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captures the grit of  
industrial railroading  
on his Los Angeles  
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**Model Railroader** SPECIAL ISSUE

# GREAT Model Railroads 2019

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## Great things in small packages

**WE DON'T PLAN** to give a theme to each year's edition of *Great Model Railroads*. We simply pick the best layout articles to come across our desk. Sometimes, though, a theme happens to emerge on its own.

This year, it seems the theme is compact layouts. Now, we're aware that small model railroads are a popular topic with our readers; we've published issues of *Model Railroader* collecting several articles on that topic. But we swear it didn't occur to us until we saw this issue's articles pinned up on the meeting room walls that we noticed so many of the layouts were spare-room-sized or smaller. We didn't plan it that way, I swear.

But if we had planned this issue to prove the idea that small model railroads can be great model railroads, I doubt we could have deliberately picked better examples. Take our cover feature, for one. Lance Mindheim is well known to regular MR readers as a talented and innovative model railroad designer and builder. His Los Angeles Junction is just as immersive and realistic as any of his other layouts we've featured over the years. But every one of the gorgeous photos you'll see starting on page 8 was shot on a shelf layout that occupies a total of just over 18 square feet. To top it off, the railroad is built on sleek "floating" benchwork that makes it worthy of being called a work of art.

Though it's about the same square footage as the LAJ, Fred Miller found room to build two separate railroads on

his HO scale shelf layout. The steam-powered Fox Hill & Metuchen RR and Fox Hill Traction Co. share a town and interchange traffic on this 18" wide shelf. Automated controls run trains through their paces while Fred tries to keep operations running smoothly on the other railroad.

For a more prototypical layout, look no further than Phil Lord's Lehigh Valley RR. Phil's HO scale model railroad began as a childhood memory of watching LV trains at the depot outside his kitchen window. Phil researched and reproduced not only the prototype track configuration at New Woodstock, N.Y., but also the structures, from the depot and trackside industries to the neighborhood houses.

Though its footprint is slightly bigger than those examples, the Gold Creek Logging Co. is still fairly compact for O scale. Meant to be displayed at train shows, the sectional On30 layout is designed like a movie set, with the trains as the actors. Several scenes are inspired by films, including *North to Alaska* and *Paint Your Wagon*.

If you've let a lack of layout space keep you from bringing your model railroading dreams to life, let these pages serve as inspiration. Maybe get your feet wet with a 2 x 4-foot module. Once you start, there's no turning back.

*Steven W. Otte*

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# MODELING THE LAJ

**1** Sabor Hispano is a small food-products manufacturer that still receives cars on its extremely short siding. This scene, based on the prototype track arrangement, harkens back to the way things looked in the steam-to-diesel transition era.

# A shelf layout designed as a work of art for a living space

By **Lance Mindheim**  
Photos by Paul Dolkos





**LOS ANGELES ISN'T ONE** homogenous place. As with any large city, it's a mosaic of neighborhoods, suburbs, regions, and incorporated jurisdictions, each with its unique look and vibe. Nestled in that patchwork is Vernon, home of the Los Angeles Junction Ry. (also known as LAJ, the Junction, or the "J").

Unless you're a railfan, Vernon, Calif., isn't going to be on your short list of vacation destinations. Not only is it, shall we say, "glamour challenged," but it's had a long and colorful political history. In a May 2011 article, *L.A. Weekly* said Vernon "may be the most corrupt five square miles in California." But if the LAJ has one thing, it's character.

Flanking both sides of the Los Angeles River, the J is a spiderweb network of industrial spurs weaving through a roughly five square mile industrial enclave in southeast L.A. Industry leads make abrupt 90-degree turns down narrow alleys, cross back and forth over one another, and dart across city streets at every conceivable angle. Businesses occupy a dazzling array of Streamline Moderne architecture, a form of Art Deco. Streets are lined with live oaks and rail rights-of-way with palm trees. Any railfan could be forgiven for being totally swept away by the experience of simply taking in the scene.

Every hobbyist goes into a new model railroad project with his own unique set of goals. With my HO scale model of the

**2** The lead to the food-processing plant siding in the foreground is sometimes used as a team-track spot, as is the case with this flatcar load of large machinery. Team tracks are a way to increase freight traffic on a layout without adding structures.

LAJ, I was looking for three things. I've always been captivated by the mystique of "J" country. More than anything else I wanted a layout that, when I looked at it, gave me the sense of being transported to Vernon in 2008. I wanted the ambiance of the place to wash over me.

Second, I wanted something that would serve as three-dimensional art. When I walk into the room, I want my creation to give me the same fulfillment as looking at a favorite painting.

Finally, I wanted something that I could operate, and to that end would run flawlessly.

## PLANNING AND COMPOSITION

Since one of my primary goals was a sense of visual balance, a lot of thought and planning went into composing the scenes. I've had layouts that closely followed the prototype and others that were "proto-freelanced." Proto-freelanced railroads draw heavily on a given prototype for flavor, but take some liberties to accommodate the realities of limited space. This is the approach I chose for the LAJ.

*Model Railroader* contributing editor Tony Koester has written extensively about the challenges proto-freelancing presents. It's often more difficult than prototype modeling because you don't have fidelity to the prototype to keep you honest. Reality is a slippery slope, so you constantly have to be on guard against the natural tendency to "cherry pick." This refers to selecting elements solely on their individual appeal. The problem is that railroads aren't composed only of interesting elements.

To create a believable look, all the elements must mesh together in a visually convincing manner. This means creating a balance between typical, mundane



structures and central focus elements. If we err too far on the “this is a cool structure” side of the scale, then things slide toward an amusement-park look. If we go to the other extreme, then there’s not enough visual interest.

Further complicating planning is that at some point you have to incorporate industries that not only contribute to the layout visually but also offer operational interest. There’s no exact formula, but in rough terms I shoot for a mix of three-quarters mundane structures and one-quarter “interesting” ones.

Although the LAJ system has many compelling areas to potentially model, I settled on what’s called the Horn Lead

because it was populated by a large number of vintage Art Deco structures and anchored by the iconic Federal Cold Storage building. Using the Horn Lead as my basis, I spent dozens of hours thinking through which structures I’d model and which I’d skip. Not all of the structures on the layout are actually on the lead, but all are within a few blocks.

There were a number of structures I would initially select but later abandon because they were *too* interesting. In the end, I settled on a blend of faded, pale Streamline Moderne structures that were representative of the region but not too over the top. These were anchored by two central focus structures, May-Vern

**3** As the early morning light skims the Vernon, Calif., industrial area, the Los Angeles Junction midnight switch job crosses District Boulevard on its way back to the yard. Lance Mindheim built the HO scale shelf layout to be a work of art worthy of sharing living space.

Liquor (so named because it sits on the border of Maywood and Vernon) and Federal Cold Storage.

I’ve always been fascinated by the work of Edward Hopper, and May-Vern Liquor seems the embodiment of what would catch his eye. It’s at the entry of the layout along District Boulevard, a



street that I ran diagonally to break up the right-angle lines. Federal Cold Storage towers in the back corner. As businesses in Vernon upgrade their facilities, the Art Deco structures are gradually being replaced with modern, soulless cubes. Although including them might have been accurate, I chose not to.

In order to create the signature look of the right-of-way running down narrow alleys and passageways, it was necessary to have rows of foreground structures on both sides of the lead. Although having so many foreground structures works visually, it makes photography and reaching freight car couplers tricky in a few areas. To work around this, I made all the structures removable.

When well done, a model railroad can take on the qualities of artwork, like a sculpture. Looking back on my previous layouts, I've found that if you want to capture the same experience of looking at a piece in a museum, it's easier if the layout is smaller. Larger model railroads, such as my Downtown Spur and Monon layouts [seen in our December 2013 and December 1996 issues, respectively – *Ed.*], were too large to take in at one glance, and located in areas didn't

pass in my normal movements through the house. A smaller layout can be placed in a living area that you pass by all day. I wanted the LAJ layout to be something I would enjoy simply by looking at it, whether it was moving or not. So it was placed in a den, with a cleanly finished fascia and neatly placed, furniture-quality light-emitting-diode (LED) lighting rather than shop fluorescents.

## OPERATIONS

Although my primary focus for the layout was visual, I didn't want just a static diorama. I enjoy model railroad operations, so it was important to design in that capability.

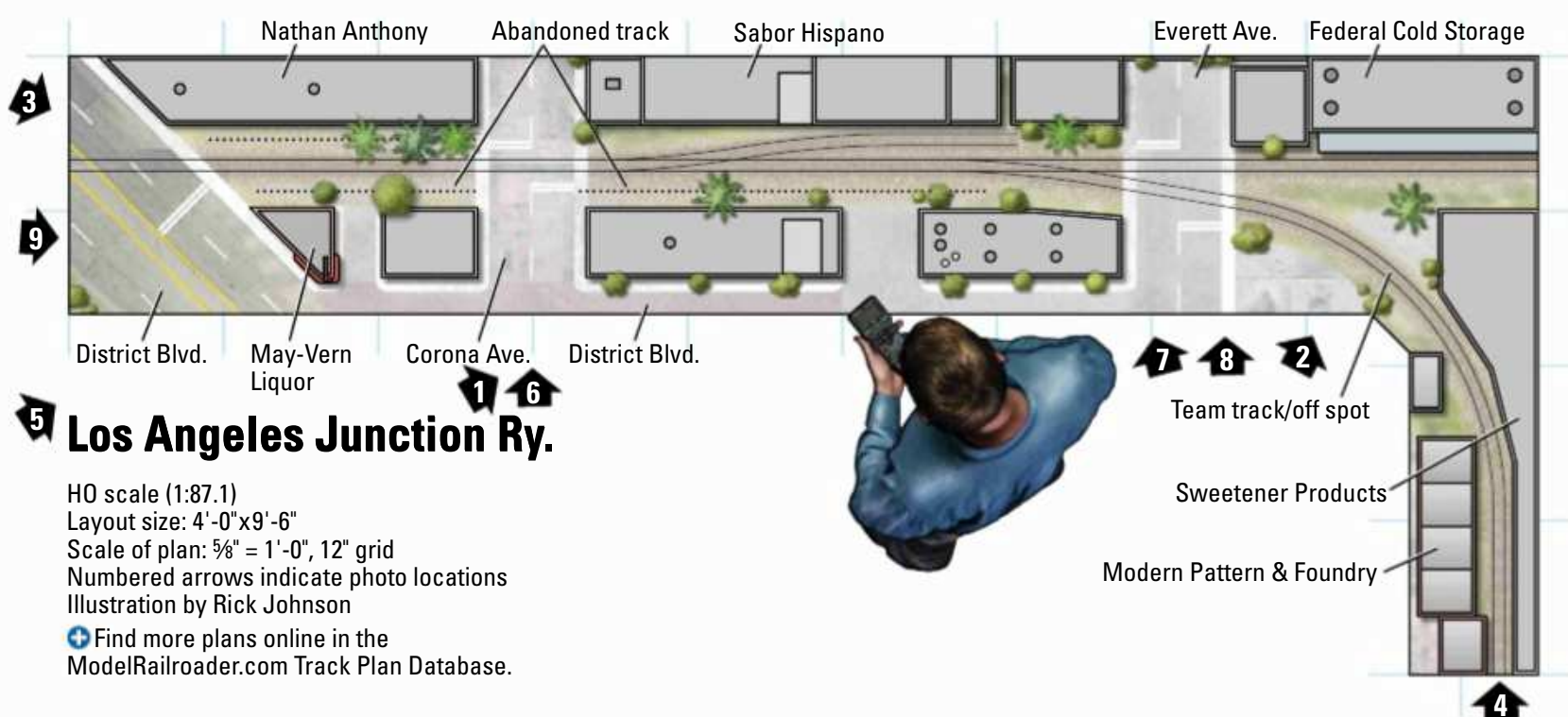
My interests tend to lie in shorter, casual, more frequent operating sessions as opposed to longer ones. I've found that the key with smaller model railroads with just a few turnouts is to be judicious in the industries you select. If you select ones where it's important to spot cars at specific locations, you are well on your way to having something that packs some operational punch, as opposed to an industry that ships or receives just one type of lading. For example, I've always been intrigued by

**4 A freshly spotted cut of corn syrup tanks awaits unloading on the Sweetener Products siding. Designating separate car spots for the different grades of corn syrup increases the operating interest of what would otherwise be a simple switching job.**

the corn syrup industry because of its operational challenges. Each grade of syrup must be spotted at its particular matching tank-car unloading pipe. Things get even more interesting when an incoming switch job finds that some of the cars at the plant are still being unloaded and are in the way of the cars you need to spot. Jim Lincoln wrote a detailed article on the subject in the 2010 issue of *Model Railroad Planning*.

Since I was proto-freelancing, I took the liberty of borrowing Sweetener Products from its location on the UP a few miles away. I also have spots for boxcars at a food industry called Sabor Hispano, reefers at Federal Cold Storage, and team track unloading. Combining all of those, it's relatively easy to design a session that runs 45 minutes or so for an enjoyable break at the end of a busy day.

**5** This overall view of the layout shows how furniture-quality benchwork framing, a lack of legs, and realistic modeling elevates the LAJ to the caliber of artwork.



## THE LAYOUT AT A GLANCE

**NAME:** Los Angeles Junction Ry.  
**SCALE:** HO (1:87.1)  
**SIZE:** 4'-0" x 9'-6"  
**PROTOTYPE:** Los Angeles Junction Horn  
 Lead  
**LOCALE:** Vernon, Calif.  
**ERA:** 2008  
**STYLE:** Shelf  
**MAINLINE RUN:** No main line  
**MINIMUM RADIUS:** 24"

**MINIMUM TURNOUT:** no. 6  
**MAXIMUM GRADE:** none  
**BENCHWORK:** box grid  
**HEIGHT:** 58"  
**ROADBED:** none; track glued directly to  
 terrain  
**TRACK:** Micro Engineering code 70  
**SCENERY:** extruded-foam insulation board  
**BACKDROP:** sky-blue walls  
**CONTROL:** CVP EasyDCC wireless

### MORE ON THE WEB

Read three of Lance  
Mindheim's how-to  
articles, including  
benchwork for the  
LAJ layout, at  
[ModelRailroader.com](http://ModelRailroader.com)



**6** The local shoves a cut of cars across Corona Avenue as it prepares to make its first switch of the day. To improve access for uncoupling and photography, Lance made all the foreground structures removable.

**7** The curved corner, a feature of the foreground industrial building, provides an interesting variation in contrast to the box designs of the background structures. The Vernon neighborhood is a trove of "Streamline Moderne" Art Deco architecture.





## SMOOTH RUNNING

If you have a slow-speed switching layout serviced by a single locomotive, the pressure is on to make sure that one unit runs flawlessly. Fortunately, Athearn produced a superbly detailed CF7 decorated for LAJ.

The first step was to install a Train Control Systems WOWSound decoder with Keep-Alive technology. I was a little surprised how much the motor control features of the decoder smoothed out the running qualities of the relatively inexpensive model.

I was tempted to stop there, but I'd already been contacted by fellow modeler Richard New, who had been encouraging me to take things a step further, gut the drive train entirely, and replace it

## Photos instead of paint



**8** The road surface and crossbuck seen here, as well as the surfaces of most of the buildings on the LAJ layout, were made by laminating photos of the prototype onto styrene surfaces.

**SOME MODEL RAILROAD SURFACES** have color features that are so complex that it's almost impossible to capture them using paint and traditional modeling means. Examples include weathering and graffiti on some structures, cracked and weathered streets, and windows. In these situations I avoided using paint entirely and used photographs of the actual structures, glued to styrene faces.

About half the structures and all the streets use this photo wallpaper technique. Even when using traditional techniques for the remaining structures, I inserted photos for the windows.

Getting images of streets was relatively simple by going to parking garages in my town, road overpasses that have safe sidewalks, and even by going to Google Street View and "tilting the camera" down to capture an image of the actual street. Although I have many images from a trip to the area, I found that a lot could be accomplished by using Google Street View images. — *Lance Mindheim*

[Registered users of our website can read more about this technique in Lance's articles "Making the most of modern buildings" and "Modeling roads with decals" at [www.ModelRailroader.com](http://www.ModelRailroader.com). — *Ed.*]

with Kato components. Richard provided a step-by-step photo tutorial with part numbers. With his guidance, the remotoring was successful.

Between the Kato drive and TCS decoder, it's now a smooth-running unit, to be sure! My original intent was to experiment with battery power for this locomotive, but after seeing how effective

the Keep-Alive-equipped decoders are, I abandoned that path.

There's nothing more frustrating than operating on a layout plagued by frequent derailments and locomotives stalling due to loss of electrical contact. Mechanical reliability boils down to three areas: track, electronics, and rolling stock. I've found that commercial

**9** The Horn Lead switch job shoves a boxcar destined for the Sabor Hispano siding. May-Vern Liquor, named for its prototype location on the border of Maywood and Vernon, Calif., was transplanted to the layout because of its architectural interest.



track products are all fairly reliable if you stick to a few standards. I never use anything sharper than a no. 6 turnout, I never dip below a 24 inch curve radius, and I pay close attention to making smooth transitions from tangent to curves and into and out of turnouts.

Grade crossings can be troublemakers. If the roadway rises even a hair

above rail height, a locomotive will lift off the rails and lose power. Special attention must be paid to be sure streets stay below rail level at such crossings.

On previous layouts, I found it difficult to accomplish the dual goals of both making my grade crossings realistic-looking and keeping them from snagging rolling stock hardware. When

I allowed enough of a wheel flange gap, appearance suffered. The solution eventually came in the form of a track product for the trolley market called Orr Girder Rail from CustomTraxx (part no. 2314). Orr Rail has a rail and flange designed for embedding in pavement.

All of my turnouts (yes, both of them) have Tam Valley frog juicers



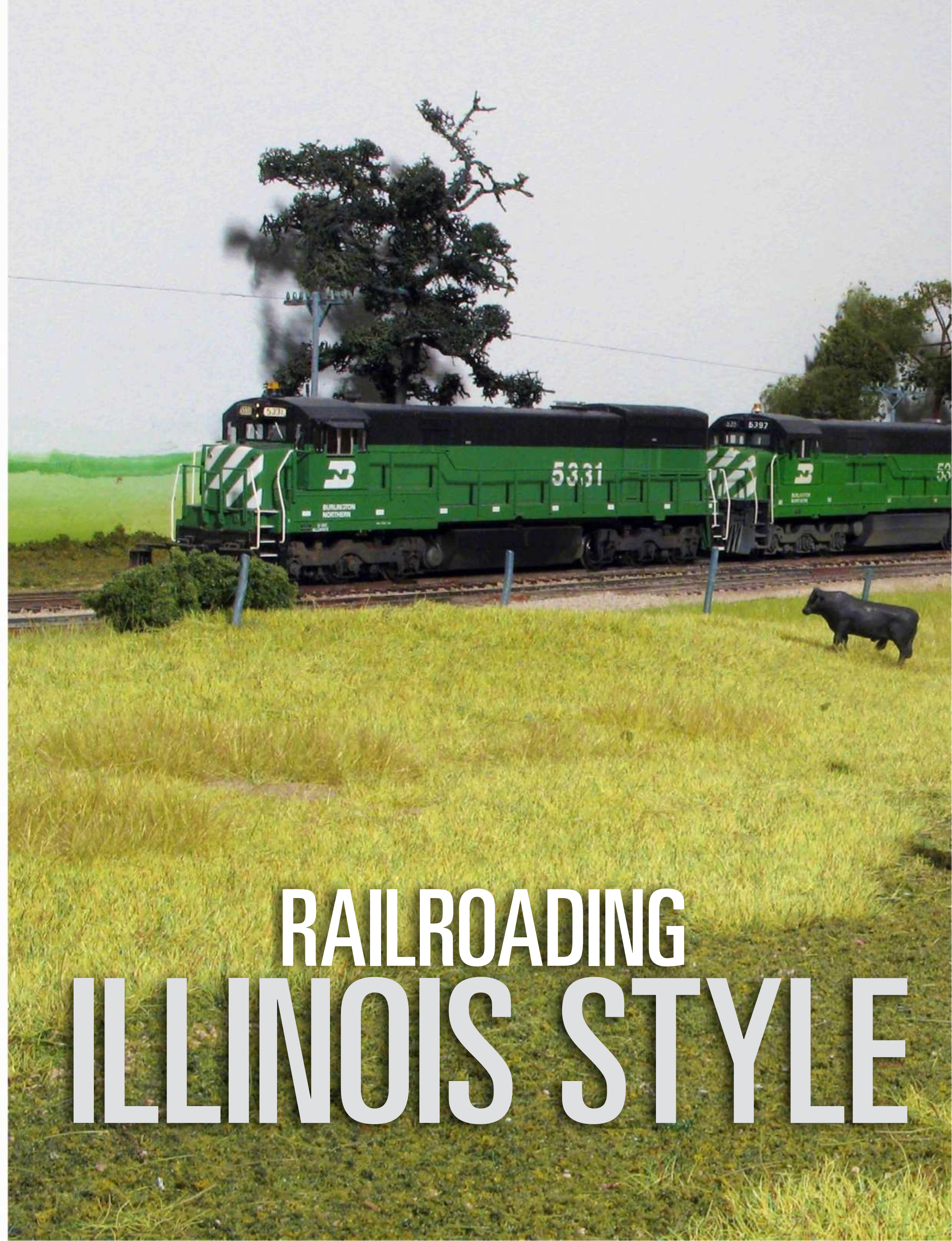
wired in to add another layer of electrical backup. Between the Keep-Alive capacitor on the locomotive and the Frog Juicers, I've experienced no stalling of my locomotive whatsoever.

## DECADES IN WAITING

The model railroad bug hit me as a teenager in the 1970s when I ran

across an excellent article on the Los Angeles Junction in the now defunct periodical *Railroad Modeler* (December 1976). In the more than 40 years since, I never gave up on the goal of representing at least a piece of it in model form at some point. Now, four decades later, I can check that off my bucket list as mission accomplished. **GMR**

*Lance Mindheim is a frequent contributor to Model Railroader and its annuals and special issues. He's also the owner of The Shelf Layouts Co., Inc. ([www.shelflayouts.com](http://www.shelflayouts.com)), a custom layout building firm. Lance lives in Silver Spring, Md., and has a grown son, Zachary, who often accompanies him to model railroading events.*



# RAILROADING ILLINOIS STYLE



# Designed for operation, this HO scale 1980s Burlington Northern layout features handlaid track

**By Dave Rickaby**  
Photos by the author

**W**hile the diesel-era setting of Ken Thompson's Burlington Northern Peoria Subdivision might make it seem like any other HO scale model railroad, his prototype is steeped in history, being one of the first lines built in Illinois during the Westward Expansion.

In the late 1840s and into the 1850s, a web of railroads was being built westward from Chicago and other hubs. The little-known Peoria & Oquawka RR was chartered by the state of Illinois in 1849. The line was laid out and built from Peoria, Ill., through Galesburg to Oquawka. It was completed on Feb. 1, 1857. During the 1860s, several railroads, including the P&O, were consolidated to form the Chicago, Burlington & Quincy. On March 2, 1970, the CB&Q joined the Great Northern; Northern Pacific; and Spokane, Portland & Seattle to form the Burlington Northern.

Ken's interest in trains began when he was a young boy who made daily visits to his grandmother's house. She lived across the tracks from the Chicago & North Western Ry.'s South Milwaukee depot. When he got there, northbound passenger local No. 119 would usually be at the station. This train's consist normally saw a Class E 4-6-2 Pacific on the lead, lots of head-end cars, and one coach. The sounds, sights, and smells overwhelmed his senses, and he was hooked.

As a boy, he was introduced to model trains with a set from Marx. Later on, his dad built him a small Lionel layout, but by the time he was 12, Ken found HO scale more appealing. Though he packed away his trains during his high school years, he brought them out again in his late 20s, when he moved into a new home.

**1** A farmer waves as a Peoria-bound coal train passes through the Illinois farmland. The action takes place on Ken Thompson's HO scale Burlington Northern Peoria Subdivision layout.

**2** Burlington Northern no. 6226, an Electro-Motive Division SD9, and no. 1970, an EMD GP9, head up train No. 105 westbound through Gilson.



## CHOOSING A THEME

The benchwork for Ken's layout was built in 1972. His first attempt was the freelanced Pine Hollow RR, a steam-to-diesel transition-era railroad. The small layout went through several changes and additions, finally emerging as the current BN Peoria Subdivision.

Ken's late wife, Becky, was from Galesburg, Ill. On trips to visit family there, Ken became interested in the Burlington Northern in the Galesburg area. Originally he thought about modeling the Pea-Vine, which ran from Galesburg to Savanna, Ill., but soon his thoughts turned east toward Peoria, a city he had visited several times to observe the railroads and the local industries. The Peoria Sub had a certain rural charm he liked. When he saw everything the subdivision had to offer, such as the types of industry, rail traffic (including coal), and all the railroads that interchanged there, he had his modeling subject.

About this time Ken met Ron Cofer, who heads up the RiverRail Operating Group based in LaCrosse, Wis. At that time Ron was living in Galesburg and worked as an engineer for the CB&Q and the BN out of Galesburg on the Peoria Sub. Not only did Ron have a trove of information about the line, but was able to reinforce Ken's modeling of the area.

In the early 1980s, Ken was invited to open his layout for tours in conjunction with the 1985 National Model Railroad Association national convention in Milwaukee. The application he had to submit asked the theme of his model railroad. This forced Ken to firmly commit to modeling the Burlington Northern's Peoria Subdivision.

## DESIGN

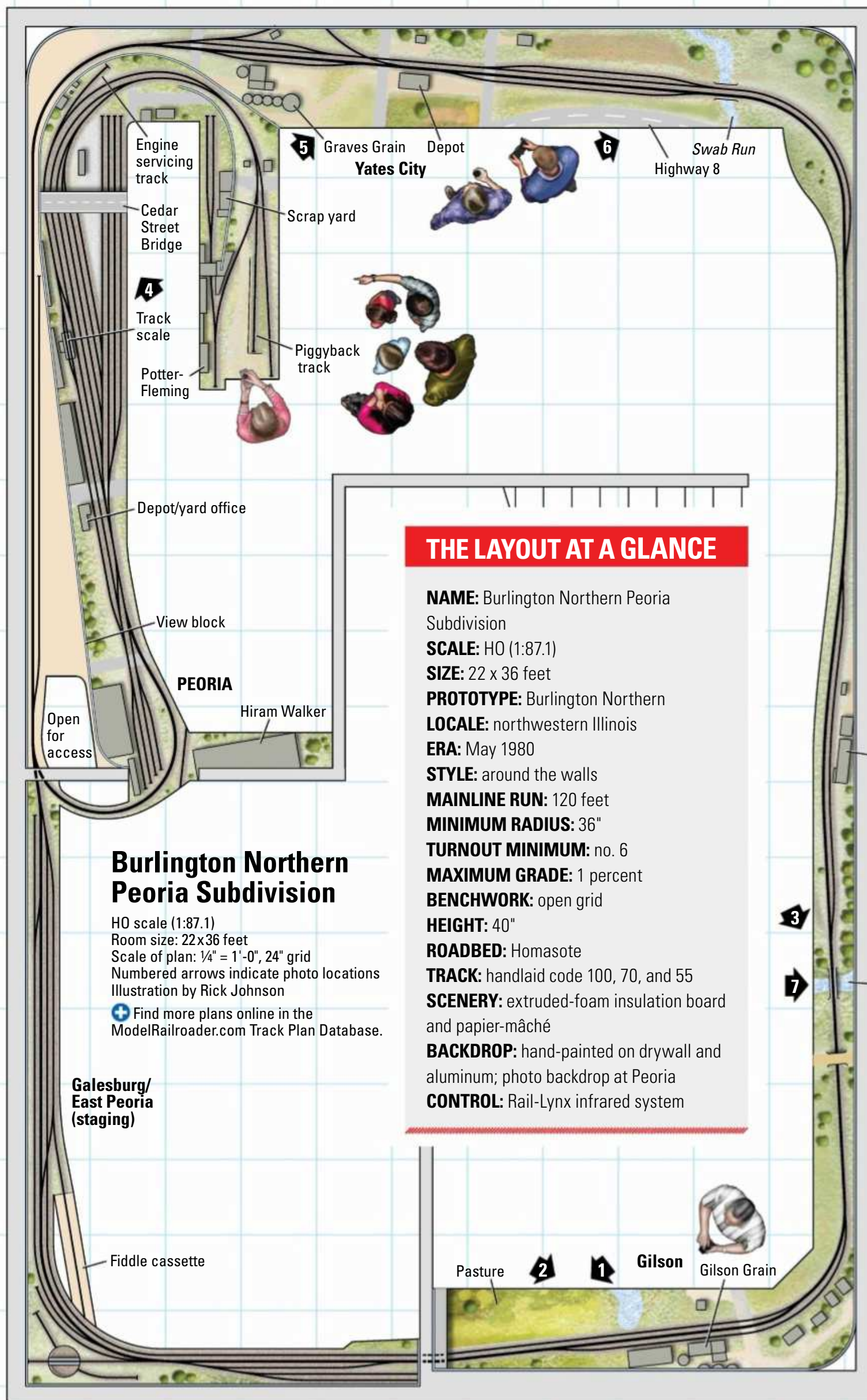
The layout is a 22 x 36-foot walk-in design, around the walls with one peninsula. Staging, located in the unscenicked utility area of the basement, does double

duty, representing Galesburg on the west end and East Peoria on the east end. Both BN traffic eastbound toward Peoria and transfers to and from the BN's interchanges at Peoria originate here.

In Peoria, known as the "River City," the BN swapped railcars with both the Toledo, Peoria & Western (TP&W) and the Peoria & Pekin Union (P&PU). Both were on the east side of the Illinois River in East Peoria, while the BN yard was on the west side in Peoria proper.

As configured, trains can run continuously around the oval for the entertainment of visitors. During operating sessions, though, the railroad is run point-to-point.

Ken models the Peoria Sub in May 1980. He has duplicated the BN track arrangements in the modeled towns of Gilson, Douglas, Yates City, and the main part of Peoria. At that time the BN still served coal mines on the Vermont Sub, which left the Peoria Sub at Yates



## Burlington Northern Peoria Subdivision

HO scale (1:87.1)  
Room size: 22x36 feet  
Scale of plan: 1/4" = 1'-0", 24" grid  
Numbered arrows indicate photo locations  
Illustration by Rick Johnson

[+](#) Find more plans online in the ModelRailroader.com Track Plan Database.

Galesburg/  
East Peoria  
(staging)

Fiddle cassette

Engine  
servicing  
track

Cedar  
Street  
Bridge

4

Track  
scale

Potter-  
Fleming

Depot/yard office

View block

PEORIA

Open  
for  
access

Hiram Walker

5 Graves Grain Depot  
Yates City

Scrap yard

Piggyback  
track

6

Swab Run  
Highway 8

## THE LAYOUT AT A GLANCE

**NAME:** Burlington Northern Peoria Subdivision

**SCALE:** HO (1:87.1)

**SIZE:** 22 x 36 feet

**PROTOTYPE:** Burlington Northern

**LOCALE:** northwestern Illinois

**ERA:** May 1980

**STYLE:** around the walls

**MAINLINE RUN:** 120 feet

**MINIMUM RADIUS:** 36"

**TURNOUT MINIMUM:** no. 6

**MAXIMUM GRADE:** 1 percent

**BENCHWORK:** open grid

**HEIGHT:** 40"

**ROADBED:** Homasote

**TRACK:** handlaid code 100, 70, and 55

**SCENERY:** extruded-foam insulation board and papier-mâché

**BACKDROP:** hand-painted on drywall and aluminum; photo backdrop at Peoria

**CONTROL:** Rail-Lynx infrared system

Depot

Douglas

3

7

Little Haw Creek

Pasture

2

1

Gilson

Gilson Grain



**3** Extra 5331 East, led by a General Electric U30C, is seen crossing the culvert bridge over Little Haw Creek. The ties of an abandoned spur extend off to the right.

City. The Buckheart Mine was nearest to Yates City and was the last to close.

In 1980, there were two daily freight trains, No. 104 (east) and No. 105 (west), two coal trains (an empty and a load), and mine jobs that would run out of Galesburg to work the Vermont Sub.

The last scheduled Chicago, Burlington & Quincy passenger train on this line was annulled in 1961. This train, No. 47/48, would run between the Twin Cities and St. Louis, traveling over the Peoria

Sub between Galesburg and Yates City and then down the Vermont Sub.

Except for the staging area and some sections of Yates City, all the track and turnouts on the layout are handlaid. There are 25 handlaid turnouts in Peoria alone. Most of the turnouts are lined using Blue Point manual turnout controllers. These use choke cables linked to the controller with knobs on the fascia. The scale switch stands are from Details West and Micro Engineering.

Mainline track is mostly code 100 and 83 rail, with some code 70. Sidings, spurs, and yard tracks are code 70, with some code 55 Micro Engineering sections here and there. All rails are

weathered with combinations of grimy black and rail brown paint.

The benchwork under the towns of Yates City, Douglas, and Gilson are built-in cabinets and bookshelves. Ken attached 3/4" plywood directly to the tops of these units to use as a base for the track, structures, and scenery. The track between these cities is built on spline subroadbed or Homasote.

To create a depressed area for a waterway or pond, he cut out the required area from the plywood, then attached a wider piece of plywood below the opening to form the waterway's bottom. In the Peoria section, he used 1 x 4 open-grid framing with 2 x 4 legs.



Ken's rolling stock is mostly Athearn, Roundhouse, Front Range, Accurail, and Kadee cars. Some of the later additions are from Tangent, Exact Rail, and Pacific Western Rail Systems. All the rolling stock is fitted with Kadee couplers and metal wheelsets. Many of the cars are being re-wheeled with .088" wheel sets.

The locomotives are from Athearn, Atlas, Proto 2000, Broadway Limited, and Kato. Each unit is equipped with a Rail-Lynx decoder and a pair of infrared sensors in the cabs. Rail-Lynx controllers are wireless. All that's required for wiring is to apply 12 to 14 volts of DC power to the rails. Locomotives can be operated as a single unit or made up into multiple

## Playing-card routing system

**KEN USES A PLAYING-CARD SYSTEM** to randomly determine the destinations of his freight cars. Each operating session, a card is drawn from the deck for every car on the layout. The value of the card is compared to a chart to find its destination. The chart lists destinations appropriate for the type of car.

If the car is being unloaded at an industry, a black card indicates it's still being unloaded; a red card says it's now empty and ready to be routed to the destination shown in the "Empties To" column of the chart. An empty being loaded at an industry is still being loaded if a red card is drawn; a black card says the car has been loaded and is ready to be sent to the destination in the "Loads To" column.

If a car is in staging, it works the same way. An empty car stays where it is if a red card is drawn; a black card says the car has been loaded and is ready to forward to the destination shown in the "Loads To" column. A black card holds a loaded car, while a red card says the car has been unloaded and is ready to be routed to the online industry in the "Spot At" column for loading.

— Dave Rickaby

unit consists, with a single address assigned to that lashup. Engines can also be speed-matched.

### SCENERY

Ken's choice of prototype made building his landforms easy. The topography in the area he's modeling is fairly flat farmland, with slightly rolling hills. The landforms are built up from various materials including extruded-foam insulation board, joint compound, papier-mâché, Homasote, and modeling putty.

To bring the scenery to life, Ken used various grades of Woodland Scenics ground foam to represent weeds, bushes, and foliage. Small trees and bushes are lichen with ground foam applied, while other trees use goldenrod or small twigs for armatures. Some Scenic Express SuperTrees armatures have been used, as well. Most of the trees are built using poly fiber stretched over the armatures, with a sprinkling of ground foam to represent leaves. Hair spray holds the foliage in place.

Grass features are created using commercial static grass from Heki and Noch and a homemade static grass applicator. Ken fashioned the applicator after seeing one built in a video. The main items required to build one of these are a plastic cream cheese container, a 9" length of PVC pipe with a flange on one end, and a negative ion generator Ken purchased from Electronic Goldmine in Scottsdale,

Ariz. ([www.goldmine-elec-products.com](http://www.goldmine-elec-products.com)). He built the device for under \$20.

Water features on the layout were poured using Enviro-Tex Lite or West System two-part epoxy resin. Ken usually has the West System epoxy on hand to make repairs to his sailboat; it's primarily used in marine applications, and cures colorless. Only at Little Haw Creek was Enviro-Tex Lite used.

Structures on the layout are of all types, with some being kit-built, others kitbashed, yet others scratchbuilt. The flat grain storage building at Gilson was scratchbuilt, as were the fertilizer sheds at Douglas. The depots at Yates City and Peoria were scratchbuilt, as well as some of the larger industrial buildings in Peoria. When scratchbuilding, Ken went on-site to take measurements of prototype structures or, if the prototype was gone or inaccessible, estimated the dimensions from satellite images.

Backdrops and view blocks are painted pale blue to give the feel of a slightly overcast sky. Between Gilson and Yates City, Ken brush-painted his backdrops to create distant landforms and trees, forming a low horizon line averaging 1½" above the modeled grade. The low horizon gives a realistic look when scenes are photographed near track level. Digital photos of the Peoria area, some of which Ken shot himself, were printed out, pasted together and glued to the aluminum coil backdrop with white glue.



**4** Toledo, Peoria & Western RR low-nose GP18 no. 600 has just arrived at BN's Peoria Yard with a transfer run. The backdrop in Peoria includes photos Ken shot in the prototype city.

Ken's fascia is 1/4" thick tempered hardboard painted a buff color. He originally tried several shades of green, but they just didn't look right to him.

The layout is illuminated with 4-foot fluorescent shop lights and screw-in fluorescent bulbs behind wood valances.

## OPERATIONS

Ken is an operations-oriented modeler. He's belonged to a couple of loose-knit, round-robin operating groups, including the Old Codgers Group. This group is based in the Milwaukee-to-Chicago corridor. Another group was headed up by three layout owners who took turns hosting an operating night every other week.

On Ken's Peoria Sub layout, an operating session lasts around 3 hours. Time is regulated using a Rail-Lynx digital fast clock set to a 2.5:1 ratio. This reduces an hour of scale time to 24 actual minutes and allows his operators to take their time and do their jobs right.

A session can keep as many as six people busy, including Ken. He usually assumes the role of dispatcher and chief clerk. The train dispatcher issues train orders, OKs clearances written by station operators, and keeps track of the subdivision's rail traffic on a train sheet. The chief clerk's job is to keep tabs on the car distribution system. Communication is accomplished using a phone system that Ken read about in *Model Railroader*. [See the Oct. 2015 Workshop Tips. – Ed.]

People may look at this as a laborious way to run a model railroad, but Ken says that once you learn the paperwork, it's actually simple. Besides, it's how the real Peoria Sub was operated in 1980.

A typical 3-hour operating session will see as many as 10 train movements, including transfer movements at Peoria to and from the TP&W and P&PU railroads (staging). The TP&W and P&PU crews bring cars to the BN yard at Peoria and return home as a caboose hop. The BN switch crew does the reverse in a transfer move to each of those railroads.

Burlington Northern manifest train No. 104 originates at Galesburg, and its counterpart, No. 105, is made up at Peoria for the run to Galesburg.

Loaded unit coal trains of western coal originating off the Peoria Subdivision, usually from the East Decker Mine in Montana, travel eastward out of Galesburg staging to Peoria and the East Peoria staging yard. The power is cut off in East Peoria and runs light to Peoria proper to lay over. Empty unit coal trains do the same in reverse order.

At least one loaded and one empty unit coal train run per session. These



trains make simulated interchange with the Chicago & Illinois Midland RR to be forwarded farther down the Illinois River to a barge dump transfer. In Ken's modeled era, the prototype BN would run two or more unit coal trains over the line each day.

A local turn also makes the run from Galesburg to Yates City just to handle

empties and coal traffic originating at the Buckheart Mine, which is on the Vermont Subdivision south of Yates City. Ken stages hoppers with live coal loads at Yates City as if they'd been brought up to the junction with the Vermont Sub by a mine job. His junction with the Vermont Sub at Yates City is represented by a set of partial wye tracks. The actual Buckheart Mine provided the BN with revenue loads until it closed in 1984.

Car movements are dictated by switch lists, wheel reports, and yard checks that the chief clerk oversees. These documents can be handwritten on switch list forms or printed from Ken's computer. Ken discovered that by using a Microsoft Works Database program in his old Windows 98 PC, he could move and keep track of his car fleet in a manner very similar to the way the Union Pacific RR did when he worked for them as a conductor. He could print out a

**5 A manifest freight passes the depot at Yates City. Turnouts are lined with cable linkages operated by wooden knobs mounted on the fascia.**

separate track report or a whole station or yard report showing each car's location, sequence on that track, its initials, car number, type of car, contents, destination, consignee, release or load date, and yard block.

Moving an individual car, or a train of cars, from one location on the railroad to another is as simple as cutting and pasting in the program. Ken's system does require manual input, but so did the UP's system.

In order to introduce randomness to his car forwarding system, Ken borrowed key elements from a system developed by fellow longtime UP and C&NW conductor Dan Sylvester. [Dan's 4 x 8-foot HOn3 Rio Grande Southern layout was featured in the March 2011 *Model Railroader*. – Ed.] Dan writes a

## WATCH THIS ON MRVP



Model Railroader Video Plus recently visited Ken's BN layout. Watch the video at [MRVideoPlus.com](http://MRVideoPlus.com).

**6** Peoria-bound No. 104, with three EMD F7s in the lead, meets the Coal Extra at Yates City. Ken applies static grass to his layout with a homebrewed electrostatic applicator.



regular column for the Operations Special Interest Group publication, *The Dispatcher's Office*. The system uses a shuffled deck of regular playing cards to provide randomness. After the simulated loading or unloading of a freight car, a card is drawn for each car. The color of the card and the order in which it is drawn will determine where and when it is loaded or unloaded. [See "Playing-card routing system" on page 23. – Ed.]

Many modelers own more rolling stock than their layout can handle, and Ken is no exception. His staging tracks also serve as a fiddle yard, where cars are moved on and off the layout. Ken is always looking for better and easier ways to accomplish this task. He used six-

drawer plastic cabinets for car storage. The models could be damaged if they were jostled together in the drawer.

When he picked up a copy of Iain Rice's book *Shelf Layouts for Model Railroads* (Kalmbach Books, 2009), he found his answer. In the book, Ian described staging cassettes. Cassettes allow for moving cuts of cars onto and off of the layout without the need to handle each car individually.

Ken found a spot off his closest staging yard track that would accommodate a 45½" long cassette, a short lead track, and a no. 6 turnout. Off the end of the lead track he built a dock to set the cassettes on. The dock has a wood cleat to align the cassettes with the lead track.

The dock, which is basically an open plywood platform with low sides, is slightly inclined toward the lead track. This helps the cars roll down onto the cassettes when they are uncoupled. A rod, threaded through the side of the dock at the lead end, acts as a clamp to hold each cassette firmly in place.

Ken didn't see a need for the track on the cassette to be powered, so using his table saw, he simply ripped two saw kerfs in the wood bottom of each one to serve as flangeways. He inserts foam pipe insulation at each end to keep cars from rolling out. Each cassette has 1" high sides of ¼" plywood.

Ken stores the cassettes on a wall in the staging area. He made brackets from



plywood and fastened them to the wall about 32" apart. Two cassettes can be set on each pair of brackets. Each unit will hold six 50-foot cars for a total storage capacity of around 60 cars. During an operating session, Ken estimates that he will change cassettes four to five times.

## MAKING AN IMPRESSION

Ken became a modeler because, when he was a kid, real trains made a big and lasting impression on him. The trains he watched as a youngster were full of sound and fury, as well as motion. It was natural, then, for him to want to create the same thing in miniature.

Ken hopes that when people see his model railroad for the first time they get

the sense of the wide-open rural atmosphere of the prairie and what this part of Illinois looks and feels like. He also hopes that they can appreciate the contrast of the wide-open prairies with the city of Peoria's gritty urban setting and industrial district.

Compared to when Ken started modeling, when it comes to availability of rolling stock and structures, today's hobbyist has the world at his feet. Because of this, Ken has started to cull his fleet of freight cars so that only cars that existed in 1980 are represented on his layout. Ken has found others in the hobby with similar interests and belongs to the Yahoo Groups Modern Freight Car List, where there's a lot of support and exchange of information on the subject. Once the layout is complete, from a structure and scenery standpoint, Ken would like to devote more time detailing and weathering those freight cars.

If Ken were to start over and do anything differently, he would try photo backdrops for the rural areas of his layout. He and his wife were quite pleased by the results this method achieved in the Peoria area.

The most fulfilling aspect of this hobby is sharing his interest with others, and Ken is glad to have the opportunity to let people see his layout. It's been a lifetime dream. **GMR**



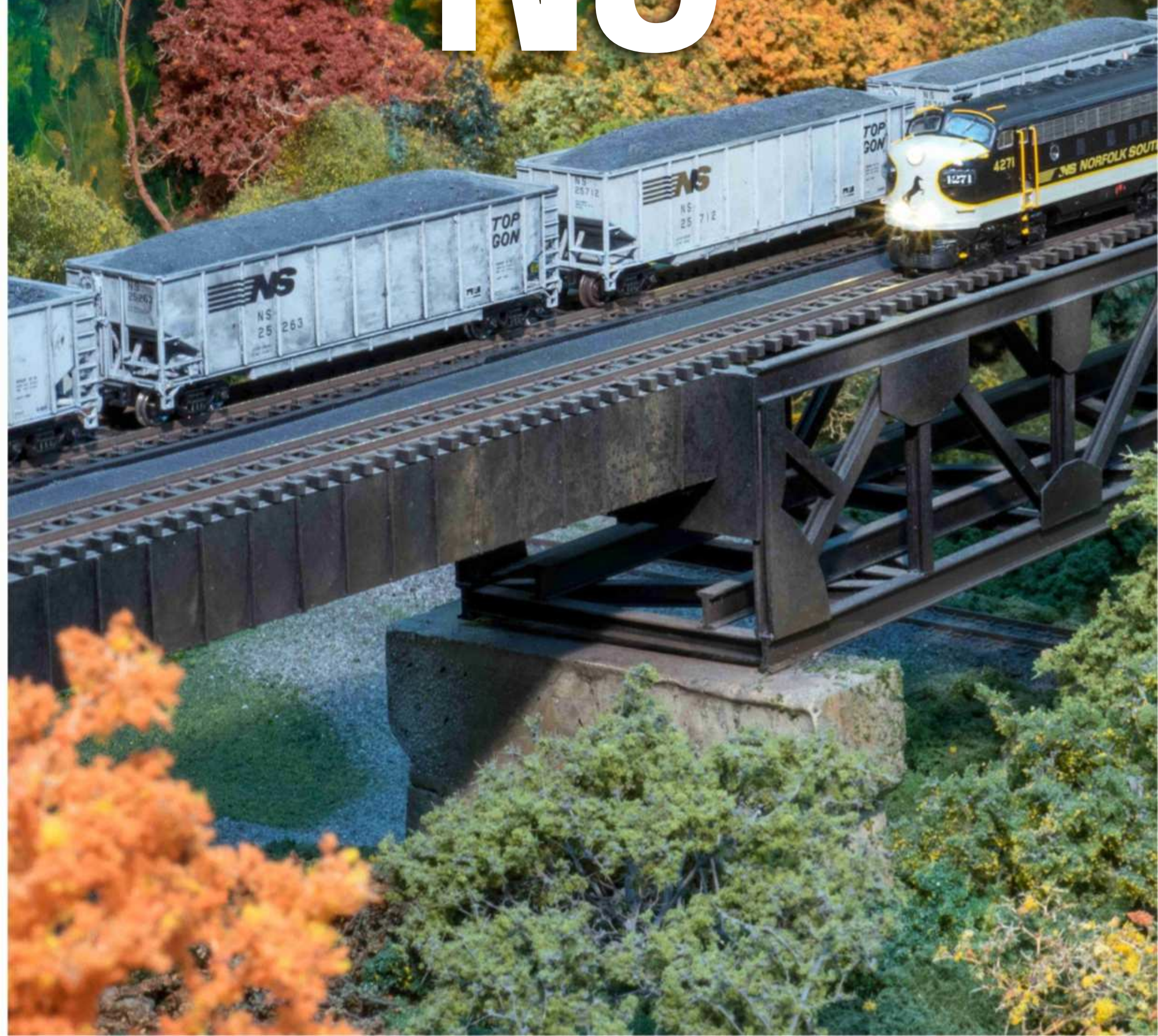
**7** Electro-Motive Division GP9 no. 1970, a former Chicago, Burlington & Quincy unit, passes over Little Haw Creek. The water here is Enviro-Tex resin; other water features on the layout are West System resin.

## MEET KEN THOMPSON

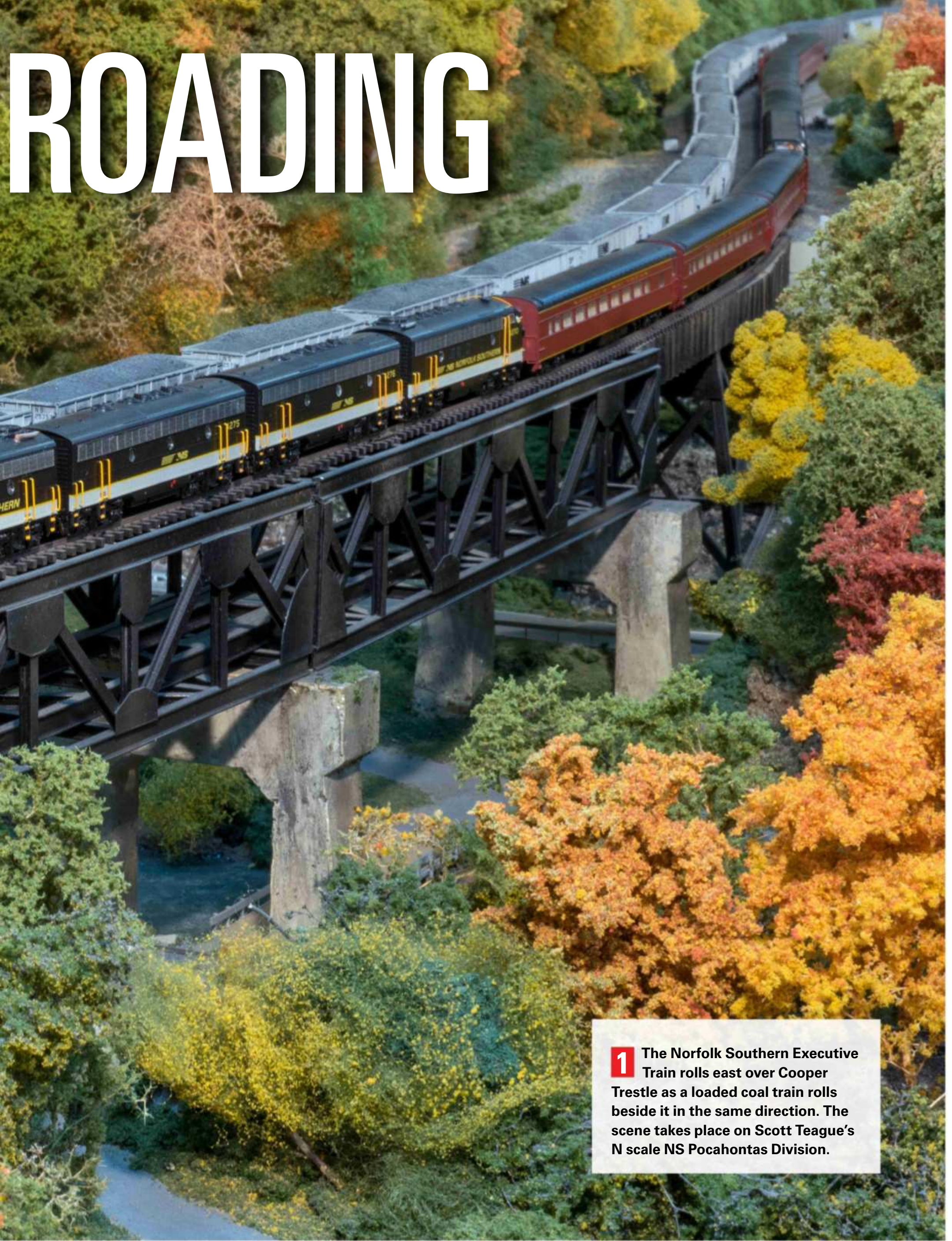
**KEN AND HIS WIFE, PATTY**, live in South Milwaukee, where they both grew up. Ken is retired after working for 45 years as a carpenter. He also spent 3 years as a conductor and locomotive operator for the Union Pacific RR. Besides model railroading, he and Patty love to sail their 26-foot sailboat on Lake Michigan. Ken wants to thank friends Dave Nelson and David Jordan, as well as Patty for her patience and support.



# MOUNTAIN RAIL ON THE NS



# ROADING



**1** The Norfolk Southern Executive Train rolls east over Cooper Trestle as a loaded coal train rolls beside it in the same direction. The scene takes place on Scott Teague's N scale NS Pocahontas Division.



## This N scale layout captures coal and intermodal traffic in the '90s

By Lou Sassi ■ Photos by the author

**WHEN SCOTT TEAGUE'S** N scale Norfolk Southern Pocahontas Division first appeared in *Great Model Railroads 2004*, the layout was a single level with 436 feet of double-tracked main line. Since then, Scott has almost doubled the size of the railroad by adding a second

deck with an additional 198 feet of branch line and a third level of staging.

Scott has been a model railroader for more than 25 years. The Pocahontas Division is his fourth layout. After watching the prototype in action back in 1995, he decided to replicate it in N scale.

"I wanted a big-time heavy NS route, and fell in love with the Pocahontas Division the first time I saw it," he said.

That meant re-creating era-appropriate heavy coal and freight operations hauled by Electro-Motive Division SD40-2s, General Electric C30-7s and



**2** A pair of pushers shove on an eastbound freight heading into a tunnel west of Welch while a pair of SD40-2s pulls loads from Havaco Mine on the Tug Fork Branch.

**3** Scott sometimes runs more modern power on the layout. Train No. 64D, with a leased Canadian Pacific ES44AC on the lead followed by an NS SD70ACe, crosses a through truss bridge on the Dry Fork Branch. The bridge is scratchbuilt.

#### NOW ON THE WEB

Registered users of our website can watch a video of trains running on Scott's Norfolk Southern layout at [www.ModelRailroader.com](http://www.ModelRailroader.com).



C39-8s, and other then-contemporary diesel motive power.

In 1996 Scott began construction of the railroad in the family's new basement. The layout is an original around-the-walls design built on L-girders. "It's easy when you build a new house with an empty basement," he said.

He opted for N scale to give himself more railroading in his limited space. He didn't listen to those who tried to tell him something couldn't be done in N scale. "That motivated me more," he said.

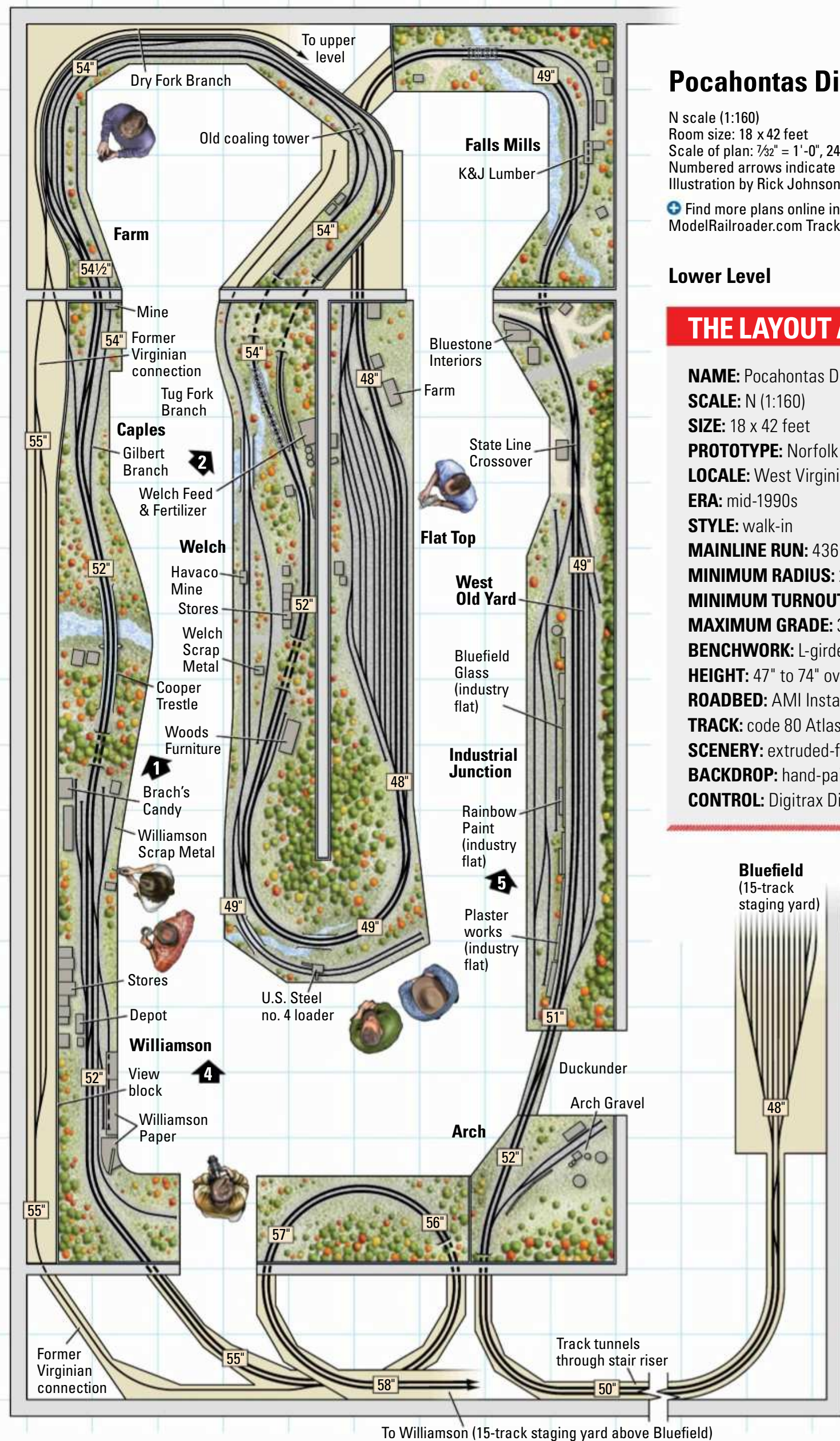
The track is primarily Atlas code 80 flextrack, with Atlas, Peco, and Shinohara turnouts lined manually with Caboose Industries ground throws. The layout features operating signals custom-made by a good friend of Scott's in Canada. Scott wired them to work with light-emitting diodes (LEDs).

#### SCENERY AND STRUCTURES

The base for his scenery is plaster cloth applied over foam board. The cloth is painted with latex paint in a mix of

grey and brown to match the soil of the area modeled. This is covered with scenery products from Woodland Scenics, Scenic Express, JTT, and others in fall colors. Rather than aim for perfection, Scott models scenery to "the 'good enough' effect."

Scott's wife, Jennifer, is in charge of tree construction. She uses Scenic Express SuperTrees armatures that she coats with spray adhesive and sprinkles with various autumn shades of ground foam. Scott knows she's been working on



## Pocahontas Division

N scale (1:160)

Room size: 18 x 42 feet

Scale of plan:  $\frac{7}{32}$ " = 1'-0", 24" grid

Numbered arrows indicate photo locations

Illustration by Rick Johnson

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

### Lower Level

## THE LAYOUT AT A GLANCE

**NAME:** Pocahontas Division

**SCALE:** N (1:160)

**SIZE:** 18 x 42 feet

**PROTOTYPE:** Norfolk Southern

**LOCALE:** West Virginia

**ERA:** mid-1990s

**STYLE:** walk-in

**MAINLINE RUN:** 436 feet (main), 198 feet (branch)

**MINIMUM RADIUS:** 28"

**MINIMUM TURNOUT:** no. 8

**MAXIMUM GRADE:** 3 percent

**BENCHWORK:** L-girder

**HEIGHT:** 47" to 74" over three levels

**ROADBED:** AMI Instant Roadbed and cork

**TRACK:** code 80 Atlas flextrack

**SCENERY:** extruded-foam insulation board

**BACKDROP:** hand-painted

**CONTROL:** Digitrax Digital Command Control



trees when his feet get stuck to the floor by the overspray near her workstation.

Two-part epoxy is used to represent water on the layout, while rocks are cast from molding plaster.

Scott brush-painted the backdrops, either directly on the basement walls or on tempered hardboard panels attached to them.

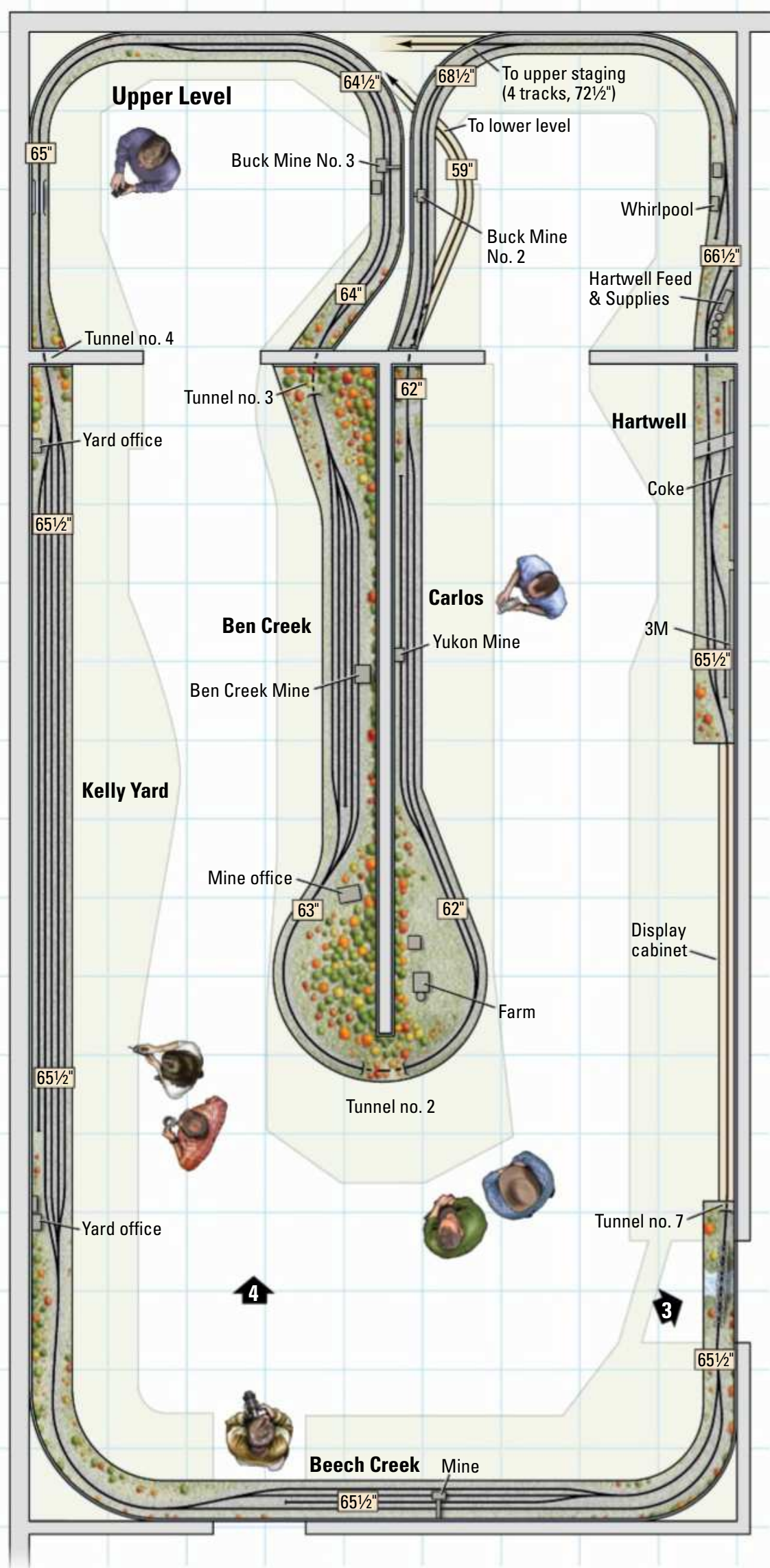
The buildings on the layout are constructed using multiple materials. Most are kitbashed, while a few are scratch-built, all to fit the area. Scott's scratch-built Cooper Bridge is a favorite of visitors who love to watch his long freight trains roll across it.

## EQUIPMENT

Scott models the mid-'90s. He collects a great deal of era-appropriate equipment that could be seen running on the prototype. To accurately model the Norfolk Southern, some of his locomotives have to be custom built, such as SD40-2 high hoods, SD40Es, SD70M-2s, and Scott's favorites, the F9 Executive engines.

Scott modernizes older-looking rolling stock by patching out the cars' reporting marks to represent new owners. He also adds lots of graffiti. Weathering is done with a combination of air-brush and drybrushing.

While Scott enjoys all phases of layout construction, he strongly recommends operation as the ultimate goal. He feels that operation makes his railroad better, revealing what needs to be changed or improved. Nothing is set in concrete, so if something doesn't work, he tears it out and replaces it.



**4** This view down one of the aisles shows the central peninsula on the right, with Tug Fork on the lower deck and Ben Creek above. On the left is the town of Williamson, W.Va., with Kelly Yard above it and Ohio staging above that.



**5** Local No. J61, with two Electro-Motive Division GP38-2s on point, works industries west of Bluefield. The buildings in this area are photo flats applied to Gatorboard.



## Textured fascia

**I DIDN'T WANT MY FASCIA BOARD** to look plain, so I applied drywall mud with a trowel to add texture to it. Once the plaster-like mud cured, I painted it flat black. This technique gives a rough, stone-like appearance to the fascia instead of the usual smooth surface. – *Scott Teague*



Though his trains are controlled by Digitrax Digital Command Control (DCC), none of his locomotives are equipped with sound decoders yet.

## OPERATIONS

The Pocahontas Division is a coal-hauling route, but it's also a major inter-modal route for NS. "The line has the best of both worlds," Scott said.

Car movements are determined with a card system using cards with pertinent info and a photo of the car on the front, to make identification easy without having to read tiny N scale reporting marks.



Scott uses printed photos of buildings laminated to black Gator Board to make building flats for use in narrow scenes.

## Printed building flats

**WHEN THERE'S NOT ENOUGH ROOM** for a three-dimensional building, I use photos of actual buildings that are sized to scale. The photos I used were made by a company called Radical Flatts (which is no longer in business). I laminated the photos to a sheet of black Gator Board ([www.gator-board.com](http://www.gator-board.com)) and cut them out with a hobby knife. Three-dimensional details like loading docks, awnings, and signs add to the realism. They work well in small spaces on the layout [see photo 5 to the left]. – *Scott Teague*

There is no timetable; trains run when the crews are ready. There is no fast clock for now. The number of trains that run depends on how many the dispatchers can handle at one time. A typical session sees 35 to 40 trains running over a 4- to 5-hour period and occupy one or two dispatchers and up to 17 crews. Crews communicate with each other and with the dispatchers using two-way radios, while the dispatchers keep track of train locations with magnets on a magnetic bulletin board.

Some of his most memorable moments have been during operating sessions, seeing his railroad come to life as trains run, while operators and dispatchers interact with each other just as they would on the real thing.

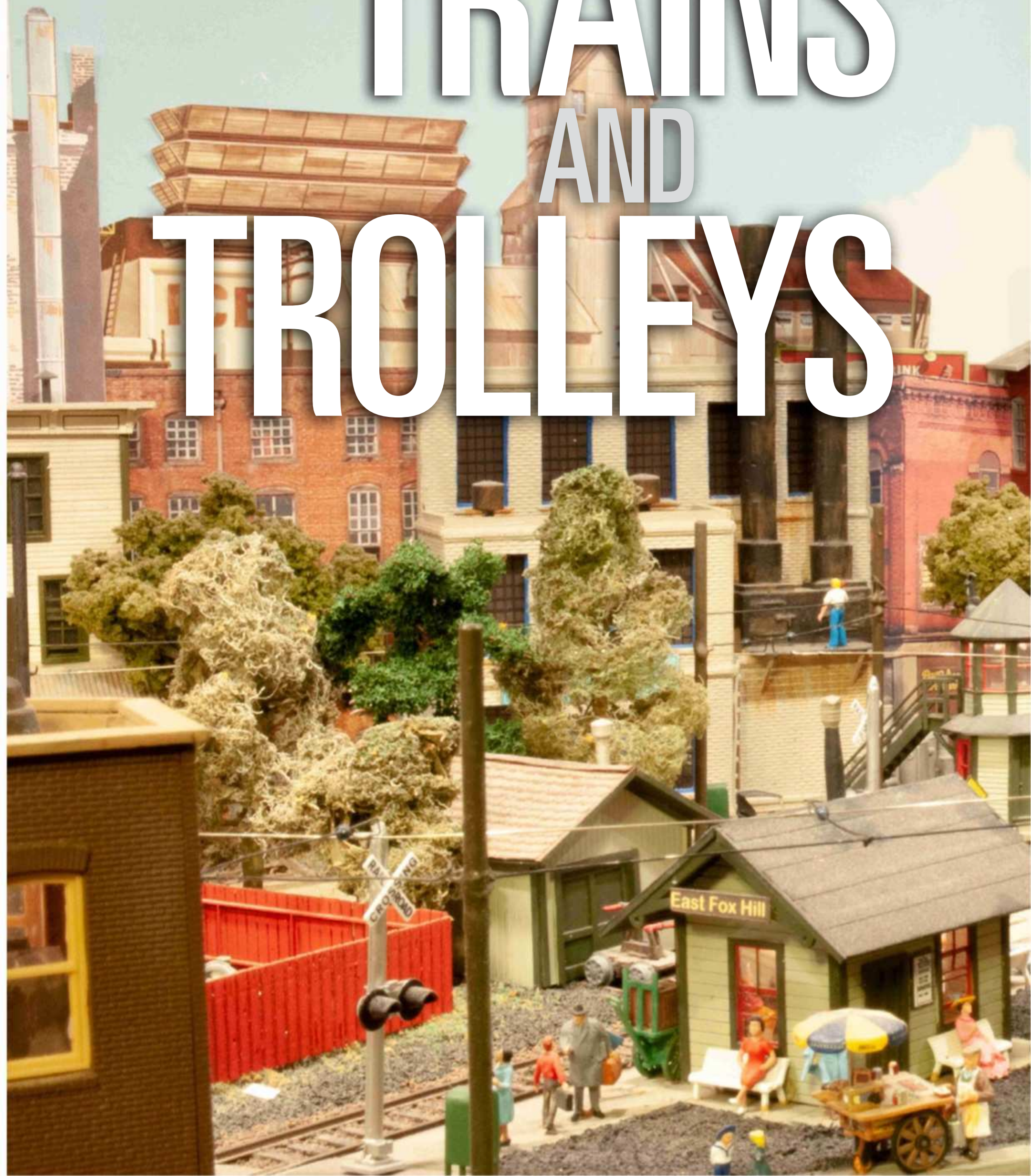
As happy as he is with his model railroad, Scott says that if he had the chance to do it all over again, there is one thing he would change about it: "I would go bigger!" **GMR**

## MEET SCOTT TEAGUE

**SCOTT PRODUCES RAILROAD VIDEOS** that he sells through his company, T&W Productions. He also makes replica train horns. He lives in North Carolina with his wife, Jennifer, two children, and one stepdaughter. He is grateful that Jennifer enjoys his hobby as well as supporting him in all he does.



# TRAINS AND TROLLEYS

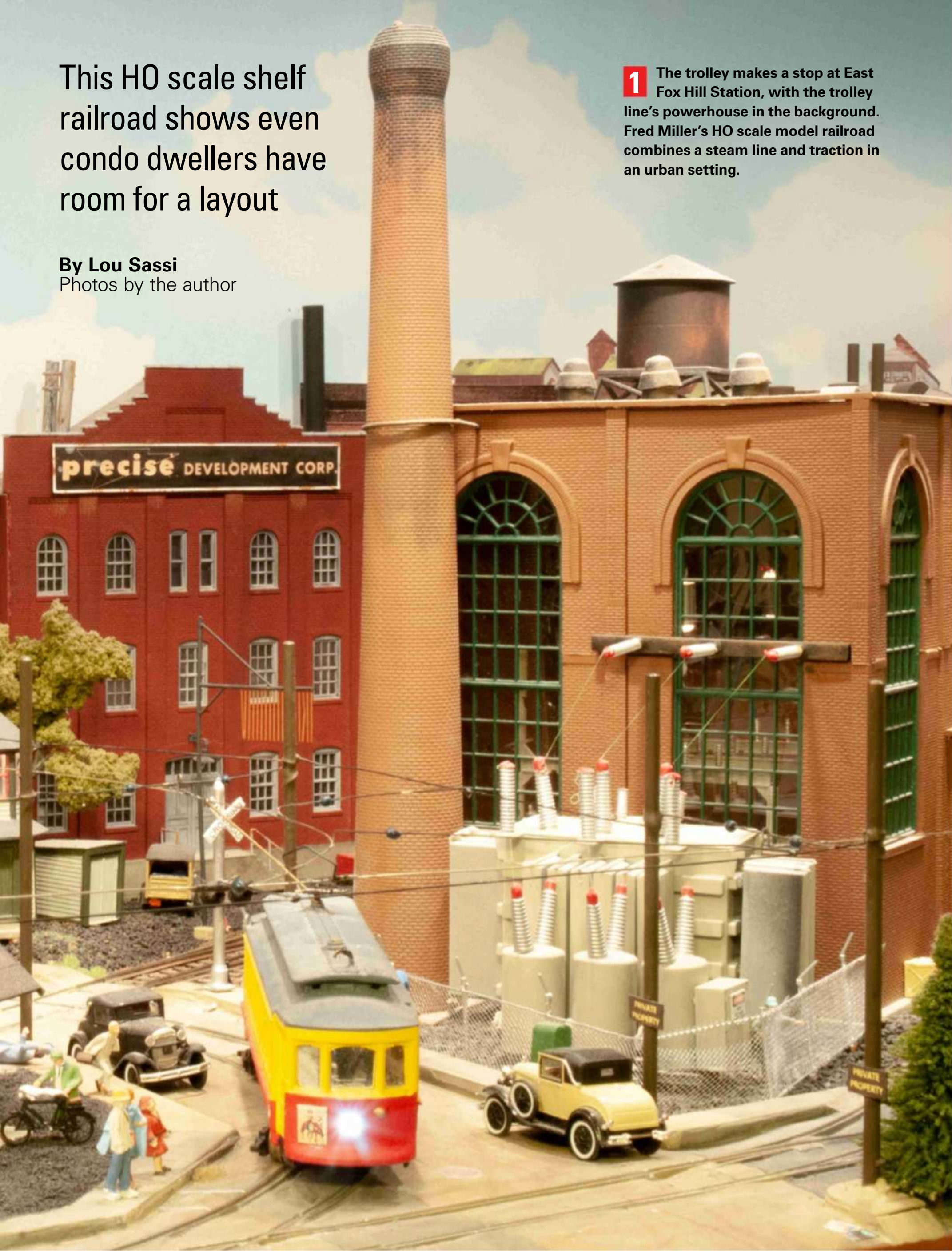


# This HO scale shelf railroad shows even condo dwellers have room for a layout

By Lou Sassi

Photos by the author

**1** The trolley makes a stop at East Fox Hill Station, with the trolley line's powerhouse in the background. Fred Miller's HO scale model railroad combines a steam line and traction in an urban setting.



**F**red Miller has been a model railroader for over 65 years. In that time Fred has built more than a dozen layouts in Z, N, TT, HO, and O scale. They ranged in size from portable dioramas to full basements. He also helped design and build a large club layout.

All this practice has honed his skills in layout design, construction, scenery building, and electronics. His construction articles have appeared numerous times in the hobby press. Photos of his earlier layouts have been published in *MR* and *N Scale Primer* [Kalmbach Books, out of print]. His HO scale trolley layouts have appeared in *MR* and other model railroad publications.

He's also designed electronic layout animation controls. Such features as an automatic rising sun and associated street and building lights combined with sound effects have been incorporated into this and other layouts.

## CONSTRUCTION

Fred put all those skills and talents into his present layout, which features a combination of 1920s to 1930s-era trolleys and steam trains running through an urban setting. Design and construction started in the fall of 2012, when Fred and his wife moved into a larger condo unit next to their previous one. Minor wall adjustments were made to the condo, a tile floor was laid, and the unit was painted. Various work surfaces and storage cabinets were installed.

The railroad occupies an 11'-8" wall in one room. The 18" wide layout was constructed on a flat sheet of medium-density fiberboard (MDF) on a pine framework that was mounted to the wall above the workbench. There is an additional 6'-9" staging shelf that extends into an adjoining closet.

Styrene sheet, .050" thick, was used for the backdrop. It was brush-painted with several coats of sky blue latex paint, then clouds were added using white and silver aerosol cans and cloud stencils. (Fred is still amazed how uninterested people passing by were in the fact that he was spray-painting a 14-foot-long sheet of styrene in the condo's garage.)

Once the paint was dry, Fred glued pre-printed background buildings to the



**2** The trolley passes the bandstand on its way downtown. A timed circuit plays big band music and other background sounds at appropriate times of day. Sprung single-point switches route the trolley around the bandstand in both directions.

backdrop and mounted it above the layout with coved corners.

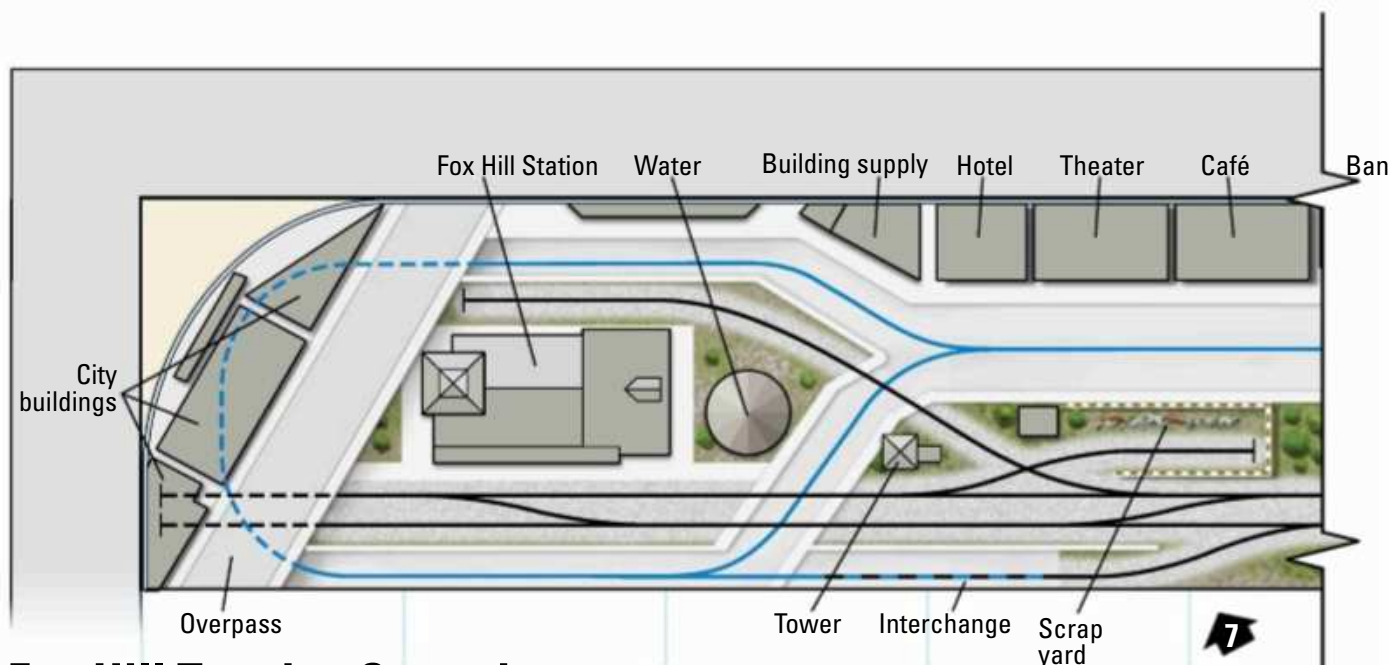
The track is 60" above the floor. Fred used code 83 flextrack on cork roadbed for the steam railroad, while code 100 girder rail was handlaid on cork sheet for the trolley line. Fred later paved the streets with plaster up to the height of the railheads.

The steam railroad uses no. 4 turn-outs, while the trolley line has single-point switches. Commercial products were to ballast the railroad tracks.

## SCENERY

Though the track is all flat and most of the scenery consists of urban streets, Fred made some minor undulations in the landscape using carved extruded-foam insulation board panels and patching plaster. Rock outcroppings are commercial foam rubber products.

A small pond was created by routing out the MDF material and smoothing the surface with plaster. Fred painted the bottom, feathering in the color from black in the middle of the pond to mud



## Fox Hill Traction Co. and Fox Hill & Metuchen RR

HO scale (1:87.1)  
Layout size: 18" x 11'-8" feet  
Scale of plan: 1" = 1'-0", 12" grid  
Numbered arrows indicate photo locations  
Illustration by Roen Kelly

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





**3** This overview looking west at Fox Hill shows most of the railroad. The layout was designed to occupy one wall of a condo's spare bedroom.

color at the edges. He glued rocks and tree limbs below the water line and along the edge before pouring two-part resin to represent the water. Green "pond scum" tinting was added to some of the layers of resin to enhance the depth.

Structures are made from a variety of materials including wood, plastic, and metal castings. Fred made a few from Woodland Scenics modular styrene panels. Many are "sliced and diced" from structures used on previous layouts. Regardless of their origin, structures are

## THE LAYOUT AT A GLANCE

**NAME:** Fox Hill & Metuchen RR and Fox Hill Traction Co.

**SCALE:** HO (1:87.1)

**SIZE:** 18" x 11'-8" plus 9' x 6'-9" staging

**THEME:** Generic steam and urban traction

**LOCALE:** Northeastern United States

**ERA:** 1920 to 1930s

**STYLE:** shelf

**MAINLINE RUN:** 12 feet (steam line), 18 feet (traction)

**MINIMUM RADIUS:** 24" (steam), 6 1/4" (traction)

**MINIMUM TURNOUT:** No. 4 (steam), 6 1/4" radius (traction)

**MAXIMUM GRADE:** none

**BENCHWORK:** shelf

**HEIGHT:** 60"

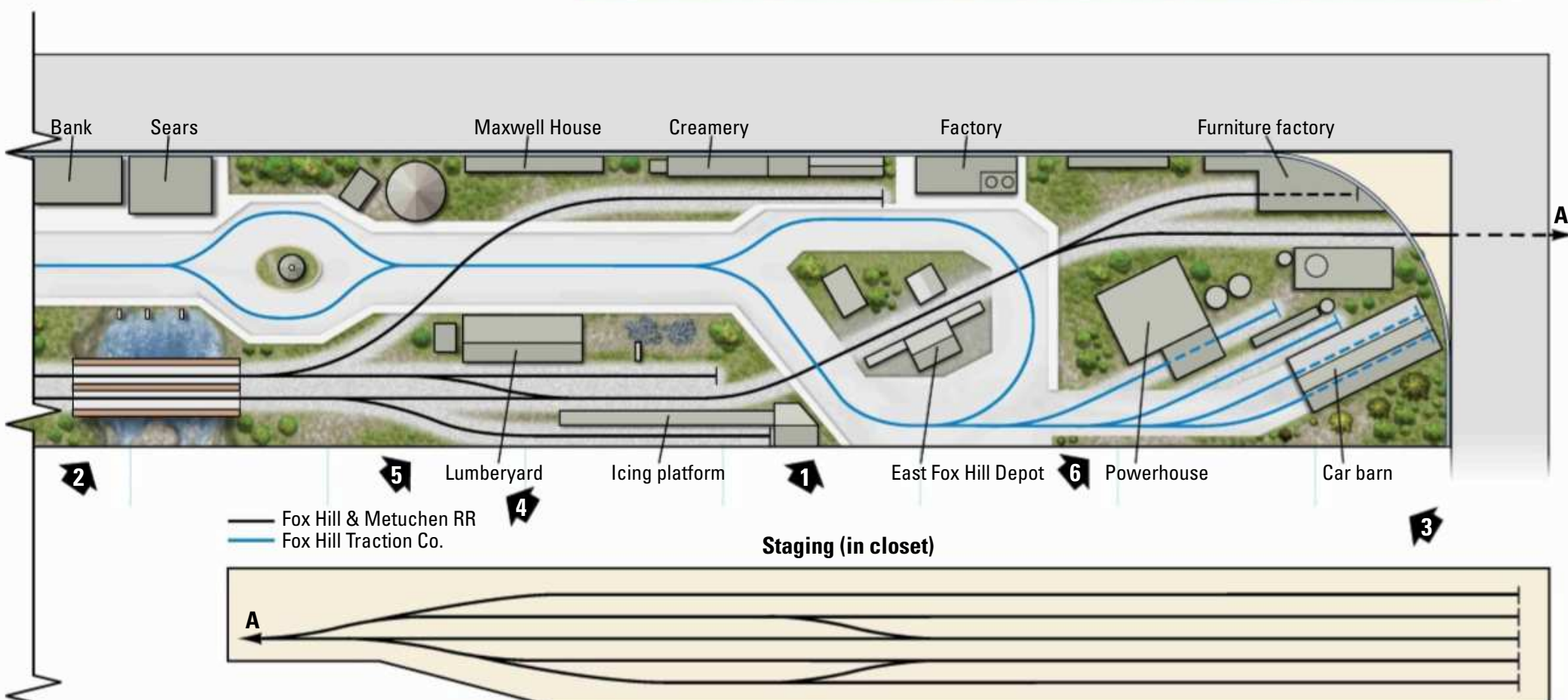
**ROADBED:** cork

**TRACK:** code 83 flextrack (steam), handlaid code 100 girder rail (traction)

**SCENERY:** extruded-foam insulation board, plaster, and rubber rocks

**BACKDROP:** commercial backdrops mounted on painted .050" styrene sheet

**CONTROL:** Digitrax Digital Command Control with JMRI Panel Pro automation





**4** Multiple animated signs shine and flash on the building tops and fronts in this night shot of downtown Fox Hill. Most buildings include lighted rooms with detailed interiors.



**5** Mogul no. 9441 shoves a reefer back to the icing platform in East Fox Hill for cooling. The platform is kitbashed, as is the Gotham Creamery, to fit the narrow footprint of the shelf layout. The lumber shed is an Atlas kit.

cut and sized to fit Fred's needs. Building kit components are often modified to create different shapes or heights.

Almost every structure has at least one room with a detailed interior and lighting. Many of the buildings have animated signs that are coordinated with a fast clock to turn on and off at certain times of day.

Fred weathers his structures and roadways with alcohol and ink washes along with white pastel powders.

The types and placement of structures were chosen to create the feeling of a small town, with residents enjoying the tranquility of it all. Entertainment is provided by musical performers in a gazebo (with sound) next to the small pond encircled by the trolley line.

The fascia and lighting valance are painted a warm brown to match the cabinetry installed elsewhere in the room.

# Hiding a workbench



**Plastic panels conceal the workbench and tool storage beneath the layout when not in use, making the room presentable for family members and guests.**

**SINCE SPACE IS LIMITED** in the train room and the room may be needed for other uses, all working surfaces and tools are hidden. Painted plastic panels are hung on hooks for easy removal. Behind the panels you will find drills,

saws, paints, and everything else needed to build and work on the layout. The panels make the condo bedroom look finished and presentable in case it's needed for some other purpose. – Lou Sassi

## ELECTRONICS

The trolleys are powered by live overhead catenary, while the steam trains run on track power. Both are controlled by Digitrax Digital Command Control (DCC). Fred has installed LocoNet jacks on the layout fascia for throttles.

A computer running Java Model Railroad Interface (JMRI) Panel Pro operates some automated controls and signals. Fred is transitioning from controlling his turnouts with fascia-mounted manual knobs and slide switches to custom-designed servomotors triggered by stationary decoders.

Several automated crossing signals protect the railroad's grade crossings with the streets and the trolley lines. In addition, working signals are installed at the end of track on the layout proper and in the staging yard. These are integrated into the JMRI controls and use infrared detectors, some custom-built, others commercially made.

All locomotives and trolleys are equipped with Digitrax sound decoders, many with custom designed sound. In addition, background sound modules are triggered to play depending on the time of day on the fast clock.

Under-cabinet light-emitting-diode "pucks" were mounted 8" apart behind a lighting valance above the layout. A custom electronic circuit tied to the fast clock brightens and dims these lights to simulate sunset and sunrise. A string of



**6** The trolley leaves the car barn on its way to the city. Hardwood Furniture Co. is a kitbashed combination of several structure kits. The car barn was kitbashed from a two-stall enginehouse.

blue rope lights is mounted above the layout to provide a twilight glow.

## EQUIPMENT AND OPERATIONS

Some traction equipment has been scratchbuilt or kitbashed. Fred has also modified the steam power and rolling stock. All equipment has been weathered with powders and airbrushing.

Railroad operation includes local freight and passenger service, while

trolley operations include streetcar service and some "on street" freight operations to serve the car barn and powerhouse. Railroad freight operations use computer-generated switch lists.

Fred has created automated operating routines for some trains, using the JMRI system. The trains follow a set sequence of movements, running out of staging, over the layout, and back. These automatic train movements create challenges

## NOW ON THE WEB

Registered users of our website can watch a video of trains and trolleys running on Fred's layout at [www.ModelRailroader.com](http://www.ModelRailroader.com).

when manually operating the other trains on the layout.

Based on space and assignments, the layout can support as many as five operators. But typically, one to three operators is a more manageable range, depending on which operations are automated.

## NEVER GIVE UP

When Fred moved to a condominium, he thought he would never have space for a layout again, and donated his previous trolley diorama to the North Carolina Transportation Museum. He thought he could fill the layout-sized void in his life by writing articles and giving presentations.

But in time, an avenue opened up with the move to a new condo unit. His dream of again having an operating layout was made possible.

Fred now gives presentations at model railroad shows emphasizing that even a condo dweller can plan, build, and operate his own layout. He assures his listeners that, regardless of square footage, such an undertaking can be a very rewarding experience. **GMR**

## MEET FRED MILLER

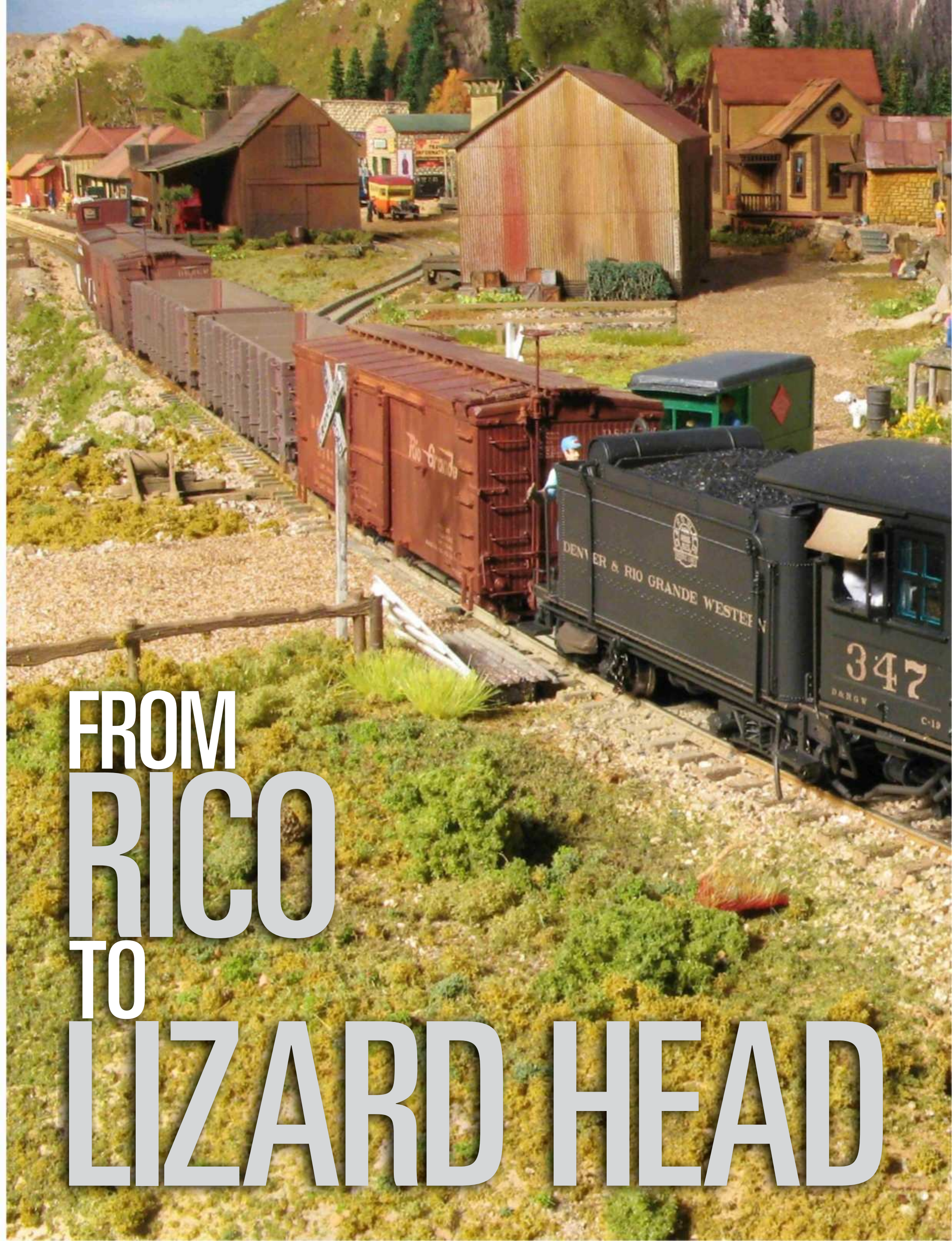
**FRED MILLER COMBINED** his hobby of model railroading with his lifelong career of computer programming to create Challenge Products [[www.fnbcreations.net/challengeproducts](http://www.fnbcreations.net/challengeproducts)], which produces railroad-simulation software games. Fred is a National Model Railroad Association Master Model Railroader and volunteers with the Mid-Eastern Region of the NMRA. He lives in Charlotte, N.C., with his wife.



**7** Theatergoers queue up for matinee tickets while Ten-Wheeler no. 1006 switches the scrapyard in Fox Hill. The Mack dump truck is a Jordan Highway Miniatures model.







# FROM RICO TO LIZARD HEAD

**1** Denver & Rio Grande  
Western no. 347 is pulling a  
southbound manifest freight out  
of Placerville on Gregg Condon's  
HOn3 D&RGW layout. Gregg has  
been fascinated with narrow  
gauge railroads since childhood.





**2** Rio Grande Southern no. 455 crosses the Dolores River near Coke Ovens. The San Juan Mountains loom in the background.

# Gregg Condon's HOn3 Rio Grande Southern Lizard Head Division captures the last heyday of Colorado narrow gauge

By Dave Rickaby ■ Photos by the author

**T**hinking back over his 70-plus years, Gregg Condon can't remember a time when he wasn't into model railroading. He had an uncle who was a railfan and model railroader. He would visit often and take a very young Gregg to watch trains in Brodhead, Wis., on the Milwaukee Road. When Gregg was 2 years old, this uncle gave him his first Lionel train. He remembers sitting on a blanket in the middle of the Lionel oval watching his uncle run the trains.

When he was in the 6th grade, his uncle gave him his first subscription to *Model Railroader*; Gregg's first issue was December 1958. After reading a few issues, he decided to stop just playing with trains and become a serious model railroader. He put the Lionel away and started buying HO scale.

To date Gregg has built seven room-sized layouts, two of which have been

featured in previous issues of *Great Model Railroads*. The last, published in GMR 2013, was constructed from benchwork to photo finish in just nine months. Over the years he's developed construction efficiencies that speed up the building process. His hobby isn't building layouts; he wants to operate them.

When he was still new to model railroading, his uncle let him read his copies of *Trains* magazine. He particularly remembers an article by Lucius Beebe about the Rio Grande Southern RR. Gregg thought the photos along the right-of-way were the most compelling examples of railroading he had ever seen. That memory would lead him to build his HOn3 Rio Grande Southern Lizard Head Division.

## THE PROTOTYPE

The narrow gauge Rio Grande Southern was conceived by Otto Mears in 1889. The president of the Mack Truck Co., Mears would build five railroads in

his lifetime. He developed an appreciation for the San Juan Mountains' mineral wealth and thought that, with proper transportation, the area could boom.

Construction began in 1890, and for a short time, the line prospered. But the Silver Panic of 1893, spurred by the United States government's adoption of the gold standard, caused the silver industry to dry up. The railroad operated on a shoestring until its demise in 1952.

The Denver & Rio Grande Western ended up owning most of the RGS, and it was common to see second-hand D&RGW locomotives and rolling stock on the railroad.

The Rio Grande Southern became a rolling museum due to a lack of funds for new equipment. Much of the rolling stock on the rails in the railroad's last days of the 1950s was purchased before the turn of the century. To Gregg, the railroad epitomized America's never-say-die fighting spirit.

## THE LAYOUT

When Gregg's wife, Pat, was nearing retirement, they decided that they would move back to the Eau Claire, Wis., area, where Gregg had been a college professor. They found some property and had a house built with a 34 by 40-foot layout

## Rio Grande Southern Lizard Head Division

HOn3 scale (1:87.1, 3-foot track gauge)  
Room size: 17x40 feet  
Scale of plan:  $\frac{7}{32}$ " = 1'-0", 24" grid  
Numbered arrows indicate photo locations  
Illustration by Rick Johnson

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

**3** This aisle view shows the town of Rico on the right, Coke Ovens on the left, and the Silver Spur in the left foreground. The dispatcher's office is off camera to the right.



### THE LAYOUT AT A GLANCE

**NAME:** Rio Grande Southern, Lizard Head Division

**SCALE:** HOn3 (1:87.1 proportion, 3-foot gauge)

**SIZE:** 17 x 40 feet

**PROTOTYPE:** Rio Grande Southern RR

**LOCALE:** Southwestern Colorado

**ERA:** September 1947

**STYLE:** walk-in

**MAINLINE RUN:** 125 feet

**MINIMUM RADIUS:** 20"

**MINIMUM TURNOUT:** no. 4

**MAXIMUM GRADE:** 3 percent

**BENCHWORK:** open grid

**HEIGHT:** 42" to 56"

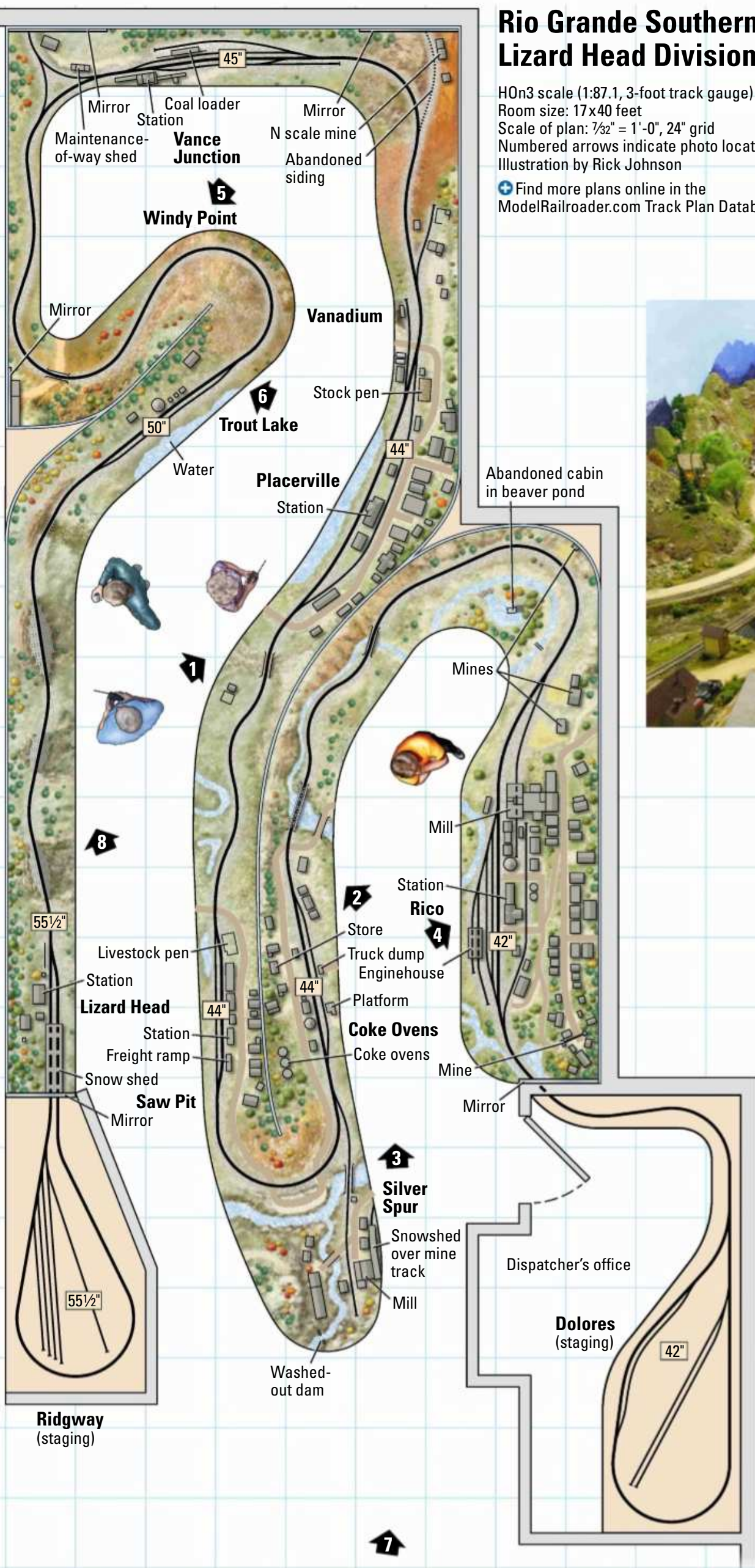
**ROADBED:** Homasote and N scale cork roadbed

**TRACK:** Micro Engineering code 70 and code 55 flextrack, Peco code 70 in hidden track, some handlaid

**SCENERY:** extruded-foam insulation board and cloth shell

**BACKDROP:** hand-painted and photo backdrops from LARC Products

**CONTROL:** Digitrax Zephyr Digital Command Control





#### **4** Rio Grande Southern K-27 no. 455 steams in front of Rico station.

**The narrow gauge locomotive is a Blackstone model, as are most of Gregg's other engines and cars.**

space in the basement. In 2014, they moved in, and Gregg started to build the new layout in January 2015, bringing it to completion in 22 months.

The layout has a footprint of 17 x 40 feet and is built as a walk-in design, with two peninsulas and loop staging at both ends. Staging represents Dolores on the south end and Ridgway on the north. Gregg designed the loop-to-loop staging for continuous running but runs the railroad as though it were point-to-point during operating sessions.

Gregg models the railroad in September 1947, the last year traffic levels were high and the railroad still ran several trains a day. Shortly thereafter, the mail

contract was canceled, and the few remaining mines began to close or switch to trucks. By 1950, it could be days between trains. Coincidentally, 1947 was also the year Gregg was born.

Gregg thinks of a model railroad as a work of art, one deserving of an attractive frame. Therefore, he built this layout with a seamless fascia. On earlier layouts he's used wall paneling for fascia, but for this one, he wanted something to compliment the overall look. He chose a green color to blend with the scenery.

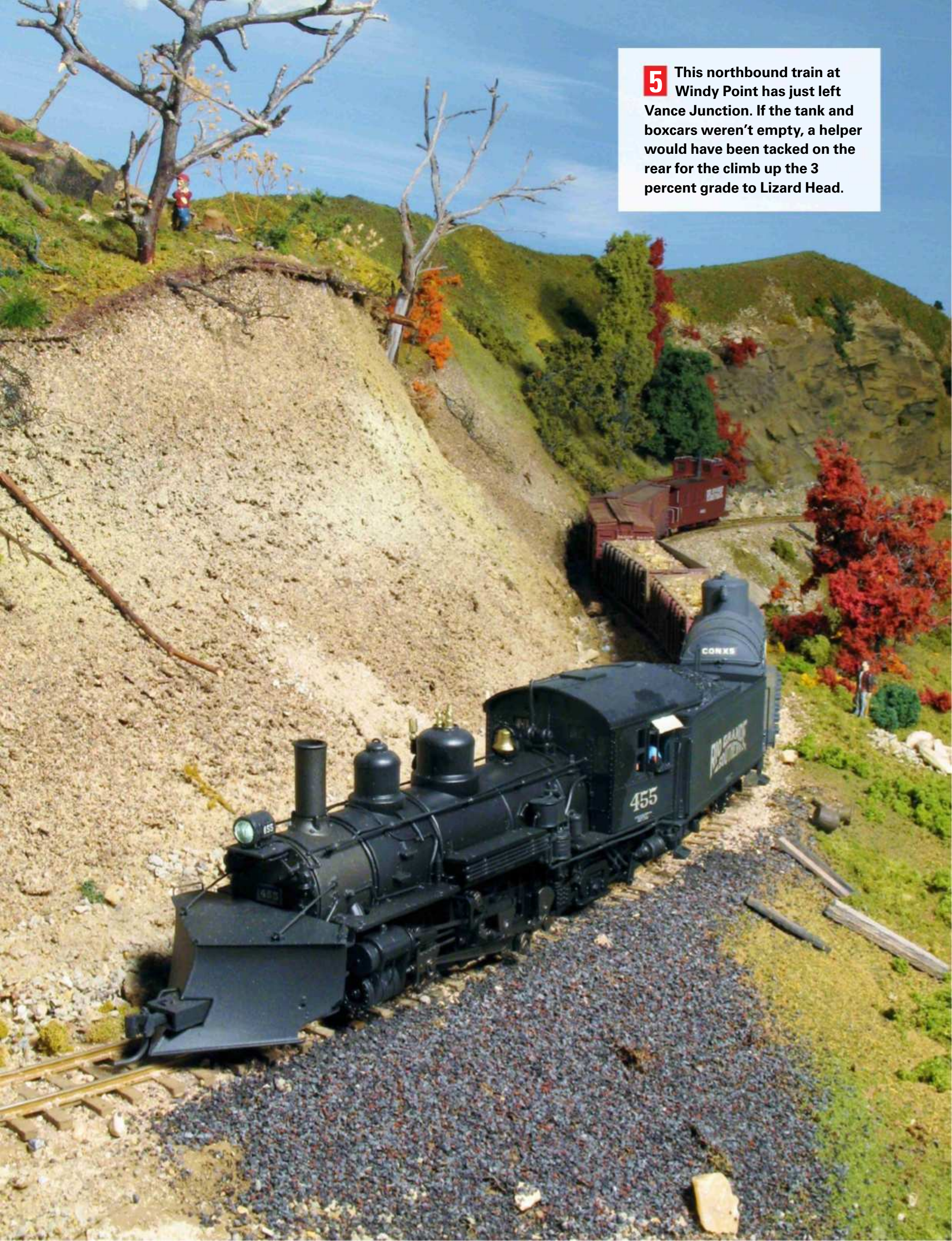
He also wanted to eliminate unsightly seams, nail heads, and screw heads, so he used a double layer of 1/8" hardboard. He attached the first layer to the benchwork the traditional way, with flathead screws recessed into the hardboard. Once the first layer was complete, he laminated the second using Liquid Nails adhesive caulk applied with a putty

knife. Any seams were spackled and sanded prior to painting with Dutch Boy Granite, a lightly textured paint that resembles a suede finish.

The track is Micro Engineering code 70, with code 55 used in the Lizard Head area. The staging tracks are Peco code 70. Most mainline track is laid on N scale cork. He uses Shinohara no. 6 turnouts on the main line, with some no. 4s in the industrial areas. The turnouts, save for the tail end of the wye at Vance Junction, are all controlled by N scale ground throws from Caboose Industries.

Gregg weathers the rail and individual ties. He starts by using the three-color paint pen set for track from Woodland Scenics. Once the paint is dry, he sprays the ties with tan, gray, and brown colors, then re-weathers them with a homemade stain made of black paint diluted with isopropyl alcohol.

**5** This northbound train at Windy Point has just left Vance Junction. If the tank and boxcars weren't empty, a helper would have been tacked on the rear for the climb up the 3 percent grade to Lizard Head.





**6** Engine no. 40 is getting thirsty, so the engineer brings his train to a stop at the Trout Lake water tank. It's a common enough sight that the sportsmen aren't bothered.

The layout was constructed using the open-grid method with 1 x 4 framing. The legs are mostly 2 x 4s and some 2 x 2s. The yards and towns are built on a base of 1/2" plywood covered with 1/2" Homasote. The main line between towns is spiked to 2" thick extruded-foam insulation board.

Although he has a collection of older brass engines, the locomotives used during operating sessions are made by Blackstone, as is the rolling stock. He prefers the Blackstone models' mechanical reliability and operational compatibility. Each locomotive is equipped with a SoundTraxx Tsunami Digital Command Control (DCC) sound decoder

and controlled by his Digitrax Zephyr DCC system.

## SCENERY

Gregg built his landforms using layers of 2" extruded-foam insulation board, which were cut and carved. To fill any gaps, deep depressions, or valleys, he used his "cloth shell" scenery method. He attaches to the baseboards cut pieces of cloth impregnated with Liquid Nails adhesive, which dries rock-hard. [See the June 2013 *Model Railroader*. – Ed.]

Gregg has used several materials to model rockwork, including foam rocks. He also cast plaster rocks in Woodland Scenics rubber molds. For more unusual rock outcroppings, such as spires, he filled aluminum foil shapes with plaster and placed them on the scenery while the plaster was still wet. He paints the rockwork with earth-tone acrylic colors.

As on the full-sized railroad, there are a lot of talus slopes along the main line. He found that paver leveling sand, which has many fine rocks in it, makes believable HO scale talus. He went through most of a 50-pound bag of sand for his slopes.

These small rocks were too yellow for his tastes in some spots, so he sprayed them with tan, primer gray, or primer red paint. He favored the red primer near the vanadium mines. He has also used Model Master Dark Earth and Light Tan.

The ground cover and bushes are mostly from Woodland Scenics and fixed to the layout with a 50-50 mix of white glue and water, with a drop of dish detergent added to break surface tension. Gregg uses lighter colors of foliage to represent his prototype area of Colorado. His pine trees are from Heki, while his

# Dispatching at Rico Station

**WHEN DESIGNING THE LAYOUT ROOM,** Gregg included part of Rico Station, which serves as his dispatcher's office as well as housing the staging loop for Dolores. The station is represented by two walls in a corner of the basement. He wanted a dispatchers office that would look sufficiently "railroad-y" and be able to properly display his prototype railroad memorabilia.

The station, painted in official RGS colors and sporting an authentic train schedule board, is the first thing a visitor sees when coming down the stairs. Hanging from the front is a prototype train order signal and a light fixture with a functioning lightbulb that's over 100 years old.

Inside, the station agent's bay is equipped with functional antique communications equipment, including a telegraph and extension-bracket telephone. A green-shaded lamp hangs over the desk. To complete the ambience, Gregg represented the platform in front of the station with a wood-look linoleum floor stacked with various items of less-than-carload (LCL) freight.

Local narrow gauge modeler Pat Thoney wired the communication system. The telephone is an open-wire system, meaning all of the operators can hear everyone else at the same time. The two phones in the layout room, also antiques, are located at Lizard Head and at Vance Junction, which is the base of helper operations. Gregg



**7 To display his prototype railroad memorabilia, like the train schedule and train order signal, Gregg built his dispatcher's office to resemble a 1:1 portion of the Rio Grande Southern's Rico Depot.**

stationed an operator at Vance Junction to whom the dispatcher dictates train orders. The operator then delivers the orders to the crews.

The phones don't ring; the telegraph is used to signal the operator of an incoming call. The sound of the telegraph suddenly clattering to life is an eye-opener for first-time visitors. – Dave Rickaby

deciduous trees are Scenic Express SuperTrees and sagebrush. He covered the sagebrush with Poly-Fill Fiberfill, applied a coating of 3M Super 77 spray adhesive, and sprinkled these and the SuperTrees with fine ground foam.

All of the rivers and waterways on the layout were poured with Enviro-Tex Lite, a two-part epoxy. Gregg used a pale green acrylic hobby paint to tint the waterways like those in the region. He cautions to use the color sparingly, as a drop is enough for a pint of Enviro-Tex.

Gregg made his backdrops using 1/8" hardboard and drywall. While some of the scenes are hand-painted, most are photo backdrops from LARC Products, which are printed on vinyl with a peel-and-stick backing.

Lighting is provided by fluorescent fixtures. Incandescent spotlights warm the depot scenes. His friend Bill Hallgren designed and installed the lighting.

## STRUCTURES AND SCENES

Most of the buildings on the layout were modeled after the prototype. Gregg

enjoys old buildings, and building structures is one of his favorite parts of the hobby. Of the 225 buildings on the layout, 190 are scratchbuilt, 20 are kit-bashed, and 15 are kit-built. He started scratchbuilding 50 years ago, and a few of his first structures are on this layout. Gregg estimates he's built close to 400 structures over the years.

Gregg has tried various structure construction techniques. He started with wood and likes the way it takes paint, but doesn't like how long it takes wood glue to dry. He also doesn't like having to sand the fuzz off of cut edges. Today, he favors styrene. You can score it, snap it, paint it to look like wood, and glue it quickly and solidly. For some of his foundations, he's used peel-and-stick rock walls from Chooch Industries.

Gregg prepared some of his structures and scenes before construction began. He placed these structures on oversized bases that include scenery and a wealth of details. Many of these "micro-scenes" were built during the five years of preparation for this layout.

Gregg made a mental list of the scenes he wanted and built them all beforehand. Observing that 95 percent of the detail in the real world is immediately adjacent to a structure, he built the bases for these buildings an inch or two wider than the structure's footprint and added ground foam, scenery, and details before installing the scene on the layout. He highly recommends this technique, because it's easier to work on a scene at the workbench instead of having to lean over the layout.

## OPERATION

Gregg has long been an operations-oriented modeler. On past layouts he could host 10-12 operators, but on the Lizard Head Division, the ideal number of operators is five, including himself as dispatcher. Typically his sessions last 2½ hours. The operators run six trains and two helpers.

The average train length is five or six cars, and each freight train manages at least two setouts and two pickups per session. The first and last trains of each



**8** Number 455 pulls a manifest freight over one of the many wooden trestles in the high country. North of here is Lizard Head. The trestle is scratchbuilt.

session are the passenger trains from Dolores to Ridgway – that is, from staging to staging.

Gregg uses train orders to dispatch his train movements. Every train receives a Clearance Form A, granting authority to occupy the track. For the two scheduled passenger trains, the timetable governs their movements.

All of the freights run as extras and use Form 19 orders. The Dispatcher

keeps a copy so he remembers what he ordered trains to do.

At each station there's a miniature station sign on the fascia. There's also a pair of waybill boxes to hold waybills for cars to be picked up, labeled "Pick Up Northbound" and "Pick Up Southbound." The labels have directional arrows to remind guest crews which ways are north and south.

Each freight train also has a switch list detailing which cars are to be set out at any given location. Gregg also employs a "message" form for special orders, such as unexpected car movements while a train is en route.

Passenger trains and helper locomotives employ one-man crews, while the freight extras use two-man crews. Prototype whistle signals are used for crossings, bridges, and to communicate to crew members.

Gregg doesn't consist the helper engines with the lead locomotives on uphill trains, but rather lets each crew run their power independently. This usually brings out the best comments during his post-session debriefings.

Gregg presently tries to simulate an 8-hour work day, from 8 a.m. to 4 p.m., in an operating session. He plans to add fast clocks from GML Enterprises, set to



## MEET GREG CONDON

**GREGG WAS BORN AND RAISED** in Brodhead, Wis., along the Mineral Point line of the Milwaukee Road. He wrote textbooks for McGraw-Hill Publishing and was a professor at the University of Wisconsin-Eau Claire. Now retired, he and his wife, Pat, live in Menomonie, Wis. In addition to model railroading, he enjoys spending time at his wilderness cabin, collecting antique firearms, and traveling.



pleased with the variety of products that are available these days and glad that model railroad conventions and train shows are going strong. He thinks modelers need to reach out to the younger generation and inspire them to take up the hobby.

Gregg is grateful to Pat for providing some great ideas while the layout was being built. Though she's not a model railroader, she brought an artist's eye for detail and scene composition to the layout's planning and construction.

Not one to rest on his laurels nor slow down, Gregg isn't done building layouts. The 17 by 40-foot footprint of his HO<sub>n3</sub> Rio Grande Southern is only half of his available layout space. He's in the planning stages of a second HO scale layout to fill the other half, one that will represent the Mineral Point Division of the Milwaukee Road during the steam-to-diesel transition period. He's designing it as a one- or two-man switching layout that follows the prototype from Monroe, Wis., to the junction at Gratiot, Wis., and then down a branch line to Shullsburg, Wis. Mineral Point itself will be represented by staging.

Gregg considers his hobby to be central not only to his life, but also to his identity. Model railroading has enriched his life, with many of his closest friendships being with other train fans. The hobby itself has been the frosting on his life's cake. **GMR**

run at a 4:1 ratio, to help operators with time management.

Car movements are generated by a seven-day matrix that Gregg created for his previous layout. The matrix has columns marked Day 1 through Day 7. The number doesn't correspond to the day of the week, but rather the number of the operating session. Once operating session 7 is complete, the railroad reverts to session 1, creating perpetual car movements and operation.

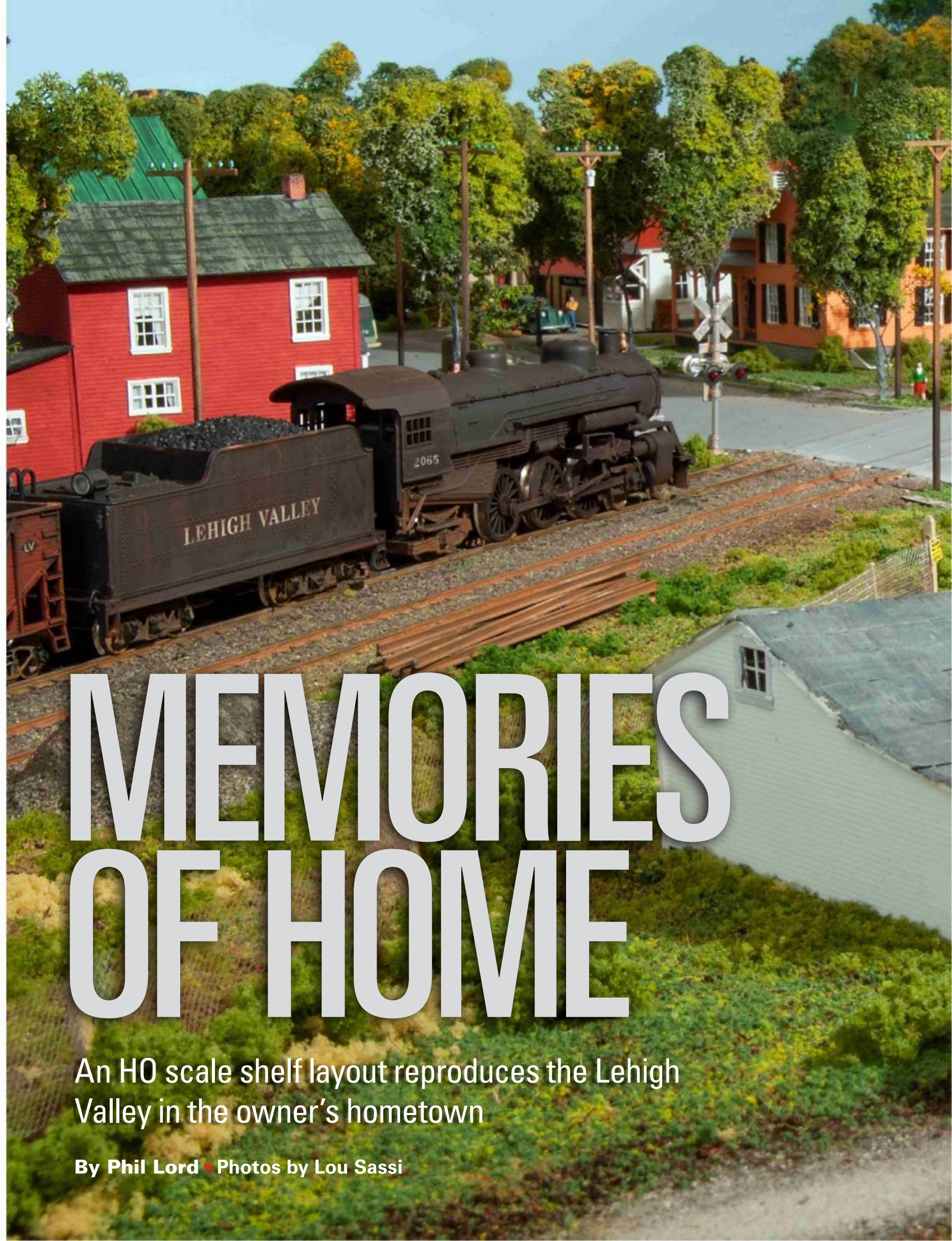
Listed along the side of the matrix are the stations and their industries. To determine if an industry should be switched that session, the dispatcher

reads the day column down and the industry across. If the industry is to be switched that day, the table will list the type of car. Some days, an industry may be left blank. The most frequently switched industry is an ore processor that loads a car six days a week.

When Gregg compiled the matrix, he made sure that it would provide close to the same number of cars per train for each session. All of his paperwork is generated by the results of the matrix.

## FROSTING ON THE CAKE

Gregg considers the present to be a golden age of model railroading. He's



# MEMORIES OF HOME

An H0 scale shelf layout reproduces the Lehigh Valley in the owner's hometown

By Phil Lord • Photos by Lou Sassi



**1** This house near the front of the layout, within sight of the Lehigh Valley depot, models the house where Phil Lord lived as a child. The operating station is positioned to give the operator the same view Phil remembers from his kitchen.



**2** This overview of the layout, looking south, shows the town of New Woodstock, N.Y., as it appeared in 1945. The tree line along the backdrop is a low view block that screens the return loop.



**3** As the local comes into town, a worker waits on the Thompson Coal & Lumber pass-through loading dock for a car to unload. The 4-6-2 Pacific, the only locomotive on the layout, is a venerable IHC model Phil painted, lettered, and weathered.

**IN 1944 AND 1945**, my family lived in a house just a few yards south of the Lehigh Valley RR depot in New Woodstock, N.Y. As I was only 3 years old, my recollections of that time are limited. But one vivid memory has stayed with me.

Our kitchen faced the LV tracks, and when the big, black steam locomotives stopped behind our house, Mom would stand me in the kitchen sink so I could look out the window. I would watch the trains move back and forth as

they spotted and picked up cars or loaded passengers.

That brief fragment is my earliest memory. Over the years, I fantasized about recapturing that event in miniature. But it wasn't until 2004 that I started to turn that idea into reality.

It didn't take long to realize that I couldn't build a model railroad out of a hazy 60-year-old memory. I recognized that I knew very little about New Woodstock in 1945. I would have to do a great

deal of research before I could even hope to begin. But since I had just retired from a museum after 29 years of doing just that, I knew where to begin.

The village of New Woodstock hadn't changed much in six decades. Some of what had been there in 1945 remained. But many of the critical structures, including the tracks and half the track-side industries, had vanished. Fortunately, the New Woodstock Historical Society, which was housed in the preserved LV depot, had several albums of photographs. These, coupled with vintage maps, 1940s-era stereo aerial photos, old postcards, and the recollections of older local residents helped me piece together, over the next 18 months, a detailed picture of what I was to model.

## PLANNING FROM THE PROTOTYPE

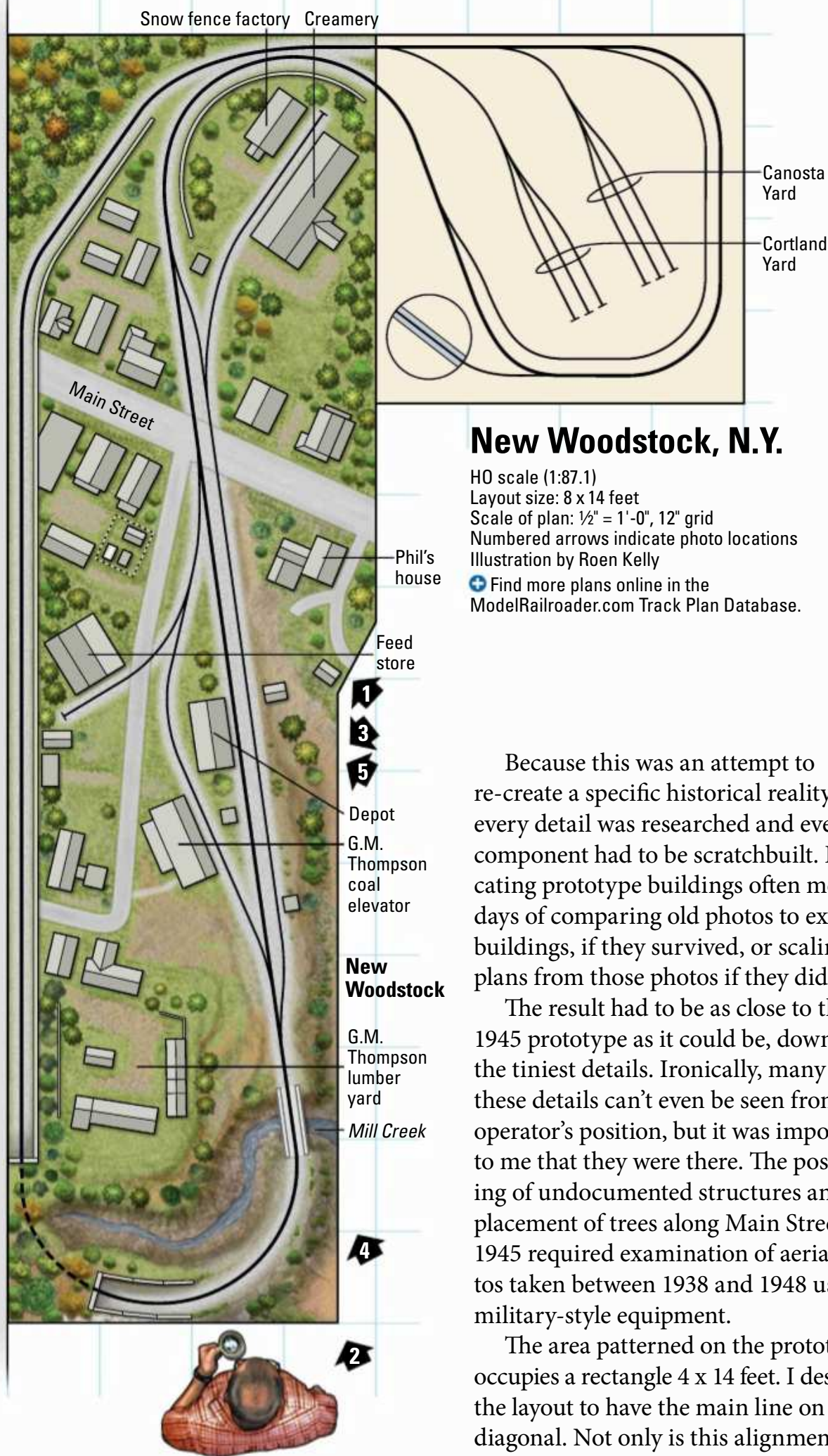
A few months into my research, Herb Trice gave me a 1917 railroad map that provided a detailed look at the trackage, railroad structures, and nearby industries. I based my layout on this and modeled the 500 x 2,000-foot area shown on the map, centered on the depot. With some modest compression, this area would fit nicely in the 4 x 14-foot space I had allocated for the layout.

My HO scale track plan duplicates the prototype track plan, including the main line, a long passing track, and a team track that ran behind the depot and also served the G.M. Thompson Coal & Lumber Co. A spur branching off this team track served the Boyd Feed & Seed store, a large building that contained a residence as well as the mill and storefront. South of Main Street, another spur diverged from the passing siding to serve the Dairymen's League Creamery and a snow-fence factory.

A model of my former house stands at the front edge of the layout. The operator's station is positioned to give the operator the same view of the railroad I had from my mother's kitchen in 1945. (Although I lived in the house for two years, I selected 1945 as my modeled year, since it's more likely my memory was from when I was age 3, not 2.)

## CONSTRUCTION

Of course, for me, set on rebuilding a memory, modeling New Woodstock meant that the non-rail-served



## New Woodstock, N.Y.

H0 scale (1:87.1)  
Layout size: 8 x 14 feet  
Scale of plan: 1/2" = 1'-0", 12" grid  
Numbered arrows indicate photo locations  
Illustration by Roen Kelly  
Find more plans online in the  
ModelRailroader.com Track Plan Database.

Because this was an attempt to re-create a specific historical reality, every detail was researched and every component had to be scratchbuilt. Replicating prototype buildings often meant days of comparing old photos to existing buildings, if they survived, or scaling plans from those photos if they didn't.

The result had to be as close to the 1945 prototype as it could be, down to the tiniest details. Ironically, many of these details can't even be seen from the operator's position, but it was important to me that they were there. The positioning of undocumented structures and the placement of trees along Main Street in 1945 required examination of aerial photos taken between 1938 and 1948 using military-style equipment.

The area patterned on the prototype occupies a rectangle 4 x 14 feet. I designed the layout to have the main line on a diagonal. Not only is this alignment recommended by layout design experts, it was also dictated by my prototype locale. At the north end of the real town, the bulk of the structures stand on the east side of the tracks; at the south end, most structures are on the west side of the main line; and in the middle, they're split about 50-50.

I supported the benchwork with diagonal braces to avoid unsightly legs at the front of the layout. The benchwork is 2" thick extruded-foam insulation board

## THE LAYOUT AT A GLANCE

**NAME:** New Woodstock  
**SCALE:** H0 (1:87.1)  
**SIZE:** 8 x 14 feet  
**PROTOTYPE:** Lehigh Valley RR  
**LOCALE:** Madison County, N.Y.  
**ERA:** 1945  
**STYLE:** shelf  
**MAINLINE RUN:** 40 feet  
**MINIMUM RADIUS:** 18"  
**MINIMUM TURNOUT:** no. 6  
**MAXIMUM GRADE:** flat  
**BENCHWORK:** open grid  
**HEIGHT:** 48 1/2"  
**ROADBED:** none  
**TRACK:** Atlas code 100  
**SCENERY:** extruded-foam insulation board  
**BACKDROP:** painted on contact paper  
**CONTROL:** direct-current block control

within frames of 1 x 4 lumber. I used drywall screws to assemble the wood parts and attached the foam board with carpenter's glue.

I built the layout at 48 1/2" high for optimal line of sight. At the north end is a stream valley that was the baseline for the first foam panel, with the streambed carved down into that layer. The embankment for the bridge approach was built up with foam, and the base for the village area (south of the bridge) was created by laminating layers of foam.

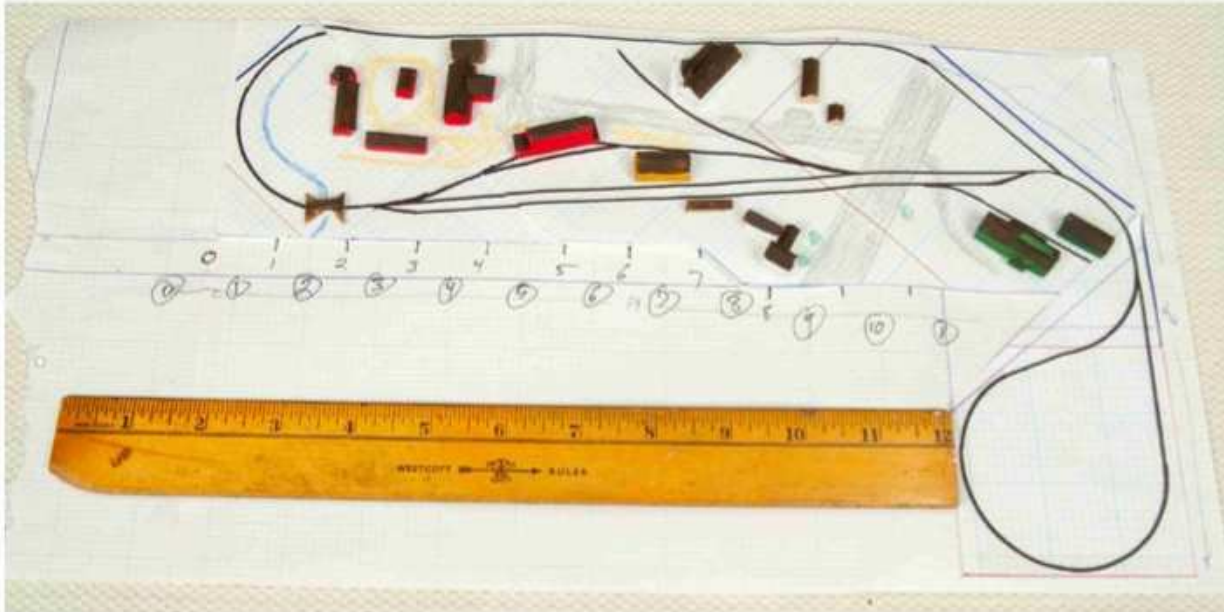
The hidden return track that runs along the back edge is screened by a 4" high view block of 1" thick foam. It ends in a tunnel at the north end, which isn't prototypical, but it was necessary to provide an exit from behind the view block.

Cork roadbed was used on the approach to the bridge from the tunnel, but track was laid on the grade everywhere else, fastened to the foam using Liquid Nails adhesive and held in place with brads. Once the adhesive dried, I cut the heads off the brads and pushed them in flush to the top of the ties.

I used a combination of Atlas code 100 sectional track and turnouts as well as flextrack. The turnouts are controlled with ground throws mounted by the headblocks; for hard-to-reach ones, I used the fascia-mounted lever system made by Hump Yard Purveyance ([www.humpyard.com](http://www.humpyard.com)).

structures and landscapes were as important an aspect of the layout as were those related to the LV. In this way, I sort of reversed the priorities of the typical model railroader. Instead of focusing on re-creating a rail line, around which scenery and structures are created to provide context, I was creating a miniature historical diorama, through which there just happened to run a train.

## Planning with a mock-up



**Phil used a scale drawing of his modeling space and balsa representations of his structure models to plan the configuration of the layout.**

**FITTING A PROTOTYPE SCENE** that occupied a rectangle about 300 x 1,800 feet into a model railroad with a footprint of 4 x 14 feet was a challenge, requiring some linear compression. And in order to accommodate the structures, the main line had to run diagonally across the layout.

Once I had drafted a working design, I tested it by transferring it to graph paper and making a mock-up of the layout using tiny balsa models of the major structures. This let me see if the layout worked from all angles and whether it captured the feel of the prototype accurately.

The same technique is often used by artists who paint historical scenes to test the arrangement and perspective of the final product. For my project, it was extremely helpful, avoiding any last-minute redesign or repositioning of the buildings. – *Phil Lord*

I soldered all the rail joints and dropped feeders from each track segment. The layout is powered with a Model Rectifier Corp. Tech 4 power pack with a walkaround throttle.

The grade crossing at Main Street is protected by a pair of crossbucks with flashing lights and a working bell. As this is a small country town, there are no crossing gates. In addition to a bell at the grade crossing, I have installed four other sound modules to provide realistic background sounds at various locations around the layout. They play sounds for the stream and forest, the sawmill, the coal dump, and the church bells.

## OPERATIONS

The components of this layout, including a depot, street crossing, multiple tracks, and a variety of industries, provide the potential for complex and interesting operations, just as the prototype did in the closing years of World War II. This was a branch line, and photos from the period show short mixed trains with second-hand cars and locomotives operating through New Woodstock. This provides an opportunity to learn about and re-create this under-represented area of railroading (plus lots of chances to practice weathering).

For me, this was an expedition into the past – my past – and an adventure in rediscovery that led me back into the world of model railroading. Though the layout is small, the arrangement of the varied industries and the depot opens up a world of operating possibilities. Using the main and passing tracks, trains can be made up and broken down. Cars can be spotted along the team track for local transfer of goods at the pass-through freight dock at the coal company, as well as at the depot's loading dock. Hoppers of coal and boxcars of lumber for Thompson Coal & Lumber can also be spotted on the team track.

Milk cars and reefers for loading can be spotted on the creamery spur for milk and cheese shipments. Boxcars can be spotted at the Boyd Feed Mill. The depot is the focal point for all of this, as well as handling the passenger traffic for the combine on the end of the mixed trains that ran through here in the 1940s.

After the main part of the layout was completed, I added a 4 x 4-foot drop



**4** The afternoon mixed train heads south over Mill Creek toward New Woodstock. Behind it, painters spruce up the peeling finish on one of the G.M. Thompson Coal & Lumber's warehouses.



section that gave me the ability to run trains exactly as the prototype did. In 1944 and 1945, a morning train ran north through New Woodstock from Cortland Yard to Canastota Yard, where the motive power was turned on an Armstrong turntable. Then, in the afternoon, the train returned south, headed through Cortland to East Ithaca, N.Y.

My small yard allows trains to be turned to replicate that schedule. Trains can also be made up and broken down on the inside passing loop. The two stub yards, representing Cortland and Canastota, provide ample staging for arriving and departing cars.

In addition, by having mainline tracks separated by a view block, I can have continuous running without any switching or reversing polarity.

Since the prototype ran a single train up and back on a single-track branch line, I have only one engine, an IHC 4-6-2 Pacific that I painted, lettered, numbered, and weathered to match the Lehigh Valley prototype.

The car roster is made up of rolling stock acquired at train shows, received as gifts, or purchased at the local hobby shop. All were selected and weathered to match the mixed trains that ran on the branch in the 1940s.

### A MEMORY RECAPTURED

Unlike those who seek through their modeling to create an operating railroad, my goal was to reproduce exactly the town where I lived in 1945. Though all I remember of the time is the trains, my research has satisfied me that I've done a pretty good job of it. And since I got a fun-to-operate model railroad out of the bargain, so much the better.

If I had to do it all over again, I'd redo the backdrop, and some of my early structures could benefit from the modeling skill I developed later. But I wouldn't change my focus. Like a painter who works from a live model, or the writer who follows the motto "write what you know," with this layout I built what I know. You look, you see, you create. **GMR**

**5** Southbound mixed train No. 324 stops at the depot to pick up passengers on Phil Lord's HO scale New Woodstock layout. Phil set out to reproduce the neighborhood he lived in as a 3-year-old in 1945.

### MEET PHIL LORD

**PHIL IS SEMI-RETIRED** after 30 years with the New York State Museum. Though he has for years enjoyed scratchbuilding wooden miniatures, including ships, boats, and dollhouse furniture, this is his first model railroad project. He and his wife live near Albany, N.Y.



# WHITE DIESELS AND

The H0 scale Soo Line Latta Subdivision is designed for realism

By **John Emley** • Photos by the author



# BLACK DIAMONDS



**1** Northbound Soo Line train 241 blasts through Lewis on John Emley's HO scale Soo Line Latta Subdivision. The turnout is part of the automated return loop.



**H**umidity hangs over the flat southern Indiana countryside. Corn and soybean fields provide the scenery, broken only by tree lines along the fencerows. Cicadas and red-winged blackbirds are all that break the silence until an air horn sounds in the distance. Soon, the rumble of Electro-Motive Division diesels signals an approaching train. A red-and-white Soo Line GP38-2 and two ex-Milwaukee Road “bandits” power a coal train.

The Soo Line in Indiana? No, the Latta Subdivision isn’t a freelanced layout. The Soo served the coal mines of southern Indiana from the time it bought the Chicago, Milwaukee, St. Paul & Pacific in 1985 until it sold the lines to the Indiana Rail Road in 2006.

### AN INTERESTING PROTOTYPE

The prototype Latta Sub was part of Soo Line’s route from Chicago to Louisville, Ky. Most of that line was over CSX

trackage rights: Chicago to Terre Haute, Ind., on the ex-Chicago & Eastern Illinois and Bedford, Ind., to Louisville on the ex-Monon. The 92-mile track from Terre Haute to Bedford was an interesting piece of railroad, a branch line run like a main line, with some through traffic, a lot of local traffic, and tons of coal.

The Milwaukee Road bought the line in the 1920s to serve as a source of coal for its steam engines. It also had a lot of interchange traffic as well as limestone from the quarries around Bedford. Then, as a condition of the Monon merger into the L&N, the Milwaukee received trackage rights from Bedford to Louisville.

Eventually the Milwaukee had two daily through freights from Chicago to Louisville to interchange with the Southern Ry. However, after the Norfolk & Western-Southern Ry. merger in 1990, it dropped to one train daily each way: No. 240 southbound and 241 northbound.

Coal traffic originated at a number of load-outs over a 50-mile stretch between Jasonville and Crane, Ind. A lot of that

**2** The XL returns from Terre Haute with empty coal hoppers from the Wabash Generating Station. In the background is the Shakamak IGA, which is modeled with photos of the actual grocery store laminated to a Gator Board core.

coal was interchanged to other railroads in the area or terminated at Terre Haute’s Wabash Generating Station, so some of the line hauls were very short. For example, the Soo transported coal from Minnehaha Mine to the Indiana Rail Road interchange in Linton, a distance of less than 20 miles.

Other longer distance unit trains delivered coal to the Chicago area and Wisconsin. Occasional unit potash trains to Louisville also made appearances. Besides coal, there was a fair amount of plastic resin traffic to Terre Haute and munitions to the Crane Naval Weapons Center near Bedford, as well as other smaller customers.

To me, all of this made for a perfect prototype to model: it had variety, local



**3** A GP38-2 and an ex-Milwaukee Road “bandit” GP40 pull a coal train near Lewis. John’s soybean fields are black chenille flocked with ground foam; the cornfields are modeled with Busch and Bluford Shops products.

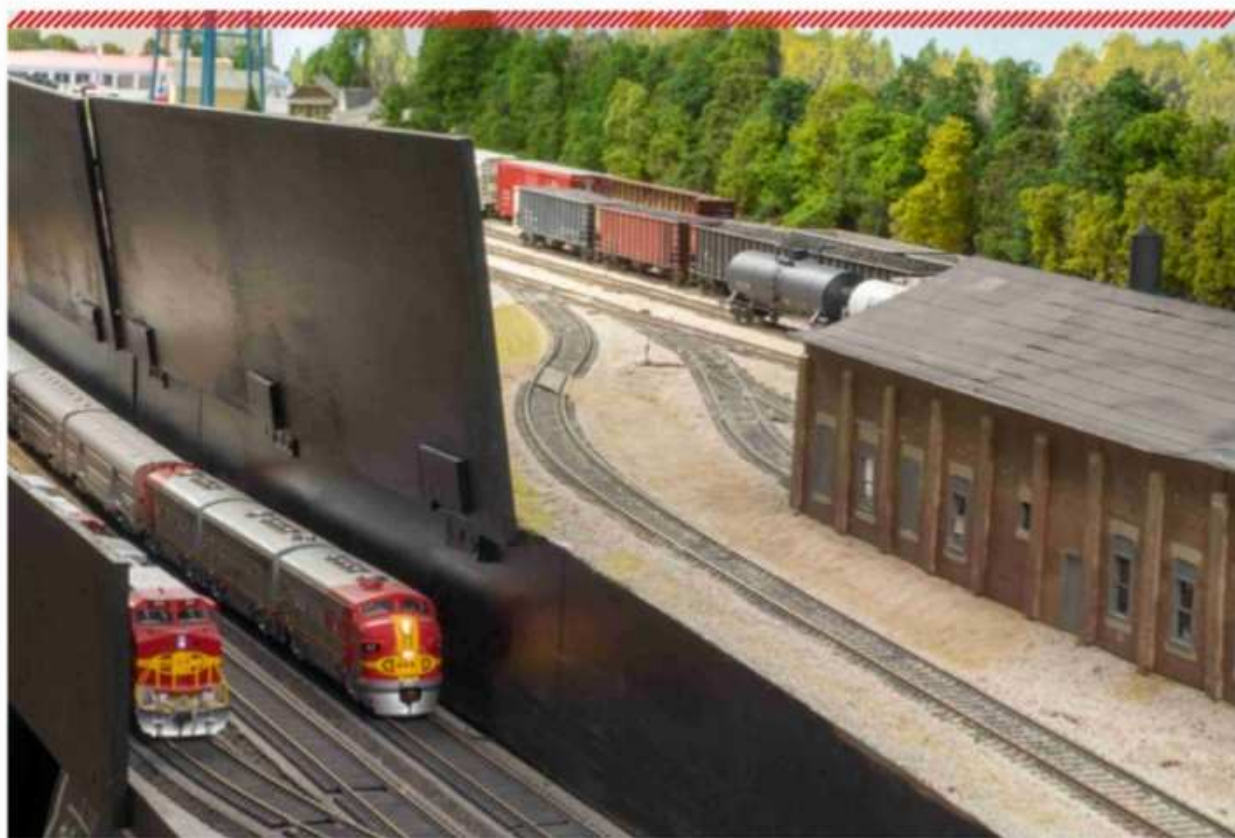
switching, and some heavy freight, but it wasn’t too busy. I had many opportunities to railfan the line while going to school at Rose-Hulman in Terre Haute. I just wish I had taken more pictures.

### THE LAY OF THE LAND

My layout, circa 1993, is a sectional, around-the-walls layout with temporary return loops on each end to allow for continuous running. I wanted a layout that gives a feel for southern Indiana. To me, that meant only one track through a scene when possible, which allows for more realistic views. I also wanted open fields and farmland between scenes to give the line a rural ambiance.

On one end is Latta Yard, the heart of the Latta Sub and the junction of the Latta Branch. (You’d think they could be more original with their naming.) The enginehouse and its sanding tower are the centerpieces of the yard. Mine are scratchbuilt replicas of the prototypes.

On the north end of the yard is Jasonville. The buildings around the



**4** The layout’s three-track staging yard is in front of and below Latta Yard. A hinged cover conceals the trains but gives ready access.

## Putting staging up front

**I PLACED MY THREE-TRACK STAGING YARD** right on the aisle, in front of Latta Yard. This makes access very easy. Trains leaving the yard pass through one of the automated reversing loops before emerging in Latta Yard. The hinged top performs double duty, both hiding the trains and serving as a convenient place to rest my coffee cup. However, if I had to do it again, I wouldn’t put the staging yard in front of my main yard, since it limits my ability to reach in and switch. – John Emley

## Soo Line Latta Sub

HO scale (1:87.1)

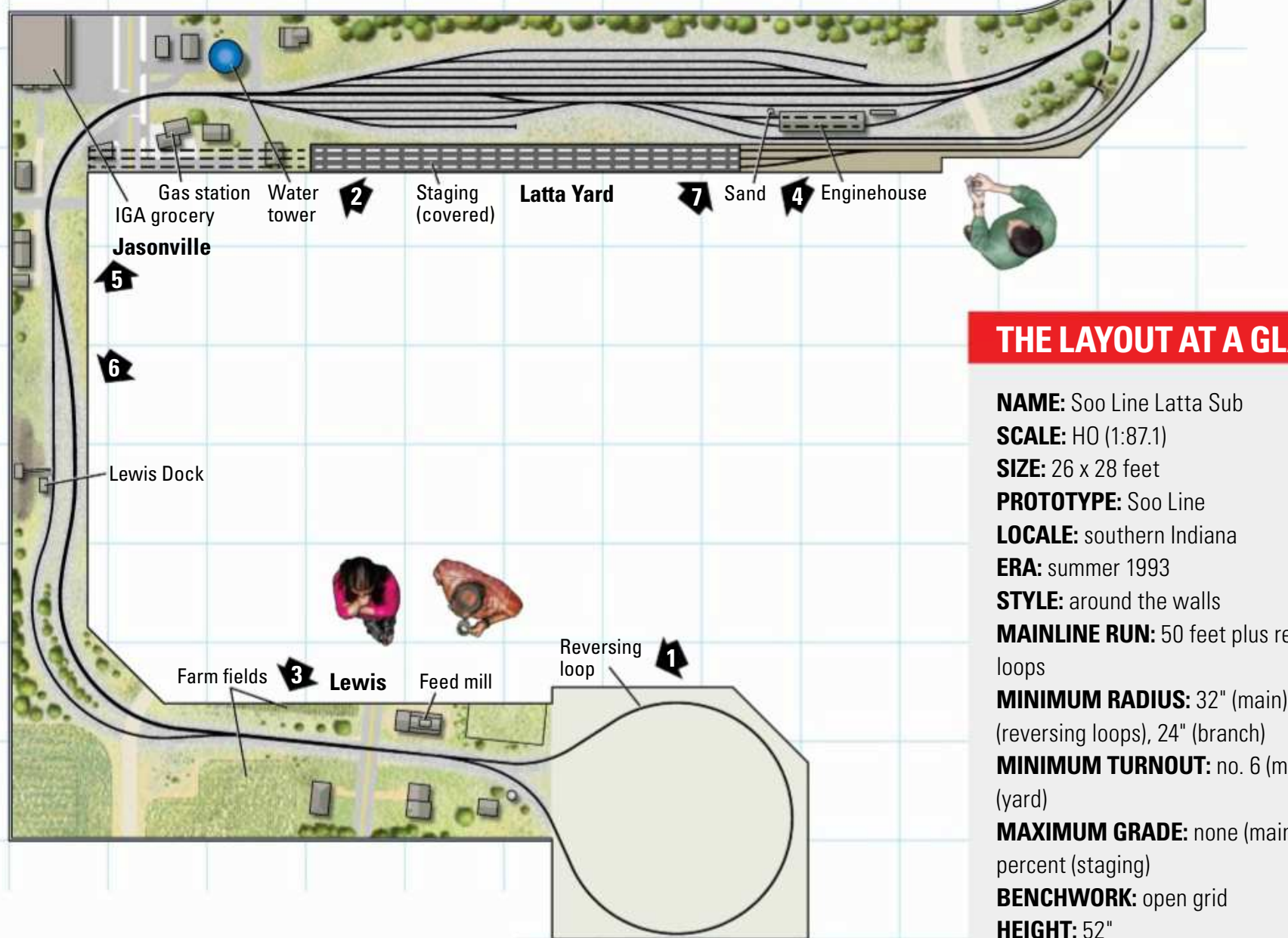
Room size: 26 x 28 feet

Scale of plan: 1/4" = 1'-0", 24" grid

Numbered arrows indicate photo locations

Illustration by Rick Johnson

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



### THE LAYOUT AT A GLANCE

**NAME:** Soo Line Latta Sub

**SCALE:** HO (1:87.1)

**SIZE:** 26 x 28 feet

**PROTOTYPE:** Soo Line

**LOCALE:** southern Indiana

**ERA:** summer 1993

**STYLE:** around the walls

**MAINLINE RUN:** 50 feet plus reversing loops

**MINIMUM RADIUS:** 32" (main), 28" (reversing loops), 24" (branch)

**MINIMUM TURNOUT:** no. 6 (main), no. 5 (yard)

**MAXIMUM GRADE:** none (main), 3 percent (staging)

**BENCHWORK:** open grid

**HEIGHT:** 52"

**ROADBED:** cork on plywood or foam board

**TRACK:** Atlas and Micro Engineering code 83 flextrack, with Walthers, Peco, and Micro Engineering turnouts

**SCENERY:** extruded-foam insulation board

**BACKDROP:** painted drywall with photos

**CONTROL:** Digitrax DCC

main street crossing are prototypical, including the IGA store, but the rest of Jasonville consists of representative kit-built and kitbashed houses. The front of the IGA store consists of photos of the actual store mounted to Gator Board. The rest of the building is textured styrene on a Gator Board core.

It seems as though many model railroads cram a lot of buildings into a town, but in reality the houses and buildings in most small towns are spaced fairly far apart. Thus, the buildings in Jasonville are close to prototypical spacing from

each other – which is also cheaper, since I don't need as many of them.

Right next to the tracks is the municipal water tower, emblazoned with the name of the town. I couldn't leave out such a landmark structure, though no suitable model was on the market. So a friend made a 3-D printed model of the tank while I scratchbuilt the legs and supports. Now it towers over the trains, just like the prototype.

North of Jasonville is a small coal load-out called Lewis Dock. The coal is trucked in from a mine miles away, so

this is a relatively compact industry consisting of just the conveyor to load the coal and a very long siding. Farther north is the village of Lewis, which has just a few houses and an old feed store where Highway 246 crosses the railroad.



## CONSTRUCTION

This version of the Latta Sub started out as a sectional layout built more than 20 years ago in an apartment. It's followed me through five moves since then, changing configurations for each move, but always giving me something to start with in each new abode. I made it sectional since I had experience with building Ntrak modules and I knew that I would be moving. Even though I'm now in a house that we own and don't plan on leaving, I'm still continuing with sectional construction because I don't want an anchor in my basement. If anyone is planning on building a layout, I would highly recommend building it in sections, especially in this highly mobile society. Every layout is eventually dismantled or moved.

The benchwork is open-grid style. It rests on triangular supports anchored to the wall. This reduces the number of benchwork legs so I can store more stuff underneath the layout. I used polystyrene foam board as my subroadbed on

the older sections, but I switched to the tried and true  $\frac{5}{8}$ " plywood on newer ones. I found that the foam board wasn't consistent in its thickness, so two adjacent pieces often didn't mate perfectly, causing a bump in the track.

The track is a combination of Atlas and Micro Engineering flex track as well as Walthers, Peco, and Micro Engineering turnouts. The turnouts that are hard to reach are controlled by Tortoise by Circuitron switch motors, while the more accessible ones are lined manually with an over-center spring. Some of the manual ones have switch stands with rotating targets.

## SCENERY

The scenery is pretty basic. Most of it is extruded-foam insulation board with some spackling compound covering the rough areas. I follow that with a coat of greenish-brown paint and one or two layers of static grass. My static grass is usually a mixture of yellow and dull green grasses to give a dry, summer look.

**5** The largest town on the layout, Jasonville, is still small, with a population of just 2,400. Latta Yard, to the right, is just south of town.

My trees are all SuperTrees from Scenic Express. The soybean fields are black chenille covered in fine ground foam and hot-glued to the layout. The cornfield is a combination of Busch and Bluford Shops products.

The backdrops are my photos that I have combined and edited in Adobe Photoshop to match the location. I have found that I can print out 7" x 7'-0" prints for an economical price at some Staples locations. I cut the sky off, glued the prints to the backdrop, and used acrylic paint to blend the cut line into the painted sky.

My roads are made from Woodland Scenics' Smooth-It. Most of the asphalt roads were spray-painted, but I replicated a chip-and-seal application on a rural road by spreading diluted white glue over the road surface and covering it with Arizona Rock & Mineral gravel.



**6** The afternoon XL passes Lewis Dock on its way back from Terre Haute. The coal loader can be wheeled into position. A steel structure protects the office in case something snags the coal loader.

Once the glue dried, I brushed the extra gravel off, leaving a mostly level road. Chalk weathering completed the effect.

## POWER AND OPERATIONS

Motive power consists of a couple of Soo Line GP38-2s from Athearn Genesis and a couple of Atlas GP40s modified to be ex-Milwaukee Road “bandits.” All are weathered and sound equipped with Tsunami or Econami decoders as well as CurrentKeeper capacitors.

The early 1990s were transition years for adding ditch lights to locomotives, so the GP38-2s have ditch lights and the GP40 bandits do not. Eventually I’ll add

SD60s and maybe SD40-2s, but that would be it, since that’s what the prototype generally used.

Modeling a specific place and time period helps to keep my locomotive and freight car rosters prototypically contained. It’s easier to say “no” to purchasing locomotives and cars that probably never made an appearance on the Latta Sub, but it also makes it harder to find the ones that did.

Walthers 100-ton, three-bay Bethlehem coal hoppers and Atlas four-bay American Car and Foundry plastics cars predominate, just like they did on the real Latta Sub. The Santa Fe “beer cars”

on the layout transport explosives, like the prototypes, which were carrying munitions to Crane Naval Weapons Center. A number of cars and locomotives are weathered, but I have a long way to go to get my entire fleet appropriately dirty.

That said, sometimes we enter a time warp and a 1950s Atchison, Topeka & Santa Fe *Super Chief* makes an appearance on the layout, just because I’m a fan.

The layout is operated by Digitrax Digital Command Control. I also use the WiThrottle app on a smartphone. Two PSX-AR auto reversing modules flawlessly automate the return loops and activate the associated switch motors to



route trains in and out. The working crossing signals and gates are by Tomar.

I haven't gotten too deep into operations. There are only two industries on the layout: Lewis Dock and another small coal load-out in back of Latta Yard. I occasionally switch those or just enjoy railfanning as a train makes its way around the layout. Future expansions, including Linton and the Latta Branch, will definitely enhance operations, giving longer runs and more variety.

## A LIFETIME OF RAILROADING

I started my model railroading at age 2 or 3 when my mom got out my uncle's



old Lionel trains for me to push around. Before long I had my dad build me a Lionel layout and an HO scale railroad. In my teen years I transitioned to N scale, building four Ntrak modules that I displayed with the Kentuckiana Society of N Scalpers (KSONS) in Louisville. In college I returned to HO to model with the Rose-Hulman club.

Since then, I've been mostly a lone wolf modeler, enjoying the challenges of building the layout by myself. However, recently I've been getting more involved with the National Model Railroad Association Motor City Division, since camaraderie with fellow modelers is an important part of the hobby.

A common theme in the model railroading press is doing more with less. In this case, I think I'm doing less with more. Our house was purchased with the idea of having more space for when we started a family, and a nice, big basement for a future layout was part of the plan. However, it takes time, resources, and play space to raise children, so the layout was scaled back from the concept of a basement empire to a simple portion of a mainline. Having other priorities means that progress is slow at times and nonexistent at others.

Choosing to build a manageable layout instead of an empire allowed me to complete this portion to my satisfaction. I hope to add more in stages. Maybe someday I'll get to an empire, but for now, I have a nice layout that my children and I enjoy.

**7** Latta Yard's venerable but serviceable enginehouse is a scratchbuilt replica of the prototype. The Soo Line GP38-2s are Athearn Genesis models.

My kids enjoy helping out on the layout. My son prefers the creative and building aspects, while my daughter prefers operating. Items like dinosaurs and toy cars get added when I'm not looking. Things get broken on the layout from time to time, but that's OK. As the slogan says, "Model railroading is fun," which includes little hands, as well. **GMR**

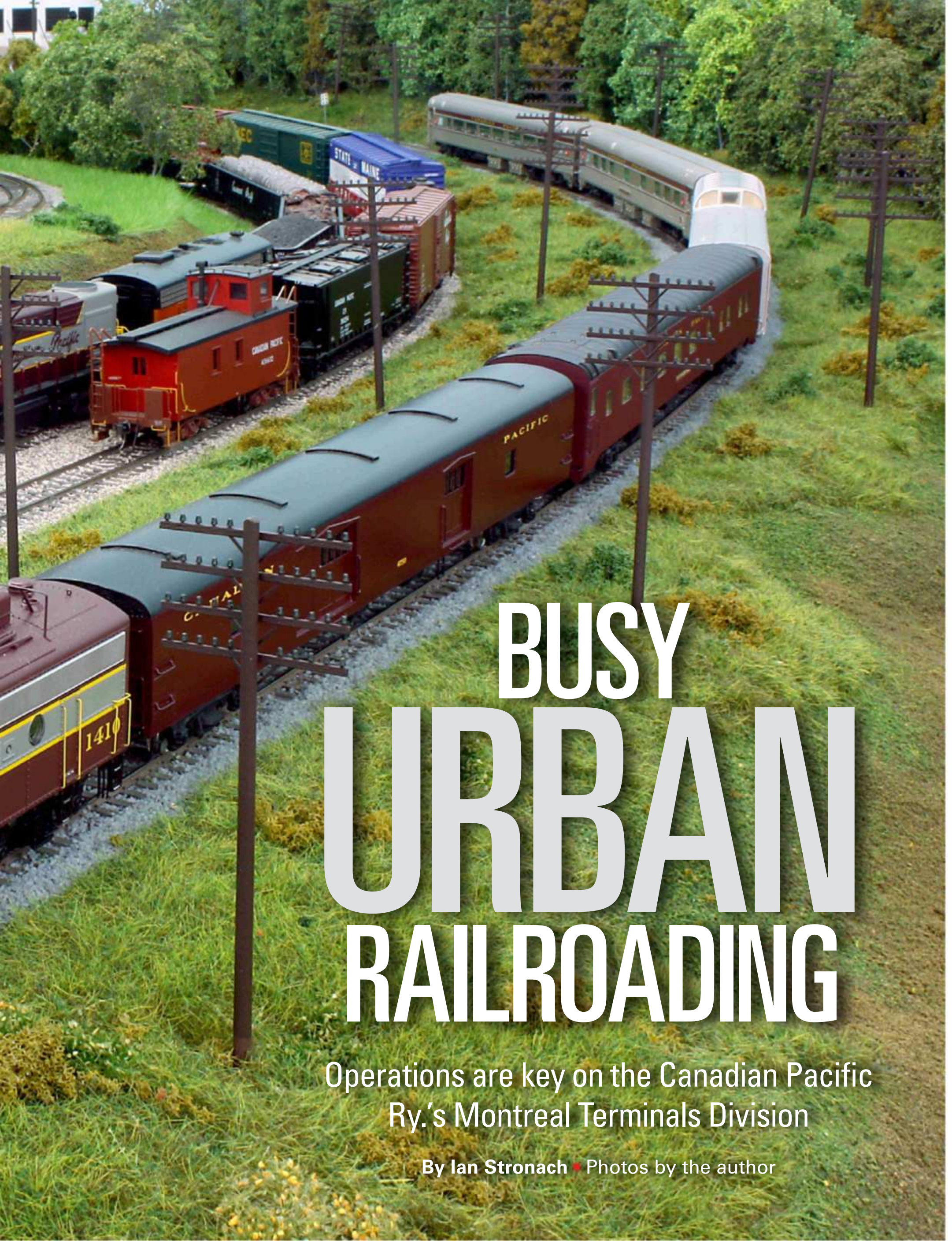
## MEET JOHN EMLEY

**JOHN AND HIS WIFE, TANYA**, live in southeastern Michigan, where they're raising their two children and are active in their local church. John works for Ford Motor Co. as a design and release engineer. His other hobby is running.



**1** Canadian Pacific EMD FP9A no. 1410 leads Train 42, the *Atlantic Limited*, down the hill to South Junction while Train 908 waits for green on Ian Stronach's HO scale Canadian Pacific Montreal Terminals layout.





# BUSY URBAN RAILROADING

Operations are key on the Canadian Pacific  
Ry.'s Montreal Terminals Division

By Ian Stronach • Photos by the author



**2** St. Luc Junction is busy as Napierville Junction Train 206 leaves St. Luc Yard, CP Train 949 arrives, and Transfer 210 switches the Canada Flooring plant. In the background, all tracks at Windsor Station are occupied by the Delaware & Hudson's *Laurentian* and *Montreal Limited* and CP's *Atlantic Limited*.

**P**rototype operations weren't the focus of many model railroaders when I started work on my HO scale layout in 1988. But I had a clear vision of an operations-oriented layout that would depict the Canadian Pacific Ry.'s Montreal Terminals Division in Canada's second largest city in the late 1960s. That was when I spent countless hours trackside as a young railfan photographing trains. Thirty years later, my goal has been achieved as my favorite trains from that era roll through Montreal's West End.

### THE PROTOTYPE, FREELANCED

The ongoing challenge has been to build a convincing representation of the Montreal Terminals, a modeling subject worthy of a club-size layout, in a 12 x 22-foot room. There were five major yards, the CPR's headquarters in Windsor Station, Angus Shops, and 350 sidings.

My layout is "proto-freelanced." Space limitations made it impossible to accurately re-create even a few actual locations, track arrangements, or industries, but they served as inspirations.

Likewise, an operating session includes a fraction of the real number of trains seen by the prototype. On a typical day in 1968, 60 intercity passenger and commuter trains, 30 freights, 20 transfers, and numerous switch jobs appeared on the division's 47 miles of main line. My operating sessions have eight passenger trains, eight freights, five transfers, and five switch jobs.

I've created an illusion of the busy division by running a sufficient number of trains, all having prototypical consists and operating in a realistic manner, through scenes with easily identified CPR railway facilities and industries. Mine is a mid-size layout where main-line freights bring cars to a central yard, which dispatches transfers and switch jobs to deliver them.

### THE LAYOUT AT A GLANCE

**NAME:** CPR Montreal Terminals Division

**SCALE:** HO (1:87.1)

**SIZE:** 11'-6" x 22'-0"

**PROTOTYPE:** Canadian Pacific Ry., Montreal Terminals Division

**LOCALE:** Montreal

**ERA:** September 1968

**STYLE:** around the walls

**MAINLINE RUN:** 72 feet

**MINIMUM RADIUS:** 30" (main), 16" (spur)

**MINIMUM TURNOUT:** no. 6 (main), no. 5 (yards)

**MAXIMUM GRADE:** 2½ percent

**BENCHWORK:** L-girder

**HEIGHT:** 45" to 52"

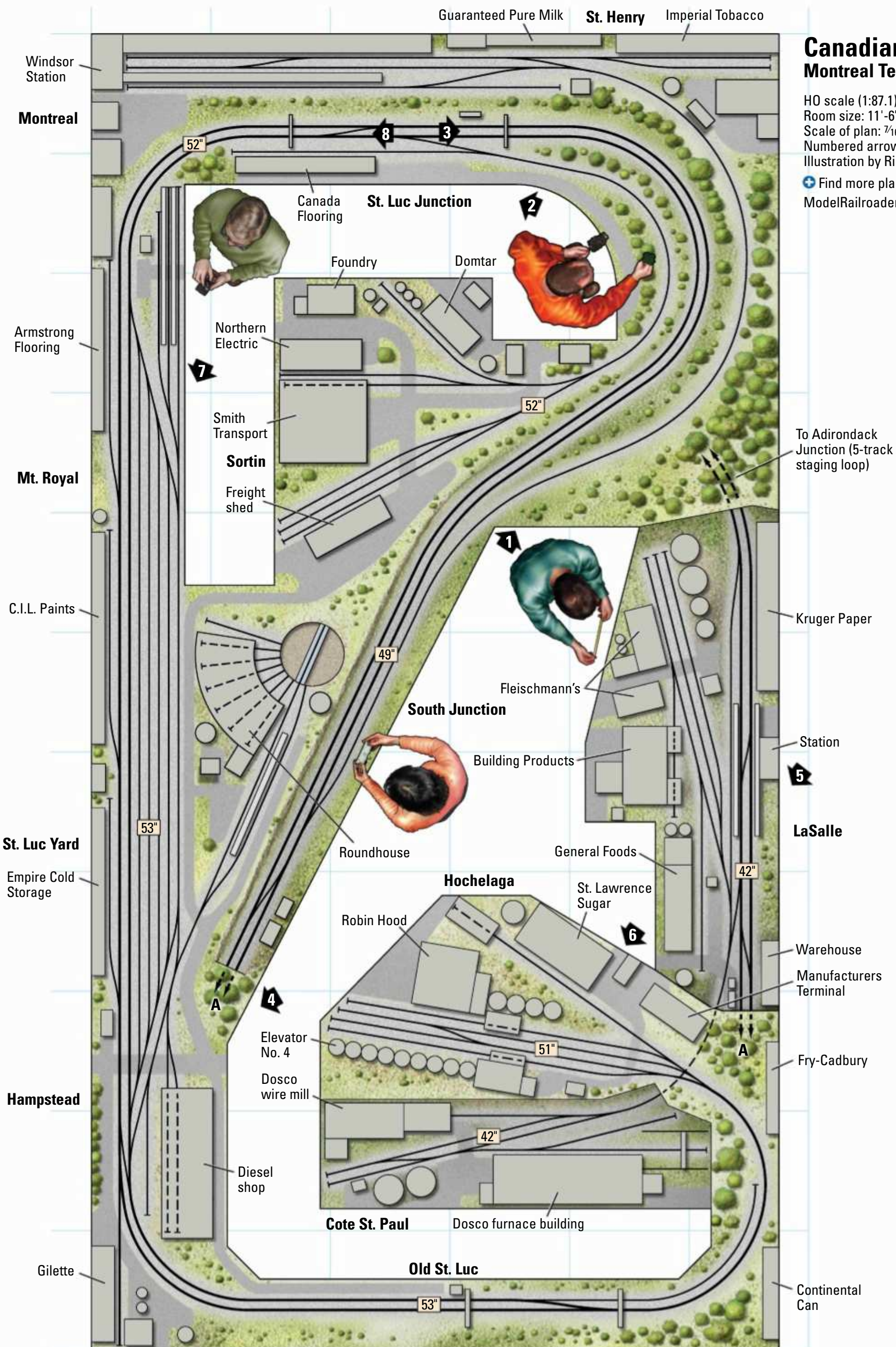
**ROADBED:** cork on plywood

**TRACK:** Walthers code 83, Peco code 100 (staging)

**SCENERY:** plaster gauze on cardboard

**BACKDROP:** tempered hardboard

**CONTROL:** GML walk-around direct current



## Canadian Pacific Ry. Montreal Terminals Division

HO scale (1:87.1)

Room size: 11'-6" x 22'-0"

Scale of plan: 7/16" = 1'-0", 24" grid

Numbered arrows indicate photo locations

Illustration by Rick Johnson

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

To Adirondack  
Junction (5-track  
staging loop)

Kruger Paper

Station

LaSalle

Warehouse

Manufacturers  
Terminal

Fry-Cadbury

Continental  
Can



**3** The entire locomotive roster of the Napierville Junction Ry., a pair of Montreal Locomotive Works RS-2s, enters St. Luc Yard after passing under the signals at St. Luc Junction. A large part of the NJ's business was moving newsprint from mills in Quebec to U.S. customers, as these units are doing.

## KEY DESIGN ELEMENTS

Early on I found two books that were particularly useful in designing my layout for prototype operations: *Building Your Next Model Railroad* by Robert Schleicher [Rocky Mountain Publishing Co.] and *The V&O Story* by Allen McClelland [Carstens Publications, 1984]. By the time I started designing the layout, these books were dog-eared, but I was convinced my goals could be met.

I tried to observe well-accepted and practical layout design principles, but ultimately had to make some compromises. I resigned myself to having two

duck-unders and narrow aisles, and haven't looked back. The result is a layout that fills the room, and some would say overfills it. But this is the appearance I want – a congested, urban railway.

There were a few key elements I absolutely had to include in my out-and-back design. St. Luc Yard is the main yard. Its five double-ended classification tracks have a capacity of 67 cars. There's an arrival/departure track of 30 car lengths and a pull-down track (switch lead) 20 cars long. The classification tracks can do double duty as arrival and departure tracks. There's also a van siding (CPR for a caboose track) and two storage tracks. All road freights and transfer jobs originate at and return to this yard.

The St. Luc service area has a two-track diesel shop, a six-track roundhouse, and two fuel and sand tracks.

The six industrial areas – Mount Royal, Hochelaga, Sortin, LaSalle, Cote St. Paul, and St. Henry – have a total of

16 online customers, plus a CPR freight shed, with a total of 51 car spots.

Windsor Station is a three-track, stub-ended passenger terminal.

I wanted the Adirondack Subdivision main line to be double-tracked from St. Luc Yard to staging.

The hidden staging area includes five double-ended tracks arranged as a reversing loop, with capacities ranging from 16 to 30 cars.

I spent my working life in heavy industry, and am interested in industrial archeology. So my online industries must be accurate in terms of building and equipment design. I've devoted considerable time to studying Canadian fire insurance maps, high-resolution aerial photographs, and historical images of the areas and buildings I've modeled.

Though space limitations precluded scratchbuilding exact replicas, my industries are based on signature buildings that can be readily identified. For

example, in nearly every photograph at the real Hochelaga Yard, the white, six-story Manufacturers Terminal Co. building is in the background, so I modeled it closely. My Guaranteed Pure Milk dairy next to Windsor Station has the prototype's characteristic white, milk-bottle-shaped water tower. My model of the Dominion Steel Co.'s St. Patrick Works replicates the building's construction type, scrap piles with travelling cranes, and rolls of wire everywhere.

## QUALITY CONSTRUCTION

In the first year and a half I spent planning the layout, I hand drew numerous track plans until I finally had one I thought would work. I made multiple photocopies of my final draft design and marked the position of every train at the start of an operating session. Each time a train moved to a different location, they would all be marked on another copy of the track plan. Determining where every train would be at any time and in what sequence they would operate told me how many trains the layout could support, as well as the number and length of station, yard, and staging tracks those trains would require.

Setting and maintaining high standards of construction went a long way in facilitating prototype operations on the layout. I spent considerable time ensuring the benchwork and tracks were built to very high standards. I didn't cut corners, as there is nothing more frustrating and unrealistic than frequent derailments and stalling at slow speeds. Derailments are few on my layout and never the result of poor construction, but rather operator error.

The layout structure is traditional for the era: L-girders made of good quality pine and 1/2" plywood. Track and turnouts are Walthers code 83 on the visible layout and Peco code 100 in the hidden staging, all glued to 1/4" cork roadbed. Minimum mainline radius is 30", and all curves have easements. Turnouts are controlled by Tortoise by Circuitron slow-motion switch motors.

Trains are run by direct-current (DC) block control. Every section of track has drops to 16 gauge feeders. All connections use terminal strips. Four GML Enterprises walkaround memory throttles provide excellent control.



**4** Canadian Pacific and leased power congregate in front of Ian's scratchbuilt diesel shop. The Penn Central units are off the daily PC freight from Syracuse to Montreal. Canadian Pacific leased diesels from many North American railroads during its chronic power shortages of the 1960s.



**5** CP 7040, an Alco S-2, switches General Foods in LaSalle. Ian achieves the slow speeds needed for realistic switching by keeping his track and wheels clean, rostering free-rolling and properly weighted cars, and using high-quality walkaround throttles.

The layout runs flawlessly, and I've made only minor repairs to three turnouts in 20 years. All I do is vacuum the layout and clean the track and locomotive wheels once a year. I have no plans to convert to Digital Command Control (DCC) and sound, as I can't justify the time and expense. I am usually a lone-wolf operator or with one or two others,

and the DC control system is more than satisfactory for my needs.

## REALISTIC OPERATIONS

I chose the time frame of late summer 1968, as this was just before the CP adopted its Multimark rebranding, which I never really liked. Though the track arrangements are freelanced, the



**6** National Harbours Board locomotive D-4, a Montreal Locomotive Works S-3, switches St. Lawrence Sugar and Elevator no. 4 at Hochelaga. The CP interchanged with the NHB, which served the Montreal harbor area.

cars. The transfers run with a single diesel unit and 6 to 14 cars.

## THE OPERATING SCHEME

There are different schemes for prototype operations, depending on the era being modeled. In 1968 the Montreal Terminals was run by timetable and train order (TTTO).

I started to develop the detailed operating scheme when all the track was fully functional in the late 1990s. I studied the CPR employee timetables and the Schedule of Fast Freight Trains from the era to understand how the division operated. I read the CPR General Operating Instructions and the Uniform Code of Operating Rules (UCOR) to understand how the CPR ran trains. I pored over my hundreds of slides and negatives to create realistic consists. While doing this, I had the radio scanner on in the background listening to how the real Montreal Terminals was operated by the professionals. What an education that was!

The main consideration for the freight trains is that the CPR didn't move loaded cars between online customers within the Montreal Terminals. This was both because of the very short distances and



**7** A set of two Alco S-2s and a cableless booster build an outbound train while a Bangor & Aroostook GP7 waits to leave St. Luc Yard with Transfer 210. Ian chose to set his layout in September 1968 to exclude the CP Rail Multimark paint scheme that debuted in November of that year.

operations follow the prototype as closely as possible. I've replicated my favorite trains of the era. There are four passenger trains: the *Atlantic Limited* to St. John, New Brunswick; the Delaware & Hudson's overnight *Montreal Limited* and daytime *Laurentian* to New York, powered by ex-Atchison, Topeka & Santa Fe Alco PAs; and one CP *Dayliner* local.

There are four mainline freights: CP No. 908 to Saint John; CP No. 904 to Wells River, Vt.; Napierville Junction

No. 105 from Rouses Point, N.Y.; and Penn Central VM11 from Syracuse, N.Y. Five transfers and two switch jobs serve the industrial areas. There are, in addition, three yard switcher jobs – two in St. Luc Yard and one at Windsor Station.

The passenger trains, like their prototypes, have four or five-car consists with one or two diesel units, with the exception of the *Dayliner*, which is a Budd Rail Diesel Car. The freights have two or three diesel units and between 18 and 25

the fact that these industries produced many more empties than loads. Therefore, cars come from and go to places off the layout, represented by staging.

An operating session begins with CPR No. 904 and the five transfers ready to depart St. Luc Yard, having been made up in the previous session. Train 904 heads to staging and the transfers go to the industrial areas. The transfers switch Mount Royal, Sortin, and St. Henry, while the industries at LaSalle, Cote St. Paul, and Hochelaga are served by switcher jobs assigned to those yards.

While the transfers and switch jobs are working, Napierville Junction No. 105 arrives at St. Luc Yard from staging, with cars for interchange to outbound freights later in the session and the next session's transfers. As the transfers return to St. Luc, the yard crew makes up the two outbound freights (CPR No. 908 and Penn Central MV12) that depart late in the session, as well as the next session's CPR No. 904.

Later on, three more freights (CPR No. 915, CPR No. 949 and PC VM11) arrive from staging with more online and interchange cars for the next session. The session concludes with the St. Luc Yard switch crew making up the next session's CPR No. 904 and five transfers.

While all this is going on, eight passenger trains operate between Windsor Station and staging.

The mainline freights require about 80 cars. The transfers provide 50 of those cars, and direct interchange from the Napierville Junction and Penn Central freights add the other 30.

## USING SWITCH LISTS

I'm more interested in running trains than being the yard clerk or conductor doing lots of paperwork. I have no need for a car-card system, as cars don't move between industries on the layout. Therefore, car forwarding is accomplished with switch lists. The twist is that I don't have to make them before an operating session. Specific cars are assigned to each industry, as in the following example.

Building Products in LaSalle ships roofing shingles in 40-foot boxcars. Operating session A begins with three cars on the layout dedicated to this industry: CP 226259 is loaded at the plant, waiting to be picked up by

# Employee timetables and manuals

**I'VE CREATED AN** employee timetable to govern operations on my railroad, copying the style and format of the actual CPR Timetable No. 29, April 28th, 1968. It includes train schedules, subdivision footnotes, special instructions, train operating procedures, locomotive tonnage ratings, track diagrams, and the Car Control Manual. I wrote actual footnotes for the layout's trackage.

For example, Sortin has a 16" radius curve, to which two footnotes apply:

"J. Cars 50 feet or longer and equipped with cushion underframe draft gear must not be coupled together but must be separated from each other by a 40 foot or shorter car with standard draft gear due to the sharp curves.

Extreme caution must be exercised when negotiating Sortin trackage due to the sharp curves."

"K. When pushing cars after uncoupling, the bodies of the couplers must be properly aligned in the delayed action position so as to prevent derailments on sharp curves due to lateral forces on the outside of the couplers if misaligned."

The timetable has been reissued seven times as I fine-tune my operations with input from two retired CPR dispatchers.

Recently, I added the CPR Car Control Manual, which provides crews with details of how to switch each online customer. The tonnage ratings of diesel units are provided, and operators have to do the math when making up trains to determine the consist needed to haul a train up the ruling 2 percent grade between LaSalle and St. Luc Junction (60 tons for a 40-foot car and 70 tons for a 50-footer). – *Ian Stronach*



**↑ Inspired by the CP's Employee Timetable No. 29, Ian created a similar version specific to his model railroad, along with a Car Control Manual that contains the railroad's switch lists.**



**8 Canadian Pacific Train 908 departs St. Luc Yard for St. John, New Brunswick, while the tail end of Napierville Junction No. 105 clears St. Luc Junction. Ian runs his layout with direct-current block control.**

## MEET IAN STRONACH

**IAN STRONACH IS** semi-retired after a 42-year career in industrial fire safety, 37 of them in the aluminum industry, where he continues to do part-time consulting. He's also been a volunteer firefighter, fire department photographer, and correspondent for a major fire service journal. He lives in Montreal with his wife, Rosemary.



Transfer 212; CP 252512 is in St. Luc Yard in the consist for Transfer 212, which will set it out; and CP 221755, in Train No. 949 in staging, will return to St. Luc Yard as an empty, destined for Transfer 212 in operating session B. The cycle of car positions repeats every three operating sessions. Interestingly, CPR had 40-foot boxcars assigned to captive service for the real Building Products, so there is a prototype for everything!

Cars interchanged at St. Luc Yard directly between inbound and outbound freights cycle every two sessions. Therefore, with some cars cycling every two sessions and others every three sessions, it takes six to get all cars back to where they started.

This might suggest that after a while regular operators would memorize the car numbers and destinations and rarely use the switch lists. This hasn't happened yet, as there are 240 freight cars on the layout. There are 60 CPR 40-foot single-door boxcars alone, all of which look similar, at least 10 of which are in CPR No. 949 destined for six different industries. Likewise, there are 20 single-dome tank cars destined for five industries, and Boston & Maine covered hoppers can be for either Building Products or Napierville Junction interchange. I've been operating the layout for 15 years, and I still need the switch lists.

Each manual also contains a switch list for St. Luc Yard, which provides consists of all inbound trains and how the cars are to be blocked for the outbound road freights and transfers.

### TRAIN ORDERS AND SIGNALING

Every session has an Operations Manual in which each train has one or two pages of instructions. The paperwork is a combination of a clearance, train orders, operating instructions, and switch list. I don't need train orders, as scheduled trains and extras (the occasional work train or Sperry test car) simply need a clearance to leave St. Luc Yard or Windsor Station, since the division is double-track, directional running with automatic block signals (ABS).

The entire Montreal Terminals is within yard limits. So on main tracks, all trains run at track speed by signal indication and have to get out of the way of first-class trains. Everywhere else, movements are at restricted speed. Where there is a need to wait for another train, the "train order" is included in the operating instruction. For example:

AT 6:50 A.M. RUN ENGINE LIGHT FROM ST. LUC TO SOUTH JUNCTION. WAIT UNTIL TRANSFER 210, ENGINE \_\_\_\_ AND TRAIN NO. 41, ENGINE \_\_\_\_ HAVE ARRIVED. RUN TO MONTREAL. PICK UP TRAIN ON WINDSOR STATION TRACK NO. 3. RUN TO ADIRONDACK JUNCTION TRACK NO. 1.

### OPERATING

Running 21 trains per operating session means there are a number of meets. I most often operate alone and have multiple trains on the road at one time. There's no fast clock, and the trains follow the sequence or schedules in the employee timetable.

I know, for example, when operating Transfer 212 that I have to get clear of the Northward Track at LaSalle to let the *Atlantic Limited* go by. At this point in the session I'll stop operating Transfer 212, run the *Atlantic Limited* to Windsor Station, then resume switching.

There is virtually no work required to prepare for an operating session, and it can be stopped and restarted at any time. The staging yard is a reversing loop design, so there's no fiddle work required to re-stage trains.



At the beginning of each session I act as the diesel shop planner and complete the power lineup, assigning units to all trains. I change some of the power off the layout at the end of each session because I have so many interesting diesels I like to operate.

The diesel shop hostler is a job in itself. There's a lot of power moving around. Arriving power first goes to the fuel and sanding area, then to the diesel shop for running repairs or the roundhouse, and finally to the ready track.

I enjoy switching, and the layout provides lots of opportunity. The St. Luc

### NOW ON THE WEB

Ian Stronach's operating manual and timetable are available for download as PDFs from our website, [www.ModelRailroader.com](http://www.ModelRailroader.com).



Yard switcher classifies 130 cars per operating session. The transfers and LaSalle and Hochelaga switchers pull and set out 100 cars.

My operating system isn't as prototypical as some, but it works well and isn't complicated. The learning curve for guest operators is short. I give them an employee timetable before a session to familiarize them with the layout and trains. Upon arrival I take them for a tour of the layout, explain the controls, and give them the operating instructions for the trains they will run.

What lies ahead for the railroad? The layout is complete, but there remains a lot to be done. Some of the scenery is 20 years old, so it's being renewed with Scenic Express SuperTrees, static grass, and other new materials. I'm adding another level of super detailing across the layout, one scene at a time. I'm also replacing many older cars as new and better ones become available.

There's never been a better time to model the CP, as high quality locomotives and cars, true to Canadian prototypes, are now readily available. When I started, Canadian prototype modeling could only be done with brass, which ran poorly and was expensive. I've recently embarked on a campaign to weather my 250 cars and 50 locomotives.

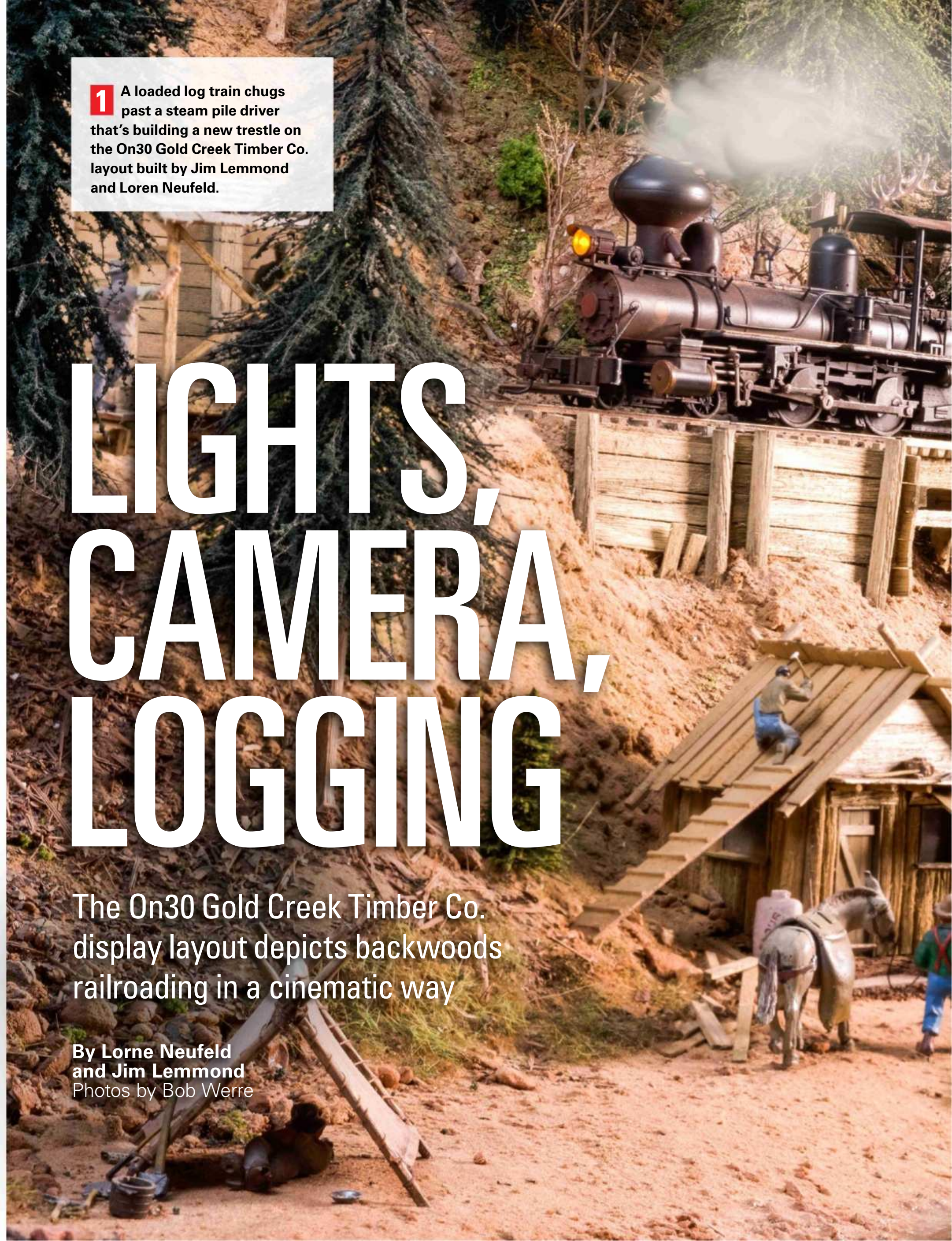
My greatest satisfaction comes from operating the layout. I'm constantly challenging myself to operate in a more prototypical manner – running at restricted speed except on the main, stopping to let the brakeman off to line turnouts, pumping the air, doing brake tests, stopping to flag crossings, observing the Uniform Code of Operating Rules within interlocking limits, following labor agreements when yarding trains, and performing running inspections.

In the last few years after joining the Operations Special Interest Group (OPSIG) and participating in the Yahoo

**9** Napierville Junction Train 105 from Rouses Point, N.Y., and CP Train 908 to St. John, N.B., meet at LaSalle. Eight road freights transit the layout in an operating session.

groups Proto Layouts and Railway Ops – Industrial, I've become even more focused on replicating prototype operations. I continue to research operations of the Montreal Terminals. I recently received CPR's maps and lists of every private siding and yard in the terminals for my era, which prompted me to change some industry names and the cars needed. I regularly call my retired dispatcher friend for his advice.

Despite the compromises I've made, after 15 years, my Montreal Terminals Division continues to captivate me. I haven't grown tired of it, and in fact, being retired has given me more time to detail scenery, weather motive power and rolling stock, and best of all, operate the layout as often as I want. **GMR**



**1** A loaded log train chugs past a steam pile driver that's building a new trestle on the On30 Gold Creek Timber Co. layout built by Jim Lemmond and Loren Neufeld.

# LIGHTS, CAMERA, LOGGING

The On30 Gold Creek Timber Co. display layout depicts backwoods railroading in a cinematic way

By Lorne Neufeld  
and Jim Lemmond  
Photos by Bob Werre





**T**he year was 2010, and we'd just found out that Houston would host the National Narrow Gauge Convention in 2015. While working on Jim Lemmond's Cedartap Railroad, we joked around a bit. "Hey, we should build a display layout for that show! Five years – we've got plenty of time."

Fast forward to 2014. We'd thought about it, but that was about it. And all of a sudden, the show was only a year away.

"Remember that show layout we talked about? If we're going to do that, we probably ought to get started. So what's it going to be?"

"Narrow gauge – duh! It's a narrow gauge convention. Plus narrow gauge has more character, more individuality, and more fun."

"What scale? Well, Bachmann has some equipment in On30, decent quality, and reasonably priced. It'll only be for this one layout."

"What kind of layout – mining? Logging? It seems like everybody does logging. How about a variation – say, redwood logging?"

"Sounds good. Let's do it!"

So we were committed. And we came up with a name: Gold Creek Timber Co.

Now we had to establish some requirements. The layout needed to be sectional to be transportable. Operation would be minimal; a loop would allow continuous running, which would let us ignore the trains while we talked with spectators. With no operation going on, scenery would have to be the star of the show. And we'd need plenty of detail to attract and hold spectators' interest.

**2** Many scenes on the layout were influenced by prototype photos of redwood logging camps, including this settler's cabin built in the hollow base of a felled tree.

Hilly terrain has more eye appeal than flatland. So do ponds, streams – any water features. With just a single loop of track, we'd have plenty of space to create an extensive natural environment. The trains should interact with the environment, going through the forest rather than in front of it, over the water instead of past it. We also needed to have at least some token logging going on, figures to bring the scenes to life, and of course, trees – lots and lots of trees.

Next stop was the internet to look for ideas. We found dozens of photos of old-time logging roads with scenes we liked. Some were things we wanted to copy



accurately; others just had a general atmosphere we wanted to try to emulate on the layout. We particularly looked for scenes of redwood forests and redwood logging, as they would be a little different from the typical logged forest.

## BENCHWORK CONSTRUCTION

The plan evolved into being two long modules along one side with another module at one end, making an L shape. The modules would have 1/2" thick backdrops and 1/4" thick tops supporting lights behind a narrow valance at the front edge. The rear edges of the tops would rest on the backdrops, and the fronts would be supported by rods concealed inside redwood trees. The other two sides that completed the oval layout would be narrower, just wide enough for a small, unscenicked staging yard.

Our first thought was to use hollow-core doors for the module bases. The doors are light, flat, and readily available. We quickly realized, though, that attaching folding table legs to the doors would not be easy due to their thin, almost

cardboard-like veneer; there's no way they would hold screws.

So we built our own module bases that were kind of hollow-core doors on steroids. We used 1/4" plywood for the sides with 1" spacers along the edges and at 12" spacing across the middle, adding wider 1" pieces where the leg screws would anchor.

We lowered the module at the base of the L by about 6" to allow for a river valley and a small canyon. We had no idea at this point what the valley would look like; we just knew we wanted the option.

On top of the base, we glued a layer of 2" thick extruded-foam insulation board; the track would be laid directly on this. This material is quite dense and resistant to being dented by wayward elbows. The track now would be a couple of inches above the base, and this foam subroadbed made it easy to carve cuts, clearance for bridges, and the like below track level.

For terrain above track level that didn't have to be particularly flat or rigid, we used softer, easier to carve

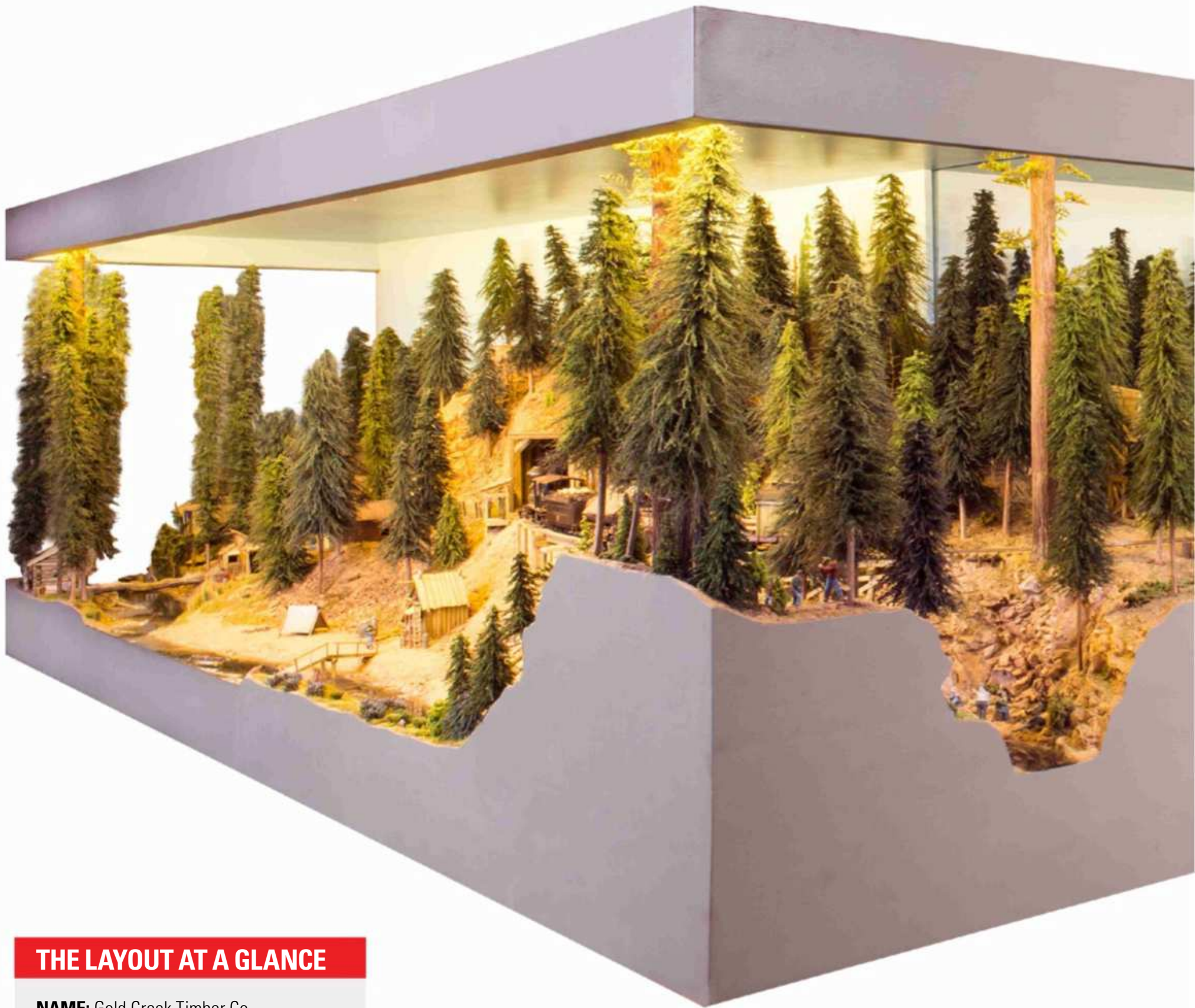
**3** Powered by a steam donkey, a hayrack boom loads cut sections of redwood logs onto train cars. Loren carves the logs and standing redwood trees from balsa.

white expanded-bead foam board, also available in 2" thickness.

## SET DESIGN

The benchwork was finished in the fall of 2014, and we spent the rest of the year brainstorming ideas, but didn't begin track laying and scenery construction until the following January.

We chose two unique scenic elements to be focal points; they would drive the design of the rest of the layout. The first was a "stump house" our good friend Chuck Lind built and donated to the cause. The other was a fallen, decaying redwood tree. Several other items – a trestle onto the lower module, a logging camp, space for (probably) a hayrack boom, and a hollow redwood tree (all inspired by photos) also got special consideration and had a strong influence on the final layout.



## THE LAYOUT AT A GLANCE

**NAME:** Gold Creek Timber Co.

**SCALE:** On30 (1:48 proportion, 30" narrow gauge)

**SIZE:** 8'-0" x 14'-4½"

**PROTOTYPE:** freelanced

**LOCALE:** Western redwood forest

**STYLE:** portable display layout

**MAINLINE RUN:** 38 feet

**MINIMUM RADIUS:** 19"

**MINIMUM TURNOUT:** no. 5

**MAXIMUM GRADE:** 1 percent

**BENCHWORK:** plywood tabletop

**HEIGHT:** 64"

**ROADBED:** none (track laid on terrain)

**TRACK:** Micro Engineering code 83

**SCENERY:** extruded-foam insulation board

**BACKDROP:** painted on plywood

**CONTROL:** Digitrax DCC

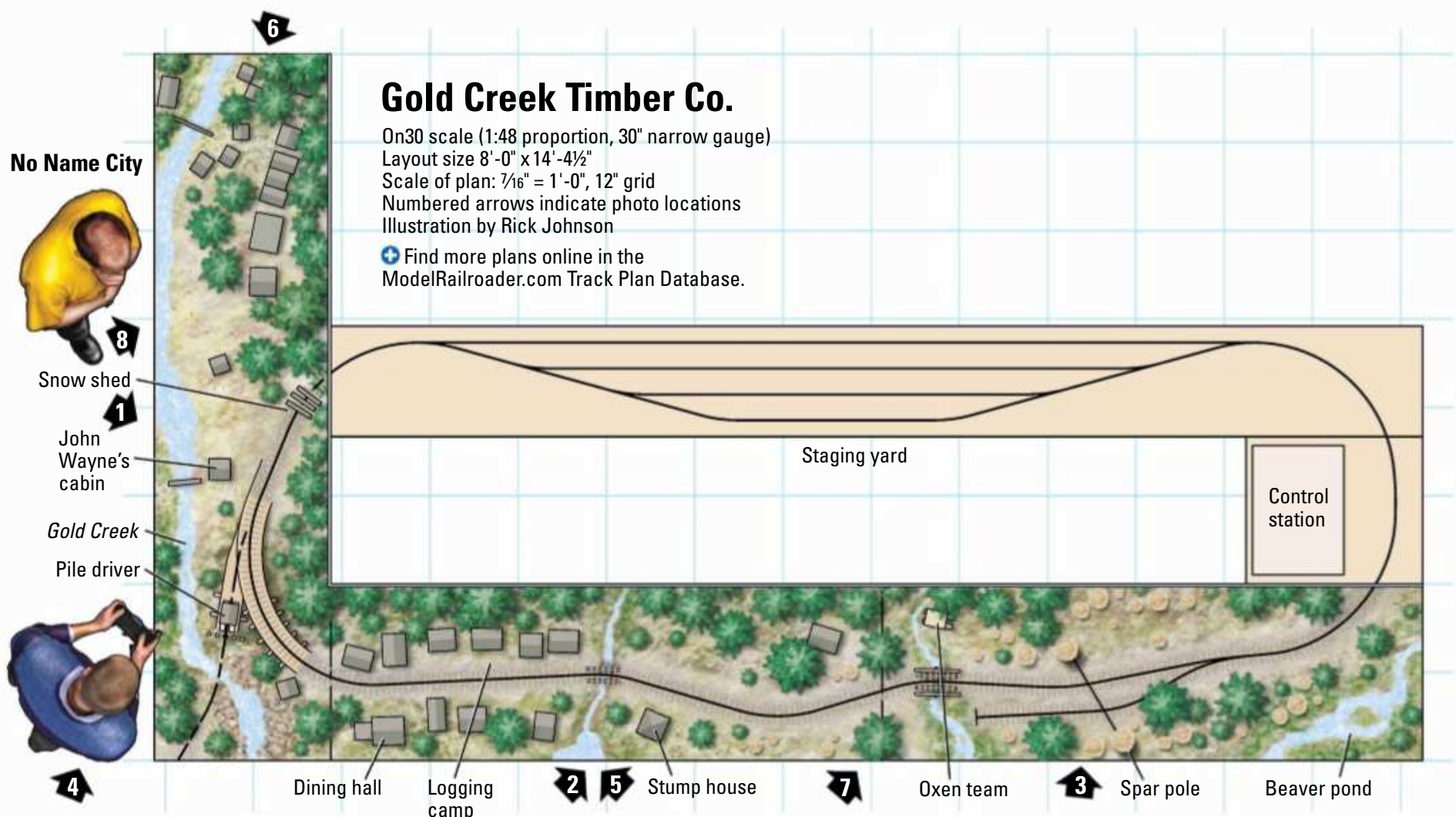
In working out the track plan and scenery concept, we positioned these features in the approximate final locations, even propping them above the base in situations where they'd be on hills. We'd already made preliminary choices of structures, so we cut chunks of white foam to the rough sizes of the structures and moved them around to find the most pleasing arrangement.

Ideas came from many places, but one was totally unexpected. About the time we were beginning to think about the river valley module, the movie "Paint Your Wagon" came on TV. It's always been one of my favorites, but I suddenly

noticed how similar the setting was to the area we were working and how interesting the buildings were. It turned out that the internet had plenty of photos of the movie set – actually a better reference source than the movie itself. We ended up modeling half a dozen structures from that film. Thus was born our version of "No Name City."

Months later, after we had thought the layout was finished, inspiration struck again when the movie "North to Alaska" came on TV. So Gold Creek now displays a replica of John Wayne's cabin and the bridge across the creek in front of it from that movie.

**4** Designed for display at train shows, the layout is made up of three modules and hides its controls and staging area behind the backdrops.





## SCENERY

Once the terrain was roughed in, the next thing was to paint the backdrop, starting with the sky. My idea was to paint it a medium blue, then spray a light mist of white on the horizon to get a prototypical gradation of color. Unfortunately, it never quite looked right, so we painted it a solid light blue.

Bob Ross was an artist who had a TV series in which he'd start with a blank canvas and in 30 minutes turn it into a finished landscape scene with the appearance of being highly detailed. Using some of his techniques, which we learned from his books, it wasn't too difficult to fill in the areas between and beyond the hills.

The trickiest section was behind the redwood forest. Redwoods are much too big to simply plant at random as one might with smaller trees. So, having made them in advance, we positioned them temporarily to create a pleasing forest scene. Reaching through and

around, we lightly penciled in workable locations of background trees. After marking the redwoods' locations and removing them, we could complete the background as needed and put the trees back in later.

For terrain, the magic word was sand – specifically, bank sand. This is a tan, fine-grained sand, finer than playground sand, usually available from landscape yards that sell mulch, gravel, and the like. It frequently has traces of clay in it (all the better), and it's cheap – \$3 or \$4 for a 70- or 80-pound sack.

Before using it we baked it at 400 or 450 degrees for several hours to dry it, kill any bugs or weeds, and darken it a bit. When it was cool, we ran it through a kitchen sieve to cull out the clods of baked clay, which we kept. The sand was used as the basic terrain surface, and the bits of clay became rocks and talus to add texture to the surface.

We also processed some topsoil from the yard the same way; we mixed some

**5** A log train passes through camp, over a log deck bridge. Water features on the layout are poured using Enviro-Tex Lite two-part resin.

of that into the sand to give it a little darker color.

Our basic technique was to paint the Styrofoam with any cheap tan or brown latex paint, and while it was wet, sprinkle on the sand. The sand is saturated with a white glue mixture – 1 part glue to 4 or 5 parts water. It fills the pores of the foam and makes a nice surface for the ground cover. If possible, we try to finish an area before the sand and glue dries, as it's easier to place weeds and bushes if the sand is still wet.

We used sheets of grass material to cover a few large areas, but we didn't put it down in big pieces, which would have looked too much like a suburban lawn. Instead, we tore off bits and glued them down randomly, then sprinkled on a layer of sand, allowing patches of grass to show through for a natural look.

We used a lot of ground foam, but also natural materials. One of our favorites is brown, dead leaves ground up in a blender. It's great for forest floors or anywhere on the layout within the range of a tree. And we made occasional trips to the nearest wooded park to gather twigs to use as stumps or fallen branches.

The layout has several streams, all of which we made using Enviro-Tex Lite. This is a two-part epoxy resin that normally dries crystal-clear, but we tinted it with craft paints. (My preference is a few drops of black and an equal amount of dark green.) The best thing about this material is that it allows modeling water scenes with depth. We've included weeds, sunken logs, and even fish in our streams. [See "Modeling a 3-D water scene" on page 86. – Ed.]

## LOTS OF TREES

Our trees fall into two categories of trees: conifers and redwoods.

Jim's the conifer specialist; he's become an expert at using the McKenzie brothers' tree-making system ([www.mckenziebrotherstimmerco.com](http://www.mckenziebrotherstimmerco.com)) and has come up with a few variations of his own. Gold Creek has more than 250 of these on the layout in sizes ranging from 2 or 3 inches to 16 inches tall. They're either planted in large forests or groups in odd numbers – 3, 5, 7, etc. For some reason, that seems to look more natural than even numbers. We're also careful not to plant trees in rows – nobody's operating Christmas-tree farms out there. Maintaining a random appearance can require careful planning!

Loren has concentrated on building the redwoods. They're made to be about 20" long to reach from the ground level to the underside of the "ceiling" of the layout. Obviously, it's not possible to model a 300-scale-foot tree in this space, so our models extend only as high as the lower branches.

A piece of 4" x 4" balsa, 3½ feet long, yields trunks for a dozen or so trees

ranging from ½" to 2½" in diameter. Loren first rips the piece into varying size square sticks. He then tilts the blade to 45 degrees and makes four more passes so the stick is octagonal. A wood rasp rounds them, then a rotary wire brush in an electric drill creates bark texture.

Tree roots are sculpted from Durham's Water Putty; the grain of the trunk is extended onto the soft putty using a small wire brush while the putty is still soft. The trunk is then painted with various shades of brown water-based craft paints.

The last touch is foliage; balsa is soft, so it's easy to punch a hole with a stick pin, dip a piece of caspia in yellow wood glue, and insert it into the hole.

A few of the redwoods disguise supports for the front edge of the layout. I cut the trunk in half lengthwise, use the kerf of the table saw to hollow out the halves, then glue them back together and finish the tree as usual. A threaded steel rod is installed through a hole in the top of the layout, through the hollow tree, then into the base, and bolted into place with lock nuts. These trees are randomly placed near the corners of the modules,



**7** As a display layout, the Gold Creek Timber Co. is designed to have lots of detailed scenes for train show spectators to discover, like these loggers standing on springboards to begin felling a tree.

**6** The structures in No Name City were influenced by photos of the set of the Western movie "Paint Your Wagon." Another scene on the layout (seen on page 78) replicates John Wayne's cabin from "North to Alaska."





**This pond scene includes a textured bottom, submerged logs, a beaver lodge, a swimming beaver, fish, and other interesting details below the surface.**

## Modeling a 3-D water scene

**ADDING DEPTH TO A WATER SCENE** is fairly straightforward. First, model the streambed or pond bottom as if it were a dry wash, using the same techniques one would use on land. Logs, rocks, old tires, or other debris can be embedded into the bottom as appropriate.

Areas that will be the deepest should be darkened, either by airbrushing with a dark color, or by sifting on a thin layer of Woodland Scenics Soil ground foam for a muddy, silty look. Everything should get a thorough soaking of diluted glue. Make sure it's completely dry before pouring the resin.

If fish are added, pour an initial thin layer of tinted resin. We mold fish from modeling clay and bake them to cure. When the initial layer of resin is cured, glue the fish in place with cyanoacrylate adhesive (CA), then pour additional tinted resin to the final water level. The tint will make the fish appear to be deeper in the water.

We found another neat water detail when we accidentally spilled some fine green ground foam into newly poured resin. After it sank in, it looked just like underwater vegetation.

If there are trees nearby, sprinkle a few dried, crushed dead leaves or tea leaves on the surface before the resin hardens to look like floating leaves. – *Lorne Neufeld and Jim Lemmond*

but not evenly spaced enough to give away their function as supports.

We also use a few cheap bottle brush trees (painted dull shades of green and sprinkled with fine ground foam) to represent the saplings that sprout up around the edges of the forest. [To learn how to make bottle-brush trees, as well as seven other techniques, see Art Curren's article "Trees, trees, and more trees" in the October 1992 *Model Railroader*. – Ed.]

In the forest, there's a fallen redwood tree hand-carved from a piece of balsa. It has several rotted-out cracks along the sides, with moss and even a small sapling growing in them. Around its stump, some mushrooms have sprouted. Mushrooms are easy to make; hold the end of a piece of fiber-optic line or monofilament fishing line near a hot soldering iron to widen and flatten it, paint it white or gray, and there you have it! The same thing painted a rust or brown makes a nice nail.

## STRUCTURES

We made a decision early on that due to time constraints our structures wouldn't have interior detail. This decision made building them easy; we simply drew patterns for each wall on paper and built them over that.

Many of the buildings have board-and-batten siding, sometimes without the battens. Scribed wood siding would be easy, but when it's stained, it doesn't look right. The grain pattern extends from board to board all the way across the sheet, though in the real world, adjacent boards wouldn't have matching grain. So all our wooden buildings were built board-by-board, and most of them were distressed with a wire brush.

Assembly was easy with our patterns. We covered each pattern with clear double-sided tape to hold the boards and edge-glued the boards together as we set them in place. We allowed the boards to extend beyond the pattern edges, trimming them to size after the glue was dry. We then cut door and window openings and assembled the walls together, after which they were weathered with Pan Pastels weathering powders.

Very few of our structures have traditional shingles; they are instead roofed with an assortment of corrugated roofing, oversize shingles, and planks.



**8** Most of the structures on the layout are scratchbuilt board by board, rather than with scribed wood siding, to avoid having wood grain that continues across adjacent boards.

The corrugated roofing panels come from Stoney Creek Designs, which is by far the best corrugated-roofing system we've used ([www.stoneycreekdesigns.com](http://www.stoneycreekdesigns.com)). Coloring and weathering the panels is easy using Pan Pastels and a silver crayon. We spray both sides with Testor's Dullcote or matte medium before coloring, both to make the pastel application easier and to prevent wrinkling when installing with water-based glue.

## POWER AND WIRING

Gold Creek Timber Co. was designed as a DCC layout. Our design was to keep the power and control as simple as possible and still use radio throttles. We chose to use the Digitrax simplex radio equipment. Our equipment is one DB150 (command station), two DS64 stationary decoders for turnout controls, one UR91 radio receiver and a DT400 simplex radio throttle. The power to the track is

supplied by a single, two-wire 12AWG bus with 22AWG feeder drops every two to three feet apart.

The lighting used for the Gold Creek Timber Co. is light-emitting diodes (LEDs) on peel-and-stick strips. We used a low-voltage power supply and one central plug-in point for all the lighting.

## THE FUTURE

So where does the Gold Creek Timber Co. go from here? At this point, we have no plans for any significant expansion of the footprint, mainly because its normal home is in Loren's garage, which doesn't have room for it.

Instead, we're totally reworking the area around the back of the layout. The staging yard will be replaced by a riverfront scene. A small section, about 3 feet square, will be highlighted by a model of Colorado's Crystal Mill. The open area between the former yard and the module backdrops is being replaced by a drop-in section featuring a mining railroad.

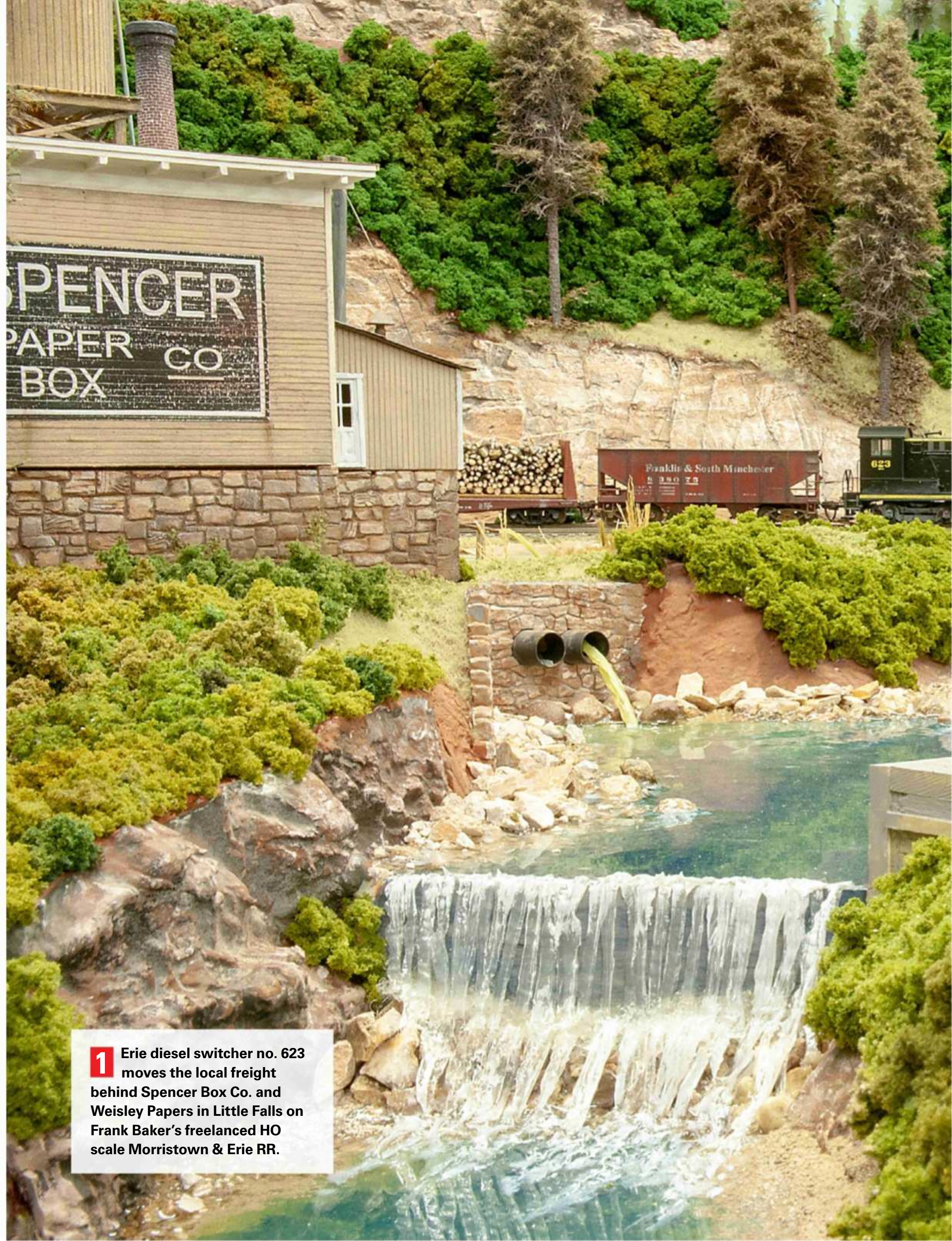
Building a great model railroad doesn't mean we're resting on our laurels! **GMR**

## MEET LOREN AND JIM

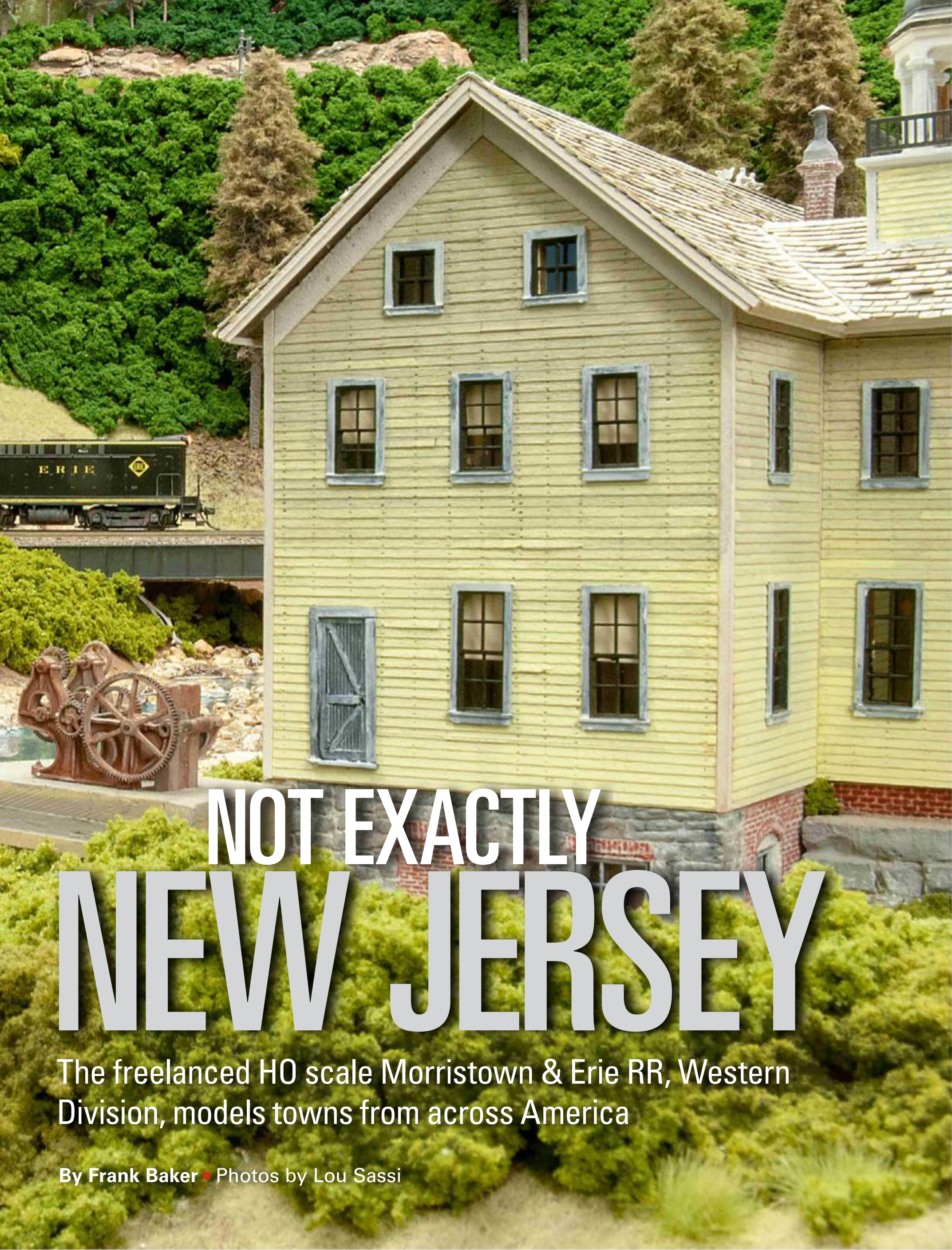
**LOREN NEUFELD**, left, has always been more interested in the creative side of the hobby – creating scenery and building structures – than operation. He has been an avid contest modeler for many years. He lives in Houston.

**JIM LEMMOND**, right, has lived in Dickinson, Texas, for the past 30 years. He's a retired music educator, aviator, and musician. He serves on the Board of Directors of the Lone Star Region of the National Model Railroad Association. His own layout, the Cedartap RR, is the inspiration for the Gold Creek Timber Co.





**1** Erie diesel switcher no. 623 moves the local freight behind Spencer Box Co. and Weisley Papers in Little Falls on Frank Baker's freelanced HO scale Morristown & Erie RR.



# NOT EXACTLY NEW JERSEY

The freelanced H0 scale Morristown & Erie RR, Western Division, models towns from across America

By Frank Baker • Photos by Lou Sassi

**THE ERIE RR RAN IN A CUT** at the end of the dead-end Little Falls, N.J., street where I lived. To a little kid like me, the shrill sound of the steam whistle and the belching of a steel monster in that cut was exciting. My friends and I would race to watch the train head up the hill toward Great Notch, N.J.

My next-door neighbor was Grif Teller, the noted Pennsylvania train artist. From time to time, I would walk next door to see what he was painting. He had a Buddy "L" locomotive and tender that his two sons had outgrown, so I was allowed to borrow them.

Soon my parents bought me a Lionel set. I was in heaven. I vaguely recall taking the engine and cars apart to see how they were made – a bad decision.

At age 9, we moved from Little Falls to Morristown, N.J. Our apartment had a basement, where I spent a lot of time building and running trains on a 4 x 8 table for my Lionel set.

I also spent a lot of time train watching on the Lackawanna RR and the Morristown & Erie. The Dover Division of the Lackawanna RR passed behind our apartment. This was a double-tracked electrified commuter line to and from New York City. The line also hosted long-distance steam and diesel trains between New York and Chicago.



**2** Frank operates on the Morristown & Erie, Western Division layout. The city of Chester is in the foreground; Frank stands near Ironia.

The Morristown & Erie RR's roots go back to 1895 as the Whippany River RR. It operated from Morristown to Whippany, N.J., to service the paper mills along the river. In 1903, the name was changed to the Morristown & Erie, with plans that it would connect the Erie RR and the Lackawanna. It fell short of its goal of connecting to the Erie, ending in Essex Fells, N.J. After emerging from bankruptcy in 1982, it reorganized as the Morristown & Erie Ry.

## MY FIRST MORRISTOWN & ERIE

Fast-forward to the age of 39, when I met and married the love of my life. Though she knew of my interest in trains, we didn't discuss the topic much. Two months later, for my 40th birthday, she bought me a brass locomotive. I knew she was a keeper!

A year later, while on vacation to Hawaii, she told me I could add a train room onto the house. I spent the rest of the trip drawing sketches of the addition



**3** The engineer sticks his head out of the cab window as his freight train rounds the bend around Sand Bag Hill. The terrain on the layout is cardboard web topped with plaster cloth and Hydrocal.

## THE LAYOUT AT A GLANCE

**NAME:** Morristown & Erie RR, Western Division

**SCALE:** HO (1:87.1)

**SIZE:** 18'-0" x 33'-6"

**PROTOTYPE:** freelanced

**LOCALE:** New England, Pittsburgh, and Pacific Northwest

**ERA:** 1940s to 1950s

**STYLE:** walk-in

**MAINLINE RUN:** 480 feet

**MINIMUM RADIUS:** 30"

**MINIMUM TURNOUT:** no. 4

**MAXIMUM GRADE:** 2¾ percent

**BENCHWORK:** L girder

**HEIGHT:** 43" to 53"

**ROADBED:** Homasote and cork

**TRACK:** Micro Engineering code 70

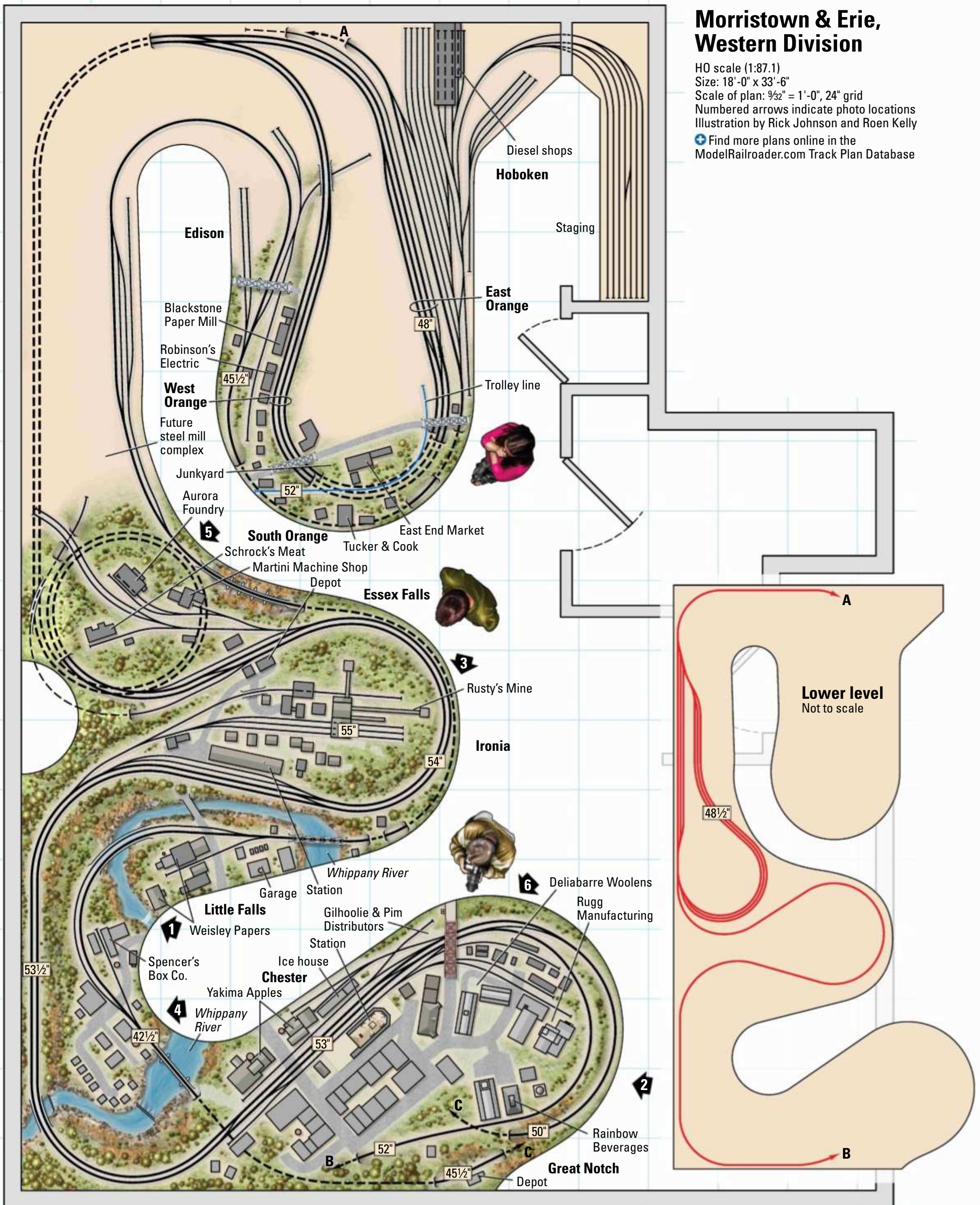
**SCENERY:** Hardshell

**BACKDROP:** Hand-painted on PVC board

**CONTROL:** Lenz Digital Command Control

# Morristown & Erie, Western Division

HO scale (1:87.1)  
 Size: 18'-0" x 33'-6"  
 Scale of plan:  $\frac{9}{32}$ " = 1'-0", 24" grid  
 Numbered arrows indicate photo locations  
 Illustration by Rick Johnson and Roen Kelly  
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and layout plans. Upon our return, I began building the new train room.

When the room was nearing completion, Russ Henzel, one of my clients, mentioned he had an interest in trains. I asked him if he wanted to join me in building a layout. With his electrical knowledge and my mechanical background, we started the layout. But three years into building the railroad, life was about to change.

Russ had an O scale layout in his vacation cabin. One time while visiting them at the cabin, my wife said that we were considering moving. Bonnie, Russ's wife, told us there was a house on their street for sale. We drove by it on the way home and contacted the real estate agent the next day. It was a fixer-upper, but had a lot of potential. Now I had to dismantle the old layout and move.

With many other projects to do around the new house, rebuilding the railroad wasn't a priority.

Then, in 1993, I added a guest house on the property, with the thought that my mother might want to move into it. Instead, she decided on a house in Sun City West, Ariz., and I was left with a 1,000-square-foot building with "train room" written all over it.

**4** Engine no. 2417 pulls into Little Falls Station with a mixed train. The railroad is set in the steam-to-diesel transition era.

## Visualizing scenery



Frank started scribbling on photos with marker pens to visualize what scenery would look like in the area. Today, he does the same thing with software.

**BACK IN 1988**, I started planning the scenery for my previous layout with a technique that I called "photo visualization." I would take a photo of the layout and draw on it with marker pens to visualize my options for terrain, scenery, and structures. These sketches could be done quickly to provide a general visual impression of the scene.

In late 2016, I purchased a new computer that came with image editing software that lets me draw and paint over a photo. If I don't like what I see, the eraser tool gives me a do-over. Then I hit Print, and I have a finished drawing. I like being able to see the possible results of a scenery project before I start construction. – *Frank Baker*



**5** Seagulls perch on the roof at Aurora Foundry in Essex Falls. Many of the structures on the layout are scratchbuilt, inspired by railroad photos and paintings.

## DESIGN AND CONSTRUCTION

While flying on business, I spent a lot of time reading layout books and drawing track plans. I eventually narrowed my layout shape down to two. One had a duckunder and the other was a series of interconnected lobes. I decided against the duckunder design.

With the layout selection made, it was time to start construction. In 1995, the train room was complete, and the Morristown & Erie RR Western Division (generation II) was begun. Now that Russ was my neighbor, we could proceed with some dispatch.

My railroad is set in the steam-to-diesel transition period. The town names on the railroad are from New Jersey, but my towns don't model the actual ones. Even the scenery is freelanced, with influences of New England, Pittsburgh, and the Pacific Northwest.

I used some modeling techniques that I'd learned as an industrial designer. After building the basic benchwork

frame, I purchased 4 x 8-foot sheets of cardboard. I began modeling the surfaces of track and cities utilizing the cardboard, cut to size and pinned or clamped to wooden risers. This let me easily visualize the elevations and track plan full size and to scale.

Another advantage of this technique was that once the subroadbed and town locations were finalized, we could use the cardboard as a template to cut the plywood to shape. This technique aided in the design and speed with which the layout was completed.

For the backdrop I used Sintra, a PVC plastic material. Three shades of blue and a white paint were brushed and blended, going from light to dark, up the sheet of plastic. I also would sketch scenery on photographs to quickly visualize a scene. [See "Visualizing scenery." – Ed.]

On my prior railroad, I used an Onboard analog system for train control. With the advent of Digital Command Control, I changed to Lenz. I used Micro

Engineering code 70 track and Shino-hara switches. It wasn't long before trains were running.

Russ spent most of his time under the layout wiring everything, while I installed the track and switches. There are control panels at each town along the railroad. Digital Command Control throttle plugs are nearby.

Initially, turnouts were lined with old-style slow-motion switch machines. Over the past couple of years, most of them have now been replaced with Tortoise by Circuitron switch motors. Replacement has been a real challenge, especially since the track, ballast, and scenery were already in place.

The layout's basic design is a dogbone, starting in Hoboken and ending in the Oranges. Both towns are at the same place on the layout, separated by only a slight difference in height. At Chester, the line splits into two separate return lines, returning on different levels to the other end of the dogbone. Helixes help



**6** A trio of GP7s rumbles under the Madison Avenue bridge in Chester on their way to Hoboken. Though the towns on the layout are named for ones in New Jersey, where the prototype M&E ran, the layout doesn't model that state.

#### NOW ON THE WEB

You can watch a video of trains running on Frank Baker's HO scale Morristown & Erie on our website, [www.ModelRailroader.com](http://www.ModelRailroader.com).

#### MEET FRANK BAKER

**FRANK AND PHYLLIS BAKER**, seen with friend and fellow modeler Russ Henzel (rear), live in Scottsdale, Ariz. Frank is active in the National Model Railroad Association's Arizona Division, where he serves as editor of the newsletter. He enjoys scratchbuilding structures. In addition to Frank's interest in trains, he and his wife enjoy traveling, gardening, and remodeling.





change elevations in two places. Line one returns eastbound to the end of the dog-bone via what I call the River Route. The other track departing Chester westbound exits and enters a tunnel to return “in the dark” below the dual main line, exiting on the far end of the room.

## SCENERY AND STRUCTURES

The basic terrain is a web of cardboard strips covered with plaster cloth and then Sculptamold. After drying, the landforms are painted brown. A variety of materials, including static grass and

## Figure painting

**ALMOST 30 YEARS AGO**, my wife, Phyllis, asked what she could do to help me build my railroad. So I immediately purchased 1,500 unpainted HO scale figures.

Mounting each figure on long straight pins makes it easier to hold and handle the figure while painting. Phyllis doesn’t prime the figures. Instead, she uses acrylic craft paints. She works on several figures at the same time, starting with skin tones.

After cutting the figure off the pin, it’s bonded to the layout using white glue.

My wife is concerned about how I treat her painted people. She likes to tell everyone how once I needed to populate a bus, and my solution was to cut off the figures’ legs. This was a big mistake. I was told to buy seated people or lose my painter.

Figures really make a difference. Yes, painting them is a lot of work, but the end result really gives a realistic appearance. My wife does a wonderful job painting, and I appreciate her help and interest in my hobby. – *Frank Baker*



**When Phyllis Baker asked her husband how she could help build the layout, husband Frank recruited her to hand-paint figures.**

Woodland Scenics Clump-Foliage, were used for ground cover.

The pine trees were built by Don Ledger, a local model builder. I also have sage trees that I purchased quite some time ago from Sweetwater Scenery.

Several years ago, while attending a National Model Railroad Association train show, my wife found another interesting product, rock formations cast in foam rubber by Cripplebush Valley Models. Rock can be cut, hot glued in place, and then painted with acrylic paint to simulate the final rock formation. I found this product easy to work with. I used the rubber rocks as major scenery elements on the layout and as layout bumpers to protect the outer edges of the layout scenery from leaners.

There are several water features in Little Falls and in Essex Falls. Water plays an important visual part in these two towns.

Prior to retiring in 2008, I typically worked on the railroad four to eight hours a week. Now that I’m retired, I can work on it almost full time. When I started working on structures for my NMRA Master Model Railroader certification, I found my true calling.

I started building kits as intended by the manufacturer. Then I moved onto

modifying high-end kits like those from Fine Scale Miniatures and South River Modelworks, and finally to scratchbuilding, my real passion. The railroad has many structures that I’ve built from photographs, paintings, and my freehand sketches. Though it’s time-consuming, the end result is rewarding.

Years ago, my wife asked what she could do to help me with the layout, and I immediately responded, “Painting people.” She’s since become very good at it. Adding figures she’s painted adds the final touch of reality. [See “Figure painting” above. – *Ed.*]

## KNOWLEDGE AND FRIENDSHIP

I’m always learning something new and meeting knowledgeable people on forums, at NMRA meets, and at conventions. It’s a pleasure to have visitors come to visit my layout. I’m always learning new techniques and technologies to continue to improve my empire.

My neighbor Russ and I have been good friends for almost 40 years, having worked together on all aspects of our railroads, visited wonderful layouts around the country, and traveled with our wives to far off countries and railroad adventures. Model railroading is a wonderful hobby. **GMR**

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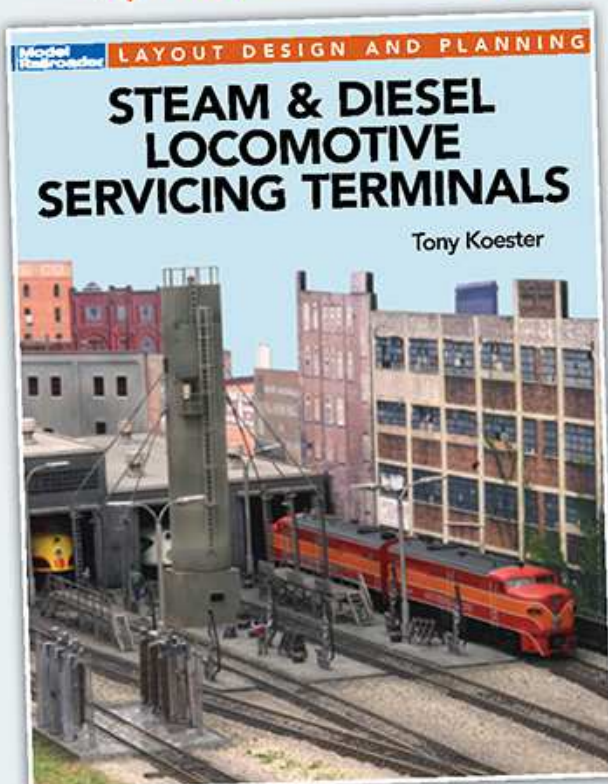
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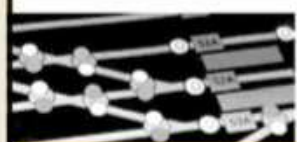
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# Knowledge is never wasted

By Steven Otte ■ Photo by the author



**THE NAME IS PRINTED** with a nib pen in a loose, casual, but legible hand: Linnaeus Westcott, followed by an address in San Marino, Calif. The name of the previous owner, her Austin, Texas, address, and a 1927 date are neatly lined out below.

I love history; if I didn't, I wouldn't have set my home layout in 1906. So when I saw the aged volume *Maintenance of Way and Structures* (McGraw-Hill, fourth edition, 1915) in the Kalmbach Media library, I had to open it up. The name of *Model Railroader's* longtime editor on the flyleaf made it all the more intriguing.

I paged through it, mentally cataloguing all the diagrams of trestles, water tanks, section houses, tool sheds, and stations I want to scratchbuild someday. I also scanned through a chapter titled "The Preservation of Timber," all about how railroad ties were made. Interesting, if not particularly useful, information.

Or so I thought. A few months later, Model Railroader Video Plus producer David Popp approached me with an assignment: Build a tie-treatment plant for our N scale Canadian Canyons project railroad (coming to the pages of MR in January 2019). Thanks to Linn Westcott, I knew just where to go for inspiration.

If you see a railroad engineering book at a train show or swap meet, pick it up, even if you model a different prototype, or no prototype at all. You never know when the knowledge contained within will come in handy. **GMR**

Though the setting of the model is much more modern, a 1915 book gave Steven Otte the inspiration for the operational details on this N scale tie-treatment plant.