

Model SPECIAL ISSUE
Railroader

NEW DESIGN IDEAS FOR N, HO, & O SCALES!

Annual 2020

Model Railroad Planning

Celebrating
25
years

2020

13 inspiring
all new
planning
stories

Tips from the experts on
design, construction, and
model railroad operation

Add operational interest
with a busy locomotive
shop complex. See p.10

**Build your layout
fast & efficiently** p.60

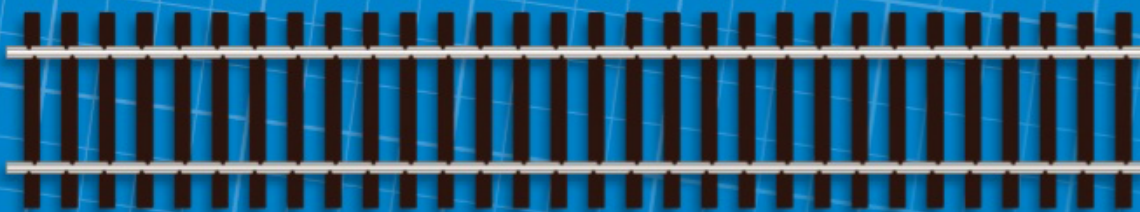
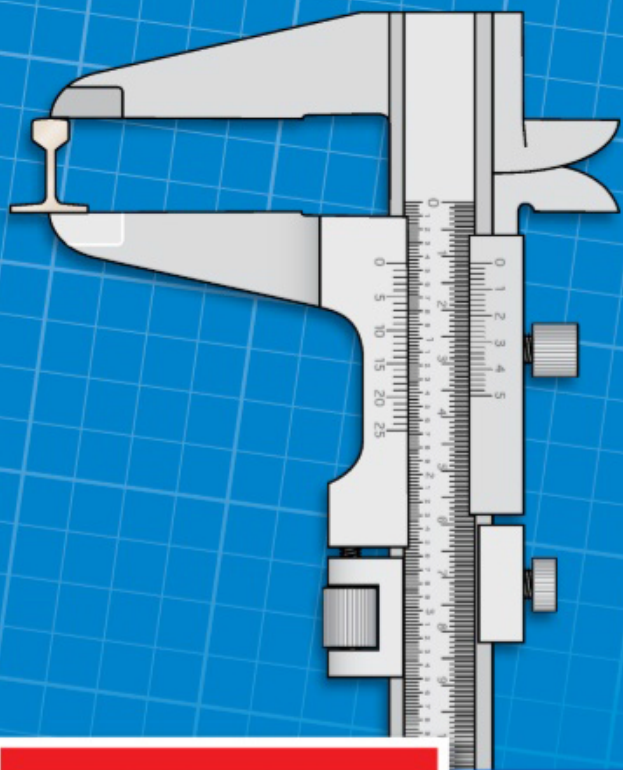
PLUS

A layout inside a semi-trailer! p.56

Norfolk & Western steam in O scale p.66

Iain Rice garage-size track plan p.74

Exacting



PECO STREAMLINE



HO CODE 83 & CODE 70 TRACK & SWITCHES

As with all Peco products, our 83 & 70 Lines are precision engineered to the most accurate and consistent standards.

Full details available in the Peco Catalog or at www.peco-uk.com

PECO

THE TRACK SPECIALIST

Pritchard Patent Product Co. Ltd, Beer, Devon EX12 3NA, England. Tel: +44 (0) 1297 626204

Digitrax

Complete Train Control

The EVOLUTION™ of Operations

**Maximum capacity,
maximum features.**

Take it to the Max with Evolution!

- Premium Advanced 5/8 Amp Starter Sets.
- Starter sets are available as standard tethered or duplex radio.
- The system features a DCS210 Advanced Command Station, DT500 series throttle, and includes a power supply to make getting started easier than ever.
- The DT500 series throttles can be purchased separately from the Starter Set.

Find out more @ www.digitrax.com



Evolution (shown) | \$450 MSRP

Standard Set Includes: DCS210 Advanced Command Station, DT500 Advanced Super Throttle, UP5 Universal Panel, PS615 power supply, and a LT1 LocoNet Tester.

Evolution Duplex | \$660 MSRP

Duplex Set Includes: DCS210 Advanced Command Station, DT500D Advanced Duplex Throttle, UR92 Universal Panel, PS615 power supply, and a LT1 LocoNet Tester.

Storage Boxes



Self Closing

Fully Assembled • Foam Lined

AXIAN TECHNOLOGY

p: 623-580-0800 • f: 623-580-8008
21622 N. 14th Ave.
Phoenix, AZ 85027-2806

HO Scale

Holds 20 Cars - **\$29.95**

N Scale

Holds 36 Cars - **\$29.95**

Tote Bags

\$35.95

Plus S&H



Patented



U.S.A.

Call **TODAY** to order! 1-800-466-3131

www.axiantech.com

Plan on Caboose for all your dream layout needs!

The ultimate full-service train enthusiast's store.

We have all the supplies, tools and knowledge to help you plan & build your dream layout.

More than 157,000 items, over 510 manufacturers, most at a discount from full retail – all at a fair price.

As always, in-stock orders of \$100.00 or more ship free within the Continental U.S.!*

*surcharges may apply for oversized items.

CABOOSE

Sharing Our Passion for Trains Since 1938

10800 West Alameda Ave.
Lakewood, CO 80226
(303) 777-6766
Open 7 days a week!

MyCaboose.com

YankeeDabbler.com

Check out our complete train store!

Repairs and decoders installed.
N, HO, S, O, G

Authorized Dealer:

**Digitrax, ESU-LokSound,
NCE, Soundtraxx, TCS**



OPEN
Tue-Sat
Web(24x7)

(856) 312-8084

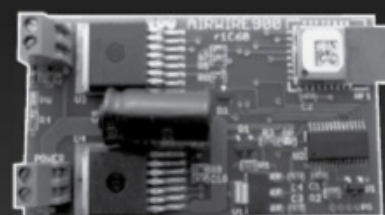
101 W. Kings Hwy.,
Bellmawr, NJ 08031

www.yankeedabbler.com

AIRWIRE900® Battery Powered Wireless DCC

Battery powered wireless operation has emerged as a real alternative to conventional DCC layout wiring. Imagine the freedom of no layout wiring, no track cleaning and no wheel cleaning. AIRWIRE is the premier system offering a huge portfolio of battery powered products for all scales. The CONVRTR-Series™ converts any NMRA-DCC decoder into an AIRWIRE compatible decoder. This new series offers 3 different output currents: 1.5A, 2.5A and 6.0A. The tiny CONVRTR-15™ enables battery operation in HO scale.

With AIRWIRE, locomotives run smoothly and never stall, stutter or hesitate since the power is supplied by the on-board battery. Adding the new CONVRTR™ to your favorite DCC decoder, converts it to an AIRWIRE compatible decoder. Then use the T5000 wireless throttle to operate your locomotive and setup your DCC decoder. The T5000 is a full featured DCC decoder programmer. No extra equipment is needed.



C60 - Internal Antenna \$132*



C60X - External Antenna \$138*



C25 - Internal Antenna \$99*



C25 - Internal Antenna \$105*



C15 - Internal Antenna \$89*



C15X - Internal Antenna \$95*

MADE IN THE
USA

CVP Products P.O. Box 835772 • Richardson, TX 75083 • www.cvpusa.com

MADE IN THE
USA

*MSRP

Model Railroad Planning

2020

6 Editorial

Value is where you find it

Tony Koester//

10 COVER STORY Enhancing diesel shop operations

Prototype insight changes how a yard and shops are operated

Mark Dance//

18 Commuter attraction

Modeling a suburban city can provide amazing operating possibilities

David Popp//



Page 18: Planning a hometown layout.

On the cover: Canadian Pacific and Burlington Northern units are lined up for servicing on Mark Dance's N scale Columbia & Western Railway. Photo by Mark Dance

Photos, clockwise from above: David P. Morgan Memorial Library collection; Brian Moore; Paul J. Dolkos; Ian Stronach; E. Gerlits photo, Chuck Conway collection; Gordon Lafleur



Page 34: Building a California layout in England.

28 Layout in the family room

A model railroad can be a welcome houseguest

Bernard Kempinski//

34 The Espee in the UK

Modeling a railroad 5,400 miles away from home

Brian Moore//

42 A busy eastern Virginia junction

CSX, Buckingham Branch, and Amtrak trains provide variety on this N scale double-deck layout

Malcolm West//

48 All the layout's a stage

Focal points become sets, structures become props

Joe Smith//

56 A model railroad in a highway trailer

Roll your railroad room to your modeling site

John Stockton-Wood//



Page 42: Focusing on switching operations.



Page 66: Capturing the character of coal country.

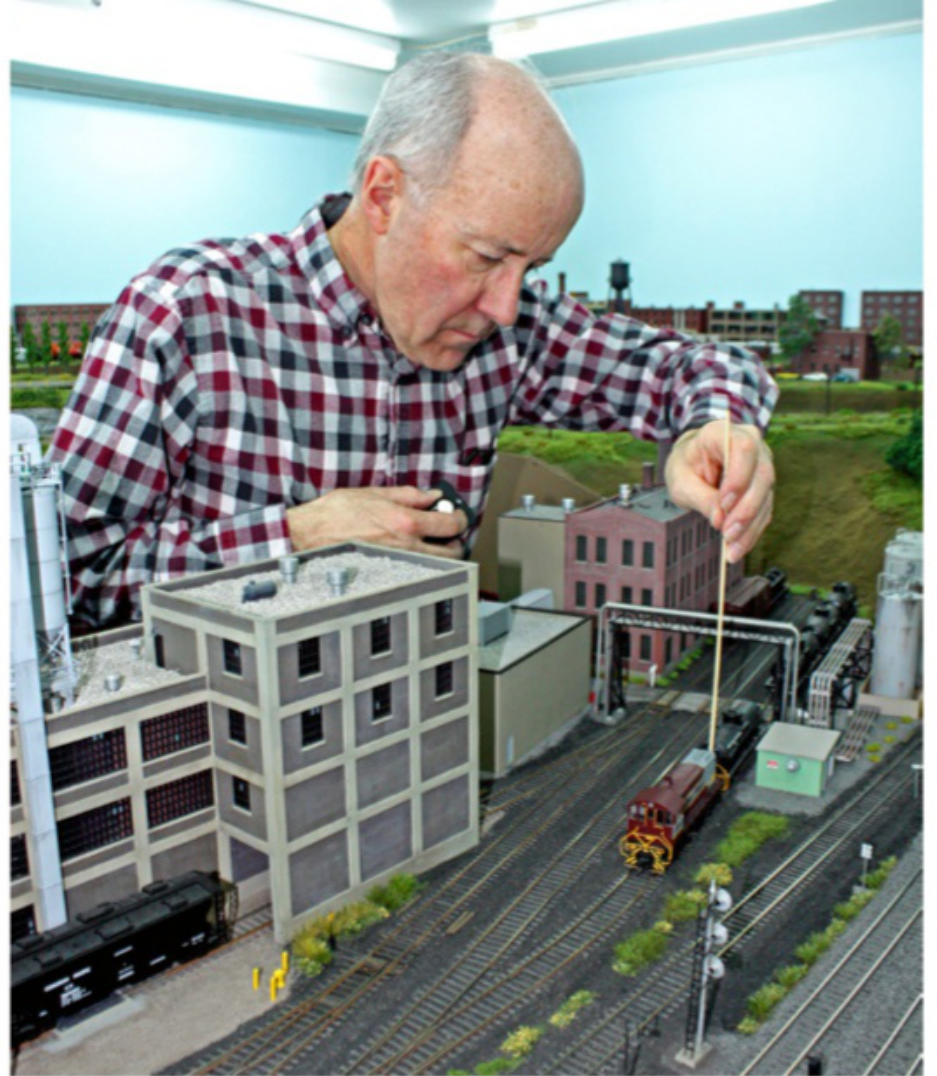
60 Building a layout more efficiently
Tips from a model railroader and project manager
Randy Laframboise//

66 Big steam is back in the Appalachians
An O scale railroad began with a layout visit and a napkin
Paul J. Dolkos//

74 A single location layout
This N scale design fits in a double garage
Iain Rice//

81 Coping with urban canyons
How to plan for lining turnouts, uncoupling cars, and cleaning track in tight spaces
Ian Stronach//

84 Through the basement and around it
A dual-gauge HO track plan for a famous stretch of Colorado railroad
Bryan Henderson//



Page 81: Dealing with tight confines between structures.

91 READER FORUM
Sharing questions and ideas

93 PLANNING TIP
Fascia signs
James McNab//

93 PLANNING TIP
Using a turntable as a turnout
Clark Propst//

98 REAR PLATFORM
Topping off the helix
Ron Griffin//



Page 84: Creating satisfying scenes on a dual-gauge track plan.

Model Railroad Planning

2020

Editor
Editorial Staff

Tony Koester
Carl Swanson
Jeff Reich
Cody Grivno
Dana Kawala
Steven Otte
Eric White

Art Director Thomas G. Danneman
Senior Graphic Designer Scott Krall
Graphic Designer Samantha Primuth
Lead Illustrator Rick Johnson

Kalmbach Media
Chief Executive Officer Dan Hickey
Senior Vice President, Finance Christine Metcalf
Vice President, Consumer Marketing Nicole McGuire
Vice President, Content/Editorial Director Stephen C. George
Vice President, Operations Brian J. Schmidt
Vice President, Human Resources Sarah A. Horner

Senior Director, Advertising Sales and Events David T. Sherman
Advertising Sales Director Scott Redmond
Circulation Director Liz Runyon
Director of Design and Production Mike Soliday
New Business Manager Cathy Daniels
Retention Manager Kathy Steele
Single Copy Specialist Kim Redmond
Ad Sales Manager Lori Schneider
Ad Sales Representatives Martha Stanczak
Mike Ferguson

Editorial offices
Phone: 262-796-8776
E-mail: mrmag@mrmag.com
Web: ModelRailroader.com

Advertising and Trade Sales
Advertising inquiries: 888-558-1544, ext. 643
Retail trade orders: 800-558-1544
Advertising e-mail: adsales@mrmag.com
Dealer e-mail: tss@kalmbach.com
Website: Retailers.Kalmbach.com

Customer Sales and Service
Phone: 877-246-4879
Outside U.S. and Canada: 903-636-1125
E-mail: customerservice@ModelRailroader.info

MODEL RAILROAD PLANNING (ISSN 1086-5586) is published annually by Kalmbach Media Co., 21027 Crossroads Circle, P.O. Box 1612, Waukesha, WI 53187-1612.

Single Copy Price: \$9.99 U.S., \$10.99 Canadian, payable in U.S. funds. (Canadian price includes GST.) BN 12271 3209 RT. Expedited delivery available for additional \$2.50 domestic and Canadian, \$6 foreign. ©2020, Kalmbach Media Co. All rights reserved. Printed in USA.



Editorial

Value is where you find it



I've commented before that my number-one criterion for a magazine is that it must be a good read, not merely a set of helpful instructions. Let me therefore suggest that you take time to read Brian Moore's report on how he came to model a portion of the sprawling Southern Pacific in the transition era some 5,000 miles away in his home in England ("The Espee in the U.K.," page 34). Whether or not you have any interest in the Espee or California of the 1950s, I think you'll find his comments a very good read.

I allocate the number of pages to each feature based on a number of factors, one being diversity of content. If the theme is narrowly focused, I assume it will be of interest to fewer readers. Often, however, as I read through the author's draft, I'm pleasantly surprised to find that the obvious theme – for example, David Popp's article on a suburban Chicago commuter operation ("Commuter attraction," page 18) – has much more to offer than the title implies. The Windy City has a lot of fans, but those of you who might not be interested in that region or type of railroad may find his research and layout planning tips of considerable value.

Joe Smith discusses his use of theatrical elements to add drama to his

railroad ("All the layout's a stage," page 48), but don't overlook the fact that he started out planning to model just one scene, making this – like Iain Rice's cameos in MRP 2019 – practical for those with limited layout space.

And, well, explore the other features and tips in this issue, whether or not they directly relate to your favored era, scale, gauge, or whatever. As your editor, I read them all, and I'm often surprised and impressed by what I learn along the way. You may be, too.

When time is a factor

None of us has all the time we'd like to have at our disposal for leisure-time activities. Life has a way of intruding. This inspired my most recent Kalmbach Books publication, *Time-Saving Techniques for Building Model Railroads* (KalmbachHobbyStore.com). While exploring ways to do what the title

Brian Moore lives in the U.K. but has done a remarkable job of capturing the look and feel of the Southern Pacific near Guadalupe, Calif., in the waning days of steam. The railroad isn't large by North American standards, but it can readily accommodate big steam such as Cab-Forwards. Brian Moore photo



promises, I contacted a number of experienced modelers who are known for getting things done, and done well, to ask them to share some of their tips.

Randy Laframboise, who with Mike Sparks is building a superb model of the Rutland RR in its transition years in Randy's ample basement (see MRP 2016), sent a few tips, which I included in the book. But then he sent more in an email that contained too much valuable information to edit down to what would fit in the book.

I switched hats from book writer to magazine editor and suggested Randy supply photos of his and Mike's railroad that illustrated key points of his treatise for an MRP feature. And I'm delighted to share his ideas and images in his article, "Building a layout more efficiently," on page 60.

High-resolution images

Few things are more frustrating to an editor than to receive an article proposal illustrated with a beautiful model or prototype photos, only to discover they have resolutions (dots, or pixels, per inch) far below what we need for good reproduction. We also need to be sure we have the permission of the illustration's owner or copyright holder to use the illustration.

So you can't just pick up a photo from the Web and assume it's high resolution or that it's legally OK for us to reprint it. The printing standard for illustrations is 300 pixels per inch. If you have photo-editing software, you can check to see how wide an image will print with the resolution set to 300 dpi; we'd like to see image files that will print 10 inches (3,000 pixels) wide.

Resolution is just one concern. Is the photo evenly lighted? Is the photo



David Popp spent months researching railroading in his hometown of Crystal Lake, Ill., after coming across a photo of tracks he'd never known existed. He ended up designing two layouts, in HO and N scales. Bill Zuback photo

sharp from side to side and from front to rear? Some newer digital phones will do the job, but hand-holding them is like hand-holding any camera – not the best way to eliminate camera jiggles.

Not sure? Check with us before assuming what you have is of publication quality. If we spot problems, we can often offer helpful advice.

Before and after

I very much enjoy seeing and sharing progress reports on layouts we've featured in MRP. By now, you've probably figured out that we tend to feature railroads that aren't fully scenicked and thus perhaps better candidates for photo coverage in *Model Railroader* or *Great Model Railroads*. We've learned that you enjoy seeing the unfinished as well as the finished areas of layouts so you can see how

the builder is constructing the railroad from the bare bones up.

I thought you'd also enjoy seeing how Ken Karlewicz finished the scene that graced the cover of MRP 2019. The segment of the railroad depicted on the cover is no longer a testimonial to high-iron railroading, and his fine workmanship and artistic talents ensured that message comes across loud and clear. Find the photos and related letter in Reader Forum on page 91.

Backdrop trend

On local layouts and those I see as I travel, I've noticed a strong trend toward photographic backdrops. I think that's largely the result of the digital photography revolution. It's easy for us to shoot the photos to stitch together to create needed scenes, and it's easy for commercial suppliers to do the same thing.

There's a school of thought that says the backdrop (or "backscene" to our U.K. friends) should be abstract so as not to compete with the 3-D models. I've never subscribed to that line of thought, as to my eye the departure between fore- and background is too severe. But when a realistic backdrop depended on our individual talents as artists, "abstract" was about as good as many of us could muster.

Now we can order almost any needed backdrop from several suppliers or "roll our own." I think the illustrations in several of this issue's features make a strong case for that being a major step forward.

A handwritten signature in black ink that reads "Tony".



AZATRAX
Circuits and Signals

Circuits for

- ★ Train detection
- ★ Block signals
- ★ Crossing signals
- ★ Turnout control
- ★ Automated exhibits

www.azatrax.com

RIGHT ON TRACK MODELS

N, HO, S and O Scale Building Kits

Miami, Florida
305.240.8362

WE WILL BUILD ANY MODEL TO ANY SCALE FROM PHOTOS

www.RightOnTrackModels.com

The Ladder Track System
Available with Code 83 or 70 Rail

Our 55th year!
Micro Engineering / Rail Craft
1964 - 2019

The Micro Engineering Ladder Track System is a series of five different **HO Code 83 or Code 70 #5 turnouts** that can be used in various combinations to allow up to 30% more yard in the same layout space. Information pdf's, turnout templates and our price list are available on our web site or by email. See the Ladder Track System at your dealer or order direct.

#5a Standard Turnout #5b Curved Diverging Track Turnout
#5c Lead Ladder #5d Intermediate Ladder #5e Last Ladder

ME Micro Engineering Company
1120 Eagle Road
Fenton, MO 63026
Phone 800-462-6975
Fax 636-349-1180

Made in the USA
www.microengineering.com
service@microengineering.com

Subscribe to **Model Railroader**
for **ALL** your model railroading needs!

Model Railroader

subscribe.modelrailroader.com

Design the Best Possible Layout for Less

Get all your layout plans off to a great start! Go through our extensive backlog of *Model Railroad Planning* issues and take **20%** off. Discover countless track plans, practical advice, construction tips, and dozens of fresh ideas from the most experienced modelers.

Get 20% off back issues of *Model Railroad Planning* with coupon code MRP at checkout.

To order back issues, visit
KalmbachHobbyStore.com/MRP

Offer excludes the current issue of *Model Railroad Planning*.



TRY MR VIDEO PLUS FOR

FREE!



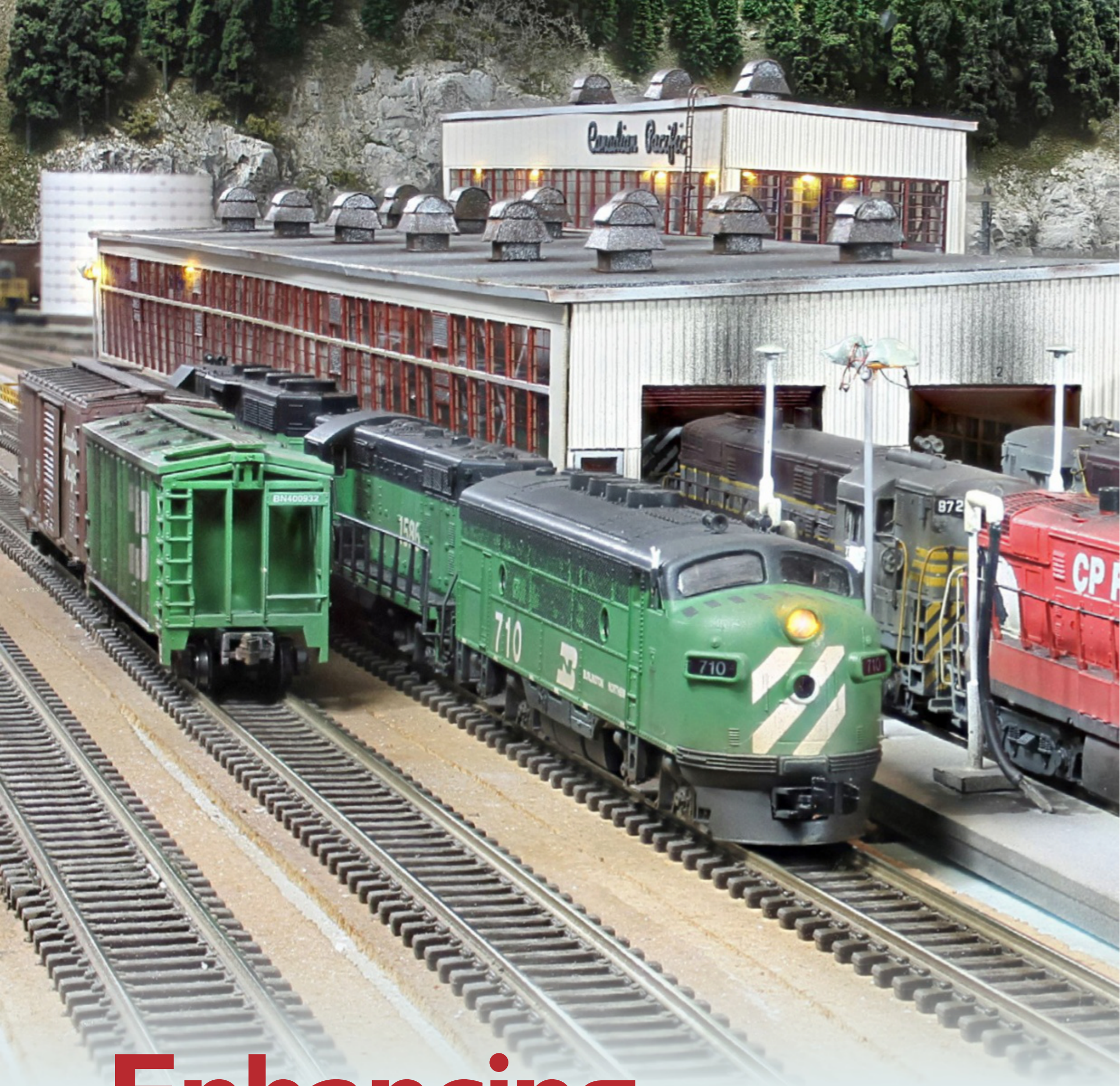
No Risk • No Exceptions • No Kidding



video
PLUS

Start Your 7 Day Trial Today!

MRVideoPlus.com/Free



Enhancing DIESEL SHOP operations

Prototype insight changes how a yard and shops are operated

By Mark Dance//Model photos by the author



Canadian Pacific and Burlington Northern units are lined up for servicing on Mark Dance's N scale Columbia & Western (C&W) model railway. Information from Mike Barone, who had worked in the Nelson Yard Diesel Shop, caused Mark to implement new hostling procedures and to develop changes to the yard tracks.

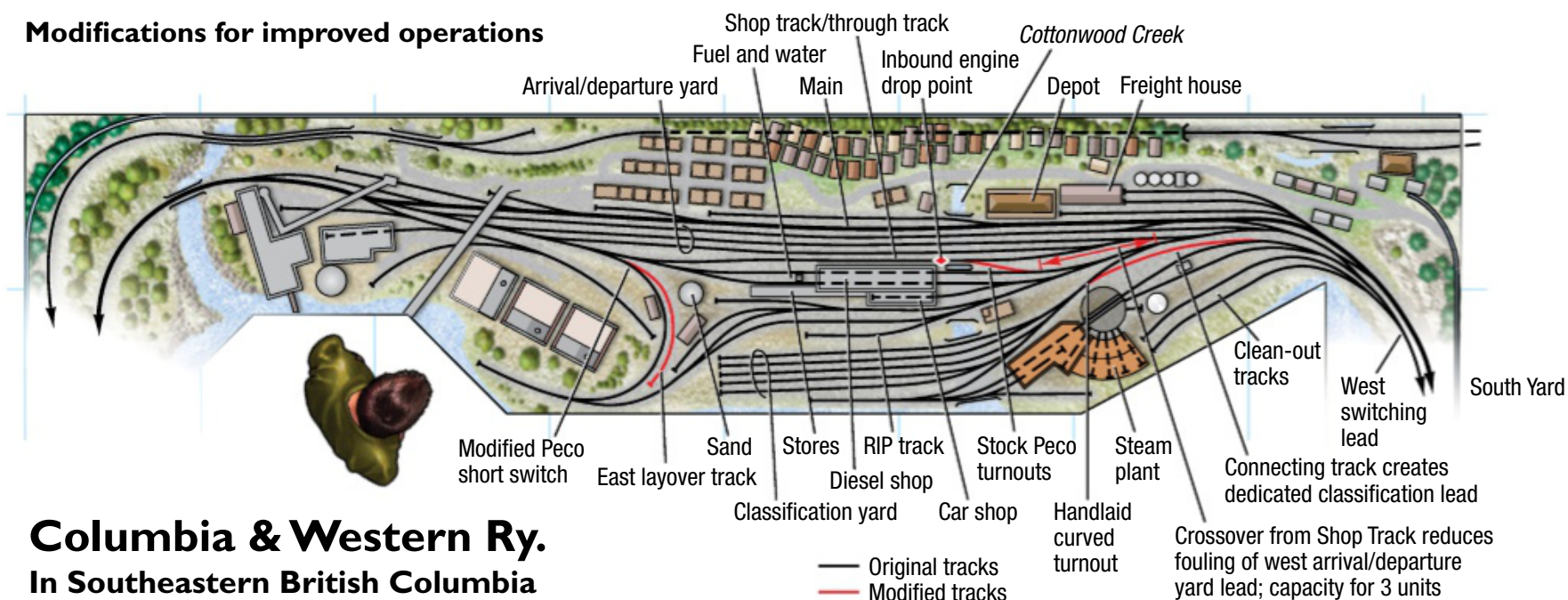
The objective of my N scale Columbia & Western (C&W) is to model the Canadian Pacific's (CP) "Kootenay Divisions" circa 1970. Initially hampered by incomplete information and having almost no operating experience, but with enthusiasm to get started, I did my best to replicate the prototype track arrangements within the space available. I also endeavored to reproduce the trains and spectacular scenic features of the prototype (see *Model Railroad Planning 2012* and *Great Model Railroads 2016*).

As I gained both experience operating the C&W and knowledge of the prototype's operations, I revised the C&W's track plan and operating scheme to more closely follow the prototype. Nowhere is this more evident than around the Nelson Yard Diesel Shop.

A recognizable prototype

Nelson Yard is a highly modelable division point situated where the CP's Nelson and Boundary subdivisions meet.

Modifications for improved operations



Columbia & Western Ry. In Southeastern British Columbia

N scale (1:160)

Room size: 19'-6" x 20'-10"

Scale of plan: 3/8" = 1'-0", 24" grid

Numbered arrows indicate photo locations

Illustration by Jay Smith and Rick Johnson

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

Nestled between the shoreline of beautiful glacier-fed Kootenay Lake and the picturesque hillside city of Nelson, this medium-size yard has all the supporting services that modelers love – ice house, freight house, engine and caboose servicing, clean-out tracks, and Repair-In-Place (RIP) and car repair facilities – arranged around a gently curving, efficient, compact, double-ended eight-track yard.

Scaled down to N, the prototype yard was three times as long and 30 percent wider than the space I had available. But my plans were to originate and terminate about the same number of trains as the prototype, using approximately the same number of locomotives. The trains would be shorter, but I'd still need a yard sized to handle about half of the prototype's cars per day in an area a quarter of the size.

My cunning plan to achieve this miracle of space utilization (twice as good as the prototype) included assigning a switch crew to both ends of the yard and giving the west end switching crew a yard lead. (And an adjustable-rate fast clock, just in case!)

As my space had proportionally more width than length, I separated the classification tracks from the arrival/departure tracks, effectively splitting the prototype's long west-end ladder into two shorter, parallel ladders. This gave me more usable length at the expense of more used width.

This separation would mean classified cars would have to move across two west-end ladders rather than one, first while being classified, then to be assembled into an outgoing train. While less efficient, this unusual ladder arrangement would allow significantly longer classification and arrival/departure tracks.

The diesel shop

The CP built the diesel shop at Nelson in 1953-'54 to serve as a principal running shop (see "Main shop or running shop?" on page 16) for British Columbia's southern main line. It featured two run-through tracks for servicing, inspection, and routine maintenance and two stub-ended track bays for heavier work. Its design was proposed by General Motors and was among the first purpose-built diesel shops in North America.

In 1970, the shop still buzzed with activity, as CP had assigned all its Fairbanks-Morse power (C-Liners, H16-44s, and Train Masters built under licenses by the Canadian

Locomotive Corp. of London, Ont.) to the southern B.C. divisions. Given my objective to run the same number of trains and similar number of locomotives as CP did during an operating session, a disproportionate amount of the available yard space would be needed for diesel servicing.

In spite of this, there still wouldn't be enough space to model the Nelson shops area track-for-track. My first priority went to the pair of long tracks through the shops – each long enough to hold three consists of three or four units apiece. I had to sacrifice one of the heavy bay tracks but retained the other, as the dual height of the shops was a distinct feature. Also sacrificed was much of the stores building and the long shop approach tracks.

Such was the initial plan, but would the yard and shop arrangement keep an ops session flowing?

Early ops experience

I was motivated to get operations up and running, so for many years, a foam core mock-up of the diesel shop covered with Patrick Lawson's brilliant drawing of the prototype (*Mainline Modeler*, Dec. 1996) stood in the middle of Nelson Yard, foreshadowing the daunting scratchbuilding project that lay ahead of me.

During the early operating sessions, the yard crews proved up to their task, but without guidance, road crews used that diesel shop mock-up like a storage shed. They rummaged around inside it for their assigned power and stashed that power away in any convenient space at the end of their runs. Operations on the C&W aren't overly formal, but, I wondered, was this perhaps a little *too* informal?

I sought answers online about the prototype shop's operations. It appeared that inbound engines were left on the west shop tracks, closest to the enginemen's lockers and time-recording desk. The hostlers then guided the locomotives through the routine servicing, fueling, and sanding to make them ready for their next runs.

I took this – incorrectly, as it turned out – to mean the locomotives were left on the tracks leading into the west end of the shops. I figured this would provide an orderly flow west to east, with the power entering the shops' west doors for running work and flowing out the east end where they would be fueled, sanded, and left ready on the service tracks. The logical mechanical engineer in me found this



The west end of the diesel shop complex shows it was an interesting modeling project as well as a focus of operations.



The Nelson, B.C., diesel shop in 1972 shows a preponderance of Fairbanks-Morse power plus a single Geep. Alco-designed power built by the Montreal Locomotive Works also frequented the area, making the location an interesting modeling era and site. Mike Barone photo

routine sensible, and the C&W would operate in this manner for many years.

This eastward-flowing process did necessitate a change to the initial track plan, as there was inadequate capacity at the east end to lay over all the ready engines. After studying plans and photos of the prototype, I noticed a curved track parallel to the east leg of the wye, often with locomotives stored on it. By modifying a Peco small-radius turnout, I shoehorned in a similar track, creating just enough capacity for the morning power rush.

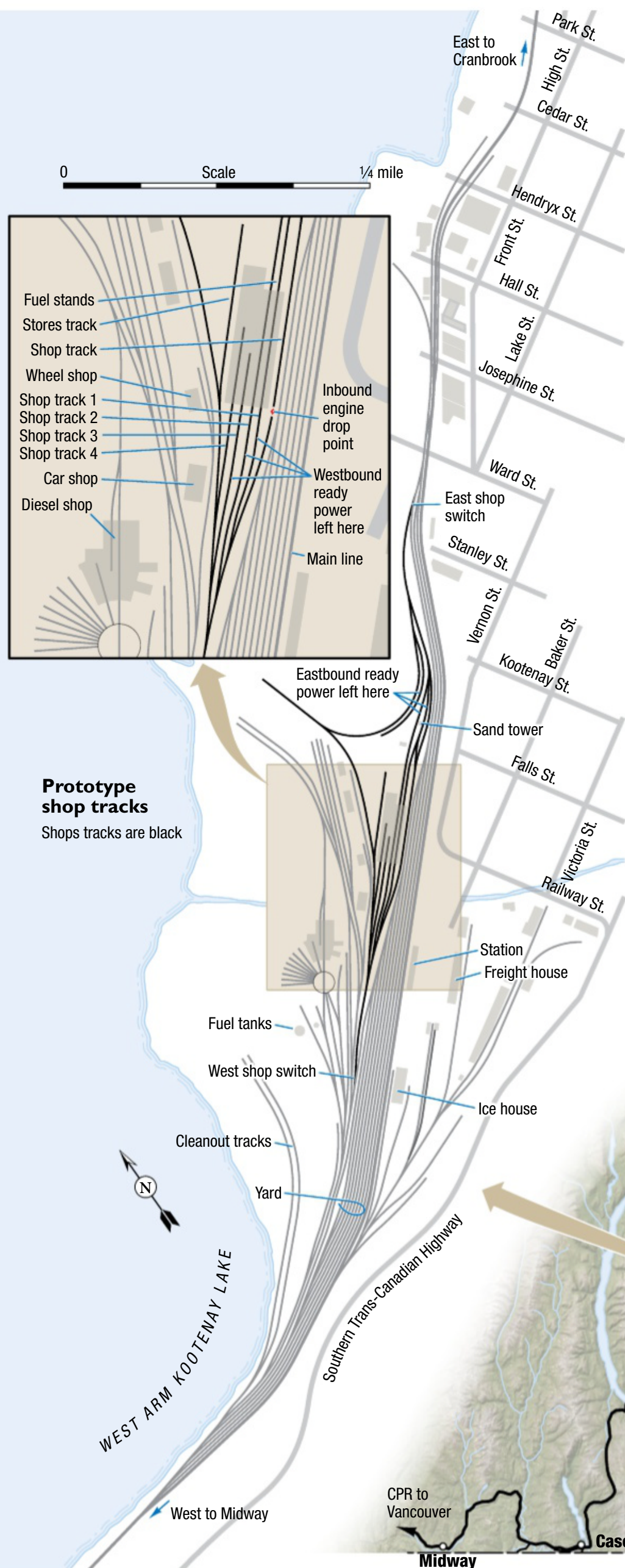
I gleaned an important lesson from this: Interior shop tracks are expensive by comparison to uncovered “garden” tracks, which are quite adequate to lay over serviced and ready power. If locomotives were tying up interior

service bays, they must be there for a good reason, not just for convenient storage.

After thinking through the needs of a typical C&W operating session, it seemed a good target was to have enough layover capacity for the first real hour of trains departing in a session. That meant we needed capacity for up to 10 consisted engines. The addition of that east-end layover track provided just enough capacity.

How the shop really worked

While the C&W was providing enjoyable operating sessions, my list of modeling projects ebbed and flowed and my modeling confidence increased. The day arrived in 2017 when I could run from it no longer; it was time to tackle the



Nelson shop. I knew this would be a time-consuming project, likely a once-in-a-lifetime investment of modeling energy. In the hopes of getting a commensurate once-in-a-lifetime model in return, I began gathering data on the shops and its detailed operation.

My primary references were those invaluable drawings by Patrick Lawson and a companion article by Mike Barone that provided detailed photos of the inside of the shops and a description on what went on there. The latter was based on knowledge Mike gained working there from 1968 to 1973 as a summer student. He and I have since become friends, and he's answered my questions with photos, diagrams, and personal recollections.

Mike identified which tracks fell under the responsibility of the shop foreman and the role of each track. The shop tracks included all tracks between the east and west Shop Track turnouts and their connections to the yard, as well as the wye track. Importantly, these connecting yard turnouts were far enough away that both east and west shop approaches could function as leads, so intra-shop locomotive moves wouldn't need to enter the yard.

To pass the Shop Track switches required permission from the yardmaster. Conversely, if the yardmaster needed to turn a car on the shop's wye, permission was required from the shop shift foreman. On some occasions, the yard crew would simply drop a car to be turned on the end of the Shop Track, which bypassed the shop building to the south, and the hostler would then run it around the wye. That invaluable Shop Track was the only track that arriving road crews were permitted to enter when dropping their power. On departure, however, they could pick up ready units from tracks inside the Shop property.

The shop tracks comprised, from south to north:

- Shop Track 1, which ran through the shop building and had the fuel, sand, and water servicing structures on its east end. Consists were built and prepared for the road on this track by setting the air and electrical systems for multiple-unit control. Road supplies were restocked, which included flagging kits, spare knuckles and chains, and drinking water. The locomotive cabs and windows were cleaned, as were the toilets.



The hostler has placed two timer tags, visible on the ground near the locomotive and on the roof of the shops, to indicate that servicing steps will be complete by 00 and 15 minutes past the fast-clock hour.

Simulating locomotive servicing

Conversations with Mike

Barone about how the Nelson shops serviced motive power increased my appetite for simulating these operations during the Columbia & Western's op sessions. After experimenting with ways to track the dwell time of locomotives as they move through servicing, we currently use two tools: a job aid populated with information about the next assignments for inbound power, and small "timer tags" to visually mark the end time of a service process.

The job aid includes a track schematic of the shops area pointing

out the location for servicing activities and the sequential servicing steps, with the minimum dwell times the hostler should replicate for each. This includes a table for each session that specifies the next assignment and required ready time for all power inbound to Nelson. The hostler needs to know what has to be delivered and when. I populate this table at the same time I prepare the yard's train arrival and departure line up. For simplicity, I only do this for inbound power, as locomotives present at the start of a session are assumed to be serviced and ready.

To keep track of when each consist will have finished each servicing step, the hostler uses small "timer tags" placed on or near the power in question. For example, if fueling a consist takes 30 minutes and the fast time clock reads 13:20, the hostler places a "00" tag next to the consist at the fueling tracks because by 14:00 ("00" on the minutes), the fueling will be done. Obviously, I don't consider exact-minute accuracy important; we just need a way to indicate the ready time for each step of the service process for each consist at a specific location. – *Mark Dance*

- Shop Track 2 similarly ran through the Shop. Units were sent here for scheduled inspections and/or to receive minor repairs and maintenance such as oil changes, water pump and electrical relay repairs, filter replacements, and steam cleaning. Both tracks 1 and 2 were used for visual inspections and brake shoe replacement.

- Shop Track 3 was a stub track inside the heavy repair section of the shop building. Locomotives went here for repairs requiring more than a day, such as piping, water jacket, or battery replacement, or work on dynamic brake grids or piston rings. Track 3 could hold a single unit plus a service flatcar, providing an opportunity to model flatcar deliveries of traction motors.

- Shop Track 4, also a heavy repair stub track, had a drop table for truck replacement and initially a wheel lathe. Shop forces could replace a locomotive truck in 30 minutes.

Replacing trucks, wheels, water jackets, radiators, batteries, and dynamic-brake grids all required use of the 20-ton overhead crane, which served Tracks 3 and 4.

- The stores department at the rear of the shops was responsible for supplies for the entire division, so lots of barrels and crates made their way across its concrete loading platform dock.

- Finally, there was the wye track and the storage track that paralleled its east leg.

Inspections and maintenance were scheduled activities, some monthly and others mileage-based. Inspections included oil sample testing and inspection of items including piston rings, crankshaft bearings, electrical items, motors, generators, and batteries. Radiators and air systems were inspected for leaks, and wheel profiles were monitored. Oil was checked monthly, while air tanks required pressure



This black-and-white photo shows the inside of the Nelson Yard Diesel Shop. The platforms provide hood-unit walkway access, while the rails are supported on pedestals to allow easier inspection of the trucks. Mark Horne photo

Main shop or running shop?

On Canadian railways, responsibility for motive power servicing and maintenance was split between main shops (also known as back shops) and the more common running shops, both of which reported to the head of mechanical engineering in the railways' headquarters. The shops were equipped and staffed for their different roles.

A main shop was responsible for stripping down, inspecting, and rebuilding locomotives. A rebuild might be planned every 10 years for freight or switch locomotives and perhaps every five years for a passenger locomotive. The unit would also be repainted at that time. More frequent inspection and refurbishment of the diesel engine power assemblies (cylinder liners, valve assemblies, and pistons) would also be scheduled and performed by the main shop.

As this work was a planned event, the locomotives' movements could also be planned so that the power "worked their way" to the main shop. Main shops were further equipped for specialized work like rewinding and rebuilding traction motors, which could then be shipped with or without wheel sets to any point on the railway. They would also repair wreck or road damage that required removal of the long hood on a hood unit or car body on a cab unit – for example, repair or replacement of the lower crankshaft, power assemblies, or the generator. The guiding philosophy was that more time- or resource-

consuming work was performed at a main shop. Conversely, a running shop was responsible for keeping all the power in its district "running" between those main shop visits. This might include:

- Running servicing such as fueling, sanding, cleaning, restocking supplies and preparations for the next trip, and light maintenance like replacing lights and brake shoes. (Normally, locomotives were in and out of the shop in an hour or so for these. Steam cleaning the running gear was done outside. Periodic inspections and minor repairs such as replacing worn or failed parts – pumps, filters, pistons and/or cylinder rings, and bearings – would take perhaps four hours.)
- Statutory inspection of brakes and wheels where the inspections were government regulated.
- Heavier repairs such as wheel turning; replacing traction motors or water jackets; or pulling dynamic brake grids or radiators for cleaning and repair. (This type of maintenance would often take a day or more.)

Nelson was unusual as a running shop because of the F-M locomotives it served and their unique vertical opposed-piston engines. The design of the F-M engines enabled their upper cylinders to be serviced without removal of the long hoods (H16-44 and Train Master) or carbodies (C-Liners). – *Mark Dance, with thanks to Mike Chandler, former CN Senior Tech Officer for Motive Power*

testing every five years. Federally mandated air brake and wheel inspections took place every few months.

Units would be placed on Track 2 for inspection by the relevant craft worker (boilermaker, electrician, or machinist), who would then advise the foreman if further work was recommended, in which case the power would be moved to Track 3 or 4.

The biggest surprise from Mike was that the inbound consists weren't left on the west Shop Tracks 1 and 2, but adjacent to this on the Shop Track (see the track diagram on page 14). This made sense when Mike explained the ad hoc nature of engine moves around the shops and the division of

responsibilities between Shop and Yard. Whereas the inbound power was always left at the same place on the Shop Track, its movement after that depended on the needs of the locomotives and upcoming power requirements. So much for the consistent flow of locomotives west to east through the shop complex that I'd assumed! From their drop-off location on the Shop Track, the diesels would be moved and serviced in these steps:

- Fueled at the east-end fuel racks. (Fueling towers had hoses so that two units could be fueled at a time either on the Shop Track or Track 1.)
- Sanded at the tower.

- Moved inside the shop on Tracks 1 or 2 for light running service or periodic inspection and maintenance. (In some cases, locomotives already in the shops might need to be moved to make room.)

- Moved to Tracks 3 or 4 if inspection uncovered issues or if more involved maintenance was scheduled, where they might remain from a day up to a week.

- Turned on the wye, if upcoming assignments required, and consisted together to provide the horsepower appropriate for their next assignment.

- Moved to ready tracks for their next assignment, with power for eastbound trains on the east end of Tracks 1 and 2 and power for westbound trains on the west end of Shop Tracks 1, 2, or possibly 3.

- Sanders tested and load testing done on all units to verify the ability of a locomotive to reach rated power in each engine speed notch, assure all diesel engines in a consist came up to speed synchronously, and verify the function of the m.u. connections and controls.

The implications of my misunderstanding about the Shop Track and the flow of serviced engines weren't trivial. Replicating this more ad hoc movement of power around the shops meant several changes were in order:

- The yard's Through Track would need to double as the Shop Track, where inbound power would be dropped off, thus necessitating the yard crews keep it clear to enable what would be more frequent light-engine moves.

- More unit movements meant increased time where the yard ladders at both ends would be fouled.

- More layover capacity might be required specifically for departing westbound power.

If any of these movements began clogging the yard, a track redesign would likely be required to keep the flow of power in the yard fluid.

New operations and track plan options

With the scratchbuilt model of the diesel shop in place, and armed with knowledge of how the prototype actually serviced locomotives, we changed the op session protocols to test whether replicating more prototypical hostler moves in Nelson Yard was manageable.

We assigned the hostler responsibilities to the Nelson East switcher position, which is the lightest role in a session and often used as the entry job for new operators. This increased the "play value" of the role without requiring another body in the train room.

Learning points

- Understanding the function and operations of a prototype shop can guide track planning and add to operations.
- Similar to arrival/departure and classification yard tracks, locomotive servicing areas and operating procedures need to be considered in the context of the yard's role and capacity.
- With much less area proportionally available for a model yard than its prototype, trade-offs must be made to keep the operational elements of a yard and their individual and collective capacities in balance.
- Hostler roles and procedures can be easy to add (and subtract), providing flexibility in crew size for an operating session.
- Talking to a professional railroader almost always provides valuable insights.



A Fairbanks-Morse A-B-A C-Liner set basks in the April 1967 sun between runs at the Nelson Diesel Shop. Their shared-cylinder, opposed-piston prime movers made a distinctive thrumming sound but created maintenance challenges for the lower bank of cylinders. Mike Barone photo

The more prototypical hostling process has since been tested in a half-dozen sessions with crews who varied in experience. As expected, the additional engine moves do slow the yard down, but the impact is small with experienced crews. Testing is ongoing while further changes to the track plan are being considered. We continue to iterate the process and job aids to improve realism while minimizing documentation. The current process (see "Simulating locomotive servicing" on page 15) relies on a written table listing the next job for all inbound power during a session and "timer tags" to mark the completion time of each servicing step.

The small reduction in yard efficiency comes from the Through Track no longer being available as an additional arrival/departure track and from more frequent fouling of the yard ladders.

One simple track change would be to introduce a cross-over from the Shop Track to the west end of Track 1. This would be quick and easy to implement and would enable all but the longest consists to move to and from the Shop Track and Track 1 without fouling the west ladders.

A more involved track change would be to link the classification yard to the west switching lead through what's now an unused ash track. This would require handlaying a curved turnout, but would allow car classification with minimal interference from shop movements.

Lessons learned

Engine servicing and the shop tracks that support them are interesting design, construction, and operating opportunities in their own right, and they are fascinating in the context of the yard as a whole.

Starting layout construction without complete knowledge, but with reasonable assumptions of servicing steps, can allow for years of enjoyable ops. As more prototype information becomes available, operating procedures can be refined – up to a point. Eventually, track changes may become necessary to keep your yard fluid. But, like any aspect of model railroad planning, design, and construction, these can also be enjoyable challenges to solve. **MRP**

Mark Dance is a regular contributor to MRP.



COMMUTER ATTRACTION

Modeling a suburban city
can provide amazing
operating possibilities

By David Popp

The rails ended in the middle of Grant Avenue – no bumper, no patches in the pavement to indicate they'd once gone farther. Even at seven years old, I realized that there had to be more to the story than that.

It was the summer of 1971, and I was standing in the street-side entry of a massive enclosed-shed lumberyard with my dad in Crystal Lake, Ill. A single spur track ran straight through the cavernous block-long building. Inside, men unloaded boxcars board-by-board, stacking the planks into neat piles in racks that stretched to the roof. Sunbeams filtering down in dusty streaks from skylights along the peak highlighted the action in amber pools of light. I was impressed, yet I still couldn't help wondering about those rails – why would they end in the middle of a street? I would have to wait nearly 50 years for an answer.

In spring 2018, while digging through the photo files in the David P. Morgan Library at Kalmbach Media, I found the above shot. The image of Chicago & North

This photo, shot by Dale Bufkin in February 1954, shows a Chicago & North Western class R-1 4-6-0 and a caboose on the station track at Crystal Lake, Ill. The town was a terminal for C&NW commuter trains, making it a busy place. David P. Morgan Memorial Library collection



Western (C&NW) Class R-1 no. 1396 was taken by Dale Bufkin at Crystal Lake in February 1954. What surprised me were the tracks in the photo's foreground. I'd grown up in this town, yet never knew those tracks existed.

There's nothing more exciting than a good mystery to get your day started – or months of research and conversations with family, friends, and new acquaintances. I'd never given my hometown a second thought as a potential model railroad. At the end of the investigation, however, I not only had an answer to my question about the tracks in the street, I'd found a compelling story for a model railroad that could be as fun to build as it would

Trains aplenty!

If you're planning on modeling a passenger railroad, you should pick up a few public and employee timetables. These offer details and insights into how a railroad runs its passenger trains. For example, I discovered that trains 502 and 506, listed in the suburban service timetable as non-stop runs from Crystal Lake to Chicago, were actually through passenger trains coming east from Madison with dining car service.

I obtained the three shown here for working on the 1950s plan on page 25, and then found a similar set for the 1960s plan on page 27. Internet auction websites like eBay are great places to start looking for vintage timetables. Train shows, swap meets, and railroad historical societies are another useful source.
– David Popp

Timetables offer a wealth of information for those modeling passenger stations. Shown left to right are Chicago & North Western public timetables for through passenger service (1946), through freight service (1952), and Wisconsin Division suburban service (1948). Bill Zuback photo



be to operate – so compelling that it yielded two plans: an HO scale plan set in the heart of the 1950s, and an N scale plan set a decade later.

A bustling railroad town

Crystal Lake, Ill., sits along the former C&NW Wisconsin Division main line, 42.9 miles from Madison Street Station in downtown Chicago. The Wisconsin Division originally ran northwest from Chicago to Minneapolis, passing through Madison, Wis., and St. Paul, Minn. Today, it's owned by Union Pacific and, in addition to freight, carries more than 40 daily Metra commuter trains. In 1954 the line was still firmly in the hands of the C&NW.

Crystal Lake in the '40s and '50s was the line's terminal. Many residents of this small town traveled to Chicago or its suburbs for work, shopping, and entertainment. In the early 1950s, Crystal Lake saw 32 daily scheduled passenger trains.

Being that the town was the end of the line for commuter runs, the railroad made provisions for storing coaches and turning locomotives.

Opposite the depot and to the west of it were coach storage tracks. The railroad also built an engine terminal east of the depot.

In the typical 1950s commuter arrival routine (C&NW called it "suburban service"), the train left its passengers at the depot. The crew would then park the coaches on one of the storage tracks and run the steam locomotive to the engine terminal. There, the crew would water and coal the locomotive, turn it on the turntable, and then park it until it was required for the run back to Chicago.

By 1956, the C&NW had replaced its suburban service locomotives with diesels, but the arrival routine was similar. The diesels were cut from their trains and run to the terminal to be turned and stored until the next Chicago-bound run. It wasn't until the introduction of push-pull service in 1959 that the C&NW kept its locomotives with the consists on the storage tracks at the west end of town. After that, the turntable, coal tower, and water tanks were removed sometime in the 1960s or early '70s.



David assembled this typical 1950s Chicago & North Western commuter train in HO scale using an Athearn Genesis Electro-Motive Division GP7 and a Rivarossi combine and 60-foot heavyweight coaches. Cody Grivno painted and detailed the models in a six-part series on MR Video Plus. Bill Zuback photo



Engine 1533 waits at the platform with a three-car train. North Western trains used left-hand running, so this train is eastbound to Chicago. In the distance is Wilbur Lumber's enclosed yard. The photo was taken by A.W. Johnson in July 1935. Robert A. Janz collection, courtesy of the Chicago & North Western Historical Society

Hometown history lesson

Crystal Lake began life as two separate agricultural communities, settled in the 1840s. The village of Crystal Lake was built around the northeast end of its namesake body of water. Nunda, the other town, was established about 2 miles to the north.

When the railroad came in the 1850s, it built through the heart of Nunda, and the town prospered. Throughout its history, particularly before World War II, the town had rail-served grain elevators, feed mills, a pickle works, a small stockyard, a dairy, and hay depot. Until the 1920s, ice was cut from the lake in winter and stored in icehouses for rail shipment to Chicago. The C&NW also maintained a freight house on Grant Avenue.

Various coal and oil dealers, farm suppliers, and lumberyards received material by rail. Several rail-served industries made homes in the Crystal Lake area, including the Express Body Corp., which built wood components for automobile car bodies, and the F. Schraam Greenhouses, which received coal for its power plant. Just north of the city was American Terra Cotta Industries that made clay pipe and roofing components before becoming a metal foundry. It's still rail-served, but



This undated view of the enclosed lumberyard was taken from atop the city's wood water tower sometime in the early 1900s, before the new depot was built. The massive lumber shed was about 90 years old when it was taken down in the 1980s. Photo provided by Diane Kenney, Crystal Lake Historical Society

And more besides

Commuters are just one piece of the puzzle, as up until 1965, the station saw some daily through passenger trains, including name trains *Victory*, *Viking*, and the *Capitol 400*. Most ran non-stop between Chicago and Crystal Lake, but then made stops at major towns along the route west to their final destinations. For passengers needing to get to an intermediate station between Crystal Lake and Chicago, they would detrain at Crystal Lake and then take one of the suburban trains to complete the trip.

Unlike the other through trains, the *Capitol 400* was a streamliner, making the daily trip from Madison to Chicago as train No. 500 with just a handful of

stops en route. Although it didn't stop at Crystal Lake, the *Capitol 400* passed through eastbound daily around 7 p.m.

Crystal Lake also saw an array of freight trains. There were four daily scheduled fast through freights between Chicago and Madison. These usually ran in the middle of the night to avoid the passenger traffic. There were also way freights, making runs from Chicago to Harvard, Ill., and to Janesville, Wis. These trains would set out cars at Crystal Lake and pick up cars headed in either direction. The North Western kept a freight engine in town to work the local that served industries in Crystal Lake and nearby communities. The 4-6-0 shown on page 18 was most likely the local's power in 1954.

now called TC Industries and makes hardened steel parts for Caterpillar.

Nunda's growth caused it to expand its borders. In 1908 Nunda's name was changed to North Crystal Lake, and eventually the two communities merged into the city of Crystal Lake.

Making a junction town

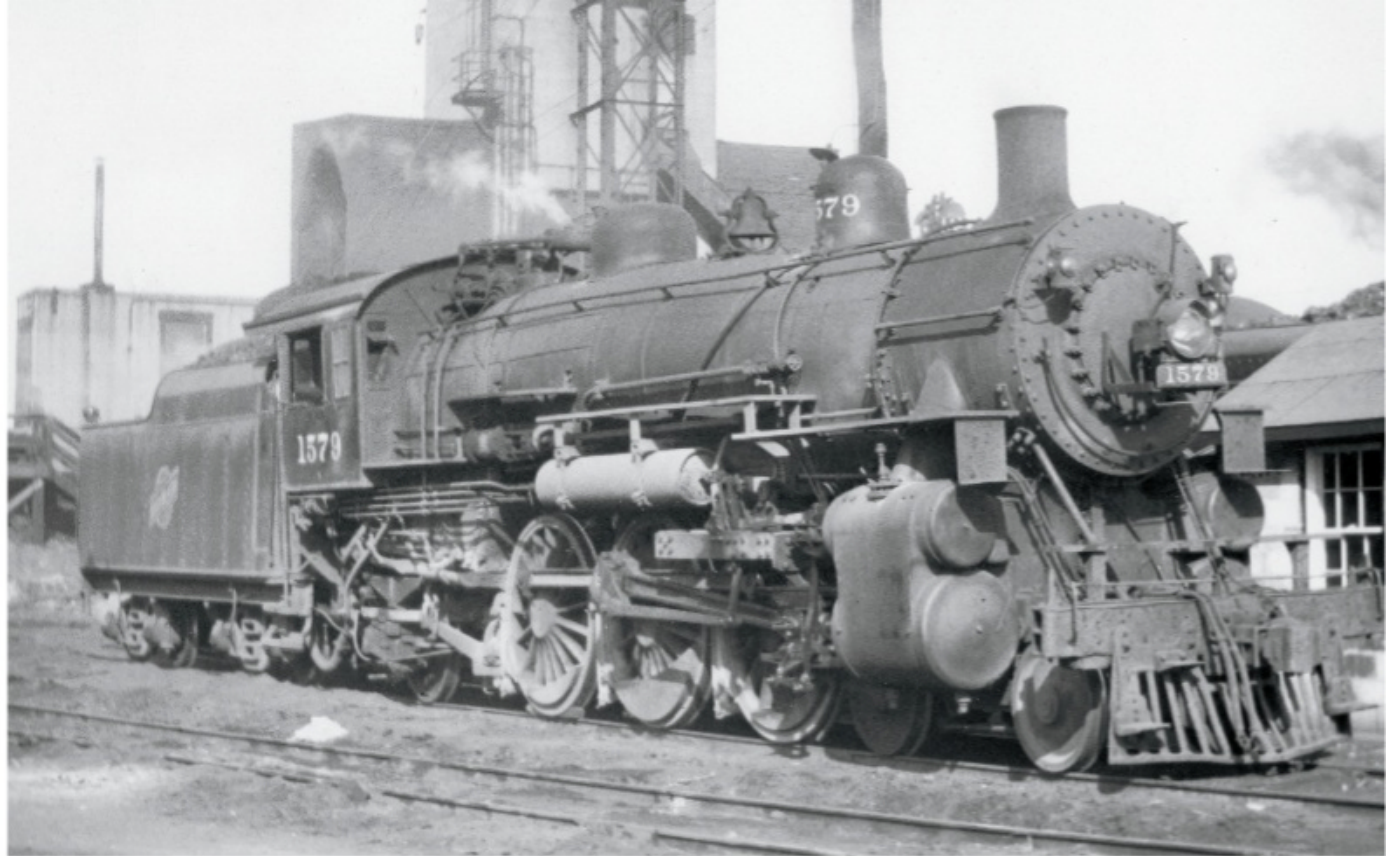
The C&NW wasn't the only railroad to build into town. In 1885, the Fox River Valley Ry. built a line north from Elgin, Ill., following the Fox River and entering Crystal Lake on the east side parallel to Main Street. When the Fox River Valley got to the C&NW main line, just east of the depot, the C&NW refused to let the railroad cross. According to *McHenry County 1832 to 1968*, by Lowell Albert Nye, after repeated efforts to make arrangements with no success, Fox River Valley workers tunneled underneath the North Western one Sunday to continue the line. The project was completed by Monday morning, and the Fox Valley's tracks are still there today.

Eventually the C&NW took ownership of the Fox River Valley Ry., and the line became its Geneva Division, running from West Chicago north through Crystal Lake and terminating in Williams Bay, Wis., on Lake Geneva, which was also a resort community where many wealthy Chicagoans kept summer homes. The C&NW ran two daily passenger trains from Chicago to Crystal Lake Junction (just east of the depot), and then north up the Geneva Division line to Williams Bay. That service lasted until 1975.

The C&NW built an engine terminal in Crystal Lake at the junction's southwest corner. It served locomotives running on either line. There was a concrete coal tower on the Wisconsin Division main line, west of the bridge over the Williams Bay line. The tower had chutes to reach both upper main line tracks and one that ran along the back of the tower to service engines on the track at the underpass. Next to the coal tower were two steel water tanks, nestled between the main line and the southwest connecting spur to the lower level. The water tanks fed several standpipes, stationed at the east and westbound depot platforms and in the engine terminal on the lower level.

The terminal had a 70-foot turntable and three layover tracks. In the 1800s there was a wood two-stall roundhouse, but that was gone by the 1920s. There was also a sand house, next to the easternmost garden track.

Most of the Geneva Division is gone today, but there are still some tracks in



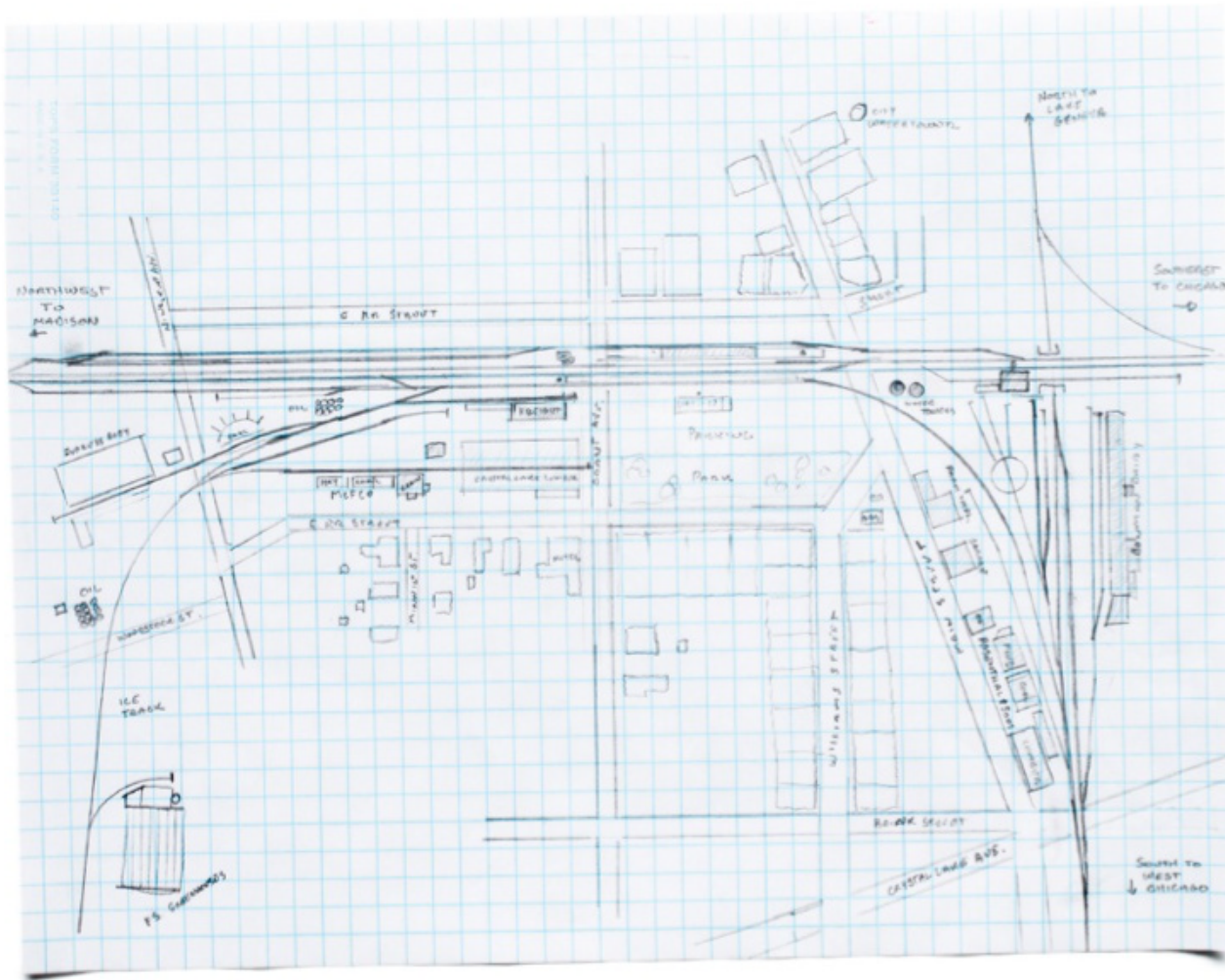
Chicago & North Western E-class 4-6-2 no. 1579 sits next to the sand house at the Crystal Lake engine terminal waiting for its next run. Although the concrete coal tower sat on the elevated Wisconsin Division main line, there was a chute that ran along its back side (seen just behind the locomotive's bell) to service locomotives on the lower-level Geneva Division main line. H.N.W. Hansen photo, David P. Morgan Memorial Library collection



A streamlined C&NW Pacific 4-6-2 races by the depot in the mid-1950s. Most likely this is train No. 500, the *Capitol 400*, a daily Madison-to-Chicago streamliner and one of the few passenger trains that didn't stop in Crystal Lake. Just behind the first car is the elevated crossing guard shack, which operated the crossing gates on Grant Avenue. The freight house is beyond the station at left. Mark Llanuza collection



This 1953 photo shows the local switcher and caboose on the grade that runs up to the depot as C&NW GP7 no. 1527 leads its train along the Geneva Division. The smokestack and buildings behind the Geep belong to the Bowman Dairy. Eugene Lewis photo, courtesy of the Chicago & North Western Historical Society



Before starting on the track plan, David used all the materials he'd gathered to make a master sketch. Drawn roughly to scale, the sketch set all the details and information into their proper places. Bill Zuback photo

the fact that the coal tower served both the upper and lower lines, and that the North Western used some of its Fairbanks-Morse H16-66 diesels to pull commuter trains in the 1950s. I also discovered that Crystal Lake saw various named through passenger trains, which started another project looking for timetables (see page 19).

My next stop was the Chicago & North Western Historical Society (cnwhs.org). Its publication, *North Western Lines*, is an excellent resource, and you can search the website by location to find issues that have references and photographs. There were more than a dozen entries for Crystal Lake, and fortunately for me, there's a complete collection of *North Western Lines* issues here at Kalmbach. Three of the magazines had new information, including photographs showing background details I hadn't seen before. Steve Jessup, the magazine's production editor, helped me get a couple of those photos for this article.

Railroad photographs are helpful, but with their limited fields of view, I still wasn't sure of any of the track arrangements – something that's vital for creating good track plans. Then I used Google to search for images of Crystal Lake. While there was little photographic help, it led me to a digitized sheet from an 1898 Sanborn Fire Insurance Map in the Library of Congress. The map showed the Crystal Lake depot and surrounding track and structures before everything was rebuilt in the early 20th century.

Sanborn maps provide a wealth of information if you can find them. The Library of Congress has a vast collection of Sanborn maps, but few are digitized, and so you'll need to travel to Washington, D.C., to view them. A town may have a dozen or more sheets in its own map collection, so even if you find an institution that will make copies and send them to you, you need to know which sheets to ask for. Typically, the first sheet of a Sanborn set of maps has a key on it that identifies which pieces of the town have been mapped and which sheet they're on.

The 1898 map was a great find but was 56 years off from the date on the photo that started the project. And it showed some track arrangements that were foreign to anything I'd found up to

place around Crystal Lake, extending south along Main Street to a small yard. In the summer of 1975, the American Freedom Train was parked at the end of that yard for several days. The engine terminal still has one or two tracks, and Union Pacific often keeps the local switcher tied up there.

To the north, the tracks are active to Ringwood, Ill. Union Pacific serves a Dow chemical plant in Ringwood and TC Industries north of Crystal Lake. Metra offers daily suburban service on the line north to McHenry, leaving the Wisconsin Division tracks at Crystal Lake Junction. Metra built a second Crystal Lake station at Pingree Road, about two miles east of the original depot. Both are actively used.

The information game

A big part of designing a layout based upon a real location is the

research journey. Finding that initial photo on page 18 may have started it all, but it left a lot more questions than it answered. I scoured the library's photo files and found just one more useful shot. This was taken in 1938 by H.N.W. Hansen, and it shows an E-class 4-6-2 Pacific at the engine terminal, as well as some details on the coal tower and a bit of the sand house in the lower right corner. (See page 21.)

From there, I turned my attention to books. The "In Color" series of railroad photograph books from Morning Sun are usually my second research stop, as often they are indexed by location. *Chicago & North Western in Color Vol. 1 1951-53* and *Vol. 2 1954-58* by Lloyd E. Keyser (Morning Sun Books, 1997 and 1999, respectively) had a handful of pictures taken in Crystal Lake. The books also provided valuable information, such as the size of the turntable,

A 1954 Crystal Lake schedule

All are passenger trains unless noted.

- | | | |
|---|--|---|
| 1. 578 Janesville to Chicago freight 2 AM | 7. 646 Harvard to Chicago 11:08 AM | Crystal Lake 5:10 PM |
| 2. 602 Commuter to Chicago 5:15 AM | 8. 635 Commuter to Crystal Lake 1:46 PM | 13. 663 Commuter to Crystal Lake 6:20 PM |
| 3. 626 Commuter to Chicago 6:30 AM | 9. 595 Chicago to Janesville freight 2:30 PM | 14. 500 <i>Capitol</i> 400 to Chicago 7:00 PM |
| 4. 630 Commuter to Chicago 7:28 AM | 10. 686 Commuter to Chicago 3:50 PM | 15. 673 Commuter to Crystal Lake 7:25 PM |
| 5. Crystal Lake Local begin 8:00 AM | 11. 506 Madison to Chicago 4:25 PM | 16. Crystal Lake Local switching duties end 8:00 PM |
| 6. 501 <i>Viking</i> to Minneapolis 9:54 AM | 12. 639 Commuter to | 17. 515 <i>Victory</i> to Duluth 9:53 PM |

this point. However, the map had one redeeming feature: It showed the lumberyard track that had been cut off in the center of Grant Ave. That track actually had run around the back of the depot to connect to the main line and had been a spur for a feed mill and a coal bin. When the railroad had taken up the depot track and torn down the mill and the bin to build a parking lot, they connected the lumberyard to the main line from the opposite end and cut the tracks at Grant Avenue. So I had to go back in time only 120 years to solve the original mystery!

Next, I checked HistoricAerials.com, a site I've used before for archival aerial photographs. Images on Historic Aerials are copyrighted, so unless you pay the subscription fee, you cannot view them without all the copyright information splashed across the pages. However, you can resize the image to get the copyright info to shift on the viewer, so the site can be useful for figuring out track arrangements.

Historic Aerials had a variety of eras to choose from for Crystal Lake, but all of the photos taken in the '40s and '50s were dark, blurry, or both. I had to go up to 1964 before I got a set of images that was bright enough to use, but by then many changes had been made around the railroad, particularly the loss of small trackside industries, so the images didn't help much.

More searching for aerial images brought up the Illinois Digital Archive. In particular, the archive has a complete set of aerial survey photographs taken of McHenry County in 1939. The photos are scanned as high-resolution .tiff files and are free. Like the Historic Aerial images, these can be grainy, but they were still useful. I downloaded the image above and cleaned it up in Photoshop. Unfortunately, it didn't help enough to make out details like turnouts, but it was easy to see that there was a lot more railroad in Crystal Lake than I'd ever guessed.

Mapping it out

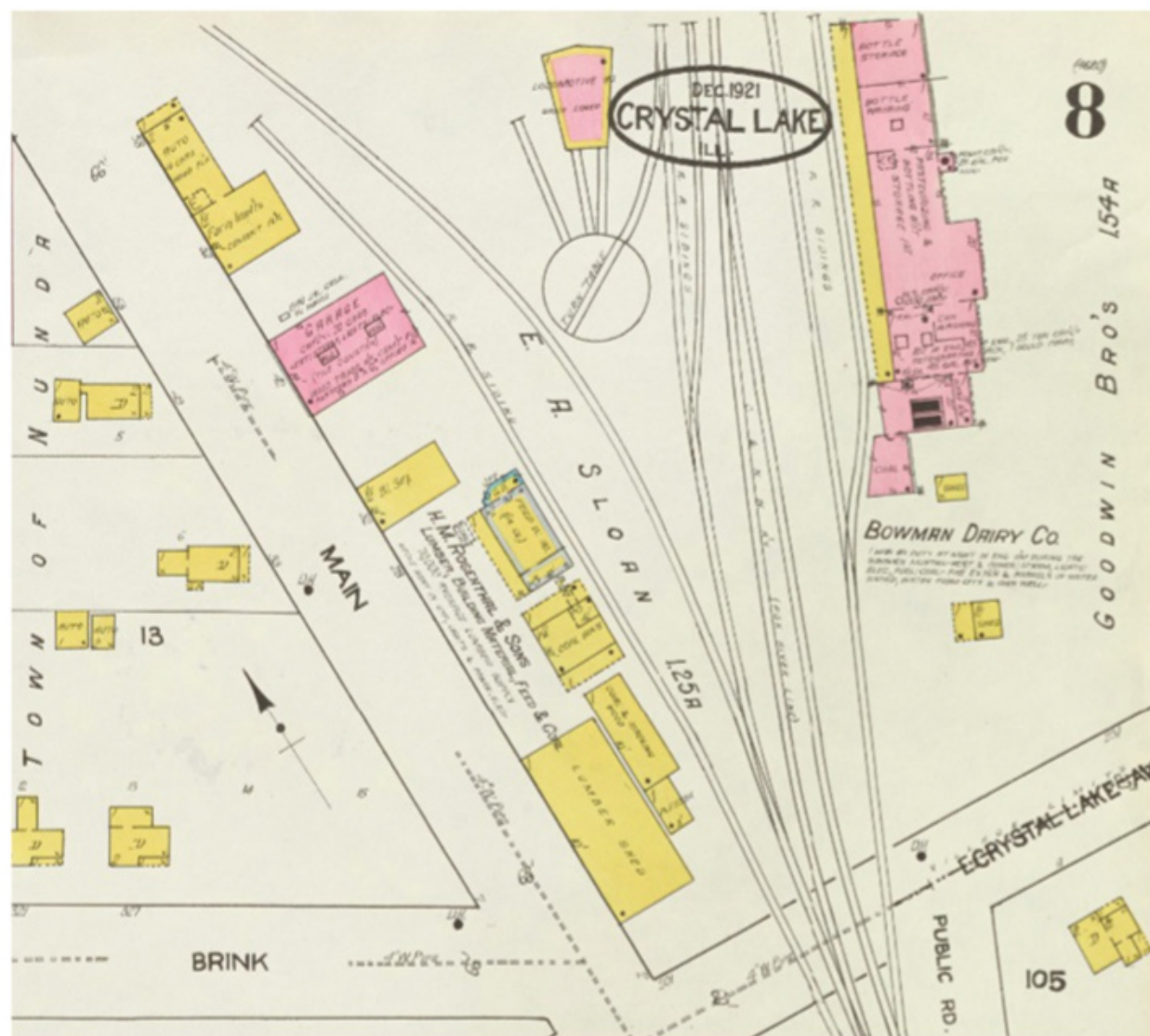
Back to Google, I refined my search for map images of Crystal Lake and finally found what I was looking for – better Sanborn maps. The University of Illinois has a digitized set of 1921 maps, four of which showed the station, the engine terminal, and the industrial tracks west of town. These maps were still 30 years out of date for a 1950s layout, but they were the best lead I'd had since starting the project.

Sanborn maps are a bit tricky to use for model railroaders. While they can be accurate to a fault for their intended



The Illinois State Archives has a complete 1939 aerial photo survey of McHenry County in digital form available on its website. Anyone can use the photos. They're not quite detailed enough to show things like turnouts, but they were helpful for determining placements of buildings and other larger features.

Courtesy of Illinois State Digital Archives



Sanborn Fire Insurance maps provide a wealth of useful information. Shown here is a detail of the 1921 set for Crystal Lake, featuring the Bowman Dairy, turntable, former wood roundhouse, and Rosenthal Lumber buildings. Courtesy of the University of Illinois Digital Archive



Typical C&NW 1950s suburban trains consisted of three or four coaches and a single steam or diesel engine. Here, a D-class 4-4-2 heads into Chicago with round-roof heavyweight coaches. H.W. Pontin photo, D. P. Morgan Library collection

Track plan at a glance

Name: Crystal Lake 1950
Size: 10 x 15 feet
Scale: HO scale (1:87.1)
Prototype: Chicago & North Western Ry.
Location: Crystal Lake, Ill.
Era: early-to-mid 1950s
Style: around the walls
Minimum radius: 30" (main), 24" (spurs)
Minimum turnout: no. 5
Maximum grade: 3 percent
Train length: 7 feet

purpose – building fire insurance – they tend to end in unfortunate places if there didn't happen to be something there to insure. Also, the placement of railroad tracks isn't always accurate.

As shown on page 23, the map showing the engine terminal provided helpful information as to the layout of the turntable area, but the map stopped before it got to the coaling tower, the mainline bridge, and the connections of the yard tracks on the lower level. All these details would have been just off the top of the page and therefore were never rendered.

The four maps were also disjointed. To create a clearer picture, I placed the images into Photoshop and arranged them so the known shared details, such as buildings, tracks, and streets, lined up. I then drew rough lines to connect the missing tracks.

One final map came from my friend Andy Roth, who works for Metra in Chicago. Andy was able to obtain permission for me to use a 1986 copy of an Engineering Department map. While the engineering map was 30 years in the opposite direction, it was still a useful tool. As a railroad makes changes to its infrastructure, the original engineering map is updated,

and often those updates don't fully obscure what used to be there. On the map I found that the turntable was still showing (even though it was gone), and the garden tracks hadn't been fully erased. Also, the sand house was still clearly marked, and I could see that the Bowman Dairy building had changed hands and was now the National Grain Yeast Corp. and no longer rail-served.

At this point, I felt I'd reached the final step in my design process before starting to draw ideas for track plans, which is to map it all out. I took my aerial images, my assorted maps, and the photocopies and prints of photos I'd collected and sketched out Crystal Lake as it should have been in the 1950s roughly to scale. Unless I was building the layout in an open field somewhere, there's no way that everything on my sketch would ever make it into the final design. This was simply my way to fact-check – making sure that what I thought was there, really should be there. My sketch for Crystal Lake is on page 22. I was then off to design a layout – or two!

A 1950s commuter terminal

The plan at right is for an HO scale layout that fits in a 10 x 15-foot space,

which could be a mid-sized bedroom, a garage stall, or one corner of a basement rec room. If you have a bit more room, the plan would really breathe a little if you could push it two more feet in either direction, but that isn't necessary for the commuter terminal to work well. Entry to the around-the-walls layout is a drop-down section at the west end of the town.

The key to maintaining the flow of traffic in this design is the traversing-table staging yard. I've included a six-track, 7-foot table in the plan, but with more space, that could be expanded in length and number of tracks. The 7-foot table will allow one steam or diesel locomotive and up to six 80-foot heavyweight coaches or 12 40-foot freight cars. You can get two, three-car commuter trains on each 7-foot track if you use the North Western's 60-foot suburban heavyweight coaches. The layout's compact size won't handle trains much larger.

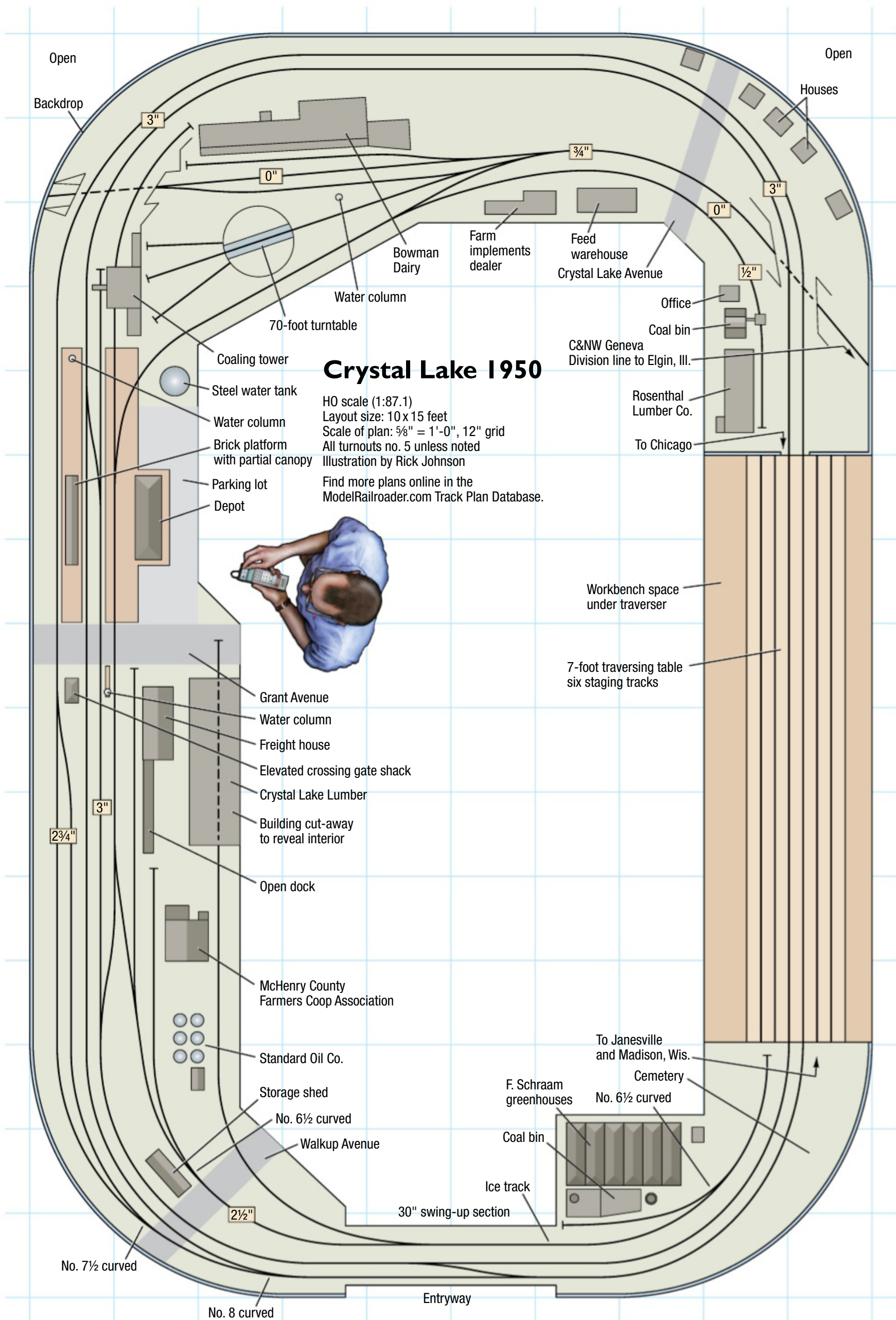
As shown above, the typical '50s C&NW commuter train was three to four cars hauled by either a small Pacific, Electro-Motive Division GP7, or Fairbanks-Morse H16-66. You could run either steam or diesels on suburban trains. The C&NW removed steam from commuter service on May 10, 1956.

Local switching could be handled by an R-class 4-6-0 or a GP7. The Bowman Dairy would be the busiest industry, as it shipped reefers of milk to Chicago daily. I cut the Crystal Lake Lumber Co.'s massive enclosed shed in half to facilitate reach, leaving it open to the aisle. It would make a great interior-detailing project. The grain elevator and the Standard Oil dealer are all placed inboard of the lumber-yard spur track to make it easier to reach the tracks deeper in the layout.

Although the Geneva line doesn't go anywhere, it has plenty of room for switching the dairy, Rosenthal Lumber,

What to run in the 1950s

- Commuter trains: small Pacific (4-6-2) or EMD GP7s and FM H16-66s. Four-axle 60-foot and 80-foot heavyweight coaches. First train from Chicago in the early morning and early evening would include a combine stuffed with newspapers for delivery to each station news agency.
- Through passenger trains: C&NW E-Class 4-6-2 Pacifics or GP7s with steam generators. Typical consist: one or more baggage cars, assorted coaches, a diner or buffet car, and a lounge. Sleepers for overnight trains. The equipment was a mix of heavyweight and streamlined cars.
- Freight: Class J 2-8-2 Mikado or two or three EMD F units or Geeps.
- Local switcher: An R-Class 4-6-0 Ten-Wheeler. After steam, handled by GP7s. Both used red wood cabooses.



Learning points

- Don't overlook your hometown.
- More states are digitizing their archival collections every day – but it can take some creative digging to find things.
- Suburban commuter terminals offer passenger operation in an economy of space.
- No matter how much you want to, you can never include everything from the prototype.
- Traversing tables are a useful staging solution for smaller layouts.

and the feed warehouse. Since the layout is set in the 1950s, the farm implements dealer could occasionally receive equipment on flatcars.

Operating the layout would include a truncated schedule of commuter trains, through passenger trains, and freights. After sending two or three morning commuter trains east, the westbound *Viking* would arrive for its scheduled morning stop at Crystal Lake. (The same train set could be used in the evening to represent the *Victory*.) Midday could see a commuter train in each direction, as well as a Chicago-to-Harvard freight, making setouts and pickups at Crystal Lake. The interchange cars could be assembled on the south end of the Geneva Division line, which is where the interchange yard was located, and brought up by the Crystal Lake local switcher. The local would then spend the afternoon kicking cars around various industries and the freight house until it gets sidelined by the afternoon commuter rush. I've included one idea for a train schedule (see "A 1954 Crystal Lake schedule" on page 22), but note that I've modified many of the prototype's schedule times to keep the model railroad interesting to run.

A changing road in the 1960s

One decade later, a lot had changed for Crystal Lake and the C&NW. Using the same 10 x 15-foot room arrangement, I designed a peninsula layout that uses one wall for a branch line, representing part of the Geneva Division north as far as McHenry.

Commuter service was still present in the '60s, but Crystal Lake wasn't always the end of the line anymore. With the loss of through passenger trains in 1965, some commuter trains were added that ran all the way to Harvard, Ill. To make it appear that some trains go beyond town, I've included a seven-track staging yard on the back of the peninsula. The yard could be expanded if desired.

The new decade also brought bright yellow bi-level Pullman coaches and push-pull operation. Trains that terminated at Crystal Lake still tied up on the same storage tracks, but with their motive power attached. Locomotives no longer need to be turned or serviced. The plan includes the engine terminal, but the water tanks, coaling tower, and turntable weren't used and could be removed. The terminal was still home to a local switcher, typically a GP7 or two, as well as one or two yellow steel bay-window cabooses.

The plan also reflects changes in industry. While the lumberyards remained, smaller rail-served businesses were gone. The Public Service of Northern Illinois took over one of the unused spurs on the town's west end for rail delivery of its utility poles.

Although the downtown grain elevator appears in the 1960s aerial photos, it was no longer used. As Crystal Lake grew, farmers shipped their grain from the modern elevator in Ridgefield, a few miles down the C&NW west of town. That complex, worked by the Crystal Lake local job, could be added to the end of the peninsula.

For added interest, I've included a piece of the Geneva Division in the plan, including the interchange yard to

Track plan at a glance

Name: Crystal Lake and McHenry 1960s

Size: 10 x 15 feet

Scale: N scale (1:160)

Prototype: Chicago & North Western

Location: Crystal Lake, Ill.

Era: mid-1960s

Style: peninsula and shelf

Minimum radius: main line 16"

Minimum turnout: Peco medium radius

Maximum grade: 5 percent

Train length: 3'-6"

offer a bit more switching. Vulcan Materials had a rail-served gravel pit just southeast of the yard. Small strings of loaded sand and gravel cars could be staged there for pickup and empties returned from the main line.

The Matthews Machinery Corp. moved into Crystal Lake in the '60s just north of town. It built grain dryers and shipped them by flatcar for export year-round. Terra Cotta Industries continued to expand its foundry operation and had a long spur running through a wooded valley to reach the plant. I've represented it as a simple track that disappears into a clump of trees to be used for swapping cuts of inbound and outbound cars.

McHenry had a propane dealer, two lumberyards, and a rail-served farm supply. The Crystal Lake local would work these industries, storing outbound cars in the interchange yard for pickup by one of the through freights on the Wisconsin main line.

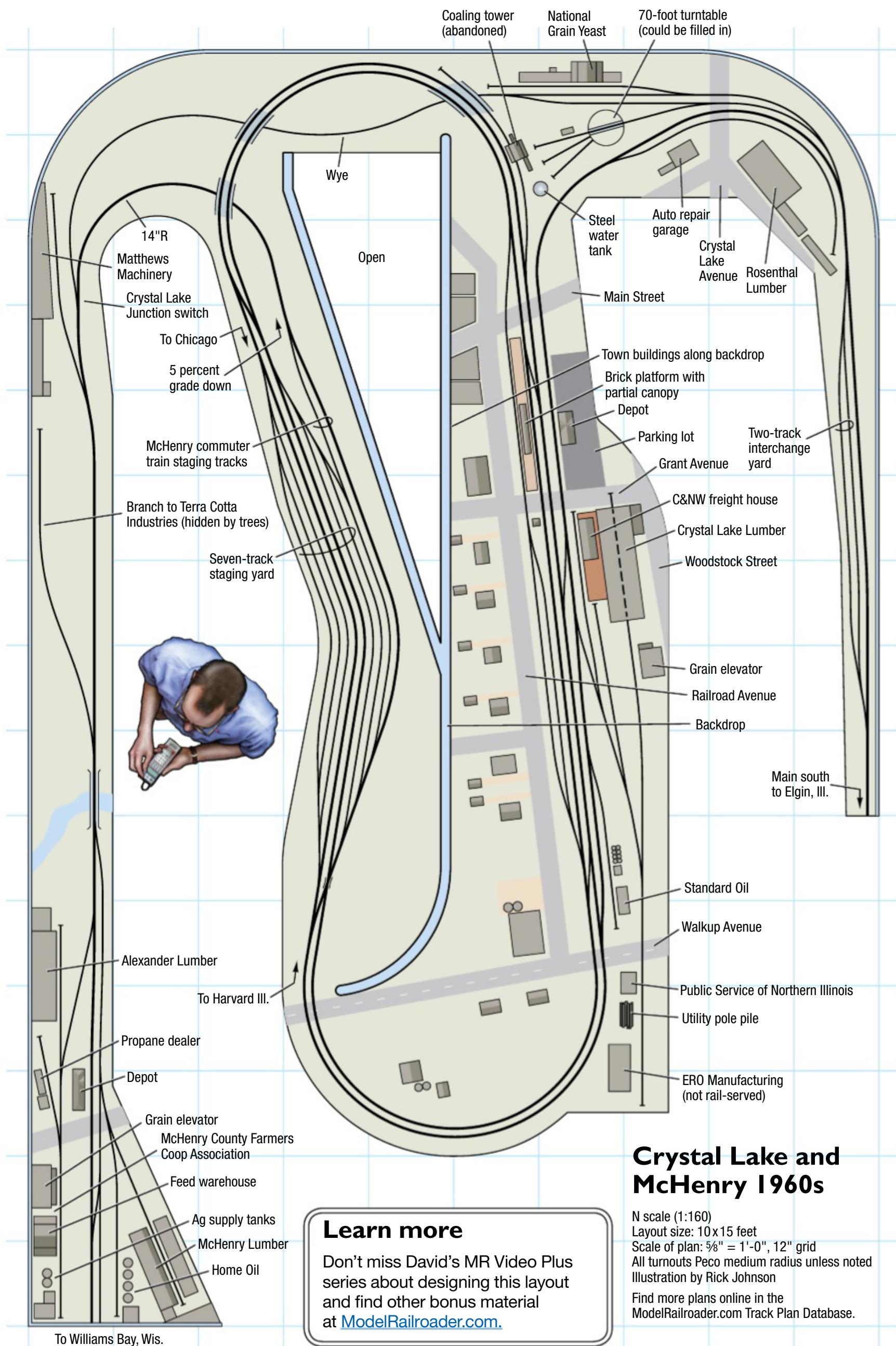
McHenry also had its own station. Commuter trains from Chicago to McHenry left the main east of Crystal Lake. I've included a connection with a steep grade and a sharp curve (like the prototype) so trains can run to the McHenry line from staging. Since the junction is on the east side of town, trains to and from McHenry didn't stop in Crystal Lake.

Hometown home run

As I do with every model railroad I design, I let it sit for a few weeks and then evaluate the plan. If it weren't for the library photo and those mystery tracks, I'd never have considered my hometown line as a project. That would have been my loss. A prototype location that supports passenger operation in a compact way is a rarity, and on those merits alone, I'd be excited to model Crystal Lake in either era. **MRP**

What to run in the 1960s

- Commuter trains: EMD F7 and E8 diesel locomotives in yellow paint. Four-axle bi-level Pullman-Standard commuter coaches. In the '60s the North Western used some of its streamlined rolling stock as club cars for a few of its evening commuter trains. (I recall usually seeing the club cars on the trains that ran to Harvard.)
- Freight: New SD40s found their way on to the line as soon as the North Western received them, as well as a mix of smaller multiple-unit road power, such as Geeps and F units.
- Local switcher: GP7 with a bay-window caboose.



Learn more

Don't miss David's MR Video Plus series about designing this layout and find other bonus material at ModelRailroader.com.

Crystal Lake and McHenry 1960s

N scale (1:160)
 Layout size: 10 x 15 feet
 Scale of plan: $\frac{5}{8}$ " = 1'-0", 12" grid
 All turnouts Peco medium radius unless noted
 Illustration by Rick Johnson
 Find more plans online in the ModelRailroader.com Track Plan Database.



Layout in the family room

A model railroad can be a welcome houseguest

By **Bernard Kempinski**//Photos by the author

Many of us dream of having a large model railroad in a basement or garage, with scale miles of track and long trains. But we're often confronted with the reality of a lack of separate space to dedicate to a layout. By re-examining the space we have, it might be possible to build a layout in another part of the home that shares other family activities. It would take a tolerant spouse to agree to building a layout in the formal living room, dining room, or master bedroom. But family rooms and dens, with their ubiquitous televisions and children's toys, are fertile ground for a model railroad.

That's exactly what I did. When I wanted to build a modern HO layout

to complement my existing O scale Civil War-era layout, I looked to the family room in my basement. I'll explain in more detail how I designed, built, and now operate an interesting and engaging model railroad in such a way that it still allows use of the family room for more traditional activities.

Design considerations

When designing a layout for a family room, some of the customary factors for planning a model railroad take a back seat. For example, we normally look to maximize the mainline run in most layout designs. Typical ways to achieve that are by adding peninsulas that protrude into the central area of the room and by minimizing aisle

widths between those peninsulas. However, peninsulas are restricted when you have to retain functionality of the room for other uses. Most of the available area must be kept open for couches, chairs, and people.

For example, the family room in my basement also serves as a crew lounge for my existing railroad. My family and I watch movies and sometimes play video and war games in this space. I also use this space as a work studio for modeling projects that are too big for my workbench.

It became apparent that a layout design would be limited to an around-the-room shelf without any large peninsulas or turn-back curves. The layout shelf would have to be mounted high



enough to provide clearance below for a television and other electronic devices. I've found that 48" to 52" from the floor is a good range of heights for my model railroads.

In this case, by making the track level 51", I was able to run a track under the stair landing to a staging yard in the adjacent closet. This also allowed 3" of clearance above the TV, which is 48" high at the top edge.

After operating the layout for a year, I added a 4-foot extension in the form of a stub peninsula off the right side of the layout. The peninsula allowed me to enlarge the boxcar facility and provided room for a large model of a bulk-carrier ship. This peninsula doesn't impinge too deeply on the open area and still allows ample space for couch and chairs.

Layout construction

To create a neat look for the layout structure, I used Ivar bookshelves from

Ikea for the benchwork. I compared the price of the Ivar shelves with home-made plywood shelving and found the Ivar was less expensive and easier to build. Moreover, assembling Ivar shelves requires few tools.

The Ivar pieces are unfinished when they come from the store. That's good for a workshop or storage closet, but they could use some refinement for use in a family room. I stained the posts black to match the electronics in the room. I left the shelves natural wood to avoid problems with storing books on them, as I've found that some books tend to stick to shelves that have been coated with polyurethane or other varnish. I treated the posts with Minwax Pre-Stain Wood Conditioner (water based). Then I applied Minwax Polyshades Black Stain. This latter product isn't water soluble and needs six to eight hours to dry.

After the posts dried overnight, I assembled the shelves around the

This HO railroad complements rather than detracts from the décor in Bernard Kempinski's family room. Model railroads can be part of casual spaces at home. Ikea Ivar shelving supports the railroad and provides ample storage space.

perimeter of the room. The new shelves expanded the amount of storage in the family room by about 250 percent. This allowed me room to display my dioramas and small collection of 1/43rd scale model Porsche race cars alongside the television and audio equipment.

With the shelves in place, I constructed the open-grid frames for the layout with 1 x 2 lumber and foam sheets. Open-grid frames are a little trickier to build than venerable L-girders, but they require less vertical clearance – a key advantage in this project.

I first screwed a 1 x 2 pine board to the wall. That created a ledger – a horizontal support piece normally



A photo backdrop greatly extends the scene, but the *Danica Marie* is a model Bernie built using a radio-control ship hull as a starting point.

installed to support the ends of a structural component for a deck, a porch, or other structural system.

Next, I cut the joists to size with a chop saw (also called a power miter saw). The chop saw easily creates nice, square edges on the ends of the joists. If you don't have a chop saw, a saber or circular saw could be used, but it will be more difficult to get square edges. A hand saw and miter box are another, more time-consuming, option.

With the joists cut, I used a Kreg pocket screw jig to create holes for screws on each end of the joist. Those pocket screws allowed me to screw the joists to the ledger from the inside of the grid. One could use a cleat attached to the ledger to avoid the use of pocket screws. But a pocket screw jig costs about as much as adding a cleat and will provide years of service on other projects.

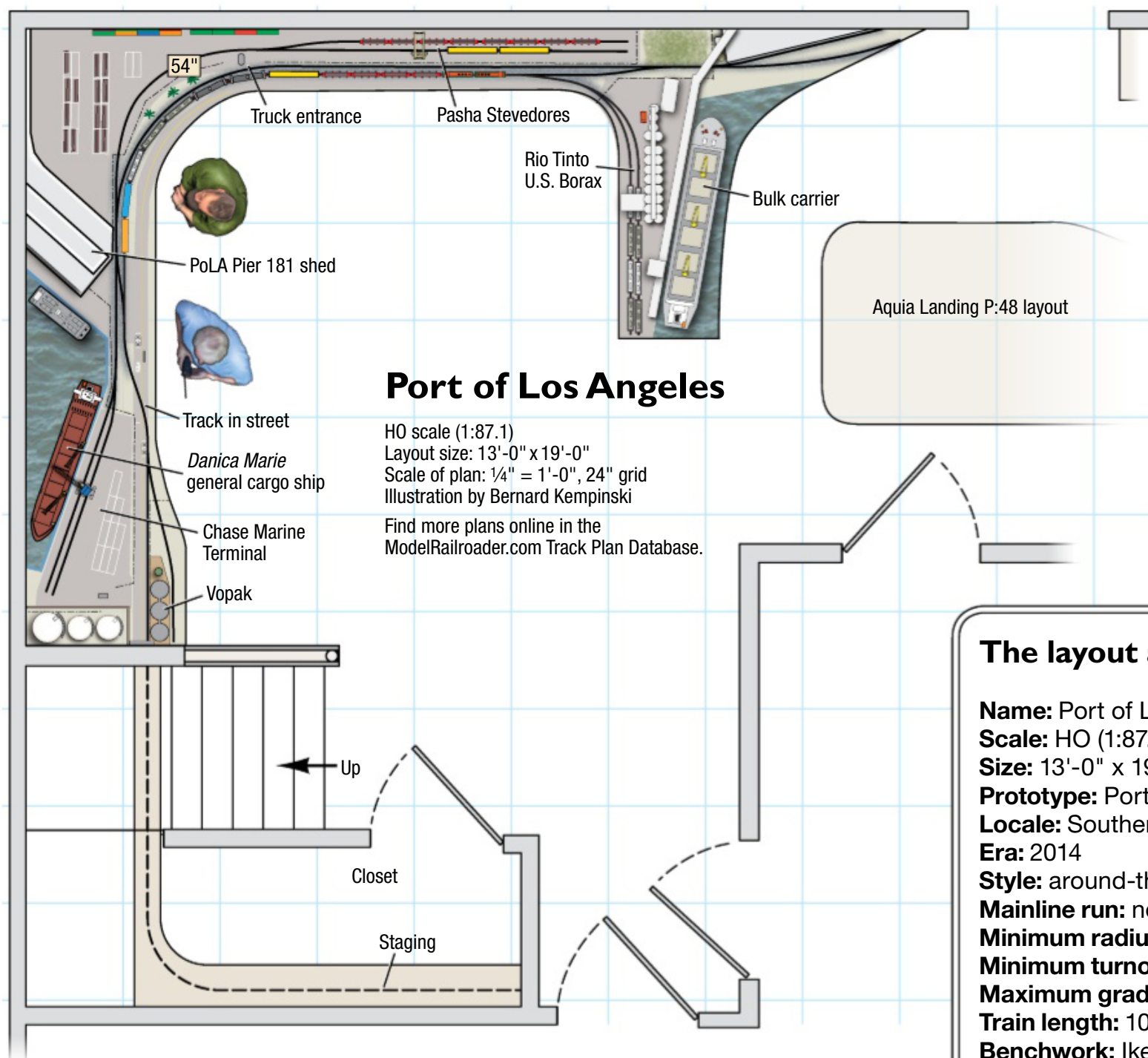
I added a second beam to the outside of the joists, again with pocket screws



Even this relatively modest-size HO railroad supports running three spanking-new BNSF Ry. six-axle General Electrics as they rumble by the pier shed of Berth 181 at the Port of Los Angeles.

on the joists. This created an open-grid frame that looked like a ladder. In addition to the ledger screwed to joists in the wall, I secured the frames to the top of the Ivar uprights with screws. This locked the shelves to the wall and made a very sturdy structure.

Alternatively, you could build the open-grid frames on a workbench without pocket screws and then screw the whole assembly to the wall. This means screwing through the beams into the end grain of the joist. That type of joint isn't as strong as using pocket



The layout at a glance

Name: Port of Los Angeles
Scale: HO (1:87.1)
Size: 13'-0" x 19'-0"
Prototype: Port of Los Angeles
Locale: Southern California
Era: 2014
Style: around-the-walls shelf
Mainline run: not applicable
Minimum radius: 30"
Minimum turnout: no. 6
Maximum grade: none
Train length: 10 to 12 cars
Benchwork: Ikea Ivar shelving
Height: 51"
Roadbed: cork
Track: code 83
Scenery: foam sheets
Backdrop: photo mural
Control: EasyDCC by CVP



Ikea's Ivar shelving forms lightweight, but sturdy, benchwork when attached to the wall. The shelving below the layout is an added bonus.

screws. Another advantage of using a ledger and pocket screws to build the open-grid frame in place is that you can easily account for minor variations in squareness that the walls might have.

The construction went quickly. The walls were square, which made things

easier. There was a slight slope to the floor, so I had to adjust for that.

To make the fascia, I ripped 1/4" tempered hardboard into 4"-wide strips. If you don't have a circular saw or table saw with the proper blade, you can have the lumberyard cut these parts for

you. I secured the fascia to the open grid with construction glue and some countersunk screws. I then puttied the screws to create a smooth surface. I painted the foam benchwork and fascia a grayish-tan color. The result was a neat and uncluttered fascia.

As I examined the fascia and its interaction with the TV and shelves, I was concerned that the fascia was overhanging the top of the TV by an inch or so. But this turned out to not be a problem when viewing the TV seated on the sofa or chairs, because the viewers' eyes are closer to the floor.

To keep the layout uncluttered, I avoided placing any location signs, waybill boxes, or other impedimenta on the fascia. Since I used Micro Engineering turnouts with dead frogs, there are no knobs or switches on the fascia to move the switch points. The

The prototype

This layout was built to support my 2017 book for Kalmbach Media, *Waterfront Terminals and Operations*. So it had to be a railroad with a marine terminal theme. But I wanted to model a switching railroad where large modern diesels in multi-unit consists switch long cuts of cars. I also wanted to include street running and varied cargo.

Following an afternoon of railfanning at the Port of Los Angeles while on a visit to California, I knew it would fit the bill for my modern switching layout. The twin ports of Los Angeles and Long Beach are the busiest container ports in the United States, with more than 7.5 million containers handled annually.

But the ports are more than just a series of container terminals. In their 10 square miles are dozens of other terminals and wharves for break bulk, project cargo, liquid bulk, scrap metal, bulk mineral, and aggregate terminals. There are also fishing-boat docks, ferryboat ramps, and cruise-ship terminals. When those businesses are included, the twin ports are the third busiest in the world.

The Pacific Harbor Line (PHL) provides all rail movements on 75 miles of port-owned track. It offers interline, intra-plant, intra-terminal, and inter-terminal switching; car storage; unit train movement; and intermodal car repositioning. It dispatches all BNSF Ry. and Union Pacific (UP) trains within the ports and serves nine on-dock intermodal terminals.

Westbound intermodal container trains that arrive at the port hand their trains off to PHL. Pacific Harbor Line can use those locomotives or they can swap them with PHL locomotives. Pacific Harbor Line crews will take the trains to the various marine terminals for loading onto the ships. The reverse process works for outbound trains from the port. Pacific Harbor Line will hand off those trains to UP or BNSF Ry. at their respective yards.

Container traffic comprises the majority of the work, with more than 2.4 million containers moved on the PHL in a year, about one third of all containers that move through the twin ports. This works out to about 140 intermodal and unit trains every day.



This photo inspired the layout. It shows modern six-axle diesels being dwarfed by ships and cranes. These BNSF Ry. engines have Pacific Harbor Line crews.

Pacific Harbor Line also handles traditional manifest traffic such as boxcar, hopper car, tank car, and automobile racks. That amounts to about 40,000 carloads annually.

Pacific Harbor Line has 25 locomotives. Most are older units rebuilt to modern “green” standards. It’s been repainting its locomotives in a black-and-silver zebra livery reminiscent of the Atchison, Topeka & Santa Fe.

While containers are the main business of the ships and railroads in the port, this layout focuses on Mormon Island, a small section of the Port of Los Angeles that doesn’t get a lot of container traffic. What it does get is a nice variety of other rail traffic, including covered hoppers, tank cars, gondolas, boxcars, auto racks, skeleton cars for steel slabs, and cars for other special project cargo like windmill parts and transformers.

Mormon Island was originally a sandbar in San Pedro Bay. After a century and a half of dredging, filling, and construction, it’s now a peninsula surrounded by the basins and manmade islands of the Port of Los Angeles. The island is largely an industrial area, with no homes and few retail businesses.

The industries on the island have changed over the years. In the contemporary time period this layout models, the primary industries are the Rio Tinto Borax factory, Pasha Stevedoring Terminal, and three petroleum terminals. Only Rio Tinto and Pasha are served by rail by PHL now.

There are four main industries included on the layout: Rio Tinto U.S. Borax, Pasha Stevedoring & Terminals, Vopak, and Chase Marine Terminal. The track plan is based on the prototype with some embellishment to add operational variety.

The first industry on the layout is Rio Tinto U.S. Borax. Development of borax mines in Death Valley in the late 19th and early 20th centuries made California the world’s primary producer and exporter of borax. In 1924, Pacific Coast Borax Co. opened a plant on Mormon Island. The company is best known for its iconic trademark, the Twenty Mule Team, which 40 years before pulled 36-ton wagon loads of borax out of Death Valley.

As a commercial product, borax has numerous applications. It’s the active ingredient in cleansers and soaps and is an additive in glass, enamels, fertilizers, fire retardants, cosmetics, and medicines. After several mergers, Rio Tinto, a London-based international mining corporation, purchased the facility in 1968.

The model layout includes most of the tracks that support the borax plant, although a bit compressed. The plant gets covered hoppers, tanks cars, and boxcars delivered to it by the railroad.

Pasha Stevedoring & Terminals L.P. is the third-largest independent West Coast terminal operator, holding several long-term leases with the Port of Los Angeles. On Mormon Island, Pasha operates an omni break bulk and container terminal that handles general, project, heavy-lift, and specialized cargoes of all shapes and sizes: yachts, transformers, heat exchangers, 428-ton petroleum cracker excavators, 125-foot-long refinery reactors, agricultural equipment, and windmills.

The prototype Pasha facility has four stub-ended tracks in its yard. Due to space constraints, the layout

includes only two, but they're quite long and can host nine cars each.

The Pasha Terminal specializes in handling steel slabs from rail cars to ships. It has quayside gantry cranes, shown on the photo backdrop, that lift the 13- to 44-foot-long steel slabs from the holds of ships. They use extra-long-wheelbase, heavy-lift forklifts to transport the slabs to the railroad sidings on the terminal.

Then, 100-ton Mi-Jack rubber-tired gantry cranes load the slabs onto railcars that were jointly designed specifically for this operation by BNSF Ry., California Steel Industries, and Pasha. The railcars are 52'-6"-long skeleton-type cars that can handle loads of 240,000 pounds. The cars have safety uprights to eliminate slab shifting or rotating during movement. The layout includes slabs of steel and coils in the storage yard as Pasha also handles coils. They're an inexpensive and fun detail to make.

Pasha also handles new 53-foot containers for use on U.S. highways. These containers are made in China and elsewhere but can't be carried on standard container ships. Instead, general cargo ships carry them as project cargo in their holds. The terminal uses its gantry cranes and yard goats to haul the containers to storage areas to await transport by truck or rail. The layout includes stacks of new, unweathered 53-foot containers to simulate this cargo.

Vopak North America is the current tenant of Berth 187. Berth 187 is on the opposite side of the basin from Mormon Island, but I included it on the layout for extra switching activity, as it receives and ships out products in tank cars. It operates the tanks and equipment that store and transfer liquid oil products, chemicals, vegetable oils, and liquefied gases between ships, trucks, and rail.

Chase Marine Terminal, named after my son, is a freelanced terminal I included on the layout for extra switching opportunities. The terminal features two on-dock tracks where cargo can be loaded direct from rail to ship. Docked at Chase Marine Terminal is the general cargo ship, *Danica Marie*, named after my daughter. – *Bernard Kempinski*

engines have Digital Command Control (DCC) stay-alive circuits to allow reliable operation over the dead frogs.

To guide crews to industry locations, I provide a map on a clipboard. In most cases, the industries also have names on the modeled surfaces.

I didn't add any special lighting for the layout. The normal recessed can lights with 120W equivalent light-emitting diode floodlights do a good job of illuminating the layout.

The backdrop is a key feature of this layout since the scenery is flat and mostly paved concrete. I normally like to paint my backdrops, but painting the heavily industrial environment of the port would have been a challenge. Instead, I created a 33-foot panorama in Photoshop using many images I took in the port. I sent the file to LARC Products, which printed it on peel-and-stick vinyl. Installing it was easy with the help of my wife.

I usually prefer to have the backdrop extend to the ceiling to create a more immersive experience when viewing the layout. But the photo backdrop, which extends only 18" above the track level, works better in a family room setting.

Operations

The layout is largely complete and operational. This is a one-train-at-a-time operation. We usually use two-person crews, as the car cuts are long and a second set of eyes is useful when switching long trains.

We use switch lists without car cards to govern movement of cars on the railroad. I use a "scenario system" to set up the operation sessions. A full description of a scenario system is beyond the scope of this article, but, to put it briefly, the scenarios are inverses of each other. So when one operating session is complete, it sets up the start of the scenario for the next operating session.

I've hosted dozens of operation sessions. Despite the layout's relative simplicity, it's usually in high demand by my operators. One satisfied operator said, "This is all one needs for a layout." So if you think you don't have space for a realistic and challenging layout, look to see if your model railroad can be a guest in some other space. **MRP**

Bernie Kempinski is a prolific modeler and author. Born in Brooklyn, N.Y., he resides in Alexandria, Va. After military service in the U.S. Army, he retired from a 35-year career as a defense system analyst. He now works on his layouts and runs Alkem Scale Models when he and his wife, Alicia, aren't golfing.

Learning points

- Building a layout atop shelves needed for other purposes doesn't have to be intrusive.
- Layouts in family-use areas need to have the look of furniture.
- Ikea Ivar shelving components are inexpensive and speed up benchwork construction time.
- Even big-time modern railroading with six-axle locomotives can be right at home in a relatively modest area.
- Many crews prefer switching operations over road hauls.



Bernie used a Kreg pocket screw jig to avoid inserting screws into end grain at butt joints. This tool isn't expensive and has many household applications.



The Ivar legs were stained black for a more finished appearance, but Bernie left the shelves natural wood to avoid any chance that books would stick to a varnished surface.

Learn more

Don't miss David's MR Video Plus series about designing this layout and find other bonus material at ModelRailroader.com.



The Espree in the UK



Modeling a railroad 5,400 miles away from home

By **Brian Moore** // Model photos by the author

After living in the same house for 25 years, my wife, Jane, and I finally relocated in 2016. Following temporary relocation to facilitate major renovation, we returned to our refurbished home in March 2017. Jane gifted me sole occupancy rights to the basement, which measures 15 x 25 feet, almost the whole footprint of the house.

The vital spark

Like many of us, my model railroad-ing journey started off in childhood, then stalled when I reached about 14 due to a developing interest in what Frank Zappa described as The Opposite Camp. It was kick-started again in 1985 when I chanced across a book in a public library in Exeter, where I was living at the time. I'm not referring to the small city in California, but to the

original, much bigger Exeter in the southwest of England. I'd relocated there the year before, following my first quarter-century in Glasgow, Scotland.

The book was *Modelling Historic Railways* (Haynes Publishing Group, 1985) by David Jenkinson, and it enthralled me. Completely British in subject matter, it introduced the idea of planning for operation. Jenkinson wrote chapter upon chapter and in fascinating detail about all the essential ingredients and compromises required to portray and to operate model trains in a realistic environment, including how to capture the essence of a prototypical track layout when boiling it down to the available space. It was a revelation. I knew any subsequent railway modeling I'd do would be guided by Jenkinson's principles.

Following a move to nearby Plymouth, I built my first layout since my early teens, a small British-outline N scale transition-era effort, and the subsequent availability of an 8 x 18-foot loft space allowed this interest to develop.

Visiting the full-size SP

By the mid-1990s, I was a regular reader of *Model Railroader*, and it introduced me to a new world of modeling options. The developing operational possibilities offered by Digital Command Control (DCC) were a joy to contemplate. I picked up the first issue of *Model Railroad Planning* in 1995, and I've bought every MRP since. It's full of the same stuff that fascinated me in Jenkinson's book. His observations on capturing the essence of a real track plan are no less than an independently realized British version of MRP editor Tony Koester's Layout Design Elements. [LDEs are visually and operationally recognizable representations of prototype locations. – Ed.]



I A new home with a 15 x 25-foot basement gave Brian Moore plenty of room to re-create Southern Pacific's steam-to-diesel transition-era operations in Southern California in HO scale. Here, SP 4-8-4 no. 4449 passes the Guadalupe depot with train No. 98, the *Coast Daylight*. The prototype no. 4449, painted in *Daylight* colors, is still in operation today.

I was up for a change in modeling direction by the time we took a family vacation to California in 2000, and within days of landing at LAX, I purchased a DCC-ready HO scale Bachmann Spectrum 2-8-0 (see page 41) and some boxcar kits.

I already knew something of the Southern Pacific Lines (SP) from MR, and a drive from Los Angeles to San Francisco followed by another down the peninsula to Monterey alerted me afresh to the existence of SP's Coast Line. I was immediately smitten by this mostly single-track line that linked San Francisco to Los Angeles, with its appealing locations and the variety of



2 The full-size eastbound *Coast Daylight* passes the Guadalupe depot in April 1954 (top). Note how clean and sharp the depot and the surrounding environment looks. The tall trees (removed in 1955) are conveniently out of the scene on Brian's version of Guadalupe, as they'd get in the way of yard operations, but he "borrowed" them for the photo. Prototype photo by Bill Olson

trains that ran across it in the steam-to-diesel transition era. The process of learning about a 1950s railroad located in a place half the world away from where I live is a continuing one, and it started on that California holiday.

In the meantime, I dismantled and sold off my British N scale models to fund the purchase of a decent amount of HO track and later a Lenz DCC system. I also joined the Western Union Division of the National Model Railroad Association (NMRA, British Region) in Plymouth, where I found a small group of modelers who were kindred spirits.

The great leap forward

Here in the U.K., the NMRA British Region deals almost exclusively with North American model railroading, since vast numbers of organizations and societies already support indigenous British- and European-outline modeling. Following a few years of jointly running Anson Yard, a portable 12 x 42-foot HO scale single-location, freelance North American layout built in the shape of a big oval with a rear hidden storage yard, we became more interested in running trains with a purpose. We had a lot of fun attempting to operate more prototypically with Anson. In the meantime, I learned more about SP's operations along the Coast

Line, and I started to collect locomotives and rolling stock appropriate for my favored transition period.

In 2012-13 at the club, we began to recognize the benefits offered by HO modular railroading, and several members built individual modules (mostly 8 to 16 feet in length) to the agreed NMRA British Region single-track modular standards. I then constructed my own 24-foot module, "Quisling, Calif.," a proto-freelanced small city in central California served by the SP and featured in the December 2018 and January 2020 issues of *Model Railroader*. I carry it to the club every month, and to a much bigger regional modular event each May.

Quisling (see page 40) allowed me to hone my modeling skills. It also served as a test bed to run, film, and shoot videos of my developing 1950s Coast Line equipment.

Long-distance information

As our small group gradually built and began to use our modules regularly, it soon became apparent that, if they were just set up and joined together, switching work could be compromised if more than one train ran on the railroad. We quickly grasped the need for simple single-track "spacer boards" to be fitted in



3 Alco RSD-5 no. 5307 switches reefers at the Bailey-Maulhardt and H.E. Tabb packinghouses in Guadalupe. Brian's layout is set in September 1954, when diesel and steam locomotives operated side-by-side on the Espee.

nonstop parade of trains, even in the mid-1950s. In the daytime hours, the passenger varnish was limited to one service running both ways, in the shape of the famous Southern Pacific *Coast Daylight* (trains 98 and 99). Then there was the single mail train, the *Coast Mail* (71 and 72). Unlike the classy *Daylights*, the east- and west-bound *Mails* stopped almost everywhere, each and every day.

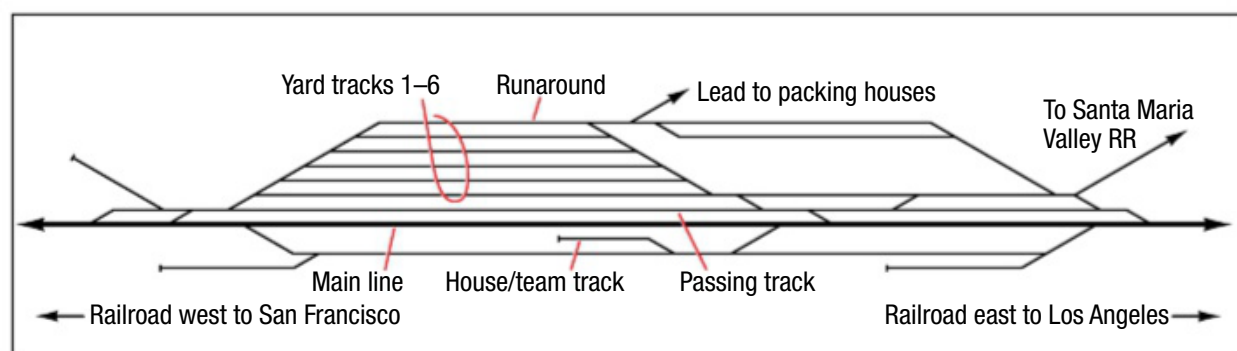
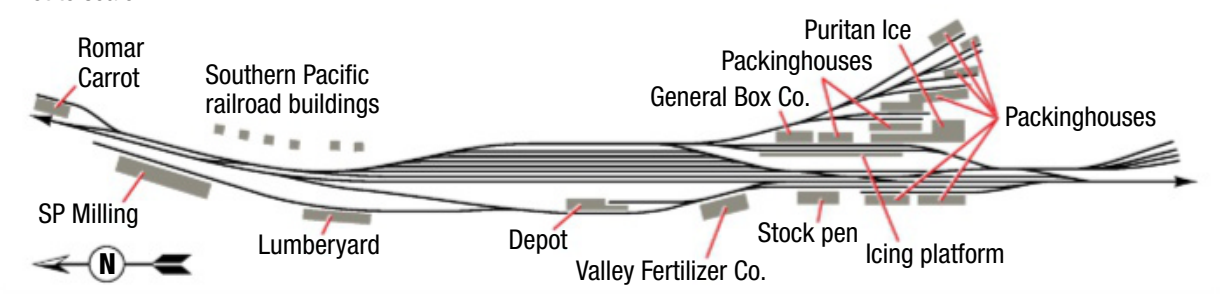
Several through freights also ran in both directions across the division daily, but they only stopped at SLO to be worked on. At night, there were another two passenger trains, the *Lark* and *Starlight*, plus the "Overnight" fast freight of jet-black boxcars.

The switching at locations on either side of SLO was mostly enabled by two local freight services (one for north, one for south), both of which began and ended their journeys in the SLO yard. Photos suggest that the majority of these local trains rarely exceeded 10 cars and a caboose in length.

Examining the route of the 1954 Coast Line as it headed compass south from SLO yard to Santa Barbara (the Guadalupe Subdivision) and eventually to Los Angeles, the single-track main line initially snaked through a lot of open country and several small townships including Oceano, with its rail-served packinghouses. Things got even more interesting at Guadalupe, which featured a yard, lots of packinghouses, an icing platform, some other rail-connected businesses, and an interchange connection with the shortline Santa Maria Valley RR (SMVRR). The SMVRR link added oil, sugar beets, boxcars, and ever more

Guadalupe, Calif., ca. 1954

Not to scale



reefers to the variety. There are 24 real railroad miles between San Luis Obispo and Guadalupe.

The planets finally align

I realized that by modeling this section of the Coast Line and not San Luis Obispo itself, there was far less of a need for lots of expensive steam locomotives. I already owned the rolling stock required to assemble at least a stand-in version of most of these trains, including provision for a few of the longer through-freight drags.

Additionally, there were no turntables or locomotive sheds to be found along the 24 miles, not even at Guadalupe, which by 1954 featured the first steam locomotive servicing facility south of SLO in the form of a single water column. The industries and packinghouses between SLO and Guadalupe were normally served by the Guadalupe Local, and with the lack of a turntable at Guadalupe, engineers usually decided to run their 2-8-0s tender-first on the outward journey.

The return home was normally in darkness, with the concomitant greater

chance of hitting a vehicle on an unguarded grade crossing, so they preferred to have the increased protection of their locomotive in front at night. In short order, this part of the Guadalupe Subdivision became ever more attractive.

All of the necessary planets gradually and unexpectedly came into alignment just as my research nailed the great possibilities that this route offered for relaxed, varied, prototypical, and, above all, achievable model railroading fun. With a lot of planning and thinking already sorted in my head, I began to ponder how much operation and running distance I could build into a 15 x 25-foot basement.

Getting on the double-decker

I wasn't initially attracted to a double-deck model railroad, but the clincher, as noted model railroader Bill Darnaby said to Tony Koester, was, "I like what it lets me do." There's twice as much to build and maintain, and the compromise elevations off the floor are driven by the two decks – one a smidge low, and the other possibly too high.



4 These two photos show a before-and-after comparison of the area in front of the Guadalupe depot. Note the simple but effective backdrop painted in muted tones with kids' poster paints.

More importantly, my space is much smaller than Bill's or Tony's, so there's even less room for a space-munching hidden helix. Even a small helix usually results in your whole train disappearing completely from view for minutes on end, and where's the fun in that, often halfway into a run?

Tony's NKP space is 63 feet long, and Bill's Maumee Route is 42 feet and L-shaped. Mine is only 25; we all model in HO. Like them, I much prefer to gain height as the layout travels around the room between switching locations, with all of the running track always visible to operators. I'm comfortable that much of it will be on narrow shelving, depicting a single-track main line running through basic scenery. The result means less to build and spend, both in money and time, when constructing it.

The plan's the thing

My basic plan is already settled. It's essentially two sets of hidden return loops in a central aisle, one above the

other, linked by a visible long ribbon of railroad running between them. The lower loops will represent south to Santa Barbara and Los Angeles; the upper, north to San Luis Obispo and San Francisco. Northbound (railroad west) trains will emerge from lower storage and immediately enter flatland Guadalupe and the interchange with the SMVRR at a track height of 39".

Curving around the wall, the track leaves Guadalupe and starts the slow climb. The single-track main line will continue on shelving (some as narrow as 7") through the 3" gap between the wall and the stairway to Bromela, which I'll place on the 180-degree, 36"-radius curve. Like the actual location in 1954, Bromela will consist of a few produce-packing sidings off the main line.

The main will then continue to rise around the outside of the central peninsula to another 36"-radius, 180-degree curve, perhaps in a cut to partially disguise the view of the trains from the unflattering outside-the-curve

position. I plan to place the prototype's passing track here too, representing Callender as it was in 1954, prior to the refinery being built the following year.

The track will then complete its around-the-room journey to arrive 14" above the storage yard entrance to Guadalupe on the lower deck. The upper-deck will enter at Oceano, where its depot, packinghouses, and a couple of other industries will be modeled in almost prototypical length.

By the time the railroad continues to the other side of the room on the upper deck and into the upper storage loops, it will have run over a visible stretch of approximately 166 feet. Since a good chunk of that track (probably just under half) will have to be level for switching purposes, this leaves enough climbing track between Guadalupe and Oceano with a ruling gradient of about 1.8 percent. But this produces an operationally rich, scenicked, and always-visible run of 2½ scale miles.

The only way is up

The smaller the room space, the less running length there is available to gain height, thus directly affecting the angle of the required gradient. This brings the essential issue of distance between decks to the fore. By keeping the upper-deck fascia to a 2" depth, I could live with a 14" distance between the two track elevations, allowing a visible 12" space between lower and upper decks. This doesn't look too bad and, more importantly, "I like what it lets me do."

Considerations of space forced me to place Oceano directly above Guadalupe, but traffic over the Guadalupe Sub will rarely, if ever, result in active switching on both decks taking place there simultaneously.

By the time a train leaves Guadalupe (39" from the floor) and goes around the room and central peninsula, it has to reach a height of 53". After Oceano, the main line will continue upward, directly above the footprint of the lower-deck main line, to eventually reach the upper return-loop storage yard representing San Luis Obispo and the north, which will be at 59". I'm 5'-8", and this works well for me.

Even with building a lengthy central aisle and taking into account the requirement for a lot of flat benchwork where the depots, yards, industries, and switching will take place, the inescapable ruling gradient presents a big (and unprototypical) challenge to my trains. I'm not willing to go around the central aisle twice to provide a

gentler rising gradient to the upper deck, mainly because this results in losing sight of the train.

Making the grade

Since this part of the Coast Line never required helpers, a particular concern was the pulling power of my otherwise great-looking InterMountain second-run Cab-Forward steam locomotives. My friend Mike Ruby re-motored them with Mashima 1833s. The big 4-8-8-2s were regularly seen on through freights along the line in 1954, and I want to see them run on the job they performed daily.

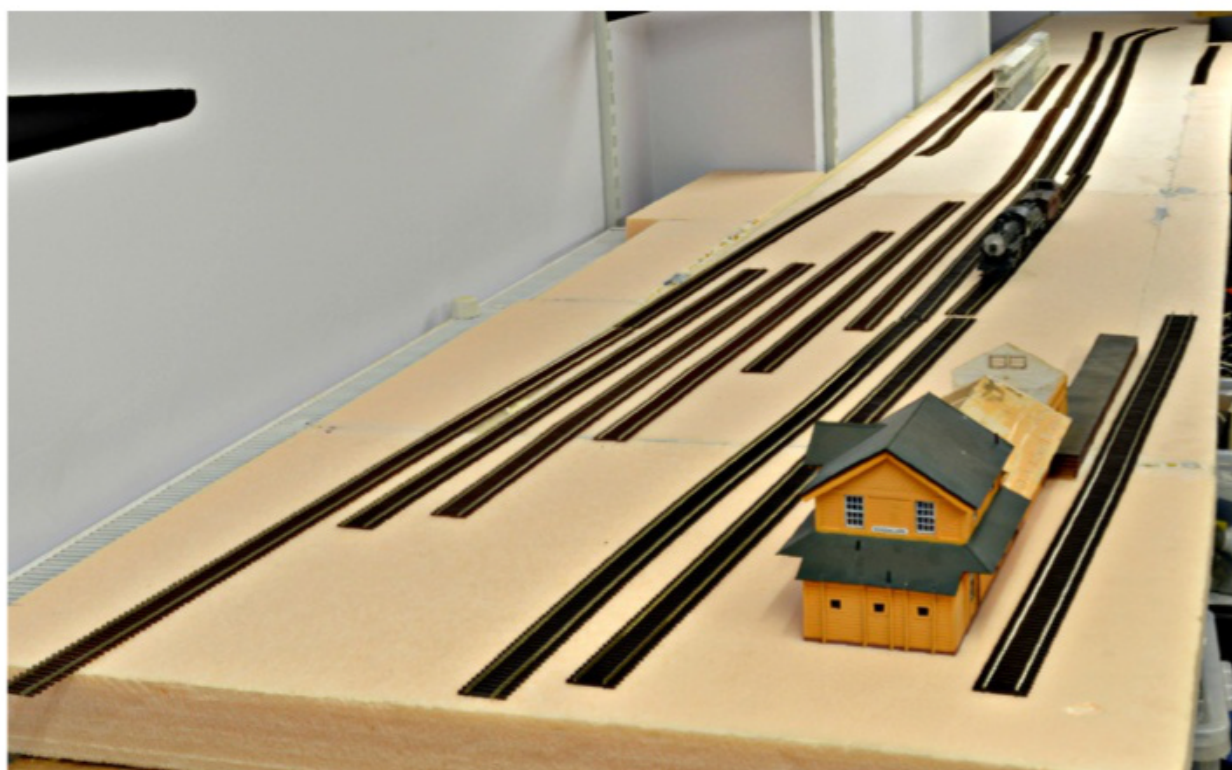
Initial trials show that a re-motored InterMountain Cab-Forward can pull 30 free-rolling, mostly 50-foot boxcars and a caboose out of Guadalupe and up a 30-foot stretch of 1.8 percent steady grade. A 30-car train appears long enough to represent the type of manifest freight that ran over the Guadalupe Subdivision in 1954. Electro-Motive Division F units were also commonplace on through freights, and a three-unit set has no difficulty on that 1.8 percent grade with a much longer train.

An operational highlight will be the passage of *Coast Daylight* trains 98 (southbound, or railroad east) and 99 (northbound, railroad west). They didn't stop anywhere on the stretch of railroad I plan to model, but with two and a half visible scale miles to travel across, it should be an enjoyable run, especially with no helix to invoke a frustrating interruption of the journey. Numbers 98 and 99 met each other just north of SLO, so on my stretch of this single-track railroad, only one *Coast Daylight* will ever be seen at a time.

At busier times the *Coast Daylight* often exceeded 20 cars but was reduced by the end of summer 1954 to a usual off-peak 14 – another bonus when both grade and financial considerations come into play. I'm going to use a single 14-car train set to represent both services, with northbound 99 heading through Guadalupe well before its southbound 98 equivalent passes by in the other direction. I'll do this with some other trains, too.

The essence of compromise

For the benchwork at Guadalupe, I've used four-foot sheets of 2"-thick extruded-foam insulation board. Most of the rest of the visible tracks will run on 18mm plywood, including on the upper deck where Oceano will reside. The foam board is too thick for the upper deck, as I need all the space I can find below it.



5 In June 2017, the Guadalupe depot area was in the early planning stages (top). By November 2017, a few key structures were in place and trains were running (middle). In January 2019, Brian had made impressive progress (bottom).



Santa Maria Valley RR no. 100 switches cars at Santa Maria, Calif., in April 1953 (top). Brian used a proto-freelanced HO layout section representing Quisling, Calif., in September 1954 to develop his Coast Line aspirations prior to building his basement layout (bottom). Prototype photo by Dallas Gilbertson

Scenically, it's all quite simple right across the whole visible route, with most of the railroad comprising flat or gently rolling terrain, scrub, grass, and trees. Apart from the depots, packinghouses, and some other structures (mainly private residences and small businesses) at Guadalupe and Oceano, there's really not a lot more to capture.

I quickly painted the backdrop with kids' poster paints, as shown on page 38; it's purposefully vague looking. The distance between the benchwork edge and the backdrop in the accompanying photos is 35" maximum. The room lighting consists of four fluorescent tubes on the ceiling.

Once the Guadalupe section is scenically complete, the next task will be to build the lower staging yard and return loops along the center of the room, around which the visible main line will eventually climb to the upper deck. Provisions will also be made to add the eventual upper storage yard.

At Guadalupe, I found almost immediately that compromise was the key to getting anywhere, even along a 25-foot wall. The prototype runs straight into town from the south, then curves just north of where the

depot is located. Following a serious sideswipe accident in 1952, the passing siding at the north end was extended to the Romar Carrot packinghouse siding, which was formerly served from the main. The shortline SMVRR arrives in town from the southeast.

As can be seen from the circa 1954 Guadalupe track plan on page 37, I've managed to fit almost everything in, albeit with some big compromises at either end of the room. The whole thing is necessarily compressed: My yard has four tracks instead of five (plus the runaround), and it's not

Learning points

- The internet is an invaluable source of railroad information.
- There are many excellent primary-reference railroad groups (modeling and prototype) to be found on Facebook; you can adjust your Facebook settings to prevent being pestered by unwanted contacts.
- Force yourself to buy primary reference books rather than more trains.
- Compromise is essential, once accepted, and can lead to liberation.
- Multi-deck layouts require lots of planning to work satisfactorily.
- The positioning and size of staging determines how your railroad operates.
- Be honest in your aspirations; too-grand plans almost never materialize.

possible to model the packinghouses and tracks that sat behind the Puritan Ice buildings. I've included the track that leads to them (space limitations require that the turnout is in a different position), which provides space for up to six reefers; it's therefore possible to switch traffic to and from those virtual industries by placing cars on that lead track.

Every other siding and turnout for 1954 is captured, although space limitations have dictated the absence of three rail-served industries on the depot side of the tracks.

The SMVRR enters from hidden storage and passes the icing platform to access the yard, where it interchanges with the SP. While there are obvious deviations from the actual location, I'm hopeful that a 1954 railroad employee would immediately feel at home on my version of Guadalupe.



6 The separation between the two planned decks, with Oceano above and Guadalupe below, is 14". Both depots are variations of the Southern Pacific Lines Common Standard no. 22 design.



Southern Pacific no. 2829 was Brian's first HO locomotive, purchased in San Mateo in 2000 as a Bachmann Spectrum Western Pacific model. Its many modifications include work on the smokebox, front end, cab roof, new front dome, prototype SP cylinders (planned for release by Owl Mountain Models), and a modified tender. The oil bunker encloses a bass reflex speaker, facing down.

And more of the same

Another essential compromise I'm comfortable with is in some of the stand-in rolling stock I'm using to allow me to run the trains I wish to depict, since I simply can't afford the accurate cars that are only available in brass. A prime example of this is the frankly ramshackle collection of coaches that make up my *Coast Mail* trains. The cars are chopped from various bits of older plastic Roundhouse, Athearn, IHC, and Rivarossi cars. Paint and decals can help to disguise a multitude of sins, and while the coaches wouldn't stand even the quickest glance from someone in search of prototype fidelity, they're good enough for now.

Similarly, accurate models of SP's signature 2-8-0s are available only in brass, so I've converted four Bachmann Consolidations to fill another "near enough" gap. This includes the engine representing SP no. 2829, which started me on this journey in 2000.

By 1954, the Santa Maria Valley RR had retired all but one of its steam locomotives for General Electric 70-ton diesel locomotives, and I didn't fancy converting the innards of the only available plastic (Bachmann) model to DCC and sound. [Bachmann now offers its 70-ton diesel with a dual-mode motor and light decoder but without sound. – Ed.]

The remaining steamer, SMVRR no. 21, was a small, powerful, and utterly bespoke 2-8-2, so I've taken the liberty of adding a brace of alternate-reality steam engines to the SMVRR

fleet. Numbers 202 and 203 are sound-equipped Bachmann 2-6-0s, modified to look similar to SMVRR no. 205, a 2-6-2 retired in 1950, and SMVRR 2-8-2 no. 100 (retired in 1953). Along with three fictional SMVRR cabooses (also converted from proprietary models), they shuffle in and out of Guadalupe Yard on interchange duties.

Prototype fun at Guadalupe

My LDE of Guadalupe allows me to capture most of what took place there in September 1954. You'll find some videos of the developing action on my YouTube channel. With only a small part of the main line north of Guadalupe built, it's already possible to use it as a staging track and run a Guadalupe Local into town, where the engine can perform duties in almost exactly the same way as the real one did. I can also run the SMVRR interchange service into and out of town from the south end.

The Guadalupe Local carried the great majority of SP traffic to and from Guadalupe, including reefers to be taken back up to Oceano once they were iced at the Guadalupe icing platform (the original could service ten at once; mine will do seven). These cars, once loaded at Oceano, were usually picked up by the Santa Maria Vegetable Block. This started as a cab hop out of SLO, heading south to pick up its first block of loaded reefers either at Oceano or Guadalupe. There's a lot of potential for varied prototypical operation on this chunk of railroad.

We've only just begun

About 85 percent of the planned layout remains to be built. That said, I could never have achieved a tenth of what I've done so far without the freely given help and assistance of so many generous people from across the world, most via the internet. Sincere thanks to you all, and most of all to my wife, Jane, for her support and understanding of my obsession. I'm particularly grateful to SP historian/modelers Tony Thompson, Scott Inman, and Robert Zenk.

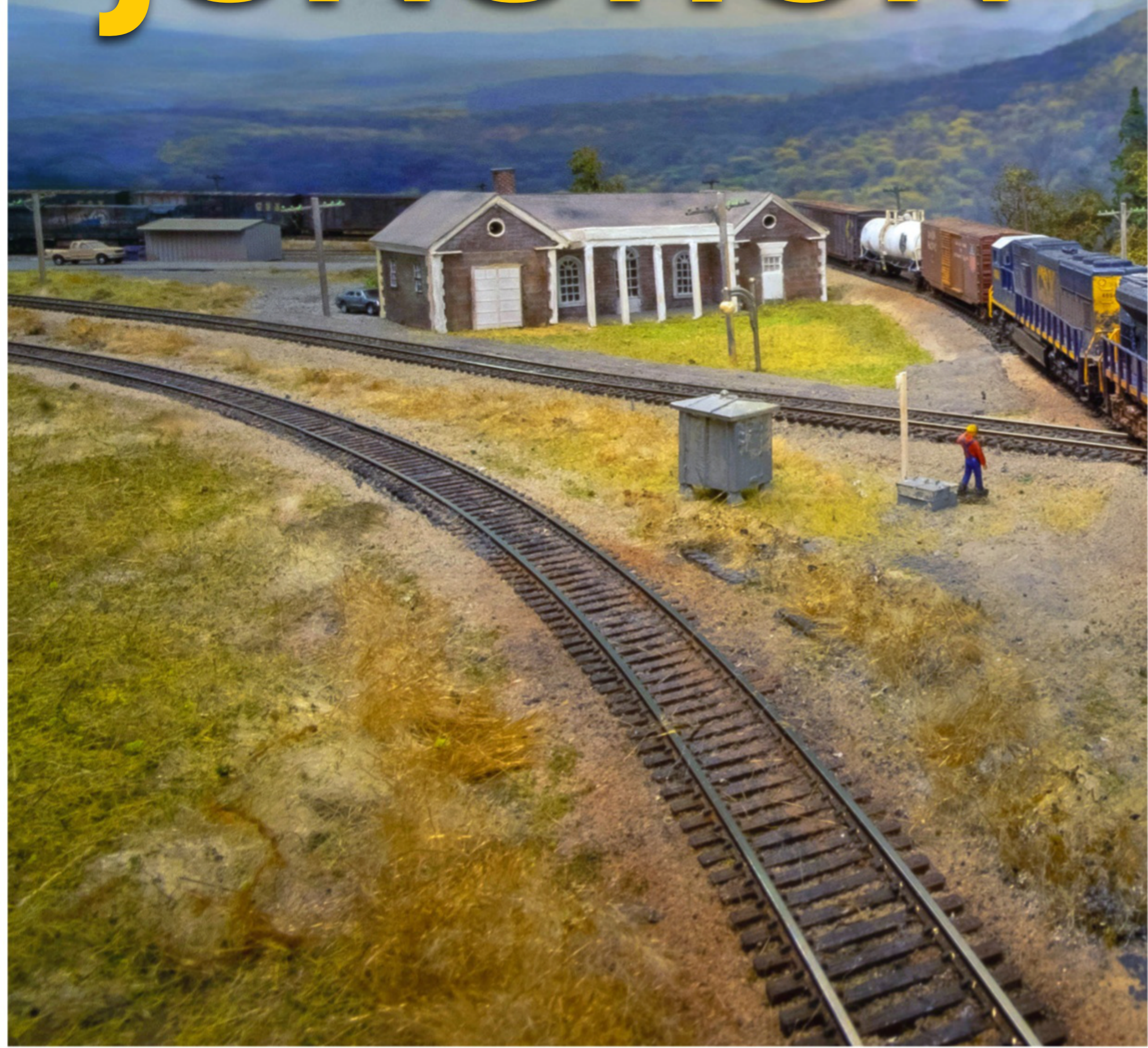
There's a long road ahead before my HO scale Guadalupe Subdivision is done. I'm hoping to reach a destination that has an operational double-deck railroad, but I'm enjoying every stage of the journey along the way. **MRP**

Brian Moore spent his first 25 years in Glasgow, Scotland, before relocating to Devon in southwest England in 1984. He spends much of his free time researching, planning, thinking about, taking pictures of, and sometimes even building stuff for his basement model railroad. Brian also enjoys reading, and socializing with friends and family over a few pints in the pubs of Plymouth.

On our website

Brian Moore is a regular contributor to the User Video section of our website. To see his layout in action, visit ModelRailroader.com and search for "Guadalupe."

A busy eastern **VIRGINIA** **JUNCTION**



CSX, Buckingham Branch, and Amtrak trains provide variety on this N scale double-deck layout

By Malcolm West//Photos by the author except where noted



I approached the design of my N scale model railroad with two goals in mind. First, it would be based on a prototype subdivision with a balance of run-through trains and switching operations. Second, scene composition would be guided by minimalism to enhance operational realism by having long-distance runs to and from centers of switching activity.

My search for a prototype subdivision to model was somewhat constrained, as I had a roster of modern CSX engines and a fleet of more than 100 coal gondolas from a previous layout. I began my search by reviewing back issues of *Model Railroad Planning* and found Bernard Kempinski's article "A junction and a paper mill" in the 2000 edition. As he described it, Doswell, Va., had everything I was looking for: a busy CSX main line that sees upwards of 40 freight trains daily; Amtrak passenger trains, including its *Auto Train*; empty unit coal trains that turn west at Doswell on their way back to Clifton Forge; and finally, the Buckingham Branch RR (BB), a short line that uses the small yard at Doswell as the base for its eastern operations.

Instantly, I envisioned a multi-deck design, with heavy CSX mainline traffic and a functioning diamond on the upper deck and BB locals to the quarry at Verdon and the Bear Island Paper Co. mill on the lower deck. I was on my way.

A brief history

Bernard's article, and a more recent one by Robert Sprague in the October 2014 *Model Railroader*, focused on an earlier era of operations at Doswell, when the former single-track Chesapeake & Ohio (C&O) Piedmont Subdivision crossed the Richmond, Fredericksburg & Potomac (RF&P) double-track main line. Instead, I chose to model present-day operations.

In 2004, the Buckingham Branch signed a 20-year lease with CSX to operate 200 miles of track that extends from Richmond through Doswell and Charlottesville to Clifton Forge, Va. Essentially, the former C&O Piedmont

I CSX Electro-Motive Diesel SD70ACe no. 4831 and SD70M no. 4694 clatter over the diamond at HN Cabin at Doswell, Va., on Malcolm West's 10 x 20-foot N scale layout. The backdrop was photographed in Virginia by Jeff Millman. Gordon Lafleur photo



2 CSX GP38 no. 2121 switches a tank car at Doswell, Va. The weathering applied to the cars and locomotives adds a considerable degree of realism to the N scale models.



3 The large Bear Island Paper Co. mill complex provides a variety of carloads for the Buckingham Branch RR. The mill buildings are photos glued to foam board boxes with 3-D details added.

Subdivision was encompassed in this 200 miles of track that's now operated as part of BB's Richmond & Alleghany (R&A) Division.

Of particular interest in this agreement was the retention by CSX of trackage rights to run empty westbound coal trains over the route, which provided a use for my fleet of coal gondolas. Moreover, Doswell is the eastern interchange with CSX for the BB's R&A Division, which is more good news, as freight interchange generates a lot of potential traffic and variety. Finally, since Doswell serves as the eastern base for BB's operations on the R&A Division, locals work to and from there on a daily basis.

All in all, it looked like I had selected an interesting location to model.

Design and construction

With a layout space comprising half a two-car garage, construction began first on the upper deck, which is set at 56". The challenge here was incorporating the at-grade crossing at Doswell

with both lines active. The crossing needed to be accessible with no long reach-ins. I also wanted to avoid having the junction create a duckunder. Nor did I want the leg tracks penetrating the backdrop.

After several mocked-up iterations, I set the crossing at an oblique angle in a corner of the room. This arrangement kept the benchwork relatively narrow and avoided a duckunder. Although not an exact replica of the track at Doswell, the arrangement captures the essence of the crossing and maintains operational integrity.

In addition to the crossing, the track plan includes a small interchange yard at Doswell, two wye tracks, and a connector track between the CSX main line and the BB (ex-C&O) single-track main line.

The CSX double-track main is an around-the-walls oval supported by a six-track, double-ended staging yard. The staging yard is operated in point-to-point fashion but allows for continuous running when non-model

railroad guests visit. The single-track BB R&A Division originates in a four-track, stub-ended staging yard.

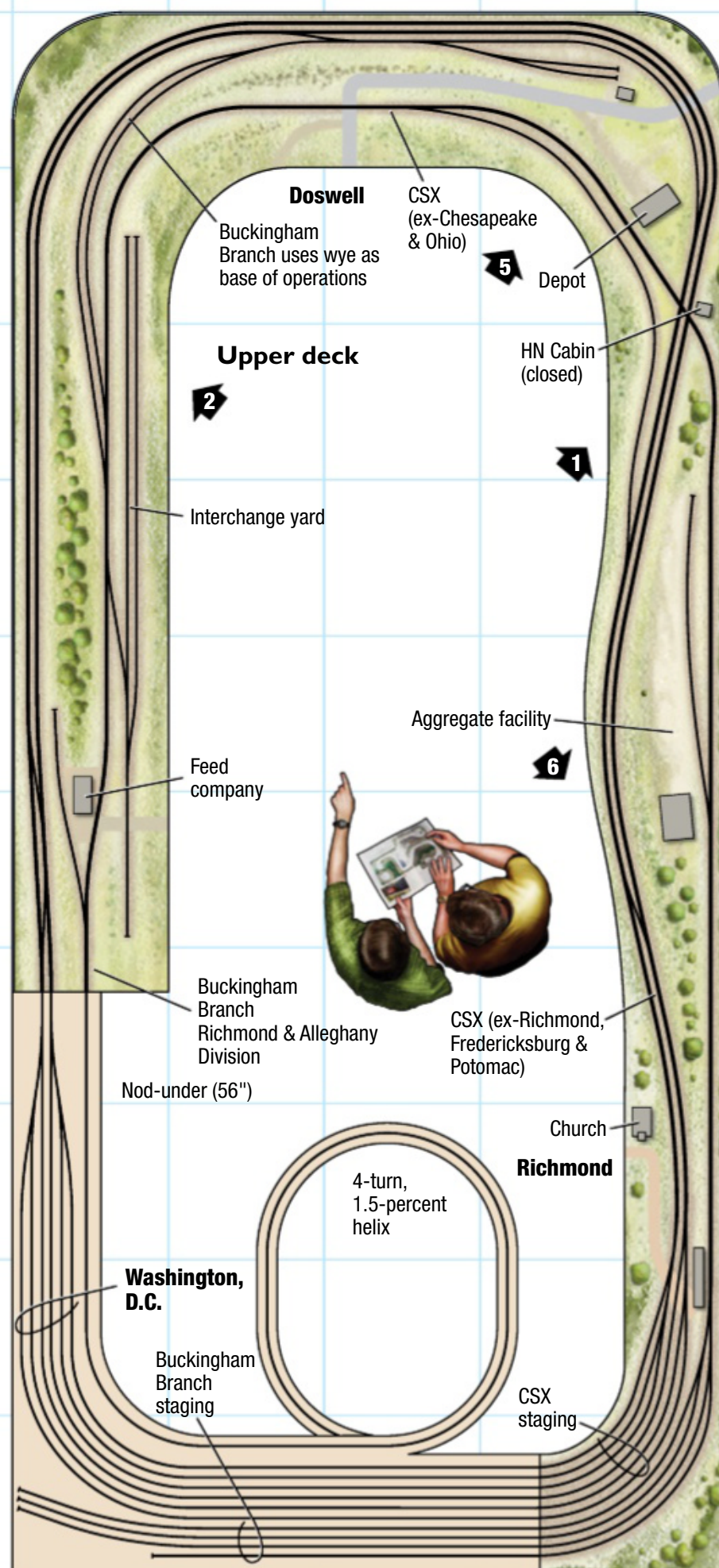
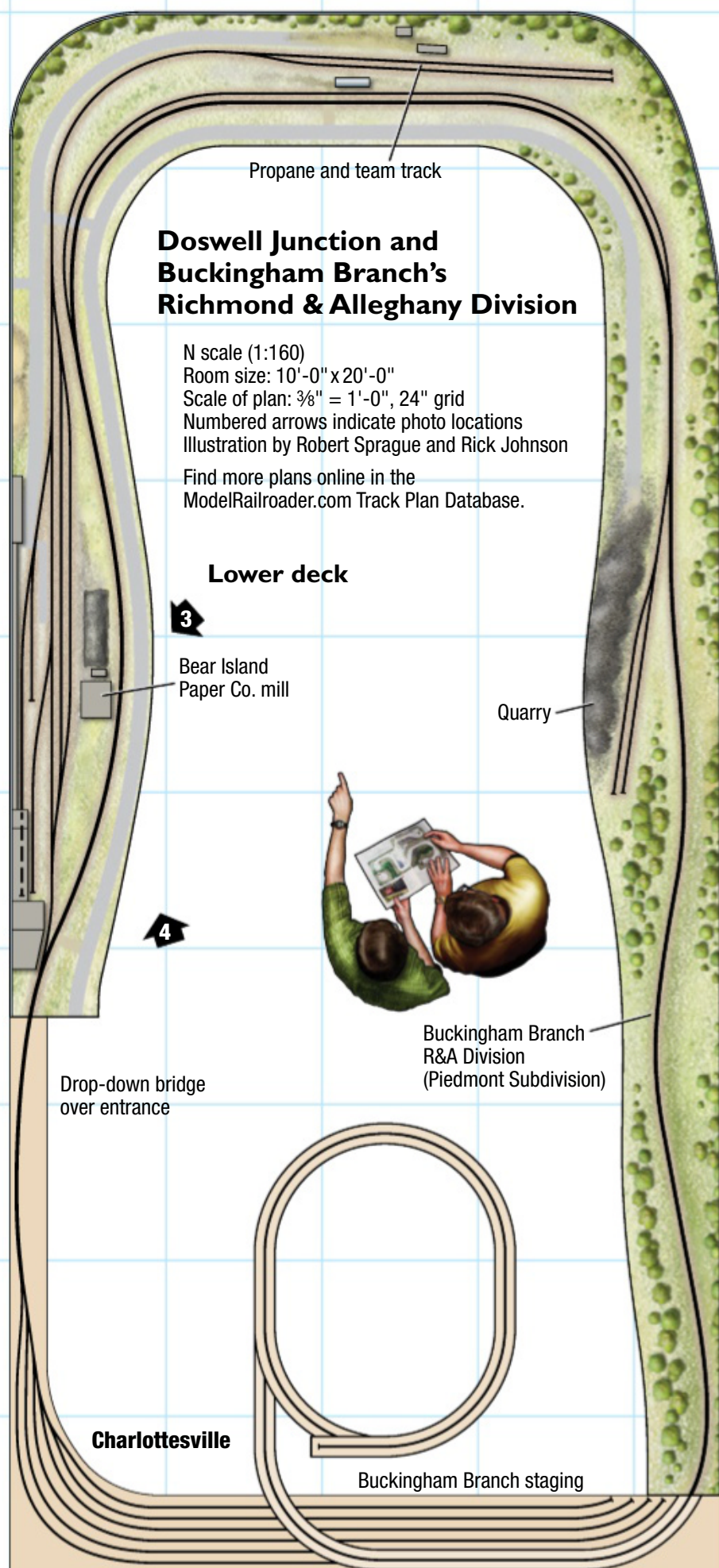
With the upper-deck benchwork complete, the next step was to install lighting and the photo backdrop. A valance surrounds a white reflective hardboard roof housing 48" fluorescent fixtures mounted in a continuous loop. The crosspieces of the upper deck benchwork were spaced a bit more than two feet apart to accommodate 24" fluorescent fixtures that illuminate the lower deck.

I used wallpaper paste to affix the backdrop, a photograph by Jeff Millman. The paste provided extra working time when hanging 6-foot lengths of backdrop material. A little help from friends proved beneficial.

The height of the lower deck was set at 40" and comprises the BB's R&A Division, which ends in a six-track, stub-ended staging yard. I deviated from the prototype here by including a 2 percent grade on the long wall to reduce the number of turns in the oval-shaped helix.

I modeled three industries found on the full-size BB R&A Division: Bear Island Paper Co., a quarry, and a propane facility. Bernard graciously sent me a print of the mill tracks from his book, *45 Original Track Plans* (Kalmbach Books, 2015). He also suggested that since the power plant located here isn't rail-served, interest could be increased by having the two spur tracks serve other industries.

I modeled the propane facility and team track at Keswick, Va., on the former C&O Piedmont route. The



The layout at a glance

Name: Doswell Junction and Buckingham Branch Richmond & Alleghany Division
Scale: N (1:160)
Size: 10 x 20 feet
Prototype: CSX and BB
Locale: Doswell, Va.

Era: modern
Style: multi-deck around the walls
Mainline run: 120 feet
Minimum radius: 20"
Minimum turnout: no. 6
Maximum grade: 2 percent

Train length: 8 feet
Benchwork: open grid
Height: 56" upper deck; 40" lower deck
Roadbed: cork over fiberboard subroadbed
Track: code 55 main line; code 40 spurs

Scenery: extruded-foam insulation board
Backdrop: photo attached to wall and foam board
Control: Digitrax Digital Command Control

Learning points

- Retirement and aging focuses attention on planning and building an achievable layout.
- Having a Class 1 railroad complemented by a Class 3 short line provides an interesting theme for a layout.
- A prototype-based model railroad makes scene composition easier.
- Adopting a minimalist approach to scene selection means long-distance runs to and from switching areas.
- Having one or two big industries generates a lot of switching work for crews.



4 These two overviews of the double-deck N scale railroad show how the dark valance/fascia serves as an upper and lower frame to focus attention on the railroad itself, much like a shadowbox.

quarry was modeled after the one at Verdon, which has two spur tracks. In the CSX-BB lease agreement, CSX retained the rights to serve the quarry.

Design parameters

Here's a brief summary of the design parameters used in the construction of the model railroad:

- 20" minimum radius curves to accommodate Amtrak passenger trains and auto racks
- Shelf width of 18" with bump-outs of 24" at industries
- Open-grid benchwork with sheets of fiberboard attached
- Land contours made from layers of 1"-thick extruded-foam insulation board glued to fiberboard and shaped with a rasp
- ¼" cork roadbed sanded to achieve prototypical height for the CSX double-track main line; secondary track and sidings spiked directly to the fiberboard

Scene composition

Choices of what to include or leave out of a scene are critical contributors to realism. These decisions are made

easier when modeling a prototype because, in this instance, I was essentially copying an actual scene. At Doswell, for example, the key elements are HN Cabin (the C&O's term for tower), the depot, and a small shed in the yard.

This approach to composition often necessitates some structure kitbashing and scratchbuilding. HN Cabin is a modified Alkem Scale Models kit; the generic shed is from BLMA. The depot is scratchbuilt.

More generally, composition has a great deal to do with leaving sufficient space between scenes, thereby augmenting realism by having relatively long runs between switching activities. In short, it's about avoiding the temptation to include one more switch or industry, thus running the risk of cluttering the composition.

The crossing at Doswell and two one-spur industries – an aggregate facility and a feed center – take up about half of the upper deck, leaving adequate space for the dense Virginia forest.

Maximizing the green spaces between layout elements means that

we need to use quality trees and grass. As seen in the photos, SuperTrees from Scenic Express do an excellent job of capturing a summer canopy.

Following the examples of those who construct military dioramas, I used teddy bear fur interspersed with static fibers to model grass and weeds. This involved snipping tufts of fur off plush animals and planting them in full-strength white glue. If unrealistically long after planting, the fur can be "trimmed" with an old soldering iron. I use various shades of green, yellow, and brown pastels to color the fur.

A word of warning: Don't let your children or grandchildren see the bald teddy bear.

Moving trains

Our group of regular operators has a lot in common. We all moved to Vancouver Island in our retirement years. We've all had big layouts that filled a basement, two of which have appeared in *Great Model Railroads*.

Some of us downsized and uncluttered our houses. We're all older and perhaps wiser as we've replaced bigger-is-better with less-is-more. We still like to run trains prototypically, but also recognize that an operating session is a social event that ought to permit conversation.

My layout operates point-to-point and supports six through trains, six locals, and two Amtrak passenger trains. The railroad was built to represent prototype track arrangements, although Doswell Junction is three tracks short of the prototype.

All turnouts are manually lined; the layout is free of electrically complex control panels. Cars have extra weight added, which adds a prototypical



5 A pair of weather-beaten General Electric four-axle road units idle outside the yard office in Doswell, Va. CSX (ex-Susquehanna) no. 5942 is a Dash 8-40B, while Conrail no. 1987 is a B23-7. Both are Atlas models. Gordon Lafleur photo

flavor to moving trains and makes them run better. Locals often have six- instead of four-axle power because the extra power is needed.

Our operating sessions have a relaxed atmosphere. We use crew briefs that provide simple instructions to the type of work to be done. Switching cars like-for-like takes the place of expecting seniors to read car numbers on weathered N scale cars. In short, the instructions make it easy for the operator to do the work required, thus ensuring success.

Over a few months, we established a semi-structured sequential order for running trains. To accomplish this, I timed how long it took each local crew to do their work. The paper mill job and rock trains each took about 30 minutes. This is manageable and holds one's attention span. Any job longer than 30 minutes seems to tax attention spans.

An operating session begins with the Charlottesville local emerging from staging, stopping to work the propane dealership and team track, before continuing east to Doswell. This train may have to tuck into the passing siding to let an empty unit coal train (second up in the sequence) pass on its way to the mines.

The third train is a CSX freight that stops at Doswell to pick up and set out cars with the aid of a switcher stabled there. The local crew builds a train from these cars and departs for the Bear Island Paper Co. mill.

An Amtrak train approaches Doswell next. The crew receives an incident card indicating that because of an accident on the CSX, they'll need



6 The head end of an empty coal train swings through a crossover on its way back to Clifton Forge, Va., with hoppers for West Virginia bituminous coal mines. David Jacobs photo

to divert via the connector track to the single track Buckingham Branch R&A route.

Then an empty rock train comes out of staging and waits at Doswell for the arrival of loads from the quarry. Once there, the two crews swap cars, with empties left in the interchange yard and the loaded train now departing eastward.

Another empty unit coal train makes an appearance at Doswell, but this time with the engines on the wrong end of the train. After running the motive power through a series of crossovers to get them on the right end, it heads west, taking one of the wye tracks in Doswell Yard to go from the CSX main line to the BB R&A Division.

With its work done, the paper mill crew returns to Doswell and drops off its newsprint boxcars on the wye track to be picked up later by a CSX through freight. A second rock train comes out of lower-level staging to bring loaded hoppers to the aggregate facility, where they're swapped for empties. This train will likely have to wait at the crossing on its return trip, as Amtrak's *Auto Train* is next through Doswell.

And on it goes until lunch, when we stop regardless of how many trains are left to run.

Upon further reflection

One of the big challenges of retirement is finding something useful to do to fill the day. I consider myself lucky to have discovered a group of fellow modelers who are all in the process of building new layouts after their relocation to Vancouver Island.

Constructing a layout is a multifaceted undertaking. We've all worked on each others' railroads, sharing knowledge gleaned from our many years in the hobby. I'm indebted to our group for helping me create a model of a railroad that's interesting and fun to operate. And I'll soon be seeking their input as I undertake a job I've never done before: repainting some engines in the Buckingham Branch color scheme. **MRP**

Malcolm West is a retired professor of psychiatry. He lives with his wife, Riva, in Qualicum Beach, B.C. When not working on his layout, he sometimes enjoys playing golf and watching his beloved Montreal Canadiens.

All the layout's

Focal points become sets, structures become props

By Joe Smith//Model photos by the author



Model railroad layouts depicting a highly detailed single town or location are popular in the United Kingdom. These standalone layouts are often built small and portable for display on the exhibition circuit in the U.K. Operation consists of rolling stock entering the modeled location from hidden staging. It operates within the scene, then exits once tasks have been

completed or a time segment has been reached. Often, these operations will be repeated with additional groups of rolling stock performing different prototypical moves.

For the average modeler living in the U.K., layout space can be limited. These single-scene layouts therefore solve the age-old model railroader's problem of lack of space.

I've admired the concept of these layouts in the pages of U.K. modeling magazines and internet videos. I especially admire the clever small layouts that have been designed and wonderfully illustrated by Iain Rice. His designs have appeared in many Kalmbach publications, including this and previous MRP editions. My personal favorites are his shadowbox dioramas.

a stage

I Recently delivered Electro-Motive Division FL9 locomotives arrive at the Danbury, Conn., station with train No. 143, the *Mahaiwe*, from Pittsfield, Mass. The scene is part of Joe Smith's HO scale layout, which is designed in a series of theater-like "sets."



A shadowbox diorama draws the viewers attention into a static display confined within defined parameters. By adding animation to a shadowbox, it becomes theater.

A different form of "staging"

The above was a sidebar title by Iain Rice that appeared in MRP 1999. His comments converted my thinking of

these single-location display layouts in the U.K. as not just small layouts, but also worthy of consideration as theatrical stage presentations.

The front of a shadowbox forms the proscenium arch that frames that stage. The sets on the stage are the structures and scenery that modelers build. These sets support and visually enhance the script, or operating

scheme, by identifying or suggesting a location and era. When we add operating scale model trains performing as the actors on the stage within a set, the shadowbox becomes a live theatrical performance.

A freelance modeler has the complete freedom to be the playwright, choose an era, design and build the stage set, and direct the scale model

cast. The world beyond the wings of the proscenium arch could be left to one's imagination.

Modeling a specific prototype railroad at specific locations within a given era means the prototype has already written the script, designed the set, and directed the movement and appearance of the scale model actors. The modeler's challenge is to capture the signature elements of the prototype when building the era-appropriate props for a set that will replicate a specific location. The destinations of the world beyond the stage have also been predetermined by the prototype.

Taking a cue from the U.K.

Like many North Americans, I'm fortunate to have more domestic space to dedicate to a layout than the typical British modeler. That said, I've never had enough space to build a layout that has enough linear space for realistic scale distances between key locations. By realistic distances, I mean those that would make an operator feel his or her train actually took a realistic amount of time to travel from one location to the next.

Curves with scene-separating view blocks may have visually hidden one location from the next on my prior layouts. But they couldn't hide the fact that a locomotive was in one town while the rear of its train was still in the last town, or that time to travel between locations was measured in seconds rather than minutes.

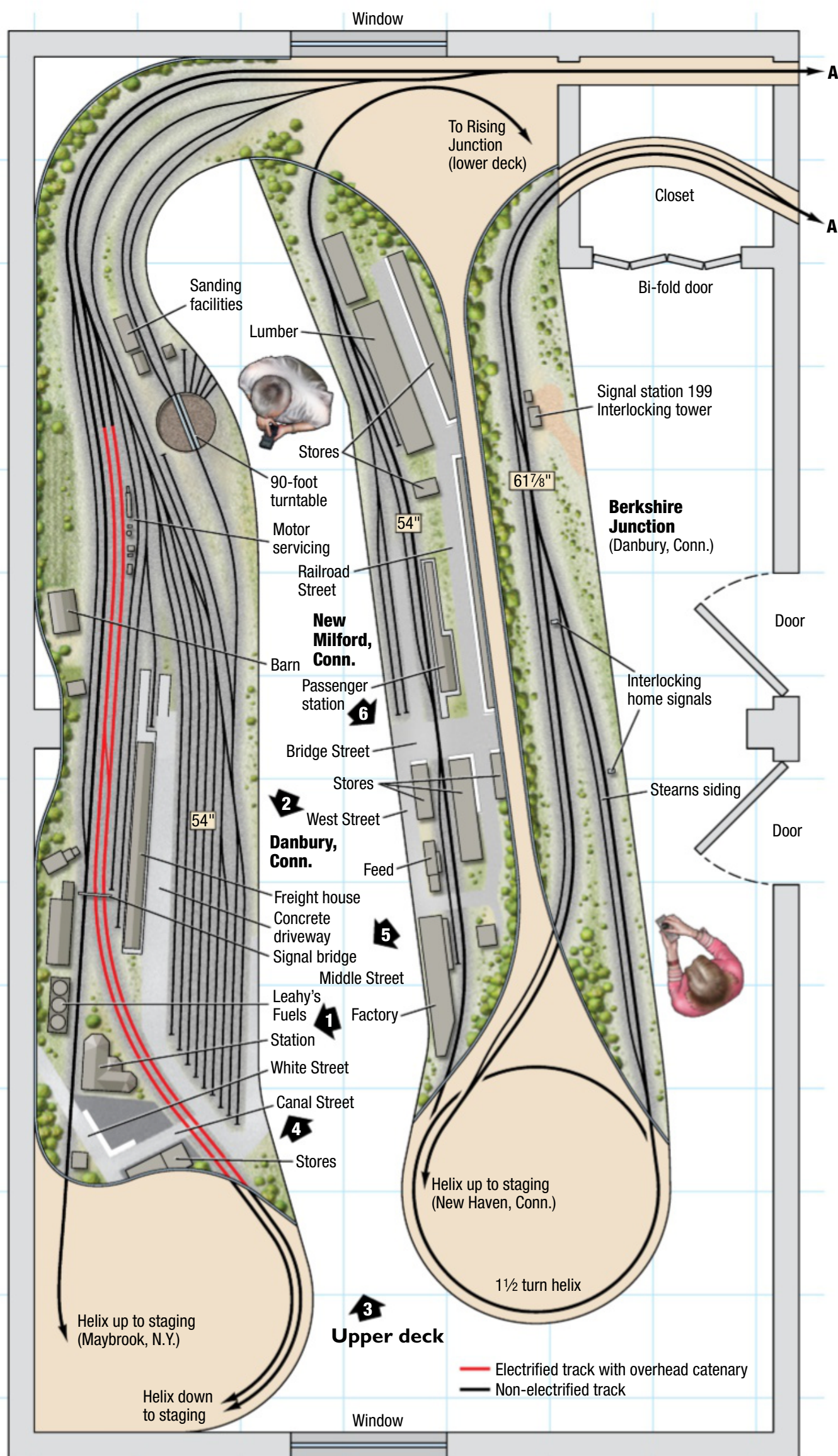
This lack of realistic distance and time that was inherently built into my previous linear layouts – no room to model the “in-between” – became displeasing during operation and ultimately led to my loss of interest in the layout.

Single-location layouts don't suffer from this issue, so why not take a cue from them and build a single location “set” in a shadowbox theater, where distance and time aren't a factor when trains leave the stage?

A fresh start

All these thoughts about viewing a layout as a theater remained unrealized for a decade, until a move to a different state gave me about 375 square feet of floor space and a fresh start on a new layout.

The main design element focused on building the new layout as a single-set theater where a play of unlimited acts (train movements) could be performed. The stage would be built in a shadowbox enclosure fronted by a proscenium arch. Main stage lighting would be

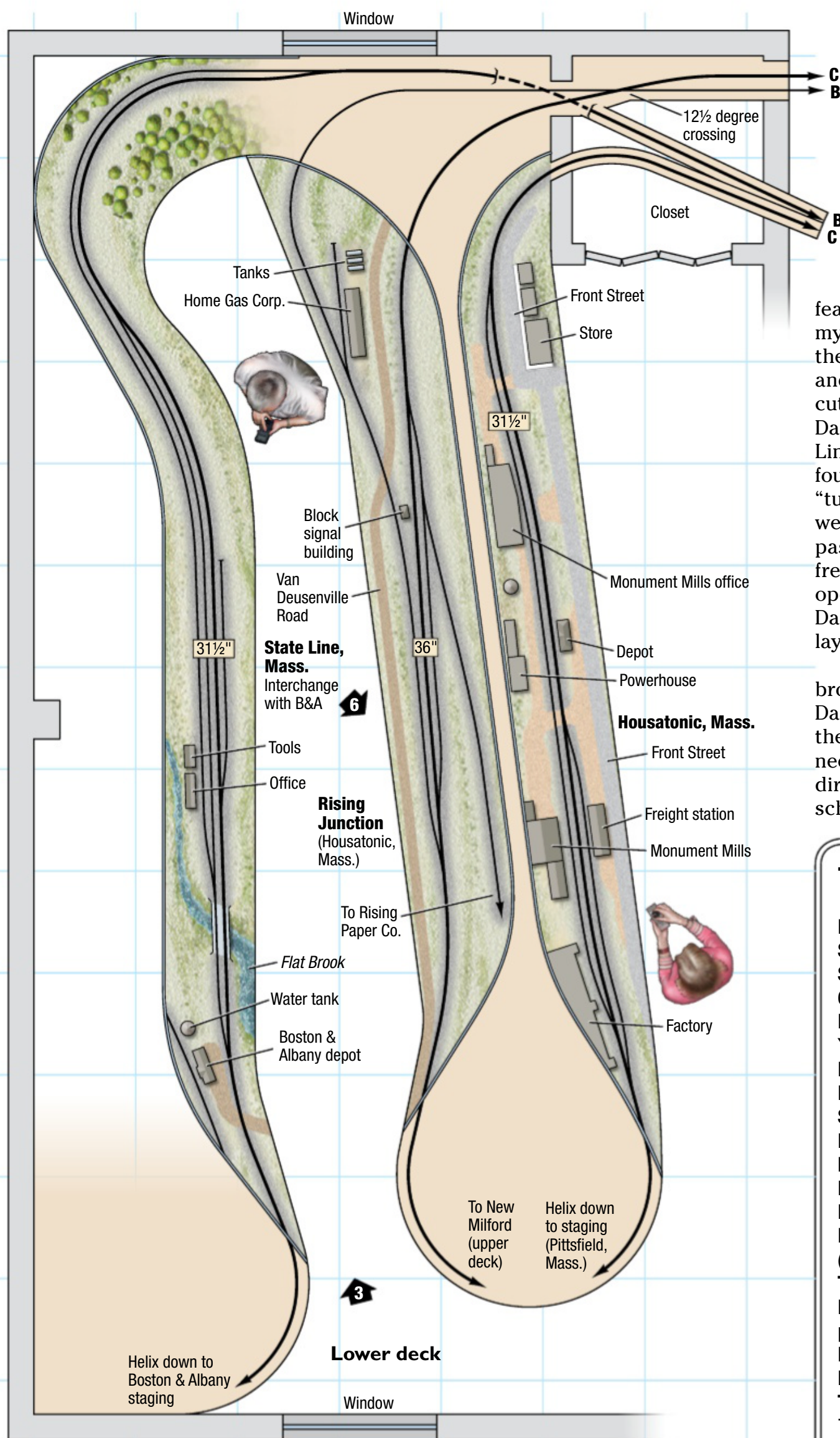


New Haven's Berkshire Line

HO scale (1:87.1)
Room size: 14'-4" x 26'-8"
Scale of plan: 5/16" = 1'-0", 24" grid

Numbered arrows indicate photo locations
Illustration by Rick Johnson

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



hidden directly behind the proscenium, and fill lighting deeper into the set would be concealed behind an overhead border curtain. There would be no house lighting to distract attention from the stage. A full-height backdrop with coved corners would mark the rear and wings of the stage.

My previous HO layouts have all featured prototypical locations along my favorite part of the New Haven RR: the Berkshire Line, which runs north and south through western Connecticut and Massachusetts. In 1957, Danbury was the hub of the Berkshire Line. Ten scheduled passenger trains, four symbol freights, and three extra "turns" ran daily. New Haven's east-west corridor, the Maybrook Line, also passed through Danbury, with a dozen freight movements. With all of these operational possibilities, selecting Danbury as the location for the new layout wasn't difficult.

The Berkshire Line met the Maybrook Line at a junction just east of the Danbury passenger station. To operate the daily schemes of both lines, trains need to enter or exit the stage in three directions. After combining these schedules, the need for staging is

The layout at a glance

Name: New Haven Berkshire Line

Scale: HO (1:87.1)

Size: 14'-4" x 26'-8" and 6'-0" x 6'-0"

Prototype: Berkshire Line of New York, New Haven & Hartford

Locale: western Conn. and Mass.

Era: 1957

Style: multi-deck with peninsula

Mainline run: 310 feet, including helixes and staging

Minimum radius: 26" (in helix)

Minimum turnout: no. 6

Maximum grade: 2.25 percent (in helix)

Train length: 12 feet

Benchwork: 3/4" plywood on 3/4" plywood brackets

Height: 18" to 80 1/2"

Roadbed: 1/4" cork

Track: Micro Engineering code 70 flextrack (visible), Atlas code 83 flextrack (staging)

Scenery: Sculptamold over extruded-foam insulation board

Backdrop: hand-painted 1/8" tempered hardboard

Control: Digitrax Super Chief DCC with wireless throttles



significant. Unlike the small portable exhibition layouts of the U.K. that rely on sector plates, turntables, traversers, removable cassettes, and the like to support operation, three long reverse loop staging yards would be required to support the busy daily schedule of this prototype.

Construction of the theater

The new layout is being built as a shelf along one of the long walls of the 14 x 27-foot layout room. Danbury is 54" above the floor. One staging yard is above this "stage" and two are below.

To facilitate entry and exit for two of the three staging yards, I built a helix on the junction side. One leg of the junction disappears behind a prototypical structure "prop" and rises through a helix to the yard above; the other leg of the junction disappears behind a wing of the stage, then descends within the same helix structure to a yard below. Access to the third staging yard is at the opposite side of the set, disappearing behind a wing to the third yard.

After subtracting the diameter of the helix and the radius of the curve on opposite sides of Danbury, 19 feet remained. This is 1,650 HO scale feet, enough for a realistic rendering of the signature rail facilities at Danbury.

I completed construction of the helix first. As the layout decks started to take shape, it became apparent that almost two-thirds of the space in the layout room would remain unused. I thought about just expanding the shadowbox to occupy an adjacent wall. But a full daily schedule of Danbury operations could already be re-created with the original design, so expansion offered no operational benefit.

I also had thoughts of another linear layout, but I reminded myself of the reasoning behind the original decision to model a single prototype location within a shadowbox theater: to eliminate the visual sense that a train wasn't actually traveling any prototypical distance or time commensurate to that distance. The new layout room still didn't offer the space required for a linear layout with long prototypical runs that I desired, so I remained steadfast in my preference for a single location layout.

More than one set?

While considering expanding the footprint of the original layout design, a new line of thinking opened: Could this shadowbox theater concept be adapted to more than one set location?

What if a train could travel from one shadowbox theater set to another

2 Idling New Haven low-clearance-cab Alco S-1 will soon be at work blocking cars at Danbury Yard for symbol freight RH-1. Black NE-6 caboose will bring up the rear when the train departs with road power for Harlem River, N.Y., at 12:45 a.m.

without visibly traveling between them? Could a timed pause backstage, between sets, compensate for the lack of distance and time?

This unseen movement between sets would be like closing the curtain on a set after an act was completed and then, after an intermission, opening the curtain on a new set for the next act. Once a train has departed the set and is off stage and unseen, a timed intermission between sets could represent any desired distance and time from one location to the next. Times indicated on a prototype daily passenger and freight schedule could actually be replicated 1:1.

Relegating unrealistically tight turnback curves to backstage and shortening the "spaces" that have no realistic "places" could also help reduce the amount of selective compression necessary to fit desirable set locations and props in the space available. The backstage track could be any length that will fit between sets, as long as it's longer than the longest

Shadowbox theater



In keeping with the theatrical theme of this article, the accompanying five photos are one operational “act” within the Danbury, Conn., “set.” Danbury is the northernmost end of the New Haven electrified tracks.

① Train No. 140 – New York Grand Central Terminal to Pittsfield, Mass. – arrives at Danbury pulled by EP-3 motor 352. During a 10-minute stop, the motor and head express car will be cut off and replaced with diesel power. I scratchbuilt the EP-3 using styrene and powered it using a Bachmann GG1 chassis.

② Alco RS-2 503 has departed the station and is passing through Danbury Yard with train No. 140. The Kato Alco RS-2 was custom painted in New Haven’s second green-and-orange scheme. I scratchbuilt the Railway Post Office car on a shortened Branchline chassis. The baggage car started as a Walthers model with NH-style resin sides from Funaro & Camerlengo.

③ The switchman at interlocking SS-198 has lined the crossover to the inner loop track at Danbury station; motor 352 and express car are backing to the station. Signal station 198 was scratchbuilt from styrene.

④ The express car is being spotted on the inner loop track at the station. Express for the Danbury area will be unloaded; New York-bound express will be loaded later in



the day for departure. The converted troop sleeper express car is Walthers with NH-style brass car sides from Model Railroad Warehouse.

⑤ The 352 has been moved to the motor service area. The engine preparer is filling buckets with sand to replenish the motor’s sand bins. Boiler fuel and water will also be refilled before the return trip to New York. The water hoses, electrical cabinet, oil pump house, sanding tower, and fire hose cabinet were scratchbuilt; the sand tank is a modified NJ International model. – *Joe Smith*

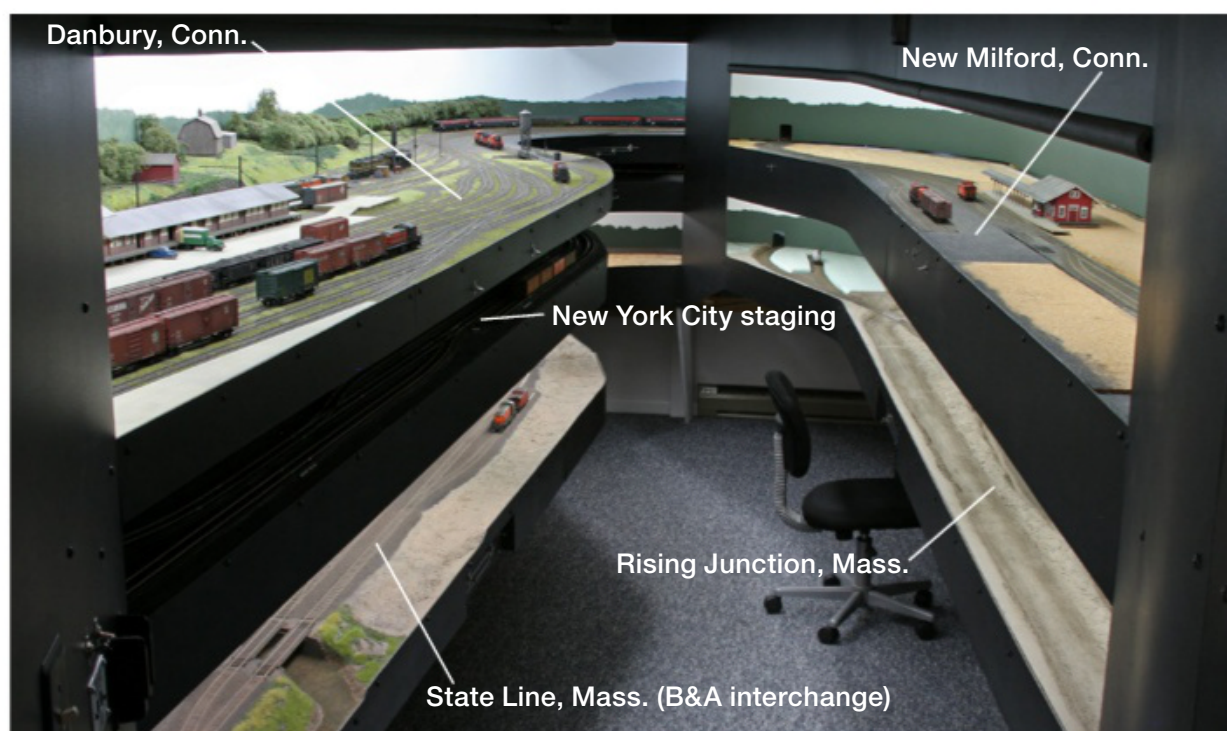
train to be run on the layout. I set out to explore the possibilities of this concept within the space that was available for the new layout.

Back to the drawing board

The most obvious design choice for expanding the layout to include extra

set locations would be the addition of a peninsula that would be accessible from both sides, parallel to the long side of the room. The peninsula would allow a set location on each side with a scene depth of approximately two feet, leaving about a three-foot aisle width on both sides.

The original construction was designed to have multiple decks (though only one with scenery and lighting), and the supporting infrastructure for that was already in place. Adding a helix to and multi-decking the new peninsula would be a continuation of that design and allow four additional



3 There are four shadowbox scenes in this photo. Danbury, Conn., is on the upper left. Moving prototypically north is the small town of New Milford, Conn., on the upper right. Rising Junction, Mass., is at the lower right, where the Berkshire Line branches off to a Boston & Albany interchange yard at lower left. Sandwiched between Danbury and State Line on the left is a staging yard for trains with New York City and New York Harbor car-float origins or destinations.



4 Joe scratchbuilt the Danbury freight house using styrene. The Danbury Branch comprises the two tracks under catenary behind the structure; the Maybrook line is the third track over.

Learning points

- We can learn a lot from our modeler friends overseas.
- Thinking of a railroad not as a contiguous whole but as a series of “sets” leads to new approaches to layout design.
- Time spent “off stage” can represent miles between towns.
- Aspects of theatrical and stage design apply to model railroading.
- Building a railroad as separate units makes downsizing more practical.

set locations to the layout. Modifications to the plywood support brackets of the original Danbury set could allow for one more set location below, a total of six locations.

With the addition of five more sets to the layout, more reverse-loop staging would be needed. Fortunately, a small 6 x 9-foot storage room adjacent to the layout room provided space for stacking all the staging and the turnback loops that add track mileage between the set locations.

Choosing new locations

The addition of five new set locations could greatly enhance the

operational possibilities of the overall layout if the prototype set locations and the physical placement of these sets in the layout design were chosen wisely. The double-deck layout design would have three realistically sequenced prototype set locations along the New Haven Berkshire Line on each deck, three southern locations on one deck and three northern locations on the other.

The original Danbury set location is on the southern end of the Berkshire. Two more nearby locations, Signal Station 199 (a junction point with siding) and New Milford, Conn. (a medium-sized town with a small rail yard and industry sidings) complete the sets of one deck.

Moving near the north end of the Berkshire, the second deck would feature three adjacent prototype locations in Massachusetts: Rising, a junction point with a small yard and two local company sidings; Housatonic, the location of a large textile mill; and State Line, an interchange point with the Boston & Albany.

Back to the original premise

The original concept was to have a single prototype location modeled within the confines of a shadowbox theater, so distance and time weren't factors when trains left the wings of the stage. But by having two or more shadowboxes linked together, the distance and time factor between locations again enters the picture. Distance and time can be compensated up to a 1:1 ratio while trains are traversing the unseen backstage track by adjusting train speed or introducing a timed pause, though this could be confusing to operators who aren't familiar with the layout.

Within the modest space that I have available for this layout, there's no room to model a realistic linear distance between locations. But there's room to compensate for that with unrealistic, but hidden, stacked loops of track that can add actual distance and time between the modeled locations on the layout. Since trains wait in the helixes, the main complaint against them – that trains disappear from sight too long – becomes an asset.

By choosing to model on each deck three prototype locations that are geographically only a few miles apart, I was able to design in enough hidden track between locations so that when a train reappears in anyone of these locations, it seems like it has traveled a realistic distance and time. An intermediate staging yard and the number of

helix turns between decks add an even longer sense of distance and elapsed time between the southern and northern locations. People who visit the layout, including those who aren't model railroaders, understand the distance and time concept when they see the layout operate.

Adding these five set locations and subsequent staging to the layout allow me to prototypically operate the New Haven's entire Berkshire Line with the exception of one town. This is my dream come true.

The railroad today

As of this writing, all track is in place, and the railroad can be operated to its full potential. I complete all the scenery and structures at one location at a time before moving to the next, although some preliminary landscaping was done to other sets when the track was installed. Danbury is nearing completion. Only three structures need to be scratchbuilt and some more foliage added for it to be finished.

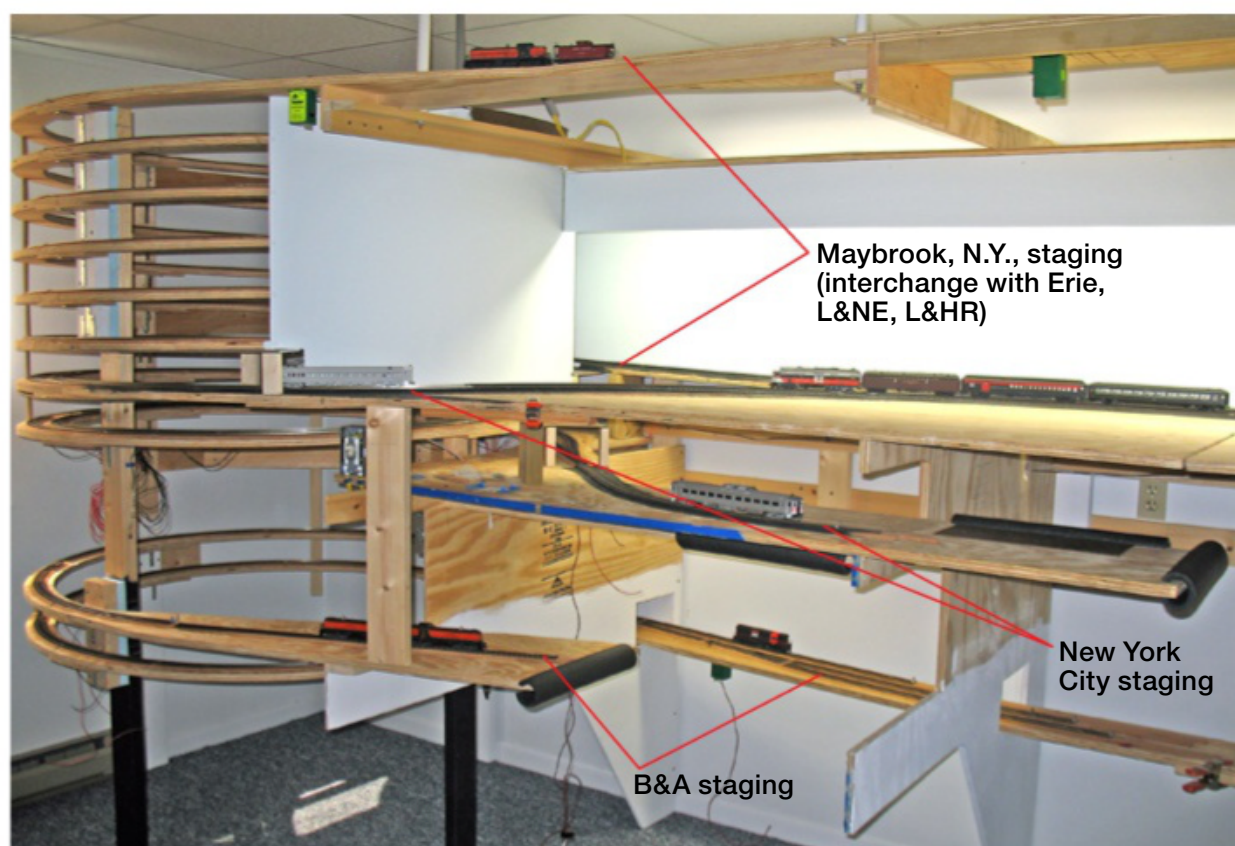
Thanks to the shadowbox construction, the next or previous sequential location on the line is out of a crew-member's line of sight. Although there's more than one shadowbox, each could be operated as a standalone layout. In fact, each has its own independently switched lighting.

The concept of linked shadowboxes could be adapted to layout spaces small to large. Eliminating the in-between areas leaves space in the layout design for locations that are closer to prototype and offer more interesting operating possibilities.

Even if one or more of the layout set locations aren't yet filled with all the props and scenery desired, a curtain could be drawn (lighting turned off) on those sets, and the remainder of the layout operated as designed.

This isn't a large layout, but it's admittedly somewhat complex to make it "operate large." Like you, however, I'm not getting any younger. If the railroad as a whole becomes a maintenance burden, the peninsula locations could be removed and the railroad turned back into a single-location layout, one that may be more appropriate at that time in my life. **MRP**

Joe Smith has retired from a career of restoring vintage Corvettes. A 45-year member of the New Haven RR Historical & Technical Association, Joe enjoys family activities, antique automobiles, motor sports, photography, railfanning, and kayaking. Joe and his wife, Sally, live in central Pennsylvania.

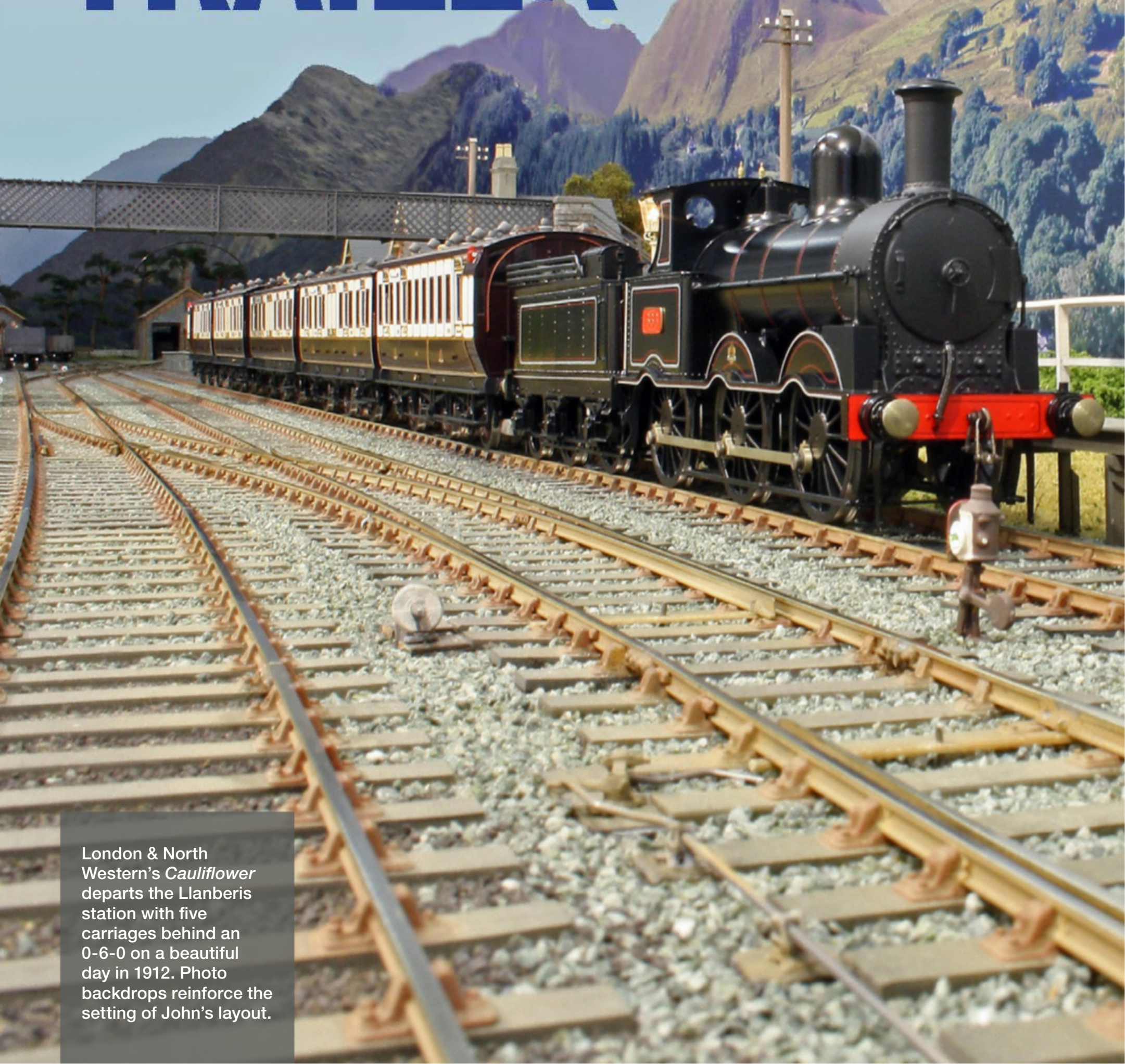


5 The layout was originally designed to be a single shadowbox with a helix to staging above and below, but during early construction Joe decided to add five more locations. This was easily done by making additional cuts into the existing plywood support brackets and adding turns to the helix.



6 Joe wanted easy-to-build and strong brackets to support the numerous decks of a peninsula required by the expanding design, so he cut them from $\frac{3}{4}$ " plywood. He mounted them to 4 x 4 posts secured to the floor joist above by slip joints to allow for movement of the layout as humidity changes.

A model railroad in a **HIGHWAY TRAILER**



London & North Western's *Cauliflower* departs the Llanberis station with five carriages behind an 0-6-0 on a beautiful day in 1912. Photo backdrops reinforce the setting of John's layout.



Roll your railroad room to your modeling site

By John Stockton-Wood

Photos by the author

Ever since I first chose O fine scale, which in the United Kingdom means 7mm scale, or 1:43, I struggled with where to set my model railroad. I wanted to model a London & North Western (LNWR) branch line, something we have plenty of in North Wales. But which one?

After considering the various lines, I selected the one through Llanberis. The village is along Llyn Padarn and nestled at the foot of Snowdon, Wales' largest mountain.

With the model location selected, I now needed to find a space for the layout. All the normal places friends have used – the attic, spare room, garage, shed, garden, or a purpose-built room – had merit. However, they didn't address my own problem of constant relocation because of my job.

A serendipitous solution

Eventually, I hit upon the solution: a used highway trailer. This was the result of needing temporary storage for our furniture and bulky household items.

This overview (below) shows off most of the scenicked portion of the layout before the backdrop was installed. In the foreground is the outer home signal that indicates the train can continue into the station.





Our home sold quickly, and the house my wife and I purchased needed a lot of repairs before we could move in.

This sparked the idea of using a trailer as a portable railway room. I located what turned out to be a suitable home for the O scale railroad: a refrigerated (which also means insulated) 8 x 8 x 44-foot trailer. Having access only through a double door at the rear helped with the security aspects.

During our cold winters, the inside temperature never gets below 7 degrees F, even when the outside is below zero. During our hot (for the U.K.) summers of late, before opening the doors, the inside temperature never goes above 65 degrees F.

After more than a month of cleaning the inside of the trailer, I was ready to install wiring for the lights, power, and heat. I installed steps and a platform to make it easier to get into the trailer. The latter proved to be handy for those sunny days when I can sit down to enjoy the views and have a drink while planning the next enhancement.

Photos for the backdrop

Installing a 6 x 28-foot model railroad and a 12-foot fiddle yard wasn't that difficult, but the backdrop proved a bit more challenging. Initially I didn't plan to have one. But once the layout was installed and I started running trains, it became clear that something was wrong. The stainless steel walls and the aluminum strips that run down both sides of the trailer precluded the illusion of reality.

The only solution was to have a backdrop. This sounds simple enough, but it wasn't. Full-size Llanberis isn't

the easiest place to photograph, especially when I wanted the scene to depict the LNWR in 1910-15.

I figured the best option was to take as many photographs as I could to fill a 34-foot long backdrop that was high enough to give some resemblance of the mountainous scenery.

Using advice from John Ellis-Cockell of ID Backscenes, I placed the camera on a tripod and took upwards of 80 pictures. I sent the digital files to John so he could then stitch them together using photo-editing software. The result was one backdrop photo showing the mountainous scenery behind Llanberis station.

Learning points

- One storage solution may lead to another.
- A used refrigerated trailer is already insulated.
- Adding house wiring requires some thought.
- In this case, you really can take it with you!

Backdating the backdrop

Next, I needed to remove all the modern details in the photos. Brian Johnson, whose area of expertise is teaching art, was just the chap for such a project. When he saw my model railroad, he understood exactly what I was trying to achieve. What I was looking for was a resemblance of the scene rather than a perfectly correct image.

Left: David Sumpton enjoys a turn at the throttle as his train passes through Llanberis, Wales, on John Stockton-Wood's O fine scale London & North Western. Frequent job relocations led John to use a highway trailer to house his model railroad.

Right: A sturdy set of wood steps and a porch afford access to the rear of the trailer. The doors can be locked to provide security.

Below: This is the frame made from 1 x 2s that was used for the 4 x 34-foot backdrop. Sheets of foam board, overlaid with self-adhesive photo backdrops, were attached to the wood frame.



It took Brian many hours to remove unwanted and anachronistic details, such as modern street lights and buildings, vehicles, and tractors. He also modified the houses. The color palette used in the 1900s was drab by today's standards.

Bringing it all together

The task then segued to the construction and positioning of a 4 x 34-foot backdrop behind my model railroad. There wasn't much room to work with – a little over 1" between the trailer wall and benchwork. John advised using foam board because it's light and inert, and therefore not affected by changes in temperature.

Foam board comes in two sizes: 4 x 8 and 4 x 10 foot sheets. The 4-foot height between the layout and the roof of the trailer led me to order three 8-foot sheets and one 10-foot sheet. The 10-foot sheet was split into a 4- and 6-foot sections. This allowed the backdrop to follow the curvature of the line to the start of the fiddle yard. It also blocks the view of the layout as you enter the trailer.

With the help of Stuart Irwin, I made 4 x 8-foot frames from 1 x 2 pine. The self-sticking polypropylene backdrop rolls arrived with John the next day.

We wiped off any dust from the foam boards with a dry cloth. Then we used a dampened cloth to wipe each board, as required to put a barrier between

the foam board and the polypropylene. We lined up the image, ensuring it was square. We then gradually peeled off the plastic backing to expose the self-sticking adhesive, slowly working along the foam board and making sure it was aligned. We had to re-do one section, as the top and bottom edges of the photo backdrop weren't parallel with the foam board.

Tall trees were positioned strategically to hide the gaps between the three 8-foot boards. Having had a chance to spend time operating and photographing the model railroad, I think the continuity between the layout and the backdrop is convincing.

A layout on the move

I've arrived at the happy state of having a functional layout room at a total cost to date of about \$6,000. I still need to find an easier method to get power to the trailer, however. I currently have a generator, which limits me to 650 watts.

Using a highway trailer may prove an attractive alternative location to install your layout. Moreover, should you have to move, you can take the model railroad with you intact. **MRP**

John Stockton-Wood is retired from careers in hotel management and financial services. He thanks those cited in the text for their contributions to this project.

Building a layout MORE

Tips from a veteran
model railroader and
project manager

By Randy Laframboise//

Photos by the author

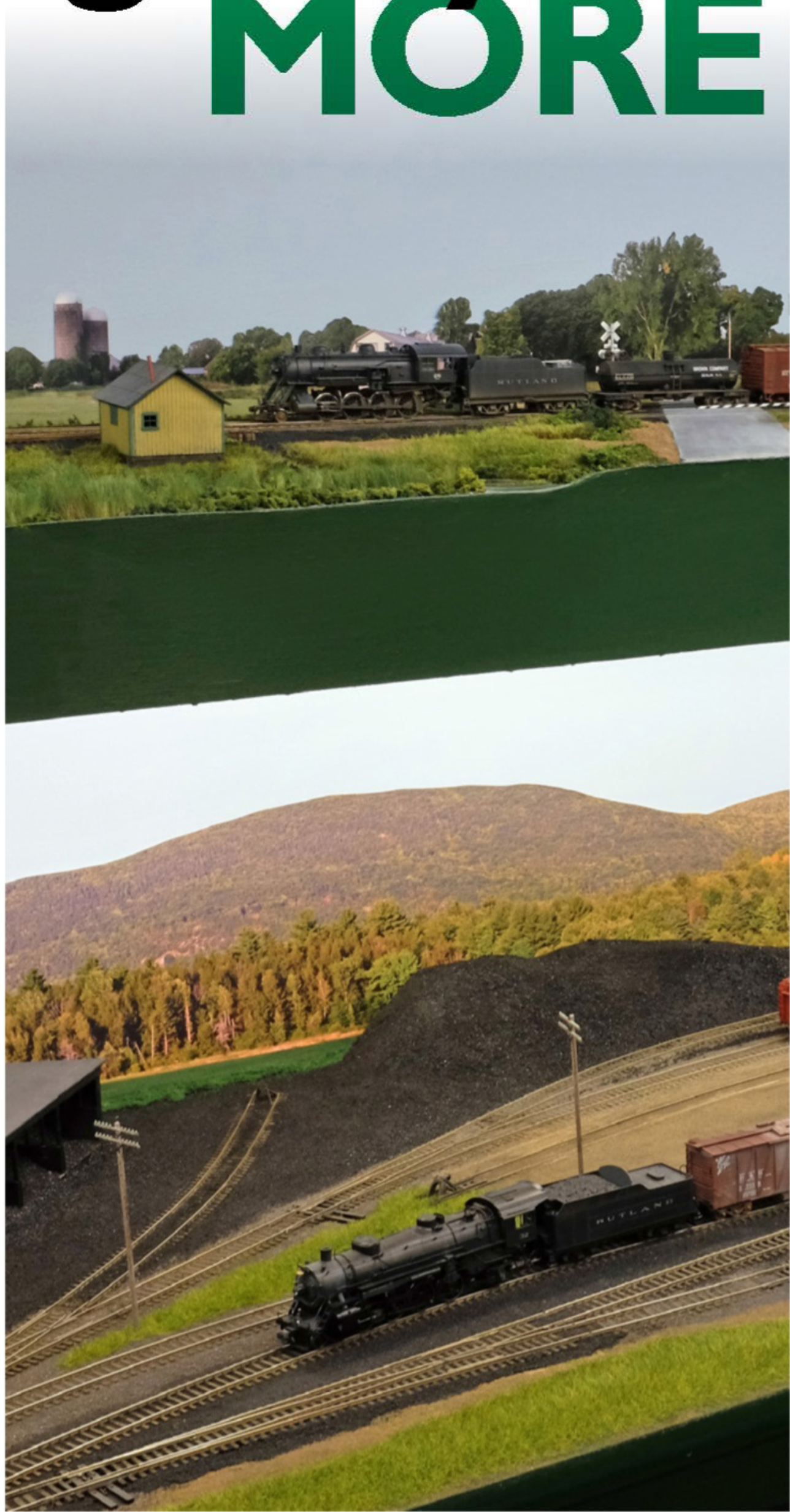
I've been a model railroader for the past 45 years and have worked in the heavy-construction industry for more than 40 years, the last 30 as a project manager. During that time, I've learned a thing or two about completing projects in the most efficient manner possible. Sharing a set of rules I use to guide my professional decisions may be of benefit to fellow modelers, as they're directly related to constructing a layout.

This article is geared toward those who want to build a large layout rapidly. With a time-consuming job and a family to raise, I had to spend my available time on the layout as efficiently as possible to make reasonable progress. Let's review what my layout-building partner Mike Sparks and I consider to be key questions and issues one must consider:

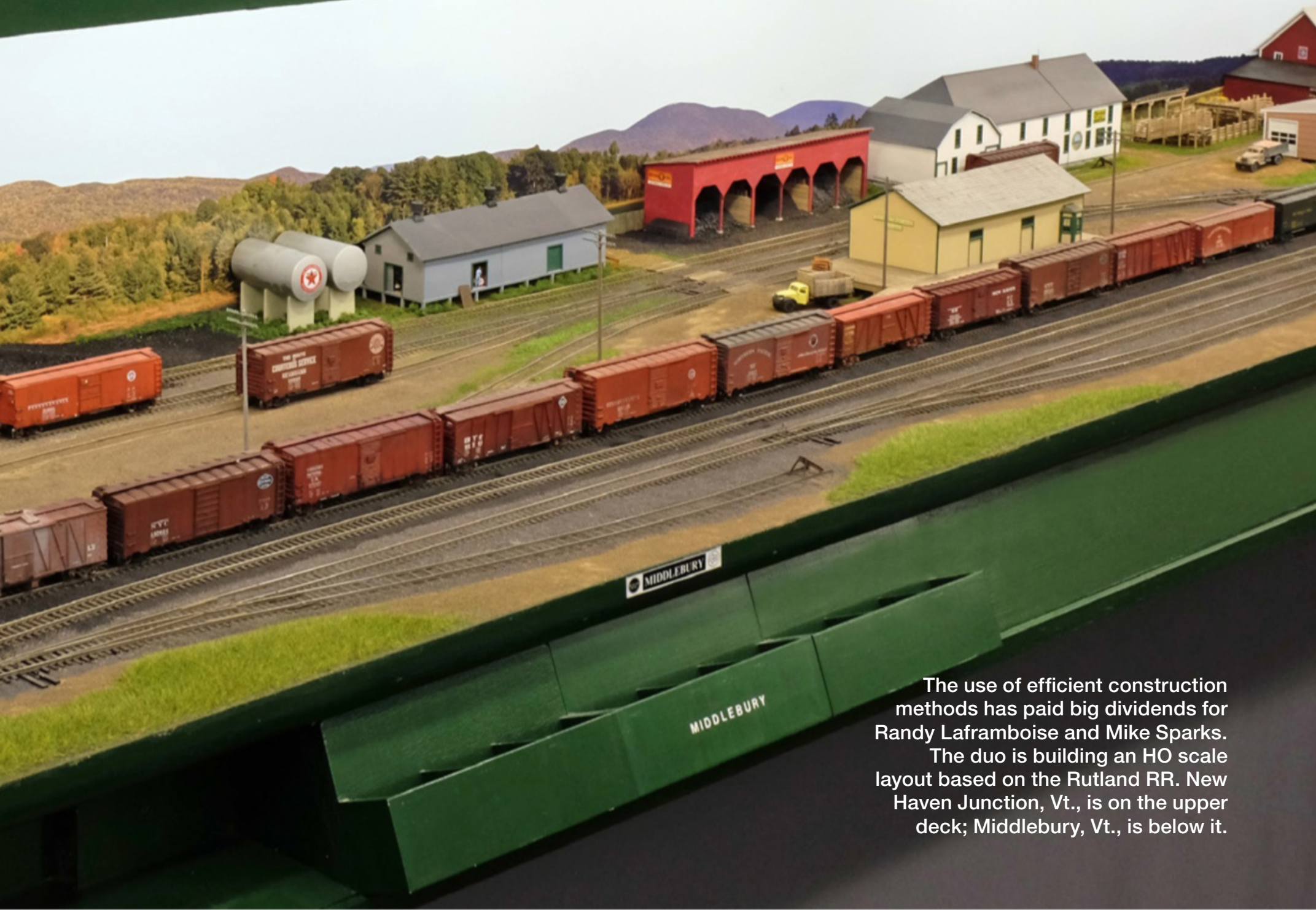
Is this something I want to tackle and can be successful at?

Before starting any project, I evaluate current workload, available resources such as manpower and equipment, and proposed schedule. In building a layout, consideration should be given to how much time you'll realistically have to spend on the layout, how much drive you have, and how much money you have available to spend on it. It's my experience that actual construction takes four times longer than you think and costs at least twice as much as you might reasonably anticipate. Make allowances in the design and size of the layout to fit the time you have available and the money you can devote to it. I've seen numerous layouts stall midway through the construction process when the owner realizes the commitment it will take to actually finish the job.

Decide how to research the project and how you'll attack it. Knowing how you'll construct the



EFFICIENTLY



The use of efficient construction methods has paid big dividends for Randy Laframboise and Mike Sparks. The duo is building an HO scale layout based on the Rutland RR. New Haven Junction, Vt., is on the upper deck; Middlebury, Vt., is below it.



Build the layout in phases to avoid burnout and to get something running as soon as possible. Randy and Mike's layout was built with the entire upper deck operational and scenicked before tackling the lower deck.

layout in advance will save time and money as you build it. Of course, it's difficult to know this ahead of time if you haven't done it before. Seek out and cultivate experienced builders to learn as much as you can prior to design and starting construction. See as many layouts in person as possible. You'll see what you like and don't like in each of them.

Most layout builders are more than happy to offer advice, experience, and help to motivated peers. Relationships with friends are the most important opportunities to gain hard-won experience and information. If handled correctly, you'll develop friendships that often benefit both parties.

Stay humble and open to new ideas. Nobody has all the answers, and different techniques work for different people. YouTube is an amazing resource for information, ideas, and hands-on tutorials. Read as much as you can on the prototype you're modeling or railroads you like if you are freelancing.

Have needed materials on hand.

The cardinal sin of managing a construction project is not having materials on site when they're needed. Besides being embarrassing, it's costly and hurts the momentum and schedule of the project. Try to accumulate plenty of materials that you know



Don't waste time trying to plan everything to the Nth degree, as it's all going to change anyway. Just have a good idea of what the end goal is, and be flexible in getting there.

you'll need, such as lumber, wire, track, scenery items, and anything else you're sure you will need in advance.

It's painful to spend money on mundane items such as plywood and track when you would rather be buying locomotives and rolling stock. But if you're committed to building the

layout, you'll eventually have to buy all this material. Running out of materials midway through a project is a sure momentum killer. It's much more pleasant and rewarding to have what you need when you need it. The price of materials will not go down. If you find a deal, bite the bullet and buy it.

I've bought plenty of materials that I ended up not using, but they're available for future projects or to sell to friends. I look at it as the price to pay to have what I want available to me when I need it. It helps having friends who are hoarders and have materials to draw from when needed.

Buy quality tools and materials.

I'm about as thrifty (cheap) as they come. It's tempting to try to get away with bargain tools and materials. Don't do it; it will always come back to bite you. Quality tools will help you perform the job easier, quicker, and more enjoyably, and they'll last.

If anything, overbuild the benchwork. On a previous layout, we tried to get away with $\frac{1}{2}$ " plywood for subroad-bed even though I'd read many times to use $\frac{3}{4}$ ". Big mistake, as we struggled with it for the entire life of the layout.

Be picky in what you buy for lumber. Sort through the piles at the lumberyard and get the straightest, knot-free lumber you can find; it will make a difference. It took me a long time to

Learning points

- Organization is the key to efficiency.
- Keep it simple.
- Be fearless.
- Good tools and materials are worth the extra money.
- Outsourcing can save time.
- Build in phases to avoid burnout.
- There's no substitute for hard work.

learn this lesson, and I still occasionally try to get away with a cheaper product, usually to my regret. For the amount of time and effort you'll be putting into this project, the extra dollars spent for quality will pay off and make life easier.

Don't be afraid to make mistakes. You'll make mistakes, a lot of them. It comes with the territory, especially if you're new to layout building. I make mistakes every day at work, even though I've been doing it for decades. Making mistakes is the best way to learn how to do it right. I used to worry about making mistakes, and it paralyzed my production. As I've gotten older, I've learned that it's much better to hop in and go for it than to agonize and put off doing something because of fear of failure. You gain nothing by waiting and hoping a problem will go away, or that you'll find an easier solution by waiting.

To make progress, you must push ahead, even if it turns out wrong. At least you're doing something. Besides that, after you make multiple mistakes trying a new technique, you'll eventually figure it out. No fear is the best way to move forward quickly.

Fix mistakes; don't try to hide them and hope they'll go away. They won't, and you'll pay for it down the road. It's no fun doing work multiple times, but it's going to happen. If you notice something that's bothering you or not working as you'd hoped, fix it. Many times I've finished something, and it just didn't come out the way I wanted it to. I tried to live with it because I didn't want to spend the time to redo it. Trust me, it'll bug you every time you look at it or think about it. It usually takes less time to fix than you'll spend worrying about it.

Quality or quantity; you can't have both. If you're planning on building a large layout quickly, every



Be prepared to grab any spare time to make progress on the layout. Here Randy fired up a Coleman lantern and worked on the layout during a power outage.

structure and freight car isn't going to be able to be superdetailed. Don't waste time on things that aren't going to be seen, such as backs of buildings. You can always do more later.

However, in the haste to get work done quickly, it's tempting to do substandard work. Do your best to take your time and perform the work correctly. It takes less time to do the job right than it does to do it twice. Take pride in your work and do the best job you can under the circumstances. You'll feel better about yourself, and the quality of the layout will reflect that pride. If you're going to do a project halfway, don't bother to do it at all.

Be organized. Organization is the key to successful construction projects. Have a plan and try to stick with it as best you can, even though it will change every day. Keep tools, equipment, and materials organized, clean, and ready for work. Spending time searching for a missing tool is frustrating and inefficient. It's hard to get in the habit of cleaning up after every work session, but once you do, you'll find it pleasant to start off in a clean workspace.

Don't bite off more than you can chew. Know your limits. You must be realistic about the speed you

work and what your talents are. Everybody has strengths and weaknesses. Lean on your strengths and try to improve your weaknesses.

I used to think that subcontracting out work was cheating and that I had to do everything myself. As I've gotten older and have more disposable income, I've come to realize that money spent farming out some of the work I don't enjoy, such as installing Digital Command Control (DCC) and sound in brass steam engines, allows me more time to work on the things I do enjoy.

Don't be afraid to subcontract work out to reputable firms. The real professionals who do this work daily will usually do a better job than you, and much quicker. Ask around and network to find good subcontractors. It does come at a cost and will bite into your budget. Labor isn't cheap, but you get what you pay for.

Start small and work your way up the ladder. Don't try to build a basement-size layout unless you know what you are getting into and have done it or helped someone else do it before. It's an enormous task and is the reason that so few layouts reach completion.

Start out with a module or section of layout you can incorporate into your dream layout. Build that module or



“Get it Green!” was Randy and Mike’s mantra during layout construction. Nothing transforms a layout more than the quick-and-easy application of a base coat of ground foam on the landforms.

technique somebody else used, ending in frustration. Yet I always seem to figure out a way to get it done that works for me. If somebody tells you that you have to use a certain glue, paint, or other material and that’s the only way it’ll work, don’t believe it.

A long time ago someone told me to “go with what you know.” If you’re comfortable with a technique and getting the results you want, have confidence in it. Don’t listen to the naysayers out there. Forge ahead as best you can.

Keep it simple. To build quickly and efficiently, you mustn’t over-complicate things. Always keep the end goal in mind. Don’t build a huge yard with tons of turnouts and wiring unless that’s what you enjoy. Use staging as the “for-now” main yard and model only the over-the-road portion of the railroad.

Build a shelf layout to maximize length and minimize amount of real estate to scenic. I’ve never met a layout builder who doesn’t wish they had more open running on their layout. Avoid choking the layout with buildings, towns, and track. Less is more.

It’s quicker to scenic open areas than towns and gets the most bang for the buck. Let the layout breathe; adding more open space will make the layout feel larger and more spacious.

Keeping the layout at a constant elevation and eliminating bothersome vertical curves will allow it to be built quickly and probably to run better. You can create the illusion of grade change



Organization is the key to efficient construction. Everything has a place, and there’s a place for everything. Rolling storage and work stations allow quick movement of needed materials to construction locations.

piece of layout out to finish before you attempt to build the entire layout at once. You’ll gain valuable insight into what works for you and what doesn’t. You can make your mistakes on a much smaller scale rather than attempting to build out all at once.

Once you’re happy with a small portion of a layout, you can transfer the skills and techniques you’re comfortable with easily to a larger model railroad. You can also extrapolate how long it will take for full buildout and estimate whether you have the time and drive to push it through to completion. Divide the project into phases so you have reasonable goals to reach.

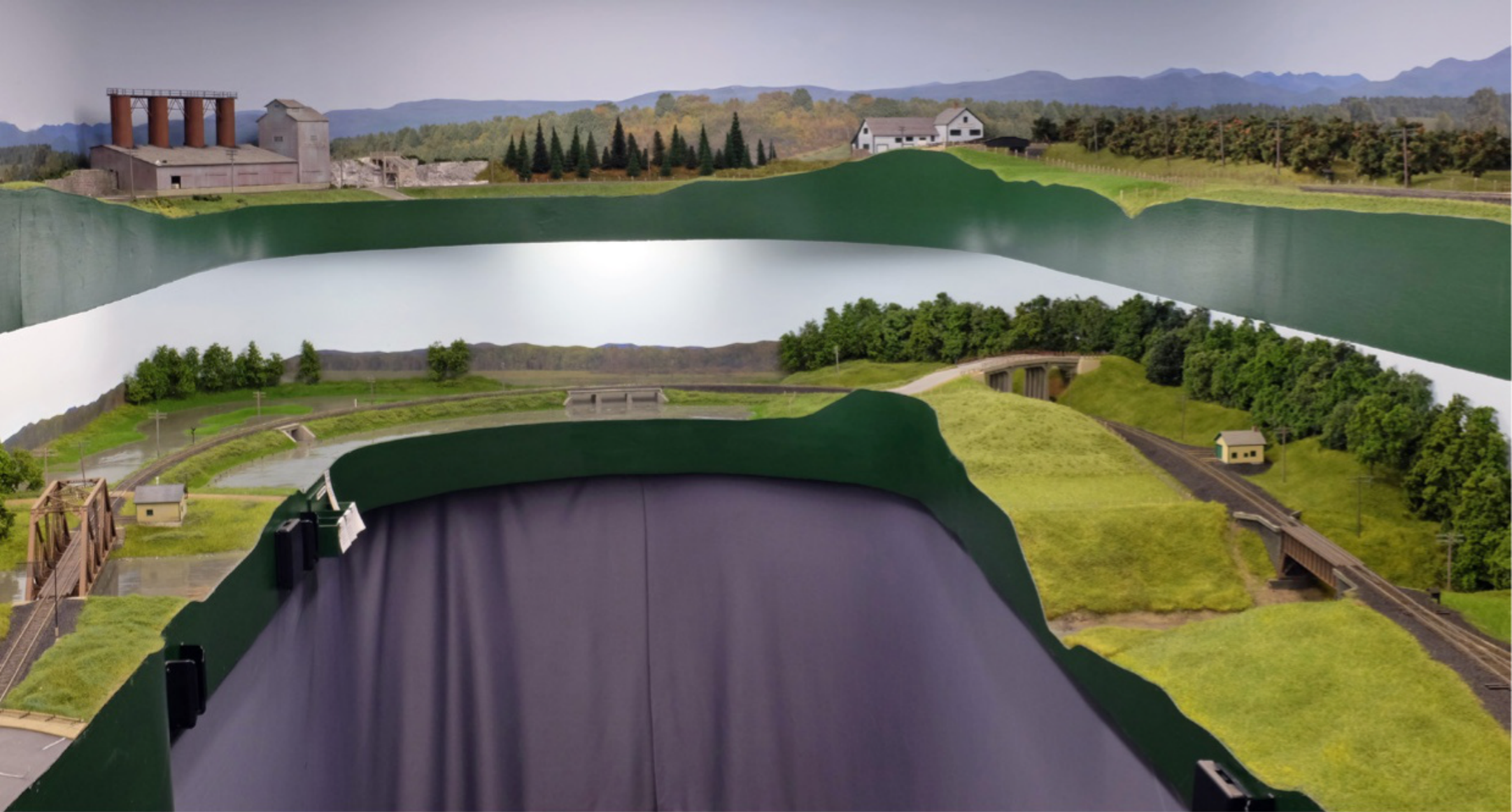
On our layout, we had the upper deck operational and mostly scenicked before starting on the helix and the lower deck. We were able to prove our

assumptions and learn what worked best for us before tackling the rest of the project.

The amount of work to build a large home layout is overwhelming to everybody at some point or another. Breaking the tasks into manageable pieces helps to prevent burnout and abandonment of the project.

Don’t believe everything you read or hear. There are always multiple ways to do something. I used to believe that everything I read or was told by others with more experience was gospel and that I had to do it that way. This left me discouraged when I couldn’t get the results I expected using other builders’ methods.

If something doesn’t work for you, try something different. Countless times I’ve struggled trying to follow a



Rural areas will make your layout feel longer and less congested. Open spaces between places are easier to complete than towns and yards.

by adjusting nearby scenery and landforms. Leave open spaces and keep the towns to a reasonable size. Structures take a long time to build, especially if you're scratchbuilding for a prototype layout.

Standardize your construction and scenery techniques and coloring. It'll make things quicker to build as there are fewer choices to make. Standardization will also make the layout more visually cohesive.

The use of DCC, auto-reversers for reverse loops and wyes, and manual control of turnouts all reduce wiring to the bare minimum. Not only will this save time, it will make troubleshooting easier.

Time is the enemy. Get in the habit of doing something on the layout every day, even if it's for only 15 minutes. There are many evenings when I have no interest in working on the layout. But once I get started, I end up spending hours in the basement. I always have many projects going on at once, so I usually can find something I enjoy doing at that particular moment. Turn off the TV, get off the internet, get off the couch, and do something.

While all the rules and advice I've just shared work for me, you have to follow your own path and figure out what works best for you. Building a



Stock up on materials that you'll need. There's nothing more efficient than having what you need when you need it.

layout quickly takes a lot of determination, discipline, and hard work. There are no real shortcuts. It's more like a second job than a hobby, and you must have some passion for it to pursue the project to completion. There's no substitute for hard work – you just have to do it.

If it were easy, what would be the satisfaction in doing it? **MRP**

Randy Laframboise and Mike Sparks are nearing completion of a multi-deck tribute to the Rutland RR. Learn more about the layout in Model Railroad Planning 2016.

Learn more

Get more great ideas for building your layout more efficiently in *Model Railroad Planning* editor Tony Koester's recently released book *Time-Saving Techniques for Building Model Railroads*. To purchase a copy of the book, please visit KalmbachHobbyStore.com.



Big steam is back in the Appalachians

An O scale railroad began with
a layout visit and a napkin

By Paul J. Dolkos//Photos by the author



I Headed by Class J 4-8-4 no. 610, the eastbound *Powhatan Arrow* speeds along the Norfolk & Western main line on Chris Smith's O (1:48) scale railroad. The bridge and piers are similar to those at Bonsack, Va.





As is so often the case, Chris Smith's interest in model trains was nurtured with three-rail O gauge Lionel trains. Over the years, he acquired quite a collection of high-rail rolling stock representing a wide range of prototype railroads. But as nice as that equipment was, his perspective changed when he visited a two-rail O scale layout. Within minutes of seeing it, he decided that was the kind of railroad he wanted.

This change of direction posed several decisions. The most important one was what prototype he should model. He had a preference for big steam, especially articulated locomotives. He also wanted to model relatively short passenger trains with attractive lightweight cars that would look good in a limited space. And he was looking to run trains in a mountain setting with lush vegetation.

These criteria pointed to the railroads and scenery of the Appalachian Mountains of southwestern Virginia and West Virginia. Chris considered the Chesapeake & Ohio (C&O) and the Norfolk & Western (N&W) as modeling prototypes, and finally chose the N&W. He especially liked the railroad's A class 2-6-6-4s and Y class 2-8-8-2s for freight and the streamlined J class 4-8-4s for passenger trains.

A critical consideration was that models of these locomotives were available in O scale. Moreover, one of the N&W's passenger trains, the *Powhatan Arrow*, typically ran with just five to seven cars, a relatively short name train that would fit nicely on the layout.

Time to hit the books

Chris read a lot of books on the N&W. He also started sketching track plans but had a hard time breaking away from tinplate-style tabletop designs. He took his track plan ideas to a regular Friday night gathering of Washington, D.C.-area O scale modelers. The initial responses were friendly wisecracks such as "Get a bigger basement!"

2 That Chris has done a masterful job of capturing the character of the Mountain State scenery is evident in this portrait of wood caboose no. 518131 on a westbound crossing the Bonsack, Va., bridge.

3 Class Y6b 2-8-8-2 no. 2190 runs west on the middle level of the railroad. This class of locomotives, called the "workhorse" of the N&W, was used in many types of services: mainline freight, pushers, heavy branchline work, or as yard hump engines.

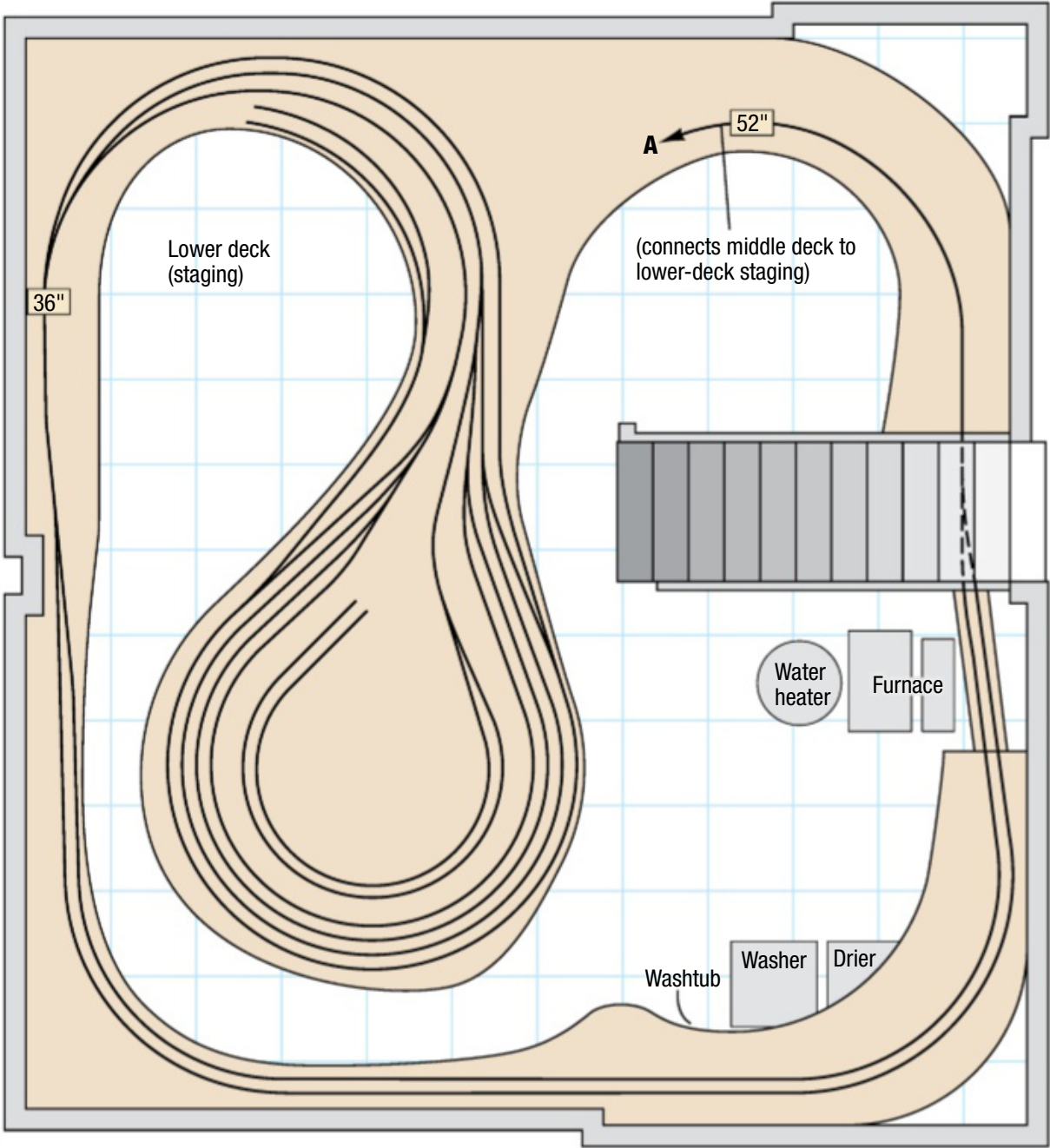
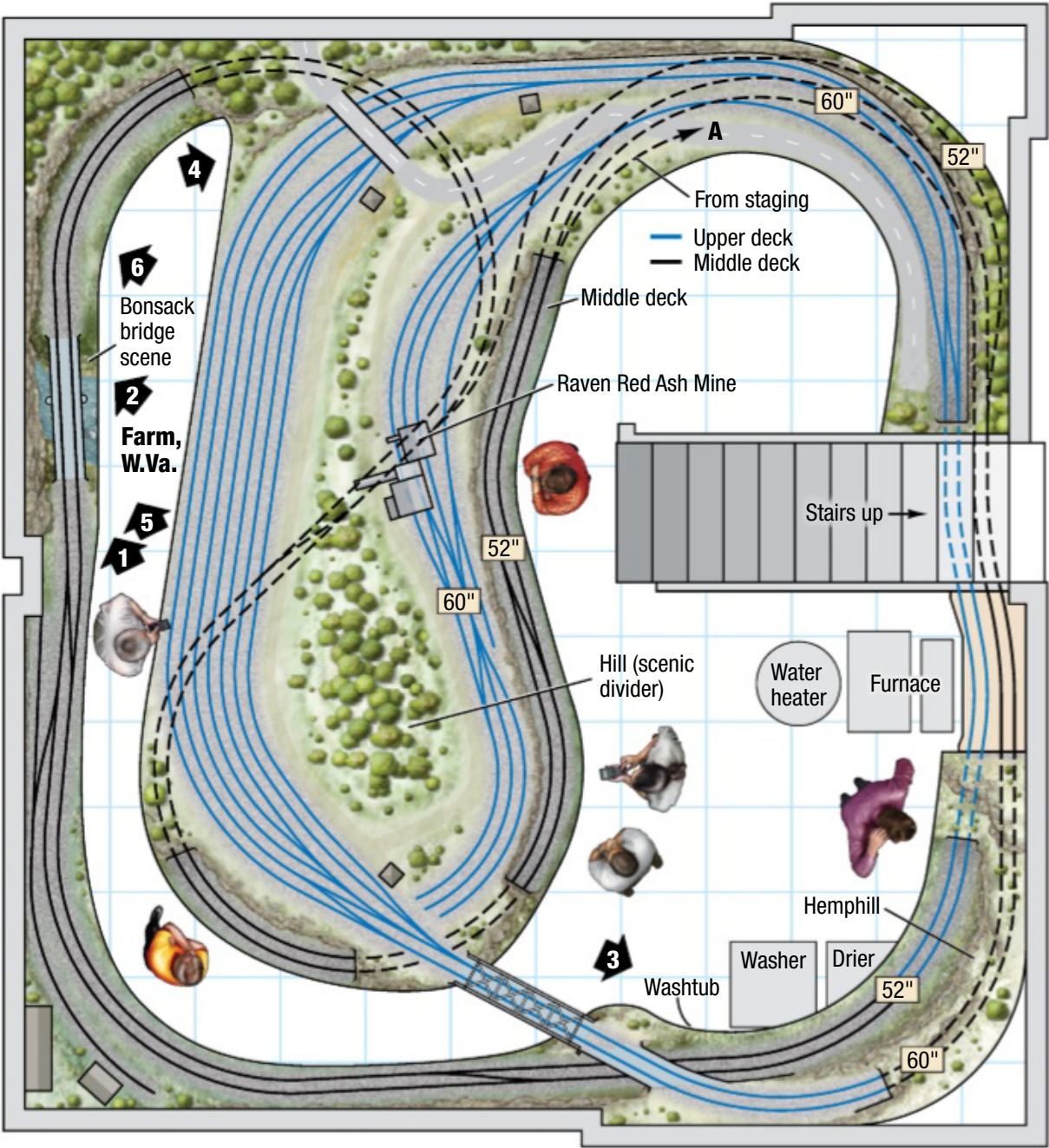


Norfolk & Western Fuel Satisfaction

O scale (1:48)
Room size: 23'-6" x 26'-6"
Scale of plan: 3/16" = 1'-0", 24" grid
Numbered arrows indicate photo locations
Illustration by Kellie Jaeger and Rick Johnson
Find more plans online in the
ModelRailroader.com Track Plan Database.

The layout at a glance

Name: Norfolk & Western Fuel Satisfaction
Scale: O (1:48)
Size: 23'-6" x 26'-6"
Prototype: Norfolk & Western
Locale: West Virginia and Virginia
Era: 1953
Style: triple-deck walkaround
Mainline run: 200 feet
Minimum radius: 60" (main line), 56" (staging)
Minimum turnout: no. 6
Maximum grade: 3 percent
Benchwork: open grid
Height: 52" to 60" (visible), 36" (hidden staging tracks)
Roadbed: 3/8" milled Homasote, 3/4" plywood
Track: Atlas code 148 flextrack and Old Pullman turnout kits
Scenery: layered and carved 2" extruded-foam insulation board
Backdrop: painted walls and tempered hardboard
Control: NCE Digital Command Control



Points of interest



Portable mountains. The long mountainsides that line the double-track main line around the basement walls are lift-out sections up to four feet long and two feet high. The sections have a tempered hardboard base with carved extruded-foam insulation board creating the slope. The ground cover is layers of earth, rock, ground foam, and static grass. The trees are Scenic Express SuperTree material. The trees aren't always tightly clustered, allowing bare earth and rock outcroppings to show through. The movable scenery sections provide quick access options for layout repairs and changes. Recently, when a service person had to get to an air-conditioner component, the mountainside was simply moved out of the way.

Control panels.

As Chris installed the switch machines in the bottom-deck staging yard, he couldn't decide on the best place to locate control panels. So he built the panels on a rolling assembly with casters. What might appear to be extra wiring is for turnout frog power; with the higher O scale amperage, Chris chose not to use the Tortoise by Circuitron switch-motor contacts.



Shaping the foam scenery. The Raven Red Ash Coal Co. mine yard is the one large industrial scene on the railroad. This view shows the drop ceiling that hides the florescent tubes and provides a finished look over the entire layout. Note how the mountain scenery is built up with 2"-thick extruded-foam insulation board. Initial shaping was done with a large kitchen knife. The final contour was created with a rotating brush in a power drill. This creates a mess with the dust and small granules thrown off by the drill



brush, but Chris likes the results. He erects a curtain around the work area that helps contain much of the debris.

Bridge abutment. With its unique rail reinforcements, this abutment is based on an N&W prototype in Bonsack, Va. Chris built the basic shape from wood covered with wood putty and painted a light concrete color. He then painted fine-grit sandpaper a darker gray shade and pressed it against the walls. Final weathering was done with India ink washes.



Rolling-stock vacuum cleaner. Rolling stock on a layout still under construction can quickly gather a layer of dust. Brushing dust off 100 or more cars and locomotives, particularly larger O scale equipment, by hand would be time-consuming and move the dust off the models onto the floor or back into the air. So Chris created this vacuum unit. The smaller hose in the middle blows the dust off each piece as the train pulls through the unit. The two larger diameter hoses pull the loose particles into shop vacuums.





Track-cleaning cars. A three-deck layout creates track areas that are relatively inaccessible, or at least difficult to reach them to clean track by hand. So Chris experimented with track-cleaning equipment pulled by a locomotive. He began with the Centerline track-cleaning car shown on the far right. The carbody is a brass casting with an opening in the middle holding a cut-down paint roller moistened with alcohol. Cars behind it with dry rollers wipe the solvent, and hopefully dirt, off the rails.

Chris found that the dry rollers would bounce up and down at turnouts and leave residual dirt. To solve this problem, he rigged up metal nuts on a rod for more weight on another Centerline car to limit roller bounce. That modification is on the cleaning car on the far left. The final improvement was to add weighted rollers to two hoppers. Light rollers are placed on top of the weighted rollers to add resistance for scrubbing the rails but allow the roller to easily roll over points and frogs without picking them. Today he uses the entire four-unit cleaning car combination and finds it effective.

Square bracing. There are numerous shelving elements on the market to add strength and stability to layout benchwork cantilevered off a wall. Chris has used a different approach to adding strength in areas that he thinks may sag over time with the weight of O scale trains passing overhead. In 20 or more locations, he screwed carpenter squares to the wood benchwork pieces for additional strength. The wood benchwork without the squares appears to offer sufficient support. The metal squares may be overkill, but Chris will tell you that he sleeps better at night confident that there won't be future sags in any of the layout's trackwork.



4 A local freight headed by Class M 4-8-0 no. 475 (still in regular operation at the Strasburg RR in Pennsylvania) enters the small holding yard at Farm. This yard handles empties and loads from the Raven Red Ash coal mine.

But also in the room was John Armstrong, often referred to as the dean of layout planning. He quietly looked over the drawings, took out a pen, and began doodling on a napkin. He sketched a simple track route that fit the confines of the Chris's basement. That simple napkin drawing proved helpful in developing the final plan.

Chris immersed himself in Armstrong's layout planning books. He also watched every N&W video he could find. Chris generated a list of what John had dubbed "givens and druthers" and focused on the purpose of the layout.

First, he wanted a continuous run to display a variety of trains. For this he planned a double-track main line that the prototype had through West Virginia. Most of the track would run through a mountain setting with curves to show off the articulated boilers shifting from side to side.

Second, to provide some operation, he planned for switching opportunities at a coal mine plus a separate holding yard for empty and loaded hoppers. What emerged was a three-deck plan. The lowest deck is a staging yard on a branchline loop that diverges from the middle deck. The middle and upper decks form a twice-around, 200-foot loop with a reverse lobe that permits a train to return to the lower-deck staging.

Room prep and construction

Chris realized he needed to improve the basement for the railroad. He installed rows of fluorescent fixtures in the ceiling. Under the lights, he added a drop-ceiling grid with transparent panels to hide the light fixtures. The water heater, washer, and dryer were moved to open up a better path for the track flow, a relatively easy "fix" that's often overlooked when modelers plan their model railroads.

Finally, it was time to start building the benchwork. After finalizing the plan using 3rd PlanIt software, Chris gave it to a local woodworking shop, which cut out subroadbed sections from $\frac{3}{4}$ "-thick plywood using its Computer Numeric Control (CNC) machine. Each piece was numbered, which made it easy to assemble the right-of-way base.

Chris then had the layout drawing printed by a service bureau full size on long sheets of paper. Using carbon paper under the printout, he transferred the centerlines of the track to the subroadbed. This helped him accurately align milled Homasote roadbed that forms the base for the Atlas O scale track.

5 A double-headed eastbound coal drag meets a westbound empty hopper train at Bonsack. Chris' preference for big steam locomotives helped him choose what prototype to model.



A new challenge beckons

After 10 years of discovery, research, and hard work, Chris's N&W is once again hauling coal through the verdant Appalachians behind steam. It runs well and looks great.

But there's a new chapter in the saga of resurrecting big-time steam in the Eastern mountains. Chris and his wife are planning to move to Florida. The good news is that the 575-square-foot, triple-deck railroad is going with them. This will be a challenge, as this isn't some modular layout where one unbolts sections and loads them into a truck.

First of all, space for the railroad had to be created. No problem; Chris contracted for and had built a similar-size outbuilding on his property. Since this isn't a basement, there's no entry stairway taking up space, just a door to the outside. The washer/dryer is in the house, not in the railroad room. The HVAC unit is largely outside, so most major space-eating non-railroad elements are eliminated.

So what about powerful storms? Today's Florida building codes call for an abundance of bracing and tie rods, all of which have been integrated into the new structure.

Soon Chris will begin taking sections of the layout apart and shipping them to Florida. The mountain scenery is sectional, so it can be easily lifted out. Then the subroadbed can be strategically cut and removed from the benchwork.

Chris expects that erecting the layout again should be straightforward. When the track sections are reinstalled, he

Learning points

- Socializing with other model railroaders, especially those modeling in your preferred scale, can pay big dividends.
- A layout designed primarily to showcase big-time mainline operations rather than switching or local-freight work may be an ideal match for your interests.
- An O scale layout featuring a major railroad can sometimes fit in an area normally considered more appropriate for an HO layout, especially if multiple decks are employed.
- Moving appliances such as water heaters, washers, and driers can enhance track-planning possibilities.
- Are you sure you won't be moving any time soon?

will lay about a foot of new track where each cut was made rather than just trying to align the old rails. He expects to be sharing time between Maryland and Florida for a while, so he'll work on the layout down south and rolling stock at his northern home. The move won't inhibit progress.

It happened once and can happen again! **MRP**

Paul Dolkos is a regular contributor to MRP.

Class J no. 610 leads the eastbound *Powhatan Arrow* bound for Norfolk, Va., past a slide fence assuring the way is clear of boulders. Note the offset metal arms atop the poles, an N&W hallmark.







A SINGLE LOCATION layout

This N scale design fits in a double garage

By **Iain Rice**
Artwork by the author

The standard two-car garage found in many homes usually measures around 20 x 20 feet and thus forms a useful 400-square-foot layout site. It's not huge, but it offers sufficient scope for a model railroad that will keep several operators entertained and handle a good-sized equipment roster.

Using the space intended for a brace of autos to house a model railway isn't a new idea; in the United Kingdom where I reside, a goodly number of well-known layouts have called a garage home. Garages forming a part of the house – or at least attached to it – are usually the most accommodating; if they're not already included in the home's heating system, they're usually easily added, while additional insulation can be readily installed to keep things comfortable through the seasons.

Probably the most critical factor is the garage door. Fortunately, the modern roll-up sectional door is a well-designed affair offering good resistance to drafts and forming an established part of home security. Modern cars can stay outside with no ill effects in all but the most extreme weather, so unless you live in the likes of Alaska or Arizona, they can sit on the driveway, leaving the garage free for a Higher Purpose.

The Italianesque street facade of Portland's superb Union Station is topped by a classical "Campanile" (bell tower). Modeling this structure, even in a simplified form, would be quite a challenge. Iain's layout design calls for full modeling of only the relatively plain trackside elevation of Union Station. Iain Rice photos

As a layout site, a domestic garage has several characteristics in common with the traditional basement but also boasts some unique advantages. Like basements, a two-car garage typically doesn't have many openings – windows, doors, closets, and the like – to break up the walls. It will also have a solid, unobstructed floor. Unlike many basements, a garage usually allows adequate headroom.

What it generally won't have are support columns holding up the rest of the house, basement stairways, and space given over to water heaters, furnaces, and utilities. With that nice big door, there's no problem in getting materials inside, and access from the house is usually convenient. The lack of a fine domestic finish to interior wall surfaces in most garages is of no account when you're intent on covering them with a scenic backdrop anyway. And – ever more important in this increasingly mobile world – if a relocation is necessary, there's a good chance of finding a new home with a similar-size garage that the layout can move into.

Layout style

The general preference for most U.S. modelers seeking a viable plan for a home layout is to look for something that offers sufficient space to model two or more major endpoint locations – yards/division points, interchanges, towns, industries, or what have you – with a decent enough length of run between them to give trains a chance to highball. The operation can be summed up as passing opposing trains over a single-track main and switching

minor towns or industries along the way, all according to the rulebook and train orders, of course. This style of layout is what I term "multi-location." That is, it offers the scope for prototypical working between defined places.

The snag is that these destinations almost always end up being too close together. With contemporary layout design practice favoring walk-around operation with "sincere" routings that avoid tracks appearing more than once in any given scene, you're going to need plenty of aisle space and a basic track plan that uses multiple peninsulas to maximize linear distance. That's before you get into multi-decking and other such complexities.

At 400 square feet, a garage-sized area probably sits in the category of mid-sized in U.S. layout design terms. As such, it can just about accommodate the route style of layout in HO scale, although the square footprint doesn't give space for too many of the turnback curves peninsula designs always call for. There's also the trade-off between mainline running and train lengths; nothing niggles more than the anomaly that sees power on the point of a train entering station B while the markers are still in station A – 40 miles back down the track by timetable. But this is something even the biggest of layouts have to contend with if trains of anything approaching scale length are contemplated.

And then there's the matter of off-scene staging needed to represent those parts of the prototype not being modeled – usually, most of it – which will also call for quite a lot of space. Although it's often possible to put all or



The interlocking tower at the eastern end of Portland Union Station is ornamented in the same architectural style as the main buildings. Iain Rice photo

some of this unseen staging under scenery or as a lower deck, there are usually access problems with such locations. In combination, these factors mean that a 400-square-foot, multi-location layout is going to be somewhat cramped and limited in train lengths and length of run, certainly in HO scale.

A different perspective

Give that same piece of real estate to a British modeler, and he'd be thinking along totally different lines. For a start, here in Britain 400 square feet would be considered a large area; few U.K. home layouts get past the 250-square-foot mark that would only just avoid the compact label in the U.S. Typically, what forms the basis of the grander schemes here is the modeling of a single through location – usually a complex railroad facility such as a major junction, large city station, or extensive freight yard – linked to off-scene active staging, thus forming what might be termed a “parade loop.” In the context of our garage-sized site, such a home layout would traditionally be designed to be viewed and operated from within the center of the space, calling for an around-the-walls oval

footprint. Many older classic British layouts were built that way.

Nowadays, however, a goodly proportion of layouts of all types in Britain are conceived for public display at one of the many model train shows held each year, and consequently they're designed as outside-viewed ovals. That is, they have the modeled scene along one side – the public side – linked to hidden staging or active fiddle yards on the other by return curves at each end, all on sectional, portable benchwork designed for easy transportation.

The British “train parade” format also calls for a different mode of operation compared to its American cousins. In a nutshell, the trains pop out of the hidden staging at one end, do their stuff on stage, and then retire gracefully backstage at the other. The style of operation is basically timetable or sequence based, and the objective is to work a nonstop cavalcade replicating the passage of all the trains that worked in, out, about, or through the station or yard being modeled.

That may sound a bit limited, but when you're working on short headways with multiple tracks on conflicting routes and going by the indications of

working block signals, there's plenty of scope for error!

Cultural exchange

To return to our 400-square-foot garage, I got to wondering what would be a good way of using this footprint to produce a model railroad having many of the assets of both the U.S. linear route layout and the British single-location parade. It struck me that using the connected beads-on-a-wire principle of the U.S. linear route layout with its en route stations and industries in combination with British-style “trains passing through” display running fed by off-scene staging, it would be possible to represent the many aspects of a major U.S. railroad single-location facility without having to compromise too much on length of run and train length or worrying about getting enough route mileage to keep the “towns” at believable distances.

Combining the various facets of through running over several possible routes – coupled with train servicing, freight and passenger station workings, engine changes and servicing, switching the various yards and industries, and short-haul runs between the different facilities – would, I concluded, make for an interesting and entertaining layout that could keep several operators busy and showcase a lot of equipment. So, following the British tradition that favors modeling a prototype over freelancing, I went looking for one.

The Oregon fit

I didn't have to look far for a subject that could have been made for the job. Given that my usual Stateside pied-a-terre these days is Seattle, a three-and-a-half-hour train ride by Amtrak on the funky *Cascades Talgo* brought me to Portland, Ore., a pleasant city that's full of interest for the railroad buff. For starters, it's home to three important preserved steam locomotives. If that's not enough, it has a stunning and still-functioning Union Station that's been beautifully restored and retains the air of being the very place to start a memorable transcontinental journey on the *Empire Builder*.

Add to that the famous Steel Bridge, a rare double-decked vertical lift bridge (railroad downstairs, highway and streetcars on top) linking the tracks from Union Station with the east-shore frontage of the Willamette (will-LAM-ette) River, with the railroad threading between impressive grain terminals on the lead-up to the throat of Union Pacific's Albina Yard and

N – the scale for larger spaces?

N scale was once a bit of a poor relation in the mainstream of model railroading, what you went for if you didn't have room for HO. True, there was a time when N scale equipment was somewhat lacking in refinement and performance compared to HO, but those days are long gone, and today's N can do pretty much anything that's possible in the larger scale.

Smooth-running drivetrains, decent knuckle couplers, and finer wheels and track all endow better performance with refined appearance, and DCC and sound are there if you want them. And advances in plastic molding technology have meant that trains this small now carry detail that can withstand the sort of close-up inspection that used to be the prerogative of larger scales.

All this improvement has come without losing the key advantage of a small scale: the ability of being able to present the larger view of railroading within its setting.

On a good-sized layout, N scale gives scope for taking the broader view and opening up the modeling. Curves that would be real flange-screamers in HO are pleasantly relaxed in N when laid to the same radius. You can readily use prototypical long-lead turnouts and sinuous parabolic curves with realistic easements. And, of course, a yard length of flextrack in N is no shorter nor more expensive than a yard of HO, but when it comes to accommodating trains, it's good for almost twice as many freight cars.

Over recent years, I've designed a number of sizeable model railroads in N, and I've come to regard the smaller scale as having properties that the larger sizes lack even when space is not an issue. This plan is one such. – *Iain Rice*

engine terminal with its four-track repair shop, all watched over by a tall smokestack with the UNION PACIFIC lettering set vertically in the brickwork.

There's no doubting who the big players in town are nowadays, Union Pacific (UP) having swallowed the Southern Pacific and with all the other once-proud Class 1 roads (Spokane, Portland & Seattle, Great Northern, Northern Pacific, and Milwaukee Road) either gone or rolled up into BNSF Ry. But there's still the Portland Terminal RR linking the various industries, yards, and specialist facilities; the Portland & Western, a go-getting regional Class 2 serving western Oregon; plus a bewildering number of local short lines like the Willamette Valley, which add a bit of color and contrast. A model railroad based around one or more of Portland's many possible Layout Design Elements (LDEs are recognizable bits of full-sized railroads re-created in miniature) could be set in time frames stretching from the glory days of the pioneer railroads that opened up the territory to the present-day situation of two mega-railroads plus Amtrak.

After chewing several pencils down to the graphite, I came up with two strong contenders for my hypothetical garage. First off was an HO British-style exhibition layout with a close focus on the Pearl waterfront and Union Station in the transition era, with all those proud railroads in the mix and contrasts like named stainless-steel

transcontinental streamliners standing on the track next to the local to Astoria – wood-sided varnish headed by a veteran slope-cylindrical Atlantic.

Trouble is, where would you affordably source either the diesel flyer or the high-stepping 4-4-2 today, not to mention wooden passenger cars? So, somewhat reluctantly, I went forward several eras and down a scale to represent the Portland of today in 1:160.

Key elements

My pint-pot rendition of contemporary Portland inevitably takes quite a few liberties with its subject and relies on a series of key prototypical LDEs to give the layout the right "signature," even if the LDEs are somewhat pruned. There were plenty to choose from, but starting in the northwest corner – where there's a lift-up giving entry to the staging area – is a snippet of the Portland Terminal's yard. It handles intermodal traffic in a relatively modest way and also possesses some tight-radius balloon tracks serving a variety of industries and facilities. I had room for only one, a compact intermodal yard mainly handling trailer-on-flatcar (TOFC) traffic. The line also serves what I deduced from Google Earth to be a cement terminal and concrete plant, which I reckoned made a nice little industry.

Next in the pecking order comes Union Station itself, in its modern reduced layout with four platforms

serving five tracks. Although somewhat reduced in track count (at its height, there were 10 platforms), this magnificent structure is still as imposing as ever. It would be a major modeling challenge, although with the orientation I've chosen, you'd be spared building the splendid facade with its mighty oval-ended ticket hall; my plan calls for just the much plainer trackside elevation. But you'd still have to tackle all those roofs.

Next up is the Steel Bridge, not too daunting a prospect if you don't insist on it working. You'll notice I've set it hard against the backdrop to avoid any cast shadows and refrained from any attempt to add the MAX light-rail cars tiptoeing over the top deck.

The panorama then switches to the east bank of the Willamette River (in the middle of which you're bobbing about!) with a couple more modeling challenges, the two grain terminals. These are the only other structures of note on the layout; pretty much everything else would be represented on the photo backdrop that a stroll along the Pearl promenade with a digital camera would provide.

The last major element in the layout is the main yard complex. Here I pulled a dodge often used in older model railroad designs – using the same LDE to represent two or more locations or to fulfill diverse functions. In this case, the element doing the multi-tasking is the extensive freight yard, which takes up one whole side of the layout and stands in for both the UP Albina and BNSF Ry. Guild's Lake (Willbridge) yards – in reality, facing each other from opposite banks of the Willamette River.

The top end of this yard makes some attempt to resemble the arrangements at Albina, where the elevated highway ramps leading onto Fremont Bridge crisscross the yard throat and UP has its engine terminal. The center portion of the yard, which simply comprises a goodly number of parallel tracks flanking the running lines, forms the yard tracks for both UP and BNSF yards, with the lower end of the complex forming the (mostly fictional) Lake Yard throat. This yard could also provide some additional (visible) staging capacity to hold freight trains awaiting their next run.

Portland routes

Portland is a true railroad hub, with routes stretching out to all points of the compass. The main links are the transcontinental route eastward to serve the Twin Cities and Chicago, followed by the lines heading north to

Learning points

- Vehicles are designed to remain outdoors in all but the most severe weather, freeing garage space for more important uses.
- Garages have inherent design attributes that many basements lack, such as being clear of support posts.
- A two-car, 20 x 20-foot garage offers almost twice the footprint the typical British modeler has to work with.
- Today's N scale equipment is the equal of its HO counterparts in almost all respects, from operational quality to detail and variety of equipment, and it looks much better on what would be regarded as tight curves in HO.
- Focusing on a single location with many railroad options rather than one railroad with many towns proved worthwhile.



What looks like a curve found only on a model railroad is found at CLD Pacific Grain's dock on the Willamette River in Portland, Ore. A Trackmobile is pulling four covered hoppers around the loop track. The track in the foreground connects to the Steel Bridge over the Willamette River. Scott Lothes photo

Tacoma and Seattle and on to Vancouver, B.C. South from Portland stretches the continuation of this coastal corridor down into California, serving the Bay area and ultimately, Los Angeles. Last are the local railroads serving the hinterland between Portland and the Pacific Coast.

Services on all these lines start from Union Station and take various routes out of the city. So Amtrak's *Empire Builder* starts its eastward run to Chicago heading northwest along the Willamette River past the Portland Terminal's yard and BNSF's facility at Lake. This is as far as the layout takes you before heading back to staging; in reality, trains take the north leg of a wye onto a lift bridge over the Willamette then over the Columbia River into Vancouver, Wash., where the east- and northbound routes split. The *Builder* heads off along the North Bank of the Columbia River toward Spokane. The Amtrak/Washington State D.O.T. *Cascades* service runs to Seattle and Vancouver, B.C., but starts its northbound journey from Eugene, Ore., well south of Portland.

This means that *Cascades* trains exit staging to reach the southern end of Union Station via the Steel Bridge. Continuing north, the *Cascades* follows the same route as the *Builder* as far as Vancouver, Wash., then heads north to Seattle. The other Amtrak offering, the *Coast Starlight*, follows the same approach from Eugene, but terminates at Union Station.

On the layout, trains simply head out of Union Station in the appropriate direction; the connections to the main lines are all "off scene." Northerly workings pass the Portland Terminal yard and run along a length of riverbank leading to "Lake" yard. On reaching the Albina end, trains take the crossover to the sneak-off track (A-A) that tunnels beneath the river bluffs to enter hidden staging, where trains can slumber until next required.

Heading southward from Union Station, trains squeal their way around the tight curve onto the lower level of the double-decker Steel Bridge, repeating the flange-grinding act around the wye junction at the eastern end of the bridge leading into staging yards, here representing routes east (Columbia River south bank) and south (to BNSF's Brooklyn intermodal yard) and the former UP/SP routes south to California. Take the single-track north curve of the wye at the Steel Bridge and you're hugging the east bank of the river past the grain elevators into Albina Yard, here operating under its own name.

At the far end of the yard, "sincere" trains head through the junction into the tunnel – that is, back into staging. Insincere trains can take the riverbank and do another circuit or two of the continuous run. There's also one more sneak track that leaves the main at the throat of the terminal yard and takes you back to the lower deck of the Steel Bridge, forming a useful reversing loop

for turning Amtrak train consists, among other things.

Centralized control

Based on the hardware on display – multi-aspect color-light signals, switch machines on mainline turnouts, and lots of trackside relay cabinets – I assume there's a combination of dispatcher-controlled Centralized Traffic Control (CTC) and automatic block signaling at Portland. Turnouts in dark (un-signaled) areas, such as yard and industry tracks, would use switch stands operated by train crews. For switching off the main lines, the crews would ask the dispatcher by radio to unlock the switches as needed.

I've gone for a similar set-up in miniature with a CTC operator's position and panel tucked into the corner by the throat of Albina Yard. This panel could be modeled on classic lines with rotary switches and indicator lights, although these days it's more likely to be fully computerized using touch-screen monitors. Either way, trains would run over preset routes going on the signal indications. On the layout, the (usually) one-person, headset-wearing train crews would operate their trains in walkaround mode using DCC radio throttles facilitated by the generous aisles.

Portland trains

Portland is one of the relatively few regional centers that still handles significant long-distance passenger



The Union Pacific's *City of Portland* is on the move eastbound from Portland Union Station in September 1969. Peering past the UP hood unit's rear corner is the lead locomotive of Southern Pacific's *Coast Daylight*. Wayne Depperman photo

Peco N scale track

This layout is designed around the versatile Peco N scale track system, which includes an extensive range of turnouts and track styles.

In the U.S., turnouts are classified by the angle of the frog, measured as a gradient: 1 in 6, described as a no. 6. The lower the frog number, the sharper the deviation of the turnout. But the frog number is only part of the story when it comes to the severity of curvature through turnouts. Other factors are at work, notably the "lead" – the distance from the tips of the switch points to the nose of the frog V. The longer this distance, the gentler the curve that can be used for the diverging road. As a comparison of differing manufacturer's turnouts of the same frog number soon shows, they're far from all being equal in this respect.

The factor that really determines how easily equipment will negotiate a turnout is the equivalent radius through the turnout, hence the general wisdom that specifies higher turnout numbers – no. 8 or even no. 10, with their wider curves – for main line use and confines sharply curved no. 4 and no. 5 turnouts to industry and yard tracks.

In place of varying frog angles, Peco has just one: 10 degrees, equivalent to a no. 6. But it offers turnouts in small, medium, and long versions, all the same frog angle but having different lead lengths, equivalent to curve radii of 12", 30", and 36", respectively. All Peco track formations – diamond and slip switch crossings, 3-way tandem turnouts, scissors crossovers – conform to this standard. Curved turnouts use the same 10-degree frog angle with radii of 18" for the inner diverging road and 36" for the outer.

So only no. 6 turnouts are used on this layout, but in long-lead format for main lines, short in the boondocks, and medium everywhere else. – *Iain Rice*

traffic. The star turn has to be the *Empire Builder* toiling across from Chicago daily, closely followed by the *Coast Starlight* from Seattle to Los Angeles, successors respectively to the NP's streamlined transcontinental and SP's fabled *Coast* trains.

The other signature train has to be the distinctive low-slung Talgo articulated train sets used in push-pull mode by Amtrak for the *Cascades* services from Vancouver, B.C., to Eugene, Ore. Power comes from a General Electric (GE) Genesis or a new Siemens Charger

four-axle 4,400-hp low-emission unit at one end, with a cab car at the unpowered end. While some Talgos have a built-in cab, others make do with a retired F40PH rebuilt as a cab-baggage (cabbage) car at the unpowered end. The other oddball piece of equipment is the adapter coach that blends the low-slung Talgo stock with the normal U.S. equipment.

Kato makes both the F40PH and P42 in N scale. The *Starlight* and *Builder* use basically standard Superliner cars, which Kato can also provide. However,

at the moment no one makes a Talgo set with adapter cars.

Portland is also home to still-operational SP GS-4 streamlined 4-8-4 no. 4449, now housed at the Oregon Rail Heritage Center, along with SP&S 4-8-4 no. 700 and 1905-vintage Baldwin 4-6-2 no. 197 of the former Oregon Railroad & Navigation Co. (now part of UP). These engines make regular fan trips using a mixture of classic passenger cars. Kato makes suitable equipment if excursions are in your plans.

Long-distance freight services under the auspices of UP and BNSF Ry. are typical of modern U.S. operating practices centered around lengthy blocks of individual commodities: double-stack containers, TOFC, tank trains, innumerable bulk grain cars, coal hoppers, lots of forest products on center-beam and bulkhead flatcars, and plenty of auto racks. Many of these railcars are built in Portland by Gunderson.

There are also manifest moves and short-haul industrial switching runs, plus daily interchange runs between Albina and Lake yards via the Steel Bridge and Union Station. These secondary workings feature a wide variety of cars from boxcars of all capacities and vintages to covered hoppers, special-traffic tank cars, and the odd gondola or flatcar.

Mainline freight motive power is, as you'd expect, mostly wide-nose GE and Electro-Motive Diesel six-axle units, usually in four-unit consists, with quite a few older low-nose SD40, SD60, and similar machines still figuring. Both UP and BNSF Ry. power seems generally to be quite smart, apart from some former Santa Fe units that look as if they've been plucked off the scrap line.

Local transfer and switching duties seem mostly to be in the charge of BNSF Ry. and UP four-axle road units such as GP38s, plus the odd Portland Terminal vintage Alco or GE switcher. On the shortline front, there's plenty of veteran power to choose from, but I'm not sure that these locomotives make it right into Portland. There's some good video footage featuring main- and shortline running and switching action around Portland on YouTube.

And all that is before you even consider the MAX light-rail and streetcar services, whose tracks take you just about anywhere for a buck fifty if you're a senior like me! Wonderful place, Portland. **MRP**

Iain Rice is a regular contributor to Model Railroad Planning.

Coping with urban canyons

How to plan for lining turnouts, uncoupling cars, and cleaning track in tight spaces

By Ian Stronach//Photos by the author

Designing a model railroad to depict prototypical operations in older, urban industrial areas can be a challenge if the modeler doesn't have a large enough area in which to build an around-the-walls layout. Typically, from the late 1800s to the 1950s, industrial buildings in cities were large, multi-story structures crowded together, often with complex track arrangements running between and into them in what are best described as urban canyons. One of the best examples is the West Bottoms district in Kansas City, Mo.

Reaching into these canyons to manually line turnouts, uncouple cars with a skewer or handheld magnet, and clean track can be difficult if not impossible unless careful thought is given to the track plan and scenery in the design stage. An around-the-walls layout will accommodate this when the tracks are at the front and the buildings are against the wall. Alternatively, the track can be in the middle if lower, one- or perhaps two-story buildings are on the aisle and the tall ones are against the wall. In both designs the reach-in distance should not exceed 30", less if the track elevation is high.

Modelers with small- to medium-size layout rooms shouldn't be discouraged, as urban railroading can be convincingly modeled if some basic design rules are followed. My layout room is 11 x 22 feet. From the outset 25 years ago, I wanted to model the Canadian Pacific Ry.'s operations in Montreal in 1968. The challenge I faced was how to



In the Hochelaga Yard on Ian Stronach's HO scale Canadian Pacific layout, it isn't possible to reach between the buildings for manual uncoupling, so he planned a "reach through" zone to the left of the white building. Follow Ian as he describes his strategies for dealing with urban canyons on a model railroad.



The low areas between shorter buildings allow for uncoupling cars without damaging the structures. Here Ian is dropping a tank car at the Building Products unloading facility.



The reach-through zone for Hochelaga Yard referred to in the lead photo provides access for uncoupling with a skewer and track cleaning.

do this when there were more than 60 passenger trains, 30 freight trains, and numerous transfers operating daily on the Montreal Terminals' more than 47 miles of main line and 350 private sidings, and in its four yards.

An around-the-walls layout, even with a peninsula, simply wouldn't work. I wanted viewers and operators to feel they were in the midst of the crowded industrial districts of Montreal. Essentially, my layout was to be an urban switching layout with as many large industrial structures as possible, a main yard, and a double-track main line leading from it to staging.

I was convinced that with good planning this could work. Twenty-five years later, the design endures, and the completed layout continues to captivate my interest as I fine-tune prototype operations. The success is based on three major design considerations having been addressed.

Power-operated turnouts

There would be areas where access from aisles to manually line turnouts wouldn't be possible due to the excessive reach-in distance or large industrial buildings being in the way. The first decision was that all 82 turnouts would be power operated by Tortoise by Circuitron switch motors. This was an expensive solution, but this way no scenery gets damaged while reaching for the ground throws. Not one switch motor has failed.

Uncoupling

Twenty-five years ago, manually uncoupling Kadee magnetic knuckle couplers with a pick or skewer was rare. The majority of layouts used Kadee track magnets for uncoupling. I disliked the visible magnets and opted for the hidden version. I used the track plan to simulate switching moves to determine where the magnets needed to be to facilitate uncoupling for spotting cars and switching the yards.

To avoid false uncoupling, there are no magnets on mainline tracks or on the St. Luc Yard (the main yard) pull down and switching leads or the ladder tracks. Each double-ended classification track has magnets at each end located just back from the fouling point of the turnouts. The location of each magnet is in line with the switch stand of the next track on the ladder so as to be easily found. Elsewhere, their locations are identified by a small pile of ties next to the tracks.

It's only within the last few years that I've taken to uncoupling with a wooden skewer wherever possible in

Learning points

- Careful planning for areas that must be reached to line turnouts, uncouple cars, and clean tracks is essential to good operation.
- Urban canyons are scenically interesting areas to model.
- Avoid excessive reach-in distances.
- Provide “reach-through” zones.
- If something can get dirty, quit working, or break, it will; plan for servicing it.

my effort for greater prototype fidelity. Many of the magnets are in accessible locations, so I no longer use them. Their locations remain identified so crews don't accidentally stop over them.

However, there are areas where manual uncoupling doesn't work because the reach-in distance is too great. Uncoupling still requires using the Kadee permanent magnets. The purists rightly will say magnets require making unrealistic stops and reverse movements to uncouple. This can be minimized by careful placement of the magnets. When dropping cars I stop over the magnet, reverse less than $\frac{1}{4}$ ", which is all that's required to uncouple, and then shove the cars into the siding.

Uncoupling with magnets can be disguised. The Sortin industrial area requires trains to stop before crossing a public street. The magnet and the street crossings were planned to be a little more than two car lengths apart. When stopping over the magnet, it appears the train is stopping to let the brakeman off to flag the crossing as required in the employee timetable.

I would like to uncouple using only skewers wherever possible. In some areas, with judicious planning of buildings and scenery, I left “reach-through zones” between them. I allowed space for an operator to uncouple cars without damaging anything. These zones have one-story buildings, driveways, or parking lots so I can easily reach over them.

Track cleaning

I also ensured that when standing on a step stool, I could reach all track for cleaning. My layout room isn't dusty, so major track cleaning is required no more than once a year.

I first vacuum the track using a small attachment for my Shop-Vac that's designed for cleaning electronics. Then I clean the track with a



It's impossible to reach in for uncoupling at the Domtar paper plant without damaging scenery, so a Kadee hidden permanent magnet is strategically located alongside the pile of ties next to the locomotive.

rectangular piece of dense felt cut from larger sheets used in pianos. I push it back and forth with an 18"-long straight-blade screwdriver. Proceeding slowly and paying attention means that scenery doesn't get damaged.

Between the annual campaigns, the track is kept clean with Woodland Scenics Dust Monkeys. These pads attach to the inside axles of each truck and are barely visible. The St. Luc Yard switch engines have a heavily weighted hopper car with these pads on the head end for all switching, so the yard tracks are clean.

Between operating sessions, this train runs a “maintenance extra” trip over the layout. When the pads get dirty, I wash them in dish soap and reuse them. I had previously used a Centerline track-cleaning car with Goo Gone. [There are mixed reports on the

use of Goo Gone as a track cleaner. – Ed.] I haven't used it in years, since putting a door on the layout room keeps dust to a minimum. **MRP**

Ian Stronach is retired from a 40-year career in industrial fire safety. He lives in Montreal with his wife. His first model railroad, begun when he was 10 years old, was the Lionel O-27 Quebec, Vermont & Eastern, which modeled the Canadian Pacific Ry. around Montreal.

On our website

Ian's HO scale Montreal Terminals was featured in *Great Model Railroads 2019*. To download the article and track plan, click on the link at ModelRailroader.com.

THROUGH THE BASEMENT AND AROUND IT



A dual-gauge HO track plan for a famous stretch of Colorado railroad

By Byron Henderson

A long-time interest in the transition-era Denver & Rio Grande Western (D&RGW), in both standard gauge and narrow gauge flavors, plus a large (if somewhat inconveniently arranged) space set the stage for this multi-deck track plan. My client – I’m a professional layout designer – had already commissioned two excellent custom plans for somewhat different spaces, but little could be salvaged

from either of those for the new space that, while ample, was festooned with doors, posts, and other obstacles. Moreover, it included a number of oddly angled walls.

Based on my client’s personal interest and those earlier design efforts, the primary elements to include were Pueblo Junction wye and yard, the famous Hanging Bridge scene near Cañon City, the busy narrow

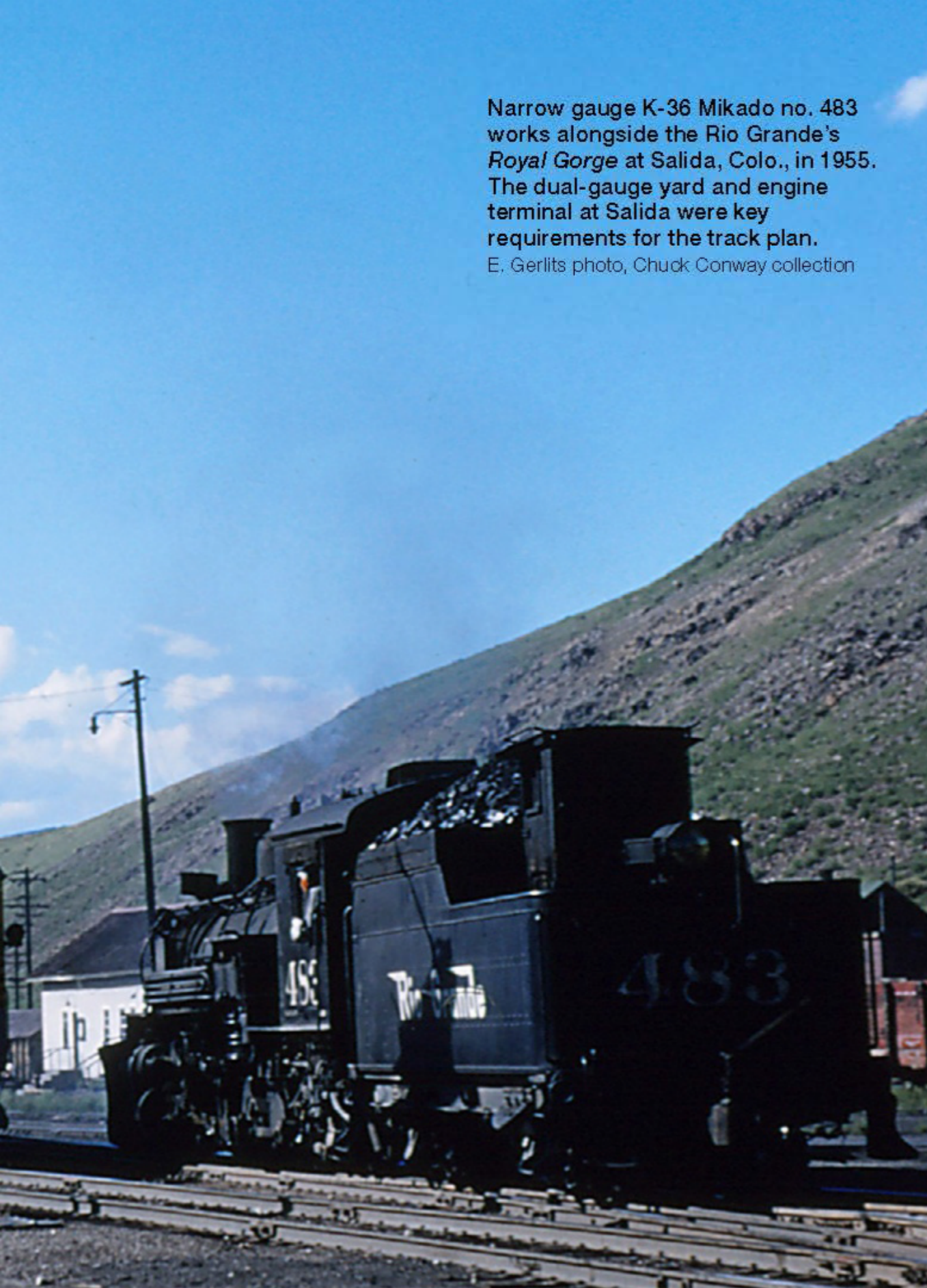
gauge/standard gauge terminal at Salida, and as far north and west as we could manage over Tennessee Pass toward Minturn on the standard gauge. The rest of the narrow gauge was more open to some freelancing, but at least some running length and operation was desired there, too.

Up against the wall?

When I’m working through the early stage of a design, I almost always try to “dock” part of the layout against one or more walls in the room. This naturally leads to the layout arrayed around the space and people in the middle, a combination that’s often most efficient.

But a few fruitless efforts showed that this was going to be difficult for the design. The many doors, access

Narrow gauge K-36 Mikado no. 483 works alongside the Rio Grande's *Royal Gorge* at Salida, Colo., in 1955. The dual-gauge yard and engine terminal at Salida were key requirements for the track plan. E. Gerlits photo, Chuck Conway collection



ways, and angles reduced my options to only a couple of candidate walls. And many arrangements of benchwork runs and aisles seemed to come up about half-an-aisle short, no matter how I turned things around.

Making for the island

After a handful of tries, I resorted to an island-style layout with aisles around the walls. Immediately things began to look up: A spiral shape naturally filled the longest diagonal length of the room pretty well, and the logical location for the impressive Pueblo Junction scene fit nicely into the area near the room's entrance doors at upper right. I was worried about how wide this section was going to be (especially if we included the

wye), but with my client's OK to employ access hatches in the deepest spots, I started working in earnest.

My first sketches involved circumnavigating the entire spiral on the lower deck from Pueblo, climbing up with a helix, and then repeating the process on the upper deck. But this placed the end of the visible run at near the highest elevation, which didn't provide the up-and-down feeling of crossing the pass in the middle.

Eventually I hit upon a good alternative. With a between-deck helix at the far end of the spiral, it might be possible to go around one side of the spiral footprint, climb to the upper deck, traverse the entire upper deck, and then come back along the other side of the spiral on the lower deck to

finish near the beginning. And I was starting to wonder if we could make use of some of the walls in some way.

Start at Pueblo

Conceptually and practically, the layout begins in Pueblo. The D&RGW tracks from staging enter one leg of the Pueblo Junction wye, from which virtually all traffic will be routed through to the Union Passenger Station or Pueblo Yard. It's always tricky to make all three legs of a wye active in HO and larger scales, so I cheated a little. One leg wraps around the outside of the helix to the Colorado Fuel & Iron (CF&I) complex around the peninsula (more on this in a moment). The Atchison, Topeka & Santa Fe (ATSF) also appears from staging from the same helix, creating a satisfyingly complex bit of trackwork. Since my client planned to handlay most or all visible track to fit, this should pose no particular challenge.

In the area of the wye itself is a small car shop and the engine service area, which is configured much like the prototype (although significantly scaled down, of course), including the two leads passing between the round-house sections to connect to the main a bit farther west. The access area inside the helix may be camouflaged with backdrops or a lift-out (or both).

Trains on either the ATSF or D&RGW may opt to head into the Union Station tracks. There's also room for a small coach yard or servicing yard, as desired, as well as a mail/express area. Santa Fe passenger trains may loop and return on their own tracks to staging. If desired, the occasional Missouri Pacific train could also pass through for variety. Rio Grande passenger trains may take the bypass at the back of the main yard to avoid the freight yard.

Rio Grande freight trains entering the yard from the east may access any of the yard tracks from the yard ladder. A relatively long yard lead parallels the main. Engine movements must also use the main for a short distance, but this bottleneck shouldn't prove too onerous. The short pocket track at the west end of Pueblo Yard can be used by a second switcher or provide a place for road engines to duck momentarily out of the way. It would be great to have another long lead here, but things are just too tight.

Santa Fe freight trains have a bit of work in Pueblo, including the interchange yard that parallels the D&RGW yard at the western end. The ATSF

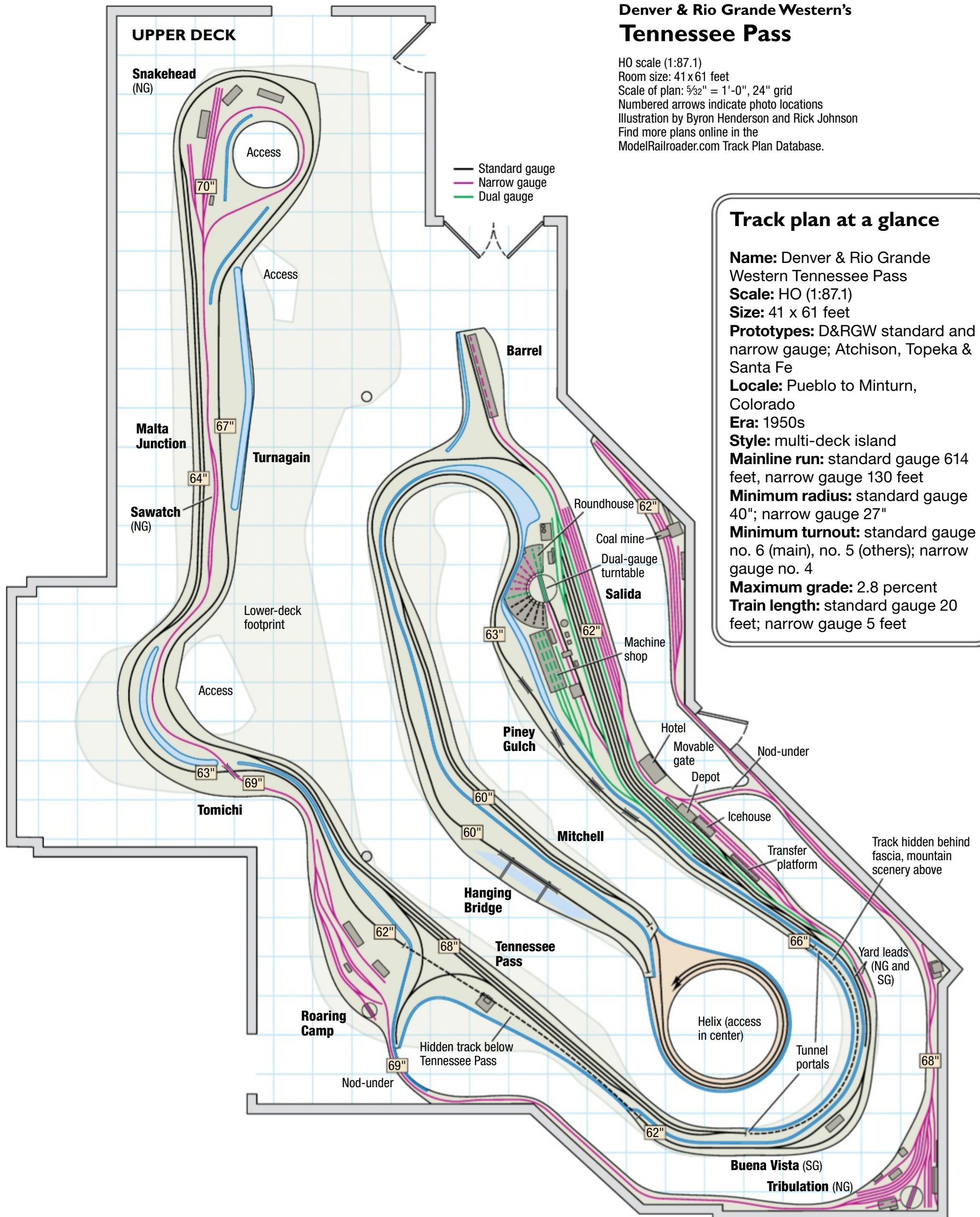
Continued on page 88

Denver & Rio Grande Western's Tennessee Pass

HO scale (1:87.1)
Room size: 41x61 feet
Scale of plan: $\frac{5}{32}$ " = 1'-0", 24" grid
Numbered arrows indicate photo locations
Illustration by Byron Henderson and Rick Johnson
Find more plans online in the
ModelRailroader.com Track Plan Database.

Track plan at a glance

Name: Denver & Rio Grande Western Tennessee Pass
Scale: HO (1:87.1)
Size: 41 x 61 feet
Prototypes: D&RGW standard and narrow gauge; Atchison, Topeka & Santa Fe
Locale: Pueblo to Minturn, Colorado
Era: 1950s
Style: multi-deck island
Mainline run: standard gauge 614 feet, narrow gauge 130 feet
Minimum radius: standard gauge 40"; narrow gauge 27"
Minimum turnout: standard gauge no. 6 (main), no. 5 (others); narrow gauge no. 4
Maximum grade: 2.8 percent
Train length: standard gauge 20 feet; narrow gauge 5 feet





The famous hanging bridge is a passenger favorite to this day in the Royal Gorge, with tourist trains now operated by the Royal Gorge Route. Only one wall of the gorge is to be modeled on the layout, with the scene viewed from the aisle and the wall across the river forming a backdrop. Chuck Conway collection

Continued from page 85

industry tracks directly behind the Union Station may have to be dummies, as access here is particularly difficult. The ATSF tracks disappear around and behind a large complex (a hospital in real life), leaving enough room for a runaround track.

Turning away from Pueblo proper for a moment, we can consider the well-known CF&I complex around the peninsula. A couple of yard tracks provide room for runarounds and

shuffling cars into the proper order. The facilities at CF&I are generally inspired by Walthers kits, with some kitbashing and scratchbuilding required. Two tracks duck behind the backdrop, providing a place for open-top loads (ore and coal) to be delivered. Loads and empties may be swapped between sessions. The main appears to continue but ends just out of sight behind the backdrop; there was just no way to bring this line back into staging.

Learning points

- Placing some portion of a layout against the wall is often optimal, but islands may work better in spaces with odd angles and/or many obstructions.
- Wyes with all legs active are difficult to fit in HO and larger scales, so expect to need access spaces.
- Locating a signature scene near the room entrance can instantly communicate time and place.
- Accepting some compromises elsewhere may make it possible for more fidelity on the most important scenes.

Hanging out

Rio Grande trains climb as they leave Pueblo to reach Florence. This is a short siding primarily for connection to the Coal Creek Branch, although helpers and passenger trains could use it. Continuing to Cañon City, there are a number of industries to be switched. The area includes a number of real-life landmarks and somewhat realistic track configurations. From here, westbounds enter the helix.

Emerging from the helix, trains enter the famous Hanging Bridge area on the upper deck. Besides the bridge itself, there's just room for some fairly steep and rugged terrain. Beyond this area, the tracks should be curving as they follow the narrow canyon, but modeling this would impinge on the aisle space in front of Pueblo.

Substantial Salida

The track continues in a broad curve to Salida, passing the unique real-life narrow-gauge-to-standard-gauge transfer point at Barrel. The grades to this interchange are fairly steep but should be manageable. Barrel is in roughly the right place geographically, but on the wrong side of the main line.

In Salida proper, we have a selectively compressed version of the real track arrangements. The minimum amount of dual-gauge track is shown; this could be expanded if desired by making one or more of the yard tracks dual gauge. As it stands, the eastern yard ladder can have a third rail straight through the ladder without requiring the extra frogs necessary to make the body tracks (except for the last one) three-rail. Some choices in this area may depend on what's available in commercial turnout jigs vs.



the time required to build turnouts without jigs.

The substantial engine-service and shop facilities are patterned after the prototype. The narrow and standard gauge leads to the turntable are separate, allowing the turntable to be four-rail dual gauge without needing special trackwork. Most supply and other associated tracks are three-rail.

The narrow gauge yard is small, but it's been designed so that the narrow gauge switcher can work without blocking standard gauge traffic. The narrow gauge main track (see below) curves away between the hotel and station, just as on the real thing. A modest standard gauge switch lead is provided at the western end of the yard, although switching the transfer dock tracks will require blocking the standard gauge main briefly. Otherwise, the yard would have been too short. Given the elevation of Pando (below) and Salida, a raised floor of 6" to 8" could be considered, but the nod-under below the narrow gauge may preclude this.

Freelanced tunnel, better pass

Leaving Salida, the tracks pass through Buena Vista. The siding is short here due to the proximity to Salida, but it could be used as a house

track or for a short returning helper. Beyond Buena Vista, the tracks enter a tunnel that doesn't exist on the prototype but is necessary to allow for a more realistic Tennessee Pass scene above. As the trains duck under here, so do the operators to negotiate the nod-under supporting the Tennessee Pass wye and the narrow gauge. Emerging from this tunnel, the standard gauge main track continues through a long siding at Malta, and then doubles back through the invented area of Turnagain.

At Tennessee Pass, a wye is provided for turning helpers, and a third track allows a place for helpers to congregate while awaiting clearance to descend the hill. The station is slightly displaced from its real position. Beyond the station area, the track is concealed in a curved tunnel to allow more room in the aisle. (The real tunnel is straight, of course, but we need to stay in the room!)

Emerging from the western portal of the tunnel, the tracks curve through Piney Gulch, a marshy area dotted with small ponds. The track should be on fill here, as it was on the prototype. Before entering the helix again, we encounter a slightly short siding at Mitchell (which could be extended around the curve, if desired). The track then

Class L-132 2-8-8-2 no. 3617 pauses at Minturn with the *Royal Gorge* in 1949. Byron was able to extend the layout as far as Minturn to allow helpers to be handled and turned prototypically rather than running into staging. Robert A. LeMassena photo, Chuck Conway collection

enters the helix for a trip back down to the lower deck.

A concession to gravity

At Deene on the lower deck, track emerges from the Pando Tunnel and then splits to form a dual main track. This area won't have much clearance from the upper deck, so it's not overly emphasized. As we enter Pando, the track prototypically diverges more widely, with only the outside tracks of a formerly large yard in use. The roadbed for the earlier tracks may still be evident, and in some eras, a center siding was present.

Because of the depth of the upper deck here, some benchwork supports are needed near the aisle. Since the real-life railroad is passing through a valley, cross-sections of some hills at the aisle to conceal these three supports will be necessary. Elsewhere, a stud wall works well to support both upper and lower decks; this location was too important to pass up.



Even though this 1970 scene is years after the transition era of the layout, many elements are still extant, such as the Railway Express Agency building in the background and first-generation diesels at work.

R. Harmen photo, Chuck Conway collection

Satisfying scenes

At Red Cliff, the prototype scene with its multiple highway and rail bridges is selectively compressed, but is still recognizable in model form. The track splits to re-create the Belden scene, and the tracks then dive into Rock Creek Tunnel (tucking below Pueblo) to ease an otherwise too-tight aisle constriction.

Minturn is primarily a hub for helper activity, with the yard tracks perhaps used for maintenance-of-way consists and cars set off by long trains. Minturn is defined from the CF&I scene above and behind by a short stretch of “mezzanine fascia” to suggest that these are two different places. The Minturn tracks are also at a slightly different angle to CF&I to provide further separation.

From here, a single track enters the outside helix down to staging. Minturn ends up lower than Pueblo, opposite the real relationship in elevations. This was a conscious trade-off by my client; alternately, trains from Belden could have gone directly to staging.

Off the wall

My chance to make some use of the outside walls came in the form of a mostly freelanced narrow gauge line.

Departing Salida, there’s a connection to a substantial coal mining area along the wall. The engine-service area at the next town of Tribulation is pretty close to Salida, so it might make sense to move it to Snakehead, replacing it with industries instead.

From Tribulation, the narrow gauge runs along the wall, crossing at the same nod-under that supports the (now curved) tail of the Tennessee Pass standard-gauge wye. The aisle’s tight here, but usable.

Back on the main upper deck but higher than the standard gauge, we come to Roaring Camp, a potentially good-sized logging area. The small turntable is intended only for logging locomotives. The Roaring Camp narrow gauge siding is purposefully designed to be too short for most trains to pass.

The narrow gauge crosses over the standard gauge at Tomichi (named for the real-life creek), emerging on the other side of the backdrop for a short spell (visible above Pueblo and accessible from the access hatch). This helps give some breathing room on the upper deck so the narrow gauge isn’t always parallel to the standard gauge.

There’s a decent-length siding at Sawatch (named for the mountain range) before we end up at Snakehead. This is imagined to be pretty high, thus requiring a turnback loop here instead of a difficult-to-reach turntable. It could be extended into a wye with some tracks covered, like the one on the prototype Lizard Head Pass on the Rio Grande Southern.

Serving up the standard gauge

Staging is designed for primarily “one-way” operation: Trains arriving from the visible layout descend one of the three helix tracks and then may use the crossovers to move onto the “inbound” track, which is closest to the Pueblo Yard aisle. After passing through the turnback curve, they may be routed into any of the staging yard tracks, pointed outbound and ready for departure. The 10 main staging tracks may connect to any of the three helixes, bound for Minturn, ATSF to Pueblo, or D&RGW to Pueblo. This allows loop- or through-routing, as desired. Trains routed in one-way fashion into the additional four tracks below Minturn may only depart to ATSF or D&RGW in Pueblo in the one-way scheme.

Tough space, excellent result

The angles and obstructions of the room were puzzling at first, but a few adjustments to reality and a long spiral footprint made it possible to re-create a rewarding portion of a well-known prototype. A willingness to include space for access and to accept a few non-prototypical elements here and there let me include famous scenes and realistic traffic in the most important locations. **MRP**

Byron Henderson is a custom model railroad designer (layoutvision.com). He’s also editor of the Layout Design Special Interest Group’s Layout Design Journal (ldsig.org) and a regular contributor to MRP.

Reader forum



As the photo above shows, Ken has made considerable progress since the MRP 2018 cover photo, right, was shot. Ken Karlewicz photo



Kudos to Brooks and Iain

I really enjoyed *Model Railroad Planning 2019*, particularly layouts such as the one by Brooks Stover ["Same railroad in a smaller space"]. While attending the North Central Region National Model Railroad Association convention last year, I was able to spend some time at his house during a self-guided layout tour. Visiting his previous S scale layout twice brought the new version's compression into perspective.

Also, over the past two decades I've thoroughly enjoyed reading Iain Rice's MRP and *Model Railroader* articles, and particularly his book, *Small, Smart & Practical Track Plans* [Kalmbach Books, 2000]. His MRP 2019 article featuring Buda, W.Va., ["The case for cameos"] has sparked the interest of several local modelers. His Buda design is high on my list – as soon as I wrap up several other projects in the works.

Thanks much for creating so much enjoyable and interesting reading

material for the model railroading hobby over the years.

Sam Swanson
Cincinnati

Nothing goes unnoticed

A question regarding the cover story, "Modeling a sense of place" by Ken Karlewicz: If the Buesing coal dealer on the layout diagram is abandoned, then why is there a truck with coal and a hopper car in the cover photo? Maybe the photo was taken in earlier years?

Dave Smith
Fort Mill, S.C.

After the cover shot was taken, Buesing Coal went out of business. But the good news is that the facility has never looked better with its new "old" sign and vegetation that's taken over the place. [See photos above.] The scene now has a bit of color, even though the stream is on the dry side and had to be finished. The coal truck has

been discarded out back after its brief stardom on the cover. Buesing Coal has transformed in recent months, becoming a favorite with railfans who can't wait to photograph the "mill job" as it rolls past in the early morning light.
– Ken Karlewicz

Bob Lucas' AC&Y

Model Railroad Planning 2019 is a fine issue. The tour of the late Bob Lucas' Akron, Canton & Youngstown HO layout was the most interesting and personal to me ["Modeling an Ohio classic"]. Bob was *the* authority on the AC&Y. He was a founder of the AC&Y Historical Society in the 1990s and editor of the society's publication, *AC&Y News*. He was an enthusiastic AC&Y researcher, historian, writer, and modeler. When I had an AC&Y question, Bob would generously respond with an epistle and photos.

The article is a great tribute to Bob Lucas and the AC&Y Railroad.

Jim Kehn
Pickerington, Ohio

Modeling the Old Line

Congratulations on another excellent issue. Michael George's layout, based on the Louisville & Nashville's "Old Line" ["A multi-deck railroad in O scale!"], stood out for me. The Old Line is the same track that the current Georgia Northeastern operates a portion of today. The Blue Ridge Scenic RR, where I worked as a trainman for five years, also operates on a portion of the line that Michael has modeled.

I belong to an HO scale model railroad club housed in the historic Mineral Bluff [Ga.] depot, and we model the same line in 1954, from Marietta, Ga., to Etowah, Tenn. We hold operating sessions once a month and are open for visitors to come and operate.

Tom Klimoski
Hiawassee, Ga.

Pennants on a wire

How did Jim Sacco make the pennants on the string shown on page 77 of his article, "Two layouts in one"? I've been trying for at least five years.

Mike Shockley
Peoria, Ill.

I found some different-colored shopping bags from the dollar store and cut out a bunch of tiny triangles. I made the "string" out of a very thin piece of piano wire and glued on the pennants using tacky glue. It actually went quicker than I thought. I remember that some were too big and some were on the tiny side. – Jim Sacco, City Classics

Yard design

“Making a good yard design better” by Paul J. Dolkos was an interesting read. Here is a bit of insight from someone once in the railroad operation mix.

As a retired Canadian National locomotive engineer, I can attest that making a yard better so it runs more smoothly is really not following the prototype. Most yards are designed so far back that they don’t really work for the trains of the 1950s, never mind contemporary operations. When I was at work (1977–2009), we all had to wait our turn, and it actually was sort of a dance orchestrated by the yardmaster. If we had a good yardmaster, working our shift in the yard or coming in on a road freight, it was great. But some could really mess things up.

Figuring out a better way to get it done using what you’ve been given is actually fun, either modeling or on the prototype.

*George Dutka
London, Ont.*

Klondike Mines Ry.

I want to clarify one aspect of my article about moving Brian Pate’s Klondike Mines Ry. [“Moving a master-work”]. The article left the impression that the entirety of Brian’s standard gauge CP mainline layout, which existed on a deck below the HOn3 KMR, was scrapped.

In a coordinated effort between Doug Mayer, Scott and Margot Calvert, and the KMR team, the Arrowhead branchline terminus was saved and now exists on display at the Revelstoke Railway Museum in British Columbia, complete with a model of the stern-wheeler *Minto* by Patrick Lawson.

*Mark Dance
Vancouver, B.C.*

I’ve enjoyed every issue of MRP from its inception, but the article in your latest issue about moving Brian Pate’s HOn3 layout set off alarm bells. Are they really using landscape cloth for skirting? Our traveling layout group tested that material and found it to be extremely flammable. Perhaps the good folks in Dawson City found a variety that is fire resistant. Black broadcloth treated with a borax/boric-acid mixture is an excellent alternative. The recipe is easily found on the internet.

It would be worth having the museum staff check a sample. I became aware of such things when we displayed our layout at the Amherst show in Springfield, Mass., several years back and fire-resistant skirting was an absolute requirement of the local fire marshal.



Bob Doms, above, hired layout builder Lance Mindheim to construct an N scale twin-deck version of Byron Henderson’s triple-deck plan featuring the CSX (formerly B&O) at Harper’s Ferry, Md. Lance Mindheim photo

That aside, thanks for a very enjoyable article about the rescue of a culturally significant layout.

*Jim Martin
S Scale Workshop
Port Colborne, Ont.*

I tested two samples of the weed barrier fabric with a lit match flame: the material I have on my layout and an unopened roll that I had on hand. I don’t think either would present a fire hazard; they just melted away with little smoke and no strong odor, and they self-extinguished when the match was removed. But readers should test fabrics before using. – Mark Dance

Wrong photo credit

The interlocking machine photo used for Tony Koester’s Rear Platform commentary [“Using a piece of the past”] was one I took prior to Lou Sassi’s visit to our club.

*Roger Beighley
Coshocton, Ohio*

A special issue

I always enjoy *Model Railroad Planning*, but MRP 2019 reaches a new level, both from a content point of view and for personal reasons.

Ken Karlewicz’s scenery is spectacular in its deft portrayal of ordinariness. I model in ¼" scale, so Michael George’s O scale layout appeals to me for obvious reasons, but nearly everything appeals – Brooks Stover’s BC&G in S scale for its effective moderation, for example.

Bob Lucas’s AC&Y stands out. I grew up with it as a special fascination because my father drove by Brittain Yard twice a day every weekday for decades as he commuted to work at

Goodyear. I was shocked and dismayed to learn of the passing of my online friend Bob Lucas.

Rear Platform really caught my eye. When I saw that interlocking frame, I instantly thought “George Detwiler!” After an Erie Lackawanna Historical Society meet at Valparaiso, Ind., a few years ago, several of us called on the historical tower at Griffith, Ind., George among us. The folks there were having trouble debugging a problem with the interlocker, which – like the one in Coshocton – works, but is no longer hooked up to a 1:1 railroad. George immediately dived into the machine, and within a few minutes solved their problem. It takes a special mind to even understand those mechanical logic devices, and he has it. I have a photo I took of him that day, beaming with delight at having solved their problem.

That club has been in existence for a long time, but it looks like they have remained thoroughly up-to-date.

*Larry DeYoung
Devon, Pa.*

From plan to layout

A track plan by Byron Henderson featuring Harper’s Ferry in N scale appeared in MRP 2017 [“A balancing act”]. Byron referred his client, Bob Doms, to me, and the layout was built. (Bob is doing all of the scenery work.) We scaled it back from three decks to two, but I thought readers would enjoy seeing what it looks like in “actually built” form [above]. It was a fun job to work on, especially with those massive – and I mean massive! – curve radii.

*Lance Mindheim
The Shelf Layouts Co.
Silver Spring, Md.*

Planning Tips



LEFT: These three fascia signs mark the locations of the key slots crews use to activate the switch, derail, and gate at Beisser Lumber on James McNab's former Iowa Interstate railroad.

ABOVE: "Where are we – exactly?" is a question often in the minds of new crews (or visitors) as they work their way around a railroad. A fascia sign quickly answers the question. Signs can also warn crews to wait until grade-crossing flashers or gates are fully activated. James McNab photos

Fascia signs

Prototypical operation was the name of the game on my former Iowa Interstate Grimes Industrial Track HO railroad. Part of playing the game well was ensuring crew members knew exactly where they were on the line. I labeled every road crossing, bridge, and turnout with signs on the fascia.

I'd seen similar setups on other model railroads that ranged from hand-lettered signs to dry-transfer decals. But I wanted something more permanent. I worked with a custom engraver to create plastic plaques designed to be easily visible during operating sessions. The signs had both the location name and milepost written on the front, using high-contrast colors to make them stand out. They were all a consistent size and shape so the signs added to, instead of detracted from, the overall aesthetics of the layout.

Since the Grimes Line used yard reports and timetable instructions for car forwarding and train movements, the signs served to guide crews to find customer locations, clearance limits, and locations where unique movements

were needed. These instructions included grade crossings that required any train to stop and ensure protection was active before proceeding, and industries that needed gates or derails unlocked, as well as speed restrictions, tonnage limits, or close clearances at specific mileposts.

Crews cross-referenced between the fascia signs, yard reports, and special instructions to make sure they were performing the proper task at the proper location. The signs also helped orient visitors to the layout, especially those who were familiar with the prototype locations.

Special instructions also included indicating which turnouts were available for use by crews. On the Iowa Interstate, any turnout that had been spiked or marked out of service by either the engineering or mechanical department had a colored tag attached to the switch stand. To represent this on the layout, I added small strips of painted styrene behind the adjacent switch lock. It was a quick and simple way to tell crews that this particular turnout shouldn't be used.

I'm now building a new HO railroad, and I anticipate fascia signs will have a prominent role to play there, too.
– James McNab

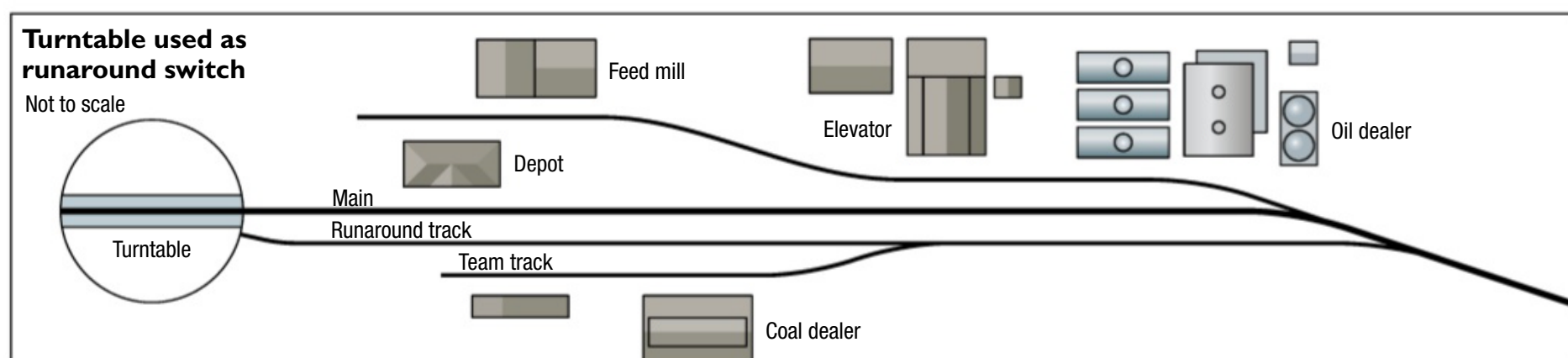
Using a turntable as a turnout

I was trying to build a generic granger town – let's call it Karlberg – at the end of a branch using three leftover turnouts (see "Modeling an M&StL branch line" in MRP 2018). I discovered I didn't have enough turnouts to add the all-important runaround track.

I mentioned this dilemma to railroader Bob Drenth. He told me about Currie, Minn., an end-of-the-line town on the Chicago & North Western, and Postville, Iowa, on the Rock Island where they had the turntables do double duty – both to turn engines and to act as switches leading to an escape track, as shown in the diagram.

The crew brought their train into town on the main, cut off the engine, turned it, and ran it around the train. They could then do any pulls and/or spots, and leave town with everything headed in the desired direction.

Problem solved! – Clark Propst



The turntable at left can serve as a switch to allow runaround moves, much as a sector plate functions in a hidden staging or fiddle yard. Illustration by Rick Johnson



Model MAGAZINE
Railroader.

We Know *All the* *Angles!*

Hobbyists trust *Model Railroader*.

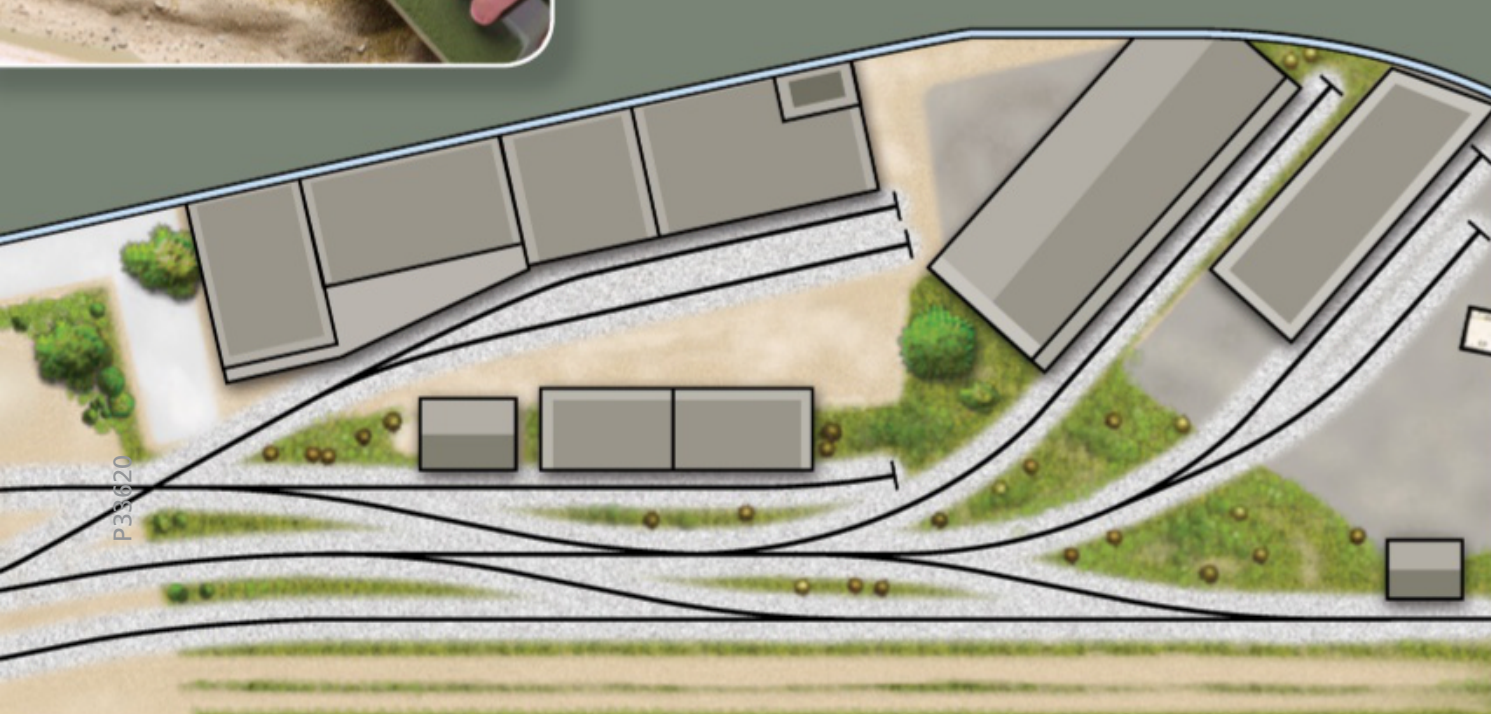
For more than 80 years, *Model Railroader* has gained a reputation as the industry standard. Our readers love our content and **trust our expertise**. That's why *Model Railroader* has a higher circulation than all other competitors combined! We are a trusted guide that can help you dream, plan, and build your model railroads!

SUBSCRIBE NOW!

2 WAYS TO ORDER:

ONLINE: ModelRailroader.com • CALL: 877-246-4879

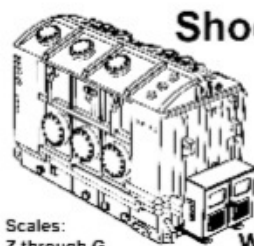
Outside the U.S. and Canada, call 903-636-1125.



Design your layout on your Mac

Empire Express™

Easy to learn. Easy to use. Quick.
Free Basic app. Deluxe app \$29.99.
Visit the Haddon Software web site:
www.haddonsoftware.com



Scales:
Z through G

Shockingly Accurate Freight Loads

- Electrical
- Industrial
- Steel Mill

www.MultiScale.Digital

Model Scenery
& Structure
WINSTON SALEM, NC

Call anytime 24/7
845-797-9533

custom layouts design build install

www.modelsceneryandstructure.com

RailroadBackdrops.com

The Hobby's Best Backdrops Period. Beautiful Full Color
Photographic Backdrops. All Designs Available In All Scales.
Waterproof, Scratch Resistant, Tear Resistant, Washable!

Enter Code Mr100 For 20% Discount



Valley Trains N Hobbies

Specializing in N scale, locomotives, rolling stock,
scenery, DCC & decoders! We also have HO!
See us at Greenberg Shows in Edison, NJ.

www.valleytrainsnhobbies.com

TrainSetsOnly.com

✓ Competitive Pricing ✓ 1000's of Items In-Stock

✓ Quick Shipping ✓ Great Service

✓ N, HO, O, and G Scales

Locos • Rolling Stock • Track • Power • Structures • Scenery



Over 2000 HO scale hand cast pewter details
Ask for them at your authorized dealer or online!

Look Your Very
Best!
Super Details
to enhance your
hard work!



800-352-554 & 620-585-2131

www.scale-structures.com

BackdropStation.com



Super Simple Pricing And Ordering By The Foot!
Custom Blending Between Scenes For FREE!

railroadbooks.biz

has 1,900+ new titles,
all at discount!

Domestic shipping FREE over \$63

E-mail for free printable
PDF list.

chuck@railroadbooks.biz
www.railroadbooks.biz

International
Service.
Book Search.

ORDERS:
U.S. (800) 554-7463

BUSINESS &
INTERNATIONAL:
+01 (812) 391-2664

SEND:
\$2 for paper
book list.

PO Box 4, Bloomington, IN, 47402-0004 U.S.A.



Pursuing
Excellence

THE TRAINMASTER, LLC
Detailed Craftsman Kits

www.TheTrainMaster.com



MODERN
Buildings
in HO & N!
(337) 436-8481

www.summit-customcuts.com

Rix Products Pikestuff



Web site: www.rixproducts.com
Send LSASE for new 20 page catalog.
3747 Hogue Rd. Evansville In. 47712
Phone (812) 426-1RIX FAX (812) 423-3174

Model Railroad Structures & Accessories

Checked us out lately?

- ✓ HO-N-O scale products since 1993.
- ✓ Laser-cut Structures & Bridges.
- ✓ Advertising & Storefront Signs.
- ✓ Highway Signs, vintage & modern.
- ✓ Laser-cut Grade Crossings.
- ✓ Billboards, roadside & rooftop.
- ✓ Laser-cut Graffiti Decals
- ✓ 1000's of satisfied customers.

www.blairline.com



AffordableModelRailroads.com
GETTING YOUR DREAMS ON TRACK
Professional Layout Design & Construction
We Complete Unfinished And In Progress Layouts.
Design, Build, Fix And Complete Any Size or Scale!

We Can Build On Your Site or In Our Shop
MR@AffordableModelRailroads.com
(800) 216-9202

Custom Layout Building



Layout Design

By Lance Mindheim

www.shelflayouts.com
301-404-8164

ModelRailroadConstruction.com

Need help designing or building a new layout?
Got a railroad that needs completing or fixing?
Contact ModelRailroadConstruction.com
and we will come to repair or complete
your existing railroad on site or we can
build completely new in our shop and deliver!



40 Years experience* over 50 railroads
built, all scales, all sizes, all budgets
....0% interest payment plans available.

ModelRailroadConstruction@gmail.com

Follow

Model Railroader

magazine on Facebook!



www.facebook.com/ModelRailroader

Touch Toggles Perfect Plan your controls to be the best!

- Your own design comes to life
- Color indicators and touch controls
- Plug together - easy wiring
- No programming - lots of options



See our website for
a video introduction

Made in the USA

www.berrethillshop.com

Directory of Leading Model Retailers

Say you saw their directory ad
in *Model Railroad Planning*

ARKANSAS • Jacksonville

Headquarters for scale hobbies. Models; N-HO-O trains; tools; paint, etc. Discounts & special orders. Open 10-6, closed Sundays and Wednesdays.

RAIL AND SPRUE HOBBIES
1200 John Harden Dr. 501-982-6836

CALIFORNIA • Atascadero

All scales G to Z. Special orders welcome. Midway LA & SF US 101-US 41, easy access. Open Tue - Sat: 10-5, Sun - Mon: By Appointment. E-mail Anita at: anita@cctrains.com Web site: www.centralcoasttrains.com

CENTRAL COAST TRAINS
7600 El Camino Real # 3 805-466-1391

CALIFORNIA • Pasadena

Model rail specialists since 1951. LGB, Lionel, O, S, On3, HO, HOOn3, N, Z. Complete stock of brass imports, new & used. Books, tools, structures, detail parts. Open 7 days. www.thewhistlestop.com

THE ORIGINAL WHISTLE STOP INC
2490 E. Colorado Blvd. 626-796-7791

CALIFORNIA • Roseville (Sacramento)

Exclusively model trains since 1989. Athearn, Kato, MDC, Lionel, Atlas, LGB, Märklin, Brass Imports, books, detail parts. Everyday low prices. Open 7 days. www.rhobbies.com

RAILROAD HOBBIES
119 Vernon St. 916-782-6067

CALIFORNIA • San Diego

Model railroad, exclusively since 1943. Lionel, HO kits, parts ready-to-run, used trains. N gauge. Buy, sell, trade all gauges.

FRANK "THE TRAINMAN"
4233 Park Blvd. 619-295-1611

CALIFORNIA • Santa Clara

100% trains. Discount prices. Super selection. Monday 9:30am-2:30pm Tuesday - Saturday 9:30am-6:00pm Closed Sunday Dennis Cole E-mail: dcole4449@att.net

THE TRAIN SHOP
1829 Pruneridge Ave. 95050 408-296-1050

CALIFORNIA • Westminster (Orange Co.)

World Famous Model/Toy Trains Only 7,000 sq. ft. Super Center www.arniestrains.com

ARNIE'S MODEL TRAINS
6452 Industry Way 714-893-1015

CALIFORNIA • Yuba City

A full service model train store. Large inventory, HO, N, O & O27 Tinplate. Books, videos, collector & gift items. Repair service. We buy old toy trains. www.westerndepot.com

THE WESTERN DEPOT
1650 Sierra Ave. #203 530-673-6776

CONNECTICUT • Winsted

A hobby shop for modelers by modelers. From hard to find to latest & greatest. Free classes & clinics / multi scales. Large store of quality products @ fair prices. Friendly service: www.whitingmills.com

RR MODEL & HOBBY SUPPLY
100 Whiting Street 860-379-3383

CONNECTICUT • Wolcott

Exclusively brass model trains. Primarily HO Scale. Buy & Consign. By appointment Mon - Fri 9 - 4 support@thecaboose.com www.thecaboose.com

THE CABOOSE
5 Mohawk Drive 203-879-9797

DELAWARE • Ocean View

No sales tax at the Delaware seashore. Lionel new & used . . . also Atlas, Bachmann, MTH. We buy used trains. Auth. Lionel repairs. Large inventory of used HO trains. Open Tues - Sat 11-4:30, Closed Sun & Mon

SEASIDE HOBBIES
15 Daisey Ave. 302-539-1601

FLORIDA • Cape Canaveral

Lionel, American Flyer, MTH on the internet. www.traincity.com www.choochooauctions.com

TRAIN CITY, INC. - JOHN SIEGEL
387 Imperial Blvd., Ste. 2 321-799-4005

FLORIDA • Fort Myers

N, HO, O scale model railroading. Paint, tools, scenery, accessories & plastic models. Mon - Sat 10:00am-6:00pm; Closed Sunday www.victorymodels.com

VICTORY MODELS & TRAINS
12951 Metro Parkway 239-332-0422

FLORIDA • Melbourne

The Space Coast's Model Train Shop. Z thru G scales. N scale our specialty! Digitrax, Kato, Lionel & Walther's Dealer. Atlas, IM, BWL, Piko, LGB & Rokuhan. Mon-Sat 10am-5pm Email: trftrains@cfl.rr.com

TRF TRAINS & MNT HOBBIES
2715 N. Harbor City Blvd., #10/11 321-241-4997

GEORGIA • Atlanta (Riverdale)

Atlanta's Finest Shop for serious modelers! Quality items in all scales at fair prices. Service - Repairs. Over 37 years of quality service. Close to all Interstate Hwys. 8-min. from Atlanta Airport. Tue - Sat 10-5:30

RIVERDALE STATION
6632 Hwy. 85, Riverdale Plaza 770-991-6085

ILLINOIS • Des Plaines

N, HO, S, O, G Std. & Narrow gauge too. Lots of scratchbuilding parts and stuff too. Brass, books & DVDs. Close to O'Hare. M, T, W, F 10-6; Th 10-8; Sat 9:30-5; Sun 11-5 Web Store: www.desplainshobbies.com

DES PLAINE HOBBIES
1524 Lee St. (Mannheim Rd.) 847-297-2118

ILLINOIS • Downers Grove

HO and N Scale Model Trains and Accessories Two Blocks South of Metra Station at Maple Ave. www.timberlinetrainshop.com

TIMBERLINE TRAIN SHOP, LTD.
5228 Main St. 630-324-6136

ILLINOIS • Geneseo

Scale Trains, Models & Hobby Supplies Specializing in Midwest Roads Visit our website at GRHobbies.com or call for directions and hours.

GREEN RIVER HOBBIES
119 W. Exchange St. 309-944-2620

ILLINOIS • Marion

Full-Line Hobby Shop. HO & N scale locomotives, scenery, plastic models, R/C, tools, paints, and more. Open Tue - Fri 1:30-6:30pm, Sat 10am-4pm

CHUCK'S DEPOT
1913 W. Rendelman St. P/F 618-993-9179

KANSAS • Overland Park (KC Area)

O, S, HO, N, Z & G Scale Lionel, MTH, A/F, Märklin, LGB & more! New, Used & Vintage. Extensive scenery line. Repair, custom work & layouts. www.fredtrainshop.com

FRED'S TRAIN SHOP
9322 West 87th St. 913-383-3500

MARYLAND • Annapolis

If we don't have it, we'll get it! LGB, Woodland Scenics, Walther's Dealer, Piko, Lionel, Bachmann, Spectrum. Mon - Sat 10-6. Full line Kalmbach! shopstarhobby.com

STAR HOBBY
1564 Whitehall Rd. 410-349-4290/4291

MASSACHUSETTS • Malden

America's largest Lionel Dealer. We also carry a complete line of G scale, O gauge, HO and N scale model trains. Visit our 3600 sq. ft. showroom. Website: www.charlesro.com

CHARLES RO SUPPLY CO
662 Cross St. 781-321-0090

MICHIGAN • Fraser

Full line hobby shop. Open Mon - Fri 10-8, Sat 10-6, Sun 12-5 www.pdhobbyshop.com

P & D HOBBY SHOP
31280 Groesbeck Hwy. 586-296-6116

MICHIGAN • Traverse City

Let your imagination run wild! Z to G, Lionel, scenery, tools, structures, scratchbuilding supplies, special orders, ships, armor, cars, more...

TRAINS & THINGS HOBBIES
210 East Front St. 231-947-1353

MONTANA • Billings

Model railroading headquarters for the Northern Rockies. HO, HOOn3 & N scale. Kits, parts, tools, books. Tues-Fri 10-5:30; Sat 10-3. Closed Sun & Mon. trains28@jimsjunction.com

JIM'S JUNCTION
811-B 16th St. West 406-259-5354

NEBRASKA • Deshler

Largest HO/N scale inventory from Denver to Chicago. Stop in and say WOW! All major brands plus books, videos, tools & scenery. Mon-Fri 9-6, Sat 9-3. www.springcreekmodeltrains.com

SPRING CREEK MODEL TRAINS, LLC
304 E. Bryson Ave. 402-365-7628

NEBRASKA • Omaha

Trains & supplies for all scales Z-G. We are DCC ready & installation service available. Service work, repairs, technical support. Family owned since 1936. www.houseoftrains.com

HOUSE OF TRAINS
8106 Maple St. 402-934-RAIL (7245)

NEVADA • Las Vegas

While in Las Vegas, check out our train selection. Close to the Las Vegas strip. Hours: Mon - Fri 10-7, Sat 10-6, Sun Noon-5.

HOBBYTOWN USA
4590 W. Sahara Ave., #103 702-889-9554

NEW JERSEY • Piscataway

Serving hobbyists since 1933. Large selection of HO, N, & O scale Railroad books - complete repair service www.themodelrailroadshop.com

MODEL RAILROAD SHOP
290 Vail Ave 732-968-5696

OREGON • Beaverton

Complete full line hobby shop. Z, N, HO, O, Lionel, and LGB. Open Mon - Fri 10-8, Sat 10-5, Sun 12-5.

TAMMIES HOBBIES
12024 SW Canyon Rd. 503-644-4535

OREGON • Portland

HO, N, Z, Lionel, DCC, brass. Reservation discounts, new, used, Consignments, 16 minutes from Airport www.hobbysmith.com

THE HOBBY SMITH
1809 NE Cesar Chavez Blvd. 503-284-1912

OREGON • Portland

Your complete model railroad store. Gauges Z through G. Mon - Fri 10-6, Sat 10-5, Closed Sunday www.wsor.com

WHISTLE STOP TRAINS
11724 SE Division St 503-761-1822

PENNSYLVANIA • Blue Ridge Summit

The Exclusive model railroad store. From N to G, we stock it all. OPEN 7 days a week. Only minutes from Frederick, MD. www.mainlinehobby.com

MAINLINE HOBBY SUPPLY
15066 Buchanan Trail E. 717-794-2860

PENNSYLVANIA • Bristol

We carry most major brands and accessories for N - G gauge. SELL - BUY - REPAIR Hours change seasonally so please call or see website. www.trainpops.com trainpopsattic@gmail.com

TRAINPOPS ATTIC
400 Mill St. 215-788-2014

PENNSYLVANIA • Broomall

Lionel, American Flyer, LGB, Atlas & MTH HO, N, ON30, Standard, O & S gauges bought, sold & traded. Auth. service station. Mon, Wed, Fri 10-9, Tue & Thu 10-7, Sat 10-5 www.nstrains.com

NICHOLAS SMITH TRAINS
2343 West Chester Pike 610-353-8585

PENNSYLVANIA • Montoursville

Mon - Fri 9-5:30, Sat. 9-4. Extended weekday & Sun hours in Nov. & Dec. E-mail: englishmodelrailroad@gmail.com www.englishmodelrailroad.com

ENGLISH'S MODEL RAILROAD SUPPLY
201 Streibigh Lane 570-368-2516

PENNSYLVANIA • Strasburg

From trains to diecast to scenery, everything for the layout builder. Open 7 days a week. N, HO, O, Lionel, LGB. Buy, sell, trade used trains. Located adjacent to the Choo Choo Barn. www.eatrainshop.com

STRASBURG TRAIN SHOP
226 Gap Road 717-687-7911

RHODE ISLAND • Warwick

HO trains & acces., detail parts, plastic & craftsperson kits. Hobby supplies, tools. Tues - Fri noon-6pm, Sat 10am-5pm 1/2 mile west of airport E-mail: aahobbies@gmail.com

A.A. HOBBIES, INC.
655 Jefferson Blvd. 401-737-7111

SOUTH CAROLINA • West Columbia

All scales, all major brands of model railroad equipment. We buy & sell used Lionel trains. Open daily 10-6. Closed Sun.

NEW BROOKLAND RR & HOBBY SHOP
405 State Street 803-791-3958

TEXAS • Athens

Specializing in HO, HOOn3 & Brass. Blackstone Tsunami • InterMountain • Decoder installs Kadec • Digitrax Dealer • Walther's • Coach Yard -----WE BUY HOOn3-----

HARRIS HOBBIES
9323 County Rd 1127 903-489-2646

TEXAS • Dallas (Addison)

Great discounts on thousands of G to Z scale items. NCE & Digitrax dealer. Monday - Saturday 10-6

DISCOUNT MODEL TRAINS
4641 Ratliff Lane 972-931-8135

TEXAS • Houston

HO & N, Lionel trains. Complete line of plastic kits, military, architectural supplies, paints and tools. Open Mon-Fri 11am-6pm, Sat 10am-5pm, Sun 12pm-5pm. www.gandgmodelshop.com

G & G MODEL SHOP
2029 Southwest Fwy 713-529-7752

TEXAS • Houston

All trains, all scales. Magazines, Books, Videos, Repairs, Brass, Consignments. Discount program, will ship. papabenstrains@gmail.com M,Tu,Th & F 10-6; W 10-7; Sat 10-5; Closed Sun. Open Sunday's Oct, Nov and Dec. Major Credit Cards. www.papabens.com

PAPA BEN'S TRAIN PLACE
4007-E Bellaire Blvd. 713-523-5600

TEXAS • San Antonio

Model railroading our specialty. Märklin, G, HO, N, O, Z. Superdetailing parts galore. Books, structures, figures and tools. Tue-Sat 10am-6pm www.dibbleshobbies.com

DIBBLE'S HOBBIES
1029 Donaldson Ave. 210-735-7721

WISCONSIN • Green Bay

Exclusively trains, specializing in DCC, N, G, & HO. DCC installation and award winning custom painting and building available. WWW.ENGINEHOUSESERVICES.COM

ENGINEHOUSE SERVICES, LLC
2737 N. Packerland Dr. 2H 920-490-4839

WISCONSIN • Milwaukee

Proudly Serving Model Railroaders Since 1932. Everything you need to build a great model railroad. Operating layout, historical display, friendly service, we will be happy to see you! 1-800-487-2467 or walthers.com

WALTHERS SHOWROOM
5619 W. Florist Avenue 414-461-1050

WISCONSIN • Waukesha (Pewaukee)

Märklin • Lionel • MTH • AF • LGB • Z to G • buildings • scenery • detail parts • books • scratchbuilding supplies • special orders • NMRA discounts • Mon - Fri 11-8 • Sat 10-5 Sun 12-5. www.hiawathahobbies.com

JETCO'S HIAWATHA HOBBIES
2026 Silvernail Rd. 262-544-4131

CANADA-BC • Savona

Model trains in G, O, S, HO, N, Z. Old toy trains, railway antiques, art, books, DVDs, souvenirs and Thomas too. Canadian road names a specialty. 20 min. west of Kamloops. www.kellyskaboose.ca

KELLY'S KABOOSE, THE RAILWAY STORE
6648 Savona Access Rd. 250-377-8510

CANADA-BC • Vancouver

Large selection of model RR supplies including Min. by Eric, Athearn/MDC, Atlas, Peco, Digitrax, Rapido, SoundTraxx, brass, etc. Special orders. www.central-hobbies.com Open 11-6, Friday til 9. Closed Sundays.

CENTRAL HOBBIES
2825 Grandview Hwy. 604-431-0771

CANADA-ON • London

Complete Canadian trains & more N, HO, OO, G, Athearn, Hornby, Peco, Walther's. Special orders, Plastic kits, parts, supplies, books. Mon - Fri 10-6, Sat 9-5. sales@rrhobby.ca www.rrhobby.ca

BROUGHDALE HOBBY
1444 Glenora Dr 518-434-0600

CANADA-ON • Paris

Full line hobby shop. Large stock N, HO. Special orders weekly, all scales. All accessories, scenery and supplies. www.parisjunctionhobbies.com

PARIS JUNCTION HOBBIES
300 Grand River St. N. 519-442-5800

GERMANY • KAARST, 41564

Europe's best known address for US Railroads. We carry N, HO & G scale for all road names, Atlas to Walther's. Mon - Fri 10-6:30, Sat 10-2. Visit us online at www.aat-net.de

ALL AMERICAN TRAINS
Kaarst, 41564 Email: info@aat-net.de

SWITZERLAND • Kilchberg, Zurich

Specializing in American models since 1977. Huge selection of consignment brass models. Open Sat 13:00-17:00. Fax: 011-41-44-715-3660. Web: www.trainmaster.ch

TRAINMASTER BY WERNER MEER
3 Hochweidstrasse 011-41-44-715-3666

Run your Retail Directory
ad in the next issue of
**Model Railroad
Planning!**

Call 888-558-1544,
ext. 551 for more
information.

Index of Advertisers

We believe that our readers are as important as our advertisers; therefore, we try to handle all reader's complaints promptly and carefully. If, within a reasonable period, you do not receive your merchandise or an adequate reply from an advertiser, please write to us. In your letter detail exactly what you ordered and the amount of money you sent. We will forward your complaint to the advertiser for action. If no action is obtained, we will refuse to accept further advertising from him. Address complaints to: MODEL RAILROAD PLANNING, 21027 Crossroads Circle, P.O. Box 1612, Waukesha, WI 53187.

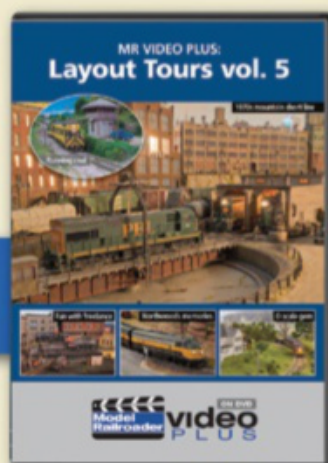
Axian Technology	3	Model Railroader Magazine	94
Azatrax	8	Model Railroader Video Plus	9
Caboose	3	MR Video Plus DVDs	97
CVP Products	3	MRP Back Issues	8
Digitrax	2	PECO Products	2
Marketplace	95	Right on Track Models	8
Micro Engineering	8	Woodland Scenics	100
Milk Trains & Traffic	99	Yankee Dabbler	3

Layouts, Scenery, Photos and More!

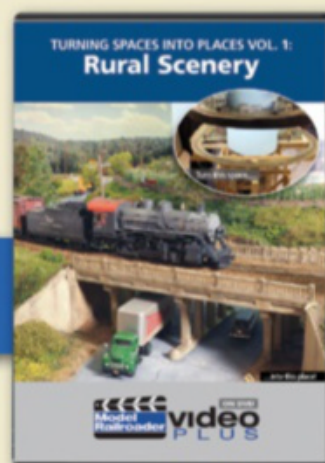
Whether you're new to the hobby or an experienced modeler, Model Railroader Video Plus DVDs offer tips and techniques for model railroaders of all skill levels to build better train models and layouts. **Check out these 4 new DVDs!**



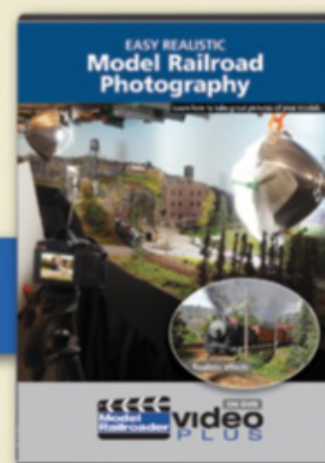
**Design a Model Railroad
from Start to Finish**
Item #15368



**MR Video Plus:
Layout Tours vol. 5**
Item #15367



**Turning Spaces into Places
vol. 1: Rural Scenery**
Item #15366



**Easy Realistic Model
Railroad Photography**
Item #15365

Shop MRVP DVDs Today at KalmbachHobbyStore.com/MRVDVD



Ron Griffin covered the expansive top of the helix between decks with a farm scene reminiscent of southeastern Michigan. The tree line hides a continuous-run track.

Topping off the helix

Why waste all that space?

By Ron Griffin//Photo by Larry Burk

My HO Adrian & Blissfield (MRP 2018) is a two-deck railroad. A two-track, five-turn helix connects the decks. There's also a continuous-run track for the upper deck behind the helix and against the wall.

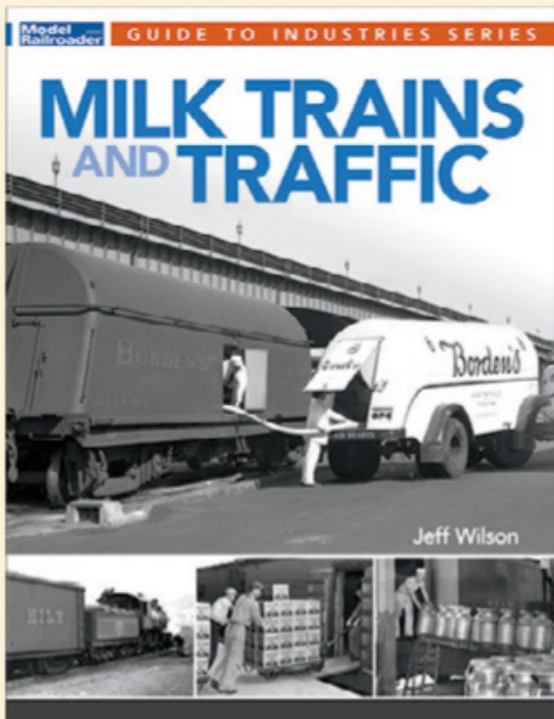
When it came time to scenic this area, I wanted the helix and the continuous-run/staging track to be hidden at normal viewing heights. This required disguising the entry to the helix (left side of the photo) as much as possible but still providing easy access to the manually lined turnouts.

I tried to make the tracks look like they're going into a forest. The ground contours are extruded-foam insulation board covering about half of the helix area supported by

laminated hardboard bands running around the inside edge of the helix fascia. There's also a drop-ceiling support beam in the back. The foam board is held in place by hook-and-loop fasteners and can be removed, so I can pop up in the middle of the helix.

The scene is based on Grosvenor Junction on the Adrian & Blissfield, the abandoned Canada Southern branch line currently used for car storage. I turned the storage track into a team track with a loading dock/ramp that can service different types of cars. The ranch house is based on a prototype and scratchbuilt; I made the pole barn from Rix parts. **MRP**

The Milk and Butter Route



Available Now!

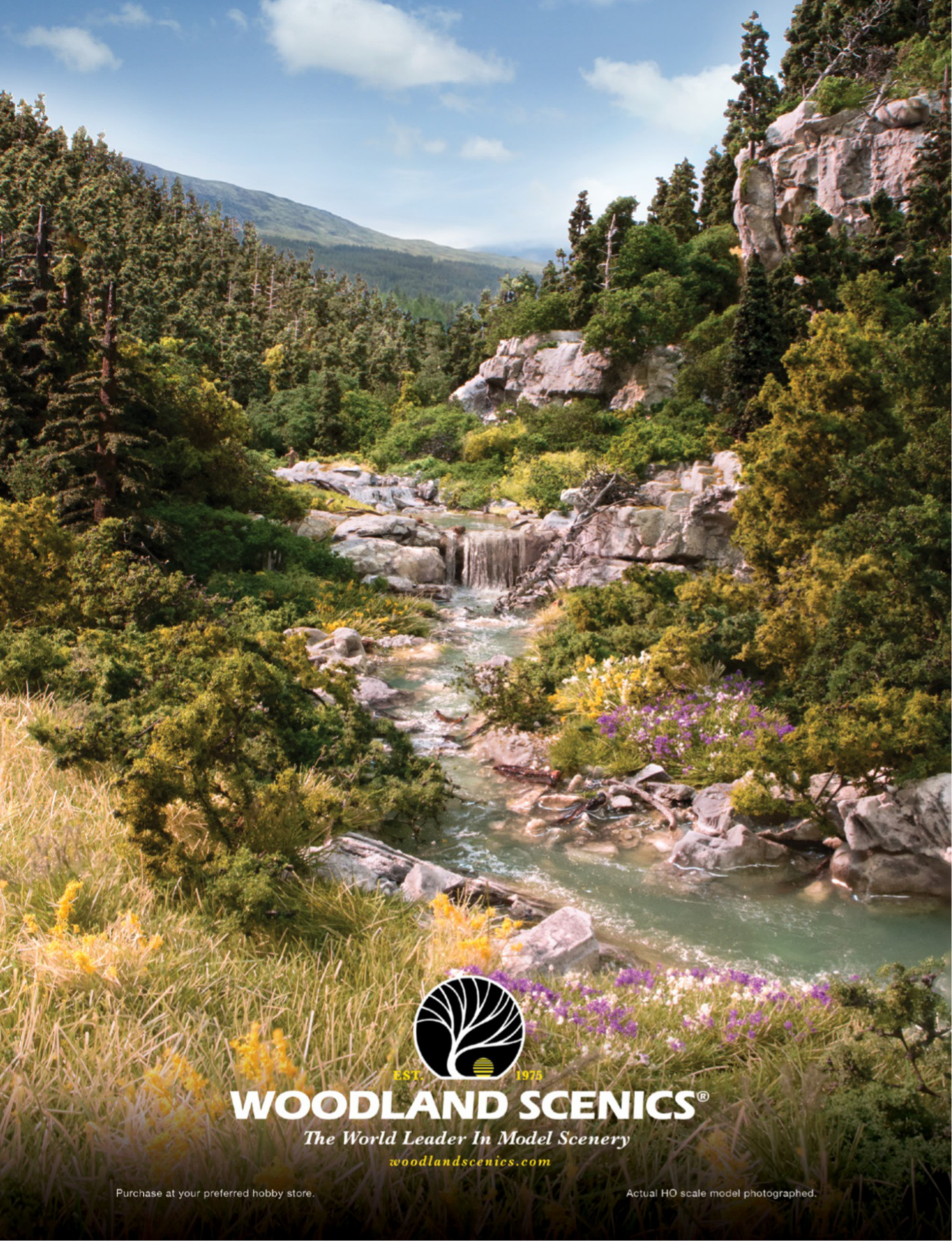
Milk was once an important commodity for the railroads. Before refrigeration became mainstream, high-speed delivery was critical. Trains carried butter, milk and cheese from small town collecting stations and creameries to the production creameries in the big cities.

In ***Milk Trains and Traffic***, explore how these creameries operated, how dairy products were processed, and how everything evolved over time. Understand all the aspects of milk and dairy traffic through the use of photography in the only book on the market dedicated to milk trains and operations.

This book is a key source for railfans and rail historians, as well as modelers who want to add creameries or milk platforms to their layouts.

Order now at KalmbachHobbyStore.com/MilkTrains

Sales tax where applicable.



EST.

1975

WOODLAND SCENICS®

The World Leader In Model Scenery

woodlandscenics.com

Purchase at your preferred hobby store.

Actual HO scale model photographed.