

PAINT + DECAL A DIESEL LOCOMOTIVE p.28

**Bowser SD40-2F
diesel tested** p.68

February 2018
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Model Railroader

Capture the color!

**Passenger trains
pop on this
California
layout** p.54

EXCLUSIVE!

**Our Winston-Salem Southbound:
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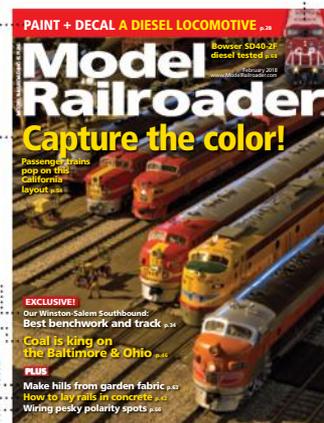
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On the cover: The evening passenger rush is about to begin on Steve Mahan's HO scale Pacific Coast Lines layout. Steve Crise photo



Next issue

In March, we show you how to model a modern lumberyard, make your own shingles, visit a Wild West layout, weather a modern coil steel car, and more!



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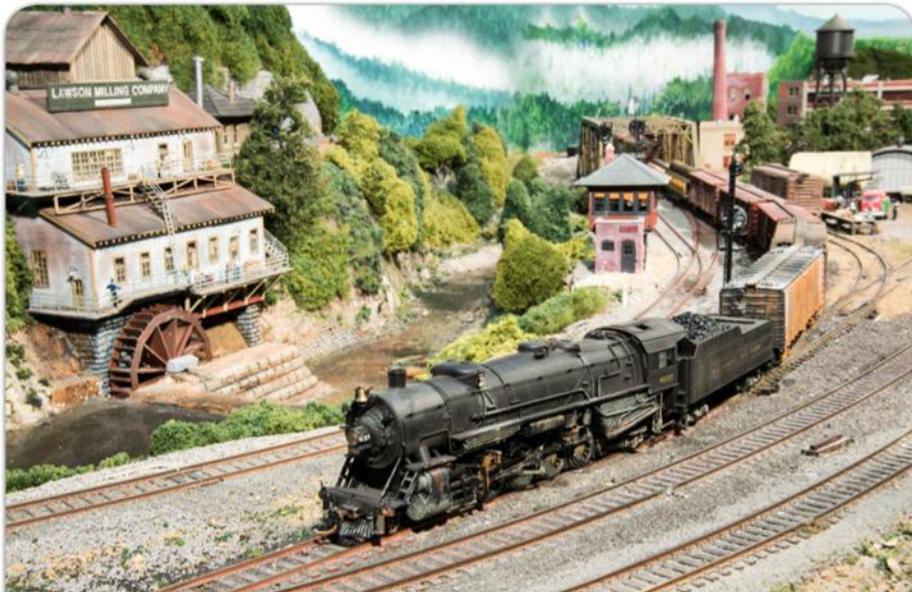
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Mountains and coal on the B&O

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John Listermann's HO scale model railroad is inspired by the Baltimore & Ohio through West Virginia in the early 1950s. Subscribers can admire some of the Appalachian coal country scenes and big locomotives in this exclusive online video at www.ModelRailroader.com.



Free trackside photo download

The Atchison, Topeka & Santa Fe El Capitan rounds a curve at Cajon Pass on Dave Bigge's HO scale layout. Dave's trackside photo, featured on page 78, is this month's computer desktop wallpaper. Click on the link under Online Extras on the MR home page to download the image.

ONLINE EXTRAS



Red barn demo

We review **Bowser Trains** HO scale SD40-2F "red barn" diesel on page 68. This new locomotive features an ESU LokSound decoder. Subscribers can see and hear the new locomotive in action by clicking on the Videos tab on the MR home page.



Trainfest show report

Back in November the *Model Railroader* staff attended Trainfest at State Fair Park in West Allis, Wis. Click on New Products to see an expanded show report highlighting all the new products featured, including this HO scale *Spirit of the Union Pacific* SD70ACE from Athearn Trains.

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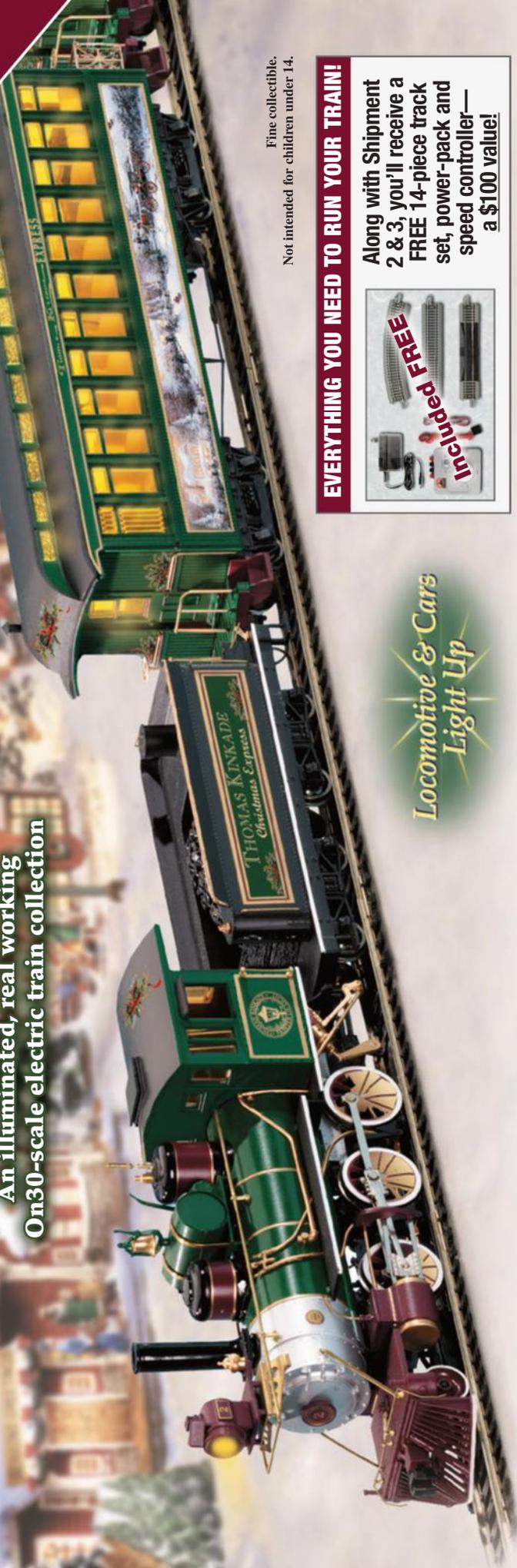
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In praise of found projects



I should build one of those. Oh wait, I did. I just forgot.

I found myself needing a decent-sized flat space to work on a modeling project not too long ago.

Most people would say, "Hmmm, if I throw a few things away I could open up the needed space on my workbench." Not me. I considered just building a new workbench. Everyone should have two or three, I think.

But common sense eventually won the day and I decided that, yes, what I really needed was less stuff in the basement.

I decided I was going to be ruthless in tossing items. In my head, I could hear the voice of one of those way-too-loud TV commercials: "Crazy days! Everything must go! We're clearing out everything

to the bare walls!" The purge was on.

I attacked the clutter on my existing workbenches. Into the trash went several half-completed tank, airplane, and car kits from my son's brief foray into modeling. Tools and paints were put back into their holders.

After excavating several layers, I came across a plastic bag containing the styrene floor and walls I'd cut out for a pair of cabooses, along with their wood cupola roofs.

I scratched my head and tried to remember which project this was. A few more things went into the trash bag and the answer was exposed in the underlying photo-copied pages that bore notes and measurements. This was a pair – if you're going to make one, you might as well make two – of Kansas, Oklahoma & Gulf cabooses I'd started about 2012.



From about the same time, I also found the measurements for a wood freight-house that remains roofless on my layout.

Why I didn't finish them then, I'm not sure, but there are two projects to add to my list for the winter. Now I have room to work on them, too.

They'll be a lot more fun to build than a workbench.

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HO scale



Electro-Motive Diesel SD70ACe diesel locomotive. Athearn displayed a pre-production sample of this six-axle road unit decorated in Union Pacific's "Spirit of the Union Pacific" paint scheme. The HO scale Genesis series model, scheduled for release in June 2018, will have vinyl m.u. hoses, light-emitting-

diode headlights and ditch lights, and late handrails. Direct-current models will retail for **\$239.98**. Versions with a dual-mode SoundTraxx Tsunami2 sound decoder will have a manufacturer's suggested retail price of **\$329.98**. Athearn Trains, 800-338-4639, www.athearn.com

Diesels, rolling stock dominate at Trainfest

Diesel locomotives and rolling stock took center stage at Trainfest, an annual show held in early November at State Fair Park in the Milwaukee suburb of West Allis, Wis. Athearn (above) and MTH Electric Trains (opposite) both had samples of Electro-Motive Diesel SD70ACe diesel locomotives decorated in Union Pacific's recently unveiled "Spirit of the Union Pacific" scheme.

ScaleTrains.com Inc. debuted its next HO scale RivetCounter line locomotive, a General Electric C39-8 (below). The six-axle road unit is scheduled for release this summer.

Rolling stock wasn't to be overlooked among the new announcements. ExactRail had a sample of its next Evolution Series HO scale model, a Gunderson 6,269-cubic-foot-capacity

boxcar (opposite). The model will be offered in five paint schemes.

In N scale, Bluford Shops announced an International Car Co. bay-window caboose in five body styles (page 14). The model will have Fox Valley Models metal wheels and wire grab irons.

To see the complete list of announcements from Trainfest 2017, visit our website at www.ModelRailroader.com.

HO scale



General Electric C39-8 diesel locomotive. ScaleTrains.com unveiled its next HO scale locomotive. The C39-8, slated for release in summer 2018, will be lettered for Conrail (as-delivered in four road numbers, "Quality" scheme in one number), Norfolk Southern (six numbers), and Pennsylvania Northeastern (Conrail and NS patchouts, one number each). The Rivet Counter line model will feature trucks with rotating bearing caps, light-emitting-diode headlights, and wire grab irons. Direct-current models will be priced at **\$164.99**. Versions with an ESU LokSound 4.0 decoder with Full Throttle and Power Pack capacitor will retail for **\$249.99**. ScaleTrains.com Inc., 844-987-2467, www.scaletrains.com

Lowell Smith acquires tooling

Lowell Smith has purchased the tooling for N scale fluted- and smooth-side baggage cars, coaches, and sleepers from Walthers.

New releases will be sold under the RailSmith Models line. RailSmith also plans to expand its line of N scale passenger cars. The first RailSmith Models offerings are scheduled for release in the second quarter of 2018.

For more information, visit www.lowellsmith.net.

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Conducted by Cody Grivno

H0 scale locomotives



- **Electro-Motive Diesel SD70ACe diesel locomotive.** Union Pacific ("Spirit of the Union Pacific"). Additional features to be announced. Direct-current model, \$199.95; with Proto-Sound 3.0, \$299.95. Spring 2018. MTH Electric Trains, 410-381-2580, www.mthhotrains.com

H0 scale freight cars



- **Fowler 36-foot single-sheathed boxcar.** Pre-production model shown. Monon, Bangor & Aroostook, and 17 other railroads. Also available painted Mineral Red and Oxide with data only and undecorated. One-piece brake rod and lever molding, plastic wheelsets, and Accumate couplers. \$17.98. Accurail, 630-365-6400, www accurail.com
- **Stealth Track Cleaner.** Inter-Mountain 55-foot undecorated, partially-assembled cylindrical covered hopper with Kadee 36" wheelsets and no. 5 couplers. Includes 16-piece assortment of felt and abrasive cleaning disks. \$59.95. JAM Creations/Solutions, www.stealthtrackcleaner.com

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N scale



Alco RS-3 diesel locomotive. Atlas is offering its N scale Alco road switcher (\$119.95 each) decorated for Great Northern, Boston & Maine, Canadian Pacific (three numbers), New York Central, and Seaboard Air Line in new road numbers. The Master Line model is offered in two numbers per scheme unless noted and has a Scale Speed motor. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

H0 scale



Gunderson 6,269-cubic-foot-capacity boxcar. This new ExactRail Evolution Series model will be decorated for Burlington Northern, BNSF Ry., International Bridge & Transfer, Illinois Central, and Wisconsin Central. Price and release date have not been announced for this model. ExactRail, 866-945-1701, www.exactrail.com

H0 scale



Modern gas station. This Cornerstone Series structure from Walthers includes injection-molded plastic kits of the main building, car fueling island, and four parking lot sections. The kit (\$49.98) includes a price sign, an ice machine, upright gas pumps with hoses and nozzles, full-color printed signs, and pump panels. Wm. K. Walthers Inc., 414-527-0770, www.walthers.com

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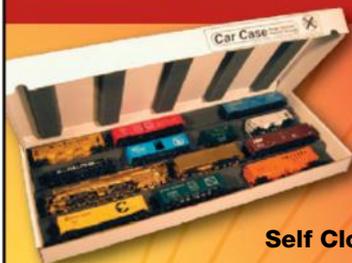
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News & Products

Trainfest Special!

N scale



International Car Co. steel bay-window cabooses. Carry the markers on your N scale freight trains with these upcoming cars from Bluford Shops. Half bay-window cabooses will be available lettered for Conrail and New York Central). Phases I through IV full bay-window cabooses will also be offered. The bay-window cabooses (**\$39.95**, release date to be announced) will be offered in two road numbers per scheme and will have Fox Valley Models metal wheels and wire grab irons. Bluford Shops LLC, www.bluford-shops.com

HO scale



The Adjuster 24" compact test track. This HO scale offering from Gooddealsdcc Inc. uses PVC construction and has a Kadee coupler height gauge, a rerailer, a built-in tilt adjuster, a leveling bubble, a foam bumper, programming connectors, soldered rails, and an eye bolt for hang-up storage. Versions with code 100 rail sell for **\$39.95**. Test tracks with code 83 rail are priced at **\$41.95**. Gooddealsdcc Inc., 224-703-0111, www.gooddealsdcc.com

N scale freight cars

- **Pacific Car & Foundry insulated boxcar with exterior posts and Landis plug doors.** Atchison, Topeka & Santa Fe. Eight road numbers. \$26.59. Wheels of Time, www.wheelsotime.com

N scale passenger cars

- **Pullman Park Series heavyweight passenger cars.** Atchison, Topeka & Santa Fe shadow-lined cars (*Grand Canyon* and *Death Valley*). Second release (first quarter 2018); Pennsylvania RR shadow-lined cars (*Independence* and *Valley Forge*). \$50 to \$60 each. Produced by Micro-Trains Line Co. exclusively for Lowell Smith, www.lowellsmith.net

N scale structures



- **Vertical lift bridge.** Laser-cut acrylic kit. Measures 25³/₄" long. Single-track version, \$160; double-track version, \$195. Custom Model Railroads, 410-889-0010, www.custommodelrailroads.com

Electronics/controls

- **Light-emitting-diode (LED) indicators for control panels.** Three-color LED repeater signal; 8mm green, yellow, and red LEDs with chrome-painted bezels for use as Centralized Traffic

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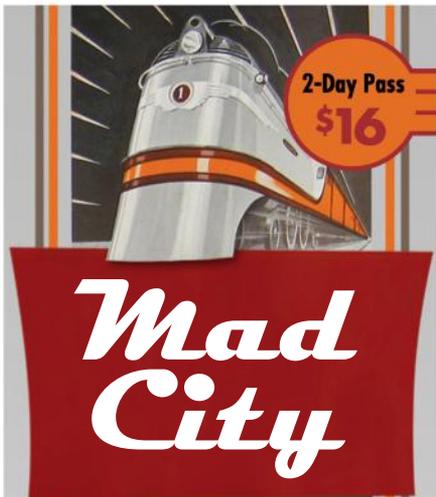
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Multiple scales



CabControl Wi-Fi Digital Command Control system. ESU's new control system includes a Mobile Control II Android throttle, a CabControl integrated control unit, and a variable 15-21V 7Amp power supply. The wireless workaround system (**\$499.90**) features consisting for multiple unit consists using drop-down menus; long and short addresses; and 14, 28, and 128 speed steps. The control system supports all scales with variable voltage 7A power supply and automatically recognizes all LokSound Select and V4.0 decoders using RailCom Plus. ESU LLC, 570-980-1980, www.esu.eu/en/start

HO scale



Pullman-Standard PS-2CD 4,750-cubic-foot-capacity three-bay covered hopper. New paint schemes on these models from Tangent Scale Models include Illinois Terminal, Chicago & North Western (Rock Island restencil in two road numbers and 1973 version), ConAgra (April 1973, four numbers), Missouri Pacific (December 1972, 12 numbers), Rock Island (May 1973, 12 numbers), and Soo Line (ConAgra restencil, two numbers). The covered hoppers (**\$44.95**) are offered in six numbers per scheme unless noted. The model has etched-metal running boards, road-specific details, and Kadee scale couplers. Tangent Scale Models, 828-279-6106, www.tangentscalemodels.com

Control signal and switch status lights; and 5mm red, yellow, and white LEDs with chrome-painted bezels for use as block occupancy indicators. Current-limiting resistors are included for use with 5V or 12V DC operation. \$2.95 to \$7.95 each. Logic Rail Technologies, 281-251-5813, www.logicrailtech.com

- **Z21 digital model railroad control system.** Provides wireless control of turnouts, signals, and functions using tablet or smartphone. Compatible with most common throttles using National Model Railroad Association standards (Digital Command Control and Motorola). Z21 digital control center, \$471.74;

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2017 Kato Model Railroading contest



The Japanese Ministry of Education, Culture, Sports, Science, and Technology sponsored a contest, underwritten by Kato, for school students to re-create a prototype scene in scale miniature. The team from Kyoritsu Girls' Senior High School was the 2017 winner. The students received a trip to the United States and displayed their winning module of Ikaho at Trainfest.



The winners of Kato's contest were introduced at Trainfest (above) and displayed their module. Hal Miller photos

Z21 Wi-Fi Multimaus throttle, \$117.05; and Z21 Wi-Fi package, \$49.66 (prices may vary based on exchange rate). Fleischmann and Roco, www.z21.eu/en

- **JST-21PNEM adapter.** Adapts any SoundTraxx 21PNEM decoder to a nine-pin Digital Command Control plug. Can also be used with a SoundTraxx nine-pin JST Power Harness to create a universal-style decoder. Supports up to eight lighting functions. Solder pads for CurrentKeeper, speaker connections, and extra lighting outputs. Measures 22.5 x 16 x 7.5mm. Maximum function current is 100mA (each output). \$13.95. SoundTraxx, 970-259-0690, www.soundtraxx.com

Tools

- **The Glue Looper V4 – Single Shot Precision.** Micro glue applicator. Uses self-regulating oppositely positioned fluid grooves to feed glue into seams. Seven applicators, \$14.99. Creative Dynamic LLC, 920-474-3838, www.creativedynamicllc.com

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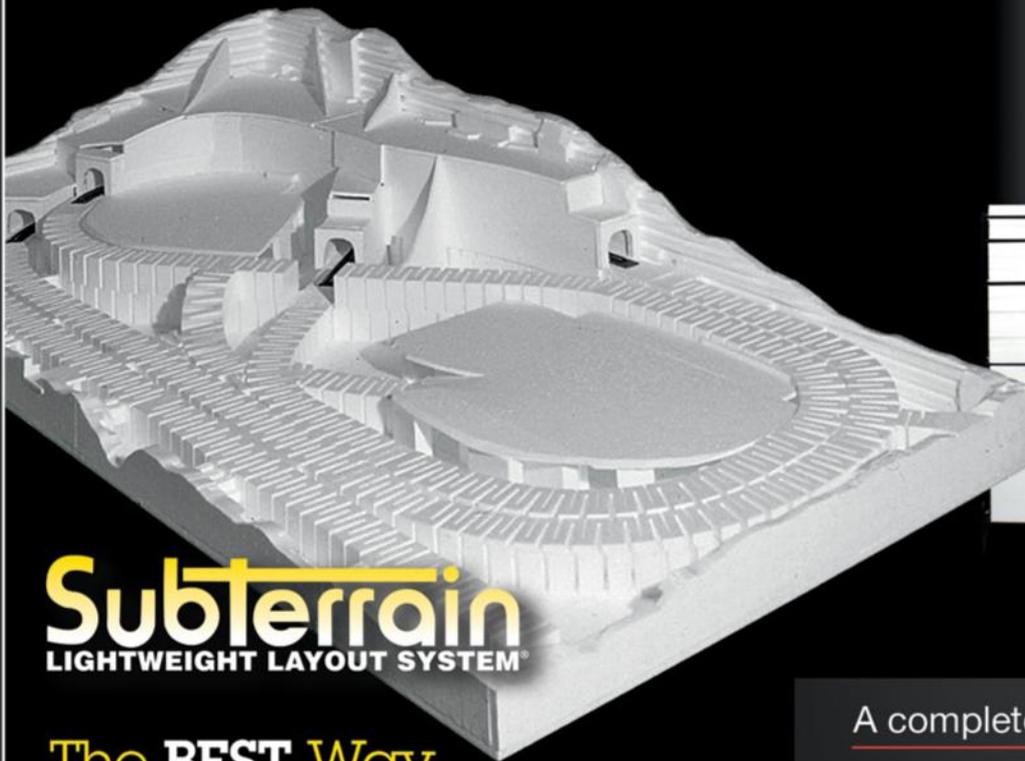
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Blast from the past

Many thanks to associate editor Eric White for his visit to the old days of wooden models and iron model railroaders ["Building a vintage wooden freight car kit," December]. It was refreshing to see something simple and fun, in contrast to so much of the high tech and high-dollar stuff in the hobby these days.

It reminded me that an important ingredient of the hobby is imagination, and an equally important skill is improvisation. More significantly, it reminded me of the Linn Westcott days, when the key concept was "Model railroading is fun!" (Hey, that would look good on your masthead, wouldn't it?)

*Terry Mitchell
St. Thomas, Ont.*

[It would, and it does! - Ed.]

Eric did a great job of making lemonade out of lemons and answering prickly critics with humor. The finished model is outstanding!

My only question is, "Why?" While the historic retrospective was interesting, it seemed more designed to answer naysayers who won't be satisfied no matter how many Ambroid or Campbell kits you assemble, even with the modern enhancements Eric cleverly introduced. For those living in the past, it was always better in the "good ol' days."

Brian Bodt, Woodbridge, Conn.

All throughout his article, Eric complained bitterly about having to cut things, measure, drill, glue, keep things square, wait for glue to dry, etc. He bemoaned the fact that he had to be creative and think things through before completing each step.

Well, guess what? He built something! But then he had the nerve to

complain about how long it took him to complete it.

In the '60s, no modeler worth his salt would've taken one iota of satisfaction from pre-built layout items. Every model I've built means 100 times more to me than any single item I've purchased. But go ahead and buy nothing but ready-to-run cars from now on; it'll save you from having all those crazy biting-your-lip expressions on your face.

Paul Zimmerman, Virginia Beach, Va.



Making wood look like steel involves lots of sanding, which isn't on many people's "top 10 fun things" list.

Bill Zuback photo



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Eric did a really fine job with that old Ambroid “box of sticks,” but it’s important to remember that the golden age of craftsman kits was not necessarily a golden age of universal craftsmanship. Back in those days you’d see plenty of really crudely assembled and painted rolling stock and structure kits. As a rule, only the very finest examples survive to be admired.

David Nelson, Fox Point, Wis.

Modeling the Canadian plains

Having grown up in British Columbia, and ridden and railfanned much of BC Rail, I enjoyed a Floridian’s take on my “hometown railroad” [“British Columbia Ry.’s Fort St. John Sub” by Christian Javier, November].

I have one suggestion: Why not swap the lower and upper levels? This would more accurately portray the arduous

climb trains face to Fort St. John. Also, there would be no clearance issues between the Peace River and the Fort St. John Yard below, if the yard were instead above the bridge. A portable raised platform would allow easy access for switching Fort St. John on the upper deck. Alternatively, both levels could be lowered so that Fort St. John could be switched from a standing height, while an operator on the lower deck could follow the action from a chair on rollers.

*Bruce Wolff
Livonia, Mich.*

The caption for the photo on page 57 is not entirely correct. While the locomotive is an MLW RS-18, it’s not an ex-Lehigh & Hudson River locomotive. British Columbia Ry. 611, built in June 1962 as PGE 597, is one of 29 such units built for the Pacific Great Eastern Ry. from 1957 to 1966. The PGE became the

BCOL in April 1972. It did have two ex-L&HR C-420s. Lehigh & Hudson River 25 and 26 were sold to the BCOL in July 1972 and became BCOL 631 and 632.

*Richard Merriam
Morrisville, Vt.*

[Thanks, Richard. Also note that the track plan on page 56 should have been labeled “Fort St. John Subdivision.” - Ed.]

It had to be said

I’m glad I was alone when I read the words “mucilaginous nectar of the devil” [“Sticky stucco” by Gerry Leone, December]. Anyone in the room would’ve thought I’d gone over the edge.

Thank you, Gerry, for the laugh-out-loud funny and most descriptive phrase I’ve read in a long time.

*Allan Ingram
La Mesa, Calif.*

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

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Seeking the Reading's 'banjo' signals

Q I was wondering if you could help me find an article on banjo signals used on the Reading Co. A rough date of publication is May 1955.

Nicholas DeRenzi, Clover, S.C.

A Banjo signals, less informally known as Hall disk signals, were simple trackside devices that displayed one of two aspects – usually a white or red disk during daytime, or a white or red light at night. They were used through most of the early steam era, starting to replace ball signals in 1878. They operated by pivoting an arm inside an inverted teardrop-shaped head to show the appropriate aspect through a central window or upper lens. Due to their inability to display more than two aspects, they were themselves replaced by more versatile semaphores in the early 1900s, though they lasted into the late 1940s on some railroads, including the Reading Co.

There was indeed an article on banjo signals in our May 1955 issue. It includes the prototype photo shown above and drawings of components for scratchbuilding one, but other than the photo, it doesn't mention the Reading specifically. Another article on ball and banjo signals, also including drawings, was published in September 1947. To read these articles, join the MR Archive, at www.ModelRailroader.com/Archive.

Hall disk signals, known as "banjo" signals for their shape, were still in use on parts of the Reading Co. long after being replaced on other lines. This photo was taken on the Reading's Trenton Branch in October 1946. *Charles S. Freed photo*

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Q This may be a question with an obvious answer, but I haven't found it yet. I'm building a small switching layout using the Walthers Cornerstone Golden Valley Depot for the station. This depot is a combination style, with both passenger and freight sections. So would I not necessarily need a separate freight house, because the freight is handled in the combination depot?

Mark Taylor, Kerrville, Texas

A You are correct. A combination depot is designed to handle less-than-carload freight as well as passenger traffic, so a separate freight house wouldn't be necessary. That's not to say that you couldn't also have a freight house in the same town as a combination depot if you wanted one; perhaps the depot's freight room handles only baggage or express traffic, or maybe business in the town grew to the point where the depot alone couldn't handle it all.

Q I'm making a model that requires a scale rail about 3/8" to 1/2" from top to

bottom. I'm ordering a small section of G scale track, but can't find any info about actual dimensions of scale rails.

Steve Meyer, Porter, Ind.

A The size of scale model rail is given in the rail's "code," which is measured in thousandths of an inch. So code 100 rail, commonly used in HO scale, is .100" tall, or 1/10", from base to railhead. Depending on the manufacturer, large scale track (the category into which G scale falls) ranges from code 250 (1/4" high) to code 332 (just under 3/8"). So code 332 G scale rail is closest to what you need.

Q Railways in England, Australia, and other Commonwealth countries often used a system called Staff and Ticket to protect single-track sections. Did railroads in the United States ever use the same system, also called token-based signaling? If not, why not?

John Zaitseff, Sydney, Australia

A Token-based train control, of which Staff and Ticket is one type, grants

authority to occupy a track using a physical object that must be in the possession of the train crew, guaranteeing no other train can be on the same track at the same time. Though we've heard of such systems being used to control traffic in tunnels, to the best of our knowledge this technique was never adopted widely as a system of mainline track control in North America. The answer to "Why not?" can only be speculation, but one reason might be the system's impracticality on larger, busier, and more interconnected rail systems.

When you think about it, though, token-based systems are rather similar to track warrant operation, the difference being that track warrants can be issued electronically and don't have to be physically returned when their authority is revoked or expires.

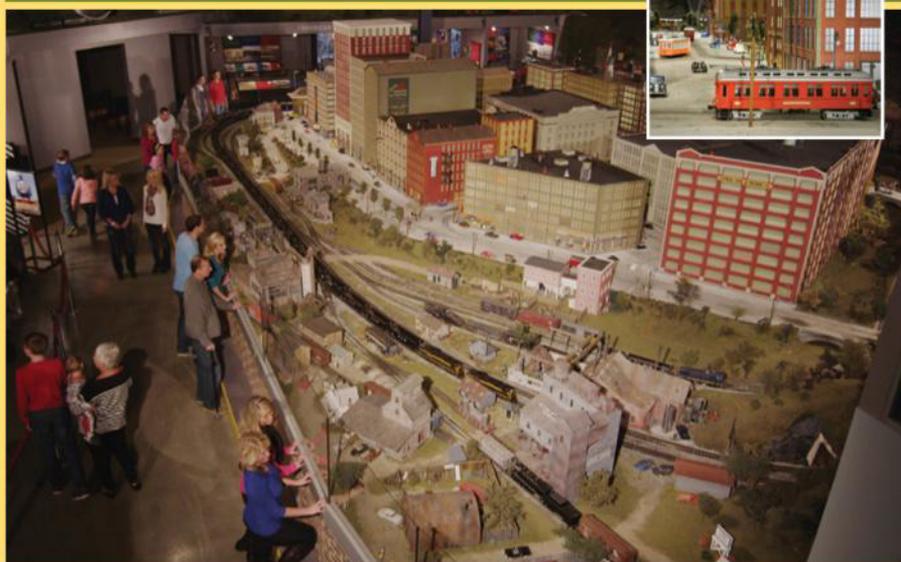
Q I've seen articles over the years touting the benefits of body-mounting couplers on N scale rolling stock as opposed to the ones mounted on the trucks. I've tried retrofitting some cars

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N Scale Insight columnist Jim Kelly is a great advocate of body-mounting couplers on N scale rolling stock. His latest column on the topic was in November 2017. *Jim Kelly photo*

but found that first, the coupler box had to be shimmed to line up with the coupler height gauge. But then, the truck hung up on the draft gear box, so the truck had to be shimmed, raising the freight car up a few scale feet.

What am I missing or doing wrong?
Don Pollock, Texas City, Texas

A Shimming the draft gear box lowers the coupler, while shimming the trucks effectively raises it (along with the rest of the car). Shimming both is the same as shimmming neither. All you're doing is raising the car body.

If your draft-gear box interferes with the wheels, you may be using too large a draft-gear box, positioning it too far in toward the truck, or running your equipment on too tight of curves. Try using Micro-Trains Line Co.'s universal body-mount coupler (part no. 001 10 003), which has a draft gear box that may be narrower than the ones you're using. Then you can shim either the coupler or the trucks as needed to adjust the coupler height.

Q I'm having trouble curving my backdrops. I'm using 1/8" tempered hardboard. When I try to curve my backdrops, the hardboard cracks.
Brad Adams, Ottawa, Canada

A Tempered hardboard is slightly flexible, and you should be able to bend 1/8" hardboard to a radius of about 18" without cracking or creasing. If you want a tighter radius, soak the bend area in hot water (wiping it down with a wet sponge for a few minutes should do it). For especially tight curves, use a circular saw set at a blade depth of 1/16" to cut kerfs paral-

lel to the bend in the back of the board. Since the remaining hardboard will be very thin, soak it with water, also, to keep it from cracking along the kerfs.

Q I live in Canada and have an HO layout. I'd like to know if I can run my engines in real snow without damaging them. I'd like to make a video of my trains running through snow.
James Sweet, Quebec, Canada

A Though we've seen videos of model trains running in (and plowing through) real snow, those were large-scale trains, designed for use outdoors. Your HO scale trains are likely not so weather-proof; even a small amount of moisture getting into the mechanism and electronics would have the possibility of causing damage. I wouldn't risk it. Not to mention, HO scale trains probably aren't heavy enough to move any but the lightest layer of snow; they'd just stall.

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

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READER TIP



The ultimate in dust (and fur) deterrence

In the **October (2017) issue**, you asked how readers keep the dust off their layouts. Since we have cats in the house, I have to keep not only dust and cat hair off the layout, but also the critters themselves. So I completely enclosed the layout with sliding Plexiglas panels all around. Then I installed a vent fan with a HEPA filter in the top of the enclosure. I simply change the filter every 6 months or so, and in 25 years, I've never had to dust anything on the layout.

– *Thomas Kupferer, Naperville, Ill.*

With his layout completely enclosed by sliding Plexiglas panels, Thomas Kupferer doesn't have to worry about dust – or marauding felines – on his layout. *Thomas Kupferer photo*

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O scale's economic woes in the early 1970s

The 1970s were tough economically, and that affected model trains as well. But the impact wasn't spread equally across the various scales. HO scale remained strong, N scale was growing in numbers, but O scale suffered the most. Walther's 1970 O scale catalog was reduced to 100 pages. West Coast model maker Boxcar Ken, boasting the largest O gauge inventory, closed in 1972.

Chicago-based All-Nation Hobby Shop, a major O gauge producer since 1951, ceased manufacturing in 1970, selling items in stock until gone. Its 1952 112-page 25th anniversary catalog was but a memory, reduced to three-hole loose-leaf binder pages.

In a letter in the catalog, owner Bob Colson wrote that the mail-order side of the business with the retail hobby shop was taking so much time and effort it wasn't practical to continue manufacturing O scale models.

Speculation about the company led to another note in May 1970 reassuring customers in bold type: "WE ARE NOT GOING OUT OF BUSINESS!! ALL-NATION HOBBY SHOP HAS NOT BEEN SOLD & WILL CONTINUE AS USUAL! ALL-NATION WILL CONTINUE THE MAIL-ORDER BUSINESS!!" In smaller type, it said neither new nor rerun models would be made.

Other O gauge lines were gone from the catalog: JC



Rivarossi offered a line of plastic O scale equipment in the early 1970s that appealed to modelers on a budget. This Indiana Harbor Belt 0-8-0 switcher was \$79.98.

passenger cars, Zimmer Scale Models, Art Fleming, Troxel Bros., Pearce Tool, Thomas, Kemtron, and Pittman. All-Nation hadn't abandoned O; it continued to sell Central Locomotive Works' Southern Ry. Ps4 Heavy Pacific, Electro-Motive Division GP35, Northern 4-8-4, Pennsylvania RR H-10 2-8-0, and Alco PA and PB passenger diesels. Central Locomotive Works pricing for the ready-to-run (RTR) Northern, \$144.50, and PRR H-10, \$141, were expensive compared to imported plastic RTR locomotives and rolling stock.

Pages in the All-Nation catalog included several for Rivarossi plastic kits: an RTR Casey Jones 4-6-0, \$69.95; a Fairbanks-Morse C-Liner A unit, \$30; unpriced Plymouth MDT diesels; and an Indiana Harbor Belt 0-8-0, \$79.98, plus freight cars. The 4-4-0 Reno appeared shortly after.

It seems Rivarossi had ambitions about what it could make and sell. Several models were shown in the catalog that I never saw advertised or reviewed: a 4-8-8-4 Big Boy; a



A Fairbanks-Morse C-Liner could pull transition-era freights for only \$30, about the price of a Bowser HO scale Pacific kit.

PRR GG1 electric; an F-M C-Liner dummy; a combine caboose; and an 80-foot combine, coach, and observation. A 1996 Rivarossi publication listed the familiar early models, but not the latter.

Rivarossi freight cars averaged \$5 to \$8: a tank car, a three-bay hopper, and an Atchison, Topeka & Santa Fe steel caboose. Plastic O scale was accessible to those for whom traditional models were considered expensive. Rivarossi rolling stock had deep flanges and Lionel-compatible couplers, but scale wheelsets and Kadee couplers converted them to scale models.

The major drawback with plastic locomotives were their underpowered can motors, which tended to burn out after intense running, and the inability to haul strings of heavy Athearn wood-bodied freight cars.

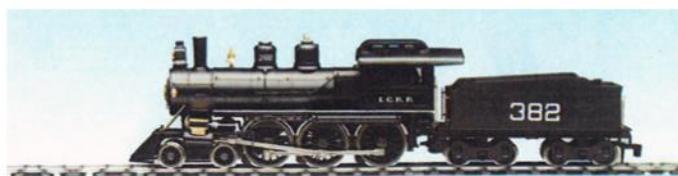
It appears Rivarossi had second thoughts about further O scale expansion in a climate that saw All-Nation, in business since 1927, and Boxcar Ken, with its large inventory, disappearing in the early 1970s. Large East Coast, Midwest, and West Coast hobby shops, core suppliers of O, found themselves with less stock with the exception of brass. O scale was abandoned in favor of faster-moving HO and N scales.

By 1997, Walther's had 17 pages of O scale models in its

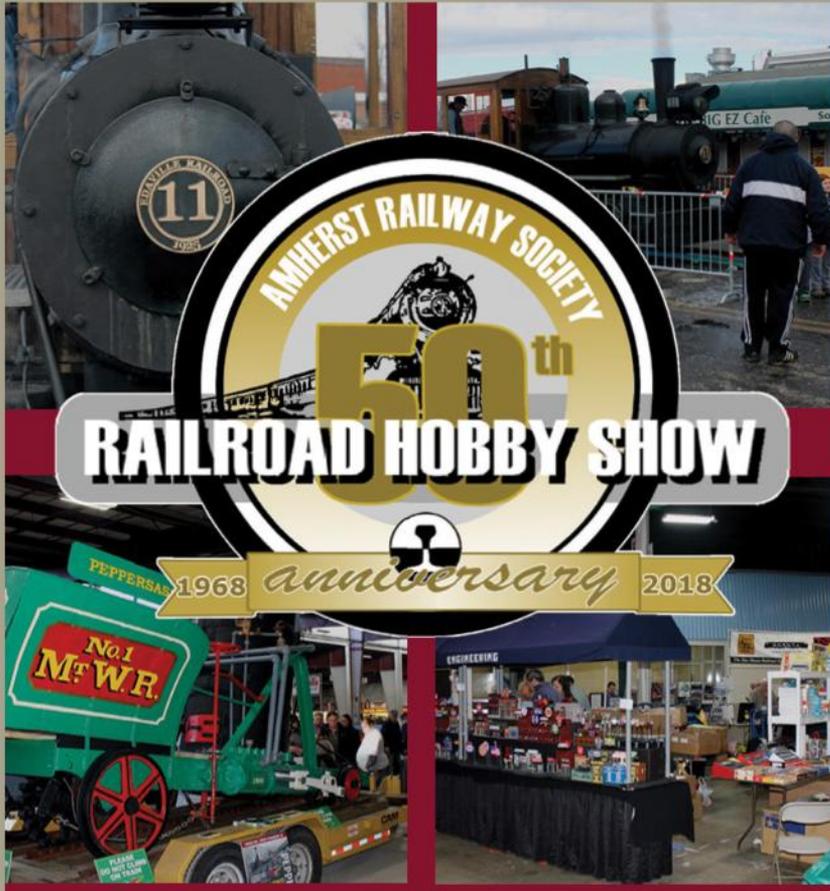
Big Trains Catalog of large scale, O scale, O-27 and S scale. In 2002's edition, O scale was back above 100 pages. Makers such as MTH and Lionel were catering to more discerning O gauge collectors, and scale models from companies such as Atlas O were supplying the modern modelers. O scale had been on the ropes, but it wasn't out. **MR**



PLASTIC O SCALE WAS ACCESSIBLE TO THOSE FOR WHOM TRADITIONAL MODELS WERE CONSIDERED EXPENSIVE.
- KEITH



Rivarossi's O scale models, such as this Casey Jones 4-6-0, used deep-flanged wheels and Lionel-compatible couplers, but scale wheels and Kadee couplers were available.



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Winston-Salem Southbound GP9 no. 1501 switches cars on our compact switching layout. Cody Grivno shares how he stripped, detailed, repainted, and decaled this Athearn Genesis model. Bill Zuback photo

How to detail, paint, and decal a locomotive

One of the chances you take when modeling a small railroad is finding locomotives in the paint scheme you need. There have been an abundance of Electro-Motive Division GP9s produced in HO scale over the years, but never one painted for the Winston-Salem Southbound (WSS). Though we could easily populate our small switching layout with ready-to-run freight cars, we were on our own when it came to a GP9 lettered for the WSS.

I started searching for a GP9 that was reasonably close to the WSS prototype. The local hobby shop was out of undecorated models, but it did have an Athearn Genesis GP9 lettered for Burlington Northern. I reasoned that with a bit of work, I could make this model match the WSS prototype.

Purchasing the locomotive solved part of the problem. The next step was finding decals. A Google search for “Winston-Salem Southbound GP9 decals” led me to the Mask Island Decals website (www.maskislanddecals.com). Set no. 87-107 includes decals for the as-delivered gray scheme and the Atlantic Coast Line-inspired black and yellow.

As a BN fan, it was tough to strip Cascade Green paint off the model, but it was in the name of progress. Throw in some detail modifications, a new paint job, decals, and bit of weathering, and the GP9 looks right at home in our little slice of North Carolina.

Though this project required a lot of time and patience, I was rewarded with a model not otherwise available. Now we need to find a caboose.

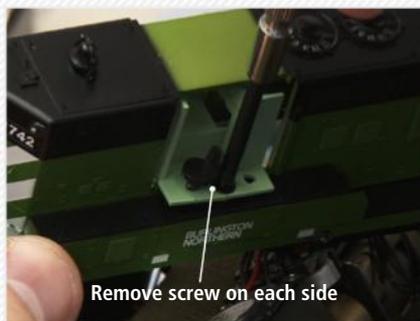
STEP 1 DISASSEMBLY



Before I could start work on the Athearn Genesis GP9, I had to take it apart. First, I removed the acetal handrails. Do this carefully so you don't accidentally trim off the mounting pin at the base of each stanchion. I set the handrails aside until I was ready to paint the model.

Next, I separated the shell from the chassis by removing the draft-gear boxes. I removed the shell slowly, as the headlight and rotary beacon wires

STEP 1 DISASSEMBLY (CONT'D)



are tethered to the printed-circuit board attached to the chassis. Using tweezers, I peeled off the tape holding the wires to the bottom of the long and short hoods.

I then used a no. 17 blade to gently break the glue joint securing the walkway to the hood. While I was at it, I removed the cab. Then I was able to remove the two screws holding the interior to the shell.

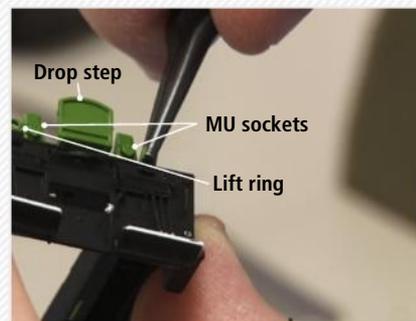
The details on top of the cab didn't match the WSS prototype. To remove the beacon, I first disconnected the wires clipped to the printed-circuit board. I then pulled the bulb out of the cored beacon lens. Working from



inside the cab, I used a screwdriver and no. 17 blade to remove the beacon and its base. I also removed the three-chime air horn and fire-cracker antenna.

Next, I used a pair of smooth-jaw needlenose pliers to remove the four etched-metal windshield wipers. Then I used a toothpick to remove the window glazing (the wood isn't as likely to scratch the clear plastic). The pile of small parts was starting to accumulate on my workbench, so I put the window glazing, wipers, cab interior, and other parts in a resealable bag.

The side glazing is sandwiched between the cab and the cab side



panels. I carefully slid a no. 17 blade between the cab and side panels to break the glue joint. I also removed the all-weather window on the engineer's side of the cab.

I finished up by removing the rest of the separately applied details. I used a no. 17 blade to take off the winterization hatch on top of the long hood, the wire grab irons, the m.u. cables, and the uncoupling levers. I used smooth-jaw needlenose pliers to remove the lift rings, drop steps, and m.u. sockets.

Getting all of the detail parts out of the way beforehand made it easier to paint and decal the model.

STEP 2 STRIPPING PAINT



With the details removed, I set the model in a plastic food-storage container and filled it with 91 percent isopropyl alcohol. I let the parts soak in the alcohol for 15 minutes. Then I used a toothbrush to start scrubbing the model (do this in a well-ventilated area wearing nitrile gloves and eye protection). Areas covered with multiple colors or printing, such as road numbers and warning labels, will require additional soaking.



As expected, there were stubborn spots where the paint didn't want to come off. I used a variety of tools to remove the paint, including a denture cleaning brush, stencil brushes, and cotton swabs. I also modified a Microbrush by trimming the bristles. The short, stiff bristles made it easier to get paint out of the hood door latches, louvers, and shutters.

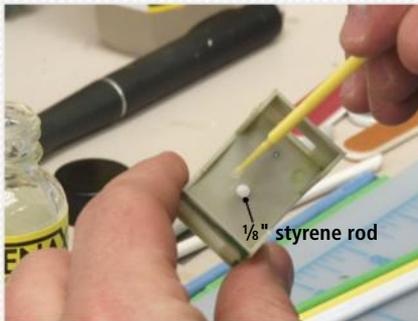
After three rounds of soaking in isopropyl alcohol, it was obvious some



paint wasn't going to come off with scrubbing alone. To finish the job, I used a micro chisel, a seam scraper, a dental pick, and a chisel blade.

I used the seam scraper to remove paint on the side of the short hood. I used sanding sticks and a dental pick to clean the paint and glue residue from the bottom of the hood. The micro chisel worked well clearing paint from the trough in the walkway assembly where the hood seats.

STEP 3 PLUGGING HOLES



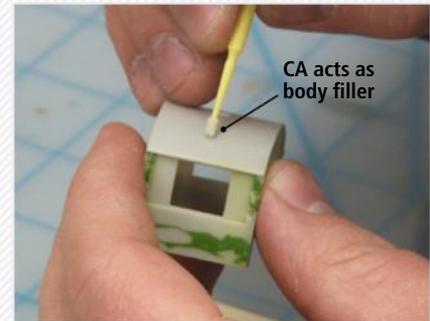
I shifted gears and started filling holes on the model. I used the following sizes of styrene rod to fill the holes: 1/8" (rotary beacon), .020" (all-weather window), .030" (antenna and winterization hatch), .040" (air horn), and .080" (bell).

After the liquid plastic cement dried, I used sanding sticks to shape



the styrene to the contour of the cab roof. I started with a coarse stick to remove most of the styrene. When I got close to the cab, I used medium, fine, and extra fine sticks to do the final shaping.

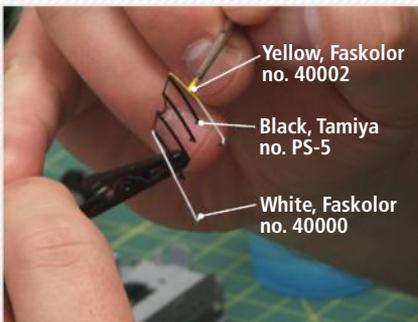
I used a toothbrush and tap water to remove any sanding residue. Then I used medium viscosity cyanoacrylate



adhesive (CA) to fill in any gaps around the styrene rod plugs. I let the CA sit just long enough to cure. Using an assortment of sanding sticks, I blended the CA with the cab roof.

I used a no. 58 bit to drill a hole for the Details West air horn (no. 191). I used Detail Associates no. 2206 to replace the factory lift rings.

STEP 4 PRIMING AND PAINTING



With all of the body work complete, I washed the model in warm water with dish soap added. This removes sanding dust, skin oils, and impurities that might affect paint adhesion.

I needed to paint the acetal hand-rails black and yellow to match the WSS prototype. Regular hobby paint won't stick to acetal, so I spray-painted them with Tamiya Color for Polycarbonate Black (no. PS-5). The paint is made for remote-controlled car bodies. Use the paint in a well-ventilated area and wear a respirator, nitrile gloves, and goggles.

The vertical portions of the hand-rails in the step wells are yellow on the full-size engine. Since yellow doesn't cover dark colors easily, I brush-painted these areas with Faskolor



White (no. 40000). Once that dried, I applied the same company's Yellow (no. 40002).

To ensure the final colors would cover evenly, I sprayed the shell with Micro-Mark Undercoat Light Gray (no. 29013).

While the primer was drying, I painted the chemically blackened wheels Model Master Railroad Tie Brown (no. 4885). Keep paint off the axle ends, treads, and flat faces that touch the wipers in the sideframes.

With the primer dry, I masked the battery box doors with blue painter's tape. I then sprayed the walkway and sills Model Master Engine Black (no. 4888). I thinned the paint slightly with 70 percent isopropyl alcohol (I eyeballed it, so I don't have a

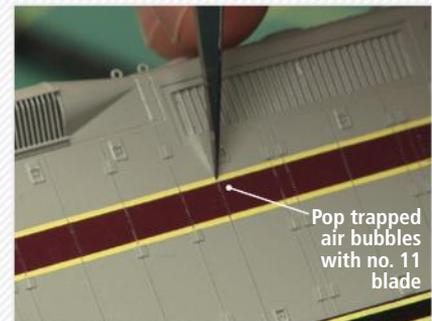
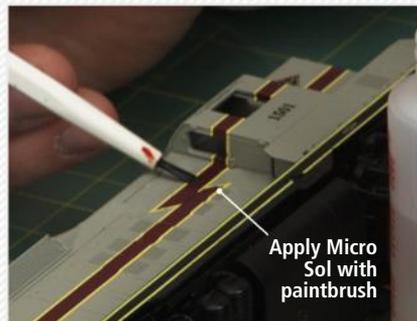
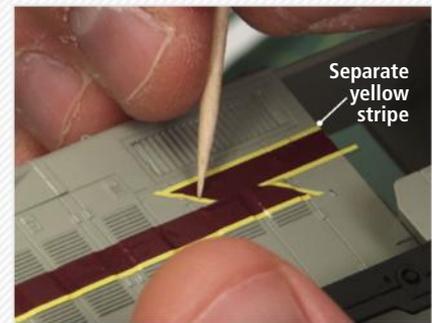
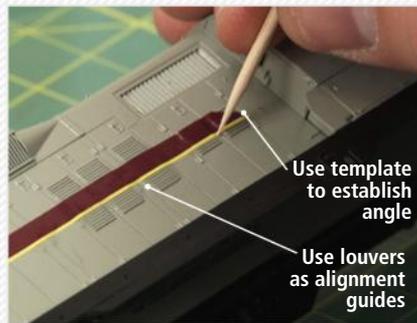


specific mixing ratio). I also added two drops of Liquitex Flow Aid, which reduces issues with paint drying on the tip of the airbrush needle.

After the Engine Black dried, I masked the sills, pilots, and walkways and sprayed the battery box doors, hood, cab, and related detail parts Model Master Light Sea Gray (no. 4759). I let the paint dry until there was no discernible paint odor (approximately 24 hours) before proceeding.

I applied three light coats of Model Master Clear Gloss (no. 4638), thinned per the manufacturer's instructions. The gloss coat provides a smooth, glossy surface for the decals. I let the Clear Gloss dry for two days before applying the decals.

STEP 5 DECALS



I was originally going to use Mask Island Decals set no. 87-107 to decal the entire model. However, I didn't like how the colors popped, so I switched gears. I photocopied the Mask Island set and used it as a cutting template for Microscale's Erie Lackawanna passenger car set (no. 87-1419).

I measured in 1/8" from where the yellow stripe meets the maroon band at both ends of the sheet. Then, using a steel straightedge and a fresh no. 11 blade, I made several passes to cut through the decal. I made the cuts on a piece of plate glass. This reduces the chance of the decals tearing.

I cut the Microscale decals, using the template I made from the Mask Island set to establish the angle of the lightning bolt. Then I soaked the decals in distilled water. The decals should slide freely from the backing paper. If the decals don't slide easily, let them soak longer.

While the decals were soaking, I used a brush to apply Microscale Micro Set along the area where the stripes would be applied.

I slid the first stripe into position, keeping the decal wet so it wouldn't tear (though I did tear one stripe). I used door hinges and louvers as alignment guides. Once satisfied with

the position of the strip, I blotted out the excess water with a cotton swab and foam sponge.

The Erie Lackawanna set has separate yellow stripes, which I needed. I again used the paper template to cut the stripes to the correct angles.

The stripe on the back of the long and short hoods proved challenging. The top of the stripe is horizontal, but the bottom has a small tail. I used a paper template to cut the decal to the correct shape.

I soaked the decal and applied Micro Set as before. I aligned the nose stripe with those on the sides of the long hood. I lined up the tip of the tail with the middle rivet lower down on the short hood.

Then I used the yellow EL stripes for the horizontal areas. I cut a piece

from a Wisconsin Central herald in Microscale set no. 87-1242 for the tail.

I let the decals dry overnight and then applied Microscale Micro Sol. This product helps decals conform to irregular surfaces.

The decals may crinkle a bit immediately after the Micro Sol is applied. This is normal, and they will settle back down. Don't touch the decals until they're completely dry.

With many uneven surfaces on the GP9, repeated applications of Micro Sol were necessary. I used a no. 11 blade to pop trapped air bubbles in door seams, louvers, and hinges. Then I applied more setting solution.

There were a few spots that I needed to touch up with paint. For that, I used Polly Scale EL Maroon [Testor's no. 4225 Dark Red is a suitable replacement. – Ed.] and Model Master Cadmium Yellow (no. 4602).

I used the Mask Island Decals set for the herald (use the diamonds with yellow lettering), road numbers, and number boards. I coated the set with Microscale Liquid Decal Film to keep the artwork from being scratched.

After cutting out the decals with scissors, I used a single-edge razor blade to cut as close as possible to the artwork. I applied the decals using the same techniques as before.



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STEP 6 DETAIL WORK

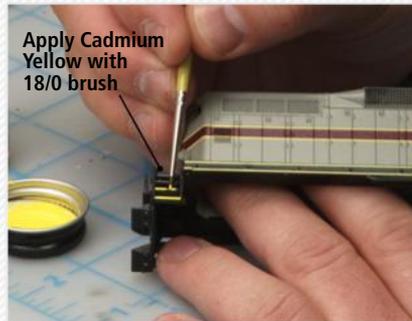


After a long slog applying decals, I was ready for a change. First, I added a bell to the short hood. Custom Finishing Models high hood-mount bell (no. 246) is a close match to the one on the full-size no. 1501. After brush-painting the casting, I attached it with medium viscosity CA.

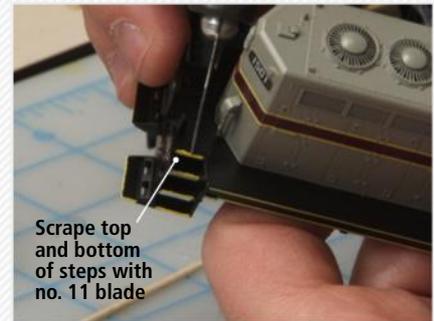
Then I used an 18/0 brush to paint the front edges of the steps and foot-board pilots Cadmium Yellow. The locomotive was fairly new in the era we're modeling, so the yellow should be opaque.

After the Cadmium Yellow had dried, I used a no. 11 blade to carefully scrape the edges. This is a quick way to get crisp color separation lines.

I reattached the front and rear radiator grills with E6000. This clear,

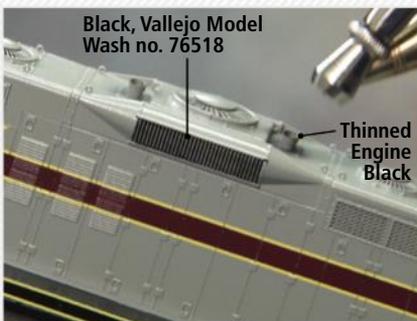


flexible adhesive can be painted and works well for attaching etched-metal parts to plastic (I also use it for freight car running boards). I applied the adhesive sparingly with a toothpick. Once the adhesive dried, I used a second toothpick to scrape away any excess.



With the details reattached, I wiped the model with a damp cotton swab dipped in distilled water to remove any residue from the decaling and detailing. Then I sprayed the model with two light coats of clear gloss. This seals the decals, giving them a painted-on look.

STEP 7 WEATHERING

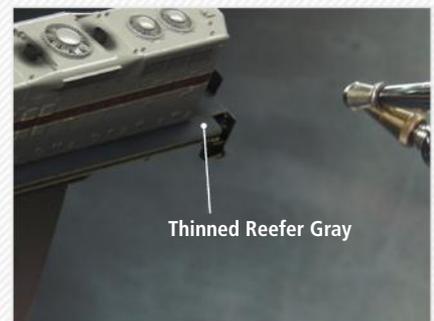


I let the clear gloss dry for 24 hours before weathering the GP9. I first applied Black Vallejo Model Wash (no. 76518) to the dynamic brake grid. Then I used an airbrush, with the air compressor set in the 15-20 psi range, to apply thinned (1 part paint, 9 parts 70 percent isopropyl alcohol) Engine Black around the exhaust stacks.



To give the grills extra depth, I weathered them with thinned Grimy Black. I used small Post-it notes to mask around the grills. The adhesive on the notes isn't very tacky, so it won't leave residue on the model.

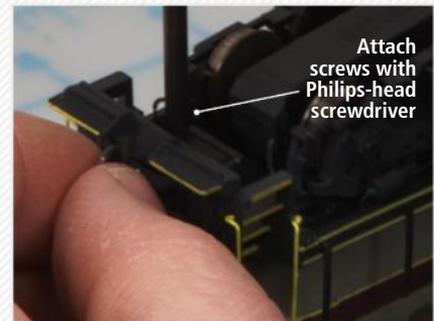
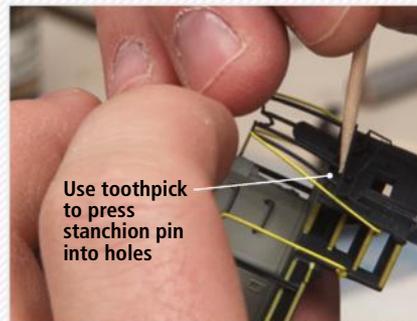
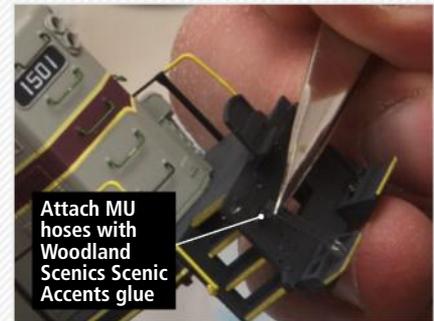
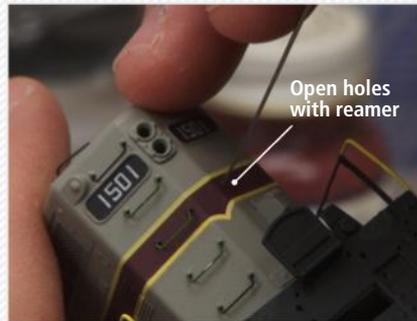
I used thinned Reefer Gray to weather the walkways, pilots, and footboards. I built up the weathering



in light layers. It's easier to add paint. Trying to remove paint at this stage of the game could end in disaster.

Since this model will be handled frequently, I sealed the weathering with two light coats of Model Master Clear Flat (no. 4636). If I skipped this step, the weathering would most likely wear off over time.

STEP 8 WRAPPING IT UP



I let the Clear Flat dry over the weekend before reassembling the model. To reinstall the wire hood and foot-board grab irons, I first dipped the legs in medium viscosity CA. Then I set them into the factory-drilled holes with serrated-jaw needlenose pliers. A strip of .030" styrene ensures the grab irons will stand off the model at a prototypical distance.

There were a few places where the decals covered the holes for the grab irons. In those locations I used a reamer to open the hole.

I attached the m.u. hose clusters and uncoupling levers with Woodland Scenics Scenic Accents glue. This is a

pressure-sensitive adhesive that comes out of the bottle white but dries clear and tacky. I used a toothpick to put the glue in the holes. After it turned clear, I installed the parts.

Before reinstalling the rear handrails, I painted the grab irons. Though I painted the walkways Engine Black, the weathering and flat coat made the color more of a gray-black color. I was able to match that color with Model Master Grimy Black, which I applied with an 18/0 paintbrush.

I reattached the end handrails with Scenic Accents glue. I used a toothpick to press the pin on the back of the stanchions into the holes.

I painted the Kadee couplers Railroad Tie Brown with Grimy Black trip pins. Once the paint dried, I put the couplers in the draft-gear boxes and secured them to the die-cast metal chassis with screws.

The image above shows the finished Winston-Salem Southbound GP9 no. 1501 ready to enter service. I installed a crew figure from a Preiser set on the engineer's side of the cab. A light dusting of thinned Reefer Gray helps the details on the truck stand out.

If you're unable to find equipment for your favorite prototype, try using the techniques presented here. [MR](#)



BUILD THE TAR BRANCH

PART 2: Benchwork and track for the HO scale Winston-Salem Southbound layout

By Dana Kawala

Photos by the MR Video Plus staff except where noted

The Tar Branch series

January: Going Southbound; meet *Model Railroader's* Winston-Salem Southbound project layout

February: Benchwork and track

March: Structures

April: Backdrop, lighting, and scenery



A successful model railroad begins with a foundation of sturdy benchwork and smooth-running track. A compact layout like the 2'-9" x 8'-2" Winston Salem Southbound Tar Branch provides the perfect place for a model railroader to hone his or her benchwork-building and tracklaying skills. In this installment of the series, Model Railroader Video Plus producer David Popp demonstrates some of the techniques used on the HO scale project layout.

The layout's benchwork centers on classic L-girder construction. Basically a 1 x 2 attached to a 1 x 4, these engineered beams provide rock-steady support. The 1 x 2 flange also makes it easy to attach joists that support the layout's 1/2" plywood subroadbed.

The leg system is made of 2 x 2s with 1 x 3 and 1 x 2 bracing. Not meant to be removed, the legs are screwed into the layout at three different points for maximum stability. David also added casters to the legs. This is an especially useful feature for a layout that shares a space for other purposes, such as a basement rec room. It can simply be rolled into a corner when not in use.

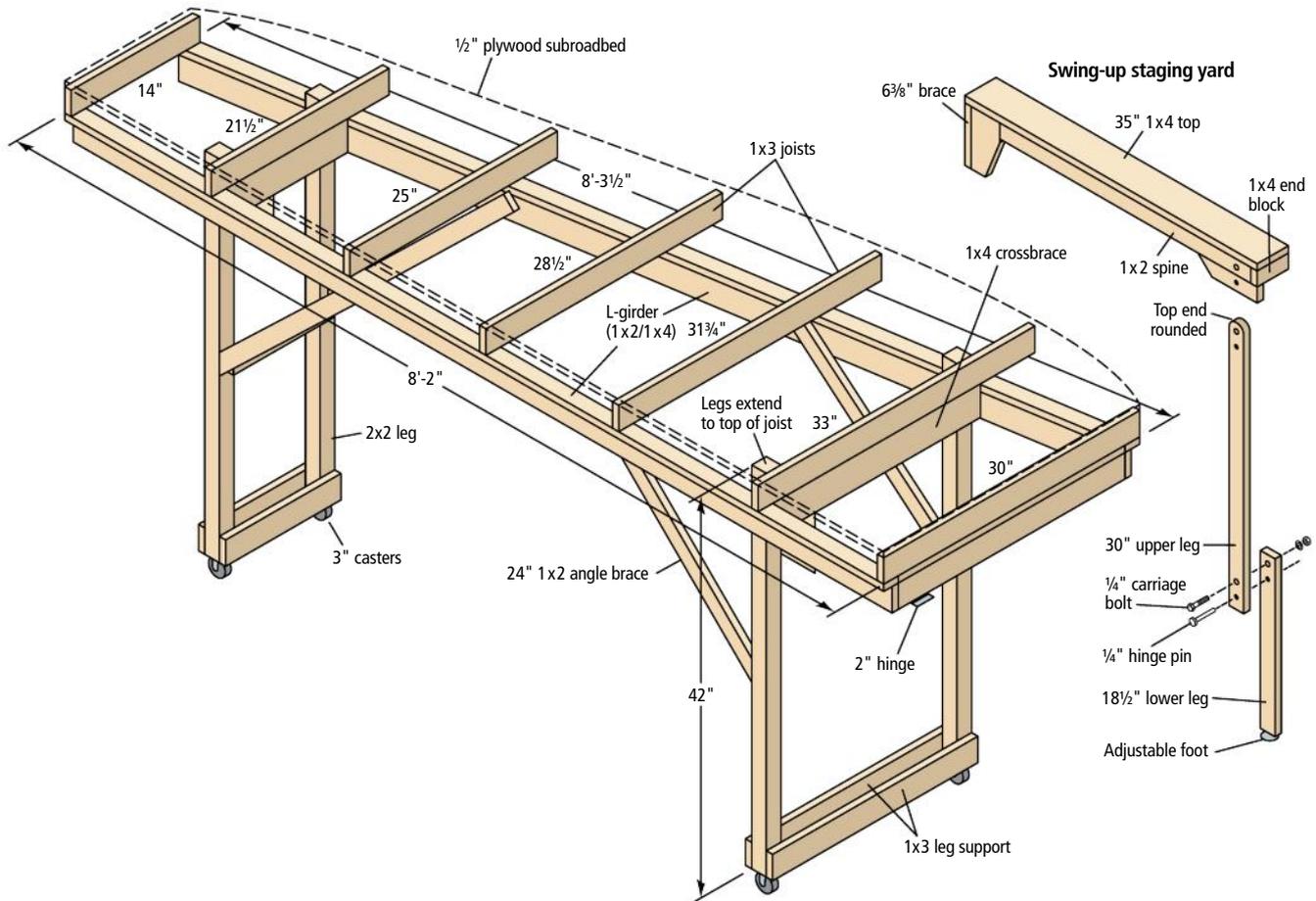
Adding to its portability and functionality, the Southbound also features a



The Winston-Salem Southbound Tar Branch features L-girder benchwork and stretches of handlaid track. The layout also features a swing-up staging yard. Bill Zuback photos

swing-up two-track staging section. Staging provides a place for trains to enter or leave the modeled scene and adds a sense that the layout is connected to a larger railroad network. Although it's only 35" long, the two-track staging yard on the Tar Branch is essential to the layout's operation.

Instead of cork roadbed, David used Homabed from California Roadbed, a Homasote-based product, which is available from Cascade Rail Supply at www.cascaderailsupply.com. Homasote is made of compressed recycled paper and



holds track nails well. For those who prefer, it would be just as easy to build this layout with cork.

The track plan could easily be laid with flextrack and other commercially available components. These are shown in the materials list at right. However, with no grades and a modest size, the Tar Branch provides a great opportunity to handlay track. In fact, contributing editor Tony Koester handlaid a turnout and a stretch of track on the layout for a tracklaying video series on MR Video Plus. For the remainder of the trackwork, David installed ready-built turnouts with handlaid track between them.

Several turnouts are connected to Blue Point mechanical turnout controllers that use a choke cable to connect the switchpoints to fascia-mounted knobs. David also wired the controllers to automatically change the polarity of each turnout frog. The remainder of the wiring is track feeders connected to a two-wire bus under the layout. This bus could be connected to any Digital Command Control system. For the Southbound, David chose an NCE PowerCab.

In the following pages you'll find highlights of the techniques used on this compact HO scale switching railroad.

Materials list

BENCHWORK

L-girders

- 1 x 2 (2)
- 1 x 3 (crossbraces)
- 1 x 4 (2)

Joists

- 1 x 3 (2)

Legs

- 1 x 2 (2)
- 1 x 3 (2)
- 2 x 2 (2)
- 3" casters

Subroadbed

- 1/2" plywood (4 x 8 sheet (1), 2 x 4 sheet (1))

Swing-up staging

- 15/64" brass hinge pin (3)
- 1 x 4
- 1 x 2
- 2" brass hinge
- 2" carriage bolt and
- 1/4" nylon-lined nut (2)
- Screw-in adjustable foot

Miscellaneous

- 1/8" tempered hardboard
- 1" brads
- Carpenter's glue
- No. 10 x 1" multipurpose construction screws
- No. 10 x 1 1/4" multipurpose construction screws
- No. 10 x 2" multipurpose construction screws

ROADBED, TRACK, WIRING

Cascade Rail Supply

- HO scale turnout pads
- HO scale 45-degree beveled roadbed

Highball Products

- 224 Cinder Ballast

Micro Engineering

- 16-083 code 83 rail
- 30-106 small spikes

Minwax Wood Finish

- 2718 Ebony

New Rail Models

- Blue Point switch controllers

Peco

- No. 5 R turnouts (6)
- No. 5 L turnout
- No. 7 R curved turnout

Wm. K. Walther's Inc.

- 948-8801 no. 4 L turnout
- 948-8826 no. 6 1/2 L curved turnout
- 948-830 30-degree crossing

Miscellaneous

- 3/32" basswood strips
- 16AWG stranded wire (red and white)
- 22AWG to 16AWG insulation displacement (IDC) connectors
- 22AWG solid wire (red, white, and green)
- Code 83 flextrack (approx. 32 feet or 11 3-foot sections)
- Rail joiners
- Solder

◆ L-GIRDER BENCHWORK

Developed by former *Model Railroader* editor Linn Westcott in the early 1960s, L-girder benchwork makes an extremely strong support system for small and large layouts alike. The girders can run up to 12 feet between legs without any additional support. David demonstrates the benchwork's sturdiness in the photo below.

As shown in the drawing on page 35, two L girders provide the heart of the Southbound's benchwork. An 8'-2" girder runs along the front, while an 8'-3½" girder runs at a diagonal along the back. Each girder is made of a 1 x 4 beam with a 1 x 2 flange glued to it. David used 1" brads to further secure the joint while the glue cured.

In addition to reinforcing the beam, the flange also provides a convenient attachment point for the joists that run perpendicular to the girders and support the subroadbed. With the joists resting on the flange, David screwed them in place from underneath with 2" screws. He didn't use glue, so the joists can be re-positioned as needed.



Casters. To make the layout easier to move, David attached 3" casters to the legs with 1" screws. He removed the caster prior to drilling the pilot holes. This avoided getting sawdust in the bearings, which could bind the caster's swivel action.



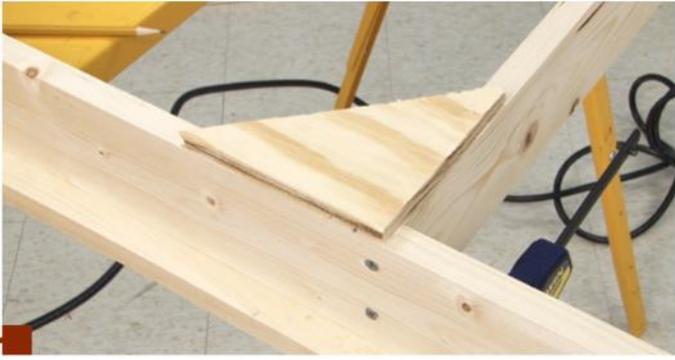
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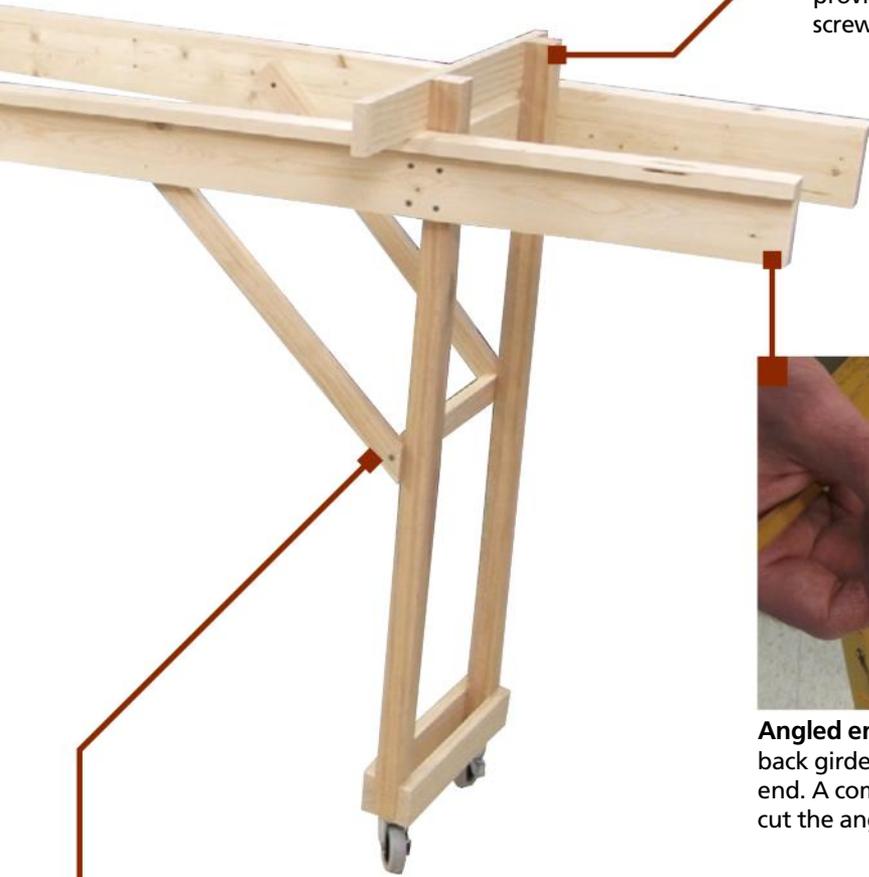
L girders. Model Railroader Video Plus producer David Popp demonstrates one of the key benefits of L-girder benchwork. The engineered beams can be run for long distances and easily support the weight of a layout without sagging.



Crossbraces. With the L girders flipped upside down, David attached the 1 x 3 crossbraces with wood glue and 2" screws. He glued 5" square triangles made of scrap plywood to further strengthen the joint.



Joists. Using 2" screws, David attached the first two joists above the crossbraces between the girders. These joists provide another attachment point for the legs, which are also screwed into the crossbraces and sides of the L-girders.



Angled ends. David needed to cut the ends of the angled back girder at 6 degrees so the fascia would fit flush at each end. A compound miter saw proved the perfect tool to easily cut the angled ends.



Angle braces. Made of 24" lengths of 1 x 2, angle braces are screwed into the inside of the L girder and a 1 x 2 block. For a better fit, David cut a 6 degree angle into each end of the 1 x 2s that ran along the back diagonal L girder.

◆ SUBROADBED AND HOMABED

With the benchwork complete, David enlisted the assistance of MR Video Plus associate producer Kent Johnson. David and Kent flipped the benchwork onto a 4 x 8 sheet of ½" plywood and then lined up the front edge of the benchwork with one edge of the sheet. Using his benchwork plan as a guide, David measured and drew the curving back edge of the subroadbed. After flipping the benchwork and plywood right side up, David cut out the subroadbed using a jigsaw.

With the subroadbed properly positioned atop the benchwork, David used the track plan to draw all the track centerlines and turnout positions full size on the plywood top. One joist had to be repositioned to avoid interfering with the operation of the turnout switch rod. Thankfully, L-girder construction made this a relatively painless process. After double-checking his work, David screwed the subroadbed to the joists through the top of the subroadbed with 2" screws.

At this point the ⅛" tempered hardboard fascia was also screwed into the ends of the joists and L girders using 2" screws.

Following the track centerlines, David laid the Homabed homasote turnout pads and beveled roadbed strips. The material is flexible and can be cut with a utility knife. He cemented the roadbed to the subroadbed with carpenter's glue. After letting the glue cure overnight, the roadbed was ready for track.



Subroadbed. With the benchwork flipped upside down on a 4 x 8-foot sheet of ½" plywood, Kent holds one end of a hardboard strip to help David draw the curved edge of the subroadbed. Because the layout is a few inches longer than 8 feet, David added plywood to make up the extra length.



Transferring the track plan. Using a pencil, David drew a 1-foot-square grid on top of the subroadbed to mirror the grid on his track plan. Using turnouts and other track components for reference, he could then accurately draw the track centerlines full-size on the subroadbed.



Splicing sections. David glued a cleat made out of a scrap length of 1 x 3 to the end joist. This cleat allowed him to splice together the 2" end piece and main 8-foot section of subroadbed. A face clamp holds the cleat in place until the wood glue dries.



Attaching subroadbed. David attached the subroadbed to the joists. He used 2" construction screws, except for the end splice. At that location he used 1¼" screws to attach the ends of the short section and main section of subroadbed to the cleat.



Turnout pads. David carefully positioned each turnout pad over the track centerlines, then used an actual turnout (in this case a Peco no. 5) to mark both ends as well as the switch rod location. He hammered track nails into the ends of each pad to hold them in place while the carpenter's glue dried.



Laying Homabed. Like cork roadbed, Homabed strips have beveled edges and are split in half. To form a curved section of track, David laid the strip inside the curve first. Once that piece was glued and nailed in place, he then added the outside strip.

◆ TRACK AND WIRING

Contributing editor Tony Koester scratchbuilt turnouts and handlaid a stretch of track along the front of the Southbound. Although commercial turnouts and a 30-degree crossing were used in the other locations, David opted to handlay the track in between using $\frac{3}{32}$ " basswood ties and Micro Engineering code 83 weathered rails. However, the materials list on page 35 includes the approximate number of

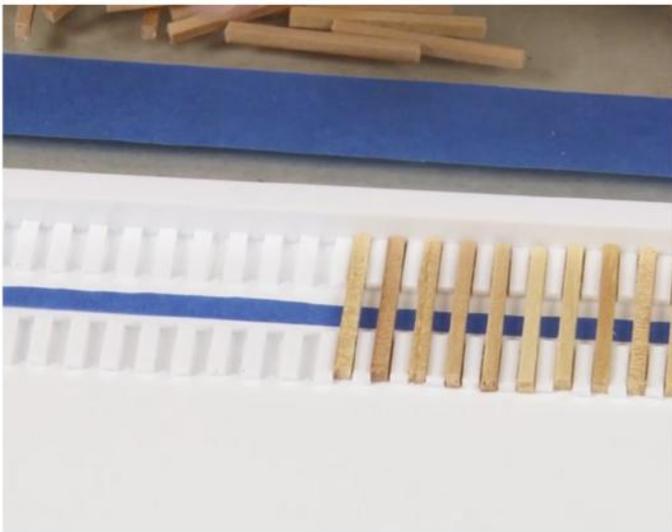
3-foot flextrack sections needed for those who prefer that option.

The materials list also includes all the commercially available turnouts, as well as the crossing, needed. For those who choose to handlay turnouts, buy turnout components appropriate for the frog number or crossing angle listed.

On our layout the turnouts in hard-to-reach locations are controlled with Blue Point mechanical controllers, but

ground throws or slow-motion switch machines could also be used. The track wiring consists of a two-wire track bus with feeders attached via no-solder suitcase connectors.

Want to watch David and Tony demonstrate these projects step by step? Be sure to visit Model Railroader Video Plus for full tutorials on handlaying track and turnouts as well as installing Blue Point controllers.



Tie jig. For the track David cut the ties from strips of $\frac{3}{32}$ " basswood to an HO scale 8'-6". He also made a track-laying jig out of .060" styrene strips, each spaced a tie-width apart, cemented to a styrene sheet. After laying down a piece of masking tape sticky side up, he inserted the ties into the jig.

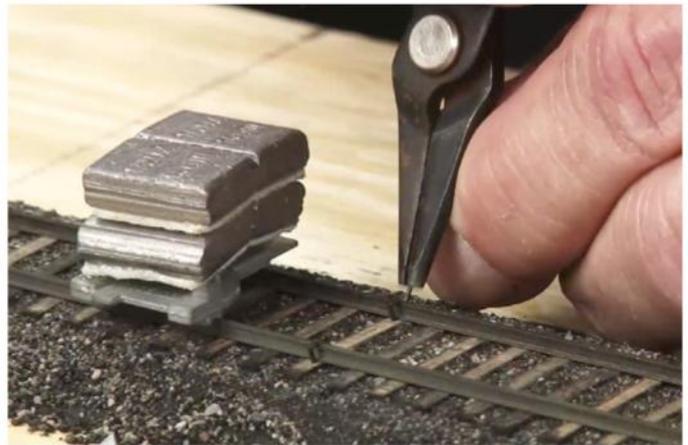


Gluing ties. After spreading a layer of carpenter's glue along the Homabed, David used the tape to lift the ties out of the jig and press them into the glue. Then he used a straightedge to align the tie ends, but made sure the ties didn't look too perfect on this well-worn industrial line.

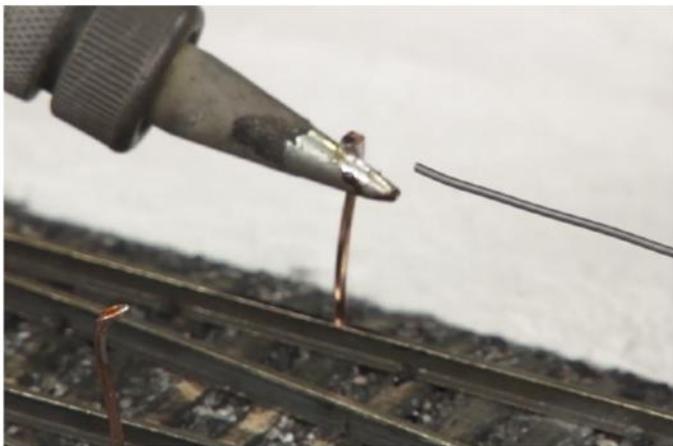
◆ TRACK AND WIRING CONT'D



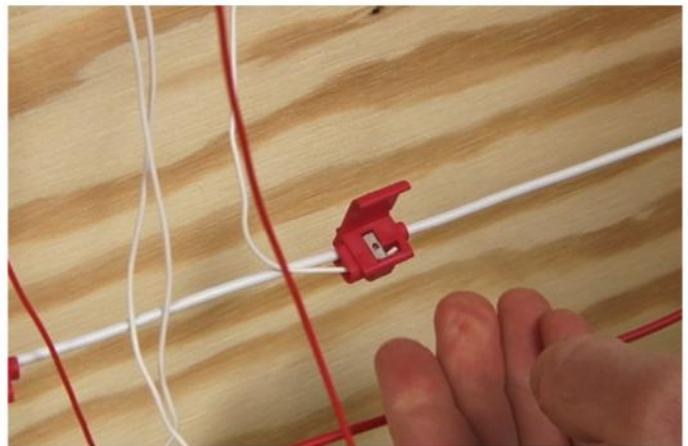
Staining and ballasting. After sanding and staining the ties, David sprinkled on ballast and spread it evenly with a foam brush. Then he sprayed the ballast with water mixed with a few drops of isopropyl alcohol, followed by white glue diluted 1:2 with water.



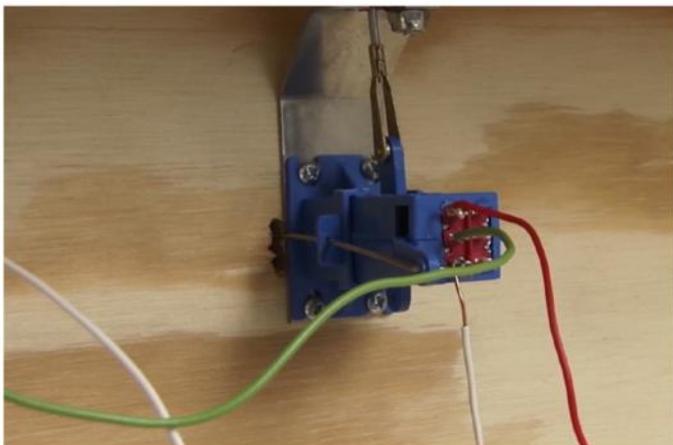
Spiking rails. The rails are spiked at every 13th or 14th tie for a straight section, more for curves. A Micro-Mark track gauge held in place with car weights kept the rails properly gauged. Spiking pliers have a groove in the jaw to hold the spike for placement and a flat nose to push the spike head home.



Spike-head feeders. For each 22AWG solid wire feeder, David drilled a no. 70 hole through the subroadbed. Then he used smooth-jaw pliers to bend over the wire to resemble a spike head. After removing the weathering from the outside web of the rail, he soldered the feeder in place.



Attaching feeders to the bus. David used insulation displacement (IDC or "suitcase") connectors to attach the 22AWG feeders to the 16AWG track bus. These connectors make it easy to splice wires without soldering. He used white and red wire to help keep his wiring consistent.



Blue Points. David installed Blue Point mechanical controllers at five turnout locations. Each controller is connected to a fascia-mounted push-pull knob via a choke cable. A built-in double-pole double-throw switch is used to wire the frog so its polarity matches that of the turnout route selected.



Fascia-mounted knobs. For each Blue Point controller, David drilled a 1½" wide by ⅝" deep recess in the fascia and benchwork using a Forstner bit in a power drill. Then he drilled an 11/64" hole in the center of the recess for the choke cable. Once the cable was installed, he added the knob.

◆ SWING UP STAGING YARD

To keep the layout portable, the staging yard had to follow suit. The Southbound's fold-up yard is shown in the open position on page 34, and in the drawing on page 35. Made of two sections of 1 x 2 connected with carriage bolts, the

yard's support leg can easily be folded under the yard and the entire section can be secured under the layout when not in use. Brass hinge pins hold the leg and the yard securely in either the open or closed position.



Hinged connection. A single cabinet hinge allows the staging yard to swing under the layout. For extra durability, David installed the hinge with no. 10 x 1" screws instead of the small screws that came with the part. A clamp held the leg in place during hinge installation.



Locked in place. David added a screw eye to the bottom of the staging yard and inside of the front leg. The safety screw eye features a spring-loaded closure to securely lock the staging yard in its closed position. With the leg folded up, the layout can easily be stored in the corner of a room. **MR**



EMBEDDING RAILS IN CONCRETE

Paving a loading area
with embedded track for
the Safety-Kleen plant

By Pelle K. Søbørg

Photos by the author

MY HO SCALE Union Pacific Daneburg Subdivision has just two rail-served industries, one of which is the Safety-Kleen oil-recycling business I wrote about in the January 2018 *Model Railroader*. Since the prototype business in Grand Island, Neb., is served by both trains and trucks, its rail siding is embedded in a concrete lot.

Only the styrene foundations for the structures were done at the time when I made the scenery on the Safety-Kleen section of the layout, including paving the lot with its embedded rails.

As I had on the roads on my layout, I used Woodland Scenics Smooth-It for the Safety-Kleen lot. This is a lightweight plaster that's easy to work with and easy to sand, too. Plaster has a realistic feel that's hard to obtain with styrene sheets. It's also very easy to apply grooves and cracks to an area made of plaster.

I usually cast my roads and parking areas in two stages. I first give the area a layer of a relatively thick plaster mix. When the plaster has set but not dried, I apply a second layer of a thinner mix to smooth out the worst irregularities. I don't try to level the lot perfectly. The

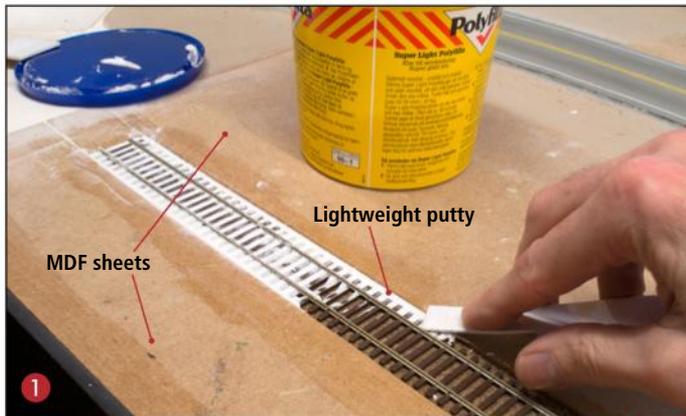
Pelle Søbørg's Safety-Kleen industry is surrounded by a paved concrete lot with an embedded rail siding. Follow along to find out how Pelle poured the lot from plaster.

slight unevenness of the plaster surface gives it a realistic look, in my opinion.

I prefer enamel paint to color roads. I thin the paint to a wash and apply it in layers. I let each layer dry completely before I apply the next. The first layer will be absorbed by the plaster and seal the surface like a primer. I apply a dark wash to the area as weathering. Finally, I seal the surface with a coat of clear flat varnish applied with an airbrush.

Rails embedded in pavement are common at rail-served industries, team tracks, and grade crossings. Try these techniques on your layout.

POURING THE LOT



In order to make the tops of the rails the same level as the rest of the lot, I surrounded the track with a base made of 1/4" medium density fiberboard (MDF) sheets, a little thicker than the roadbed. I filled the spaces between the ties with lightweight putty **1**.

I cut out foundations for the structures from .040" styrene sheet, placed them at their locations, and used railroad spikes to weigh them down. The paved area was outlined with Woodland Scenics Paving Tape. I filled the area with Smooth-It from Woodland Scenics, **2**.

I then evened out the plaster with a screed made of styrene sheet **3**. Dipping the screed in water first helps keep plaster from building up on it.

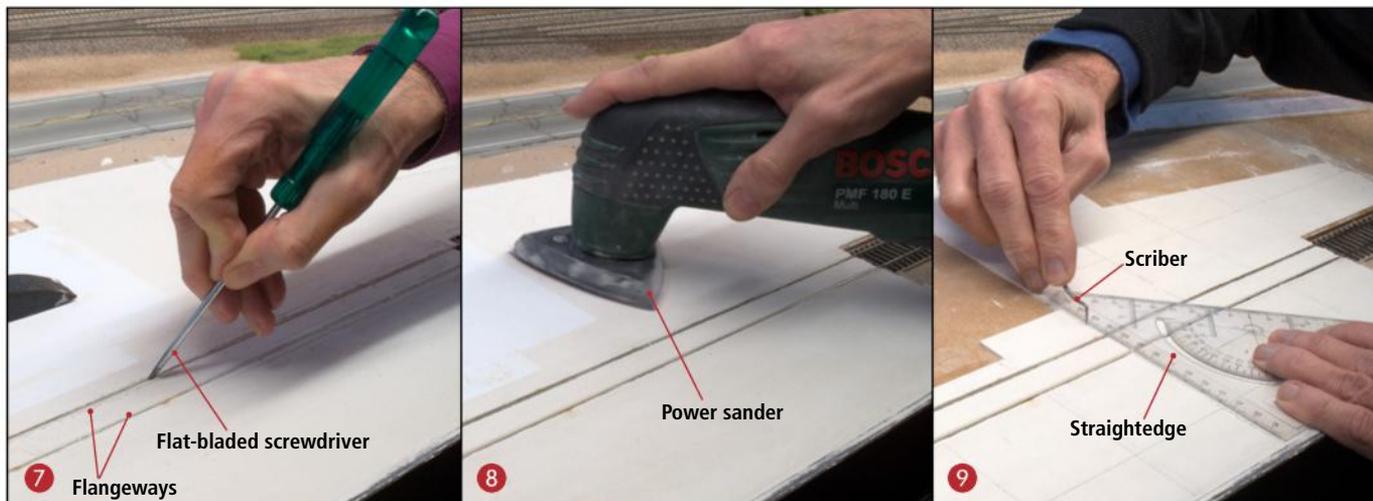
Next, I filled the area between the rails and also the narrow area between the styrene foundation for the

buildings and the track **4**. Again, try to apply just the right amount as evenly as possible. That will make it easier to spread afterward.

I made a special screed for the area between the rails **5**. It has two tabs that match the distance between the rails, which will leave a groove along the rails for the wheel flanges **6**. I also applied a .010" styrene strip between the two tabs so the area between the rails will be slightly recessed.

I applied and smoothed a second layer of plaster when the first layer has set, but not yet dried. Instead of applying plaster to the entire area, I didn't start on the other half until I had finished the first. When the plaster has set, but not dried, I cut a narrow groove along the outside of the rails with a scalpel.

PREPARING THE SURFACE



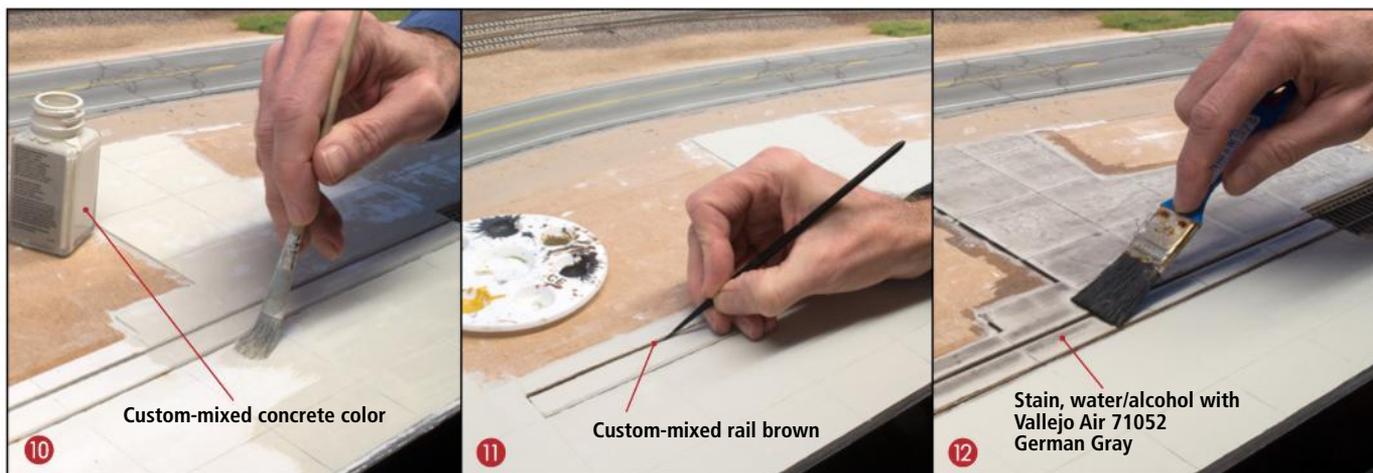
When the plaster had dried completely, I cleared the flangeways of plaster residue with the point of a small, flat-bladed screwdriver 7.

Before painting, the paved surface needs to be sanded smooth. The quickest, but also riskiest, way to do it is with a power sander 8. To avoid sanding the plaster layer too thin and exposing the underlying MDF, you need to keep the sander in constant motion and never linger too long in one spot. When the sanding was done, I removed the

foundations for the structures. I would replace them once the structures were done.

Concrete lots like this one are poured in slabs, with expansion grooves between them. I outlined the slabs with a pencil and scribed the grooves with a pointed tool 9. (Before you ask, no, I didn't make my slabs using any specific prototype dimensions. I just chose a size that looked right to me.) I also scribed a few cracks in the surface here and there.

PAINTING AND WEATHERING



I gave the plaster several thin coats of a custom-mixed light concrete color that I made from two parts Humbrol 147 Light Gray, two parts 34 White, and one part 121 Pale Stone 10.

I then brush-painted the sides of the rails in a custom-mixed rail brown color 11.

I sanded the painted plaster lightly with very fine sandpaper – by hand this time. I cleaned the surface and

applied a dark wash to the area. The wash consists of a few drops of Vallejo Air 71052 German Gray mixed into water with a little isopropyl alcohol 12.

When everything had dried completely, I sealed the surface with a coat of Vallejo Matte Varnish applied with an airbrush. Finally, I used a hobby knife with a chisel blade to scrape the top of the rails clean. Safety-Kleen could now receive its first tank car. [IMR](#)

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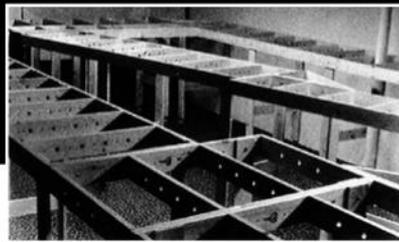
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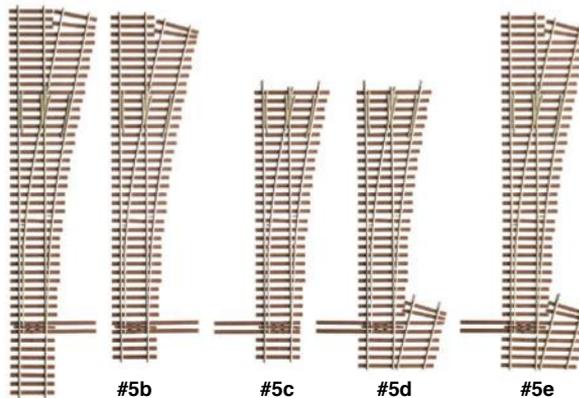


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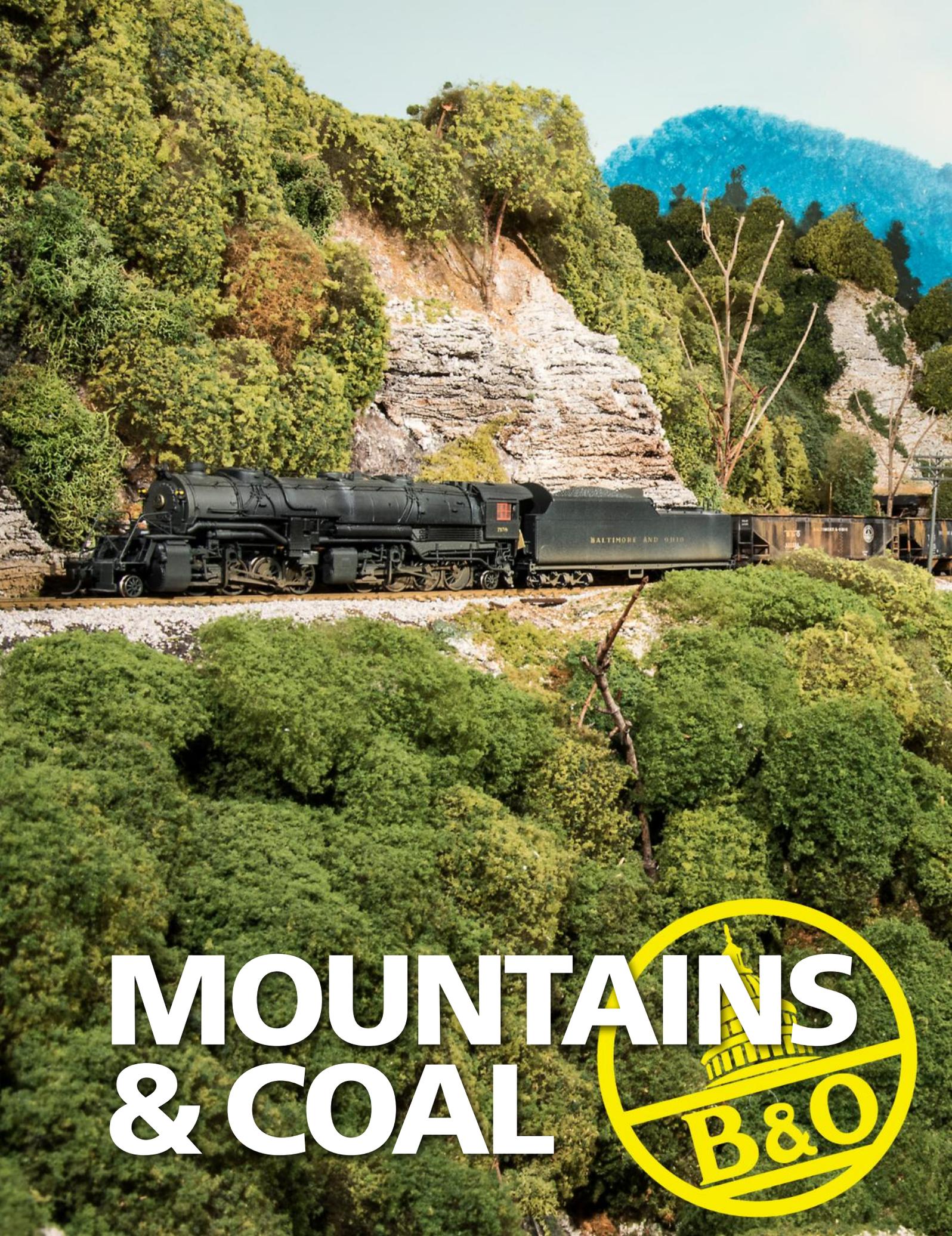
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MOUNTAINS & COAL





This freelanced
32 x 35-foot HO layout
is set in West Virginia
during the early 1950s

By John Listermann

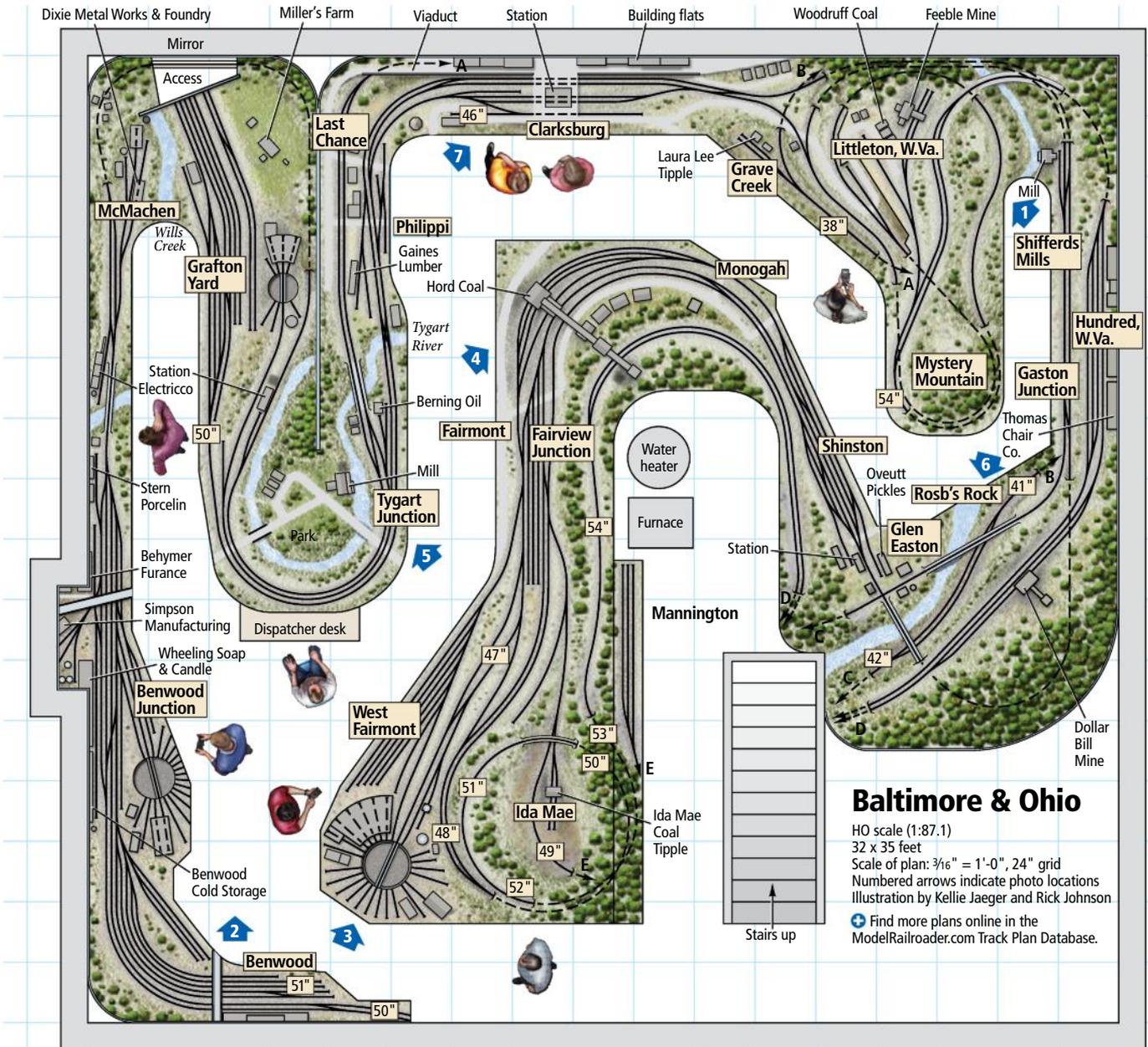
Photos by Lou Sassi

I grew up two blocks

from the Baltimore & Ohio tracks on the former Cincinnati, Hamilton & Dayton line. The Procter & Gamble yards were less than a mile from my house in the Cincinnati suburb of Winton Place. As the trains left the yard, they would sound their whistles and their wheels would slip on the steel rails as the locomotives tried to pull their heavy load through the Estes Avenue crossing. This told me I had just enough time to run down Mitchell Avenue to the crossing to watch those huge locomotives belch smoke into the sky.

Like many model railroaders, I started out with Lionel. Perhaps I should say “we,” as I shared the trains with my older brother.

1 A class EE-2 2-8-8-2 Mallet leads a string of empty coal hoppers up Mystery Mountain on John Listermann’s freelanced HO scale Baltimore & Ohio layout. The 32 x 35-foot model railroad is set in West Virginia during the steam-to-diesel transition era.



2 This view shows the left half of John's model railroad. Benwood Junction is to the left, Tygart Junction is in the center, and Fairmont Yard is to the right.



The layout at a glance

Name: Baltimore & Ohio
Scale: HO (1:87.1)
Size: 32 x 35 feet
Prototype: freelanced, inspired by the B&O
Locale: West Virginia
Era: early 1950s
Style: walk-in
Mainline run: 500 feet
Minimum radius: 24"
Minimum turnout: no. 4
Maximum grade: 2.7 percent
Benchwork: L-girder and open grid
Height: 36" to 54"
Roadbed: 1/2" Celotex roadbed with 3/4" wafer board subroadbed
Track: code 100 flextrack
Scenery: Structo-Lite soaked paper towels over cardboard webbing
Backdrops: hand-painted on hardboard
Control: Digitrax Digital Command Control

Sometime, I don't remember just when, the trains disappeared as my interest turned to girls, rock 'n' roll music, and cars. Then came art school, college, the military, my career in graphics, marriage, and children. I still loved trains; I just didn't think I had time for them.

Finding the right place

After three moves and two feeble attempts at building a model railroad, we finally found the home of my dreams, a basement with a house on top.

Thanks to my childhood, I've always had a soft spot for Baltimore & Ohio (B&O) motive power and rolling stock. I've also had a longtime interest in mountain railroads. This led me to convert my existing railroad to a portion of the B&O from Clarksburg through Fairmont to Benwood, W.Va., along the Ohio River.

Those familiar with that section of the B&O will recognize some of the town names, like Clarksburg, Metz, Hundred, Littleton, Woodruff, and Glen



Easton. Some town names are fictitious, such as Lawson Mills, Last Chance, and Grave Creek.

Setting priorities

When designing the track plan, my first goal was to have a railroad that appeared to go somewhere. My railroad is a point-to-point operation, with Benwood on the west end and Grafton on the east end. Fairmont is the division point, roughly halfway between Benwood and Grafton, where trains terminate.

My second goal was to build the railroad so you can't visually

follow a train through its entire journey. I achieved this goal by using mountains and tunnels as view blocks. I may have over-achieved on this goal, as I constructed 13 tunnels.

Third, I wanted the railroad to be challenging to operate. I combined mountain railroading and industrial switching along with three major yards with full engine servicing facilities.

Coal is the main commodity on my freelanced B&O, supported by three coal mines and three truck tipples. Most coal is marshaled at Fairmont, W.Va., and shipped east and west.

3 Keeping steam locomotives running was an around-the-clock job that required skilled laborers. Fairmont, W.Va., is the division point on John's layout where locomotives arriving from both directions are turned and serviced.



4 Coal is king on John's layout. He scratchbuilt Hord Coal at Monogah, W.Va., based on drawings in Thomas Dixon Jr.'s book *Appalachian Coal Mines & Railroads*.

From plan to reality

I started work on the layout in 1989, shortly after we moved into our home. I tried to salvage some of the benchwork and background scenery from a previous layout. Some materials survived the move, some didn't. I don't recommend trying to move sections of a model railroad by strapping them to the top of an automobile.

The benchwork is open grid with risers for elevation changes. I used 3/4" wafer-board for sub-roadbed and 1/2" Celotex insulation board for roadbed.

I like Celotex because it's easy to cut and can be shaped with a rasp. The insulation board made track laying simple, too. I just pushed the track nails into the Celotex with a nail punch. No hammer was required.

To model the mountains, I first wove cardboard strips and secured them to profile boards

with hot glue. Then I used hot glue to attach paper grocery bags to the cardboard web. I covered the paper bags with brown shop-style paper towels soaked in Structo-Lite.

In areas where I wanted rock outcroppings, I applied a thick coat of Structo-Lite. After roughly 25 minutes, I used a spatula and knife to carve the rocks and strata.

I supplemented the hand-carved rocks with plaster castings made using rubber molds. I also added real rocks and talus from West Virginia along river streams and certain trackside locations.

I colored the rocks and terrain with acrylic paints. I painted the backdrops on 1/4" hardboard using oils and acrylics.

The nickel silver highway

The railroad is set in the early 1950s during the steam-to-diesel transition era. Steam is still king

on this coal hauler, but diesels are continuing to make their way onto the railroad.

My locomotive fleet includes Consolidations, Mikados, Mountains, Pacifics, Santa Fes, and Mallets. Engines from both directions are serviced in Fairmont, W.Va. There's also a mix of Electro-Motive Division F units in B&O dark blue.

The trains run on code 100 nickel silver flextrack. I would have preferred code 83, but at the time I started in the hobby, I had several engines with deep-flanged wheels that didn't run well on code 83. The turnouts are Peco code 100 Insulfrogs.

I spray-painted the track rail brown and hand-painted many of the ties in shades of brown so they wouldn't look uniform.

There is approximately 500 feet of main line. In addition, there are several passing sidings that give stretches of the railroad a double-track look.

MORE ON THE WEB

Model Railroader magazine subscribers can see video of John Listermann's HO scale B&O layout at ModelRailroader.com



Poly fiber and natural plants populate the hillsides on John's layout. He makes the trees quickly and easily with a few basic items.

Quick and easy trees

I knew when I first started building my railroad I was going to need a lot of trees. After all, I'm modeling the mountains of West Virginia.

On my trips to Baltimore & Ohio country, I noticed how the trees on the hillsides varied in size, texture, and color. At the base of most trees there's undergrowth. Often, you don't see the tree trunk.

I wanted to capture that look on my layout. Using black and green poly fiber, Woodland Scenics ground foam (light, medium, and dark green), toothpicks, and some unscented super hold hair spray, I was able to populate the hillsides quickly and realistically. Here's how to do it.

First, tear off small clumps of poly fiber. I prefer black, as it gives the trees more depth, but green will work.

Next, pull the poly fiber until it's almost see through. Do not roll it into a ball. Vary the size and shape of each clump.

Then spray each clump with hair spray. Unscented, cheap hair spray will do the

trick. Spray in a well-ventilated area away from any open flame.

With the hair spray applied, sprinkle each poly fiber clump with various colors of ground foam. Start with dark green and then add the medium and light green to give the tree highlights.

Then stick toothpicks, painted flat black or brown, into the hillside. Put a ground foam-covered poly fiber clump on each toothpick. The larger "trees" should be at the base of the hill; the smaller trees should be near the top. For effect, add a few rock outcroppings between trees and leave some areas open.

Finally, add trees with armatures in the foreground. Live Forever (sedum pupureum) Folia yields a realistic tree armature. Let the plants dry out and remove the petals so all that's left is the stalk. Spray the plants with gray primer or Railroad Tie Brown. Then coat the painted plants with spray glue and apply ground foam.

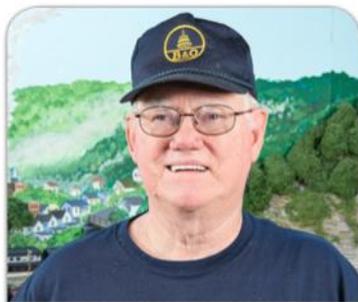
— John Listermann

Materials list

- ① Toothpicks
- ② Primer
- ③ Painted toothpicks
- ④ Black poly fiber
- ⑤ Hair spray
- ⑥ Ground foam
- ⑦ Sedum
- ⑧ Poly fiber on toothpick
- ⑨ Coated poly fiber clumps



5 As the last of the fog burns off in the wooded hillsides, a freight train led by 2-10-2 no. 6157 parallels the Tygart River. John's engine roster features an assortment of steam locomotives and some Electro-Motive Division F-series diesels.



Meet John Listermann

John and his wife, Margie, live in Cincinnati and have been married for 50 years. They raised three children and adopted and are raising a granddaughter. John is a retired graphic designer.

Running trains

I host operating sessions on the last Friday of each month. Though I have a regular crew, I welcome new operators.

I use a modified Form 19 with a switch list and a track schematic to aid operators. I keep track of each train on a track schematic dispatch panel with engine tags representing each train as it advances over the layout.

A typical operating session will keep between seven and 10 operators busy. Positions are dispatcher, three yardmasters, two hostlers, and four road crews.

The railroad is divided into four power districts. I use the

Digitrax Genesis II DB 150 Digital Command Control system with plug-in throttles. I recently added two DB 150 boosters and P515 circuit breakers to the two already installed. More than 70 percent of the locomotives are sound-equipped.

More than just trains

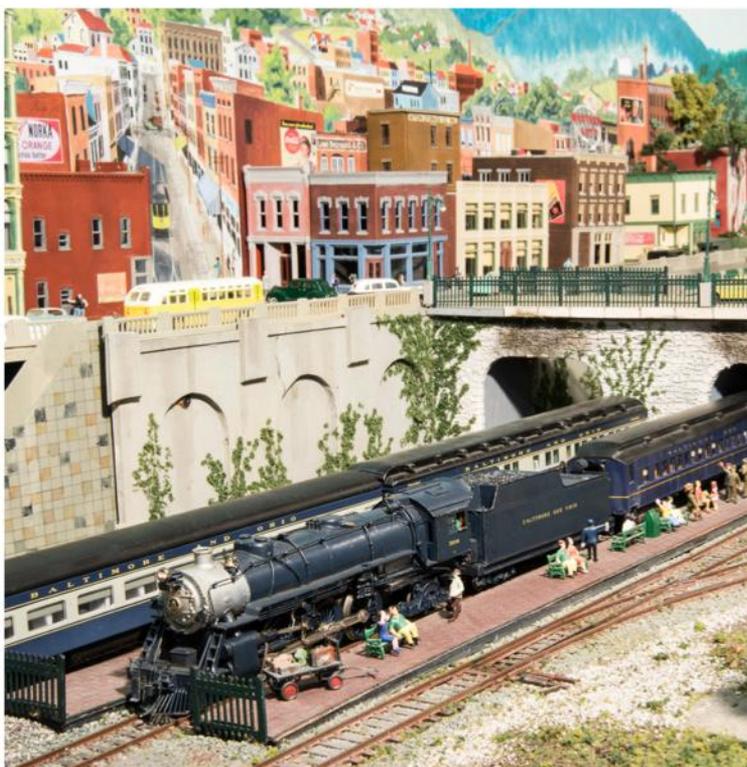
One of the things I like most about model railroading is the friendships I have made over the past 30 years. We all come from different and diverse occupations, but we all share a love for trains and modeling. Each of us brings a unique skill or talent to the hobby and a willingness to share. I enjoy working on my



friends' layouts and appreciate the talents and skills they have to offer.

If you're new to the hobby, I highly recommend you join a local train club or the National Model Railroad Association. Visit your local hobby shop and ask about clubs or organizations in your area. Being active in a local club and attending NMRA events will teach you a lot about the hobby.

My freelanced B&O is nearly 30 years old, but I still enjoy making upgrades to the layout and hosting operating sessions. Though I live in Ohio, a trip down to the basement takes me to West Virginia coal country in the 1950s. 



6 Mikado no. 4515 leads a solid train of loaded hoppers westbound as a class I-5 caboose marks the end of a freight train passing above. The action takes place at Glen Easton, W.Va.

7 The local National Guard unit is being deployed to Camp Dawson for annual training exercises. One of John's hand-painted backdrops is visible in the background.

A big splash of California

Colorful passenger trains and point-to-point operations highlight this 42 x 57-foot double-deck layout

By Eric White • Photos by Steve Crise

The sprawling Sacoma Terminal fills an approximately 20-foot-long peninsula at the entry of Steve Mahan's HO scale Pacific Coast Lines layout. That's fitting because, as Steve says, he's partial to passenger trains.

"We have a yard that not only includes a passenger yard, but also a head-end facility for the express cars, a postal annex, and a Railway Express Agency (REA)," says Steve. His crew can do everything needed from servicing a train at the terminal to assembling a new train from the coaches, sleepers, lounges, and diners, plus the head-end cars, in the coach yard and postal annex.

But the layout, which fills two rooms in an L shape that measures 42 x 57 feet overall, focuses on more than strictly passenger operations. Plenty of freight trains run, too.

"We move point-to-point on everything. From the passenger trains, to beet trains, to coal trains, to rock trains, oil trains

to manifest trains, so we're going from one point to another," says Steve. His layout is set in Southern California, and focuses on the railroads that operated where he grew up.

"When I was young, I grew up by the Southern Pacific tracks, so I always liked *Daylights*, Cab-Forwards, SP engines, and got to hear them and see them.

"And you can't hardly not like Santa Fe. And then since this is Southern California, Union Pacific had to have a place in it. We also have Western Pacific. So my definition is that anything that ends with 'Pacific' I'm open to here."

That includes the Pacific Electric interurban lines. Just for a bit of variety, Steve models the Denver & Rio Grande Western in both standard gauge and narrow gauge. The narrow gauge was a late addition to the layout.

It's good to be king

The layout, which is upstairs in a commercial building, was built in two stages, but little time passed from conception to completion.

"We finished that first room in one year and then we went on to do the rest of the layout in the second year, so we moved pretty quick," says Steve. The layout in the first room was designed by Tony Andersen, who helped design the La Mesa Club layout in San Diego.

"He had heard that I had this space available and wanted to know if I needed a layout designed, and I thought, 'knock yourself out!' And so he did. Tony came over probably four or five times to measure the first room and had a grid (of the room) down to 2 inches to the grid square. We modified very little from his original design.

"But then as we proceeded to come into the other room, the rest of the design has been mine exclusively. But he (Tony) was the original source on the first room."

The layout is built with a steel frame, welded together out of square tubing. Steel frame construction was used as a way to allow a larger area to be viewed without supports that would obstruct or block parts of the scenes.

The lower level also has 1 x 3 open-grid framework on top of the steel. Subroadbed is 3/4" plywood, and everything is screwed together.

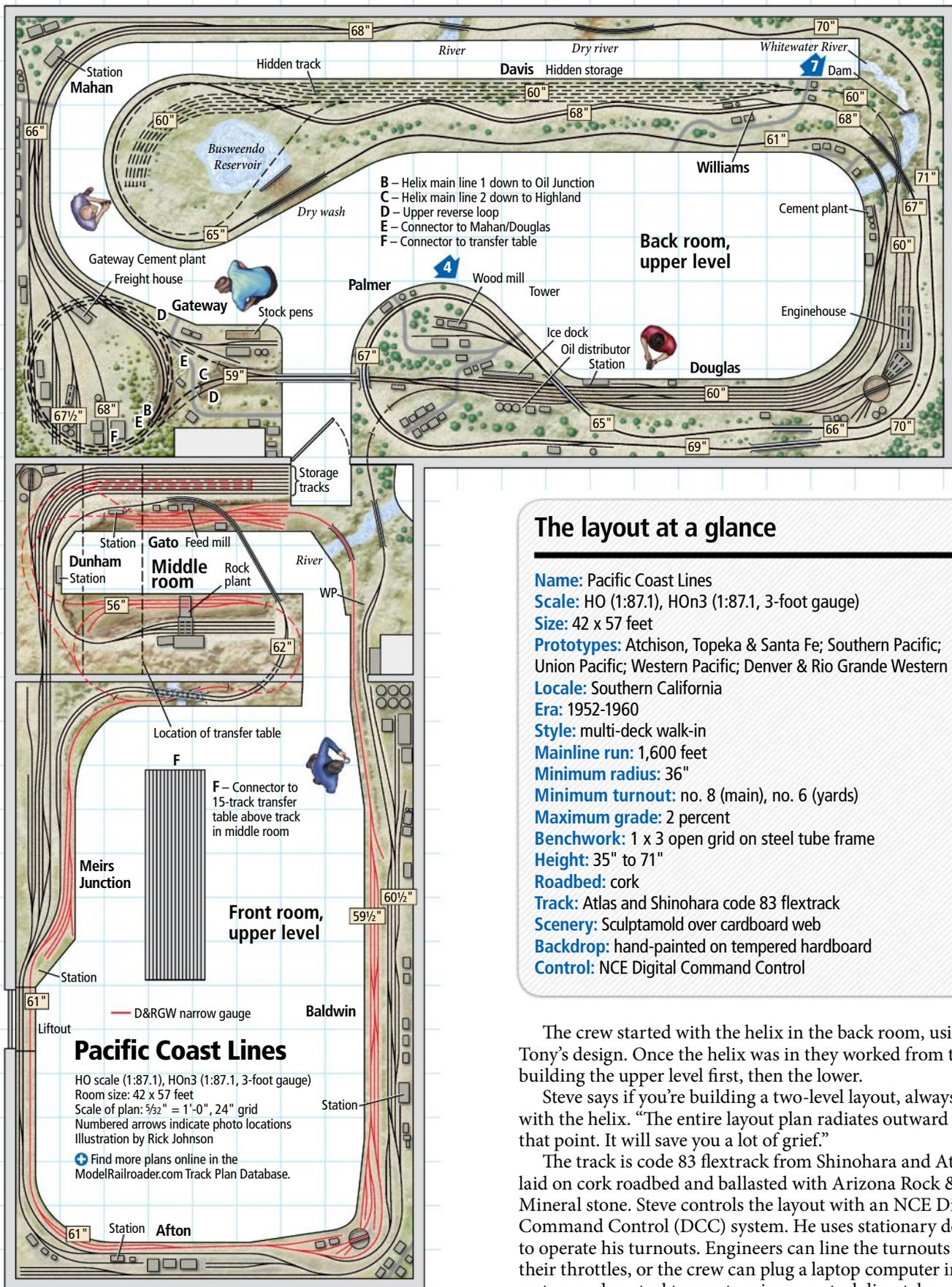


1 Foot Hill is where the Pacific Electric interchanges with the Santa Fe on Steve Mahan's HO scale Pacific Coast Lines layout. A Proto 2000 Alco S-1 switches a load of steel at the interchange, while a sign looming behind advertises Steve's charter bus business as if it were operating in the late 1940s.

sunshine



② Secoma Station is bustling with activity as trains from four railroads await departure. The locomotives are a mixture of brass imports and Athearn Genesis models. Passenger operation was a must for Steve when he envisioned his HO scale model railroad.



The layout at a glance

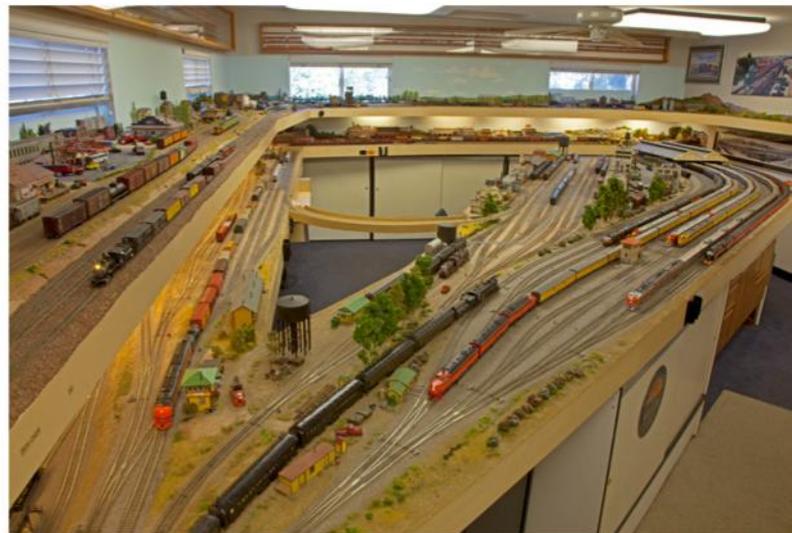
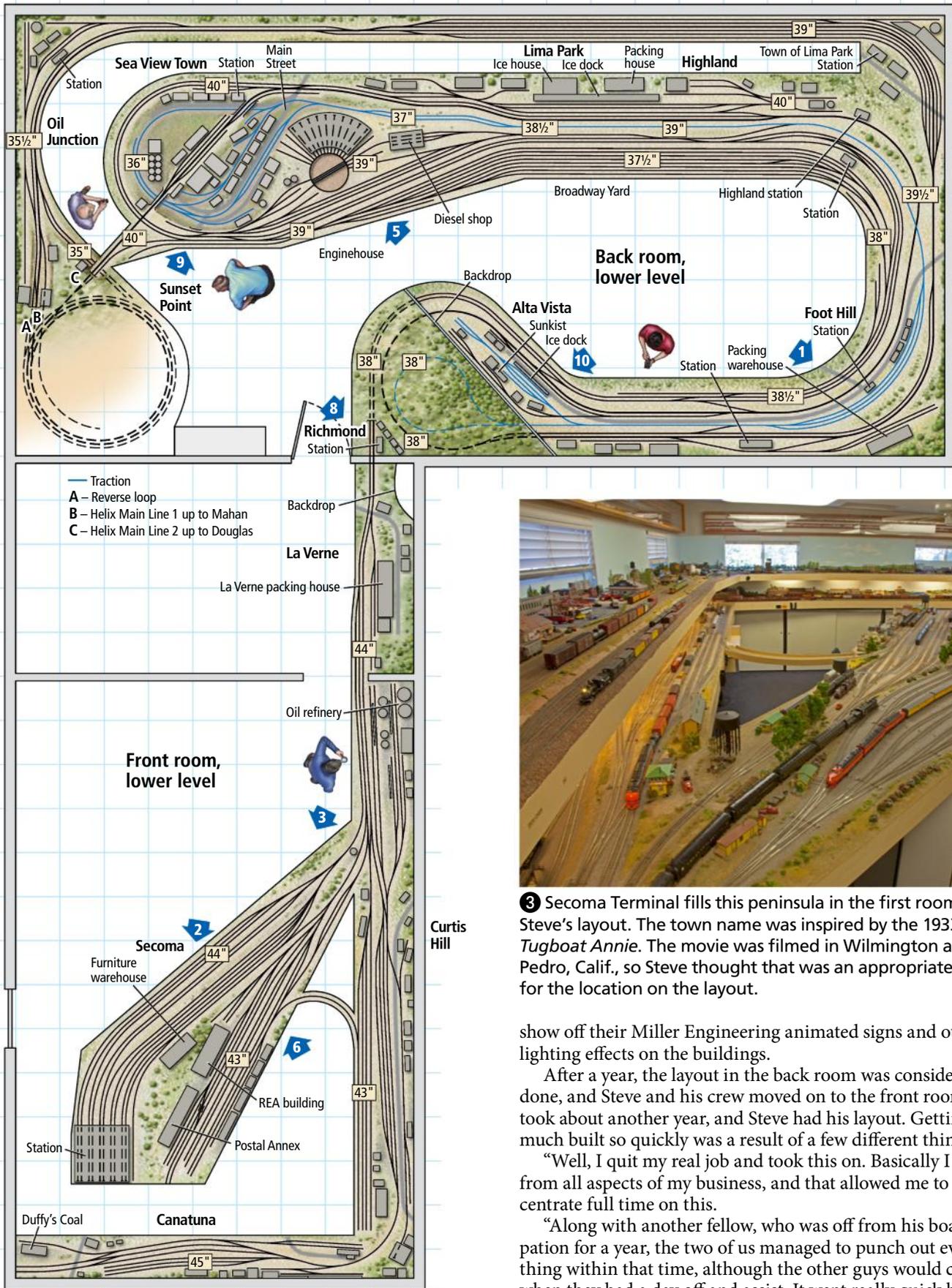
- Name:** Pacific Coast Lines
- Scale:** HO (1:87.1), HO_{n3} (1:87.1, 3-foot gauge)
- Size:** 42 x 57 feet
- Prototypes:** Atchison, Topeka & Santa Fe; Southern Pacific; Union Pacific; Western Pacific; Denver & Rio Grande Western
- Locale:** Southern California
- Era:** 1952-1960
- Style:** multi-deck walk-in
- Mainline run:** 1,600 feet
- Minimum radius:** 36"
- Minimum turnout:** no. 8 (main), no. 6 (yards)
- Maximum grade:** 2 percent
- Benchwork:** 1 x 3 open grid on steel tube frame
- Height:** 35" to 71"
- Roadbed:** cork
- Track:** Atlas and Shinohara code 83 flextrack
- Scenery:** Sculptamold over cardboard web
- Backdrop:** hand-painted on tempered hardboard
- Control:** NCE Digital Command Control

The crew started with the helix in the back room, using Tony's design. Once the helix was in they worked from there, building the upper level first, then the lower.

Steve says if you're building a two-level layout, always start with the helix. "The entire layout plan radiates outward from that point. It will save you a lot of grief."

The track is code 83 flextrack from Shinohara and Atlas, laid on cork roadbed and ballasted with Arizona Rock & Mineral stone. Steve controls the layout with an NCE Digital Command Control (DCC) system. He uses stationary decoders to operate his turnouts. Engineers can line the turnouts with their throttles, or the crew can plug a laptop computer into the system and control turnouts using a central dispatcher.

The layout has under-bench lighting to eliminate the dark areas on the lower deck, and in the first room there are can lights on a dimmer switch that produces a twilight effect. Though the crew doesn't run trains in the dark, they do like to



③ Secoma Terminal fills this peninsula in the first room of Steve's layout. The town name was inspired by the 1933 film *Tugboat Annie*. The movie was filmed in Wilmington and San Pedro, Calif., so Steve thought that was an appropriate name for the location on the layout.

show off their Miller Engineering animated signs and other lighting effects on the buildings.

After a year, the layout in the back room was considered done, and Steve and his crew moved on to the front room. This took about another year, and Steve had his layout. Getting so much built so quickly was a result of a few different things.

"Well, I quit my real job and took this on. Basically I retired from all aspects of my business, and that allowed me to concentrate full time on this.

"Along with another fellow, who was off from his boat occupation for a year, the two of us managed to punch out everything within that time, although the other guys would come by when they had a day off and assist. It went really quick because of the availability of everybody," Steve says. It's not as though this were a club, though. "It's a benevolent dictatorship."

"Really, we're just all friends that enjoy each others' company, we base it around that. However, all ideas from our group



④ An A-B-B-A set of Western Pacific FT helpers waits on Palmer Siding as the Union Pacific *City of Los Angeles* passes on its way to Chicago. The brass diesels are from Division Point (WP) and Challenger Imports (UP). Steve's son Bill installed the Sunrise Enterprises signals, which use tri-color light-emitting diodes in the signal heads.



5 The roundhouse and turntable at Broadway Yard are Walthers models. The location is a hive of activity for both Southern Pacific and Santa Fe locomotives. The models are a mixture of brass and ready-to-run plastic.

are considered – no one has a monopoly on good ideas – we consider all suggestions from the standpoint of how it fits into the overall good of the layout. But the final decisions aren't voted on. If I like the idea, we'll do it; if I don't like the idea, it doesn't happen.

"This was also how we were able to build this project so quickly. There were no committees to study the problem, no debates. If the king liked it, it got done."

Attention to detail

Steve builds his landforms with a lattice of cardboard strips. "It's much easier to control how you want to set up your scenery." A layer of Sculptamold, a papier-mache product, goes on top of the cardboard webbing. Then Steve colors the Sculptamold with a base layer of latex paint, and washes of oil paints on top of that to get the specific shades he wants.

"I tell everybody who's interested in scenery that I would become an outside salesman for Sculptamold, it's such a good product. There's such a variety of things you can do with it."

The crew used photos in books for inspiration to create the scenery. They used molds to cast rocks in plaster, then blended everything together with Sculptamold.

"With Sculptamold you can just carve it in yourself. You can either make it smooth, rough, or practice your techniques with your X-acto blades," says Steve.

Once the basic landforms were in and colored, Steve started on the foliage.



6 The Black Cat Bar, which serves the neighborhood around Sacoma Terminal, is a tribute to the many cats that live on the grounds of Steve's offices. The bar is a Master Creations kit.

"We used everyone's products, from Woodland Scenics to Busch scenic products. We've even tried to do some of our own trees where you get your own little sticks and branches and put the foliage right on it with hair spray (and) color them how you want them.

"We've had sessions where we build trees. In fact, we have a whole box full of trees right here on stand-by," Steve says. The



7 An expedited Army movement crosses Whitewater River Bridge as it enters the west end of Williams Siding. Southern Pacific no. 4287 is an AC-12 Cab-Forward by InterMountain, weathered by Steve. The bridge is kitbashed from parts from several different manufacturers.

water in the rivers and reservoir is modeled with Woodland Scenics Water Effects products.

Most of the backdrops are hand-painted, except a few spots where photos were used.

“We have a railroad artist, Eric Smith, who’s not a professional artist, but a professional railroader who paints all of our backdrops,” Steve says.

“In some of the areas of the layout Eric had to access, he actually had to lie down on his back like Michelangelo had to do when he painted the Sistine Chapel ceiling.

“In fact, when Eric was doing a row of palm trees on the backdrop while he was prone, he didn’t realize he had painted all the trees and one building a bit slanted,” Steve says. Unfortunately, they had to be redone. Because the upper deck was built with steel tubing, Eric was able to rest his entire body weight on the upper decking without causing harm to the layout.



8 It’s twilight at Richmond Station as a train trailing a Northern Pacific lounge car leaves after a station stop. The lights in the back room are fitted with a dimmer to help show off the layout lighting and Miller Engineering signs.

Many of the bridges on the layout were built by fellow modeler Bob James, a retired dentist. “Because he likes to do bridge work,” Steve says with a smile.

Steve says attention to detail is his strength as a modeler. He’s done a lot of different modeling, including model aircraft and ships. “I like trains immensely, so that’s carried over to doing the details on the structures.”

The buildings on the layout come from a variety of sources. Many of them come from Wm. K. Walthers, Inc. “Walthers, over the last 10 years, has come a long way with a number of great structures, but even so, we still modify them so they don’t look like they’ve come right out of the box.

“It’s always a treat to see a structure and have it appear new, and as you study it, you realize that could’ve been part of another structure at one time. The joy of discovering that is kind of fun.

“We’ve also done scratchbuilt structures, limited-run kit structures like Bar Mills, but not too many of those ‘sticks-in-a-box’ kits,” Steve says. Instead, he’s fond of laser-cut kits, appreciating them for their craftsman-like detail levels.

Steve moderates the level of detail depending on how visible the structure is. Buildings at the front of the layout receive much more attention, with detailed interiors and nail holes visible in the sheathing. Buildings near the backdrop can just convey the overall shape since they don’t have to stand up to close inspection.

Get this party rolling

Steve has focused his rolling stock, especially the freight cars, on the Southern Pacific. “We’ve probably done the freight cars to the highest standards for operational reliability,” Steve says. “You can build a beautiful resin kit and put all of the hoses and lines on it, and it might be a little too much for normal operations.

“Then again, you maybe don’t need an early ‘blue box’ kit from Athearn either, but their latest stuff is really great. And if you weather the blue box kit a little to bring out more detail, that always helps.” There comes a point where the detail can get in the way of operation. “Do you tell everybody not to touch it? If it comes off the track, only *you* can handle it?” Steve asks.



9 Sea View is served by the Pacific Electric. The rolling stock is from Suydam & Co., which imported brass models decorated for many traction lines. Steve decided not to string trolley wire as it might get in the way of operations.

The layout has a number of brass locomotives, especially steam, but Steve is impressed with the more recent mass-produced models, so they've found a place on his layout as well. Almost all of the locomotives have sound, and Steve has tried many of the sound decoders available. SoundTraxx Tsunami and TCS WowSound are two of the products he's using now.

While Steve enjoys kitbashing structures, that's not his focus with rolling stock. He says he does go to great lengths to install interiors and lighting on his passenger equipment, though. And his rolling stock is weathered. He's using oils and washes in place of the chalks and pastels he used to use.

With more than 1,000 cars on a layout that fills two rooms on two decks, Steve and his crew have plenty of opportunities for operation. Steve has car cards for about 990 of his cars, but he doesn't use a car-card-and-waybill system.

"This layout to me is big enough I almost chose not to use the car card system, because with more than 1,000 freight cars on the layout, if I want to walk in here without having an official operating session and just run a few cars, I don't have to worry about where that car wound up and then have to trace it down with a car card."

Instead, Steve uses train orders and a sequence of trains, but he doesn't use a fast clock. "The closer it gets to lunch, the faster we go!"

The layout can handle about 12 operators, plus a dispatcher and one or two yardmasters. The

dispatcher can use a laptop computer plugged into the DCC system to route trains, and the crews use a Family Radio System to communicate.

The layout is signaled, so once operators get a clearance from the dispatcher, they're clear to proceed across the layout on signal indication.

"You can just go down the line and watch the signals as you go – hopefully, we stop at the red signals."

The signaling system uses a Master Signal Controller from The Signaling Solution (www.signaling-solution.com). Each control point has a circuit board, and they're all tied together with block detectors that communicate with each other.

The signaling system could've slowed construction down, but Steve's son Bill didn't want that to happen.

"You know, I always wanted to do signals on a layout," Bill says. "I always thought that was a neat aspect on a layout, but I was down here perhaps once a week, while they were working on it every Monday and Friday, and I didn't want to hold them up."

The construction crew would leave Bill a place to dump some wires for the signaling, a tube or something through the scenery or a building. Then he would come along and do the signals after the fact.

"There were a couple of instances where I had to punt and do something kind of unusual with the wiring. Had we held up everything so my wiring could be perfect, obviously we would've been that much farther behind."





10 Reefers are lined up for icing as the Pacific Electric switches the Sunkist packing house at Alta Vista. There are a number of packing houses on Steve’s Southern California layout. This model is a modified YesterYear Models kit.

“Keep in mind that I had never done signaling before, so I sort of had to guess at what length of wire I would need and where it was going, so we just left extra material behind and moved on. Looking back, some of my stuff might not be as ‘NMRA [National Model Railroad Association] pretty,’ but it works and has worked several years now,” Bill says.

“The nice thing about this size layout is you can do bridge traffic, unit trains, run a local, passenger traffic, all at the same time – and we do,” Steve says. “If we have somebody that’s interested in just running a through passenger train, well we can just do that. If someone just wants to switch the local, we can do that. We have at least five local trains that we can run at the same time.”

By the time a typical operating session is done, 30 to 35 trains have crossed the Pacific Coast Lines.

Do-overs

Now that the layout has been up and running for awhile, Steve says he doesn’t really have much he would change.

“I had always wanted to have a layout where you don’t have to duckunder. We’re always confined to some type of limit, it doesn’t matter if its 5,000 square feet, you have a limit somewhere,” Steve says. “With this (layout) I don’t think we could have done anything differently to get everything done, and have a layout in the schematic that it is, the operation that

Meet Steve Mahan

Steve is married, lives in San Dimas, Calif., and has three grown sons. The oldest, Bill, helps on the layout. Steve also enjoys making model ships. He’s retired after running a charter bus company for 30 years.



it is. But that probably would’ve been nice, not to have any duckunders.” There are three duckunders on the upper level.

“I think what I learned in building this layout is that once I had the area to work in, it seemed overwhelming to try and achieve something like this,” Steve says. “Yet if you don’t set a limit with yourself, in other words, don’t say ‘I don’t think I can do this’ – and it doesn’t matter if it’s model railroading or business – if you say ‘I’m going to try and achieve this’ and just keep working at it – in any task – you can accomplish it.

“The one thing about this layout that we’ve talked about before is that there are very few things we would want to change. We like the way it operates, we like what we’ve created,” Steve says. “Not to say that with anything you can always do better, but we’re pretty happy with this one.” 

Steve Crise’s photographs, including photos of Rod Stewart’s Grand Street & Three Rivers RR in the June 2017 Model Railroader, have appeared in several railroad hobby publications over the past two decades.



Rolling, rock-covered hills add to the southwest feel of Eric Bodin's freelanced HO scale Echo Canyon & Santa Fe. Eric shares how he made the scenery base for his hills using extruded-foam insulation board and weed-blocking fabric.

A fresh take on modeling hills

Combine extruded-foam insulation board and weed block fabric to model rolling terrain

By **Eric Bodin** • Photos by the author

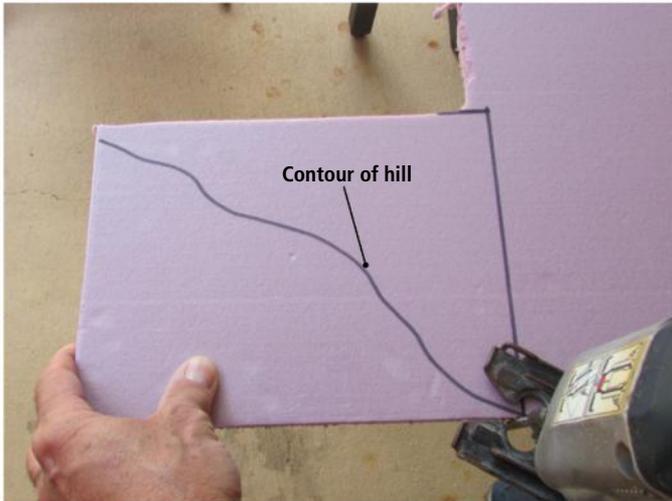
There are many techniques for modeling rolling hills on model railroads. Popular methods include a cardboard web covered with plaster-impregnated gauze strips, layered and shaped pieces of extruded-foam insulation board, and packing peanuts covered with masking tape and plaster gauze, among others. These methods have served the hobby well over the years. I've used some of these approaches in the past. But when it came time to build hills on my HO scale model railroad, I asked myself if there was a better way. Then an idea popped into my head: Cover an extruded-foam insulation board frame with weed-blocking fabric.

To see if the idea would work, I made a trip to my local home improvement center to get the supplies. The key ingredients are a 4 x 8-foot sheet of extruded-foam insulation board (I used a $\frac{3}{4}$ "-thick sheet, but any thickness will work), a roll of weed block, and foam-safe adhesive.

I'm happy to report the technique worked. I even learned that weed block works well for filling gaps between existing scenery and new benchwork. Follow along as I show you how to model rolling hills starting with extruded-foam insulation board and weed block.

Eric Bodin lives in Bridge City, Texas, with his wife, Karen. They have two children, Rikki and Ty, both attending college. Eric is a process operator for Total Petrochemicals.

STEP 1: Foam frame



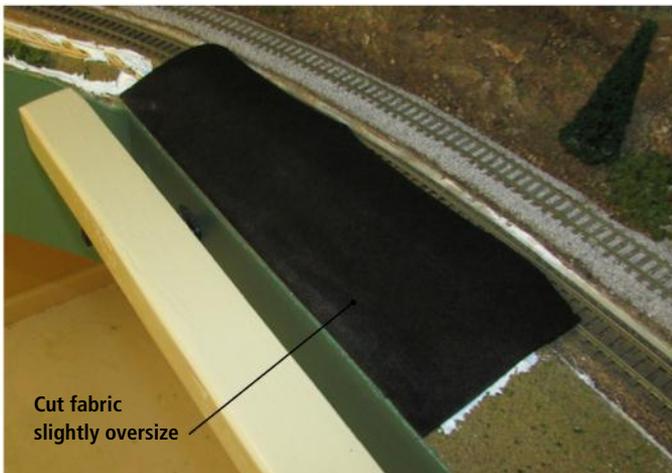
I started by building the extruded-foam insulation board frame. First, I drew the contours of the hill on the foam with a permanent marker. Then I cut the foam with a saber saw (a drywall saw would also work). I prefer using a saber saw because it makes the job easier and faster.



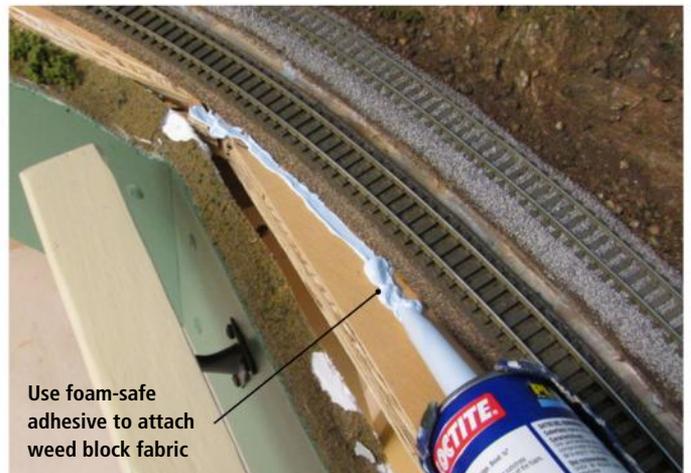
Use foam-safe adhesive

With the foam cut, I ran a bead of Loctite PL-300 Foamboard Construction Adhesive along the edge(s) of the foam that would be attached to the backdrop or layout table. Then I pressed the foam into place and let it dry overnight.

STEP 2: Weed block



Cut fabric slightly oversize



Use foam-safe adhesive to attach weed block fabric



Trim excess fabric with hobby knife

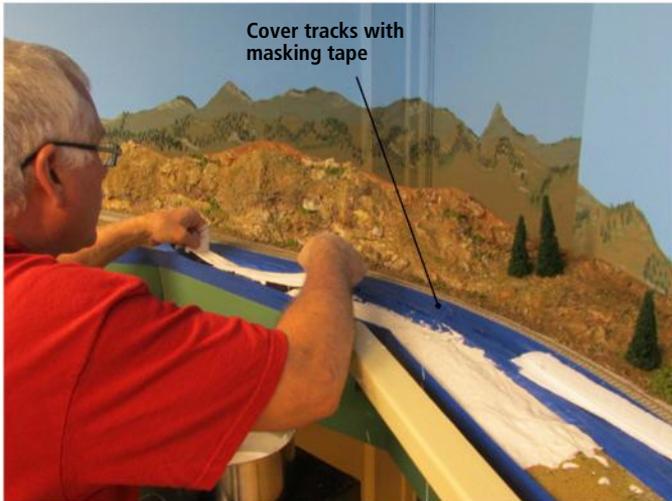
There are several types of weed block on the market. I used Blue Hawk Landscape Fabric, available at Lowe's in 50-foot rolls for around \$7. The fabric is easy to work with and, more importantly, plaster doesn't drip through it.

I started by laying the fabric over the scene to determine how much I'd need. I cut the fabric slightly oversize, as the extra fabric let me add slopes and valleys.

I set the fabric aside and ran a bead of adhesive along the perimeter of where the fabric will be attached. The image at left shows how I used the fabric to fill gaps between existing scenery and new benchwork.

I laid the fabric in the scene and pressed it into the adhesive. Some of the adhesive will ooze through the fabric, which indicates a good bond. This is the time to adjust the fabric to create slopes and valleys. I let the adhesive dry overnight and trimmed the excess fabric with a hobby knife.

STEP 3: Lots of Hydrocal



I mixed a batch of Hydrocal to the consistency of pancake batter. Then I dipped strips of paper towel into the Hydrocal and applied them over the weed block fabric in an overlapping fashion. Before the first layer had completely cured, I applied a second layer of Hydrocal-soaked towel strips. I let the Hydrocal dry before proceeding.

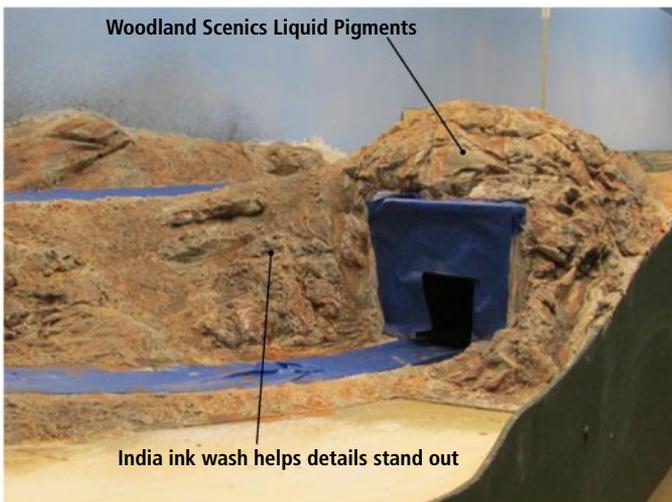
Then I worked on rock castings using commercial rubber molds. First, I sprayed the molds with water that had a few drops of dish soap added. This acts as a mold release. Then I filled the molds with Hydrocal.



I put the rock castings in the scene while they were green (not fully cured). Before installing the castings, I sprayed the scenery base with water. Then I flipped the mold over, holding it in place for about 5 minutes. I slowly peeled the mold away from the casting.

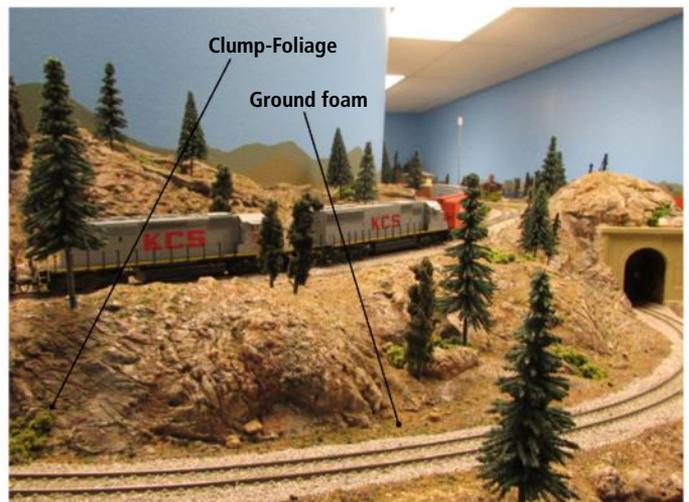
I again turned to Hydrocal to blend adjacent castings and to feather the rocks into the scenery. I let the Hydrocal cure for a few minutes and used dental picks and a hobby knife with a no. 17 blade to carve in details. I let the Hydrocal cure overnight.

STEP 4: Adding color



I used Woodland Scenics Earth Colors liquid pigments to color the rock castings. First, I mixed the Yellow Ochre, Raw Umber, and Burnt Umber pigments with water per the manufacturer's instructions.

Next, I applied the pigments with the supplied 1" foam paintbrush using the "leopard spotting" technique demonstrated in a tutorial video on the Woodland Scenics website. I started with the lightest color (Yellow Ocher) and worked my way to the darkest, overlapping colors until I had the desired look.

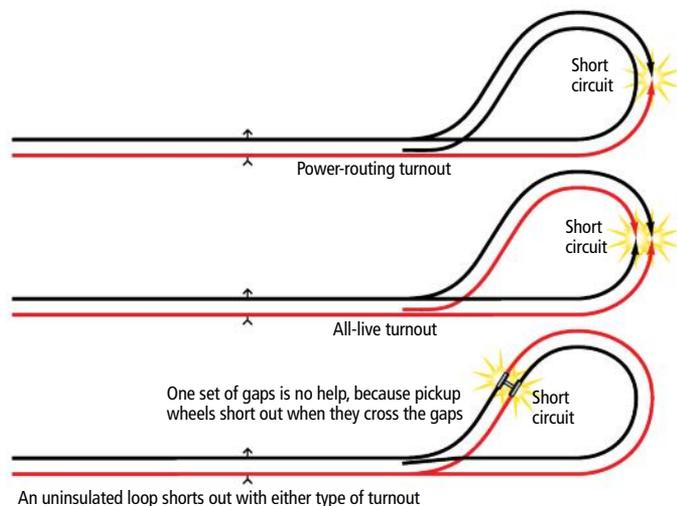


Then I applied an India ink wash (2 tablespoons of ink in a 50/50 mix of water and isopropyl alcohol) with a spray bottle. The ink settles into the recesses of the castings, which adds shadows and helps the details stand out.

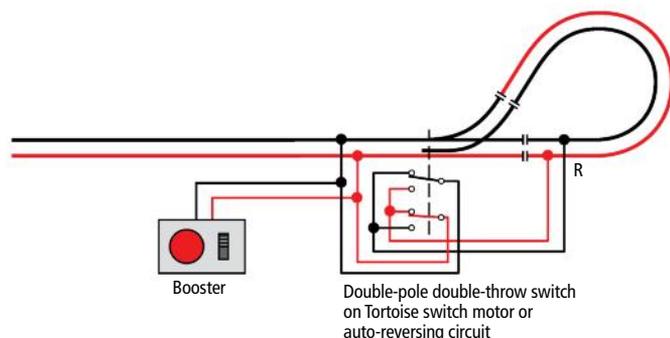
I finished up my rolling, rock-covered hill scene by adding ground foam, Clump-Foliage, and trees from assorted manufacturers. The various shades of green provide a nice contrast with the earth-toned rocks.

If you plan on modeling hills, try starting with a base of foam insulation board and weed-blocking fabric. [MR](#)

Reverse loops, turntables, wyes, and DCC



1 Reverse loops. When the tracks in a reverse loop turn back on themselves, it creates a short circuit. Larry discusses strategies to resolve short circuits in typical layout situations.



2 Wiring loops. The old DC approach that also works with DCC is to use the double-pole double-throw (DPDT) contacts on a switch machine such as a Tortoise to automatically change the track polarity. However, if you don't use switch machines with integral DPDT switches, an auto-reversing circuit will correct the polarity.

Reverse loops, turntables, and wyes have always presented model railroaders with the issue of how to maintain correct polarity when turning or reversing a locomotive or a whole train. Because of this long history, dozens of articles have appeared in hobby magazines and books detailing a myriad of inventive ways to deal with the potential short circuits created by these track orientations.

The good news is that all of the methods for dealing with shorts in the direct-current (DC) environment should work with Digital Command Control (DCC). However, in most cases there are easier ways to correct the problem on DCC-powered layouts than using DC-oriented methods. Let's take a look at each potential problem, and at the ways to correct it on a DCC-powered layout.



3 Auto-reversing circuits such as the DCC Specialties PSX-AR (bottom), Digitrax AR1 (top left), and Tam Valley Depot Dual Frog Juicer make correcting track polarity problems easy.

The simple reverse loop is probably the most common of these three potential issues. As you can see from **1**, this problem is created when the tracks in a reverse loop turn back on themselves, creating a short.

The first step in correcting this problem is to isolate a section of track in the reverse loop by cutting gaps in the rails at each end. Note that it isn't enough to simply cut one set of gaps; you have to totally isolate this section. This section of track will serve as the reversing track where the polarity correction takes place. But how do we go about correcting the polarity?

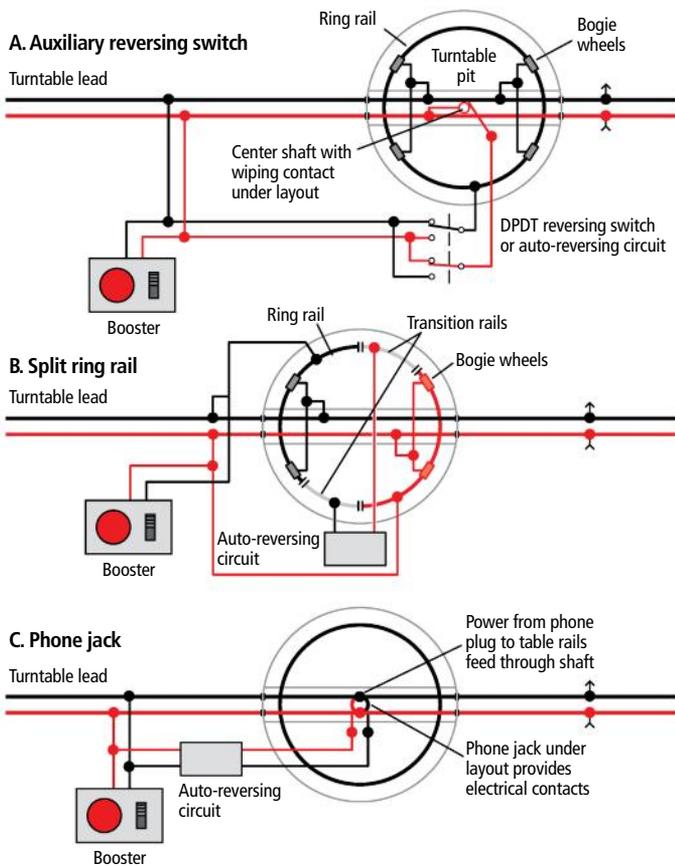
The old DC approach that also works with DCC is to use the double-pole double-throw (DPDT) contacts on a switch motor such as a Tortoise by Circuitron to automatically change the track polarity as shown in **2**. Using this method, the reversing track polarity is changed when the turnout is set for the train to exit the reverse loop.

Unlike with DC operations, because the locomotive

direction of travel is controlled internally by the DCC decoder, the polarity of the reversing track can be changed while the locomotive is in motion, which simplifies operations.

Another option is to replace the DPDT switch with one of the electronic auto-reversing circuits available from DCC Specialties, Digitrax, Model Rectifier Corp., and Tam Valley Depot **3**. These devices automatically detect when a short circuit occurs and immediately reverse the polarity of the wires to the reversing track. These can be especially useful in areas of complex track or in long reverse loop situations.

One thing to keep in mind is the reversing section of track needs to be at least as long as the longest consist of locomotives that will be run through it. This is because if it's too short, once the polarity changes, the wheels on trailing locomotives will cause shorts when they bridge the gaps. The same is true for entire trains



4 Turntables. Turntable short circuits can be dealt with using double-pole double-throw (DPDT) switches in the feeders to the turntable tracks. Three common turntable wiring schemes are shown. In all cases the DPDT switch can be replaced with an auto-reversing circuit.

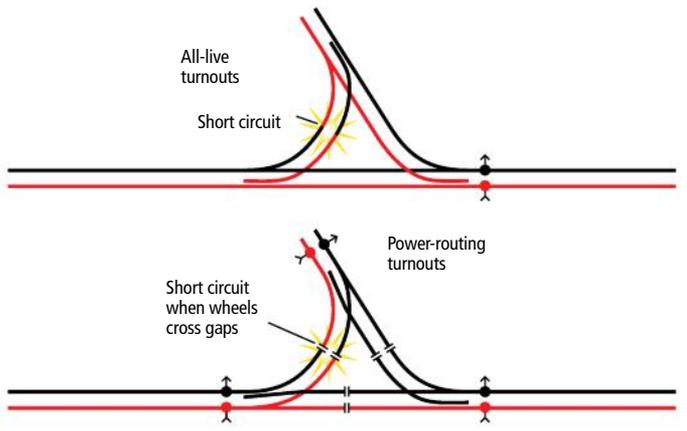
if metal wheels are used. The metal wheels on the last car will cause a short as they cross the gap in the tracks where polarity changes.

The second most common issue comes when using turntables. The problem occurs when you rotate the turntable, which in effect reverses the polarity of the turntable tracks. Once the turntable crosses the point where polarity flips, if the locomotive wheels bridge the gaps, or both rails don't change simultaneously, a short will occur.

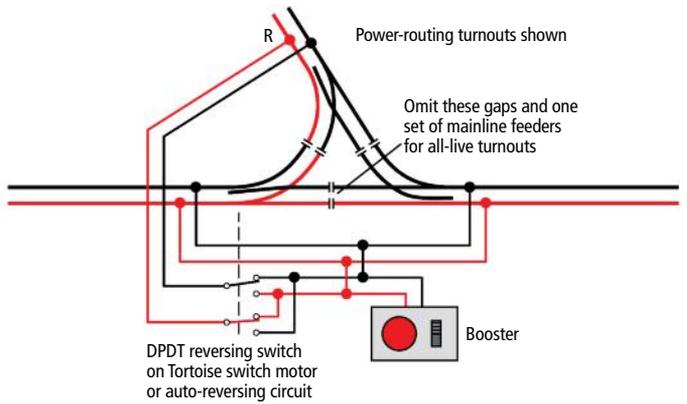
To fix this problem, you need a way to correct the polarity disparity, which, as shown in 4, can be done with switches or special wir-

ing. However, if you use one of the DCC auto-reversing circuits mentioned before, they will instantaneously detect and correct any differences in polarity.

The final problem involves the use of wyes. These track arrangements, shaped like a triangle, allow a locomotive or whole train to be driven onto one leg of the wye, and then backed out through another leg, then finally pull forward again on the third



5 Wyes. As with reverse loops, wyes create short circuits as a result of track and turnout configurations.



6 Wiring wyes. Correcting the short circuit in a wye can be done with DPDT switches or an auto-reversing circuit.

leg, reversing direction of travel in the process.

However, as with reverse loops, due to the combination of track and turnouts, you end up creating shorts in the process 5. Like the other problems, special wiring and switches can correct the problem. However, forgetful engineers sometimes neglect to flip these switches.

Again, by using DCC auto-reversing circuits wired in place of the switches as shown in 6, the polarity will be

corrected automatically without your train crews having to remember to do anything but run their locomotives.

In general, auto-reversing circuits designed specifically for use with DCC are something of a cure-all for situations where previously one or more DPDT switches and extra wiring were required.

Various other versions of these circuits designed for automatically correcting frog polarity and lining turnouts are also available, but that's something for another column. For more information on this subject, I dedicated an entire chapter to it in my book *Wiring Your Model Railroad* (Kalmbach Books, 2015). **MR**

ONE THING TO KEEP IN MIND IS THE REVERSING SECTION OF TRACK NEEDS TO BE AT LEAST AS LONG AS THE LONGEST CONSIST OF LOCOMOTIVES THAT WILL BE RUN THROUGH IT. - LARRY



Bowser Trains HO scale GMDD SD40-2F

For the first time in plastic, a cowl-body SD40-2F rolls along HO scale rails thanks to Bowser Trains. Dubbed “Red Barn” by railfans, the cowl body locomotive is a perfect follow-up to Bowser’s General Motors Diesel Division SD40-2 released last year. (See my review in the July 2016 *Model Railroader*.) Our review sample came factory-equipped with an ESU LokSound decoder that adds realistic sound to this detailed model on both Digital Command Control (DCC) and direct-current (DC) layouts.

The prototype. In 1988 and 1989 General Motors Diesel Division produced 25 SD40-2F diesel-electric locomotives for CP Rail. Built two years after the last SD40-2s rolled out of Electro-Motive Division’s La Grange, Ill., plant, the Canadian-built SD40-2Fs featured a

wide-nose safety cab and a cowl body. These custom-built locomotives marked the last SD40-2 order.

Like other SD40-2s, the heart of the SD40-2F was the 16-cylinder 645 diesel engine that produced 3,000 horsepower. The SD40-2Fs used a Positive Traction Control system, developed by Canadian National and GMDD that was an improvement over the stock EMD anti-wheelslip system.

The SD40-2F fleet soldiered on throughout the 1990s and 2000s. CP Rail started retiring SD40-2Fs in 2012. As of late 2016, all had been removed from the CP Rail roster.

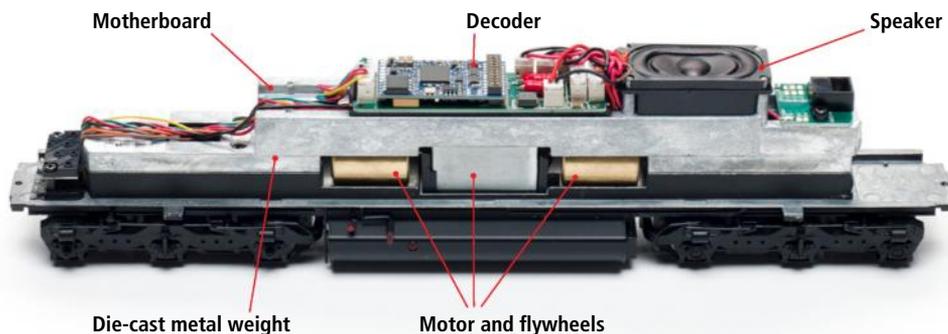
The model. The model’s dimensions match prototype drawings published in the July 1998 *Model Railroader*, and its details match prototype photos.

The plastic body shell features well-defined molded detail, including grills and engine-access doors on the sides of the body. The body accurately models the “Draper taper” behind the cab that improved rearward visibility for train crews. There’s also tread detail on the front and rear pilot decks. Separate detail parts include m.u. hoses, windshield wipers, and flexible plastic handrails that resist breaking.

The grab irons are wire. The three-chime air horn, bell, and bell bracket are brass parts. The roof-top dynamic brake fans and radiator fans feature see-through grills.

The cab features seats and interior detailing, but no crew figures. All the windows feature clear plastic glazing, including the portholes on the crew doors along the long hood. Our review sample models its prototype as it appeared after 1993, so there’s also a porthole in the front access door. As delivered, this door was blank.

Our review sample, no. 9022, models one of two SD40-2Fs (the other was no. 9000) that got repainted in the CP Rail “dual-flag” paint scheme in 1993. The model is smoothly painted with sharp color separation between the red and black on top of the short hood. The dual-flag logo is clearly printed with no voids in the graphics. Various stencils, including LIFT HERE on the jacking pads are legible under magnification.



A die-cast metal weight runs the length of the metal chassis. All the axles are powered and all wheels pick up electricity from the track.

Along with SD40-2F, the CP Rail classification of DRF-30Y is correctly printed under the road number.

Mechanism. After removing the front and rear coupler draft-gear boxes, I could easily lift off the plastic body shell. The mechanism looks nearly identical to that of Bowser's earlier model of a standard GMDD SD40-2. The dual-flywheel-equipped motor rests in the center of the metal chassis. Two drive shafts connect the motor to truck-mounted gearboxes. An additional die-cast metal weight runs the length of the locomotive and over the top of the motor.

The ESU LokSound decoder is plugged into a 21-pin socket on the motherboard. Leads run from the motherboard to two lighting boards at each end of the chassis. All lighting is supplied by light-emitting diodes (LEDs). An upward-facing oval speaker is also mounted atop the weight positioned underneath the radiator fans on the body shell.

Performance. As shown in the charts above, the locomotive accelerated smoothly from 1 scale mph to a prototypical 65 scale mph top speed on both our DC and DCC test tracks. The model's drawbar pull should be enough to handle 45 free-rolling HO scale freight cars on straight and level track.

During the hill climb test, the SD40-2F pulled 10 freight cars up a 3 percent grade without slipping. All-wheel electrical pickup kept the locomotive rolling smoothly with steady sound and lights. The freely swiveling trucks easily handled 18" radius curves and no. 5 turnouts.

DCC sound. The ESU LokSound decoder includes the Full Throttle diesel effects package. After pressing function 8 to start the engine sounds, I pressed function 9 (DRIVE/HOLD) so that I could

then use the throttle knob to manually notch the engine before heading down the main line. I then used function 10, the independent brake, to bring the locomotive to a stop.



PERFORMANCE TESTS	
DRAWBAR PULL	3.2 ounces 45 HO scale freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
7.25 (start)	1
9	15
10	30
12	65
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	1
7	19
14	42
28	65

Other user-triggered effects include the air horn, bell, and coupler sounds. The default horn sound is the correct Nathan K3H. For those who disagree, there are 15 other horns to choose from. The included quick-start guide lists all the available effects and features instructions for setting the volume levels of individual sound effects. A much more extensive user manual is available as a free download at www.esu.com/en/start.

Although the model comes with some pre-programmed momentum, I added more, as well as changed the locomotive address, using an ESU LokProgrammer computer interface (sold separately). The free LokProgrammer software makes it easy to program the indexed CVs required. I find it especially helpful for function mapping.

In addition to the dimmable headlights, I used function 6 to turn on the ditch lights and function 5 to control the classification lights. Just like the prototype, these lights can be set to white, green, red, or off.

I advanced the SD40-2F with a Bowser GMDD SD40-2. The LokSound decoder supports CVs 21 and 22, so I could adjust which effects were controlled by the consist address.

DC sound. Using a DC power pack, the sounds are limited to the diesel engine ramping up and down with the throttle. I appreciated that there was also built-in momentum during DC operation. Sounds also remained constant, even when I flipped the direction switch. The headlights operate according to the

Facts & features

Price: \$219.95 (DC no sound), \$319.95 (DCC sound)

Manufacturer

Bowser Mfg.
1302 Jordan Ave.
Montoursville, PA 17754
www.bowser-trains.com

Era: 1988 to 2016 (1993 to 2016, as decorated)

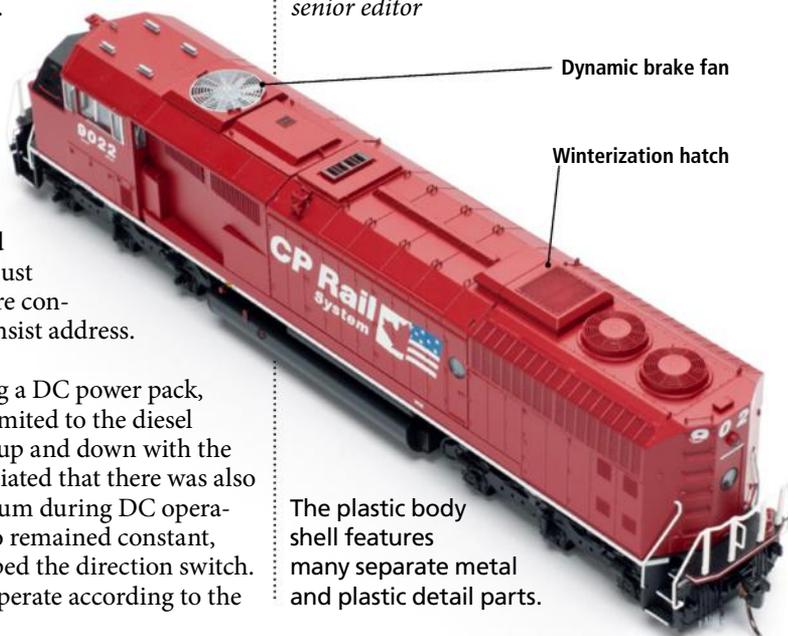
Road name: Canadian Pacific (multiple road numbers and paint schemes available)

Features

- 21-pin decoder plug
- All-wheel-drive and electrical pickup
- Die-cast metal frame
- Dual-flywheel-equipped can motor
- ESU LokSound Select decoder
- Kadee metal knuckle couplers at correct height
- Light-emitting-diode headlights, ditch lights, and class lights
- RP-25 contour metal wheels
- Weight: 1 pound, 3.5 ounces

locomotive's direction of travel. However, the ditch lights didn't come on and the class lights illuminated green in DC. Using a DC sound controller, such as an MRC Tech 6, provides access to all the decoder's functions in DC and allows some programming.

Superdetailed with super sound, the Bowser SD40-2F is an accurate model of a Canadian classic – *Dana Kawala, senior editor*



The plastic body shell features many separate metal and plastic detail parts.



Kato N scale Operation North Pole set

Chicago's rail transit authority, Metra, has been giving children with serious health problems a bit of winter cheer since 2011 in cooperation with Operation North Pole (operationnorthpole.org), a nonprofit organization that treats these kids to a day with Santa at the North Pole (actually, the Donald E. Stephens Convention Center in the Chicago suburb of Rosemont, Ill.).

Since 2012, Metra has wrapped a train in special vinyl decals for the event. Kato USA has a new N scale Operation North Pole set, consisting of an Electro-Motive Division F40PH and three Gallery Bi-Level cars, depicting the 2016 decoration of the train. A two-car add-on set is also available.

The prototype. The Electro-Motive Division F40PH has been a commuter locomotive stalwart since its introduction in 1976. Initially designed for Amtrak, commuter rail agencies from coast to coast have rostered F40PHs. Metra, the second-largest buyer after Amtrak, now rosters 87 F40PH locomotives, including two acquired from Amtrak.

The gallery bi-level cars in the special train were delivered in two groups, in 1994 through 1996 by Morrison Knudson and Amerail, and 2002 through 2008 by Nippon Sharyo USA. Both orders consisted of cab cars, used

to control trains in push-pull operation, and trailer cars.

The models. We first reviewed Kato's N scale F40PH in the December 2005 *Model Railroader*. The gallery bi-level cars were reviewed in the March 2012 issue as part of a Metra set that included an MP36PH-3S locomotive.

The big change here is the graphics applied to the models. Kato has done an excellent job of re-creating the vinyl wrap applied to the Metra equipment. All the printing is opaque and in register. The only slight deviation in the graphics I noted was on the cars. The stars on the full-size graphics are red and white, while on the model they're all white.

Hints of the standard Metra paint scheme show through, such as the car numbers and wheelchair accessible placards by the doors and the end striping on the cab cars, and the nose striping and grills on the locomotive – a nice touch.

The locomotive is a model of a Phase III F40PH, but Metra no. 133, the locomotive wrapped for Operation North Pole, is a Phase I unit.

The big difference between phases is the location and size of the fuel tank, and the location of the air tanks and battery boxes between the trucks. Phase III locomotives had 1,800-gallon fuel tanks mounted just behind the front truck, like the model, instead of the 1,500-gallon

tank mounted just ahead of the rear truck on Metra no. 133.

Kato's add-on two-car set allows modelers to re-create the entire five-car train. The cab cars have operating headlights and marker lights that are lit according to the train's direction. The locomotive has a similar feature. A switch on the bottom of the cab cars allows the lights to be turned off if the car is used mid-train, as cab car no. 8415, the "Donald E. Stephens," was in the 2016 consist. Kato sells a Digital Command Control (DCC) decoder, no. FL12, made by Digitrax to control the lighting with a DCC throttle.

All of the models were within scale inches of published dimensions. *Model Railroader* published drawings of a Phase I F40PH in the April 1987 issue, and the Nippon Sharyo website has overall dimensions for the passenger cars.

The locomotive has a five-chime horn on its cab roof, along with dual air-conditioning units and an offset amber rotary beacon, which isn't illuminated. The nose has illuminated marker lights, ditch lights, and a headlight, and the light above the cab is also illuminated, but doesn't flash. There's also no way to make the ditch lights flash alternately, which Metra locomotives' ditch lights do when the horn is sounded.

User-installed parts include a pair of snowplows – one with a larger opening



The basic Operation North Pole set includes the top three cars, the bottom two make up the add-on set. *Allstate Arena* and *Donald E. Stephens* are cab cars. The cab cars have switches to turn the headlights and marker lights on or off.



PERFORMANCE TESTS	
DRAWBAR PULL	.64 ounce 15 N scale passenger cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
1.5 (start)	2
3	24
9	105
12	192

to allow operation on tight-radius curves – m.u. hoses, and printed number boards for the illuminated number boxes.

Under the plastic shell is a die-cast metal frame that supports the motor and driveline. A detailed plastic frame casting depicting underbody details snaps onto the die-cast metal frame. Catches on the left front and right rear corners secure the body to the frame.

Atop the motor is a printed-circuit lighting board. Train Control Systems makes a replacement board for Digital Command Control, part K5D7. A clever light tube arrangement allows for the operating headlights, ditch lights, and marker lights.

On the test track. Our direct-current sample started moving at 1.5V at 2 scale mph. At 12V, it reached a top speed of 192 scale mph. The prototype gallery bi-level cars are designed for a top speed of 79 mph, and the F40PH has a top speed of 103 mph, so realistic top speeds are reached in the middle of the model's range.

Measured with our workshop force meter, the locomotive's drawbar pull of .64 ounce is equivalent to 15 N scale passenger cars on straight and level track. I took the train set to our Red Oak N scale project layout for further testing.

The Kato F40PH had no trouble pulling or pushing its five-car train around the layout, and all of the rolling stock operated flawlessly on the Red Oak's 13" minimum radius curves and no. 6 turn-outs, in either push or pull mode. The directional lighting made it fun to run

Facts & features

Price: \$195 (set), \$65 (two-car add-on set)

Manufacturer

Kato USA Inc.
100 Remington Road
Schaumburg, IL 60173
www.katousa.com

Era: Dec. 10, 2016

Roadname: Metra with Operation North Pole wrap

Features

- Blackened metal wheels, in gauge
- Directional lighting in cab coach and locomotive for push-pull operation
- Five-pole, flywheel-equipped motor and all-wheel drive on locomotive
- Kato magnetic knuckle couplers, at correct height (user-installed trip pins)
- Lighting kits available for passenger cars, no. 11-211 and 212
- Locomotive weight: 3.2 ounces
- Passenger car weights, cab car: 1.3 ounces (.14 ounce too light per National Model Railroad Association recommended practice 20.1); coach: 1.2 ounces (.23 ounce too light per NMRA RP-20.1)

the train both ways, as the cab car or locomotive always displayed the appropriate lighting aspect.

For a real-world test of the locomotive's pulling capacity, I added one car at a time to the consist. Confirming the results of our force meter test, the F40PH pulled a maximum of 15 N scale passenger cars without stalling.

With its colorful graphics and reliable performance, the Operation North Pole train would make an excellent addition for any layout whose owner wants to host a prototype-based holiday train. In addition, a portion of the proceeds from the sale of each train set goes toward funding Operation North Pole's trains. – *Eric White, associate editor*

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Operator version

Rivet Counter version

ScaleTrains.com HO Airslide covered hoppers

ScaleTrains.com has added a pair of General American Airslide covered hoppers to its HO scale freight car line-up. The first is a 4,566-cubic-foot-capacity car, part of the company's Rivet Counter line. The second is a 4,180-cubic-foot-capacity car, an Operator line model.

Both cars have a one-piece injection-molded plastic body with a separately applied roof. A steel weight is secured to the inside of the body with two ringed-head screws.

As the photo above shows, the level of detail differentiates the Rivet Counter (ADM Milling Co.) and Operator (Burlington Northern) lines. The ADM car has etched-metal running boards, wire grab irons, metal couplers, and Barber S-2 100-ton trucks with rotating bearing caps. The BN car has plastic running boards and couplers, holes for separately applied details, and trucks with non-rotating bearing caps. A modeler-installed detail set for Operator line cars is available separately.

General American produced the full-size 4,180-cubic-foot-capacity Airslide from 1963 to 1980. Over the course of the production run, there were variations, referred to as "phases" by railfans. The ScaleTrains.com car is a phase "TZL" car produced from 1966 to 1969. Features on these cars include a low handbrake on the B end and four grab irons on each side corner.

Our 4180 Airslide is decorated as BN no. 481433, part of the railroad's 481400-481457 series. The prototype was built for the St. Louis-San Francisco (Frisco) in 1969 and came to BN in 1980. The lettering, simplified on Operator line cars, matches prototype photos.

The full-size 4,566-cubic-foot-capacity Airslide covered hoppers were built from 1978 to 1985. Both the 4180 and 4566 covered hoppers were designed to carry dry, granular, or powdered commodities such as sugar, flour, starch, and clay, among other items.

Our 4566 Airslide is lettered as ADM Milling Co. no. 53066, part of the 53051-53100 series built in June 1981. The car is painted in its as-delivered scheme with the "molecule" logo.

The 4180 and 4566 Airslide covered hoppers closely follow prototype dimensions published in the 1970 and 1984 editions of Simmons-Boardman's *The Car and Locomotive Cyclopedia*, respectively. Though the cars have different capacities, the biggest visual difference between the two is the height. The 4180 measures 14'-4" from the top of the rail to the top of the running board. The 4566 measures 15'-3¹/₁₆".

I tested both cars on our Beer Line and Wisconsin & Southern project layouts. The cars negotiated the 18" curves on the Beer Line, but the manufacturer recommends a 22" radius. The only problem

Facts & features

Price: Rivet Counter, \$39.99; Operator, \$22.99

Manufacturer

ScaleTrains.com Inc.
7598 Highway 411
Benton, TN 37307
www.scaletrains.com

Era: 1963 to present

Road names: Six schemes per body style, two to four numbers per scheme.

Features

- 36" metal wheels, correctly gauged on both cars
- Weight: 4.4 ounces (Rivet Counter), correct per National Model Railroad Association Recommended Practice 20.1; 4.2 ounces (Operator), .2 ounce light per NMRA RP-20.1

I encountered was with the B-end coupler on the BN car. After a shove move, the coupler wouldn't always stay closed when I switched directions. If you use between or under-the-rails uncoupling magnets, note that ScaleTrains.com doesn't use trip pins on its couplers.

If you're looking for bulk commodity haulers for your HO layout, check out these Airslide covered hoppers from ScaleTrains.com. – *Cody Grivno, associate editor*

QUICKLOOK

Atlas Bulkhead Flatcar with pipe load

Price: \$36.95

Manufacturer

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

Era: 1970s to 2000s

Comments: A new removable pipe load and more road names highlight the latest run of this HO scale 68-foot bulkhead flatcar from Atlas. An earlier release was reviewed in the April 2010 issue of *Model Railroader*.

The included plastic pipe load accurately models scale 62-foot lengths of 24" diameter pipe. The prototype pipe is commonly used in large sewer and drainage projects. The load includes simulated metal banding and cradles and rests securely on the flatcar deck.

The flatcar is part of Atlas' Trainman line. It's overall dimensions match those

of prototype drawings and diagrams for various 68-foot bulkhead flatcars, including one from the February 1984 issue of *Model Railroader*. However, I couldn't find a builder-specific prototype that matched the model's details.

Our review sample is decorated as Burlington Northern no. 621460. That prototype was part of a 200-car order of bulkhead flatcars built by Thrall in 1976. However that prototype is a smaller 100-ton car that measures 61'-6" vs. the model's 68 feet.

The model is smoothly painted in BN green with lettering that's accurate for the BN prototype. All the decoration is clearly printed. The information on the Clean, Oil, Test, and Stencil (COTS) panels is also correct and legible under magnification.

The Atlas bulkehead flatcar has well-defined molded detail, including stake pockets and a simplified underframe.

The brake wheel and end ladders are separate parts.

A die-cast metal center sill provides much of the car's 3.7 ounce weight. Adding the 1.3 ounce plastic pipe load brings the loaded weight to 5 ounces, which is .75 ounce too light per National Model Railroad Association Recommended Practice 20.1.

The plastic truck sideframes feature molded spring and (non-functioning) roller bearing details. The chemically blackened scale 36"-diameter wheels are in gauge. The plastic Accumate knuckle couplers are body-mounted at the correct height.

In addition to Burlington Northern, the other road names available in this run are CAI Rail, Canadian National, Illinois Central Gulf, Louisville & Nashville, and TTX. Each road name is available in multiple road numbers.

– Dana Kawala, senior editor



FIRST TIME IN HO SCALE*

GE C39-8

(Actual Model Shown)

A photograph of a GE C39-8 locomotive in HO scale, painted in dark blue with white and yellow accents. The locomotive is shown from a front-three-quarter view, with the number 8622 visible on the front and side. The background shows other locomotives and a clear sky.

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Scene and photography by Ken J Johnson
Preproduction model shown

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QUICKLOOK

Menards HO scale Fire Station 12

Price: \$69.99
Manufacturer: Menards
5106 Menard Dr.
Eau Claire, WI 54703
www.menards.com/trains
Era: 1960s to present

Comments: Fans of the 1970s-era TV show "Emergency!", still seen in syndication on some cable channels, will recognize the architectural style of the latest HO scale factory-assembled structure from Menards. Fire Station no. 12, like the company's previous HO and O scale offerings, is sturdily constructed of acrylic and tempered hardboard, illuminated with more than a dozen light-emitting diodes, and detailed with trees, bushes, static grass, rocks, a flagpole, and seven figures, including the omnipresent Jack the German Shepherd.



The structure resembles the modern minimalist-style fire stations I remember from my childhood in Long Beach, Calif., in the early 1970s, and from my favorite TV series at the time. It's not designed to be an exact replica of Station 51, though.

Menards' structures are designed to appeal to the train-set crowd, with factory-landscaped bases and plenty of animated features. The building is studied inside and out with bright white and red LEDs. Two more LEDs are situated at the base of the flagpole, but they glowed through the adjacent grass more than they illuminated the flag. There's also a rotary air vent on the roof that turns slowly when plugged in.

Powering the lights and animation requires a 4.5V DC power adapter, sold separately (\$7.99, no. 2794061). There are plugs on the back and underneath.

The structure is made of tempered hardboard, laser-etched with roof ridge or brick wall textures. A thin acrylic interior wall doesn't reach the top of the ceiling above, exposing lighting circuitry from some viewing angles. A sticker printed with interior details was attached to the back wall.

I hoped that the lights on the fire truck in the driveway were illuminated, but they weren't. The die-cast metal and plastic vehicle was glued down to the base, but it shouldn't be too hard to pry it up if you wanted to wire it for working lights.

Menards' offerings are fun ways to fill up your layout with factory-finished and -detailed structures. Sometimes, they're good for a trip down memory lane. — Steven Otte, associate editor



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Spice up a schedule with sections

Last June, I explained how train signals, such as classification lights or flags, help railroaders identify opposing trains. White flags and white lights indicate that trains are extras, not regular trains. Another type of train signal applies to the movement of sections, which can add an interesting element to an operating session.

Consider a surge in traffic that produces more tonnage than normal, such as a grain rush or holiday passenger travel. With additional cars to move, more trains are needed. An operating officer or a dispatcher has the ability to run two trains on the same schedule to accommodate the additional movements.

Run two trains on the same schedule, you say? That's preposterous!

Not at all. Rule 85 explicitly allows two or more trains to run on the same schedule. Now, that doesn't mean running at the same time – an important distinction. Rule 82 keeps a schedule in effect for 12 hours, so a second section could run hours later than the first. Think of sections as a regular train in two parts, each with its own locomotive, crew, and marker.

A train in two parts? How can an opposing train know when the train it's waiting to meet is running in sections?

Under Rule 20, carrying green flags or green lights on the front of the engine warns opposing trains that another section will follow. The dispatcher must instruct the crew of a regular train to run as a section with a train order, such as, "ENG 34 DISPLAY SIGNALS AND RUN AS FIRST 2 A TO Z." "First 2" makes it a regular train for which signals must be green. A and Z are the points between which



Leading train No. 11, engine 12 displays green flags, so Extra 67 South can't leave the passing siding until all sections of No. 11 have passed. Perry Squier photo

the sections will run. The dispatcher later writes a second order, "ENG 56 RUN AS SECOND 2 A TO Z." Only First 2 was instructed to display signals, so Second 2 will not.

These orders have two trains running on No. 2's schedule, First 2 and Second 2. Had it been necessary for the dispatcher to run more than two sections, each section except the last would be ordered to display signals.

An inferior train waiting to meet No. 2 must not proceed until both sections have passed, whether the second section follows by 10 minutes or 10 hours. When Second 2 reaches any inferior train, the absence of signals tells the opposing crew that all trains of this schedule have passed and the meet is complete.

Here's an example. We're at the throttle of Extra 67 South on Perry Squier's Pittsburg, Shawmut & Northern, waiting on the siding at Farmers Valley to meet train No. 11. A long and two short whistle blasts sound as the train approaches, calling attention to signals. We see green flags flying from the engine's front and acknowledge this by answering with two shorts.

Our meet will not be complete until we see Second 11 carrying no signals.

If the extra doesn't acknowledge signals with its whistle signal, First 11 must stop and make sure that the extra knows that another section is following. This protects the extra from risking a collision because its crew didn't notice First 11's green signals before proceeding.

Should waiting for Second 11 delay Extra 67 South considerably, the dispatcher can "help" the extra by sending an order to both trains: "EXTRA 67 SOUTH MEET SECOND 11 ENG 21 AT NORTH FORK."

This order forces Second 11 to wait at North Fork, allowing the extra to proceed from Farmers Valley.

The photo shows one way train signals can be modeled with small flags, and DCC sound gives engineers the ability to make whistle signals. A modeler need not go to such in-depth detail,

however. Here's another approach: Have your crews identify themselves when meeting another train. Answers to "who are you?" include "I'm First 11 with green signals" or "I'm Second 11 with no signals."

Running sections wasn't confined to first-class trains. Many railroads ran freight trains on second- and third-class schedules. Southern Pacific's Tehachapi Line regularly saw multiple sections – three, four, and more – of manifest freights, identifying trains this way by special instruction at times well

after centralized traffic control was installed.

Sections offer a variation to any operating session that schedules regular trains. An occasion as simple as a one-car officers' inspection train can spice up operation running as a second section on any layout, large or small. Try adding "display signals" to a train order for a change. **MR**



AN INFERIOR TRAIN WAITING TO MEET NO. 2 MUST NOT PROCEED UNTIL BOTH SECTIONS HAVE PASSED, WHETHER THE SECOND FOLLOWS BY 10 MINUTES OR 10 HOURS. – JERRY



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● The company photographer got up early on this sunny morning in 1956 to photograph the new all-stainless-steel Budd consist on the *El Capitan*. Dave Bigge of Thayne, Wyo., staged and photographed the scene on his HO scale Cajon Pass layout.

MORE ON THE WEB

● Dave Bigge's HO scale *El Capitan* photo above is this month's computer wallpaper. Download it free at ModelRailroader.com

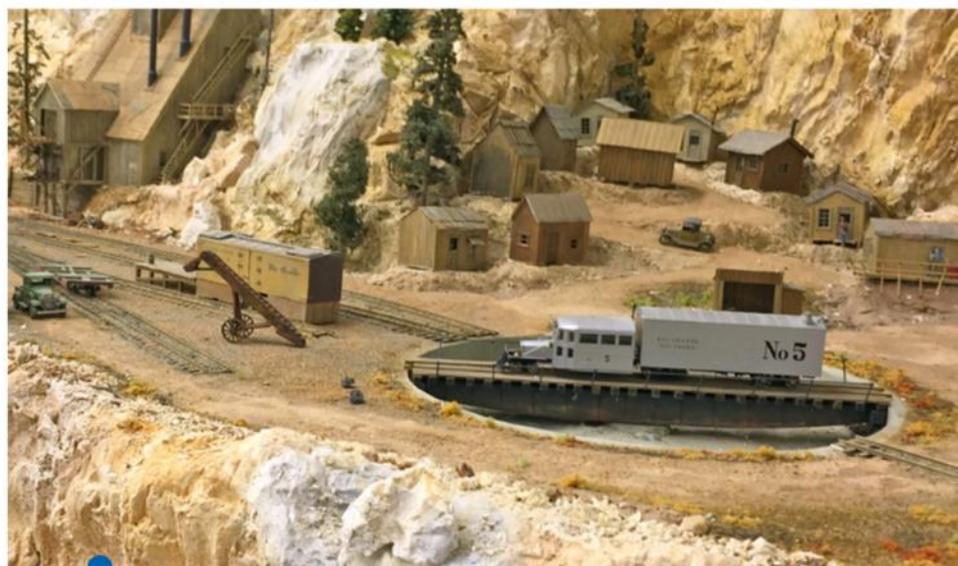


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A Burlington Northern SD40-2 leads a similar unit leased from the Iowa, Chicago & Eastern across the cornfields of Iowa, as an ominous sky looms. Paul Brennecke of Golden, Colo., shot the photo on Patrick Lana's N scale Cedar River & Iowa Central Ry. (CRANDIC) layout, which was featured in *Great Model Railroads 2013*. The locomotives are InterMountain models.



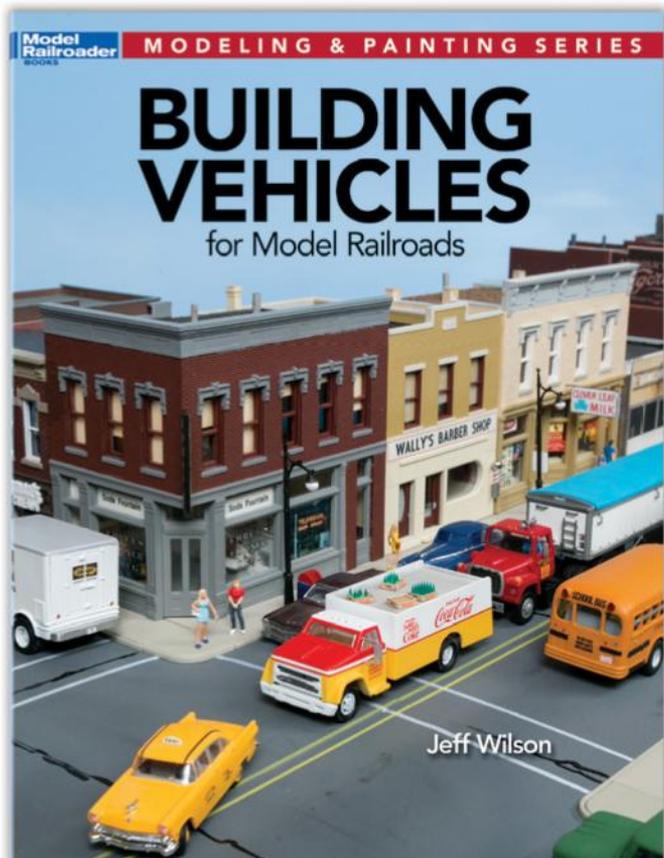
A Galloping Goose takes a spin on the turntable at the small mining town of Pine Mountain on the narrow gauge Sockeye, Pine Mountain & Chumstick RR. Stephen Sulkin of Bellingham, Wash., photographed the scene on his freelanced HO scale layout. The Goose is a Con-Cor model; the miners' shacks are by Classic Miniatures.



The sky may be blue along the Union Pacific main line in Colorado, but soon snow will fly, so firewood is stacked and drying by the maintenance shack for use by caboose crews on cold nights. Tom Vaught built and photographed this O scale diorama inspired by a move to Fort Collins, Colo., and by his friend in model railroading, Chuck Ingrahm.



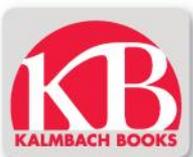
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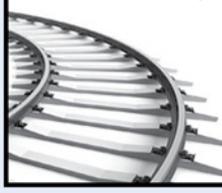
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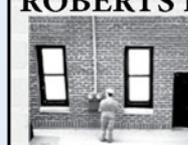
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Schedule of Events Rate: \$35 per issue (45 word maximum). Ads will contain the following information about the event: state, city, sponsoring organization and name of event, meet, auction or show, dates, location, times, admission fee, name and/or telephone number and/or email of person to contact for information. Name, daytime telephone number and street address of the person providing the information is also required but need not be included in the ad. Unless otherwise requested, ads will be published in the issue month that the event occurs in. Additional months are available at the \$35 per issue fee. Please specify issue date(s).

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All Copy: Set in standard 6 point type. First several words only set in bold face. If possible, ads should be sent typewritten and categorized to ensure accuracy.

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All ads must be prepaid and pertain to the subject of model railroading.

CLOSING DATES: Jan 2018 closes Oct. 20, Feb. closes Nov. 13, March closes Dec. 19, April closes Jan. 22, May closes Feb. 19, June closes Mar. 19, July closes Apr. 23, Aug. closes May 18, Sept. closes June 22, Oct. closes July 23, Nov. closes Aug. 17, Dec. closes Sept. 24.

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 10, 11, 2018, 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 charlieboye6@comcast.net

AR, ROGERS: Sugar Creek Model Railroad Historical Society, Fifteen Annual Show, Embassy Suites, 3303 Pinnacle Hills Pkwy, Rogers, AR. Saturday, March 17, 2018, 9:00am-4:00pm. Adults \$8.00, under 12 free. Keith Johnson, 479-871-2802, E-mail: train072@cox.net or NWA Train Show, PO Box 1283, Farmington, AR 72730, Website: www.railroadclubssugarcreek.org

CO, DENVER: Rocky Mountain Train Show March 3-4, 2018. Denver Merchandise Mart, 451 East 58th Avenue, Denver, CO 80216. Saturday, 10:00am-5:00pm, Sunday 10:00am-4:00pm. 2-1/2 acres of model trains of all scales, 30 layouts, 600 sales tables, clinics and more. Admission \$10.00 Free Parking. Phone: 303-364-0274 www.RockyMountainTrainShow.com information@RockyMountainTrainShow.com

FL, FORT MYERS: Scale Rails Annual Train Show. Araba Temple, 2010 Hanson Street. February 17-18, 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, KISSIMMEE: Regal Railways Presents Toy Train Collectible & Hobby Show, 2000 Neptune Road. Saturday, February 24, 2018, 9:00am-2:00pm. Admission: \$5.00 adults. Vendors, operating layout, videos playing. Lunch items for sale. Contact Joe: 727-244-1341 or visit: www.regalrailways.com for more information.

FL, OCALA: Lions Semi-Annual Train Show. First Christian Church, 1908 SE Fort King St. Saturday, March 3, 2018, 9:00am-3:00pm. Adults \$5.00, children 12 and under free w/adult. Bring two canned goods and receive \$1.00 off admission. Information: Bob 352-694-6381 or cell 352-208-5284

FL, PORT RICHEY: Toy Train Collectible & Hobby Show, New Lake Civic Association, 8330 Civic Rd. Port Richey, FL 34668. Saturday, February 17, 2018, 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.

FL, STUART: Martin County Model Railroaders 11th Annual Train Expo. Martin County Fairgrounds, 2616 Old Dixie Hwy. January 20-21, 2018, 9:00am-3:00pm. Admission: Adults \$6.00, Operating layouts, sales tables, displays & NMRA information. Information: Bill Smet, 772-233-0279, mcmr2616@yahoo.com or PO Box 1498, Stuart, FL 34995.

GA, SAVANNAH: Coastal Rail Buffs 29th Annual Model RR Train Show. National Guard Armory, 1248 Eisenhower Drive, Zip: 31406. January 27-28, 2018, 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

IA, MONTICELLO: M.R.R.C. Train Show and Swap Meet. Bernes Center, Jones County Fairgrounds, 766 N. Maple St. Sunday, January 28, 2018, 9:00am-3:30pm. Admission \$5.00, children under 12 free. Contact Denny Beasley, CircleBarB607@aol.com or phone 319-270-1171 between 6 and 10 PM.

IL, ROCKFORD/BELVIDERE: Rock River Valley Division NMRA 27th Annual Show & Sale. NEW LARGER LOCATION. Belvidere North High School, 9393 Beloit Rd., Belvidere, IL. March 24th 10:00am-5:00pm, March 25th 10:00am-4:00pm. Admission \$5.00 under 12 free. Website: rrvd-nmra.org or Doug 815-765-3135 vendors contact dobnrindle@aol.com or Don 815-874-6095.

IL, SPRINGFIELD: Springfield Railroad Society Annual Train Fair. Orr Building on the State Fairgrounds. Sunday, March 25, 2018, 10:00am-4:00pm. Early Bird shopping starts at 9:00am. Free parking. Largest show in downstate Illinois! For info call Ray at 217-544-4295 or visit www.springfieldtrainfair.com

IN, AUBURN: RxR Mania Train Show & Antique Show. Kruse WWII Museum, (National Military History Center), 5634 County Road 11-A; from Interstate 69, Exit 326; Saturday, February 3, 2018, 9:00am-3:00pm. Adults \$5.00, under 12 free. \$20.00 per table, 5+ tables \$15.00 each. Info: www.RxRMania.com or 260-715-2519

IN, INDIANAPOLIS: The Indianapolis Model Railroad Show and Open House. Manual High School Gymnasium, Saturday, March 3, 2018, 10:00am-3:00pm. Admission \$5.00, children 12 & under free. Boy Scouts in uniform free. Free parking. Naptown & White River Model Railroad Club. Contact: Steve Handly, 317-786-8627, E-mail: naptownmrr@gmail.com

IN, MICHIGAN CITY: Duneland Model RR Club Train Show and Swap Meet. IBEW Building, 301 East 8th St. Sunday, February 25, 2018, 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, MUNCIE: 27th Annual Muncie Model Train Show, Delaware County Fairgrounds, 1210 N. Wheeling Ave., Zip: 47305. Saturday, February 24, 2018, 11:00am-4:00pm. Admission \$5.00, 12 and under free. 200+ Vendor tables, operating layouts, Circus Memorabilia, Free parking. Food on-site. Contact: Brandon Mundell, 765-288-6505, Store@toyforeverhobbies.com

IN, NOBLESVILLE: Central Indiana Division/NMRA Train Show. Hamilton County 4H Fairgrounds, 2003 Pleasant Street. Noblesville, IN. Sunday 28, 2018, 10:00am-3:00pm. Admission \$3.00 or \$5.00 family. Dealers, Portable Train Layouts, Clinics, Door Prizes. Dealer tables \$12.00. Contact Tom Cain 317-696-2818 or atsf93@comcast.net

KS, LAWRENCE: Lawrence Model Railroad Club 17th Annual Train Show and Swap Meet. Crown Toyota Kingdom, 3400 S. Iowa St. February 10-11, 2018, Saturday 9:00am-4:00pm; Sunday 9:00am-3:00pm. Admission: \$6.00 donation, 12/under free w/adult. Contact: Steve M., 785-979-2711, www.lawrencemodelrailroadclub.org

MA, AUBURN: Worcester Model Railroaders Annual Show at Auburn Elks Club, 754 Southbridge St. Sunday, February 25, 2018, 10:00am-3:30pm. Admission: \$5.00, children under 12 free. Two floors of dealers, exhibits, modular layouts. Contact: Ralph Kimball, 508-868-5189, ralphkimball@charter.net or www.wmrr.org

ME, AUGUSTA: Whitefield Lions Club 32nd Annual Model Railroad & Miniature Dollhouse Show, National Guard Armory, Western Avenue. February 17, 2018, Open 10:00am-3:30pm. Adults \$5.00, under 12 free, family \$10.00. Operating layouts, miniature displays. Contact: Steven Landrie, 50 Fairview Ave., Randolph, ME 04346. 207-582-1410, slaundrie@roadrunner.com

MN, WOODBURY: Newport Model RR Club Flea Market & Train Show. Woodbury High School, 2665 Woodlane Drive, Zip: 55125. January 20, 2018, 9:00am-2:00pm. Admission \$5.00. Future Show: April 7, 2018. Club Address: Newport Train Club, PO Box 0061, St. Paul Park, MN 55071. Contact: Ed, 651-233-3310

NC, ASHEVILLE: Asheville Train Show. Western North Carolina Agricultural Center. March 2-3, 2018. Friday 12:00pm-7:00pm and Saturday 9:00am-5:00pm. Admission \$6.00, under 10 free. All scales, all gauges, collectibles, artifacts. Operating layouts, Thomas The Tank Engine, hundreds of vendor tables. More: www.Asheville-Trainshow.com

NC, GREENSBORO: 10th Annual 'Greatest Little Train Show'. AMTRAK Depot, West Concourse, 236 E. Washington St. Saturday, March 17, 2018, 10:00am-3:00pm. \$5.00 adults, under 12 free. Onsite CMR layouts. Free Downtown city meter/parking. Contact Jim Turckett, 336-314-3341, Jturckett@gmail.com or mail CMR, PO Box 13642, Greensboro, 27415

NC, NEW BERN: 23rd Annual Train Show. New Bern Riverfront Convention Center, 203 South Front Street. February 24-25, 2018 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, FISHKILL: Fishkill Model Train and Railroad Hobby Show. Fishkill Recreation Center, 793 Route 52, Sunday, February 11, 2018, 10:00am-4:00pm. Adults \$7.00, kids under 12 \$2.00, 13,000 sq. ft. Operating layouts, dealer, vendor tables, Thomas The Tank Engine and LEGO trains. Information: 845-616-0931 or www.kingstontrainshow.com

NY, ROCHESTER: TCA Upstate NY Chapter & Edgerton Model RR Club's Train Show. Edgerton Community Center, 41 Backus Street. Zip: 14608. Saturday, February 24, 2018 TCA Members: 9:00am-10:00am. Public: 10:00am-3:00pm. Admission \$5.00, children under 17 free w/paid adult. Call: Chuck 716-390-8216 or Lee 585-544-0916. E-mail: tca.usnyc@yahoo.com or www.upstate-ny-tca.com

NY, SYRACUSE: Syracuse Model Railroad Club Open House. Eastwood American Legion Hall, James Street at Nichols Ave. Sunday, February 25, 2018, 10:00am-4:00pm. Adults \$4.00, 12 and under \$2.00, family maximum \$12.00. An HO layout, LEGO layout, dealers selling train models and railroad items. Contact: Ken Cameron, 315-706-7580.

OH, COLUMBUS: The 10th Ohio N Scale Weekend, "For N-Scalers by N-Scalers" Franklin County Fairgrounds, Hilliard, Ohio. Presented by Central Ohio N-Trak. May 19-20, 2018, Saturday, 10:00am-5:00pm and Sunday 9:00am-3:00pm. Set-up Friday May 18th, 1:00pm-8:00pm. Event registration \$10.00. Event info www.centralohiontrak.org or e-mail chionscaleweekend@yahoo.com

OH, MT. HOPE: CJ Trains Spring Train and Toy Show. Mt. Hope Event Center, 8076 St. Rt. 241, Zip 44660. Saturday, March 24, 2018, 10:00am-4:00pm. Admission: \$5.00, Free under 12. \$25.00/dealer table. 600+ tables. Contact, Jon Ulbright, 330-262-7488, cathijon@ssnnet.com, www.cjtrains.com (GPS directions: Millersburg, OH 44654)

OH, SPRINGFIELD: Springfield Area Model Railroaders Model Train Show and Flea Market. Clark County Fairgrounds, I-70, Exit 59. March 25, 2018, 11:00am-4:00pm. \$5.00, under 12 free. Robert D. Chaffin, Jr., PO Box 51, Springfield, OH 45501, 937-346-6734.

OH, TOLEDO: Greater Toledo Train & Toy Show. Owens Community College (SHAC), 30335 Oregon Rd., Perrysburg, OH 43551. Sunday, March 11, 2018, 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, toledototymasters@gmail.com

OH, VERMILION: Norwalk & Western RR Model Train Show & Swap Meet. German's Villa, 3330 Liberty Avenue (US Rt. 6). Sunday, January 21, 2018, 10:00am-3:00pm. Admission: 10 and over \$5.00. Trains all scales, historical items, operating layouts, lunch available, free parking. Information: 419-706-8038, www.norwalkandwesternrr.com

PA, NEW CASTLE: BLRHS Frosty Rails Train Show. Shenango Twp VFD Social Hall, 2424 E. Washington St., 16101. Next to Dunkin Donuts, February 18, 2018, 10:00am-3:00pm. Adults \$5.00 (\$4.00 if you mention Model Railroader ad) Children under 12 free. Info: blrhs.org or Clark McKim cmckim1@verizon.net 412-974-0935

SC, CHARLESTON: Charleston Area Model Railroad Club Annual Train Show. Danny Jones Armory Park, 5000 Lackawanna Blvd. North Charleston. March 17-18, 2018. Saturday 9:00am-5:00pm and Sunday 10:00am-4:00pm. Adults \$5.00, Active military and family's are Free. Children under 12. Free Table rentals information, contact trainshow@chamrc.com or www.chamrc.com

SC, COLUMBIA: Jamil Temple, 206 Jamil Road. Saturday, March 24, 2018, 9:00am-3:00pm. Admission \$5.00, under 10 FREE. Over 200 vendor tables, Thomas the Train & Friends, railroad collectibles. Contact Todd at 843-307-8674, southcarolinatradeshow@gmail.com or www.SouthCarolinaTradeShows.com

SC, EASLEY: CRMHA MODEL TRAIN EXPO - \$7.00 Adults, Children FREE. Friday February 9th 1:00pm-7:00pm. Saturday, February 10th, 10:00am-4:00pm. Rock Spring Church - Impact Center, 207 Rock Springs Road, Easley, SC 29642. www.CRMHA.org 864-719-0096 or trainshow@crmha.org

TX, PLANO: NTC 3rd Annual Fall Plano Train Show. Plano Centre, 2000 E. Spring Creek Parkway. January 20-21, 2018, 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.dfwtrainshow.com

WA, CHEHALIS: Lewis County Model Railroad Club, Annual Spring Model Railroad Swap Meet and Show. Southwest Washington Fair Grounds, Blue Pavilion Building, 2555 N. National Ave., Zip: 98532. April 7-8, 2018, Saturday 10:00am-4:00pm and Sunday 10:00am-3:00pm. Admission \$5.00. Free parking. Contact information: Ted, 360-985-7788 or tedstrains@lewiscounty.com

WA, VANCOUVER: SP&SRHS Railroad Swap Meet. WareHouse23, 100 Columbia St. Saturday, February 17, 2018 from 9:30am-2:30pm. Adults \$5.00, 12 and under-Free. All scales of railroad items for sale. Local clubs and societies. Collectibles. Vendor tables \$30.00. Info: Jerry Pickell 360-735-0516 or pickell5141@msn.com

WI, STEVENS POINT: CWMR 21st Annual Model Railroad Show. Holiday Inn Convention Center Hotel, 1001 Amber Avenue. February 3-4, 2018. Saturday 9:00am-5:00pm; Sunday 10:00am-3:00pm. Adults \$4.00, \$2.00 kids 12-17. Many layouts, swap/sales tables, vendors. Paul Clasen, 4546 Buckhorn La., Stevens Point, WI 54481, designcentralwi@yahoo.com 715-341-5253.

CANADA-ON 23rd Annual Model Train Show. Essex Public School, 72 Brian Ave. E. Essex, ON, N8M2N8. February 24 & 25, 2018, Daily 9:30am-3:30pm. Adults \$5.00. Display, Memorabilia, Interactive Train Model and More! Contact Historic Essex Railway Station at 519-776-9800 or heritageessex@bellnet.ca

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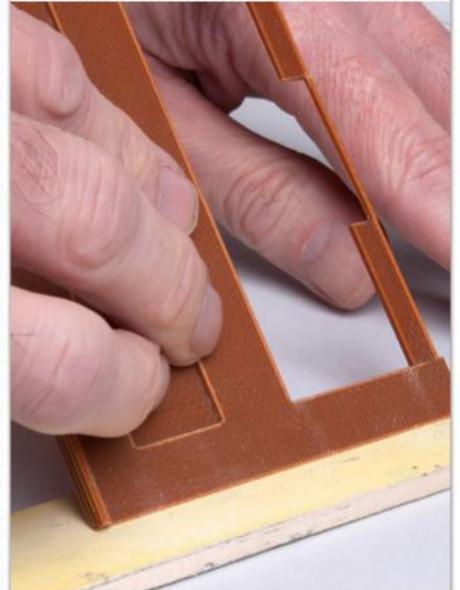
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Modeling the photo line

Those of you who are not only modelers but railfans will probably be familiar with the time-honored tradition of the photo line. The idea is that everyone lines up abreast so that no one is in anyone else's photograph. The photo at right illustrates the concept. It also suggests some interesting scenic and operational possibilities for our model railroads.

A photo line could be the premise for what we commonly call a mini-scene. The reason for the gathering of railfan photographers could be a special run such as a fan trip, a circus train, or the last (or even first) run of a train or type of locomotive.

The occasion need not mark something exceptional; new motive power or one of the last hood units painted in the classic Santa Fe war-bonnet scheme on the head-end of a freight could trigger such a gathering of lenses.

Translated to model railroading, a planned change of the modeled era could be reason enough to pose some photographer figures in a photo line. The Utah Belt is well known in part because of Eric Brooman's ongoing quest to keep the railroad up-to-date. So the last run of a UB F unit, first-generation Geep, or early U-boat could warrant a brace of camera-toting fans at lineside.

From an operational standpoint, it may pay to look at events that cause railfans to gather, and work one or more of them into our plans. [See "Operate a fan trip on your layout" by Jim Hediger in the May 2008 issue. – Ed.] The most obvious would be a steam-powered fan trip on a post-steam-era railroad.



In 1950, a Toledo, Ohio, group ran a fan trip over the New York Central from Jackson to Adrian, Mich., behind a soon-to-be-retired New York Central K-3q Pacific. Jim Findlay photographed Extra 4638 South and the photo line during a brief stop in Tecumseh, Mich. Doug Leffler collection

As one who in the 1960s was intimately involved in what went on behind the scenes of a steam fan trip, I can tell you that a lot of planning and logistical support is required. Just getting coal and water to a steam locomotive in an era devoid of water tanks and coal docks is a major undertaking.

To be sure, our miniature versions are like old-time western movies, where the good guys had six-shooters with a seemingly infinite supply of bullets – we never run out of coal. But fair is fair: we should assume that the local fire department will meet our excursion train at a busy point on the railroad and drape fire hoses across the main line to refresh the tender's water cistern.

The preparation starts with the gathering of passenger cars, including an open-door baggage car for the head end. The steam locomotive will look considerably more spic-and-span than its typical in-service appearance. The usual order of battle for a passenger train – head-end cars,

coaches, diner, and sleepers – won't apply. Instead, there will be a preponderance of coaches, a snack car, perhaps a generator car to energize the electric air-conditioning systems on modern passenger cars, and maybe even a dome and an observation car.

Before the excursion, you'll want to spot a hopper filled with coal and a conveyor (unless the star of the show is an oil burner) at the mid- or turnaround point of the excursion. Most excursions are round trip. Special orders will be required to create that move. The local fire department in full regalia should be waiting for the arrival of the train to pump water at one or more strategic locations, depending on the duration of the trip. A local petroleum dealer's tank truck will be needed for oil burners.

And then there's the photo line. Figures holding cameras are available in most scales, so your task will be to find a highly photogenic spot along the run and arrange the photographers in a line, probably a gentle arc, facing the oncoming train. Railfans are usually a patient lot, so they won't mind being placed there well ahead of the excursion's passage.

Someone with a bullhorn or portable two-way radio should be positioned to one side, as should at least one railroad official wearing a suit and hat – or hard hat and safety vest. If your railroad has run fan trips before, the officials will probably stay out of the way and let the railfan organizers manage the activities.

"OK, everyone quiet on the photo line! Highball, Extra 4638 South!" **MR**



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