

BUILD A MODERN WAREHOUSE p.24



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An N scale layout in a crawl space p.40

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Using trees to add a view block p.30

Dave Abeles made his
own Conrail C30-7A
engine. See page 34

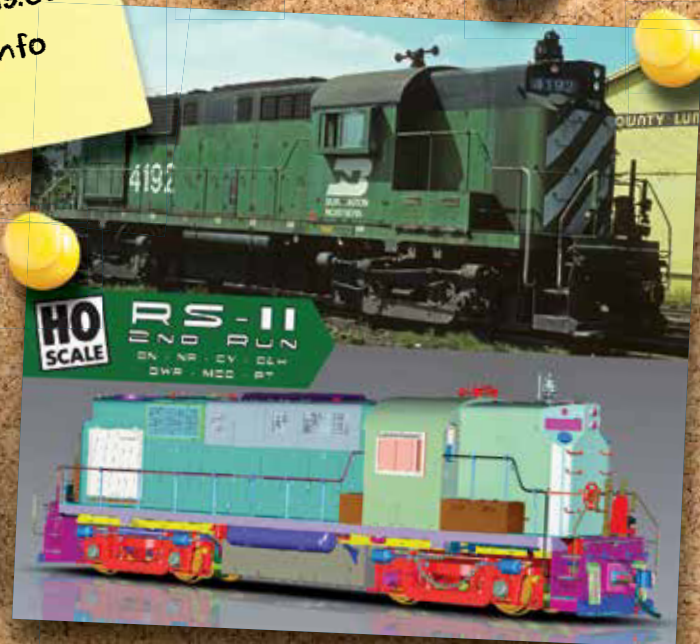
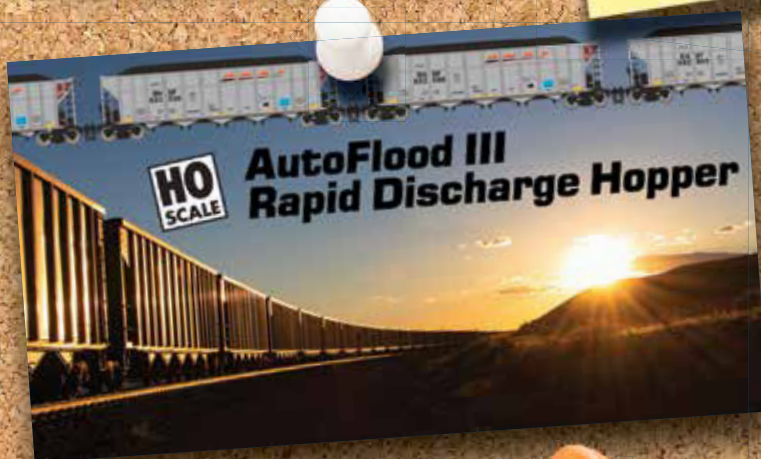
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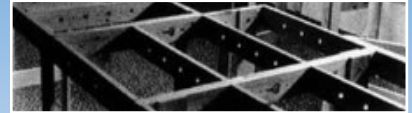
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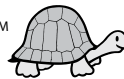
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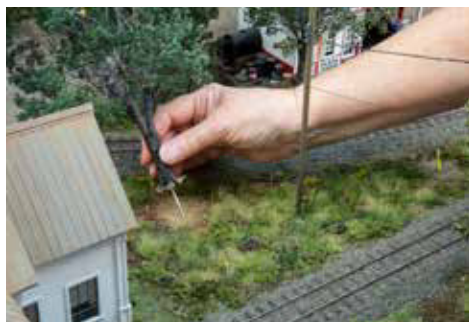
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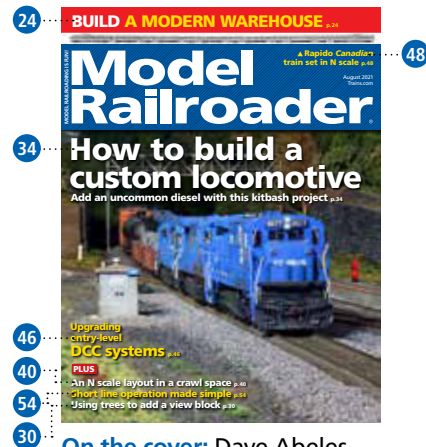
Operation made simple

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Rolling stock as scenery



On the cover: Dave Abeles explains how he kitbashed a General Electric C30-7A for his HO scale Conrail layout.
Dave Abeles photo



Next issue

In **September**, visit a freelanced layout that reaches from Cincinnati to the Appalachians. Plus, tell stories with figures, dye static grass, build a transfer ramp, and more!

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New Product Reviews

Model Railroader is back with another Rapid Review, and this time we're taking a closer look at Accurail's new American Car & Foundry 2,970-cubic-foot capacity two-bay Center Flow covered hopper. Read all about the kit's facts and features to see if it's the perfect addition for your layout. In addition to a detailed product review, Trains.com members can also watch an exclusive demo video as a benefit of their subscriptions.



Finishing the Helix

Gerry Leone, host and star of Model Railroad Video Plus's *Off the Rails*, returns in the latest installment of the *Back on Track* video series, as he continues with his plans to build a brand-new HO-scale layout from square one. Follow along as Gerry deals with the ups and downs of constructing a helix and works to avoid wavering levels at each turn.



Expert Tips

Everybody wants their rolling-stock operating smoothly, which is why Senior Editor Eric White is here to show you how a little bit of filing can go a long way when trying to fix the pesky wobble on a boxcar. To watch more expert tips and tricks from our staff, become a Trains.com member for unlimited access to all the *Model Railroader* videos.

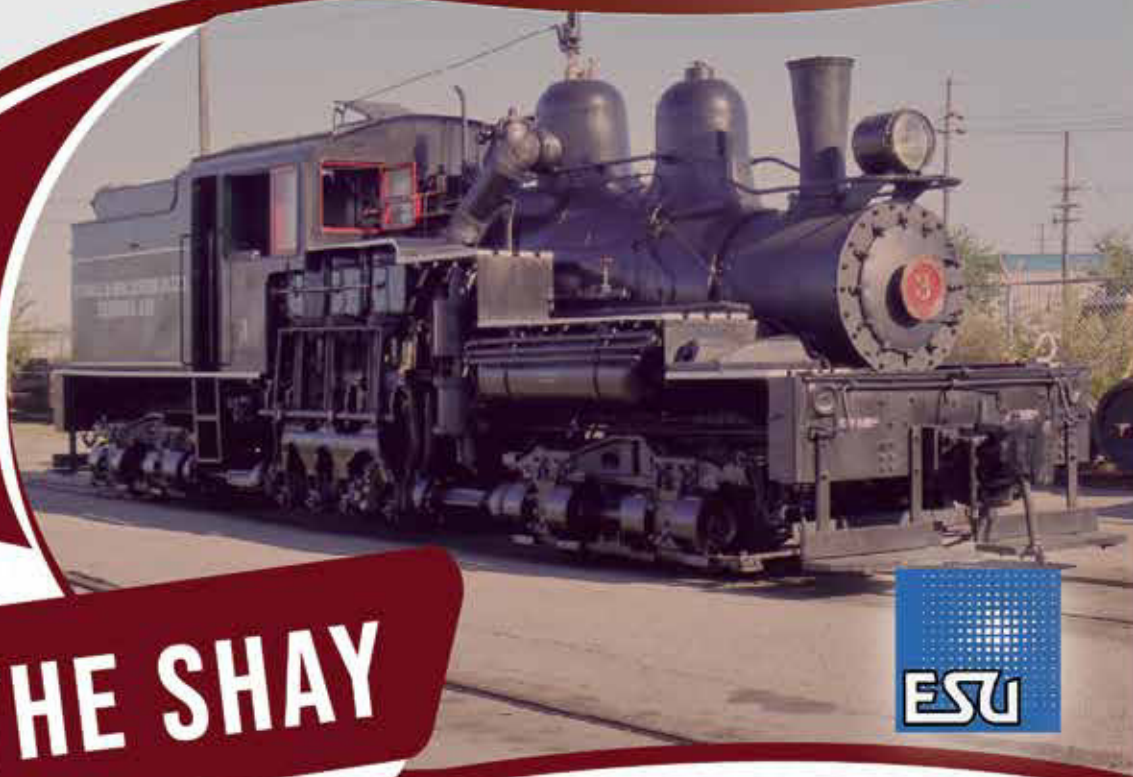


Trackside Finds

Hurry on over to Trains.com to check out the debut of **Cody's Trackside Finds**, a new article series where Group Technical Editor Cody Grivno discusses some of the many locomotives, freight cars, structures, or other interesting details he's stumbled across while railfanning. In this first edition, Cody talks about some Canadian National braking cars he found only 30 minutes north of our very own *Model Railroader* headquarters.



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THE SHAY



The Shay locomotive was the most widely used geared steam locomotive. The locomotives were built to the patents of Ephraim Shay, who has been credited with the popularization of the concept of a geared steam locomotive. Although the design of Ephraim Shay's early locomotives differed from later ones, there is a clear line of development that joins all Shays. In 1884, they delivered the first 3-cylinder (Class B) Shay.

Class B, Lima-built 50-ton 2-truck Shay

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Spanning the Great Divide

If you could travel through time to visit any layout ever made, where would you go first? For me and, I suspect, for many *Model Railroader* readers, the answer would be, "I want to see John Allen's Gorre & Daphetid RR."

Born in 1913, John Allen remains a towering figure in the hobby. He combined boundless imagination with

immense modeling skill to create his masterpiece – the 24 x 32-foot Gorre & Daphetid.

Despite its humorous name (it's pronounced "gory and defeated"), Allen was serious about the art of model railroading. Construction of his layout was his full-time occupation for many years.

Allen contributed a series of memorable articles for *Model*

Railroader illustrated with photos of steam trains winding through towering mountains and across tall bridges in a fantasy landscape that seemed to go on forever.

Allen died in January 1973. Just 10 days later, the layout was destroyed in a house fire.

Traveling back in time isn't possible, but – as amazing as it sounds – we may once again see trains running from Gorre to Great Divide and across the Squaw Creek High Bridge (shown at left).

Randy Decker, retired from careers as a master finish carpenter, wood carver, and museum exhibit specialist, is hard at work re-creating Allen's famous layout.

Replicating an intricately detailed layout that has been gone for nearly 50 years is possible because Allen thoroughly documented his railroad in



numerous photographs, track plans, and articles.

Randy, whose childhood memories of Allen's *Model Railroader* articles sparked his interest in model building, will regularly update his progress in our print publications and on Trains.com.

"I love a challenge," Randy said. "I'm having the time of my life with this hobby."

Carl Swanson



Destroyed 48 years ago, John Allen's Gorre & Daphetid remains one of the hobby's best-known layouts. John Allen photo

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Many thanks for the warm welcome you have given us. We have successfully negotiated hundreds of deals and we are ready for more. We apologize for the slight delay in processing some of your lists: we are now working on a **24-48 hours response time** to make you an offer.

Our era system has also a great response. Thank you for the applause and criticism, we understand this method of categorization is not to everyone's liking. We are reviewing all your suggestions and hope to improve it further.

I hope you are well and I look forward to getting the opportunity to meet with you, if you are at any of the events I hope for Hattons to attend over the next year.

Richard Davies
CEO

Shouldn't America have its own Era System?

Please join us at hattonsmodelmoney.com/US-Eras and give us your thoughts and opinions. We'd love your assistance in developing one!

Our proposed method of grouping products based on prototypes across nearly 200 years of railroads in the United States!

Era	Date	Name	Steam	Alco	EMD	GE	Passenger
1	1827-1880	Old Time	American 4-4-0s				Open vestibule wood cars <60ft
2	1880-1916	Turn of the Century	Atlantics, Moguls, Consolidations, Camelbacks				Closed vestibule wood cars 80ft
3	1917-1928	Golden Age	USRA to Superpower and Modern Steam				Steel Clerestory/Early streamliners
4	1929-1949	Superpower	4-6-4s, 2-8-4s, 4-8-4s, 2-10-4s and 2-6-6-4s	Small switchers HH, S and DL series	NW Series/Streamline Trainsets/Early E Series		
5	1949-1960	Steam/Diesel Transition	Steam Decline	FA/PA/S Series Early RS Series	E/F/SW Series Early GP/SD Series	U Series launched	Rise of the post-war streamliner
6	1960-1972	1st Gen	End of steam	RS27-36/Century Series	SW1000/1500, GP20 to SD45	U Series	Decline of the post-war streamliner
7	1972-1979	2nd Gen			GP/MP15, GP/SD50, GP/SD60, Dash 2 Series	Dash 7	Amtrak Heritage/Amfleet
8	1980-1989	Eighties			GP50/60 SD50/60	Dash 8	Amtrak Superliners/Amfleet II
9	1990-2010	Nineties and noughties			SD70 Early AC traction	Dash 9, Early AC	Amtrak Viewliner/Superliner 2
10	2010 to Present	Current			SD70 ACe-T4	AC Series, GEVO	Avelia Liberty (Amtrak Acela II)

Thank you to **Mr H. Fuller, Mr R. Shirey, Mr J. Agneta** and many others for their help in progressing the eras we proposed in our previous advertisements.

www.hattonsmodelmoney.com/US-Eras

We welcome assistance in developing this resource - please contact our proprietor Richard Davies on richard@hattons.co.uk if you are interested in participating with this project.

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Conducted by Steven Otte

Flip that switch (machine)

I commend M.R. Snell for modeling a switch heater [June 2021], something which everyone modeling the modern era in the northern states should consider. But as a retired signal engineer, I have to point out that his switch machine has been installed incorrectly. The hand throw lever should be on the side away from the track and the whole machine and junction box should be turned 180 degrees to put the cable junction box end toward the frog. This photo shows the normal arrangement of the machine and the rods connecting it to the track. The trunking for the switch heater would be just off to the left of this photo.

David T. Byatt
Sugar Camp, Wis.



This photo shows the correct orientation of a switch machine to the points of a turnout. David T. Byatt photo

...And flip that pole gate, too

I look forward to those articles about small projects to enhance my railroad. The simple pole gate on page 28 in the April issue was a nice one to build. But if I were the area supervisor, I would have words with the foreman of the crew that installed it. If he installed it with the pivot on the other side of the road, no problem. Because the pivot is next to the tracks, there should be a post to prevent the gate from fouling the track. Without it, there could be catastrophic results if a train came along and hit it.

Kenneth Cloughley

How can I help Lucas?

I was touched by the letter from young Lucas Hilsendager in the May Ask MR. I have four kids on the autistic spectrum and am well aware of the challenges Lucas faces, so I would very much like help. Like all modelers, I have over the

years acquired much more stuff than I need, and I would be happy to send some items to him free of charge.

John McBride

Hi, John, and thanks for your kind offer. We received many such messages from modelers wanting to know how they could help Lucas. Although it's heartening to hear from so many generous hobbyists, it would not be appropriate for us to put a minor in touch with a stranger, no matter how well-meaning. If you are interested in helping today's younger generation discover the world's greatest hobby, we suggest you get in touch with your nearest hobby store, model train club, trade school, or Scouting troop to ask how you can help. – Steven Otte, associate editor

Correction

The photo of David Barrow's staging yard in "Secrets of Staging Yards" (June 2021) was taken by Tommy Holt. **MR**

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

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Electro-Motive Division FP7 and F7B diesel locomotives.

Wm. K. Walther's Inc. offers these Proto series models decorated for Amtrak, Pennsylvania RR (Dark Green Locomotive Enamel), Soo Line (maroon), Southern Pacific (gray and scarlet), Southern Ry. (green and white), and VIA Rail Canada (blue and yellow) in two to four road numbers

per scheme. The HO scale models have prototype-specific details and a die-cast metal frame. Direct-current models with 21-pin plug are priced at **\$189.98** (FP7) and **\$369.98** (FP7-F7B set). Versions with a dual-mode LokSound 5 sound decoder are **\$279.98** (FP7) and **\$549.98** (FP7-F7B). Wm. K. Walther's Inc., 414-527-0770, walther's.com

Athearn announces new HO Genesis models

Athearn made a big splash recently by announcing three newly tooled HO scale models for its Genesis family of products. A General Electric AC4400CW and an Electro-Motive Division SD90MAC will be added to the Genesis 2.0 product line. Surfliner bi-level intercity cars will be in the original Genesis line.

The SD90MAC is based on an early production prototype that had a 16-710G3-ES diesel engine. The engine compartment is different than that on the SD90MAC-H Athearn previously released. The six-axle road unit will have

see-through steps and light-emitting-diode lighting, including illuminated number boxes and ground lights. The model will be offered with and without a SoundTraxx Tsunami2 sound decoder.

The General Electric AC4400CW will have see-through steps; separate, factory-applied detail parts; and Genesis 2.0 lighting functions.

The final products announced were Surfliner bi-level intercity cars. The models, which will be offered with and without sound, will have prototype-specific details to match the era of the

paint scheme as well as interior and exterior lighting. Sound-equipped models will have cube-type speakers and a decoder similar to that used on Genesis-series cabooses. The cab cars will have horn and bell sound effects; additional sound effects are being planned.

"We are very excited by these releases, as they were all highly requested by our fans," said James Wiggin, associate brand manager for Athearn Trains.

Road names, additional details, pricing, and release dates will be announced in the coming months.

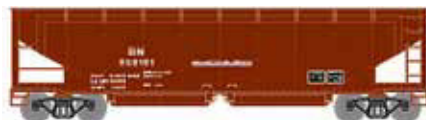
HO scale locomotives



- **United States Army Transportation Corps 65-ton Whitcomb diesel locomotive.** Pre-production sample shown. Additional features to be announced. Non-sound version, \$249.99; with PIKO

4.1 SmartDecoder and sound, \$362.99. Late summer 2021. PIKO America, 619-280-2800, piko-america.com

HO scale freight cars



- **40-foot offset-side ballast hopper.** Burlington Northern (Oxide Red), Alaska RR (brown), Southern Ry.

(black), Union Pacific (brown with "Serves all the West" slogan), and Wisconsin Central (black). One single car and two four-packs per scheme; also available painted black and Oxide Red with data only (four-packs only). Removable load; separate, factory-applied wire grab irons and brake wheel; and body-mounted McHenry scale couplers. Single car, \$44.99; four-pack, \$169.99. April 2022. Ready-to-Roll. Athearn Trains, 800-338-4639, athearn.com



- **70-ton 13-panel three-bay hopper.** Penn Central (class H37B, three road numbers) and Pennsylvania RR (class H37B with Crown trucks and H37B in simplified scheme). Six numbers per scheme unless noted. Injection-molded plastic model with separate brake wheel and metal wheels. \$29.95. January 2022. Bowser Manufacturing Co. Inc., 800-327-5126, bowser-trains.com



- **24- and 36-foot double-sheathed boxcars.** Kits include stripwood decking, Tichy Train Group detail parts, and fictional Conowingo RR decals with "Route of Pentaquod" slogan. Trucks

Large scale



Pennsylvania RR 2-6-0 steam locomotive. Pull freight or passenger trains through the garden with this Mogul from PIKO America. The large scale Pennsylvania RR 2-6-0 steam locomotive (**\$689.99**) has a five-pole precision can-type ball-bearing motor; a SoundTraxx sound decoder; a 5V smoke unit; factory-applied piping, handrails, and ladders; an engineer figure; and hook-and-loop couplers. PIKO America, 619-280-2800, piko-america.com

and couplers not included. 24-foot boxcar, \$25; 36-foot boxcar, \$27. Add \$5 per kit for trucks and couplers. Conowingo Models, conowingomodels.com

- **Association of American Railroads 50-ton two-bay offset-side hopper.** Atchison, Topeka & Santa Fe (1948

factory-new scheme). One road number. Injection-molded plastic with lump-egg coal load; separate, factory-applied detail parts; self-centering solid-bearing trucks with metal wheels; and Kadee scale couplers. \$42.95. Kadee Quality Products Co., 541-826-3883, kadee.com

Union Pacific Railroad (UP) class 4000

The Union Pacific Railroad rolled out the biggest restoration of 2019, the complete overhaul of the largest steam locomotive in the world – the Big Boy, road number 4014.

TRIX



To commemorate this event, Trix has reissued an accurately redesigned model in HO scale (Item No. 22163). This model was made specifically for the HO US market.

- RP 25 Wheels
- Kadee® Couplers

This metal model has a total of 14 design changes to accurately represent the prototype, including changing to an oil firing tender, "Big Boy" written on the smoke box door, applying the UP 4014 logo onto cab floor and more!

Also available in a Märklin H0 version (37997) and standard Trix HO version (22014).

Trix products are available from authorized Trix and Märklin dealers. See our complete line of products at marklin.com and trix.de/en. Contact customerservice@marklin.com for more information or to request a free New Items catalog.

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HO scale



FedEx freight building. This modern-era structure is the latest release from Menards. The HO scale FedEx freight building is factory-assembled and decorated with 15 light-emitting-diode lights, a FedEx worker, three packages, a flagpole, two air conditioner units, and Jack the German shepherd. The building (\$49.99) measures 6 $\frac{5}{8}$ " x 3 $\frac{5}{16}$ " x 3 $\frac{1}{16}$ ". The lighting requires a 4.5V power source (sold separately). Menards, menards.com/trains

- **60-foot high-cube boxcar.** BNSF Ry. (Mineral Red with circle-cross herald), Canadian National (Oxide Red with "wet noodle" herald, website, and DWC marks), Canadian Pacific (red with "Canadian Pacific Railway" lettering and beaver herald), Norfolk Southern (Mineral Red), and TTX (yellow and black with Forward Thinking and Railbox heralds and Oxide Red with TOBX reporting marks). Four road numbers per scheme. Separate, factory-applied latch bars; 100-ton roller-bearing trucks with 36" turned-metal wheelsets; and Proto-Max metal couplers. \$31.98. Walthers Mainline. Wm. K. Walthers Inc., 414-527-0770, walthers.com

HO scale details and accessories



- **Diesel locomotive cab details.** Positive Train Control (PTC) track-type antenna four-pack, \$11.99. BNSF Ry. PTC number board two-pack, \$8.25. BNSF Ry. PTC stand and antenna array

four-pack (two of each item), \$10. Large GPS dome two-pack, \$6.49. Rooftop air conditioner protection rack two-pack, \$8.50. Round GPS dome four-pack, \$6.49. Sleek RV-style air conditioner four-pack, \$8. Short track-type PTC antenna four-pack, \$8.99. Square RV-style air conditioner four-pack, \$8. PTC stand four-pack, \$8. Track-type PTC stand four-pack, \$8. Fully painted or primed 3-D printed parts. MAC Rail LLC, macrailproducts.com

N scale locomotives



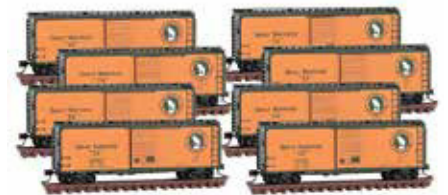
- **Electro-Motive Division NW2 diesel locomotive.** Boston & Maine (red and black), Chicago Great Western (maroon, red, and gold), Chicago & North Western (yellow and green), Erie Lackawanna (gray, maroon, and yellow), Milwaukee Road (orange and black), Pennsylvania RR (Dark Green Locomotive Enamel), Southern Pacific (scarlet and gray), and Union Pacific (Armour Yellow and Harbor Mist Gray with "Road of the Streamliners" slogan). Two numbers per scheme; also available undecorated. Dual-mode Paragon4

sound decoder with Rolling Thunder; die-cast metal body and chassis; and separate, factory-applied handrails, grab irons, smokestacks, horn, and bell. \$229.99. Broadway Limited Imports, broadway-limited.com

N scale freight cars



- **Pacific Car & Foundry 57-foot mechanical refrigerator car.** Atchison, Topeka & Santa Fe (orange and black); Cold Train (blue); Erie Lackawanna (orange and black); Northern Pacific (silver); Pacific Fruit Express (orange with Union Pacific and Southern Pacific heralds); and Tropicana (white). Three road numbers per scheme. McHenry scale couplers and 33" metal wheels. \$34.99. May 2022. Athearn N. Athearn Trains, 800-338-4639, athearn.com



- **Great Northern 40-foot boxcars.** Orange and green with "See America First, Glacier National Park" herald. Injection-molded plastic models with positionable doors; separate, factory-applied running boards; solid-bearing trucks with plastic wheelsets; and Magne-Matic couplers. Eight-pack, \$219.95. Micro-Trains Line Co., 541-535-1755, micro-trains.com

N scale sets



- **Metra State of Illinois four-piece collector's set.** Includes Chicago Metra Motive Power Industries MP36PH diesel

locomotive no. 402 (State of Illinois scheme), Nippon Sharyo bi-level coaches nos. 6074 and 6169, and Nippon Sharyo bi-level cab-coach no. 8541. Models will be packed in specially printed collector's box with foam insert. \$380. Kobo Custom Paint line. Kato USA Inc., katousa.com

N scale details and accessories



- **Assorted intermodal containers.** 53-foot high cube with 8-55-8 corrugated sides (two-pack, \$33.95): Hub Group (green), Milestone (gray), and Universal (red). 20-foot standard height (two-pack, \$29.65): United States Marines (tan) and Siemens Wind Power (NYK Logistics & Megacarrier patchout). 40-foot high cube (two-pack, \$29.95): CMA CGM (blue with "Eco

container bamboo flooring" lettering), Cosco Shipping (blue), Florens (faded dark blue Hanjin patchout), MOL (brown), and Ocean Network Express (Cherry Blossom Magenta). Visionary Series 53-foot high cube with 6-42-6 corrugation pattern (two-pack, \$33.95):

Brooks Transportation. Injection-molded plastic with prototype-specific doors and fronts, inter-box connecting pins, and JTC magnetic connecting system (magnets on bottom and metal plates on top). Jacksonville Terminal Co., jtcmodeltrains.com

HO scale



American Car & Foundry 2,970-cubic-foot capacity two-bay Center Flow covered hopper. Accurail recently released its latest injection-molded plastic freight car kit. The HO scale American Car & Foundry 2970 covered hopper is decorated for Chicago & North Western and features a one-piece body, separate underbody, two-piece outlet gates, and more. Single cars are **\$20.98**. A three-pack sells for **\$61.98**. Accurail, 630-365-1173, accurail.com

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N scale



Procor 20,000-gallon tank car. Rapido Trains continues to expand its lineup of N scale rolling stock. The Procor 20,000-gallon general purpose tank car will be decorated for British Columbia Ry., CP Rail, Procor, Government of Alberta, and North American Car. The car, scheduled for release in 2022, will also be available painted black but unlettered. Features on the ready-to-run car include photo-etched metal walkways; detailed vent stacks, loading hatches, air tanks, and brake equipment; and Rapido knuckle couplers. Single cars will sell for **\$32.95**, four-packs will be priced at **\$131.80**, and six-packs will be offered for **\$197.70**. Rapido Trains, 905-474-3314, rapidotrains.com

O scale details and accessories



• **1950s-1960s gas pumps.** 1:43.5 scale. Laser-cut cardboard kit with nozzles, hoses, and volumetric display. Each pump measures .78" x .39" x 1.57". Platform not included. Two-pack, \$17.92. Price may vary based on exchange rate. Minifer, minifer.fr/en

Large scale rolling stock



• **Union Pacific drover's caboose.** Positionable side baggage doors; light-emitting-diode marker lamps with red and green lenses; molded wood grain on siding; factory-applied ladders, running boards with metal railings, brake wheels, and roof smokejack; metal wheelsets; electrical pickup wipers; clear window glazing; and hook-and-loop couplers. Can be upgraded with interior lighting using PIKO kit no. 36136, sold separately. \$209.99. PIKO America, 619-280-2800, piko-america.com

Z scale locomotives



• **Electro-Motive Division E7A diesel locomotive.** Baltimore & Ohio. Two road numbers. Direct-current model with 7mm motor, dual flywheels, metal steps, directional light-emitting-diode lighting, optional front truck with mounted coupler, blackened metal wheels, and AutoLatch couplers. American Z Line, 614-764-1703, americanzline.com

Tools



• **Snap blade knives.** K10 9mm (\$3.49) and K13 18mm (\$3.99). Both knives have a plastic handle, push lock, and replaceable blades (replacement blades sold separately). 9mm knife has 13 usable points and is ideal for cutting light cardboard, cork roadbed, decal film, and foam

Club offerings



Chicago & North Western (ex-Rock Island) 40-foot boxcars.

Accurail HO scale injection-molded plastic kits custom-decorated for the Chicago & North Western Historical Society. Three car numbers, each with a slightly different style of lettering representing the various styles used by the C&NW during the renumbering of Rock Island equipment. Kits include solid-bearing trucks, plastic wheelsets, and Accumate couplers. Single car, \$32; three-pack, \$85 (prices include postage to U.S. addresses). Illinois residents please include 9½ percent sales tax. CNWHS, P.O. Box 1068, North Riverside, IL 60546; cnwhs.org



Philadelphia, Bethlehem & New England 53-foot gondola.

Tangent Scale Models car custom-decorated for the New England Steam Corp. Five road numbers. \$38.95 plus \$8 shipping for one car and \$1 for each additional car. Check or money order to David Clinton, 11 Hancock Rd., Hingham, MA 02043; newenglandsteam.org

board. 18mm knife has 8 usable points and can be used to cut heavy cardboard, sheet styrene, canvas, cork, foam board, and wood. Produced by Excel Blades Corp., available from Kalmbach Hobby Store, KalmbachHobbyStore.com

Books

• **Vulcan Locomotives Vol. 1.** Reprints of seven catalogs and brochures on Vulcan Locomotive Works Gasoline powered locomotives. Softcover, 112 pages. \$35. Manufacturers' Catalog Archive series. SilverLake Images LLC and Ron's Books, 914-967-7541, ronsbooks.com 

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A crossbuck with a stop sign stands at a grade crossing on the Grand Elk RR at South Street in Schoolcraft, Mich., on Nov. 4, 2011. The shape, size, configuration, and placement of traffic signals like this in the United States is dictated by the U.S. Department of Transportation. Thomas E. Hoffmann photo

Tracking changes in railroad practice

Q My layout is set in 1956. I'm OK with choosing appropriate vehicles and diesels for that era, and I learned that yellow stop signs were replaced by standardized red signs in the late 1950s, but other questions remain. When were roof walks on interchange freight cars outlawed? When did railroads give up cabooses? When were diamond crossing signs replaced by crossbucks? And speaking of crossbucks, is there a standard as to which word faces up?

Neil Berger

A In 1966 the federal government prohibited running boards on new cars delivered after Oct. 1 of that year. Railroads began removing them from existing boxcars and reefers at that time, though generally only when a car was in for rebuilding, so this change was gradual. Running boards were mandated to be removed from all rolling stock by Jan. 1, 1974, but that deadline was extended to Dec. 31, 1983.

Cabooses were never outright prohibited, but railroads started to give them up in 1982, when laws requiring their use were relaxed and technology took over many of the functions of the caboose crew. You can still find them in use in special cases, like as shoving platforms or in transfer service.

The design and placement of street signage, including crossbucks and railroad crossing approach warning signs, is mandated by the Department of Transportation and described in its *Manual of Uniform Traffic Control Devices*, or MUTCD. Crossbucks are mentioned in the oldest version I could find online, the 1930 *Manual on Street Traffic Signs, Signals, and Markings* (a predecessor to the MUTCD). There's no mention of diamond-shaped signs in that manual, so they were long gone by your era.

The words "RAIL ROAD" appear on the downward-sloping leg of the X, separated by the word "CROSSING" on the upward-sloping leg.

Railway crossing approach signs in the 1930 manual were black markings on a white circle, 24" in diameter, with the cross mounted orthogonally instead of diagonally as today, and the letters "R R" in the upper two quadrants. By the 1935 MUTCD, the approach sign was changed to the standard we know today – black markings on yellow, 30" diameter, diagonal cross, with "R R" in the two side quadrants.

Q For my fictional Susan River & Western RR, set in Northern California and Nevada in the early-to-mid 1960s, I need to develop a numbering system for the few pieces of equipment owned by the railroad. The four Electro-Motive Division GP7s have been numbered 10, 11, 12, and 14. I also need appropriate numbers for cabooses, bulk-end flatcars, wood-chip hoppers, and maintenance-of-way equipment. What guidelines or requirements exist for such a numbering system?

Ross Stevenson, Susanville, Calif.

A There are no hard-and-fast rules or requirements on rolling-stock numbering, but I have observed some common practices that you might adopt to increase the verisimilitude of your free-lanced road.

The number of digits used in a road number is chosen so there will be enough available numbers for the rolling stock the railroad might conceivably own in the future. As such, locomotives tend to have fewer digits than the more plentiful cars. On larger roads in the early diesel era, passenger locomotives tended to have low numbers, one or two digits, while freight engines usually had four. Since locomotives are often bought in batches, multiples of the same type of engine should be consecutively numbered, at least to start with. The absence of no. 13 in your Geep fleet might point to a wreck in the railroad's past (as would befit that unlucky number), or it might have been sold or leased to another railroad.

While locomotives typically have no more than four digits, freight cars often get four to six digits, depending on the age and size of the railroad's fleet. Though the chance of even a large Class 1 railroad having 999,999 freight cars is slim, six-digit freight car numbers leave room to accommodate the gaps that occur when batches of cars reach obsolescence and are scrapped. Railroads also tend to numerically group their cars by type, meaning that 10000-17999 might be boxcars, 18000-19999 insulated boxcars, 20000-23999 flatcars, 24000-24999 bulkhead flats, and so on. Within those groups, there might be large gaps to leave room for future purchases of the same car to be consecutively numbered.

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

As time goes on and a railroad grows, the fleet might grow to need more digits to keep track of everything. While older cars that need to be renumbered for the new system might get all new numbers, some might simply get an additional digit stenciled before its existing number. Such a patch job might make for an interesting paint scheme to apply to some of your cars.

I've also observed that railroads that use five digits for their freight cars will sometimes use six digits to distinguish cabooses, maintenance-of-way equipment, and other non-revenue cars.

Q Here are several photos of an HO scale wall hanging diorama I bought at a garage sale. I'm trying to learn more about it. However, I can't make out the artist's last name on the back and I can't find the company whose name is also stamped on the back. Included in the box was an unpowered switch locomotive and three ore cars that apparently sit on the track. I'm hoping someone on the MR staff might know



Douglas Kass bought this fascinating wall sculpture, which includes some HO scale models, at a garage sale. But its origin is a mystery. Douglas Kass photo

its history or could refer me to someone who might know more about it.
Douglas Kass, Clinton Township, Mich.

A I'm sorry, but I can't tell you much. This is certainly an interesting piece, but

its rarity is going to make it hard to track down. Written on the back next to the artist's signature (which looks to me like "Martin Schumer") is "No. 5/30 1998." That tells me only 30 of these plaster castings were ever made. Stamped on the back are also the words "Innovation Design & Fabrication Co. 'Cliffhanger' C 1998." But I haven't been able to turn up any information about it. Perhaps a reader has heard of Martin Schumer or Innovation Design & Fabrication. If anyone out there knows about this piece, please e-mail AskMR@MRmag.com.

Q A lot of the light-emitting diode (LED) lighting on my layout comes with very tiny wires – 28AWG or so. Is there any easy way to connect to these?

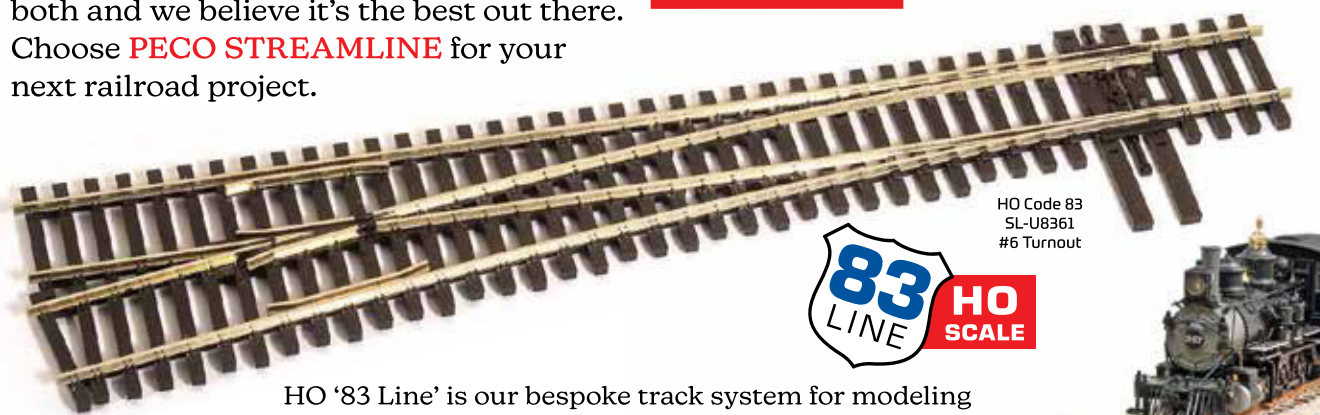
Fred Sotcher, San Jose, Calif.

A The easiest thing is to strip the insulation off the ends of the fine wire and solder on a longer feeder of a gauge that's easier to work with, before you install the LED. If the insulation is a varnish type, you can scrape it off with a hobby

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This maintenance-of-way device is a Herzog Multi-Purpose Machine. One of its many purposes is to pick up and distribute items such as ties from its integrated gondolas. James Cox photo

knife or burn it off with a soldering iron or match. After adding the extension, protect the joint with heat-shrink tubing.

Q I saw some kind of work train on my local BNSF line today that I've never seen before and was curious as to what it was. The thing that surprised me the most is it looks like double-stack well cars were converted to MOW duty. Is that the case?

James Cox, Portales, N.M.

A That's a Herzog Multi-Purpose Machine, or MPM. You can read about it on Herzog's website (long URL ahead):

herzog.com/innovation/on-track-maintenance-material-distribution-and-pick-up-machine/. It's not made of repurposed intermodal well cars, but rather is purpose-built. The walls of the gondolas that make up the center section of the machine are reinforced so the crane seen near the back can move between cars, picking materials out of the gons and placing them along the track. Among its many uses are distributing new ties for a tie-refurbishment project or picking up brush and debris cleared from the track after a storm. It's a cool-looking machine that would make an interesting maintenance-of-way

movement on a model railroad. We've seen a custom-made N scale version for sale on Etsy, but as far as we could find no major hobby manufacturer offers them. Perhaps there's a niche there.

Q What year did the Burlington Northern abandon one side of the double track crossing of the Wisconsin River south of Prairie du Chien? Are there plans to restore it?

Jason Kelly, Manteno, Ill.

A I checked with Tom Danneman, MR's art director and an avid railfan who's familiar with the area. He replied:

"BN never had a double-track crossing of the Wisconsin River. BN had a single-track bridge over the Wisconsin, and later BNSF built a second one alongside it in 2005. Now, just the one new bridge is being used. As far as I know, there is no plan to rebuild the existing one, but I suppose BNSF could someday tear down the old one and put up a new second one to complete double track through there." **MR**

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Cody Grivno scratchbuilt the bulk area (left) and warehouse (middle) portions of Cargill Salt using assorted styrene sheet and shapes. He kitbashed the bagging area. Photos by the author and Bill Zuback

Building Cargill Salt, part 2

Cargill Salt, with its vibrant blue walls and sprawling footprint of approximately 50 x 400 feet, is hard to miss along South Carferry Drive on Milwaukee's Jones Island. Though modeling a scale-sized representation of the industry would have been neat, we simply didn't have the real estate on our 3'-6" x 13'-10" Jones Island project. However, I was able to model a reasonable approximation of the prototype by using the right colors and re-creating signature details.

In last month's issue, I shared how I modeled what I called the office and warehouse (I've since learned it's the packaging area) by kitbashing a couple of Pikestuff kits. This month, I turned to scratchbuilding to model the bulk area and warehouse sections of the operation.

I'll be honest, scratchbuilding takes patience and time. If you're like me, you'll probably make a few missteps along the way. I initially put the bases for the skylights (see step 2) on the subroof and started using peel-and-stick shingles. After about three courses, I realized the project probably wouldn't be ready until the August 2022 issue. Interested in keeping my employment with the magazine, I looked for faster options. I carefully removed the bases with a razor blade and sanded any rough spots. Then I installed embossed styrene shingle sheet (try saying that three times fast!) and put new bases on top of that. Problem solved.

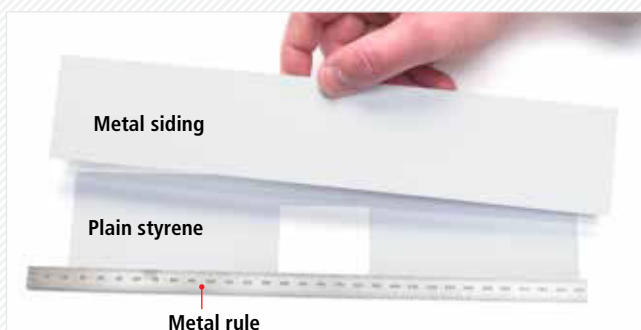
Though selective compression was necessary with this project, I carefully studied prototype photos looking for

signature features. Beyond the blue walls, here's what stood out to me:

- The bulk area has a bump-out for what I assume is a mechanical room.
- A concrete block firewall with a stepped roofline separates the bulk area and warehouse portions of the complex.
- Dome skylights dot the roof on the warehouse and bulk areas.

Knowing the key features I needed, I set to work cutting, shaping, and gluing styrene. Yes, the project took time and patience. Yes, there were some missteps along the way. However, once the styrene dust settled, I was rewarded with a pair of scratchbuilt structures that tied in nicely with the packaging building I kitbashed last month, giving our Cargill Salt plant a sprawling look appropriate for the available space.

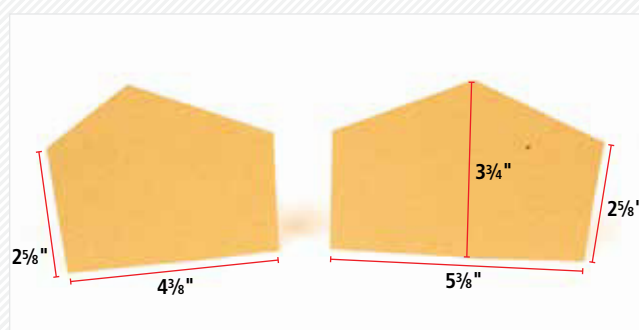
STEP 1 STYRENE PARTY



I started by cutting the side walls for both buildings from Evergreen .040" plain styrene. Each wall measures 2 $\frac{5}{8}$ " x 11". I cut door openings as necessary.

Then I attached metal siding, cut slightly oversized, to the .040" sheet using Model Master Liquid Cement for Plastic Models. I used double-sided tape to hold a 1/2" tall metal rule to the plain styrene. This is the same height as the concrete foundation on the packaging building.

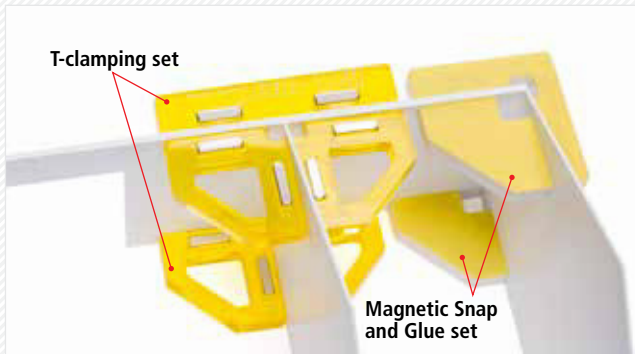
I put some heavy books on the walls and let the glue



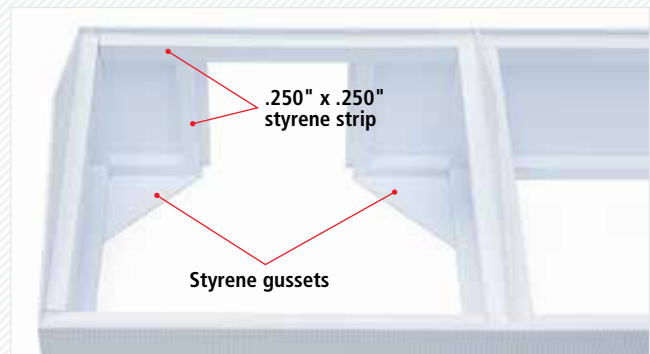
dry overnight. Then I cut off the excess metal siding and cleaned up the edges and door openings with sandpaper and jeweler's files.

I again turned to .040" plain styrene for the building ends (I cut a few extra end pieces to serve as interior spacers). Since the warehouse has a gable roof and the bulk area has a saltbox roof, I decided to make cardstock cutting templates. These made it easier to consistently cut the styrene to the same dimensions.

STEP 1 STYRENE PARTY (CONT'D)



With the walls, ends, and spacers cut, I was ready to begin assembly. To keep the parts at right angles I used Bachmann's Magnetic Snap and Glue set for the corners (Kalmbach Hobby Store no. 84013) and Rite-Way's T-clamping tool set for the interior spacers (Reynauld's Euro Imports no. 10092). Once the clamps were in place, I used plastic solvent cement to bond the styrene.



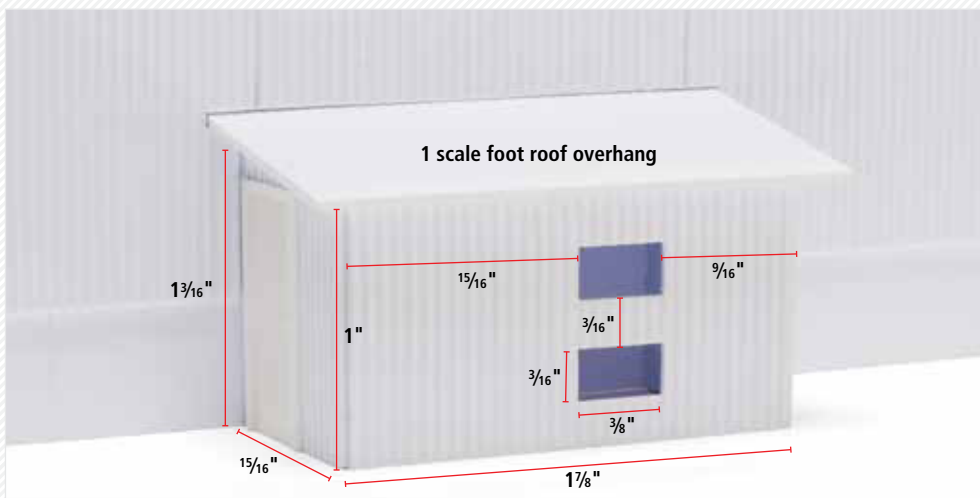
Some people may perceive the next couple of steps as overkill, but I've seen too many fine looking scratchbuilt structures warp after just a few years. To minimize the chances of that happening on the Cargill Salt buildings, I braced the interior with .250" x .250" styrene strip. To prevent the walls bowing in at door openings, I added styrene gussets.



After the $\frac{1}{4}$ " square styrene strip was in place, I installed City Classics 90-degree braces (no. 209) on the inside corners (the same kit also includes braces for outside corners). Before installing the plastic castings, I sanded the gluing faces to remove seams from the injection molding process.



Laminating the metal siding to the plain styrene added just enough thickness that the roof wouldn't seat properly. To remedy this, I attached a sheet of 400-grit sandpaper to a piece of plate glass and gently sanded the styrene. I put masking tape on the ends and interior spacers so I wouldn't remove styrene from those parts.



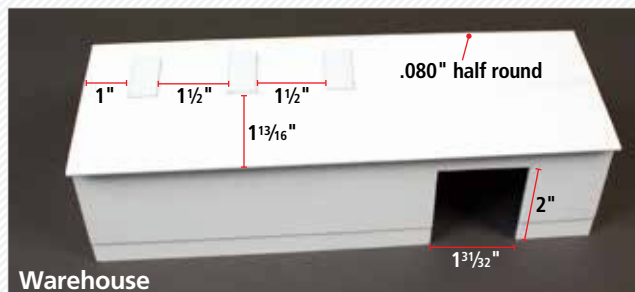
The bulk building has a small mechanical house on the side facing the tracks. I built this using the same Evergreen metal siding. I left the corners notched for .030" x .030" styrene strip trim, which I added later. The subroof, which has a scale 1 foot overhang, is .040" plain styrene. The door is from Pikestuff (no. 541-1102). The two rectangular openings are for Tichy Train Group work car windows (no. 8229).

STEP 2 UP ON THE ROOF



Use screed to spread glue evenly

I built the roof by laminating JTT Scenery Products asphalt shingles to .040" plain styrene sheet [Plastruct no. 91630 asphalt shingles could be used instead if you're unable to find the JTT roofing material – Ed.] I wasn't sure if plastic solvent cement would damage the .020" styrene shingle material. To be safe, I used Crafter's Pick The Ultimate water-based contact cement to bond the materials. After the shingles were attached to the subroof, I used a Microbrush to apply Bondene along the edges.



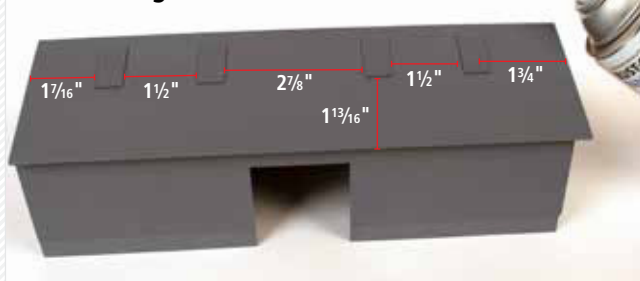
Warehouse

I attached the roof pieces to both structures with plastic solvent cement. The overhang on the sides of both buildings and the end of the bulk area is 2 scale feet. I filled the gap between the roof halves with .035" styrene rod; the ridge cap is .080" half round.

The full-size buildings have skylights mounted on frames that stand off the roof slightly. To simulate the frames, I cut $\frac{3}{16}$ " x $\frac{1}{8}$ " pieces of Evergreen V-groove siding. I attached the pieces, grooves down, with canopy glue.

STEP 3 PRIMING AND PAINTING

Bulk building



With the buildings assembled, I scrubbed them gently with a toothbrush dipped in warm water with a few drops of dish soap added. This removed dust, skin oils, and other impurities. After rinsing the buildings and letting them dry, I sprayed both structures with Rust-Oleum Painter's Touch 2X Flat Gray Primer.



I let the primer dry for 24 hours. Then I turned to the same Vallejo Model Air colors I used last month to give the buildings a unified appearance. I started with Concrete (no. 71.131) on the foundation. The Model Air line of acrylic paint is designed to be airbrushed with little, if any, thinning required.



I let the paint dry overnight before masking the foundation with blue painter's tape. I airbrushed the corrugated metal siding and soffits Light Sea Blue (no. 71.089).

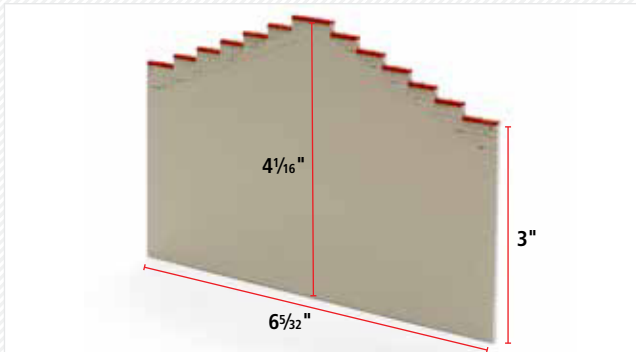


After the blue paint dried, I masked the building again, this time in preparation for painting the roofs. I airbrushed the asphalt shingles Dark Gray RLM42 (no. 71.123).



One more round of drying and masking. I finished up the painting by applying NATO Black (71.251) to the bases for the skylights on both of the structures.

STEP 4 THE FIREWALL



The full-size Cargill Salt plant has a concrete block firewall between the bulk area and warehouse. I modeled that detail by laminating Plastruct concrete block (no. 91620) to both sides of a piece of .060" plain styrene sheet. I used Pikestuff cap tiles (no. 541-1008) along the top of the wall. To finish the wall, I used a razor saw to carefully notch mortar lines on the edges.



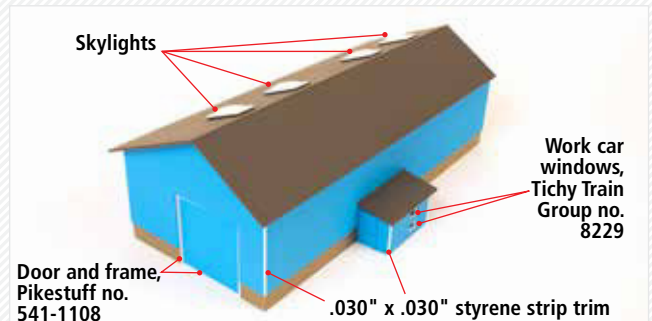
After cleaning the wall to remove impurities, I sprayed it with the Painter's Touch 2X primer I used earlier. Once that dried, I airbrushed the wall with Acrylicos Vallejo Model Color Stone Gray, thinned 50 percent with the same firm's Airbrush Thinner. I brush-painted the cap tiles Mahogany Brown. Finally, I applied a wash of Lifecolor Tensocrom Burnt Brown (no. TSC 211, in set no. TSC 02).

STEP 5 FINAL ASSEMBLY AND WEATHERING



The warehouse building (above) doesn't have corrugated metal siding on the ends. I used canopy glue to attach the firewall to the end that abuts the bulk building.

The end of the bulk building opposite the fire wall has metal siding. I used .030" x .030" styrene strip for the corner trim here and on the mechanical room. The roll-up



doors for both buildings are Pikestuff no. 541-1108 engine-house doors and frames cut to fit. I installed the frames and Tichy work car windows backwards on purpose.

Then I added the skylights, which I found in my scrap-box. I spray-painted the plastic castings Tamiya Matte White (no. TS-27) and attached them with canopy glue.

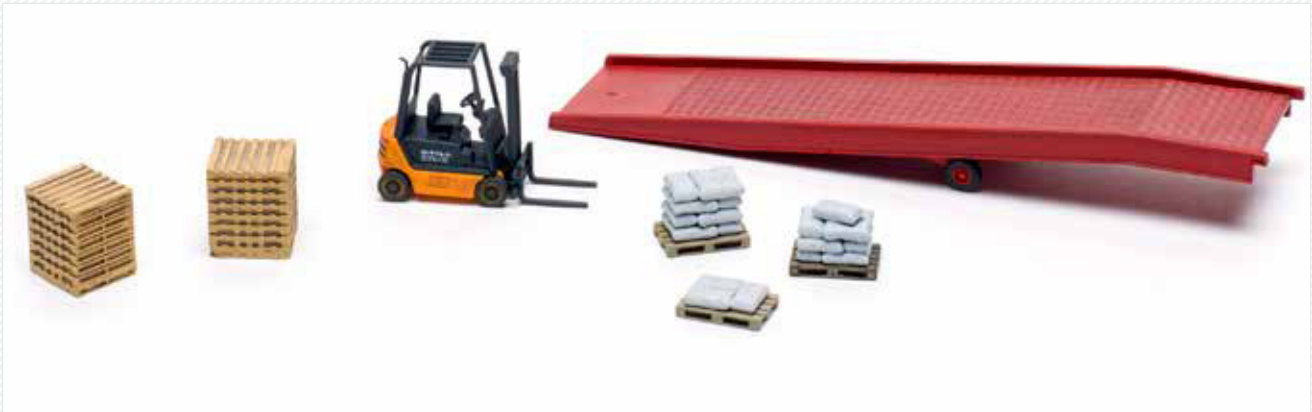


I drybrushed streaks of Light Gray (no. 71.050) on the roof. To keep the streaks vertical, I set a spent plastic gift card against the .080" half round ridge cap and used it as a guide (See, there is a reason to keep old gift cards).



Finally, I used an airbrush to spray Vallejo Oiled Earth Model Wash (no. 76.521) on the sides and ends of the buildings to tone down the bright blue. Then I sprayed Model Air Light Gray (no. 71.050) along the foundation.

STEP 6 DETAILS



In **Google Street View** and satellite images, I noticed there were lots of loaded and empty pallets around the Cargill Salt plant. I modeled the loaded ones using Walthers SceneMaster pallets and sacks (nos. 949-4129 and 949-4130, respectively) and the empties with Classic Metal Works Mini Details (no. 20238). I again turned to Walthers (no. 933-4130) for the portable loading ramp visible in satellite images. A Wiking forklift will complete the scene.

Friend and fellow modeler Eric Gust supplied the prototype photo, taken in a structure on Milwaukee's outer harbor, for the bulk building. I attached the image to a piece of cardstock with spray adhesive and used tacky glue to secure the viewblock to the styrene. [MR](#)



Materials list

Acrylicos Vallejo paint (Model Air unless noted)

70.846 Mahogany Brown (Model Color)
70.884 Stone Gray (Model Color)
71.050 Light Gray
71.089 Light Sea Blue
71.123 Dark Gray RLM42
71.131 Concrete
71.251 NATO Black
71.261 Airbrush Thinner
76.521 Oiled Earth (Model Wash)

City Classics

209 corner braces

Classic Metal Works

20238 pallets

Evergreen Scale Models styrene

220 .035" rod
242 .080" half round

409 .250" x .250" strip (2)
4040 V-groove siding
9060 .060" plain sheet
14527 .040" metal siding
19040 .040" plain sheet (2)

JTT Scenery Products (Model Rectifier Corp.)

0597440 asphalt shingles

Lifecolor Tensocrom Active Surface Agents

TSC-02 Set 2

Pikestuff

541-1008 cap tiles
541-1102 personnel door
541-1108 roll-up enginehouse doors (2)

Plastruct

91620 cement block

Rust-Oleum Painter's Touch 2X

249088 Gray Primer

Tamiya

TS-27 Matte White

Tichy Train Group

8229 work car windows

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949-4130 sacks

Wiking

0664 01 Still R 70-16 forklift

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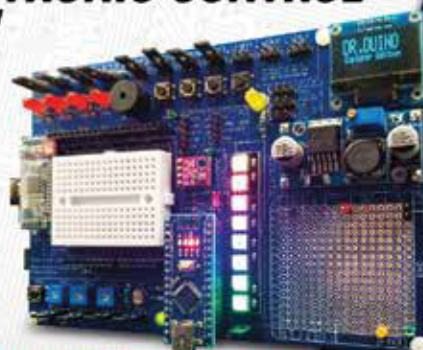
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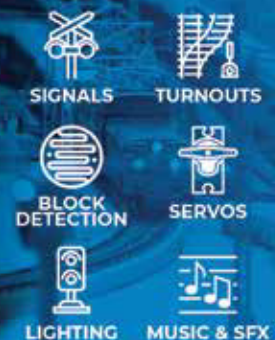
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Engine no. 24 hauls a freight out of Kingfield headed for Strong. The trees surrounding the track block the view of the next scene and create a canopy over the tracks. Contributing editor Lou Sassi shares his scenic techniques.

Through the woods

Using trees to create view breaks and set a mood

By Lou Sassi • Photos by the author



1 Fine specimens. Lou's wife and "company arborist," Cheryl, built two maple trees that will provide the overhanging crown of branches in the final scene. Learn how she models trees in the April 2019 and March 2020 issues of MR.



2 Add a bit of grass. Cheryl applied wood glue to Walthers SceneMaster grass mat and pressed it in place to represent tall grass, brush, and weeds. Tweezers help keep the glue off her fingers so the scenery materials don't stick to her.



3 Stones and dirt. Cheryl glued down small stones and dirt with diluted white glue after wetting the area with alcohol.



4 A tree grows in Maine. After applying Aleene's Tacky Glue to the tree, Cheryl pushed it into place.

As work progressed on my On30 Sandy River & Rangeley Lakes model railroad, it became apparent that having strategically placed view blocks would not only enhance the viewing experience but also make the railroad appear larger. I also had been thinking about replicating the look of prototype short lines in the Northeast, where the trees on either side of the railroad often hung so far over the right-of-way that they formed a canopy over the tracks.

Placing trees, made by the company arborist, at either end of Kingfield on my layout would work nicely to create both effects. (For a description of my wife, Cheryl's, tree making techniques, see the April 2019 and March 2020 issues of MR).

The trees we needed for this project are shown in **1**. The other materials in the box on the next page. The process involved planting the two maple trees in the field at the south end of Kingfield, north of the Winter Store. Cheryl had already added a large maple next to the Texaco station on the opposite side of the right-of-way in that area that would form the other

side of the required canopy. She started by adding tall grass, brush, and weeds, **2**, to the field around both trees, using the materials in the list.

The field was originally covered with a 50-50 mix of MiniNatur 6.5 mm spring and 6 mm autumn static grass I applied with a static grass applicator. Over this Cheryl added random sized pieces of a Walthers SceneMaster "tear and place" summer meadow grass mat along with clumps of Woodland Scenics light and medium green Fine-Leaf Foliage and light and medium green grass tufts. She also added clumps of Woodland Scenics' light green, medium green, natural straw, and harvest gold field grass; Noch yellow flowering grass tufts; and a few sprigs of Scenic Express SuperTrees.

Then she interspersed natural products, including clumps of wild oregano from her garden, plus small sticks, stones, tufts of natural field grass, and dirt accumulated from upstate New York fields and roadsides. The larger stones, grasses, and brush were glued in place using full-strength wood glue. An application of 91 percent alcohol followed by white glue **3** diluted



5 Finish planting. Cheryl added dirt around the base of the tree to blend it with its surroundings.



6 Leave no trace. After Cheryl smoothed out the dirt with a soft-bristle brush, she added leaves and small sticks.



7 Final wash. Cheryl brushed on a light wash of Model Master acrylic paint to blend all of the colors.

Materials list

Aleene's Tacky Glue

FG172 harvest gold
FG173 light green
FG174 medium green

Model Master paint 4877 Earth flat

Grass tufts
FS771 light green
FS770 medium green

Noch

528-7026 blooming yellow
flowers

Fine-Leaf Foliage
1131 medium green
1132 light green

Scenic Express SuperTrees scraps

Miscellaneous

91 percent isopropyl alcohol
Field grass
Fine and medium dirt
Leaves shredded in a blender
with water
Small stones and twigs
Wild oregano
White glue (diluted 2 parts
water to 1 part glue)
Wood glue

Walthers SceneMaster 949-1127 Scene Master "tear and place" summer meadow matting

Woodland Scenics Field grass FG171 natural straw



8 More trees. Engine no. 10 heads into the white birches as it leaves Kingfield. Cheryl made these in the March 2020 issue.

two parts water to one part glue was used for the sticks, small stones, and dirt.

Once all the grasses and ground cover were in place, Cheryl planted the trees. After applying a bit of Aleene's tacky glue to the mounting pin of each tree, she pushed them into position **4** and added fine to medium textured dirt **5** spread around their bases with a soft bristle brush. This was followed by leaves and small sticks **6**. Again, everything was saturated with alcohol, then glued down with diluted white glue. Once the grasses were glued in place, they were all given a wash of highly thinned Model Master acrylic Earth flat **7** to make the colors blend better.

A white birch grove was added at the opposite end of Kingfield to create the same "through the woods" effect while at the same time separating the main part of Kingfield from the adjacent scenes **8**. **MR**

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Kitbashing a Conrail

If your model railroad has a signature locomotive, you might have to make it yourself

By Dave Abeles

Photos by the author

There are certain locomotives that come to define a piece of railroad. Some branches and even entire divisions can be quickly identified by the presence of certain motive power. From the steam days through the transition era, most railroads had locomotives unique or distinctive to their rosters, and in many cases, these locomotives became ubiquitous on certain lines.

Although locomotive rosters have become more far more homogeneous with increasing standardization (not to mention the development of pooled power arrangements), part of the enjoyment of modeling a prototype railroad and operation is to include details and equipment that help set a place and era.

Locomotives especially help set that tone. For Conrail's Albany Division from the mid-1980s through the 1990s, the focus of my HO scale Onondaga Cutoff layout, that locomotive was the General Electric C30-7A.

My Onondaga Cutoff, as part of Conrail's Albany Division, requires the C30-7A model in order to capture the look of the railroad in that era. It's a necessary addition to the roster. With no models available in plastic, I turned to kitbashing to add the unique carbody to the operation.

Start with the long hood

I began with an Atlas C30-7. While the model was last released in the 1990s, it's still available from many hobby shops and online vendors for reasonable prices. Thanks to the fact that the C30-7A shares the C30-7 frame, truck spacing, and major carbody dimensions, I had a great starting point for the C30-7A.



I reviewed photos online as well as from published resources such as *Conrail Motive Power Review 1987-1991* (Withers Publishing) to determine the carbody differences and to decide on an approach to the model ❶, page 36.

A comparison of the cab, hood, and radiator details that differ between each model shows a variety of door and air intake differences. While scale drawings for the C30-7A have been hard to come

by, I examined photographs to determine the simplest way to create the proper door and intake spacing.

Knowing that these units had a 12-cylinder diesel engine, the same as the B23-7, I also compared the long hood to that of the smaller B23-7. As it turned out, the B23-7 hood – including the six tall engine doors, the exhaust stack, and the radiator section – would be a perfect starting point ❷. An added bonus is that

C30-7A

Conrail train NFSE, from Niagara Falls to Selkirk, N.Y., tops the grade at Ram's Gulch at CP 282 on Dave Abeles' HO scale Onondaga Cutoff. Conrail C30-7A no. 6577 is in charge of today's NFSE. Dave shares how he kitbashed this scene-setting Conrail locomotive.



the Atlas B23-7 has more modern tooling than the firm's C30-7, which is especially apparent in the radiator grills on the top of the long hood.

I began by disassembling the C30-7, removing the shell from the chassis and then the hoods and cab from the walkway assembly. The cab, chassis, and walkway were set aside; conveniently, they can be used for the C30-7A without significant modification.

I removed the cab from the Atlas B23-7 shell and set it aside to install later. On the long hood, I located the first cut just ahead of the six tall engine room doors, then followed the old engineering motto: measure twice, measure again, cut once. I used a miter box and a razor saw to make square cuts. I worked slowly and carefully, letting the tool do the work. Once the cut was made, I filed the edges smooth and set the body aside.

I moved to the C30-7 shell next, where a variety of cuts are required ³. The first is ahead of the eight tall engine doors. However, additional full-height cuts are needed for the air intakes behind the cab.

While the intakes are similar to those on the C30-7 carbody, they're located farther down the long hood from the cab on the C30-7A, behind the third stanchion hole on the frame instead of



1 The first cuts are the hardest! Using reference book photos, Dave cut the C30-7 shell (in blue) and the B23-7 shell (gray) to begin creating the long hood.



2 Bringing up the rear. The B23-7 shell provides the entire rear of the long hood, with the addition of extra intakes from Hi-Tech Details.



3 Critical test. It is critical in a major kitbash to test-fit components. Here, the unaltered Atlas C30-7 frame is used to test the assembly of other components.

between the second and third holes. Therefore, another full-height cut is needed on the C30-7 shell, ahead of and behind the air intakes. I then cut the proper length of the cabinet door section of the B23-7 shell to splice ahead of the air intake section **4**, page 38.

With any sort of major kitbash, I find it helpful to do periodic “check-up” loose assemblies to see how things are fitting. This is where the common walkway and frame came in handy, allowing a positive check where I could see if any issues with the body shell needed adjustment before assembly. Once everything lined up, I used plastic cement to glue to different segments of the long hood together, carefully lining up the components and checking each joint with the walkway to ensure a good final fit.

While the full-body cuts and new joints cured, I focused on other details that characterize a C30-7A. Extra radiator grill intakes from Hi-Tech Details are necessary, seen in **2**. These were added to the blank Atlas radiator doors under the overhang. On the right side of the radiator section, I created an access door from styrene bits and glued that in place to match photos **5** on page 39. I added the proper “bathtub” GE stack from Hi-Tech Details as well at this time.

Frame updates

Next, I moved to the frame. While the overall dimensions are correct, some changes are needed. First, I modified the battery box doors on the left (conductor’s) side of the walkway casting.

I removed the rivets and the part of the door on the tall riveted access panel that protrudes below the line of the adjacent doors on the access panel closest to the front steps, **6**.

Use a sharp chisel blade to get the look (and just as importantly, to avoid injury). I used putty to fill the depression between the doors to create a large, continuous door that matched prototype photos. I used styrene bits to add the hinges below, and then turned to a no. 64 bit to open up the battery box latches.

For the corner steps, I used a razor saw to remove the four cast steps on the C30-7 walkway casting. After filing the sides smooth, I installed three etched brass GE steps from A-Line, **7**.

Putty and details

While the steps cured, it was time to return to the long hood and to the process of applying putty to the joints. While

more experienced kitbashers may have cleaner cuts, mine required three applications of putty. After each application cured, I carved and sanded each layer.

Once I was happy with the joints, I removed the cast-on headlight bracket on the short hood, while avoiding the sand fill cap. After all the putty fully cured, I scribed in new cabinets behind the cab to match prototype photos using a dull no. 11 blade in a hobby knife. I then glued the completed hood and nose assembly into the walkway.

For the cab, several changes were needed. As molded by Atlas, the C30-7 headlight is in a rectangular box. Thankfully the B23-7 cab comes with the correct rounded headlight casting and better-detailed number boxes, again from the more modern tooling. I removed the older cab casting and substituted the B23-7 casting, glued in place as needed.

The change required re-drilling the headlight hole and quite a bit of filing for the clear plastic light bar casting to fit through the cab wall. I used black art paper as a light block behind the cab and on the bottom of the light guard.

I added the Hi-Tech Details GE anti-climber casting to the front walkway and a Details Associates cab signal box to the walkway behind the cab on the left side of the locomotive. Thanks to the Conrail Modelers group on Facebook, I found that one of the members there used Shapeways.com to create custom GE marker light mounts in HO scale, which made the installation of the distinctive Conrail marker lights simple. Grab irons also were bent and installed at this time.

I used Smokey Valley brass stanchions for the handrails and bent .015" brass wire for the front and rear end handrails. I used .015" steel wire for the side handrails for extra stiffness. The Smokey Valley stanchions needed new holes to be drilled in the walkway casting, as they didn't fit the Atlas part (they were made for Athearn GEs). Stanchions for each railing go first, then the railing itself.

I soldered the stanchions to the handrails. I used a simple pencil iron, paste flux, and electrical solder for a quick and extremely strong joint. I was nervous about that process, since that too was a first for me, but I'm pleased with the result.

After the addition of other details – including a Details West Leslie RS-3L horn casting, Details Associates Sinclair antennas, and cab details including the rain gutters and flag holders I fashioned



Conrail C30-7A 6571 leads 6585 and another C30-7A through CP286 in Syracuse, N.Y., on westbound TV13, a Boston-to-Chicago intermodal train on March 27, 1998. No. 6571 has been repainted at Conrail's Juniata Shops in Altoona, Pa., as evidenced by the black-on-white number boards and bold-font cab numbers.

The GE Dash-7s make their debut

Long the second fiddle to the Electro-Motive Division (EMD) of General Motors due to reliability and maintenance concerns, GE representatives spent extensive time in the field in the early 1970s with its customers, asking questions and riding with crews to learn how to improve the products.

This process resulted in a complete redesign of the catalog offerings in that time. This new series of locomotives was fittingly cataloged as the "New Series" or "1977-series" locomotives.

While the external appearance still had plenty of similarities with older GE "U" series locomotives as well as the same 7FDL diesel engine and GE752 model traction motors, several key spotting features set the new designs apart. These include a wider area on the long hood adjacent to the large GE radiator section with its telltale "wings" on the end of the long hood.

Conrail was in a unique situation at the time – a new company having been launched in 1976 by the federal government from seven bankrupt railroads. The new management team was charged with reinvigorating the Northeastern railroad scene. This included a need for hundreds of new locomotives to replace the ill-sorted mish-mash of tired locomotives inherited from predecessor roads, most of which were in poor mechanical condition and were suffering from decades of deferred maintenance.

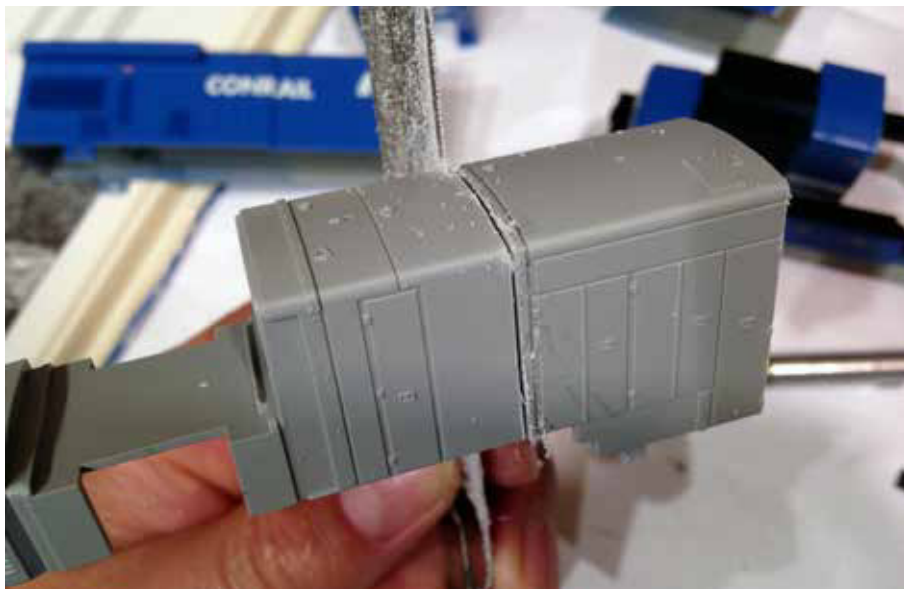
Given this timing, Conrail became a purchaser of many different locomotives from GE's 1977 line. Like other railroads, Conrail's mechanical forces adopted a "-7" in naming the new locomotives to denote the classes for their roster.

More than 100 four-axle B23-7s arrived before 1980, and Conrail was also looking for larger six-axle power. The initial six-axle offering in the Dash-7 line was the C30-7, with "C" representing three axles per truck, "30" signifying 3,000hp developed from a 16-cylinder 7FDL diesel engine, and "-7" letting everyone know it was part of the new line. The C30-7 had only a small presence on Conrail, with 10 delivered in 1977 and rostered as 6600-6609.

Conrail wanted to order more C30-7s in the early 1980s. General Electric, however, had moved to an uprated 12-cylinder version of its 7FDL engine, also producing 3,000hp, but using less fuel. General Electric had produced several orders of 4-axle power, dubbed B30-7A, with this new platform for other railroads.

General Electric therefore offered Conrail a C30-7 equivalent with the new platform, designated C30-7A. Conrail ordered 50 of the new model, delivered in May and June 1984 carrying Conrail cab numbers 6550-6599. As it turned out, Conrail was the only buyer of the C30-7A.

Conrail's C30-7As were assigned to the shops at the massive former NYC yard at Selkirk, N.Y., southwest of Albany, for maintenance. There the new locomotives quickly came to dominate road freights on former NYC main lines west to Buffalo and east to Boston. – *Dave Abeles*



4 It's electric. The B23-7 hood also provided a good candidate for the increased length of the electrical cabinet on the C30-7A. Cuts should be made slowly and steadily – let the tool do the work.



Conrail C30-7A 6558 leads sister 6559 and stack train TV24 into CP285 in East Syracuse, N.Y., on Feb. 14, 1998. Both are Juniata Shop repaints into the "Quality" paint scheme. Solid sets of C30-7As were common across the Albany Division for nearly 20 years.

Conrail paint scheme evolution

My C30-7A is painted in Conrail's standard original paint scheme. Conrail kept that scheme from its origin through 1989, which included the blue with white safety striping, and white numerals on black number boards. The scheme was ordered on all new locomotives and applied on all repaints at Conrail's own shop facilities. Electro-Motive Division deliveries and in-house repaints all shared the Futura bold lettering font. New deliveries from GE did too, except that the cab numbers were less bold, a detail reflected in the Microscale sets.

In 1989, new deliveries began to arrive with black numerals on white number boards, and in-house repaints also had the new detail. The Federal Railroad Administration (FRA) began to require reflective frame striping on new or repainted units in the early 1990s. Conrail added white reflective striping to the sills of all deliveries and repaints. Finally, in the spring of 1991, Conrail began a continuous-quality improvement program and advertised it with new "Conrail Quality" lettering on GE C40-8W locomotives delivered new to Conrail. All further deliveries and eventually, in-house repaints of all units, including C30-7As, followed suit. – *Dave Abeles*

out of styrene – I was ready for primer and paint. I used Testor's Aircraft Gray for primer. After the primer cured for two days, I inspected the joints.

Paint and decals

For the top coat, I used Scalecoat II Conrail Blue from a spray can. Each can was warmed in hot water until it was warm to the touch. This process lowers the paint's viscosity to help ensure details won't be hidden.

While the blue paint cured, I installed a LokSound Select Direct decoder programmed for the GE 7FDL diesel engine. I then replaced the stock Atlas sideframes with new Atlas sideframes from its C40-8W, which fit perfectly and include the correct exposed roller bearings and profiles. I masked the mechanism and wheels before giving the underframe a coat of Testor's flat black enamel paint.

I used Microscale decals to decorate the locomotive in its as-delivered paint scheme. I used white enamels to add the safety ends to the handrails, grab irons, and uncoupling levers. Testor's Dullcote sealed the decals and evened out the appearance of the model.

After the Dullcote cured for 24 hours, I used flat black enamel for the exhaust stains and gave the engine and underframe a coat of airbrushed grime. Black washes were used as panel liners. I used rust enamels for the darker stains around the battery boxes, followed by powdered pastels to add localized grime and rust as applicable. Finally, I installed window glass in the cab and used MV Products red lenses to represent the marker lights **8**, opposite. I'm pleased how those came out, too.

An indispensable addition

All in all, this was close to 60 hours of work. Even in a perfect process this would be more than 50 hours, which is a lot to spend on one locomotive when there's an entire layout to consider.

However, the C30-7A is indispensable to represent this era on my layout. While it took a long effort in research and construction to get to this finished state, I'm excited the Onondaga Cutoff will have this locomotive to capture some of the aura of its prototype.

C30-7As were "plain Janes" on the Albany Division through the 1980s and 1990s and ran through onto all major railroads in North America for more than 20 years. My 6577 will be a major

Materials list

Atlas

C30-7 locomotive
800200 B23-7 locomotive shell
11621401 Dash 8-40C sideframes (left)
11621402 Dash 8-40C sideframes (right)

A-line

29253 diesel steps (etched) Atlas C30-7

Detail Associates

1508 m.u. hoses
1806 Sinclair antenna
2202 grab irons
2317 windshield wipers (GE)
2314 windshield wipers (single offset)
2505 .015" brass wire

Details West

127 bell – frame mount
155 plow
190 RS-3L air horn
267 air hose

Evergreen

Sheet styrene (misc. thicknesses)

Hi-Tech Details

6001 Dash-7 to Dash-8 exhaust stack
6003 GE anticlimber
6005 intake grills for C30-7 versions

Microscale

87-614 CR diesels – GE
87-628 Conrail diesel – data & striping

MV Products

220 red lenses

Scalecoat

2075 6-ounce spray can Scalecoat II
plastic-compatible Conrail Blue

Shellscale

108 white on black number board
decals, 8"

Shapeways

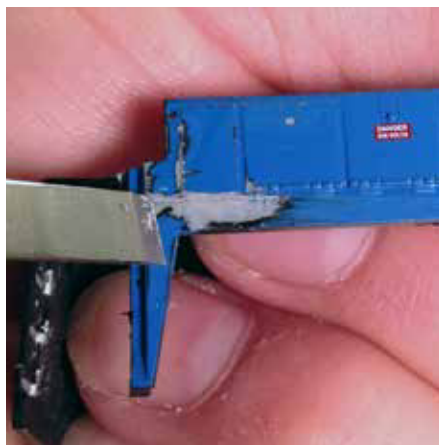
244A4D9BC Conrail GE marker lights

Smokey Valley

110 GE stanchions



5 New door. The right side of the radiator needed a new door, which Dave scratchbuilt from styrene sheet to match photos. Also visible here are the A-Line etched-brass steps.



6 Modified doors. The battery box doors on the conductor's (left) side of the frame need to be modified. Dave used a chisel blade to remove the bottom of the access panel, and here is (carefully!) dragging the edge back to create definition at the new bottom of the door to match adjacent doors.



7 The short of it. The short hood is seen here before primer, including new handrails, removed low headlight bracket, new etched brass steps, anticlimber, and modified frame.



8 Up on the roof. The radiator grills from the newer B23-7 are evident in this top-down view, as are the Hi-Tech Details bathtub exhaust stack and roof weathering.

contributor to moving big trains on the Onondaga Cutoff! [MR](#)

Dave Abeles is a frequent contributor to Model Railroader. He models a fictional Conrail bypass of Syracuse, N.Y. Dave's Model Railroader's Guide to Signals and Interlockings is in its second printing.



DIGGING

Some modelers put dirt on their layout; this one put his layout on dirt

By David W. Savage • Photos by the author

A toy truck led to my N scale layout. In 1996 I was cleaning out my crawlspace and rearranging the lumber pile there when I found a Mini-Tanks U.S. Army truck in the dirt. It had been missing in action since I played on the crawlspace's dirt floor as a kid. Taking a closer look, I also found the roads I had carved in the dirt for the trucks. After 30 years, the hard, red clay was still the same shape.

This gave me an idea. If the clay could hold the shape of a road for 30 years, it could hold the shape of roadbed and terrain. Instead of the expense and effort of removing all the dirt, putting up cinder block walls, pouring a concrete floor, then building all that benchwork and scenery, I would just sculpt a layout out of the dirt! After all, it only has to last another 30 years.

I had been modeling in Ntrak modules for 15 years, but it didn't satisfy my

urge to run long trains through realistic scenery. My railroading inspiration was the book *Zephyrs Thru the Rockies* by Harold Edmonson and David Goodheart. This was the train and the scenes I wanted to re-create.

I drew up 14 possible track plans, thus saving myself 13 digging mistakes not made. I carved a 2-foot test section of track, ballast, and scenery in the dirt. When it was still in good shape a year later, I started the big dig.

Digging in the dirt

Two-thirds of the basement is finished with a tile floor; the crawlspace in the other third is behind a 48" high retaining wall. I knocked a 3-foot wide hole in this cinderblock wall, which opened up the area for digging. To lift the dirt as little as possible, I shoveled, picked, and chipped dirt from the top down directly into a plastic tote bin.

The biggest task was getting the bins full of dirt out of the basement. The operation was too small for an excavator. So I invented my own primitive but effective conveyor.

My golf ball conveyor is a wood ramp divided by wood ribs into 9" sections. Each section holds one row of golf balls. I filled plastic bins with dirt and pulled them up the slope with a hook on a rope. The bin rolled up each row of balls 9" up to the next wood rib, then onto the next row of balls. When the tote moved far enough to clear a row, they rolled back down again. The bin is 30" long, so it would always have at least two rows to support it. If I let go of the rope, the bin wouldn't roll all the way down the ramp again. Since the golf balls rested at the bottom of each section, against a rib, the bin couldn't roll back more than 9".

Rain or shine, I filled and emptied at least 15 bins of dirt every day before going to work. Two months (and two

INTO N scale



① The California Zephyr rolls over the Clio Viaduct on the Western Pacific loop of David Savage's N scale layout. The terrain on this half of the layout – called "Uncle Dave's Indoor Garden Ry.," or UDIG – was carved out of the dirt of David's basement crawlspace. Those mountains aren't plaster; they're actual dirt and clay, just like the real thing.

boulders) later, I had a hill in my front yard, and my aisles, basic mountains, and canyons carved out. At this point I strategically placed steppingstones so I could crawl over the layout to service wrecks without destroying the scenery.

Surveying the terrain

To prove that I could successfully lay track on dirt, I decided to work on the Western Pacific (WP) section of what came to be called Uncle Dave's Indoor Garden Railroad (UDIG RR) to the point of running trains. I finished sculpting the dirt into rough shape. With each blow of my grubbing hoe, the dirt exploded into natural-looking rock faces. This was a big payoff, saving the time of conventional plaster construction.

Some mountains had to be built above the original dirt surface level. This was accomplished by laying 2" of mud on top, plopping large and small stones on,



② David had to dig aislesways out of the dirt down to the level of the floor of the adjacent basement. This photo, shot during construction of the aisles' retaining walls, shows Gore and Byers canyons on the Denver & Rio Grande Western loop. The Western Pacific is to the left and the Chicago, Burlington & Quincy is to the right.



David used an assortment of trowels, picks, brushes, scrapers, and other tools to carve his mountains, canyons, and rights-of-way from the dirt. At the bottom is part of a drawer slide he used to excavate tunnels.

then tamping damp dirt on and around the stones. Details were easily scratched into the dirt with a wire brush.

To guide my curves, I cut some poster board radius templates to 24" and 21". The 24" was my goal, but most curves got down to 21". I planned the easements in and out of the curves using the tried-and-true bent-stick method.

I selected a minimum track height of 35". Others may scoff at what they call a "helicopter view," but I model N scale because it gives me the high aerial viewpoint that I want. This is why N scale is so great; I can put a figure a scale 500 feet above the trains, standing atop my canyon walls with the goats and deer.

The grades required serious planning, because in most places I wasn't building up from a zero point, but rather digging down from one. At every 2-foot interval, or at any special point along the right of way, I assigned the track a relative plus or minus to the 35" level line.

To translate these heights into actual grades, I determined a point about 12" higher than the highest part of the dirt in the crawl space. This height of 60" would serve as my virtual ceiling line.

If you've ever installed a drop ceiling, you know how to use a water level. I mounted it on the wall with the plumb line at 60". Now at any point in the room I could use the water tube to locate that 60" height, then drop a ruler for a measurement below it. I would then dig a hole down to the plus or minus point I determined for that location. Then it was connect-the-dots with the holes. With a farmer's grubbing hoe and a pickaxe, I got the roadbed down to within 1" of the plotted depth.

Track and wiring

How do you lay track on dirt? First you must get the dirt flat. This was done by scraping with a putty knife and tamping with the long side of a 6" block of 2 x 3 lumber. When I encountered a rock that was too big to remove, I pounded it down into the earth with a hammer.

I taped a 1 percent riser on one end of an 8" torpedo level to verify the grade. I used Atlas code 80 flextrack in most areas, except in areas that would be viewed close up. In these areas I used Peco code 55 or 80. On bridges I used Micro Engineering code 55.

I spiked down the flextrack sections with 1/2" no. 19 flathead nails. In areas that will be photographed often, I ground off the nail head after ballasting. From my tests, I knew that the nail would rust in the damp clay, forming an arrowhead to hold it in place.

Since there is no "under the table" to hide wiring, I dug scale ditches and buried the track feeders. I ran the main bus along the aisle behind the retaining wall.

Now came the first test run. My brass *California Zephyr* model is very touchy. Its skirts restrict the truck pivot to a 21" minimum radius and the sideframes almost touch the rail. Both of these cause shorts if the track is less than perfect. I removed dips by loosening the track and shimmying with small pebbles between the ties and the roadbed.

Finishing the room

This part was frustrating. I wanted to build a train layout, but I first had to change a damp basement cinder block

pit into another studded, drywalled room of the house. My good friends got me over the hump. Ken Melchiorre finished the drywall, taping, and sanding. Using latex house paint, I painted the walls a light sky blue with some clouds and background scenery.

The aisle walls are 1/2" Wonder Board, which is used as a base for tile flooring. I connected these from behind by a vertical 1 x 3 board. I then screwed 6" bolts through the Wonder Board at the 1 x 3 joints, anchoring them firmly into the dirt with 5" of thread. Over time, rust bonds the bolt to the dirt.

The floor was filled like a sidewalk, with 3" of crushed stone and 3" of concrete. I then covered the Wonder Board with wallpaper that looked like rock and stone. I finished the aisle floor with the same blue and tan tiles used on the main basement floor.

Digging deeper

Now that all the climbing over the dirt to do the drywall was finished, I could cut valleys and tunnels in the terrain. This finished the heavy dirt lifting. After I removed the last bin of dirt, I dismantled the golf ball conveyor.

To suppress dust and fix the terrain in its shape, I soaked the dirt with a garden hose, then applied two coats of light gray latex paint. I diluted the first layer 50/50 with water so it would better penetrate the dirt and seal it. Then I applied the second coat of paint full strength to make a durable covering.

All tunnels on the layout are excavated like the prototypes, tapped through the dirt at track level. I used a long, flat, metal drawer slide to dig with. When a dig from both ends met in the middle, I pushed a dust brush through the tunnel. When the brush could be pushed completely through, the tunnel would be clean of loose dirt and big enough for both trains and fingers to rescue derailments.

At least that's how I dug most of the tunnels, which up until that point had been no longer than 18". But then I wanted to dig my version of the 6 mile long Moffat Tunnel. My friend Ken cut teeth in one end of a 5-foot section of 2" PVC pipe. We then started hammering it into the dirt along the track line. Before each hammer strike we aligned the pipe vertically with a level and left to right by line of sight. We removed a dirt plug between 2 and 4 inches long each time we removed and cleared the pipe.



3 David scratchbuilt the Moffat Tunnel house on an extruded-foam insulation board base. This section and the track beyond it are removable in case he needs to retrieve a crashed train from inside the 4-foot-long tunnel.

After getting 2 feet in, the pipe started to get stuck. I used the drawer slide to widen the tunnel. This gave the drilling pipe some wiggle room. Once finished, the tunnel was lined with a 3" aluminum rain downspout to prevent cave-ins.

The Moffat Tunnel head house is scratchbuilt. I was lucky to find raised plastic letters for it at a train show. It and a small clump of extruded-foam insulation board scenery behind it are removable in case I need to get at the track tray inside the tunnel to retrieve a train.

Finished scenery and details

I sculpted dirt details like the Keddie Wye area with a no. 11 blade in a hobby knife and other fine clay-working tools. I colored the rock faces with diluted brown and black water-based paint washes. To apply ground foam, I painted on a 50/50 mix of water and white glue, then sprinkled it on. To make it stick to vertical cliffs, I sprinkled foam on an index card and blew quick puffs of air.

Water is Enviro-Tex Lite or Famowood Crystal Clear Glaze Coat, a two-part resin available at my local hardware store. For churning white water and waterfalls, I teased apart strands of fish tank filters, glued them in place, then coated them with Enviro-Tex and sprinkled them with glitter. More recently I found dryer fabric softener sheets pull apart to form nice ripples and are whiter, so they don't need any gloss or glitter.

The five ovals

I call the section I dug out of the crawlspace the UDIG Ry. (Uncle Dave's Indoor Garden Railway). But there's more to the N scale layout, which extends into the rest of the basement on conventional benchwork. That section is the East & Beyond, or E&B. Taken together, the layout is made up of five continuous-run ovals, each representing a different prototype main line.

As I mentioned earlier, the first section of the layout I completed was the Western Pacific oval. I cut the right-of-way into the cliffside and filled the river below with concrete. After a few derailed cars broke falling to this unyielding surface, I covered the concrete with "egg crate" foam from computer boxes. The long bridge above that river is plywood on aluminum L-beam, so it's tough enough to survive my climbing feet.

My friend Bob Scott challenged me to do a two-sided river valley, which I did beyond the Keddie Wye. I angled it so you can see down the length of the valley from the aisle.

I built my version of Clio Viaduct (see the photo on page 40) from four Micro Engineering steel trestles; the prototype has 10. Finally, a pair of short tunnels represent the Honeymoon Tunnels.

The Denver & Rio Grande loop occupies most of the UDIG. Here I run mostly the Rio Grande *Zephyr* and coal drags pulled by a Bachman DDA40x.

I love to hear the sound resonating in the canyons and out of Moffat Tunnel.

Salt Lake City is represented by a photo of Mormon Tabernacle and Union Station on the backdrop. I sculpted Castle Gate Rock out of the clay, but it was broken by a plumber who had to crawl on the layout.

On the D&RGW, I sculpted several canyons, including Buby, Debeque, Red, Gore, and Byers. Each is separated by a short tunnel. This let me bring each canyon wall to the edge of the layout aisle.

The buildings of Glenwood Springs are kitbashed Model Power hotel flats. The curved towers of the Athletic Club are made from Alumilite; I curved my mold as it was setting.

The interchange switches at Denver are on two wooden modules. To keep them seated in correct position, I made concrete footings underneath. Some Tortoise by Circuitron switch motors had to be mounted above ground, so I hid them in rock faces or buildings.

The west end of Moffat Tunnel hosts the Winter Park ski lift and a snow town with hotels, cottages, and some curious deer looking at a car crash.

The siding at Big 10 has an underground Tortoise. To protect it, I dug a hole 4" deep, laid the switch on a 3 x 5-inch sheet of waterproof plastic, and attached the Tortoise as normal underneath it. I then dropped two moisture-absorbing silica gel packs in a plastic bag and hot-glued it to the underside of the

plastic, around the Tortoise. The throw wire pokes through the bag and is also sealed with hot glue. The bag has enough slack for the wire to pivot. I then fitted the assembly into the hole, connected the rails with sliding rail joiners, and buried the wires in the dirt.

The Chicago, Burlington & Quincy oval starts in the crawlspace and extends into the basement. I bought the end of the loop from my friend Bob Dougherty, who had to move. I removed a row of cinder block from the retaining wall so Chicago's CB&Q Yard in the main basement could be connected to the UDIG.

On the other side of the basement from Chicago, also on traditional wood benchwork, is the fourth loop, loosely based on CSX. This climbs up to a second level, with Ntrak modules representing Philadelphia's 30th Street Station and other tracks around Philadelphia. The fifth loop, which circles the entire basement and crawlspace, represents the Union Pacific. This loop connects and interchanges with all four of the other loops. We run anything on this trans-continental line.

Automatic back-and-forth reversing circuits keep various commuter and short lines buzzing: a San Francisco cable car, two Chicago El trains, the Chicago-area Metra, Upper Darby Red Arrow trolley, Philadelphia's 30th Street West Chester local, and Philadelphia's SEPTA Aldan line.

Control and operations

I designed this layout in the late 1990s, when DCC was burgeoning. I have so many locomotives that aren't



4 Challenged by a friend to include a two-sided valley in his layout, David dug out Keddie Wye so the valley beyond could be seen from the aisle. He sealed and colored the dirt rock faces with two layers of latex house paint.

worth adding decoders to, so I decided to use a Digitrax Zephyr DCS50 on each of the five main loops. This would let me run direct-current locomotives independently on each loop using DCC address 0, a feature of the Zephyr system.

When I converted the layout from direct current to DCC, I started with the WP loop, then next, the D&RGW. Here I learned that N scale locomotives, especially first-generation ones from the 1970s, get dangerously hot, chirping in anger, when running or sitting in DCC address 0 mode. I decided to put a heavy-duty double-pole, double-throw toggle switch between the DCC and DC power packs on the D&RGW. Now when I run a DC locomotive, instead of using 0 mode, I can toggle power to the DC pack and keep my old engines happy. I did this for the WP loop, too.

The CSX loop is full DCC with a Digitrax DCS51 and a four-zone PW42 power manager. It is a single-track dog-bone; each end loop turnout has a Tortoise switch motor on a toggle that switches it from manual control or automatic. In automatic mode, a DCC Specialties PSX-AR block detector triggers the turnout so the train can exit the loop back onto the single-track main without human intervention.

The Union Pacific loop uses standard DC throttles. It's organized in four blocks; basically, one for each wall of the basement. It's being converted to DCC, also. For now, just the West End Boat Club module can be toggled to hand its tracks over to the CSX loop's DCC control.

With all five loops controlled separately, the layout can run in "show" mode or "ops" mode. Show mode is

running the seven automated back-and-forth commuters and one train on each of the main loops. In ops mode, we run train orders using the Westtown Southern Order Dispatcher program, which prints out Division and Department perpetual work orders. We use the UP trans-con loop to deliver set-outs to the interchanges with each of the other four divisions.

I also have fun letting guests run the railroad in "tour" mode. In this mode, operators stage their trains in the Chicago yards, run that oval, then interchange to the Denver & Rio Grande Western, and so on through all five loops. This run takes about 1½ hours. Depending on the person's interest in operations, I may give them a switch order like "Pick up all the trash gondolas from each division and take them to Fraser Fill dump on the D&RGW."

The reward

I'm having an open house, and the Jones Family are the next visitors. The wife, first through the basement door, looks down and stops short, concerned not to step in the train tray cut into the landing below her feet. She need not worry; it's covered with a ¾" Plexiglas lid. Then, when they step down and enter the room, most visitors stop, drop their jaws, and gasp "Oh, my God!" I feel this is a just reward for all the hard work I've done to create my railroad.

The Joneses can't get their two young kids to leave, so I pull out the box of kids' favors: toy trains, cars, planes, bouncing balls. Each kid picks one and happily leaves with the parental promise of a return visit. **MR**

Meet David Savage

David lives with his wife, Helen, and talkative orange cat, Molly. David is retired from a life of work, amateur ice-hockey, railfanning, and crawling under Ntrak modules. Other hobbies include gardening, nesting, Monopoly, and World War II and Napoleonic history. David and Helen hope for a day when it will be safe to buy and sell at train shows again.



Upgrading entry-level DCC systems



1 Two good choices. NCE's PowerCab, left, provides DCC track power without a separate box. Besides being a popular entry-level system, it's also popular as a portable decoder programmer.

The Digitrax Zephyr Express, above, shares a keypad and display with the company's UT6 and DT602 throttles, which can easily be added via the Loconet network.

Many modelers start out with entry-level Digital Command Control (DCC) systems. It's a way to get started with DCC if you don't have the money to buy a lot of equipment up front. You may have purchased an entry-level system from companies that you know offer upgrades, but now you're not sure what to buy next. I'll outline the options for two popular systems this month.

You may want to avoid an entry-level system if eventually you'll exceed the number of locomotives it can run, or if it won't be able to support enough operators, or if it doesn't support some other feature you'll want in the future. Otherwise, they can be an excellent choice. [See "A buyer's guide to DCC systems" in the July 2019 issue of MR. — Ed.]

The throttle is often what leads modelers to choose which system to purchase. After all, the throttle is the face of the DCC system. A

system's ability to support third-party wireless throttles or cell phone throttle apps opens up new possibilities. In the meantime, you're wondering what's next for your entry-level system.

Two companies that offer upgrade paths from their entry-level systems to nearly full systems are Digitrax (Digitrax.com) and NCE (ncedcc.com). Both companies' entry-level systems offer throttles that mirror their full systems. This is good news because you won't have to learn a new throttle when you upgrade, and you can keep using what you already own.

The Digitrax Zephyr Express and the DT602 (DCC Corner, December 2020) and UT6 throttles (DCC Currents, March 2021) now share nearly identical keypads, displays, and software.

The cab (throttle) for the NCE PowerCab and the ProCab also share common keypads, displays, and software. If you need more throttles for either of these

systems, you can buy them without having to climb the learning curve again.

In addition to power and throttles, modelers are often interested in adding wireless capability. Both companies provide for doing so. With wireless throttles, you don't need to place throttle panels around your layout, saving money that can go to your wireless receiver and throttles. The receiver can be hidden.

For an NCE PowerCab system, you have a few choices **1**. If you want a system that supports up to six cabs, you can

expand the PowerCab system by buying an SB5 Smart Booster and cable **2**. It comes with a power supply. This will give you a system capable of supplying 5A of track power, and you'll be able to move your PowerCab throttle to another cab bus jack without any trains stopping. If you need more than 5A, you can further expand your NCE system by adding one or more DB5 boosters. Both the SB5 and DB5 come with clear diagrams on how to hook them up.

If all you need is wireless capability for your PowerCab,



2 More power! The SB5 allows the basic PowerCab to support six cabs and allows the PowerCab to be unplugged from the network without your train stopping.



3 Cut the cables. The NCE wireless receiver allows you to get rid of your cables once you've upgraded your PowerCab system, or to use add-on wireless cabs.

you can buy NCE's RB02 radio base station receiver and have your PowerCab converted to a wireless cab **3**.

NCE uses a six-pin cab bus cable that connects its cabs with its command station. You'll need to interconnect the SB5 with a cab bus cable. If you add one or more DB5 boosters, you connect them with a smaller four-pin control bus cable. You can go to the NCE website and look at the manuals for these products. Have no fear; they're only a couple of pages long!

You can also go all out and buy an NCE Power Pro (PH-PRO) system. This is a full-blown DCC system. You'll be able to use your PowerCab throttle as a Pro Cab throttle with the Power Pro system.

If you want to use your smartphone with your NCE equipment, WiFiTrax (WiFiTrax.com) makes the WFD-30. It's an interface for NCE's cab bus that supports four smartphones. It requires neither a computer nor a connection to your home WiFi.

You can make cables or purchase them from NCE. The company can also make custom cables for you at a nominal cost. You may want to go this route if you only need one or two custom cables or are unsure of your ability to properly make a cable if one of



4 Make your Zephyr fly. The Digitrax DB210 booster will give your system more oomph to run more trains.

NCE's pre-made cables doesn't suit your needs.

The Zephyr Express system

1 can operate up to 20 locomotives at once, depending on their current draw, and can take advantage of other Digitrax products like its wireless transceiver or WiFi interface. Note that the Zephyr Express shares a nearly identical built-in throttle as the DT602 and UT6 throttles and their wireless counterparts.

To expand a Digitrax Zephyr Express system to power more trains, you'll need to buy one or more boosters, such as the DB210 (single booster) or DB220 (double booster), and power supplies, then connect them to the Zephyr Express via Loconet cables **4**. These boosters will require a power supply from Digitrax or one you supply.

If you need more throttles, any of Digitrax's throttles will work with the Zephyr Express. If you're on a budget and not going wireless at this time, you'll need to place one or more UP Loconet Universal Interconnect Panels around your layout. These panels will need to be connected to

each other and the Zephyr Express with Loconet cables.

If you're going with wireless throttles, you'll need a UR93 Duplex Radio Transceiver **5**. Locate it strategically for maximum radio coverage of your layout and connect it to your Zephyr Express with a Loconet cable. The new UR93 has more range than the older UR92.

You can also connect to your Zephyr Express using WiFi throttles or smartphones. Digitrax sells its LNWI Loconet WiFi Interface **6** if you don't want to use a computer connected to your home's WiFi system and loaded with Java Model Railroad Interface (JMRI, a free download at jmri.org). The LNWI supports four WiFi throttles or smart-

phones. Multiple LNWI's can be used if you have more smartphone users.

Digitrax's Loconet cable has wires that provide for the communication between throttles, command station, and other accessories. It also contains the communication between the command station and the boosters.

Digitrax sells premade cables or a kit to make your own. If you only



5 Radio equipped. The Digitrax UR93 wireless transceiver allows operators to use Digitrax radio wireless throttles.



6 WiFi connection. The Digitrax LNWI supports up to four smartphones running the app for your particular phone – WiThrottle for iOS or Engine Driver for Android.

need a cable or two, you may not need to invest in the kit to make your own.

If you go for WiFi throttle control, don't forget you can also use the TCS UWT-100 universal throttle (DCC Corner, Oct. 2020).

NCE and Digitrax offer lower-cost throttles if you don't need all the functionality of the full-blown throttle or want fewer buttons for your operators. Both companies' systems support a wide range of other DCC products, such as accessory (turnout) decoders and signals. For now, start expanding your entry level system with more boosters or throttles!

For quick links to manufacturers, part suppliers, and my website, bookmark WiringForDCC.com/dcc_currents.htm and use it each month. Note that I've recently upgraded my website to include security. **MR**



YOU CAN GO TO THE NCE WEBSITE AND LOOK AT THE MANUAL FOR THESE PRODUCTS. HAVE NO FEAR; THEY'RE ONLY A COUPLE OF PAGES LONG! — ALLAN



Athearn Genesis 2.0 HO EMD SD60M diesel

A newly tooled HO scale Electro-Motive Division (EMD) SD60M diesel locomotive has been added to Athearn's Genesis 2.0 line. The model, based on the three-window North American-cab version of the road locomotive, features ground lights, vinyl m.u. cables and trainline hoses, and molded traction motor detail on the gear boxes.

Meet "triclops." Electro-Motive Division produced the SD60M from January 1989 through June 1993. During the production run, 461 units were produced. The six-axle road locomotives, rated at 3,800hp, were equipped with a 16-710G diesel engine.

Electro-Motive Division offered the SD60M with three-piece windshields from 1989 to 1991. This is the version Athearn's new model is based on. In the railfan community, these diesels have been given the nickname "triclops." Union Pacific, Burlington Northern, and Soo Line were the only roads to originally roster this version of the SD60M.

Our sample is decorated as BN no. 9213. The full-size locomotive was built in January 1990. The model has a window on the front cab door, a modification made to the full-size units after they were in service for a few years. The American flags were applied between February and May 1991.

In November 2006, the unit received BNSF stencils but retained its BN road number and scheme. Since then, the SD60M has been renumbered twice, first to 8113 (in 2007) then 1404 (2017). Not long after its 2017 renumbering, the SD60M was repainted in BNSF's Heritage III scheme. Today, most former BN SD60Ms on BNSF's roster are used in yard service and on locals and turns.

The Athearn SD60M shell consists of an injection-molded plastic cab, body, and sill/pilot. The three-piece window casting and front door are separate parts. The roof, secured to the cab with magnets, is removable. Three seats, an engineer's control desk, a conductor's

console, and a rear bulkhead are inside the cab. No crew figures are included, but they'd be easy to add. Each side of the cab has a long sunshade and mirror. Wipers are attached above the front and rear cab windows.

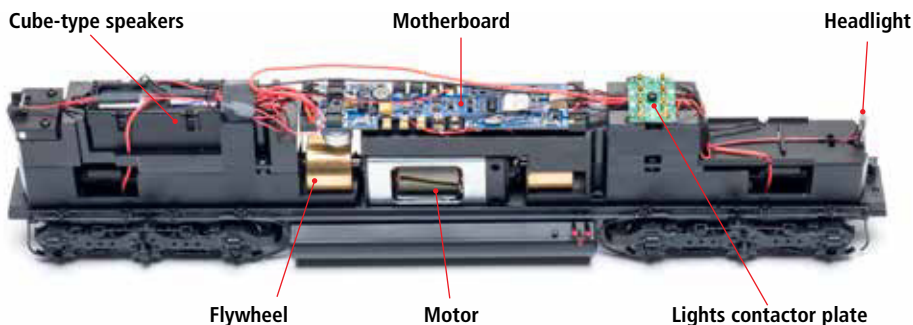
Factory-painted wire grab irons are secured to the cab and rear of the long hood. The handrails and stanchions are Celcon. Separate parts on the front pilot include a snow plow and m.u. cable. An uncoupling lever, three-cluster m.u. cables, trainline air hose, and m.u. receptacles are on both pilots.

The roof features a mix of molded and separate, factory-applied parts. A firecracker and small can antenna are the two separate parts on the cab roof. The air horn, lift rings, angled radiator fan grab iron, and three Q-fans are free-standing on the long hood. The dynamic brake exhaust is a separate casting. Though the exhaust is molded, careful masking and painting give it a 3-D look.

The bulk of the details on the sides of the long hood are molded. Separate parts include an electrical cabinet (brakeman's side), a brake wheel (engineer's side), and see-through dynamic brake intake vents (both sides).

An assortment of details are attached to the bottom of the sills, including cable bundles, an air filter with pipe, and a toilet drain. The fuel tank is a multi-piece assembly with separate parts.

The trucks are also well detailed. Our BN sample has rotating bearing caps, a speed recorder on the front brakeman's side truck, and brake line plumbing between the cylinders.



Here's what's under the shell on the Athearn Genesis 2.0 SD60M. A pair of cube-type speakers are located above the rear truck.

The BN SD60M is advertised as having deck-mounted strobe lights. The housings look a bit oversized compared to prototype photos. The lights, which accurately flash in an alternating pattern, look more incandescent than strobe-like.

Under the shell. Removing the shell is an involved process. First, I unscrewed and removed the draft-gear boxes. Then I removed a screw above the rear truck, just behind the fuel tank, on the brakeman's side. The screw over the front truck on the engineer's side is partially covered by the fuel tank, so I removed that, too. Finally, I opened the S hooks attached to the brake link chain and tension spring to release the metal chain.

The motor, framed by two brass flywheels, is secured with screws to the center of the chassis. The motherboard for the SoundTraxx Tsunami2 sound decoder is held in place by two plastic clips above the motor. A pair of cube speakers are mounted in a plastic housing above the rear truck.

By the numbers. The paint on our SD60M is smooth and evenly applied, with crisp separation lines between the colors. The lettering and warning label placement matches prototype photos I found online.

I compared the HO scale locomotive to prototype drawings in *EMD's SD60 Series* by Diesel Era magazine (Withers Publishing, 1996). The model follows or is within scale inches of published data.

Our sample is equipped with a dual-mode SoundTraxx Tsunami2 sound decoder, so I tested the model in both

PERFORMANCE CHARTS	
DRAWBAR PULL	4.8 ounces 67 free-rolling freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
7	Sounds on
9.6 (start)	2
10	7
11	16
12	27
13.8 (max)	40
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	4
7	29
14	59
21	70
28	71

environments. I used a Bachmann power pack to test the model in DC mode. The sounds came on a 7V, and the locomotive started moving at 2 scale mph at 9.6V. The model achieved a top speed of 40 scale mph at 13.8V.

Then I used an NCE PowerCab to test the SD60M in Digital Command Control (DCC). The model's speed range was more realistic. At step 1 the locomotive moved at 4 scale mph. The six-axle road unit topped out at 71 scale mph at step 28. The full-size SD60M had a top speed of 70 mph.

With a drawbar pull of 4.8 ounces, the SD60M is capable of pulling 67 free-rolling freight cars on straight and level track. On our Milwaukee, Racine & Troy staff layout, the road unit pulled 16 50-foot freight cars up a 3 percent grade.

While running the SD60M on the MR&T I noticed it would derail periodically. The track and wheel gauge were correct, and the gears appeared to be in good shape, so I reached out to Athearn. I learned that some, but not all, SD60M models had issues with derailling and the bearing caps falling off.

A post on the Athearn Facebook page noted in part, "Athearn is not advising any specific DIY repairs to these locomotives currently. Primarily because we do not want you to inadvertently damage the locomotive's fine details, but also because we're expecting the forthcoming solution to be a better fix requiring very minimal effort."

Athearn's model is well proportioned and has many railroad-specific features. As decorated, a pair of SD60Ms teamed with an EMD SD40-2 would look right at home on the point of a unit coal train.

— Cody Grivno, group technical editor

Facts & features

Price: With 21-pin NEM connector, \$249.98; with SoundTraxx Tsunami2 sound decoder, \$339.98.

Manufacturer

Athearn Trains

1600 Forbes Way, Ste. 120

Long Beach, CA 90810

athearn.com

Era: February 1991 to November 2006 (as decorated)

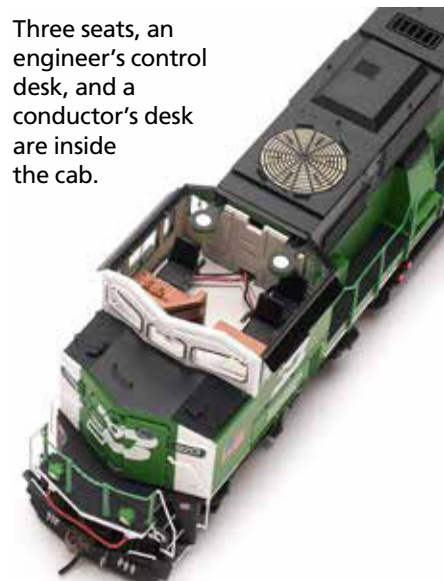
Road names: Burlington Northern (four road numbers), BNSF Ry. (BN patchout in two numbers, Heritage II and Heritage III in one number each), Canadian Pacific (with beaver herald in one number, without in two numbers), Norfolk Southern (Thoroughbred scheme, three numbers), and Union Pacific (as-delivered scheme, four numbers).

Features

- 40" metal wheel stubs on plastic axles, in gauge
- Etched-metal see-through walkway steps
- HTC gear boxes with traction motor detail
- Illuminated number boxes and ground lights
- Light-emitting-diode ditch lights and headlights
- McHenry scale couplers, mounted at correct height
- Removable roof secured with magnets
- Vinyl m.u. cables and trainline hoses
- Weight: 1 pound, 6.2 ounces



The SD60M has many separately applied parts, including wire grab irons, windshield wipers, and ditch lights.



Three seats, an engineer's control desk, and a conductor's desk are inside the cab.



Rapido N scale *The Canadian* 10-car set

The flash of light on fluted stainless steel made its way through our Canadian Canyons layout recently thanks to Rapido's new N scale *Canadian* 10-car set, and these models are available at your favorite dealer now.

The *Canadian* debuted in 1955 with all new cars from Budd of Philadelphia. Canadian Pacific ordered a total of 173 cars for *The Canadian* in 1953, at \$40 million, the largest order Budd would ever receive. Construction began in 1954, with delivery through spring 1955.

The Canadian started as a daily train with two sections, one from Montreal and the other from Toronto in the east running to Vancouver in the west.

Canadian Pacific soon decided passenger traffic was a losing proposition and cut *The Canadian* back to three times a week. Fares were raised as bookings decreased.

In 1978, the Canadian government formed VIA Rail Canada, which took over passenger operations from CP and Canadian National. *The Canadian* lived on. VIA Rail renovated the passenger cars in 1992, including updating the systems on board to head-end power instead of steam. The cars were renovated again in 2010, with most of the fleet still in service today.

Our samples from Rapido included a 10-car set in the VIA Rail Canada "Silver and Blue" scheme. I compared the cars with drawings in *The Passenger Car Library, Vol. 3: Western Railroads* by W. David Randall (2000, RPC Publications, Alton, Ill.) At first I thought the *Skyline* lounge car in our VIA Rail 10-car set had a mismatched interior, but then I checked the CP Rail Action Red sample we received and realized the interiors reflected changes made when the cars were renovated.

In addition to the partitions and window arrangements matching the drawings, measurements were within scale inches as well. Opening the cars was easy; I pried the sides apart with my thumbnails as I lifted on the sides of the screw-mounted trucks to free the floor and interior from the molded plastic body shell.

All of the cars are lighted and use the Rapido Lighter to illuminate or extinguish the lights. A magnet on the Lighter triggers a magnetic reed switch mounted on the circuit board carrying the interior lights. On our VIA Rail cars, red marker lights are installed on the ends of the cars. These are also triggered with the Rapido Lighter. All versions of the *Park-series* observation cars have working marker lights on the tail end.

Facts & features

Price: \$699.95, 10-car set; \$219.95, 3-car sets; \$74.95, individual *Skyline* cars

Manufacturer

Rapido Trains Inc.
500 Alden Road, Unit 21
Markham, Ontario, L3R 5H5 Canada
rapidotrains.com

Era: 1955-present, depending on scheme

Road names: VIA Rail Canada, Canadian Pacific in maroon or Action Red, and painted but unlettered

Features

- Body-mounted knuckle couplers
- Etched-metal stirrup steps and grab irons
- Lighted interiors and end marker lights
- Weight: 1.5 ounces, except sleepers, 1.6 ounces, matching NMRA RP-20.1

Photo-etched-metal grab irons, hand-rails, and stirrup steps add to the detail on the cars, along with etched-metal gates in the end doors of each car. Underneath the cars, a combination of molded and separately applied details give the cars a properly busy look. These details also match drawings in the passenger car book and photos in *Canadian Pacific Color Guide to Freight and Passenger Equipment* by John Riddell (1998, Morning Sun Books).

The metallic paint gives a realistic rendition of the stainless steel finish of the full-sized cars, and the fluting pattern matched photos of the cars. All of the lettering was sharp and opaque.

I took the 10-car train to our N scale Canadian Canyons project layout. In addition to looking fantastic in the Canadian Rockies, the cars performed well as they wended their way through the 13" minimum radius curves and Peco medium-radius turnouts.

Modelers of Canadian passenger equipment will be pleased with these cars. The train is accurately detailed and operates well, and the switchable lights are a fun upgrade to this included feature. – *Eric White, senior editor*



The VIA Rail Canada 10-car set includes, clockwise from bottom left, lounge/observation *Strathcona Park*, 4-8-3-1 sleeper *Chateau Vercheres*, 4-8-3-1 sleeper *Chateau Montcalm*, 4-4-5-1 sleeper *Butler Manor*, 4-4-5-1 sleeper *Carlton Manor*, baggage/dormitory 8609, coach 8103, coach 8117, *Skyline* 8501, and diner *Kent*.



Tangent HO 40-foot combo-door boxcar

Over the past 14 years, Tangent Scale Models has become well-known for its line of highly detailed HO and N scale models. That tradition continues with the company's latest release, a newly tooled HO scale Pullman-Standard PS-1 40-foot combination-door boxcar. The model has railroad-specific details, Pullman-style ladders and bracket grab irons, and Kadee scale couplers.

Our sample is decorated as Northern Pacific no. 3087, part of the railroad's 3300 to 3399 series built by PS under lot 8530 between December 1959 and January 1960. The cars were originally painted Metallic Brown with black ends, as depicted on the Tangent model. I found photos online of two cars from the series that were repainted green in preparation for the 1970 Burlington Northern merger. Photos suggest most of the cars survived in their as-delivered scheme until they were retired from service in the late 1970s and early 1980s.

The Tangent boxcar has a one-piece injection-molded plastic body with a separate roof. The roof on our NP sample has an etched-metal running board

with wire corner grab irons, Metallic Brown overspray on the sides and black overspray on the ends, and black paint along the seams.

The sides of the car feature crisp rivet and weld seam detail, a separate seven-rung ladder on the right side, and plastic stirrup steps. The plug door has free-standing door bars and levers. The grab irons on the left side of the car extended beyond the end just like they did on the full-size NP cars.

The B end of the car includes an Equipco brake wheel housing, a Universal brake wheel, a retaining valve, and a see-through brake platform. Both ends have a tack board, seven-rung ladder, grab irons, and an uncoupling lever.

By the numbers. I found prototype drawings of the NP 3000 through 3399 series boxcar under the EQUIPMENT tab at the Northern Pacific Ry. Historical Association website (nprha.org). The Tangent model closely follows published dimensions.

I took the boxcar over to our Wisconsin & Southern staff layout, where I put it in a train and switched some industries. The car performed

Facts & features

Price: \$52.95

Manufacturer

Tangent Scale Models
P.O. Box 6514
Asheville, NC 28816
tangentscalemodels.com

Era: December 1959 to early 1980s

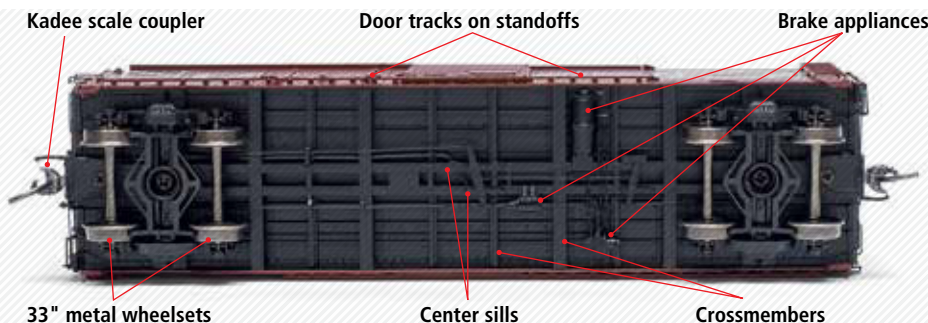
Road names: Northern Pacific, Milwaukee Road, and Union Pacific. Twelve road numbers per scheme; also available undecorated (MILW, NP, and UP body styles).

Features

- 33" CNC-machined metal wheels, correctly gauged
- 50-ton ASF A-3 Ride Control roller-bearing trucks with rotating bearing caps or 50-ton Barber S-2 solid-bearing trucks
- Kadee scale couplers, at correct height
- Pullman-style ladders and bracket grab irons
- See-through running boards and brake steps
- Three brake wheel and two brake housing options
- Two PS-1 end configurations
- Weight: 4.8 ounces, 1 ounce too heavy based on National Model Railroad Association Recommended Practice 20.1

without incident while being pushed and pulled. The car will easily navigate 18" radius curves.

This isn't just another 40-foot boxcar. Tangent Scale Models clearly did its homework on the PS combination-door boxcar. It's well detailed from the running boards to wheelsets. – *Cody Grivno*



The Tangent Scale Models 40-foot PS combination-door boxcar has a high level of underbody detail. The trucks on the NP car have rotating bearing caps.



JTC N scale 53-foot high-cube containers

While Jacksonville Terminal Co. has up until now stuck to producing accurate scale models of prototypical intermodal equipment, the company is branching out into fantasy schemes with its new Visionary Series. The first three offerings in this series let N scale modelers simulate interchange with the well-known railroads of the fictional Appalachian Lines: W. Allen McClelland's Virginian & Ohio (V&O), Tony Koester's Allegheny Midland (AM), and Steve King's Virginia Midland (VM). Jacksonville Terminal Co. (JTC) is now offering its accurately modeled, finely detailed N scale 53-foot cargo containers decorated in schemes for these three influential proto-freelanced railroads.

Though the layouts that made up the Appalachian Lines are gone, JTC's models bring the fictional railroads into the modern era with three sets of 53-foot intermodal containers decorated for the V&O, AM, and VM. The containers are painted white with the railroads' iconic gothic-letter heralds on the sides, and

the ends painted in a contrasting scheme using the railroads' official colors: royal blue and white for the V&O, red and yellow for the AM, and green and yellow for the VM. Each comes in a two-pack.

The paint jobs are exceptionally well done. The white sides make the containers perfect candidates for a subtle weathering job, and the colored ends really stand out. All but the very smallest printing is legible under magnification. The closure rods are molded-in details, but the accurate painting makes them stand out like separately applied parts.

The containers are injection-molded plastic, with the roof and sides a single piece; the floor is friction-fit. Steel plates are attached inside the roof, while three magnets are mounted to the inside floor. This makes containers stay stacked when well cars rock and roll through uneven track. The containers can be picked up by a magnetic crane, like the one from Walthers (part no. 933-3222).

According to my caliper, the containers' dimensions were all within fractions of a scale inch of the prototype.

Facts & features

Price: Two-pack, \$33.95

Manufacturer

Jacksonville Terminal Co.
9526 Argyle Forest Blvd.
Suite B2, no. 406
Jacksonville, FL 32222
jtcmodeltrains.com

Era: 1989-present

Road names: Allegheny Midland, Virginia Midland, Virginian & Ohio (all fictional schemes)

Features

- 6-42-6 side corrugations
- Injection-molded plastic body
- Magnetic bottoms and steel top plate
- Weight: .4 ounces each

We have a good number of intermodal containers and well cars in the MR workshop, so I tested the containers out with them. The containers fit into JTC's own N scale NSC 9-post 53-foot well car and stack with the company's 20- and 40-foot containers, as expected. They also fit in Kato's Gunderson Maxi-IV three-unit well car and stack with Kato 40-foot containers. But they won't stack with Kato 53-foot containers.

Intermodal traffic has brought to railroading a color and variety not seen on the rails since billboard reefers. Jacksonville Terminal Co.'s new Visionary Series containers offer N scale modelers a way to boost their railroad's container traffic while paying tribute to three of the all-time great freelanced model railroads.

— Steven Otte, associate editor



JTC's N scale containers come with steel plates inside the roof and three button magnets inside the bottom, allowing the containers to stack securely.



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- Color 1.5" LCD Screen
- Full numeric keys for easy Locomotive selection
- Fine speed control with a large encoder knob
- Removeable LocoNet® cord
- Forward/Reverse toggle switch with Braking
- Off/On switch, uses AA or BP600MH batteries

UT6
Utility Throttle
\$105.00 MSRP

UT6D
Duplex Utility Throttle
\$170.00 MSRP

View all features and *more*
on our website!

Find out more @ www.digitrax.com/throttles/

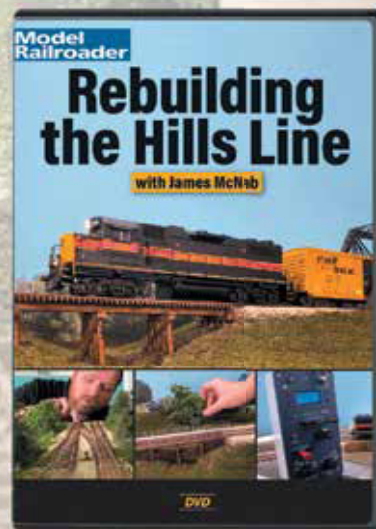
Expert Modeling Tips and Tricks!

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Operation made simple

Chesapeake and Delaware

(CAD) operates freight service over four New Jersey short lines with Central Railroad of New Jersey; Delaware, Lackawanna & Western; and Pennsylvania RR heritage. Two of these see regular excursion passenger service, and a third uses trackage rights on New Jersey Transit's busy Morris & Essex commuter rail line.

Chesapeake and Delaware meets this operations challenge with a hybrid of traditional timetable-and-train-order (TTTO) and current Northeast Operating Rules Advisory Committee (NORAC) rules. The company is a contemporary case study for my February column about operation on lines where only a single train operates, "Train on Branch."

Chesapeake and Delaware's Black River & Western includes former PRR trackage. Until Black River began operation in 1965, Pennsy's MG operator (Montgomery Street in Trenton, N.J.) relayed train orders from the A-Desk dispatcher at New York Penn Station. Kean Burenga, CAD president, explained that Black River inherited the Standard Code from PRR and continued TTTO operation until 2017. At that time, vice president of operations Scott Harris began preparing to expand CAD operation onto New Jersey Transit's Morris & Essex trackage, which was governed by NORAC.

Scott made clear his "the simpler, the safer" principle when I interviewed him,



Black River & Western Electro-Motive Division SW1200RS no. 1259 leads No. 21 with a lumber load through Flemington, N.J., on June 28, 2017. Photo courtesy Chesapeake and Delaware LLC

saying "It's a short-line necessity." The railroad strives for paperless operation. Crews use iPads for everything from car placement reporting to customer communication to federal hours-of-service records. However, crews must still carry hard copies of the rulebook, timetable, bulletin orders, and other documents.

Scott devised a system that blends TTTO with NORAC, including schedules that grant movement authority. There are no Rule 93 yard limits. Any trackage that might require yard limits is designated Rule 98. Both require restricted speed, but Rule 93 requires dispatcher permission and Rule 98 doesn't.

Schedules for regular trains are the backbone of TTTO operation. Schedules remain in effect for 12 hours; in other words, a regular train can be 12 hours late without losing its movement authority.

But CAD's schedules expire at the end of the calendar day, relieving crews of the 12-hour calculation.

Superiority is another element essential to TTTO. When two trains are scheduled to move in opposite directions, the inferior train must not leave its initial station until it determines that any superior trains due have arrived. Chesapeake and Delaware simplified this, too, dispensing with superiority. All trains are round trips operated by a single crew.

Here's an example. Black River & Western operated scheduled service between its interchange with Norfolk Southern in Three Bridges and a distribution site in Ringoes several times a week. No. 21 originated in Three Bridges, ran to Ringoes, and returned as No. 22. If No. 21 became late, the CAD rule cited above protected it against No. 22. Only when No. 21 arrived at Ringoes could the crew ascertain that all scheduled trains arrived and return to Three Bridges on No. 22's schedule.

If Black River had no cars to deliver, there is no need for a dispatcher to annul the schedule because it expires at the end of the day. If there is a hot car or other special movement on a day that isn't scheduled, an extra train can move on a NORAC Form D.

I mentioned crew use of iPads on the CAD system. Rule 716 satisfies a federal mandate which prohibits use of electronic devices when railroad operation is taking place. You'll hear crews transmit "716" on the radio, referring to the rule and suspending operation so use of the iPad may begin.

Contemporary short lines and regionals make attractive prototypes for modelers, and this prototype has lessons. Few of us record hours of service or have real-time contact with customers in our operating sessions. However, devising simple schedules like Black River's can make a session nearly paperless. It's almost magical, as if turning the clock back to a simpler time before rulebooks became bible-sized. **MR**



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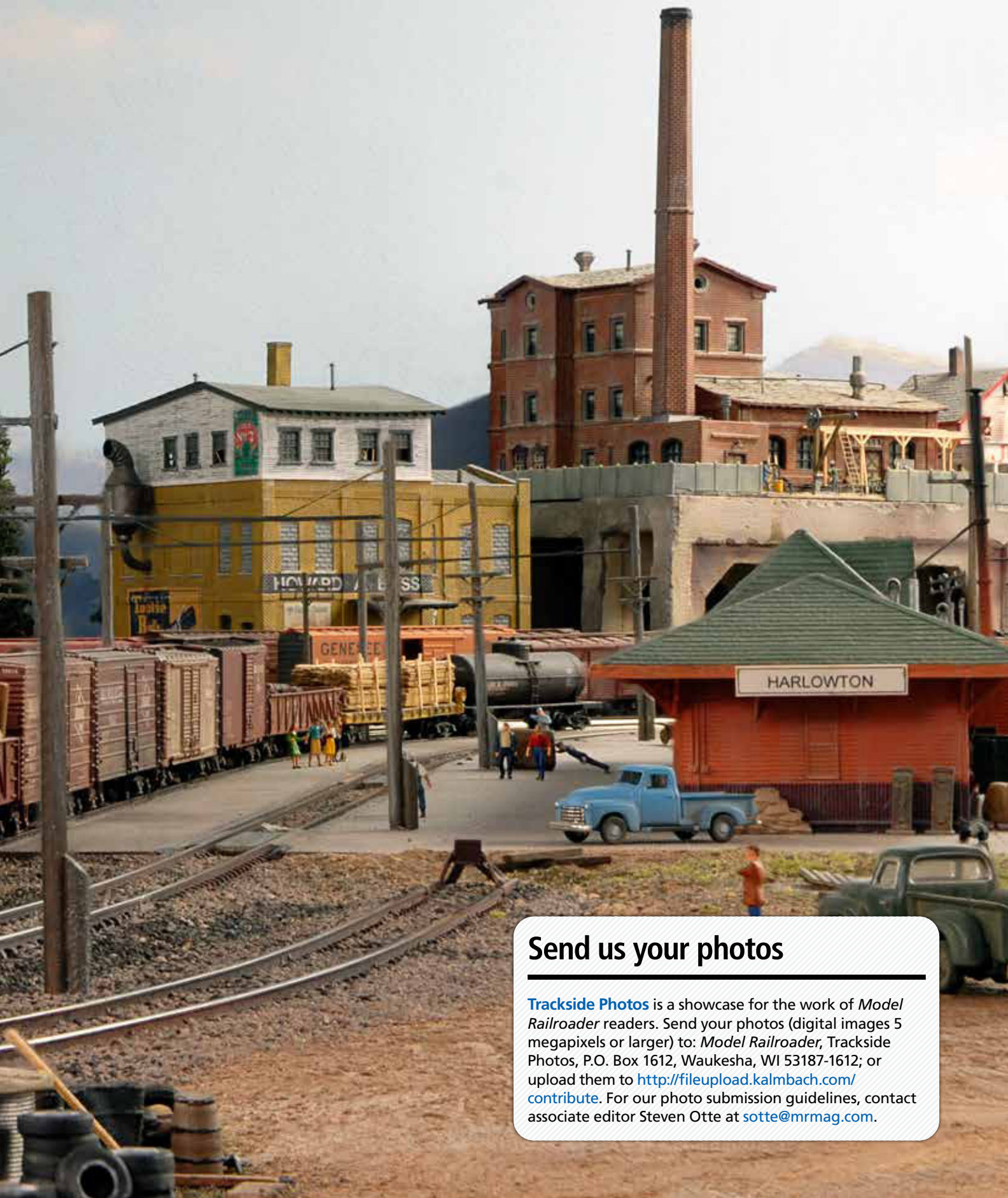
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In Harlowton Yard one morning in September 1953, Milwaukee Road "Little Joe" electric locomotive E76 couples onto its train for Time Freight 263, westbound to Avery, Idaho. Dan Lewis of Rochester Hills, Mich., photographed the action on his N scale MILW North Montana Line. The locomotive is a brass Overland Models model. The station is scratchbuilt to follow the prototype. Dan also painted the backdrop.





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Union Pacific no. 776, an Electro-Motive Division SD7, drifts downgrade alongside picturesque Willow Creek with a coal extra bound for the power plant in Spokane, Wash., in the early 1950s. Rod Vance of Farmville, Va., photographed the scene on his HO scale UP Willow Creek Subdivision layout. The SD7 is from Broadway Limited Imports, weathered with PanPastels. The water is Enviro-Tex Lite two-part resin detailed with Woodland Scenics products.

A SEPTA Silverliner commuter train glides past the quiet residential street of Moreland Avenue in Philadelphia. Tim Nicholson of Stafford, Qld., Australia, photographed the scene on his HO scale spare-bedroom layout, based on SEPTA's Chestnut Hill West commuter line. He replaced the layout's blue backdrop with sky images using Photoshop software.



JSSX Ry. no. 815, a venerable Electro-Motive Division GP38, works the industries along South Industrial Boulevard. Jim Sloan of Sarnia, Ont., photographed the HO scale scene on his HO scale layout, which models an urban short line that interchanges with the Grand Trunk Western around the year 2000. Jim painted the Atlas locomotive with ModelFlex paints, then weathered it with artist's acrylics. He paved the streets with styrene sheet and wall spackling compound.



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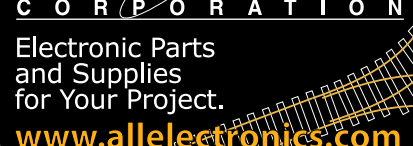
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AZ, PRESCOTT AREA: Beat the Heat Model Trains Swap Meet. Liberty Traditional School, 3300 N. Lake Valley Rd., Prescott Valley, Saturday, August 21, 2021, 9:00am-1:00pm. Adults \$5.00, children 12 and under free. Presented by: The Central Arizona Model Railroad Club. Contact: Doug Gilliatt, 480-390-0320. Face masks are required in the hall.

FL, PINELLAS PARK: Regal Railways Presents a Toy Train, Collectible and Hobby Show/Sale. Lopez Hall, 7177 58th St. North, Saturday, August 28, 2021, 9:00am-2:00pm. Adults \$5.00, children under 12 free. Vendors, videos & operating layout. Serving lunch items. Contact Joe: 727-244-1341 or visit www.regalrailways.com for more information.

IA, ELKADER: 9th Annual Elkader Model Train Show-Swap Meet. Sunday, August 22, 2021, 10:00am-4:00pm. Johnson's Reception Hall, 910 High Street. Adults \$4, children 6-12 \$2, under 5 FREE. Free parking, lunch-stand and door prizes. Information: Larry Lerch 563-880-2066 or 563-245-3345

NE, DESHLER: Train Show & Open House, July 24-25, 2021. Thayer County Activity Center, 4th & Race St. Hours: Saturday, 9:00am-5:00pm, Sunday 10:00am-4:00pm. Clinics, custom vendors, layouts, and manufacturers. Admission \$6.00, under 12 FREE. Extended hours at Spring Creek Model Trains, 304 E. Bryson Ave. Details: www.springcreekmodeltrains.com

All listed events were confirmed as active at the time of press. Please contact event sponsor for updated status of the event.

Schedule of Events (cont.)

OH, VAN WERT: Van Wert Railroad Heritage Weekend Model Railroad Show & Swap. Van Wert County Historical Society, Van Wert County Fairgrounds, 1055 S. Washington St., Van Wert, OH 45891. July 24th & 25th, 2021. Saturday 10am-4pm & Sunday 10am-3pm. Adults \$6.00. Scouts in Uniform and Children 12 & under: FREE. Info: Chuck White raillcarman@frontier.com 260-760-1666

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TX, HOUSTON: Greater Houston Train Show presented by the San Jacinto Model Railroad Club. Saturday, August 14, 2021, 10:00am-4:30pm. Stafford Centre, 10505 Cash Rd. (at Murphy Rd.), Stafford, TX 77477. Instructive classes, vendors, operating layouts, contests. \$5 admission, under 12 free, \$10 family. Concessions and free parking. Subject to mandates surrounding Covid. More info at: <http://sanjacmodeltrains.org/>

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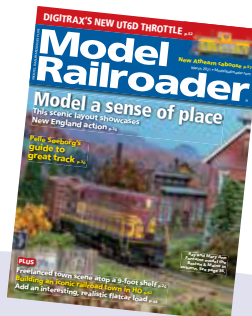
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Model MAGAZINE Railroader



Coming Up

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Rolling stock as scenery



A rebuilt Accurail boxcar and a detailed Rivarossi baggage car do double duty as scenery and, on occasion, as the cause of a special move on Dennis Eggert's HO Chicago & North Western. Dennis Eggert photo

When we think of scenery, it doesn't tend to be something that moves. Even vehicles are almost always permanently parked at specific locations, although there are now some animated options in that genre. Beyond that, "scenery" translates to landforms and the structures they surround. But there are some intriguing options.

The accompanying photo by talented modeler Dennis Eggert makes a strong case for mobile scenery in the form of maintenance-of-way equipment parked, permanently or temporarily, on a siding. We'll get to the specifics in a moment, but let's first consider the visuals.

Maintenance-of-way cars that provided the tools and materials to do the work at hand as well as places to eat and sleep were spotted on a siding. "Camp" cars were homes away from home for the maintenance crews that worked on the rights-of-way in the days before they were transported to the work site by high-rail vehicles or vans or housed in much more accommodating container-like mobile housing units.

Most if not all of them were converted from former revenue freight and passenger cars. Seeing ancient cars with truss rods or outlawed truck types in a more modern era was not uncommon.

Cuts of maintenance-of-way cars offer two opportunities for modelers. The first is to model some older equipment, such as wood or older steel freight or passenger cars. The second is that they can add operational challenges by being spotted on a passing track, thus taking it out of service for the day. They could also require an extra move by the local as the cars are taken to a new work site.

Mike Aufderheide cited two examples from the Monon during the 1940s: a Bridges & Buildings crew that was moved to a new location by a local, and a camp car coach that was tacked on to a passenger train to take workers back home on Friday evenings. He's done this on his layout and found that it adds interest.

Dennis Eggert built the MoW cars in the photo for his 1976-era Chicago & North

Western HO scale railroad. "It was common to see a set of these cars parked on a siding in a small town where work was being done on bridges, buildings, signal systems, or communication lines," Dennis recalls. "The cars provided a means to store tools, materials, and sometimes lodging for the work crews. I think of the cars as part of the scenery on my layout."

He built a boxcar using an Accurail 40-foot single-sheathed wood boxcar kit as the base model. To cut in the window frames, four of the angled braces needed to be removed, as none of the bracing matched the spacing on the prototype car. With the exception of the doors, new sides were scratchbuilt using styrene. New grab irons, stirrup steps, and cut levers were made using brass shapes. Dennis removed the fishbelly underframe on the car and added a new center sill and brake rigging.

Dennis built the baggage car using a 60-foot Rivarossi heavyweight model. The diaphragms were removed, coupler pockets were replaced, and buffers were added to the ends. He made new steps from brass strips.

Both cars were painted using acrylic paints and weathered using an airbrush; he also used artist pencils on the boxcar and chalks on the tool car.

I never went to the lengths that Dennis did on my Allegheny Midland, but I did see a tender from one of the Louisville & Nashville's "Big Emma" 2-8-4s parked on a siding deep in coal country. I had an extra Vanderbilt tender that was going

to be a bear to insert a Dynatrol receiver into, so I put a knuckle coupler on the stoker end and used it along with some other older rolling stock in MoW service – that is, as semi-mobile scenery, like Dennis's example. **MR**



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