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ARRIVING SUMMER 2020



STEP BY STEP: BUILD A YARD OFFICE p.24



**Bachmann HO
2-10-0 review** p. 52

July 2020
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Room to run, varied
operation, and great
scenes on a club layout

p.38

Mike Tylick's
Narrow gauge
switching layout

p.28

PLUS

Model mortar rubble walls p.34

Add DCC to an Atlas S2 diesel p.50

Enhance figures with decals p.46

Easy body-mounted couplers in N p.22

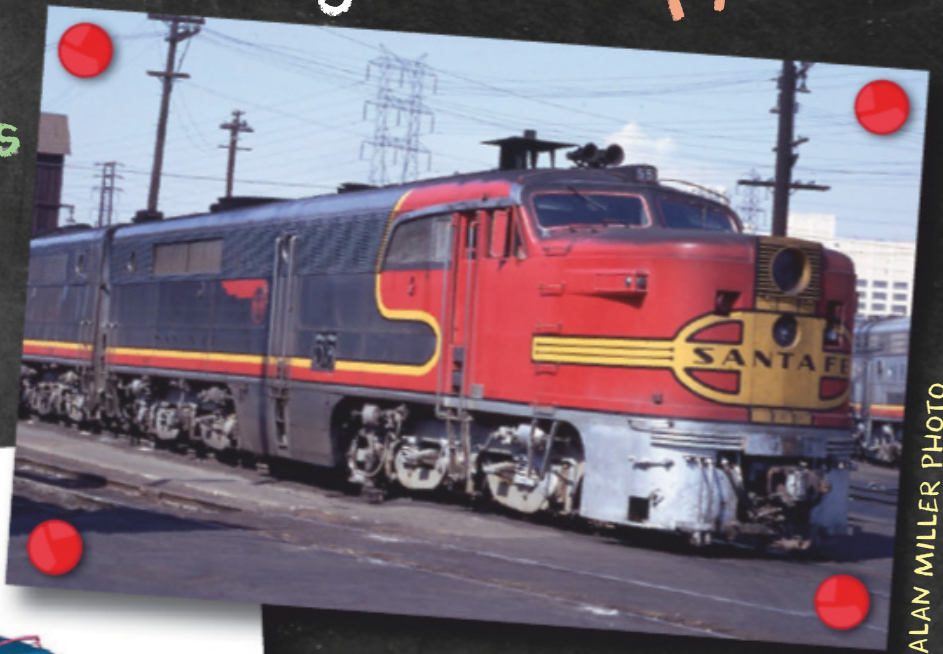
This Ohio club models
a freelanced bridge
line in a 50 x 150-foot
space. See page 38.

**BONUS
ONLINE
CONTENT
CODE PG. 4**

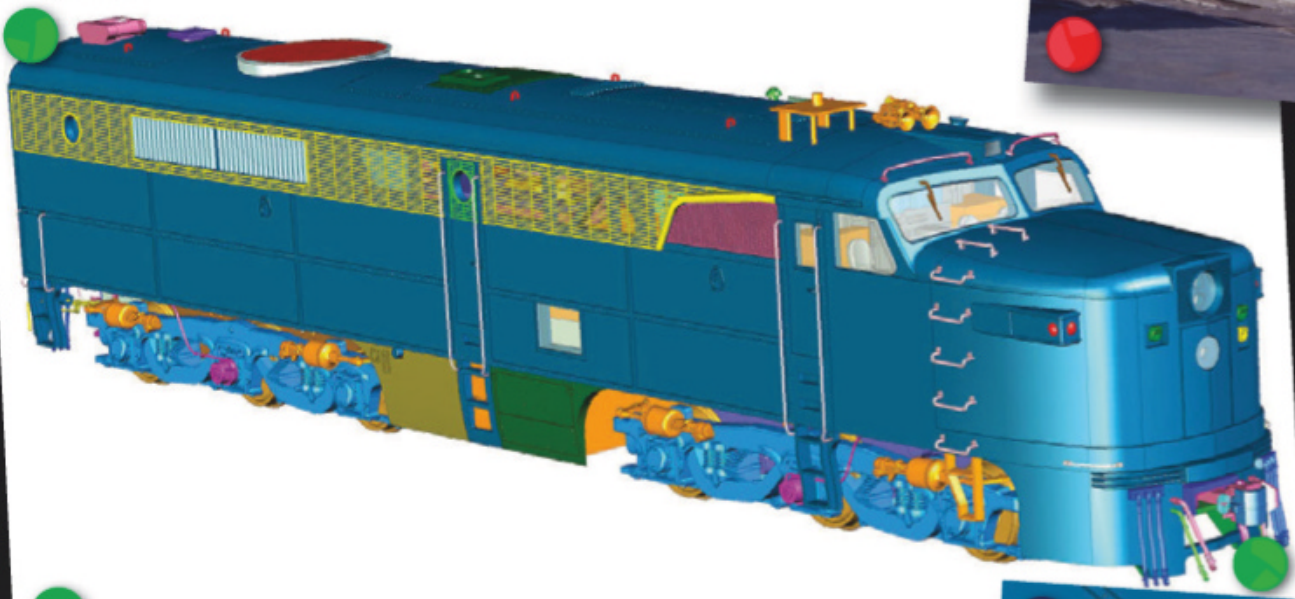
Today's Lesson - Making something big into something small. **PART II**

Step #1 - Find one of the most beautiful passenger locomotives ever built.

Step #2 - 3D scan it and make it small!



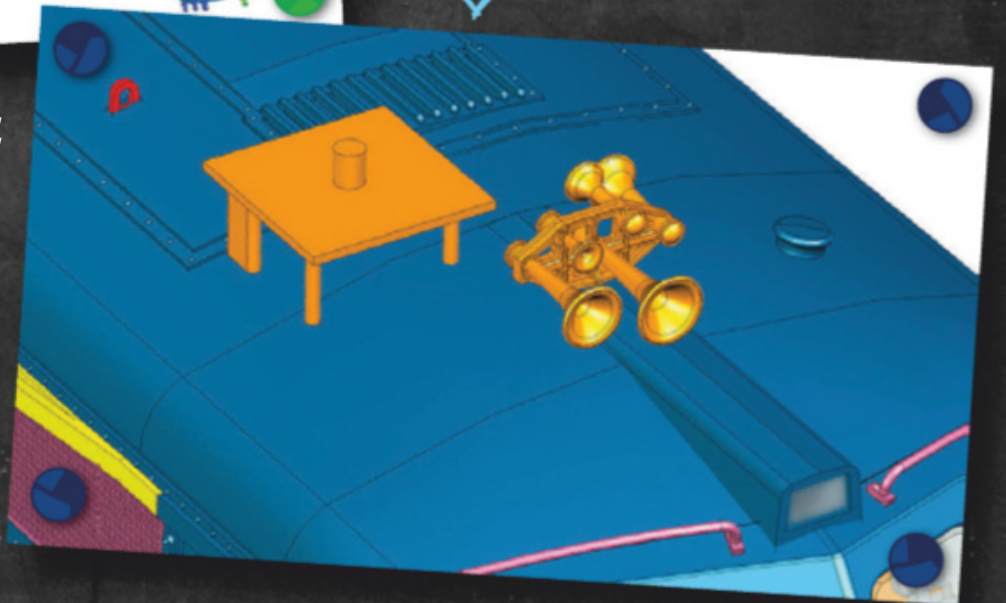
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MREXTRA

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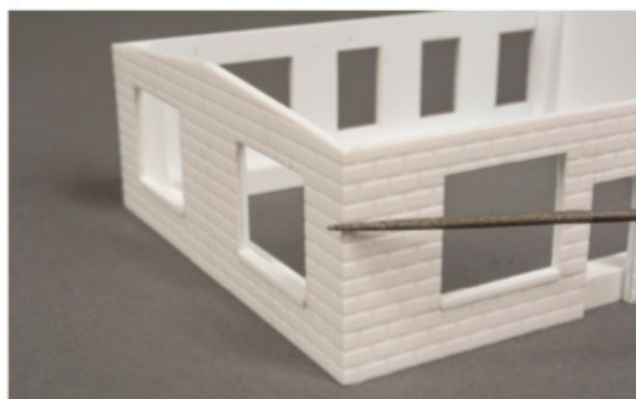
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It's mostly made of wood

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On the cover: Trains run on the expansive HO scale layout belonging to the Coshocton (Ohio) Model Railroad Club. Lou Sassi photo



Next issue

In August, we take a look at a freelanced HO scale layout designed for operations. Plus, tuning up your turnouts, skill building on a 6-foot-long plank, and more!

MREXTRA

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New layout videos

This month's issue features both a large HO scale club railroad with a prototype interlocking machine (the Coschocton Model Railroad Club on page 38) and a superdetailed 8 x 16-foot On30 railroad (the Marshfield & Old Colony on page 28). Contributing editor Lou Sassi also shot short videos of each railroad that subscribers can watch at ModelRailroader.com.

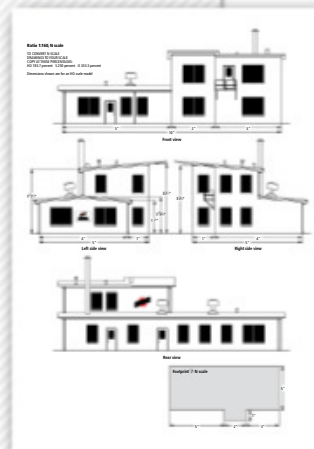


STEP BY STEP BONUS

Project plans

Group Technical Editor Cody Grivno

shows how to scratch-build a Chicago & North Western Ry. yard office in this month's Step By Step column on page 24. The model is based on a prototype in Butler, Wis. Click on the link under Online Extras to download the plans for the project.



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Follow the Jones Island project

In the new season of Rehab My Railroad, featuring the *Model Railroader* staff's HO scale Milwaukee, Racine & Troy, MRVP Producer David Popp and Group Technical Editor Cody Grivno continue work on the waterfront.

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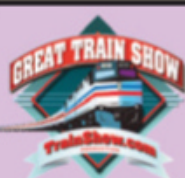
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Due to the health crisis all shows until June 1 are postponed or canceled.
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Old truths gain new importance

The wonderful HO scale

Coshocton (Ohio) Model Railroad Club, featured on our cover this month, shows the power of creative modelers working toward a common goal.

The club's Toledo, Walhonding Valley & Ohio RR (TWV&O) fills a 50 x 150-foot space inside a dedicated

building at the Coshocton County Fairgrounds. The layout features handlaid track, intense train action, soaring bridges, and even a vintage 32-lever interlocking machine controlling a scale model crossing of two railroads!

Then in a Facebook post in late March, the 52 members were told meetings and

operating sessions were canceled and the club building closed for the duration of the Coronavirus pandemic.

The message concluded, "We're all model railroaders, we should have tons of stuff to work on at home already."

The same story was repeated across the country in early spring. Clubs went dark. Train shows and conventions, including the National Model Railroad Association's St. Louis annual convention, were canceled.

In the midst of the gloom, model railroaders left to their own devices realized they indeed had tons of stuff to work on at home.

Ordered to stay home for two months by Wisconsin's governor, the *Model Railroader* staff also put our time to productive use. We made rapid progress on structures that will soon be part of a



major upgrade to our own club layout, the HO scale Milwaukee, Racine & Troy.

In the coming months we'll tell you more about this project, including detailed articles showing every step in its construction.

It was an unhappy spring, but we found welcome diversion in the artistry and intricacy of building models.



The members of the Coshocton Model Railroad Club filled a large building with great scenes like this one. Photo by Lou Sassi

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Canadian Pacific 4-6-4 Royal Hudson steam locomotive.

Rapido Trains has released the first model in its Icons of Canadian Steam Line. The 4-6-4 Royal Hudson is offered in three classes, H1d (Canadian Pacific in three road numbers and Royal Train in one number), H1c (CP in five numbers and Southern Ry. in one number), and H1e (CP in two numbers and British Columbia in one number); all classes are offered

painted for CP but unnumbered. The HO scale model features road-number-specific details, three stack styles (streamlined, straight, or bathtub; one installed, others included), an interior cab light, blackened metal wheels and driving rods, and optional modeler-installed parts. Direct current models sell for **\$599.95**; versions with a dual-mode sound decoder are **\$699.95**. Rapido Trains Inc., 905-474-3314, rapidotrains.com

NMRA cancels 2020 National Convention

The **COVID-19 pandemic** has forced many events to be canceled worldwide, and the 2020 National Model Railroad Association (NMRA) National Convention and National Train Show are no exceptions. The events were scheduled to be held in mid-July in St. Louis.

A letter posted on the NMRA website, nmra.org, said, "The local host group has determined that they can no longer continue with the preparations and operation of the convention. Among the reasons for this decision is the fact that one key member is ill with COVID-19. The host group requests your prayers for him.

"Additionally, some members of the local model railroad community have withdrawn their model railroads from the tours based on their understandable and valid concerns about allowing persons in their homes who may have

the COVID-19 virus," the letter continued. "Even if the virus is well under control, that does not mean that everyone who attends the convention will be virus-free."

This is the first time in the NMRA's 85-year history that it's canceled a national convention. "Neither the Gateway 2020 crew nor the NMRA

made this decision in haste or without careful consideration of all involved. The cancellation is in the best interest of NMRA members, their family members, and the NMRA," the letter said.

A refund policy for those who registered for the convention will be posted online at Gateway2020.org as soon as possible.

3rd annual International Toy Train Expo canceled

Home-improvement chain Menards announced that the 3rd annual International Toy Train Expo, scheduled to be held in Eau Claire, Wis., in July, has been canceled due to the COVID-19 pandemic. The event is sponsored by Kalmbach Media, Model Train Classics LLC, and Operation Lifesaver.

A note on the show's website said that the two-day event will resume in 2021. The date for next year's show has yet to be announced.

For updates on the show, visit InternationalToyTrainExpo.org.



HO scale locomotives

• **Electro-Motive Division GP18 diesel locomotive.** Baltimore & Ohio (blue and yellow, one road number), Illinois Central (black and white), Norfolk & Western (black and white), Burlington Northern (Cascade Green and black in three numbers, Northern Pacific patchout in one number), Nickel Plate Road (black and yellow), and Northern Pacific (black and yellow). Four numbers per scheme unless noted. Factory-installed and painted wire grab irons, etched-metal radiator intake and fan grills, and body-mounted McHenry scale couplers. Direct-current model with 21-pin NEM connector for Digital Command Control decoder, \$209.98; with dual-mode SoundTraxx Tsunami2 sound decoder, \$299.98. March 2021. Genesis series. Athearn Trains, 800-338-4639, athearn.com



• **Electro-Motive Division SD24 diesel locomotive.** New paint schemes (low short hood unless noted): Burlington Northern (Chicago, Burlington & Quincy patchout with high short hood), Southern Pacific (scarlet and gray, three road numbers), and Union Pacific (Armour Yellow and Harbor Mist Gray with early shield, one number). New

HO scale



Milwaukee, Racine & Troy Association of American Railroads offset-side three-bay hopper. This limited-run injection-molded plastic Accurail kit (\$24.99) is available from the Kalmbach Hobby Store. The HO scale three-bay hopper (era: March 1977+) has a one-piece body; solid-bearing trucks with plastic wheelsets; modeler-installed hopper doors, slope sheet inserts, bolster/draft-gear box/sill assemblies, end braces, and brake wheel; steel weights; and Accumate couplers with modeler-installed trip pins. The kit includes a free Accurail coal load. Kalmbach Hobby Store, KalmbachHobbyStore.com

road numbers: Atchison, Topeka & Santa Fe (pinstripe scheme, three numbers); Chicago, Burlington & Quincy (Chinese Red and gray with high short hood); Southern Ry. (black and white with high short hood [one number with herald on short hood, two numbers without]); and Union Pacific (Armour Yellow and Harbor Mist Gray with "We Can Handle It" slogan on cab). Two numbers per scheme unless noted; also available undecorated (UP-style with low short hood and Southern Ry.-style with high short hood). Separate, factory-applied roof piping detail, golden white light-emitting-diode headlights, and metal couplers. Direct-current model with

factory-installed speaker, \$189.95 (undecorated, \$179.95); with dual-mode ESU LokSound sound decoder, \$299.95 (undecorated, \$289.95). Third quarter 2020. Master Line. Atlas Model Railroad Co., 908-687-0880, atlasrr.com

HO scale freight cars



• **American Car & Foundry Coalveyor bathtub gondola.** New paint schemes: Albert Brothers (three road numbers), The Andersons, Appalachian Railcar Services, Joseph Transportation, RMG Leasing, Metal Management (three numbers), and Wilmot Transportation. Four numbers per scheme unless noted; also available undecorated. Injection-molded plastic body, die-cast metal chassis, and Accumate couplers. \$38.95 (undecorated, \$29.95). Master Line. Atlas Model Railroad Co., 908-687-0880, atlasrr.com



• **National Steel Car 4,550-cubic-foot-capacity four-bay cylindrical covered hopper.** Trough-style hatch covers: Alberta Heritage Fund (blue with ALNX and ALPX reporting marks), Canadian Pacific (gray with red CP Rail lettering), First Union Rail (gray with Logimex

HO scale

J. Shepherd & Sons Dog Food Factory.

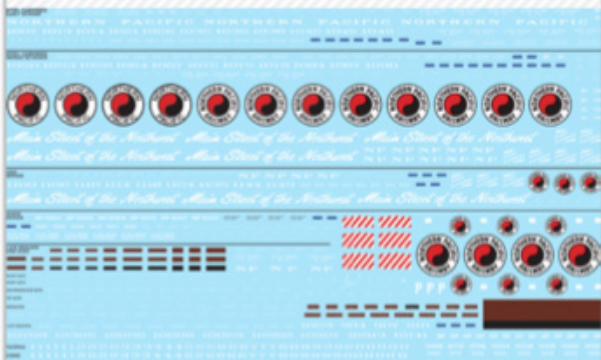
This factory-painted and assembled structure is now available from Menards. The HO scale factory (\$69.99) features an electronic dog food sign with animated pouring effect, a loading dock with dog food bags, a Dumpster, six figures, and Jack the German shepherd. The roof has a water tank, four vents, and five blinking red light-emitting-diode warning lights. The lighting requires a 4.5V power source (sold separately). The industry measures 10" x 6" x 6". Menards, menards.com/trains



Club offerings



- **Northern Pacific 10000-series double-sheathed boxcar.** Rapido Trains HO scale ready-to-run car with road numbers unique to the Northern Pacific Ry. Historical Association. Post-1948 scheme and post-1956 company service scheme. Four road numbers each; also available painted in post-1948 scheme but unnumbered. Injection-molded plastic with riveted center sill and factory-installed and painted wire grab irons. \$37.50. Northern Pacific Ry. Historical Association, nprha.org

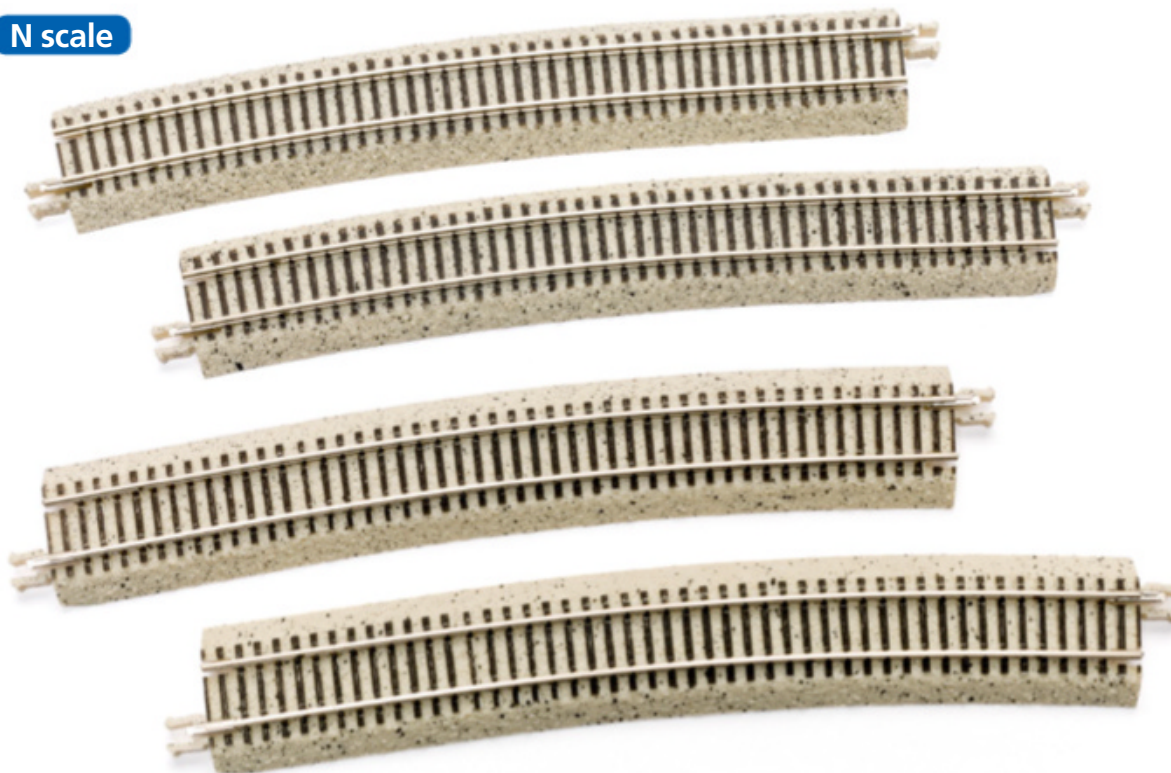


- **Assorted Northern Pacific HO scale decals.** Waterslide decals produced for the NPRHA by Cartograf. Wood and steel cabooses, \$24. Converted wood-chip cars, \$19. "From scratch" gondolas, \$17. 10000-series double-sheathed boxcars, \$8. Thrall and Gunderson wood-chip cars, \$11. Northern Pacific Ry. Historical Association, nprha.org



- **Warwick Ry. Evans 52-foot gondola.** Atlas Trainman HO scale model custom-decorated for the Worcester Model Railroaders. Two road numbers. Metal wheels and McHenry couplers. \$20 each plus \$8 shipping for one car, \$10 for two cars, \$12, for three cars, and \$14 for four or more cars. Worcester Model Railroaders, wmrr.org/club-cars

N scale



Code 65 True-Track no. 5 turnout reverse curves. Atlas Model Railroad Co. sells these track pieces in left and right versions. The N scale reverse curves, sold in two-packs for **\$5.50**, have molded plastic roadbed, code 65 nickel silver rail, painted wood ties, and two rail joiners. Each section features three hollow tubes underneath for adding track nails (holes must be opened by modeler with drill bit). Atlas Model Railroad Co., 908-687-0880, atlasrr.com

logo and NDYX reporting marks), and Saskatchewan Grain Car Corp. (brown-and-orange scheme with SKNX and SKPX reporting marks). Round hatch covers: Canadian National (gray with black "wet noodle" herald), Canadian Pacific (black with script lettering), and Procor (gray with blue lettering). Four road numbers per scheme. See-through plastic running boards, 36" turned-metal wheelsets, and Proto-Max metal couplers. \$29.98. October 2020. WaltherMainline. Wm. K. Walther Inc., 414-527-0770, walthers.com

HO scale structures



- **Vintage Ford automobile dealership.** Injection-molded plastic kit with Art Deco trim on front, plain brick service bay in back, large showroom windows, and full-color printed Ford signs. Measures 7⁷/₈" x 6⁷/₈" x 3". \$39.98.

Cornerstone Series. Wm. K. Walther Inc., 414-527-0770, walthers.com

HO scale details and accessories



- **53-foot high-cube intermodal containers.** Canadian Pacific (red with white "CP" and gray with red "CP"), Armour Transportation System, Canadian National ("We Deliver" slogan and multimodal scheme), Clarke (Transforce), J.B. Hunt, Maritime-Ontario, Schneider National, and Western Canada Express. Also available undecorated. Removable floor for adding extra weight and optional heater box and fuel tank decorated and installed as appropriate. Two-pack, \$29.95. Late 2020. Rapido Trains Inc., 905-474-3314, rapidotrains.com

N scale locomotives



- **Electro-Motive Division GP60 diesel locomotive.** Southern Pacific, BNSF Ry.

(Vermont Ry. patchout and Heritage III scheme, one number each), Denver & Rio Grande Western (black and orange in two numbers, with white stripe in one number), Green Mountain RR (green and orange, one number), Norfolk Southern (black and white), Texas Mexican Ry. (green and orange without ditch lights, two numbers), Union Pacific (Armour Yellow and Harbor Mist Gray with yellow sill in two numbers and red sill in one number), and Vermont Ry. (red and white, one number). Three numbers per scheme unless noted; also available undecorated. Ditch lights unless specified, Scale Speed motor, blackened metal wheels, and Accumate couplers. Direct-current model with factory-installed speaker, \$144.95 (undecorated, \$134.95); with dual-mode ESU LokSound sound decoder featuring Full Throttle, \$254.95 (undecorated, \$244.95). Third quarter 2020. Master Line. Atlas Model Railroad Co., 908-687-0880, atlasrr.com



- **Alco PA and PB diesel locomotives.** Atchison, Topeka & Santa Fe (PA/PB set and single PA); Cuyahoga Valley (single PA); Denver & Rio Grande Western (PA/PB set and single PA); New York Central (PA/PB set and single PA and PB); New York, New Haven & Hartford (two single PAs); Pennsylvania RR (PA/PB set and single PA and PB); Southern Pacific (PA/PB set and single PA and PB); Union Pacific (PA/PB set and single PA and PB). Dual-mode Paragon3 sound decoder with Rolling Thunder; plastic and die-cast metal construction; and separate, factory-applied handrails, grab irons, diaphragm, and air horns. Single PA and PB, \$249.99 each; PA/PB set (PA is powered, PB is unpowered), \$329.99. Broadway Limited Imports, 386-673-8900, broadway-limited.com

N scale freight cars

- **33,900-gallon liquefied-petroleum gas tank car.** Flat panel: Union Tank car (white [three road numbers] and gray). Late body: Procor (black, three single cars and two three-packs), Southwest Rail Industries (black, three numbers), Trinity Industry Leasing (black), United

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Large scale



CSX two-bay hopper with exterior posts. This ready-to-run plastic model is now available from PIKO America. The large scale hopper (\$67.99) has molded handrails and stirrup steps, a coal load, plastic wheelsets, and hook-and-loop couplers. PIKO America, 619-280-2800, piko-america.com

Pacific Energy (black, three numbers), and Union Tank Car (blue). Three single cars and one three-pack per scheme unless noted. Photo-etched metal walkways and end platforms, wire safety rails and end handrails, and 100-ton

roller-bearing trucks. Single car, \$33.98; three-pack, \$95.98. February 2021. AthearnN. Athearn Trains, 800-338-4639, athearn.com

• **Trinity 64-foot mechanical refrigerator car.** Union Pacific (white with

“Building America” slogan and high ARMN reporting marks in 12 numbers, with ARNM marks in one number), CIT Group/Capital Finance (white and black, six numbers), Naked Juice (white and blue, one road number), and Tropicana (white, orange, and black in 12 numbers). Carrier reefer unit as appropriate, BLMA 100-ton trucks with 36" metal wheels, and brown couplers. \$39.95. Third quarter 2020. Master Line. Atlas Model Railroad Co., 908-687-0880, atlasrr.com



• **Assorted freight cars.** Atchison, Topeka & Santa Fe 89-foot tri-level enclosed auto rack, \$55.90. Archer Daniels Midland General American 4,566-cubic-foot-capacity Airslide covered hopper (two road numbers), \$31.80. Conrail 50-foot double-door boxcar, \$26.70. Deep Rock 39-foot single-dome tank car, \$28.70. Ontario Northland

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50-foot gondola, \$27.80. Injection-molded plastic models with plastic wheelsets and Magne-Matic couplers. Micro-Trains Line Co., 541-535-1755, micro-trains.com

0 scale freight cars

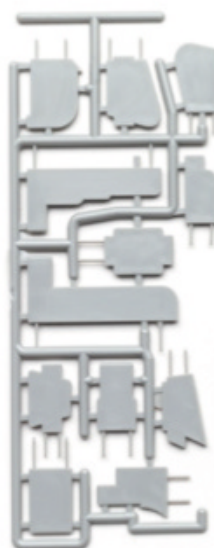


- **General American 2,600-cubic-foot-capacity Airslide covered hopper.** New paint schemes: Brach's Candy, Chicago & North Western (yellow), ConAgra (gray), Conrail (Deepwater Green Penn Central patchout), Revere Sugar (black), Rock Island (blue), St. Louis Southwestern (Cotton Belt, gray), and Union Pacific (silver with red lettering). New road numbers: Burlington Northern (Cascade Green with large herald) and Delaware & Hudson (red). Two road numbers per scheme; also

HO scale

Hanging storefront signs.

This new release from City Classics (\$14.98) includes 12 molded plastic signs with nearly 30 full-color paper overlays for retail stores, restaurants, printers, banks, doctor's offices, and other services. City Classics, cityclassics.biz



available undecorated. See-through running boards; sprung, die-cast metal trucks; and positionable hatch covers. \$79.95 (undecorated, \$74.95). Third quarter 2020. Master Line. Atlas O, 908-687-0880, atlasrr.com

0 scale details and accessories

- **1973 Ford F-100 pickup truck.** Boston & Maine (yellow), Canadian National (red), Chessie System (blue), Erie Lackawanna (yellow), Great

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News & Products

HO scale



Modern grocery warehouse. This injection-molded plastic kit is the latest
addition to the Walthers Cornerstone Series. The modern grocery warehouse
(\$59.98) has one-piece corrugated-style walls with exterior splines; pull-
through railcar end walls; truck and railcar loading dock doors with weather
bellows; four roof-mounted air conditioners; and separate doors, windows,
entry ramp and stairway. The structure measures 16⁷/₈" x 8¹/₁₆" x 4¹/₂".
Wm. K. Walthers Inc., 414-527-0770, walthers.com

Northern (Big Sky Blue), Milwaukee
Road (orange), Penn Central (Deepwater
Green), and Union Pacific (Yellow). Also
available undecorated. Plastic headlight
and taillight lenses, cab interior with
steering wheel, and chrome-plated grille
and bumpers. \$29.95 (undecorated,
\$22.95). Third quarter 2020. Atlas O,
908-687-0880, atlasrr.com

Large scale locomotives

• **Denver & Rio Grande Western
2-6-0 Mogul steam locomotive.** Five-
pole can-type ball-bearing motor; sepa-
rate, factory-applied tank piping, hand-
rails, and ladders; dual-mode Sound-
Traxx sound decoder; directional head-
light; detailed cab interior with engineer
figure; hard chrome ball-bearing drive
wheels; and hook-and-loop couplers.
\$649.99. August 2020. PIKO America,
619-280-2800, piko-america.com

Large scale passenger cars

• **Denver & Rio Grande Western
wood passenger coach.** Grande Gold
(nos. 334 and 337). Separate, factory-
applied brake wheels, handrails, brake
cylinder, and smokejack; plastic wheel-
sets; and hook-and-loop couplers. Can
be upgraded with PIKO no. 36135 light-
ing kit, no. 36164 metal wheels, or
no. 36167 ball-bearing wheels, all
sold separately. \$124.99. PIKO America,
619-280-2800, piko-america.com

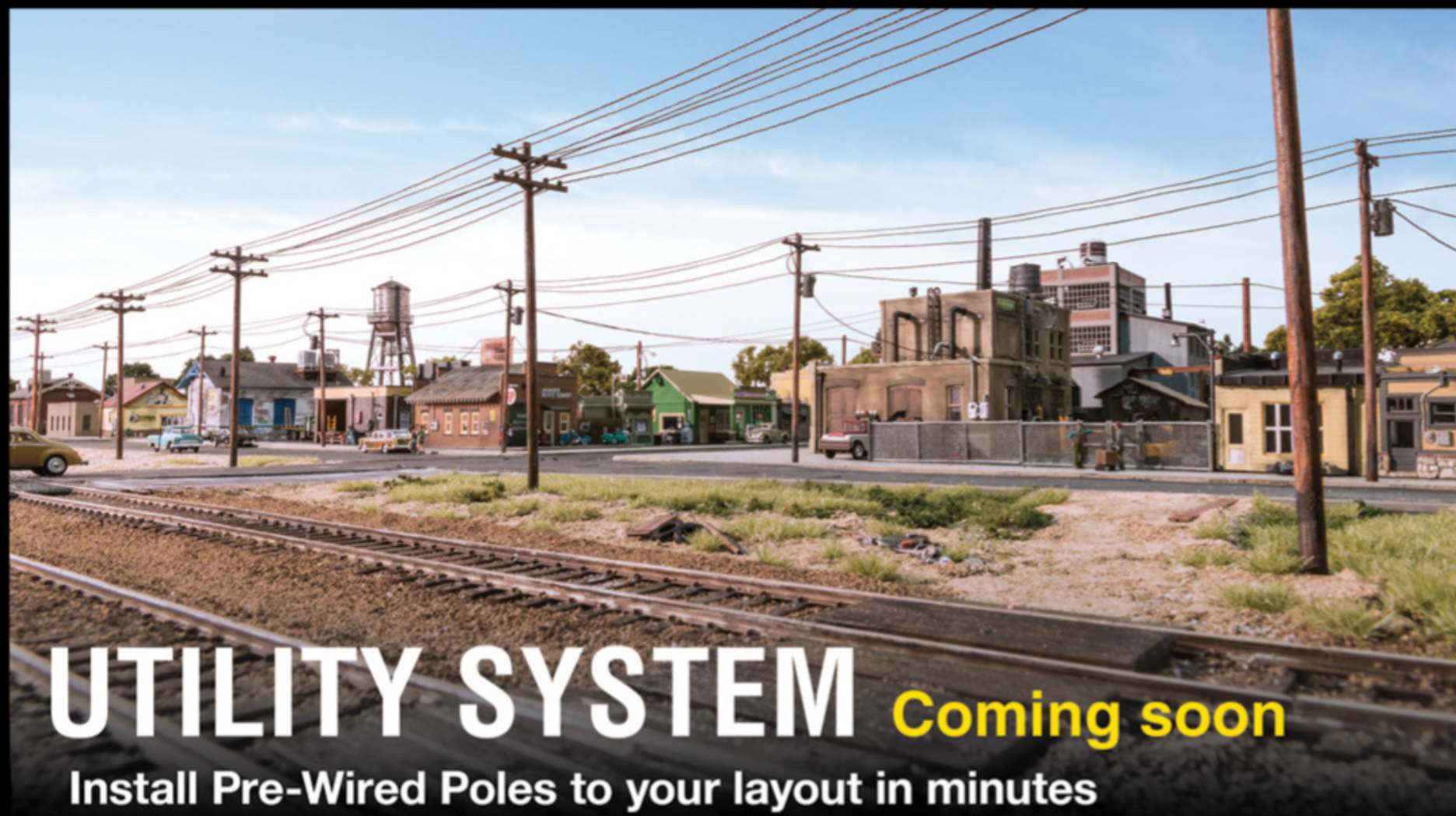
Z scale passenger cars



• **Chesapeake & Ohio lightweight
passenger cars.** 6-open-section,
6-roomette, 4-double-bedroom sleeper
(unnumbered with Pullman subletter-
ing). Baggage car (unnumbered). Coach
(nos. 1613 and 1641). Diner (*Bluegrass
Club* and *Shenandoah Club*). Dome
(nos. 5500 and 5501). Etched-metal stir-
rup steps, flush window glazing, metal
wheels, Auto-Latch couplers, and add-on
details. American Z Line, 614-764-1703,
americanzline.com

Electronics/controls

• **LokSound upgrade kits.** For Athearn
Ready-to-Roll locomotives with 8-pin
sockets (with or without sound). Electro-
Motive Division GP35, GP38-2, GP40X,
GP40-2, SD38, SD39, SD40, SD40-2,
SD40T-2, SD45, SD50, and SD60;
General Electric AC4400CW and
C44-9W; and Santa Fe-rebuilt CF7
diesel locomotives. Kits include 8-pin
plug and 15mm x 35mm speakers with
baffles. Assembly and soldering wires
(not included) to speaker required. \$110
each. English's Model Railroad Division
of Bowser Manufacturing Co. Inc., 570-
368-2379, bowser-trains.com **MR**



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HO scale models photographed.



Jim Kelly, former *Model Railroader* managing editor and current "N Scale Insight" columnist, found a bartender's cocktail sword makes a handy N scale uncoupling tool. Jim Kelly photo

Got any ideas for an uncoupling tool?

Q I model in N scale. I'm having problems uncoupling the cars. Is there a tool out there to assist with this task, or do you have a suggestion on how to make this easier?

William Semanko, Junction City, Kan.

A Many N scalers like yourself uncouple their cars by inserting the point of a fine-pointed tool, like a wooden or bamboo kitchen skewer, between the knuckles and twisting. I've seen some people make custom tools for this purpose using a darning needle inserted in a wooden handle, sometimes with an LED light attached to illuminate between the cars. Others, like "N Scale Insight" columnist Jim Kelly, use plastic cocktail picks, like those you'd find skewering cherries or olives in a mixed drink (see above). Jim finds that the flattened point of such an implement provides more twisting torque than a round skewer – and you can't beat the price. Rix Products makes a similarly shaped tool called the Rix Pick, available at hobby stores for only a few bucks. Rix also makes the Rix Sticker, a two-pronged magnetic wand made for HO scale magnetic uncouplers. I don't know if it would fit between two close-coupled N scale cars, but if one of your friends has one, borrow and try it.

Q I purchased an N scale Vollmer structure kit that includes paper-based decals that don't appear to be either waterslide decals or dry transfers, both of which I'm familiar with using on structure kits from other manufacturers. How are these signs supposed to be adhered to the assembled model? There were no specific instructions and I haven't found any guidance on the internet. Any advice?

Ken Burg, O'Fallon, Mo.

A I've seen European structure kits that come with decor elements, like room interiors, signs, and window treatments, printed in color on glossy paper. You're right that these aren't decals; they're intended to be cut out and mounted inside the windows (in the case of curtains/blinds) or glued to the outside of the building (for signs).

One way to make the paper signs look more realistic, if you're applying them to an irregular surface like a molded brick

wall, is to turn them face-down on a smooth surface and slowly, carefully sand the back of the paper with a fine-grained sanding stick until the surface with the printing on it is just tissue-thin and almost see-through. Handling the sign very carefully, adhere it to the side of the painted structure using white glue. Carefully use a tissue-wrapped finger to push the paper sign into the grooves of the brick without tearing it. Once the glue dries, the sign will look like it was glued to or painted on the prototype long ago and has weathered in place for many years. Then you can protect it with a spray of matte varnish.

Q Hey there, *Model Railroader*! I'm a curious 12-year old who was wondering about a simple question. What type of steam locomotive would be best for a transition-era layout?

Noah Peace, Hartsville, Tenn.

A Hi, Noah, and thanks for writing in. "Best" is a value judgment that you'll have to answer for yourself, based on what you want out of your model railroad. Are you building a compact layout with tight curves and sharp turnouts, like a 4 x 8 tabletop? Then you'll want smaller locomotives, like a 4-6-2 Pacific to lead your passenger trains, a 2-8-0 Consolidation for freight duties, or an 0-6-0 switcher for industrial or yard jobs. But if a grownup is helping you build a basement empire with broad turnouts and gentle curves, you can consider larger, more modern steam power, like 4-8-2 Mountains, 4-8-4 Northerns, or maybe even articulateds.

What kind of locomotive you needs also depends on what kind of traffic your railroad will have. If you're modeling a sleepy branch line, smaller, older motive power will do. A logging line would have geared locomotives like Shays, Climaxes, and Heislars. For heavy mainline traffic, you'll want the larger, heavier, newer engines (and you'll need the space for the wide curves they require). Rather than thinking about locomotives first, plan your layout, and pick the locomotives that suit it.

Q I'm setting up a new layout with Digital Command Control. It will have a total of 70 feet of track. I've been

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

looking at several starter DCC systems, and they all say they're good for a small setup. How many feet of track is considered "small?" I've searched many websites but have had no luck finding one that says anything about footage. Can you help?

Paul Ruebusch, Loveland, Ohio

A There are two things to consider when judging whether a DCC system is powerful enough to run your layout, and neither has to do with how much track you have. The first is voltage drop and the distance from the base station. The longer your DCC power bus wire is, the more resistance the wire will have, and the more voltage will drop on its journey from your base station to the engine. If it's a long journey, you may notice your locomotives running slower the farther they get from the base station.

You can counteract this by positioning your base station closer to the middle of your power bus, using larger gauge bus wire, and adding more feeder wires from the rails to the bus (nickel-silver

rails have more resistance than copper wire, so solder a feeder to your rails every six feet or so).

The second factor is current draw. A large layout can play host to more locomotives running simultaneously than a smaller one. The more locomotives you plan to run, the more current they'll need. When you get to running five or six locomotives at once – fewer, if they're older or sound-equipped – a starter system that provides only 1.5A or so may get overtaxed. At that point, you might want to consider adding a DCC booster, which would solve any problems with voltage drop, too.

Q What is the purpose of the frame or arch you see at the center of some turntable bridges?

Andrew Banta, Fort Bragg, Calif.

A On a wooden "gallows type" turntable, the arch is a structural support that distributes some of the stresses from the outer ends of the turntable bridge, like a suspension bridge. On more modern

turntables, a metal arch is often the attachment point for the electrical feed to the motors that turn the bridge.

Q I was wondering how to wire the frogs on Atlas code 80 turnouts. I've watched many videos on Model Railroader Video Plus but I am uncertain if a no. 6 turnout needs to have power to the frog. Do I need to hook up a switch of some kind to reverse the polarity or should I use a Tortoise switch motor instead?

Jay Matteson, Jamestown, N.D.

A Turnout frogs don't absolutely have to be powered, but doing so makes them more reliable for locomotives with electrical pickup issues (like those with a long, rigid wheelbase or with traction tires). The problem is that the metal used in Atlas turnout frogs doesn't take solder. The only way to reliably attach a feeder wire to such a frog is with a mechanical connection. Use a drill and tap set to drill a small, shallow hole in the bottom of the frog, being careful not



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to break through the surface into the flangeway. Use the tap to thread the hole for a 2-56 brass screw. Then solder your feeder wire to the screw. You could run the wire to a double-pole switch to control the polarity manually or use the internal contacts on a switch motor like a Tortoise by Circuitron to change the polarity automatically.

Q What's the difference between simple wire snips or cutting pliers and a sprue cutter? It seems like they perform the same task of cutting.

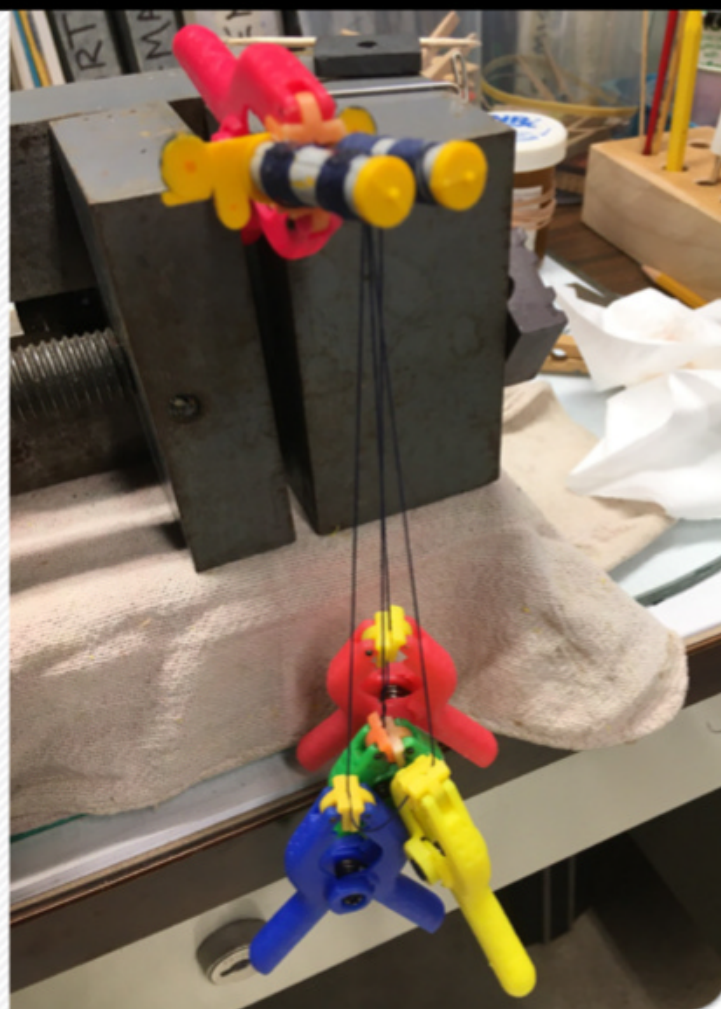
Alan F. Jenkins, Frisco, Texas

A If you look closely at the jaws of a wire cutter, you'll see that they're angled on both sides. When you cut something with them, you're left with an angled cut on both sides. A sprue cutter, like its heftier cousin the rail nipper, is "flush cutting" because it has one angled side and one flat side. Turn the flat side of the jaws toward the side the model part is on, and you'll get a straight cut; the angled cut will be on the sprue. **MR**

READER TIP

Stretch those strings

Recently I was rigging an overhead crane for my diesel shop when I had trouble with the threads twisting. The plastic blocks weren't heavy enough to hold the thread taut. Robert Hill, a friend of mine who models the Union Pacific in HO scale and used to build model boats, suggested that I wet the thread and use a weight to hold it taut while it dries. I use spring clamps to weight my thread. This helps the string to uncoil and dry straight, which helps eliminate the twisting when used on the model. – *Richard Minder Jr., Grand Blanc, Mich.*



HO P5a Electrics, New Fantasy Schemes



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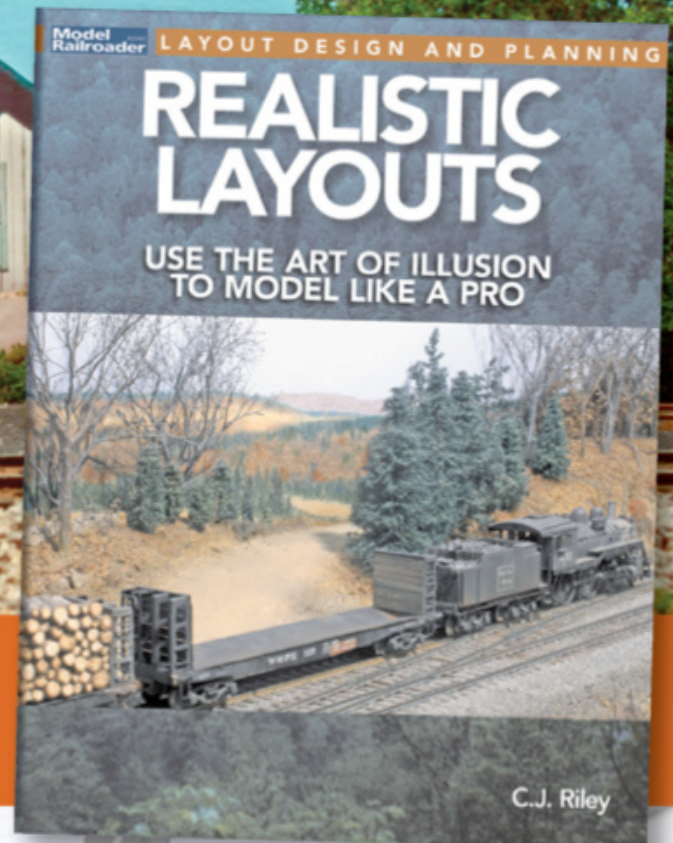


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Simplifying body-mounting couplers

Former editor Neil Besougloff used to accuse me of trying to convert all N scale modelers to using body-mounted couplers. He was joking – I think – but I’m not mounting such a campaign. For 90 percent of you, using truck-mounted, body-mounted, or a mix of both would make little difference. Your trains will run just fine.

Where body-mounts will make a difference is if you want to back long trains, say a dozen or more cars. The obvious place for doing this would be in a fairly large yard on a fairly large layout. Another instance might be a really major industry on a probably even larger layout. And even in those cases you can get along well – providing the tracks are straight.

The problem with backing long trains with truck-mounted couplers is that we’re shoving the couplers together, causing the trucks to skew and making the wheels want to climb the rails. With body-mounted couplers, the wheels are free to find their own way.

An inconvenient truth. On my layout I wanted to run long trains up 2.5 percent grades on lots of curves, using mid-train helpers. That’s the way Southern Pacific and Santa Fe did it on Tehachapi Loop in 1985, and I’d planned and built the layout to do the same. It’s been years now since I discovered my dream wasn’t

working out. The pileups were amazing, about as near a prototype wreck as is possible with models, and involving a dozen cars or more. I was about ready to take a sledge hammer to the layout.

I’d seen HO modelers run helper service with no problems. Why them and not me? The difference had to be that their equipment came standard with body-mounted couplers and our N scale cars came with truck mounts – except for the cabooses. The only solution was body-mounting couplers. A huge task of converting cars lay ahead of me.

The shorty tank car. The photo at right shows a shorty tank car that I’ve just converted. It was made some years back by Model Die Casting (MDC), a company Athearn bought in 2003.

You’ll often hear these 28-foot-long cars called “beer cans” because the tank’s proportions resemble those of a beer can. I’ve always liked these cars because they’re so small and just so dog-gone cute (not sorry).

I’ve never known much about what these cars are used for, and I’d bet that many of you don’t either. A cursory search on the internet didn’t tell me much. They were rare and used for very heavy liquid chemicals or for customers that needed a



Jim added body-mount Micro-Trains Magne-Matic couplers to this N scale Model Die Casting (Roundhouse) shorty tank car using a Trainworx conversion kit. Roen Kelly photos

lesser supply of something. I guess that’ll have to do, and besides, on my layout they’re just passing through.

Using Trainworx coupler kits. Like so many tank car models, this one came equipped with truck-mounted couplers, and when you take the trucks off there’s nothing there to support body-mounted couplers. In the past I’d built a support from styrene, then drilled and tapped it for coupler-mounting screws. This was usually a touchy job that required a lot of trial-and-error fitting.

Enter a great N scale innovation, the N scale coupler conversion kits offered by Trainworx. These are one-piece

plug-in plastic end frames with a Micro-Trains coupler already built into it. They have two versions. The first is for Ortner 5-bay rapid discharge hopper cars. These are now in the Fox Valley Models line. The second is for Atlas open and covered hopper cars.

I had lots of each car type, and although I’d already converted many the old-fashioned way, the kits allowed me to finish the remainder in practically no time and with much better results.

Fitting out the shorty tanker was easy. All I had to do was file the sides of the adapter down until it fit, then cement it in, using a cyanoacrylate adhesive (CA) gel. Give Trainworx a Google. 



**I WAS ABOUT
READY TO TAKE
A SLEDGE
HAMMER TO
THE LAYOUT.
—JIM**

Here’s the adapter installed. Besides the coupler, the kit included the diagonal braces that are typical on open-ended cars.



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Step by Step

Cody Grivno built this HO scale yard office for Chuck Sable's freelanced layout. The structure is a selectively compressed version of the Chicago & North Western prototype in Butler, Wis. Photos by the author



How to build a yard office

Over the course of 16 episodes, members of the *Model Railroader* and Model Railroader Video Plus staffs worked on Chuck Sable's HO scale Milwaukee & Northwestern Wisconsin Division model railroad as part of the "Rehab my Railroad" series. During the shows, we tackled an assortment of structure, scenery, and detailing projects. One project we didn't get around to was the Butler, Wis., yard office. Chuck was hoping to have the building on his 13 x 24-foot layout in time for the Chicago & North Western Historical Society 2019 annual convention in Milwaukee. With the clock ticking, I agreed to scratchbuild the yard office.

Chuck and I were unable to find drawings of the full-size Butler yard office, but that didn't bother me too much. Layout space was at a premium, so building an accurately scaled model wouldn't be possible. We did find prototype photos, however. These proved valuable, as I could estimate the building's height as well as door and window spacing based on the dimensions of the cinder blocks.

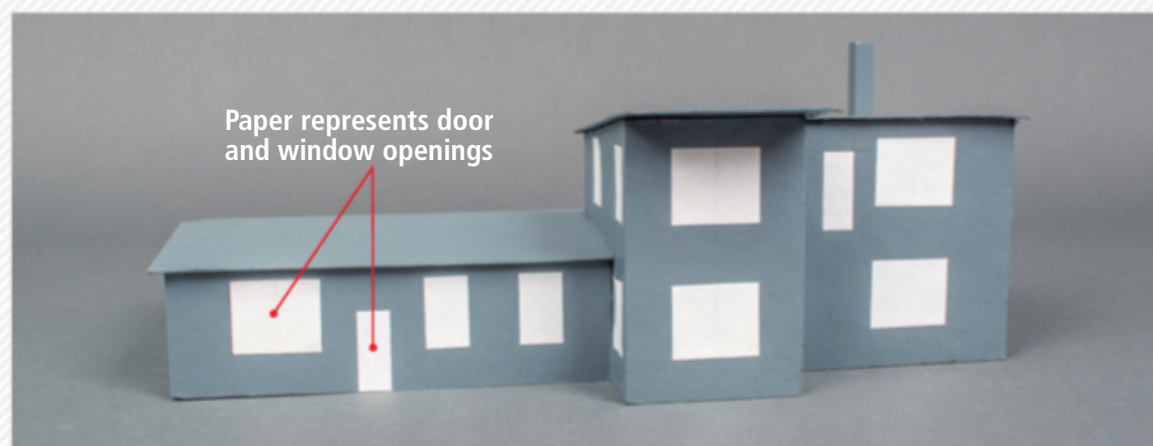
There were a few ways I could have scratchbuilt the block building. I chose The N Scale Architect concrete block laminated to styrene sheet. I used off-the-shelf windows from Tichy Train Group and doors from Pikestuff, as they looked close to those used on the

full-size building. The roof details are based on what I could see in photos.

The era for Chuck's layout is 1955-1980, which is a pretty wide span. Prototype photos revealed that during that time the yard office was painted in at least three schemes. He liked the building's final scheme, gray with white windows and trim.

I'm happy to report that I finished Chuck's yard office with a few days to spare before the convention. Even though the structure is selectively compressed, I think it captures the building's signature features. Chuck reported that some society members said the yard office looked like real one in Butler, so I must have done all right.

STEP 1 BUILDING THE MOCK-UP



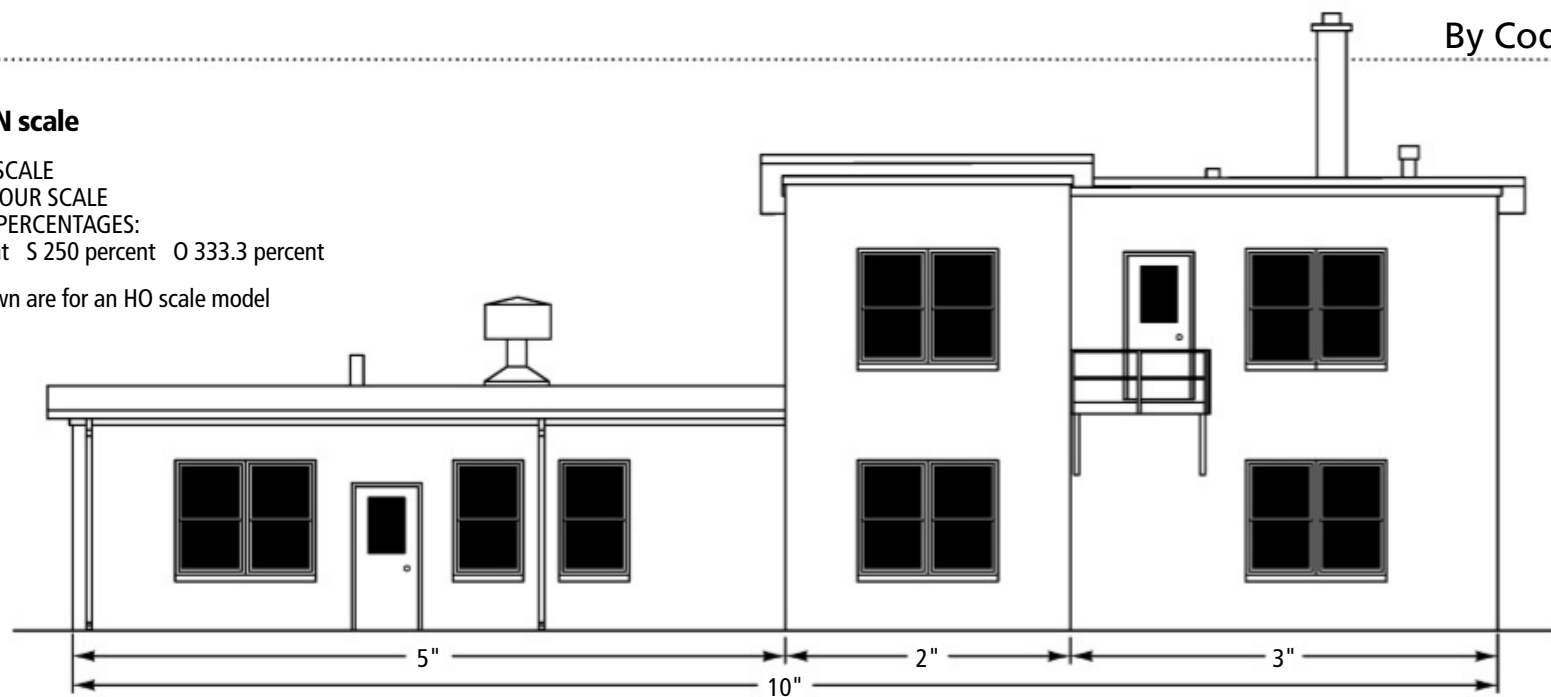
Before I cut any styrene, I built a cardboard mock-up of the yard office, using printer paper to represent the doors and windows and a piece of 1/4" square styrene for the chimney. I painted the mock-up primer gray, similar to the final color of the structure, so Chuck could get an idea of how the building would look in the scene.

I then gave the cardboard structure to Chuck to put on his model railroad for a few days. I wanted to confirm that the structure would fit the space, the door and window locations made sense, and the roof above the operator's bay wouldn't foul the nearby track. Everything checked out, so it was time to begin building.

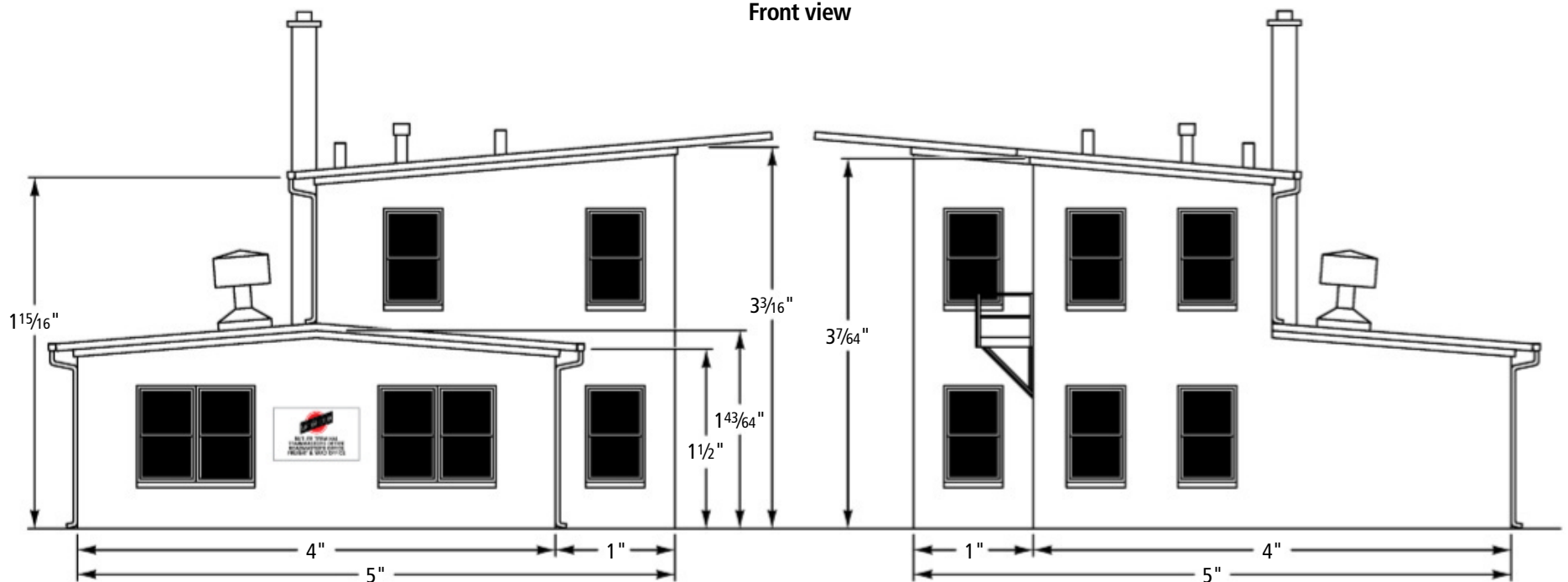
Ratio 1:160, N scale

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Dimensions shown are for an HO scale model

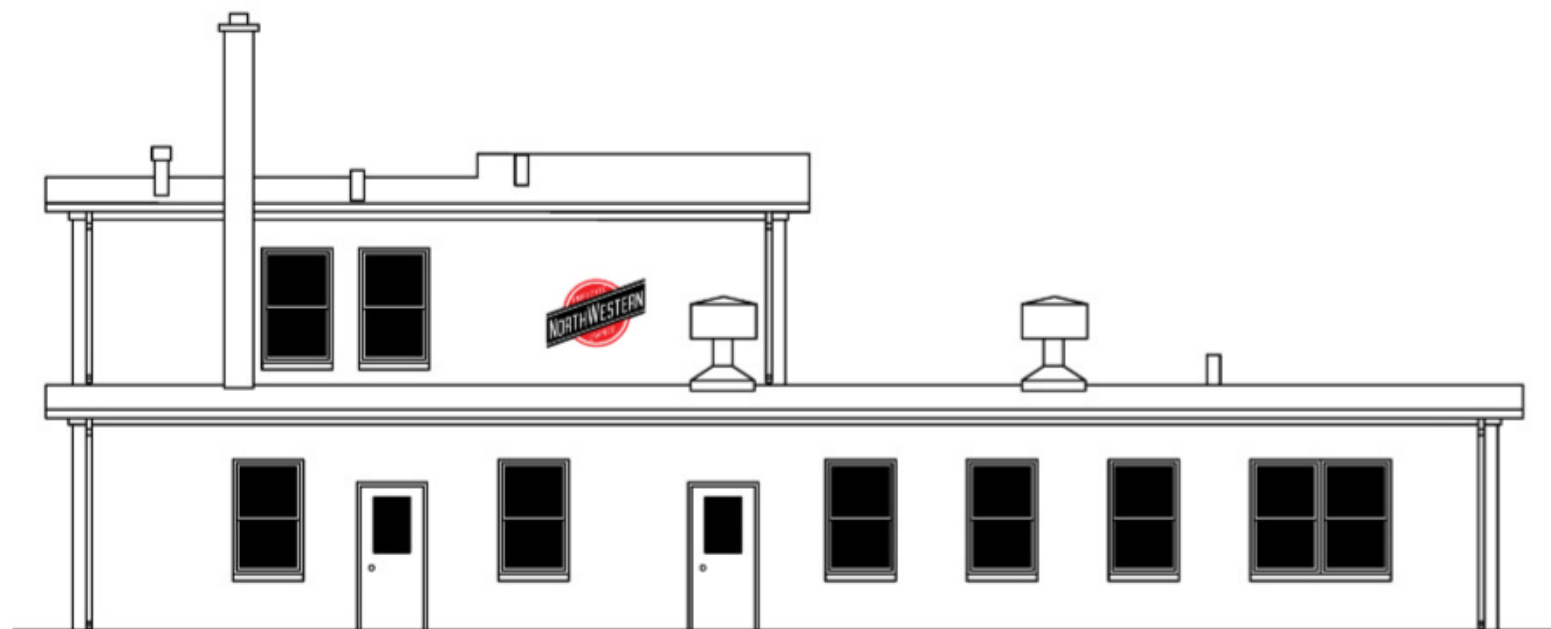


Front view



Left side view

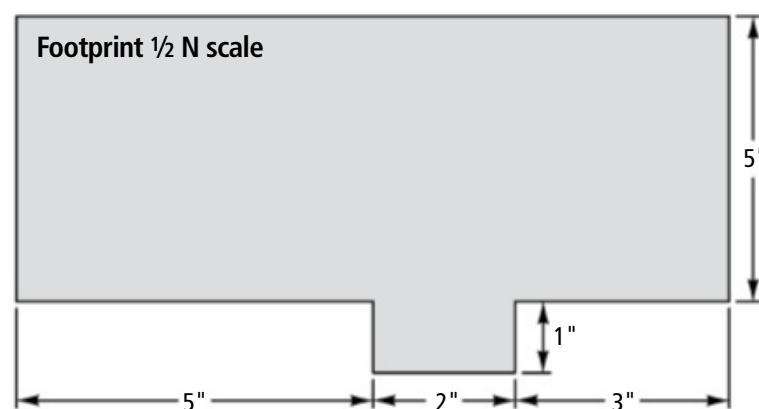
Right side view



Rear view



Want to learn more about Chuck's layout? Purchase Vols. 1-3 of "Rehab my Railroad" online at Kalmbach-HobbyStore.com



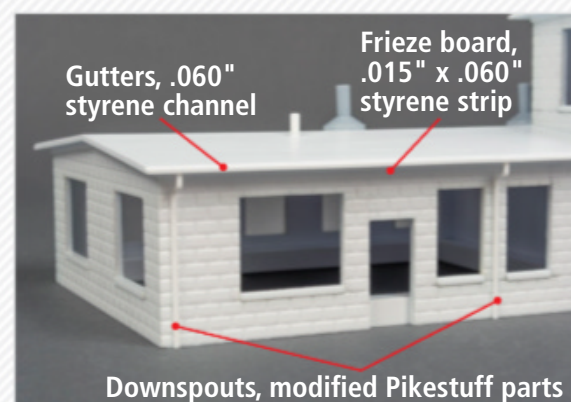
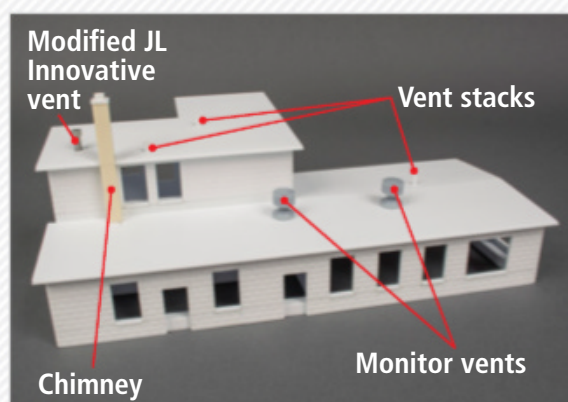
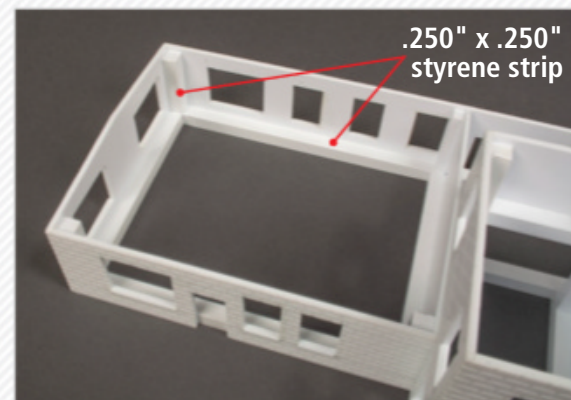
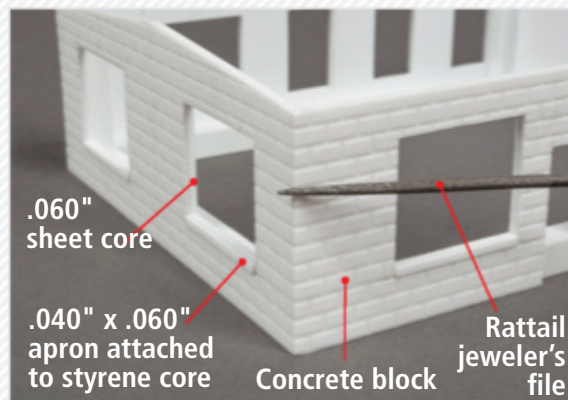
STEP 2 STYRENE FOR ALL OCCASIONS

I started by cutting the structure's core from .060" plain styrene sheet. Then I cut matching concrete block panels from The N Scale Architect no. 50005 styrene sheet, leaving the edges for the front and back walls slightly oversized. I attached the block to the styrene with Model Master Liquid Cement for Plastic Models.

Next, I marked the window and door openings. I used Tichy Train Group 1/1 double-hung windows (no. 8162), splicing them in locations with two windows. I trimmed the frame on the Pikestuff doors (no. 541-1103) to fit the openings.

I then drilled a hole in the center of each door and window location and used a nibbling cutter to remove most of the styrene. I used jeweler's files to finish the openings.

Next, I attached the wall sections with plastic solvent cement. I trimmed the overhanging concrete block on the front and back walls so it was flush with the end walls. After the glue dried, I used a rattail jeweler's file to continue the mortar line detail through each corner.



I reinforced the bottom of each wall section and the corners with 1/4" square styrene strip.

Next, I added the .060" styrene sheet roof sections. Using prototype photos as a guide, I added three vent stacks (3/32" styrene tube), a Depots by

John cast-resin chimney (no. HO-124) modified with a styrene crown and flue, a vent from JL Innovative kit no. 507 (also modified), and two short monitor vents with a round base from Walthers kit no. 933-3733. I used styrene for the gutters and frieze board.

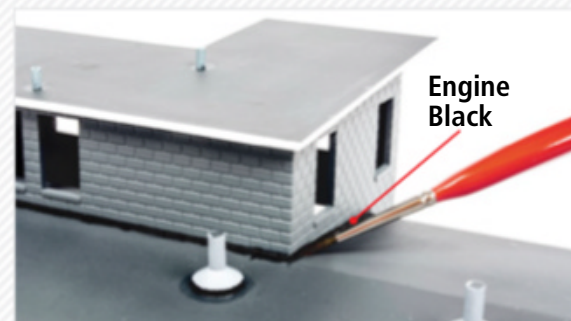
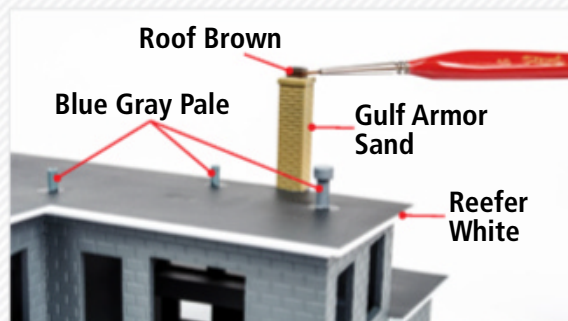
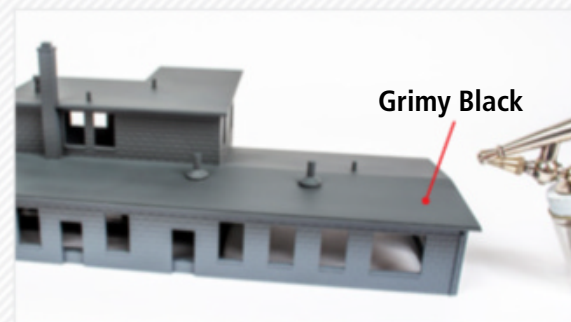
STEP 3 TO THE SPRAY BOOTH

I washed the building in warm water with a few drops of dish soap added to remove impurities that might affect paint adhesion. Then I sprayed the yard office with Rust-Oleum Painter's Touch 2X Flat Gray Primer (no. 249088). The plastic-compatible primer won't craze styrene.

I waited 24 hours before applying the final colors. I used an airbrush to spray the roof Model Master Grimy Black (no. 4887); the walls Reefer Gray (no. 4886); and the fascia, soffits, and frieze boards Reefer White (no. 4873).

Next, I painted the portion of the chimney above the roofline Model Master U.S. Army/Marines Gulf Armor Sand (no. 4812). I used a 4/0 paintbrush to apply Roof Brown (no. 4884) to the flue. I used a Microbrush to paint the various vents Vallejo Blue Gray Pale (no. 70.905).

In prototype photos I noticed sealant was applied where the roof meets

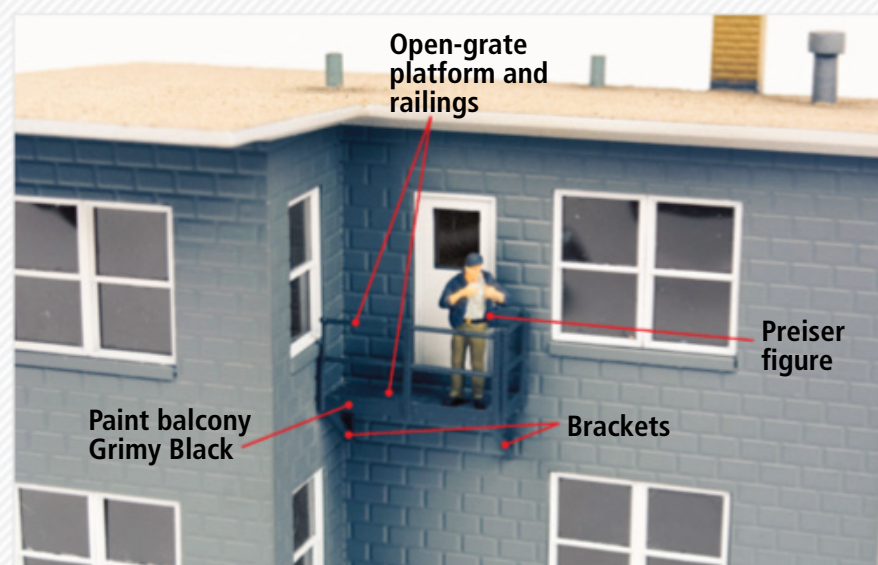
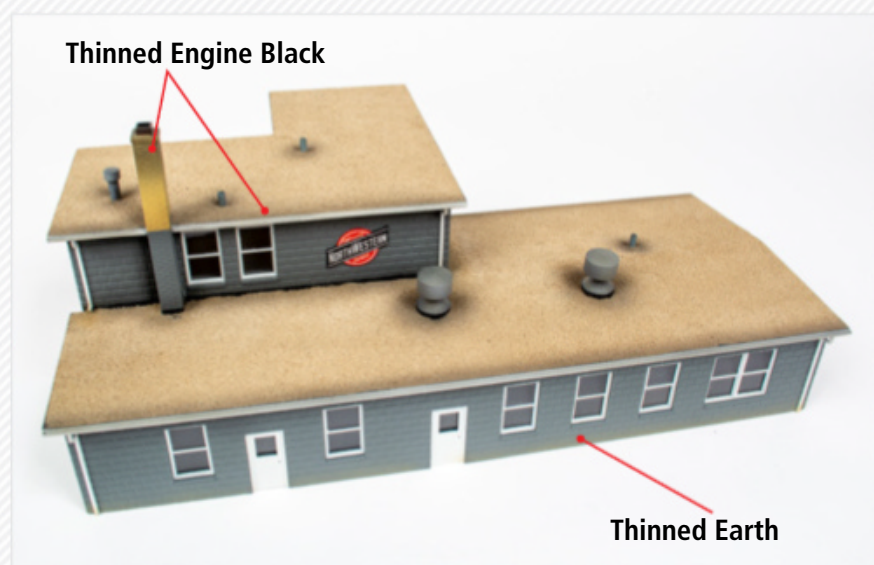
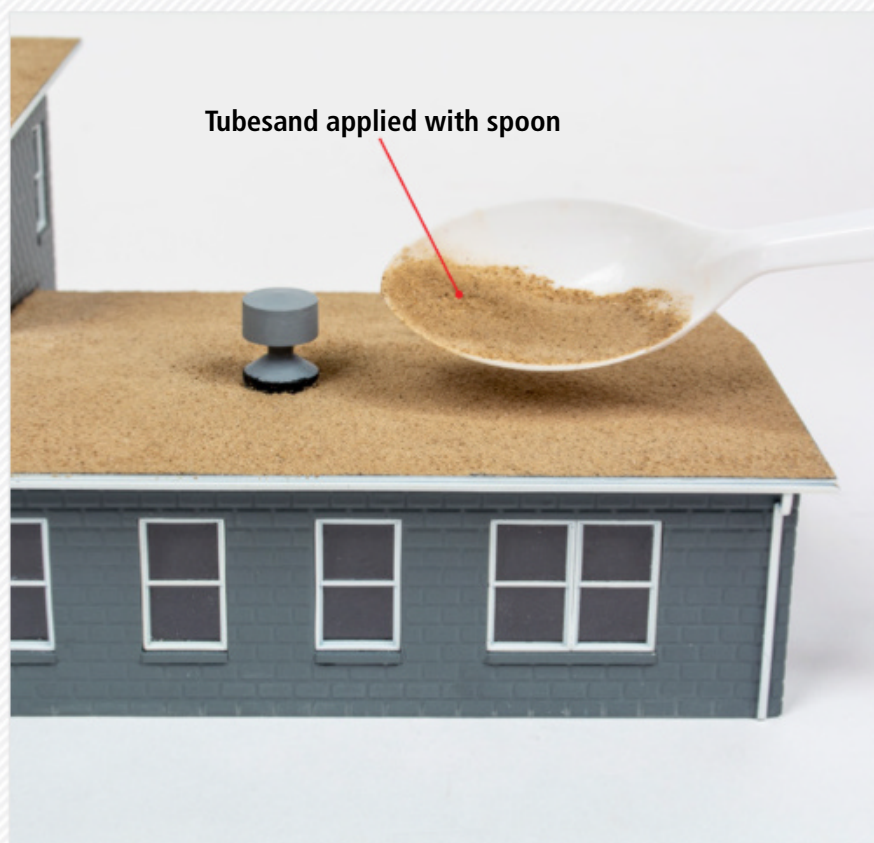


the second story. To capture that look, I used a brush to apply Model Master Engine Black (no. 4888). This is one of those rare instances where it's OK to be a bit sloppy. On full-size structures sealant is typically applied

with a push broom or large brush, so the edges aren't always neat.

I finished this part of the project by installing the windows, which I painted Reefer White. I attached the supplied glazing with canopy glue.

STEP 4 ROOF, WEATHERING, AND FINAL DETAILS



Based on prototype photos, it appeared the yard office had a tar-and-gravel roof. The Grimy Black paint I applied earlier captured the tar look. But what about the gravel? I ran Quikrete Tubesand through a tea ball infuser. The mesh basket on the infuser allowed only the fine granules to pass through, perfect for what I needed.

With enough sand collected, I applied slightly thinned white glue to the roof in small patches. With the glue wet, I used a spoon to apply the sand. Once the upper and lower roof sections were covered, I applied 70 percent isopropyl alcohol with a pipette to break the surface tension and let the glue work its way through the sand.

The prototype yard office featured a Chicago & North Western "ball-and-bar" herald on the back wall of the second story. I asked our lead illustrator, Rick Johnson, to make C&NW heralds in a few sizes and print them out. I attached the sign to .010" styrene with double-sided tape, painted the edges, and secured it to the building with canopy glue.

The full-size building also had a sign on the north end with a smaller C&NW herald and wording that wasn't

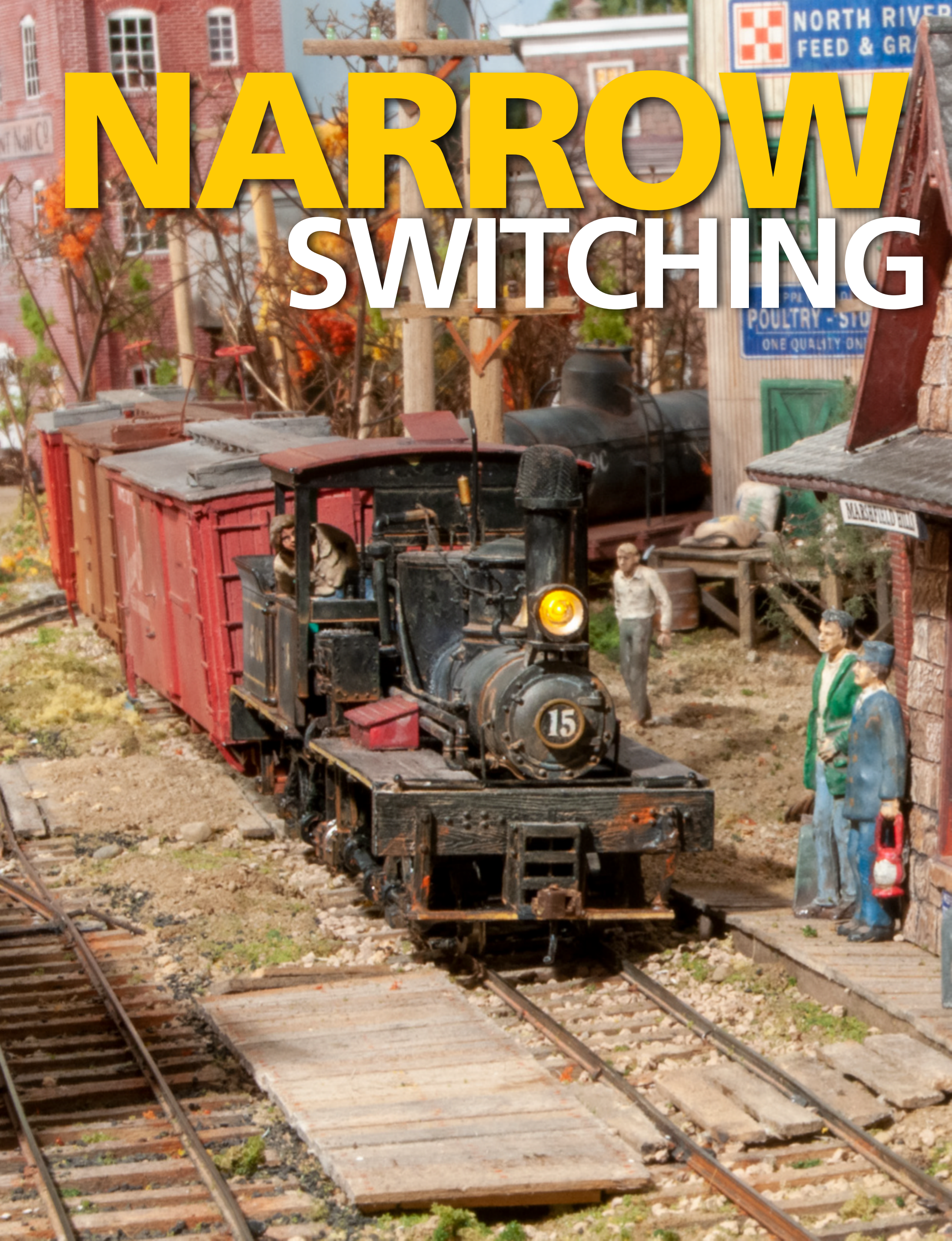
legible in the prototype photos. However, I found a photo online of a similar sign at C&NW's Janesville, Wis., terminal. I showed it to Chuck, he picked the wording he wanted, and Rick made the sign. I attached it using the same techniques as before.

The building looked a bit too clean for my taste. To make the yard office look like it had been around for a while, I weathered the roof with Engine Black and the foundation with Earth (no. 4877). I thinned both colors to a wash-like consistency with Testor's Universal Acrylic Thinner and applied them with an airbrush.

I finished up the structure by adding the balcony. The open-grate platform and pipe railings are from Tichy Train Group (no. 8001). I found the brackets in my scrap box. Tichy offers brackets (no. 8011) designed for use with the open-grate platform. A Preiser figure putting some paperwork in his shirt pocket completed the scene.

If you can't find the structure you want for your model railroad, give scratchbuilding a try. Yes, it takes some work. But in the end, you'll be rewarded with a building that you won't find on any other layout. **MR**

NARROW SWITCHING



GAUGE ACTION

This On30 shelf layout's plan was inspired by John Allen's "Timesaver"

By Lou Sassi
Photos by the author



① Marshfield & Old Dominion Shay no. 15 pulls a freight past the Marshfield Hills station on Michael Tylick's On30 M&OD shelf layout. The station was kitbashed from Railway Design Associates styrene castings.



② Center-cab diesel no. 132, a Whitcomb 50-tonner, delivers a boxcar to the Parker & Tremont Nail Company. Mike scratchbuilt the boxcar following an Edaville RR prototype. The locomotive is a Bachmann model.

Mike Tylick's fascination with model railroading started with his exposure to the real thing. His father, who worked for the Erie RR on tugboats in New York Harbor, would occasionally bring young Mike to work, exposing him to the bustling activity of the Erie yards around the city. Those childhood experiences led Mike to build numerous model railroads not only for himself, but also for others, while working for companies that built custom layouts. He still does layout design, railroad graphics, and custom model building under the name RailDesign Services.

The On30 Marshfield & Old Colony RR (M&OC), shown here, was created by Mike based on several other railroads he built, all inspired by John Allen's "Timesaver" portable layout. [The Timesaver was a 2 x 4-foot switching puzzle Allen would challenge his friends with. -Ed.] The 8 x 16-foot, L-shaped



③ This overall view shows the entire shelf layout from the Marshfield end.

railroad has a main line that goes into hidden staging tracks on either end. Mike plans to use a "back and forth" circuit to move trains automatically across the scenicked portion of the layout.

The railroad is set in the 1930s and loosely based on the coastal region of Southeastern Massachusetts, specifically the Old Colony Railroad, although the

prototype OCR was standard gauge. The model also encompasses the Marshfield and Scituate sections of the Old Colony Greenbush Line.

Benchwork and track

Construction began in 2011. Since the room was finished by the previous

owner, Mike was able to start work on the railroad immediately. He added a removable wallpaper liner over the paneled walls and painted a blue sky. Over this he used stencils to spraypaint clouds, along with a few lightly colored mountains. He installed dimmable LED track lights for lighting control.

Mike mounted L girders to 1 x 2 angled legs. He spread the legs to a 15-degree angle, creating a parallelogram shape. This creates a stable table with less bracing. He laminated 1/4" thick white pine lattice stock over 1/2" plywood subroadbed to hold spikes better.

Mike used a Micro-Mark table saw to cut wood into strips as narrow as 1/4" wide, which he wetted down and bent to form sharp curves. Full-width wood was used on tangent track.

All of Mike's track is handlaid, including a dual gauge crossing and dual gauge track along with a pointless switch where the standard and narrow gauge meet (see "Dual gauge tongue switch and crossing" on page 32).

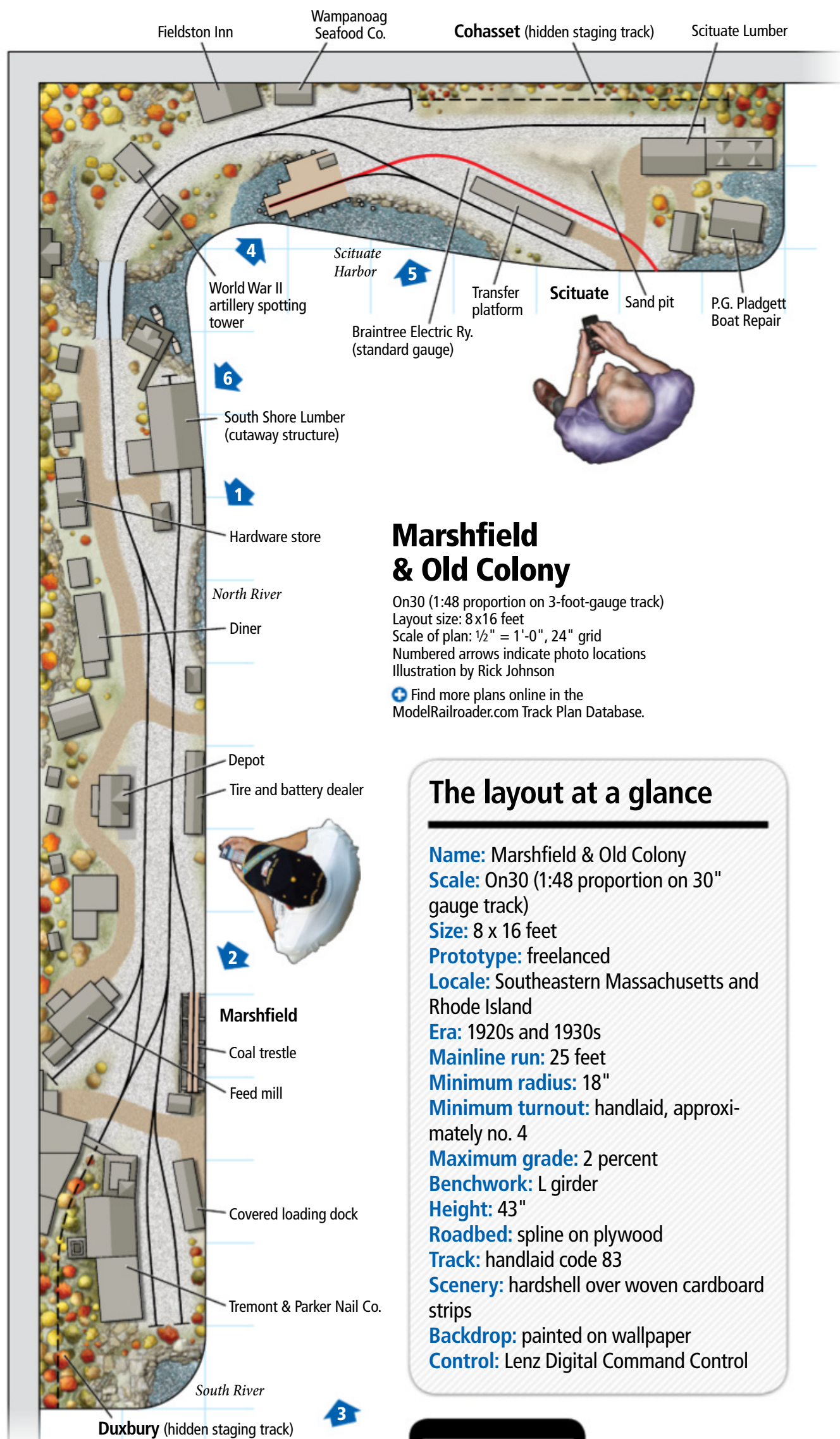
Impressionist scenery

To reduce plaster mess, the layout, including scenery, was built in the workshop portion of the basement and moved into the finished layout room when completed. Mike spread plaster-soaked paper towels over woven cardboard strips to craft the landforms. He then applied thicker plaster over these forms and stained with washes of gray and brown latex paints to create an earth color.

To create texture and color variations, he spread Scenic Express dirt and Woodland Scenics green blended turf over the plaster. He stippled paint on the plaster to represent igneous rock and used streaked paint for sedimentary rock, then added color with washes of latex paint, following techniques developed by Linn Westcott. Several plaster rock castings were also used.

Foliage is a mix of local weeds Mike picks in the fall mixed with Woodland Scenics ground foam foliage materials. Although Mike considered using Scenic Express SuperTrees on the layout, he opted to fall back on the materials he has used for years, preferring a "signature" look rather than a more contemporary but less original appearance.

"Using representational objects that may be less realistic reinforces the idea of a sculptural piece rather than a model," Mike said. "Perhaps a bit like the work on a typical watercolor painting. Maybe a bit impressionistic."



Marshfield & Old Colony

On30 (1:48 proportion on 3-foot-gauge track)
Layout size: 8x16 feet
Scale of plan: 1/2" = 1'-0", 24" grid
Numbered arrows indicate photo locations
Illustration by Rick Johnson

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

The layout at a glance

Name: Marshfield & Old Colony
Scale: On30 (1:48 proportion on 30" gauge track)
Size: 8 x 16 feet
Prototype: freelanced
Locale: Southeastern Massachusetts and Rhode Island
Era: 1920s and 1930s
Mainline run: 25 feet
Minimum radius: 18"
Minimum turnout: handlaid, approximately no. 4
Maximum grade: 2 percent
Benchwork: L girder
Height: 43"
Roadbed: spline on plywood
Track: handlaid code 83
Scenery: hardshell over woven cardboard strips
Backdrop: painted on wallpaper
Control: Lenz Digital Command Control

MORE ON THE WEB

Model Railroader magazine subscribers can watch video of trains on Mike Tylick's On30 layout at ModelRailroader.com



4 Shay no. 15 spots an empty narrow gauge gondola for loading on the Scituate Harbor pier while passengers wait at the shelter for the standard gauge Braintree Electric Ry. railcar to pick them up. The water is resin, poured over a blue-green and tan painted base; the pier is scratchbuilt.



5 Mike handlaid this dual-gauge turnout and crossing in the Scituate Harbor area of the layout. No points are needed, because each gauge of track only goes in one direction.

Dual gauge tongue switch and crossing

I couldn't find a prototype of the dual gauge turnout I built at Scituate Harbor, but I'm sure one must exist somewhere. Perhaps this could be more aptly considered a gantlet switch, because we have a situation where the two lines of a dual gauge track go their separate ways.

Since each line can only travel one way, there's no need for switch points, just a tongue-type switch and some guardrails to ensure the trains follow the correct rails.

The dual gauge diamond crossing is probably more common, just two tracks of different gauges crossing each other. Both of these were scratchbuilt, since I doubt I would ever find them commercially. – Mike Tylick

To model water, Mike used two-part casting resin poured in two thin coats over a base colored with dark green and earth-colored paints. In Mike's opinion, since water, like fire and smoke, is continually moving, it's difficult to represent well in a static model. Although wave effects on modeled water can look good in photographs, which freeze a moment in time, he's disappointed with the results when viewing them in person among moving models. For this reason, he prefers to model still water such as that found in bays and inlets, where a slow-moving tide would be almost unnoticeable to the eye.

Scratchbuilt structures

Most of Mike's structures are scratchbuilt, though the layout does feature a few kitbashed plastic and laser-cut wood kits. One of his favorites is a cut-away lumber yard (see "The edge of the frame" on the next page). Cutaways are a feature

that railroad modelers seldom build, and therefore, he feels that this is one of his signature structures.

Mike uses a lot of watercolor (not acrylic) paint for weathering. He finds the subtle effect of this inherently transparent medium to be easier to control as washes. He often applies complementary watercolors to soften an original color. He opts for water-based bottled craft store paints, which provide him with an enormous variety of inexpensive, flat, fine-pigmented colors.

Many of his buildings have what he refers to as “suggested interiors.” Rather than purchase expensive detail parts, he opts to use bits of wood and paper along with photos to suggest interior detailing. He also installs interior lighting when he feels it is necessary.

Mike has scratchbuilt a styrene plate girder bridge, wood coal trestle, and waterfront pier. All are designs derived from *Bridge and Trestle Handbook* by Paul Mallery (Carstens Publications, fourth edition, 1992).

Making it move

Narrow gauge motive power consists of four Bachmann Spectrum locomotives, three steam and one diesel, all weathered and sound-equipped. Engines are controlled using Lenz DCC. All of Mike’s locomotives and rolling stock are weathered using acrylic and watercolor washes along with chalks and PanPastel weathering powders.

Some of Mike’s more interesting rolling stock includes two narrow gauge steel hoppers based on the Erie’s horizontally braced standard gauge cars. Three gondolas and a tank car are Bachmann models.

Three narrow gauge boxcars are scratchbuilt from drawings of Bridgeton & Saco River cars; one is decorated for the Marshfield & Old Colony. The other two are painted in the “Cranberry Red” scheme used by the late Ellis Atwood on the prototype Edaville RR, a line that worked Atwood’s cranberry bogs with locomotives and equipment he saved from a number of now defunct two-foot-gauge Maine railroads. (The Edaville RR eventually became a tourist attraction, which still exists.)

Operation consists of local freight and passenger traffic. Generally, two trains leave the hidden track, enter town, and work. Mike plans to use a simple card system that sends a car to a shipper, then offline, following a randomly selected sequence of moves. A typical



6 This lumber and building materials warehouse, cutaway at the fascia to show a detailed interior, attracts a lot of attention from visitors to the layout.

The edge of the frame

If we can imagine a large knife slicing through our scenery to establish the front edge of our model railroad layouts, this knife must also slice through any structure that lies in its path. In addition to reinforcing the idea of a world beyond the layout edge, a cutaway see-through structure offers the opportunity to fully detail an interior that will actually be seen and enjoyed by visitors. Interiors I have previously detailed that can only be seen by removing the structure’s roof may only have been viewed once or twice.

By implying that a considerably larger structure exists beyond the layout’s edge, we can represent a large building in a small space, the inverse of a structure flat against the backdrop. A cutaway model becomes a great conversation piece; visitors always notice and devote a good deal of time to studying it.

The idea is not a new one; the idea of a cropped object probably became apparent from the early days of photography. Former MR editor Linn Westcott included cutaway structures in some of his delightful track plan renderings. I think they should be modeled more often. I’ve built one on at least three model railroads; it’s become one of my “signatures.” – Mike Tylick

operating session will keep from two to four people busy for one to two hours.

Thinking bigger

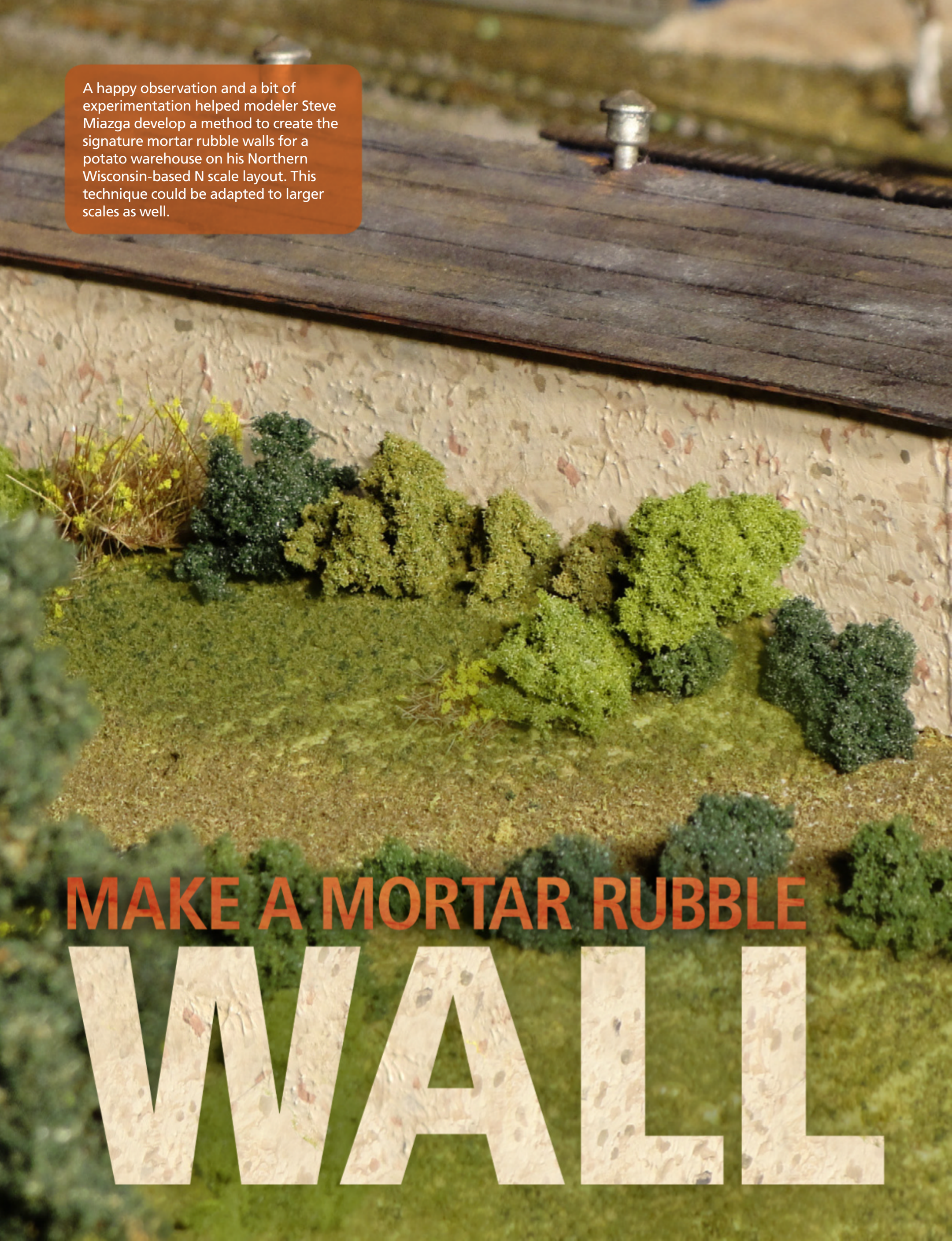
Working on and operating the M&OC has caused Mike to reach some conclusions. Although he prefers to work in larger scales, because the work and end result are easier to see and appreciate, he wishes that this railroad had been O scale rather than On30. Although he feels that On30 equipment is excellent, he finds it as finicky to operate and maintain as HO scale. What he prefers is, in his words, “equipment I can leave for months, then return to the train room, turn on the trains, and watch them run.”

Mike is now considering building in large scale or possibly 3-rail O gauge. No matter what scale or gauge he chooses, the end results will probably be outstanding. 



Meet Michael Tylick

Michael Tylick is a “skipped generation” in the railroad business. His grandfather worked for the Central of New Jersey and his father for the Erie. His son now works for BNSF. Michael is a retired art teacher who’s authored many articles in the hobby press. He recently formed RailDesign Services. Now remarried, he lives in Massachusetts.



A happy observation and a bit of experimentation helped modeler Steve Miazga develop a method to create the signature mortar rubble walls for a potato warehouse on his Northern Wisconsin-based N scale layout. This technique could be adapted to larger scales as well.

MAKE A MORTAR RUBBLE WALL



Woodland Scenics Water Effects makes it easy to simulate the texture on this potato warehouse

By Steve Miazga
Photos by the author

When I expanded my N scale Missabe Junction Ry. ["Missabe Junction revisited," September 2018 – *Ed.*], I wanted to add structures that were representative of rail-served industries in northern Wisconsin. A little field research came up with a candidate: potato warehouses. The Starks, Wis., area used to be a producer of potatoes, and that's where I found a row of warehouses on a siding along the Soo Line. Several of the buildings were simple steel-sheathed structures, but one was unique, being constructed with mortar rubble walls.

Mortar rubble walls are cheap and simple to build and have a rough surface that's sometimes more mortar than stone. There's no attempt to lay the stone in courses, so the finished result has a random, mottled look to it.

All of the buildings were simple rectangles, which made them easy to scratchbuild. But the mortar rubble wall texture presented a challenge. Unlike the metal structures that could be built using available sheet styrene, searches for a styrene mortar rubble finish in N scale came up empty.

I was committed to building this structure, so I surveyed my fellow hobbyists for a solution. How could I get the right texture on plain styrene? Suggestions were to distress the styrene with a soldering iron, stipple the surface using a stiff brush and styrene solvent cement, or use

random stone styrene sheet as a last resort. None of these seemed to be the right solution, and it appeared I was at a dead end.

Eureka moment

The branch line expansion included a river I made with Woodland Scenics Realistic Water, which I textured with Woodland Scenics Water Effects. Could the stippling effect utilized to make waves on the water be used to get the random rough texture of the mortar rubble walls? I took a scrap piece of sheet styrene and used a stenciling brush to apply the Water Effects and set it aside to dry overnight.

Water Effects dries clear, so I applied a base coat of paint to confirm the result. Before this I lightly sanded the texture to remove any spikes. The texture was perfect for N scale.

The color of stone

The next step was getting the proper color on the walls to match the aged mortar. I had a good daylight photo of the warehouse, so the game was on.

Using Acrylicos Vallejo Model Air paints, I kept mixing samples until I found a final color match to the prototype. I prefer the Vallejo Model Air line to the Model Color line because the paints are thinned for airbrushing. Also, some colors were only offered in the Model Air line.



The rough texture of the mortar rubble wall on this potato warehouse isn't available in any commercial building material.

The final mix was 10 parts 71.001 White, 1 part 71.042 Dark Brown, and 4 parts 71.074 Beige.

Now that I found the proper mortar color, I had to come up with a better way to apply the stone accents. I used a small paint brush for the stone accents, but I wasn't happy with the result. The stone accents were too round.

I remembered a Model Railroader Video Plus segment where Cody Grivno was doing some detail painting using a Microbrush. So out came the test piece of scrap styrene, along with the Vallejo browns and grays. The Microbrush worked perfectly, and by applying the colors using both wet and dry-brush techniques, I was able to get the variations I wanted.

Building assembly

Once I figured out how to get the finish I wanted, it was time to start construction. The prototype structure is about 60 feet wide by 200 feet long. I selectively compressed it to 28 x 60 feet to fit my siding. If you want a larger warehouse, the rail-side loading doors are at 45-foot intervals.

I built the door assemblies before cutting the walls. I used stripwood to fabricate the doors and dock opening. The doors are made of scale 4 x 10 strips glued to wood tabs made of the same material. These finished items will determine the size of the openings in the styrene walls.

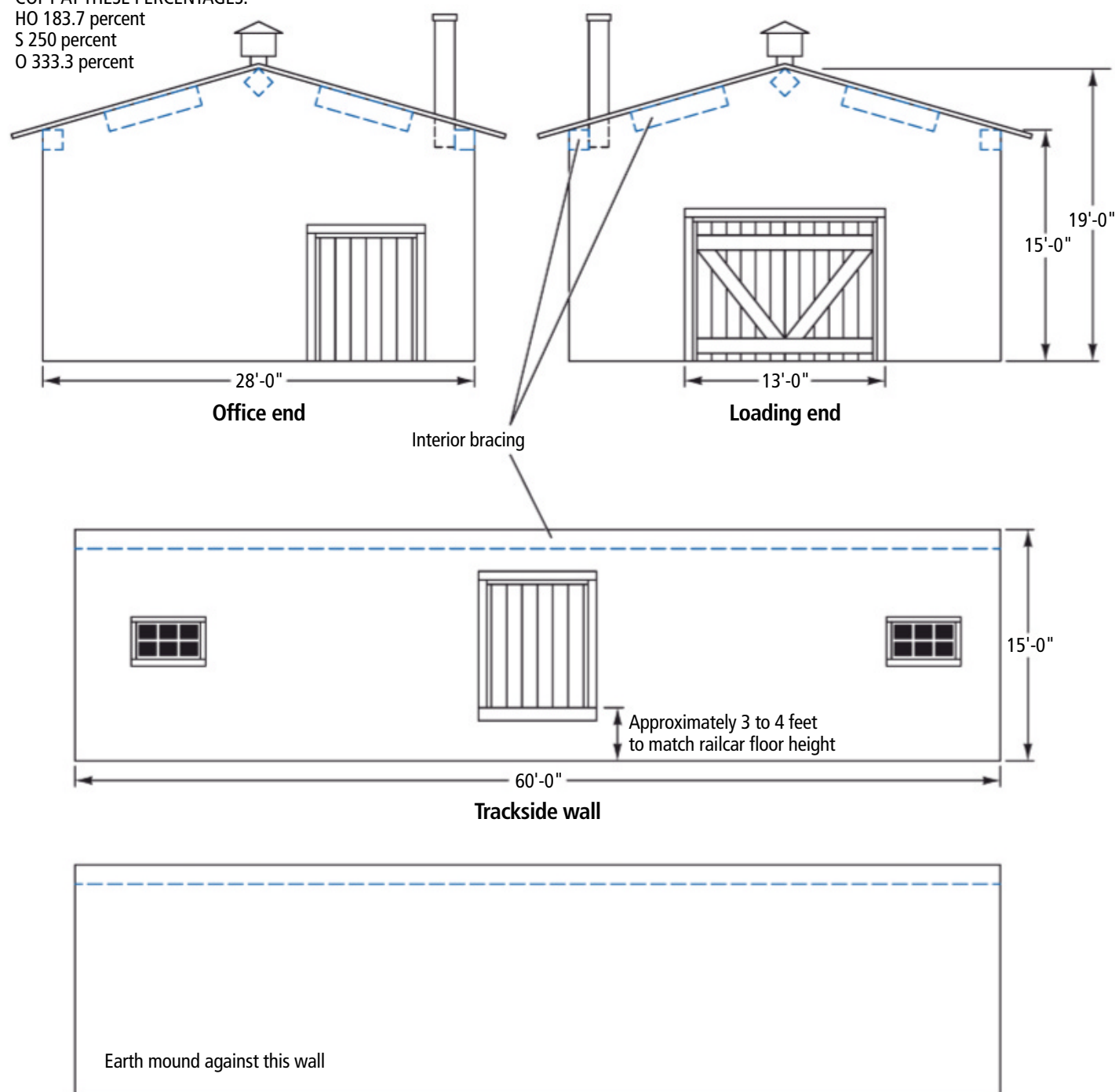
Once I knew the size of my door openings, I cut the warehouse walls from .040" plain styrene, then cut the openings for the windows and doors. I cut the openings small and used sanding sticks and files to enlarge them to the perfect fit. Remember to allow for the door and window jambs. You don't want gaps.

I assembled the four walls using styrene solvent cement. I cut roof sections from .040" thick plain styrene sheet, based on the size of the

Potato warehouse building wall details

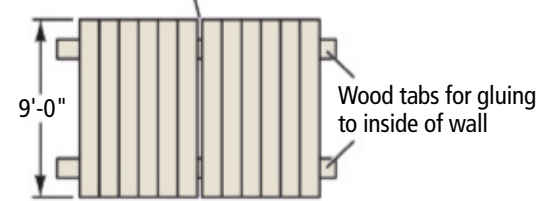
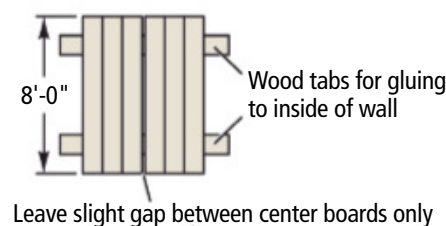
Ratio 1:160, N scale

TO CONVERT N SCALE
DRAWINGS TO YOUR SCALE
COPY AT THESE PERCENTAGES:
HO 183.7 percent
S 250 percent
O 333.3 percent



Potato warehouse wood door details

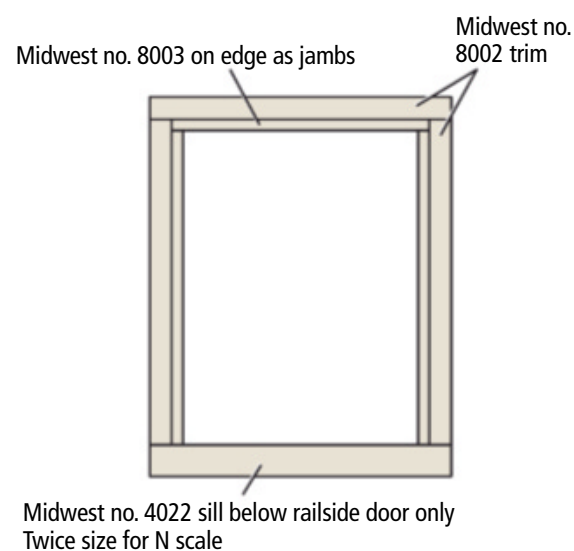
Office and trackside doors



Loading door

All material Midwest Products no. 8003 basswood
Full size for N scale

Door framing detail



building and allowing for a 2-foot overhang. I added .100" square styrene strips for bracing at the roof gable and along the interior where the roof will be attached. The strips also help keep the

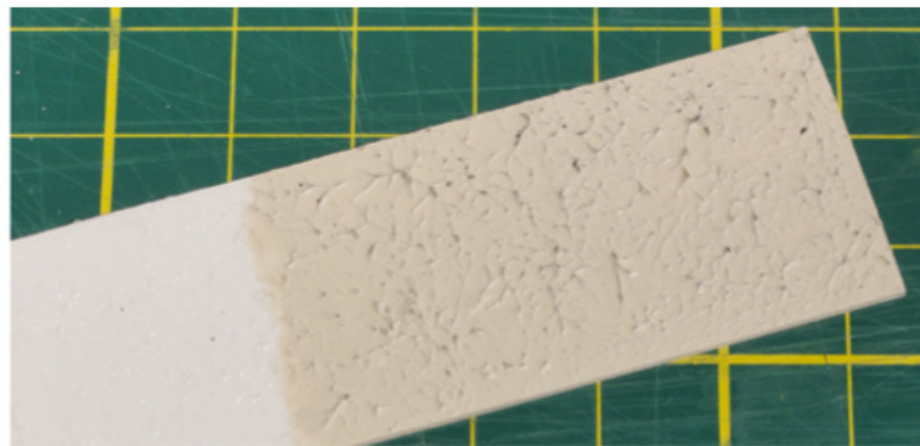
structure from warping after assembly.

I painted and weathered the doors before I attached them. I first used a gray stain to age the wood. When the stain was dry, I drybrushed a

diluted mix of 70 percent isopropyl alcohol and Vallejo Air 71.271 German Red Brown. Don't forget the door-jambs and trim. I used this same color, undiluted, to do the roof edges and the



Steve began testing with Woodland Scenics Water Effects applied to a scrap of .040"-thick styrene sheet with a stencil brush. The material dried clear. Steve knocked down spiky peaks with a bit of sanding.



Steve tried a few mixes of Vallejo Model Air paints until he got a mortar color he liked. He mixed 10 parts 71.001 White, 1 part 71.042 Dark Brown, and 4 parts 71.074 Beige. Your layout lighting might result in different proportions.

Materials list

Evergreen Scale Models styrene

9040 .040" sheet
9006 .010" sheet
122 .020" x .040" strip

Midwest Products

8002 .0208" x .0416" stripwood
8003 .0208" x .0625" stripwood
4022 1/16" x 1/16" stripwood

Tichy Train Group

2510 windows
2533 chimney stack

Wm. K. Walther's Inc.

904-299 Goo adhesive
933-3286 roof details

Motrak Models

MTX14003 N scale tar paper roofing

Woodland Scenics

C1212 Water Effects

Acrylicos Vallejo paints

71.001 White
71.074 Beige
71.042 Dark Brown
71.248 Brown Gray
71.121 Light Gull Gray
71.271 German Red Brown
71.072 Gun Metal
71.080 Rust

Miscellaneous

PanPastel weathering powders
Flex-I-File Plast-I-Weld 7112 styrene cement
Pacer PT-56 canopy glue

undersides of the eaves. The doors and roof edges were weathered with gray and black PanPastel powders.

I made the chimney from a Tichy Train Group no. 2533 chimney column, cut to length, then added .020" x .040" strip styrene to create the chimney cap. I drilled a hole in the chimney cap using a pin vise, then used a sharp hobby knife to square up the hole. I painted and weathered the chimney for attachment later.

Finishing the building

While the paint was drying on the details, I textured and painted the building walls as described earlier. Once the walls were dry, I installed the doors, windows and trim. I added glazing (clear styrene) to the two windows (Tichy Train Group no. 2510 6-lite window) on the rail-side wall using Pacer Canopy Glue. I used Walther's Goo to attach the styrene roof panels. It's best to set aside the structure overnight while the Goo dries.

Once all the glue was dry, I applied Motrak Models scale 3-foot-wide tar paper roofing to the assembled building using Canopy Glue.

The chimney and roof vents came next. I located the chimney so it could be attached under the roof to one of the .100" interior braces. I used a small bit in a pin vise to drill to pilot hole in the roof opening, then used a sharp hobby knife to

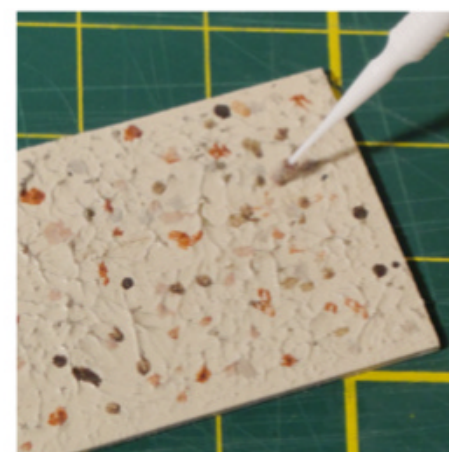
finish the opening so the roofing paper wouldn't tear. I used the same process to install the roof vents. The vents were from my scrap box, but similar parts are available in the Walther's Cornerstone no. 933-3286 Roof Details kit.

Final weathering included a light wash to the walls, made from India ink diluted 30:1 in 70 percent isopropyl alcohol, and PanPastel accents applied to the roof.

Potato warehouses usually had an earthen berm around much of the structure to keep the temperature cool in the buildings. When you consider placement on your layout, try to add this landscape element to your building site.

While this wall texturing technique was used in N scale, the same process could be applied in any scale. The only difference would be the relief of the stippling on the styrene.

Now that I figured out how to create mortar rubble

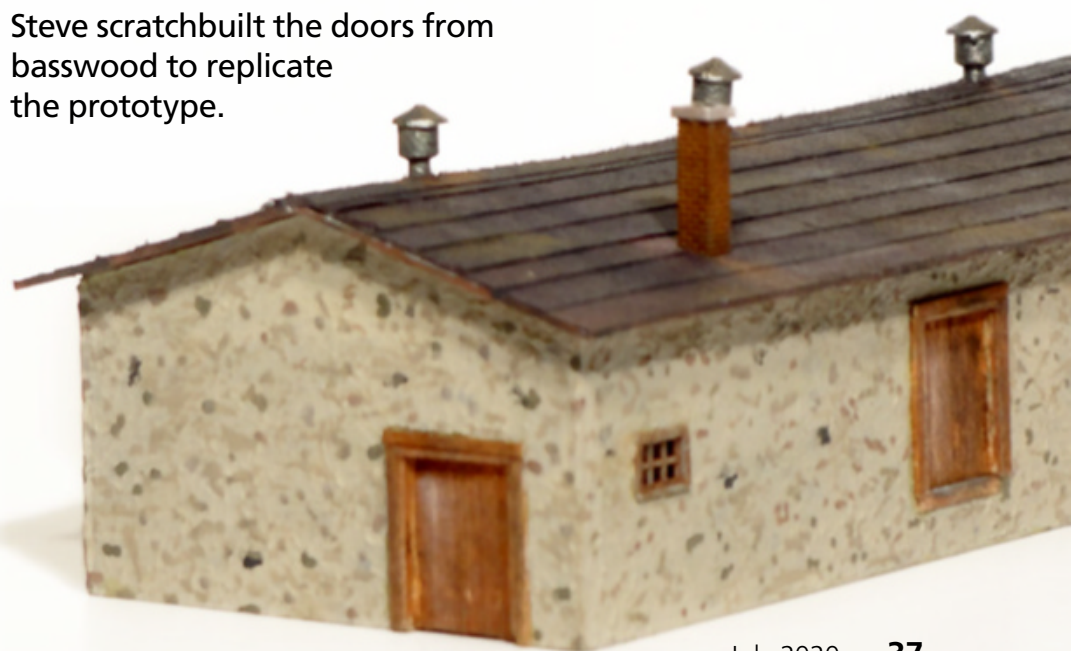


A video on Model Railroader Video Plus tipped Steve off to using Microbrushes to apply dabs of paint to simulate stones in the mortar.

texturing, I'm going to apply it to the exposed basement walls on some of my older structures to better match the time period I model. Meanwhile, I have a unique trackside structure. [MR](#)

Steve Miazga is retired and lives in the Milwaukee suburbs. He models the Soo Line and other Upper Midwest railroads on his N scale Missabe Junction Ry.

Steve scratchbuilt the doors from basswood to replicate the prototype.





① The high steel trestle on the Detroit, Toledo & Ironton and the arched concrete viaduct on the double-track main are scenic highlights of the Coshocton Model Railroad Club's HO scale Toledo, Walhonding Valley & Ohio RR. The freelanced railroad has a mainline run of more than 960 feet.

Pulling together

at the Coshocton Model RR Club

This southern Ohio club's layout fills 50 x 150 feet with handlaid track, detailed scenes, and a vintage interlocking machine

By Lou Sassi • Photos by the author

The Coshocton Model Railroad Club began in 1972 when the Rev. Robert Kleesattel put his business card in all the model railroad magazines on the newsstands and store shelves of Coshocton, Ohio. The reverend also included a note about meeting with anyone interested in starting a model railroad club. Many people attended that initial meeting, with 26 of them becoming charter members.

As of this writing, the club, also known as the Associated Model Railroad Engineers of Coshocton, Inc. (AMREC), has 52 members. The club's HO scale Toledo, Walhonding Valley & Ohio RR (TWV&O) fills a 50 x 150 foot space inside a dedicated building at the Coshocton County Fairgrounds.

In addition to trackside industries and rolling landscape depicting typical scenes of southeastern Ohio, a highlight of the layout is the vintage 32-lever interlocking machine that controls a scale representation of the New York Central System/Detroit, Toledo & Ironton

crossing at Quincy, Ohio. Learn more about how the club uses this unique piece of railroadiana in "Putting the past to work" on page 43.

Second time's the charm

The TWV&O is actually the club's second layout. Back in the 1970s the club built its first layout, a 30 x 72-foot HO railroad, in an existing building in the city of Coshocton. After 16 years, the club lost its lease, and the layout along with it, when the building was torn down to make way for a parking lot.

Thankfully the Coshocton County Fairgrounds stepped in and offered the club a place to build a new steel structure to house a new layout. The club's "rent" is \$1 for a 100-year lease.

Construction on the building began in fall of 1992. Since this was to be a public building, every step of the building's plan and construction had to be inspected and approved by state officials. Club members did most of the work except for pouring the concrete floor and installing public restrooms, and

eventually adding a central air-conditioning system.

Many local businesses helped the members by providing equipment, supplies, and additional personnel at no or reduced cost. For example, there are prototype Nickel Plate Road and Pennsylvania RR cabooses displayed in front of the club building. The Ohio Central RR provided the materials to lay the track on which the two cabooses rest, while another local company moved the pair from a nearby siding to their present location free of charge.

A freelanced line

The club's TWV&O takes its name from a prototype Pennsylvania RR subsidiary that ran through the area. However, club members modeled their railroad as a freelanced bridge line connecting the East to the Midwest. They based the layout concept on the Pennsylvania RR's Panhandle Division, which ran through Coshocton on its way from Pittsburgh to St. Louis. Club members also took inspiration from the New



2 In this view from inside the main entrance, Jody Davis (left) runs an eastbound train through Big Stone Cut, Phil Porter (center) works the logging line, and Richard Jones (right) mans the interlocking that controls the Quincy crossing. The railroad can be run by either Digital Command Control or direct-current cab control.



3 Led by green-and-yellow ex-Reading Co. Geeps, a Conrail train barrels through Quincy while a Detroit, Toledo & Ironton freight holds at the signal in front of the Farmer's Co-op. The track arrangement models the prototype crossing of Conrail (ex-New York Central) and DT&I that was once controlled by Morgan Tower.

York Central; Nickel Plate Road; and Detroit, Toledo & Ironton.

The club members wanted their model railroad to represent southeastern Ohio, especially the rolling landscape and local industries. Many had fond memories of railfanning throughout the state, including spending time railfanning with the friendly operators at Morgan Tower in Quincy, Ohio, as well as along the PRR main line through Coshocton.

In addition to scenes of small-town Ohio, there's also a logging branch centered around the town of Phillipsburg. Featuring a sawmill complex and geared locomotives, this section of the layout is loosely based on Cass, W.Va.

There's no specific era modeled on the TWV&O. Since it's a large club, almost anything could be found running on the layout. Club members made sure to design the railroad with as wide radius curves as possible so that almost any

The layout at a glance

Name: Toledo, Walhonding Valley & Ohio

Scale: HO (1:87.1)

Size: 40 x 143 feet (layout),
50 x 150 feet (room)

Theme: freelanced

Locale: southeastern Ohio

Era: not specific

Style: walk in

Mainline run: approximately 967 feet

Minimum radius: 42" (main line)

Minimum turnout: no. 14 (main line)

Maximum grade: 1 percent (main line)

Benchwork: L-girder

Height: 39" to 59"

Roadbed: pine lattice over spline,
plywood in yards

Track: handlaid, code 83 (main), code 70
(industrial); flextrack, code 100 (staging)

Scenery: extruded-foam insulation board

Backdrop: painted tempered hardboard

Control: Aristocraft wireless direct-
current cab control and Digitrax Digital
Command Control

④ Seaboard Coast Line GP9 no. 1026 with its train in tow passes the Porter Lumber Co. sawmill, which is loosely based on logging operations in Cass, W.Va. Philip Porter scratchbuilt the wooden tramway.



HO scale equipment could be run, no matter how large.

Like the prototype PRR line through Coshocton, the TWV&O has a double-track main. The double-track arrangement also makes operation easier during public open houses. During the county fair, the layout is open seven days in a row with trains running between six and 12 hours each day.

Layout construction

The layout was built using L-girder construction with risers to support the trackwork. Backdrops made of tempered hardboard mounted on 2 x 2 frames run down the middle of each layout section. The backdrops are high enough that it's

impossible to see over them. Club members painted the backdrops sky blue and added some clouds and trees.

Yard tracks were laid directly on ½" plywood tabletop while other track was laid atop spline roadbed. Each track section has five ⅜" splines underneath it separated by spacer blocks and covered by ¼" Lauan plywood. The roadbed is 1⅜" pine lattice attached to the top of the spline subroadbed with wood glue.

Using Micro Engineering rail and Campbell Scale Models low-profile ties, club members handlaid 95 percent of the track. The rail was spiked to every tie with a Kadee Twin Spiker tool. [Note: Kadee has discontinued this tool. – *Ed.*] Atlas and Micro Engineering flextrack is used in hidden staging yards.

Club members don't rely on kits or templates and instead build custom turnouts and other track to fit specific locations. All curves feature spiral easements with outside rails superelevated about 2 scale inches at the curve's apex. Mainline crossovers feature no. 14 frogs.

SwitchMaster slow-motion switch machines control all mainline turnouts. World War II-surplus rotary relays control all other turnouts.

For wiring the club used a 12AWG power bus running from the main panel to each electrical block, with 14AWG feeders connecting the bus to each section of track. The layout can be run using either direct-current (DC) or Digital Command Control (DCC). A single switch toggles between an



Aristocraft wireless DC system and a Digitrax DCC system.

Scenery and modeling

Club members made the basic land-forms from extruded-foam insulation board with a minimum 2" thickness. After carving the foam to shape, the members covered the surface with a mixture of vermiculite and white glue to form a rough-textured scenery base. Then they painted the scenery base brown and added various grass, bushes, and other ground cover products from Woodland Scenics and Scenic Express, as well as a variety of natural materials. All water was modeled using Enviro-Tex Lite two-part resin.



5 Electrically connected to the layout, this prototype interlocking machine controls the Quincy crossing located across the aisle from it. The 1942 vintage model board is mounted in the case above the levers.

Putting the past to work

The club has one unique piece of equipment that most model railroads don't have – a vintage working interlocking machine. This impressive piece of equipment was originally housed inside Morgan Tower in Quincy, Ohio, where the Detroit, Toledo & Ironton RR crossed the Cincinnati, Chicago & St. Louis RR (Big Four, part of the New York Central System, which eventually became part of Conrail).

George Detwiler of West Liberty, Ohio, purchased the machine from Conrail when the railroad closed the tower in 1984. The machine has 32 armstrong levers that were originally connected to derails, switches, locks, and signals. The tower used the 1942 model board, now mounted in a case above the machine, until the tower closed. George and a group of friends dismantled the machine and stored it in his garage until the club's new building was finished in the early 1990s.

The club's new building includes a pit specifically designed for the interlocking machine, which is electrically connected to the layout. During operating sessions, club members use the levers to line the turnouts at the HO version of Quincy crossing. – Lou Sassi

Structures are a mix of kit-built, kit-bashed, and scratchbuilt models. While members use a variety of materials, most prefer wood or styrene. Regardless of the materials used, buildings close to the front of the layout receive more detail and those along the back get less.

The grain elevator, tower, and station in Quincy are all modeled after prototypes in the namesake Ohio town. In addition to a sawmill complex, Phillipsburg features company houses, a company store, a planing mill, and other structures typical of a small logging town. Other notable structures on the railroad include three large bridges and one trestle, as described on page 44.

Along with members' locomotives decorated for a variety of prototype

railroads, the club runs some custom-painted and decaled diesels in its own livery that also honor the club's deceased members. Some freight cars have been decorated in the club's paint scheme and feature custom-printed decals. There's also a long unit train of covered grain hoppers that were custom painted and decorated to celebrate the club's 40th anniversary.

A few freight cars have been kit-bashed and some open cars have unique loads added to them. All cars meet National Model Railroad Association standards and recommended practices, including car weight. Club members weather most equipment with a light overspray from an airbrush to simulate grime. Some cars receive additional



Building bridges

Bridges are favorite scenic features on many model railroads, and the Toledo, Walhonding Valley & Ohio is no exception. There are three major bridges along the TWV&O main line. Two of the most prominent examples are the arched concrete viaduct and the high steel trestle shown in the photo on page 38.

The model of the arched concrete viaduct is made of three sheets of 2"-thick extruded-foam insulation board laminated together to form a single 6"-thick piece. A local company assisted by cutting out the bridge from the foam using its CNC water jet cutter.

The steel viaduct on the Detroit, Toledo & Ironton line is modeled from multiple Micro Engineering kits with some modifications, including scratchbuilt walkways. Club members built these kits during work sessions in the 1990s and weathered the model using photos of a prototype DT&I bridge as a guide. The fully assembled bridge was then installed on the layout.

The foundation of the skewed bridge on the main line in Thomasville is the deck from a Walthers two-track truss bridge kit. The entire bridge superstructure was scratchbuilt.

Although not on the main, there's one more bridge on the layout. The logging line features a wood trestle that club members salvaged from their previous layout and rebuilt to fit its new location. – *Lou Sassi*

6 CSX GenSet no. 1304 (left) and MP15 no. 1155 work the Beighley Mining Co. tracks as a manifest freight passes in the background. Club members run a variety of equipment on the freelanced model railroad.

weathering from powdered chalks sealed with Testor's Dullcote.

Running the railroad

With at least 1,000 cars on the layout at any given time, there's enough rolling stock to serve local industries and provide ample bridge traffic during operating sessions. Depending upon the size of the group, a session usually lasts from two to four hours.

When run with DC cab control the layout can handle one dispatcher, two yardmasters, five mainline engineers, two logging line engineers, and one engineer working the coal mine. More operators can participate when the layout is run with the DCC system.



7 Union Pacific no. 3579 leads a freight past the brick plant near Quincy. The SD40-2 suffered an engine fire, so its prime mover and long hood were replaced with those from a Chicago & North Western unit.

During operating sessions, the club doesn't follow a fast clock, and working signals haven't all been installed yet. Layout operations currently follow a sequence with Java Model Railroad Interface (JMRI) software used for car routing. In addition to bridge and local industry traffic, the club runs unit and passenger trains. A typical session features eight to 10 scheduled trains with extras added as needed.

A group effort

The club has worked to build a model railroad that looked realistic and operated as much like a real railroad as possible. Despite some setbacks, club members worked together and have come fairly close to that goal.

There's still work to be done on the TWV&O, but the club's in no rush. Club members have learned from the experience of building the first layout and overcome some new challenges involved with this larger, second model railroad. For nearly 50 years the Coshocton Model Railroad Club has been successful by following its club motto. In their words, "Let's see how well we can build it, not how fast." **MR**



Meet the Associated Model Railroad Engineers of Coshocton

The Coshocton Model Railroad Club, or more officially the Associated Model Railroad Engineers of Coshocton (AMREC), is located at the Coshocton County Fairgrounds at 707 Kenilworth Avenue, Coshocton, Ohio. The group holds regular operating sessions and open houses. For more information, go to the club's Facebook page at facebook.com/amrec.rrclub.

Some AMREC members are pictured above in front of the club's Pennsylvania RR cabin car. The first row (seated) includes: Richard Jones, Doug Mitchell, Bruce Steinfurth, Phil Porter, Dave Snyder, Nikki Todd, Ron Householder, Edward Skerness, and Bern Beighley. The second row includes: Tom Veigel, Jody Davis, Rick Moore, Jadyn Cline, Jesse Adams, Strattyn Beighley, and Eddy Dennis. The back row includes: Jim Murray, Russ Gwin, Jim Phelps, Roger Beighley, Kevin Tweed, Kevin Orr, Brian Henry, Jason Katerberg, and John Mason.

Enhance figures with DECALS



Pants with stripes?
Hawaiian shirts?
Plaids? Do it with
these techniques

By V.S. Roseman
Photos by the author

Painting scale figures for your layout is a great way to make them different than those on other model railroads. Using a brush to add basic details like shirts, pants, and shoes is easy. But even if you have steady hands and a fine paintbrush, adding patterned

clothes to figures would be difficult at best. To add greater variety and detail to figures, try using decals.

“Wait, you mean decals like you put on locomotives and freight cars?” Yes! Virtually any figure can be enhanced with decals. Follow along as I share my techniques.

Off-the-shelf solutions

Microscale makes solid color decal sheets, called Trimfilm, in several colors. The decal manufacturer also makes decal stripes in various widths and colors **1**.

Alternatively, you could print areas of solid color on white inkjet or laser decal

Decals aren't just for locomotives and rolling stock. V.S. Roseman explains how he used commercial and custom-made waterslide decals to add stripes, patterned shirts, and windbreakers to these O scale figures.



paper to create colors not offered commercially. Just make sure you use a decal paper that's compatible with your home printer.

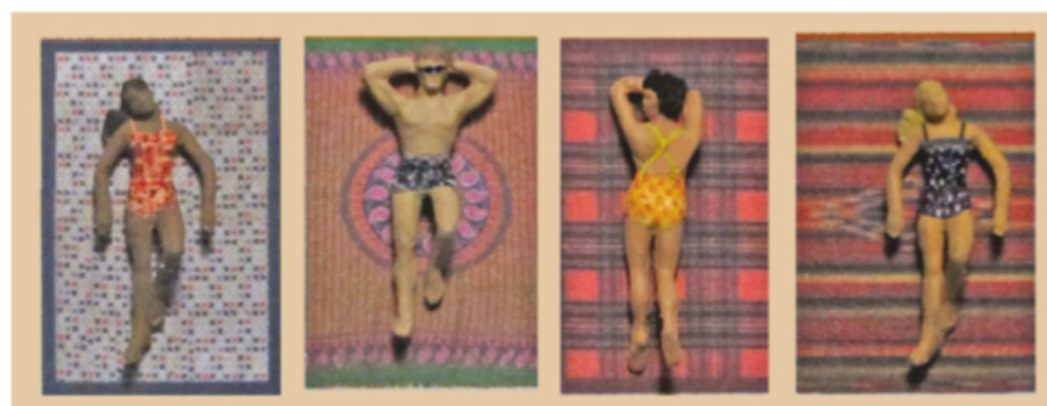
Suspenders for men's pants, neckties, and thin shoulder straps on swimsuits would be difficult to paint on a figure. Instead, try using commercial decal stripes,

as seen in ②. Stripes can also be used for uniform pants, such as those worn by a doorman, theater usher, or members of the military.

Stripes and Trimfilm can be also be used to add geometric patterns, such as a triangle, to decorate a windbreaker or skirt. Though off-the-shelf decals work for



① **Solid colors and stripes.** Microscale produces decal sheets printed in solid colors, as well as stripes in various widths, that can be used on figures. If the colors you want aren't available, V.S. recommends making your own decals on an inkjet or laser printer. Bill Zuback photo



② **Simple straps.** Re-creating the fine straps of 1940s women's swimsuits would be tricky with a paintbrush. V.S. used commercial decal stripes on the HO scale figures shown here.



③ **Hawaiian shirts.** V.S. photographed the front and back of Hawaiian shirts, scaled the images for O scale figures, and printed them on white decal paper. Selecting a variety of colors and patterns adds to the realism.

some situations, they're not a one-size-fits-all solution.

Next-level realism

Another option is to print patterned clothing on blank decal paper. I recently needed a group of O scale tourist figures for a photo shoot. I hung some real Hawaiian shirts on

hangers and photographed the fronts and backs. After scaling the images to 1:48 proportion, I printed them on white decal film ③.

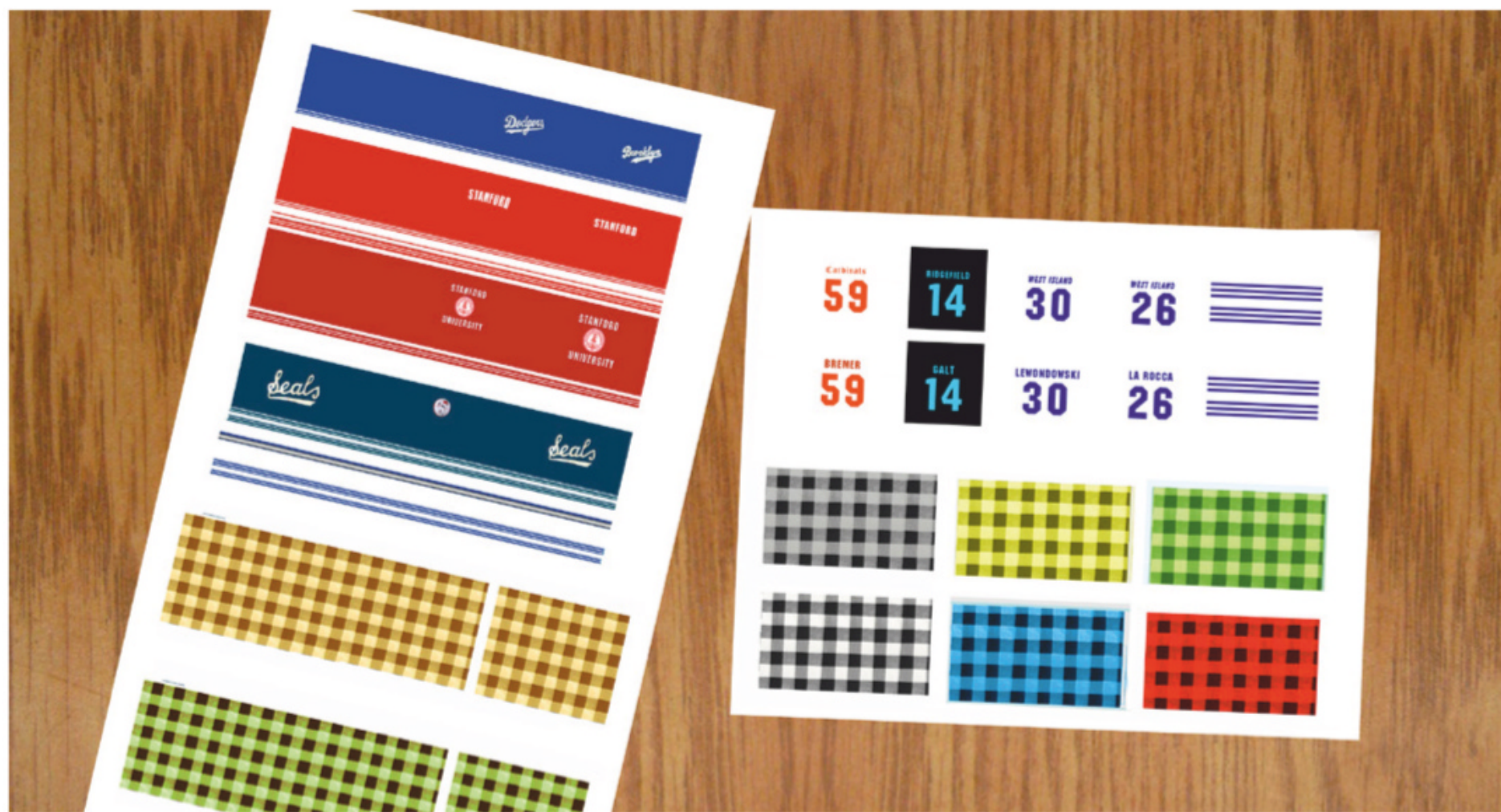
While these forms wrapped around the figures (④ on the next page), there were sometimes spots that didn't get covered. To remedy this, I used scraps of the same



4 Finished product. Here are three of the O scale figures that V.S. applied the Hawaiian shirt decals to. He used scraps of the same pattern to fill in any bare spots where the decal didn't completely wrap around the figure.



5 Plaid for all occasions. These 1:32-proportion figures feature plaid shirts made using decals. You can either photograph real shirts or use photo editing software to scale a plaid pattern for this technique.



6 Sample sheets. These decal sheets show different plaid patterns, as well as different jackets and sports uniforms, that V.S. made for figures. Printing on white decal paper helps the colors stand out more.

pattern. Even in O scale, the designs are so small that precisely matching the edges of the pattern isn't typically necessary. From normal viewing distances, irregularities in the design aren't noticeable.

I also used this technique to make plaid shirts **5**. The key to success with plaid is making sure you have enough material. If you photograph a real shirt, print an extra shirt

back. Or, as shown in **6**, you can create your own rectangles of scale plaid using photo-editing software.

If you don't have computer software, you can still make patterned clothing decals. Start by photographing real shirts and make a file or print of each. Next, glue the image to a sheet of white paper and scan it. Then reduce the scanned file to your modeling

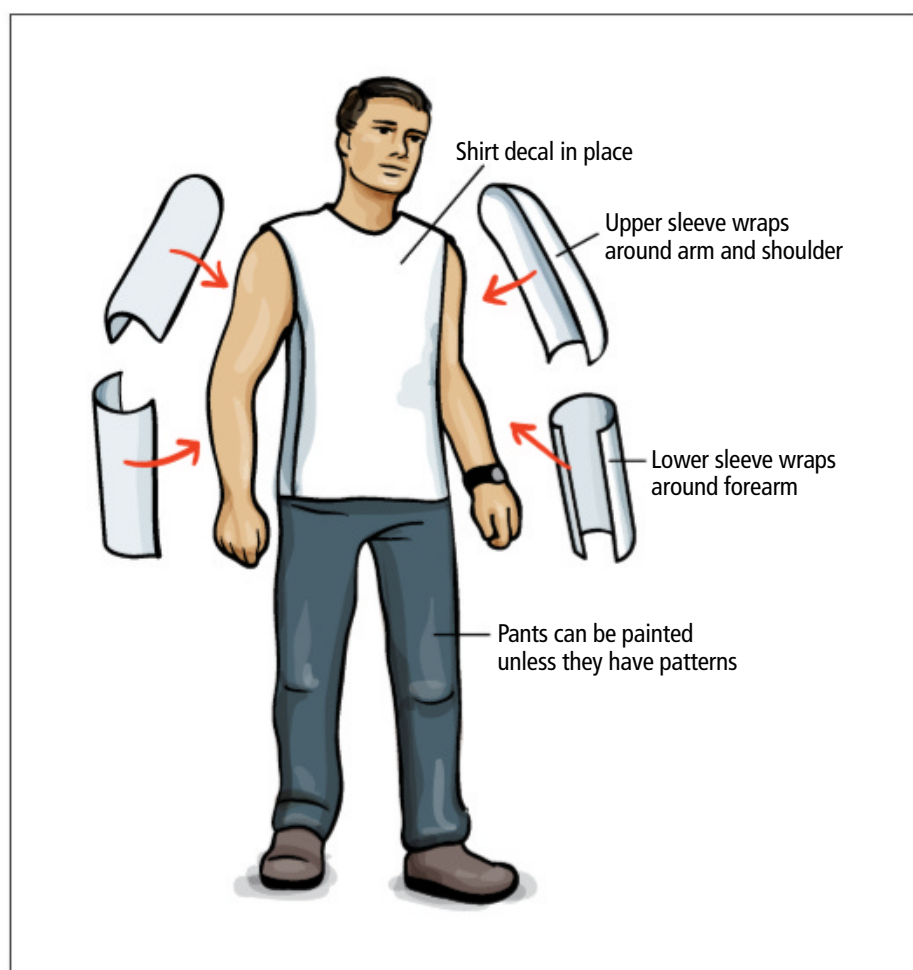
scale. To be safe, make a printout on plain paper to check the size and make any needed adjustments. Once satisfied, make the final printout on decal paper.

Applying the decals

After the decals have been printed, the next step is to cut them out. I start with the shirt or blouse form, which is

based roughly on a Medieval sleeveless tunic. Then I cut a hole in center with a punch for the head to slip through.

How the sleeves are cut depends of the figure's pose. If the arm is bent, I cut two pieces. For the upper arm, I cut a rectangle with one end rounded. For the lower arm, cut a regular rectangle. You can modify these techniques for figures with arms in other



7 Getting dressed. This illustration shows how V.S. cuts and applies clothing decals. He starts with the torso then works his way down the arms. Roen Kelly illustration



8 That's the solution. When applying decals to figures, V.S. uses setting solutions from Microscale. He applies the Micro Set first. To help the decals conform to irregular surfaces, he applies Micro Sol. Bill Zuback photo

poses. The decal cutting and application techniques are shown in **7**.

As you place each decal, use setting solution to help it conform to the irregular surfaces. I start with Microscale's Micro Set, which softens the decal and improves how it adheres to the figure. I follow that with Micro Sol, a setting solution that also softens decals. More importantly,

Micro Sol helps the decal wrap around uneven surfaces without distortion, giving it a painted-on appearance **8**. [You can order Microscale Micro Set and Micro Sol at KalmbachHobbyStore.com. – Ed.]

Decals are soft and can be easily damaged when the Micro Sol is wet. Wait for the setting solution to dry before adding the next piece.



Passengers reading magazines and newspapers wait on the platform for their train to arrive. Figures reading publications can help reinforce the layout's era and locale.

Newspapers and magazines

Over the years I've received a number of positive comments about the figures I place on station platforms and in passenger cars reading newspapers and magazines. Here's how I do it.

Preiser has a selection of unpainted figures holding their hands out. Figures in these poses are ideal for placing a newspaper or magazine. The arms of other figures can be bent slightly for this purpose as well.

With the figures selected, I photograph modern and vintage magazines and newspapers. Since the viewing angle isn't always known ahead of time, I photograph the front and back of the publications, as well as a few interior pages. The headlines don't necessarily need to be legible, but the nameplate should be, as seen on the covers of *Life* and *Look* in the image above.

I then clone the images to fill as much of the print area as necessary. I usually tint newspapers to a tan or ivory color. Then I reduce the images to the appropriate scale and arrange them in even rows so they're easy to cut out in groups.

You can print the scaled publications on regular printer paper. However, I find high-quality matte-coated paper, such as Epson matte presentation paper, is easier to fold to capture the look of a magazine or newspaper. A few dots of full-strength white glue or Aleene's Tacky Glue on the hands of a figure is all that's necessary to secure the magazine or newspaper. I have some figures reading and others holding a folded paper. I also leave a few newspapers on empty coach seats. – V.S. Roseman

Fashion forward

Combining photography with home decal printing technology makes it possible to attain a level of detail on figures that would be difficult, if not impossible, with brush-painting. The key is to not overdo it. A scene full of people with plaid or patterned shirts, striped pants, or other designs on their clothing will

look busy and unrealistic. Mix a couple of detailed figures in with those in plain clothes, and you have the beginnings of a prototypical scene. **MR**

V.S. Roseman lives in Brooklyn, N.Y., and is a regular contributor to Model Railroader magazine. His article "Upgrading streamlined passenger cars" appeared in the May 2017 issue.

LokSound for an Atlas S2



Larry Puckett's Alco S2 adds a Chesapeake & Ohio baggage car to a passenger consist on his HO scale Piedmont Southern layout. This vintage Atlas model joined Larry's fleet after he installed a LokSound 5 decoder.

Last month I went over the changes to LokSound Digital Command Control (DCC) decoders with the release of version 5. This month, I thought I would follow up with an installation using one of those decoders. In keeping with this year's theme of legacy locomotives, I installed one of the LokSound micro decoders in an Atlas S2 switcher. I've received numerous requests for tips on this installation, and since I have several of these models, it seemed like as a good a time as ever.

One problem with installing decoders in such small locomotives is finding a place for both the decoder and speaker. Atlas has gotten around this conundrum in recent releases of this model by redesigning the chassis and motor mount to provide room for a circuit board and speaker. With the older version of the model, I had to come up with a way to work around these issues.

The small size of the LokSound micro decoder

coupled with the Streamlined Backshop (www.sbs4dcc.com) sugar cube speaker, which has a rounded enclosure designed to fit under a cab roof, seemed a good combination to make this installation possible. Let me show you how I did it.

I began by removing the pilot handrails, followed by the cab and hood. Depending on the age of your model it may have a simple board, or it may be a bit more complex with diodes or other electrical components. Either way, it has to go to make room for the decoder. I unsoldered the wires attached to the circuit board and removed the screw on the top of the board, releasing it and the metal spacer from atop the motor.

Next I had to fix the fact that the motor frame is screwed directly to the frame, which is a big no-no in DCC. If the frame contacts track power, it may short out the decoder. Always isolate the motor! Fortunately, this can be done easily. If you flip the frame upside down, you'll see

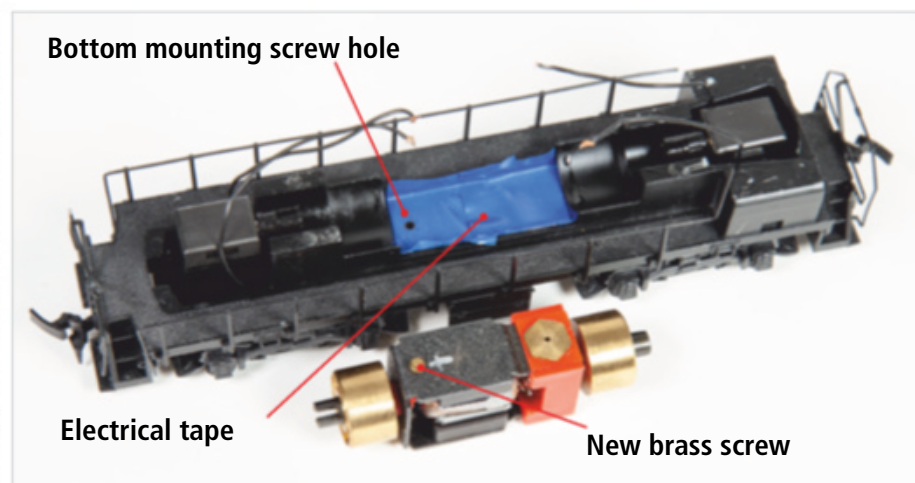
a small screw in front of the air reservoir casting. I backed it out and the motor dropped right out.

To isolate the motor, I first applied a layer of vinyl electrical tape to the motor mount area on the frame **1**. With the tape in place, I reinstalled the motor, using a nylon screw. The original metal screw would bridge the insulating layer of tape and reconnect the motor to the frame. I had a nylon screw, but you should be able to find a nylon or plastic screw at the local hobby shop.

With the motor reinstalled, I started on the wiring. Since the motor frame is electrically continuous with the lower motor brush, I applied a spot of solder to a brass screw head and installed it in place of the original pot metal one **2**.

Next, at the rear of the motor is a large, flat, hexagonal brass screw that holds the motor brush and spring in place. I removed it, sanded it to get a fresh surface, then added a spot of solder to it and reinstalled it. Do not attempt to do your soldering with these installed in the motor, as the heat may melt some of the plastic parts. These spots of solder served as soldering pads for the decoder wires.

To protect the orange, gray, red, and black wires from rubbing against the flywheel, I threaded them through a piece of heat-shrink tubing and then attached the decoder to the top of the rear truck using a pad of double-sided foam tape. I next tinned the orange (+) and gray (-) wires and as quickly as possible connected them to the solder tabs I had just created. On my model the small brass screw was the positive and the large brass hex screw was negative. With those connected I spliced the truck pickup wires on each side together and connected the red (right) and black (left) decoder wires to them,



1 Cut the path. To isolate the motor, Larry first needed to apply a layer of vinyl electrical tape to the motor-mount area on the chassis.

protecting the splices with heat-shrink tubing ②.

Next I turned to the lights.

Over the past year I've standardized on using the golden daylight light-emitting diodes (LEDs) I found on eBay. These come with the required resistor already attached, simplifying installation. I used cyanoacrylate adhesive (CA) to attach the small surface-mount device (SMD) LEDs to the back of the plastic headlight and backup light inserts in the cab and hood.

Once the CA had set up, I added small plugs of black Uhu putty around the rear light to help prevent light leakage into the cab and stabilize the LED. I found the putty on Amazon, but you might locate other brands at your local hardware store.

I then folded up the excess wire and soldered the leads to the appropriate white, yellow, and blue wires on the decoder, protecting the joints with heat-shrink tubing ③.

My last job was installing the speaker. I used the same rounded sugar cube speaker enclosures for this job as I showed in the April 2020 DCC Corner column. The rounded enclosure made it easy to install a speaker in the cab of the locomotive by attaching it to the inside of the cab roof using a pad of double-sided foam tape. I wired the speaker directly to the two brown wires on the decoder ③. (Note the use of brown instead of the usual purple wires on this decoder).

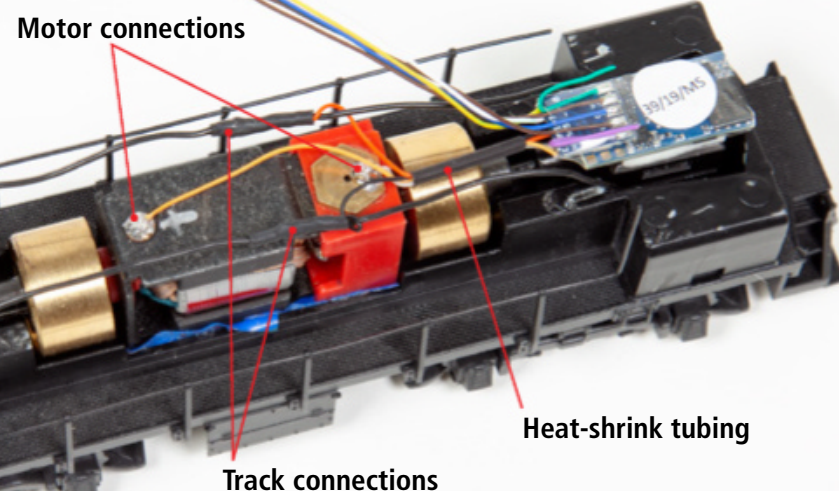
With all the wiring completed, to prevent the headlight and speaker wires from dangling into the flywheel,

I installed a rectangle of styrene sheet on top the motor, extending it out over the rear flywheel, and taped the wires to it using Kapton tape ④.

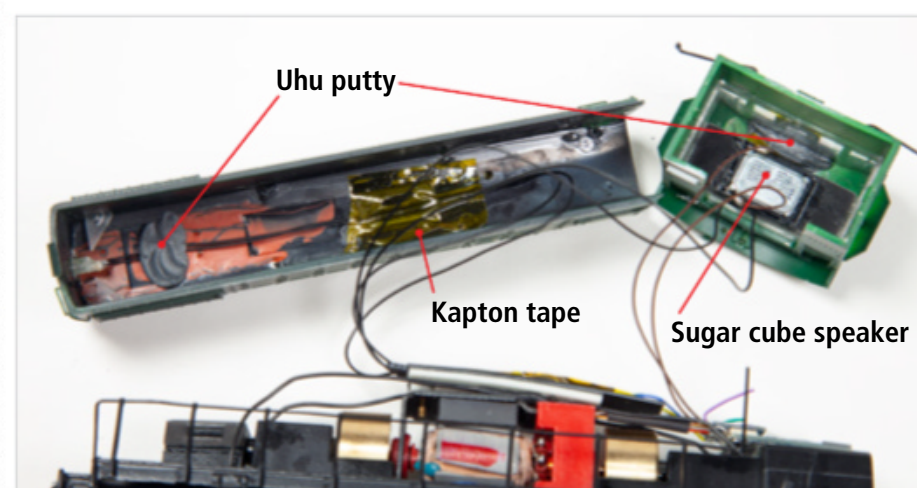
I tested the decoder by placing it on the service mode programming track and reading a few configuration variables (CVs). This is a quick and safe way to check for shorts, since by design, the power applied to the programming track is very limited and of such short duration it is unlikely to do any damage. If you can't read back any CV values, remove the locomotive and check for shorts.

Once I confirmed the installation was safe, I moved the locomotive to my LokProgrammer track and loaded the Alco 539T sound package used in the S2 locomotives. I will be doing a column on using the LokProgrammer to upload sound projects to LokSound decoders in an upcoming issue.

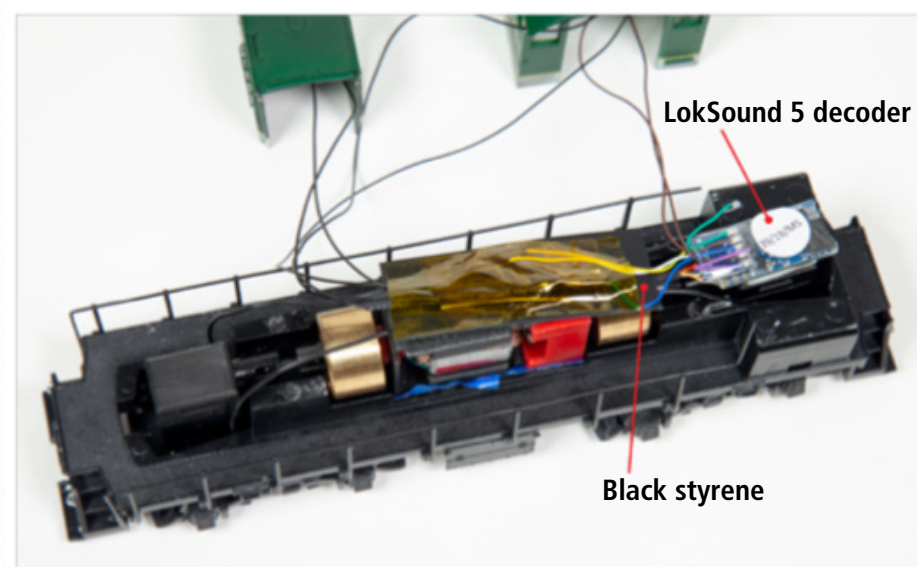
This turned out to be a much easier installation than I had expected, due mainly to the small decoder and sugar cube speaker enclosure. The combination



② **Make a new path.** Larry applied solder to the head of a small brass screw and the larger hex screw on top of the motor. He then soldered the orange and gray wires from the decoder to the solder tabs on the motor and spliced the track pickup wires to the red and black decoder wires. Always protect splices with heat-shrink tubing.



③ **Final connections.** After installing the sugar cube speaker and LEDs, Larry made the final connections to the decoder wires, protecting them with more heat-shrink tubing.



④ **Wire protection.** To prevent the headlight and speaker wires from contacting the flywheel, Larry installed a rectangle of black styrene sheet on top the motor, extending it out over the rear flywheel. He then taped the wires to the top of the styrene rectangle using Kapton tape.

of these two innovations have really opened up a lot of possibilities for adding DCC and sound to legacy locomotives like this Atlas S2. Dig one out

of your collection and give this installation a try. To hear the locomotive in action, pay a visit to my YouTube channel "The DCC Guy." 



OVER THE PAST YEAR I'VE STANDARDIZED ON USING THE GOLDEN DAYLIGHT LIGHT-EMITTING DIODES I FOUND ON EBAY.
— LARRY



Bachmann HO scale Russian Decapod 2-10-0

With its small drivers, open space under the boiler, and European look, a “Russian” Decapod 2-10-0 is very recognizable to most steam aficionados. We first reviewed Bachmann’s Spectrum series model of this distinctive prototype back in the April 2002 issue. Featuring the same high level of detail, this latest release of the Russian Decapod features a factory-installed Train Control Systems (TCS) WOWSound dual-mode decoder that offers realistic effects on Digital Command Control (DCC) and direct-current (DC) layouts. The decoder also includes a built-in TCS Keep-Alive capacitor circuit.

The prototype. Around the outbreak of World War I, Alco and Baldwin had received an order from the Imperial Russian government to build more than 1,000 2-10-0 decapod-type steam locomotives. Most of the order had been shipped before deliveries abruptly ended

in 1918 after the outbreak of the Bolshevik Revolution.

About 200 “Russian” Decapods remained undelivered and were allocated to American railroads by the United States Railroad Administration (USRA). With 75 2-10-0s, Erie rostered the most Russians. Seaboard Air Line (40) and St. Louis – San Francisco (21) also had large fleets. More than 20 other U.S. railroads ended up with Russian Decapods on their rosters.

The locomotives had to be re-gauged from Russian standard gauge (5 feet) to U.S. standard gauge (4'-8½"). They also had their European-style couplers and buffers replaced with American-style knuckle couplers.

Atchison, Topeka & Santa Fe Ry. received its three Russian Decapods in 1929 after it purchased the Kansas City, Mexico & Orient Ry. The KCM&O had purchased the locomotives (nos. 401 to 403) from the U.S. Army in 1923; the

Army had been leasing them to the Wichita Falls, Ranger & Fort Worth Ry.

The Santa Fe renumbered the Russians (although not all were repainted in Santa Fe livery) to nos. 2554 to 2556. This 2554 class ran for only a few years on the Santa Fe before being scrapped in 1934.

The model. Featuring much of the same tooling as the previous release, the Bachmann model’s dimensions match those of a drawing published in the *Model Railroader Cyclopedic: Vol. 1, Steam Locomotives* (Kalmbach Books). The drivers are also the correct 52" in diameter.

The plastic locomotive shell has well-defined rivet seams, boiler bands, and other molded detail. The domes, stack, and cab are separate parts. Other separately applied details include the whistle, bell, and pop valves. The handrails and uncoupling levers are separate wire parts.

The interior of the cab includes a backhead with molded gauges and fire-box door details as well as separately applied throttle and brake controls. Painted crew figures man the engineer and fireman positions.

The plastic tender features a molded coal load and an operating backup light. The tender rides on plastic sideframes that model the prototype’s as-built arch-bar trucks. User-installed Andrews style truck sideframes are also included.



The TCS WOWSound decoder and speaker are concealed inside the tender.

PERFORMANCE CHARTS

DRAWBAR PULL	2 ounces 28 HO scale freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
9 (start)	4
10	5
11	16
12	30
14	50
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	2
7	23
14	48
21	60
28	62

I couldn't find prototype photos of class 2554 locomotives during their time on the Santa Fe. Bachmann gave its model the freelanced road number 2456.

However, the lettering on the model features the correct font and aluminum color of other Santa Fe steam locomotives, including the 2565 class, which were also ex-KCM&O 2-10-0s (although not "Russian") built new in the 1920s.

Mechanism. The can motor is enclosed by a die-cast metal weight inside the locomotive boiler. A drive belt connects the motor to a worm gear concealed in the firebox. This allows the model to capture the gap between the boiler and chassis characteristic of a prototype Russian Decapod.

The motor is geared to the third driver axle; the siderods transfer power to the other axles. Unlike the prototype, the third drivers are blind while the others are flanged to help the locomotive negotiate tight curve radii.

After removing three screws from the underside of the tender frame, I removed the plastic shell. The main printed-circuit board is screwed to die-cast metal weights attached to the plastic tender chassis. The TCS WOWSound decoder is plugged into a 21-pin socket on the main board. Sound is delivered through a downward-facing WOWSpeaker mounted on the chassis.

A six-pin wiring harness connects the electronics in the tender to those in the locomotive. The locomotive's metal drawbar connects to a pin under the tender deck. There are two holes in the drawbar. The hole closet to the end is for negotiating curves as tight as 22" and places the distance between locomotive and tender about a scale foot farther

than the prototype. The hole closer to the cab provides closer coupling but also requires wider curves.

DCC performance. The model accelerated smoothly during DCC speed tests, as shown at left. Setting the decoder to 128 steps offers finer control. Out of the box, the speed curve is rather sharp; however, it can easily be adjusted, as can every other aspect of the decoder using configuration variables (CVs). A quick start guide is included with the model, but more extensive user manuals and an online programming tool is available for free at tcsdcc.com. This tool makes it easy to work with the indexed CVs used for tasks such as remapping functions.

Function controls are on three "pages" that are toggled by pressing function 8 twice. Page 1 has functions including the headlight, bell, whistle, and dimmer. Page 2 has the brake, brake release, and additional sound effects like the coupler. Page 3 has even more sound effects, including various whistle signals as well as ambient background sounds that can be turned on or off.

I used the decoder's Audio Assist for calibrating the locomotive's back electro-motive force load control. Audio Assist uses telephone-style option trees to simplify some programming tasks like remapping sound functions, setting volume levels, and speed matching.

Then I set the Decapod to work on our staff layout, the Milwaukee, Racine & Troy. When I started the locomotive with a train, I heard heavy labored chuffs, at four chuffs per wheel revolution. Running light, the chuffs drifted to a whisper. The new TCS Chuffinity effect uses a multitude of prototype recordings of individual steam exhaust chuffs, instead of just recycling a few of the same sounds, for a very realistic effect.

I operated the WOWSound decoder in what TCS calls prototype mode, which features some built-in momentum and function-button controlled braking. Traditional operation, with constant chuff sounds and no momentum, is also available.

For more information on using TCS WOWSound decoders, check out my product reviews, available as online extras, at ModelRailroader.com.

DC performance. I ran the model on our DC test track with a Bachmann

Facts & features

Price: \$579

Manufacturer

Bachmann Trains
1400 E. Erie Avenue
Philadelphia, PA 19124
bachmanntrains.com

Era: 1918 to 1950s (1929 to 1934 as detailed and decorated for ATSF)

Road names: Atchison, Topeka & Santa Fe; Erie; St. Louis-San Francisco (Frisco); and Western Maryland. Painted black but unlettered versions also available.

Features

- Can motor equipped with brass flywheel and metal bearings
- Die-cast metal chassis
- Electrical pickup on 10 drivers and all tender wheels in gauge
- Front and rear E-Z Mate Mark II knuckle couplers at correct height
- Light-emitting diode headlight
- Minimum radius: 22"
- TCS WOWSound dual-mode decoder with Keep-Alive capacitor circuit
- Weight: 13 ounces (engine and tender), 10 ounces (engine alone)

no. 44211 power pack. As you can see in the performance charts on this page, the locomotive required a lot of voltage to get moving, but it accelerated smoothly throughout its speed range.

The model requires filtered DC power to operate correctly. For those using older rheostat or "pulse" power packs, the easy solution is to add a filter, such as the TCS AF1 Analog Filter (available for \$23.95 at tcsdcc.com).

Sound effects in DC are mostly automatic. These include incidental sounds, such as the fireman shoveling coal that sounded after I applied 8.5V to the track, and the exhaust chuffs as I advanced the throttle further. The bell sounds until about 15 scale mph. When I changed locomotive direction I heard the correct whistle signal (two blasts for forward, three for reverse, and one for stop). A quick turn of the speed control knob triggers a grade-crossing whistle signal.

With its powerful new dual-mode decoder and realistic sound system, this detailed Russian Decapod from Bachmann Trains is better than ever. – *Dana Kawala, senior editor*



Walther's Mainline HO scale EMD SD50 diesel

Electro-Motive Division's SD50 diesel locomotive was the successor to its wildly popular SD40-2. Now a model of this big 3,500-hp brute equipped with an optional Electronic Solutions Ulm (ESU) dual-mode decoder is available from Walther's Mainline for your HO scale layout.

The prototype. General Motors sold the first SD50s to Kansas City Southern in 1981. Another early adopter was Seaboard System. While the SD50 was intended to replace the SD40-2, it certainly didn't replicate its sales. Only 492 SD50s (including 60 SD50s with the unique "Draper Taper" to Canadian National) were sold, compared to 3,982 SD40-2s.

The SD50's troubles centered around its 16-645 diesel engine. By the time engineers had wrung 3,500hp out of it, the engine was stressed beyond its reliability

limits. The SD50 and GP50 would be the last domestic locomotives to use EMD's 645 engine series.

Other systems were improvements on the Dash-2 electronic upgrades introduced in the 1970s. More noticeable changes include moving the dynamic brakes from above the diesel engine at the center of the locomotive to a cooler position behind the cab. In the engine section, a new exhaust stack was part of a noise reduction system.

While the locomotives weren't as popular as the SD40-2, some SD50s are still in operation, albeit after being rebuilt, at times with lower power ratings.

The model. Walther's model is part of its value-priced Mainline series, so there are no grab irons or m.u. hoses. A separate-sale detail kit is available for \$9.98 which

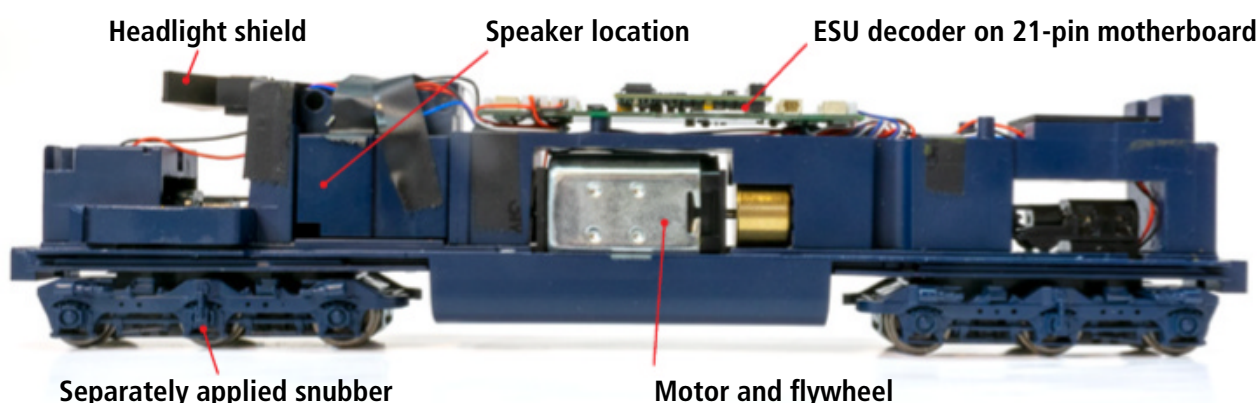
includes those details. There are dimples molded into the body shell at the appropriate spots to make it easier to drill the holes for the parts.

The roof-mounted radiator and dynamic brake fans have fan blades visible through their grills. The radiator fans at the rear of the locomotive have separately applied grills and fan blades. The windshield has molded-on wipers, which are painted silver. The walkways have a diamond-tread pattern, and the plastic steps have see-through treads.

There are posts inside the cab that could support engineer and fireman/conductor figures if the modeler wanted to add them. The handrails are molded in orange from slippery engineering plastic.

Our sample is decorated in Chessie System paint with Baltimore & Ohio (B&O) reporting marks. The yellow, orange, and blue paint was smoothly applied, although a little thick. Yellow is a notoriously difficult color to get good coverage with. Color separations were sharp. There were some minor voids in the Chessie System herald and lettering as it went over the long-hood doors and their latches. The exhaust stack is painted silver and the step edges are painted orange.

The major dimensions of the model match drawings printed in the January 1984 issue of *Model Railroader*. There are some detail differences between the



The Walther's Mainline SD50 has a die-cast metal frame and weight, which surrounds the skew-wound motor and supports the ESU dual-mode sound decoder.

PERFORMANCE CHARTS

DRAWBAR PULL	4.3 ounces
	60 free-rolling HO scale freight cars

SCALE SPEED (DC)

VOLTS	SCALE MPH
9 (start)	2
10	14
11	26
12	49
13.5 (max)	93

SCALE SPEED (DCC)

SPEED STEP	SCALE MPH
1	.5
7	7
14	24
21	51
28	70

model and published photos of Chessie SD50s. The most obvious, and easiest to change, are the horn and the location of the bell. The horn should be a five-chime Nathan K5. The bell should be mounted on the engineer's side of the locomotive just ahead of the radiator intake grill near the roof. More involved would be changing the battery box doors to a slot-style instead of the louvers on the model.

Under the hood. I removed the draft-gear boxes, then two screws partially hidden above the front of the rear truck, to lever the body from the frame. It's a tight fit.

A five-pole, skew-wound can motor equipped with a brass flywheel drives all 12 wheels, which also pick up current. The HTC-2 trucks have separately molded brake cylinders and snubbers.

A die-cast metal weight is screwed to the top of the frame. A motherboard carrying a 21-pin ESU decoder is screwed to the top of the weight. A round speaker is concealed ahead of the motor and behind the cab. Light-emitting diodes are secured in light shields at each end of the locomotive and illuminate the headlights and number boxes.

On the test track. I first tested the locomotive in Digital Command Control mode. The model includes an ESU Sound & DCC decoder. Although not as fully featured as an ESU LokSound decoder, the Sound & DCC decoder includes some of my favorite effects.

The locomotive performed well overall, but out of the box it didn't start moving until speed step 2. I got the SD50 to move in speed step 1 by resetting configuration variable (CV) 2 to a value of 3. It then started moving at .5 scale mph. In speed step 28 it registered 70 scale mph,

Facts & features

Price: 199.98 (DCC and sound), 139.98 (DC, no sound)

Manufacturer

Wm. K. Walther's Inc.
5601 W. Florist Ave.
Milwaukee, WI 53218
walther's.com

Era: 1981 to early 1990s, as decorated

Roadnames: Chessie System/B&O, CSX, Kansas City Southern, Southern Pacific, Union Pacific (Two road numbers each)

Features

- All-wheel drive and electrical pickup
- Blackened metal wheels, in gauge
- Die-cast metal chassis
- Dual-mode ESU decoder works on DC and DCC layouts
- Five-pole skew-wound motor
- Open grating on steps
- Proto-Max metal knuckle couplers, at correct height
- Updated shell with drill starter points for grab irons in EMD SD50-60 Diesel Detail Kit (910-256) sold separately
- Weight: 1 pound, 5.5 ounces

correct for the most popular of several gear ratios available from EMD.

The DRIVE/HOLD feature let me manually notch the engine rpm sound without increasing the speed to simulate a locomotive starting a heavy train or pulling hard up a steep grade.

There are five horn sounds available on the decoder. The instruction sheet details the values to enter into CV163 to select which horn you want. There are also two optional bell sounds.

The overall volume level seemed high to me, so I adjusted the value of CV63, master volume, to a value of 75, a little less than half the factory value of 160.

As you can see in the charts above, the model also performed smoothly on our direct-current test track. Under DC, effects are limited to the engine sounds and directional headlights.

The Walther's Mainline SD50 is a well-proportioned model of a locomotive that saw service in many parts of the country. With its stout pulling power and smooth mechanism, these SD50s will likely provide much better service on model railroads than they did on the prototype. — Eric White, associate editor

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Rapido Trains HO scale P-S New Haven diner

Rapido Trains has added a 1949 Pullman-Standard streamlined dining car to its ever-growing line of New York, New Haven & Hartford HO scale passenger equipment. The injection-molded plastic and metal car features more than 200 parts and is detailed inside and out.

The prototype. In December 1945, the New Haven ordered 10 36/48 seat dining cars, as part of an order for more than 140 cars of various types to upgrade its name trains, such as *The Merchant's Limited* and *The Yankee Clipper*.

The cars were built to a similar design as the New Haven's 1930s Osgood-Bradley streamlined cars, but with assorted upgrades including fluted stainless-steel sides. The class of 10 cars carried names of some of the historic signers of the Mayflower Compact, and although all were laid out identically, there were at least four interior decoration schemes. The cars were delivered to the railroad in July 1949 and served the New Haven until its merger into the Penn Central system in 1969.

Attention to detail. The Rapido cars are some of the finest-detailed ready-to-run passenger cars I've seen. The car matched the major dimensions of the drawings found in *The Official Pullman-Standard Library vol. 10* (Railway Production Classics, 1991), except over

the coupler faces as a result of the manufacturer using couplers with longer shanks that allow for operation on smaller radius curves.

The car features a full prototypical interior, including chairs, tablecloths, china, and silverware. An extra sprue with modeler-installed water pitchers is also included. All can be clearly seen thanks to the car's interior lighting system, which works on both direct-current and Digital Command Control layouts.

The diner's full kitchen includes details like the sink, steamer, range, and coffee urn. There isn't a window in that area to see any of it, but it's there.

Our sample came decorated in the McGinnis warm orange paint scheme with the car name *William Brewster*. The paint and lettering on the model includes silver window trim and black gasket detail. The model's markings match a 1969 prototype photo of the *William Brewster*. Our sample portrays the car after its skirting was removed, so the extensive detail is easy to see.

All six metal wheels in each detailed 61-NO General Steel Castings truck collect track power for the interior lighting. Our sample model also rolled freely.

The diner will negotiate 22" or greater curves when coupled to other cars. (I tested it with a couple of Rapido's 8600-series coaches.) I also ran the diner through an 18" curve. The trucks swivel enough to make it without binding, but according to the manufacturer's directions, for use on this radius one or both couplers should be replaced with the long-shank couplers provided in the box.

The diner comes with medium-shank Macdonald-Cartier couplers pre-painted in a rust-brown color. When coupled with other Rapido New Haven cars, the medium-shank couplers put a lot of distance between the diaphragms. If you have broader curves on your layout (say

Facts & features

Price: \$139.95

Manufacturer:

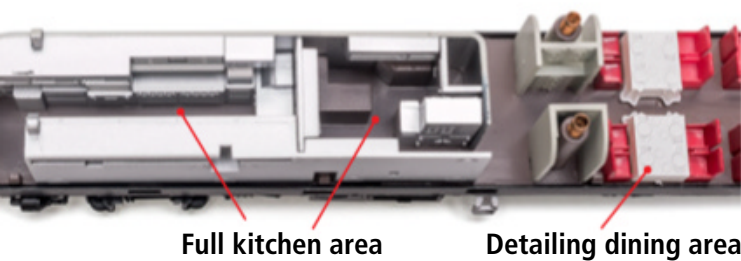
Rapido Trains Inc.
500 Alden Rd., Unit 21
Markham, Ontario L3R 5H5
rapidotrains.com

Era: 1957 to 1971 (as decorated)

Road names: New Haven as delivered (1949-1957 Hunter Green with skirts), New Haven McGinnis scheme (1957 to early 1960s with skirts), New Haven McGinnis scheme (1957 to 1971 no skirts); five car names per scheme.

Features:

- Body-mounted, rust-brown-colored, Macdonald-Cartier metal knuckle couplers at correct height
- Fully-detailed interior
- Metal wheelsets on plastic axles, correctly gauged
- Sprung diaphragms
- Separate, factory-applied metal grab irons
- Track-powered, constant light-emitting diode interior illumination
- Weight: 7.4 ounces (.65 ounces too heavy per NMRA Recommended Practice 20.1)



Rapido's attention to detail includes a full kitchen painted to simulate the prototype's stainless steel fittings and a dining area with place settings.

32" or greater) and larger number turn-outs (no. 8 or better), you could achieve a more realistic spacing by installing short-shank couplers.

Any way you look at it, Rapido's Pullman-Standard New Haven diner is a stunning model. I, for one, believe it has set a new standard for HO scale dining car excellence. I can't wait to see it behind the long-anticipated EP-5 electric passenger locomotive coming soon from Rapido Trains. – David Popp, Executive Producer, *Trains.com*

Atlas N scale 4,180-cubic-foot-capacity Airslide covered hopper

Atlas Model Railroad Co. has added a new model to its expanding N scale lineup, the General American 4,180-cubic-foot capacity Airslide covered hopper. The model, based on a mid-1960s version of the car, features an injection-molded plastic body and a mix of molded-on and factory-applied plastic and etched-metal details.

The prototype. General American produced the 4,180-cubic-foot-capacity Airslide covered hopper from 1963 to 1980. The full-size car was designed to transport a variety of powdered, dry, and granular commodities such as clay, sugar, flour, starch, and PVC resin.

During the course of the production run, there were six different versions of the car, referred to as phases by railfans. The Atlas model we received depicts a phase TZH car, produced by General

American between June 1965 and March 1966. Spotting features are hat-section exterior posts, a high brake wheel, and bolster jack pads with built-in roping eyes.

Production of the 4180 Airslide covered hopper ended in October 1980. Though not as numerous as they once were, examples can still be found in revenue service. BNSF Ry. converted some of its Airslides into buffer cars used on ethanol and crude oil trains.

The model. The Atlas model has a one-piece plastic body with a separate underbody. The top of the car features 10 separately applied hatch covers, wire corner grab irons, and a see-through running



board. The B end of the car has a separate brake wheel, brake housing, and etched-metal brakewheel platform. The ladders and grab irons are molded.

Where the model really shines is the detailed underbody, shown on the next page. Wire uncoupling levers, which run between a bracket next to the stirrup step and the bottom of the draft-gear box, further enhance the ends of the covered hopper. Be aware, though, that the underbody details are quite delicate.

Our sample is decorated as Rock Island no. 8835, part of the railroad's 8800 through 8864 series built by

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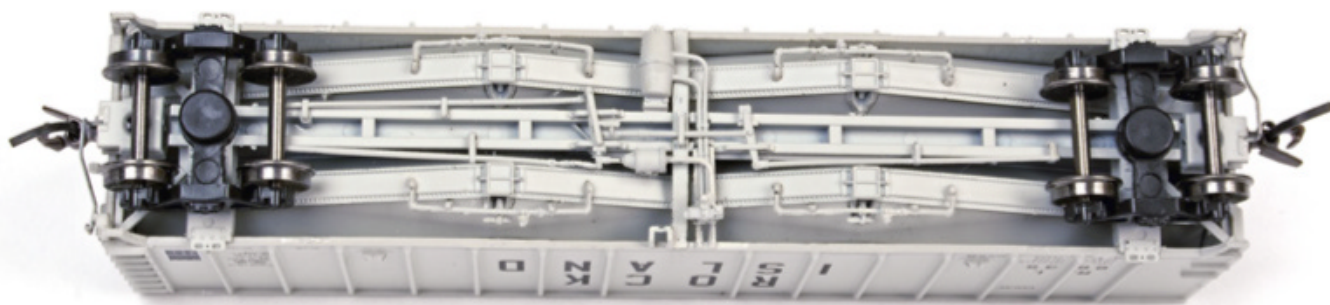
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Underbody details include separate, factory-applied outlet gate piping, hopper outlets, underframe slope braces, and the cylinder/brake assembly.

General American in 1965 and 1966. The paint was smooth and evenly applied, and the lettering was crisp with the small data legible under magnification.

I found two prototype photos of cars in this scheme, one online and the other in *Rock Island Color Guide to Freight and Passenger Equipment* by Steve Hile, David H. Hickcox, and Todd Miller (Morning Sun Books, 1996). The Atlas model accurately has 30" block lettering, with extra spacing between the letters on the center panel. The other lettering and data matches prototype placement.

Measuring up. The Atlas model closely follows prototype drawings published in

the 1970 *Simmons-Boardman Car and Locomotive Cyclopedia*.

The Airslide covered hopper weighs 1.1 ounces, which matches National Model Railroad Association Recommended Practice 20.1. The body-mounted couplers are at the correct height, and the 36" metal wheelsets are correctly gauged.

A standout. Growing up in a town that had a sugar beet processing plant, I've always had a soft spot for General American 4,180-cubic-foot capacity Airslide covered hoppers, frequent visitors to the industry. Atlas did a great job on its N scale version of the dry goods

Facts & features

Price: \$36.95

Manufacturer

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

Era: 1965 through 1980s (as decorated)

Road names: Rock Island; Gulf, Mobile & Ohio; St. Louis-San Francisco (Frisco); Southern Ry.; and Westvaco (four numbers each, plus undecorated).

Features

- Body-mounted couplers
- Etched-metal running boards
- Weight: 1.1 ounces
- Wire corner grab irons

hauler. The combination of see-through etched-metal parts, separately applied underbody details, and metal wheelsets makes this ready-to-run car a winner. –
Cody Grivno, Group Technical Editor

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Picture Credit: G.W. Kowanski

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Protection and authority

Last fall, I gave a talk titled “Demystifying Operating Rules” at a long-running prototype modelers meet. I discussed two fundamentals of safe railroad operation: authority and protection. A thoughtful friend in the audience, Michael Mang, made a darn good suggestion that I reverse the order, because protection must come before authority. Sold!

Here’s why. Protection means safety from harm or injury. Authority means the right to act in a specified way. Railroads are the only major transport system which relies on vehicles incapable of steering to avoid collisions. Therefore, a train must have protection against others before it’s given authority to occupy any given track.

Protection takes many forms. It prompts thoughts of Rule 99 flagging, but the entire timetable-and-train-order (TTTO) system rests on protection. A regular train’s schedule protects it because Rule 92 declares that a train must not depart a station before the time shown at a station, informing other trains where the scheduled train can’t be. Superiority, defined by Rules 71-73, instructs how trains operate when schedules conflict with other regular trains and extra trains. Train orders are tools a dispatcher (DS) uses for protection, for example, instructing an operator: HOLD No. 2. Today’s Track Warrant Control (TWC) and Form D Control System (DCS) follow similar principles.



CSX’s scenic River Subdivision along New York’s Hudson River is Centralized Traffic Control territory, so signal indication authorizes movements like this northbound freight crossing the Iona Island trestle on October 18, 2018. Jerry Dziedzic photo

Signals add more protection. Automatic Block Signal (ABS) and Centralized Traffic Control (CTC) systems tell train crews of the condition of the block ahead, most importantly, when that block is occupied.

Railroaders see authority as the right to use a given section of track. Under TTTO rules, a regular train derives authority from both schedule and superiority. Its schedule allows it to occupy the track and superiority makes that right exclusive. The dispatcher grants authority to extra trains with train orders,

track warrants, or Form D’s, depending on the rulebook and the era. Centralized Traffic Control and typical double track ABS signal systems convey authority by signal indication.

Even when a train has movement authority, protection ultimately depends on its crew’s actions. Timetable and train order

operation relied on independent decision making, often far removed from communication. Overlooking the schedule of an opposing train, misinterpreting a train order, or failure to carry out Rule 99 could all cause an accident. Recent high-profile wrecks were caused by speeding on a curve. Slower, restricted speed violations remain a major concern for the industry, as does fatigue. Falling asleep and passing a stop signal can have serious consequences.

Today’s dispatchers have the advantage of multiple safety overlays. Since its inception nearly a century ago, CTC has relied on interlocking relay circuits that prevent a dispatcher from authorizing conflicting movements. Form D systems and TWC can be backed by software that has the same effect. When DS issues a track warrant from Anna to Cloy, his entries update a database and the software blocks him from giving an overlapping authority, known as a lap.

Imagine working as a DS in busy TTTO territory. Veterans I’ve spoken to

describe the necessity of keeping a mental picture of the railroad, without the aid of a display panel. Not only does DS rely on the mental picture at a given moment, he also forms a picture of train locations several hours ahead. How would delays to regular trains ripple through the system? Which train orders could keep traffic flowing? What traffic would arrive and how would he handle it?

Most of us don’t shoulder the same responsibilities in operating sessions, but a DS job on a busy layout may be the closest to the prototype we know. During a recent session, excited voices from the layout room disturbed the DS late in the session while he was pondering questions like these. Next, two crews who narrowly averted a collision stormed his office, waving schedules and train orders. Happily, derision is the only harm he suffered.

Correction: Speaking of derision, I goofed in May’s column. “Greenbrier” was the Chesapeake & Ohio’s name for 4-8-4s. My apologies to Norfolk & Western and C&O modelers for the blooper. 



RAILROADS ARE THE ONLY MAJOR TRANSPORT SYSTEM WHICH RELIES ON VEHICLES INCAPABLE OF STEERING TO AVOID COLLISIONS. — JERRY



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2020 PHOTO CONTEST

Earlier this year, we put out the call for MR readers to send us their best model railroad photos. And wow, did you respond! We got so many great images that we had a hard time narrowing them down to just eight winners. Our top picks are reproduced in the following pages, but you'll be seeing many other great entries in Trackside Photos in the months to come. Thank you to all who participated.

GRAND PRIZE WINNER: \$750

Richard Bourgerie
Noblesville, Ind.

The brakeman rides the caboose as Nickel Plate Road No. 45, westbound from Toledo, Ohio, to Frankfort, Ind., crosses Roseburg Pike. Richard Bourgerie photographed the scene on the Proto:48 (O fine scale) Maumee Basin layout modeled by Richard and his friend Warner Clark. The caboose is a Gloorcraft product; Aunt Jane's house is a Design Preservation Models kit. Charles Morell scratchbuilt the double wig-wag signal from photos.

MORE ON THE WEB

All 8 of the winning photos seen on these pages are available as free digital wallpaper. Download them from ModelRailroader.com

SECOND PRIZE WINNER: \$500

Jim Bzdawka Milwaukee, Wis.

Milwaukee Road Fairbanks-Morse H10-44 diesel-electric no. 778 leads a transfer run through the Southside Switching District. Jim Bzdawka shot the photo on his HO scale shelf layout, which is set in the 1950s-'60s and, though freelanced, is intended to capture the flavor of a Midwestern industrial city like Chicago or Milwaukee. The locomotive is an Athearn model; the pictured industry was built from a Walthers background structure by Jim's son, Bill Bzdawka.







Want to see your work in Trackside Photos?

Trackside Photos is a showcase for the work of *Model Railroader* readers. We encourage contributions. Send your photos (digital images 5 megapixels or better) to: *Model Railroader*, Trackside Photos, P.O. Box 1612, Waukesha, WI 53187-1612; or upload them to fileupload.kalmbach.com/contribute/. Include caption information, such as what's going on in the picture; the layout's scale, era, and locale; and information about the rolling stock or structures shown. For a copy of our photo submission guidelines, contact associate editor Steven Otte at 262-796-8776, ext. 370, or sotte@mrmag.com.

THIRD PRIZE WINNER: \$250

Rob Thoms Cambridge, Mass.

Boston & Maine 4-6-2 Pacific no. 3648 delivers passengers to Woodriver, N.H., as an Electro-Motive Division E7 arrives on the southbound track. Rob Thoms staged and photographed the scene on his HO scale layout, this section of which began life as regular MR contributor Paul Dolkos' B&M New Hampshire Division. The Pacific is a brass Overland model; the EMD E7 is by Proto 2000.



RUNNER-UP: \$100

Jay Qualman Milford, Mich.

It's early fall, 1950, when Grand Trunk Western Electro-Motive Division F3A no. 9027 leads a manifest freight past Pere Marquette's Saginaw-based Holly Turn at the interlocking in Holly, Mich. Jay Qualman photographed the action on the HO scale Michigan Lines, which features modeling by Jay, his wife Brook, and their friend John Bussard. All structures were scratchbuilt.



RUNNER-UP: \$100

Ray Grosser Eubank, Ky.

An A-A set of Alco FA-2 locomotives with a freight train in tow slows as it passes the station in Dent, Ky., where passengers are waiting for the train to Louisville on a warm evening in August 1955. John Bowling of Danville, Ky., set the scene on his HO scale layout. The locomotives are from Life-Like with Digital Command Control sound decoders. Ray Grosser shot the photo.





RUNNER-UP: \$100

Rick Sutton Atascadero, Calif.

Harvest time on the Visalia Electric RR means reserve locomotives like this veteran EMD GP40 are being pressed into service to handle extra reefer runs. The HO scale modeling and photography are by Rick Sutton, who made the treetops in the foreground by using hairspray to glue Selkirk leaves to black Micro-Mark polyfiber. The locomotive is from Atlas. The refrigerated car is a BLMA model to which Rick applied a graffiti decal printed from a prototype photo.





RUNNER-UP: \$100

Bob Kuchar Lake Forest, Ill.

The engineer of Buffalo Valley RR no. 60, a narrow-gauge 2-8-0 Consolidation, waits impatiently for the shepherd and his sheepdog to get the sheep out of his way. Bob Kuchar of Lake Forest, Ill., photographed the scene on his Sn3 BVRR layout. The Consolidation is a former Colorado & Southern brass model from Overland Models, relettered for the BVRR. The sheep are by Hal Reynolds; the sheepdog was hand-carved.

RUNNER-UP: \$100

Brooks Stover East Lansing, Mich.

Elk River Coal & Lumber Co. no. 4, an aging three-truck Climax, eases out of the open-air enginehouse after undergoing yet another round of life-extending maintenance. Brooks Stover modeled the scene on his S scale Buffalo Creek & Gauley inspired by a photo shot by John Phillips on the prototype ERC&L in October 1958. The locomotive is a heavily modified Bachmann On30 two-truck Climax. Brooks scratchbuilt the engine shed and waterspout from prototype images.



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Schedule of Events

IL, ST. CHARLES: 44th Annual Kane County Railroadiana and Model Train Show. Kane County Fairgrounds, 525 South Randall Rd. Sunday, June 14, 2020, 10:00am-3:00pm. Admission: \$6.00 w/tax. Tables \$60.00. For information: 847-358-1185, RussFierce@aol.com or www.RRShows.com

MO, ST. LOUIS: Wabash Railroad Historical Society annual meeting. September 18-20, 2020. O'Fallon, MO (30 min west of St. Louis). Base fee \$40 - model contest, presentations, banquet. Add for bus tour of St. Louis Railroad facilities, ride Metrolink on Wabash tracks; tour National Museum of Transportation, ride Wabash Frisco & Pacific. Larry VanHouten 314-225-6206, wabash700@gmail.com

TX, AUSTIN: Austin Area Train Show, Williamson County Expo Center, 5350 Bill Pickett Trail, Taylor, TX (just minutes past Dell Diamond). September 5-6, 2020, Saturday 10am-5pm, Sunday 10am-3pm. Admission: \$7 (includes both days), children 12 and under FREE w/adult. Vendors, model and lego railroads, home tour included. Concessions and free parking. For more info, visit austintrainshow.org

WI, EAU CLAIRE: 3rd Annual International Toy Train Expo. July 11-12, 2020. Saturday, 10am-5pm. Sunday, 10am-4pm. Chippewa Valley Expo Center, 5150 Old Mill Plaza, Eau Claire, WI 54703. Toy trains, kids events, family fun! \$3 early bird, \$6 at the door. Ages 17 & under FREE. Tickets: menards.com/trains or any Menards store. UPDATE: cancelled

WI, LA CROSSE: Rail Fair, Copeland Park, Rose & Clinton Streets. July 18, 2020, 10:00am-4:00pm. Admission \$5.00, under 12 free. Railroad Show, Sale & Exhibition. Model, Toy & Antique Trains & Memorabilia, Railroad Exhibits & Displays. Information: 4000 Foundation, PO Box 3411, La Crosse, WI 54602, 608-781-9383

WI, WAUPACA: WAMR 31st Strawberry Fest Model Railroad Show & Model Contest. Waupaca Recreation Center, 401 School St., June 20-21, 2020, Saturday 9am-5pm and Sunday 10am-3pm. FREE. Many layouts/vendors & swap tables. Roger Hildebrandt, 7693 Evergreen Dr. East, Waupaca, WI 54981, 715-258-8218 or check club website: www.wamrltd.com UPDATE: cancelled

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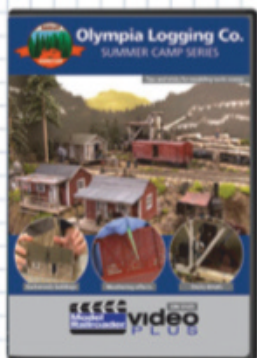
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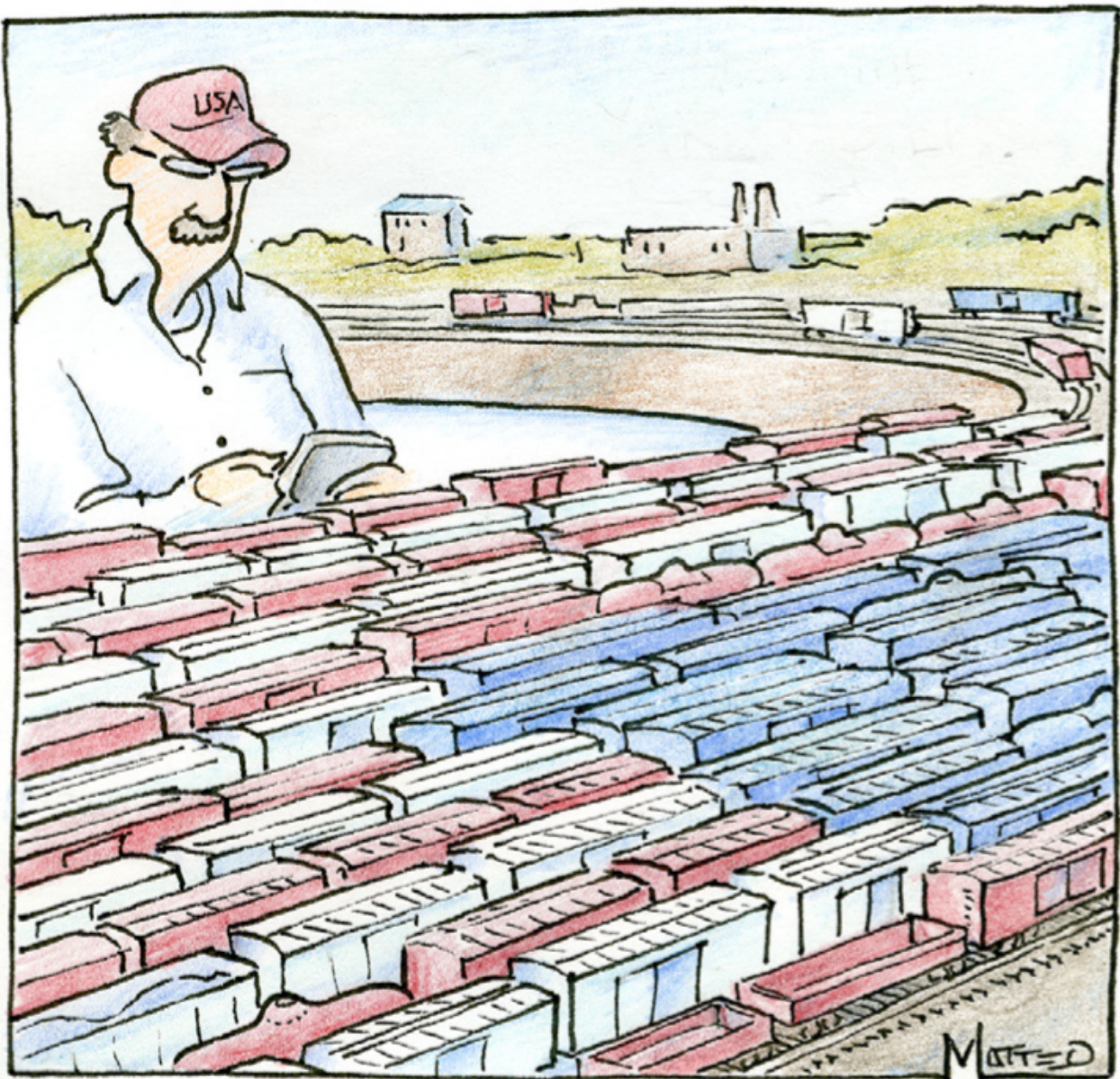
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It's mostly made of wood

My friend Tom Piccirillo has always been handy with tools. He recently completed a large-scale model steam locomotive. It's designed to run on 45mm-gauge track, which puts it in the 1:20.3 range, but Tom wasn't counting rivets when he built this model. Instead, he was having fun working in an unconventional material where operating scale model locomotives are concerned: wood.

"Yup, even the engine frame/chassis, cylinders, motor mount, and tender shell were made from wood," Tom said. "I must say this is an excellent material for such a purpose! It's readily available, easy to fabricate and assemble, and, with the application of sanding sealer, can be easily painted to look like metal. The addition of rivet decals prior to painting completes the transformation."

The term "scale model railroading" embraces two terms: scale modeling and railroading. If we ignore either side of the equation, we lose some of the vast potential built into our hobby. Some of us are almost purely devoted to building models while others focus primarily on realistically operating them. But there's more value if we enjoy some of this and some of that.

Tom has an operating O scale railroad – two of them, in fact. He has a "steam road" that runs along one side of his basement, and he has a complementing electric railroad that fills the rest of it other than a nice workshop area. He regularly hosts operating sessions, so he's not missing out on the realistic operation part of our hobby.

But he's scratchbuilt and upgraded enough models to earn kudos in that area, too. He's even ventured into the



As you can see, this 1:20.3 (or so) narrow gauge Mogul was built primarily from wood – "an excellent material for such a purpose," according to builder Tom Piccirillo. Tom Piccirillo photos

live steam arena. And this latest venture into a different scale, gauge, and building material – well outside what would be the comfort zone for most of us – is a testimonial to the fact that there is much more to our hobby than we probably realize.

A glance at Tom's 2-6-0 shows that he employed a few commercial parts, including tender trucks, drivers, air compressor, headlight and bracket, smokebox front, and poling pockets. It looks like the domes are copper tubing and the stack a length of brass tubing. But by and large, it's a wood model.

I've seen similar steam locomotives made from pieces of PVC pipe and sheet ABS or styrene. The effort required is similar. But to me there's something magic about building something from wood, maybe the result of hours spent in junior high school wood shop class trying to get the base of a pump-handle lamp precisely square. And plastic will never smell as good as wood does.

But we're not dissecting media here as much as we're discussing creativity and approaching a familiar task in unfamiliar ways. I have no

idea what motivated Tom to build this model, but build it he did. I also don't know what he plans to do with it, but that's almost beside the point. He enjoyed building it, and he shared it with us to suggest we rethink what we consider fair use of our leisure time. And that's enough. **MR**



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