

FIT A DCC DECODER INTO A TINY SPACE p.60



**Athearn SD70ACe
'Spirit' unit** p.64

February 2019
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Tracing a layout
back to its beginnings p.52

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Build benchwork
on our project layout** p.40

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Construct a camera car for your layout p.38

Scratchbuild an electric freight motor p.48

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On the cover: An excursion train crosses the high bridge at Drake on the N scale Rio Grande Alpine Division.
Cody Grivno photo



Next issue

In **March**, Gerry Leone melds his layout with his home decor, we build scenery on the Canadian Canyons layout, we visit a Rock Island model railroad, and more!

MREXTRA

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A History Of Quality & Innovation



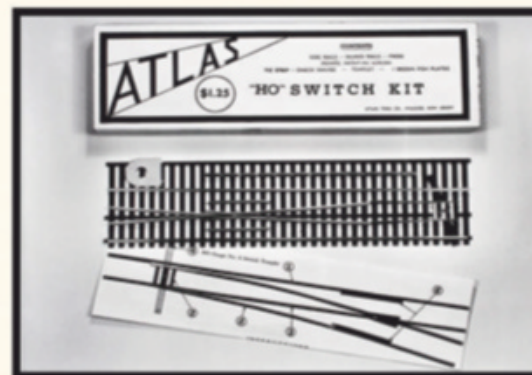
Founders of Atlas Tool Co., Stephen Schaffan Sr., right and Stephen Schaffan Jr., left circa 1940



Atlas Headquarters, 1959



Atlas Headquarters, 2018



Atlas' Original Switch Kit circa 1940

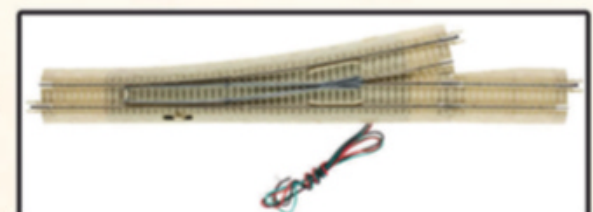
Steve Schaffan Jr. began making switch kits and track in the basement of his father's machine shop in the 1930s. Realizing that they could make a living selling track and related products, Steve and his father had the first factory built in Hillside, New Jersey in 1947. On September 30th, 1949, Atlas Tool Company Inc. was officially incorporated as a New Jersey company. Steve went on to be a worldwide leader and an innovator in the hobby. He created such masterpieces as world renowned Super-Flex® Track, Snap-Switches®, Customline® Turnouts and more. Steve's efforts in Europe, Asia and the United States brought model railroading to a new level, and hobbyists have him to thank for the reliability and durability they enjoy in Atlas track, even to this day.

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Item# 2493- N Scale True Track #5 Turnout — Left



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Build better benchwork with MRVP!

In this month's installment of the Canadian Canyons series on page 40, you'll get an overview of the multilevel project layout's benchwork construction. For an in-depth look at all the techniques used, don't miss the Canadian Canyons series on Model Railroader Video Plus. The series features several step-by-step videos devoted to layout benchwork, including building the framework and installing the stack-and-go helix.

To begin your subscription to MR Video Plus, visit www.MRVideoPlus.com. In addition to more than 50 videos about building the Canadian Canyons N scale layout, you'll find hundreds more informative shows covering all aspects of the hobby!



► **Canadian Canyons:** Learn how David built the legs for the Canadian Canyons layout in episode 2 of the benchwork series. MRVideoPlus.com/CCBenchwork



Cody's Workshop: Technical editor Cody Grivno expands on the techniques outlined in this month's step by step column. MRVideoPlus.com/Workshop



Smartphone throttles: Check out this episode on DCC Programming to learn more about WiFi throttles and JMRI. MRVideoPlus.com/WiFi



Truck's Toy Trains: See how John "Truck" Truckenbrod re-created a toy train shop in his home. MRVideoPlus.com/TrucksTrains

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David Popp,
MRVP Producer



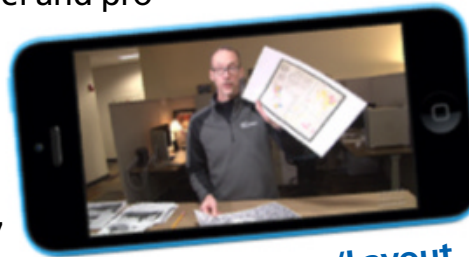
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railroad or getting ready to build your first layout, MR Video Plus has you covered. Don't miss producer David

Popp's new series, "Designing a layout." In the first three parts of the series, you'll learn about researching a prototype railroad as well as using historical maps and photos.

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It started with a train ride

John Lazar's freelanced HO scale layout is inspired by the Pennsylvania RR and the Ligonier Valley RR in the 1940s and 1950s. In this online video, visitors to www.ModelRailroader.com can watch trains running through the western Pennsylvania scenery. Click on the link under Online Extras on the *Model Railroader* home page.



Camera car for the Stockton & Copperopolis

Don Ball describes how he built a camera car for his HO scale Stockton & Copperopolis on page 38. He also posted a cab ride video taken with the car on the ModelRailroader.com User Videos page. Be sure to check it out, along with hundreds of other videos shared by your fellow model railroaders.

BONUS HOW TO ARTICLE



Modeling modern structures

Click on the **How To** tab on the MR home page to find dozens of articles on all aspects of the hobby. In this featured article, author Lance Mindheim shares his techniques for modeling and detailing urban structures for a modern-era layout.

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Have you set modeling goals yet?

We're a month into the new year, more or less. Have you thought about what you want to get done in 2019?

The calendar clicking over to a new year is as good a waypoint as any to look back and see what you did on your model railroad last year, and to set goals for this one.

The goals can be as modest as something like, "Draw a track plan and see if it fits in my room" or as grand as ... well, your imagination is the limit, really.

Once you have a goal, write it somewhere visible like a white board or on a note taped to your workbench. In my case, it will be several notes tacked directly to my benchwork that say "Finish this" with arrows pointing upward to whatever project is sitting up top.

I need these reminders, and I feel at least a little sense of accomplishment when one

of them comes down. You might, too.

How about a look back now? As we continue our 85th anniversary celebration, I've been reading editors' notes from the online *Model Railroader* Archive. One that caught my eye this month was written by Paul Larson in February 1959.

Today, we regard flywheels in locomotive drives as common. These metal discs help smooth out starting and stopping. Basically, they're the analog version of the momentum function in Digital Command Control.

One of the earliest mentions of their use came in Larson's editorial. He'd experienced their fluid motion years prior on the layout of one J.B. Caldwell of Omaha, Neb., and thought it would be great if they were standard on production locomotives.

He opined: "It appears we've circled all around the flywheel in search of substitutes – that have never really produced the results we've wanted."

Locomotive makers must have gotten the message. Simple physics always wins.

Now for something I think deserves mention. You might have noticed in the masthead that Cody Grivno has been promoted to Group Technical Editor. He'll be overseeing the products and news for MR, as well as sister Kalmbach titles *Classic Toy Trains* and *Garden Railways*.

Over the years, you've come to know him best as the host of "Cody's Office" on *Model Railroader's* website and MR Video Plus. But he's far more than a talking head, having amassed an almost encyclopedic knowledge of the hobby in terms of



companies that produce products, what the companies have made, and when. He's also well-versed in many areas of model railroad construction (I call him the King of Ballast) and painting techniques, as well as the person on the staff with the keenest eye for dimensional data.

Congratulations to him!

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N scale



Siemens ALP-45DP locomotive. Atlas displayed a pre-production sample of its latest locomotive. The Siemens ALP-45DP is decorated for NJ Transit in four road numbers. The Master Line model has illuminated directional light-emitting-diode headlights, ditch lights, and red marker lights;

a positionable non-functioning pantograph; and a five-pole skew-wound motor with dual flywheels. Direct-current models are priced at **\$149.95**. Versions with an ESU LokSound Digital Command Control sound decoder are **\$259.95**. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

Trainfest 2018 features new companies

Trainfest 2018 featured new manufacturers and a new product line. The 47th annual show was held in early November at State Fair Park in the Milwaukee suburb of West Allis, Wis.

Value Trains USA made its debut at the show with an HO scale American Car & Foundry 50'-6" boxcar (opposite). The company's first offerings are decorated in Union Pacific-inspired schemes.

Arrowhead Models made its first appearance at Trainfest. The firm displayed its HO scale committee design three-bay hopper, shown on page 14.

Lowell Smith unveiled his RailSmith Line of N scale passenger cars. The models, based on former Walthers tooling, can be seen on page 15.

Athearn (N scale, opposite) and Tangent Scale Models (HO scale, page

16) both announced Pullman-Standard high-side 4,427-cubic-foot-capacity three bay covered hoppers. Athearn's model is due out in late 2019; Tangent Scale Models' car is available now.

We couldn't fit all of the product announcements from the show in to print. To see the complete list of announcements from Trainfest 2018, visit www.ModelRailroader.com.

HO scale



Scale test car. Bachmann's scale test car is decorated for Burlington Northern, Baltimore & Ohio, Canadian National, Union Pacific, and painted black but unlettered (with customizable details). The HO scale model (**\$39**) is scheduled for release in 2019 and features a die-cast metal body, metal wheels, and E-Z Mate Mark II couplers. Bachmann, 215-533-1600, www.bachmanntrains.com

HO scale freight cars



• **55-ton fish-belly two-bay hopper.** Baltimore & Ohio, Central RR of New Jersey, Chesapeake & Ohio, Delaware & Hudson (black and oxide red schemes), Lehigh Valley, Norfolk & Western, Norfolk Southern (pre-1982 company), Reading Co., and Western Maryland (speed lettering with "Serves the world port of Baltimore" in two road numbers and U-channel side posts with speed lettering). Three numbers per scheme unless noted. Cars feature factory-applied brake details and metal wheels. \$27.95. Summer 2019. Bowser Manufacturing Co. Inc., 800-327-5126, www.bowser-trains.com

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Conducted by Cody Grivno



- Pennsylvania RR class N5c cabin car.**

One road number. Injection-molded plastic body; metal floor; separately applied running boards, brake system, and grab irons; and clear window glazing. NEM couplers can be replaced with other brands. \$59.99. Märklin Inc., 573-365-9522, www.marklin.com

- Union Pacific-themed American Car & Foundry 50'-6" boxcar.**

"Building America" scheme with American flag, heritage schemes (Chicago & North Western, Denver & Rio Grande Western, Missouri-Kansas-Texas, Missouri Pacific, Southern Pacific, and Western Pacific), and "The Spirit of the Union Pacific." Injection-molded plastic model with Kadee couplers and trucks, metal wheels, separately applied brake wheel, and molded grab irons and steps. Single car, \$29.99; eight-pack, \$229.99. Value Trains USA, 660-815-0569, www.valuetrainsusa.com

HO scale passenger equipment



- Chicago & North Western Pullman bi-level cab-coach and coaches.** Four-window cab-coach (\$75) and four- and six-window coaches (\$65 each). Interior details, green-tinted window glazing, metal wheels, and kinematic couplers. Lighting kits and dry transfer numbers

N scale



Single-track arched Pratt truss bridge.

Walthers unveiled this injection-molded plastic kit at Trainfest. The N scale bridge (\$44.98) can be used as stand-alone structure or as the center span for longer bridges. Double-stack and similar tall cars can be used on the bridge. The Cornerstone Series bridge is compatible with flextrack, sectional track, and handlaid track. Wm. K. Walthers Inc., 414-527-0770, www.walthers.com

HO and N scale

Kato Smart Controller. This new device from Kato allows Bluetooth operation of HO and N scale direct-current layouts via Android or Apple smartphones or tablets (free app can be downloaded from Google Play or Apple iTunes Store). An AC adapter (sold separately) can be used to provide more or less power depending on the needs of the layout. The Smart Controller (\$170) may be used alone or fully integrated with Kato Sound Box. A smart device controller and communication cable for the Sound Box are included. Kato USA Inc., 847-781-9500, www.katousa.com



N scale



Pullman-Standard 4,427-cubic-foot-capacity three-bay covered hopper.

Athearn's Pullman-Standard 4427 high-side covered hopper will be decorated for Atchison, Topeka & Santa Fe; Burlington Northern (1991 scheme); Chicago & North Western (green); Harmon Grain, Trumbull, Neb.; Montana Rail Link (gray); Pillsbury; Union Pacific (gray with reporting marks and shield); and Wisconsin Central. The N scale covered hopper, scheduled for release in November 2019, will be offered in six numbers per scheme (three single cars and one three-pack). A single car will sell for \$28.98; three-packs will retail for \$84.98. Athearn Trains, 800-338-4639, www.athearn.com



HO scale

Bethlehem Steel Co. F68-series 100-ton 68-foot flatcar. A new flatcar has been added to the ScaleTrains.com Rivet Counter line. The HO scale 68-foot flatcar will be lettered for Trailer Train in four paint schemes and four body styles. The F68-series flatcar (\$41.99) is scheduled for release this summer and will feature a modeler-installed laser-cut wood deck, recessed deck tie-down details, and 100-ton trucks with hydraulic snubber detail. ScaleTrains.com, 844-987-2467, www.scaletrains.com. Scene and photo by Ken J. Johnson

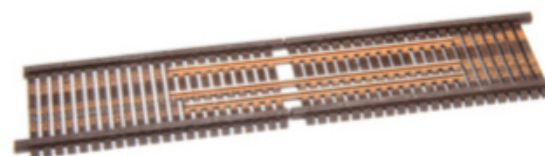
sold separately. Kato USA Inc., 847-781-9500, www.katousa.com

HO scale structures



• **Split-level house.** Injection-molded plastic kit with curbside mailbox, large and small shutters, separate gas and electric meters, and brick exterior chimney. \$34.98. Cornerstone Series. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

HO scale details and accessories



• **Dual-gauge bridge ties and stringers.** HOn3. Injection-molded plastic. Works with Micro Engineering or Peco code 70 and 83 rail (rail not included). \$11.95. Central Valley Model Works, 805-489-8586, www.cvmw.com



• **Snyder Industries boom cabinets for diesel servicing.** 60" x 45" boom (\$9.99), 30" x 45" boom (\$9.49), 10" x 45" boom with small arm box (\$8.99), 10" x 45" boom with large arm box (\$9.19), 78" x 60" boom (\$9.99), and 78" x 45" boom (\$9.99). All kits are 3-D printed in gray ABS plastic (shown assembled and painted). Dimensional Modeling Concepts, www.dmcrrproducts.com

N scale locomotives



• **4-8-2 Light Mountain steam locomotive.** Southern Ry.; Louisville & Nashville; Missouri Pacific; and Nashville, Chattanooga & St. Louis.

N scale



New York, New Haven & Hartford 8600-series coaches. Rapido Trains offers this car lettered for New York, New Haven & Hartford (McGinnis Orange with and without skirts and Hunter Green with skirts), Penn Central (without skirts), and Massachusetts Bay Transportation Authority (without skirts) in six road numbers per scheme. The N scale model (\$59.99) has a tubular cross section, interior and underbody detail, and Easy-Peasy battery-operated interior lighting. Rapido Trains, 905-474-3314, www.rapido-trains.com

HO scale

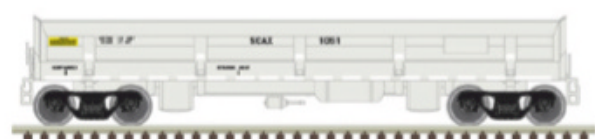


Committee design three-bay hopper. Arrowhead Models first car is this HO scale three-bay hopper (\$48.95) decorated for Denver & Rio Grande Western, Pennsylvania RR, and Southern Ry. Undecorated kits (\$48.50) are also available in three versions. The hopper features prototype-specific detail, an etched-metal brake platform, and a removable coal load. Arrowhead Models, www.arrowheadmodels.com

Dual-mode SoundTraxx Econami sound decoder, separate detail parts (bell, whistle, pop valves, and handrails), die-cast metal chassis, and traction tires. \$349. 2019 delivery. Bachmann, 215-533-1600, www.bachmanntrains.com

- **Electro-Motive Diesel SD70ACe diesel locomotive.** Norfolk Southern (thoroughbred scheme in two numbers; New York Central, Reading Co., Erie, and Penn Central heritage schemes in one number each) and Union Pacific ("Building America" scheme in two numbers; Chicago & North Western, Denver & Rio Grande Western, Missouri Pacific, Missouri-Kansas-Texas, Southern Pacific, and Western Pacific heritage schemes in one number each; and George H.W. Bush Presidential Library scheme in one number); also available undecorated. Plastic body with die-cast metal chassis, golden-white light-emitting-diode headlights, and dual-mode Paragon3 sound decoder featuring Rolling Thunder. \$249.99. Broadway Limited Imports, 386-673-8900, www.broadway-limited.com

N scale freight cars



- **Difco dump car.** Southern California Regional Rail Authority, Alaska RR, BC Rail, Denver & Rio Grande Western, Helm Leasing, Missouri Pacific (Union

N scale



Pullman-Standard lightweight smooth-side 10-roomette, 6-double-bedroom sleeper. Lowell Smith debuted cars from his new RailSmith Models line. The N scale sleeper is decorated for Northern Pacific (Loewy Green and Southern Pacific silver-and-red schemes), Pullman (New York Central two-tone gray), Southern Pacific (silver-and-red scheme), and Union Pacific (Armour Yellow and Harbor Mist Gray). The model (\$40-\$43 each) has silver grab irons, metal wheels, window trim, and prototype-specific road numbers and names. RailSmith Models, www.railsmith.net

Pacific shield), Norfolk & Western, and Montana Rail Link. Three road numbers per scheme. Truck-mounted couplers and 100-ton roller-bearing trucks. \$34.95. First quarter 2019. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



- **Johnstown America Autoflood II five-bay hopper.** Pre-production sample shown. BNSF Ry. (green or brown rotary ends, both with circle-cross

herald), CIT Group/Capital Finance Inc. (NRLX marks), CSX (as-delivered scheme), Commonwealth Edison Co. of Illinois (KGLX marks), and Union Electric Co. (as-delivered scheme, "On Track for the Cure," and "Honoring Ameren's Military Veteran Employees" schemes). American Steel Foundries 100-ton Ride-Control trucks, 36" metal wheelsets, and Micro-Trains no. 1015 couplers. \$29.99. ExactRail, 866-945-1701, www.exactrail.com

- **Department of Defense 68-foot flatcar.** U.S. Navy five-pack with submarine ballistic missile bodies (each car includes a two-piece cast-resin load), \$199.95. Cascade Green, Olive Drab, or

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HO scale



Pullman-Standard 4,427-cubic-foot-capacity high-side covered hopper.

Paint schemes on Tangent Scale Models' new car include Peavey Co.; Atchison, Topeka & Santa Fe (TP&W patchout); Louis-Dreyfus; Milwaukee Road; Missouri Pacific with Chicago & Eastern Illinois reporting marks; Rock Island; and Toledo, Peoria & Western. The HO scale covered hopper is priced at **\$44.95**. Tangent Scale Models, 828-279-6106, www.tangentscalemodels.com

HO scale



Milwaukee Road 40-foot ribbed-side boxcar. Coming soon to the Accurail product lineup is this HO scale injection-molded plastic boxcar kit. The Milwaukee Road 40-foot ribbed-side boxcar kit (**\$18.98**) is based on the phase 1 prototype and will be offered in three paint schemes and undecorated. Accurail, 630-365-6400, www.accurail.com

HO scale



Clear acrylic inspection car. This product is the latest release from Gooddealsdcc Inc. The clear acrylic inspection car features a two- and three-axle truck, a user-installed bubble level, a clear 5x magnifier, and Kadee couplers. The car measures 11" long and is priced at **\$35.95** plus shipping. Gooddealsdcc Inc., 224-703-0111, www.gooddealsdcc.com

Urethane Green with six-wheel Buckeye roller-bearing trucks and six M1 Abrams tank kits, three-pack \$124.95; red with three M1 Abrams tank kits and four-wheel roller-bearing trucks, three-pack \$109.95. Flatcars feature mounting points for containers, all-new under-frame, and body-mounted Magne-Matic couplers. Micro-Trains Line Co., 541-535-1755, www.micro-trains.com

• **Old-time gondola.** Baltimore & Ohio, U.S. Military RR, Virginia & Truckee, and Western & Atlantic. Body-mounted E-Z Mate Mark II couplers. \$29. 2019 delivery. Bachmann, 215-533-1600, www.bachmanntrains.com



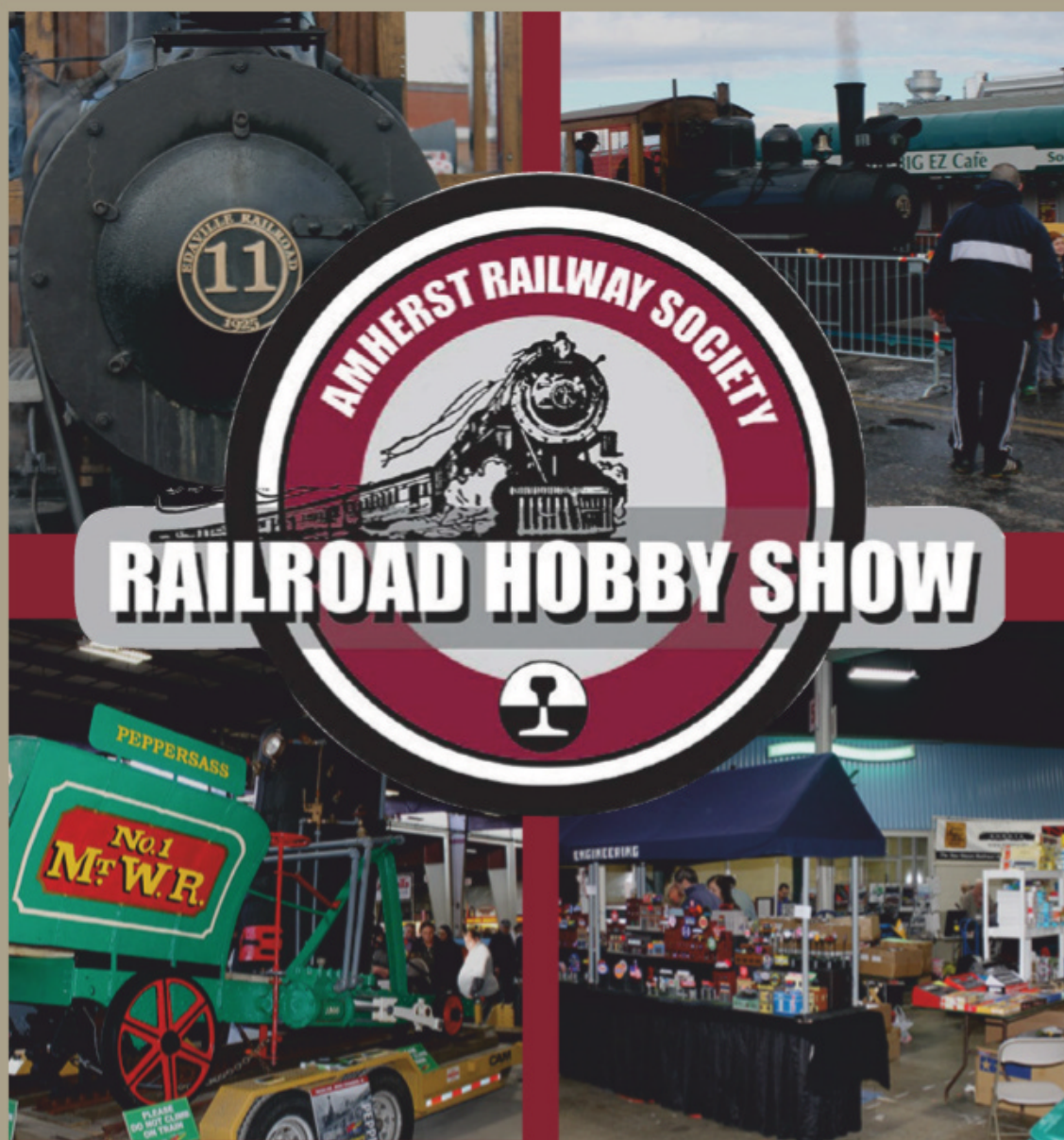
• **Milwaukee Road transfer caboose.** Early body: Maroon "The Milwaukee Road" lettering and "The Milwaukee Road" herald, one road number each. Late body: "The Milwaukee Road" herald in two numbers. Metal wheels, clear window glazing, and body-mounted couplers. \$38.95. Fox Valley Models, www.foxvalleymodels.com



• **National Steel Car potash service covered hoppers.** 4,275-cubic-foot-capacity: Agrium (NAHX reporting marks). Twelve road numbers (two six-packs), \$179.98 each. 4,300-cubic-foot-capacity: K&S Potash Canada (NSCX reporting marks). One road number. \$29.98. Models feature many separately applied detail parts, metal wheelsets, and Magne-Matic couplers. Produced by North American Railcar Corp., available exclusively from Pacific Western Rail Systems, 866-840-7777, www.pwrs.ca

N scale structures

• **Hotel Belvedere.** Laser-cut acrylic kit with tab-and-slot construction, detailed instructions, and photos. Measures 7" x 4" x 15". \$256. Custom Model Railroads, 410-889-0010, www.cmrtrain.com



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ATL2000462X 4/6 EMP Container 3 Pack	\$34.99
ATL2000462X 7-9 HUB Container 3 Pack	\$34.99
ATL2000463X 0-2 UMAX Container 3 Pack	\$34.99

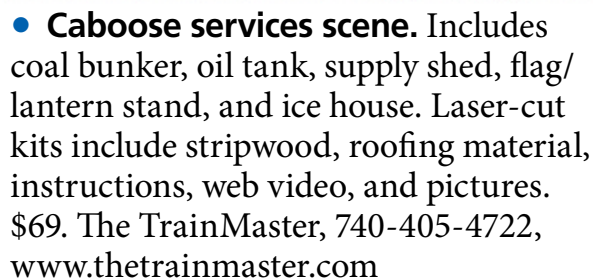
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- **Allis-Chalmers HD-21 crawler and dozer.** Resin body and treads with 3-D printed blade, cylinders, and

exhaust pipe. HD-21 crawler (no blade) kit, \$15.99; HD-21 dozer kit, \$18.99; crawler or dozer (assembled, painted, and decorated), \$85 each; decals, \$5. Wheels of Time Wheels of Time, www.wheelsotime.com

- **Clear acrylic inspection car.** Features a two- and three-axle Micro-Trains trucks, clear 5x magnifier, and truck-mounted Magne-Matic couplers. Car measures 57⁷/₁₆" long. \$35.95 plus shipping. Allow two weeks for delivery. Gooddealsdcc Inc., 224-703-0111, www.gooddealsdcc.com
- **China International Marine Containers 53-foot dry container.** New road name: XPO Logistics. New paint schemes: COFC Logistics, HUB Group (large logo on roof), J.B. Hunt (Intermodal with small nose logo, Uline, and gray schemes), and Schneider (white roof, darker orange body, and without "National" lettering). Two vents per side and four painted door rods. \$9.99 each; three-pack, \$29.99. Summer 2019. Operator line. ScaleTrains.com, 844-987-2467, www.scaletrains.com

- **24"-diameter turntable.** Upgraded injection-molded plastic model with larger, more powerful motor; flat cogged anti-slip belt; new deck support with additional roller bearings for greater support of heavier locomotives; and redesigned metal contacts to power the rotating track. Will operate on alternating current or direct current. Compatible with Trainmaster Command Control and Digital Command System (using TMCC or DCS accessory interface). \$299.95. Atlas O, 908-687-0880, www.atlasrr.com

18 www.ModelRailroader.com

S scale freight cars



- **Thrall 2,743-cubic-foot-capacity gondola.** RJ Corman; Dakota, Minnesota & Eastern; Gateway Western; Fluor Daniel Fernald (OHFX reporting marks); Oregon Steel Mills; and Union Pacific. Three road numbers per scheme. American Flyer-compatible trucks and couplers. Can be adapted to Kadee couplers. \$59.95. S Scale America line. Des Plaines Hobbies, 847-297-2118, www.desplaineshobbies.com

Large scale locomotives



- **4-6-0 steam locomotive.** Denver & Rio Grande Western (Flying Grande lettering and bumblebee scheme),

Pennsylvania RR (green), Christmas, and painted black but unlettered. Metal gears; non-proprietary plug-and-play circuit board for choice of direct current, National Model Railroad Association/NEM Digital Command Control, and/or remote control operation; operating headlight and smoke unit; and metal side rods, separate piping, and metal handrails. Plug-and-play sound module available separately. Price to be announced. Spring 2019. Big Haulers line. Bachmann, 215-533-1600, www.bachmanntrains.com

Electronics/controls

- **16V DC multi-accessory power supply.** Several accessories can be attached to each side of power supply for up to 1 Amp total load. Six 16V DC accessory attachments. For use with all scale accessories. \$59. Bachmann, 215-533-1600, www.bachmanntrains.com
- **SoundTraxx Tsunami2 steam-2 digital sound decoders.** Expanded sound library with 28 new whistles, 12 bells,

Large scale



General Electric 25-ton diesel locomotive. This 1:24 proportion model is now available from PIKO America. The General Electric 25-ton diesel locomotive (\$199.99) is decorated for Denver & Rio Grande Western and painted blue but unlettered. The model features directional light-emitting-diode headlights and can be upgraded to include a sound system and smoke unit. PIKO America, 619-280-2800, www.piko-america.com

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HO scale



Offset-cupola caboose. MTH has released this injection-molded plastic model decorated for Union Pacific, General Electric (GEVO demonstrator scheme), and Norfolk Southern ("Honoring Our First Responders" and "Honoring Our Veterans" schemes). The HO scale offset-cupola caboose sell for **\$26.95**. MTH Electric Trains, 410-381-2580, www.mthhotrains.com

10 air pumps, 8 dynamos, 10 exhaust chuffs, snifter valve, injectors, Johnson bar, power reverse, firebox blower, side rod clank, and brake squeal. TSU-1100, \$129.95; TSU-2200, \$124.95; TSU-21

PNEM, \$109.95; and TSU-4400, \$179.95. SoundTraxx, 970-259-0690, www.soundtraxx.com

• **SH2AB HO scale mainline signaling kit.** Includes two single head A signals,

two single head B signals, 4 SMP1s, eight spacers, and eight screws. Makes all signals plug-and-play with small 10-pin connectors. Can be used as basic HO scale signal. Mounting board and hardware included. Current-setting resistors built into the board. Intended for use with the SE8C and other Digitrax signaling products. \$25. Digitrax, 850-872-9890, www.digitrax.com

Software

• **Track planning software.** Features pieces from Atlas Model Railroad Co.'s nine track lines. Layout can be arranged on multiple levels with different track heights and grades. Features 3-D tool; export, print, and share options; and printable list of the track pieces required to build the designed plan. Layout libraries will be available with future library updates. Software operates on Windows XP/Vista/7/8/10. There are no plans for a Mac version at this time. \$32.95. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com **MR**

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A German reader scratchbuilt this N scale trestle bridge, 7.88" long and 3.15" high, from basswood. Stefan Heinbockel photo

Learning from MR

I built this N scale trestle from scratch using tips from *Model Railroader* and two great Kalmbach books, *The Model Railroader's Guide to Bridges, Trestles & Tunnels* by Jeff Wilson and *Model Railroad Bridges & Trestles*. The bridge is set in a landscape inspired by Arizona.

My project was entered in a model-building competition at the November

2018 Modellbahn-Köln, the international model railroading show held in Cologne, Germany.

Thanks to your magazine, I can enjoy building a U.S. model railroad in my home in Germany. The next projects are already in the making, and your publications are again a great help.

Stefan Heinbockel
Munich

Running tender first for many mine runs and even helpers was the norm, rather than the exception, on many coal turns in that era. – Jim Hertzog

Canadian rails

"Adding interchange traffic" by Jerry Dziedzic [November] was thoroughly enjoyable. I had summer jobs with Canadian Pacific in the early 1970s. As an interchange clerk, I prepared the "bills" for cars to be interchanged with Canadian National Ry. and other railroads in the area that the office controlled. It was fun.

I also enjoyed Jeff Wilson's ["Open auto racks" [November]]. For several years they were used to carry trailers made at a plant in Quebec to dealers across North America. The plant was not on a rail line, so the trailers were driven from the plant to a spur, where a mobile adjustable ramp was installed. There, pickup trucks with hitches on the front would push the trailers onto the cars. This could make for an interesting scene to model.

Hugues Fortin
Sherbrooke, Que.

Just the right size

When I saw the photo in "Add a park in a compact space" by Gerry Leone [December], I was reminded of a nice park by the New York, Susquehanna and Western Ry. in Warwick, N.Y. The park is small and narrow, just like the model. It has a few benches by an old station and a caboose on display nearby.

Whenever my wife and I visit this town, we usually eat lunch at the park, and if I'm lucky I'll see a freight train go through. It's a very nice railroad scene.

Bill DeBuvitz
Mendham, N.J.

Correction

Who could've missed those tail fins? Apparently, we could. As many of you pointed out, the caption in photo 4 of Jeff Wilson's "Open auto racks" [November] lists the rack as carrying a load of 1960 Fords. It's actually carrying Dodges and Plymouths. Sorry if we slighted any Mopar fans!

Home sweet home

I grew up near the Baltimore & Ohio and Bessemer & Lake Erie railroads north of Pittsburgh, so I was eager to read about Jim Babcock's layout in the September issue ["B&O in a bonus room" by Lou Sassi]. How surprised I was to find he modeled the same line that ran through my hometown of Glenshaw, Pa. While landmarks were rearranged a little and necessarily compressed, they were instantly recognizable, right down to the windows of my second-grade classroom!

Congratulations on a well-executed layout, and thanks for the short visit back to my old neighborhood.

Eric Hundertmark
Collegeville, Pa.

Coal turns

I enjoyed Jim Hertzog's article "Ride along on a mine run" [November]. But

after following the story, track diagram, and photos, I'm at a loss to understand how locomotive no. 2001 was turned for the return to Tamaqua. I could find no turntable, wye, or reversing loop accessible to Locust Summit. In fact, I saw only one wye on the entire layout – at Tamaqua.

Bill Hobbs
North Little Rock, Ark.

Great question from an astute reader. Actually there was no wye at Locust Summit for turning. The nearest wyes on the prototype were at Shamokin or Gordon, neither of which is modeled due to space constraints. A former Reading Co. tower operator (now deceased) told me a few years ago that the train would have returned downhill to Gordon running tender first. Once at Gordon, the locomotive would be turned on the wye and run in a normal fashion back to Tamaqua.

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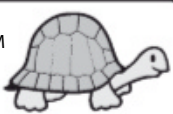
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Associate editor Steven Otte designed the decals for *Model Railroader's* 2009 Beer Line project layout on his computer. He printed them out on clear decal film from Walthers using a color laser printer. Steven Otte photo

How can I print my own sign decals?

Q After a 20-year pause, I'm getting back into model railroading. This time I intend to model areas that will require a number of one-of-a-kind signs. I see that you can make your own decals using your home printer. Has *Model Railroader* published any how-to articles about making your own decals?

Steven Favale, East Amherst, N.Y.

A I couldn't find a recent article entirely on this topic, but I touched on it in my article on building structures for the Beer Line in the April 2009 issue (page 45).

Making your own decals isn't a complicated process; simply prepare your graphics on a computer, then print them on clear decal film using a color printer. Companies including Testor Corp., Walthers, Microscale, Kadee, VitaCal, and Evan Designs make decal paper designed for use in inkjet printers, but you'll get more opaque colors out of a color laser printer. If you don't have access to one, bring your designs and blank decal paper to a business copy center for printing. For best results, use dark, saturated colors, as a less vivid shade will let the background color show through the decal.

Also keep in mind that most printers can't print white. (The Alps dye-sublimation printer did, but they haven't been manufactured for years.) To make white lettering, you'll actually print the colored area surrounding the lettering on decal film. Either print your decal on white film, or paint the background white before applying a clear decal.

Q This may fall under *Model Railroad-ing 101*, but what is the average length of an HO scale consist? What's the longest you know of? If space permitted, could I put together a consist of two, three, or four diesel locomotives and pull 30, 40, or even 50 cars? If we assume quality rolling stock, how would this long of a consist track on curves using code 83 track and proper radii?

Robert Taylor, Lexington, S.C.

A It's hard to say. On the sleepy 1906 branch line I model, a typical freight

would be 5 or 6 cars long. But YouTube is full of videos of model trains pulling 100 or more cars. And the world record for the longest model train consists of 31 HO scale locomotives pulling 1,563 cars. So even if you could arrive at an average length, the number would be irrelevant to your railroad.

The length of your trains should depend on two factors, one practical, the other economical. First, the size of your layout, the distance between stations, the length of your passing sidings, the grade and curvature of your track, and the pulling power of your locomotives are all

factors that determine your maximum practical train length.

As you imply, the longer a model train is, the more factors like "string-lining" – the tendency of cars to pull off the track on the inside of curves – become a factor. Spacing your locomotives out throughout the train (what the prototype calls "distributed power") and making sure your engines are speed-matched will help obviate this problem.

Secondly, although we run trains for fun, the prototype railroads do it to make money. A train pulls as many cars as the customers pay to have moved. A layout with just a few industries and not much offline staging space would run shorter trains than a bridge line with large staging yards. So while model trains of 50 cars might not be unheard of, whether one would be appropriate for your layout is another matter.

Q Is there an easy way to tell brass track from nickel-silver? I'm tearing up an old layout and want to save the nickel-silver track.

James Lyons, Wallingford, Conn.

A By the color. Nickel-silver rail has a slight yellowish tint to it, while brass is a deeper gold color, even more so when it hasn't been polished in a while. The other common track material, stainless steel, is a pure silver-white color, and will stick to a strong magnet, while the other two materials won't.

Q Is there a technical reason for switching from plastic wheels to metal wheels? When I switched the wheels on a few freight cars, I noticed the metal wheel noise drowned out the sound system on the locomotives. Increasing the sound of the decoders wasn't an option, so I switched back to plastic. But is there a real advantage to switching to metal wheels?

Philip Harris, Yorktown, Va.

A Fans of metal wheelsets cite many advantages, but most of them have little real effect. Advocates say metal wheels increase the weight of the car at the railhead, improving tracking, but the difference in weight is negligible. Some say metal wheels look better, but once you paint the wheel faces, it's hard to tell the

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

difference. Metal wheelsets stay a bit cleaner than plastic, but they still pick up rail gunk. The only definitive advantages to metal wheels are their machining, vs. molded plastic that can warp; and the ability to pick up electricity from the rails for interior car lighting. Beyond those features, it's a matter of taste.

Q Pelle Søbørg wrote an article about detailing an HO scale diesel in which he used surface-mount light-emitting diodes (LEDs) to replace the headlights and ditch lights. After installing the lights, he touched the front of the LEDs with some solution that created lenses for the lights. Would you know which issue that piece appeared in, or the name of the solution Pelle used?

Robert Cronan, South Portland, Maine

A How about both? The article you're talking about was the DCC Corner column for February 2014, and the substance Pelle used to make the lenses for that Electro-Motive Division SD70ACe was Microscale Kristal Klear.

Q In your Product Reviews and News & Products announcements, you often describe some details as "separately applied." Does that mean that the purchaser puts it on after buying the product? I've never been clear on just what "separately applied" means.

Jay Lambeth, Greensboro, N.C.

A No; a "separately applied" part was originally a separate part, as opposed to being molded as part of the body shell. We usually refer to parts that are added by the buyer as "modeler-applied."

Q Does anyone make parts for a 1970s-vintage diesel that I own? It won't run right, and two local people have told me it's unfixable. Surely there's a source of replacement parts or new motors for these trains!

Jim Kelly, Clarks Summit, Pa.

A There is, but don't call me Shirley. You could check train shows, swap meets, eBay, and similar auction sites for other models of the same type that you

can cannibalize for parts. But in the end, you'll still end up with a locomotive with 40-year-old guts.

Another approach is to swap out the motor or even the whole drivetrain on your locomotive with new aftermarket parts. You might have to modify the locomotive's frame, gear towers, or motor mounts, but you'll end up with a more reliable locomotive.

A more radical option would be to buy a new model of the same type of locomotive, and replace the body shell with your old one. This route is more expensive, and you still might have to make modifications for the shell to fit, but this approach can also let you add new capabilities like DCC and sound.

Q I want to paint an 0-8-0 switcher satin black. After I apply the decals, how do I protect them without ruining the satin finish?

Royal Gower, Union City, Calif.

A Pelle Søbørg protects his rolling stock's finish by airbrushing on a coat of



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clear varnish by Acrylicos Vallejo. That company makes a satin-finish varnish in both a polyurethane and an acrylic base. Apply your decals on a gloss paint base, then spray the satin varnish on top to protect them and restore the finish you want. Testor Corp. also makes a clear satin-finish lacquer spray. Tamiya calls its semi-gloss acrylic. I'm sure other manufacturers have similar offerings.

Q In your many articles on DCC wiring, you show the use of single strands of wire of 18AWG or so, one for each rail. Is there a reason you use individual strands instead of dual-conductor wire?

Nathan Owen, Hudsonville, Mich.

A Digital Command Control guru Larry Puckett replies:

"Most folks use individual wires out of convenience, as they're easy to find and reasonably cheap. Also, some DCC manufacturers recommend that folks twist their bus wires 3 turns per foot to eliminate inductance issues" – interference caused by electromagnetism.

READER TIP

Subroadbed curve template

I wanted to share how I laid out the curves on my O scale layout. The center point of most of my curves fell in the middle of the room, so I couldn't use the pivoting trammel method David Popp demonstrated in a Model Railroader Video Plus episode.

Instead, I cut a template from white coated 1/8" tempered hardboard.

My layout has a double-track main at 48" and 52" radius, so my subroadbed needs to be about 8" wide. The inner edges of the template are at 48" and 52" radii for the track



Carl Blum cut a template from hardboard to help him mark curves on his O scale layout. Carl Blum photo

centerlines, and the outer ones mark the edges of the double-track subroadbed, at 46" and 54".

I mark the radii on 1/2" plywood and cut out the subroadbed with a saber saw. I'm sure such a template would work in any scale. – Carl Blum

"More recently, some modelers have been using zip cord, which is two strands connected as on a table lamp cord, as another way to eliminate inductance issues.

"On my layout, I use 14AWG zip wire for my bus runs. This is available at

companies that carry audio wiring, like www.allelectronics.com. Some large hardware stores have zip sizes up to 16AWG. There have been several posts on my website (www.dccguy.com) concerning the use of wiring." **MR**

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Live-steam Hudsons were popular models

New York Central's Hudsons were famous for setting speed records between New York and Chicago. This popularity led American Flyer to introduce a $\frac{3}{16}$ " scale O gauge tinplate version in 1938. Of course, there was also Lionel's no. 700E $\frac{1}{4}$ " O scale superdetailed model in 1937. Both of these models were electric, but fascination also included live steam.

A Little Engines $\frac{1}{4}$ " O scale model, two Aster Gauge 1 models, and Little Engines' huge 3" scale, 15" gauge version were impressive.

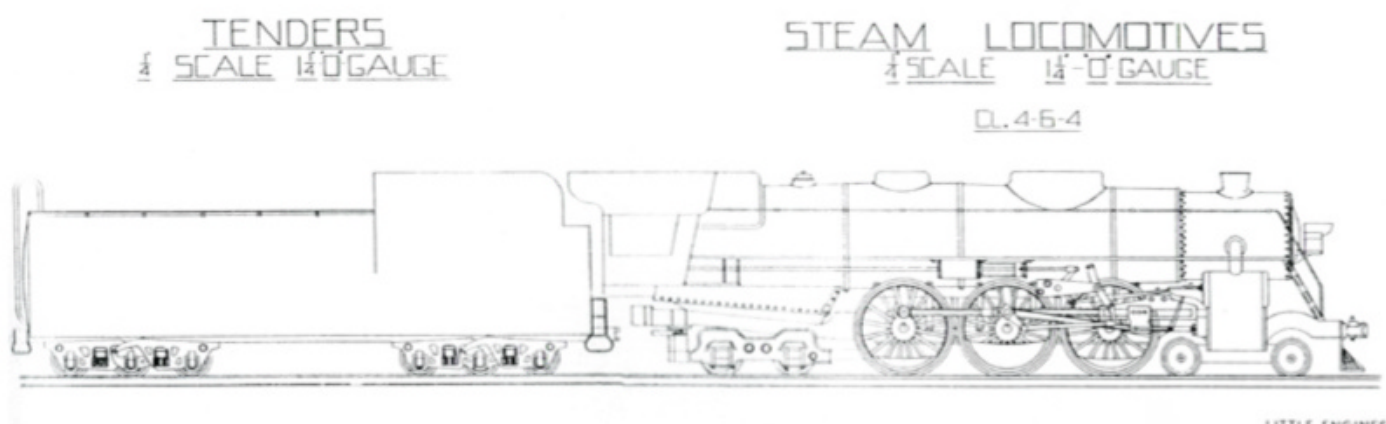
Little Engines of Lomita, Calif., [now operating out of Port Angeles, Wash., and offering primarily $1\frac{1}{2}$ " scale models – *Ed.*] never pictured its generic O scale Hudson other than in a line drawing; I observed one under steam moving slowly back and forth on a track at a Montreal meet. Compatible with commercial 48" radius track, it was ordered with insulated wheels on one side for operation on powered track. No kind of motor was noted.

The finished castings could be assembled with a limited set of tools and were suited for an amateur builder. The tender and underframe were one-piece castings. Alcohol, distillate, or high gravity diesel oil could fire it, though alcohol was preferred as the cleanest burning. The model was $25\frac{7}{8}$ " long. It was sold in sections, or as a complete kit in 1967 for \$240.50.

A 1980s Aster color promotional sheet showed a Gauge 1, 1:32 scale, 36.7"-long NYC J-1e no. 5344 (the same engine number as Lionel), and J-1c Hudson no. 5265 with center flues, three fire tubes for burning butane, and room for radio control. The tender held



Aster's 1:32 Gauge 1 live-steam New York Central Hudson was promoted in a 1980s flier. Offered as kits or ready-to-run, the models were made of various metals suited to their tasks.



Little Engines of Lomita, Calif., offered a generic O scale Hudson live-steam locomotive. Keith Wills once saw one running at a Montreal meet.

$4\frac{1}{2}$ ounces of fuel and had a 21 ounce water tank, and came with a hand-operated pump installed. All wheels were insulated.

It required a 10-foot radius to operate. The headlight, marker lights, cab light, and tender marker lights were electrically powered. It was interesting to read an "Electric Puffer" could be fitted inside the smoke box – for a live steam locomotive? One could purchase the locomotives as kits or ready-to-run; no price was mentioned in the promotional material, nor weight.

Gauge 1 live steam models were popular in Britain before World War I from manufacturers such as Bing, Märklin, Schöner, and Carette. In any gauge, they shared one problem, over-firing, which scorched painted brass boilers.

Castings comprised Little Engines' O scale Hudson. Aster's Gauge 1 models had brass bodies, stainless steel

wheels and rods, a high-strength aluminum smoke-box door, stainless steel handrails, a brass throttle, zinc alloy trailer and tender truck frames, phosphor-bronze cylinders, and a silver-soldered copper tube boiler. Other refinements are too numerous to recount, other than to say both Asters were exquisitely modeled.

The most elaborate NYC Hudson was Little Engines' huge 3" scale, 15" gauge J-1c no. 5212, which it sold for several years. Because of its size, 14 feet long sans tender, and weight, three tons, it required at least 100-foot radius curves to run – not your garden-variety locomotive.

A 1963 catalog had a dark, muddy photo of the finished locomotive, but clearer images of its parts. It could haul 100 passengers, useful as 15-inch gauge was once popular on large Victorian and Edwardian British estates.

It was sold in rough parts requiring finishing. It consisted of steel, iron, bronze, and brass components. Little Engines was quite clear this Hudson was not a "Park" engine, a pejorative for freelance steamers found in amusement parks; it was a serious model for serious hobbyists.

Live-steam Hudsons, generic or prototype, were highly desirable to a specialized segment within our hobby. 



GAUGE 1 LIVE STEAM MODELS WERE POPULAR IN BRITAIN BEFORE WORLD WAR I FROM MANUFACTURERS SUCH AS BING, MÄRKLIN, SCHÖNER, AND CARETTE.
– KEITH

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Weathering N scale locomotives

The **Model Railroader Video Plus** crew did a great job capturing the flavor of British Columbia's scenery on our Canadian Canyon's N scale project layout (see page 40). Now we needed locomotives and rolling stock to bring the model railroad to life.

Running through rugged mountain terrain, the bright red Canadian Pacific road units quickly accumulate a layer of grime. Road dust on the trucks, fuel tank, side frames, and pilots; soot around the exhaust stack and on the roof; and rusty brown couplers were the

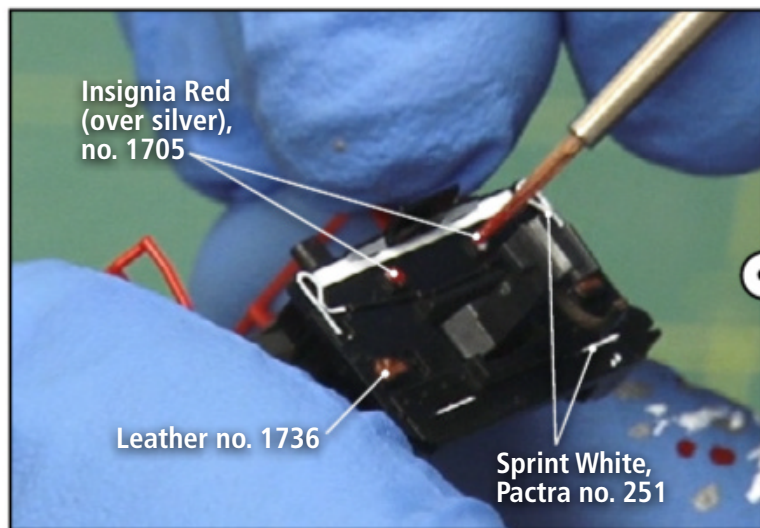
order of the day for our Kato ES44AC. But before I dug into the big-picture stuff, I focused on the details.

I applied Vallejo Model Washes to the radiator grills and truck sideframes. Spot color on the raised pilot details, the headlight and ditchlight housings, and the fuel tank gave this six-axle road unit some "wow" factor.

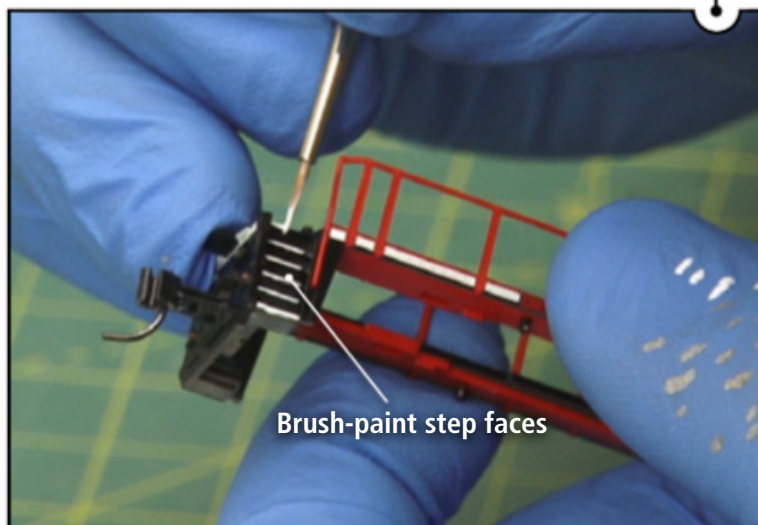
Compare the weathered CP no. 8705 below to straight-from-the-box ES44AC no. 8706 to the right of it. And all of this was done without an airbrush, making this project easily accessible. **MR**



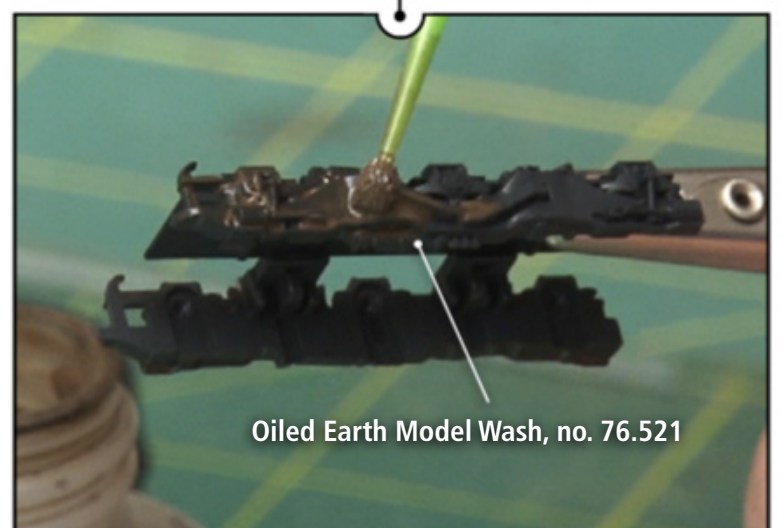
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I painted the details on the rear pilot with Model Master and Pactra paints. Adding color to the spare knuckles, uncoupling levers, m.u. receptacle covers, and m.u. hose loops made a big difference.



The step faces are white on the full-size diesel. I re-created that look on our model with Pactra Sprint White. After the paint had dried, I scraped the top and bottom edges with a no. 11 blade.



I sprayed the truck sideframes with Testor's Dullcote to give the castings a flat finish. Then I applied Vallejo Oiled Earth (no. 76.521) and European Dust (no. 76.523) Model Washes.



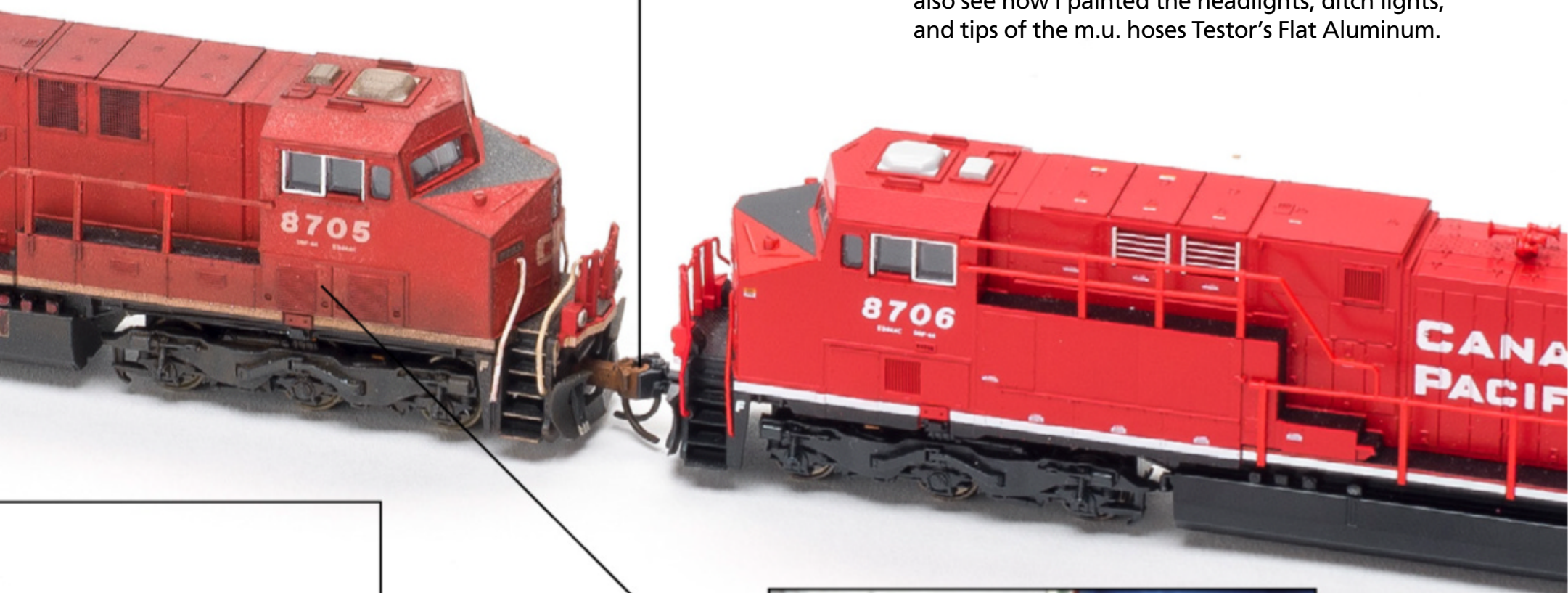
Grimy Black, no. 3102

Monroe Models Grimy Black works well for simulating soot around the exhaust stack. I put it on thick closest to the stack. The effect looks heavy here, but I feathered it out with different brushes.



Flat Aluminum,
Testor's no. 1181TT

I weathered the couplers with Monroe Models Rusty Brown no. 975 weathering wash. You can also see how I painted the headlights, ditch lights, and tips of the m.u. hoses Testor's Flat Aluminum.



Black Model Wash, no. 76.518

The radiator grills are finely molded. To give these details depth, I applied Vallejo Black Model Wash (no. 76.518). I used a damp cotton swab to remove wash that got on the grill frames.



Medium Earth,
no. 3103

I also sprayed Dullcote on the shell, which gave it some tooth. After it dried, I used a paintbrush to apply Monroe Models Medium Earth weathering powder (no. 3103) to the sides and ends.

It started with

① The stalls are full at the Blairsville roundhouse as Pennsylvania RR class L1s 2-8-2 takes a ride on the turntable on John Lazar's freelanced HO scale Red Mountain RR.



a train ride



A visit to a tourist railroad planted the seed for this freelanced HO scale layout

By John V. Lazar

Photos by Lou Sassi

The story of my freelanced HO scale Red Mountain RR goes back to the summer of 1961. I was living in western Pennsylvania and visited the East Broad Top RR (EBT) in Orbisonia, Pa., shortly after the line reopened as a tourist operation. My father, uncle, brother, younger sister, and three cousins all rode the train and toured the facility.

I became enamored with the EBT after that visit and envisioned a model railroad similar to the prototype. In my mind, the railroad would be a small coal-hauling line that connected with the Pennsylvania RR (PRR). The coal mines would be located near the fictional Red Mountain, the railroad's namesake.

I honed my modeling skills on two small HO scale layouts before constructing the first Red Mountain RR in 1964. During those early years I received a lot of help and inspiration from my cousin, Ed Materkowski. He was into model railroading then and continues to be an excellent modeler to this day. Even though Ed and I now live far apart, he still offers suggestions and inspiration via email.

N, O, and back again

The first Red Mountain RR existed until the late 1960s when I switched to N scale, which was relatively new at the time. Following marriage and the birth of our first son, I got away from scale model railroading and became heavily involved in collecting and operating O gauge trains. I wanted my children to experience the joy of operating Lionel trains as I did growing up. I still have an



② This overall view shows most of John's layout. Hillside is to the left and Blairsville is to the right.

interest in toy trains and have been a member of the Train Collectors Association for 40 years.

In 1985, I felt the urge to go back to HO scale and started work on the second version of the Red Mountain RR. The layout lasted more than a decade. After dismantling the layout, I began helping a close friend construct his dream model railroad. But not having a layout of my own sparked my urge to build again.

My current HO model railroad is the third iteration of the Red Mountain RR. I started work on this layout in March 2003. Initially, the track plan was an expanded version of John Allen's original Gorre & Daphetid, but in the East.

Over the years, the layout was expanded to its current form. Two of the last three extensions are models of prototype locations: the PRR's North Yard in Blairsville, Pa., and a portion of the Ligonier Valley RR (LGV) between Latrobe and Ligonier, Pa. The full-size LGV connected with the Pennsy at Latrobe. In my world the Red Mountain RR serves as a connecting line between the LGV and PRR.



③ Ligonier Valley RR Consolidation no. 807 spots empty hoppers at the limestone tipple. The scene illustrates how John used chopped leaves and Aleene's True Snow to model a winter scene.

Benchwork and track

I built the first section of the model railroad using 1 x 4s and open-grid construction. I used $\frac{3}{8}$ " plywood for the subroadbed.

As the layout progressed around the wall, I continued using open-grid benchwork. However, I switched to L-girder

benchwork when I built the peninsula for the Blairsville Yard. I returned to open-grid benchwork for the layout's final expansion, including the level below the Blairsville Yard.

Because the final expansion was mostly located below existing benchwork, I faced some construction challenges. With limited workspace, it



became difficult to construct buildings and scenery on the layout. This led me to build modules at the workbench and set the finished scenes into the layout. I made one module removable so I can access hard-to-reach areas.

I used Atlas code 100 flextrack and mostly Peco turnouts, all of which are laid on cork roadbed. I operate all of the switches manually.

Changing scenery techniques

My scenery techniques changed as the layout evolved over the years.

The layout at a glance

Name: Red Mountain RR
Scale: HO (1:87.1)
Size: 14 x 18 feet
Prototypes: Pennsylvania RR and Ligonier Valley RR
Locale: western Pennsylvania
Era: 1945 to 1955
Style: multi-deck walk-in
Mainline run: 103 feet
Minimum radius: 24"
Minimum turnout: no. 4

Maximum grade: 3 percent
Benchwork: open grid and L-girder
Height: 36" to 55 1/2"
Roadbed: cork over 3/8" plywood
Track: code 100 flextrack
Scenery: plaster over screen and plaster and joint compound over extruded-foam insulation board
Backdrop: hand-painted on luan
Control: Digitrax Digital Command Control



④ Pennsylvania RR class H10s 2-8-0 no. 9422 leads a manifest freight toward Jaystown (above) while 2-8-0 no. 8421 leads a short coal train through Justin Junction. John's collection of locomotives and rolling stock reflect his nearly 60 years in the hobby.

Initially I put screen wire over plywood forms and covered it with wood-fiber plaster. I carved the rock formations into the plaster. I covered the hillsides with ground foam and lichen.

Later, I started using extruded-foam insulation board to shape the terrain, again covering it with wood-fiber plaster. I also began using rock castings instead of hand-carving rock formations. Eventually, I replaced the wood-fiber plaster with lightweight joint compound, which has a slightly longer working time.

I also added Woodland Scenics Clump-Foliage and Scenic Express SuperTrees to my repertoire. In addition, I've been experimenting with poly fiber for foliage features.

While building the final expansion, I incorporated natural materials, including dirt and chopped and screened dried leaves. [See page 34. – Ed.] The crushed leaves were put to good use in a winter scene. I remember many heavy



⑤ Traffic comes to a halt temporarily as SW9 no. 8529 crosses Market Street in Blairsville. John's layout is set between 1945 and 1955, the transition era from steam to diesel locomotives.

snow events in Western Pennsylvania. The snow usually melted fairly quickly, even though the temperature remained cold. My recollection of a typical winter scene is a drab, leafless vista with patches of snow here and there.

To re-create this look, I used the chopped leaves as ground cover. Then I installed several bare SuperTrees.

Finally, I added patches of Aleene's True Snow, which is available at craft stores.

Structure showcase

The buildings on my layout are a mix of scratchbuilt, kitbashed, and kits I painted and detailed. I mainly used kits on the freelanced portion of the model

railroad. When I started modeling real locations, I kitbashed or scratchbuilt structures to match the prototype.

I used illustration board, styrene, and basswood for most of the newer structures. I covered the illustration board with styrene siding to match the prototype I was modeling. Many of the buildings also have detailed interiors.

Some of my earlier modeling efforts weren't as sophisticated. As a teenager, with lack of funds (I only earned a small allowance for doing chores around the house), it became clear that I needed to build structures on the cheap. Budget-friendly balsa wood was available at the local hobby shop. I liked balsa because it was easy to cut and scribe. I often paired balsa with thin cardboard from shirt boxes and notepads.

Not surprisingly, the structures were fragile and easily destroyed. Over the years a few survived. Five of the buildings are on the Red Mountain RR, including a small coal tippie between Smith and Hillside. I built the structure in 1963 based on measurements of the full-size structure in Blairsville, Pa. Except for some weathering and slight modifications, the structure is as it was built more than 50 years ago.

Equipment and operations

My locomotives and rolling stock are evidence I've been in the hobby for nearly 60 years. Early on, most of the motive power was lettered for either the Pennsylvania RR or Red Mountain RR. Since converting to Digital Command Control (DCC), I've only purchased locomotives lettered for the Pennsy. Unfortunately, I don't have any operating Red Mountain engines. My story is that the railroad is leasing locomotives from the PRR. The rolling stock is largely kit built, weathered, and tuned for optimum performance.

Operation on the Red Mountain RR is primarily a one-man show. I've experimented with different operating systems, but I usually just dream up a random operating scheme for the day. The plan normally involves moving incoming freight at Blairsville to the various customers on the layout. As loads are delivered, both empties and finished product are taken back to Blairsville. In some cases, coal from the Lazar Bros. mine is taken directly to the Isabella Coke Works. Although the railroad



6 A fisherman tries his luck catching trout in Loyalhanna Creek. John made the waterfall using a plastic sheet protector, acrylic paint, and gloss media.

Sheet protector waterfall

Kingston is located on Loyalhanna Creek between Latrobe and Ligonier, Pa. Just upstream from the Route 217 bridge is a small dam and spillway. The location has always been popular with fisherman, swimmers, and sunbathers, and I drove by here daily for more than 20 years. The water coming over the spillway always had a Coke-bottle-green color with a little bit of froth. I knew I wanted to re-create this scene on the Red Mountain RR.

First, I constructed Loyalhanna Creek using a tempered-hardboard base glued to wood supports. To simulate the water, I painted the hardboard with acrylic paint, then stippled the surface with gloss medium to give the appearance of moving water. Next, I applied several coats of high-gloss polyurethane.

I modeled the water flowing over the dam with a piece of thin clear plastic from a sheet protector. I glued the plastic to the edge of the water at the top of the spillway, curved it over the dam, and attached it again at the bottom of the spillway. Then I painted the plastic with a thin coat of green acrylic paint. After the paint dried, I used a brush to add streaks of white acrylic paint in a vertical motion to simulate foam. – *John Lazar*

operates point-to-point, I can run a continuous loop when hosting visitors.

Always more to do

It's often said a model railroad is never truly complete, and the Red Mountain RR is no exception. My future plans include improving details, adding more lighting (including signals), and installing switch machines for turnouts in a few of the hard-to-reach locations.

In the meantime, I'll enjoy running trains through western Pennsylvania in the steam-to-diesel transition era. Who'd have thought a visit to an upstart tourist railroad would lead to decades of model railroading fun? **MR**



Meet John Lazar

John is retired and lives in North Carolina with his wife, Beverly. The couple has four children, eight grandchildren, and one great-grandchild. He credits his father, maternal grandfather, and uncles for getting him interested in trains.

A CAMERA CAR for the railroad



Camera Car B of the Stockton & Copperopolis heads out onto a trestle on a film assignment. Don Ball explains how he built the car from an old HO scale Mantua bobber caboose to carry his Prime X camera from Replay.

A compact camera and a caboose make the perfect pair to film your layout

By Don Ball • Photos by the author

LIGHTS! CAMERA! ACTION!

The movie cameras start to roll and the railroad is the star. The Edison Studios started making motion pictures, many of them involving railroads, in the 1890s, and other studios have continued shooting on the rails up to this day.

Many memorable railroad scenes have been shot from a moving train. I've always wanted to make such a video on my layout. Unfortunately, three things have held me back.

The first was getting a camera that would fit on an HO scale car. The second was that the camera always seemed to catch all the details of the lighting behind the valance, which was distracting to the viewer. The third was that, when going around a curve, the camera looked to the outside of the curve rather than to the center of the track.

Solutions to problems

The first problem was solved when I discovered the Replay Prime X camera (www.replayxd.com). It's less than 4 inches long and 1 inch in diameter,

making it ideal for HO scale equipment. The battery is built into the unit, and the images are recorded on a microSD card, which can be removed and taken to the computer for download and editing. The camera also has a USB port to connect it to a computer as well. Although I used the Prime X camera, other small cameras such as the GoPro could be used with some modification of the car.

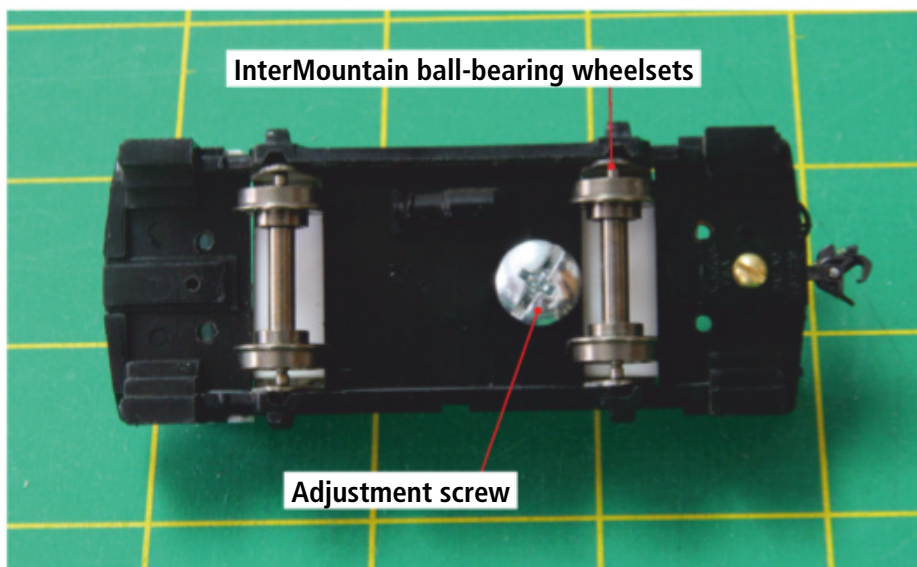
Mounting the camera in the center of a flatcar gets you going, but this creates the second problem I mention, distracting lighting. I found, however, that tilting the camera down somewhat gives a better view of the railroad and gets the lighting details out of the picture.

The third problem was a little harder to resolve, since the geometry of the situation is such that the camera will always be pointed along a line tangent to the curve. Our sharp model railroad curves only make the problem worse. The solution I found was to place the camera on as short a car as possible. The car I chose was a Mantua four-wheel bobber caboose. While this car isn't currently in production, it can be easily obtained at train meets or on eBay ¹.





1 New mission for a bobber. Finding a Mantua four-wheel bobber caboose like this one is fairly easy on eBay or at model train swap meets.



3 Tilt and roll. A look at the car's underside shows the adjustment screw for the camera tilt and the InterMountain ball-bearing wheelsets.

Caboose modifications

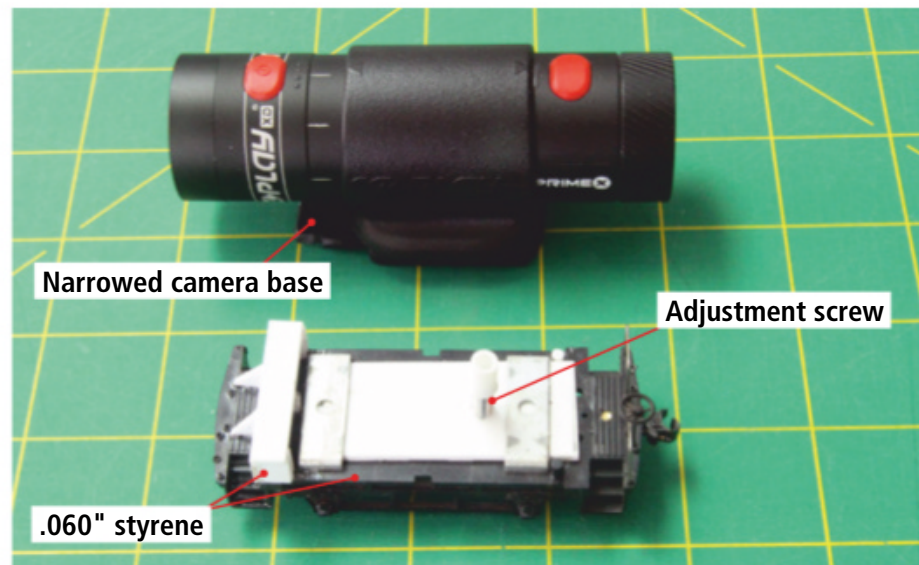
The caboose needs a bit of modification for this service. First, remove the body. It's held in place by four screws that can be pried out. The body holds down a steel weight and U-shaped pieces of metal that hold the wheelsets. Pushing up on these wheel retainers loosens the weight, which slides out toward the car end. Removing the retainers releases the wheelsets.

The Prime X camera's basic retainer is ideal for our purposes. I built a small pocket from pieces of .060" styrene on one end of the car to hold the tongue of the retainer. The retainer itself is a bit wider than the car, so I cut a notch in either side of the retainer to fit the pocket I built **2**.

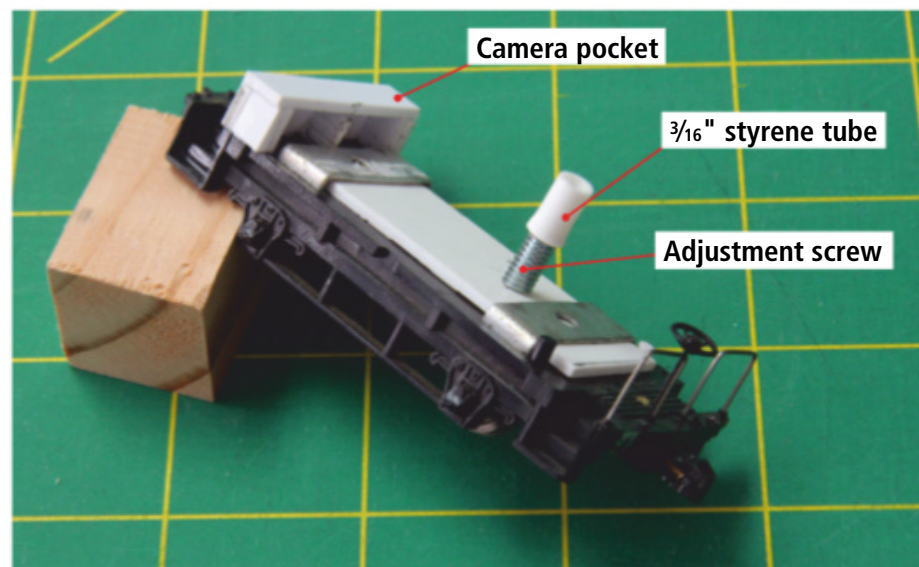
Discard the metal weight (the camera is heavy enough) and substitute a .060" thick piece of styrene of the same size. I used 33" InterMountain ball-bearing wheelsets to make the car free-rolling. These should be mounted in the wheel retainers and re-inserted into the chassis. The .060" styrene can be slid into place and the wheel retainers pushed down to hold the styrene in place. A bit of glue will keep the wheel retainers from moving.

Drill and tap an 8-32 hole through the styrene and the floor of the car and insert a 3/4" long screw. This will be the adjustment for the camera tilt **3**. I used a screw from a furniture knob and glued a piece of 3/16" styrene tube over the end of the adjustment screw so it wouldn't mar the camera body **4**. Add couplers and you're ready to go.

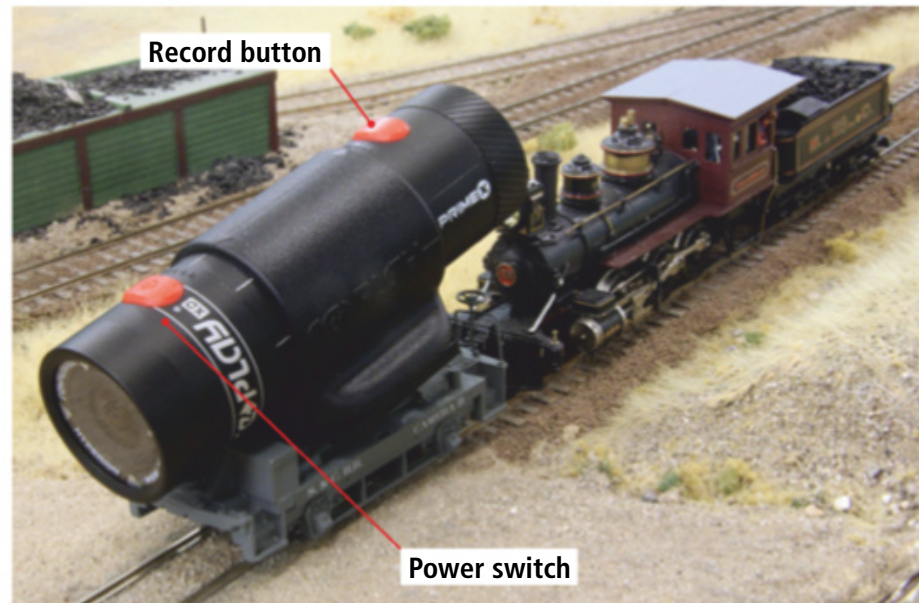
To be a little fancy, I added handrails and painted and lettered my car as a piece of maintenance-of-way equipment **5**.



2 The primary components. The tongue of the Prime X camera base slips into a pocket Don built at the end of the frame. Don narrowed the camera base to fit in the pocket.



4 Camera car modifications. Don built the camera pocket from .060" styrene. The middle divider centers the camera mount. The screw is from a furniture knob.



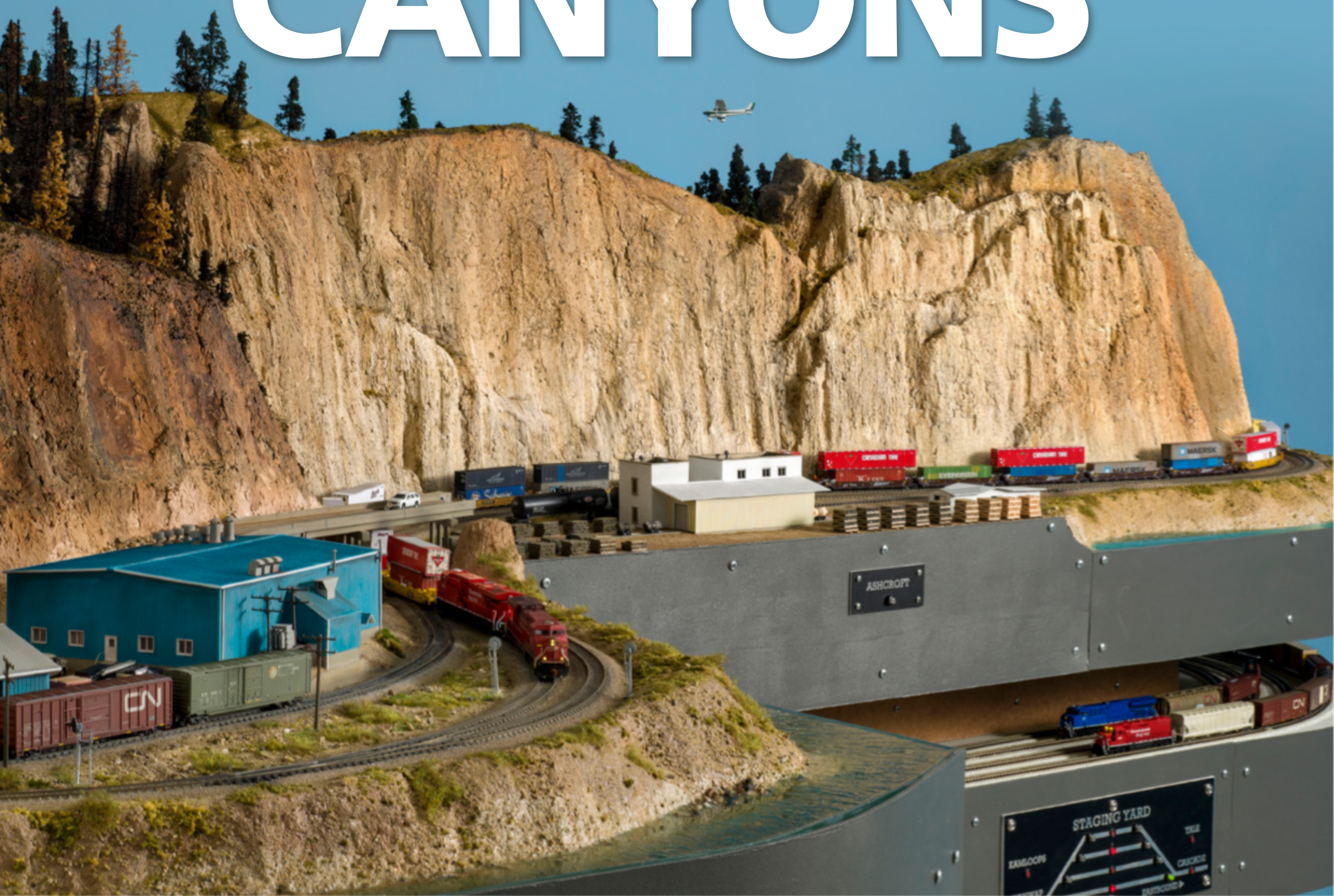
5 Done for the day. The two red buttons on the camera are the main on-off switch and the record button.

To use, slide the camera into the pocket and adjust the screw to get the desired tilt. You might have to try some test shots before getting the right angle.

Editing your movie and adding titles and special effects are a whole different topic, but now you can turn on your camera and start making movies that really move! **MR**

Don Ball's Stockton & Copperopolis is set in the late 1800s, but he takes advantage of modern technology when it's appropriate. He is a frequent contributor to Model Railroader.

Build the N scale CANADIAN CANYONS



With its four-track staging yard nestled underneath the mountainous scenery, our Canadian Canyons N scale layout can provide a steady flow for train-watchers up top.

Part two: Double-deck benchwork and a helix provide enough space for a parade of trains

By David Popp

Photos by Bill Zuback

Standing trackside at Savona, British Columbia, your pulse quickens at the sound of an approaching train. A pair of bright red Canadian Pacific General Electric diesels thunder through the Thompson River canyon at the head of a double-stack container train. The well cars snake endlessly along the river's banks. Finally the rumble of another red GE running as a distributed-power unit (DPU) heralds the end of the train.

Soon the canyon walls echo again with the growl of another train. This

time it's a Canadian National unit coal train. Black-and-red diesels are followed by a procession of red and silver coal gons. Flanges squeal on the rails, as nearly every inch of track on this line is built on a curve. This is just a taste of the excitement in store for you when you build a railfan's model railroad.

When designing our N scale Canadian Canyons layout, featured in the January 2019 *Model Railroader*, I knew it wasn't going to be enough to model just the majestic hills and dramatic rivers of British Columbia. We



The lower-level staging yard is visible on both sides of the layout, making it easy to identify and maneuver the trains. A five-turn helix is hidden under the tree-covered mountain at left.

would also need to model the trains that run through them. The jointly operated CN (westbound) and CP (east) main lines each see 30 trains or more a day, so we needed to supply a parade of trains for the layout to look right, and that meant one or more staging yards.

On past project railroads, I've placed a staging yard along one edge of the layout and hidden it with a shallow backdrop. However, for this layout we'd need space for 20-car trains with at least two locomotives. A train that size, even in N scale, can take up more than one edge of our 8-foot layout. To leave the most possible room for the dramatic scenery, I designed a lower level staging yard.

Now, before you think "I can't build this, it's too complex," I invite you to think again. A double-deck layout is essentially building two single-level railroads and stacking them. If you can cut boards and glue and nail them together to form right angles, you can build this layout. Even helix construction isn't that difficult using the "stack-and-go" method shown on pages 54 and 55.

For an even more in-depth look at the Canadian Canyons benchwork, we've chronicled the complete construction process in the Canadian Canyons series on www.MRVideoPlus.com.

The Canadian Canyons

January: Introduction to the layout and the track plan

February: Multilevel benchwork

March: Mountain scenery

April: Digital Command Control and wiring

May: Structures along the line

Lower frame

The frame for the layout is two separate sections, allowing the layout to be taken apart for easy transport. The main portion measures 3'-4" x 8'-0" and is shaped like a kidney bean. This section holds the lower level components, including the staging yard and the helix.

The staging yard is double-ended. Westbound trains leave the yard under the Fraser River side of the layout and enter the inner loop of the helix, exiting it at Yale. Eastbound trains leave staging on the Thompson River side and run along the outer loop, appearing on the upper deck at Kamloops Lake. The staging yard shown in the drawings and photos has four tracks. With slight repositioning of the track alignments, it's possible to include five by adding a short inner yard track. Doing so would require an 11½" radius curve, which is smaller than the layout's minimum of 13".

Kamloops is a 2'-3" x 3'-0" bump that contains part of Kamloops Lake and the town of Savona. This single-level section is built with an upper and lower frame to provide support when it's detached from the layout. Note: If you're building this railroad as a permanent installation, there's no need to build the bump with extra reinforcement. Instead, you can dispense with its lower frame and simply glue and nail its upper frame to the main layout section. This arrangement would also make laying track much easier, since the layout wouldn't need to come apart.

Lumber list

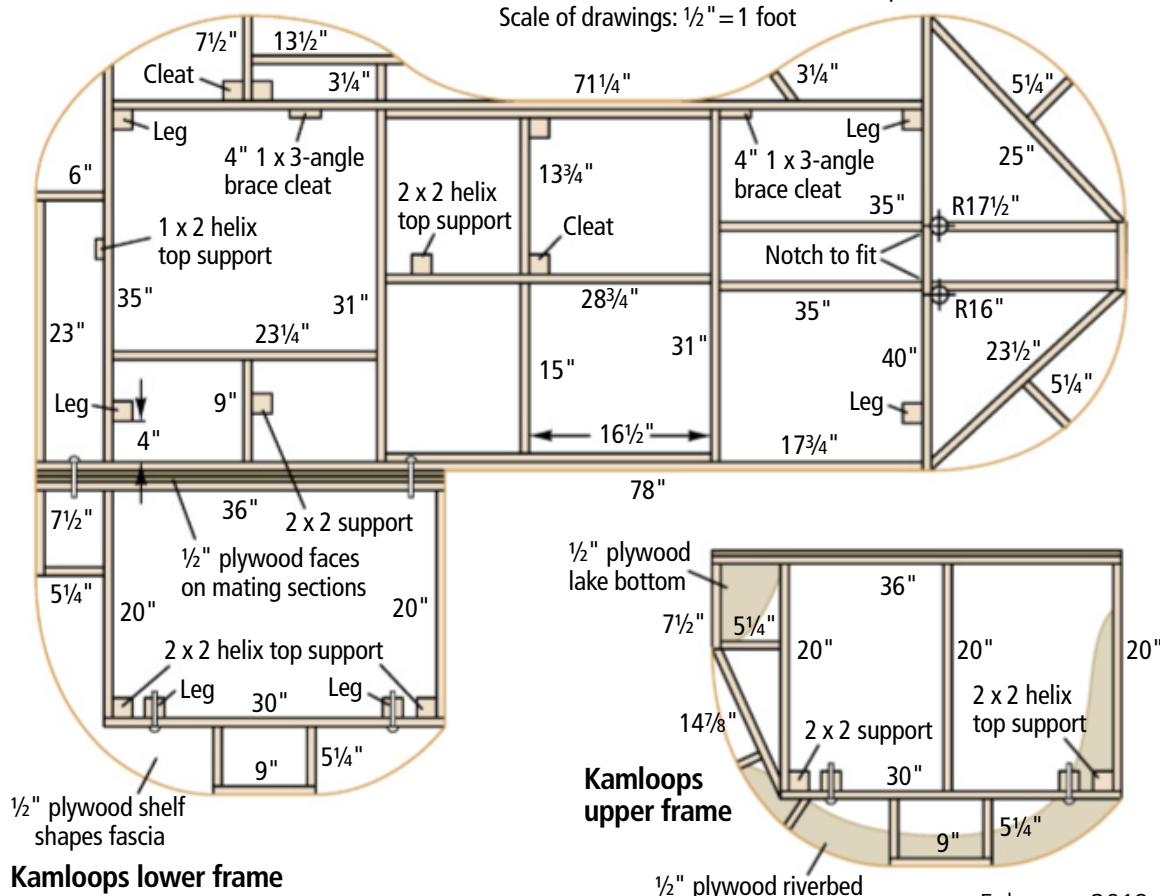
1 x 2 – 8 foot (8)
1 x 3 – 6 foot (7)
1 x 3 – 8 foot (7)
1 x 4 – 8 foot (3)
2 x 2 – 6 foot (2)
2 x 2 – 8 foot (1)
4 x 8 - ½" plywood (4)
4 x 8 - ¾" tempered hardboard (2)
4 x 8 - ½" tempered hardboard (2)
2 x 4 - ¾" medium-density fiberboard (MDF) (1)

As shown in the illustrations and the lumber list, I used standard board stock for all the framing sections and supports. The joints are glued and nailed. One location to pay special attention to is the pair of 35" joists that run to the staging end of the layout. These need to be notched to fit into the 40" cross piece that connects to the leg assembly. This is required to properly support the curved staging end of the layout. Without them, that section would be prone to sag – which is the problem I encountered when I first built the frame.

If you watch the video series, you'll find that I did a few things differently than shown here. One change was building the layout to 8 feet in length instead of 7 feet as I'd originally designed. Sometimes a pencil and paper plan can only take you so far, and it isn't until you

Main section lower frame

Curves mark outer limits of plywood top
*All frames built from 1 x 3 boards except where noted
Scale of drawings: ½" = 1 foot



Lower frame (cont'd)

build the layout that you discover things that could be improved. The added support and the extra length ultimately produced a much better model railroad.

The two sections are joined using interface plates made from $\frac{1}{2}$ " plywood. The plates are bolted together at three locations with $\frac{1}{4}$ " x 2" carriage bolts with wing nuts and washers. I cut the plywood to match the contours of the scenery, and it serves as an anchor point for the mountains and protects their edges when the layout sections are separated.

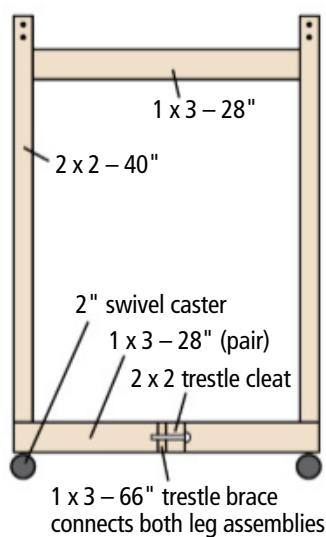
Three pairs of 2 x 2 legs support the layout. The leg assemblies are braced with 1 x 3s and have 2" locking casters. The latter components are optional but the finished layout is quite heavy, so casters make it much easier to move.

I made the legs at 40" to create an overall average viewing height for the layout of 56". While that's comfortable for me, based upon my height of 6'-0", make sure you choose a leg height that best matches the majority of the people that will be working on your layout and viewing it.

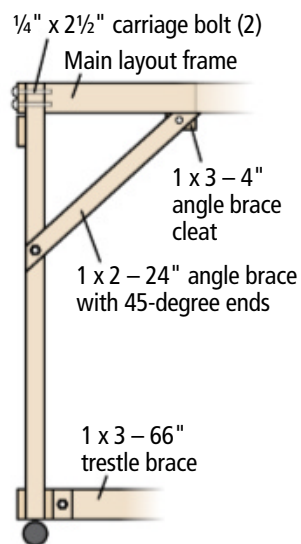


Main leg assembly (x2)

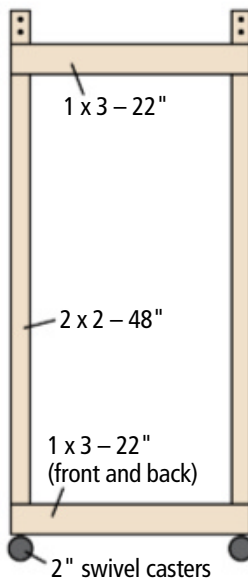
Scale of drawing: $\frac{1}{2}$ " = 1 foot



Leg assembly side view

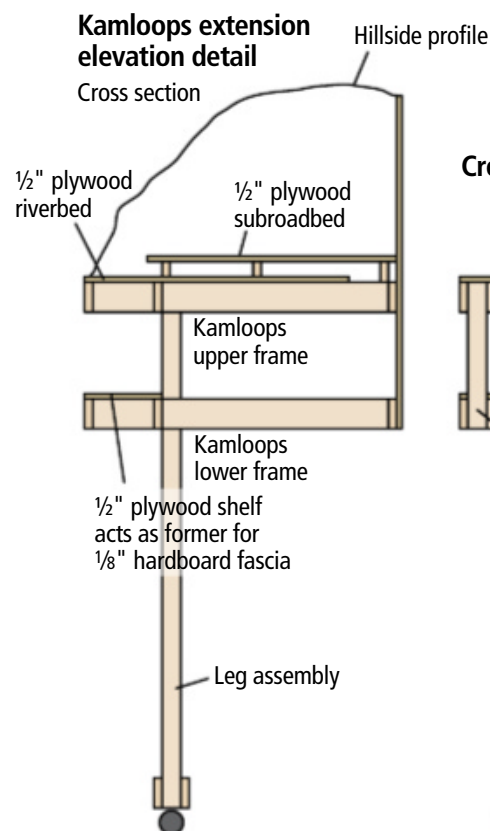


Kamloops section leg assembly

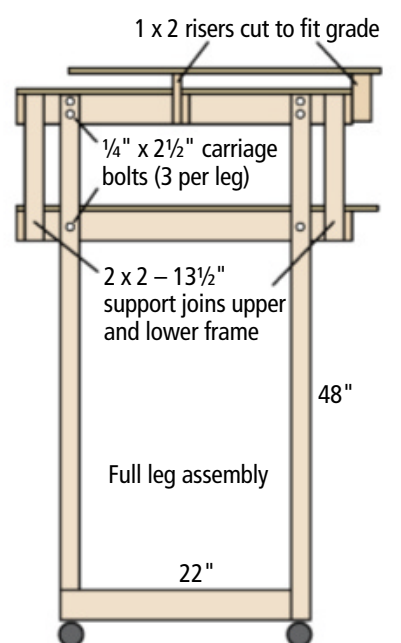


Kamloops extension elevation detail

Cross section



Cross section at leg connection



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Staging level

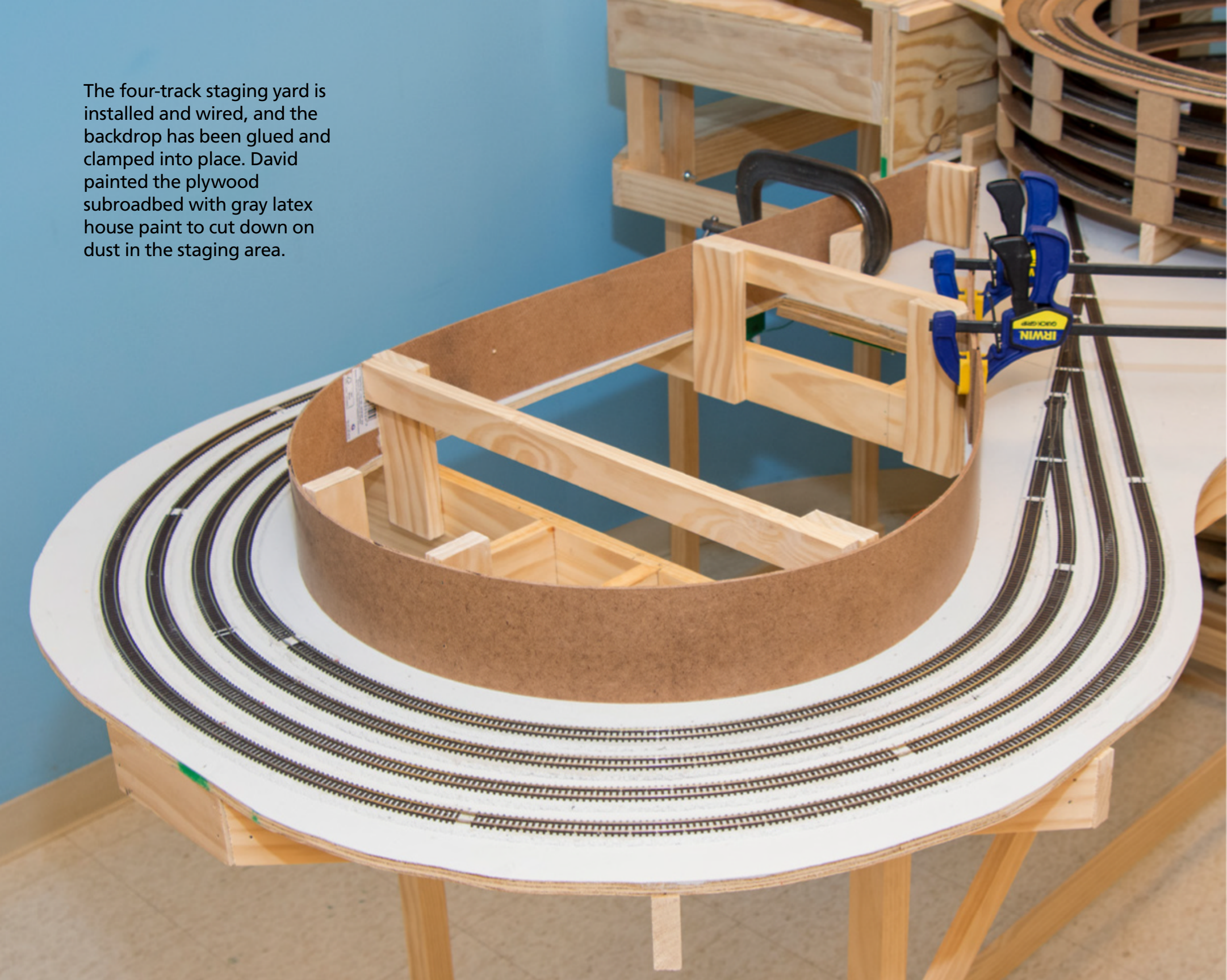
The staging level is built on a sheet of $\frac{1}{2}$ " plywood, and it forms the subroadbed for the four-track yard, as well as the first three-quarter turn of the helix. To make the layout as light as possible, there are two openings cut into the plywood. The staging end has a teardrop-shaped opening. The helix has its 30"-diameter center removed for easy access.

Staging is elevation zero on the layout. The helix grade begins at the last

switch on the Thompson River side of staging. I elevated the plywood helix sections by cutting and gluing blocks of 1 x 3 to the frame at the quarters to provide the correct elevations, as marked on the drawing.

As shown in the elevation drawing, I've doubled parts of the frame with 1 x 4 boards glued at key locations to the bottom edge. The boards allow the layout to be taken off of its legs and set

The four-track staging yard is installed and wired, and the backdrop has been glued and clamped into place. David painted the plywood subroadbed with gray latex house paint to cut down on dust in the staging area.

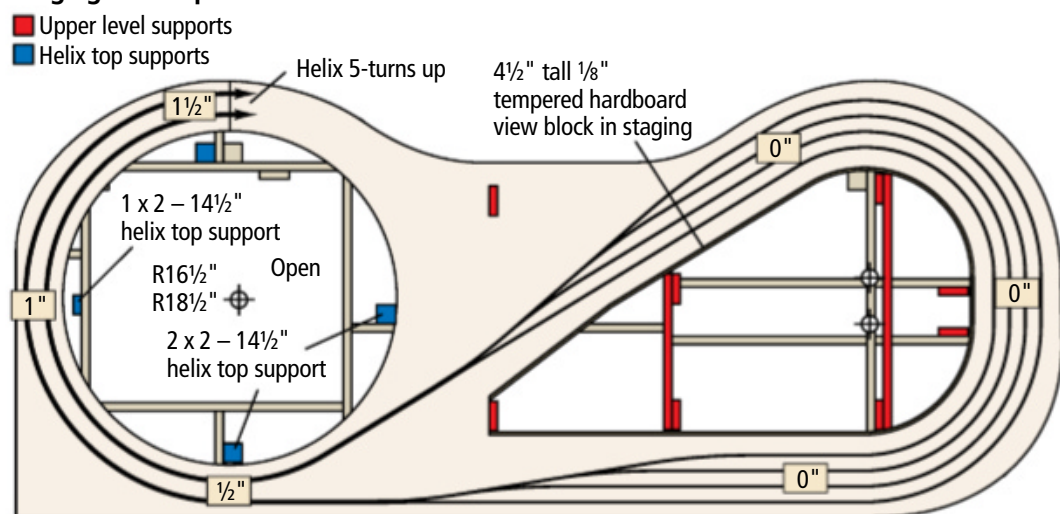


on other surfaces, such as the floor, without having to remove the fascia. It also provides a place to mount the main control panel for the staging yard on the Thompson River side, as well as to attach the DCC control ports, one on each side, as well.

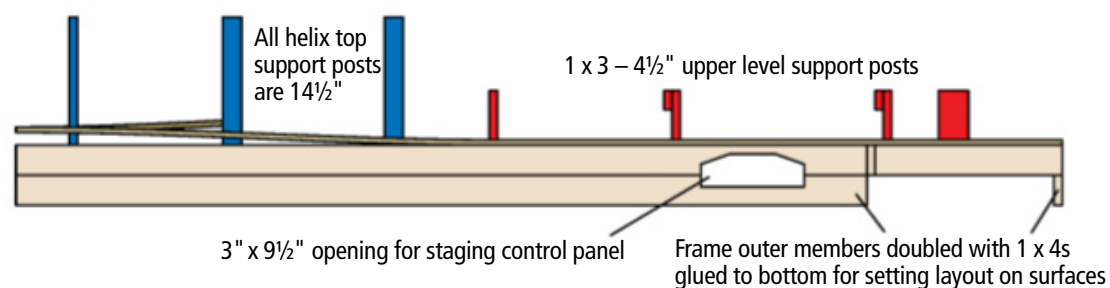
One other item of note is the inclusion of the upper deck support posts. These are made from 1 x 3 supports and 1 x 2 cross braces. They're glued and nailed to the frame at the locations shown in the drawing, except for the two closest to the helix, which are glued to the plywood top and held with 2" screws driven from underneath.

At this point, I laid all the track for the staging yard and installed a 5" tall view block made from 1/8" tempered hardboard. See the above photo.

Staging level top view



Side view



Stack-and-go helix

The helix is built from two basic components, $\frac{3}{4}$ " medium-density fiberboard (MDF) cut into 2" x 2" blocks and $\frac{3}{16}$ " tempered hardboard half-loops. By stacking the parts and laying the track in each section, you build the helix a level at a time as you work – hence the phrase “stack-and-go.”

Using the coordinates noted on the cutting guide on the opposite page, I was able to lay out seven helix half circles per 4 x 8-foot sheet of tempered hardboard. I drew the helix parts on the sheet with a pencil, using a homemade compass. The compass is a simple yard stick with holes drilled in it at half-inch intervals along its length. I used an awl to function as an anchor point and placed the pencil's tip into the appropriate hole to strike the arc.

I used a table saw to cut up a 2 x 2-foot panel of $\frac{3}{4}$ " MDF into 2" x 2" blocks. The blocks support the half-circle helix sections as marked in the illustration. All parts in the helix are affixed using yellow carpenter's glue, and I clamped the pieces together for an hour to form a secure joint.

You must lay the track as you build the helix. As I finished each section, I laid the cork roadbed and the Peco code 55 N scale flextrack on it before covering it up with the next level. Although I used track nails to hold the flextrack in place on the lower-level staging yard, I couldn't do that here because the nails would have extended through the bottom of the thin hardboard subroadbed, impeding taller pieces of rolling stock. I glued the track in place using adhesive caulk.

Using the stack-and-go method, I built approximately one loop a day until all five levels of the helix were in place. The process is shown step by step on the right.



Step 1: Roadbed. The track must be installed before adding the next helix layer, so step one is to install the roadbed. David used Midwest Products N scale cork, and he glued it to the layout with yellow carpenter's glue.



Step 2: Track. To ensure the joints between flextrack sections wouldn't kink, David soldered the rail joiners. The track on the right was glued down the day before. The new section (left) is left mostly straight until the solder cools.



Step 3: Form the curve. With the joint soldered, the flextrack is bent to fit the curve. David placed a smoothed bead of latex caulk on the roadbed before adding the track, and he is shown here pressing the track into the wet adhesive.



Step 4: Clamp and cure. The track won't stay in the caulk while it's wet, so David used a variety of clamps to hold it in place until the adhesive cured. It's best to give it 24 hours to be certain it will stay put.



Step 5: Support blocks. David used 2" x 2" MDF blocks to uniformly elevate the helix sections. The lines on the blocks indicate the gluing surfaces, ensuring the blocks stand exactly 2" tall.



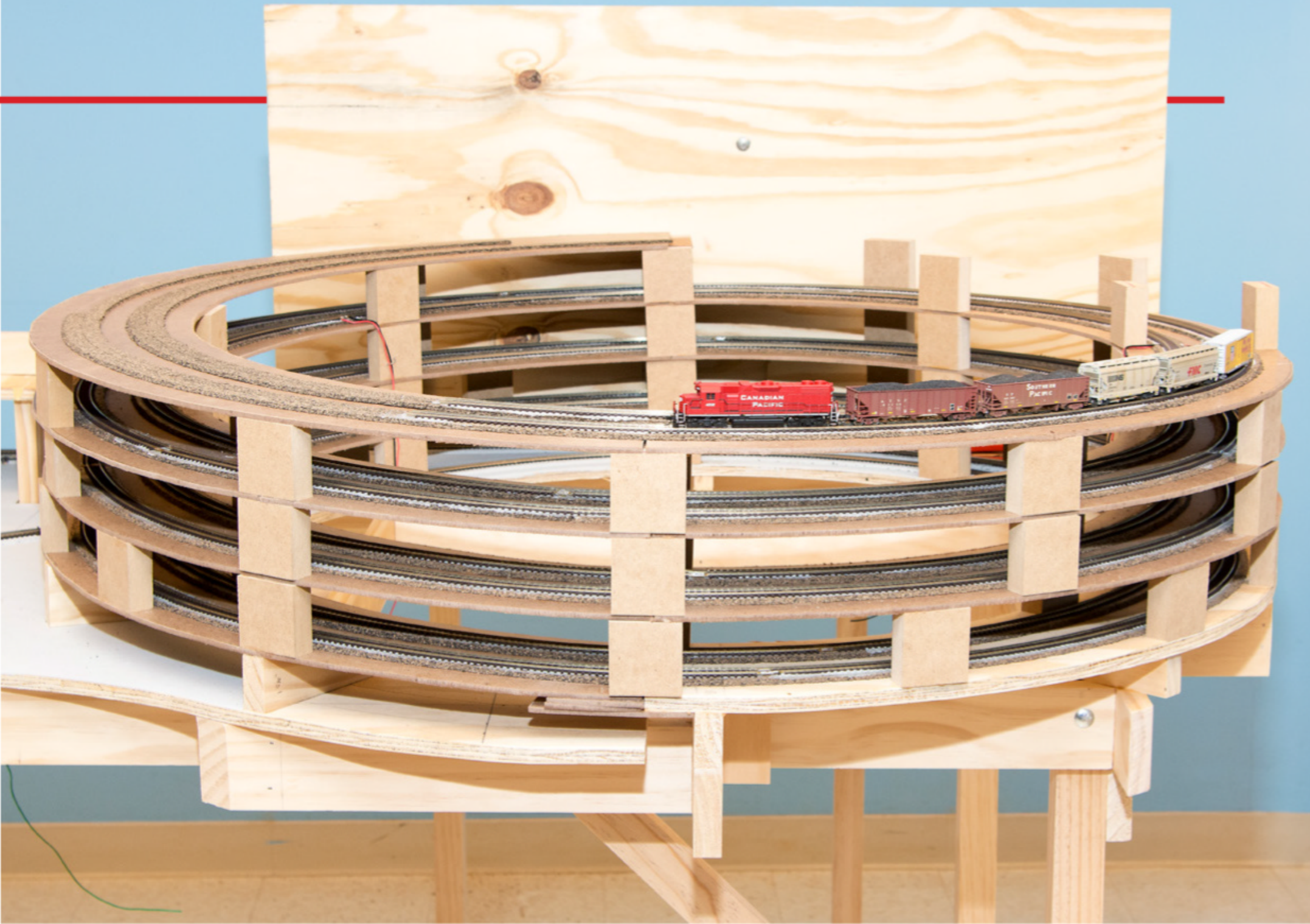
Step 6: Subroadbed circles. The helix is built in 40"-diameter half-circles cut from $\frac{3}{16}$ " tempered hardboard. David glued the half-circles to the support blocks with yellow carpenter's glue.



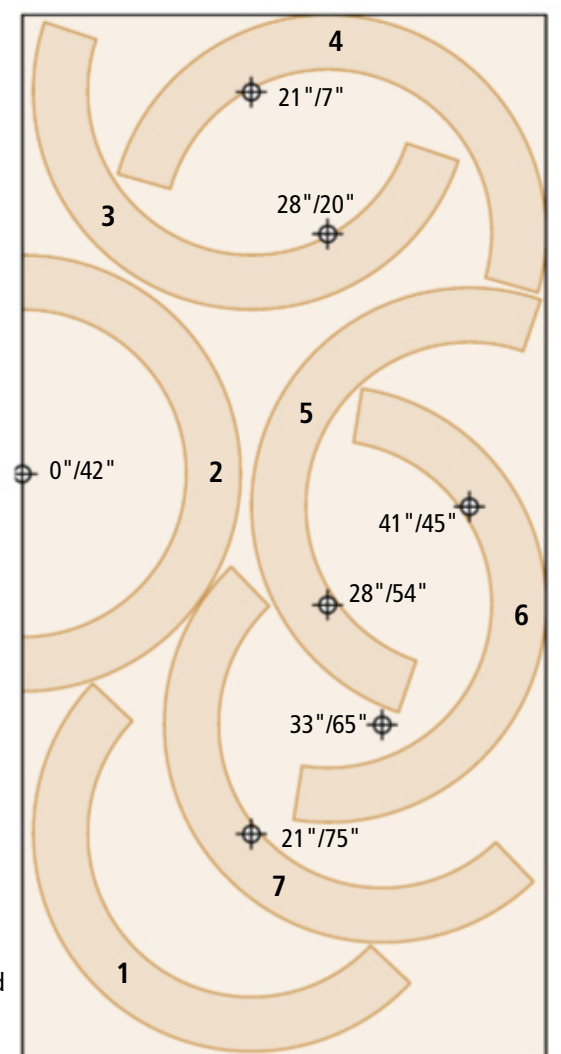
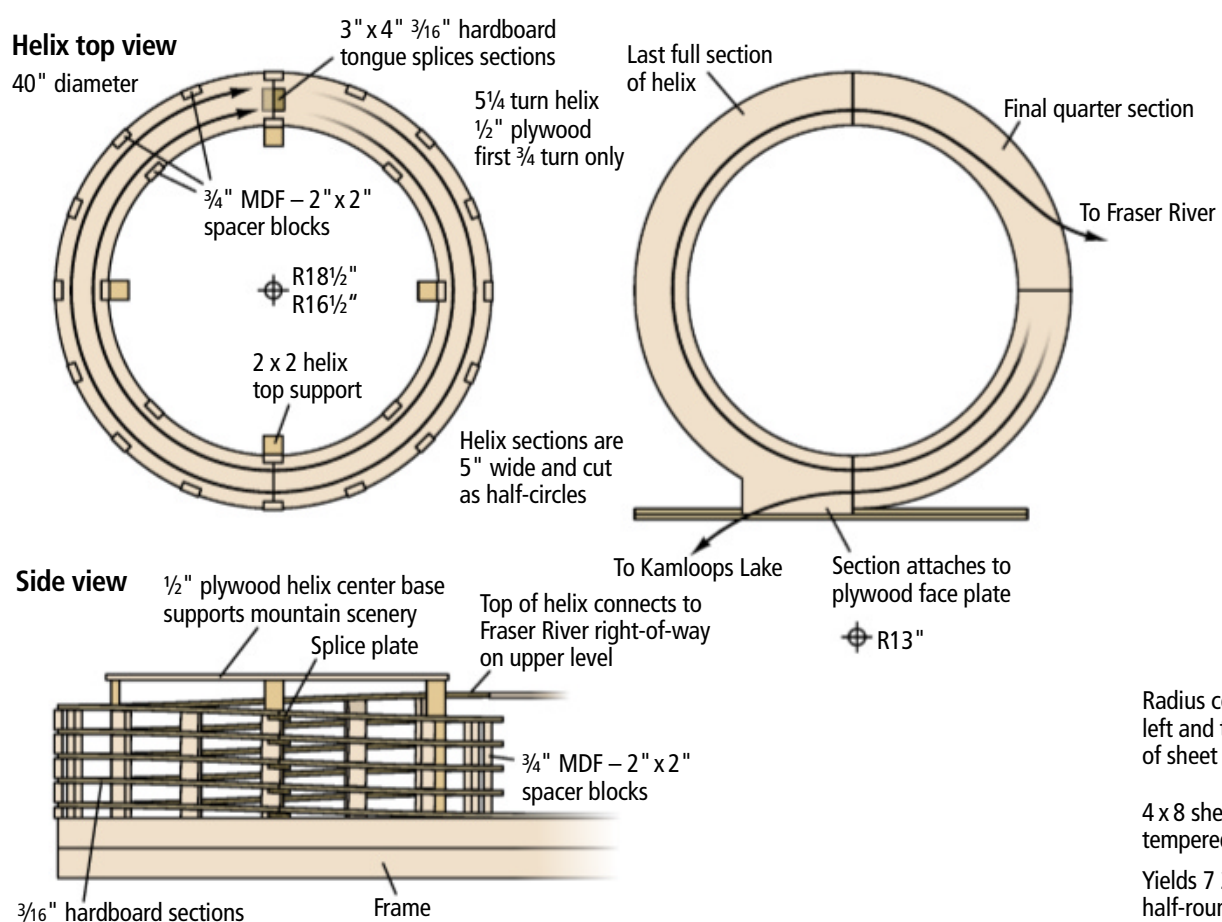
Step 7: More clamps. With the half-circle in position, it needs to be clamped until the glue sets. Tempered hardboard and MDF do not take nails or screws well, so gluing is the best option.



Step 8: Add the tongue. To form a smooth transition between the thin hardboard, David added a 3" x 5" tongue made of $\frac{3}{16}$ " hardboard glued to the end of each half-circle.



In this photo, the helix is $4\frac{1}{2}$ turns and nearly finished. The final pieces must be cut to include the diverging track leading to Kamloops Lake and a single-track section that completes the last half-turn to the Yale Tunnels.



Radius centers from left and top edges of sheet as marked

4 x 8 sheet of $\frac{3}{16}$ " tempered hardboard

Yields 7 20" radius half-rounds

Upper level

The upper deck supports the trackwork for the Fraser River and Thompson River parts of the layout. I built it as a tray in order to protect the staging yard below from wiring, sawdust, scenery materials, and the resin we used for the water. Essentially the 1 x 2 frame for this section is attached to the top of the 1/2" plywood and not the bottom.

The tricky bit is that this section has to fit snugly around the helix, as well as form a smooth transition between the layout's main section at Thompson and the L-shaped bump that holds Kamloops Lake. After measuring and drawing the piece on a full sheet of plywood, I cut it out and then used it as a pattern to trace out the subroadbed and river bottom sections on a second sheet.

I built the upper-deck frame from 1 x 2s, then glued and nailed them to the base of the tray. I next attached the tray to the supports on the lower deck with 2" screws and finish washers. From there it was easy to cut and fit various 1 x 2 and 1 x 3 risers to support the subroadbed and the riverbed for the upper deck. In most cases the support blocks are glued to the frame and the plywood subroadbed is glued and nailed to them.

Even though the layout has two decks and a helix, I completed benchwork construction over the course of two months. For me, part of the fun is getting a new layout to the point of being able to run that first train, and with all the track in the staging yard and the helix, I got to start the trains rolling sooner rather than later. If nothing else, it was cool to watch trains run from staging up to the top of the helix and back again. We could see all of that because we hadn't put any scenery on the layout yet, which is one of the many subjects for next month's installment of the Canadian Canyons series. 



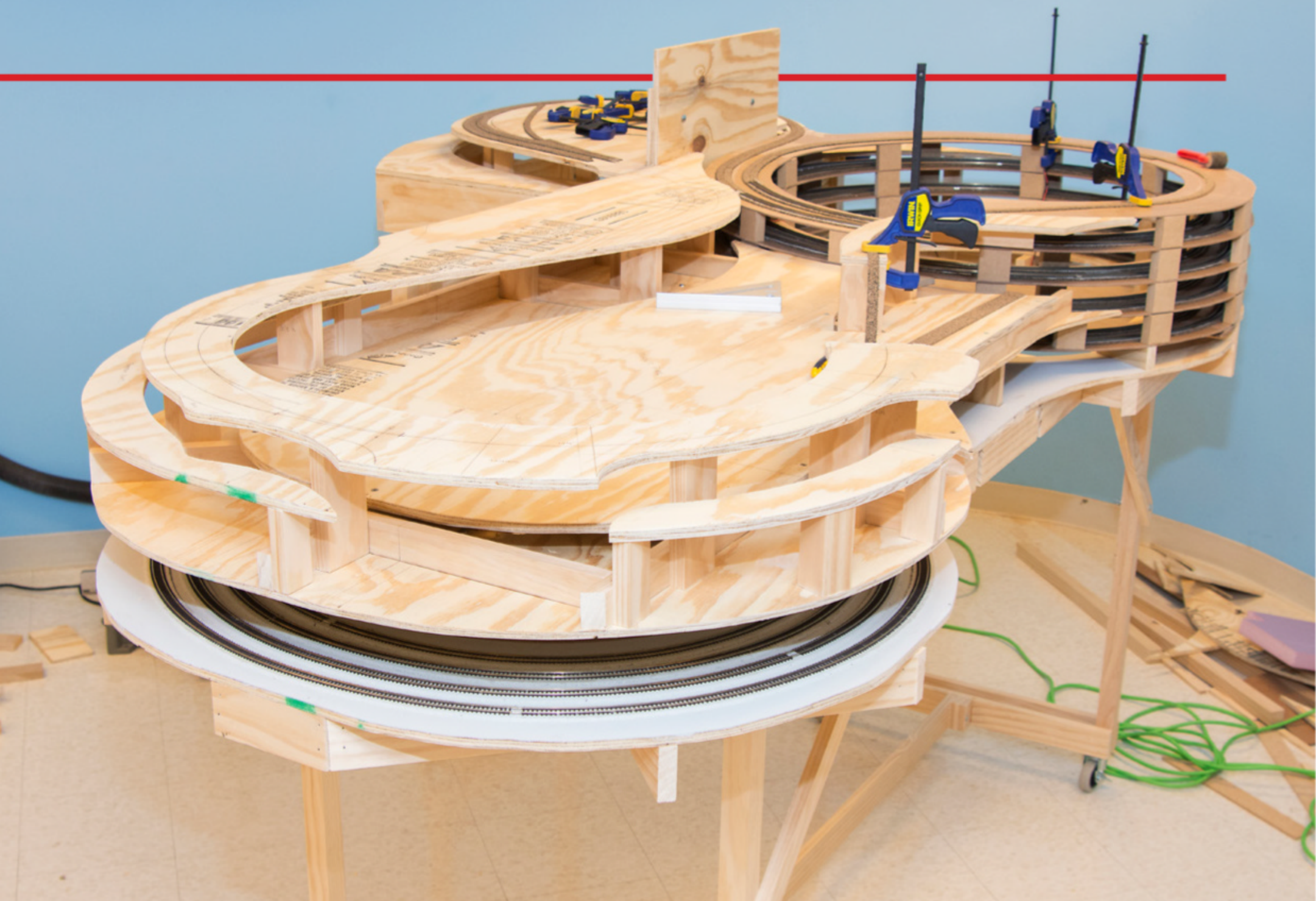
To protect the staging yard, David built the upper deck as a self-contained unit with its own plywood floor. The upper deck is shown with its frame attached and ready for installation. The subroadbed is laying on the frame for a test fit.



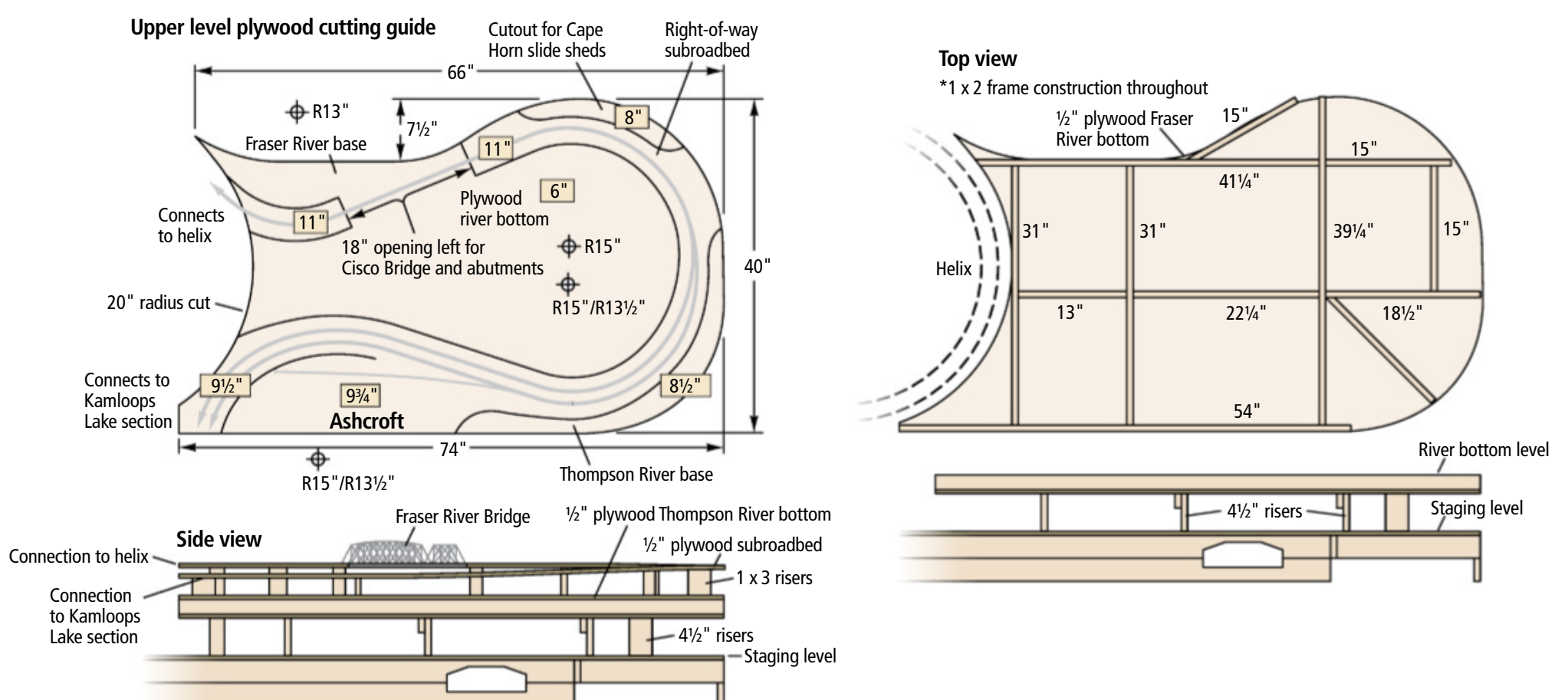
David permanently attached the upper deck to the layout by gluing it to the risers, then locking it all together with 2" deck screws. He used finish washers to keep the screw heads from pulling through the soft plywood.



To elevate the subroadbed and the Thompson River sections, David cut risers from 1 x 2s and 1 x 3s. The risers are glued to the frame, and the subroadbed is glued and nailed to the risers.



There's a bit more track work to do on the upper level, but by this point all the benchwork construction is complete. Next month, the *Model Railroader* team will explain how they added the tall mountain scenery to the railroad.



Author Doug Kirkpatrick scratchbuilt this HO scale model of Washington & Old Dominion freight motor no. 26.



Scratchbuilding a vintage freight motor

Wood siding, plastic windows, and power trucks go into a working model of a 1919 prototype

By Douglas Kirkpatrick • Model photos by the author

One of the unique aspects of the Northern Virginia Model Railroaders club is the club's location in the Vienna, Va., depot that once belonged to the Washington & Old Dominion RR (W&OD). The railroad is long gone, but its history has been preserved in print.

The single-track line meandered under wire through Northern Virginia from Alexandria to the Blue Ridge Mountains. Both passenger and freight service were provided.

The railroad began in late 1847 and lasted until 1968. The line was rarely far ahead of financial difficulties and relied on creative innovation to remain solvent. Its right-of-way has been turned into a trail by the Northern Virginia Regional Park Authority.

The club's HO scale Western North Carolina RR layout includes a traction segment for the enjoyment of interurban and trolley enthusiasts.

Paging through various W&OD publications, I came across the picture of freight motor no. 26, which had been built from an old double-sheathed boxcar and spare parts. Some would say it looks like an ugly duckling, while others would say it has character. I think the porthole windows make it one of a kind, so I scratchbuilt the unit for the club's traction members.

Scoping out the dimensions

I used two publications extensively to provide both details and dimensional



1 The prototype. Washington & Old Dominion Freight Motor no. 26 poses in all its glory. Northern Virginia Regional Park Authority photo

data that uniquely defined the freight motor. The first is *Rails to the Blue Ridge* by Herbert H. Hardwood Jr. (Northern Virginia Regional Park Authority, 3rd edition, 2000), which has several excellent front and side views of no. 26 **1**. The second, brought to my attention by a club member, is the *Washington & Old Dominion Railroad 1847-1968* by Ames

W. Williams (Capital Traction Quarterly, 1970), which includes a line drawing of the freight motor.

The motor was built in 1919 in the W&OD shops from the body of a 36-foot boxcar and equipment from a wrecked passenger car. The motor sported Wason 25 trucks with four Westinghouse 93-A2 motors. The freight motor was retired from service in 1944.

I selected wood for the basic material and NorthWest Short Line's Stanton power trucks for propulsion.

Fabricating the body

My approach was to fabricate each end from individual pieces of wood and then add the sides to form an open box. I used Northeastern Scale Lumber Co. products for the sides, selecting $\frac{1}{32}$ " scribing sheets $\frac{1}{16}$ " thick. Removing material for the side door is straightforward using a sharp hobby knife.

The most critical aspect of the project was to locate suitable size porthole windows. Luckily, Tichy Train Group makes a 30" round attic window that fits the bill. Care must be taken to keep from tearing the wood when using a drill bit to make holes for the window frames. I used a small bit to start the holes and then enlarged them incrementally. As I approached the final window diameter, I used sandpaper wrapped around a dowel to complete the holes ②.

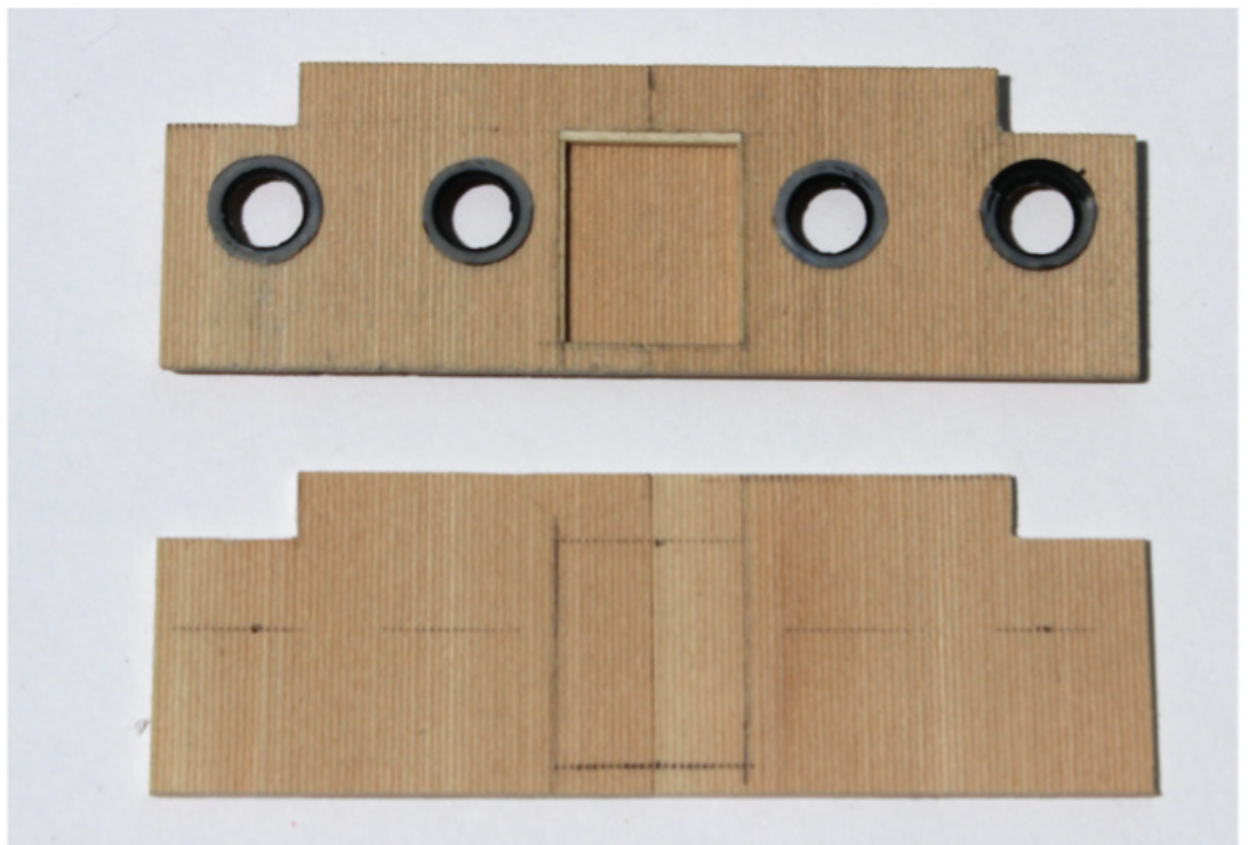
I prepared the sides by adding $\frac{1}{8}$ " stripwood bracing at both the top and bottom. The bottom brace is positioned to support the floor and power trucks that will be added later ③. I attached the side doors from the inside after the door opening was framed.

The ends are made from scribed siding and scale lumber. They're shorter than the sides, as they have to fit on top of the end platforms and floor, while the sides will overlap them.

The challenge was to fabricate four identical arches to be used at the top of the ends. One is required for each end and two more as internal supports along the roof line.

I made a half template of the arch and used it first on the right side and then the left side. This way, I knew the full arch would be symmetrical ④. The ends fit inside the $\frac{1}{16}$ " thick sides, which form the outer edge for the ends.

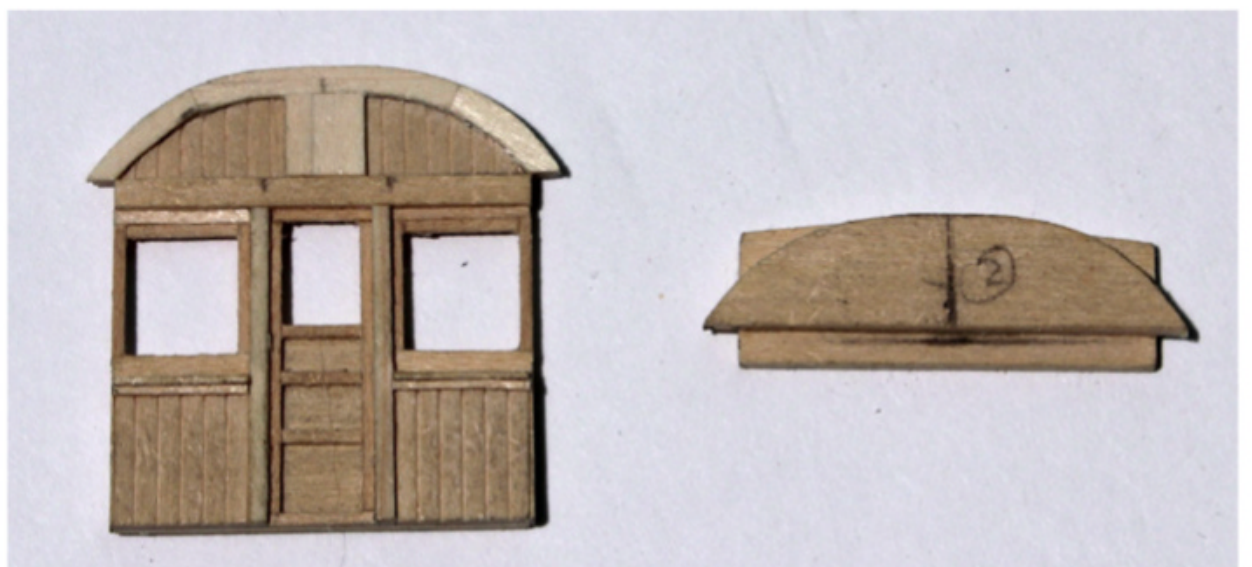
I used wood glue to attach the sides and ends together, using a magnetic jig to make sure that each corner was square and true (⑤ on the next page). Now it was starting to look like a freight motor.



② **Starting the sides.** The sides have been cut to length and the door and windows located. The porthole window frames and door have been installed for one of the sides.



③ **Bracing.** Stripwood bracing has been applied to the back of the side, with sufficient room at the bottom for the floor.



④ **Pitching a curve.** Using the same half-curve template for both sides of the end arch guarantees the arch will be symmetrical.

End platforms

I cut the outline of the end platforms from wood. I drilled a hole to accommodate a 2-56 screw to attach the draft gear box, then covered the top of the platform with $\frac{1}{32}$ " thick scribed wood. This brought the platform to the correct thickness to slide under the door on the

end walls and still be flush with the bottom of the side walls.

After studying prototype photographs, I determined the platform railing was made from iron pipe. For the model, I formed the outside of the railing from .022" brass wire. I then cut pieces of brass wire to the exact length to fit between the outer railing. I drilled



5 Framing it up. The sides and ends have been assembled into a single unit, with the roof bracing installed.



6 Railing. The railing was bent and soldered together using brass wire, then mounted to holes drilled in the end platforms.



7 Platforms. The end platforms have been installed to the body.



8 Shorter side frames. The donated side frames have been shortened to match the dimensions of the power trucks. The original-length truck is on the bottom.

holes in a piece of wood to make a fixture to hold the wires in place while I soldered them together.

I used small files to clean up the soldered joints, but left a slight bump at each intersection to represent the pipe fittings used to join the pieces on the prototype railing **6**.

I salvaged poling pockets from an old freight car and attached them to each corner of the platform. Small strips of wood were used to form anticlimbers along the front edge of the platform. Once the entire unit was completed, I attached it to the body **7**.

Propulsion system

The NorthWest Short Line Stanton Drives are self-powered trucks that can be easily installed under many locomotives. I chose these drive units so I wouldn't have to build an internal motor and gearing system. These self-powered drives have the added benefit of leaving the interior totally free for installation of weights and a Digital Command Control decoder.

I elected to have both trucks powered. The trucks can be ordered with different wheelbases and wheel tread thicknesses to match your specific needs.

The trucks don't come with side frames, which are for visual effect only and don't provide mechanical support to the axles. I used a set of side frames from an old freight motor. However, they were too long to match no. 26's wheelbase. So I carefully made two cuts on either side of the center of the brass frame, shortened the pieces with a file, and then glued them back together **8**.

The power trucks have a single threaded attachment point at the top that makes for easy installation. To make the carbody the right height, I fabricated the floor with raised truck mounts, using stripwood **9**, opposite. Each truck has two wires for the motor feed and two more wires from the track power pickup, for use both in rail power and rail-and-powered-catenary setups.

I installed a double-pole double-throw switch to select power from either both rails or from the overhead wire. At the club, when the overhead wire is powered, both rails are converted to the same polarity. This design provides eight-wheel pickup for the freight motor when using the trolley pole. I selected a DCC decoder with a Train Control Systems Keep-Alive capacitor module that provides continuous power even when service is briefly interrupted.

Installing the roof

Once I was sure that the floor with the power trucks would fit correctly inside the body, letting the trucks swing freely, I started on the roof. When the freight motor was constructed in 1919, sheet plywood had not been invented. Therefore, I planked the roof with individual pieces of 2 x 12 stripwood. This approach ensured a smooth roofline over the arched ends and individual boards showing under the eaves, like the prototype, rather than cardboard or solid wood **10**.

With the roof installed, I attached trim along the sides and ends. I used brown wrapping paper to simulate the canvas roof covering. A running board and seven roof steps were installed.

Two holes were drilled through the roof to support the brass sleeves that held the trolley poles. Under the roof, I soldered wires to the outside of the sleeves to provide power from the trolley poles to the decoder. I noticed immediately that the inside of the roof had to be reinforced around the sleeves to bear the loads from the springs that hold the poles against the overhead wire.

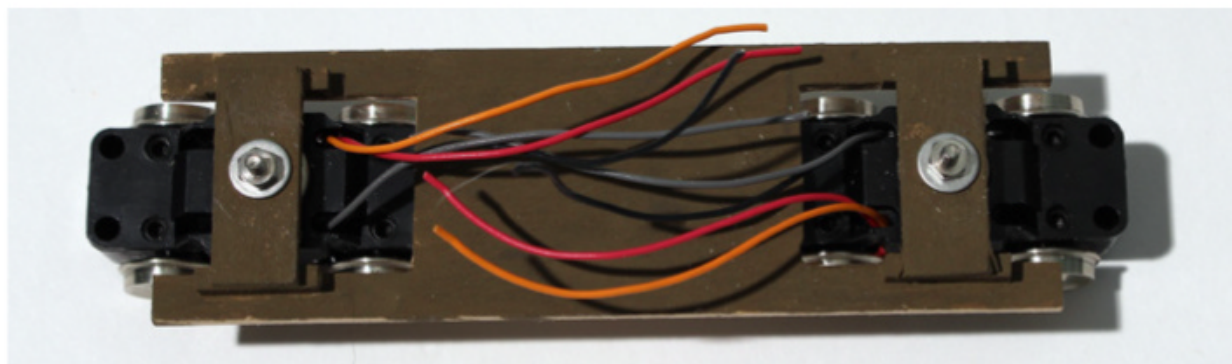
Details and painting

Early pictures of the freight motor showed the bell installed on the middle of the roof, presumably with a hole in the roof for a rope to the motorman's station. Some time later, the bell was placed behind the front headlight, which was how I elected to model it.

Small brackets were fabricated from brass stock to hold both the bell and headlight. The headlight wires were run along the bracket to hide them. The rear light was attached directly to the end wall. I also mounted a horn on the trim directly above the motorman's porthole.

The six steps were fabricated from brass wire using the same methods as the platform railing **11**. I bent the grab irons from brass wire and placed them according to the photographs. I installed the truss rods on each side of the freight motor, making sure they were attached to the sides rather than the floor. This approach allowed for floor and power truck removal if required. Uncoupling levers were added at each end.

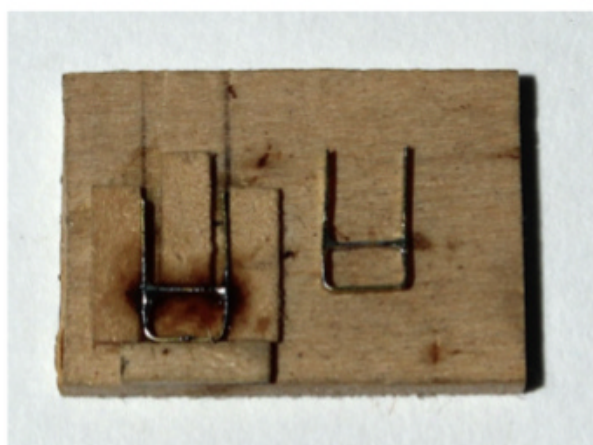
I painted the interior a dark brown prior to installing the roof. I was unable to locate any color pictures of the freight motor, but a local museum has a large scale model of no. 26 that has a dark green body and a dark red roof.



9 Trucks installed. The NorthWest Short Line power trucks have been attached to the floor via elevated mounts to put them at the correct height.



10 Plank roof. Individual pieces of stripwood form the roof, rather than a single sheet. Plywood didn't exist at the time the freight motor was built.



11 Step right up. Steps were fabricated from brass wire using the same method as the end railings.

I cut a .020" thick styrene disc the exact diameter of the portholes and used it as a template to cut the clear styrene for each window. Glass for the remaining windows was cut directly from clear styrene sheets. I left the motorman's window open representing that the sash was in the down position.

I used Microscale alphanumeric decals to letter and number the freight motor, based on prototype photos.

Now when the club holds its Friday night operating sessions, old no. 26 can spend the night shuffling cars into various industries while picking up the loads for shipping down the line. **MR**

Doug Kirkpatrick lives in Falls Church, Va., and has been a member of the Northern Virginia Model Railroaders Club for more than 40 years. His article on the club's 21 x 50-foot HO scale layout was published in our February 2016 issue.

Materials list

Detail Associates

2507 .022" brass wire

Kadee

35 coupler

Microscale

90001 HO scale alphabet – Railroad Roman white

Midwest Products

various scale lumber

Midwestern Train Hobby

614-279-4144

12-foot trolley poles and sleeves

Northeastern Scale Lumber Co.

70354 scribed sheathing 1/16" x 1/32"

70363 scribed sheathing 1/32" x 1/16"

NorthWest Short Line

1210 Stanton drive 6'-6" wheelbase, 36" diameter wheels

Tichy Train Group

3005 brake gear set

8149 round 30" attic windows

Scrap box

bell

headlights

pilot

truck side frames

A 45-year obsession with model trains started with a mother's gift and culminates in a basement-filling N scale Rio Grande layout

RAILROADING IN THE MOUNTAINS OF COLORADO

By Eric White

Photos by Cody Grivno unless noted

The first thing that strikes you as you walk into Matt Carpenter's basement and look at his N scale Rio Grande Alpine Division layout is the flowing curves. There's little straight track, as Matt prefers the look of the track and trains winding through mountain scenery. Even his yard is laid out in a large, sweeping arc.

Matt has been an N scaler since he entered the hobby as a child. "I blame my 95-year-old mother for my obsession with model trains," he said.

"She claims it's a conspiracy and denies any involvement. But 45 years ago, a Wisconsin mother did buy her 12-year-old son a birthday gift, an N scale starter set."

Matt has continued in N scale because he appreciates the scenery-to-trains ratio possible with the compact models. "For me, how the scenery and track work in harmony is what's fun. With N scale's size and some forced perspective, your mountain scenes can look huge," Matt said.

This is the second layout in this space. Matt started building the Rio Grande Alpine Division in 2005. The ceilings are finished in tongue-and-groove siding and the open areas around the basement are illuminated with flush-mounted can lights. Carpeting covers the concrete floors, and a lighting valance and fascia contribute to a finished look.

Matt installed a hardboard backdrop and painted sky and clouds on it before the trackwork went in. He covered the



1 A westbound manifest freight heads over the bridge at Mills Bridge on Matt Carpenter's Rio Grande Alpine Division N scale layout. Matt applied his knowledge of stone coloring when he built the scenery on his layout.

ceiling behind the valance with mirrors to reflect the light from the compact fluorescent light fixtures mounted above the layout.

"It's something I've never seen or used before. But in these days of energy conservation, I can get the same amount of light coverage with less wattage," he said.

Building off the walls

The benchwork is open grid supported by heavy-duty shelf brackets. The brackets, made of 2 x 3s assembled with metal plates similar to a residential roof truss, are screwed to the wall studs in

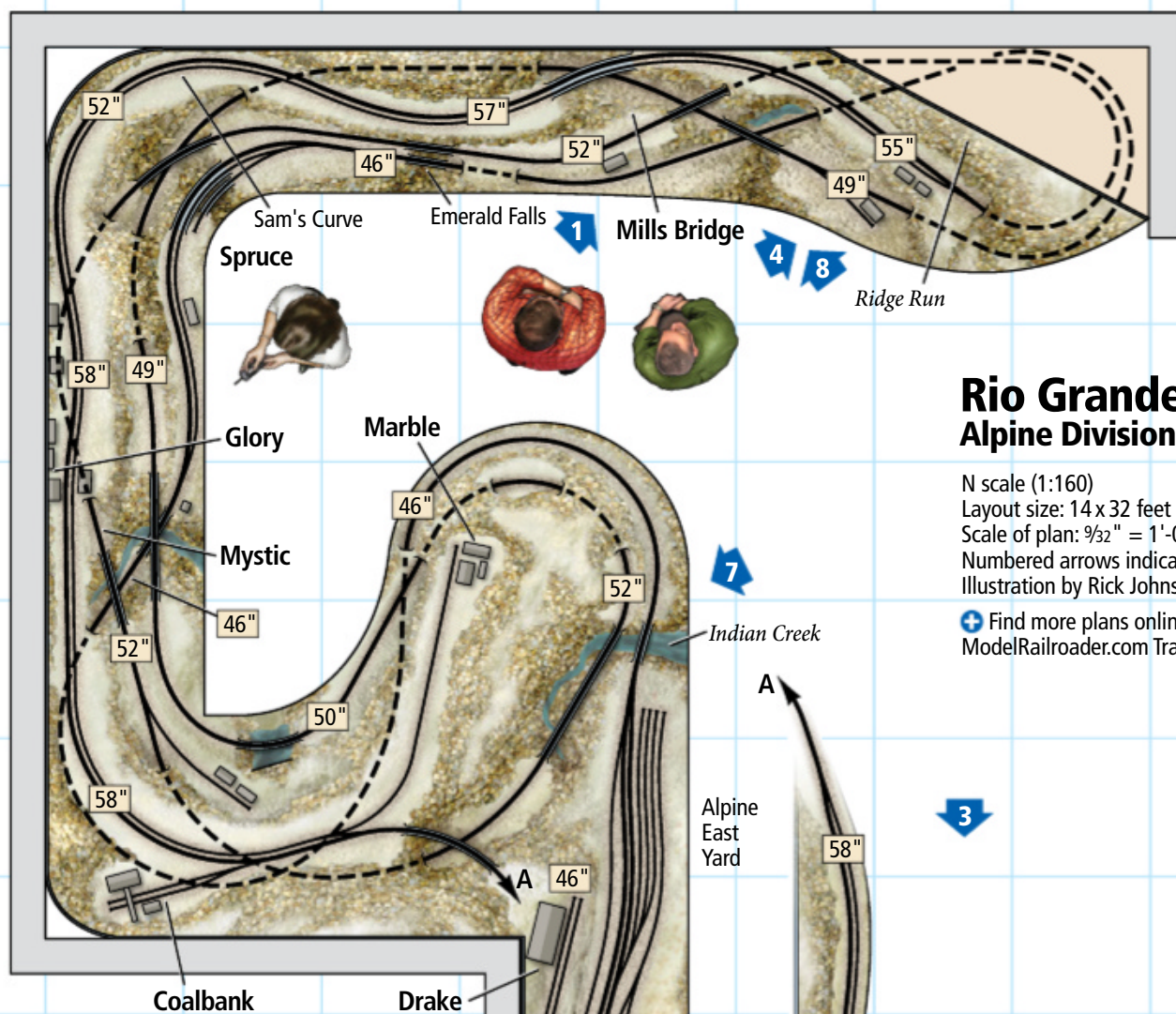
Matt's finished basement. The brackets are designed to carry two shelves. The top level holds the layout, and the lower level holds a shelf for storage.

Matt started construction by installing the brackets around the perimeter of the room, then added peninsulas on opposite ends of his basement.

Matt made up the track plan as he went. It features a single-track main line with passing sidings, folded over twice to gain altitude and distance. The "easy-spline" roadbed Matt developed allowed him to try out track radii and clearances at different locations on the layout. [See "Easy spline roadbed" on page 54. – Ed.]



② An excursion train led by a pair of Denver & Rio Grande Western Electro-Motive Division F units crosses the high bridge at Drake. The distant mountains on the backdrop are brush-painted by Matt's son, Sam.



Rio Grande Alpine Division

N scale (1:160)
 Layout size: 14 x 32 feet
 Scale of plan: $\frac{9}{32}$ " = 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: Rio Grande, Alpine Division

Scale: N scale (1:160)

Size: 14 x 32 feet

Prototype: Denver & Rio Grande Western

Locale: Colorado mountains

Era: 1985

Style: walk-in with partial upper deck

Mainline run: 250 feet

Minimum radius: 18"

Minimum turnout: no. 6

Maximum grade: 3 percent

Benchwork: open grid on heavy-duty
 wood shelf brackets

Height: 42" to 58"

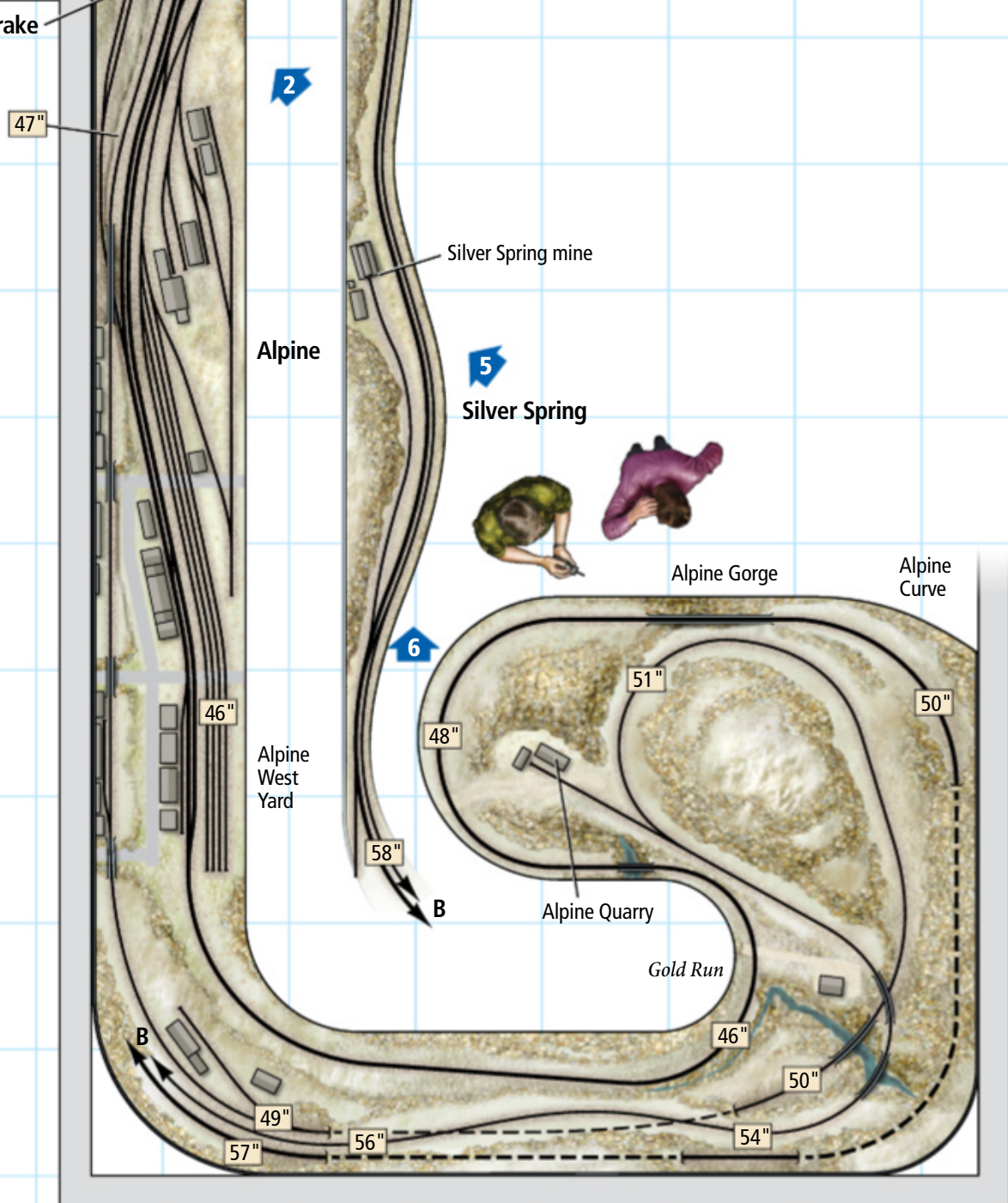
Roadbed: "Easy Spline" sandwich of
 tempered hardboard and Styrofoam

Track: Micro Engineering code 70
 flextrack

Scenery: cardboard strips, plaster cloth,
 aluminum foil plaster castings

Backdrop: hand-painted

Control: Model Rectifier Corp. Prodigy
 Digital Command Control





3 Matt's basement is finished around the layout to create a pleasant environment to run trains. "Total relaxation can be achieved in as little as 20 minutes or two hours," Matt said.

"I knew the layout had to be around-the-walls" to achieve his goal of a long main line, Matt said. "It's a logical progression. I knew I had to climb. I approached it like a sculpture."

Using spline subroadbed allowed Matt to easily create the flowing path for his track that was so important to him. The subroadbed is topped with Woodland Scenics foam roadbed. The result is a layout that runs quietly.

The track is Micro Engineering code 70 flextrack. "I really like that it holds a curve, and they really nailed the tie spacing." The turnouts are from Peco. Matt couldn't find Micro Engineering turnouts at the time, and the Peco turnouts were readily available.

The layout is wired for Digital Command Control (DCC), using Model Rectifier Corp.'s original Prodigy system. Matt plans to add radio control later.

Colorado inspiration

Colorado became the setting for Matt's layout for a few reasons. One was a "really strange old book," *Tracking Ghost Railroads in Colorado: A Five Part Guide to Abandoned and Scenic Lines* by Robert Ormes (Century One Press, out of print). Ormes was an English professor at Colorado College who during World War II taught mountaineering to soldiers in the 10th Mountain Division at Camp Hale, Colo., near Leadville.

The book is an extensive guide of abandoned railroad lines. Matt's brother,



4 A helper engine waits at the engine servicing siding at Ridge Run. Matt's layout has a maximum grade of 3 percent, so a train sometimes needs help up the hills.

Curt, had moved to Colorado, and the pair would explore the areas covered by the maps in the book.

"We'd park the car, and maybe find an abandoned roadbed. We once found an old quarry, and sometimes we'd find track, rails, or sometimes just the roadbed that had been scraped away in the mountains, then abandoned before anything more was done with it."

Matt was able to see coal and other mining operations close up. "This was the early '80s, and standing next to the main line and watching grubby multi-engine lash-ups work a loaded coal train was fascinating."

A fan of the Denver & Rio Grande Western Ry., Matt said he's always bought Rio Grande equipment. "I love that black and orange. Whoever chose that was a genius."

The layout doesn't follow an actual part of the D&RGW, so Matt created a fictional backstory for his line.

"During the early 1900s, the Rio Grande was looking for another high mountain pass to tap the mineral-rich area around the fictional town of Alpine, Colo.," Matt said.

"The original survey party assigned to the job spent months trying to figure an easy way out of the valley to the high country. Unfortunately, the only routes available needed many tunnels and bridges to keep the grades down to a manageable level. The chief surveyor was quoted as saying 'This is godforsaken country where no railroad oughta be!'"

"The bosses agreed, but decided the railroad needed to be pushed through anyway. Thankfully for me, it became a perfect prototype to model."

Digging into scenery

Modeling a mountain railroad means mountain scenery, and that's one of Matt's favorite parts of the hobby. The



5 The Silver Spring mine is switched by an Electro-Motive Division Geep while an eastbound manifest freight rolls past on the main line. The complex is built from the Blair Line Cash Mine kit and scratchbuilt odds and ends. "I stained mine to bring out the lovely old wood texture," Matt said.

scenery is probably the strength of the layout, Matt said, followed by an interesting track plan.

"I thank [MR] for showcasing John Allen's layout in the '70s. I've always been intrigued by the three-dimensional aspect of mountain railroading."

The basic landforms are built from cardboard strips attached to the benchwork or subroadbed with hot glue or staples. Matt also used drywallers' shims, which are stiffer than cardboard, 32" long, 1½" wide, and ¼" thick. Flat areas are Homasote on Styrofoam.

Matt's experience in the granite and marble industry for over 23 years taught him a lot about plasters, cements, epoxies, and colors – very useful skills for model railroaders. He used aluminum foil rock castings applied to plaster cloth over cardboard strips. Some were colored during casting, others after. Woodland Scenics colors were used for the finished rock colors, with some dry-brushed highlights.



A single spline of tempered hardboard traces the path of Matt's main line. This made it easy to get the flowing form he was after. Matt Carpenter photo

Easy spline roadbed

Matt Carpenter's easy-spline roadbed is made from 1" wide strips of ⅛" tempered hardboard (2" wide on curves), sandwiched between either 1" thick Styrofoam or extruded-foam insulation board.

First, Matt screwed the hardboard to risers. For long runs, he overlapped the hardboard and screwed it together. Once he had the path of the subroadbed plotted out to his liking, he glued strips of Styrofoam to the hardboard to create the track surface.

"I could've used extruded-foam insulation board – that would be cleaner – but the Styrofoam was easy to bend," Matt said. – *Eric White*



6 Matt has affixed mirrors to the ceiling behind his lighting valance. The mirrors help distribute the light from his compact fluorescent light fixtures.

Matt makes his pine trees with steel wool. [See “Steel wool trees” at right. – *Ed.*] He also uses Scenic Express SuperTrees in the lower elevations. The streams on Matt’s layout are modeled using Woodland Scenics E-Z Water.

After Matt painted a sky on the backdrops, his son, Sam, added more detailed scenes. Matt said his son will come home late from his job managing a restaurant and start painting. “When I come down to the basement in the morning, there’s another scene painted. Fantastic!”

The numerous bridges in relation to the scenery create interesting focal points, Matt said. He’s most proud of Indian Creek trestle and the high bridge at Drake (both scratchbuilt). Matt also enjoys switching at the Coalbank loader near Drake.

The high bridge at Drake is modeled after the Stoney Creek bridge on the Canadian Pacific Ry. The Indian Creek bridge is modeled after standard wood trestles of earlier eras. On other prototype railroads, this type of bridge would’ve been eliminated years ago, Matt said.

Operating on the Rio Grande

The layout is set in 1985, just prior to the Rio Grande’s merger with the Southern Pacific. But Matt also has some Union Pacific locomotives. Motive power is second-generation or newer diesels.

Like the rest of the D&RGW, the Alpine Division is a bridge line, taking freight from one end of the line to the other. In addition, local crews handle coal, rock, and mineral runs for the Alpine Yards.

Matt mostly runs the layout alone, but the railroad has enough going on to entertain three crew members. There’s



These trees are made from steel wool and steel spikes. The process is quick and easy, as well as economical.

Steel wool trees

Matt makes some of his pine trees using 0000 and medium no. 1 steel wool. He unrolls the steel wool to lay flat, then sprays the top surface lightly with green paint. He then flips it over and sprays the bottom with tan or brown paint to represent twigs and branches.

He makes some of the trunks from steel wire posts utility companies use for the flags that mark buried lines; these are available at big-box home centers. Larger trees use wooden skewers to model thicker trunks.

These trees have an “airy” feel and don’t look too perfect or distract from the rest of the scenery. Matt makes three sizes: small, background trees for high-altitude forced perspective; medium, the largest number for good coverage; and larger foreground trees. – *Eric White*

the Alpine yardmaster, a local crew, and a through freight or passenger run.

There’s no staging on the Alpine Division; the two modest yards hold more than enough cars to cover operations. Because Matt usually runs the layout by himself, he tends to run one long

(about 30 cars) through freight, mostly loaded mine cars, to distant destinations. In continuous mode, at a scale 20 mph, it takes eight minutes to make a circuit of the entire main line.

While that’s running, Matt will make up a local in the Alpine Yard. These



7 The trestle at Indian Creek would likely have been replaced by Matt's 1985 era, but on the freelanced Alpine Division, such anachronisms remain in "real godforsaken country where no railroad oughta be!"



8 A grain train heads east with Union Pacific General Electric power in the second position as an Electro-Motive Division SD50 leads the way.

trains are usually empties heading back to the rock mines. When the train is assembled, Matt parks them on the yard lead to wait for the assigned road crew and power.

These locals can be two separate trains: one eastbound, through Alpine on the elevated track behind the yards,

then up the Alpine Branch to the mining district. The other is a dedicated westbound to the large coal-loading tippie at Coalbank. There are also a couple of turns to switch other local industries.

Matt's rolling stock has evolved as the layout has matured. "The rolling stock has become very specific," Matt said.



Meet Matt Carpenter

Matt Carpenter, after a career in television, joined the family stone business, which he still manages. He's also active in media ministry at his church. His other interests include cross-country skiing, biking, raising German shepherds, rowing in his handmade wooden boat, and traveling by train.

"There are lots of company coal cars, gondolas, and numerous boxcars. Also a growing fleet of company flatcars to carry rough-cut blocks of stone from the (future) marble quarry to the fabricating facility in Alpine." There's also a restored Rio Grande passenger train used for seasonal fan trips.

Matt has old F units for those fan trips, plus steam locomotives that make occasional appearances. The rolling stock is weathered with drybrushed rust and grime paint. "The tunnels on this range are particularly hard on paint jobs," Matt said.

A lifelong hobby

The role of model railroading in Matt's life has changed over the years. "In the early years, my wife worked evening shifts, and the layout was something my kids and I could happily do together," he reminisces. "Today, the dads in the neighborhood can bring their kids for a viewing. And let's be honest, my future grandkids will need a good reason to visit."

Matt says he learned to work carefully with the space he had. A bigger layout isn't always better. "A lot of the track plans today, I think, lack creativity. Proportion and flowing track work are important in the final product.

"The current layout is probably my last. I'm very happy with the layout design. I can always change or refine the details. As that fictional surveyor said, it's 'a real godforsaken country where no railroad oughta be!' "

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Using cell phones as throttles with DCC



1 Direct connections. The Digitrax LNWI, left, comes with a 14.9VDC power supply and short connector cable. The Model Rectifier Corp. Prodigy WiFi draws power from the command station and only comes with a connector cable. Both are reliable plug-and-play devices.

One common complaint

I hear from model railroaders is that the National Model Railroad Association (NMRA) didn't establish a standard for throttles so they could be used among the various Digital Command Control (DCC) systems.

This can be an especially frustrating issue when someone uses one type of DCC system at home, a different one at the club, and yet others on various layouts for operating sessions. Unless each layout owner is willing to provide throttles, then model railroaders must make choices as to where they will operate. And it's been that way for most of the past 25 years.

Yes, there were systems such as Wangrow System One, NCE, and Ramtraxx that used the same throttles, and for a brief time Atlas offered a DCC system based on the Lenz system, but among them only NCE and Lenz are still in operation. So where are we going with this

in the future, and what options are available now?

Actually, the future isn't all that far away. *Model Railroader* senior editor Dana Kawala reviewed the Digikeijs DR5000 DCC system in the December 2018 issue of MR. This new system offers compatibility with a large number of other DCC systems through a variety of wired, WiFi, and IR interfaces.

Train Control Systems (TCS) has a DCC system in development, anticipated by the end of 2019, that will have wireless throttles using WiFi communications and will also support NCE throttles (wired but not wireless). TCS is also working on a Digitrax interface. In the meantime, what other options exist?

For a number of years, we've been able to use WiFi with Java Model Railroad Interface (JMRI) DecoderPro (available at www.jmri.sourceforge.net) and connect cellphones running either

the Android Engine Driver app or the Apple iPhone WiThrottle app to a computer running DecoderPro. As long as the computer is also connected to the DCC system, the cellphone apps can select and run trains.

Since many folks now have home WiFi networks, the main stumbling blocks are purchasing the required interface, getting DecoderPro installed on their computers, and communicating with the DCC command station.

The downsides to this approach are the cost, complexity, and the fact you have to be willing to use your home WiFi network for this purpose. (Note: Most WiFi routers include the ability to set up a second account for guests separate from your secure household account).

To set up the DecoderPro WiFi capability, you first need an active connection to the DCC command station. For more on the various interfaces available and how to make

that connection, refer to the August 2015 DCC Corner column and search for my posts on "usb interfaces" on my website (www.dccguy.com).

With the connection to the command station made, go into the preferences menu option in DecoderPro and select WiThrottle. This pane offers several options, but the only one I changed was to allow WiThrottle to open automatically when the program starts. Whether your cellphone is an Android or Apple iOS machine, the program in DecoderPro is called WiThrottle, the same name as the iOS app.

Finally, make sure your cellphone is connected to the WiFi network the computer is connected to. With everything configured, the WiThrottle app on my iPhone was able to connect to DecoderPro immediately.

If setting up an interface through DecoderPro sounds a bit complicated, then you'll want a way to directly connect cellphones to your DCC system. Both Digitrax and Model Rectifier Corp. (MRC) offer devices **1** that make this possible. The Digitrax LNWI device plugs into a port on the Loconet network, whereas the MRC Prodigy WiFi device plugs into a connector socket on the front of the command station.

Once these are powered up, they create their own standalone WiFi network that cellphones can log on to. Connecting can be as simple as selecting the correct WiFi network in the cellphone settings menu. The Engine Driver and WiThrottle apps provide a graphical user interface that communicates with the DCC command station.

I tested both the Digitrax and MRC devices with

WiThrottle on my iPhone and had no problems with either, but that was with just one throttle. For a more complete test, I took the Digitrax LNWI interface to an operating session at my friend Ron Hale's 22'-6" x 38'-6" Blue Ridge and Allegany layout (featured in the November 2016 *Model Railroader*).

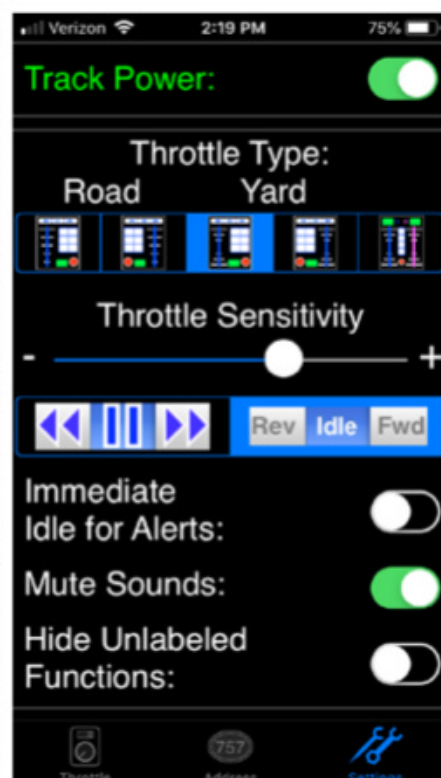
The iPhones had no problems connecting to the LNWI, but the Android cellphone and Engine Driver program required a bit more work. We had to manually enter the LNWI IP address and the port, after which it connected with no problems.

Each LNWI device supports up to four cellphones, and up to eight LNWI modules can be connected to a single Loconet for a total of 32 cellphone throttles. We were using two iPhones and an Android phone at one point, along with at least eight standard throttles.

There were no delays in response to speed or function changes. The good thing is you can download free versions of these programs to see how you like the interface. The WiThrottle app is also available as a paid version (\$9.99) with expanded features.

The free "Lite" version of WiThrottle includes both road and yard throttle screen configurations **2**. The road throttle display has a single slider for speed control, direction controls, plus virtual buttons for function controls, and an emergency stop button. Yard throttles have a speed control slider that allows you to go from forward to reverse without having to hit a separate direction button.

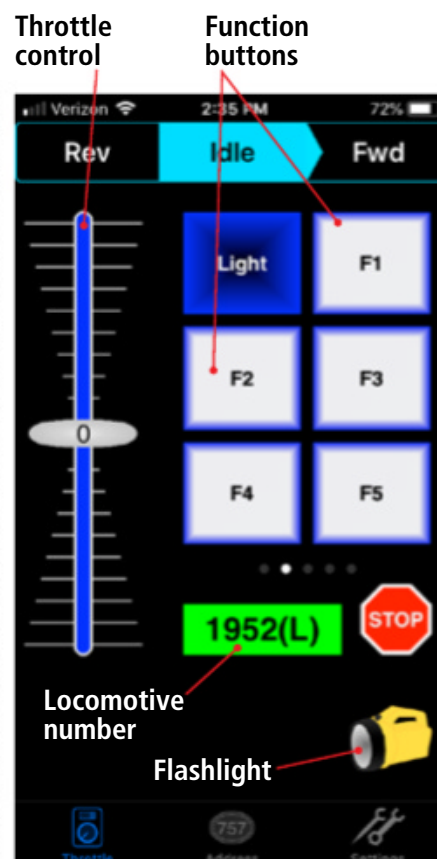
I tried several of the optional throttle displays, but settled on the single yard throttle version **3**. Another neat feature is a flashlight button that turns on the iPhone light-emitting diode (LED) –



2 Display options. The WiThrottle app running on Larry's iPhone has a settings page that allows you to select from several road and yard throttle displays, as well as various other display and sound options. Note the throttle sensitivity setting.

very useful for reading car numbers in low-light settings.

You can easily flip through all 29 function buttons (F0-F28), but there's another special option. In DecoderPro you can edit the function button labels, giving them specific names such as bell, light, horn, etc. Then, if you're connected through DecoderPro, these labels are loaded into your



3 For righties or lefties. The yard throttle display can be set up with the virtual slider on the left or right side of the screen, making it convenient for left- and right-handed users. Note also the stop and flashlight buttons.

cellphone WiThrottle display

4. There's also an option to turn off function buttons without labels, making it easy to tailor the WiThrottle app display for each locomotive.

There's also the ability to use DecoderPro to access to the entire locomotive roster. This allows you to select a locomotive address from a list instead of having to enter the address using the keypad. Note that as you use the WiThrottle app, it keeps recent addresses you have used in memory.

So what extras do you get with the paid version of WiThrottle? There's access to control panels in JMRI, allowing you to control individual turnouts and set routes. It also allows you to turn track power on and off remotely.

Simple command station assisted consisting is available. Finally, a dual-throttle display giving you the ability to control two locomotives simultaneously is available.

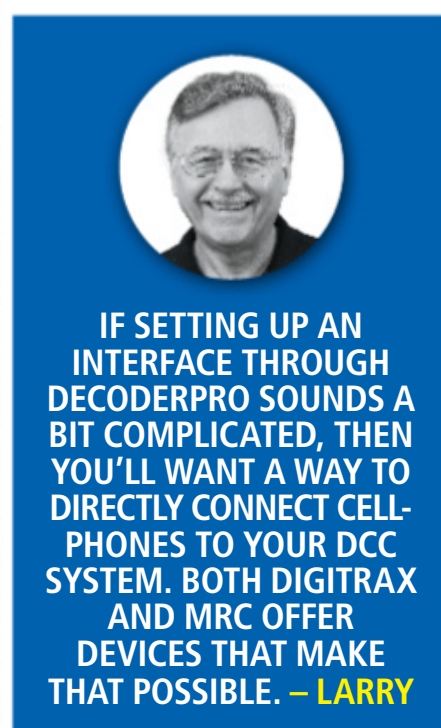


4 Simple names. Using DecoderPro, Larry edited the function labels, giving them simple names like Bell, Horn, Xing Horn, and Mute. By selecting the option to turn off unlabeled functions, he customized the display for this specific locomotive.

Since I didn't have access to an Android device, I wasn't able to test the Engine Driver app. However, Dana Kawala reviewed the MRC WiFi device with the Engine Driver app, and that's available in a January 2018 video on the *Model Railroader* website and a full product review in the March 2018 *Model Railroader*.

The Digitrax LNWI and MRC Prodigy WiFi devices do a brilliant job of making cellphone throttles easy to set up with Digitrax and MRC systems, respectively, and are reliable plug-and-play devices. Both offer a simple solution for owners of those systems to provide operators and visitors a way to run trains on their layout without having to purchase additional throttles.

This makes them an especially attractive option for clubs. Take a look at these to see if they may be the solution to your throttle issue. **MR**





Bachmann N Sound Value Baldwin 2-8-0

It was only a few months ago – in the September 2018 issue – that we last reviewed a Baldwin 2-8-0 steam locomotive from Bachmann. But that was an HO scale model. Bachmann's new Consolidation is an N scale model. This freight hauler is well detailed, nicely decorated, and despite its small size, a strong puller. It's also packed with features thanks to its dual-mode SoundTraxx Econami decoder.

The Consolidation was most railroads' go-to freight engine at the beginning of the 1900s. Its four low drivers produced traction, not speed, letting it haul longer, heavier trains up steeper grades than the speedier 4-4-0s or lighter Moguls. Even after the development of engines with larger fireboxes like 4-6-2 Pacifics and 2-8-2 Mikados, new Consolidations continued to be built well into the 1930s, incorporating new technologies like superheaters. It wasn't until after World War II that the last of the 2-8-0s dropped fire.

A generic model. The Bachmann Consolidation doesn't follow a particular prototype. Rather, like the company's HO scale model, it's a modified, more generic version of a Baldwin 2-8-0 built for the Illinois Central from 1909 to 1911. Drawings of the IC engine appear in *Model Railroader Cyclopedica: Volume 1, Steam Locomotives* (Kalmbach Books, out of print), and Bachmann's model bears it some resemblance.

Some dimensions and details differ, though, such as the driver wheelbase. On the model, this has been stretched about a foot to accommodate its proportionally deeper wheel flanges. The engine also has a smaller, more rounded sand dome than the IC engine's broad, flat one.

Trailing behind is a United States Railroad Administration-style short-haul tender, a design developed after 1918. Even though there was no such thing as a USRA Consolidation, it's conceivable such a tender could have replaced the original.

Our model came painted as Western Pacific no. 35. According to the WP's 1938 locomotive roster, no. 35 was indeed a Consolidation, built in 1909, though by Alco, not Baldwin. The Alco prototype had 57" drivers, which match those on the Bachmann model, but other dimensions on the model more closely resemble the IC Baldwin.

First look. Our sample is a handsome model, smoothly painted satin black with a silver smokebox and firebox. White stripes and wheel rims make the engine stand out on the roundhouse tracks. The printing is crisp and opaque, and even the builder's plate on the side of the smokebox (dated July 1918) is legible under magnification.

The wire handrails and coupler lift bars are close to scale thickness. The whistle and bell are metal castings. There was a small amount of flash on the flexible engineering-plastic piping. One of the pilot ladders was warped and wouldn't stay in the mounting hole on the side of the smokebox without glue.

The locomotive comes fitted with a plastic E-Z Mate Mark II knuckle coupler on the rear, mounted at the correct height. The front has a dummy coupler. Though it was easy to remove the dummy, I saw no means of mounting a working coupler without making modifications to the pilot.

The model picks up power from all eight tender wheels and six drivers; there are rubber traction tires on the third set of drivers. According to the National



The model's electronics, including the speaker, are housed in the tender. The model gets power through all eight tender wheels and six of the eight drivers.

Model Railroad Association standards gauge, all the drive wheels were in gauge, but the wheelsets on the pilot truck and tender were slightly tight. This didn't cause problems when I tested the engine on the Peco medium-radius turnouts on our N scale Canadian Canyons project layout, though.

On the test track. I tested the locomotive first under direct current. The dual-mode decoder responded with a startup sequence at just under 6 volts. At 9 volts, the headlight came on and the locomotive started to roll at 5 scale mph. The bell clanged for about 15 seconds after starting, then shut off. At 12 volts, the engine reached 39 scale mph, which is an acceptable top speed for a Consolidation; the prototype maxed out around 45 scale mph. Just to check I turned the throttle all the way up to 14V, at which voltage the model zipped along at 61 mph.

Under Digital Command Control, the engine was even speedier. With the throttle set to 28 speed steps, the engine responded to speed step 1 at 8 scale mph. It topped out at 75 smph at speed step 21, before even getting to step 28.

However, setting up a simple three-point speed curve is easy in DCC. I programmed configuration variable (CV)5, commonly called Vmax, to a fairly low value of 64. This cut the locomotive's top speed under DCC to a more prototypical 47 scale mph. Programming CV2, or Vstart, to 0 didn't improve the engine's low-speed performance, though – that CV apparently defaults to 0. However, when I set CV6, or Vmid, to 20, that low value stretched the lower end of the speed curve. This had the effect of reducing the engine's speed at step 1 to a stately 2.6 smph, perfect for switching.

To test the engine's real-world performance, I put it on the rails of the staging yard on our Canadian Canyons project layout and hooked it up to a train. The engine performed like a champ, tugging a 7-car train up the 13" radius and 1.9 percent curve of the helix.

I had more control over the sound effects with Digital Command Control. I could trigger a long whistle blast with function key 2 and a short toot with F3. Function 4 opened the cylinder cocks and F10 triggered a blowdown. One cool effect was the Drift function, which muted the engine chuffs and turned up the side-rod clank when I hit F5 (key F6

PERFORMANCE CHARTS

DRAWBAR PULL	0.8 ounces
	19 N scale passenger cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
9V (start)	5
10	16
11	28
12	39
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	8
7	46
14	68
28	75

put things back to normal). I also liked the fact that when I turned on the headlight, I could hear the dynamo spin up, even if the light stayed off because the engine was in reverse. All the functions can be easily remapped, using the decoder's Flex-Map technology.

Programming the decoder. I prefer to be able to control my locomotives' headlights directly, rather than having them turn on and off or dim automatically when I put the engine in reverse. So that was one of the first things I programmed into the decoder (after setting its short address to the cab number of 35, of course). Programming CV49, the headlight function, to 0 made it a simple on/off switch, rather than directionally dimming. I tried adding 128 to that value to activate what the SoundTraxx Econami Sound Value manual called LED (light-emitting diode) Compensation Mode, but the headlight didn't look any brighter to me either way.



The tender is equipped with an E-Z Mate Mark II knuckle coupler. The grab irons and coupler lift bar are fine wire.

Facts & features

Price: \$399

Manufacturer

Bachmann Trains
1400 Erie Ave.
Philadelphia, PA 19124
www.bachmanntrains.com

Era: 1918 to late 1930s, as detailed

Road names: Western Pacific, New York Central, Norfolk & Western, Union Pacific, and Western Maryland

Features

- Blackened metal wheelsets (pilot truck and tender wheels were slightly tight)
- E-Z Mate Mark II knuckle coupler on rear, mounted at correct height (dummy coupler on front)
- Light-emitting diode (LED) headlight
- SoundTraxx Econami dual-mode sound decoder
- Weight: 3.3 ounces (engine and tender), 2.4 ounces (engine alone)

During testing I noted that the chuff sounds weren't synchronized to the wheels, sounding about three times per rotation rather than the prototypical four. Programming a value of 75 into CV114 gave me the desired four chuffs per wheel revolution.

Finally, just for fun, I tweaked some of the sound effects. Bachmann's Quick Start manual says that the decoder comes with three selectable whistle sounds and doesn't mention bell options. However, the SoundTraxx manual lists 16 whistles and six bell sounds, which I confirmed are available on the decoder. By programming CV120 to 0, I selected a Lunkenheimer three-chime whistle, and setting CV122 to 10 selected a medium brass bell with a pleasing manually-rung cadence. The manual also lists options for the exhaust chuffs, air pumps, and dynamo sounds, but I left those at the defaults. The user manual is available at the SoundTraxx site, www.soundtraxx.com.

A must-have. More 2-8-0s were built than any other steam engine wheel arrangement, and they ran on practically every railroad in the country for half a century. This makes the Consolidation a must-have for N scale steam modelers. Bachmann's model is a worthy choice. – Steven Otte, associate editor



Athearn HO scale SD70ACe with Tsunami2

In 1943, employees of the Union Pacific RR agreed to an extra deduction in their paychecks to buy War Bonds during World War II. The railroad collected \$379,000 for the cause, and in response, the U.S. Army Air Corps named a B-17 bomber “Spirit of the Union Pacific.”

In 2017, Union Pacific unveiled SD70ACe no. 1943, The Spirit, as part of a Salute the Military Tour. Athearn has now released an HO scale Genesis series model decorated in The Spirit’s unique paint scheme, and equipped with a SoundTraxx Tsunami2 dual-mode decoder as an option.

The prototype. Originally built as UP no. 9046 and designated SD70AH by the

railroad, the Electro-Motive Diesel locomotive is a 4,300-hp unit with alternating-current traction motors. It’s the last model to feature EMD’s two-stroke diesel engine, in this case a 16-710G3C-2.

Built from 2004 to 2014, 13 railroads purchased SD70ACes new, including 518 for UP. Between 2014 and 2016, Union Pacific received an additional 273 units designated SD70AH, for “heavy.” These engines carry extra ballast to increase their weight to 428,000 pounds, 8,000 more than a standard unit.

Locomotive no. 1943 is the 16th Union Pacific commemorative unit in the railroad’s history. The paint scheme on The Spirit starts with a cab and nose in silver, honoring the Air Force. The

blue sash with the “Spirit of the Union Pacific” lettering copied from the B-17 recalls the Strategic Air Command sash formerly painted on SAC aircraft.

The Coast Guard’s racing stripe separates the Air Force silver from Navy battleship gray, which is the background for Union Pacific’s American flag. This is followed by a camouflage pattern to honor the Army and Marines. The rear of the locomotive features the POW-MIA flag with the lettering “You are not forgotten.”

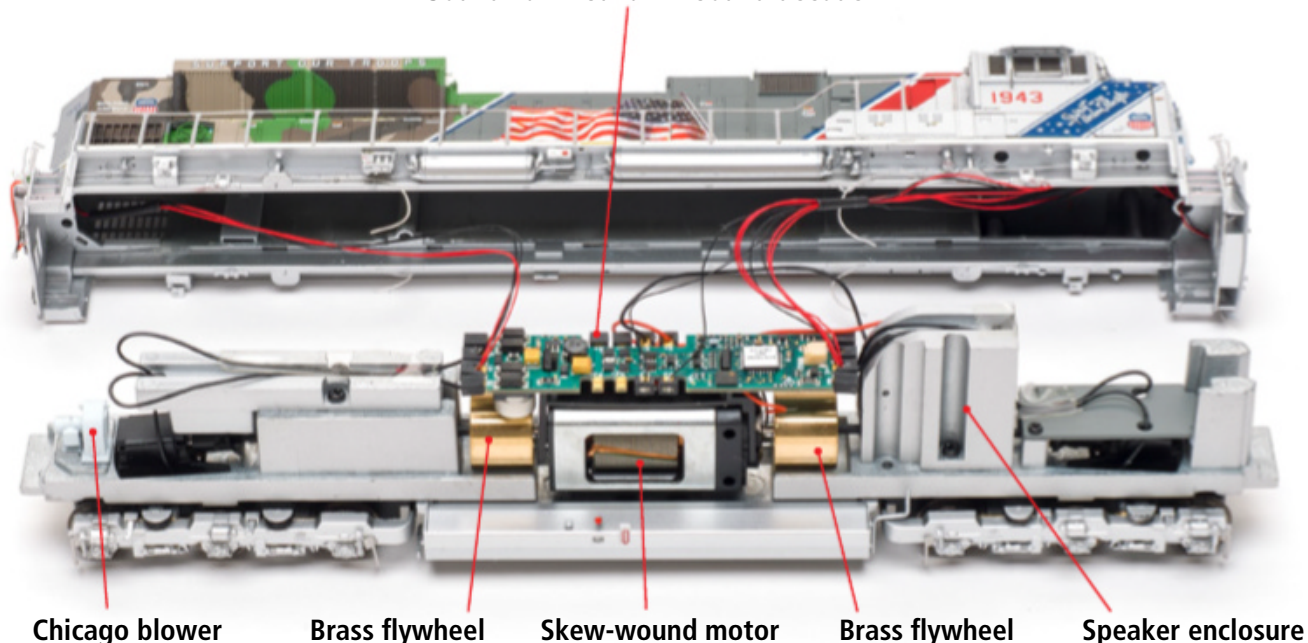
The model. Much of the current release is the same as the model reviewed in the February 2011 *Model Railroader*. The notable changes include the optional SoundTraxx Tsunami2 dual-mode decoder, and a switch to light-emitting diodes (LEDs) for illumination.

The most obvious difference on this highly detailed Genesis series model is the paint scheme. Athearn is proud of the effort put in to replicate the complex Union Pacific design, as well it should be. The paint is smooth and opaque with clear separations between the different sections, including the green, brown, and tan camo pattern as it crosses doors, radiator fans, brake wheel, and other details.

Many details are etched-metal parts, including most of the grills. The combined dynamic brake and traction motor intake grill is especially well done, with the silhouette of the Chicago Blower cooling fan visible inside.

The cab roof is held on with magnets, allowing access to add crew members. In addition to the engineer’s control console

SoundTraxx Tsunami2 sound decoder



Chicago blower

Brass flywheel

Skew-wound motor

Brass flywheel

Speaker enclosure

A skew-wound motor with brass flywheels is secured to the center of the die-cast metal frame. Plastic driveshafts power all 12 wheels, which also pick up current.

PERFORMANCE CHARTS	
DRAWBAR PULL	3.04 ounces 43 HO freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
9.75	2.5
10	7.1
11	15
12	25
13	34
14 (power pack max)	42
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	4.1
7	31
14	63
21	70
28	77

and three crew seats, there's an event recorder in the left-hand windshield and cabinet doors and panels on the cab's rear wall.

On the test track. I wanted to hear the SoundTraxx Tsunami2 decoder, so I went right to Digital Command Control (DCC) testing. Using our NCE PowerCab system, I recorded a starting speed of 4.1 scale mph in speed step 1, and a top speed of 77 scale mph in speed step 28. Switching to 128 speed steps, the locomotive crawled along at 1.1 scale mph in speed step 1. Drawbar pull measured just over 3 ounces, equivalent to 43 HO scale freight cars.

After the test track, I took the locomotive to our staff layout, the Milwaukee, Racine & Troy. There, I followed the instructions in the included user manual to set up the Dynamic Digital Exhaust.

With that done, I enabled the Tsunami2 braking rates following those instructions. Where SoundTraxx instructs you to set configuration variable (CV) 1.403, that means you first set CV32 to 1, then change CV 403. I also changed the values for baseline acceleration rate, CV3, and baseline deceleration rate, CV4. This simulates the momentum of the 214-ton machine. A quick change to the long address to match the cab number and the programming was done.

The addition of momentum and braking programming made the locomotive much more satisfying to run. The Spirit responded like a powerful, heavy road unit. Setting the Dynamic Digital Exhaust meant the sound of the diesel engine rose and fell as the apparent (and physical) load on the engine changed.

I was also able to consist the locomotive with an older Athearn Genesis

Facts & features

Price (Spirit of Union Pacific no. 1943):

\$339.98 (Digital Command Control and sound), \$249.98 (direct current)

Price (other roadnames):

\$309.98 (Digital Command Control and sound), \$219.98 (direct-current)

Manufacturer

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

Era: 2017 to present, based on paint scheme

Road names (multiple road numbers):

Union Pacific "Spirit of the Union Pacific," CSX, Electro-Motive Division leasing, Ferromex, Norfolk Southern/Reading heritage, Norfolk Southern/Virginian heritage, PRLX, Union Pacific

Features:

- Correctly sized operating ditch lights
- Factory-installed wire grab irons
- HTCR or HTSC trucks per prototype
- Light-emitting diode (LED) lighting
- McHenry scale couplers, mounted at correct height
- Weight: 1 pound, .6 ounce

SD70ACe equipped with an original Tsunami decoder with no problems.

I also tested the locomotive in direct-current (DC). At 7V, the start-up sounds commenced. The locomotive started to move at 9.75V at 2.5 scale mph. Speed at 12V was 25 scale mph, and the top voltage our DC power pack provided, 14V, translated to 42 scale mph. While that's lower than the prototype's top speed, it seemed reasonably fast for a model railroad.

Sound in DC was limited to engine revs rising and falling with locomotive speed, and the sound of brakes squealing as I brought the locomotive to a stop.

In the Spirit. With its flashy paint scheme and patriotic theme, this modern locomotive makes an eye-catching addition to any layout. And if you're looking for a paint scheme more appropriate for another part of the country, Athearn has several other road name options equipped similarly to our test model.

Whether you choose to model UP territory, or somewhere farther east, you won't go wrong with this locomotive. – *Eric White, associate editor*

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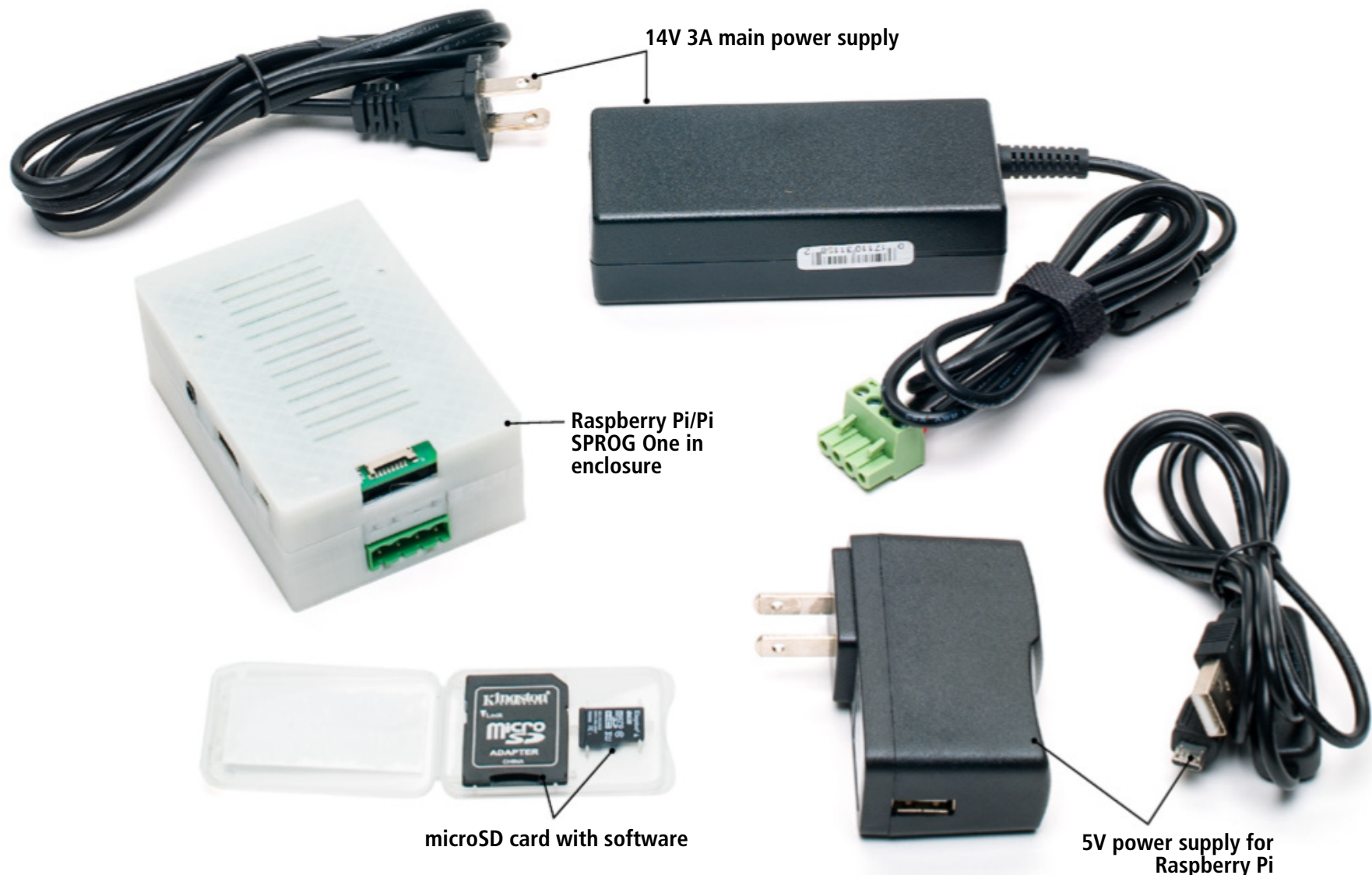
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SPROG USA Pi-SPROG One DCC system

Raspberry Pi isn't a tasty dessert. It's an inexpensive, single-board computer that's become popular with programmers, hobbyists, and makers for a wide variety of interesting projects. SPROG USA has developed a full Digital Command Control system based around the latest Raspberry Pi boards and the SPROG line of DCC products.

Like other SPROG products, the Pi-SPROG system runs Java Model Railroad Interface (JMRI) software, notably JMRI DecoderPro and its WiThrottle WiFi control feature. Instead of conventional throttles, internet-enabled smartphones, tablets, or WiFi throttles running supported application software (apps) are used to run trains.

The full package. I tested the Pi-SPROG One full DCC system that included the Pi-SPROG One board, a Raspberry Pi 3B+, microSD card with software image (an adapter is also included, if needed), a 14V 3A main power supply, a 5V power supply for the Raspberry Pi, and a 3-D printed plastic enclosure. When assembled with the boards inside, the enclosure measures 1³/₈" x 2¹/₂" x 3⁵/₈"

For those who wish to supply their own Raspberry Pi, the Pi-SPROG One

board is available separately. The Pi-SPROG One is compatible with the following Raspberry Pi versions: PI-3 Model B, Pi-2 Model B with WiFi adapter, or Pi-2 via a wired connection to a wireless router.

The software is available for download on the SPROG website, or it can be purchased ready to go on a microSD card for \$15. The software is available in command station, programmer, or Command Station/Programmer combination versions. The full system includes the combo version.

Easy to set up and run. Our full system included the Pi-SPROG One board connected atop the Raspberry Pi. After inserting the microSD card into the holder on the Raspberry Pi, I connected both the 14V and 5V power supplies. I also connected the track bus wires to the screw terminals marked TRK on the main power supply. A red light-emitting diode (LED) let me know the Raspberry Pi was working, and a green LED let me know that I had track power.

An external computer or display isn't required to use the Pi-SPROG as a command station. To run trains I opened one of the smartphone throttle apps that

support JMRI: Engine Driver for Android or WiThrottle for Apple iOS. Then, I simply clicked on the Pi-SPROG server on the touch screen and ran trains. If the Pi-SPROG doesn't automatically show up on the screen, then it's a simple matter of manually entering the IP address and port number. Connection instructions are fully outlined in the user manual available for download at www.sprog.us.com.

I ran locomotives using both WiThrottle on an iPad and Engine

Facts & features

Price: \$170.95 (full package with Pi SPROG One, Raspberry Pi 3B+, 14V 3A main power supply, 5V power supply, all necessary software on microSD card, and a plastic enclosure), \$109.95 (same as above, but doesn't include Raspberry Pi, 5V power supply, or enclosure)

Manufacturer

SPROG DCC
BBM Group LLC
7840 SW 136th Ave
Beaverton, OR 97008
www.sprog.us.com

Driver on an Android smartphone. Both apps operate simultaneously without any problems. The throttle apps support 28 function controls, speed control, and advanced consisting. However, neither of the apps offer programming capability.

The Engine Driver app also supports some Android-based WiFi throttles, such as PIKO America SmartControl and ESU CabControl throttles. (See my review in the September 2018 issue.)

I could even program the soft keys on this type of throttle using the latest version of the Engine Driver app.

The included 3A power supply can easily handle three or four HO scale, sound-equipped locomotives running simultaneously on a medium-size layout. For larger scales or layouts, SPROG USA SBOOST 3A boosters are available separately and easily connect to the Pi-SPROG.

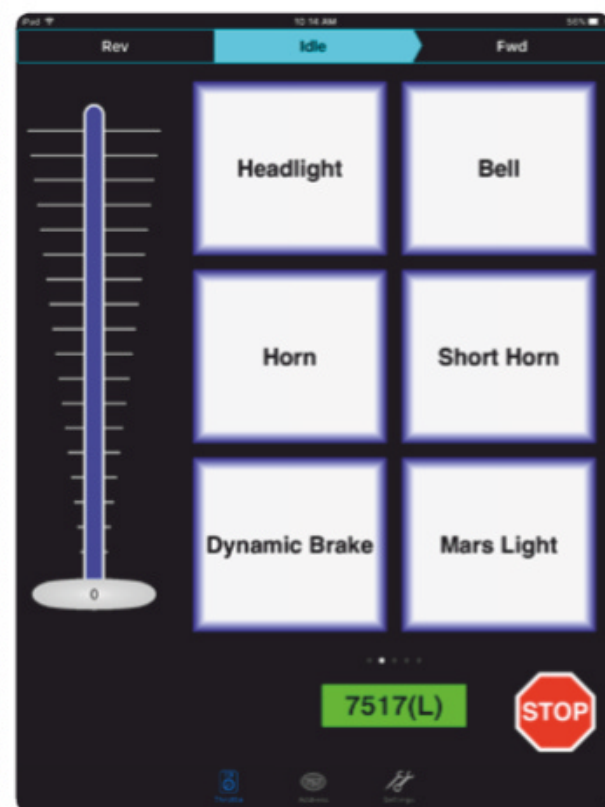
Programming. Although a computer isn't needed to run trains, it is required to access DecoderPro and program locomotive decoders. The Raspberry Pi includes four USB ports and an HDMI

port, making it easy to connect the system to a monitor, keyboard, and mouse.

However, I found an easier option outlined in the instruction manual. The Pi-SPROG automatically starts a Virtual Network Computing (VNC) server. This allows any computer with a VNC viewer application to access the Pi-SPROG desktop. I downloaded my viewer at www.realvnc.com. They have free versions available for most major operating systems, including iOS, PC, Linux, Google Chrome, and Android.

With the VNC viewer software installed on my laptop PC, I simply entered the Pi-SPROG IP address, and the virtual desktop appeared with DecoderPro already running. Then I used DecoderPro's intuitive menus to program locomotives on the main. For those already using DecoderPro, it's easy to upload an existing locomotive roster into the Pi-SPROG One using a USB memory stick.

The Pi-SPROG One is a user-friendly system with room to grow. – *Dana Kawala, senior editor*



Instead of conventional throttles, the Pi-SPROG relies on smartphones or tablets running throttle apps, such as WiThrottle (above) or Engine Driver. Android-based WiFi throttles, such as PIKO SmartControl or ESU CabControl, can also be used with the system.

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QUICKLOOK

Atlas O Pullman-Bradley coach

Price: \$139.95

Manufacturer

Atlas O

378 Florence Ave.

Hillside, NJ 07205

www.atlasrr.com

Era: 1950 to 1968 (as decorated)

Road names: New York, New Haven & Hartford; Boston & Maine; Kansas City Southern; Long Island Rail Road; and Southern Pacific. Four road numbers per scheme. Also available painted dark green with black roof but unlettered.

Comments: A Pullman-Bradley 10-paired-window lightweight coach has been added to Atlas O's Trainman line. The model features a cleverly designed three-piece plastic body, factory-installed and painted wire grab irons, and sprung side vestibule doors.

The Atlas O model is based on a car built by Pullman-Standard's Osgood

Bradley shops in Worcester, Mass. Our sample is decorated as New York, New Haven & Hartford coach no. 8267, part of a 20-car order built in 1936. The NH cars originally had full skirting, but it was removed by 1950. The Atlas model depicts a deskirted car.

The plastic body is attached to a metal frame with screws. Inside is a plastic interior painted medium gray with seating for 84 passengers. The window glazing is simulated with thin clear acetate attached to the car's interior. A light board is secured to the underside of the roof with screws. The lighting is track powered.

Car no. 8267 is equipped with die-cast metal two-axle solid-bearing truck sideframes. This is accurate for coaches 8250-8269 and 8500-8529 from their build date through the late 1940s, when the solid bearings were replaced with Fafnir roller bearings.

The model closely follows prototype drawings published in the 1940 *Simmons-Boardman Car Builders' Cyclopedia of American Practice* and data published in the Jan. 5, 1935, *Railway Age* magazine.

Though the coach will operate on a 36" radius, it will look better on broader curves. At 2 pounds, the coach is 6.5 ounces too heavy per National Model Railroad Association Recommended Practice 20.1. The 36"-diameter metal wheelsets are correctly gauged. The A-end coupler is .040" too low; the B-end coupler is at the correct height.

Fans of early streamlined passenger cars will certainly enjoy the Atlas O Trainman line Pullman-Bradley coach. The car has a lot of great details straight out of the box, but it leaves room for modelers to add their own enhancements, like seated passengers and extra underbody equipment.
— Cody Grivno, Group Technical Editor

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Using lineups for track car movements

The news disturbed my grandfather deeply. We called him Dziadziu (pronounced ja-joo), a Polish diminutive for the word. He farmed in Pine Island, N.Y., the rich “black dirt” region, in fields adjacent to the Lehigh & New England right-of-way.

Dziadziu worked as an L&NE section hand until 1943. The following year, in heavy early morning fog, a westbound freight collided with his old gang’s track car, taking the lives of all three section men. A yellowed newspaper clipping depicting the scene was one of my grandparents’ keepsakes. Now, it’s one of mine.

Track cars used by section gangs and signal maintainers needed protection from train movements. For most of the timetable-and-train-order era, it was common to rely on lineups listing all movements, both regular trains and extra trains. Think of a lineup as a snapshot of the locations of all trains moving or planned to move on a specified section of line. Dispatchers issued lineups several times a day, giving the time issued and, equally important, the time expired. An 8:01 a.m. lineup would give information valid at that time. It became void at its expiration time.

Here’s an example based on an actual 1960 Milwaukee Road lineup:

LINEUP NO. 1 FROM 801AM TO
1201PM BETWEEN ELGIN AND
KINGSTON
EASTWARD
NO. 104 ON TIME
NO. 102 LEAVE KINGSTON ONE
HOUR LATE
EXTRA 50A KINGSTON ABOUT
1120AM
WESTWARD
EXTRA 69A ELGIN 852AM
EXTRA 106C ELGIN ABOUT
1052AM



Andrew Genovese, a motor car operator for the Cumbres & Toltec Scenic Ry., prepares to move on the main track after watching Extra 483 West pass in August 2018. Jerry Dziedzic photo

An employee could then decide when the main track would be clear. His timetable has schedules for No. 104 and No. 102. The lineup informs him that No. 104 is on time and No. 102 is running one hour behind. Similarly, he sees that Extra 69A West left Elgin at 8:52 a.m. and Extra 106C is expected to leave Elgin roughly two hours later.

The lineup has the effect of a schedule. A section foreman or signal maintainer counts on its protection knowing where trains won’t be. The dispatcher (DS) has the responsibility to maintain protection by adhering to the lineup. If No. 102 makes up time, he must issue an order such as “No. 102 RUN ONE HOUR LATE KINGSTON TO ELGIN.” His alternative is issuing a new lineup to all affected employees, which

may not be practical if a section gang or signal maintainer is working at a point without communication.

While the dispatcher’s lineup protected track car movements, a section foreman protected a work site by stationing flagmen far enough away in both directions, in a manner like Rule 99.

It surprises me that the lineup system operated much less formally than one might expect. Many railroads

instructed dispatchers on their use. However, as widely as lineups were used, the term was absent from rulebooks with which I am familiar until the 1960s. The first instance I found is the 1967 Consolidated Code (CCOR). A *Milwaukee Road Train Dispatcher’s Manual* that a friend sent me gives complete instructions,

consistent with that edition of CCOR. RailGroup’s *Condensed Code*, which adapts operating rules to model railroad operation, contains similar instructions.

Oddly, L&NE was an exception. Long before the accident that grieved my grandfather, the railroad required the use of train orders for track cars, authorizing their movements in the same way as extra trains. The Interstate Commerce Commission accident report criticized the railroad for failing to enforce the rule. The section gang took off after a brief and insufficient phone conversation with DS.

Operating model track cars are scarce, even in larger scales. However, timber track car setouts, placed strategically along railroad rights-of-way during the timetable-and-train-order era, are details that are easy to add. An experienced DS might enjoy the challenge of dictating a lineup, copied by an operator posing as a section foreman, to simulate a track car movement. Let your imagination go to work. 



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4-8-2 Mountain no. 92 leads south-bound Rutland through freight No. 20 past a grove of laden apple trees and toward Vergennes, Vt., on a crisp fall day. Randy Laframboise of Cornwall, Vt., photographed the scene on the HO scale Rutland Mainline Division he built with friend Mike Spark. The locomotive is a brass model from Pacific Fast Mail. The fruit trees are by Noch, and the right-of-way fence is made with toothpicks and tulle.

MORE ON THE WEB

The photo on this page of Randy Laframboise's layout is this month's wallpaper. Get it at ModelRailroader.com



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



Union Pacific 4-8-2 no. 7857 is readied for its day's assignment while nearby train crews chew the fat. Andrew Thompson of Potto, North Yorkshire, U.K., photographed the scene outdoors on an HO scale diorama. The locomotive is a Westside brass model Andrew remotored and upgraded to Digital Command Control and sound. He weathered it with water-soluble oil paints and PanPastels.



The Chicago L train leaves Skidrow Station while below the arteries of the city flow with the traffic that is its lifeblood. Dave Williams of Coloma, Mich., was inspired to build the freelanced HO scale scene by memories of riding the L as a youngster in the 1960s. The 6000-series cars are from Island Model Works and motorized with Tomix trucks. The elevated superstructure is from Imagine That Laser Art and the vehicles are mostly by Classic Metal Works. Dave also shot the photo.



A Royal Oak & Southern 4-4-0 picks up a flatcar of freshly sawn lumber from the sawmill while another log is winched up the ramp from the log pond. Stan Knotts of Laytonsville, Md., scratchbuilt the industry about 20 years ago for his HO scale railroad, set in western Pennsylvania, using scale lumber, plastic window castings, and many interior details. He poured the water in the pond from two-part epoxy and added floating logs.





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CLOSING DATES: Jan 2019 closes Oct. 22, Feb. closes Nov. 8, March closes Dec. 17, April closes Jan. 21, May closes Feb. 18, June closes Mar. 25, July closes Apr. 22, Aug. closes May 17, Sept. closes June 21, Oct. closes July 22, Nov. closes Aug. 16, Dec. closes Sept. 23.

Schedule of Events

AL, MOBILE: Model Train Show sponsored by South West Alabama Railroad Modelers (SWARM). Via Health, Fitness and Enrichment Center, 1717 Dauphin Street. March 9-10, 2019, Saturday 9:00am-5:00pm; Sunday 10:00am-4:00pm. Admission \$5.00, family \$10.00, under 10 free. Operating layouts, demonstrations and dealers. Contact Charlie Boyer, 251-454-0572, email charlieboye66@att.net

AR, BENTONVILLE: Sugar Creek Model Railroad Historical Society, 16th Annual Show. Benton County Fair Grounds, Highway #12, Saturday, March 2, 2019, 9:00am-4:00pm. Adults \$8.00, under 12 free. Keith Johnson, 479-871-2802, E-mail: train072@cox.net, NWA Train Show, PO Box 1283, Farmington, AR 72730. www.sugarcreekrailroadclub.com.

CO, COLORADO SPRINGS: Train Expo Colorado (TECO) hosts its next model train show in Colorado Springs at Chapel Hills Mall Events Center, January 12-13, 2019. Saturday 10:00am-5:00pm and Sunday 10:00am-4:00pm. Admission: \$6.00/person or \$10.00/family. Senior and military discounts. Contact Mike, 719-640-2076 or http://www.tecoshow.org.

FL, FORT MYERS: Scale Rails Annual Train Show. Araba Temple, 2010 Hanson Street. February 9-10, 2019, Saturday & Sunday, 10:00am-4:00pm. Dealers and Collectors: 100+ tables, new & used equipment for all scales. Admission Adults: \$7.00, Teens: \$2.00, Children under 12: Free. Contact: Dwight Sedgwick 239-850-6764.

FL, FT. PIERCE: TCA Toy Train Show, The Fenn Center, 2000 Virginia Avenue. February 2, 2019. Open 9:00am-2:00pm. Admission: \$5.00, Children under 13 Free. Every child receives a Gift! Refreshments Available for purchase. Contact: Al Galli at 772-219-7653 or algalli@embarqmail.com.

FL, JACKSONVILLE: 40th JACKSONVILLE RAILFAIR. Prime Osborn Convention Center, 1000 Water St. Saturday, February 9, 9am - 5pm. Adults: \$9.00 (under 12 free). Over 350 tables. Large operating layouts. Miller, 3106 N. Rochester St., Arlington, VA 22213. 703-536-2954. Email: rrshows@aol.com

FL, PORT RICHEY: Toy Train Collectible & Hobby Show, New Lake Civic Association, 8330 Civic Rd. Port Richey, FL 34668. Saturday, February 16, 2019, 9:00am-2:00pm. Admission: \$5.00 adults, 12 and under free. Vendors, operating layout, Lunch items for sale. Contact Joe, 727-244-1341, visit: www.regalrailways.com for more information.

GA, SAVANNAH: Coastal Rail Buffs 30th Annual Model RR Train-Show. National Guard Armory, 1248 Eisenhower Drive, Zip: 31406. January 26-27, 2019, Saturday 10:00am-5:00pm, Sunday 10:00am-4:00pm. Adults 2 day \$7.00; Students/Seniors \$5.00, Active Duty Military/under 12 FREE. Dealer tables, operating layouts in O, HO, N. See www.coastalrailbuffs.org

IL, SPRINGFIELD: Springfield Railroad Society Annual Train Fair. Orr Building on the State Fairgrounds. Sunday, March 24, 2019, 10:00am-4:00pm. Early Bird shopping starts at 9:00am. Free parking. Largest show in down-state Illinois! For info call Ray at 217-544-4295 or visit www.springfieldtrainfair.com

IN, MICHIGAN CITY: Duneland Model RR Club Train Show and Swap Meet. IBEW Building, 301 East 8th St. Sunday, February 24, 2019, 9:30am-2:00pm (Chicago time). Adults \$4.00, youths 6-13 \$1.00, 5 and under free. Contact: Dave Novak at trains86@frontier.com or 219-778-1186.

IN, MIDDLEBURY: Essenhaus Train Show. On the Das Dutchman Essenhaus campus, 240 US 20. Saturday, February 16, 2019, 9:00am-2:30pm. Admission \$3.00/person or \$6.00/family. (Children under 7 FREE w/adult). All gauge, operating layouts, repairs, parts dealers, selling and trading. Display tables \$20.00 each. Essenhaus.com or call 800-455-9471 (x443).

IN, NOBLESVILLE: Central Indiana Division/NMRA Train Show. Hamilton County 4H Fairgrounds, 2003 Pleasant Street, Noblesville, IN. Sunday January 27, 2019, 10:00am-3:00pm. Admission \$3.00, Family \$5.00. Dealers, Portable Train Layouts, Clinics, Door prizes. Dealer tables \$12.00. Contact, Jim Shellhaas at 317-750-4834 or jshellha@butler.edu.

ME, AUGUSTA: Whitefield Lions Club 33rd Annual Model Railroad & Miniature Dollhouse Show, National Guard Armory, Western Avenue. February 16, 2019, Open 10:00am-3:30pm. Adults \$5.00, under 12-free, family-\$10.00. Operating layouts, miniature displays. Contact: Steven Laundrie, 50 Fairview Ave., Randolph, ME 04346. 207-582-1410, slaundrie@roadrunner.com, Website: www.whitefieldlionsclub.com/modelrailroaddollhouseshow.

MI, HOLLY: Detroit Model Railroad Club, 104 North Saginaw St. Holly, Michigan starts its open house season in November for the winter season. Please, visit our web site at www.dmrcc.org or visit us on FACEBOOK@DMMRC for times and dates.

MN, WOODBURY: Newport Model RR Club Flea Market & Train Show. Woodbury High School, 2665 Woodlane Drive, Zip: 55125. January 19, 2019, 9:00am-2:00pm. Admission \$5.00. April 27, 2019 is the next show. Club Address: Newport Train Club, PO Box 0061, St. Paul Park, MN 55071. Contact: Ed, 651-233-3310 or Mark, 651-207-7747

NC, NEW BERN: 24th Annual Train Show, New Bern High School, 4200 Academic Dr. . March 2-3, 2019 Saturday 10:00am-5:00pm; Sunday 10:00am-4:00pm. Admission \$7.00, under 12 free w/adult. Operating layouts, 90 vendor tables, food concession, door prizes. Carolina Coastal Railroaders, George Shalhoub, 252-626-3476

NY, ROCHESTER: TCA Upstate NY Chapter & Edgerton Model RR Club's Train Show. Edgerton Community Center, 41 Backus Street. Zip: 14608. Saturday, February 23, 2019 TCA Members: 9:00am. Public: 9:30am-2:30pm. Admission \$5.00, children under 17 free w/paid adult. Call: Kevin 716-771-6059 or Lee 585-544-0916. E-mail: usnyc2015@gmail.com or www.upstate-ny-tca.com

NY, SYRACUSE: Syracuse Model Railroad Club Open House. Eastwood American Legion, James Street at Nichols Ave. Sunday, February 24, 2019, 10:00am-4:00pm. Adults \$4.00, under 12, \$2.00, family \$12.00. HO & LEGO layout with JMRI control and signalling, FRE-MO modules under construction. Contact: Ken Cameron, 315-706-7580.

NY, WEST SENECA: TCA Upstate NY Chapter Train Show. Ismailia Shrine Center, 1600 Southwestern Blvd., Zip Code: 14224. Sunday, March 10, 2019, TCA Members: 9:00am. General Public: 9:30am-2:30pm. Admission: Adults \$5.00, under 17 free with paid adult. Contact: Kevin 716-771-6059, E-mail: usnyc2015@gmail.com or www.upstate-ny-tca.com

OH, COLUMBUS: The 11th Ohio N Scale Weekend, "For N-Scalers by N-Scalers" Franklin County Fairgrounds, Hilliard, Ohio. Presented by Central Ohio N-Trak. May 18-19, 2019, Saturday, 10:00am-5:00pm and Sunday 9:00am-3:00pm. Set-up Friday May 17th, 1:00pm-8:00pm. Event registration \$10.00. Event info www.centralohiontrak.org or e-mail ohionscaleweekend@yahoo.com

OH, HAMILTON: Ross Train Show Fundraiser, 3371 Hamilton Cleves Rd. Saturday March 2, 2019, 900am-2:00pm. Public welcome. Admission: Adults \$5.00, under 12 Free. Tables \$25.00, additional tables \$20.00. 88 tables available. Operating layouts, music performances. Show has sold out each year. Worth the drive. Contact: Kent Acree, 513-235-3086

OH, KIRTLAND: Lakeland Community College (AFC), 7700 Clocktower Dr.. Kirtland, OH 44094. NMRA MCR Div. 5. March 16-17, 2019, 10:00am-4:00pm. All Gauge Train Show with over 400 tables. For Information: 440-357-8890 or www.Railfest.org.

OH, MT. HOPE: CJ Trains Spring Train and Toy Show. Mt. Hope Event Center, 8076 St. Rt. 241, Zip 44660. Saturday, March 23, 2019, 10:00am-4:00pm. Admission: \$5.00, Free under 12. \$25.00/dealer table. 600+ tables. Contact, Jon Ulbright, 330-262-7488, cathijon@sssnet.com. www.cjtrains.com (GPS directions: Millersburg, OH 44654)

OH, TOLEDO: Greater Toledo Train & Toy Show. Owens Community College (SHAC), 30335 Oregon Rd., Perrysburg, OH 43551. Sunday, March 10, 2019, 11:00am-3:00pm. Early Birds: 9:00am-3:00pm. Adults \$6.00/Early Birds \$10.00, 12/under FREE w/adult. Contact: Randy Ramsey, 1566 South Ave., Toledo, OH 43609, 419-215-4181, email: toledotoymasters@gmail.com, website: toymasters.org.

SC, EASLEY: CRMHA MODEL TRAIN EXPO - \$7.00 Adults, Children FREE. Friday February 8th 1:00pm-7:00pm. Saturday, February 9th, 10:00am-4:00pm. Rock Springs Church - Impact Center, 207 Rock Springs Road, Easley, SC 29642. www.CRMHA.org 513-325-8850 or trainshow@crmha.org

TX, HOUSTON: Greater Houston Train Show, Stafford Centre, Cash/Murphy Rd., Stafford, TX. Saturday, February 16, 2019, 10:00am-4:30pm. Clinics, vendors, layouts, contest. \$6.00 adults, \$1.00 children, \$12.00 family. Free parking. Steve.sandfifer@sbcglobal.net.

TX, PLANO: Dallas Area Winter Train Show. Plano Center, 2000 E. Spring Creek Parkway. January 19-20, 2019, Saturday 10:00am-5:00pm; Sunday 10:00am-4:00pm. Adults \$10.00, 12 and under free w/adult. All scales & Tin Plate. Dealer tables, How-To Clinics. Information: Chris Atkins, chris@railroadmodeler.com 469-438-0741. Visit www.dfetrainsshow.com

WA, SPOKANE: River City Modelers Spring Train Show, Spokane Fairgrounds, 404 North Havana. Sunday, March 10, 2019 from 9:30am-3:30pm. Adults \$6.00, Free under 12. 200+tables of Railroad items for sale, operating layouts, Free-MO, Operation Lifesaver & more. Free parking. For information: Shirley Sample, 509-991-2317 or email shirley@busnws.com

WA, VANCOUVER: SP&SRHS Railroad Swap Meet. Warehouse23, 100 Columbia St. Saturday, February 16, 2019 from 9:30am-2:30pm. Adults \$6.00, 12 and under-Free. All scales of railroad items for sale. Local clubs and societies, Collectibles. Vendor tables \$30.00. Info: Jim Leonard 503-729-2773 or jpl2004@comcast.net.

WI, STEVENS POINT: CWMR 22nd Annual Model Railroad Show. Holiday Inn Convention Center Hotel, 1001 Amber Avenue. February 2-3, 2019. Saturday 9:00am-5:00pm; Sunday 10:00am-3:00pm. Adults \$4.00, \$2.00 kids 12-17. Many layouts, swap/sales tables, vendors. Contact Jim Miller 715-340-0265; email jimbro67@gmail.com

WV, CHARLESTON: Kanawha Valley Model Railroad Show. Arena Events Center, St. Albans, WV. February 23-24, 2019. Saturday, 10:00am-5:00pm, Sunday, 10:00am-3:00pm. Admission, \$5.00, under 12 free. Free parking. Vendor tables \$25.00. Clinics, operating layouts, new and used equipment all scales for sale. www.kv railroad.org. Joe: 304-539-6721 or jhorter@gmail.com

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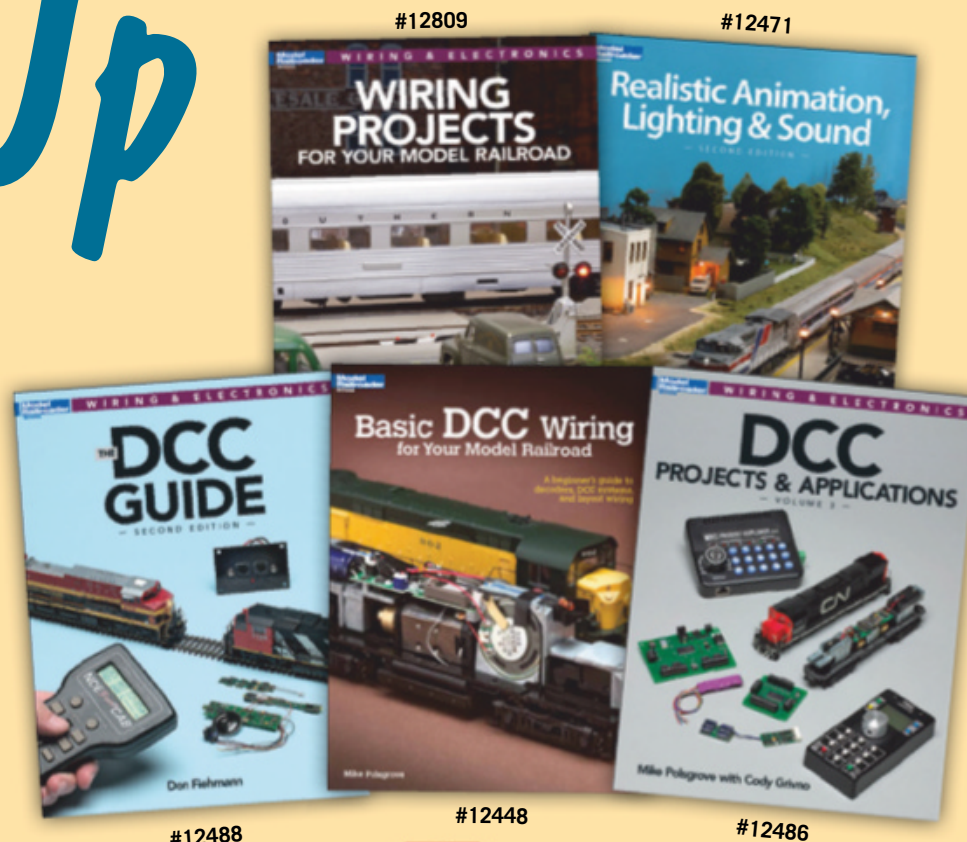
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Model railroading's most dangerous word



Today's factory-detailed models for specific railroads, such as this Athearn Ready-to-Roll HO scale Nickel Plate Road Electro-Motive Division GP35 (front), make it difficult to imagine the need for much more detail. But that detail may be easier to discern in a larger scale, such as this Atlas O NKP GP35. Tony Koester photo

We use all sorts of railroad lingo and technical terms in our hobby, but there's one word that should raise the hair on the back of your neck whenever it's uttered. Its use portends great expenditures of time and money and usually involves resetting the experience clock back to zero, enduring trials and tribulations you haven't known since you started in this hobby. It's a very short word, with only two consonants and nary a vowel. The word is "hmm."

"Hmm" implies contemplation, that you're seriously considering something. It's best said while gathering your beard in one hand and gently stroking it downward, but you can do this using your chin without taking time to grow a beard. Those of you who are female thus don't get a free pass from this potential pit of quicksand.

Let's take an example so my point will be abundantly clear. You stroll into the local hobby shop, and the proprietor is discussing a newly arrived On30 Mogul with a customer. You model in HO

but can't help to notice how handsome that 2-6-0 is, and you overhear the owner telling the customer that it runs on HO gauge track and therefore can fit into a similar space.

If it hadn't been for a vacation trip to Narrow Gauge Valhalla in Colorado and rides on the Durango & Silverton and the Cumbres & Toltec, all of this would be academic. But it's hard not to be influenced by exposure, however so brief, to the Rocky Mountain High. You therefore hang around and listen to the rest of the sales pitch as the proprietor brings out an array of freight and passenger cars and four-wheel cabooses that could almost be called cute.

The built-in 6" gauge error sort of precludes nitpicking from the outset. You'd have some clear guidelines but also the freedom to express your own creativity without fear of untoward comparisons. And a new challenge is always invigorating!

Hmm ...

No local hobby shop within an easy drive? Perhaps a visit to a friend's layout turns out

to be a bear trap in disguise. She, too, is modeling in a different scale, gauge, locale, and/or era.

You've been freelancing, having never settled on a specific railroad, time, and place to model. But you instantly recognize well-known locations on her railroad and find it fascinating how such small replicas can mentally transport you to a place you visited long ago or perhaps have seen only in photos or on video.

The game of 20 Questions begins as you ask how she found the time to detail so many models for her favorite prototype. You're surprised to learn that most of them are virtually ready-to-run models that the manufacturers have factory-detailed and painted for that railroad. "This gave me time to kitbash and scratchbuild structures and some unique

rolling stock for my railroad," she says with a smile.

She goes on to explain that Railroad A and Railroad B are very close to your freelanced railroad's theme and setting. If you made a few changes, you'd have reasons to make field trips to gather information about your newfound interest, to read books and watch videos about it, and to join the railroad-specific historical society to glean even more information and meet others who share your interest.

Hmm ...



SURELY YOU CAN FIND SOMETHING OF INTEREST. AND THEN SOMETHING ELSE. AND MAYBE SOMETHING ELSE, TOO. HMM ... — TONY

Model railroading has extremely broad shoulders. When the magic of wheels guided along rails by tiny flanges appeals to you, the vast array of options is at once inviting and intimidating. Surely you can find something of interest. And then something else. And maybe something else, too.

Hmm ... 



N SCALE



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- New Body tooling with isolated cab and nose mounted headlights.
- The appearance of these SD70ACe locomotives is a match for the "Tier 4 Credit" engines built post-2014.

These SD70ACe's are a *credit* to their design!

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