

DCC CORNER: NEW DIGITRAX THROTTLE P.54



December 2020
ModelRailroader.com

Model Railroader®

Realistic winter scenery

Gary Hoover adds some chill to his layout p.34

50 years of
fun on the
HO Midwest
Lines p.38

Gary Hoover describes
how he added a frosty
scene to his HO layout.
See page 34.

PLUS

Visit an innovative N scale layout p.48

A look at the MR&T's heritage fleet p.32

Rehab: New home for an old structure p.24

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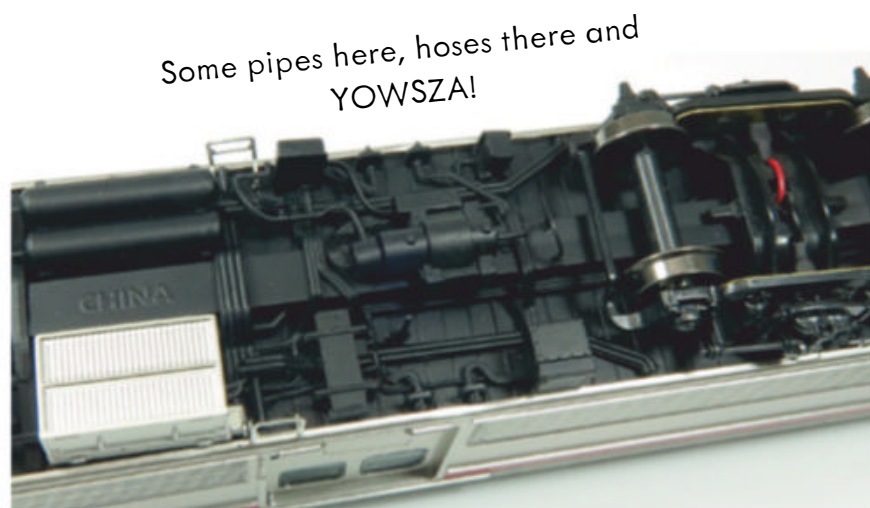
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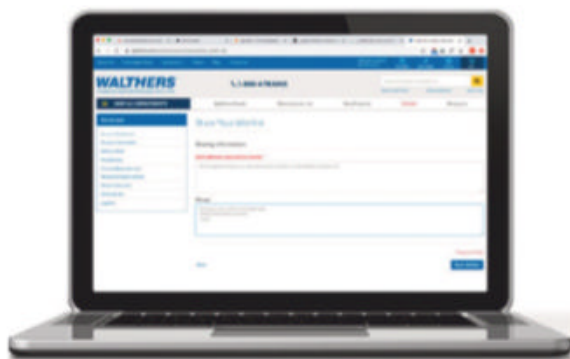
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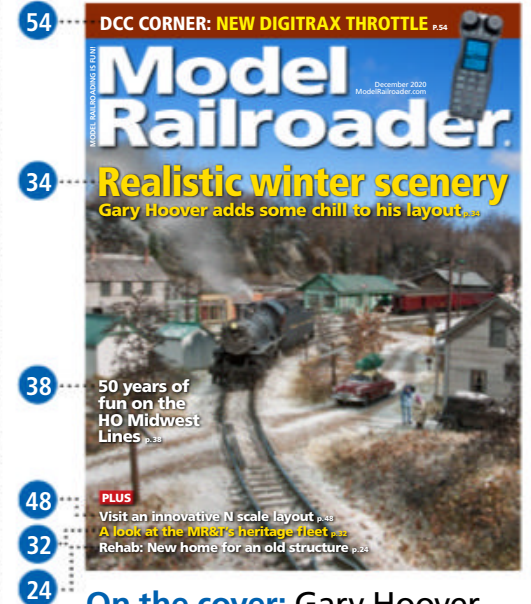
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On the cover: Gary Hoover shows how to add a touch of Jack Frost to your model railroad scenes. See page 34.

Gary Hoover photo



Next issue

In January, our Jones Island "Rehab" project gets roadbed and track. Plus, visit a Florida train club's newly expanded layout, learn to take better photos, and more!

MREXTRA

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Having a little fun with history

Have you ever become so involved in a project that you lose track of time? It happens to me fairly often when I'm focused on an intricate task.

You've probably heard the expression, "He's stuck in the past." When I'm in my train room I'm sometimes stuck in the present! It's all good though. I find I do some of

my best work when time stands still.

I'm also guilty of day-dreaming (I call it "layout planning"). I can spend hours thinking about what my future empire might look like, or how to justify the purchase of another locomotive.

It's that kind of hobby. We enjoy it in the present and

happily look forward to what we will do next.

But what about the past?

As *Model Railroader* prepared to celebrate its 80th year in 2014, Group Technical Editor Cody Grivno took a page from real-world rail-roading and commemorated the anniversary with a creative nod to the past.

Cody's inspiration was the "heritage fleet" trend. Starting in 2005, Union Pacific fielded 6 full-size locomotives painted in the color schemes of long-gone railroads that had merged into its system. Not to be outdone, Norfolk Southern soon painted 20 units in the colors of its predecessors.

Cody thought it would be interesting to build a fleet of locomotives reflecting the history of *Model Railroader's* own HO scale Milwaukee, Racine & Troy.



Although the MR&T was then four decades old, it had only two paint schemes. So Cody added past MR project railroads including the Kinnickinnic Ry. & Dock Co., Seaboard Central, and Turtle Creek Central.

His article on how he made a heritage fleet can be found on page 32. Who says history can't be fun?



Chicago's commuter rail system fields this Rock Island-painted diesel saluting one of its heritage railroads. Carl Swanson photo

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HO scale



Electro-Motive Division F7A and F7B diesel locomotives.

Walthers offers these cab units in railroad executive schemes, including Chicago & North Western, Burlington Northern (Grinstein Green and cream), CSX (gray, blue, and yellow [YN2] scheme), Kansas City Southern (*Southern Belle* scheme), and Norfolk Southern (Tuxedo scheme). The Mainline series

HO scale models have factory-installed handrails and Proto-Max metal couplers. Direct-current models with a 21-pin plug for a Digital Command Control decoder are **\$139.98** (A unit) and **\$279.98** (A-B set). Versions with a dual-mode ESU sound decoder are **\$199.98** (A unit) and **\$399.98** (A-B set). Wm. K. Walthers Inc., 414-527-0770, walthers.com

HO scale locomotives



- **Canadian National RSC-14 diesel locomotive.** Canadian National (stripes and “wet noodle” herald schemes). Five road numbers per scheme. Redesigned chassis and shell for easier access and disassembly; operating headlights, rear lights, bi-color class lights, and illuminated cab control stand; metal side handrails with plastic stanchions; and detailed cab interior with control stand, operators’ seats, and back wall panels. Direct-current model with 21-pin connector for Digital Command Control decoder, \$225; with dual-model ESU LokSound sound decoder, \$335. Scheduled for release in 2021. Rapido Trains Inc., 905-474-3314, rapido trains.com

HO scale freight cars

- **Assorted freight cars.** Maine Central 40-foot Pullman-Standard PS-1 boxcar, \$18.98. Central Vermont 36-foot Fowler

boxcar, \$18.98. Canadian Pacific Pullman-Standard 4,750-cubic-foot-capacity three-bay covered hopper, \$20.98. Chesapeake & Ohio United States Railroad Administration two-bay hopper (single car, \$17.98; three-pack, \$52.98). Chicago & North Western 36-foot double-sheathed boxcar (single car, \$18.98; two-pack, \$36.98). Rock Island 40-foot combination-door boxcar, \$18.98. Injection-molded plastic kits with plastic wheelsets, Accumate couplers, and steel weight(s). Accurail, 630-365-1173, accurail.com



- **Slab-side covered hopper.** Canadian National (gray-and-red scheme with 12 square hatch covers, brown-and-white as-delivered scheme with 12 square hatch covers, and gray-and-red scheme with six square hatch covers); Canadian Pacific (black with Multimark herald, six square and eight round hatch cover versions); and Toronto, Hamilton & Buffalo

(black with eight round hatch covers). Three road numbers per scheme; also available undecorated (six-, eight-, and 12-hatch cover versions). Injection-molded plastic with open or closed sides as appropriate, solid-bearing trucks, metal wheels, and body-mounted couplers. \$54.95 (undecorated, \$44.95). Second quarter 2021. Master Line. Atlas Model Railroad Co., 908-687-8857, atlasrr.com



- **Greenville 2,494-cubic-foot-capacity Railgon gondola.** Lombard Hobbies exclusive schemes: CSX (Railgon patchout in two numbers [each with different reporting mark/road number font] and black repaint with yellow lettering in one number). Also available: Railgon (as-delivered scheme) in 12 numbers. Road-number-specific light weight and load limit; 81 wire parts; 34 etched brass parts; and code 88 CNC machined metal wheels and metal axles. \$49.99. Produced by Arrowhead Models, available from



Lombard Hobbies, 630-620-1084,
lombardhobby.com

HO scale passenger equipment



- **Pennsylvania RR Fleet of Modernism smooth-side passenger cars.** 85-foot coach with lighted interior (three car numbers), 72-foot baggage car (one number, \$67), and 85-foot observation car with lighted interior (*Juniata Narrows*). Injection-molded plastic with non-magnetic, blackened-brass axles with needle-point bearings; Celcon trucks; and E-Z Mate couplers. \$79 unless noted. Silver Series. Bachmann Trains, 215-533-1600, bachmanntrains.com

N scale locomotives



- **Florida Tri-Rail Electro-Motive Division F40PH diesel locomotive.** Two road numbers. With Digital Command Control and sound. Available

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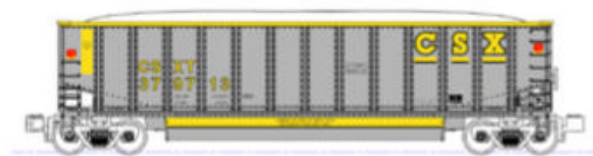


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- **General Electric standard turbine.** Union Pacific (with tender in four road numbers and without in one number). Directional light-emitting-diode headlights, printed number boards, illuminated number boxes, etched-metal Farr side grills, all-wheel electrical pickup, and brake wheel and stand mounted on rear platform. Direct-current models: With tender, \$179.99; without, \$134.99. With dual-mode ESU Lok Sound 5 micro sound decoder with Full Throttle, Next 18 connector, and sugar cube-type speaker: With tender, \$274.99; without, \$229.99. Scheduled for release in early 2021. ScaleTrains.com, 844-987-2467, scaletrains.com

N scale freight cars



- **Johnstown America BethGon Coalporter.** CSX (yellow lettering and rotary end), BNSF Ry. (post-2005 herald), Canadian National (CNA reporting marks, no herald), Norfolk Southern (gray and black), and Union Pacific

(shield herald and yellow rotary end). Injection-molded plastic with removable coal load, low-flange metal wheels, and internal bracing. Eight-pack, \$150. Price is an estimate and subject to change upon release. February 2021. Kato USA Inc., 847-781-9500, katousa.com

O scale details and accessories

- **40-foot high-cube refrigerated intermodal container.** "K" Line (white and red), Maersk Sealand (white and blue), NYK Logistics & Megacarrier (white and blue), and Ocean Network Express (white and magenta). Four container numbers per scheme; also available in eight pack (two each of all four road names) and undecorated. Injection-molded plastic with composite materials sandwich-sides design and detailed picture window refrigeration unit with separate parts. Single container, \$26.95 (undecorated, \$24.95); eight-pack, \$215.60. Master Line. Atlas O, 908-687-0880, atlasrr.com

Large scale locomotives



- **Clean Machine Green.** General Electric 25-ton diesel switcher with two spring-loaded cleaning shoes and clear window glazing. Requires six AAA batteries (not included). Price to be announced. PIKO America LLC, 619-280-2800, piko-america.com

HO scale



Modern era vehicles. A red sport coupe, a taxi, and a two-tone truck are among 12 new vehicles from Woodland Scenics. The HO scale injection-molded plastic models (\$24.99 each) have a detailed interior, one or more figures, and clear window glazing. Woodland Scenics, 573-346-5555, woodlandscenics.com

HO scale



Gunderson Multi-Max auto racks. These modern freight cars are part of the ScaleTrains.com Rivet Counter Line. The HO scale Gunderson Multi-Max auto racks are decorated for BNSF Ry., Canadian National, Canadian Pacific, CSX, Kansas City Southern, Norfolk Southern, and Union Pacific. The HO scale models (\$74.99) are offered in four numbers per scheme unless noted and feature prototype-specific details, photo-etched metal side panels, semi-scale long-shank Type E couplers, and 28" machined metal wheels. ScaleTrains.com, 844-987-2467, scaletrains.com

In Memoriam

Theodore (Ted) Klein, 1935-2020

Theodore (Ted) Klein, longtime owner of the M.B. Klein hobby shop in Baltimore, died on July 19. He was 84 years old.

Ted worked with his father, Morris Benjamin (M.B.), at the family's well-known hardware store and hobby shop in Baltimore.

In 2007 M.B. Klein moved to its current location in Cockeysville. The store shifted from a brick-and-mortar retailer to online only (modeltrainstuff.com) in 2019.

Z scale locomotives

- **Electro-Motive Division GP38-2 diesel locomotive.** Southern Pacific. Gray and scarlet scheme with Roman lettering. Two road numbers. Coreless motor

with dual flywheels, traction tires, standard printed-circuit board, directional light-emitting-diode headlights, Auto-Latch couplers, and optional pilot or plow. American Z Line, 614-764-1703, americanzline.com

Decals

- **Illinois Central 86-foot Greenville double-door auto parts boxcar.** HO scale. Set completes one 1968 Greenville car used in the Pontiac auto parts pool.

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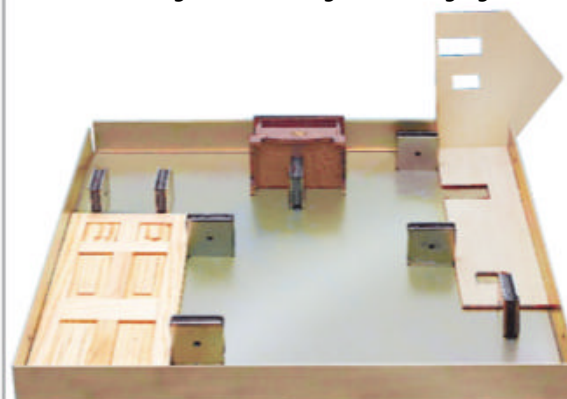
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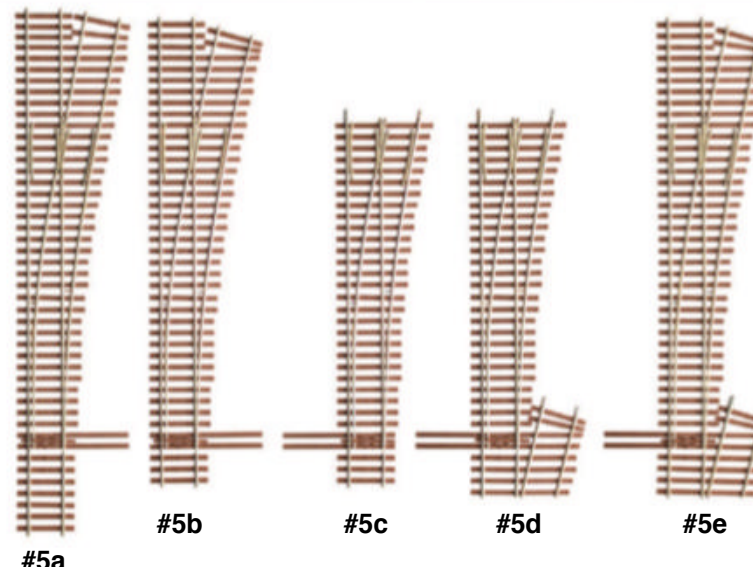


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News & Products

N scale



Norfolk & Western Class J 4-8-4 steam locomotive. Bachmann has released this N scale locomotive painted for Norfolk & Western in three road numbers. The Class J 4-8-4 (\$439) has a SoundTraxx Econami Sound Value sound package; a die-cast metal boiler, underframe, and tender frame; laser-cut exterior detailing; and E-Z Mate Mark II coupler on the rear of the tender. Bachmann Trains, 215-533-1600, bachmanntrains.com

Includes lettering diagrams. \$7. ICG
Decals, icgdecals.com

Tools

- **Seam scraper.** Removes seam lines in plastic kits without destroying adjacent details. \$9.99. Produced by Squadron Tools, available from Kalmbach Hobby Store, KalmbachHobbyStore.com

- **Cross action straight tweezers.**

Tweezers open when pressure is applied and close when pressure is released. Tweezers measure 6". \$6.99. Produced by Squadron Tools, available from Kalmbach Hobby Store, KalmbachHobbyStore.com

Books

- **Jordan Spreader & Russell Snow Plow.** Reproductions of catalogs and brochures from the O.F. Jordan Co. and Russell Car Snow Plow Co. Includes four catalogs on the Jordan Spreader, detailing the design and use. Catalogs also illustrate the use of spreaders, ditchers, snow plows, and ice cutters. Russell Car Snow Plow Co. catalogs show the various single- and double-track snow plows and flanger cars. Softcover, 92 pages. \$35. Manufacturers' Catalog Archive series. SilverLake Images LLC and Ron's Books, 914-967-7541, ronsbooks.com

Club offerings



- **Kankakee & Seneca RR 40-foot stockcar.** Accurail HO scale kit custom-decorated for the Kankakee Model Railroad Club. Kit, \$25; assembled with Kadee couplers, \$30. Shipping \$6 per car. Check or money order payable to KMRC, 197 S. East Ave., Kankakee, IL 60901

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Showcase



1 Cripple Creek Water Tank. Menards now offers this factory-assembled HO scale structure. The water tank (\$29.99) has a positionable spigot arm with chain and counterweight. The model measures 3 3/4" x 3 3/4" x 7 3/8". Menards, menards.com/trains.

2 1937 Association of American Railroads 40-foot boxcar. Great Northern is one of five new paint schemes on this Atlas O model. The Steam Era Classics line O scale model (\$84.95) has factory-painted and installed wire grab irons, die-cast metal ladders, and

etched-metal running boards. Atlas O, atlasrr.com

3 3,800-cubic-foot-capacity cylindrical covered hopper. This redesigned HO scale car is available from Rapido Trains. The ready-to-run covered hopper is decorated for Canadian National, Alcan Chemical Products, Canadian Pacific, Canpotex, Indusmin, North American, Potacan, Potash Corp. of Saskatchewan, and Roberval & Saguenay. The model has Dofasco S-2 100-ton trucks and metal Macdonald-Cartier couplers. Single cars are priced at \$59.95. Six-packs sell for \$359.95. Rapido Trains, rapidotrains.com

4 Third hand fiber grip tweezers. Squadron produces this tool (\$8.99) for making airbrushing, soldering, and working on fine details easier. Simply clamp item into tweezers and let the stand hold it. Produced by Squadron Tools, available from Kalmbach Hobby Store, KalmbachHobbyStore.com

5 50-foot insulated boxcar. Milwaukee Road, Delaware & Hudson, Conrail, Missouri Pacific, and Wabash are the paint schemes on this Atlas Master Line model. The N scale car (\$34.95) is offered in two road numbers per scheme and has separately

applied uncoupling levers and etched-metal crossover platforms. Atlas Model Railroad Co., atlasrr.com

6 TrentonWorks 67'-11" bulkhead flatcar. ExactRail offers this modern era freight car decorated for TTX (2000 as-delivered scheme in 18 road numbers, new logo patch in six numbers, and September 2004 as-delivered scheme in three numbers). The Platinum line HO model, priced at \$44.99, has laser-board bulkhead ends, 100-ton trucks, and Kadee no. 156 couplers. ExactRail, exactrail.com **MR**

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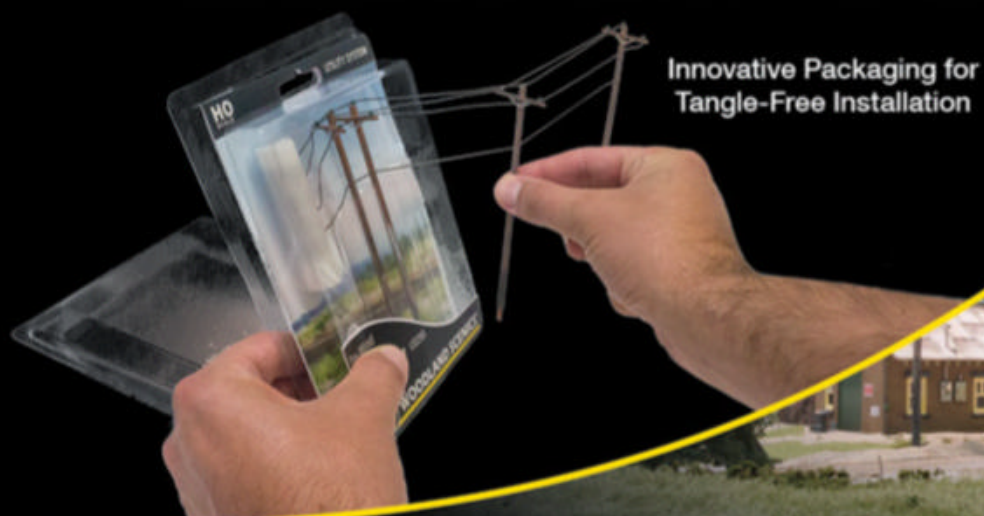
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Flatcars owned and leased by TTX Co. have different reporting marks depending on their use. The ETTX mark on this car, seen at the Kia Motors assembly plant in West Point, Ga., in April 2013 designates it as carrying an enclosed tri-level auto rack. Frank Orona photo

What do different TTX marks signify?

Q I have six freshly painted brass O scale auto racks that I need decals for. I've found some TTX flatcar sets that might be close. Do auto racks have special letters before or after the reporting mark different from those on a regular TTX flatcar?

Tom Champley, Oregon, Ill.

A Yes. Each type of car has its own reporting mark. The type of 89-foot flatcars commonly used with early auto racks are designated RTTX. Enclosed tri-level auto racks are ETTX; CTTX is a roofless enclosed tri-level rack. Non-enclosed bi-level racks are TTBX; enclosed ones are TTGX. Non-enclosed tri-level racks are TTKX. TTNX is a single-deck enclosed auto rack for large trucks, and TTQX is a tri-level rack for minivans and automobiles. TTRX is another non-enclosed tri-level rack, and TTSX is a roofless enclosed bi-level rack. TTVX is a tri-level auto rack without end doors. As the difference between these types of auto racks can be inobvious, I suggest you do a Google image search of each reporting mark to see which mark is appropriate for the kind of auto racks you have.

Q I've collected model trains all my adult life, and now that I've retired, I've started building a layout. My reason for writing is that I'm having trouble getting some of the Walthers Great Northern passenger cars to stay on the tracks. The box says that a 24" minimum radius curve is recommended, but the Great Dome cars with six-wheel trucks won't stay on the curves. I've checked the radius and I'm positive it's 24". How can I fix this problem?

Jeff Gottlieb, city not given

A Since Group Technical Editor Cody Grivno reviewed those cars for the October 2007 MR, I'll let him answer:

"I didn't have any problems with the Walthers HO scale Great Northern

Great Dome staying on the tracks when I reviewed the model.

"Since you've confirmed that the radius the car is operating on is 24", there are a few other things you'll want to check out. First, are the wheelsets in gauge? You can check that with a National Model Railroad Association (NMRA) standards gauge, available at most well-stocked hobby shops and on the organization's website, nmra.org.

"Second, are the plastic axles straight? The model features metal wheels with stubs mounted on plastic axles. If the axles are warped, that may cause the model to derail.

"Third, check the play in each truck. If a truck is too tight, it may derail on sharp curves, turnouts, and grades. With

truck screws, one should be tightened so the truck rotates freely. The other should be left a bit looser so the truck has some lateral and longitudinal play. If the car wobbles, tighten the looser screw.

"If the derailment occurs at the same spot every time, then it's likely a track-related issue. Confirm that the rail is in gauge and there is no debris stuck in the web of the rail (ballast, solder, etc.)."

Q I have both Kato and Bachmann N scale track with plastic roadbed. I need a converter from Kato to Bachmann. Is there such a product?

Becky Barton, San Francisco

A Although Kato makes an adapter to go from its Unitrack to standard track, I don't think you'll find one that joins two kinds of roadbed track. But you should be able to join the two types with a little adaptation. Use a pair of flush-cutting rail nippers or sprue cutters to cut the plastic clips off each roadbed, but keep the metal rail joiners on the rails. Use the rail joiners to attach the rails to each other; if the rail profiles are very different, you might find you have to crimp one of the joiners to tighten it and spread the other with the point of a jeweler's screwdriver.

Place both pieces of track on a table and compare the heights of the plastic roadbed. If they aren't the same height, shim the low one with a thin sheet of styrene or cardstock. Then run your finger over the rail joints to see if one railhead is higher than the other. If it is, make sure the rail joiners are on both sides of the track correctly, and use a jeweler's file to file down the high rail until it matches the other. Finally, attach the plastic roadbed on both sections to your train table or subroadbed to keep the joint from working apart.

Q Where can I find the track plan for *Model Railroader's* N scale Clinchfield project layout? I was interested in the alternate plan that was I-shaped.

Steve Linville, Tampa, Fla.

A You can find the variant track plans for our Clinchfield RR project on page 87 of our December 1978 issue. That issue, and every other issue we've published from 1934 to today, are available

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

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Q I'm in the designing phase of my staging yard and I've hit a bump. Should I go with insulated or non-insulated frogs for my yard turnouts?
Will Sagraves, Oklahoma City, Okla.

A Since yards are often worked by shorter-wheelbase locomotives, which tend to have more trouble with electrical continuity on turnouts and uneven track, I would recommend turnouts with powered frogs for yards, even though they take more work to wire.

Q What's the best replacement truck and wheel set for the Walthers HO scale ore and taconite cars? The factory wheels rub the inside flanges against the car body. They also roll poorly.
Brian Hager, city not given

A That doesn't sound like the kind of issue that replacement wheelsets or

READER TIP

Cutting openings in styrene

If you have to make multiple openings in styrene for doors and windows, this scribe, drill, and snap method will make them quickly and precisely. First, lay out and scribe the openings with a hobby knife, then scribe a long X from corner to corner. Using a step drill, make a large hole at the center. Step drills scoop out the plastic, as opposed to normal "twist" drills, which tend to tear and jam on thin materials.

Work one segment with your fingers to crack the long scribes. Using needlenose pliers, snap out the four



Wayne Wesolowski uses a hobby knife, a step drill, and a pair of needlenose pliers to make openings in styrene sheet for door and window castings. Wayne Wesolowski photo

segments. If your scribes were accurate, you have a perfect opening ready for the door or window casting. – Wayne Wesolowski

trucks will solve. If the edges of the flanges are rubbing against the bottom of the car floor above, you can fix it by shimming the car body up slightly with a thin fiber washer or similar shim

between the truck and the bolster. (You may have to then shim the couplers downward to compensate.) If the backs of the wheels are rubbing against the center sill of the frame on



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curves, that problem also won't be fixed by replacing the trucks or wheels. The problem is your curves are too tight for the cars. The only way to fix that would be to use a file to notch in the center sill where the wheels rub against them. And next time, design your layout with broader curves.

Q I have a Walther's Mainline General Electric ES44AC diesel locomotive that starts up automatically when I turn on the Digital Command Control system. Which Configuration Variable (CV) must be changed so I can start it up when I want it? I think the locomotive is equipped with a SoundTraxx Econami decoder.

*Jens (last name not given),
Korsør, Denmark*

A Walther's put out two versions of that locomotive, one with a SoundTraxx Econami sound decoder and one with an ESU Sound decoder. If you have an Econami decoder, Auto Start is governed

by CV114. Set CV114 to 0, and the sound won't start up until you press F8.

Q Can someone please decode the mystery of narrow gauge and detail level naming practices? I've refrained for years to ask but it's bugging me now. What does 30 or 3 mean in a railroad scale? What do OO-9 or HOn2½ or Proto-48 or Proto-87 mean? It's gotten so confusing that my feeble 35-year-old mind can't keep up! I love model railroading but the minutiae of the scales is getting to be a bit much. Please explain so I don't feel so left out.

Justin Helms, Blanchard, Okla.

A You're talking about a lot of different terms there, so the numbers in each don't always refer to the same thing. If it follows a scale like OO or HO, the number usually has to do with the gauge of the track. Such scale-number combinations refer to narrow gauge modeling – modeling a prototype railroad that used

a track gauge smaller than the standard 4 foot, 8½ inches. HOn3 means HO scale (1:87.1 size ratio of model to prototype), 3-foot narrow gauge. HOn30 and HOn2½ are actually the same thing – HO scale modeling of a line with a 30-inch gauge.

OO-9 is a little different; it's OO scale modeling (1:76 proportion) on 9mm gauge model track. Unlike the previous examples, in which the number refers to prototype gauge, that 9mm refers to the N scale model track used. In 1:76, N scale track works out to about 27" gauge.

Proto-48 and Proto-87 are different. Although they do deal with scale, they don't say anything about track gauge. They refer to "fine scale" modeling in O and HO scale, respectively. The numbers 48 and 87 are the proportion of those two scales (1:48 for O scale and 1:87 for HO). Under the principles of "fine scale" modeling, items like track and wheels are modeled to faithful proportions rather than the often heavier model parts designed for more reliable operation at small scales. **MR**



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Master custom builder Bill Lenoir



Bill Lenoir moved to Tampa, Fla., later in life and ran a business custom building locomotives. This 1/4" scale Milwaukee Road class L3 2-8-2 Mikado was featured in the May 1969 *Model Railroader* Trackside Photos.

Bill Lenoir, 1910-1995, considered one of our hobby's master builders because of the high quality of his work, was called upon to design patterns for firms from which they could produce models. His New York Central Hudson graced *Model Railroader's* cover in March 1935. He was 24. Bill built O scale brass steam locomotives, gas-electric cars, passenger and freight cars, and had many personal models become contest winners – five in one 1934 Chicago show!

His 1934 ad listed four styles of trucks for 1:48 O and 1 7/64" Q scales and kits. His Lenoir's Model Railway Supplies folder showed boxcars, wood and metal reefers, and wood-sheathed automobile cars.

Olsen couplers were 75 cents per pair; 10 varieties of freight car trucks were \$1 a pair; four- and six-wheel

passenger truck pairs were \$1.30 and \$1.80, respectively. In an era when many modelers were freelancers, with few kits available, hobbyists were on their own to build from scratch or from parts offered by different sources.

A 1935 ad in the modeling press revealed six new locomotive designs, which he shortly sold to Scale Model Railways in Indiana, it being the depths of the Depression and Bill needing employment to earn a living.

What set Lenoir apart was a range of Western prototypes, while others focused on Eastern roads.

In 1937, Scale Model Railways catalogued Indiana Harbor Belt; Wabash; Texas & Pacific; Erie; Chicago, Milwaukee, St. Paul & Pacific; Chicago Great Western; plus other models of his designs. Cast T&P gondolas and reefers were designed for

Walters at the Texas & Pacific Centennial Exhibition.

Bill's reputation led him to Saginaw Pattern & Manufacturing Co.'s engineering department, where he created three Pennsylvania RR prototypes, a class G5s 4-6-0 Ten-Wheeler, an E6 4-4-2 Atlantic, and an H10s 2-8-0 Consolidation for 1940 introduction (see *Heritage Fleet* in the October 2016 MR).

Initially successful for their quality and low prices, with the Depression easing and rising incomes, Saginaw found itself flooded with government defense contracts for large patterns upon which it had built its reputation. With a low-volume, low-financial-return train line compared to lucrative government work, Saginaw sold the former in 1942 to the Pioneer Co. The line never returned, and Lenoir entered military service as an ordinance machinist in Italy and the Philippines.

By 1950, Bill created 0-8-0, 2-8-2, 4-8-2, and 4-6-2 locomotives for Hines Lines with fully formed, machined brass boilers and cabs, and drilled and tapped cast bronze frames. By the 1960s, two models became part of the Pierce

Tool Co. line: the 0-8-0 and a 2-8-0, which shared the same boiler.

Pierce instructions are interesting for the required tools: heavy-duty soldering iron, tin snips, pliers, small vise, a 2-56 tap, scraper, and assorted files for cutting and forming small sheet metal parts, and for tapping, center-punching, drilling and soldering the parts. They were true craftsman kits.

In a 1950 hobby catalog, Hines locomotives had more finished work than Pierce's lower priced offerings during an inflationary period. Adding to their cost to modelers, Hines and Pierce kits came less motors.

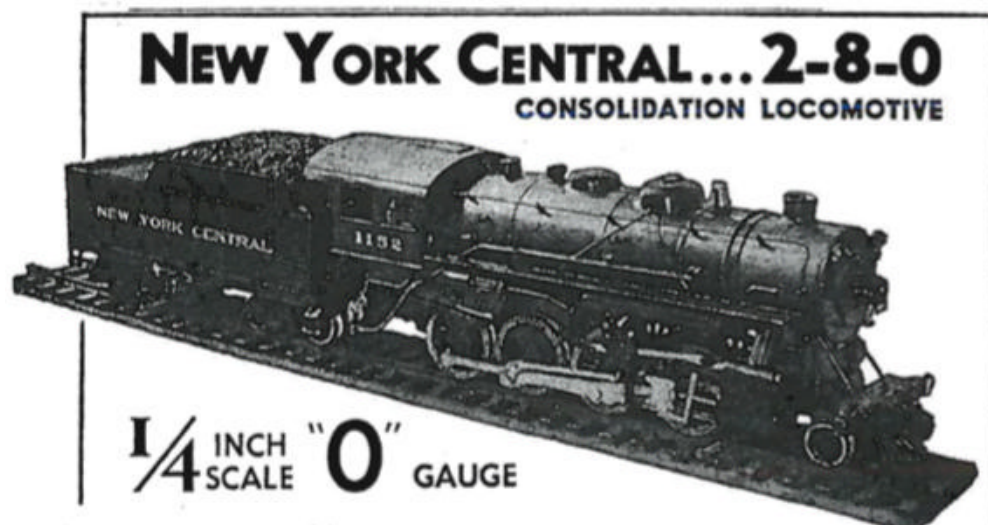
Another Lenoir survivor was the Pennsy H10s, produced by Central Locomotive Works from tooling and equipment acquired earlier from Pioneer.

In the late 1940s, Bill opened Lenoir Locomotive Works in Tampa, Fla., making custom-built locomotives on a five- to six-week turnaround. It's estimated he made 266 custom locomotives in his lifetime, selling for between \$2,000 and \$5,000. He retired in 1987, a creator of superb custom models and pattern maker-designer

to the hobby industry. **MR**



Since August 2015, Keith Wills has been sharing his expertise on the history of model railroading. As we head into the new year, *Model Railroader* is reorganizing some of its departments. This will be Keith's final column. — Ed.



Bill was also a patternmaker, designing the tooling for this New York Central class G-46h 2-8-0 Consolidation, a 1/4" scale model of a Brooks locomotive from 1912 sold by Scale Model Railways in 1941.

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New life for an old building

Back in the October 2020 issue,

I noted that Ladishfeger Steel Products, an industry kitbashed by the late Art Curren, was going to be relocated from Kelly's Island to Mukwonago on our HO scale Milwaukee, Racine & Troy staff layout. Initially David Popp and I thought this would be a fairly straightforward structure transplant. But then we took a closer look at the scene.

In the February 2013 MR, I wrote about adding a low-relief building at Mukwonago. I paired up the curtain-wall structure with prefab metal low-relief building to form Empire Level. The real company, which makes levels, squares, and other tools for the construction trades, is located in Mukwonago. However, unlike its model counterpart, the full-size Empire Level factory isn't rail-served.

Since Ladishfeger Steel Products is also a curtain-wall building, we reasoned that it could be part of a larger Empire Level complex on our layout. The existing buildings against the backdrop would be the offices and warehouse. The old Ladishfeger building would become the manufacturing side of the operation, receiving raw materials to make levels, squares, and other products.

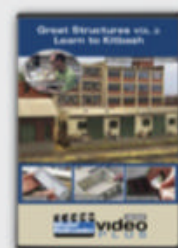
To help reinforce this idea, I repainted Ladishfeger to match the buildings against the backdrop. Other than new paint, we left Art's masterful kitbashing work untouched, including the cleverly designed interior scenes. We think they can be better appreciated at the structure's new location.

While I was busy repainting the building, David reworked the scenery where the structure would be located.

Art Curren's kitbashed Ladishfeger Steel Products building has a new lease on life as part of the Empire Level complex at Mukwonago on the HO scale Milwaukee, Racine & Troy. The structure was originally located on Kelly's Island. Bill Zuback photo

The scene now features one siding instead of two, a paved lot, an overhead gantry crane, and an outbuilding. The property is neatly framed on three sides with a corrugated metal fence.

If you're renovating your model railroad, don't be in a big hurry to discard old buildings. Take a look around and see if you can give them a new lease on life in a different location.



Want more kitbashing ideas? Check out the 90-minute DVD *Great Structures Vol. 2: Learn to Kitbash*. Find it at your local hobby shop or order online at

KalmbachHobbyStore.com.

STEP 1 SCENE RENOVATION



The area between the main line and aisle at Mukwonago was originally going to be a Quad/Graphics printing plant. Though the sidings were installed, the industry was never built. When we removed the structures from Jones Island, David and I thought the space would be ideal for Ladishfeger Steel Products. The structure didn't quite fit the spot, so some scenery modifications were necessary.



First, Ben Lake and David adjusted the risers for the subroadbed to make the area level. Then David adjusted the setoffs to push the fascia out from the side of the layout. Instead of filling the gap between the subroadbed and fascia with more plywood, he decided to use extruded-foam insulation board. Before he could add the foam, he attached a 1 x 2 to the top of the setoffs.



Next, David installed the 1"-thick extruded-foam insulation board on top of the 1 x 2. However, the foam was a bit taller than the plywood subroadbed. David had to pull the screws out of the risers one more time and re-adjust the subroadbed to bring it to the same level as the foam. He attached the foam insulation board to the 1 x 2 with foam-safe adhesive.



David attached cork sheet to most of the lot. Then he shaped the remaining bits of exposed foam with a hot-wire cutter (and plenty of ventilation). David used Sculptamold, a papier-mache-like product, tinted with latex paint to fill in the gaps between the foam and cork. Sculptamold can be kind of messy, so David covered the top portion of the fascia with blue painter's tape.



Originally this location had a turnout and two sidings, as evidenced by the shadows of the painted track on the roadbed. The new building wouldn't support this track arrangement. Instead of pulling up the cork, David filled in the gap between roadbed with more Sculptamold.

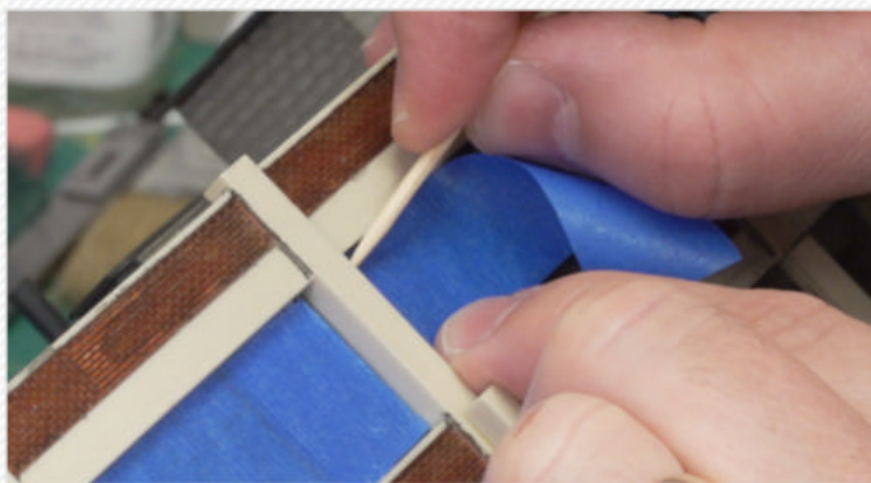


Not all ground is perfectly smooth, but the Sculptamold was a bit too lumpy for this area. With the Sculptamold still wet, David dipped his fingers in water and smoothed out the scenery material. This also pressed the material into tight spots the putty knife couldn't reach.

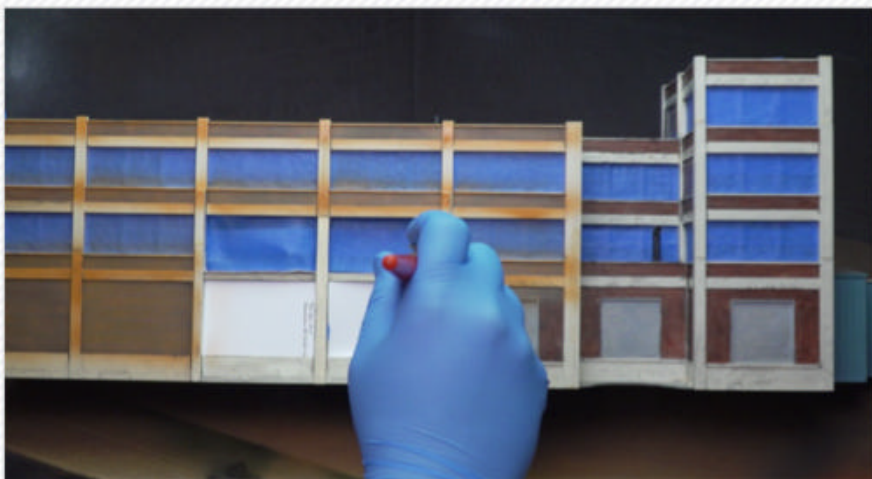
STEP 2 BUILDING MAKEOVER



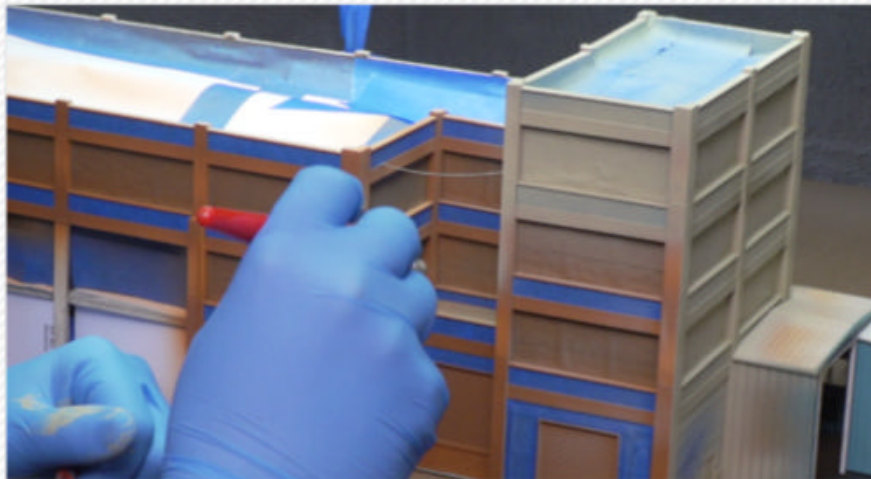
Art Curren built Ladishfeger Steel Products using parts from multiple City Classics Smallman Street Warehouse kits and Pikestuff corrugated metal wall panels. Though he brush-painted the brick portions of the curtain-wall structure, the color didn't match the building across the tracks. He also left the concrete areas (as well as the corrugated metal addition) unpainted.



To make it appear this building was connected to Empire Level complex across the tracks, I needed to repaint Ladishfeger. Before I could get the airbrush out, I had to mask the windows and cover the wall sections that were cut out for the detailed interior scenes. I used painter's tape and index card stock to keep paint off these parts of the building.



Next, I airbrushed the brick areas with Polly Scale Rust [Modeler's Decals and Paint Rust (no. 84041), available from the Kalmbach Hobby Store, is a suitable replacement. – *Ed.*] I let the paint dry until there was no discernible paint odor (24 hours is usually sufficient). Then I masked the brick portions of the structure.



Next, I applied Polly Scale Aged Concrete to the concrete portions of the structure. MicroLux Aged Concrete (no. 29007) from Micro-Mark is a close match for the discontinued Polly Scale color. I typically apply light colors first. However, in this case, it made more sense to paint and mask the brick areas first.



After the Aged Concrete paint had dried, it was time for more masking and painting. I used the same company's Boston & Maine Blue (walls) and Reefer White (roof, windows, and doors) to paint the corrugated metal addition. Then I painted the roll-up doors on the curtain wall sections Polly Scale Tarnished Black.



Leaving the windows and cut out wall sections masked, I used an airbrush to apply a control coat of thinned Model Master Engine Black. This toned down the fresh paint and helped the building better match the low-relief structure across the tracks. I sealed the weathering with Testor's Dullcote, then removed the masking.



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STEP 3 LOT WORK



David tinted the Sculptamold with latex paint used on the fascia of a past project layout. However, when the tinted Sculptamold dried, it looked more like ground beef than tinted scenery material. He covered the scenery material and cork with flat, earth-toned latex paint before painting the lot.



After the latex paint had dried, David came in with a pencil and marked the outline of the lot. Then he used a 1"-wide brush to paint the lot with Apple Barrel Pavement (no. 21490E) acrylic craft paint. The paint is sold at most well-stocked craft stores and some big-box retailers. David let the paint dry thoroughly before proceeding.



Next, David sprayed the brush-painted areas with Dullcote. Wear a respirator and make sure the room is well-ventilated when applying the flat coat. Then he used Sofft applicators to weather the pavement with PanPastel weathering powders. David sealed the weathering with another application of Dullcote.



David made a partial floor for the industry using 1/2" square styrene tile (flipped upside down) shimmed with .060" styrene strip on the outside edges. He used same tile material, without shims, in the gauge of the rail. He secured the styrene with Aleene's Tacky Glue.



To give the lot a worn look, David used a fine-tip permanent marker to add cracks. He lightly dragged the marker over the surface in random patterns. Do not spray Testor's Dullcote over the permanent marker, as it will bleed, ruining the effect.



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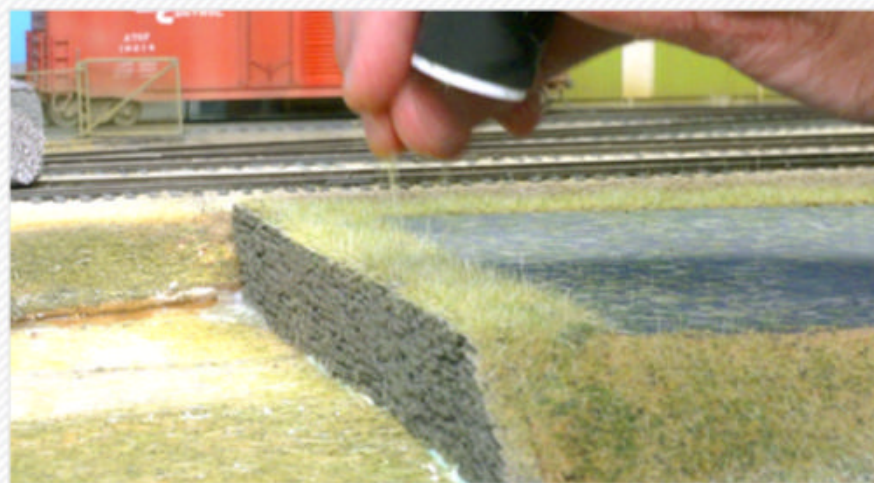
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STEP 4 FINAL DETAILS



When the subroadbed was raised, it left the edge of the scene $\frac{3}{4}$ " higher than the adjacent scenery. Instead of using Sculptamold to blend the scenes together, David cut a piece of Chooch dry stack fieldstone flexible vinyl sheet (no. 8544) and attached it to the subroadbed with DAP Dynaflex latex caulk. This allows us to add a mini scene behind the industry at a later date. He painted and weathered the wall after it was installed.



Next, David used Woodland Scenics ground foam to apply a base layer of scenery to the unpaved portions of the scene. He followed that up with Woodland Scenics 4mm light green static grass (no. FS619). He applied the static grass with Peco's PSG3 Pro Grass Precision Applicator. This device gives the fibers a static-electric charge, helping them stand upright when applied in wet scenery glue.



Despite our best efforts, the building didn't seat perfectly level on the lot. To conceal the gaps where the building meets the layout surface, David added static grass tufts from Busch and Heki along the foundation, as well as a bulk oil tank and 55-gallon drums.



Since Empire makes an assortment of metal tools, we reasoned the factory would receive shipments of coil steel. David built this overhead gantry crane, included with the Walthers piggyback ramps kit (no. 933-4048), to remove the hoods from coil steel cars.



The Walthers kit also contained a small shed and telephone pole. David built and painted those items and added them behind the building. He painted the shed B&M Blue and Reefer White to match the corrugated metal extension on the building. David finished the scene by adding an oil drum and weeds around the shed.



I used the Walthers corrugated fence kit (no. 933-3632) along three sides of the scene. I spray-painted the post frames with Rust-Oleum Painter's Touch 2X Flat Black and the fence Flat Gray Primer. I weathered the fence with Vallejo Model Wash. I used a no. 50 bit to drill holes in the scenery and secured the fence with white glue. 

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David Bailey's On30 layout Karolina Falls, Photo: Andrew Burnham.

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A look back at the MR&T's heritage fleet



As *Model Railroader's* HO scale line celebrates its 45th anniversary, these seven locomotives are as relevant as ever

By **Cody Grivno** • Photos by Bill Zuback and Jim Forbes

Believe it or not, *Model Railroader* magazine's freelanced HO scale railroad, the Milwaukee, Racine & Troy (MR&T), is celebrating its 45th anniversary in 2020. During the course of those four-plus decades, the magazine's staff has enjoyed two model railroads. The first was located at Kalmbach's downtown Milwaukee headquarters at 1027 North 7th Street. The current layout is in a neatly appointed room at our offices in Waukesha, Wis., a western suburb of Milwaukee.

As we celebrate this milestone anniversary, we thought it would be fun to take a look back at the MR&T heritage fleet. Though these locomotives have been around for six years already, they help tell the history of our railroad.

In 2005 and 2006, Union Pacific unveiled six full-size locomotives decorated for railroads it merged with. In 2012 Norfolk Southern upped the game and debuted 20 units painted for predecessor roads to celebrate its 30th anniversary **1**.



As *Model Railroader* prepared to celebrate its 80th anniversary in 2014, it seemed like an appropriate time to develop a heritage fleet for the MR&T.

The previous MR&T paint schemes were natural choices, but two units didn't seem like much of a fleet. Then I looked in the display cases in the MR&T layout room and had an "aha!" moment. Why not use paint schemes from previous project layouts? That added the Kinnickinnic Ry. & Dock Co., Seaboard Central, and Turtle Creek



1 Full-size heritage units. Norfolk Southern painted 20 locomotives in the schemes of its predecessor railroads.
Thomas Danneman photo

Central to the mix. I also threw in former Kalmbach librarian George Drury's proposed MR&T passenger scheme and the Troy & Northern into the mix **2**.

Not long after my article on the MR&T heritage fleet appeared in the January 2014 issue of MR, I was



2 Finding inspiration. Two showcases in the MR&T club room feature historic models from the layout's past. Cody adapted the paint schemes on these units to fit the General Electric four-axle road locomotives.



3 For the masses. Atlas produced two MR&T heritage units in HO (shown) and N scales, as well as the railroad's Operation Lifesaver engine. Dash 8-40BW no. 1175 is named the *Andrew P. Sperandeo* to honor the designer of the current MR&T.

contacted by Atlas Model Railroad Co. The New Jersey-based manufacturer wanted to produce two of the heritage units, as well as the Operation Lifesaver diesel, in its HO and N scale Master Line. Former editor Neil Besougloff approved the idea.

Then, shortly after retired executive editor Andy Sperandeo passed away in early October 2015, Atlas contacted me again to see if it could name one of the locomotives in honor of Andy. This seemed a fitting tribute, as Andy designed the current MR&T and spent many hours working on the layout. Dash 8-40BW no. 1175 is lettered the *Andrew P. Sperandeo* **3**.

The seven heritage units are just part of the larger MR&T diesel locomotive fleet. In our upcoming special issue *Milwaukee, Racine & Troy: The Inside Story of Model Railroader's Club Layout*, you can read about the paint schemes

the MR&T has used on its locomotives over the railroad's 45-year history. We've also included the MR&T's diesel roster.

To see 360-degree views of the heritage units, and to learn about the paint and decals used on each model, please visit our magazine's website, ModelRailroader.com.

MR

Milwaukee, Racine & Troy: The Inside Story of Model Railroader's Club Layout is an 84-page special issue covering the 45-year history of our freelanced HO scale railroad. Order your copy by phone at 877-246-4879 or online at KalmbachHobbyStore.com.



Add some **CHILL** to your **NEXT SCENE**



Follow these techniques to model a light snowfall and get the best photos of your work

By Gary Hoover
Photos by the author

When planning my HO scale Norfolk & Western layout, I wanted to set the season in late fall/early winter. This time of year seemed to be when many of the 1950s railfan still and motion photography was done. I also wanted to model a portion of the model railroad with a light dusting of snow.

One of my previous layouts, the HO scale Missouri, Kansas & Quincy, had a small snow scene that was done with a significant amount of snow covering most of the terrain and track. The effect was nice, but keeping the snow dust-free was difficult even though I covered it with a plastic drop cloth when I wasn't

operating trains. Cleaning the track also presented problems, not to mention occasionally getting some snow material on the locomotive wheels. Further, the heavy snow prevented many small details from being seen or added.

So, on the N&W layout, I limited the snowfall to just a dusting. This eliminated the maintenance issues while allowing me to add extra details and mini-scenes to reinforce the bitter cold weather.

Abingdon Branch in snow

The portion of the layout where I chose to model the snowfall was the Abingdon Branch. On the prototype N&W, the Abingdon Branch ran from

① Before adding snow, Gary Hoover applied normal ground cover on his HO scale layout. Muted brown and pale yellow colors are used to represent late fall/early winter. The field also reflects the season with corn teepees, a common site along on the Abingdon Branch.



② Gary modeled streams with thin ice along the edge. Icicles from Busch hang from the lower edge of the aging water tank.



③ Once the base scenery is in place, it's time to apply the snow. Gary used an applicator from Vintage Reproductions. However, a teaspoon would also work. Only a light dusting of snow was applied over the entire scene. Dirt roads tend to show snow more than the grassy areas.

Abingdon, Va., to West Jefferson, N.C., and featured the *Virginia Creeper* southbound in the morning and northbound in the afternoon.

Noted rail photographer O. Winston Link made the Abingdon Branch popular with his daylight color and black-and-white images. The Abingdon Branch is rich with rustic scenery and backwoods details that just cry out to be modeled. Additionally, my Abingdon Branch is in the least dusty part of my basement.

Basic scenery

The areas that were to eventually receive the dusting of snow were first

completed with the same scenery materials and techniques used on the rest of the layout ①. After an application of real dirt to the base scene, I added various ground foams including Woodland Scenics earth (no. T42), earth blend turf (no. T1350), and soil (no. T1341). I next applied various shades and lengths of static grass. I started with a blend of Heki winter grass (no. 3363) and wild grass (no. 3371), followed by additional applications of Noch brown (no. 08323). Heki nos. 1680 and 1682 autumn leaf foliage was added to select areas over the static grass once it was completely dry.

Trees were SuperTrees from Scenic Express and Timberline Scenery deep woods conifers. On some of the Scenic

Express trees, I applied finely ground dry leaves I'd collected from my back yard in the fall. I also sprinkled the ground leaves over the terrain to represent leaves that had already fallen from the trees.

I added season-specific details to the terrain, such as corn stalk teepees in the field. I made the teepees from Walther's harvest corn stalks (no. 949-1141). I attached AMSI medium dust foam (no. 137572) to the stalks with white glue.

Water under ice

The Abingdon Branch crossed many creeks and small rivers ②. To model the water, I once again started with the same materials and techniques used on the



④ Gary used a fan brush to move the snow where desired. Tracks made by vehicles can be easily made and add realism to the scene.



⑤ Once Gary had the snow positioned as desired, he used a light mist of unscented hair spray to hold it in place. Holding the can 12" to 18" above the scene and using short bursts prevents the snow from blowing away.

non-snow areas. I poured a layer of Enviro-Tex two-part resin onto the painted streambed and allowed it to dry. Next, I applied clear latex caulking to create some ripples. When dry, a thin top-coat of Enviro-Tex provided the wet look.

I then brushed a very thin coat of white latex caulk along the edges of the stream to represent a thin ice formation. Once it cured, I applied a light dusting of snow

over the frozen portions of the stream. In addition to icy streams, most of the structures located in the snowy areas had Busch icicles (no. 1143) added randomly in logical locations.

Snow materials

Having previously done a snow scene on the MKQ layout, I had a fair amount

of unused snow material remaining, including the excellent but now long out of production snow varieties from Vintage Reproductions. [Snow modeling products are available from Busch, Deluxe Materials, Faller, Noch, Woodland Scenics, and others. – Ed.]

I used three types of Vintage Reproductions snow – dry snow, wet snow, and snow with sparkle. In addition, I wanted to try some of the snow products currently available. Woodland Scenics Soft Flake Snow (no. 785-140) provided good results. I applied the snow using a Vintage Reproductions bellows-type applicator, which is now also out of production ③, previous page. Using a teaspoon would be a suitable alternative.

I first applied non-sparkle snow lightly and evenly to all areas including the tracks, roads and building roofs. On the tracks, I applied the snow sparingly, especially between the rails and around turnouts. (This is a lesson learned from the snow scene on the MKQ.) Next, I applied a light dusting of snow with sparkle.

The sparkle effect can easily be overdone. Only a slight amount is needed in select areas. Walthers sells Icy Sparkles from Deluxe Materials (no. 806-BD33). I haven't tried this brand, but it looks like it should work.

I used a fan brush to arrange the snow once the initial application of snow was complete ④. On the roads, I brushed the snow to the center and the sides of the road to represent bare areas where the cars and trucks would travel. On the building roofs, the snow was brushed in areas where it would logically collect, such as near the bottom of the roof or on flatter porch roofs.

Once the snow was positioned where I wanted it, I applied a light mist of unscented hair spray while holding the can about 12" to 18" above the scene and using only short bursts ⑤. This prevented the snow from blowing out of place. When the hair spray dries, it provides enough hold to keep the snow in place. On the other hand, if some snow needs to be relocated or removed, it can easily be loosened with a soft brush and then vacuumed up. Once the hair spray dried, I cleaned the rail tops with isopropyl alcohol followed up with a Bright Boy track cleaner.

In some cases, such as on building roofs or vehicles, the hair spray left a slight shine. This was easily fixed by applying a light mist of Testor's Dullcote (704-1260) once the hair spray had dried. The Dullcote is only needed

on areas that look too shiny, not the entire scene.

Winter scenes

A nice benefit of modeling a snow scene and cold weather is adding the seemingly endless array of mini-scenes. How about a boy building a snowman **6** or a fresh load of coal being delivered to a home for heating **7**? Or maybe just two folks standing outside looking chilled to the bone **8**.

Don't forget small details, like a wreath on the door, a tree on the porch, or a pile of firewood neatly stacked just outside the back door. One car getting a jump-start from another car would make an interesting scene.

Photos of your work

If you enjoy model railroad photography and use Photoshop or similar photo-editing software, there are even more possibilities for fun.

Lighting can be used effectively to reinforce the time of year. During the late fall and winter months, the shadows are long, so position your auxiliary photo lights low.

Obviously, the locomotives will need to be spewing steam from multiple locations. Chimneys will need smoke coming from the burning fireplaces. These are things you can add in Photoshop.

For the sky, I use Photoshop to remove my painted sky and then add a real sky photographed during the same season represented in the model photo. Typically, model railroad photos include a blue sky with some puffy clouds. That's also fine for a snow scene, but don't hesitate to create a photo or two made with an overcast sky **7**. Overcast skies and cold, miserable weather seem to go hand in hand.

For overcast photos, there would be no hard shadows. I use overhead fluorescent shop lights to provide flat light. Finally, converting a color photo to black and white often works nicely for winter scenes, as shown in **2** on page 35.

I really enjoyed creating and photographing the snowy, cold weather scenes on my N&W layout's Abingdon Branch. If looking at these scenes brings a brief chill to visitors in my otherwise comfortable basement, I will consider it to be mission accomplished! **MR**

Gary Hoover has written numerous articles for Model Railroader and its special issues.



6 Details that reinforce the cold snowy weather are easy and fun to add. This boy has just finished making his first snowman of the season.



7 In the 1950s, many homes on the East Coast were heated by coal delivered by truck and shoveled through a coal door into the coal bin in the basement. Applying just a light dusting of snow allows details such as the pile of firewood to be seen. A dark, overcast sky, added in Photoshop, reinforces the season and weather.



8 Figures dressed for cold weather help convey the time of year, as does the smoke coming from the chimneys. Snow applied on the track was kept to a minimum to simplify cleaning and avoid getting snow on locomotive wheels or into mechanisms.

More than 50

Since 1966 the HO scale Midwest Lines has provided enjoyment for family and operating crews

By **Cody Grivno** • Photos by the author



years of fun



① Rock Island Alco RS-1 no. 744 switches cars in the Richfield, Kan., yard on Rolf Plachter's HO scale Midwest Lines. The 33 x 52-foot freelanced model railroad is set in the mid-1960s and also features trains from the Chicago, Burlington & Quincy and Union Pacific.



2 This overall view shows the Richfield, Kan., portion of Rolf's layout. This section of the model railroad, added in 1993, is one six additions made to the Midwest Lines since 1966.

When Rolf Plachter started work on the HO scale Midwest Lines back in 1966, he was looking for a hobby to enjoy with his sons, Fred and Richard. The layout started innocently enough, occupying just part of the family's basement. Fred eventually became more interested in slot cars, and Richard participated in the hobby through his early teens. But Rolf's interest in the hobby kept growing.

In the ensuing 54 years, the layout has been expanded six times, now measuring 33 x 52 feet and filling the entire basement plus a crawl space. Richard returned to the hobby in his late 20s and has been working side-by-side with his dad ever since to help shape the Midwest Lines into a sprawling model railroad depicting the Chicago, Burlington & Quincy (CB&Q); Rock Island (RI); and Union Pacific (UP) during the mid-1960s.

Learning the hobby

When Rolf was getting into the hobby, he joined the Great Lakes & Western Model Railroad Club, which



3 An American Car & Foundry 85-foot observation-dome-lounge carries the markers on a Union Pacific passenger train easing away from the platform after a station stop in Colby, Kan. The Midwest Lines features freight and passenger traffic.

met in the basement of the Racine (Wis.) Heritage Museum. He joined the group in 1965 and was a member for many years. "There were about five or six members, two of which my dad became lifelong friends with, Ed Flatten and Marty Edwards," Richard said. "Marty was a regular operator on the Midwest Lines RR for more than 45 years and offered much advice and support."

Rolf's hobby knowledge grew thanks to his membership in the Great Lakes & Western Model Railroad Club. In 1966 he started work on the first section of the Midwest Lines RR, Alpine and Elk

Springs. The 12 x 33-foot piece of the layout features the Haagen Short Line and two classification yards. The Haagen Short Line, named after Rolf's childhood hometown in Germany, is a mining operation that connects with the UP.

Knowing wiring would be important to smooth operations, Rolf took an electronics course at Gateway Technical College in Racine. "This gave him the ability to wire the layout by himself," Richard said.

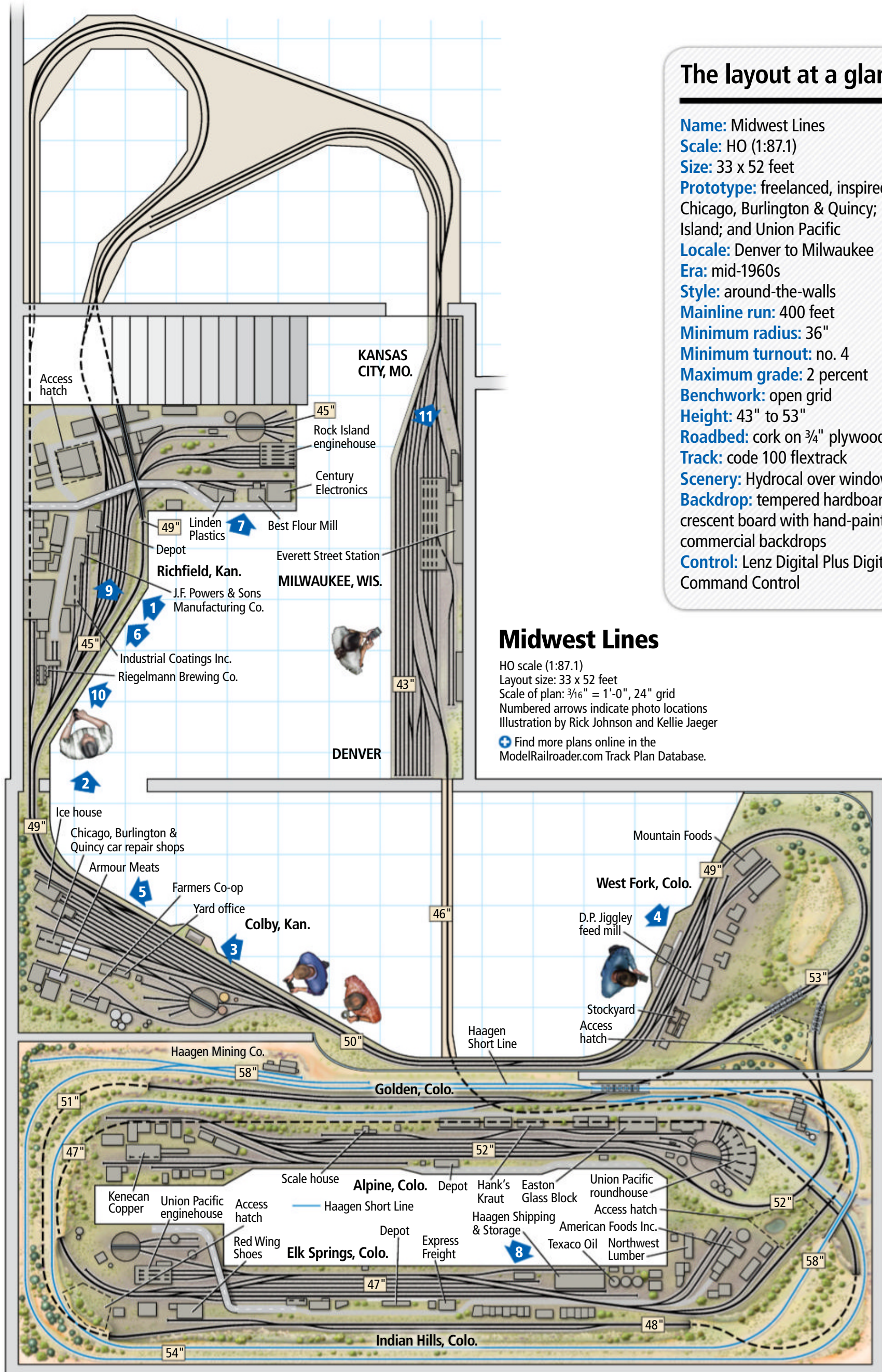
Rolf has since expanded the model railroad a half-dozen times. The first expansion was West Fork, Colo. (1976),

The layout at a glance

Name: Midwest Lines
Scale: HO (1:87.1)
Size: 33 x 52 feet
Prototype: freelanced, inspired by Chicago, Burlington & Quincy; Rock Island; and Union Pacific
Locale: Denver to Milwaukee
Era: mid-1960s
Style: around-the-walls
Mainline run: 400 feet
Minimum radius: 36"
Minimum turnout: no. 4
Maximum grade: 2 percent
Benchwork: open grid
Height: 43" to 53"
Roadbed: cork on 3/4" plywood
Track: code 100 flextrack
Scenery: Hydrocal over window screen
Backdrop: tempered hardboard and crescent board with hand-painted and commercial backdrops
Control: Lenz Digital Plus Digital Command Control

Midwest Lines

HO scale (1:87.1)
 Layout size: 33 x 52 feet
 Scale of plan: 3/16" = 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.





4 Agricultural businesses keep the Union Pacific busy in West Fork, Colo. The local switcher, Alco RS-3 no. 1292, spots a pair of 40-foot boxcars at the D.P. Jiggley feed mill. The industry deals in feed, seed, and grains.

followed by Colby, Kan. (1992), Richfield, Kan. (1993), crawl space storage tracks and return loop (1993-1994), staging and return bridge (1994), and Milwaukee, Wis. (2018).

Of all the expansions, the one in the crawl space was the most difficult. “The area is only 4 feet high, and we had to break through the concrete block wall for track pass-throughs,” Richard said. “The (benchwork) needed to be built in modular sections outside the space and assembled inside. Once all sections were leveled and screwed together, flextrack and turnouts were installed and wired.”

Track plan

The track plan is a freelanced design. The Midwest Lines provides rail service to manufacturing, mining, shipping, farming, and food-service industries between Denver and Milwaukee.



5 M. Kreuser Freight Co. is one of several businesses served by the Chicago, Burlington & Quincy in Colby, Kan. Today, Electro-Motive Division NW2 no. 9208 spots a Great Northern double-sheathed boxcar next to the industry.

“When my dad started the layout, he wanted to model a region of the U.S. that was more hilly or mountainous, and often referenced Oregon and Washington when creating the scenery,” Richard said. “He liked large areas of trees and greenery, rocky outcroppings, ledges, and high bridges across cuts or rivers.

“When I became more involved, especially with new areas, I influenced the change to flatter regions of the U.S. and the rail lines that go through those states,” Richard continued. “I like flat, grain elevator country. The end result moved the map from the northwest to the Midwest.”



Tried-and-true scenery

Rolf turned to traditional techniques for the scenery. He used window screen covered with paper and plaster to shape the landforms, rubber molds to cast the plaster rocks, and acoustic tiles to build up the rock ledges. Rolf scenicked the layout with ground foam, lichen, and Clump-Foliage.

Variety was the theme when it came to modeling trees. Rolf used Woodland Scenics tree kits, scratchbuilt evergreens, and twisted wire coated with painted plaster and lichen or ground foam.

There are two lakes on the layout. To create the illusion of depth, Rolf painted the lake beds blue. He used commercial epoxy to simulate water.

Rolf used tempered hardboard and Crescent board, both painted sky blue, for the backdrops. Rolf's friend, Marty Edwards, painted the backdrops in Alpine, Elk Springs, and West Fork.

Structure showcase

The 33 x 52-foot model railroad features more than 40 structures. About



6 Richard Plachter, Rolf's son, is a talented structure modeler. Realistic paint, weathering, and signs make Industrial Coatings Inc. look right at home next to the tracks in Richfield, Kan.

Realistic structures

Rolf's son, Richard, is an accomplished structure modeler. He shared some of the techniques he used for the structures in Richfield, Kan., on his dad's layout.

Though Richard used Floquil railroad colors on his early buildings, he's since switched to Model Master acrylics. After he's done painting a structure, Richard sprays it with Testor's Dullcote to give the paint a flat finish and give the surface some "tooth" for powdered chalks to adhere to. "I use chalks in various colors, applying them with a soft paint brush, either dry or with a small amount of water to fill in mortar lines," Richard explained.

In many cases Richard also adds signs to the structures using time-tested methods. "On Industrial Coatings Inc., I painted a color block of white, applied black dry-transfer lettering in the field, and added a custom insignia made of clear plastic with black, hand-drawn stylized lettering inside the border," Richard said. "On the Goldman's Furniture building, I painted a white color block and used a black fine-tip Sharpie to draw stylized lettering on the background, which works great for classic turn-of-the-century signage."

When asked if he has a preferred modeling technique, Richard said, "I like scratchbuilding and kitbashing equally, as each method offers advantages. Scratchbuilding gives you complete control over technique and design. Kitbashing provides easier work and faster results, but you can still control the final look. I've sometimes used both elements. Kit building is fun, but I like a challenge that uses some creativity." – *Cody Grivno*

half of the buildings are kit built. The remainder are scratchbuilt or kitbashed. Evergreen styrene and Grandt Line castings (now San Juan Details) were go-to materials for the kitbashed and scratchbuilt structures. The bridge that spans the yard in Richfield was built using Evergreen strip and sheet styrene. The four turntables on the layout have scratchbuilt wood handrails.

Haagen Mining Co. has operating chutes that load ore cars with material. The cars are then sent to the Copper Processing Inc. plant in Golden, where a

vacuum system unloads the cars inside the plant.

Rolf noted that Richard was instrumental in the construction of Richfield and Milwaukee. Richard said his design goals for Richfield were to increase industrial switching and add depth to the scene. He feels that he achieved both goals. "The building that I'm most proud of is the Kroeger Brothers Co. store, which is a scratchbuilt model based on a prototype that still stands in Milwaukee," Richard said. "The hidden pass-throughs to and from the storage and



7 The rooftop of Best Flour Mill affords this bird's-eye view of the Rock Island enginehouse in Richfield, Kan. The Electro-Motive Division and Alco products show the many paint schemes used by the Rock Island. Plymouth WLG-8 35-ton diesel locomotive no. 350, seen in the lower right corner of the image, is the shop switcher.

staging areas work really well. I wouldn't have done anything differently."

The scene depicting Everett Street Station in the Milwaukee Road's namesake city is Richard's current project. He used a Walthers Everett Street Station and train shed kit (no. 933-2946) as the starting point. "I scratchbuilt walls for the east and west two-story extensions of the depot to match the prototype using Walthers Cornerstone brick sheets," Richard said. "The kit isn't scaled accurately for depth relative to height, which caused problems related to the rise and run of the unusual Dutch gable roofs on the extensions. I resolved the issue by increasing the depth of the kit and making wider end walls on which to attach the extensions.

"I then made the front, back, and side brick walls of the extensions, and proceeded to build the highly complex roof extensions using Evergreen styrene

sheets for the main hip and gable structures, smaller dormers, and larger windows," Richard explained. "When the extension roofs were attached, I was able to build the third floor double dormers on the east and west ends of the main roof. I scratchbuilt seven chimney stacks from Walthers brick sheets, modified the other four kit chimneys, and used Evergreen strip styrene for trim."

Richard modified some doors and windows for fit and scratchbuilt others as necessary. He used Evergreen styrene strip to model ledges, trim, and accents. He applied Laser Art shingles, painted medium gray, to the roof and installed a Scale Structures Ltd. circular staircase in the clock tower.

Equipment and track

The locomotives on the Midwest Lines are from Atlas, Kato, Life-Like

Proto 2000, and Stewart; the freight cars are Athearn and Roundhouse products. All of the locomotives and freight cars are equipped with Kadee couplers, and the freight cars have metal wheelsets and extra weight. Rolf weathers the equipment with chalks, washes, and paints.

Richard's interest in the Rock Island during the mid-1960s led him to paint, modify, and kitbash several locomotives for the fallen flag railroad. Among his kitbashing efforts are Alco RS-3m no. 456 painted solid maroon with yellow ends. Richard re-created this unusual locomotive using an Atlas Electro-Motive Division (EMD) GP7 long hood and a Stewart cab on an Atlas mechanism. Some of his custom painting work includes Kato EMD GP35 no. 307, Atlas EMD GP7 no. 1332, and Stewart RS-3 no. 470.

The track on the layout is all code 100. Rolf used Atlas brass track on the



8 Elk Springs, Colo., is one of the original sections of the layout. As customers look to get good deals during a sidewalk sale, Chicago & North Western Fairbanks-Morse no. 1048 switches cars in the yard.

1966 portion (Alpine and Elk Springs). The newer sections of the model railroad have Peco track with nickel silver rail.

The Midwest Lines features H&M switch machines, custom-made switch machines by electrical engineer and family friend Marv Kreuser, and Tortoise by Circuitron switch motors. The switch stands are commercial kits with a metal base and wire stem for the target. “My dad modified them by using a stiffer wire for the target” to prevent breaking from the base, Richard said. “(He connected) a wire with a lead weight to the switch stand base under the layout to prevent (the castings) from constantly falling over or being vacuumed up during cleaning.”

Controls and operation

Rolf considers operation the most interesting aspect of the Midwest Lines. “The layout comes to life,” Rolf said. “The coordination between the operators highlights the efficiency of the layout’s design.”

Rolf hosts operating sessions twice a month. His longtime friend, Burnell

Midwest lines history

Though the Midwest Lines is freelanced, I created a history for the railroad. In 1919, the Midwest Lines RR was formed by three business owners of the Haagen Mining & Transportation Co. in Kansas City, Mo. Shops and infrastructure were built in Richfield and Colby, Kan., and Alpine and Elk Spring, Colo. The railroad earned its keep transporting coal and copper.

The stock market crash of 1929 severely impacted the Midwest Lines. The Haagen Coal Mine closed, and the government took over the railroad. Eventually the Interstate Commerce Commission brokered a deal allowing the Union Pacific; Chicago, Burlington & Quincy; and Chicago, Rock Island & Pacific to operate the line through lease agreements.

When the dust settled, the Midwest Lines retained its name. Haagen Mining & Transportation Co. was sold to UP, and the railroad continued hauling copper from its Colorado mine. Shop operations were taken over by the UP in Elk Springs and Alpine, RI in Richfield, and CB&Q in Colby. – *Rolf Plachter*

Breaker, helps run the layout. “There is a core crew of six to eight operators,” Burnell said. “Others come as they can or are invited by a crew member.” Rolf also hosts sessions during local operating weekends and during conventions and monthly National Model Railroad Association division meets.

Burnell said the ideal size for a crew is 10 to 14 operators. Positions include staging yard director, dispatcher, five local operators, and road crews. “The railroad uses Lenz Digital Command Control with tethered keypad-and-knob throttles,” Burnell said. “(We hope) to

get JMRI WiThrottle installed again for operators who have (an Iowa Scaled Engineering) ProtoThrottle or JMRI Engine Driver installed on their smartphones for wireless operation.”

Traffic on the Midwest Lines includes several way freights, local switching, some through freights, and local and through passenger trains. “We are still in the process of working the Milwaukee depot and its related switching into the operating scheme,” Burnell noted.

A typical session lasts between two and three hours, during which time 10 to 15 trains run over the system. Trains are



9 The Rock Island yard in Richfield, Kan., is nestled in a bowl between the main line to the right and the downtown buildings to the left. Here, RS-1 no. 744 builds the next outbound freight train. On the track adjacent to the locomotive is equipment from the railroad's unnamed passenger train.

10 Riegelmann Brewing Co. is a major rail-served customer in Richfield, Kan. Rock Island Alco RS-1 no. 744 picks up a couple of refrigerator cars loaded with cases of beer. Rolf's son, Richard, modeled the industry.





Meet Rolf Plachter

Rolf Plachter, shown with his son, Richard, is a retired journeyman metal pattern maker. He has been active in model railroading for more than 50 years. He used to own and ride horses, participate in archery, and dabble in photography. He lives in southeastern Wisconsin and enjoys spending time with his children and grandchildren.

built using JMRI Operations, which, according to the program's website, "allows you to create computer generated train manifests for your railroad."

Burnell said he enjoys using the program on the Midwest Lines. "JMRI Operations builds trains from the information entered into the program by the railroad owner," Burnell said. "The nice thing about JMRI Operations is you can enter basic information and be up and running very quickly. If you so wish, you can enter more detailed information and get more involved at a later date."

"As trains are run during a session, they are terminated so the cars again become available for future trains," Burnell continued. "If need be during a session, more trains are called and switch lists are printed for road crews and local operators. When a session winds down, I begin to print switch lists for the next session."

More fun ahead

Rolf designed the 33 x 52-foot HO scale Midwest Lines to share with his sons. For more than a half century Rolf has made many great memories with his family, visitors, and those who have participated in operating sessions on the layout.

What lessons has Rolf learned from the layout? "Do your own thing and have fun," Rolf said. He added that he wouldn't do anything differently if he were starting over. "I enjoyed everything that we accomplished." 



11 Milwaukee is the latest addition to the Midwest Lines. The centerpiece of the scene is the Everett Street Station, a Walthers kit modified by Rolf's son, Richard. Here, a Fairbanks-Morse H10-44 locomotive and transfer caboose wait between assignments while a passenger train prepares to depart. Richard Plachter photo

Vistas from the new Bone Valley

More 3-D printed structures and Central Florida scenes highlight this new and improved N scale layout

By Alex Marchand • Photos by the author



Peer inside one of the gallery windows and see the lightning strike near the Tampa Bypass Canal bridge as a phosphate train passes. Inside another window is the Amtrak *Silver Meteor* arriving at Orlando station. A total of six windows showcase the scenes of my gallery-style N scale Bone Valley model railroad. Each scene celebrates railroading through central Florida in the late 1980s.

The first iteration of my Bone Valley layout was featured in *Great Model Railroads 2017*. Since then, I've completed a new version, building upon lessons learned and tests confirmed from the first iteration. Like the first version, my layout depicts central Florida's Bone Valley phosphate mining region. Although activity has decreased over the years as mining has moved farther south, phosphate is still mined in central Florida and transported to ports along Tampa Bay on its way to northern farms.

My new Bone Valley layout is in the same room as the previous 4 x 7-foot version, but it's now nearly twice as big. Compared to other model railroads, the new Bone Valley at 6'-7" x 7'-0" is still relatively small, though. I'm not a fan of biting off more than I can chew. The way I see it, there's no point in going bigger

until I'm sure I can efficiently achieve an optimal level of craftsmanship.

Testing ground

With my first Bone Valley layout, I tested several things, notably the concept of a gallery-style layout. Like the previous version, this Bone Valley is housed inside a small room made of 2 x 3 studs covered with drywall. The layout is viewed from outside the room.

Several openings were cut into the drywall to showcase individual scenes. I also made removable Plexiglas windows that fit into each opening. Viewing the finished layout is similar to enjoying paintings on a gallery wall or dioramas at a museum.

A gallery layout isn't for everyone, but the style works well for me. The new layout builds upon the successes of the first layout but also tests out some additional concepts. There were three main things I wanted to test: smaller, more tightly packed scenes; multiple decks; and dynamic backdrops.

Small scenes, more decks

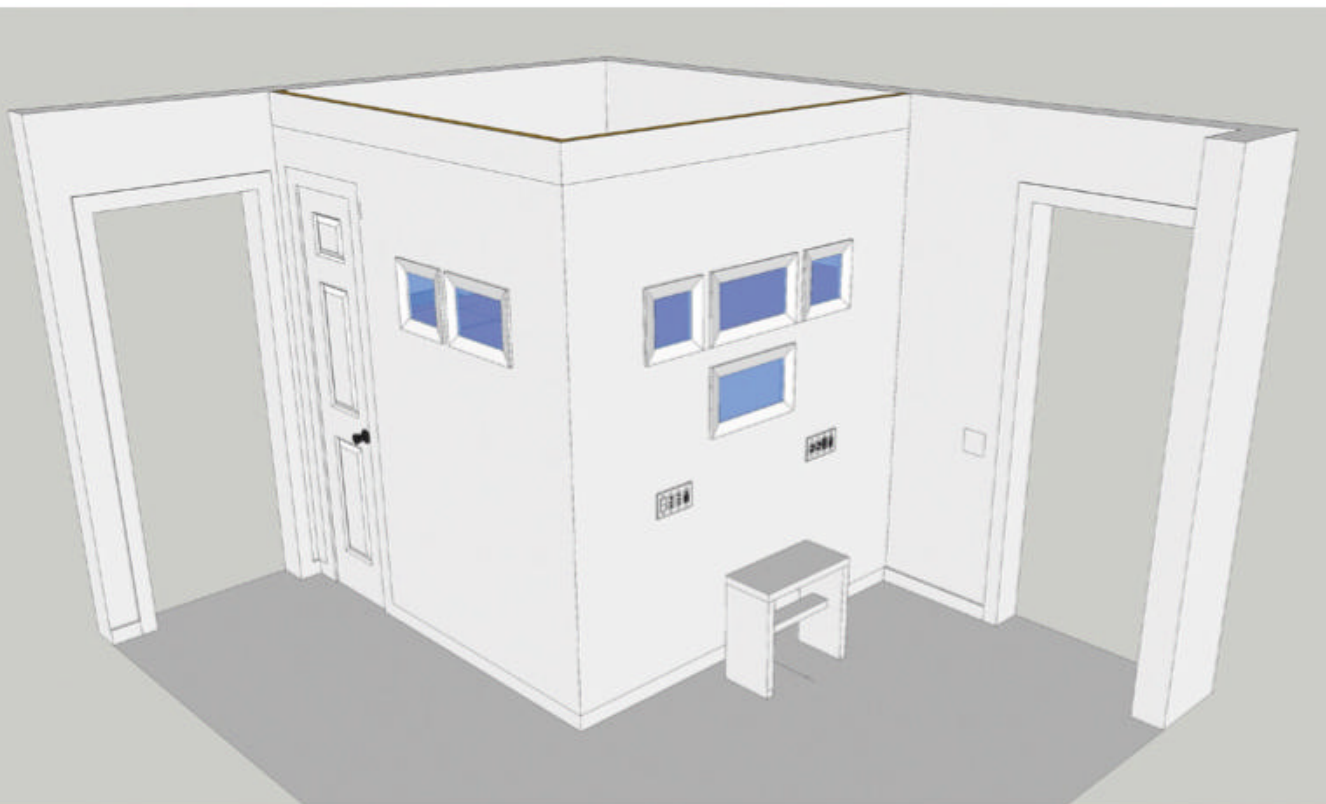
The first layout included a 4-foot long scene depicting the bridge over the Palm

River in Tampa. It was a nice scene, but it ate up a lot of real estate, even though I compressed the bridge from the prototype. On the new layout, that same space features three scenes, including a bridge. The bridge on the new layout depicts the four-track bridge over the Tampa Bypass Canal just east of Tampa's Yeoman Yard. I modeled only the center of the bridge, without any compression. I'm just as pleased with the new small bridge scene as I was the larger one, even though it reduces the photography options.

To gain space for more scenes, I added another deck. More decks allow more railroading in the same space. So far, I have only one scene on the lower deck: the Orlando Amtrak station. I'm pleased with how it looks, so at some point I may cut windows for more scenes on the bottom deck.

① As lightning strikes north of the Tampa Bypass Canal bridge, a "wet rock" train of open phosphate hoppers passes a pair of General Electric diesels waiting to get into Tampa's Yeoman Yard. Alex Marchand built the bridge from 3-D printed parts and created the lightning with an electroluminescent panel behind the backdrop of this scene, one of six in his new N scale layout.





② This 3-D rendering shows how the gallery-style layout fits into the room. Visitors view the model railroad's six distinct scenes through the individual windows, much like at a museum display. A door provides access to the layout for maintenance.

The two decks aren't connected, and so are essentially separate layouts. The layout room is designed so that each deck can be replaced by sliding it out and sliding in a new one. I don't know if I'll ever do that, but the option is there.

Dynamic backdrops

With this layout, I made it a point to do as much modeling as I could two-dimensionally on the backdrop instead of three-dimensionally in the

foreground. A good backdrop can go a long way in making a scene. Even though I have the art skills to paint a nice backdrop, it still wouldn't consistently achieve the realism of a printed photo. But it's often hard to photograph things at the proper angles with the right lighting and weather conditions to make good backdrops. And it's impossible to photograph things that haven't existed for 30 years. That's why I was quite pleased when I figured out how to use 3-D modeling software to compose

realistic backdrop scenes without relying solely on photographs. (See my article "Sketchup for backdrops" in the November 2019 issue of MR.)

To increase the drama and interest of my backdrops, I depicted a few scenes as they would appear from a distance through the lens of a zoomed-in camera. For instance, the late 1980s downtown Tampa skyline that graces the backdrop of the Northwest Rockport Yard scene wouldn't have appeared as large with the naked eye. But through a zoomed-in camera lens, the downtown Tampa skyline could be made to look as big as the photographer wanted. Nothing establishes the prototype for a modeled scene quite like a widely recognizable landmark, whether man-made or natural.

I used the same zoom technique for the Bonnie Wye scene to make the CF Industries Bonnie Phosphate plant clearly visible over the Florida vegetation. The depth of all the scenes on the layout is the same except for the Bonnie Wye scene. That's because I wanted to test varying scene depth. On the Bonnie Wye scene, I pulled the backdrop forward 3 inches. I liked the results. I've

③ The Amtrak *Silver Meteor* arrives at the Orlando station ahead of a thunderstorm. The structure is a 3-D printed model. Alex used Sketchup software to design the backdrop, as he described in the November 2019 *Model Railroader*.



The layout at a glance

Name: Bone Valley
Scale: N (1:160)
Size: 6'-7" x 7'-0"
Prototype: CSX/Seaboard System
Locale: West Central Florida
Era: late 1980s
Style: multilevel, gallery
Mainline run: 40 feet
Minimum radius: 12"
Minimum turnout: no. 6
Maximum grade: none
Benchwork: extruded-foam insulation board on 1 x 2 frame
Height: 48" (lower level), 62" (upper level)
Roadbed: Woodland Scenics Track-Bed
Track: Micro Engineering code 40 and 55 flextrack (visible), Kato Unitrack (hidden)
Scenery: zip texturing over extruded-foam insulation board
Backdrop: Printed photo compositions mounted on foam board
Control: direct current

concluded that I'll set the depth on most future scenes at 7 inches. Other scenes will be as deep as the scene requires.

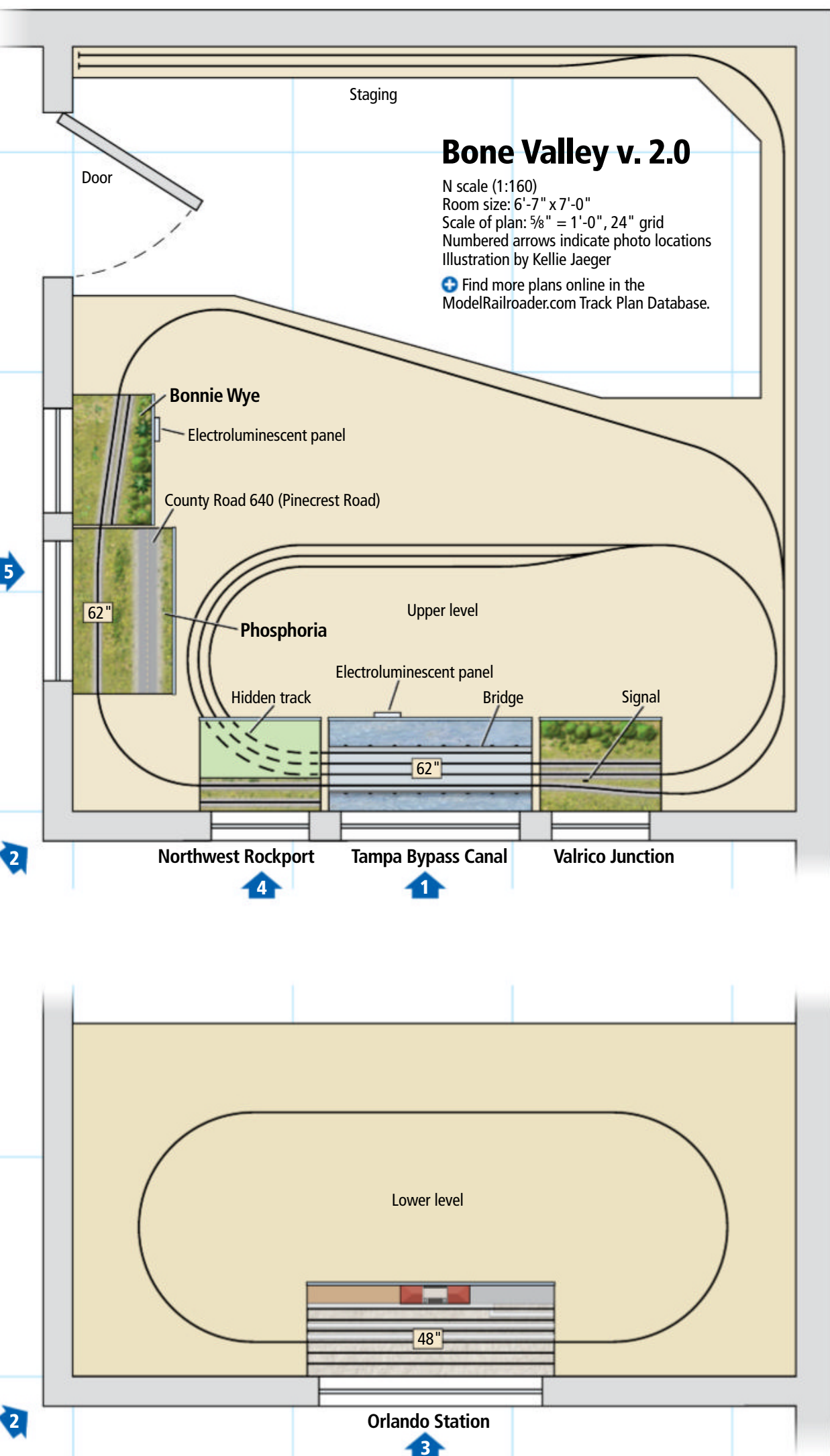
Next to the Bonnie Wye scene is the Phosphoria mine scene. That scene depicts a distant International Mineral & Chemical walking dragline. Walking draglines are used to mine Bone Valley phosphate. If I modeled a dragline in three dimensions, it would've taken up too much space. But in two dimensions on the backdrop, it works out fine.

To make my backdrops extra dynamic, I added lightning bolts to the Tampa Bypass Canal and Bonnie Wye scenes using electroluminescent panels. I've also added some thunder sound effects.

Structures

Although the layout is backdrop-centric, there are still a few three-dimensional structures. I designed all the structures using 3-D design software and then 3-D printed them. The Valrico signal and most of the Orlando station were printed by Shapeways. In the past, I outsourced all my 3-D printing to Shapeways. But since printer prices have decreased, I recently purchased an FDM Creality Ender 2 3-D printer.

Using my Ender 2, I printed the Tampa Bypass Canal Bridge in white PLA plastic. The money saved by not having to out-source printing the bridge was enough to cover the cost of the 3-D printer. I may soon upgrade from my current printer to



a resin 3-D printer. These printers have become relatively inexpensive and can reproduce finer details. As an added bonus, plant-based eco-resins are now available as an alternative to traditional, toxic resins used in the past.

I wanted to model one of the major passenger stations in Florida. My first choice was the West Palm Beach station,

but I couldn't find enough info. I found plenty on the Orlando station though, including plan and elevation drawings through the Library of Congress.

The Orlando station is long, so I just modeled the center portion. The thing I find most pleasing about the model is the 3-D printed Spanish tile roof. Shapeways printed the roof sheets in fine detail



4 At Rockport Yard, a “dry rock” train of covered hoppers is unloaded while a U36B diesel sits idle on an adjacent track. The “zoomed-in” view of the Tampa skyline looms large along the backdrop.

plastic. I then glued these sheets to a core I made with my own 3-D printer.

The station is a shining example of why I love 3-D printing so much. The process allowed me to accurately model every little detail I wanted.

Scenery

The lighting on my layout is muted to represent cloudy skies. I use cool white light-emitting diode (LED) Christmas lights to illuminate the entire layout. I chose scenery colors that looked good under these lighting conditions. Although Florida grass can be just about any shade of green, I find that Silflor late summer static grass is the most pleasing to my eye.

The sabal palm tree fronds and saw palmetto bushes on the layout were made using a digital cutter, as I described in the June 2014 MR. For live oak trees I used Scenic Express SuperTrees armatures covered in Woodland Scenics conifer green foliage (no. F54).

For smaller trees, weeds, and underbrush, I used Heki foliage in light and medium green (nos. 1550 and 1551) and Woodland Scenics fine leaf foliage dark green (no. F1130). I still have work to do finding the perfect mixes to model Florida’s deciduous trees and shrubs. But for now I’m content with these materials.

For a while, I wasn’t sure how to model Florida dirt in N scale. Sifting real dirt wasn’t doing the job for me. Then I discovered zip texturing, which is an old modeling technique that involves mixing plaster of Paris with various colors of powdered tempera paint. [*Model Railroader* All-Access Archive subscribers can read Linn Westcott’s article introducing zip texturing in the April 1965 issue. – Ed.]

My Florida dirt mix consists of about ½ teaspoon each of brown, black, and yellow pigment to each cup of plaster. I applied the mixed plaster/pigment combo through a sifter, then I wet it with water containing a little white glue. I’m pleased with the texture and subtle color variations this technique provides. I also used zip texturing to coat the 3-D printed removable phosphate loads I made for my open hopper cars.

Track and rolling stock

The visible track on the layout is Micro Engineering code 55 and code 40 flextrack. The hidden track is Kato Unitrack, which features code 80 rail. The sectional Unitrack makes it easy to reconfigure the staging tracks as needed.

I wish Kato would make code 55 to code 80 Unitrack transition pieces. But in the



meantime, I use Peco code 55 flextrack to make my own. Peco code 55 flextrack is made with code 80 rail that’s embedded deeper into the plastic ties. To make a code 55-to-80 transition piece, I trim off the ties to expose the code 80 rail on one end of a track segment, and leave the other end alone.

The freight cars and locomotives haven’t changed much from my first Bone Valley layout. Most of the freight cars are 3-D printed. And although I really want General Electric U36B locomotives to dominate my roster, Atlas models of GE U23B, B23-7, and B36-7 locomotives continue to be passable substitutes.

Since it’s ultimately my railroad, I like to keep my locomotives clean. For that reason, I like factory-painted, ready-to-run locomotives without any weathering. However, I do weather my freight cars to add some dirt and grime.

Operations

My favorite YouTube railfan channel is Danny Harmon’s Distant Signal. Most of Danny’s videos were shot in Florida. His videos have been inspiring me even before YouTube existed. As a kid, I purchased a VHS he made titled *Trains of the Bone Valley*. With that inspiration,





5 An orange Family Lines caboose on the end of a phosphate train, a Publix supermarket truck, and silver DeLorean on Polk County Road 640 reinforce the layout's 1980s setting. Alex created the image of the massive walking dragline at Phosphoria mine on the backdrop using Sketchup software.

I view my layout as a kind of virtual railfan outing back in time to the late 1980s.

Just one train plies the bottom deck, Amtrak's *Silver Meteor*. The top deck includes my three favorite trains: the Tropicana Juice train, a wet rock phosphate train (open hoppers), and my very favorite, an export dry rock phosphate train (covered rotary hoppers). The trains run through only the scenes where they would have been found on the prototype in the late 1980s. In other words, no Tropicana or Amtrak trains in the mining areas. The Tropicana train and phosphate traffic overlap through Tampa, but part ways about 8 miles east of Tampa's Yeoman Yard at Valrico Junction.

While operating, I make it a point to stay true to the prototype and only run one train through Valrico Junction at a time. The signal at Valrico Junction is wired to light up using .25mm fiber optic filament with one end melted into a tiny

lens. The signal simply indicates which way the hidden Kato turnouts are aligned.

More Bone Valley

I like having finished layouts, so I build the pieces for a model railroad before I assemble it. The time between ripping down the first Bone Valley layout and replacing it with the new one was only about a month. Since a lot of my modeling is done in virtual space to be printed in 3-D or 2-D, I can postpone the time when I press print. I can accumulate a lot of modeling without it taking up physical space or costing a lot of money.

Although I have a finished model railroad to enjoy right now, I'm thinking about yet another layout to replace this one. My long term goal is to build an N scale Bone Valley with a couple dozen scenes and plenty of operation.

An idea I'm daydreaming about is making a time travel Bone Valley layout. I'd model scenes and trains from different eras from the 1950s to the present. Each train would originate and terminate in the correct era, but travel through the past and future to get there. It would be a satisfying premise, since it wouldn't really sacrifice prototype accuracy; it would just bend the time periods a bit.

While I'm daydreaming about railroads of the past, I'm looking forward to the development of technology for even better modeling in the future. There's plenty of room for improvement in the 3-D printing world. I'm also hoping that stay-alive capacitor circuits, like those found in larger scales, become available to modelers for N scale locomotives.

The sooner the technology gets better and cheaper, the sooner I'll want to build an even bigger layout. Stay tuned for the Bone Valley v3.0! 

Meet Alex Marchand

Author of numerous articles

for *Model Railroader* and its special issues, Alex Marchand is a graphic artist, designer, and private investor. Besides model trains, some of Alex's other hobbies include simulation theory, Austrian economics, DeLorean sports cars, football, and oil painting. He lives in Naples, Fla.



A look at the new Digitrax DT602 throttle



1 Curvy new design. Overall the DT602D is about the same size as a DT500, just with a more ergonomic shape and larger throttle knobs for dual locomotive control. Note also the larger individual buttons.

This must be the year for new throttles! After the release earlier this year of the TCS UWT-100 universal WiFi throttle (reviewed in the October 2020 DCC Corner) Digitrax followed this summer with the DT602 series throttles, available in both corded and wireless versions.

Digitrax took a big step forward with this throttle, as it's a radical change from the basic flat box design of previous throttles **1**. The result is an ergonomically designed product that fits comfortably in your hand, while offering many time-tested features.

As you can see, there are six "soft keys" labeled A, B, C, D, E, F, whose purposes change as you step through on-screen contextual menus. In their default state their purposes are primarily related to decoder functions shown on the LCD display immediately above or below each key **2**.

For example D, E, and F control decoder functions 10, 11, and 12. Soft key A switches the functions from 0 to 9 to 10 to 19, and finally to 20 to 28, making it possible to quickly move from one group to another. Accessing all these functions is a problem that's

plagued modelers since these expanded functions started to become available. Soft key B allows you to change the active throttle knob, and C expands the function info bar on the display so you can see the status of all decoder functions.

The LCD display also provides information on the speed and direction of a locomotive being controlled by each throttle knob, with the active locomotive shown in large lettering and a green locomotive icon. In the upper right is a green battery charge status display, a "Trk" status (which is green when track power is on), and the duplex wireless signal strength bars.

Along the bottom of the display a scrolling message line appears and prompts users through various procedures, such as when consist-ing locomotives. Overall the larger display is a major improvement over the much smaller monochrome display on the DT500.

I own at least one of every type of Digitrax throttle going all the way back to the CT4, produced in 1993 as part of its original Challenger Digital Command Control (DCC) system. This new design and menu-based scheme was so different it prompted me to do something I rarely have had to do – read the manual!

However, once I knew what was available using the soft keys it made complex jobs easy.

They allow you to follow a menu-driven series of instructions to complete tasks like consist-ing locomotives. A line of text at the bottom of the screen prompted me for the next steps.

One feature I was especially interested in exploring was the manner in which universal consist-ing is implemented, since this is a popular feature for many Digitrax users.

You begin by setting up the address for the lead locomotive on one throttle. Pressing the key shaped like a locomotive will change the A soft key from Fn+00 to Mu, for multiple unit, or what DCC users call consist-ing.

You're then prompted to enter the address of the locomotive to be added to the consist, then press the A soft key again, and you're done. By repeating these steps you can add more locomotives to the consist. I found the procedure especially user-friendly, and you can now have the lead or "top" locomotive in a universal consist on either throttle.



ONCE I KNEW WHAT WAS AVAILABLE USING THE SOFT KEYS IT MADE COMPLEX JOBS EASY. THEY ALLOW YOU TO FOLLOW A MENU-DRIVEN SERIES OF INSTRUCTIONS TO COMPLETE TASKS LIKE CONSISTING LOCOMOTIVES. – LARRY

Let's take a look at power features. The DT602D can be powered either by connecting it to the LocoNet using the cord provided, or with three AA batteries. Either alkaline or rechargeable types can be used, and Digitrax offers a rechargeable battery pack (more on that in a bit). The 2.4" LCD color screen has a bright display that dims after a set amount of time to preserve battery life. And if

the throttle is left unattended, it will go into power-save mode after another set period. Finally, after 5 minutes of further inactivity, the throttle will shut down, but not without warning you first. And if 5 minutes is too little for you, this can be extended to 20 minutes. There are more than 20 such user-selectable setup options available in the throttle setup menu.

To turn the throttle off manually, you can press the on/off button on the bottom left. However, you have to be careful how hard you press. A hard press won't work; instead, you have to use a soft press, or hit the left or right side of the button, and it will work fine.

Do it just right and the display above the ABC soft keys will change to track power on, track power off, and power off, respectively. Keys A and B turn the layout power on and off, whereas C will turn the throttle off. In an emergency situation, the exit/stop key on the bottom right will stop the active locomotive when pressed for 1 second, and the inactive locomotive when pressed for an additional second. In both cases the speed of the desired locomotive will be set to 0.

One thing I noticed right away is that the DT602D is a bit thicker and heavier than its predecessor DT500 **3**. Since the AA batteries used in the DT602D are no thicker than the 9V battery used in the DT500, I assume the added thickness must be required for the large LCD display and enhanced processor/memory components.

The use of three AA batteries also accounts for about $\frac{2}{3}$ of the added weight of the DT602D, which comes

in at 8.6 ounces compared to 7 ounces for the DT500. I didn't find either the added weight or thickness a detraction, but felt it important to mention.

As I said you can purchase a battery pack from Digitrax that can be semipermanently installed in the throttle for regular use. There's a socket on the bottom of the case for connecting a 12-15V DC power supply with a center-positive 2.1mm plug to recharge the battery pack (Digitrax also offers the PS14 for this purpose).

A typical recharge cycle takes 12 to 14 hours. You can also plug the throttle into a LocoNet port, and if the command station is placed in sleep mode, the battery will recharge as long as the Railsync voltage doesn't drop below 9V.

The DT602 throttle comes in both a tethered version with infrared wireless capability (assuming the proper infrared receiver is

installed) and the DT602D version with duplex wireless capability – the DT602D throttle uses the UR92 or UR93 duplex transceivers.

The DT602D throttle also comes with a six-pin socket to attach a LocoNet cable for wired access when required, such as when initially connecting it to a new system or for updating the firmware.

This latter process is very useful, since from time to time Digitrax will make changes to the operating system to provide new features or modify old ones. I tried this feature out and found it to be an easy process using the free DigiPL software available on the Digitrax website.

Time for a change

After chasing magazine deadlines since 1991, I've finally decided it's time to wrap up my sojourn with the DCC Corner column, so this one will be my last. I have thoroughly enjoyed the time I've been able to spend with all of you through *Model Railroader*, my website, and my YouTube channel "Model Railroading with The DCC Guy." However, I won't be totally disappearing.

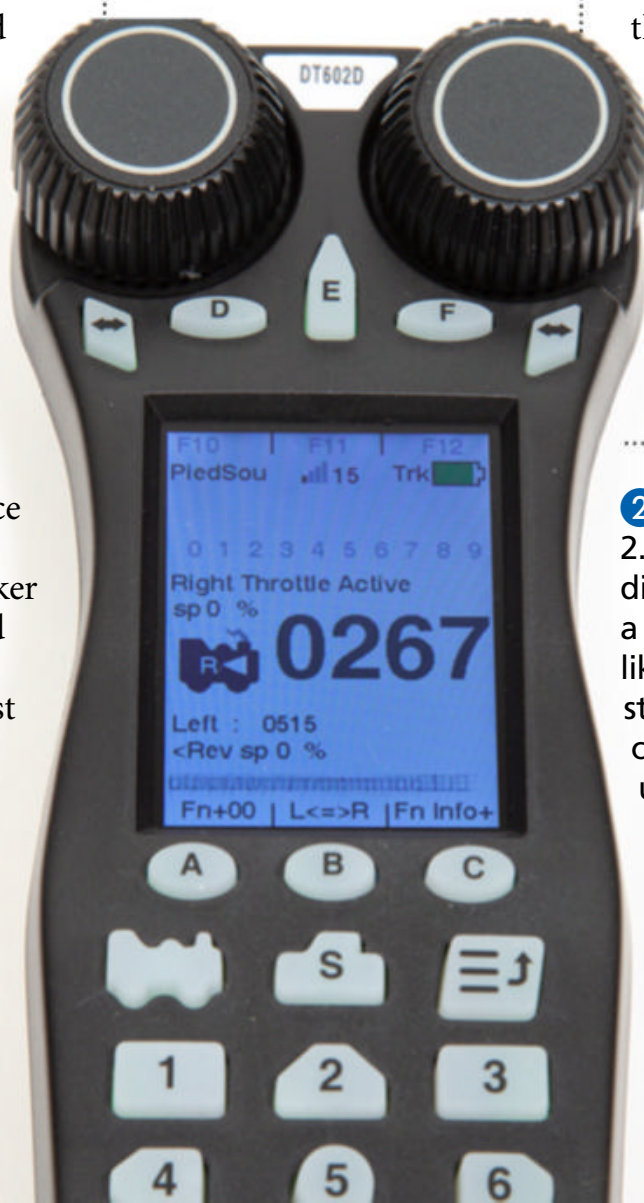
2 Color screen. The large 2.4" color liquid-crystal display (LCD) screen packs in a lot of useful information, like the wireless signal strength bars and battery charge level shown in the upper right. Also shown are the direction and speed of the locomotives being controlled by the dual throttle knobs, and the function status of the active locomotive, among other things.



3 Back to back. Placed back to back, the added thickness of the DT602 is obvious compared to the DT500. The use of three AA batteries accounts for about $\frac{2}{3}$ of the added weight of the DT602, which comes in at 8.6 ounces compared to 7 ounces for the DT500.

I plan to remain a contributing editor and do some articles each year for MR. Also, my website will remain available for the next few months, and I'll continue to produce new videos on my YouTube channel, so drop in and say hello sometime.

When I was considering pulling the plug, I gave some thought as to who might replace me. Fortunately, someone I've known for about 25 years immediately came to mind, and he agreed to take on the job. So beginning with the January 2021 issue, Allan Gartner will be taking over in these pages. You may already be familiar with Allan through his popular website wiringfordcc.com, which has been providing excellent DCC information for about as long as I have known him. I wish him and all of you the very best for the future. – Larry





Walther's HO WiFlyer Express train set

People who buy train sets are looking for simplicity. They want to buy one box, set up its contents easily, and get running trains right away. Walther's is answering that need with new technology, offering three new train sets that operate via a digital throttle using a smartphone, tablet, or similar Wi-Fi device. The HO scale WiFlyer Express train set comes with an oval of track, a sound-equipped Electro-Motive Division GP15-1 locomotive, three freight cars, a caboose, and a Wi-Fi receiver.

The locomotive. In the 1970s, Electro-Motive Division noted that railroads were rebuilding their older GP7 and GP9 diesels into low-horsepower, lightweight engines for local switching and yard jobs. The company developed the GP15-1, basically a rebodied MP15DC switcher with a bigger fuel tank, to recapture some of that lost business.

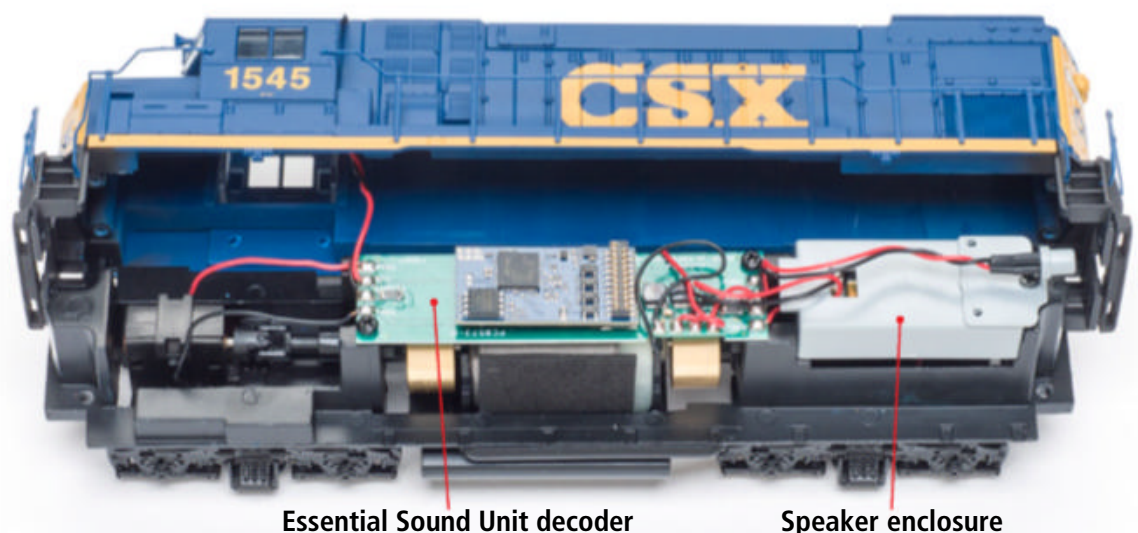
Electro-Motive Division built a total of 310 GP15-1s for Chicago & North Western, Missouri Pacific, St. Louis-San Francisco, and Conrail. CSX no. 1545, the model in our review set, was an

ex-Conrail engine that came to CSX in the Conrail breakup of 1998. It was scrapped in 2010.

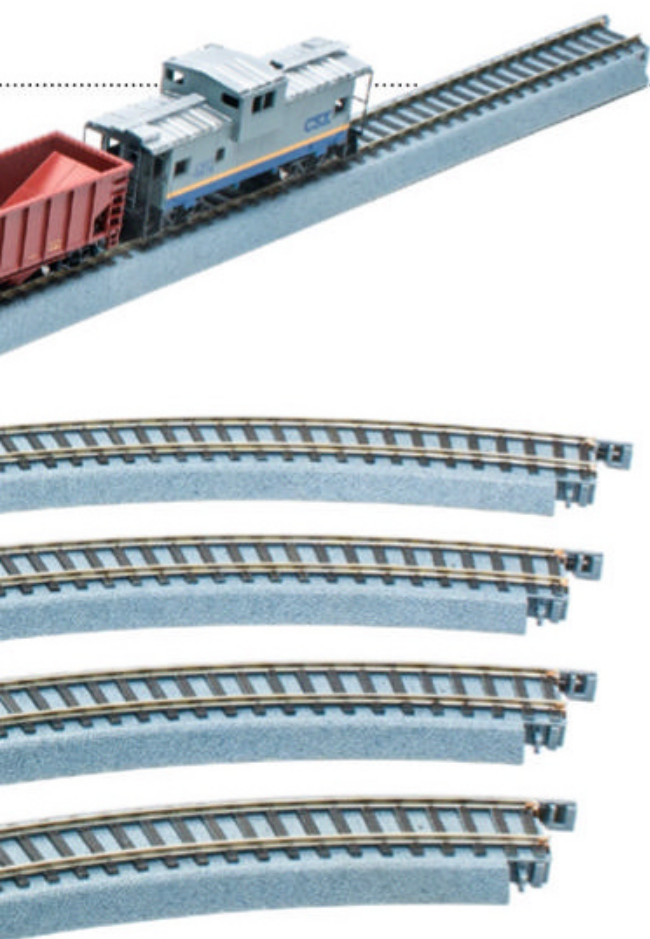
Cody Grivno reviewed the Walther's GP15-1 in October 2009. The model now features an ESU Essential Sound Unit Digital Command Control (DCC) decoder. The locomotive's one-piece molded plastic body shell is unchanged. It's a good representation of the prototype, matching the dimensions shown on

a diagram published in the January 1990 MR. It also resembles photos of the prototype I found online. Though the shell lacks grab irons or lift rings, it has drilling starter points for the latter, if a modeler wants to install them. There's glazing in the cab windows, and the horn is separately installed on the cab roof.

The paint was smooth and evenly applied, and the small lettering under the road number was clear and legible.



The Walther's Electro-Motive Division GP15-1 locomotive has been updated with new electronics for service in the WiFlyer set.



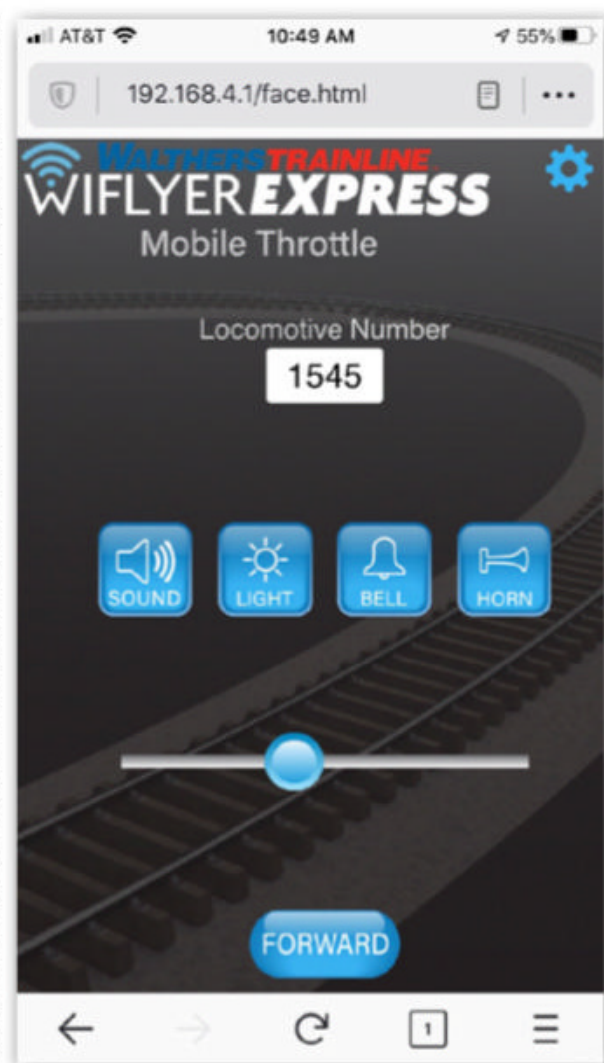
The cars. The three freight cars, plus caboose, in the set come from the entry-level Walther'sTrainline brand. As such, they have injection-molded plastic bodies, and details like ladders and brake gear are simplified or molded in place. All are smoothly painted and resemble prototype plans and photos.

Though all the car types were still around for the time period set by the locomotive, some – the two-bay hopper in particular – would be nearing the end of their service life. Like the locomotive, the Conrail boxcar would have gone to CSX or Norfolk Southern in 1998. But if it went to NS, which inherited the CR mark, it's possible the car could have kept its old paint scheme for a few years.

All the cars have blackened metal wheels on plastic axles, in gauge; likewise, the Proto-Max magnetic knuckle couplers were all mounted at the correct height. The boxcar was a half-ounce short of the National Model Railroad Association recommended weight under Recommended Practice 20.1, something easily correctable. The open-top freight cars are considerably lighter than they should be, both weighing less than 2.5 ounces; a load could fix that. The caboose, at only 2.2 ounces, is considerably underweight.

Test run. The train set comes with a 38 x 54-inch oval of Walther's Power-Loc sectional track with nickel-silver rail. The sections lock together by sliding them sideways. This is easier to accomplish with the pieces flat on a table.

Setting up the Wi-Fi control system was faster and easier than assembling the oval of track. After attaching the



The control for the Walther's WiFlyer is a webpage on the included Wi-Fi receiver.

receiver box to the terminal rerailer track and plugging it in, I connected my iPhone to the Walther's Wi-Fi network. (This network is isolated, not accessible to or from the internet. No home Wi-Fi router is needed, and the Walther's box can't take the place of one.) You do need to provide your own smartphone or Wi-Fi-enabled tablet to run trains.

There's no app to download; the controller is a web page that lives on the Wi-Fi receiver box. After typing a numeric address into my phone's web browser, the throttle control window came up, with four buttons for sound, lights, bell, and horn, as well as a throttle slider. After typing in the locomotive's number, I took control. The app will control any DCC-equipped locomotive, and the WiFlyer GP15-1 will run on a DCC-equipped layout.

The locomotive had admirable low-speed control, creeping at less than 1 scale mph. The throttle control screen doesn't have markings to show you how much power you're sending to the locomotive, so I tried to eyeball its speed curve. At about 25 percent throttle, the engine rolled at 10 scale mph, and 40 scale mph at about half throttle. This low-speed performance makes the

Facts & features

Price: \$299.98

Manufacturer

Wm. K. Walther's Inc.

5601 W. Florist Ave.

Milwaukee, WI 53218

walthers.com

Era: CSX set: 1998 to 2010

Roadnames: CSX, Burlington Northern Santa Fe, and Canadian Pacific

Features

Locomotive

- Blackened-metal RP-25 wheels, in gauge
- Directional light-emitting-diode lights
- Drawbar pull: 3 ounces (42 cars)
- Five-pole skew-wound motor with flywheels
- Flexible plastic handrails, molded in color
- Proto-Max knuckle couplers, at correct height
- Sound effects: diesel engine, bell, horn, and brake squeal
- Weight: 12.1 ounces

Cars

- Blackened-metal RP-25 wheels, in gauge, on plastic axles
- Proto-Max knuckle couplers, at correct height

Track and control system

- 16 pieces of Power-Loc sectional track with plastic roadbed (forms 38 x 54-inch oval)
- Nickel-silver rail
- Terminal rerailer
- Wi-Fi receiver with power supply

GP15-1 well suited for the switching jobs handled by its prototype. Built-in momentum made starts and stops gradual and realistic.

The locomotive also had plenty of pulling power, mustering 3 ounces of drawbar force, enough for a 42-car freight train on straight and level track.

The future of model railroading?

Model train manufacturers are always looking for the next big thing. If Wi-Fi control is making its way to entry-level train sets, you can pretty much consider it mainstream. Expect more products featuring increasingly powerful smartphone or tablet control from Walther's in the future. – *Steven Otte, associate editor*



Rapido Trains HO Alco FA-2 and FB-2 diesels

Designed from 3-D scans of existing prototypes, HO scale models of Alco FA-2 and FB-2 diesels are back for a second run from Rapido Trains. In addition to accurately capturing the contours of its transition-era prototype, the HO locomotive is available factory-equipped with a powerful dual-mode ESU LokSound 5 decoder.

The prototype. At the end of 1950 Alco introduced an upgraded version of its B-B freight locomotives, the FA-1 cab unit and FB-1 cabless booster. These new locomotives were designated FA-2 and FB-2 and designed to be dual purpose. Alco designers added an extra 2 feet to the FA-2 and FB-2 carbody to accommodate optional steam-generator equipment for passenger car heating. The steam-generator-equipped locomotives were designated FPA-2 and FPB-2.

When the Alco's original FA-1 and FB-1 diesels were introduced in 1945, they featured 1,500 hp, 12-cylinder 244

diesel engines. Later production units had their engines uprated to 1,600 hp, and this improvement was continued through FA-2 and FB-2 production.

Between 1950 and 1956 Alco and its subsidiary Montreal Locomotive Works built 334 FA-2, 194 FB-2, 73 FPA-2, and 33 FB-2 locomotives. Most of the FAs were retired by the 1970s. Several examples survive as display and excursion locomotives.

The model. Our review samples are decorated as Erie Lackawanna (EL) FA-2 nos. 7381 and 7391 and FB-2 no. 7393. These units were originally built as Erie RR nos. 738A, 739A, and 739C in late 1950 and early 1951. They were repainted after 1960 when the Erie merged with the Delaware, Lackawanna & Western to form the EL.

In addition to matching prototype drawings and accurately modeling the extra length of the FA-2 and FB-2, the Rapido models capture other

spotting features. These include the boxy number boards and the battery boxes along the sill under the cab windows.

Our EL samples accurately depict what railfans refer to as Phase Ia FA-2s, with "chicken-wire" style air intakes and vertical louvers on the battery boxes. Later production models had vertical louver Farr grills on the air intakes and horizontal louvers on the battery boxes.

All grab irons and handrails are separately applied. The side air-intake grills are etched metal. On top, the radiator grill is see-through, with visible fan detail underneath it.

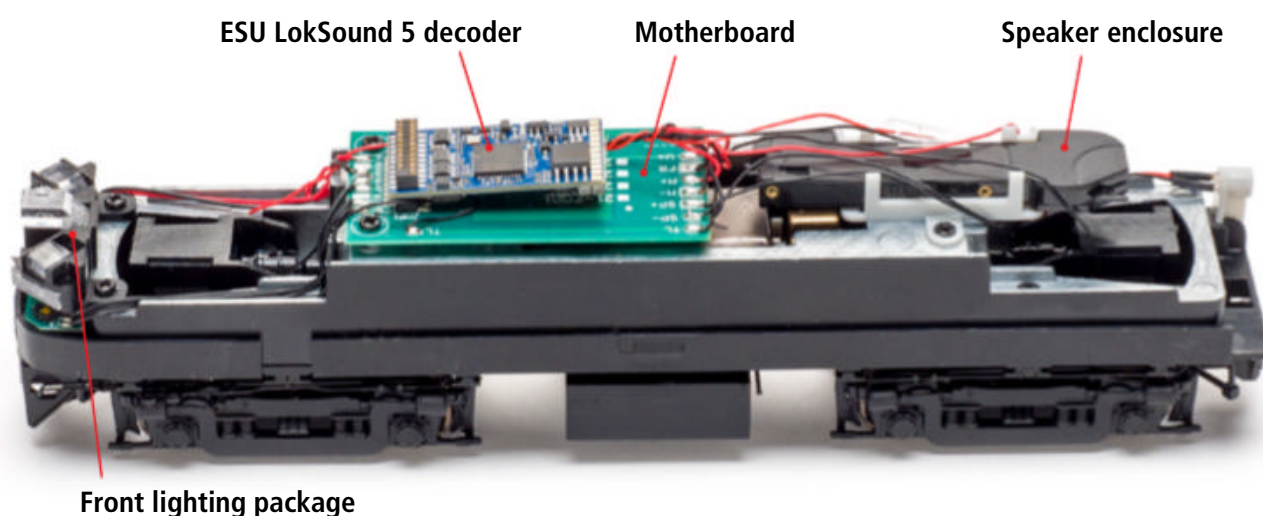
The cab interior is fully detailed and painted. There's clear glazing in all the cab windows, as well as separately applied windshield wipers and wind deflectors. There are no crew figures.

The underbody features piping and conduit detail. The American Association of Railroads (AAR) Type B trucks are well-rendered with separate, factory-applied brake cylinders.

The paint and lettering is smoothly applied, with sharp separation between the colors. All lettering and striping placement matches prototype photos.

The mechanism. After removing the coupler boxes, I used my fingernails to carefully spread the sides of the plastic body shell away from the chassis. It's a tight fit, so I found it helpful to insert wooden toothpicks on each side to keep the sides spread. Then I slowly wiggled the body shell free.

The motor and flywheels are in the center of the chassis. Gearboxes power all four axles. All eight wheels pick up current.



The motor of Rapido's FA-2 is nestled in a die-cast metal frame. The Electronic Solutions Ulm LokSound 5 decoder is attached to a motherboard above the motor.



The ESU LokSound 5 decoder is plugged into a 21-pin socket on the main printed-circuit motherboard, which is attached to the chassis. A flat, cellphone-style speaker provides clear sound without any buzzes or distortion.

DCC operation. On our DCC test track, the FA-2 crawled along at 1 scale mph in speed step 1 and accelerated smoothly to a top speed of 80 scale mph. The top speed of a prototype FA was 65 mph.

The top speed of the DCC-equipped model, as well as every aspect of the decoder's performance, sound, and lighting, can be adjusted with configuration variables (CVs). I find it easiest to program LokSound decoders using the free ESU LokProgrammer software available at loksound.com. I also used a LokProgrammer computer interface, which is sold separately at a suggested retail price of \$179.99.

Pressing function 8 starts up the sound of the Alco 244 diesel engine. Pressing function 9, DRIVE/HOLD, allowed me to manually notch the engine sound without affecting the locomotive speed. Other user-triggered effects include the headlight, dimmer, bell, backup light, and dynamic brake sound sequence.

The default horn is an accurate reproduction of a Wabco E-2 single chime. There are also four other horn options to choose from. Function 5, the so-called Doppler horn, triggers a grade-crossing sequence with a fading tone.

Lighting functions can also be controlled separately. These include the headlight, backup light, and number boxes. The classification lights can be toggled between white, green, and off.

The model features an independent brake controlled by pressing F11. On our

PERFORMANCE CHARTS	
DRAWBAR PULL	2.6 ounces 36 HO freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
7 (start)	4
8	15
9	25
10	37
12	67
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	1
7	17
14	49
21	76
28	80

sample, this function wasn't enabled to actually stop the locomotive, so I had to set up that feature using our LokProgrammer.

Since we received a pair of FA-2s and an FB-2, I advance consisted the locomotives to run in an A-B-A configuration. The LokSound 5 decoders support functions 21 and 22, which allowed me to set the consist function controls so that only the lead unit's headlight, bell, and horn operated under the consist address. All the units ran together smoothly without any additional speed matching required.

Direct-current (DC) operation. Out of the box, our three FA samples ran erratically on our DC test track. The horn kept turning on, there was no direction control, and the models sped up very fast. The fix is simple but requires a LokProgrammer, DCC system, or analog programmer such as an MRC Tech 6.

Using the analog operation menu in the LokProgrammer software, I turned off the Use Quantum Programmer option (CV50 = 2). This gave me back direction control.

To smooth out the sound and motor performance I increased the analog starting voltage from 40 to 50 (CV125 = 50) and reduced the motor hysteresis setting from 30 to 5 (CV130 = 5).

After I made those changes, the sounds and lights turned on at 6.25V and the model rolled smoothly at 4 scale mph after I applied 7V to the track. It accelerated smoothly to 67 scale mph at 12V.

On a DC layout, sounds are limited to the engine and a squealing brake sound when the throttle is reduced. The headlight operates according to the direction of travel, but the backup light

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Facts & features

Price: FA-2: \$325 (DCC sound), \$225 (DC no sound)

FB-2: \$299.95 (DCC sound), \$199.95 (DC no sound)

Manufacturer

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

Era: 1950 to 1970s

Road names: FA-2: Erie Lackawanna; Ann Arbor; Burlington Northern (ex-Spokane, Portland & Seattle); Chicago & North Western; CP Rail (Multimark); Long Island Rail Road; Louisville & Nashville; Missouri Pacific; New York Central; Penn Central (black with red "P" and ex-NYC cigar band versions); Spokane, Portland & Seattle; Wabash (ex-Ann Arbor); and Western Maryland. FPA-2: CP Rail (Multimark), Louisville & Nashville, and Missouri Pacific. FB-2: Erie Lackawanna; Baltimore & Ohio; Canadian Pacific (block or script lettering versions); CP Rail (Multimark); Chicago & North Western; Erie; Great Northern; Lehigh Valley; Louisville & Nashville; New York, New Haven & Hartford (as-delivered and McGinnis schemes); New York Central (cigar band and lightning stripe versions); Penn Central (black); and Pennsylvania RR. FPB-2: Baltimore & Ohio, Canadian Pacific (block and script schemes), CP Rail (Multimark), Great Northern, and Lehigh Valley. Undecorated FA/FPA-2 and FB/FPB-2 versions also available.

Features

- 21-pin DCC socket (DC version)
- All-wheel drive and electrical pickup
- Blackened metal wheels in gauge
- ESU LokSound 5 dual-mode decoder (DCC version only)
- Five-pole skew-wound motor with dual brass flywheels
- Metal knuckle couplers at correct height
- Weight: 12 ounces (FA-2), 11.7 ounces (FB-2)

is nonfunctional unless a controller such as an MRC Tech 6 is used.

Rapido Trains has brought the definitive Alco FA-2 and FB-2 to HO scale. Fans of classic transition-era diesel power won't want to miss them. – *Dana Kawala, senior editor*



Dr. Duino Explorer with Model Railroad Expansion Pack

Facts & features

Price: Dr. Duino Explorer Model Railroad edition, normally \$200, available for a limited time for \$159

Manufacturer

Dr. Duino
P.O. Box 875
Holbrook, NY 11741
www.DrDuino.com/ModelRail

Features

Explorer:

- 3 potentiometers
- 4 discrete light-emitting diodes (LEDs)
- 4 push buttons
- 8 addressable RGB LEDs
- All required electronic components
- Bluetooth BLE
- Light sensor
- Organic LED display
- Piezo buzzer
- Ultrasonic sensor
- Voltage regulator

Model Railroad Expansion Pack

- 1 MicroSD MP3 player module
- 1 speaker
- 2 infrared detectors
- 2 micro servos
- 10 addressable RGB LEDs

The Dr. Duino Explorer with the Model Railroad Expansion Pack is a wonderful introduction to the fascinating possibilities Arduino devices can add to your layout. These include special effects like custom light-emitting diode (LED) sequences and sound effects. It could also include layout control with servos and block detection. Our review looks at two parts: the Explorer kit and the Model Railroad Expansion Pack.

The Dr. Duino Explorer kit is a helpful all-in-one prototyping board. Typically, when building Arduino projects I end up using lots of wires on a separate breadboard. The Explorer kit makes the process much less cluttered. It includes four standard red LEDs, four momentary push buttons, three potentiometers, a light detection circuit, a piezo, eight addressable LEDs, an organic light-emitting diode (OLED) display, an on-board voltage regulator, an ultrasonic sensor, and a Bluetooth BLE transmitter/receiver. The kit includes an Arduino Nano clone. There's also a spot where you can plug in an Arduino Uno if you prefer.

As you may have noticed, this is a kit, so it's important to note that the Dr. Duino Explorer comes with the circuit board and all its components, but they need to be assembled. You'll need to

get your soldering equipment out for this project. Dr. Duino has detailed instructions online to assemble the board. The instructions also include helpful tips on how to solder some of the trickier components. I was able to complete the assembly in about two hours.

After this it was time to dig into the Arduino IDE software. This is where the code, or "sketches," are written, compiled, and uploaded to the Arduino board. The software is available for Windows, Mac, and Linux, and can be downloaded free from the Dr. Duino website. You'll need this so your computer can access the Arduino board. Again, Dr. Duino has provided detailed instructions on how to set up the projects, and where to find the additional important downloads.

The first project is an interactive test sequence that ensures your Explorer kit is working properly. There are also a number of interesting projects that come with the Explorer. Although they aren't train related, I tried them anyway. I didn't have to write any code because the sketches are provided by the developer.

After completing the Explorer kit projects, I moved on to the Model Railroad Expansion kit. This kit comes with two infrared detectors, two mini servos, a speaker, micro SD mp3 player, and 10 individual addressable LEDs.

There are five projects in this kit. Block detection, servo control, sound playback, addressable LED control, and finally a large project that ties it all together. The main idea with the Explorer isn't to set up a fully functional railroad with an Arduino. It's about learning how to use the technology through easy to follow projects. After completing the included projects, I immediately started to think about how Arduino can be used on future layouts. – Ben Lake, associate producer, *Trains.com*

Accurail HO scale Milwaukee Road boxcar



Accurail has added a 40-foot Milwaukee Road ribbed-side single-door boxcar to its range of HO scale freight car kits. But this isn't a newly tooled model. Instead, the manufacturer has revived the former Rib Side Cars tooling.

The prototype. The Accurail kit is based on Milwaukee Road ribbed-side boxcars from the 18000 through 21187 series. These cars were built by the railroad between October 1939 and September 1940 at its shops in Milwaukee, Wis. The key spotting feature of this group of single-door boxcars is the full-length ribs. On later cars, the ribs ended at the ladders and grab irons.

Our sample is decorated as Milwaukee Road no. 31163, part of the railroad's 31129 through 31228 series. The model is lettered to match prototype cars that

were rebuilt and renumbered by the railroad in 1962 and 1963.

The model. The Accurail boxcar has many of the same features of the Rib Side Cars model Andy Sperandio reviewed in the February 2004 issue of *Model Railroader*. The car still has a plastic body (sides, ends, doors, floor, and underframe); separate ladders, Hutchins roof, tack boards, steel running boards, running board supports, and draft-gear box covers; and AB brake components. The grab irons, door hardware, and stirrup steps are molded.

What's different this time around is the lettering. The Rib Side Cars version of the boxcar featured decals for the road numbers, end reporting marks, and re-weigh dates. Accurail prints all of this data on the model. However, Accurail

does offer renumbering decals for \$4, postpaid.

The trucks and couplers have also changed. The Rib Side Cars model included E-B Products AAR-type ("Bettendorf") sprung plastic trucks and McHenry scale couplers. Accurail includes its own plastic solid-bearing Bettendorf trucks with Delrin wheelsets and Accumate couplers in the kit.

Assembly. I built the kit following the 14 steps in the instructions. Unlike other Accurail boxcars, the running board casting doesn't have pins that fit into holes on the roof. You'll want a ruler handy to make sure the casting is centered and overhangs the ends properly.

The underbody has a basic rendering of the welded underframe assembly used on Milwaukee Road ribbed-side boxcars.

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The A end of the Accurail Milwaukee Road boxcar (left) has a small door at the top for loading lumber. The B end has a separate brake platform and Equipco brake wheel.

The pieces parallel to the car sides should be Z channel. The crossmembers and body bolsters lack flanges.

The brake detail consists of a control valve, air reservoir, and brake cylinder. I had to trim some of the molding gate (from the manufacturing process) for the brake cylinder to seat properly.

Measuring up. I compared the Accurail boxcar to prototype drawings in the *Railway Prototype Encyclopedia: Vol. 13*

(RP CYC Publishing Co., 2006) and the June 1988 *Mainline Modeler*. The distance between truck centers and over the striker castings matched published data. The wheelbase on the trucks is a scale 5'-9" instead of 5'-6".

Lettering placement matches a prototype photo of a car from the 31129 through 31228 series published in Doug Nighswonger's *Milwaukee Road Color Guide to Freight and Passenger Equipment: Volume 2* (Morning Sun Books Inc., 2000). The inside height is listed as 9'-7", but it should be 9'-2".

The boxcar performed without incident while being pushed and pulled on our Wisconsin & Southern layout, which has no. 5 turnouts and 30" radius curves.

Welcome back! As a modeler of the early 1970s, I'm glad that Accurail has added the Milwaukee Road 40-foot ribbed-side boxcar to its product range. Though the car is sold out at the manufacturer, it's still available at hobby shops and through online retailers. – *Cody Grivno, group technical editor*

Facts & features

Price: \$18.98

Manufacturer

Accurail Inc.
P.O. Box 278
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Era: July 1963 to early 1980s
(as decorated)

Road names: Milwaukee Road (The Route of the Hiawathas, Route of the Electrified Olympian, 1963 repaint and renumber with billboard lettering, and 1968-1974 repaint and renumber with herald only). One road number per scheme. Also available undecorated.

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What's behind all this?

I admire a photograph whose careful composition so captures a scene that you feel you could step into it. A weather-worn whistle post frames the left of this Rich Taylor photo. The Esso sign reminds me of the advertising gimmick that had Dad drape a tiger tail from the tank of our family's Pontiac Tempest. Commanding attention, two tall signal masts make a frame within a frame.

Signals have aspects, names, and indications. The westward signal at the left displays a PROCEED indication, its aspect has the semaphore blade vertical, and its name is "Clear." The eastward signal on the right displays a STOP indication, actuated by an electrical circuit triggered by the train's wheels when it entered the block the signal protects.

Close inspection reveals a number plate on the westward signal mast. Also note the pointed blade on the westward signal and the square ends on the eastward. The number plate and arrow make the westward a permissive signal. If its semaphore blade were in a horizontal position, the indication would be STOP AND PROCEED, meaning the train in the photo must stop, but after stopping, may proceed at restricted speed prepared to stop once again for a flagman's signal, train ahead, or other obstruction.

Square ends and the absence of a number plate designate the eastward an absolute signal. A train approaching this signal must come to an absolute stop. It cannot proceed until specifically instructed to do so by the dispatcher controlling this line. Railroad rulebooks contain block signal and interlocking rules, including pages which illustrate signal aspects, their names, and their indications. The Standard Code's Rule 291 shows stop and proceed; Rule 292, stop.

What's behind all this? The camera doesn't see the passing siding at the photographer's back.

The signals belong to the Absolute Permissive Block (APB) system then present on Erie Lackawanna's New Jersey & New York branch, long busy with rush hour



Tall semaphore signals frame an Erie Lackawanna commuter train nearing Hillsdale, N.J., on December 30, 1966. Rich Taylor photo

commuter trains serving the New York City area. General Railway Signal (GRS) developed the system for single track main lines; sources agree its first installation was in 1911. Absolute Permissive Block made the block for opposing movements extend from siding to siding, a distance that could be many miles.

The absolute signal on the right, called a head block, protects the single track between sidings. For following movements, the track between sidings was divided into two or more intermediate blocks extending from signal to signal, like the permissive signal on the left.

Absolute Permissive Block track circuits detect a train's presence and its direction. The eastward head block in the photo dropped to a STOP indication the moment the westbound train entered the far end of the single track between sidings, protecting its movement. All intermediate eastward signals "tumbled down" to STOP AND PROCEED. But the westward intermediate signals operated as conventional ABS, allowing a second westbound train to follow the first.

How would two trains meet here? Absolute Permissive Block signals provide protection only; unlike

Centralized Traffic Control signals, they don't convey movement authority. This was timetable-and-train-order territory, in which authority came from schedules and superiority. If both were regular first-class trains and east was the superior direction, the westbound train in the photo would enter the siding. The eastward head block would clear after the westbound passed it and the eastbound would be free to proceed on its schedule. A dispatcher could also intervene with a train order, specifying which of the two trains to take the siding.

General Railway Signals' Absolute Permissive Block System Circuits, published in 1919, includes photos of early installations on Northern Pacific (NP) and the Monon. At that time, NP operated 627 miles of APB, more than 25 percent of the U. S. total. Remnants of Monon's original APB installation survived well into this century until CSX took its semaphores out of service.

Model Railroader published a four-part series about APB modeling between November 1991 and February 1992. Bill Darnaby designed and installed an APB section on his Maumee layout, because, as he explained, "I think it's neat."

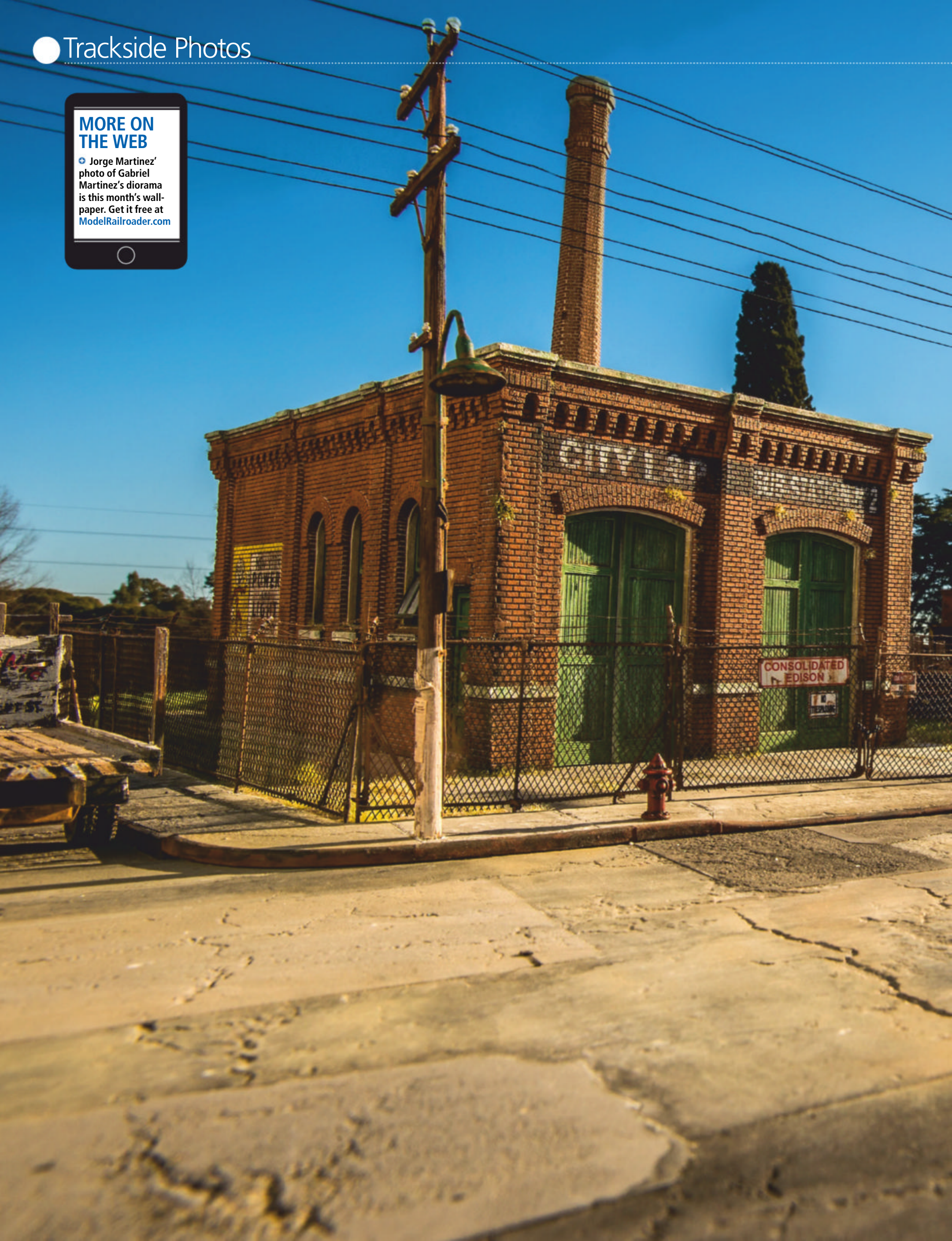
Lehigh & Hudson River was another of the early installations GRS named in its brochure. Someday, I'll put APB in service on the L&HR main on my own layout, because I think it's neat, too. 



ABSOLUTE PERMISSIVE BLOCK SIGNALS PROVIDE PROTECTION ONLY; UNLIKE CTC SIGNALS, THEY DON'T CONVEY MOVEMENT AUTHORITY.
— JERRY

**MORE ON
THE WEB**

➦ Jorge Martinez' photo of Gabriel Martinez's diorama is this month's wallpaper. Get it free at ModelRailroader.com



The rumble of the General Electric 44-tonner's engine, the cracking sound of the flexing rails, and the squealing of the brakes add up to music to a railfan's ears as this special freight slowly moves through the crossing. Gabriel Martinez of Buenos Aires, Argentina, whose "Worn-out warehouse on the waterfront" appeared in *Great Model Railroads 2017*, built this 3 x 3-foot O scale diorama. The power station was built from laser-cut medium density fiberboard. Gabriel's brother and modeling partner, Jorge Martinez, took the photo.





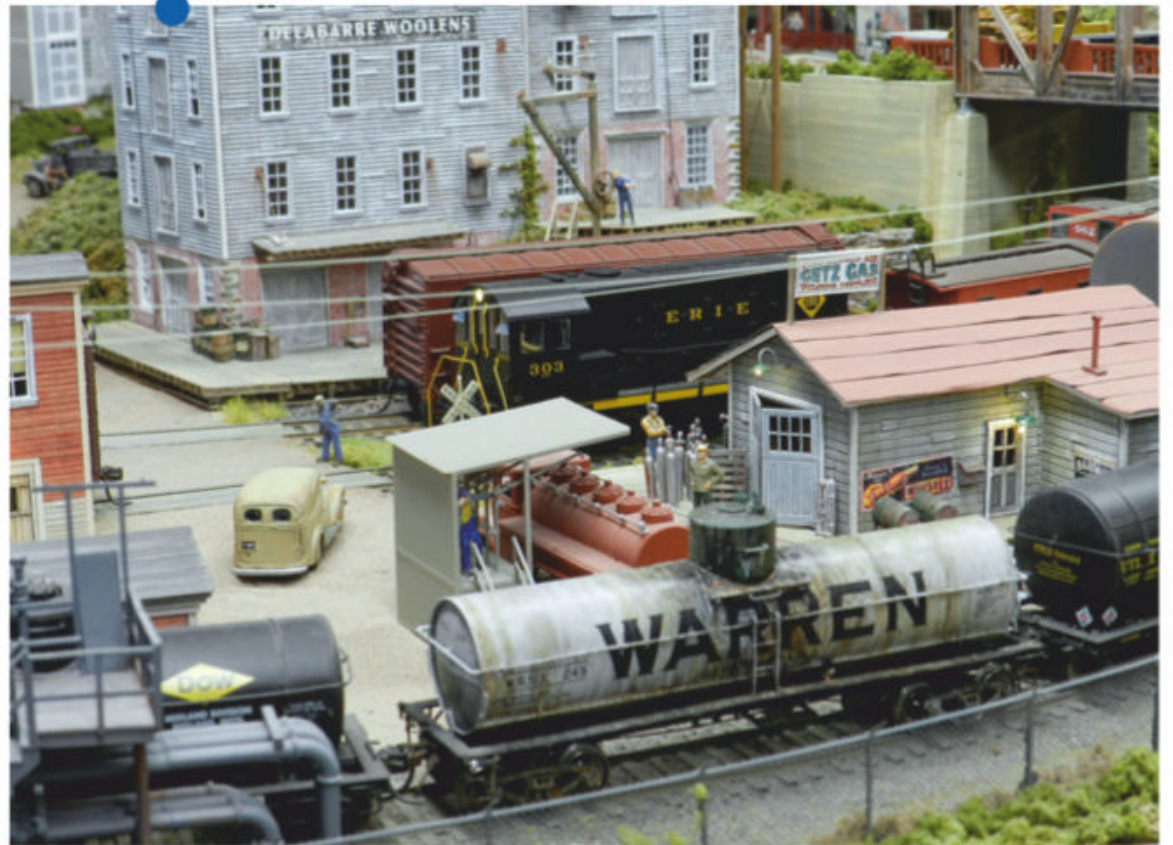
Passengers move to the front of the platform as Canadian Pacific Alco FA-2 no. 4085 draws its passenger train up to the Texas Creek station. Vanessa Stoddart of Cape Negro, Nova Scotia, shot the photo on the 600-square-foot HO scale model railroad built by her father, Raymond O'Connell. Raymond assembled the structures from kits and hand-painted the figures. The locomotives are Rapido Trains models.

Send us your photos

Trackside Photos is a showcase for the work of *Model Railroader* readers. Send your photos (digital images 5 megapixels or larger) to: *Model Railroader*, Trackside Photos, P.O. Box 1612, Waukesha, WI 53187-1612; or upload them to <http://fileupload.kalmbach.com/contribute>. For our photo submission guidelines, contact associate editor Steven Otte at sotte@mrmmag.com.



A switchman guides Erie Fairbanks-Morse HH-660 no. 303 as it switches the Delabarre Woolens mill siding while the rest of the train waits on the main. Frank Baker of Scottsdale, Ariz., photographed the switching action on his HO scale Morristown & Erie, Western Division layout. The Atlas engine is equipped with a Lenz decoder. Delabarre Woolens is a modified South River Modelworks building.



New York Central 4-6-4 Hudson no. 5332 has just had its firebox cleaned and will back up for a load of coal before going to the enginehouse for servicing. Russ Weis of Louisville, Ky., photographed the scene at the engine terminal on his HO scale New York Central layout. Russ' friend Steve Lasher, a retired Rock Island engineer, built the structures and also weathered the Overland Models locomotive.





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Schedule of Events

AZ, GLENDALE: ARHS Model Train Swap Meet. Glendale Christian Church, 9661 North 59th Ave. Saturday, November 28, 2020, 9:00am-1:00pm. Admission \$5.00. Tables \$25.00 to sign up send stamped envelope, check or money order to ARHS, PO Box 5816, Glendale, AZ 85312-5816. Contact: Craig Faris 623-340-3529.

FL, DOVER: Regal Railways presents a Toy Train, Collectible and Hobby Christmas Sale/Show. Hillsborough County Fairgrounds, 215 Sydney Washer Road, Zip: 33527. Saturday, December 12, 2020, 9:00am-2:00pm. Admission: \$5.00 adults, children under 12 free. Vendors, videos, and operating layout. Lunch items available. Contact Joe: 727-244-1341 or visit: www.regalrailways.com for more information.

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

IN, DANVILLE: Central Indiana Division-NMRA annual Danville Train Show at Hendricks County Fair Grounds, 1900 E. Main St., Danville, IN 46122. Saturday November 21, 2020, 10:00am-3:00pm. Admission \$3.00 adults, \$5.00 family. Operating Layouts, Vendors, Clinics, Food. Dealer Tables 8 feet at \$16.00. Info: johnporay@gmail.com or 317-627-1660. CID website <http://cidnmra.org>

MA, MARLBOROUGH: Hub Division NER/NMRA CANCELLED ITS TRAIN SHOW at the Royal Plaza Trade Center, scheduled for December 5 & 6, 2020. Next year the show will be on Saturday, December 4, 2021, 10am-5pm, and Sunday, December 5, 2021, 10am-4pm. Admission: \$12.00; Children under 12 and Scouts in Uniform FREE; hope to see you then. www.hubdiv.org

MI, EAST LANSING: UPDATE-Cancelled due to Covid-19. Lansing Model Railroad Club Show and Sale. Michigan State University Pavilion, 4301 Farm Lane. Sunday, November 22, 2020, 10:00am-4:00pm. Admission \$6.00, under 12 free. Michigan's largest train show: layouts, demonstrations and 500+ tables. Free parking. Flyer, table forms and map, www.lmrc.org or call Ron St. Laurent 517-256-3588

OH, DAYTON: Dayton Train Show, The New Montgomery County Fairgrounds, 645 Infirmary Road, Dayton, OH 45417. November 7-8, 2020. Saturday, Nov 7, 11:00am-5:00pm and Sunday, Nov 8, 11:00am-4:00pm. Admission: \$8.00 per adult, children 12 and under free with paid adult. Gail Yarnall, PO Box 341233, Dayton, OH 45434, 937-301-0746, NMRA. Div.3@gmail.com. Go to <http://www.DaytonTrainShow.com> for updates.

OH, MASSILLON: UPDATE-CJ Trains Winter Train and Toy Show, December 2020 event, cancelled due to Covid restrictions. The Massillon Show has been rescheduled for Sunday, December 12, 2021, and the Mt. Hope Show has been rescheduled for Saturday, March 20, 2021. Contact: Jon Ulbright, PO Box 446, Wooster, OH 44691. 330-262-7488, cathijon@sssn.net www.cjtrains.com

OK, STILLWATER: Holiday Train Show. December 12-13, 2020. Saturday 9am-4pm and Sunday 10am-3pm. Payne County Fairgrounds. 3 miles east of Stillwater, OK, on Hwy 51. 150 dealer tables, operating layouts, door prizes. Concessions available. Admission: \$5.00 for both days, kids under 12 free. For information: Rickey 405-624-7651 or www.ttos-soonerdiv.org. Protective facemasks required.

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A tale of two covers

Those of you who read both *Model Railroader* and *Trains*, as I do, may have noticed something rather interesting when the October 2020 issues arrived: At first glance, the MR cover, which featured a photo of a VIA Turbo Train sweeping around a curve, looked like a typical *Trains* cover. Conversely, the cover of *Trains*, featuring a gleaming pair of The Rock GP38s, looked for all the world like an MR cover.

Why this was so offers some lessons in model photography and a look into developments in photography of full-size railroads. We'll look at three major factors that contributed to the illusion of a prototype photo on MR and a model photo on *Trains*: angle, lighting, and "texture."

Angle: Model photographers are limited as to where they can position their cameras by the diameter of the lens, so getting a scale-height railfan's eye view of an

oncoming train is difficult. In this case, Jason Shron, the founder of Rapido, which made the Turbo Train, used a Canon Powershot digital single-lens-reflex camera supported on a beanbag sitting beside the embankment. Some of the better camera phones make this even easier.

The *Trains* cover shows an entirely different perspective, one that's so easy to shoot on a model railroad that it's almost a cliché. If we're trying to show off a pair of freshly painted locomotives, an ideal spot is where they cross a

trestle, as the fascia drops out of view. But for a railfan to get that same shot requires a lot of luck – a nearby road bridge, a meander of the stream bed, or maybe a boat. The *Trains* photo was taken in Mississippi, and railfanning in a possibly gator- or snake-infested swamp also requires a bit of fortitude.

A camera-equipped drone is another tool railfan photographers have recently added to their arsenals. I often see photos in *Trains* that look like someone was standing in the aisle of a layout with his or her camera

tilted down, just as model photographers too often do. It affords a whole new perspective on prototype railroading. But like overuse of a new lens, we may grow tired of the new toy in time.

Lighting: Jason achieved a rather flat, cloudy-day lighting effect for the MR cover. It's a bit subdued by MR standards, but adds to the

realism. Jason tells me that he models "a crummy day in November/December, so my lights are all 6400K compact fluorescents," which are rather cold to the eye and camera. His backdrop is a cloudy sky, which contributed to the realistic effect.

The sky reveals that Tishia Boggs had to contend with a partly cloudy day when she shot the *Trains* cover, as well. The coats of Reborn Blue paint pop out of the photo nicely nonetheless.

(For Rock Island fans who are wondering what The Rock paint scheme is doing in rural Mississippi, entrepreneurs and professional railroaders Robert and Gwen Riley bought rights to the original corporate name and logo and are running a successful short line in the northwestern corner of that state. You can read Tishia's report in October's *Trains* magazine.)

Texture: That the GP38s are spotlessly clean contributes to their model-like appearance, as do the almost side-view angle and the opaque, nearly flat water. The pride of The Rock's owners is as evident to railfans as it is to their customers and employees. Many modelers are reluctant to weather their models, especially expensive locomotives, and The Rock's example reinforces that assumption.

Conversely, the HO scale Turbo Train looks used, as it should. If it were as spit-and-polished as those Geeps, even the low camera angle and realistic setting wouldn't compensate for what our eyes would perceive as a bit too perfect to be full size.

All in all, it adds up to a pair of covers that deviate from our expectations a bit. I'd give both high marks on that basis alone! **MR**



Several readers noticed that the October 2020 MR cover looked like a *Trains* Magazine cover, and the October 2020 *Trains* cover looked like a typical MR cover.

Turbo Train photo by Jason Shron; The Rock photo by Tishia R. Boggs



THAT THE GP38S ARE SPOTLESSLY CLEAN CONTRIBUTES TO THEIR MODEL-LIKE APPEARANCE... CONVERSELY, THE HO SCALE TURBO TRAIN LOOKS USED, AS IT SHOULD.
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