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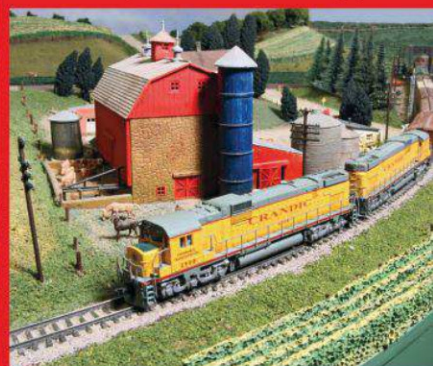
Photos, stories, and track plans of
10 inspiring layouts in
N, HO, and O scales

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Collett's HO scale
New England
layout has matured
over 25 years. p.8

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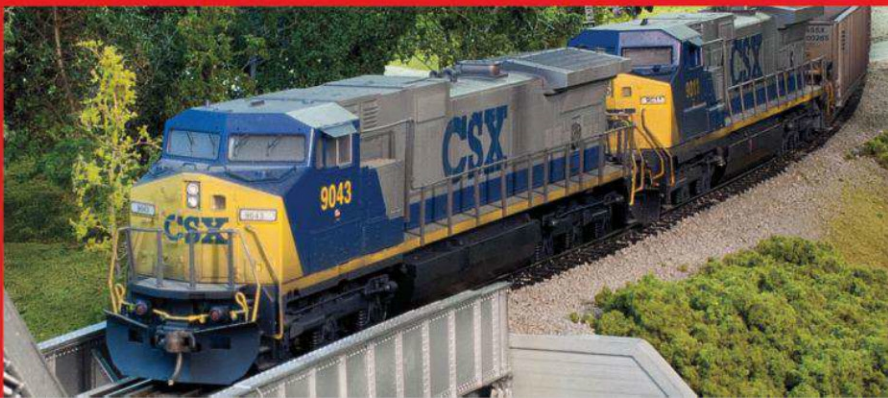
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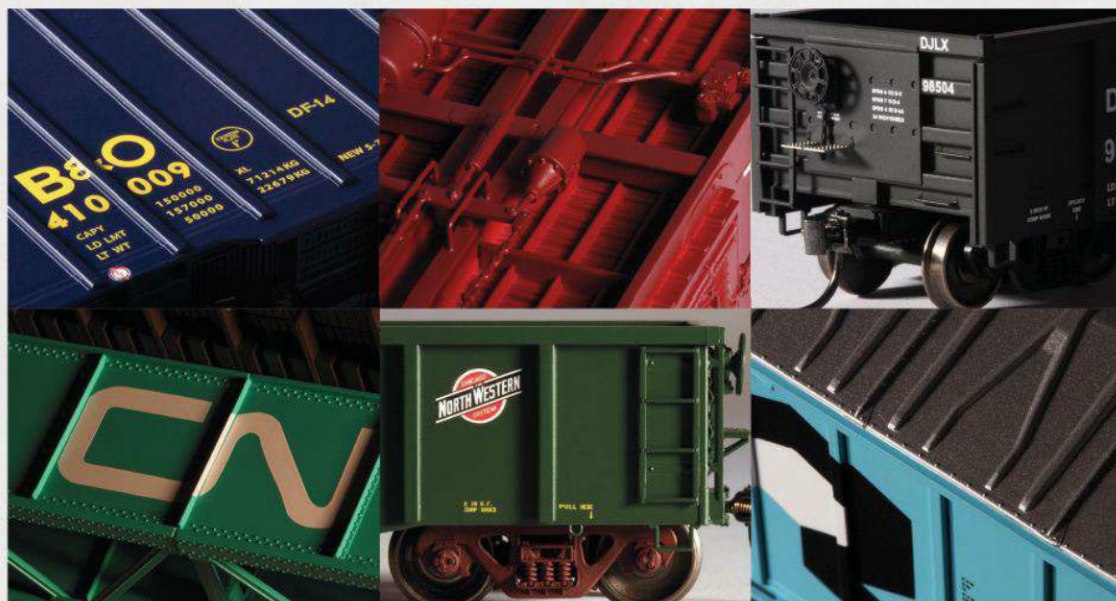


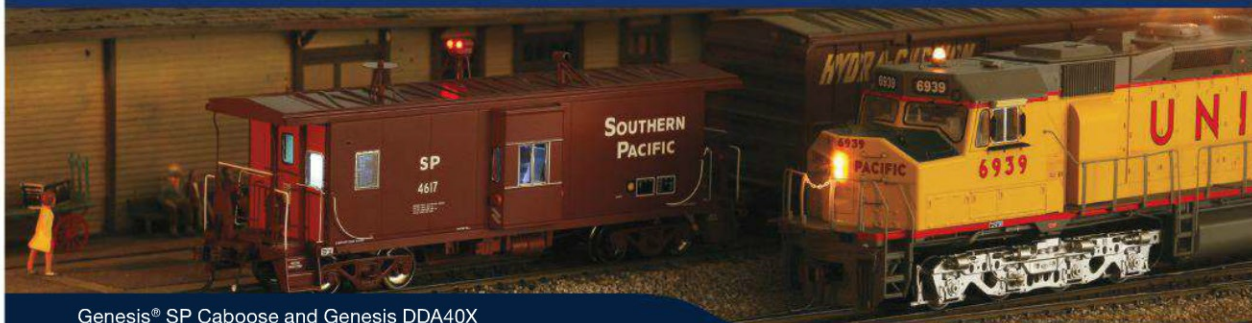
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P1 Model Railroader Special Issue and Archive Collection arrives in mid-November 2012.

GREAT Model Railroads[®] 2013

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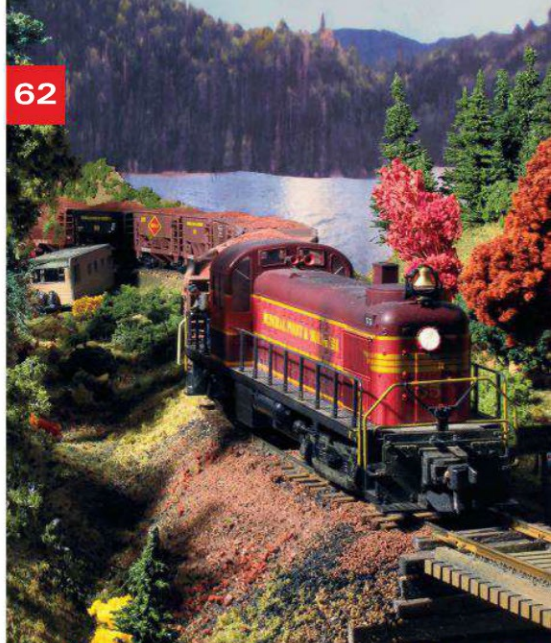
Take a video tour of all three decks of Cliff Powers' HO scale Mississippi, Alabama & Gulf RR.

Download the car-routing matrix Gregg Condon uses on his HO scale Mineral Point & Northern.

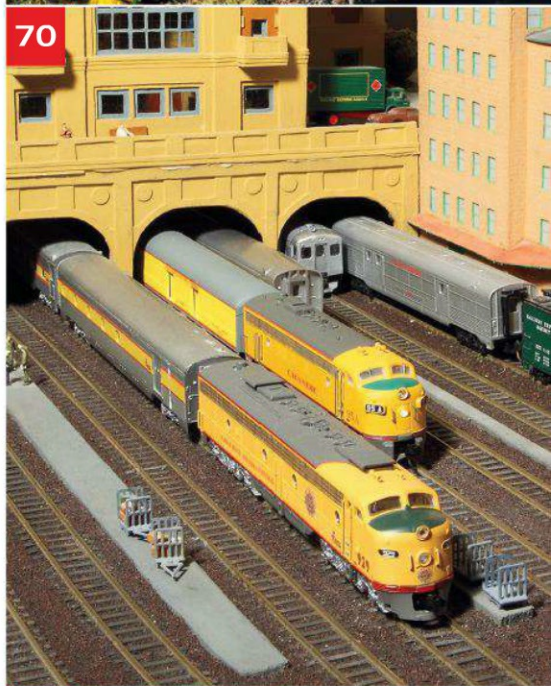
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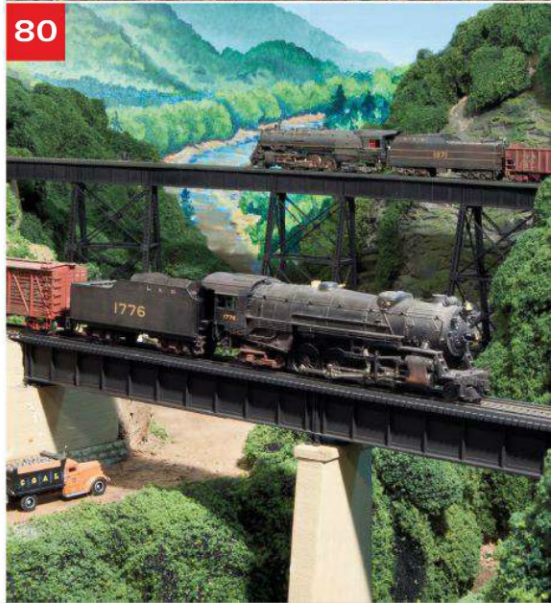
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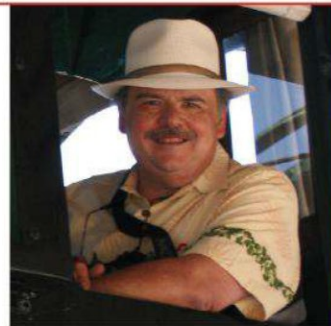
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>> Are they ever really finished?



Model railroads, that is. The conventional wisdom has long been that a model railroad is never completely finished, because there's always something more to add or some earlier feature that can be improved. In this issue of *Great Model Railroads* you'll find layout builders who have several different views.

Bob Collett presents his case for a traditional view in his article describing his HO scale Huntington & Hartford RR on page 8. Anyone walking into Bob's basement would think that his railroad is indeed finished, and that's certainly the impression created by Lou Sassi's outstanding photography. Yet Bob has plans for further improvements, many aimed at improving the layout's operations, that show he's still going to be working on the H&H for some time.

Jack Burgess offers the most sharply opposing attitude in writing about the stage he's reached with his HO scale Yosemite Valley RR. Jack's goal was to recreate most of this famous California short line as it appeared on a specific date in a specific year. He now judges he's achieved this goal, and his YVRR is now, in his words, "finished and done." But this doesn't mean that he's abandoning his completed project. For one thing, he's learned that it's fun to operate a model railroad so like its prototype that it almost has to run like the real thing.

You might expect a life-long modeler like Jack to be disappointed in not facing new modeling challenges, but he's not giving up model building, either. Besides adding

new rolling stock for variety in the YV's operations, he has diorama and display model projects in mind, and sees them as an opportunity to branch out into other scales. But let Jack tell you about all that in his article on page 16.

Another approach to "finishing" a model railroad is illustrated in Dave Rickaby's story on Gregg Condon's HO scale Mineral Point & Northern, starting on page 62. Greg had a completed MP&N that was featured in *Great Model Railroads 2007*, but that railroad succumbed to a home relocation, as is so often the case. Gregg faces another move in a few years when his wife retires, so the question was how much could he accomplish in that short span.

As Dave's article shows, that turned out to be quite a lot. Taking advantage of completed structure models and rolling stock saved from his earlier layouts, Gregg brought his new Gogebic Division of the MP&N to a high stage of completion in short order. He now can enjoy operating and perfecting this version of his model railroad vision until it's time to move once again.

Seven other accomplished model railroaders share their personal visions in this issue. We hope there's something you can learn from each of them that will help you on your way to achieving your own great model railroad.

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Editorial offices
Phone: 262-796-8776
Fax: 262-796-1142
E-mail: mrmag@mrmag.com
Web: www.ModelRailroader.com

Advertising and Trade Sales
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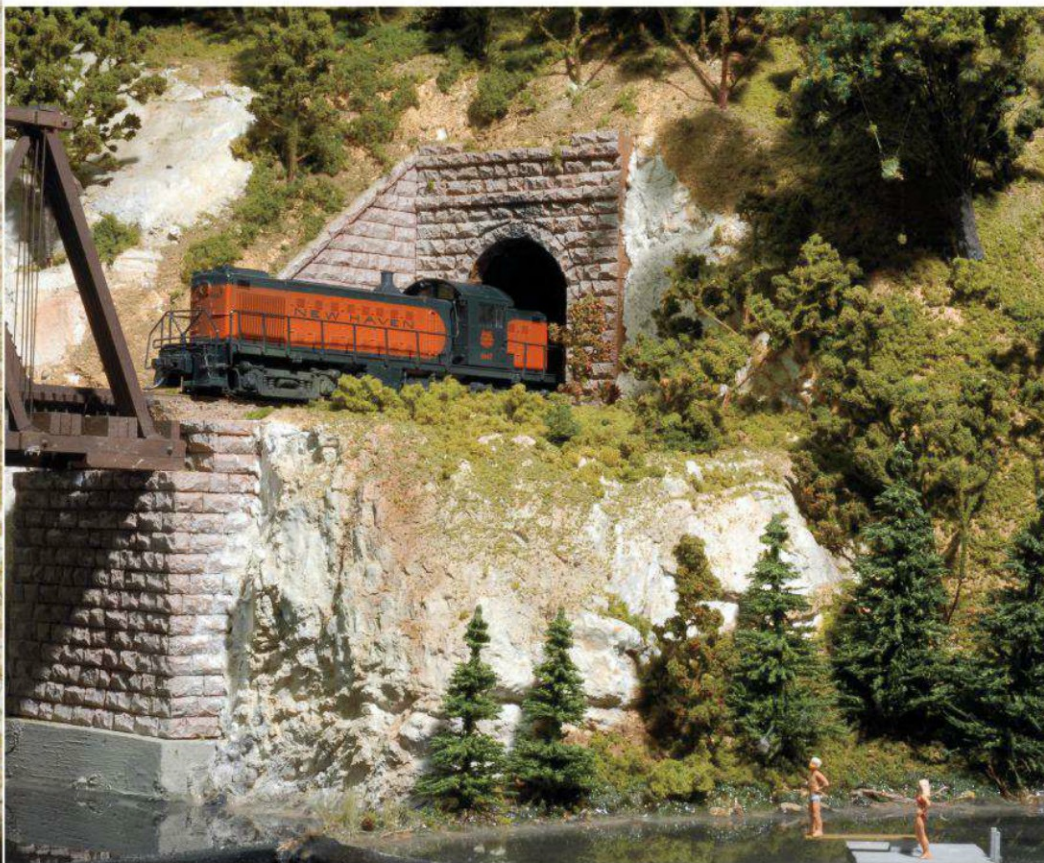
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>> Is this layout complete, for now?

An up-to-date look at the HO scale Huntington & Hartford

By Bob Collett • Photos by Lou Sassi



1 Left: Mikado no. 103 is pulling out of White Hills on its way to Huntington on Bob Collett's HO scale Huntington & Hartford RR. Like most of Bob's steam power, this United States Railroad Administration heavy 2-8-2 is a brass import. The Sunset model was detailed and painted by the late Bob Evans.

2 Above: Swimmers pause and look up at a train led by a New York, New Haven & Hartford RS-1 emerging from a tunnel to cross the Housatonic River. Bob's interest in the New Haven has grown since he started the H&H, and the layout now features a lot of New Haven motive power and rolling stock.

They say things get better with age. After 19 years of fun, I know that's true of my HO scale Huntington & Hartford RR.

A lot has happened to the H&H since *Model Railroader* featured the railroad in its December 1996 issue. Structures and scenery are completed on the railroad, with the last bit of bare Homasote covered in 2004.

At least it's finished for the time being. I have no thoughts of starting a new layout, but would like to do some controlled expansion of the railroad to improve operation.

The Huntington & Hartford is a freelanced Connecticut short line that interchanges with the New York, New Haven & Hartford. The H&H is in part

owned by the New Haven, and as such, the NYNH&H has trackage rights on my railroad. The New Haven exercises its rights to operate both local and through trains. The time is the magic mid-1950s, when both steam and first-generation diesels could be seen running side by side. The locale is from the lower Naugatuck Valley up to Waterbury, and then on to Hartford, paralleling the New Haven's "Naugy" Line and High Line.

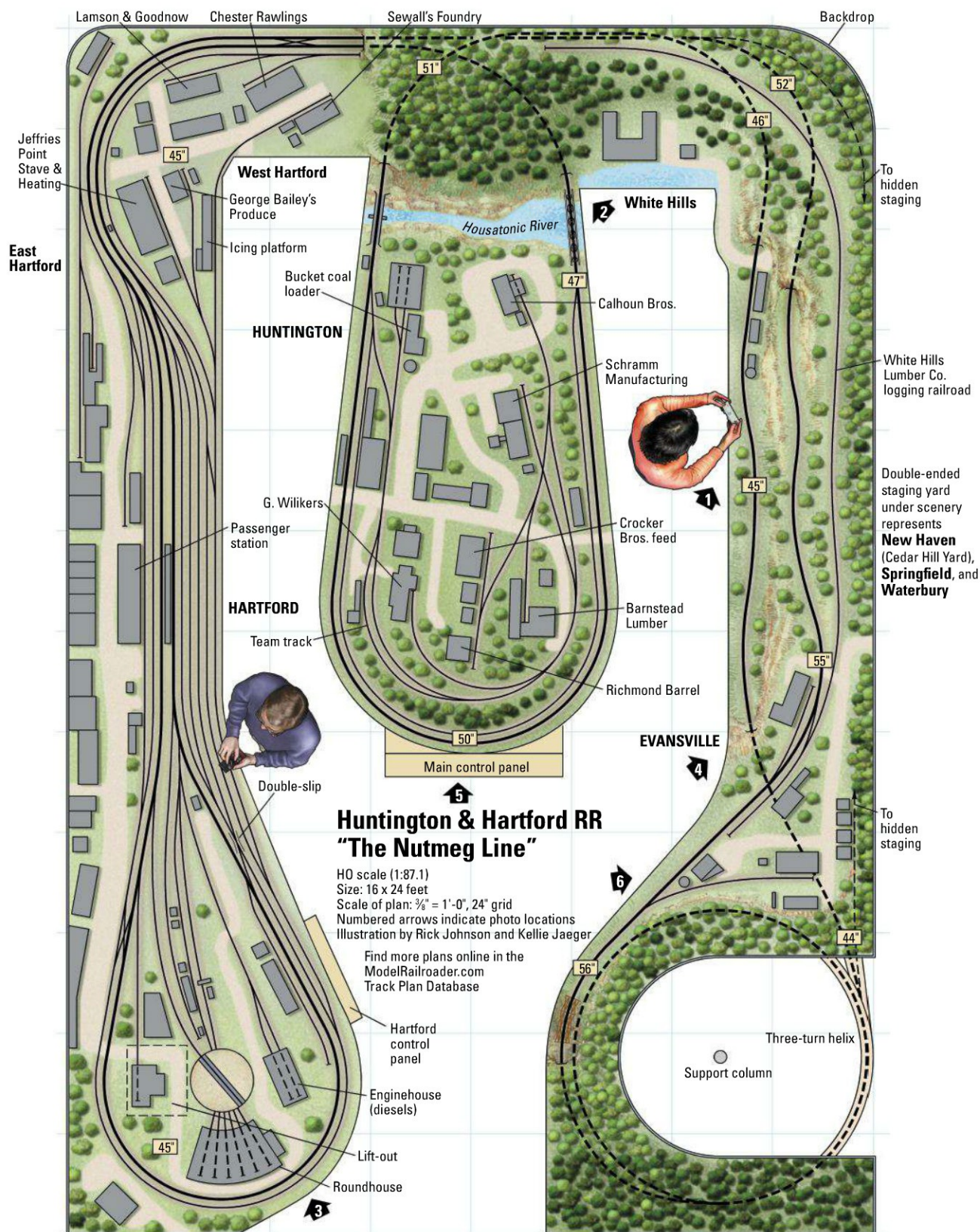
Layout design

When I decided to build the H&H, I was traveling a lot for work. I spent a year designing my layout on airplanes before I was sure it would meet my objectives. I designed the H&H for operation, and wanted to create the impression that

trains were going somewhere "beyond the basement walls."

The layout includes a large city, Hartford, which has many industries and a classification yard. There's also a medium-sized town, Huntington, with a number of rail-served customers, and two small towns. Evansville has three industries, including the White Hills Logging Co., the operator of a logging railroad. The other is White Hills, a resort town that generates railroad traffic. There's also a double-ended hidden staging yard that represents the off-layout destinations of New Haven, Springfield, and Waterbury.

I tried to keep trains from passing through the same scene more than once as much as I could. The line climbs from



>>The layout at a glance

Name: Huntington & Hartford RR

Scale: HO (1:87.1)

Size: 16 x 24 feet

Prototype: freelanced and New York, New Haven & Hartford

Locale: central Connecticut's Naugatuck Valley

Era: mid-1950s

Style: walk-in

Mainline run: 230 feet

Minimum radius: 30" (main), 20" (sidings)

Minimum turnout: no. 6 (main), no. 4 (some sidings)

Maximum grade: 1.5 percent

Benchwork: L-girder

Height: 45" to 56"

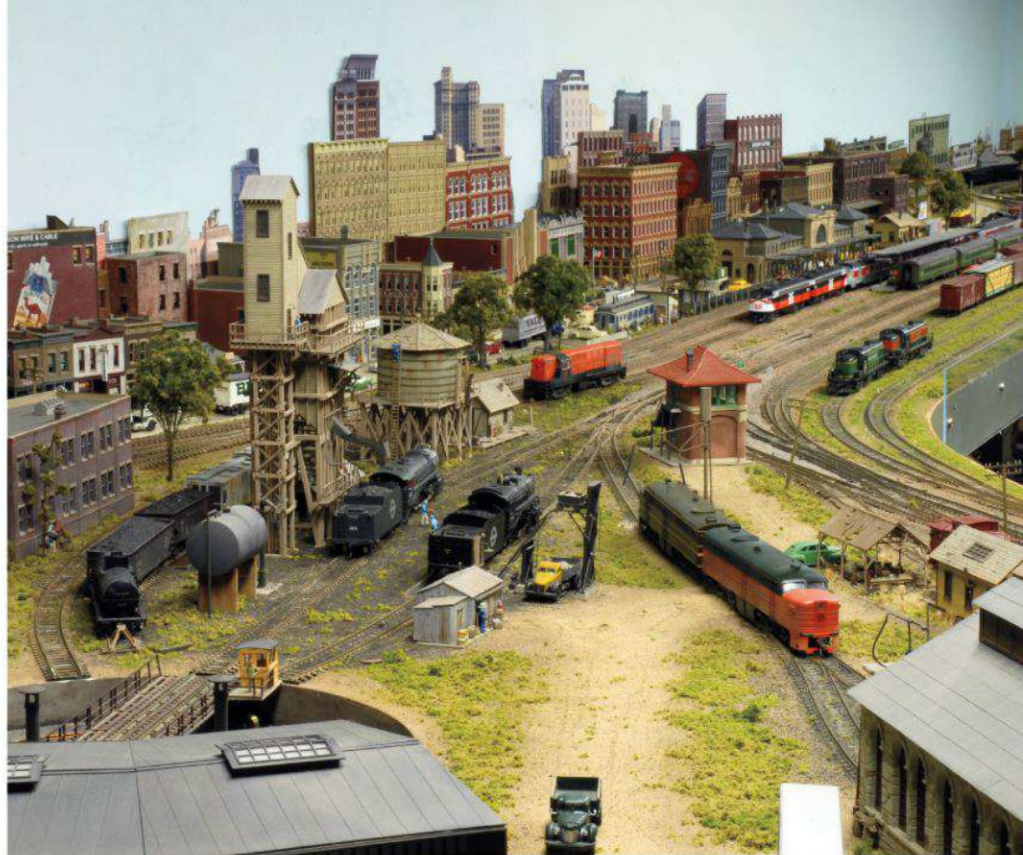
Roadbed: 1/2" Homasote on 1/2" plywood

Track: code 100 flextrack (main), codes 83 and 70 (sidings)

Scenery: plaster over cardboard webbing, foam insulation board, and Sculptamold

Backdrop: concrete wall, tempered hardboard, and sheet styrene

Control: NCE Corp. Digital Command Control



Hartford, through Huntington and Evansville, with a maximum grade of 1.5 percent. Passing the summit in Evansville, trains enter a rock tunnel leading to a three-turn helix that connects to a staging yard. There's also a connection allowing trains to reappear on the main line 11" lower than where they disappeared and return to Hartford through White Hills.

Having learned my lesson from a previous layout, I wanted all the railroad's trackwork to be easily accessible. The main line and most other tracks are reachable from the edge of layout, making for easier operation and track maintenance. I also wanted to make the aisles as wide as possible to accommodate multiple crews working on the same part of the railroad. Space constraints forced me to compromise on this objective, but I've found that by carefully planning operating schedules I can limit the number of people who need to be in a given area at the same time.

I wanted my track plan to provide as many switching opportunities as possible. I've put in both trailing- and facing-point sidings, which at times can be a challenge to switch. The railroad is designed so that operating sessions can

include local freights, through freights, and passenger trains scheduled against a fast clock. The railroad runs point-to-point for operating sessions and can also run in a continuous loop to entertain guests during open houses.

Structures and scenery

Building craftsman kits, such as those from Fine Scale Miniatures, South River Model Works, and others, is still my favorite part of the hobby. I've found the experience gained from building craftsman kits has also made it a pleasure to scratchbuild and kitbash structures to meet a particular need. There are 75 structures on the layout, with 33 of them providing switching opportunities. That doesn't include several background flats in Hartford.

The major reason it took 17 years to finish the railroad was the time it took to build highly detailed structures. To me, the effort was well worth the time, as the finished product adds much realism to the H&H.

Making credible, realistic scenery is my second-favorite part of model railroading. Since the railroad is in a corner of my basement, I first finished the wall behind Hartford by filling all the air

3 This overview at Hartford shows how Bob has concentrated a lot of rail action and urban scenery in a relatively small area. Behind the freight yard and passenger station, building flats add to the impression created by the 3-dimensional city buildings.

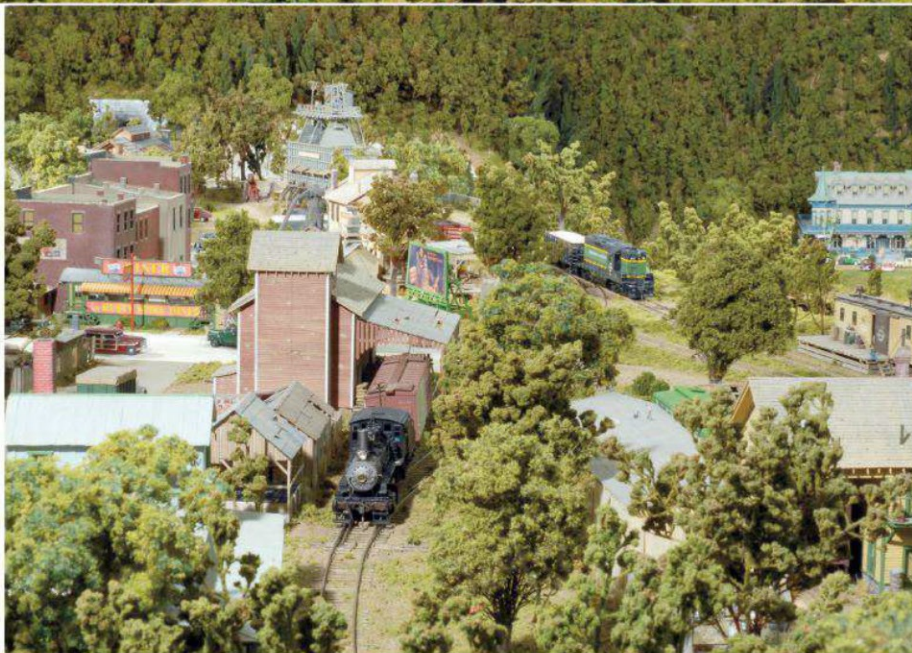
bubbles in the concrete with spackling compound. On the other side of the layout, I used tempered hardboard for the backdrop. I coved the corners of the basement wall with 4 x 6-foot sheets of .040" styrene. I also used this material for a tight-radius backdrop at the helix, in the center of which is a support column. I painted all of the backdrops Sears Federal Slate Blue. I regret not using wallboard and recessed lighting to have a more finished layout.

The scenery base is plaster over cardboard webbing. I paint the shell with an earth-colored latex paint, and then cover it with real dirt that's been finely sifted. For dirt roads I've found a light tan soil around construction sites that looks natural without being painted.

New England is heavily forested, with heavy ground cover in undeveloped areas. This means lots of trees! I've made about 2,300 trees for the H&H, using



4 Above: An H&H GP9 has just delivered a load to Delabarre Tap & Die, the major employer in the small town of Evansville. Bob says that building structures is his favorite part of the hobby, and this South River Model Works kit is a good example of the kind of model he enjoys making.



5 Bob estimates he's planted more than 2,000 trees on the H&H, and a good number of them are visible in this view of Huntington. On the railroad, an 0-6-0 switcher pulls a car from the feed mill and a GP9 spots a gravel load at the rock bunker. Bob built these and some of the other structures in this scene from Fine Scale Miniatures kits.

meadowsweet and steplebush (both perennials). Dipping tree armatures cut from these plants into a bucket of white glue diluted 50:50 with water, then covering them with Woodland Scenics Green Grass, is a quick way to make about 150 trees in an hour. The time-consuming part is drilling all the holes to plant them. I insert a round toothpick

into each tree trunk and put the lower ends of the picks into the holes. Not gluing my trees to the layout makes it easy to change their locations later.

For more detailed foreground trees, I use slender-leaf goldenrod, picked in late October or early November. I wrap multiple sprigs of goldenrod with floral wire, then spray them with Model Master Dark Green paint. When the paint dries, I spray on an inexpensive, unscented, firm-hold hair spray – Aqua Net works great – and then sprinkle on Woodland Scenics coarse turf.

As a final step, I cover the stems with Durham's Water Putty to form a trunk. The putty coating is the reason I prefer floral wire to floral tape. The latter contains beeswax, which keeps the putty from sticking. When the trunk is dry, I paint the trunk and lower branches with Polly Scale Reefer Gray. I also work

>>Scheduled passenger service

Four or five passenger trains usually run during an H&H operating session. In years past, more often than not these passenger trains had to “go in the hole” and creep through towns on sidings. That was because freight train crews who didn’t know when to expect a passenger train blocked the main line with cars they were picking up or setting out.

To resolve the issue, I implemented scheduled passenger service with a fast clock. The local freight crews appreciate it because they now understand when they’re supposed to clear the main line for a scheduled passenger train, and for the most part, they do so.

Since I have an NCE Corp. Digital Command Control system I decided to use a Logic Rail Technologies fast clock, since it can be fully integrated with NCE’s throttle clock displays. The Logic Rail clock plugs into the cab bus just like any throttle, but uses a separate 12VDC power supply. I mounted the clock display on the sky backdrop where everyone can look up and see it. The clock can be started and stopped using function keys on one of the DCC cabs.

HUNTINGTON & HARTFORD RR PASSENGER TIMETABLE						
Friday, July 29, 2011						
	H&H Morning Local	NYC to Springfield	The Lunch Box (RDC)	NH Nutmegger	Springfield to NYC	Afternoon Local
Required Speed Step	SS 10	SS 8	SS8	SS 8	SS 14	SS10
WESTBOUND						
Depart NH/Sprngfld/Waterbury		7:00 AM				
Arrive Hartford		7:15 AM				
Depart Hartford		7:25 AM		12:00 PM		
Arrive Huntington		7:35 AM		12:10 PM		
Depart Huntington		7:40 AM	10:50 AM	12:15 PM		1:40 PM
Arrive Evansville		thru	10:57 AM	thru		1:50 PM
Depart Evansville		thru	11:00 PM	thru		1:53 PM
Arrive New Haven		8:00 AM	11:21 PM	12:40 PM		
Arrive White Hills			11:20 PM			2:20 PM
Depart White Hills						
EASTBOUND						
Depart NH/Sprngfld/Waterbury			10:00 AM		1:00 PM	
Arrive White Hills			10:05 AM			
Depart White Hills	7:00 AM		10:08 AM			
Arrive Evansville	7:20 AM		10:28 AM		thru	
Depart Evansville	7:23 AM		10:31 AM		thru	
Arrive Huntington	7:30AM		10:38 AM		1:25 PM	
Depart Huntington					1:30 PM	
Arrive Hartford					1:45 PM	
Depart Hartford					1:55 PM	
Arrive NH/Sprngfld/Waterbury					2:10 PM	

Since different locomotives run at different speeds, I timed each passenger train consist over the layout from stop to stop. This way, the schedule accurately reflects what each train can do, and I can

also record the DCC speed step appropriate to keep each train on schedule.

Note that even though the freights aren’t scheduled, every crew needs a copy of the timetable. – B.C.

some Roof Brown into the gray paint while it’s still wet.

Over the last 10 or so years, we model railroaders have been blessed with ever more realistic scenery products from Adventures in Miniature (AIM), Scenic Express, Woodland Scenics, and others. I’ve used many of the new products for recently finished areas, and I’ve gone back over some of the older areas as well.

Benchwork and trackwork

I followed Linn Westcott’s *How to Build Model Railroad Benchwork* (Kalm-bach Books, out of print) as a guide to building the benchwork for the H&H. I used Linn’s L-girder system, and I’ve been impressed by its flexibility. It’s been easy to make changes over the years without major effort.

When I started the layout in 1987, Atlas code 100 flextrack was the easiest

way to go. Code 83, at that time sold by Shinohara, wasn’t as widely available. In subsequent years I did switch to mostly code 83 and some code 70 track on sidings and spurs. The main line is 230 feet long, about 4 scale miles, including 67 feet of track in the helix. A train traveling at a scale 30 mph takes about 8 minutes to traverse the entire main line.

The trackwork in the city of Hartford is a large balloon track or reversing loop. Trains entering from either the main line or the staging yard can return on the same track they arrived from. This is particularly effective for interchange traffic in Hartford.

The three-turn helix always draws a lot of attention from visitors. Again following Linn Westcott’s instructions, I found it easy to build. After I had all the sections cut, I invited a group of friends over and we had it installed and working

in less than an hour. The helix is built on a 36" radius and has 3½" plywood spacers between each turn. The grade is only 1.37 percent, and trains of up to 25 cars trains can climb the slope.

Control

I replaced the layout’s DC (direct-current) cab control with NCE Corp. Digital Command Control (DCC) in 1999. Initially I installed decoders in locomotives that I used the most in operating sessions. With the advent of sound decoders, I installed sound in the same engines I initially chose for DCC operation and moved their original non-sound decoders to unequipped locomotives, expanding my DCC roster. Today almost all of my locomotives have DCC sound.

I added PSX Power Shields/Auto Reversers from Tony’s Train Exchange to change polarity automatically in the

>>Locator maps

On our layouts, operators don't do their jobs every day like railroaders on the big roads, so they can't be expected to know the territory as well. Recently, several friends and I discussed how to make our sessions easier for people who only operate on a railroad once or twice a year, and therefore aren't familiar with the various towns and industries. To help with this, we now give every crew a clipboard laminated with the H&H track plan.

The train paperwork also includes diagrams showing the names and locations of every industry in the towns that train will switch. [Prototype railroads have issued similar diagram books. On the Santa Fe, these were called Car Location Inventory Control or "CLIC" books; on the Southern Pacific, they were Southern Pacific Industrial Numbering System or "SPINS" diagrams. – Ed.] Together these have made operation easier for all of us. – B.C.



reversing loop and to establish circuit breaker protection, dividing the railroad into four power districts. I still have two cabs with DC power packs so I can make sure a new DC engine works OK before I install a decoder.

Additionally, I've replaced most of my solenoid switch machines with Circuitron's Tortoise motors. These have Hare or Wabbit accessory decoders so operators can control turnouts from their throttles as well as from control panels with momentary buttons. Routes entering and leaving the yards have multiple turnouts programmed with DCC macro command sequences for automatic routing. Many who have operated on the H&H say the auto-routing capability makes it much easier for them. I can certainly say that DCC has generally made operating the railroad easier both for train crews and the dispatcher (who is usually me).

Equipment and operation

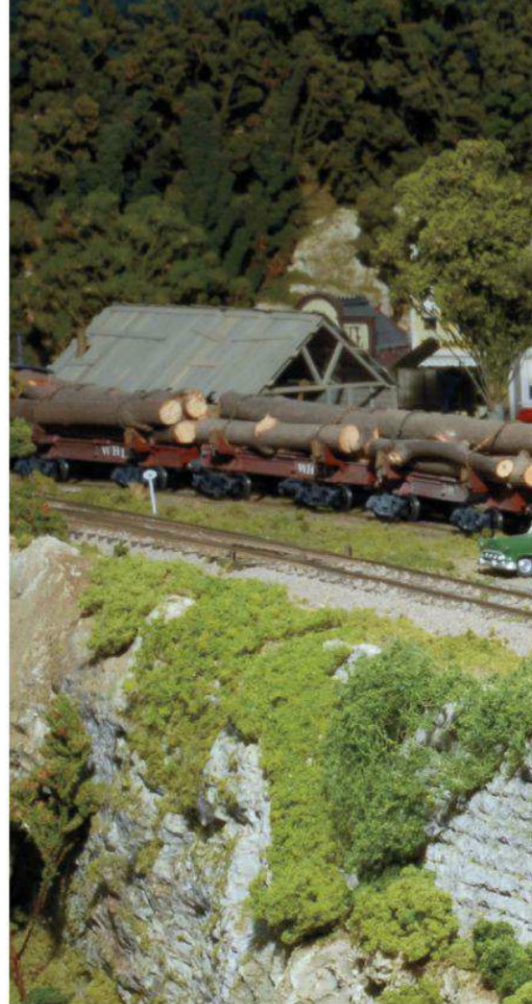
Over the years I've become more interested in modeling the prototype New York, New Haven & Hartford, and have joined the New Haven Railroad Historical & Technical Association (NHRHTA). Power on the H&H is a mix of steam and first-generation diesels carrying both New Haven and H&H road names. My steam power is mostly brass, supplemented with some Bachmann and Life-Like Heritage locomotives. The diesel roster includes Alco and Electro-Motive Division locomotive models from Atlas, Kato, and Walther's Proto.

Having become a member of NHRHTA, I've become much more focused on New Haven passenger operations of the mid-50s. During operating sessions I schedule local and through passenger service, which keeps the crews on their toes. I use a Logic Rail Technologies fast clock made specifically for use with NCE Corp. DCC, so operating crews know when the main line must be clear for passenger trains. The freight trains are unscheduled. See "Scheduled passenger service" on page 13.

Huntington & Hartford operations include local turns, point-to-point through freights, and passenger trains. Our Friday night round-robin group has elected to use switch lists instead of a card system. Each crew consists of an engineer and a conductor/brakeman. Typically we have two or three local crews and a crew assigned to through trains. One of the local crews can be assigned to the White Hills logging line, with double-headed Bachmann Shays for power. With the slow speed of the Shays, a couple of moves can take a good part of the session.

Through passenger trains set out and pick up "head-end" (mail and express) cars and sleepers. In Hartford, heavy-weight passenger cars must have their air conditioners re-iced before proceeding. Through freight trains may set out or pick up blocks of cars at Huntington on their way to or from Hartford.

All of the switching work can be puzzling to operators who may not be



6 A White Hills Logging Co. train crew has spotted engine no. 5 for water in Evansville before delivering a flat of rough-cut lumber to the H&H. The 3-truck Shay is a Bachmann model with added details by Bob, who has plans to extend this logging line for longer runs and more interesting operation.

familiar with the locations of towns and industries. "Locator maps" at the top left explains what we've done to make the H&H friendlier in that regard.

A look back

Overall I think the Huntington & Hartford has been successful in several ways, based on the enjoyment it's given to me and my friends. There are a few things I wish I'd done differently, as I mentioned earlier. Nevertheless there are a number of things I think I did right, some of which may be of use to those of you just starting to plan a layout.

- I fully planned the railroad before driving the first nail in the benchwork,



and planned the track and structure locations to support operations.

- I included a double-ended hidden staging yard that's been particularly useful for through freight and passenger service. City yards have a tendency to fill up as you acquire rolling stock, and may even restrict train movements. The staging yard lets me move cars off the modeled portion of the railroad.

- I decided ahead of time on the length of both freight and passenger trains. This was important in planning straight track, yards, passing sidings, and most importantly the maximum grade and minimum curve radius.

- I wanted the railroad to go somewhere instead of just doubling back on itself. The helix accomplishes that. Trains are out of sight for a while as they either head for hidden staging, or emerge a minute or so later on the main line 12" below where they entered. This separates the scenes sufficiently to keep trains from appearing to pass through the same scene twice.

- Thanks to a suggestion by my friend John Adriani, I've kept a complete, documented schematic of all the layout's wiring. These schematics have saved me time and frustration over the years when making wiring changes.

Speaking of suggestions, I owe special thanks to our round-robin model railroading group, the Friday Knights of the Road, for their many ideas as well as their camaraderie. John Elwood helped me decide where to place new industries, and John Grosner was a big help with ideas and kitbashing help as I finished building Hartford. Model railroaders are great friends.

A look to the future

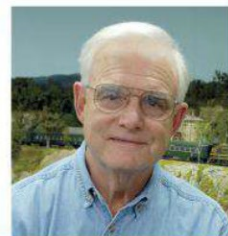
Though the railroad is more or less complete, I have many projects to take up my modeling time, including signaling and building New Haven head-end equipment for passenger trains. On the layout I'd like to expand the White Hills Logging operation, including a detailed log-loading scene and several trestles. I'd

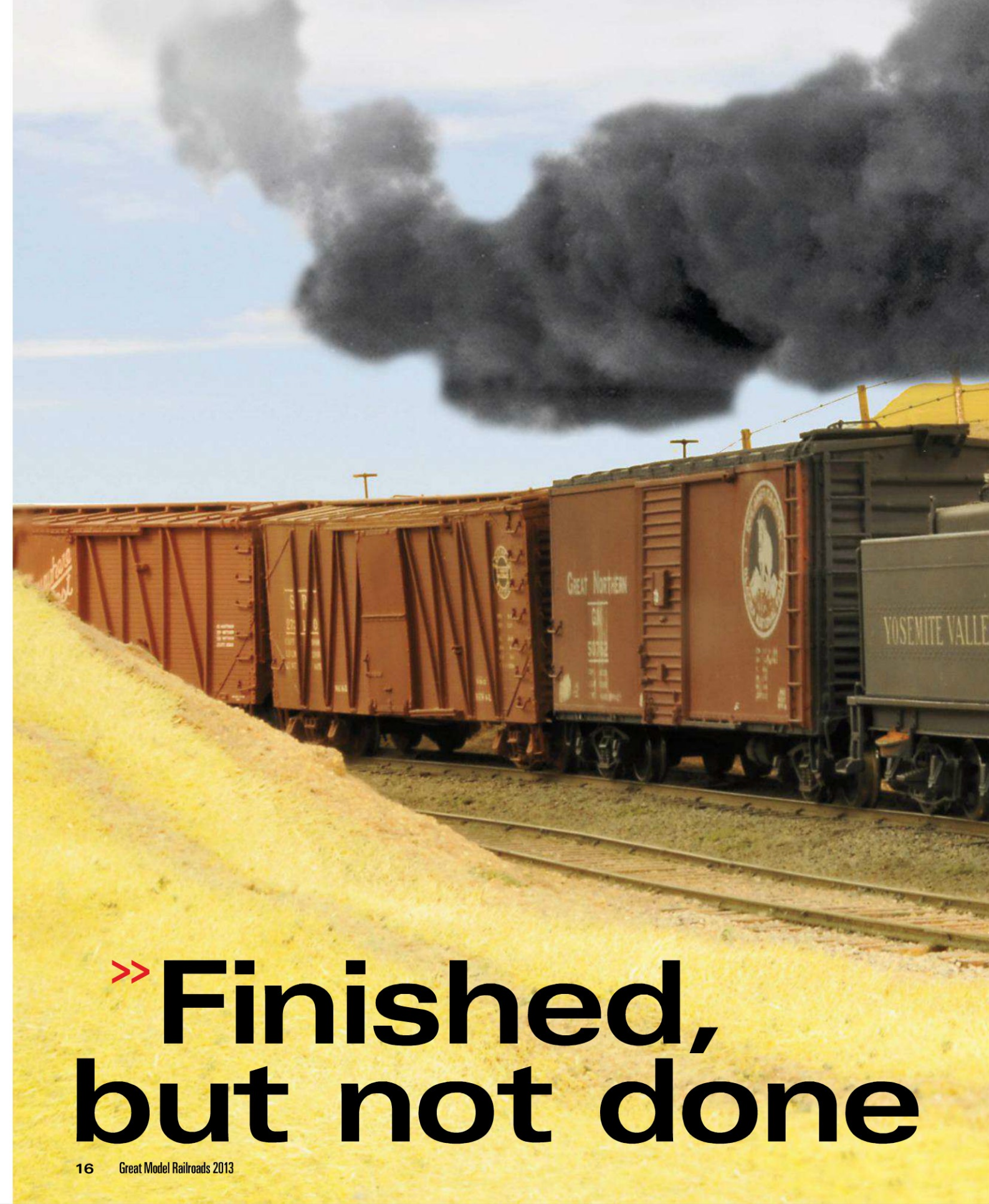
also like to have more hidden staging for greater operating flexibility, and I plan to make a 12-foot-long portable section with four to six tracks on a Gator Board base.

Since I retired eight years ago, I've continued adding to the H&H and making new friends. I'm sure I'm enjoying the hobby more than ever. GMR

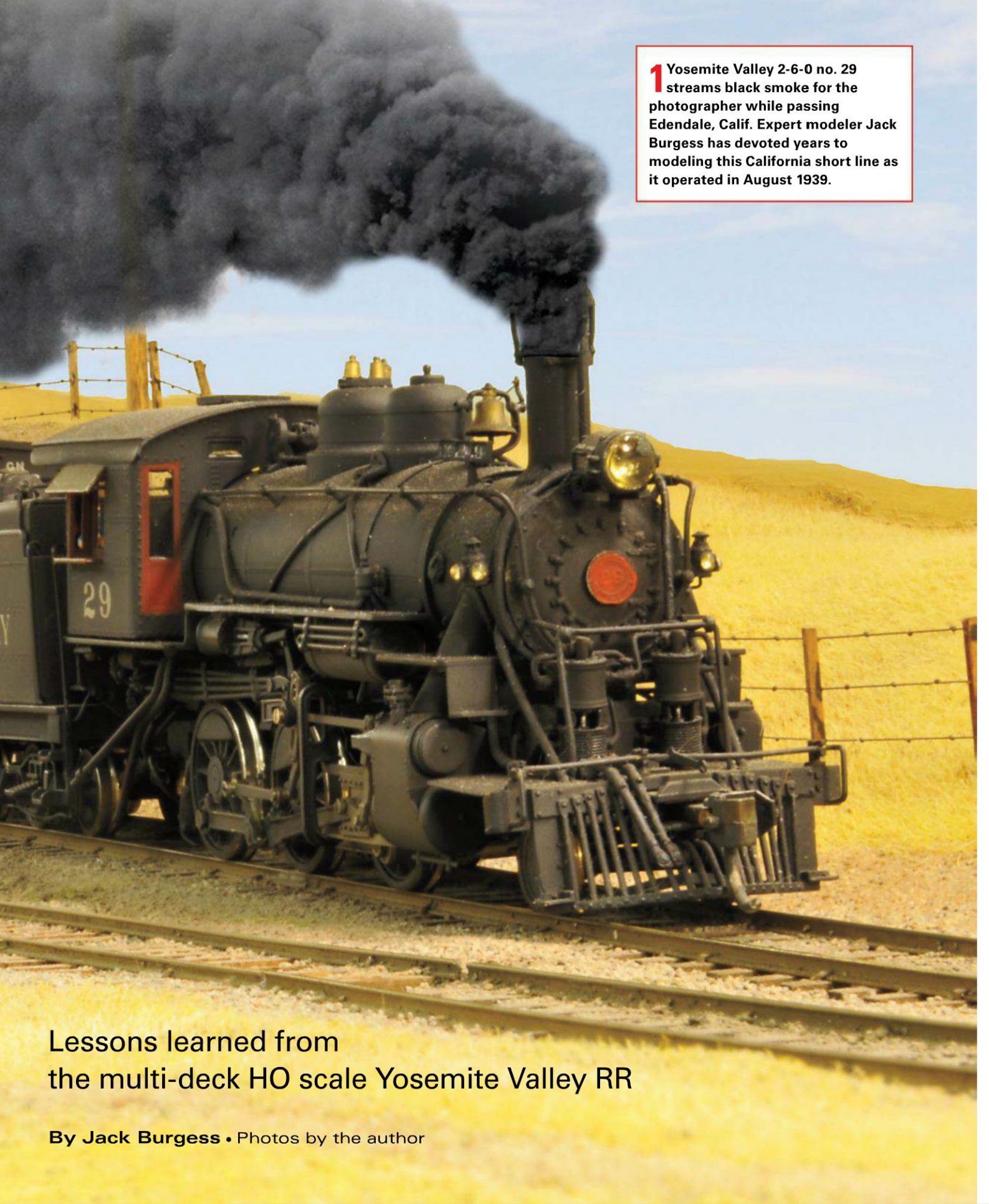
>>Meet Bob Collett

Bob has been model railroad-ing for more than 40 years. Like so many others, he started young with American Flyer and Lionel trains. He and his wife, Jackie, are retired and enjoy traveling and tennis. They have a grown son and daughter, along with three grandchildren.





>> **Finished,
but not done**



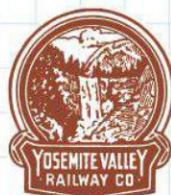
1 Yosemite Valley 2-6-0 no. 29 streams black smoke for the photographer while passing Edendale, Calif. Expert modeler Jack Burgess has devoted years to modeling this California short line as it operated in August 1939.

Lessons learned from the multi-deck HO scale Yosemite Valley RR

By Jack Burgess • Photos by the author

>>The layout at a glance

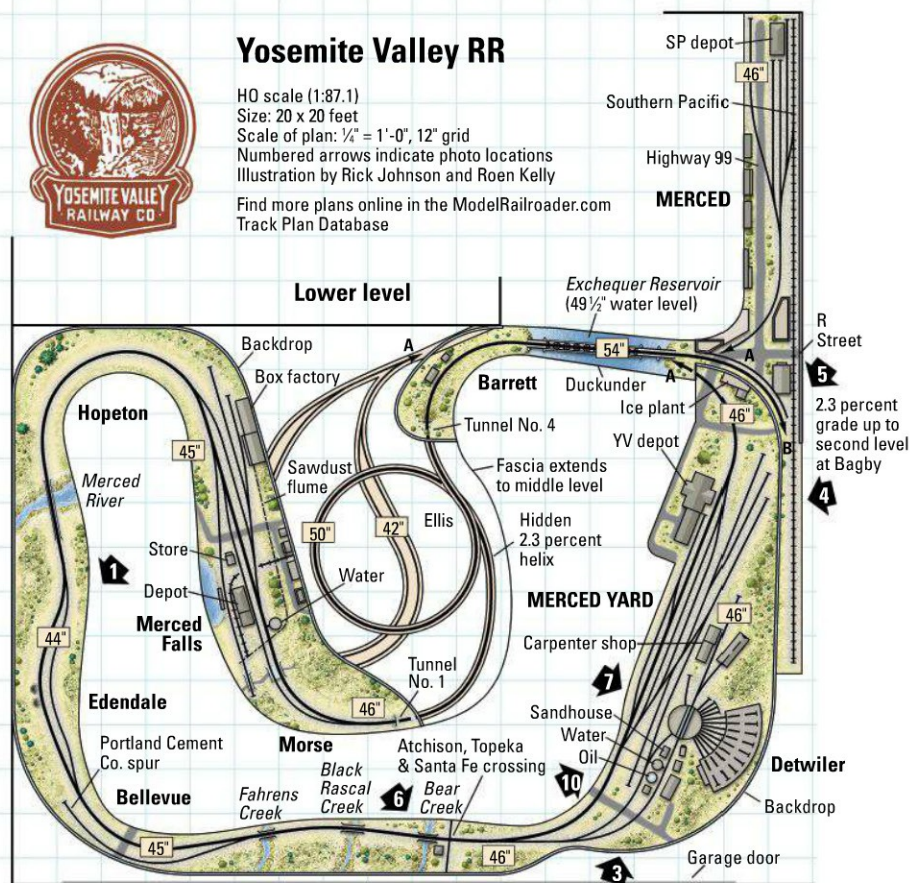
Name: Yosemite Valley RR
Scale: HO (1:87.1)
Size: 20 x 20 feet
Prototype: shortline railroad to Yosemite National Park
Locale: San Joaquin Valley and Merced River Canyon in California
Era: August 1939
Style: multi-level
Mainline run: 112 feet
Minimum radius: 22" with spiral easements
Minimum turnout: no. 5
Maximum grade: 2.3 percent
Benchwork: open grid
Height: 44" to 82"
Roadbed: 1/2" Homasote on 1/2" plywood
Track: handlaid codes 55, 70, 83
Scenery: plaster-soaked paper towels over screen wire
Backdrop: 1/8" tempered hardboard
Control: NCE Corp. Digital Command Control



Yosemite Valley RR

HO scale (1:87.1)
 Size: 20 x 20 feet
 Scale of plan: 1/4" = 1'-0", 12" grid
 Numbered arrows indicate photo locations
 Illustration by Rick Johnson and Roen Kelly

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



Forty-five years ago, in 1967, I posed a challenge to myself: to model California's Yosemite Valley RR in HO scale, and to model this storied short line as it existed in August 1939 as closely as possible. When I took up that gauntlet, those who modeled a specific railroad in a specific location were in the minority, with fewer still selecting a specific time frame.

In those days, many hobbyists, if they weren't freelancers, were satisfied to only generally follow their prototype as to location and era. Even if scenery and structures were correct or at least typical for their prototype, few modelers restricted their modeling to a year, let alone a month. Instead, it was more typical to model just a general period, such as the "transition era" or the 1960s. But I decided it was necessary to narrow my modeling window, since I thought both a specific year and month were important to modeling accuracy.

Since challenging myself with that goal, I've never looked back or changed my focus. The past 45 years have thus been a great and rewarding experience.

Having a vision

There's a well-known proverb, prevalent since the beginning of the hobby, which claims "No layout is ever done." The idea behind that is that you can always add more details, rebuild scenes, and make other modifications that will keep you busy until the last train departs the station. But I've always questioned that assumption.

I'm probably atypical, but when I started building my present model railroad in 1980, my objective was to eventually finish it. That was a relatively obvious goal to me. I finally finished my layout in June 2011.

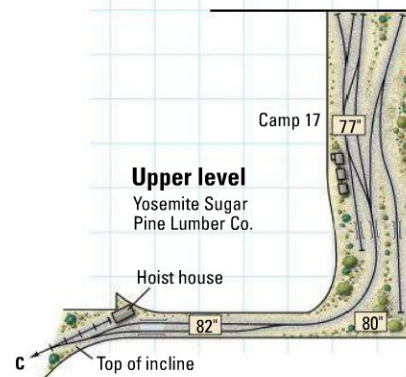
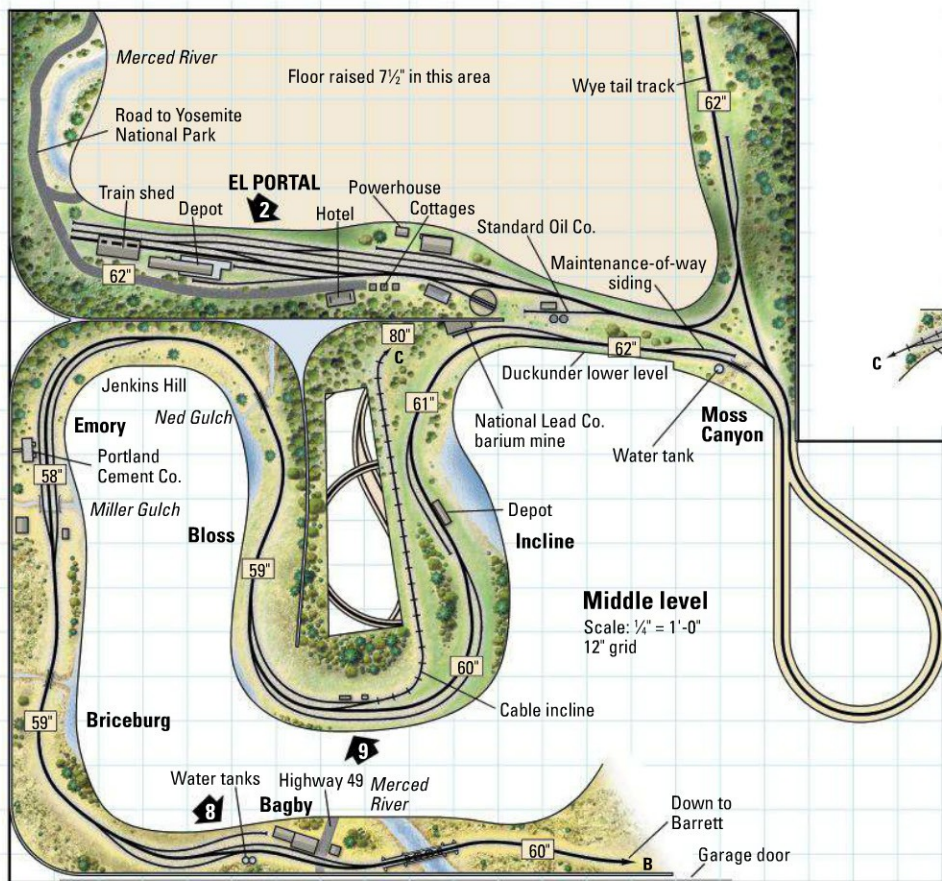
To me, a finished layout means that all structures, scenery, and details are done and nothing needs to be upgraded or changed. I can understand that if one freelances, it can be easy to continually replace structures and even rip out parts of the track or scenery and replace them. But modeling a prototype means continually replacing things isn't necessarily an option. Once you have a good model of the appropriate building, there's no need to change it. I see that as a huge

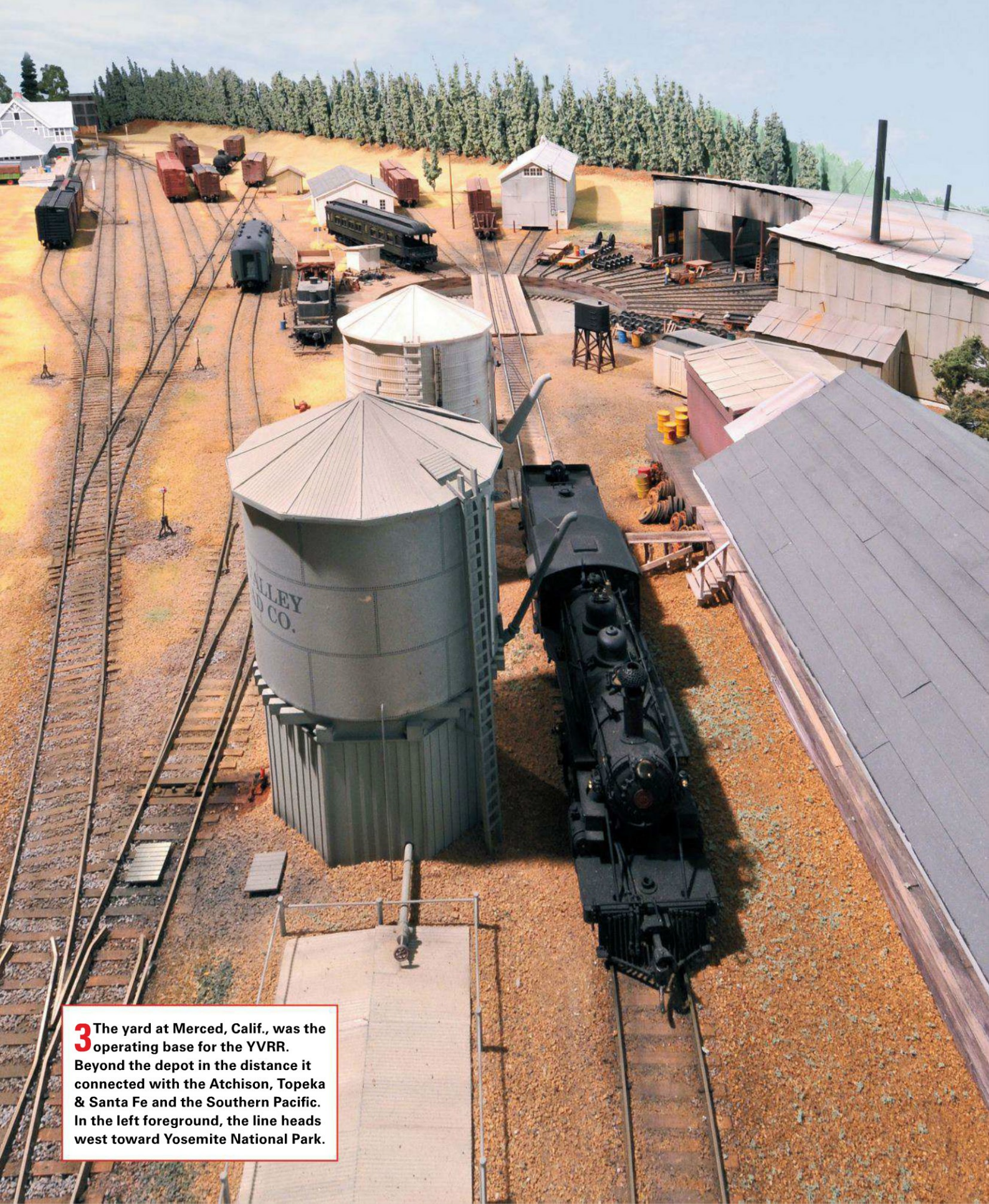
advantage, since I wanted to actually finish my layout someday!

I'm fortunate that when I started construction of my layout, I couldn't foresee how much time and effort would be required to finish it. While it was easy to study prototype photos and visualize how scenery and structures on the layout might ultimately appear, the actual scope of my project eluded me. Since my space was limited to a 20 x 20-foot California 2-car garage, I decided I needed a multi-deck layout to provide a long enough main line for operation and to include all of the scenes I wanted to model.

Multi-deck layouts were rare then, so design and construction techniques were new ideas. It also meant twice the amount of scenery would be needed.

2 Having reached the east end of the line at El Portal, the gateway to the park, Mogul 27 spots cars for delivery. Jack's finished scenery gives a realistic impression of the YV's locale, but it took perseverance to reach that goal.





3 The yard at Merced, Calif., was the operating base for the YVRR. Beyond the depot in the distance it connected with the Atchison, Topeka & Santa Fe and the Southern Pacific. In the left foreground, the line heads west toward Yosemite National Park.

4 Structure modeling is one of Jack's favorite activities, and his Merced station is a gem. This early morning view shows off the building's interior lighting. The station houses a periscope that gives visitors a view of the yard from inside the building.

When I started construction, I chose to handlay all of my track and turnouts since I could purchase ties, rail, and spikes and then lay track for several weeks for the cost of a single prefab turnout. The lack of good prefab track at the time might have also been a factor, but the cost of supplies was more important to me in those early days. However, I didn't realize that the spikes and the needlenose pliers wouldn't finally be put away until nine years after I started!

The first couple of decades after starting layout construction rolled by as I laid track, built some structures, and started on the scenery. While I'd built scenery on a couple of my previous layouts, this new model railroad was no longer a practice effort. I realized I'd never finish all of that scenery if I later had to later tear things out and rebuild areas that didn't meet my vision.

Persistence pays

It was very disconcerting when I quickly realized that the first section of scenery I built on the new layout didn't match my expectations. After the basic screen wire was in place and covered with a coat of plaster, I studied it for a couple of days before realizing that I needed to tear it out and start over. The replacement looked better and more closely conformed to the prototype terrain in the area I was modeling. But, while the scenery contours appeared more prototypical, I wasn't confident that the final product was going to be acceptable. Part of this problem is due to the wonderful model photos that show up every month in *Model Railroader* and other magazines. Such photos set a very high bar for scenery modeling.

But I kept going, adding rock castings and sieved dirt onto the basic plaster shell of my scene. I still wasn't inspired by the results, but, after adding some static grass, bushes, and a couple of trees, it seemed that my efforts were finally getting closer to my vision.



>>Always making lists

When large parts of a layout are still mostly benchwork with just track and some partial scenery, it probably doesn't seem worthwhile to start trying to quantify what remains to be done. However, I'm a habitual list-maker, and early on I started a list of all of the buildings I'd eventually need on my layout. Ideally, I'd have completed that list while designing the railroad in order to provide the room for the structures later. However, I didn't have that level of information as I designed my layout.

Over the years, I added a few buildings to this list as my collection of photos and information grew, and I deleted a couple that wouldn't fit. But the total never changed that much, staying just over 100 buildings and bridges.

Since all the structures I needed had to be scratchbuilt, the list made it easy to see that I was slowly making progress on completing buildings for the YV. It also made it easy to find a structure project that met my interests at any given time, whether that was a quick, one-night project or taking on a more complex building. I have another list of future projects that includes building models of all of the cabooses, boxcars, flatcars, passenger cars, and maintenance-of-way equipment that the YV owned in 1939.

Though I only work on one model or scene at a time to maintain my focus, I'm usually thinking about the next project while finishing the current one. While studying photos of the next project, I'll add any parts and supplies I'll need for that project to my hobby shopping list, so everything will be on hand when I'm ready to start building. I also use the hobby shop list to keep a stockpile of basic scratchbuilding supplies on hand, including sheet and scribed styrene, brass wire, and so forth.

For some more involved or detailed projects, such as a caboose or a series of YV boxcars, I'll start a list of details I want to be sure and add to the models while I'm studying prototype photos. This list can also help me mentally develop a construction sequence so that finishing one step doesn't make a later one more difficult.

List-making might seem more like work than a hobby. But I find lists a good way to harness the power of my spare time. — J.B.

>>Operation



5 Jack finds realistic operation is the key to satisfaction with his completed YV. Here 2-6-0 no. 25 switches cars for the SP connection at Merced. Prototypical track arrangements guarantee realistic movements.

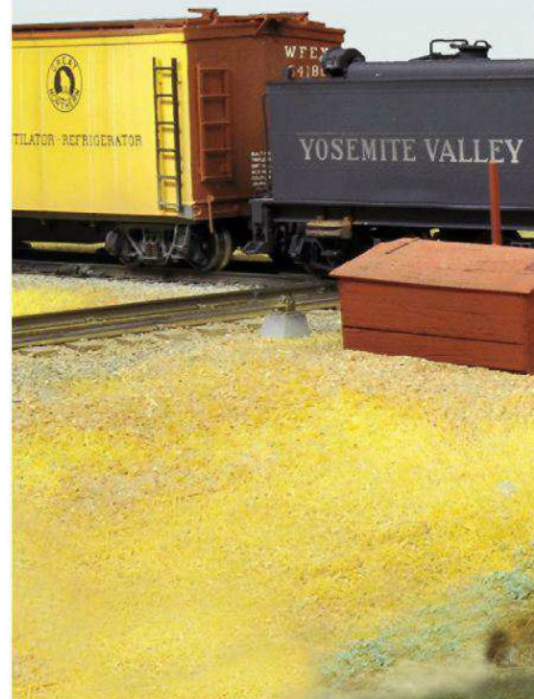
What will it take to keep your interests up long enough to actually finish your layout? Getting into operation is the obvious answer for many model railroaders. But ensuring that you enjoy satisfactory operation requires good layout design from the beginning. Fortunately, good layout design principles have been continually enumerated during the past several decades. In addition, the opportunities to operate on many other layouts, such as through the National Model Railroad Association's Operations Special Interest Group (OPSIG, www.opsig.org), has allowed modelers to better understand how good layout design can support enjoyable operations on their own layouts.

[Other good sources for information on layout design for operation include *Model Railroader* and its annual *Model Railroad Planning* magazine, and the NMRA's Layout Design SIG, www.ldsig.org. – Ed.]

Operations weren't a major design consideration for me when I drafted my layout plans in early 1980. The need for adequate staging was recognized in those days, but staging wasn't really a valid need for a layout based on a prototype that interchanged with a couple of Class 1 railroads at one end and then dead-ended 78 miles away at Yosemite National Park. However, I did think that, by replicating the prototype yards and switching locations on my layout, future operations would be rewarding and prototypical. When I began formal operating sessions nearly two decades after I'd started construction, it was gratifying to find that assumption was correct. By following my prototype as closely as possible, I didn't find need to change any of my original trackwork for operation.

For many modelers, however, a better approach might be to start operations as soon as all of the track has been laid in order to uncover operational problems and fix them before moving on to scenery and other tasks.

I always envisioned operating my layout with visitors rather than a dedicated train crew. While that might be a vague design goal, it can also be something to think about during design. A "sincere," once-through-each-scene track plan is easy to follow and logical for operators. I like a clean fascia without lots of distractions, but I do have all of the yard and place names on the fascia. The local freights work with prototypical YV switch lists, just like the crews did on the full-size railroad. I think this is easier for visiting operators rather than working with a handful of car cards. The backside of the switch lists also includes a line map of the layout with station and siding names to help orient operators. – J.B.



I learned from these first efforts that it can take perseverance to get over that initial disappointment when your work isn't matching your expectations. Scenery can seem to be much less demanding than building freight cars or structures, but it does have its own challenges. When you run into this "wall," it's important to persist until you achieve the results that you want.

One scene at a time

A popular approach to building scenery for a large model railroad is what I call the "shotgun" technique. Once the track is laid, scenery is roughed in and maybe some initial mock-ups or "good enough" structures and details added. Later, better models replace those stand-in buildings and more details are added and the scenery improved, sometimes almost continually.



I didn't follow this approach. When I'd finish a bridge and install it on the layout, I'd also finish all of the scenery in the vicinity of that bridge. That meant not only the obvious ground cover, but also bushes, trees, and any appropriate details such as a handcar setout or oil stains on the ties from a nearby flange oiler. After completing and installing a structure on the layout, I added the details around it that showed up in prototype photos of that building.

Finishing individual scenes to this degree of completion as the layout progresses can be a great motivator and also very satisfying. At least for me, it made me want to immediately get busy on another unfinished area of the layout.

Finding the time

A number of factors work against modelers being able to finish a layout.

Many hobbyists find it difficult to find the time needed to work on a layout or build models, given the demands of their profession, family, and other obligations. I always kept in mind a sign that a fellow modeler posted above his workbench many years ago that read, "Harness the Power of Your Spare Time."

Another friend, also a Yosemite Valley modeler, has spent only an hour a night, Monday through Thursday, along with an occasional late Sunday afternoon, on model building. During the past 4 years, he's scratchbuilt about 40 YV-prototype structures! He's convinced that success depends on good time management as well as focusing on what you want to achieve in each building session.

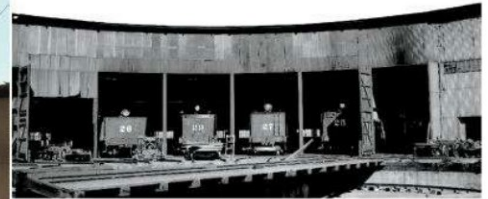
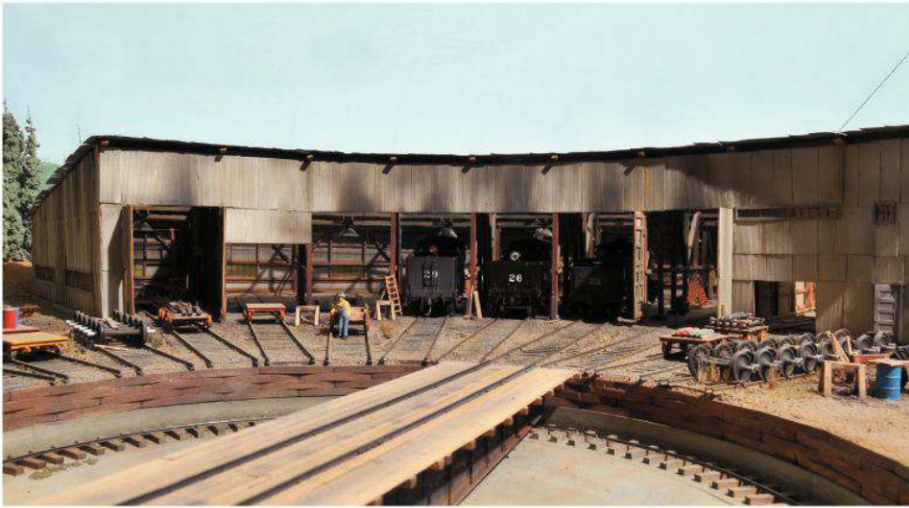
A life-long obsession

Yes, I consider my hobby of model railroading an obsession. I have other

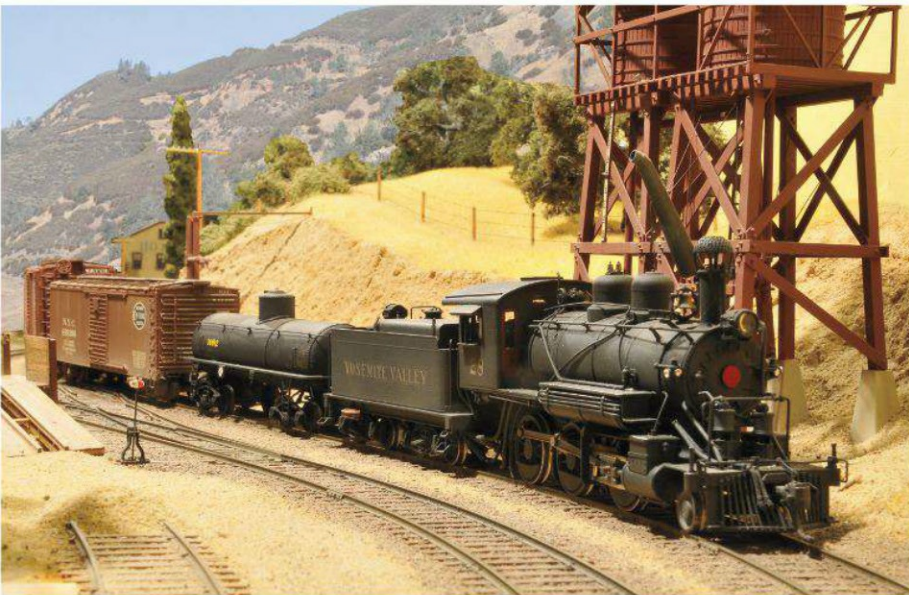
6 Engine 27 leads the westbound local freight past the AT&SF crossing and tower, and across Bear Creek. Jack found he got the most accomplished when he completely finished a scene such as this one before moving on to another part of the layout. He prefers this approach to the "shotgun" technique.

hobbies, but model railroading takes up a majority of my spare time at home. One major reason for this obsession, other than the fact that I love building models, is that I made that early decision to model a specific prototype.

After some limited model railroading efforts in my youth back in the late 1950s, I returned to model railroading in 1965, defaulting to freelancing a fictitious railroad set in northern California. However, I soon became interested in scratchbuilding prototypical freight cars that I'd measured and photographed in



7 Comparing Jack's model scenes to the prototypes they represent demonstrates the fidelity of his modeling. Here we see Jack's version of the Merced roundhouse alongside the real thing. Prototype photo from author's collection



8 Mogul 28 leads the Merced Local past the distinctive twin water tanks at Bagby. Jack's accuracy in modeling prototype locations can sometimes make visitors think they recognize a scene in a prototype photo when they've really only seen the YV layout. Ken Kidder
prototype photo from author's collection



9 Engine 28 again, but on this day it's arriving at Incline with a train of empty log cars. A cable incline here formed the YV's connection with the Yosemite Sugar Pine Lumber Co's. logging railroad. Will Whitaker prototype photo from author's collection

the local Southern Pacific yard. In due course, I realized that I would enjoy the hobby much more if I modeled a particular prototype. After some research and reflection, I selected the YVRR as a prototype to model. This was an important decision, since it combined model building with the need for prototype research, which I also find rewarding.

I think the satisfaction you derive from a hobby is based on how much you're willing to put into it. Yes, this is a hobby and not work. But I continually find that the time that I spend on the hobby, whether scratchbuilding models, working on my layout, researching the YV, studying historic photos, or sharing those efforts with other modelers, has resulted in enormous rewards. And any hobby, whether model railroading or golf or fishing, should reward you for your time and effort.

But now what?

Finishing my layout logically leads to the question I'm often asked these days: Will I tear it out my model railroad and start over? No, I'm satisfied with the design and operation of the layout, and there's nothing on the layout that I feel a need to redo. But I have always been primarily a model builder.

I still plan to build a lot more models of YV freight cars, passenger cars, cabooses, and maintenance-of-way equipment. I might even build some of the YV stations that I couldn't find a place for on my layout; they will go directly into a display case. I also look forward to working my way through my stash of more than 100 resin "foreign-line" freight car kits, since I get tired of seeing the same cars on my layout all the time. As I finish these kits, I'll transfer cars on the layout into storage to make room for the new rolling stock.

I recognize that a goal of actually finishing a layout is not that important to many modelers. Even if their layout appears complete to visitors, many builders still like continually changing things and adding more detail. Others might find, by the time completion of their layout is within reach, their interests change and they want to scrap everything and start over. The trend during the past 20 to 25 years from freelancing and proto-freelancing to prototype modeling can also result in a decision to start a new



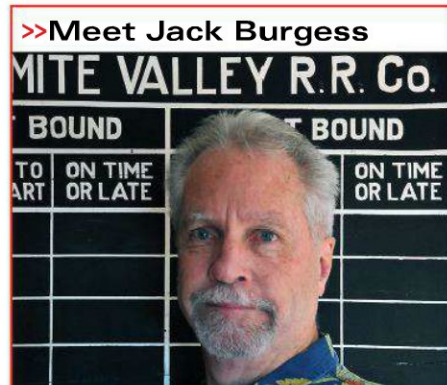
model railroad. Another factor might be the shift toward layouts better designed for operation.

Layout construction and completion may actually present a conundrum. If you're happy with your layout and enjoy the construction process, why hurry to finish it? But, at the same time, finishing trackwork, scenery, buildings, and details on a layout is not only rewarding but there can be a lot of satisfaction from completing things. One approach is to quickly finish the benchwork and the roadbed but then slow down and enjoy the ride. My friend Clark Propst wrote on an Internet chat list "I think it will be a sad day when I look at my layout and say to myself, 'Well, there's nothing left to do!'" [Clark also wrote "Modeling a "steam"-electric interchange" in *Model Railroad Planning 2009*, which is available from Kalmbach Publishing Co. - Ed.]

Maybe the answer depends on your age, the amount of time you have to devote to the hobby, and your interests. If you enjoy operation, a completed layout might seem liberating, as you no longer need to balance operating sessions with model building or scenery installation. If you love model building as I do, it's good to still have 15 or 20 years worth of model projects you look forward to tackling. If you love research as I do, there will always be more things to learn and new photos to uncover.

Even with a completed layout, this is a hobby that can provide a lifetime of satisfaction and enjoyment. GMR

10 Engine 23 (shown in Merced Yard) is the result of a modeling project that Jack outlined in the August 2009 MR. He redetailed a ready-to-run Bachmann Spectrum 4-4-0 American to better match a YV prototype.



Jack has been a model builder for as long as he can remember. He built a couple of shelf switching railroads before deciding to model the Yosemite Valley, then built a first YV layout as a test-bed for his multi-level YVRR shown here. He's written numerous articles for *Model Railroader* and other publications. His research on the YV led to his writing *Trains to Yosemite*, a book published by Signature Press in 2005.

Jack retired after a 39-year career as a civil engineer for the city of Newark, California. His wife, Jacque, shares an interest in trains. Her garden railroad was featured in the September 1995 issue of MR.

>> Way down yonder in New

The third level of the HO Mississippi, Alabama & Gulf reaches its terminal in the famous port city



Orleans

By Cliff Powers • Photos by the author



We often hear model railroads are never truly finished. But after 11 years of enjoyable construction, I can finally make that claim about my HO scale Mississippi, Alabama & Gulf RR. I'd be the first to admit that there are still hundreds of freight cars to be built or weathered, but the physical layout itself is complete. When you consider each of the three levels has a footprint of 14 x 32 feet, it may seem like an impossible amount of work for one person to achieve in that time. In fact, the layout could have met an early death when we decided to sell our home in 2006. However, thanks to forward-looking planning, even this obstacle proved to be no match for the Magnolia Route.

A not-so-solid foundation

When I first considered options for housing my dream layout, I hit upon the idea of purchasing an outdoor workshop. While not "portable" in the sense that it was on wheels, it would be built off-site and delivered on a flatbed trailer. Although I had no expectations at the time of ever relocating, I did like the idea that the layout could theoretically be moved if ever needed.

A local dealer handled the job and my new building arrived in April 2001. As luck would have it, our family grew from three to five members, and by 2006 we had outgrown our 3-bedroom home. By then I'd completed the lower two levels of the layout as presented in *Great Model Railroads 2007*.

After finding a home that doubled our square footage and acreage, I picked a spot to relocate the layout.

1 Cliff Powers' model of the New Orleans Union Passenger Terminal (NOUPT) is the focal point of his HO scale Mississippi, Alabama & Gulf RR. The station features a fully detailed interior and lighted entry canopies. It also includes the butterfly platform sheds, baggage building, and temporary Railway Post Office sheds in use when the prototype station opened in 1954.



2An MA&G switcher hauls a transfer run past the railroad's division office and freight terminal. In the background is the NOUPT coach yard with overhead conduits for servicing passenger trains.

The most difficult aspect of moving the building was finding a contractor to do it. I ultimately hired a professional house-moving company.

Before the move, workers prepared the new site for a conventional foundation and ran the necessary electrical connections. We were moving 10 miles from our old home, so it only took three

hours to have the building in place and wired in its new location! The building suffered a few minor cracks in the dry-wall near the doorway, but my layout arrived in mint condition.

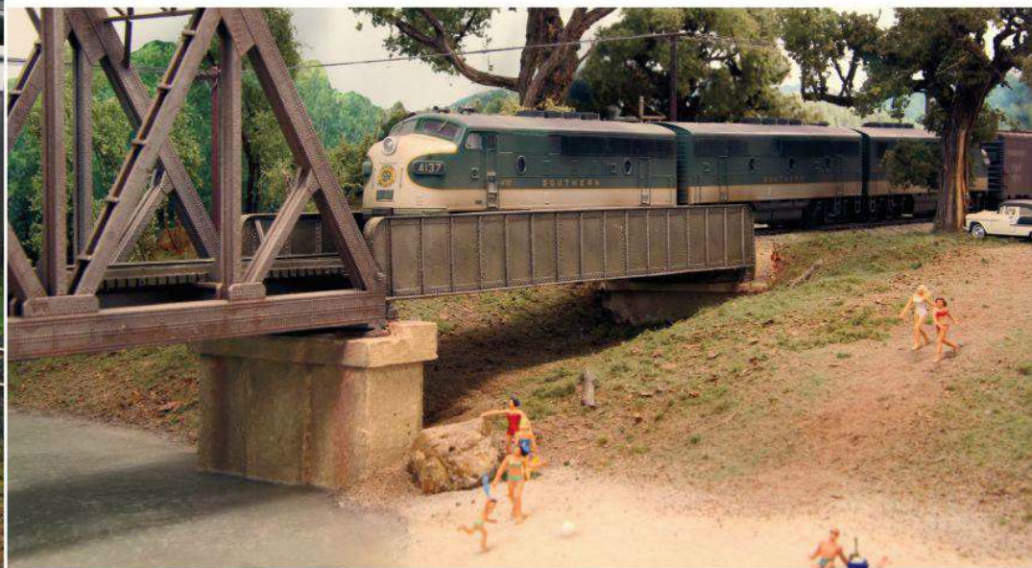
Since then I have made some major improvements to the building and its surroundings including a concrete walkway, landscaping, a metal roof, and a 2-ton central air conditioner with ductwork concealed under the floor.

Design goals

When I designed the MA&G, I started with a seemingly unattainable list of

things I wanted. These included a rural mainline run through multiple small towns, a large city, waterfront switching, several bridges, heavy passenger operation with a large station, a major freight yard, an engine terminal with turntable and roundhouse, a logging operation, multiple prototype railroads, and staging for more than 25 trains. To include all of these elements in a space less than 500 square feet would obviously require a multi-deck layout.

After choosing a fictional route through southern Mississippi to a terminal in New Orleans, I designed a



track plan accommodating all of my goals on three decks. I decided early I would build each deck to completion from the bottom up, beginning with the staging level. This lowest deck exceeded my original goal with staging for 30 trains plus a wye for turning consists.

Once the staging tracks were laid and wired, I began one of the most challenging projects, the double helix. Some trains don't travel through the second deck, so the double helix was designed to allow trains to either go from staging up to the second deck on the outside track (on a 1.63 percent grade) or from staging

directly to the upper deck on the inside track (with a 1.79 percent grade). All of the track laid in these unscenicked areas is Model Power code 100 flextrack and Atlas code 100 no. 6 turnouts.

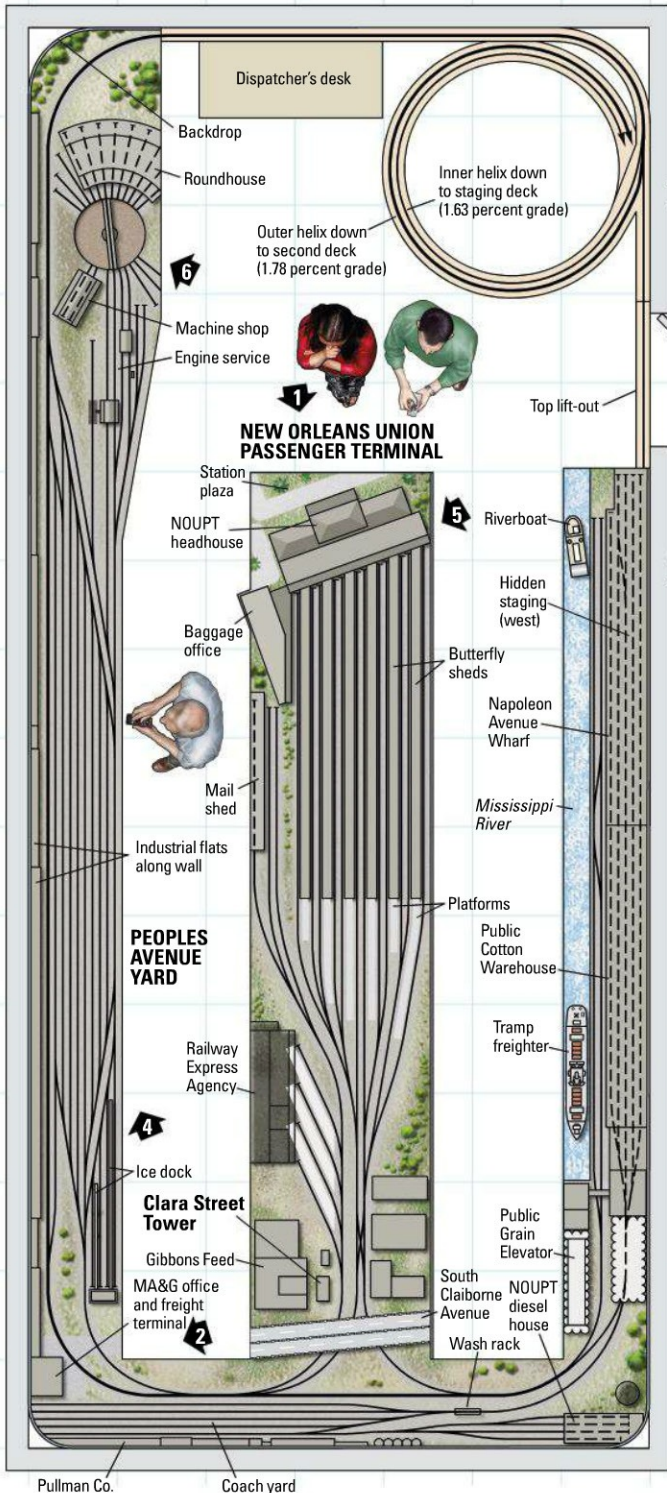
The Mississippi level

The second deck of the layout represents the open country mainline run between the fictional towns of Wharton and Edna, Miss. Both the Gulf, Mobile & Ohio and Southern Ry. have trackage rights over the MA&G on this level, although by agreement, only home-road passenger trains make station stops.

3 A classic A-B-A consist of Southern Ry. F3s starts across the Jourdan River with a Birmingham-New Orleans through freight. The Southern has trackage rights over the MA&G main line between Kiln, Miss., and the Pearl River.

Wharton is the largest town on the Mississippi level and presumably a county seat with its courthouse and town square. The structures in this town are primarily made from Design Preservation and American Model Builders kits. Leaving town, the main line crosses the Wolf River over a Central Valley truss

UPPER DECK, NEW ORLEANS – 58"



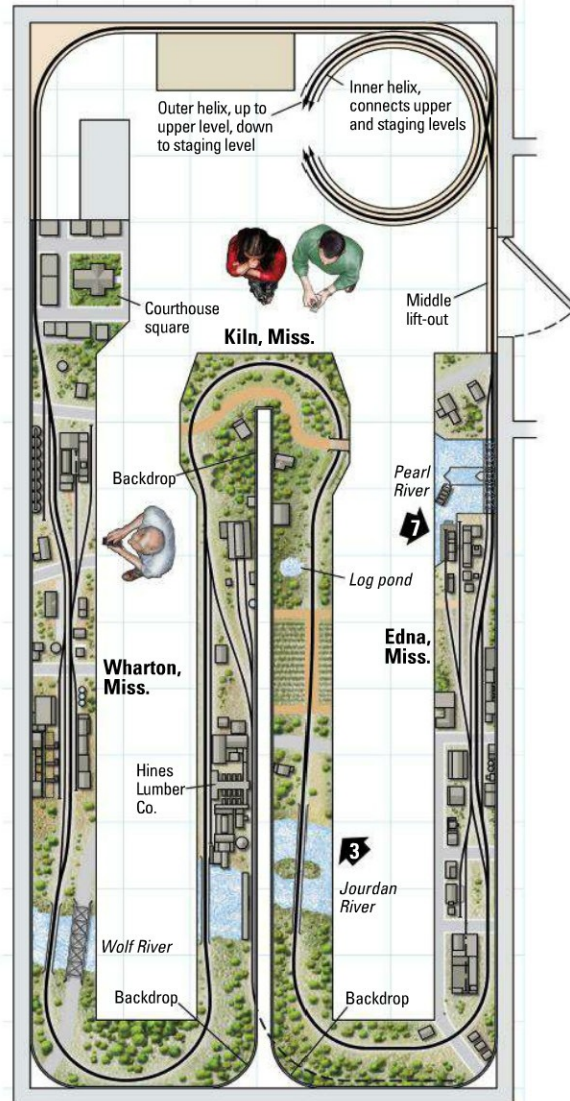
Mississippi, Alabama & Gulf "The Magnolia Route"

H0 scale (1:87.1)
Room size: 14x32 feet
Scale of plan (upper deck): 1/4" = 1'-0", 24" grid
Numbered arrows indicate photo locations
Illustration by Rick Johnson

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

MIDDLE DECK – 40"

Scale of plan: 3/32" = 1'-0", 24" grid



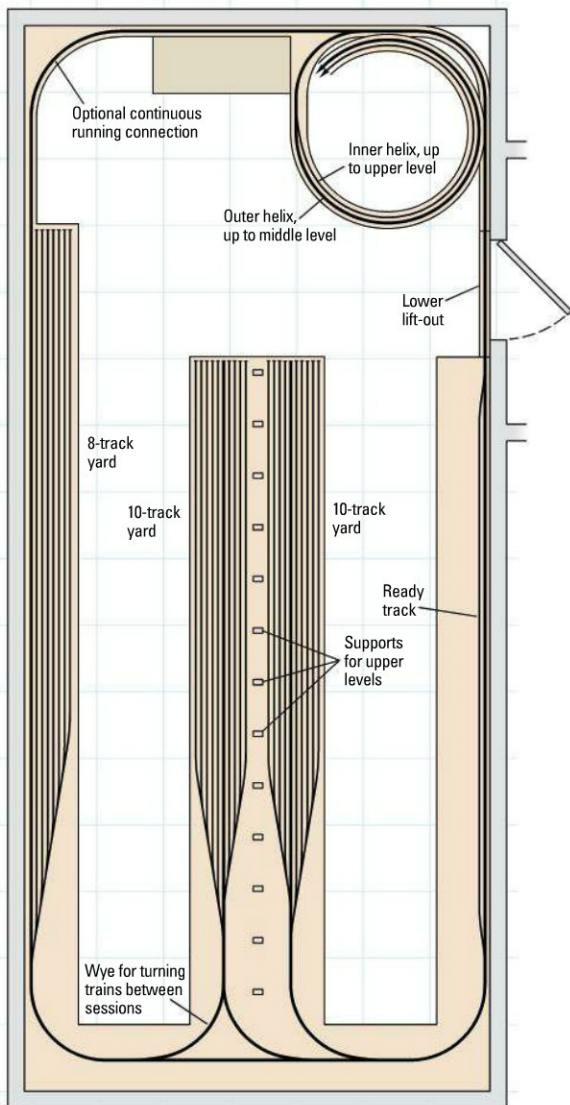
bridge. It parallels the State Highway 53 bridge, which is a kitbash of an Atlas pony truss bridge and several Rix highway overpasses.

The Hines Lumber Co. represents the timber industry that dominated this area of the state. The main line crosses the Hines log pond on a low pile trestle, then passes the sawmill, lumberyard, planing mills, and enginehouse. These backwoods structures are modified kits from B.T.S. Structures, Keystone, and Walthers.

An isolated track controlled by a Circuitron AR-2 auto-reversing timer allows a Bachmann Shay and string of Rivarossi log cars to shuttle back and forth between the mill and a hidden track independent of the main line.

STAGING DECK – 30" Supports for upper decks

Scale of plan: $\frac{3}{32}$ " = 1'-0", 24" grid



>>The layout at a glance

Name: Mississippi, Alabama & Gulf RR

Scale: HO (1:87.1)

Size: 14 x 32 feet

Locale: southern Mississippi and New Orleans

Period: summer of 1955

Style: multi-deck walkaround

Mainline run: 290 feet

Minimum radius: 27" (main line)

Minimum turnout: no. 6

Maximum grade: 1.78 percent (helix only)

Benchwork: L-girder and shelf brackets

Height: 30", 40", and 58" (three levels)

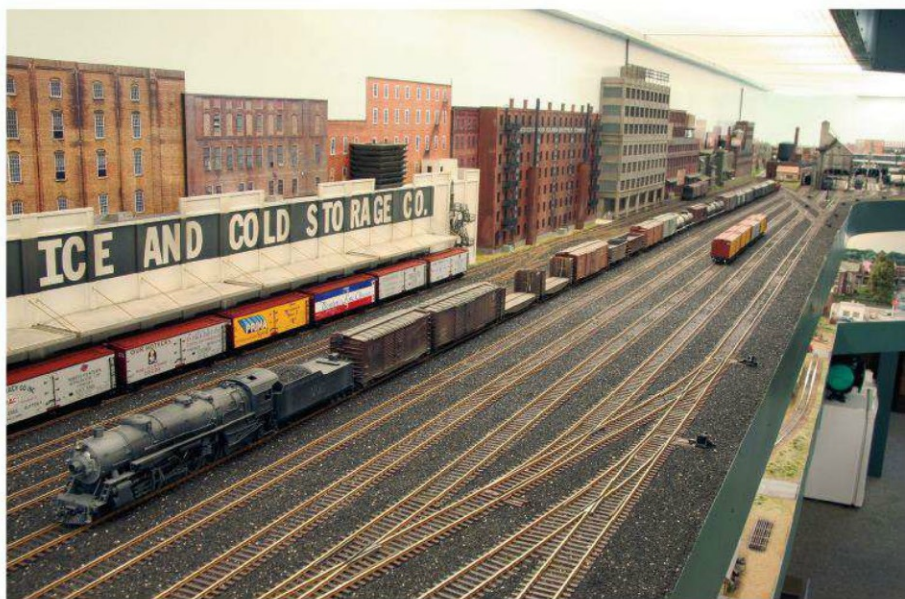
Roadbed: cork on $\frac{1}{2}$ " plywood

Track: code 83 flextrack (code 100 in staging and helix)

Scenery: extruded-foam insulation board with Sculptamold and real dirt

Backdrop: $\frac{1}{8}$ " hardboard

Control: Digitrax Digital Command Control



The small town of Kiln, Miss., is represented by a small church and local farm before crossing the Jourdan River over a kitbash of two Walthers double-track truss bridges with Central Valley deck girder bridge approaches.

The other major Mississippi town is Edna, which boasts four Fine Scale Miniatures models. Other structures came from kits made by American Model Builders, Bar Mills, Branchline, and Campbell. The town's largest industry – one of my favorites – is the Graves Pulp Mill, which I built from an impressive Master Creations limited-edition kit.

The railroad leaves Mississippi and crosses the Pearl River over a Walthers swing bridge. From there it enters Slidell,

La., which is represented by two small businesses. The main line continues through the helix up to the third level. This "dead" area represents miles of unmodeled swampland and the long trestle across Lake Pontchartrain. It also softens the abrupt transition between rural Slidell and urban New Orleans.

The New Orleans level

About a year after the railroad building was moved, I began work on the third level. Because all the Mississippi scenery was finished, I had to find a way to construct the upper deck without disturbing or destroying any of the existing layout. Finally I decided to use a shelf bracket system to support the third

4 This is the 32-foot long Peoples Avenue Yard, the MA&G's New Orleans freight terminal. It features separate arrival and departure, caboose, and classification tracks. A runaround track along the front side of the yard provides access to the engine terminal in the distance and a large icing dock.

deck's benchwork around the walls (see "Shelf bracket benchwork" on page 32). The beauty of this system was ease, speed, and cleanliness of installation.

The center peninsula continued the more typical L-girder construction with dimensional lumber that I used for the two lower decks. Once all the benchwork was in place, I added an overhead

>> Shelf bracket benchwork



Cliff used steel shelf brackets to support his layout's upper level along the walls of the room. Prefabricated sectional benchwork "boxes" will rest on the horizontal 1 x 3s and be secured by wood screws driven from below.

I used a shelf bracket system to support the upper deck of my layout. It consists of 20" heavy-duty metal shelf brackets that hang from 12" slotted strips mounted on the walls. These components, made by Closet Maid, are readily available from Lowes and other home centers. I hung the brackets in the lowest position to minimize the visual intrusion into the top of the middle level backdrop. The sections of the strips that rise above the third level are hidden by strategically placed building flats. I laid 1 x 3 lumber flat along the brackets as shown in the photo, and secured it with screws from below to provide horizontal support for the benchwork.

To avoid potential damage to the finished middle deck, I built the upper deck benchwork as a series of 8-foot long "boxes" that were drilled and wired for power bus. Then I simply placed the boxes on top of the 1 x 3 supports and secured them with drywall screws. Once the boxes were in place, I connected the bus wires between the sections with wire nuts. I installed track feeder wires and switch motors after the top deck was in place.

To light the scenicked second level, I used n:vision-brand 14-watt bright white compact fluorescent lamps (CFLs) that are equivalent to 60-watt bulbs. The advantages of these CFLs include low wattage, low heat, long life, and a color temperature similar to my ceiling fluorescents. – C.P.

valance to continue the shadowbox presentation used in all three decks. "Egg-crate" diffuser panels shade the harshness of the numerous compact fluorescent light (CFL) bulbs.

Trains entering New Orleans from the east (MA&G, GM&O, Louisville & Nashville, and Southern) pass behind the engine terminal at the Peoples Avenue Yard. This 32-foot long classification yard has separate arrival and departure

tracks, six sorting tracks, and a caboose servicing track. Along the back wall are several large industries that I kitbashed from multiple Walthers kits and named for actual New Orleans businesses. The long siding can serve as yet another yard track, and can be switched from either end or the middle via two crossovers.

At the west end of the yard is a 4-track icing dock that I kitbashed from eight Walthers kits. Here, block ice is received

in dedicated reefers, stored, then used for icing outbound reefers carrying imported perishables such as bananas and other tropical fruits to northern markets.

On the waterfront

The famous New Orleans waterfront is represented on the wall opposite the yard. Arriving switchers haul cuts of cars for setout along the pier as they pass through the enormous New Orleans Public Grain Elevator that I kitbashed from four Walthers Red Wing Milling kits. Two tracks run the length of the 19-foot wharf.

To represent the muddy brown waters of the Mississippi River, I poured an entire gallon of Enviro-Tex two-part resin that I'd tinted with Floquil paints. To create waves, I stippled on gloss gel medium using a stiff brush. Flying seagulls were mounted on thin brass wires so that they appear to swoop over the choppy water.

The first industry on the wharf is the Public Cotton Warehouse. I scratchbuilt this imposing structure from photos of the prototype, including the interesting rolling bridges that extend from the upper level of the building. Docked here is the tramp freighter *Gulf Breeze*. This scene-stealer, which was built from a Sylvan Scale Models resin kit, was one of the most difficult models I've ever built. I devised my own method for making the cotton bales being loaded into the cargo holds of the ship.

The second structure is the warehouse of the Napoleon Avenue Wharf. I kitbashed this 8-foot-long behemoth from three Walthers rolling mill kits. Along with the other structures on the waterfront, it conceals a hidden 5-track yard used to stage passenger trains and interchanged freight cars entering the city from the west. Those railroads include the Illinois Central, Kansas City Southern, Missouri Pacific, Texas & New Orleans (Southern Pacific), and Texas & Pacific. All roofs are removable for access.

Docked at the wharf is the *Creole Queen* riverboat. This signature New Orleans element was built from an Artesania Latina kit (www.historicships.com) with two smoke units that supply both tall stacks. A customized Innovative Train Technology Co. sound module plays "When the Saints Go Marching In" to represent a jazz band playing for the boarding passengers.



5 Above: The open-air concourse at NOUPT connects the station headhouse at right to the six passenger platforms extending out to the left. The station serves trains from all the passenger carriers that reached New Orleans, in addition to Cliff's MA&G.



6 Left: Mikado no.1513 takes a spin on the turntable at the Peoples Avenue roundhouse. The Walthers roundhouse at right is truncated at the front edge of the layout and open to reveal a fully detailed interior.

>>Inside NOUPT



The interior of Cliff's union station is fully detailed, with the walls and historic murals represented by photographs of the prototype.

My New Orleans Union Passenger Terminal has a detailed interior, and visitors to my website say it's the layout's most impressive feature. On his original plans, Nick Muff included a scale floor plan of the main concourse with all the rooms labeled. These markings were laser cut into the acrylic base to provide accurate locations for the partitions. I cut the interior walls from styrene and overlaid them with actual photos of the station's interior. Where these photos had modern details such as public phones and vending machines, I used Adobe Photoshop to substitute 1950s-era counterparts.

The beautiful wall murals, which are original to the station, were critical in creating an accurate interior, so I reproduced them on self-stick paper from original color photographs. The ticket counter includes a scale reproduction of the actual arrival/departure board with my Mississippi, Alabama & Gulf trains added to the schedule. The 90 waiting-room benches are passenger car seats made by Precision Scale Co., which are very similar in style to the prototype. I scratchbuilt the freestanding newsstand following prototype photos.

One very nice architectural detail in the concourse is the decorative metal grillwork above the side entries. A total of 45 LEDs illuminate the interior. – C.P.



In this night view, the station's lighting shows off the concourse at left and the waiting room interior on the right through the glass wall and doorways.

Passenger terminal

The focal point of the entire MA&G layout is the New Orleans Union Passenger Terminal (NOUPT). The building parts were laser-cut by Custom Model Railroads from scale plans provided by noted modeler Nicholas Muff, and it's an exact scale replica of the prototype. No selective compression was used for the station or the baggage building. Both boast full interiors based on photos (see "Inside NOUPT" at left). The scratchbuilt post office sheds reflect the temporary structures that existed in 1954, the year the station opened.

Although the arrangement of the yard throat is simplified, I felt it important to include all 12 of the station's platform tracks – again, no compression here. I built the six butterfly platform sheds with a combination of scratchbuilt parts and components from Walther's butterfly trainshed kits (15 of them).

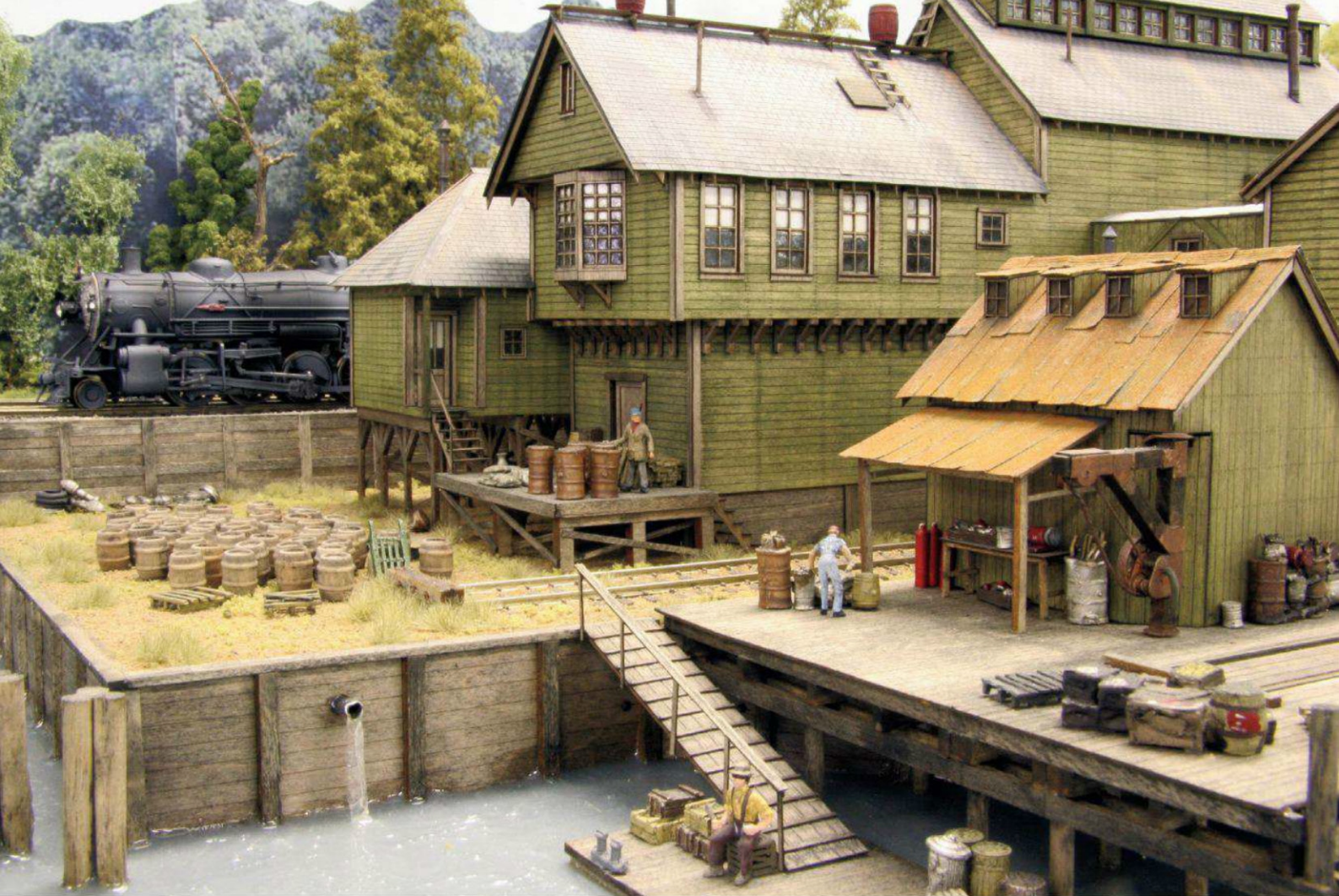
In all, I installed more than 300 light-emitting diodes (LEDs) and 100 grain-of-wheat bulbs to illuminate the station, platforms, and adjacent buildings. Further out along the station throat, I've also modeled the Railway Express building with its angled loading platforms, also with lights and a full interior. Finally, I built the Clara Street Tower with more parts laser-cut by CMR from plans drafted by Nick Muff. I based the interior details on a phone conversation with the last NOUPT employee to work the tower.

As on the prototype, the massive Gibbons Feed Mill that stood a few yards away dwarfs the tower. Gibbons is one of the tallest structures on the layout.

To represent the complete operation of the passenger terminal I included key support facilities along the back wall. Once again I relied on prototype photos including the diesel shop, sand tower, wash rack, Pullman building, and coach yard. The arrangement of all these items had to conform to the available space rather than following the prototype site plan, but they effectively simulate the work of servicing passenger equipment.

So now what?

The one aspect of the layout that's been neglected for all of these years has been operation. While I designed the layout from the start to operate prototypically, I first wanted to make sure that I could finish it in my lifetime. Even



7 An MA&G Mikado rumbles past the R.L. Graves Pulp Mill at Edna, Miss. This mill is one of Cliff's favorite structures. He built it from a limited edition Master Creations kit and named it for his longtime model railroading friend Roger Graves.

though my primary interest is in layout construction and structure building, I'm excited about creating a formal operating scheme and holding a much-anticipated first operating session.

The prototype NOUPT passenger train timetable will govern the 24-hour

schedule, which I plan to carry out in three 8-hour tricks. I'll use the sequenced timetable approach described by John Pryke in the October 2002 *Model Railroader*. I've yet to decide on a freight car forwarding system. Because room is somewhat limited, I expect the crew to include no more than a dispatcher, yardmaster, NOUPT stationmaster, and three mainline engineers.

Another project I'm excited about is producing and marketing a DVD on the MA&G. I've also considered adding onto the building to provide a crew lounge, restroom, and separate workshop area. I'll continue to update my website, www.magnolia-route.com, where you can keep up to date on all of my projects.

I can't express how deeply satisfying it's been to single-handedly design, construct, and now complete a project of this magnitude. I hope you've enjoyed your visit to my model railroad dream come true. GMR

>>Meet Cliff Powers



Cliff is a teacher who has created an innovative railroad-themed classroom with a full-size depot, water tank, and grade crossing signal. That seems only natural from someone who's been a model railroader since age 10.

Cliff and his wife, Jennifer, live in Brandon, Miss. They've been married 20 years and have three children.

Now on ModelRailroader.com

Take a video tour of Cliff Powers' entire triple-deck Mississippi, Alabama & Gulf RR on our website, www.ModelRailroader.com.



»» Broad Way



An HO scale recreation of the final days of the Pennsylvania RR's New York Division

By Andy Rubbo

Photos by Paul J. Dolkos

One challenging railroad to model is the electrified, multi-track Pennsylvania RR main line between Washington, D.C., and New York City. Today it's known as the Northeast Corridor and has been extended to reach Boston, serving as the race course for Amtrak's high-speed *Acela* trains. Even before urban planners and engineers named this corridor, it was one of the busiest and most intricate sections of the PRR, and one of the justifications for the Pennsy's "Broad Way" moniker.

curtain call



I wanted to recreate the drama of multiple trains running on closely spaced parallel mainline tracks, often at different speeds and in opposing directions, and sometimes executing complex crossover moves at interlockings and junctions. For focus, I've concentrated on the eastern end of the busy Philadelphia-to-New York section of this line, the PRR's New York Division.

For those like myself who lived nearby, or perhaps rode it every day, the New York Division main line was at once

commonplace and familiar, but also unique and unparalleled in American railroading. The complex heavy-duty infrastructure of tracks, catenary, towers, and signals, along with the diversity and density of traffic, made this Pennsy main line an irresistible choice for modeling.

Last days of a classic railroad

I found several compelling reasons to set my layout in 1967. First, this represented the last full year of pure PRR operation prior to the February 1968

1 The Pennsylvania RR built its New York Division for heavy traffic, and Andy Rubbo's HO scale layout captures both the look and the action of that prototype. Here a multiple-unit (M.U.) local makes a stop at Elizabeth, N.J., while a GG1-powered eastbound express accelerates "down the middle" and a piggyback Truc-Train heads west.



2Catenary dominates the New York Division's right-of-way, but the track structure and high mainline embankments are also part of its heavy-duty infrastructure. Passenger trains, and mail and express trains dominate, but the line also hosts freight trains led by E44 or GG1 locomotives.

merger with longtime rival New York Central. Though the majority of my railfanning and train-watching experiences were during the Penn Central and early Amtrak years, I still have first-hand recollections of the pre-merger PRR. This was also an extremely well-documented period, as the use of color film had become widespread among rail photographers. There's a comprehensive archive of photos available in the many picture books published in recent years, as well as many hours of video.

A second reason for modeling 1967 is it represented one of the last years of "classic" passenger railroading. During that time the New York Division was still very colorful, with railroads such as the Atlantic Coast Line, Chesapeake & Ohio, Louisville & Nashville, Norfolk & Western, Seaboard Air Line, and Southern using PRR rails to reach New York. These movements involved both individual cars and complete trains. Also, through services between Washington and Boston saw a good deal of New Haven equipment incorporated into PRR trains.

In April 1967, with the introduction of the joint-operating Aldene Plan, the

Central RR of New Jersey (CNJ) closed its Jersey City waterfront passenger terminal and began routing its suburban and Jersey Shore trains over various portions of the PRR main line to their new terminus at Newark's Penn Station. Add the Pennsy's own fleet of long-distance, commuter, and mail and express trains along with a good deal of freight traffic, and the New York Division presented a train-watching experience like no other.

A final reason for choosing this period is the variety of new freight cars that had appeared on the railroad scene. Modern rolling stock such as Hi-Cube boxcars, open auto racks, trailer-on-flatcar (TOFC) and container-on-flatcar (COFC) equipment came into widespread use side-by-side with their older 40- and 50-foot counterparts. It's this mix of old and new, foreign and home roads, and the sheer volume and variety of traffic on the PRR's amazing infrastructure that makes the New York Division so intriguing.

A piece of the Broad Way

To maximize the mainline run, I chose a double-deck design with a helix connecting the levels. Loop staging at each end of the line allows for the heavy traffic I want to represent. The main lines are two, four, or six tracks wide in the sections I'm modeling.

I chose to depict the easternmost 25 miles or so of the New York Division from Metuchen, N.J., eastward to the west portal of the North (Hudson) River tunnels located in North Bergen, with the

>>The layout at a glance

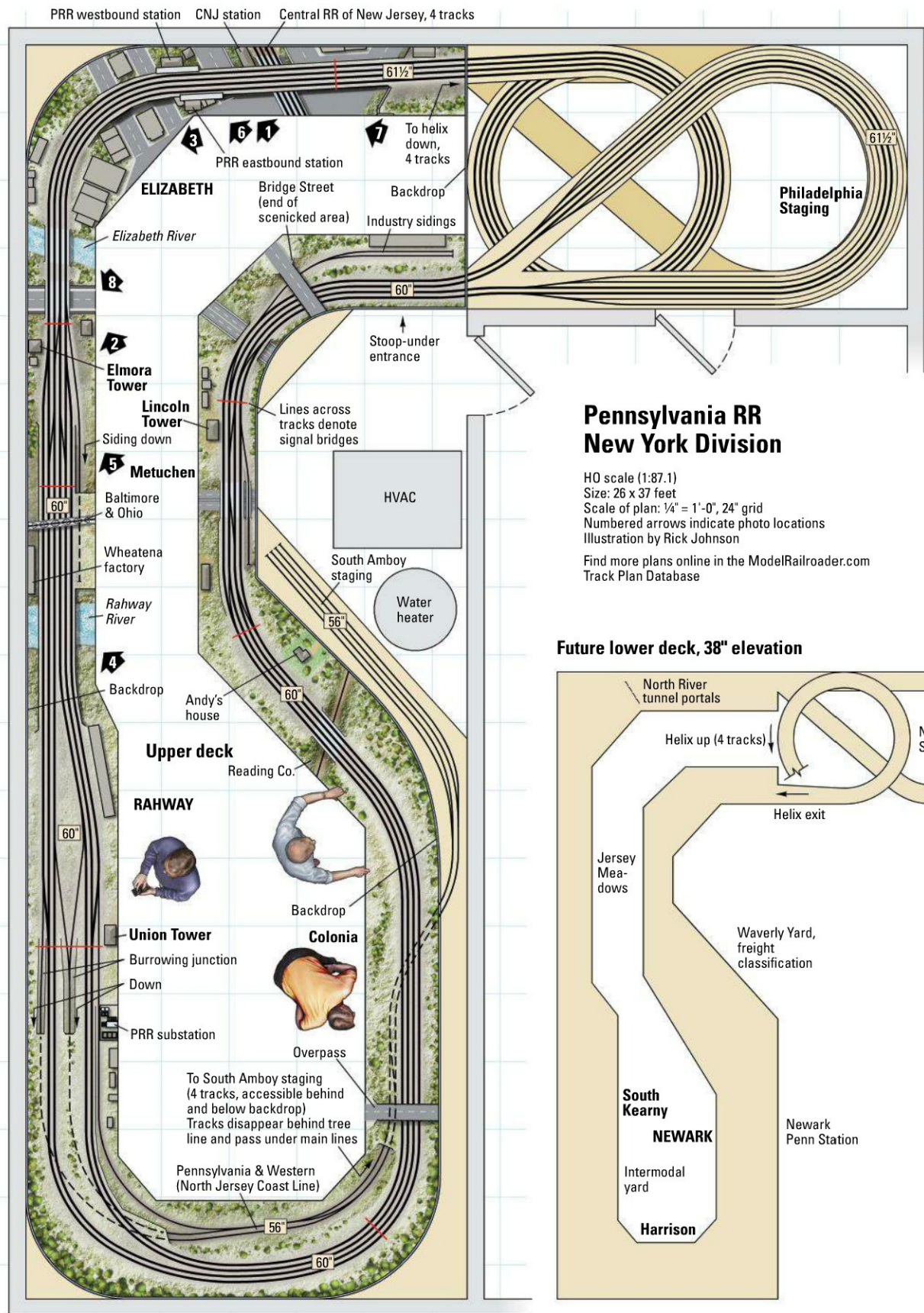
Name: Pennsylvania RR New York Division
Scale: HO (1:87.1)
Size: 26 x 37 feet
Prototype: PRR electrified main line between Philadelphia and New York City
Locale: New Jersey
Period: summer 1967
Style: double-deck around-the-walls
Mainline run: 300 feet
Minimum radius: 40" (exposed track), 28" in staging
Minimum turnout: no. 8
Maximum grade: 1.5 percent in helix, 5 percent momentum grade in burrowing junction at Rahway
Benchwork: open grid
Height: 60" upper deck, 38" lower deck
Roadbed: Homasote on plywood
Track: Micro-Engineering codes 83 and 70 flextrack (exposed track), Atlas code 100 flextrack (in staging)
Scenery: heavy paper over cardboard mesh (plasterless) and extruded foam insulation board
Backdrop: painted hardboard
Control: Digitrax Digital Command Control

areas east and west represented by hidden staging.

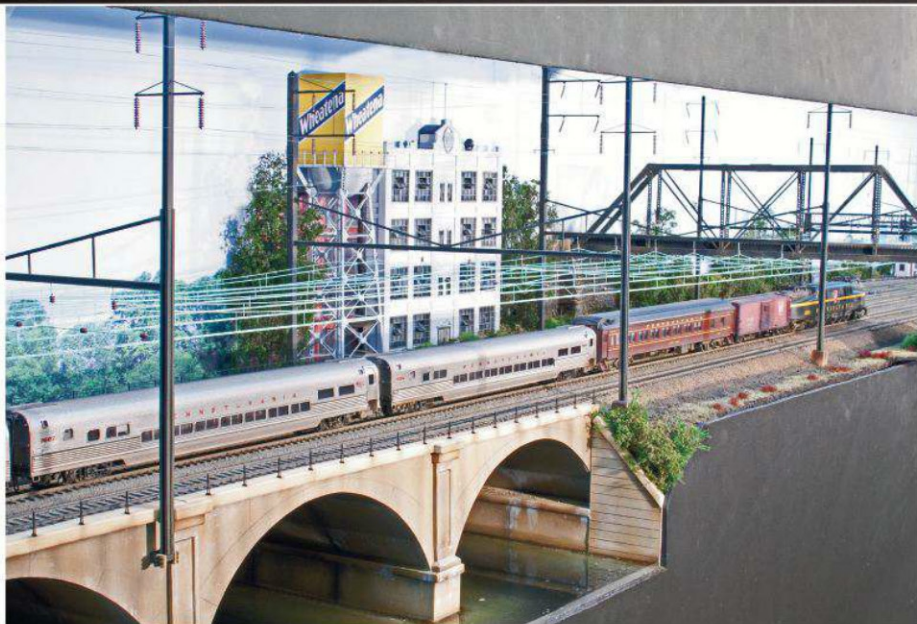
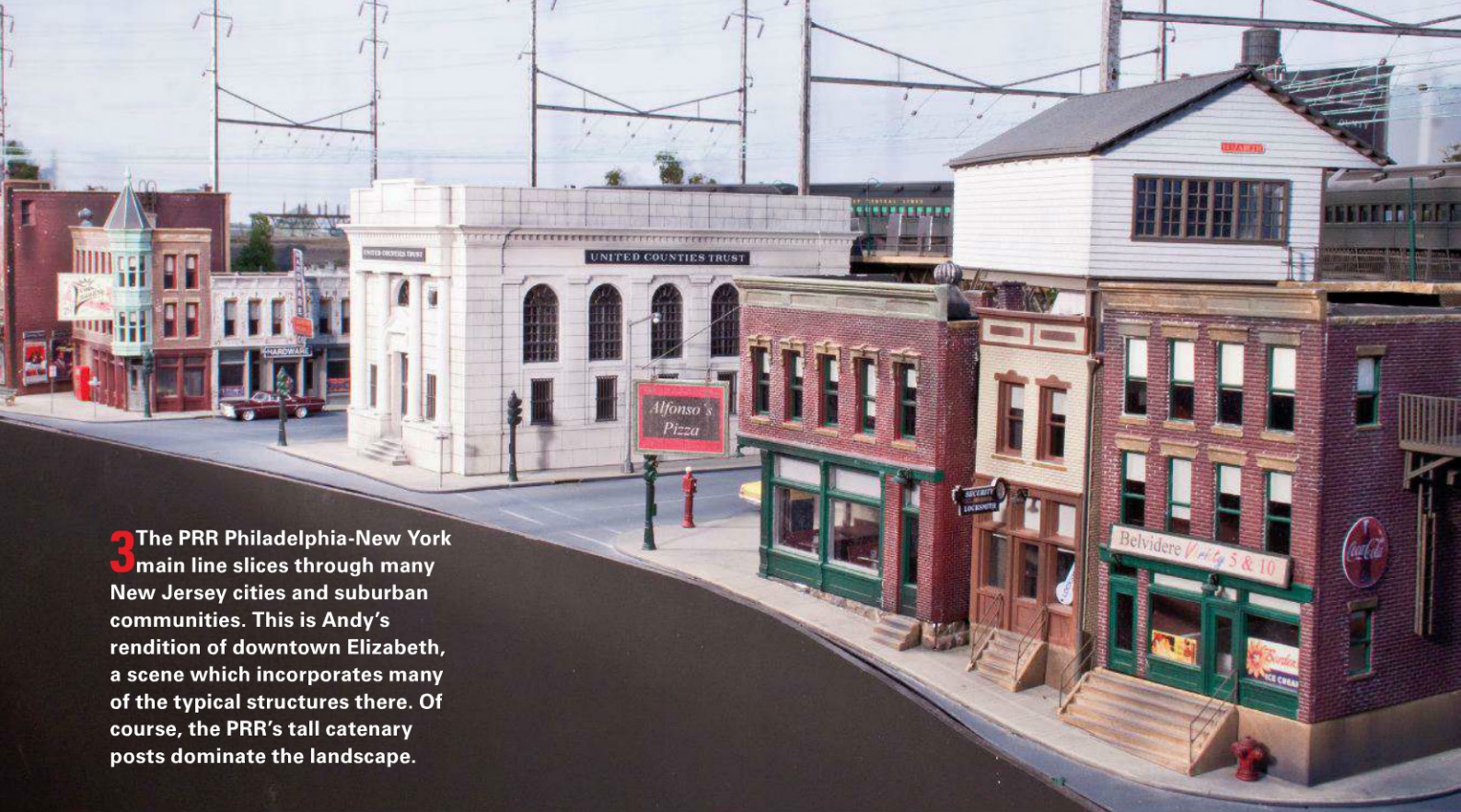
The total run for both decks (with the helix) is approximately five scale miles, or a ratio of about 1:5 for the segment being modeled. While the helix is a discontinuity in time and space, it may not be a complete liability, as it can serve to increase the overall running time of trains operating at scale corridor speeds. Train speed through the helix can also be increased somewhat to reduce the time trains are out of sight.

Beginning at the west staging loop, the railroad immediately enters Lincoln interlocking at Metuchen. This is a full "universal" interlocking that lets trains move from any track to any other track in either direction. That universal capability routes trains in and out of staging, as there are no crossovers within the staging loop. Though the trackwork is compressed in length, I've modeled all of the crossovers included in the prototype Lincoln interlocking plant.

From there, the main line enters the broad S curve leading east out of Metuchen (where, coincidentally, my



3 The PRR Philadelphia-New York main line slices through many New Jersey cities and suburban communities. This is Andy's rendition of downtown Elizabeth, a scene which incorporates many of the typical structures there. Of course, the PRR's tall catenary posts dominate the landscape.



4 The unique *Keystone* train crosses the Rahway River on a concrete arch bridge. These futuristic low-profile cars are quite a contrast to the veteran X29 express boxcar and a heavyweight parlor car that ran into the late 1960s. Andy included the landmark Wheatena factory in this scene, with its unusual square water tower that represents the firm's once well-known cereal box.

back yard adjoins the prototype right-of-way). A short tangent will be the future site of the Colonia station with its signature roadway overpass, which was a popular railfan photography spot.

East of Colonia is the burrowing junction at Union interlocking in Rahway, where three tracks from the Perth, Amboy & Woodbridge Branch (today

known as the North Jersey Coast Line) merge from a lower elevation with the six-track PRR main. This interlocking and the one farther east at Elmora are only partial representations of their prototypes, and on the layout they have to work in conjunction with one another to route trains on and off the main line from the PA&W.

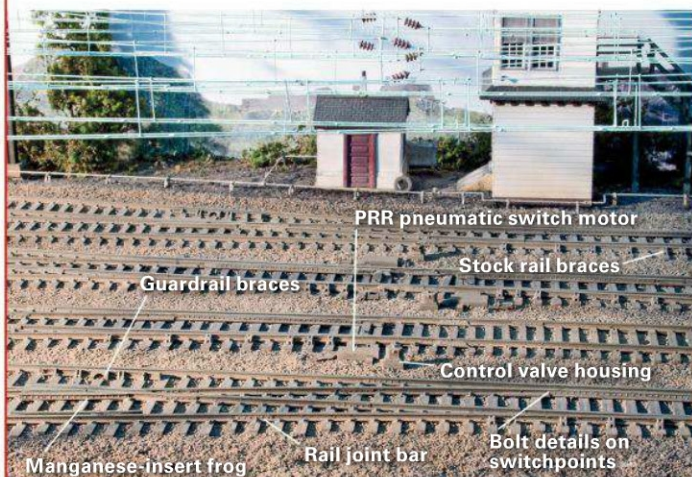
East from Elmora is the Elizabeth S curve, which is asymmetrical and compressed on the model; downtown Elizabeth, with its neighboring PRR and CNJ stations; and the triple PRR/CNJ/Broad Street crossing. From there, the line enters the helix to the lower level.

The lower level will represent the rest of the line to North Bergen, where the North River Tunnels under the Hudson will serve as the entrance to staging.

Building the Broad Way

In anticipation of having the characteristic PRR catenary system, I wanted to establish a sequence for the construction process. For the scenicked portions of the railroad, I built the basic benchwork framing and installed and painted the backdrop. Then I worked back to front and top to bottom. I built the upper deck

>>The Pennsy look from the ground up



This closeup photo shows the level of track hardware detail that Andy adds to his Micro-Engineering track to enhance its realism. He fabricates most of these small detail parts from styrene strip and structural shapes, embossed Mylar, and wire piping.

The characteristic appearance of the PRR's heavy-duty New York Division main line comes from many factors. Along with the more obvious things like the concrete and masonry structures, catenary, position-light signals, and standard safety railings, there are a variety of more subtle, often-overlooked details that contribute to this area's signature appearance.

If ever a case could be made for using code 100 rail in HO, it would certainly be here, where the heaviest main line (152-pound) rail of any U.S. railroad was employed. However, the web and general cross-section of code 100 appeared too



Andy kitbashed his characteristic PRR position-light signals using Precision Scale Co. brass castings for the lamp housings and circular backgrounds. He uses 1.5mm light-emitting diodes (LEDs) for a realistic three-dimensional appearance and added the mesh safety cages behind the lower signals.

bulky, so I went for the more delicate, well-proportioned code 83, supplemented by code 70 in certain locations.

The top left photo shows the items I've modeled and the materials and parts involved. All of the track details are cosmetic add-ons, and the out-of-the-box track was not altered. For comparison, see pages 75 and 106 of the William D. Middleton book *The Pennsylvania Railroad Under Wire* (Kalmbach Books, now out of print) for high-contrast photos of these prototype installations.

The top right closeup photo shows a combined signal bridge and catenary support that's typical of PRR practice. – A.R.

first in case I needed to stand on or in between the lower-deck framing.

After I installed the roadbed, I laid, painted, and ballasted the track. Then I put in the basic background scenery and structures behind the track.

Once the track was operational, I installed mounts for the catenary supports. Placement of these, and therefore the position of the supports, depends on the track arrangement, including turnout locations and curves. Then I put in the supports and strung the sections of overhead wire before putting in the foreground scenery. It's actually a fairly intuitive process, meant to avoid damaging installed catenary by not working over or behind it.

I followed PRR engineering diagrams and first-hand observations in building the right-of-way. On 4-track segments,

the inner two tracks are elevated three to six scale inches above the outer ones, and in 6-track territory the outermost two are recessed more, about a scale foot or so. On curves, each track is individually superelevated, giving the roadbed cross-section a saw-tooth profile. Additionally on curves, the center tracks are raised as much as a scale foot above the outer tracks.

Track centers are $1\frac{7}{8}$ " on tangents (straights) and 2" on curves and through interlockings. I established these values with extensive testing using long rolling stock during the tracklaying process. Centers this close provide a more realistic appearance than the more conservative National Model Railroad Association (NMRA) S-8 standard for track centers.

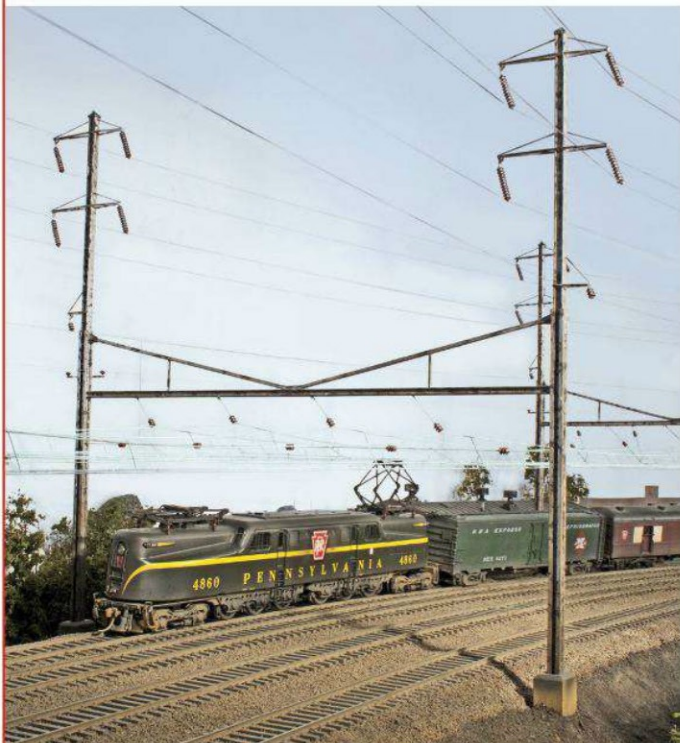
Following PRR practice, I ballasted the right-of-way to the inner edges of the

catenary pole footings. From there, a cinder sub-grade extends down the roadway slope. The ballast line, though mostly straight, isn't as razor sharp as the Pennsy would have demanded in earlier times. Being less well defined reflects the deferred maintenance common by 1967. For more on right-of-way construction, see "The Pennsy look from the ground up" above.

Modeling philosophy

My approach to portraying scenes from real life is not so much to make a brick-by-brick rendering of the subject, but rather one that conveys the essence of each scene. My aim is for the end result to be recognizable and unmistakable. In creating many of the scratchbuilt details, I use common materials such as styrene strip and Mylar sheet to form representa-

>>The Pennsy's signature catenary



Andy scratchbuilds his catenary supports from brass shapes and makes his own resin castings for the footings and finials (post caps). Notice how the wires themselves here are inclined or "banked" to smoothly follow the superelevated curves.

I model the PRR catenary system as close to scale and prototype appearance as is practical. Since the wires don't carry any current, I can concentrate on the aesthetics of the system, and not so much on durability, so I can use very thin wire. For research and reference, I drew from PRR technical publications, as well as those from the PRR Technical & Historical Society. An especially useful resource was the society's Winter 1996 *Keystone* magazine, which contained a very detailed article on the overhead catenary system. In addition, I referred to countless photographs as well as my own firsthand observations.

The catenary supports, like the prototype, are composed of relatively simple structural shapes, mostly H-columns and angles and, to a lesser degree, trusses, T-sections, and I-beams. I obtained the scale brass structural materials from the Special Shapes Co., www.specialshapes.com.

I built the catenary bridges in sub-assemblies consisting of vertical poles with transmission line hangers, cross-track spans with angled bracing and, in the case of the signal bridges, the complex truss assembly. Then I combined these parts in an assembly somewhat resembling a football goal post. At this point I added gusset, bracing, rivet, and other details, and then painted and weathered the assembly.

I made masters for the pyramid-shaped post caps and the concrete footings, then made RTV rubber molds so I

could cast them in resin. I typically make four or five supports at a time. The supports are mounted in holes drilled vertically into 1 x 2's attached to the underside of the roadbed. I secure the poles with screws from underneath the 1 x 2 supports.

For the catenary wires, I use .010" and .015" phosphor bronze wire from Tichy Train Group, www.tichytraingroup.com. When contacting Don Tichy about obtaining straight 36" lengths of wire for catenary, I provided him with prototype information that allowed him to make the scale insulators for me as well. These injection-molded parts come in a four-disk configuration that can be chained together or cut down as needed to replicate virtually every configuration found on the prototype. Both the wire and insulators are now available in Tichy's regular product line. To achieve a near scale appearance, I use .015" wire for the lengthwise spans and .010" for the vertical hangers and cross bracing over turnouts.

I assemble the wire sections by soldering them over a drawing of the catenary pattern on a plywood board. Then I attach the completed sections to supports already on the layout. As a final touch, I brush-paint the wires with a green patina color. This is my own mixture of mostly white with just a small amount of, of all things, New York Central Jade Green. I follow that with a light brown wash for weathering. All the transmission, signal, and ground lines on the upper poles are Berkshire Junction E-Z line elastic thread.

My pole spacing is typically 17", which scales out to about half the prototype distance. My late friend Paul Gnash suggested that this would give a greater impression of distance, and I agree. There is also practical side to this choice: I can make two span lengths at a time from a 36" length of wire, with a couple of inches left over for splicing and adjustments. Moreover, at distances much greater than 17", the very thin wire wouldn't have enough support.

Because the wire is so delicate, I'm concerned about potential damage. Most pantographs on model electric locomotives are too rigid and exert too much upward pressure. Simply adjusting the spring tension wouldn't provide for safe operation. With all the catenary wires tied in together, a defective pantograph could snag and destroy months of work in seconds.

My first plan was to run with the pantographs extended, but secured just below the wire and not in contact with it. I've since devised an alternative, based on a Bob Hegge design in the May 1974 *Model Railroader*. I scratchbuild the lower half of each pantograph out of .015" phosphor bronze wire.

The upper half is made from .015" styrene rod, with a section of styrene half-round for the contact shoe. The upward pressure is feather-light so if it snags on the catenary, the top of the pantograph breaks off, leaving the wire undamaged. In most cases, the parts can be re-assembled and the pantograph re-used. My MP54 M.U. cars are equipped with these, and adaptations for the GG1s and E44s will follow.

A series of articles on my catenary construction techniques appeared in the PRRT&HS *Keystone Modeler* online magazine. The online version is no longer available, but it's included on *Keystone Modeler* CD-ROM No. 5, sold through the PRR society's website, www.prrths.com. — A.R.



5 Above: Pride of the fleet No. 29, the westbound *Broadway Limited*, enters the broadest stretch of the PRR “Broad Way” (six tracks wide) at Elmora interlocking. The Chicago-bound streamliner is accelerating out of the speed-restricted Elizabeth curve as it meets an eastbound M.U. local that’s slowing for a downtown station stop.



6 Left: A Central of New Jersey Train Master diesel leads an eastbound morning commuter train on the normally west-bound no. 3 track. During periods of heavy traffic, PRR dispatchers could shift directions on one of the two middle tracks for the additional trains. Andy has built this capability into his layout.

tive shapes for items such as track, catenary, and rolling stock details, in order to add realistic visual clutter.

While I use a great deal of selective compression in terms of geography, I represent the infrastructure of the railroad in true scale size to enhance believability. The catenary poles are scale height, nominally 70 scale feet, and with all transmission and signal lines represented. For more on how I modeled the

overhead system, see “The Pennsy’s signature catenary” at left.

Conveying the essence of the PRR requires extensive scratchbuilding. I put my greatest efforts into features of the road itself, such as the catenary, towers, and other railroad structures. I allowed myself some artistic license with non-railroad features like the adjacent city buildings, but I try to use structures that are representative of those locations.

This usually takes some modification of kits if not outright kitbashing [combining parts of two or more kits to make one building – Ed.].

There are several completed scenes on the layout. They include the PRR/CNJ crossing with the respective railroads’ distinctive passenger stations; the Elizabeth S curve; Elmora interlocking, where the 4-track main line fans out to six tracks; the Baltimore & Ohio–Staten



7 The westbound *Afternoon Congressional* crosses “the arches” over Broad Street in Elizabeth, with the parlor-observation car *George Washington* positioned backwards behind the locomotive. This was a common practice for PRR, to avoid having to turn the train’s consist in Washington, D.C.

Island Rapid Transit overpass; and the concrete arch bridge at the Rahway River.

Rolling stock

Most of the traffic on the New York Division consisted of passenger trains, and I’ve begun to assemble a representative fleet of passenger cars to reflect the various types seen on a daily basis. I try to acquire the most accurate and detailed cars available, in either brass or plastic, as some types may only be available in one material or the other. Examples of this would be Pennsy’s unique experimental *Keystone* train, which once was only available as a brass import set, or the Seaboard’s signature observation lounge car on the *Silver Meteor*, which is nicely represented by the Walthers tavern observation but has never been produced in brass.

My detailing standard is to model those items that were readily visible from a railfan’s perspective. These include steam, air and signal lines, diaphragms, uncoupling (“cut”) levers, and window shades or blinds. I adjust the coupling

distances so the diaphragms are in contact when running. On some cars I’ve installed battery-powered marker lights.

While many of the car sides are relatively clean, reflecting passage through the car washer at Sunnyside Yard on Long Island, all the ends, roofs, and underbodies are appropriately weathered for an in-service look.

By 1967 the status of most passenger trains had been downgraded, and their consists reflected this. The flagship *Broadway Limited* was still all-Pullman, and the *Silver Meteor* often ran with a matched set of cars, but many other train consists were eclectic mixes of heavy-weight and lightweight, foreign and home road, and head-end equipment.

Of course, the primary locomotive for these trains was the GG1 streamlined heavy electric, with a 2-C+C-2 wheel arrangement that was the “juice” equivalent of a 4-6-6-4. My locomotive fleet includes GG1s working in dual (passenger and freight) service, E44 C-C heavy electrics for freight, MP54 electric multiple-unit commuter cars, and a smattering of diesels for local and sometimes road freights. Central of New Jersey Fairbanks-Morse Trainmasters, Electro-Motive Division Geeps, and RDCs (Budd self-propelled Rail Diesel Cars) also operated over various portions of the New York Division, thanks to the joint operations of the Aldene Plan.

The New York Division also saw a good deal of freight activity. My roster

includes Trailer Train flats, mixed merchandise cars, open auto racks, and tank cars. I also have unit coal trains, which by 1967 were carrying fuel to power plants in North Jersey.

Tower operation

I’ve designed my layout to represent the prototype’s operation, meaning the emphasis will be on mainline running with little industrial switching. The New York Division’s heavy traffic and multiple tracks required a high-density operating system unlike the usual timetable-and-train-order or even Centralized Traffic Control (CTC) methods familiar to many model railroad operators. Trains ran on signal authority under the immediate direction of the towermen or “block operators,” who were coordinated by the train dispatcher.

I’d like to mimic the prototype, with block operators using the crossovers at interlockings to route trains from track to track in order to keep the main lines fluid. Train movements could be scheduled in reference to a fast clock or follow a sequence operating plan. My block operators will need to regularly communicate with each other as well as with the train dispatcher.

The corridor’s interlocking towers controlled both turnouts and signals. Normal practice was for the home signals at interlockings to remain at the “stop” indication (three horizontal yellow lights on PRR position-light signals) until a



train movement was anticipated (usually announced by the next tower down the line). Then the block operator would align the necessary switches and clear the home signal, with the exact signal aspect displayed depending on the route and track occupancy ahead.

The layout's block operators will perform similar functions. They'll manually set the signals in advance of a train, but the train's passage will cause the signal to change back to stop.

I've accomplished this with a system of relays to control the signals both manually, with panel-mounted toggle switches, and automatically, with passing trains activating a homemade magnetic contact switch between the rails. To have attempted to install some sort of electronic signal detection with computer control would surely have been beyond my capabilities, not to mention far too time-consuming.

This system provides basic signal operation and animation, but no block detection. It'll be up to the block operators and dispatcher to avoid conflicting train movements.

Unlike other 4-track sections of the PRR, the New York-Washington main line featured bi-directional signaling on the two center tracks, so three out of four tracks could be assigned as needed to one direction for certain peak times. The center tracks on the layout likewise have bi-directional signals.

A rewarding project

Attempting to recreate the PRR under wire has proven to be a challenging yet enjoyable experience. Probably the most rewarding aspect is all of the creative problem-solving involved in trying to develop ways to effectively capture the Pennsy's complex infrastructure in miniature.

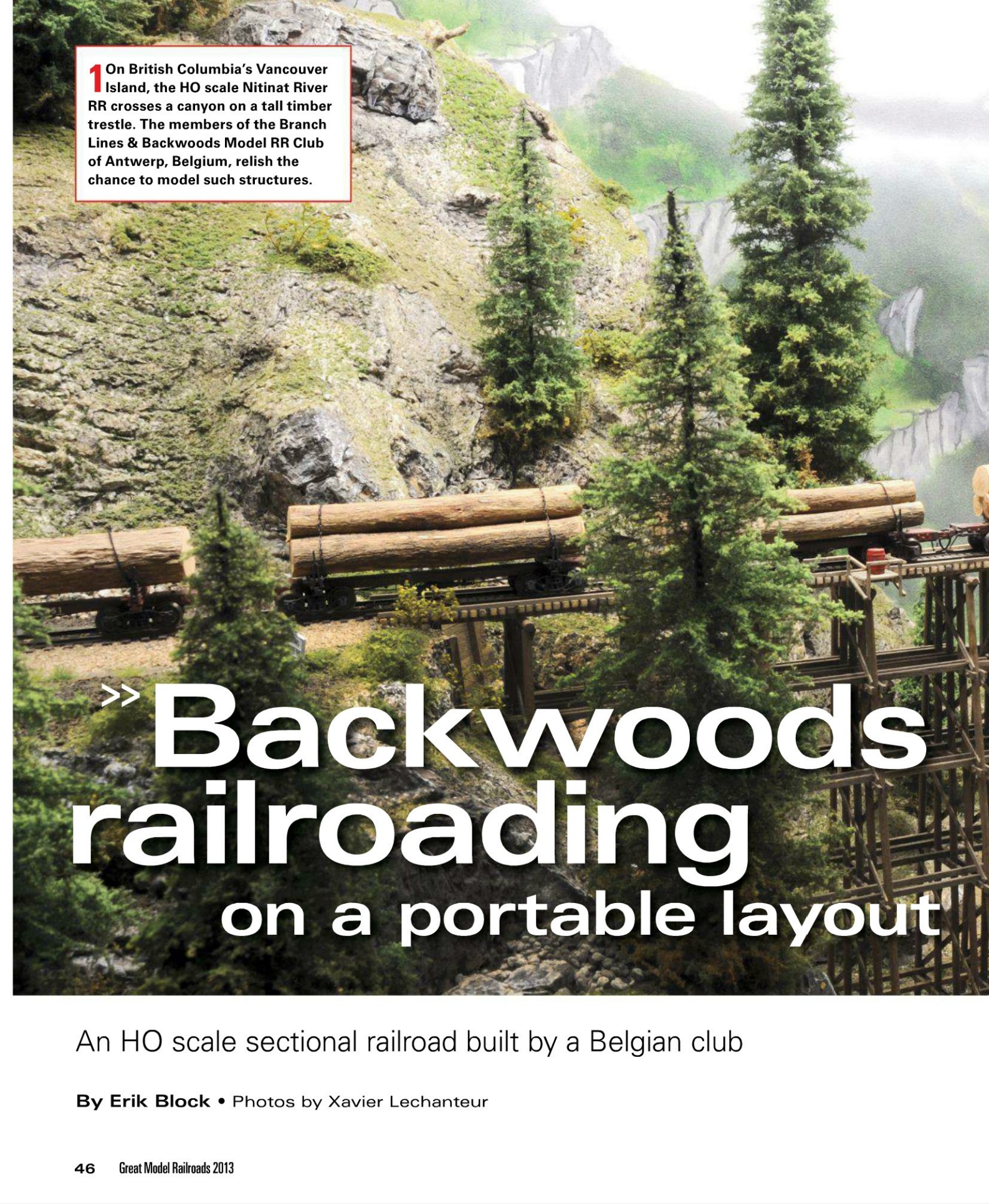
I'd like to thank my good friends Doug Gurin and Ron Hoess for their collaboration and continued encouragement and support, Al Buchan and the Pennsylvania RR Technical & Historical Society (www.prrths.com) for their work in preserving the history of the PRR, and Don Tichy for providing the overhead wire and insulators that are so essential to building this project. GMR

8 The combined *Senator* and *George Washington* passes Elmora Tower en route to New York, showing how colorful through service was. The Pennsylvania and New Haven cars will continue to Boston, while the Chesapeake & Ohio cars will be dropped in New York for servicing and return westbound on the combined *Patriot* and *Fast Flying Virginian* (FFV).

>>Meet Andy Rubbo

Andy is an airline pilot who lives in Metuchen, N.J., with his wife, Louise, who is ever-supportive of his model railroading endeavors, and their two cats, Ricky and Caesar. The back yard of their home borders on the Northeast Corridor's former PRR New York Division main line at milepost 23.7.





1 On British Columbia's Vancouver Island, the HO scale Nitinat River RR crosses a canyon on a tall timber trestle. The members of the Branch Lines & Backwoods Model RR Club of Antwerp, Belgium, relish the chance to model such structures.

>> Backwoods railroading on a portable layout

An HO scale sectional railroad built by a Belgian club

By Erik Block • Photos by Xavier Lechanteur



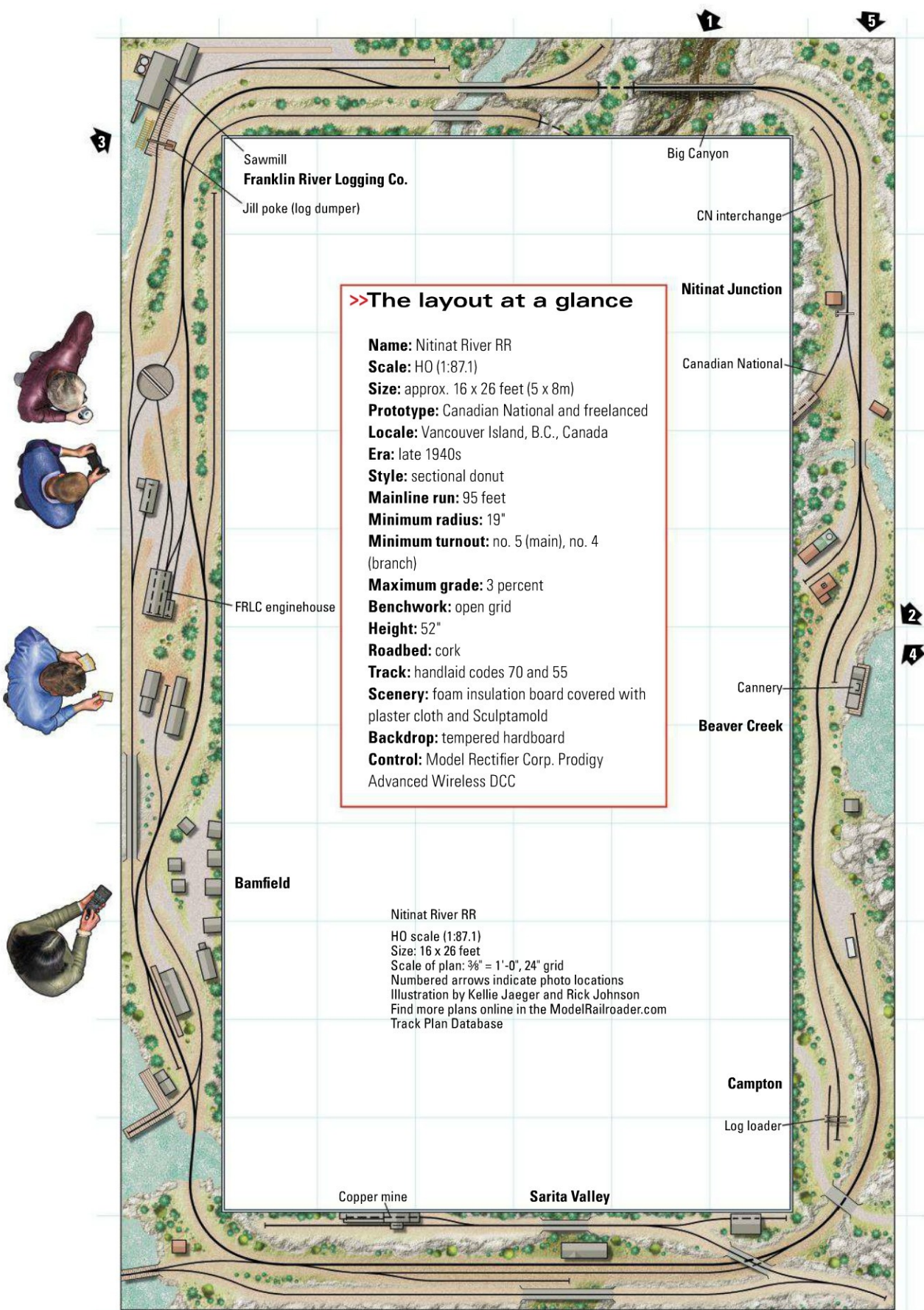
The Nitinat River RR is an HO scale sectional logging layout built by the Branch Lines & Backwoods Model Railroad Club of Antwerp, Belgium. A group of fans of North American railroads formed the club about 12 years ago.

We agreed from the start we would build structures from wood and handlay track. We wanted to build a partly freelanced model railroad that would have impressive scenery. Because a few members of the group had visited

Canada and liked Vancouver Island, we investigated this as a possible setting.

History lessons

Reading the books *Logging by Rail: The British Columbia Story* and



>>The layout at a glance

Name: Nitinat River RR
Scale: HO (1:87.1)
Size: approx. 16 x 26 feet (5 x 8m)
Prototype: Canadian National and freelanced
Locale: Vancouver Island, B.C., Canada
Era: late 1940s
Style: sectional donut
Mainline run: 95 feet
Minimum radius: 19"
Minimum turnout: no. 5 (main), no. 4 (branch)
Maximum grade: 3 percent
Benchwork: open grid
Height: 52"
Roadbed: cork
Track: handlaid codes 70 and 55
Scenery: foam insulation board covered with plaster cloth and Sculptamold
Backdrop: tempered hardboard
Control: Model Rectifier Corp. Prodigy
 Advanced Wireless DCC

Bamfield

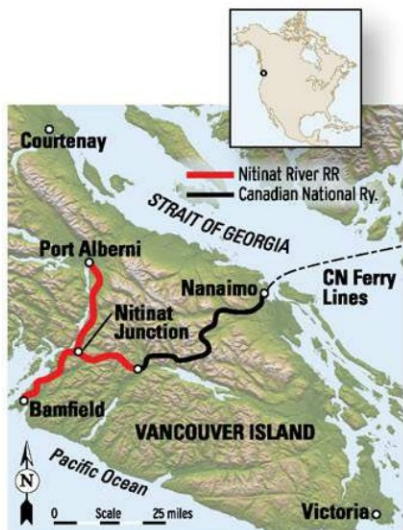
Nitinat River RR
 HO scale (1:87.1)
 Size: 16 x 26 feet
 Scale of plan: $\frac{3}{8}" = 1'-0"$, 24" grid
 Numbered arrows indicate photo locations
 Illustration by Kellie Jaeger and Rick Johnson
 Find more plans online in the ModelRailroader.com
 Track Plan Database

Campton

Log loader

Sarita Valley

Copper mine



© 2013 Kalmbach Publishing Co., TRAINS: Rick Johnson and Kellie Jaeger

Vancouver Island Railroads by Robert D. Turner, we learned that Canadian National Ry. (CN) had intended to build a railroad from Victoria, at the southern tip of the island, west and north through extensive stands of evergreen to Port Alberni at the head of a west coast inlet.

On February 18, 1911, work began and track was laid from Victoria to Youbou and later to Kissinger on the western side of Cowichan Lake (now known as Nitinat Camp). By December 1916, the subgrade had been completed all the way to Port Alberni, but the rest of the track was never laid. You can still find parts of this

roadbed today, some of which was later used by logging firms operating along the Alberni Inlet and inland from the town of Franklin River.

The Nitinat River RR

So much for the actual story. From here we diverged from history and wrote our tale of the Nitinat River RR (NRR).

In our version, six European immigrants (five Belgians and one Dutchman) with a lot of guts pooled their money and took over the rights for the railroad from CN and finished the line. They named the new road the Nitinat River RR after the



2 The NRR leases small Canadian National diesels for its motive power. This General Electric 44-tonner is hauling a load of logs past the cannery at Beaver Creek as a fishing boat prepares to return to the Pacific.

nearby river and lake. The only demand from CN was to retain the rights to offer passenger service over the new road with its own trains. After a few successful years, management extended the railroad with another branch to Bamfield at the western end of the inlet.

The NRR primarily serves the logging and mining industries. Some small harbor towns also have fish canneries. In the little village of Beaver Creek, people come to see the bald eagles and the whales that come close to the coast.

The Franklin River Logging Co. is located just south of Port Alberni, where in reality MacMillan Bloedel Co. had a logging operation. The FRLC started small but later extended its sawmill with a drying kiln and planing mill. The lumberjacks sleep and eat in camp cars that can be moved as the logging camps go deeper into the woods. The lumber company has its own enginehouse and car repair shop.



3 The Franklin River Logging Co.'s sawmill is a busy place. Franklin River Shay no. 9 spots log cars for dumping into the pond as CN 4 stands by with another trainload of fresh-cut timber.

>>Bridges and trestles



Club members are fans of high wooden trestles, so several were included in the track plan. Building one doesn't have to be a complicated task.

Bridges and trestles add interest and drama to a model railroad and can be impressive structures in their own right. Scratchbuilding your own bridges and trestles can make a layout unique, and doing it with friends just adds to the fun. (A trestle is a bridge consisting of relatively short spans between supporting legs or towers, known as bents.) We considered it an advantage that many bridges and trestles would be needed to carry the Nitinat River RR across streams and ponds and through canyons.

We scratchbuilt our own bridges, primarily because we couldn't find the right kits. We wanted to model bridges we saw in old pictures from the area we were modeling. Since the layout is set in the late 1940s and a great part of it is in the forest, we built all 15 bridges and trestles from wood. For a lumber-hauling railroad, this readily available and inexpensive material makes sense.

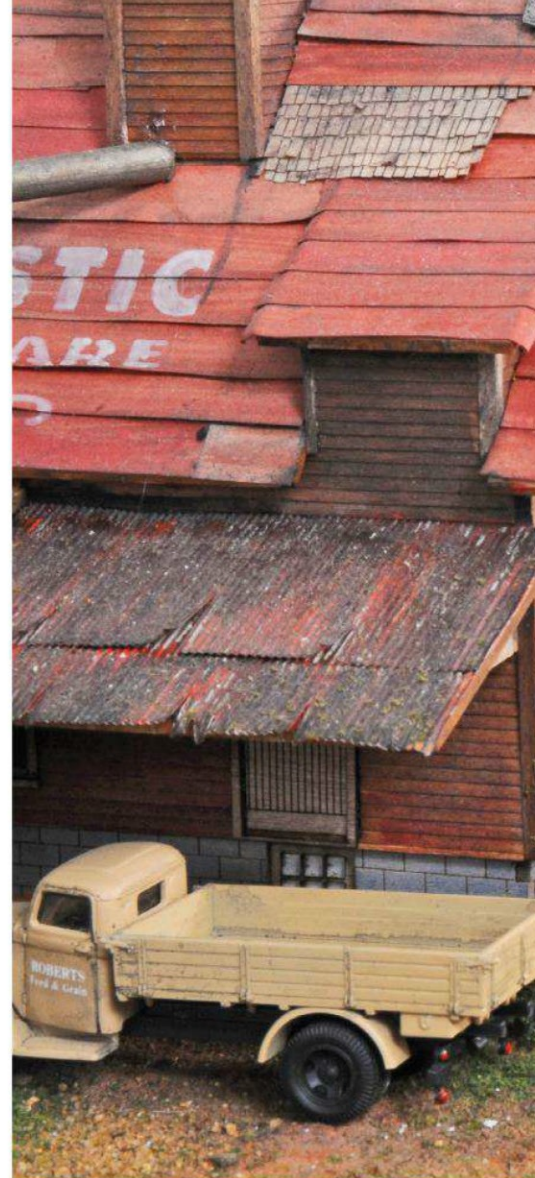
Many people think that scratchbuilding a detailed wooden trestle can only be done by master modelers. We find that isn't the case if you apply a couple of simple rules. First, investigate the area you're modeling. You can almost always find pictures to use as the basis for your model.

Next, use a fixture or jig for assembling the trestle bents to be sure all of these parts come out the same. One fixture can usually accommodate bents of several different heights. We spent a lot of hours building trestle bents, especially since we detailed each bent with nut-bolt-washer castings at all the timber connections. These take time, but they look great on the layout and in photos.

In order to "plant" the big trestle in the landscape, we first built a frame with wood supports for each bent glued to the base. The height varied with the lengths of the bents. In this way, you determine the base of a canyon.

The next step was to fix the trestle's stringers in place between the sides of the valley. Once the stringers were in position, we used rubber bands to hang bents beneath the stringers and on top of the wooden supports. Then we glued it all together and installed the bracing between the bents.

The last part was to glue down the ties and guard timbers, completing the deck structure, and spike rails to the ties. For more detail, refuge platforms can be glued on the side of the trestle deck. These often supported barrels filled with water in case the trestle caught fire, but their main purpose was to let railroad workers get safely off the track if a train approached. — E.B.



Once leaving Franklin River, the NRR runs through rugged mountains with tunnels and steep canyons. A massive wooden trestle crosses Falls Creek Canyon. Beyond the canyon the line reaches Nitinat Junction, where there's an interchange with the CN. Toward the Sarita mines, the NRR passes the fish cannery at Beaver Creek and a spar-tree log loadout at Campton for loading skeleton log cars.

Sarita Valley is a junction with a small depot and a switchback branch that leads to the copper mine higher in the mountains. Locals say the name Sarita comes from a lost love of the mine owner. Next to the mine, you can find a bar and house of pleasure where the owner hopes the mineworkers will spend most of their hard-earned money.



Bamfield is at the end of the branch line. It's a real pioneer town, with a harbor, a small station, a church, a hotel, some shops, and a little community of Chinese immigrants.

Construction and scenery

Our club doesn't have a large space for a permanent layout. We needed another solution, so we built our layout in sections.

The sections measure approximately 2'-6" x 4'-0" (70 x 120cm) each and are owned by the club members. Some of us store the sections when not in use, but others incorporate them into their home layouts. We have 19 sections that we set up on supports of adjustable framing to form a layout of about 16 x 26 feet.

Once a year we go on the road with the layout transported in a large truck.

We're always excited to go to train shows, because this is our only opportunity to assemble the complete NRR and run trains to all the destinations. We do this only once a year because it's such an enormous job.

Each road trip requires packing up and loading all the sections at the homes of the six members, then traveling to a show that may be as far as 500 miles away. We then have to set up the layout, run it, and greet visitors while it's on display. When the show is over we must then reverse the whole operation.

In order to keep the sections lightweight, we built them with open wood frames topped with 2" foam insulation board. We used more foam to form the landscape and covered it with plaster cloth. When a road or track needed some

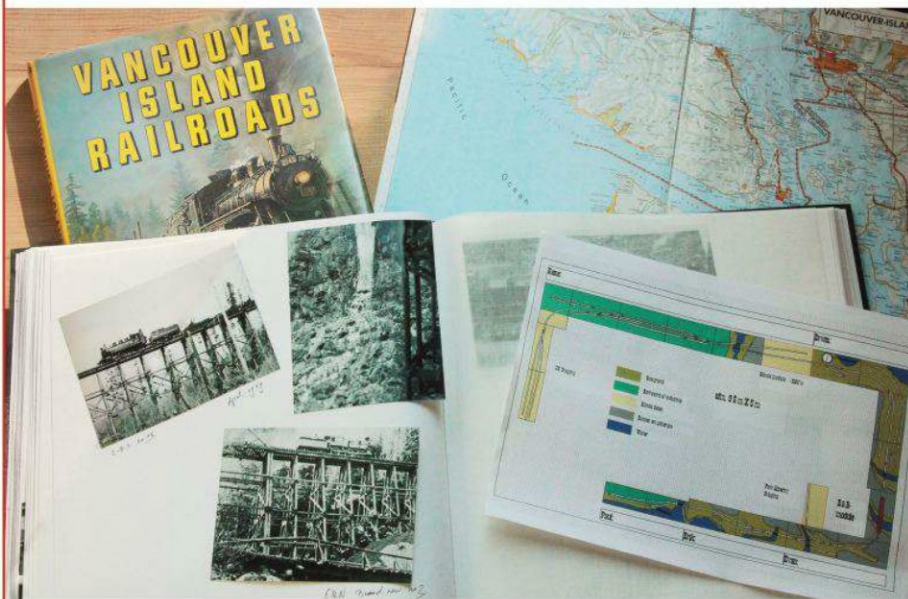
4 Now on a different assignment, CN engine 4 is picking up an empty boxcar at the Beaver Creek feed and hardware store. This store supplies all the local logging camps.

elevation, we used foam risers and inclines from Woodland Scenics.

All trackwork is handlaid with Micro Engineering code 70 rail spiked on wooden ties glued to cork roadbed. We used jigs from Fast Tracks to help with filing the frogs, points, and stock rails.

We cover the foam landforms with plaster cloth and use both Hydrocal in rubber molds and hand-carved Sculptamold for rocks. We started using the latter only as our surfacing material, then discovered its utility for rocks. It's lighter than plaster and easier to carve,

>>Research from a distance



A few members of the Branch Lines & Backwoods club have visited British Columbia, but most research on the prototype was done at a distance.

Researching a railroad in the Pacific Northwest from a distant location in Europe is obviously more difficult than when you actually live in the area. We can't jump in a car and drive to the library or visit the local British Columbia historical society. We can't have a close look at the colors of the rocks or the roadbed. Not everybody can spend thousands of dollars on an airline ticket just to do homework. So how can you gather all the information you need to build a prototype-based model railroad from such a distance? We're lucky we don't live in the '80s anymore. I'm so glad somebody invented the Internet.

When we were starting to research Vancouver Island railroads, we found a link on the Internet about Robert D. Turner's book *Vancouver Island Railroads*. We ordered it online and received it a few weeks later. This was the start of our idea to build the Nitinat River RR.

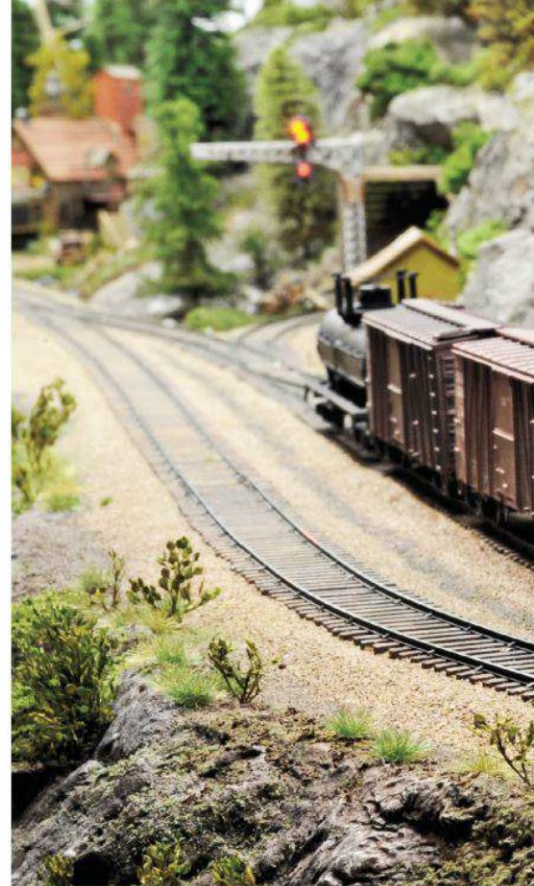
We also found we could visit museums and their archives online. We made many online visits to the Royal B.C. Museum (www.bcarchives.bc.ca). It has lots of historic pictures that can be viewed online and downloaded.

Now we're researching our new layout, which will represent present-day railroading in the Canadian Rockies, prairies, and Vancouver Harbor.

When you model the present day, the Internet becomes even more fun. With Google Maps or Bing Maps, you can view tracks, buildings, and surrounding scenes in a lot of detail. With Google's Street View, you can "walk around" the area you're investigating. With the optional "Bird's Eye" in Bing Maps you can view any area from a high angle and "fly" around a building to see its different sides. Such views are extremely helpful in modeling railroad or trackside industrial buildings.

For prototype information, there are many useful websites. One we often visit is Railpictures (www.railpictures.net). You can search for a locomotive type, railroad name, state or country, or any keyword. This site has more than 320,000 photos and 10,000 videos.

So the Internet made it possible for us to model a remote area with all the required details. Even with all these new tools, however, it still takes a lot of time to get all the information you want, and sometimes you will run into frustrating dead ends. But research is an aspect of this hobby that can be rewarding. I hope you enjoy it as much as we do. — E.B.



5 The CN local freight has just arrived at Nitinat Junction to work the interchange with the NRR. After completing the exchange of cars and running around its train, GP9 no. 1726 will return to its home rails by way of the tunnel in the middle distance.

and the rocks don't chip if you hit them with something hard, the kind of accident that can easily happen with all the moving.

To cover the Sculptamold base we used several soils and sands of different shades for a natural look. We ground up dead leaves from the yard and spread them over the soil. We even used leftover bits and pieces of plaster as fallen rocks. For most of the vegetation we used materials from Woodland Scenics. Grasses are Mininatur and Woodland Scenics turfs. The bushes are mostly clump foliage and fine leaf foliage. Berry bushes are made from poly fiber covered with turf. Water features are modeled using Woodland Scenics Realistic Water, Water Effects, and E-Z Water.

One downside of modeling the Pacific Northwest is that you need lots and lots of evergreen and aspen trees. Since our



trees are mostly handmade, we still have a number to go. For a really prototypical look we'll need a few thousand of them.

Structures

All of our structures are made of wood; most are kits we sometimes kitbash or modify. Building the board-by-board kits from Sierra West Scale Models (www.sierrawestscalemodels.com) is time-consuming but a lot of fun, and even these we sometimes kitbash.

A few of our buildings are scratch-built, such as the sawmill and the copper mine. The sawmill is mostly copied from pictures of Australian modeler Geoff Nott's O scale Red Stag Lumber Co. [Geoff's HO scale Leigh Creek Lumber Co. was featured on the cover and inside *Great Model Railroads 2000*. – Ed.]

We also scratchbuilt all the trestles, a total of 15 of various sizes and types. The big trestle at Falls Creek Canyon consists of several bents and a timber deck bridge in the middle. The bents are built with round sticks that are normally used to hold up young tomato plants. Each bent includes 140 nut-bolt-washer castings glued into hand-drilled holes. See "Bridges and trestles" on page 50.

Continuing projects

There are only a few more buildings to finish, but a lot of trees. At some places we need to put extra effort into the backdrop painting, but most of the layout can be considered finished. We've attended a few train shows, and in 2010 we won the prize for best layout in the Ontrax train show in the Utrecht, Netherlands, railway museum.

We hope to do some more shows in coming years, but also want to come up with something new in about three years. We've started planning a new layout that will represent a journey through western Canada, including scenes of the prairies, the Rocky Mountains, Thompson Canyon, and Vancouver Harbor. Each setting will consist of three to five sections that can be connected to the others in a very flexible way. GMR

Erik Block, a zookeeper, is one of the six members of the Branch Lines & Backwoods Club, based in Antwerp. He lives in Antwerp, Belgium, with his wife, Ina, and son, Yuma. He's building a layout set in the American Southwest, but most of his modeling efforts go to the club. He also enjoys photography.

>>Meet the club



The Branch Lines & Backwoods Club

has six members: Alex van Jole, Erik Block, Evan Daes, Paul de Wachter, and Xavier Lechanteur, all from Belgium, and Erwin Jansen from The Netherlands. They all live in or near Antwerp. The club's home is an old school building close to Antwerp where members meet every Wednesday night. On those evenings, club members work on layout sections and modeling projects and enjoy each other's company. The club has attended train shows in Belgium, Holland, and Luxembourg, and plans soon to travel to Germany.

>> Modern railroading on the Plymouth Sub

An HO system modeling today's CSX and interchanging cars with several other model railroads

By Chip Cole • Photos by Doug Tagsold



1 The railroads and the industries they serve are big-time, modern-day operations on Chip Cole's HO CSX Plymouth Subdivision layout. Here's Chip working the switch job at the Ford New Brighton Assembly Plant, checking the switch list before pulling the transmission and drive-train track.

When I purchased my basement in 2001, I was already planning to fill it with a layout based on the modern-day CSX system. Of course, the basement came with a house on top, but the real estate agent quickly learned I was just as keen to see what was below ground as what was above.

That large, dry, unfinished basement was a great start to fulfilling the dream I had as a kid of following in the footsteps

of model railroad celebrities such as David Barrow, Chuck Hitchcock, Tony Koester, and Allen McClelland. I wanted a railroad empire I could enjoy with my friends. It had to be entertaining and comfortable, with wide aisles so you could enjoy running trains with wireless walkaround throttles.

Developing a plan

Planning began after I measured the space and started to visualize the layout footprint. This is my first large basement-sized layout, so I wanted to do it right. I remembered what friends had done with their layouts and I asked for advice.

Speaking of friends, an important planning requirement arose from my membership in the Ohio Interchange Group. The layout owners in this group physically interchange cars between their layouts, and I wanted my new railroad to fit into this system.

I started planning by setting a minimum mainline radius to accommodate modern-day equipment. Planning continued while my father and I installed walls and a drop ceiling to prepare the basement for the layout. My main concern at this time was deciding on a geographic location for the layout, including towns and industries.

I chose to model the crossing of two CSX lines at Plymouth, Mich. The CSX Plymouth Subdivision, part of the line



2 Wide-nose General Electric diesels lead train Q328, a CSX manifest (mixed freight) train from Chicago to Detroit, across the Maybury River.

>>The layout at a glance

Name: CSX Plymouth Subdivision

Scale: HO (1:87.1)

Size: 30 x 60 feet

Locale: southeast Michigan

Era: 2009 to present

Style: linear, around the walls

Mainline run: 188 feet

Minimum radius: 30" (18" in Livonia Industrial Park)

Minimum turnout: no. 6

Maximum grade: 2.5 percent

Benchwork: open grid

Height: 40" to 63"

Roadbed: O scale cork (single strip) on Homasote

Track: code 83 flextrack, code 100: staging

Scenery: Hydrocal-soaked paper towels over aluminum screen

Backdrop: painted drywall with some photo backdrops

Control: CVP Products EasyDCC Digital Command Control

CSX Transportation Chicago Division, Plymouth Subdivision

HO scale (1:87.1)

Size: 30 x 60 feet

Scale of plan: $\frac{9}{32} = 1'-0"$, 24" grid

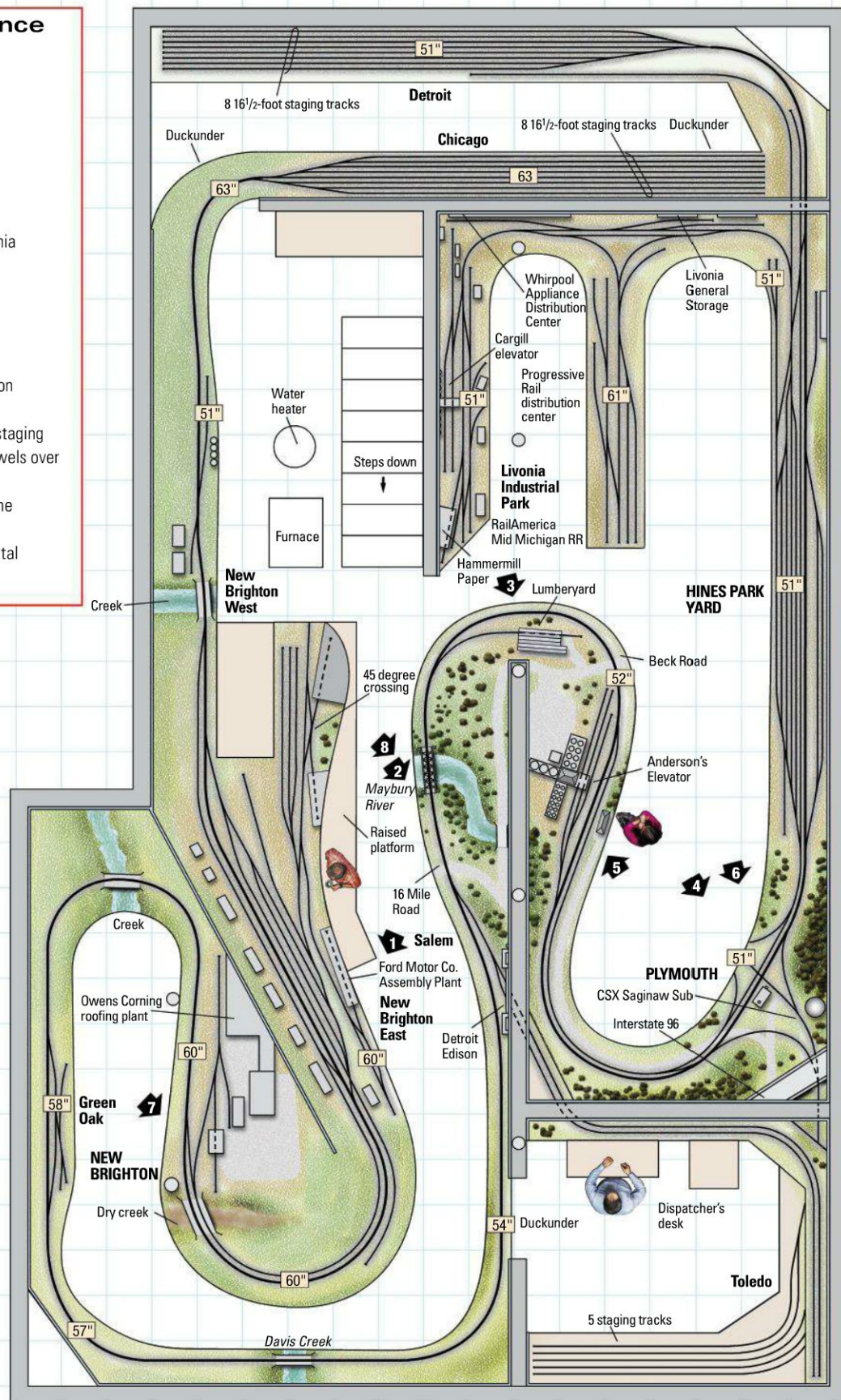
Numbered arrows indicate photo locations

Illustration by Jay Smith

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the ModelRailroader.com

Track Plan Database





running between Detroit and Chicago, fits into the east-west traffic flow that our interchange group mostly follows. I chose towns that are relatively close and made the trip across the layout a segment of a train crew's trip rather than a full "day."

The junction with the CSX Saginaw Subdivision at Plymouth provides a prototypical connection to Toledo, Ohio, and the staging yard where my cars enter the Ohio Interchange Group's interchange system or return to my layout's home rails. I also like the way the varied routings offered by the third staging yard, which includes Detroit and Chicago, force operators to think about car movements.

The industries are mostly made up to provide a traffic mix for operation. Some of the locations are modeled from the real thing, but some modeling license is taken because of space. Since most of the interchange group leans strongly toward the automotive industry, I used my modeling license to relocate a Ford assembly plant from Wayne to New Brighton, Mich.

When I thought I was done, I asked my friends what they thought. This was a valuable check, as some features that look okay on paper don't always work out well in three dimensions. My friends had plenty of experience to help me avoid such traps. I'm especially thankful for the valuable feedback from Allen, Bill, Bruce, Dave, Doug, Eric, Garth, Howard, Jim, Kevin, Matt, Mark, Phil, and Steve.

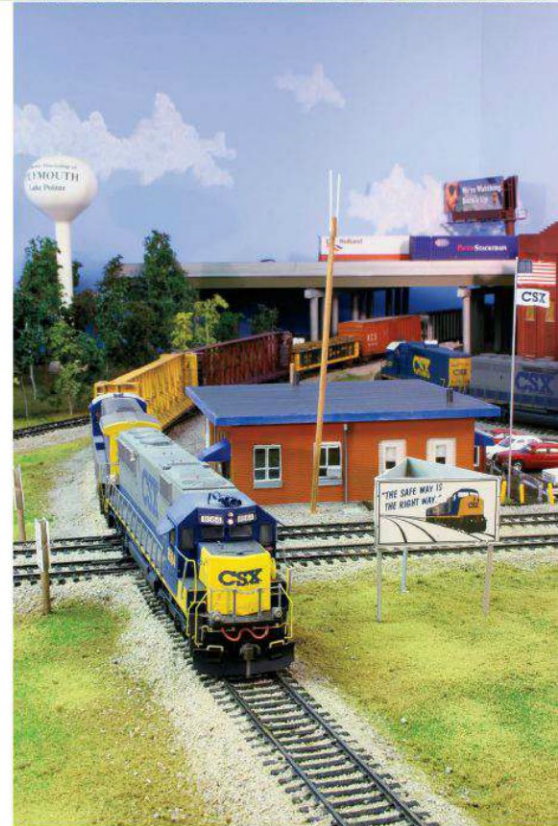
3 The crew has left local freight train D709 on the main line (foreground) while delivering carloads of building materials to the Reichelder & Graham Lumbervard west of Beck Road.

Scenery and structures

I'll admit I wasn't looking forward to scenery construction, as I don't think of myself as an artistic person. I was happy to find that it came easier than I expected. I modeled the terrain with aluminum window screen propped up on wood and on paper wadded into balls. Paper towels soaked in Hydrocal form a shell over the screen.

My layout design leaves a lot of room for scenery to suit my vision of trains running through rolling, tree-covered hills. In Michigan, that means a lot of trees. I used a large amount of Scenic Express Super Trees material, with foreground trees from JTT. I concentrated on making the scenery realistic, using the space to make the scenes proportional to the railroad and trackside structures.

The industrial buildings are large and look appropriate with relatively large numbers of freight cars spotted at them. My friend Howard Clark built most of the massive facilities. After working offsite, he'd bring one over one at a time. I'd position the structure on the layout and then add scenery around it, while he started on the next one.



4 Toledo-to-Saginaw manifest Q516 occupies the diamonds at Plymouth. The Interstate 96 overpass helps conceal the entrance through the backdrop to the Toledo staging yard. A locomotive engineer himself, Chip is familiar with the railroad industry's widespread promotion of safety, as on the billboard.



5 Chip likes his online industries on the massive side so they keep today's large railroad equipment in realistic proportion. This is the Anderson's grain elevator at Beck Road, built by Chip's friend Howard Clark, with local D709 at work. The car puller next to the gray diesel pulls cuts of cars though the shed.

Rivers and backdrops

Adding rivers was a lot of fun. The Maybury River with its wide, muddy riverbank is one of my favorite scenes on the layout. In contrast, Davis Creek is just a small stream running only 5 inches before it ends at the wall. I used a large

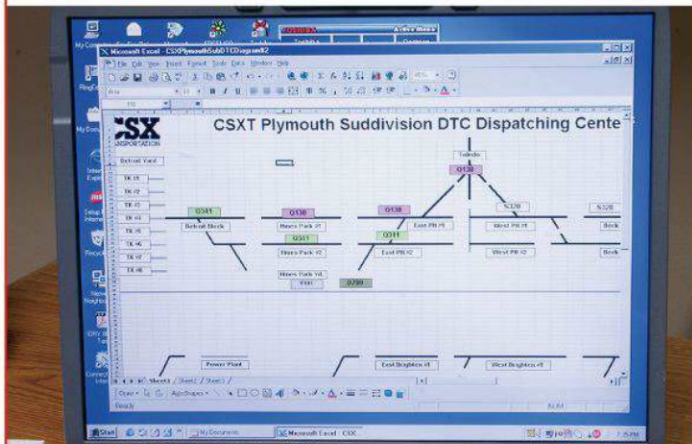
6 The focal point of Chip's Plymouth Sub layout is the junction with the CSX Saginaw Subdivision at Plymouth, Mich. As CP Rail run-through train X501 charges toward Chicago on Main 2, CSX train Q322 from Toledo pulls around the Detroit (east) leg of the wye on its way to the Motor City.

photo backdrop to help blend it into my layout, and added a tint to the Magic Water resin in the creek to match the color of the water in the photo. I also made sure the stream in the photo matched the width of the creek on the layout, making the stream seem to continue miles toward the horizon.

I've used a couple of other photo backdrops on the layout, such as at Anderson's elevator, where the parking lot ends at the backdrop. Before using the photos I'd tried to fix this odd-looking juncture with a row of shrubs, but it looked bad. Once I installed the photo backdrop, it made the scene look right.

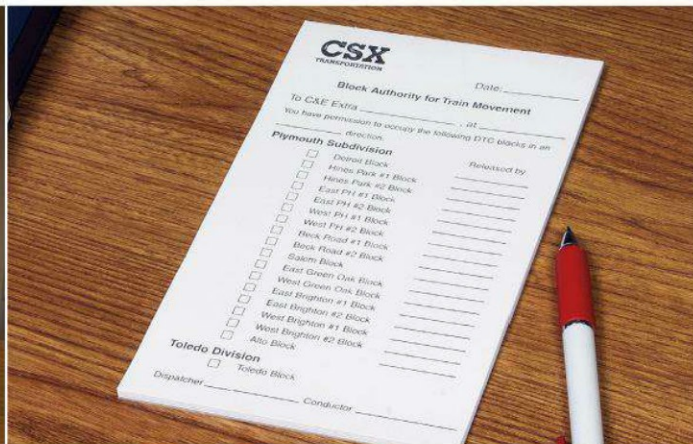
One other homemade photo backdrop is of my childhood home and neighborhood.

>>Dispatching with Microsoft Excel



Plymouth Sub dispatchers can now work with this Excel display to keep track of train locations and Direct Traffic Control block authorities. The dispatcher issues authority

I've used Direct Traffic Control (DTC) to dispatch my CSX Plymouth Sub from the beginning. I started with magnets to represent trains on a metal track-model board, but the actual authority was given verbally to the crew by radio without filling out any forms. However, the way we used verbal authority was unprofessional, and the speed of dictation as dispatchers tried to rush trains over the road was like listening to a fast-talking auctioneer.



to crews by radio, and they copy the instructions onto these block authority forms. Photo 7 shows an example of the lineside signs that divide the railroad into named blocks.

I wanted to slow the pace down and make the conversations sound more professional. My friend Bruce Carpenter put together a track diagram computer display with Microsoft Excel, and I designed a simplified block authority form in Excel and had pads of the forms printed at my local print shop. I kept it simple so new operators could easily catch on. The result was a process that sounds more like prototypical radio traffic and also makes the trip across the Plymouth Sub take a little longer. — C.C.

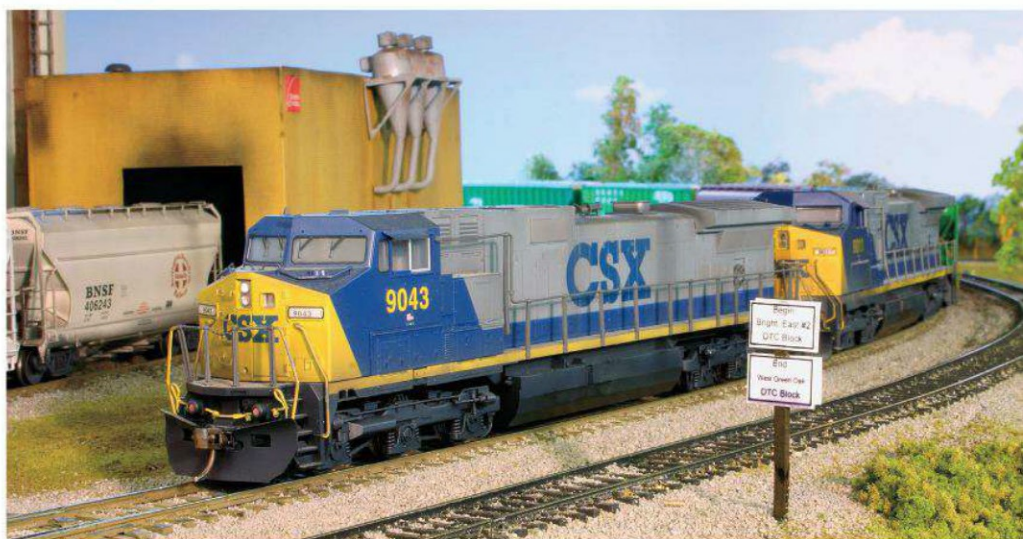
My friend Kevin Bertrand and I took the pictures of my father's house and others to complete the neighborhood scene. The one thing I wish I could do over on the layout is to use photo backdrops exclusively, as they add so much to the scenery.

Up-to-date operation

I use CVP Products' EasyDCC to run trains, with eight RF1300 radio throttles for wireless walkaround operation. We run 20 to 25 trains in a 3½-hour operating session.

Authority to use the main line is given by Direct Traffic Control or DTC, a modern prototypical method similar to Track Warrant Control. In DTC, the railroad is divided into named blocks marked by signs along the right-of-way, and the dispatcher gives the crews authority to occupy specific blocks. The dispatcher issues authority by radio and the crews copy the instructions on DTC Block Forms. For more about these forms, see "Dispatching with Microsoft Excel" at the top of this page.

There are three yard jobs, one being a true yard switcher that works the CSX



Hines Park Yard. The second job is the Livonia Industrial Park switcher. This job is actually on an independent short line, RailAmerica's Mid Michigan RR, which interchanges with the CSX. The third is a plant switcher that works the Ford assembly facility in New Brighton.

7 Train Q326 heading east through Brighton, Mich., passes block signs naming the defined blocks of the Direct Traffic Control (DTC) block authority system. In the background is the Owens Corning roofing shingle plant, a major customer for the Plymouth Sub.

>>Switch lists for car spotting

Before Switch

Grand Motor Company, SWITCH ORDER

DATE 7/9/14

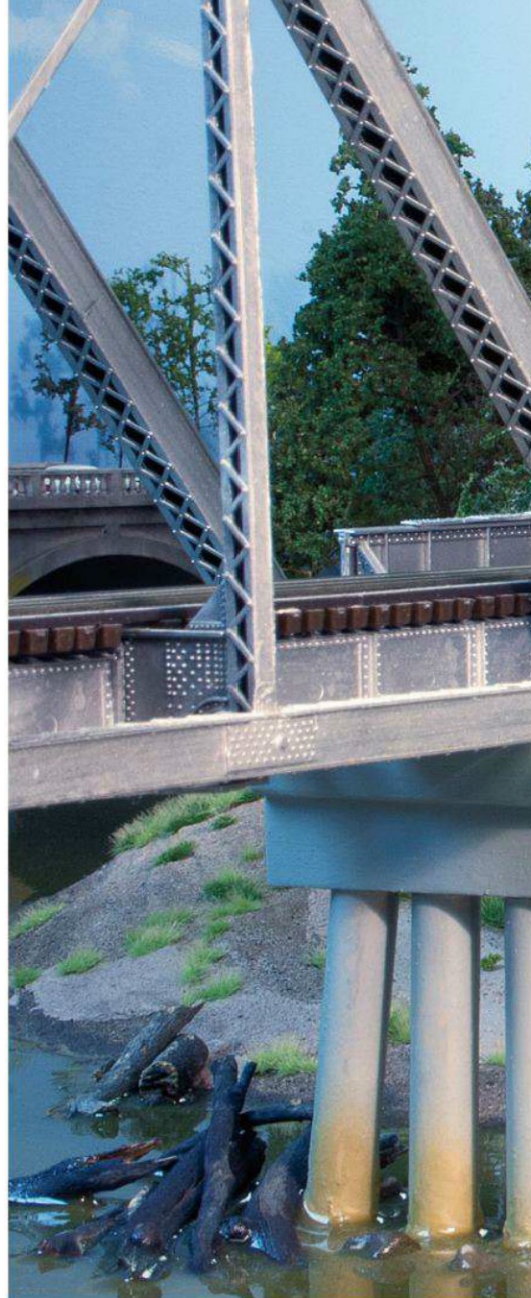
ORDER NO. 2

DATE 7/9/14

TO: Y102	SUBJECT: 530	TIME: 6:00	SUPPLIED: Drex	TO: Y102	SUBJECT: 730	TIME: 8:00	SUPPLIED: Drex
FROM: B	CAR NUMBER	DESTINATION	CONTENTS	FROM: B	CAR NUMBER	DESTINATION	CONTENTS
B 1	CR 293066			B 1	NYC 238261		
B 2	CR 237309			B 2	CR 237303		
B 3	CR 237333			B 3	GTW 378224		
E 1	NW 604523			E 1	NO		
E 2	SPR 43490			E 2	Swivel		
E 3	NW 604534			E 3	Needled		
T 1	ATSF 601142			T 1	SON 43767		
T 2	CSXT 171347	Respot		T 2	CSXT 171347		
T 3	BN 355183	Respot		T 3	ON 355183		
T 4	SON 43759			T 4	CNA 799440		

At industries with several tracks and car spots, Chip uses "Switch Order" lists like this to help crews spot cars. Photo 1 shows an example of a location where lists like this are used in Plymouth Sub operations.

The guys in my operating group look for a challenge when switching industries. So in addition to moving cars by car cards with tags, I increase the realism and level of detail by preparing switch lists designating specific spots for some of the industries. This is a prototypical way of placing specific cars in specific places at the discretion of the customer. It takes just putting together a form, listing spots, and maybe a chart on the layout so the operator knows locations of the car spots. – C.C.



I like having different kinds of operating jobs on my layout, as my experience is that some people want a challenge while others just want to run trains. I truly want everyone to have fun while operating my layout.

The Ohio Interchange Group provides my railroad with a mix of cars from many different owners. It's also a treat to see my own cars on other railroads in the system. Each railroad in the group has a unique tag color for its car cards and every industry has a three-letter code. We each provide an industry register for our layouts and provide colored paper for the tags. Routing cars between layouts is

as simple as entering the destination of another railroad on the waybill card.

In addition to car routing by the typical car cards and waybills, some industries have switch lists with more detailed spotting instructions. See "Switch lists for car spotting" on this page. This makes switching those industries more of a challenge than just putting cars in a train and leaving town.

What's left?

Since my layout is almost finished, people often ask me, "what will you do next?" Though I may be close to completion, I'm certainly not done making

modifications to improve layout scenery and operation.

I'm eager to install a dispatcher-controlled signaling system, which would eliminate most of our current paperwork and radio chatter. The CSX term for what I want to do is Computerized Central Traffic Control, or CCTC.

I'll use Bruce Chubb's Computer/Model Railroad Interface (C/MRI) hardware, but the control interface will be through computers representing current-day railroad technology. It would be great to have an old CTC "machine" control and display consoles, but since I model 2009, that would be out of date.



8 Train E766 with run-through BNSF power takes empty coal cars from the Detroit Edison Salem plant back to the Powder River Basin. Fishermen on the bank of the Maybury River focus on their angling and don't bother to look up.

And I'm not quite done with the scenery. I still have many trees to make and details to add, not to mention the signal system details still to come.

It's hard to believe the Plymouth Sub is 10 years old, but it still gives me and my friends a lot of "entertainment," and I know that will continue for years to come. GMR



>>Meet Chip Cole

Chip is a lifelong model railroader. In his day job he's a locomotive engineer for a Rail America short line. He's also a union officer for the Brotherhood of Locomotive Engineers and Trainmen. He lives in Lima, Ohio, and when not working, he likes to go train watching around the country. Other activities include golf, fishing, bicycling, and yard work. You can keep up with progress on his layout at www.csxplymouthsub.com.

>> A great layout in 9 months

1 A daily iron ore extra heads for Iron Harbor on Gregg Condon's HO scale Mineral Point & Northern Gogebic Division. Engine no. 55, an Alco RS-3, is snaking 18 loaded ore jennies and a caboose through the "S" curve at Firesteel Lake.

Gregg Condon made a fresh start on his HO layout in a new home

By Dave Rickaby • Photos by the author

Time is precious for all of us. Our layouts take years to “complete.” Some want to take their time because they use their hobby for relaxation, while others tarry because sometimes life just gets in the way.

Let’s face it, family, jobs, and other concerns take up our time. If our time is marked with a degree of certainty and finality, would we waste it or embrace the known timetable to complete our model railroad? Gregg Condon chose the latter.

If Gregg’s name seems familiar, you need only turn to the 2007 issue of *Great Model Railroads*, which featured his former Mineral Point & Northern RR. A move to a new home near Appleton, Wis., brought the demise of that layout and opportunity for a new version, the MP&N’s Gogebic Division, in HO scale like the former.

Fast work

Gregg started building his new layout in March of 2009 and “finished” it nine months later. By that he means every square inch has been brought to a presentable level of completion. He realizes a layout is never really finished, and refinements can always be made.

The reason for this feverish pace was this layout would only last four years until his wife, Pat, retired. Then they’d be moving – again! Part of the reason Gregg was able to build so fast was because the structures came from his previous layouts. After 50 years of scratchbuilding, he had more than 300 completed structures to choose from.

He recently added another unusual structure that represents the remains of a foundry at Iron Harbor. See “Modeling a burned-out foundry” on page 67.

Also during the same nine months Gregg wrote a book on his plasterless “clothshell” scenery technique.

The enduring MP&N concept

Gregg chose to retain his original fictional version of the Mineral Point & Northern RR set in the Upper Peninsula of Michigan – an area commonly known

as “the U.P.” The prototype MP&N was actually located in the lead-mining country of southwestern Wisconsin, but some of the mines it served were owned by U.P. mining companies. In fact, the biggest lead mine near Shullsburg, Wis., was owned by Michigan-based Calumet & Hecla Mining Co.

Gregg logically concluded if Michigan mining companies could own subsidiary mines in southwestern Wisconsin, then his fictional version of the MP&N could theoretically own rail lines in other areas, such as the U.P.

Long a lover of U.P. mining and logging railroads, Gregg has taken many trips retracing old rights-of-way and reading about the history of railroading in this region. He wanted the MP&N’s Gogebic Division to be a short line with small trains carrying iron ore to a Lake Superior port. For plausibility the railroad would follow a route he could plot on a federal geological survey map.

The MP&N serves two mines in the fictional town of Mineral Point and runs 30 miles to the northeast. There, it terminates at an indentation in the Lake

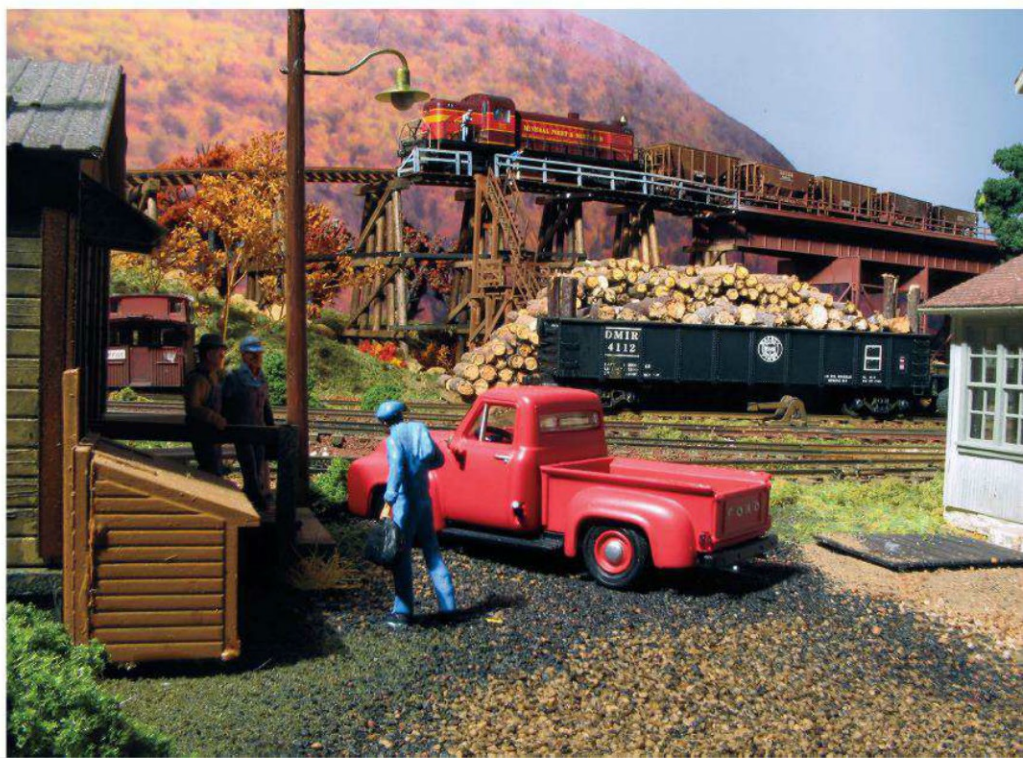
Superior shoreline, which Gregg named Iron Harbor. Along the way, the Gogebic Division connects with the prototype Duluth, South Shore & Atlantic RR, further reinforcing the Upper Peninsula connection.

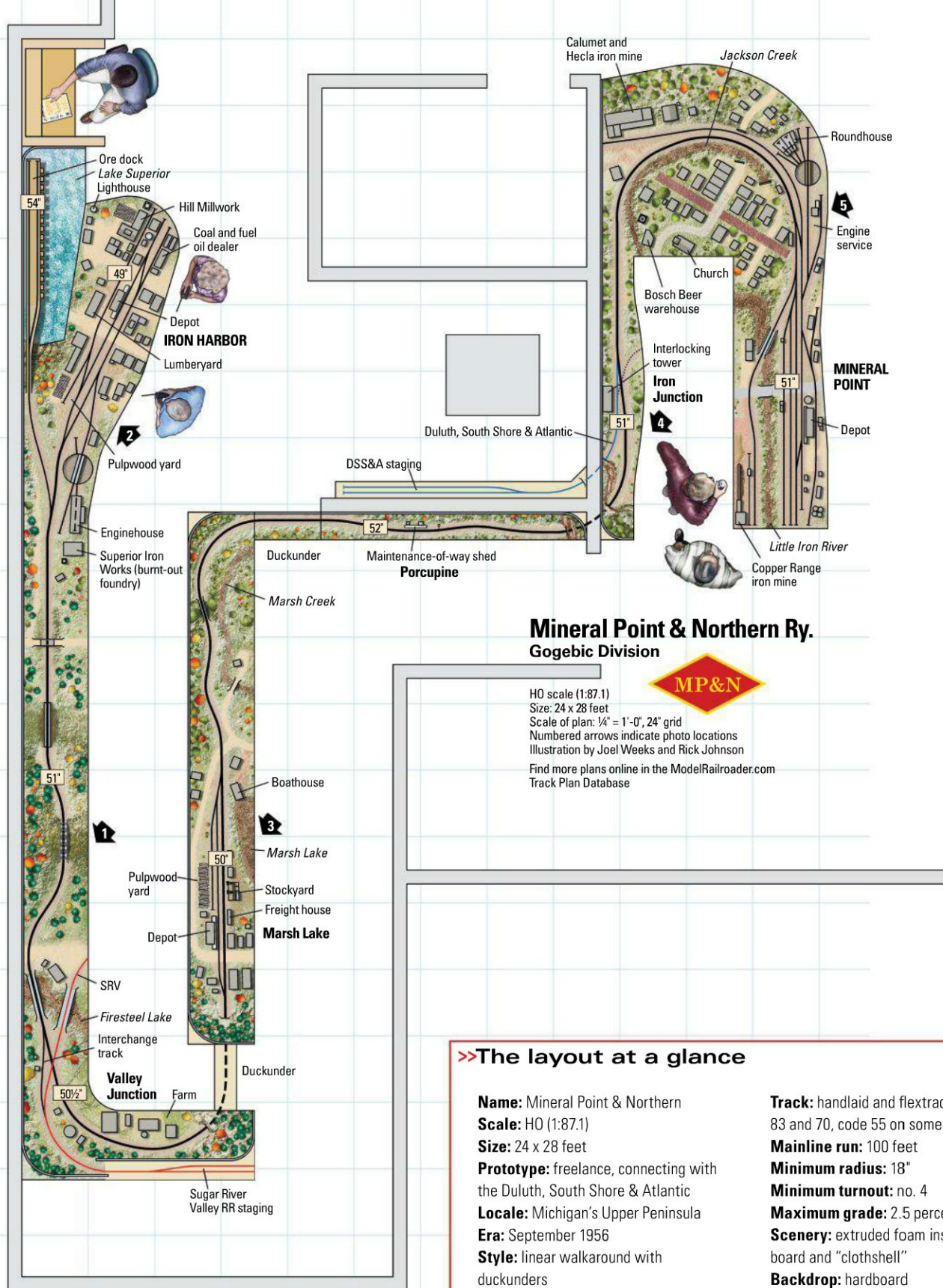
The period is autumn 1956, and the new ‘57 Chevys are on the dealers’ lots. Rock and roll, cars with fins, and soda fountains abound. It’s also the time when Gregg, as a 9-year-old with a bicycle, began to explore and discover the world around him.

Design and construction

The 28 x 24-foot layout is built as a serpentine form against two walls with a lazy “S” between them. Gregg describes it as a “double whiplash.” It’s a linear railroad where the line goes through each scene only once, and it was designed to fit the basement’s footprint.

2 We’re at Iron Harbor as RS-3 no. 55 is pulling a cut of empty jennies off the ore dock. In the foreground, “Hogger” Holtz arrives for work and is heading into the roundhouse office.





>>The layout at a glance

Name: Mineral Point & Northern
Scale: HO (1:87.1)
Size: 24 x 28 feet
Prototype: freelance, connecting with the Duluth, South Shore & Atlantic
Locale: Michigan's Upper Peninsula
Era: September 1956
Style: linear walkaround with duckunders
Benchwork: open grid
Height: 48" to 52"
Roadbed: Homasote on 1/2" plywood

Track: handlaid and flextrack, codes 83 and 70, code 55 on some sidings
Mainline run: 100 feet
Minimum radius: 18"
Minimum turnout: no. 4
Maximum grade: 2.5 percent
Scenery: extruded foam insulation board and "clothshell"
Backdrop: hardboard
Control: cab control with Aristo-Craft wireless throttles

Mineral Point & Northern Ry. Gogebic Division

"The Porcupine Mountain Route"



The benchwork consists of an open grid of 1 x 4s supported on 2 x 4 legs. Gregg says he wanted the layout to be solid enough for a heavy man to lean on. The layout's elevation rises from 48" at Iron Harbor to 52" at Porcupine, and the maximum grade is 2.5 percent.

Although Gregg handlaid a small portion of the track, his main line is code 70 flextrack from Micro Engineering. Spurs and sidings not used by the ore trains are code 55. His turnouts are mostly no. 6 from Peco and Shinohara, and all are lined by hand.

To improve the appearance of the flextrack, Gregg spray painted it with cans of Model Masterpiece Light Earth or Dark Tan to kill the plastic shine. Then he hand-colored individual ties with a set of Rail Brown, Tie Brown, and Rust paint markers. Track where the ore trains run received a light spray of Auto-Primer Red to simulate the iron ore dust that permeates everything in iron-country railroad-ing. Gregg finds painting, weathering, and ballasting the track reduces the apparent rail size for greater realism.

Clothshell scenery

Gregg's scenery base is primarily made from 2" extruded foam insulation board. Layering it and carving it into



basic forms is much faster than anything he's tried previously. Making the convex hills was easy, but the concave forms taxed him. What if he could use a hardshell-like technique that wouldn't involve the mess of dipping paper towels into soupy plaster?

He cut an old blanket into pieces and applied Liquid Nails brand Projects & Foamboard Adhesive no. LN-604 (www.liquidnails.com) across the cloth every couple of inches. Then he spread the beads of construction adhesive evenly over the cloth with a putty knife. The Liquid Nails sticks so well that he can pull the material tight as it adhered to the layout. He uses this method mostly to fill in gaps between pieces of foam and for the concave transitions between hills and level ground.

Where necessary, he laid the cloth pieces over shaped foam supports spaced every four to six inches. By the next day his clothshell scenery was just as hard and rigid as any plaster method he'd ever used, and he didn't encounter any drying-time issues. In addition, there weren't any mess, dust, or drips. In fact, there was nothing to clean up but his fingertips and the putty knife, and the new method is water-soluble. For more information on this process, see Gregg's

3 All passenger service on the Gogebic Division is provided by daily-except-Sunday mixed trains Nos. 211 and 212, and a Sunday-only gas-electric turn. Here Ten-Wheeler 1585 pulls no. 212 out of Marsh Lake en route to Mineral Point.

book, *Clothshell Scenery*, available at www.marshlakeproductions.com.

With his landforms done, he painted them with a light tan latex paint and glued on various grades of ground foam. Gregg's scenery palette includes 30 different types of ground foam and 30 non-vegetative natural materials such as N scale ballast, real dirt, decomposed granite from Colorado, mine tailings from the U.P., and even sweepings from his garage. The garage material is a fine, dusty, gray color that he used everywhere on the layout. He believes that using a variety of materials is the key to creating realistic scenery.

Gregg makes his water using Enviro-tex, a 2-part epoxy, into which he mixes a little bit of green or brown paint. He cautions against using too much paint, as it doesn't take much to tint the epoxy. He preps the water areas by adding fine sand to the edges, or if he's modeling a small creek, he'll carry the sand all the way across. To represent deeper water, Gregg



4 The Gogebic Division's link to the rest of the North American rail network is the Duluth, South Shore & Atlantic, a subsidiary of the Soo Line. Here the DSS&A connection behind an Alco RS-1 waits at Iron Junction for MP&N mixed train no. 211 departing for Iron Harbor.

stains the bottom of the waterway bed with a wash of black and light gray paint thinned with denatured alcohol.

The water at Iron Harbor was made by mottling green and black paint directly on the wooden surface. The black represents deeper water. Gregg then brushed on 12 coats of a clear polyurethane to add depth to the harbor.

With the exception of four or five rock outcroppings that he saved from his previous layouts, Gregg's layout is virtually plaster-free. He prefers the ready-made foam rock formations that you can purchase at most hobby shops. He uses a coping saw to cut the castings to fit into his foam insulation board hills and fills the gaps with Liquid Nails foamboard adhesive and clothshell.

Some of his fall trees are from Woodland Scenics and Scenic Express. His favorites are made from sagebrush he harvested in Colorado.

He stretches polyfiber over the armatures, applies hair spray as an adhesive, and sprinkles on ground foam.

Gregg uses polyfiber balls, similarly coated with ground foam, to fill gaps between the trees in front of the backdrop because he didn't want the sky to show through the forest. His bushes are a combination of many things including Woodland Scenics clusters, pieces from Scenic Express Super tree kits, baby's breath, and peppergrass.

Gregg's wife, Pat, has helped with the scenery and has also built several structures. On their first date Gregg decided to tell her that he was a model railroader, and her response was that she had always wanted to build model railroad scenery. He almost asked her to marry him right there! She also told him

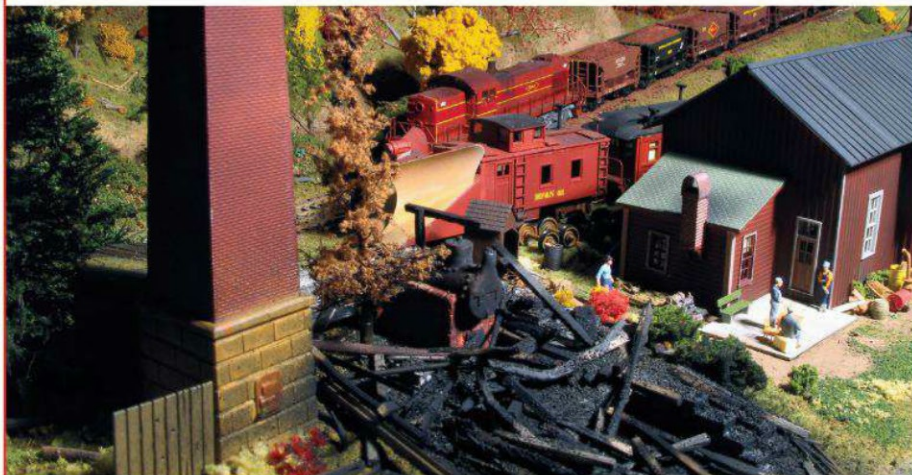


that she had her own Lionel set. Her artistic sense is keen, and Gregg is continually amazed that Pat had no prior modeling experience.

The backdrop is 1/8" hardboard painted sky blue. The clouds are hand painted, but the distant horizon was made using photos shot on location in the U.P. Gregg had the images enlarged, which softened their focus. He doesn't mind that, since the photos are supposed to serve as a distant background.

One special scene is behind the ore dock at Iron Harbor. Gregg took this photo of Brockway Mountain in the Keweenaw Peninsula of Upper Michigan 15 minutes after proposing to his wife.

>>Modeling a burned-out foundry



Gregg's wife, Pat, suggested finding a place for this industrial smokestack, so he did some scratchbuilding to produce this burned-out foundry.

On-the-spot planning led to an interesting model, proving that sometimes the neatest features of a layout are the ones that aren't planned.

The last scene I finished on the Mineral Point & Northern Gogebic Division was Iron Harbor. I had structures sitting in their final arrangement prior to adding the ground-cover layer of scenery when my wife, Pat, started looking through the boxes of structures and detail parts left over from previous layouts. She came across a plaster casting of a large industrial smokestack and said, "This is really neat; you should find some place for it."

At that point the only remaining vacant piece of real estate in Iron Harbor was a hillside behind the enginehouse. As I pondered what I could build on that uneven ground, I remembered Pat's earlier suggestion that I find a place for an old abandoned stone foundation dug into a hillside. Aha! I could place a stone foundation in that hillside with the smokestack next to it to represent the site of a former major industry. But what industry?

A foundry, I decided, because the MP&N hauls iron ore to the dock at Iron Harbor. The town would have been a reasonable location for a foundry – the railroad would have brought in ore and ships could have delivered coal. But as industries grew larger in size and fewer in number, the marginal foundry at Iron Harbor wasn't rebuilt when it was destroyed by fire.

It was a simple matter to use a carpenter's knife to carve out space for two levels of structure foundation into a hillside made of foam insulation board. (If the hillside had been clothshell, a carpenter knife would have easily cut it, too). I built the foundation one stone at a time using Dr. Ben's Baby Building Blocks (debenllc.com) held in place with white glue. I sprinkled ample amounts of HO scale coal and ballast to represent mounds of ashes and cinders and secured them with diluted white glue. Next I gave the entire area a quick dusting with flat black spray paint.

To represent the remains of the main structure, I got out my scrapbox of scale lumber remnants, a candle, and a cup of water. Working on the bottom of an inverted steel trash can, I carefully charred all of the pieces of wood in the candle's flame. I also glued a few framing assemblies together before I burned them. After dousing all of the fire-damaged pieces in water and letting them cool, I glued them into the scene.

This burned-out foundry was a last-minute whim, but it garners more comment from visitors than anything else on the layout. Model railroading gives us plenty of room for creativity, as long as we keep our imagination well stoked and fired up. – Gregg Condon



5 Alco S-2 no. 1010 pauses in its work to refuel on the Mineral Point service tracks. Although he's collected quite a roster of engines, Gregg's favorites are the Alco diesels made by Atlas and Kato.

The layout is lit by a mixture of fluorescent and incandescent lamps. The fluorescents are good fill lighting and the incandescents cast a warmer glow. Gregg's not totally satisfied with the combination. Still, he hasn't found a more appealing alternative.

Locomotives and rolling stock

Gregg decided that six locomotives would have been needed to operate the Gogebic line in 1956. Since his roster is much larger, he swaps locomotive groups on and off the layout. Thus he can operate with a full complement of Shays, rod locomotives, Alco diesels, or all Electro-Motive diesels as he chooses. His favorite

locomotives are the various Alcos from Kato and Atlas.

As Gregg tells the story, when the MP&N was looking for a diesel color scheme, management went to Alco and chose one similar to the Gulf, Mobile, & Ohio and the Chicago Great Western. The specific details varied with different orders, but all of the diesels use the same red and maroon livery. Most MP&N steam locomotives are modified Bachmann products, while a few others are Model Power models that Gregg detailed.

The MP&N's rolling stock collection comes from Walthers, Athearn, and Accurail. It also includes several scratch-built and kitbashed models.

Gregg's weathering varies from car to car, as it does in the real world. His common denominator is a thin wash he makes from denatured alcohol with a couple of brushes full of flat black paint and one of gray. He uses this wash to tone

down most of his rolling stock and structures. After the wash dries, he applies powdered pastels and fixes them with a light overspray of Dullcote.

Operation

Gregg believes operation brings a layout to life, and he enjoys seeing his trains run with a realistic purpose. The concept of a 30-mile short line through the western part of the U.P. suggests a somewhat laid-back operation, something similar to the narrow-gauge East Broad Top in Pennsylvania.

Mirroring the EBT, a full schedule of trains operate Monday through Friday, with just the mixed (passenger and freight) trains running on Saturday and a gas-electric passenger run on Sunday. All trains operate as turns that make round trips. Passenger service is limited to the combines carried on the mixed trains and the Sunday doodlebug.

On a typical day, mixed train No. 212 is first out of Iron Harbor, running south to Mineral Point, performing switching duties along the way. The DSS&A connects to the MP&N at Iron Junction. A daily DSS&A local exchanges cars with MP&N No. 212 at Mineral Point, then returns to Iron Junction and home rails. After making the exchange with the DSS&A, train No. 212 switches Mineral Point's industries and returns to Iron Harbor as No. 211. Thus, the DSS&A is the MP&N's connection to the outside world.

Two ore trains run as extras during a session, one from the Calumet & Hecla mine and the other from the Copper Range mine in Mineral Point. Both go to the dock at Iron Harbor and return with empties. There's also a Sugar River Valley RR train that appears from staging at Valley Junction to interchange cars loaded with pulpwood.

The MP&N's trains are short, with a maximum train length of six cars including the caboose or combine, and 10 cars for the ore trains. Meets are minimal, as there's just one passing siding on the railroad, at Marsh Lake. Gregg's main line is only 100 feet long, and he thinks that shorter trains look better, especially in relation to the scenery. He feels the trains should be a relatively insignificant part of the overall scene, and he likes the fact that shorter trains can't occupy more than one town at a time.

Instead of a car card and waybill system, Gregg uses a car forwarding matrix system to route his cars. (See "Car-routing matrix" above.)

Gregg doesn't use a clock either, so the MP&N is run on a sequence "timetable" which lists the trains in the order of their appearance on the railroad. Since just two trains can work on the railroad at one time, the next train doesn't begin its run until after the previous one on the timetable has completed its work.

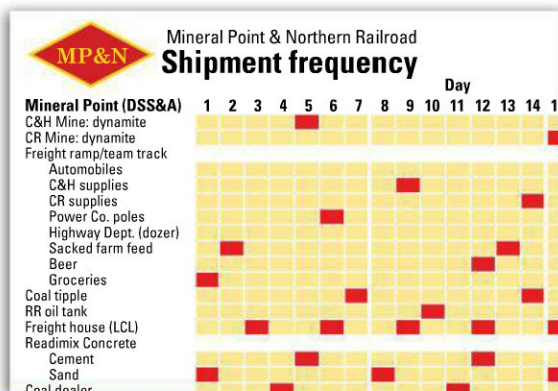
A typical operating session with only five trains lasts about 2½ hours. On this small railroad, the layout can be operated with a dispatcher and two road crews. These can be 1- or 2-person crews. If there are more than five people available, then crews take turns as trains are available.

The layout is controlled by two Aristocrat wireless throttles and dispatcher block control. The dispatcher assigns the cabs and controls the six

>>Car-routing matrix

Freight car routing on the MP&N is sheer simplicity. I don't use the popular car-card-and-waybill system or a computer. The MP&N has 60 ore cars on the layout at all times. Other freight cars number only about a dozen at any given time. These come onto the MP&N via the Duluth, South Shore & Atlantic, and the DSS&A staging yard has fiddle shelves above it that hold about 300 cars. A given car very seldom makes a trip over the layout – perhaps some never will. Maximum train length (other than ore trains) is six cars, but the mixed usually has fewer. With such short trains, I find it no hassle to write out waybills for pickups and switch lists for setouts. I write these on miniature forms I had duplicated at a copy shop.

Frequency and destinations of shipments are governed by a matrix that has a line for each of the possible car movements and 21 columns indicating a 21-day sequence. The red marks indicate the shipment days. My entire matrix is available on the *Model Railroader* website, www.ModelRailroader.com. – G.C.



blocks from his office. There are small local panels that allow the operators to kill power in sidings for meets.

Communication between the dispatcher and the train crews is done through a combination of antique telephones and telegraph. Crews can call the dispatcher only when they stop at a station. A few random taps of the telegraph key alert the dispatcher or crews to pick up the phone. Although there isn't any actual code being sent, the telegraph sounders add a nostalgic effect.

Gregg likes the camaraderie of running the layout with a group of friends and enjoys the social dimension it adds to the hobby.

Another railroad coming

Gregg and Pat plan on relocating to northwestern Wisconsin after her retirement, where they'll build a home with the train room in mind. Their next layout will hark back to Gregg's home region and represent the Milwaukee Road's Shullsburg branch. It will be set in September 1954, the transition date on that line for both steam and diesel power.

Gregg considers himself a "total immersion" model railroader. The hobby is essential; he can't imagine life without it, and he hopes he never has to. GMR

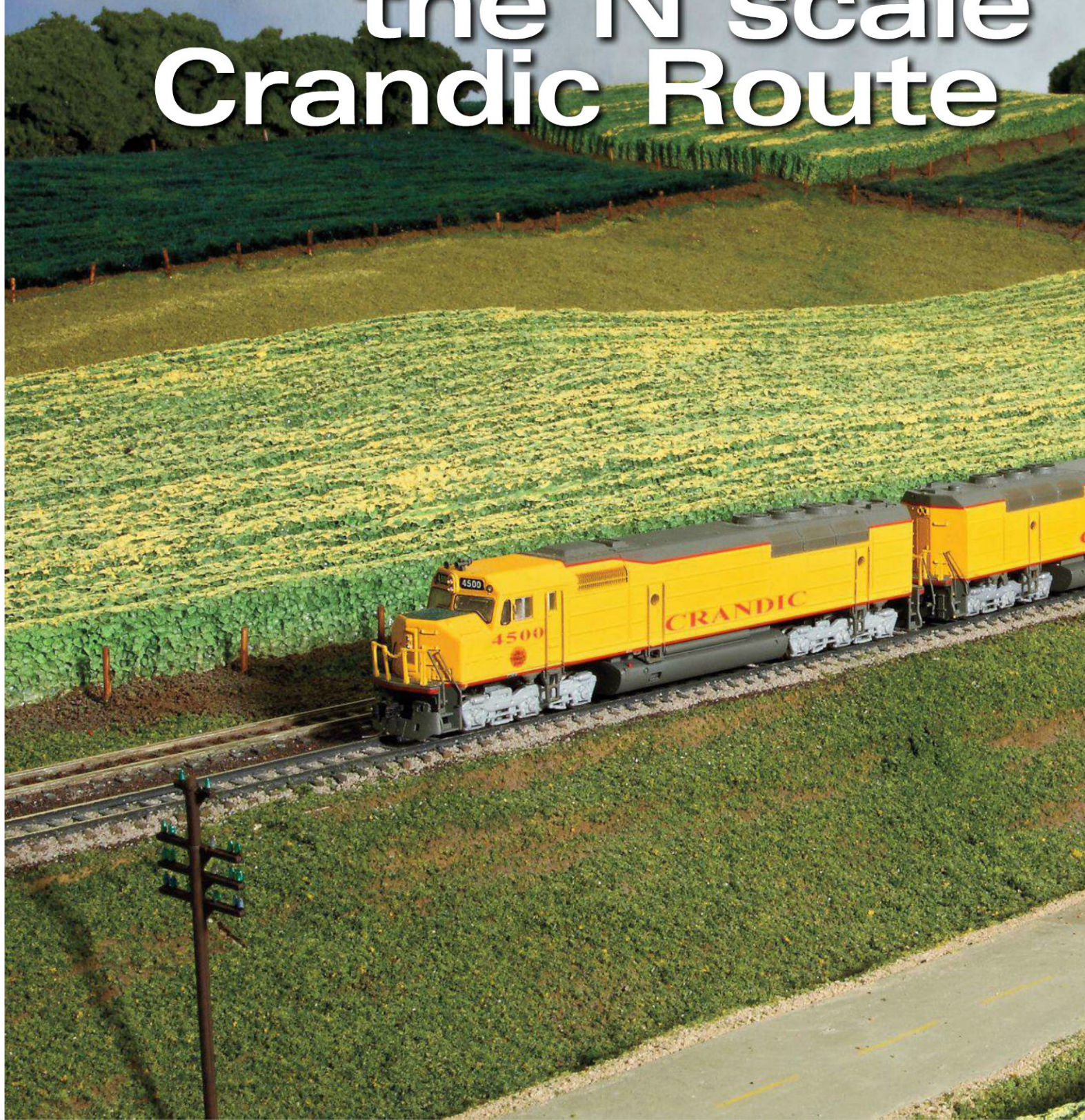
>>Meet Gregg Condon



Gregg grew up near the Mineral Point line of the old Milwaukee Road in Brodhead, Wis. He's been a high-school teacher, a book editor, and a college professor at the University of Wisconsin, Eau Claire. He's published 74 books, including the once widely used Gregg Short-hand textbooks. Now retired, he and his wife, Pat, live in Greenville, Wis.

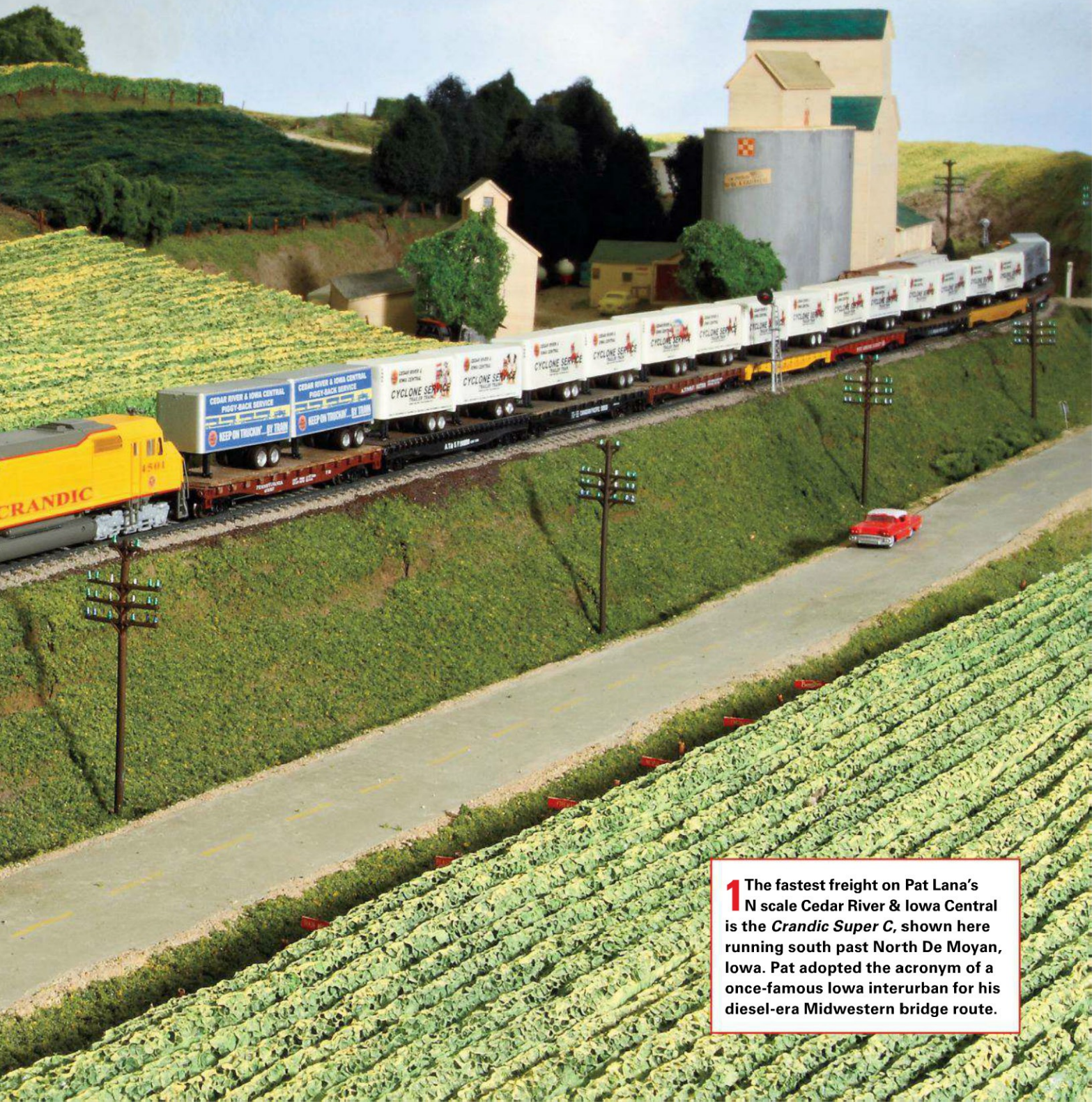
Gregg was influenced by his uncle, John Plichta, a model railroader and railfan who gave Gregg his first Lionel train set. He was also inspired by the work of Paul Larson in *Model Railroader* magazine and was fortunate enough to obtain one of Larson's original scratchbuilt locomotives, MP&N 4-4-0 no. 20.

>> Perfecting the N scale Crandic Route



Realistic operation and CTC highlight the Cedar River & Iowa Central Ry.

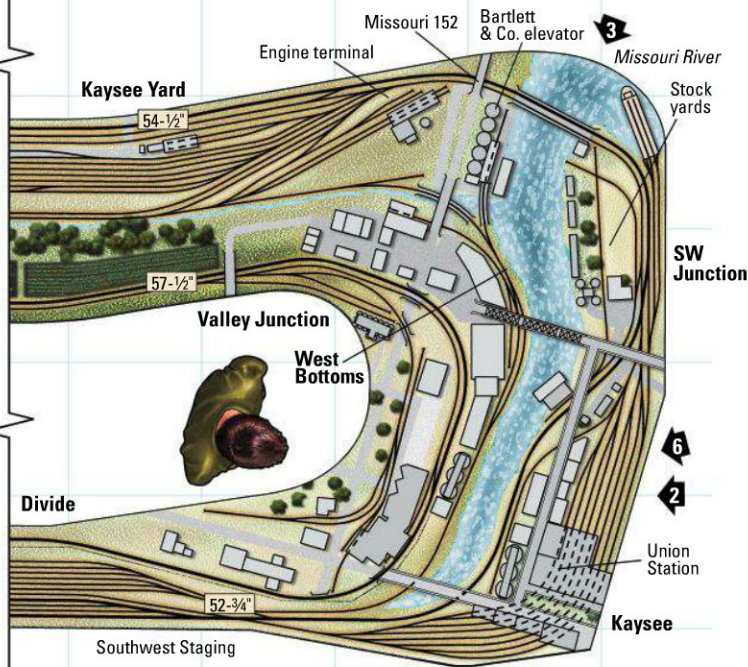
By Patrick G. Lana • Photos by Mike Danneman



1 The fastest freight on Pat Lana's N scale Cedar River & Iowa Central is the *Crandic Super C*, shown here running south past North De Moyan, Iowa. Pat adopted the acronym of a once-famous Iowa interurban for his diesel-era Midwestern bridge route.



2 The Crandic Route is a freestanding, or island, layout designed for linear walkaround operation. Train crews can follow their trains around the aisleways.



purchase of a Revell-Rapido train set in Ames, Iowa. Because we were living in a small apartment, my first layout was built on the 18" x 24" side of an old recycled TV cabinet. My second layout was about 4 x 6 feet and folded out of a wall cabinet. Upon renting our first house in 1972, my third Crandic layout used sectional construction – a good choice, as it was moved four times. The final version of

that layout measured 11 x 21 feet in our Kansas City, Mo., home and was featured in the July 1985 *Model Railroader*.

In Kansas City, I was encouraged by a group of very talented hobby friends to work on the National Model Railroad Association's Achievement Program (AP). The AP opened many new modeling and operating doors for me. In the late 1980s and early 1990s, I began operating on

>>The layout at a glance

Name: Cedar River & Iowa Central Ry., "the Crandic Route"

Scale: N (1:160)

Size: 18 x 31 feet

Theme: proto-freelanced based on Midwestern railroads

Locale: Iowa and Missouri

Era: August 10, 1968

Style: linear walkaround island

Mainline run: 148 feet

Minimum radius: 24" on mainline, 18" on secondary tracks, 12" on industrial tracks

Minimum turnout: Peco large radius (main), medium radius (secondary), small radius (industrial)

Maximum grade: .75 percent (2 percent secondary and industrial)

Benchwork: cookie cutter over grid

Height: 52 3/4" to 59"

Roadbed: Homasote over plywood

Track: Peco code 55 flextrack (Atlas code 80 in staging)

Scenery: plaster-covered paper sacks on screen wire

Backdrop: room walls surrounding layout

Control: Digitrax Digital Command Control



3 Pat found the inspiration for Kaysee's West Bottoms industrial area in Kansas City, where he lived for some time. The Crandic's West Bottoms Local is switching the Bartlett & Co. grain wharf while a bald eagle fishes in the muddy Missouri River.

other HO and N layouts for the first time. I really enjoyed the excitement and camaraderie. At that time, my Crandic was a "railfan's delight," as you could watch trains run all day. However, it lacked prototypical operations.

In 1996, a job transfer moved my wife and I to Colorado, and I started the railroad you see here. I planned this version of the Crandic as an operating railroad so I could share the fun with friends. It had to provide prototypical operation for a multi-person crew. I call it "proto-freelanced" in that there is no

full-size Cedar River & Iowa Central Ry., but I built it to look and operate like a prototype system.

Concept and design

The Crandic Route serves as a bridge line from Kansas City to Minneapolis/St. Paul, with an eastern extension to Chicago from Pammelia. The layout represents the mainline portion from Kaysee (Kansas City) to Pammelia (Ames, Iowa).

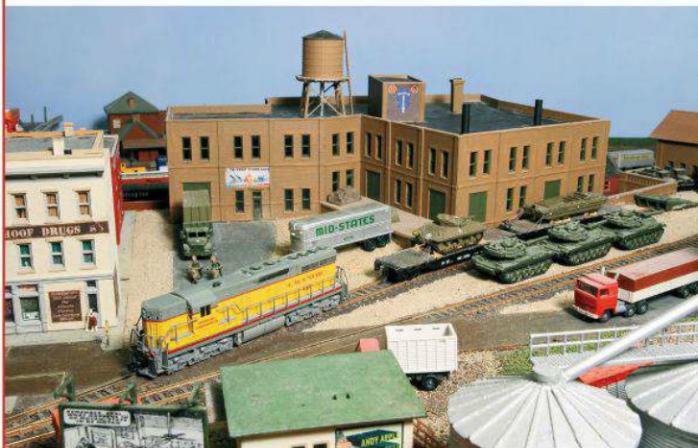
After 28 years of playing trains in Midwest basements with little natural light, I was happy with all the illumination coming in through four 4 x 4-foot windows. I'd have preferred to build the layout in an unfinished room, but the basement was finished, complete with carpeting and drywall. An island type layout design was almost dictated by all the windows, doorways, and stairs.

This was okay as I wanted to model the Midwest, with its rolling hills and croplands. By raising the hills to eye level to serve as view blocks, I could keep the up-close view focused on one side of the layout at a time while suggesting the open atmosphere of the Midwest. It also allowed a linear walk-around design. No matter where you face the layout, you're looking west with south to your left and north to the right.

The disadvantage of the island layout is that operators in different locations can be facing each other less than three feet away. Some find that distracting, but others are so focused on their side of the railroad and their train they forget the person across the layout who's focused on something entirely different.

I kept the basement clear of clutter when we moved in and covered the carpet with drop cloths. I laid out the

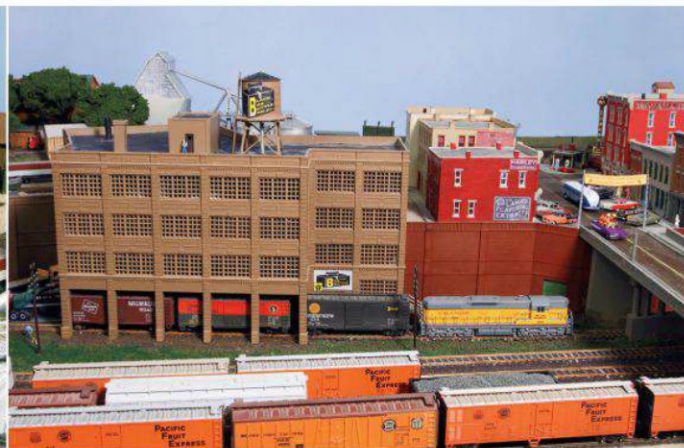
>>Let buildings do double duty



4 In De Moyan this building represents a U.S. Army Reserve Center, and Pat built this side of it using Design Preservation Models wall modules.

One advantage of an island style layout is you can get double duty out of one structure. Many structures on the Crandic represent two industries, one industry on one side of the building and one on the other side. These buildings are located between two towns on opposite sides of the layout and form part or all of the view block between those towns. Prime locations on the Crandic are Kaysee/Valley Junction and De Moyan/Pammelia.

Most of the two-sided buildings are kitbashed, and I find that if one side has more stories than the other it helps the illusion that there are separate and distinct buildings having different purposes. Shown here is one example in De Moyan and Pammelia.



5 This is the same building as in photo 4, but here it's shown from the Pammelia, Iowa, side. Pat kitbashed this side from Walthers' Hardwood Furniture Co. kit.

I was in the ROTC and the U.S. Army Reserve, so I wanted to model a USAR training center at De Moyan. That's my shoulder patch on the elevator shaft. My dad was in a tank destroyer unit in World War II, and his patch is barely visible off to the upper right of mine. The M-10 tank destroyer and DUKW on the flatcars are metal Minifig models from a war gaming store. The tanks are repainted Micro-Machine toys.

The Black Box, Bottle & Bag Co. is the same building as the USAR center but is a four-story "Skunk Works." No one on the Crandic knows what goes on in this factory, but all shipments to and from are "classified." The company is named after my friend Rodney Black, who likes black boxes (computers) and bottles of "classified." — P.L.

Homasote-and-plywood tabletop on the floor and cut out the aiseways I wanted. This was probably not the most efficient procedure, but it was certainly effective.

The most difficult part of the design process was working in all of the structures I wanted to keep from my old layouts. While the tabletop was on the floor, I drew in the main line and then placed the structures around the right-of-way to make sure everything would fit. Then I raised the tabletop up four feet on L-shaped legs of dimensional lumber and open-grid benchwork so I could squeeze four-foot particle-board shelves under parts of the layout. Finally, I used the cookie-cutter construction method to finish the tabletop so I could elevate or depress track and scenery as needed.

My standard mainline grade was .75 percent because my carpentry skills aren't great, and I didn't want to exceed a

maximum grade of 1 percent. The lowest point on the main line is at Kaysee Union Station and the staging area, 52¾" from the floor. The highest point on the main is south of Creston, at 59" from the floor. In December 1998, the mainline golden spike ceremony was held.

N scale evolution

After 45 years, the Crandic has evolved with N scale itself. As better performing and more detailed N scale locomotives and rolling stock became available, I replaced most of my older equipment. Today most Crandic power is either Atlas or Kato with a sprinkling of InterMountain and Athearn. I installed Digital Command Control (DCC) in 2000.

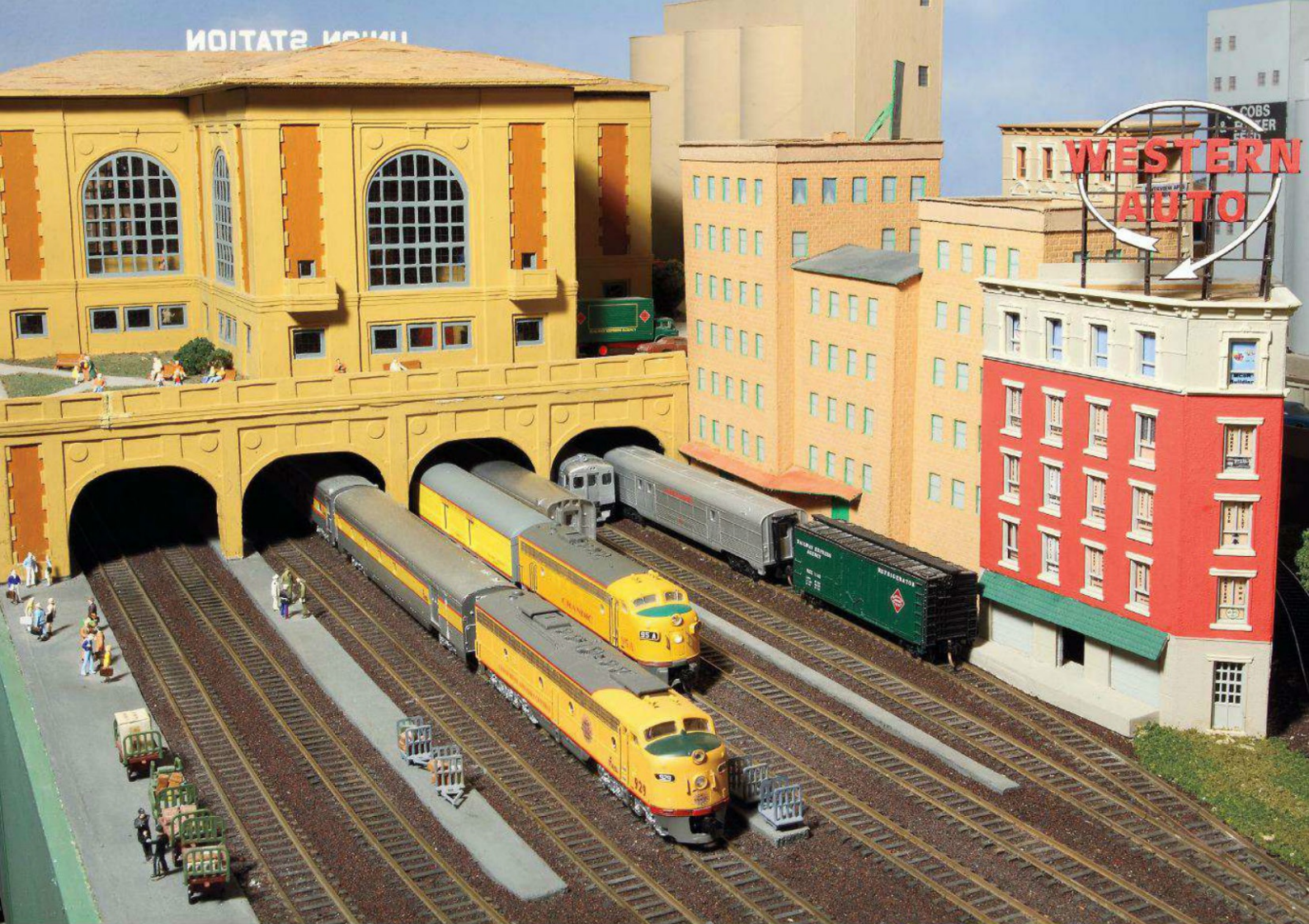
I still have the original metal-bodied Alco FA diesel and cars from the set purchased in 1968. All were converted to Micro-Trains couplers. The original

Revell-Rapido reefer still runs on the layout, but my original caboose was retired in 2011. The old FA now has a DCC decoder, but I only bring out the locomotive for special occasions.

Always a modeler

Scenery and model building are my first loves in the hobby. I still use the tried and true plaster or a sawdust/glue mix on screen wire as a scenery base with real dirt and ground foam turf applied on top. Each of my agricultural fields are built as a single "structure" rather than as a set of individual plants. I described how I do this in an article in the October 2012 *Model Railroader*.

Over 45 years I've modeled bridges and buildings with cardboard, computer data punch cards, balsa, plaster castings, and styrene, as well as with kits. Properly reinforced, most of the scratchbuilt balsa



6 The Crandic Route's passenger trains run to and from Kaysee Union Station, a model that Pat based on the facade of the former Denver & Rio Grande Western station in Salt Lake City. From left to right the lineup includes No. 20, the *Silver Cyclone*; No. 22, the *Morning Mail*; No. 23, the *Night Crawler* (southbound mail train); and No. 24, the *State Fair Special* (Budd Rail Diesel Car, or RDC).

7 Pat has developed techniques to model Midwestern crops in N scale more as structures than as individual scale plants. He described how he modeled various crops in the October 2012 *Model Railroader*.



>>Signaling the Crandic



8 Semaphores and searchlight signals give authority for mainline train movements on the Crandic Route. Pat and his friends scratchbuilt 16 three-position semaphore

signal heads by adapting an MR article on HO signals. Here a Crandic Grain Sweep is getting a “clear diverging” indication to take siding at South Creston.

The Crandic’s signal system can work either as Centralized Traffic Control (CTC) during operating sessions or as an Automatic Block System (ABS) for display running during open houses. The heart of the system is the Computer Automated Traffic System (CATS) developed by Rodney Black. This software, based on the Java Model Railroad Interface (JMRI), controls all the mainline signals and turnouts through the Digitrax LocoNet bus cables. The CATS software is available as freeware; for more information go to home.comcast.net/~kb0oys/.

On the Crandic, CATS provides a computer display that emulates a modern dispatcher’s panel with train locations and turnout-position indications. The dispatcher also has a second “Trainstat” screen that shows train and crew information. The dispatcher’s computer is interfaced with

the Digitrax DCS100 Command Station through a RR-CirKits Locobuffer-USB connection. [You can find RR-CirKits at www.rr-cirkits.com. – Ed.]

For train detection my friends and I installed five Digitrax BDL168 LocoNet occupancy detectors. For switch and signal drivers we used five Digitrax SE8C signal decoders.

The more than 50 searchlight signals on the Crandic were either made by Sunrise Enterprises (unfortunately no longer available) or scratchbuilt. We also scratchbuilt 16 operating semaphore signal heads by adapting Jeff Scherb’s HO construction article in the March 2003 *Model Railroader*. Bob Frager designed and built the linkage to operate the semaphores from Circuitron Tortoise switch motors using model airplane components. Bob also designed and built the linkage to drive powered turnouts with Tortoise motors. – P.L.

and cardboard structures I built in the 1970s and ’80s survive on the railroad today. However, more and more I use today’s highly detailed styrene kits to kitbash the structures I want.

The island layout allows certain buildings to be seen from all sides, and I’ve taken advantage of that by having some of them serve two purposes. Operators and visitors may see distinctly different facades depending on the directions they’re facing. See “Let buildings do double duty” on page 75.

Signals for a busy system

The N scale Crandic is computerized with Centralized Traffic Control (CTC) provided by CATS, the Computer Automated Traffic System. This software was developed by Rodney Black using the Crandic as his test bed. The CTC system drives 16 operating semaphores and more than 50 searchlight signal heads.

Dean Dickerhoof developed the car-routing software we call CARS (Crandic Automated Routing System) to help move cars. We switch about 260 cars

every two operating sessions. This doesn’t count unit coal, mail, or passenger trains. We usually run between 16 and 19 mainline trains.

Typical operations on the Crandic require a dispatcher, trainmaster, two yardmasters, and two switch crews in each of the two yards. The rest of the 14 or more crew members are conductors or engineers, depending whether we use 1- or 2-member train crews.

The dispatcher keeps the main line flowing while the yardmasters oversee



9 Crandic Route train 22, the *Morning Mail*, passes under Iowa Highway 148 leaving the depot at State Line. Pat contacted the Missouri State Police public relations office to find the authentic 1968 paint scheme for the police cruiser in the background.

the car routing. The yardmasters don't run switchers, but supervise the switch crews using CARS switch lists. The trainmaster calls crews according to a sequential train list, records the crew's assignment, prepares them to leave staging, and assists the dispatcher where needed. Since he's the glue that holds the session together, the trainmaster is usually a veteran Crandic Route operator.

The train crews pick up general instructions and wheel reports that tell them where their trains work and what to switch. I oversee the total operation as chief operating officer, although I have

been known to crew a hotshot train just to hassle the dispatcher and yardmasters.

Friends make it fun

After starting out in late 1960s as a lone wolf, I learned in the 1980s and '90s that camaraderie is the most important part of the hobby. And I learned scale doesn't matter, as I gain knowledge from every model railroader.

The Crandic Route is crew-built and operated. I would be remiss if I didn't mention those who, in addition to Rodney and Dean, have made major contributions to the layout: Nelson Bennet, Andrew Black, Kent Charles, Dan Delany, Bob Frager, Bob Hochstetter, Fred Jaeger, Bill and Chase Kepner, Brian Marotta, Travis Searls, Cameron Turner, David Vande Castelee, and Rich Virgin. The Crandic wouldn't be what it is today without these superb model railroaders and wonderful friends. GMR

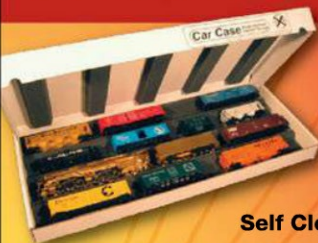
>>Meet Pat Lana

Pat rode the real

Crandic Route, the Cedar Rapids & Iowa City Ry. interurban, in a first grade outing, and that set him on his course as a model railroader and railfan. He's a life member of the National Model Railroad Association, is NMRA Master Model Railroader no. 208, and currently writes a bi-monthly column called "N-Visible" for *NMRA Magazine*. A graduate of Iowa State University, Pat spent his professional career at the local, state, and federal levels in community development and energy efficiency.



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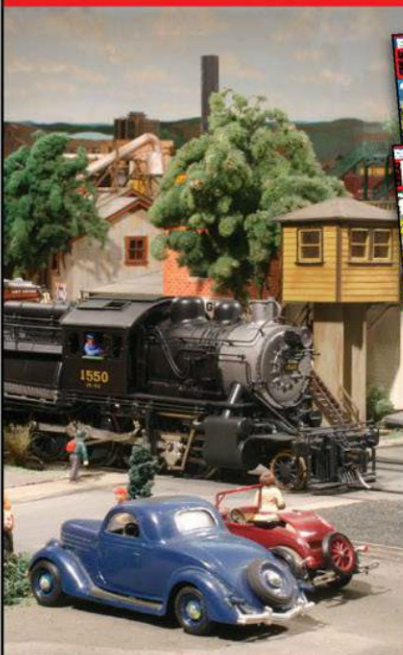
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1 As L&N class J-4 2-8-2 no. 1776 leads fast freight No. 45 over Brush Creek, class M-1 2-8-4 no. 1971 leads a solid train of empty hoppers. Perry's friend John Listermann painted the 1/8" tempered hardboard backdrop.

>> Moving coal on the Louisville & Nashville

Perry Simpson's HO scale layout showcases the 'Old Reliable' in the mid-1950s

By Lou Sassi • Photos by the author

Perry Simpson was employed by the Louisville & Nashville for a time in the early 1970s, and that work experience with the "Old Reliable" influenced his decision to model the coal-hauling lines of that railroad. However, he turned the clock back to mid-century on his 34 x 42 foot HO scale layout.

While the L&N was his main prototype influence, Perry notes that the Baltimore & Ohio, Norfolk & Western, and Southern Ry., among others, also played a part in the layout's design and development. Being a student of railroading, Perry has spent considerable hours reading timetables, train orders, train sheets, and books about full-size railroads. He also enjoys traveling with his wife to the areas he models to take reference notes and photographs.

A time of change

Perry's layout depicts the L&N in 1955 and '56, when the railroad's transition from steam to diesel was nearly complete. The class M-1 2-8-4s, dubbed "Big Emmas," were in their final days. Though the rest of the L&N's operations had been

dieselized, steam was still at work in the coalfields.

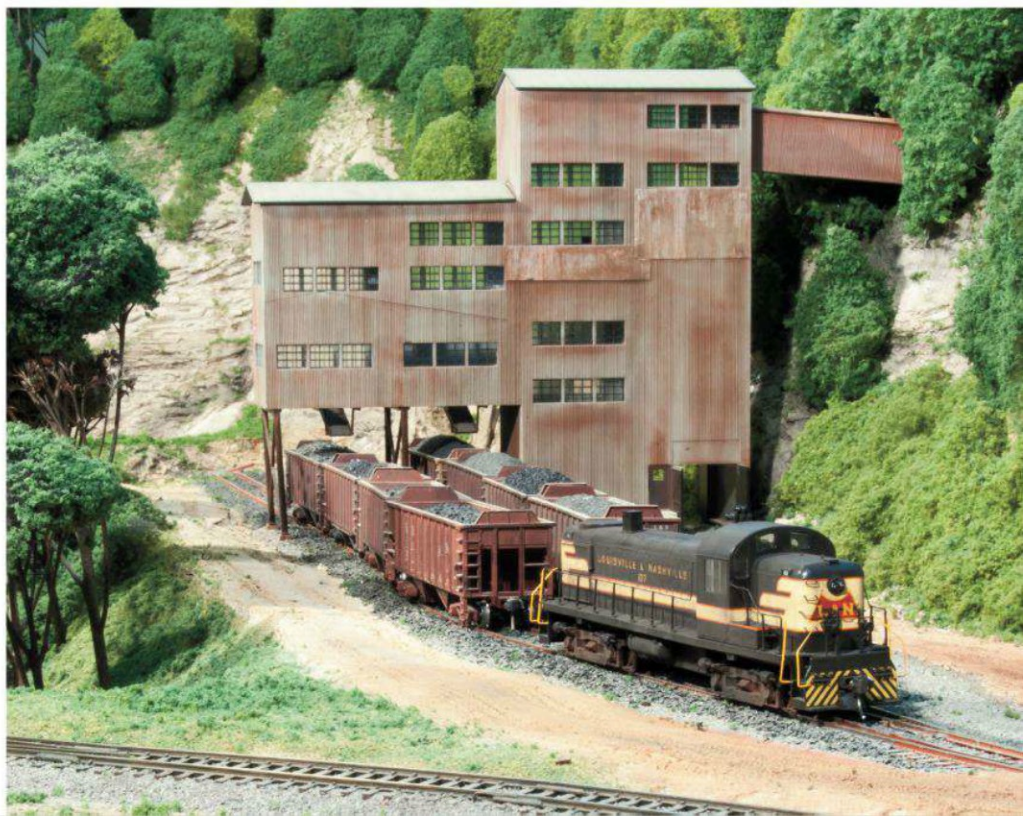
The model railroad represents the southern and eastern regions of Kentucky, as well as Cincinnati. The main focus of the railroad is moving coal from Kentucky mines to Cincinnati, a gateway into Ohio and Indiana and to points north and east. Fast freights and passenger trains are also a part of the operating schedule.

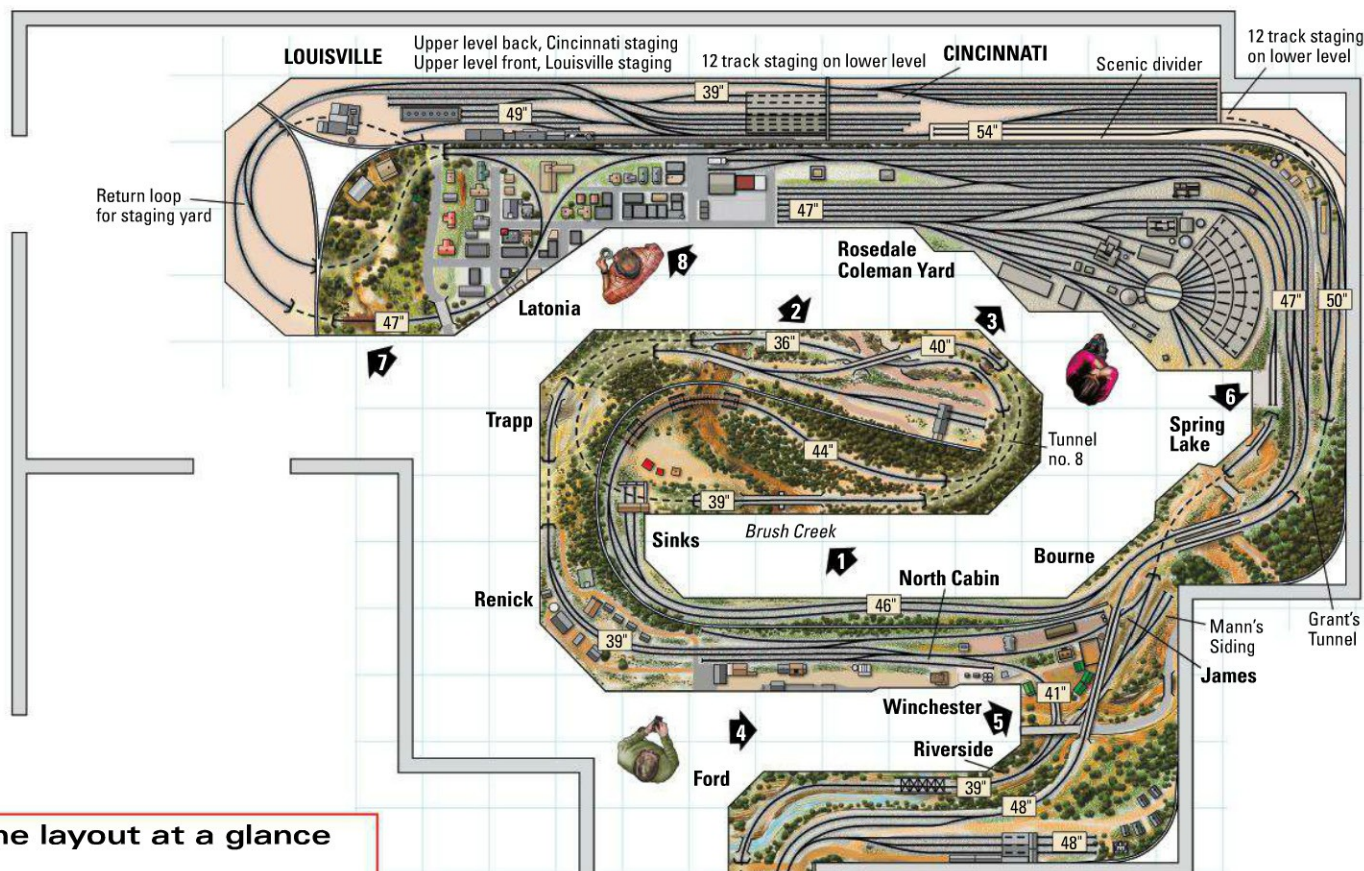
Combining old and new

After adding basement partitions for a workshop, crew lounge, and bathroom, Perry started work on the layout in October 2001. He designed the layout on the go to fit the available space. After planning the benchwork, Perry drew the track plan full size on the basement floor to see how things would look at 1:1 proportion.

continued on page 84

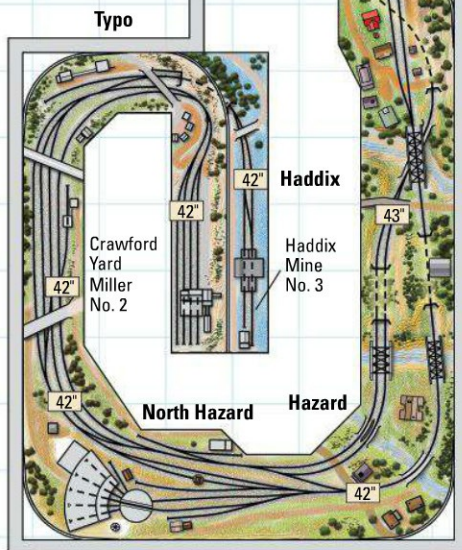
2 Louisville & Nashville RS-1 no. 107 looks after the lifeblood of the line as it switches coal hoppers at Sassafra Tipple no. 1. The action takes place on Perry Simpson's 34 x 42-foot HO scale L&N layout set in the mid 1950s.





>>The layout at a glance

Name: Louisville & Nashville
Scale: HO (1:87.1)
Size: 34 x 42 feet
Prototype: Louisville & Nashville
Locale: northern and eastern Kentucky
Era: 1955-56
Style: walkaround
Mainline run: 350 feet
Minimum radius: 32" (mainline), 28" (branchline)
Minimum turnout: no. 6 (mainline and yards), no. 4 (spurs)
Maximum grade: 2 percent
Benchwork: open grid and L-girder
Height: 42" to 55"
Roadbed: cork
Track: Atlas codes 83 and 100 flextrack
Scenery: Structo-Lite
Backdrop: 1/8" tempered hardboard
Control: NCE Digital Command Control

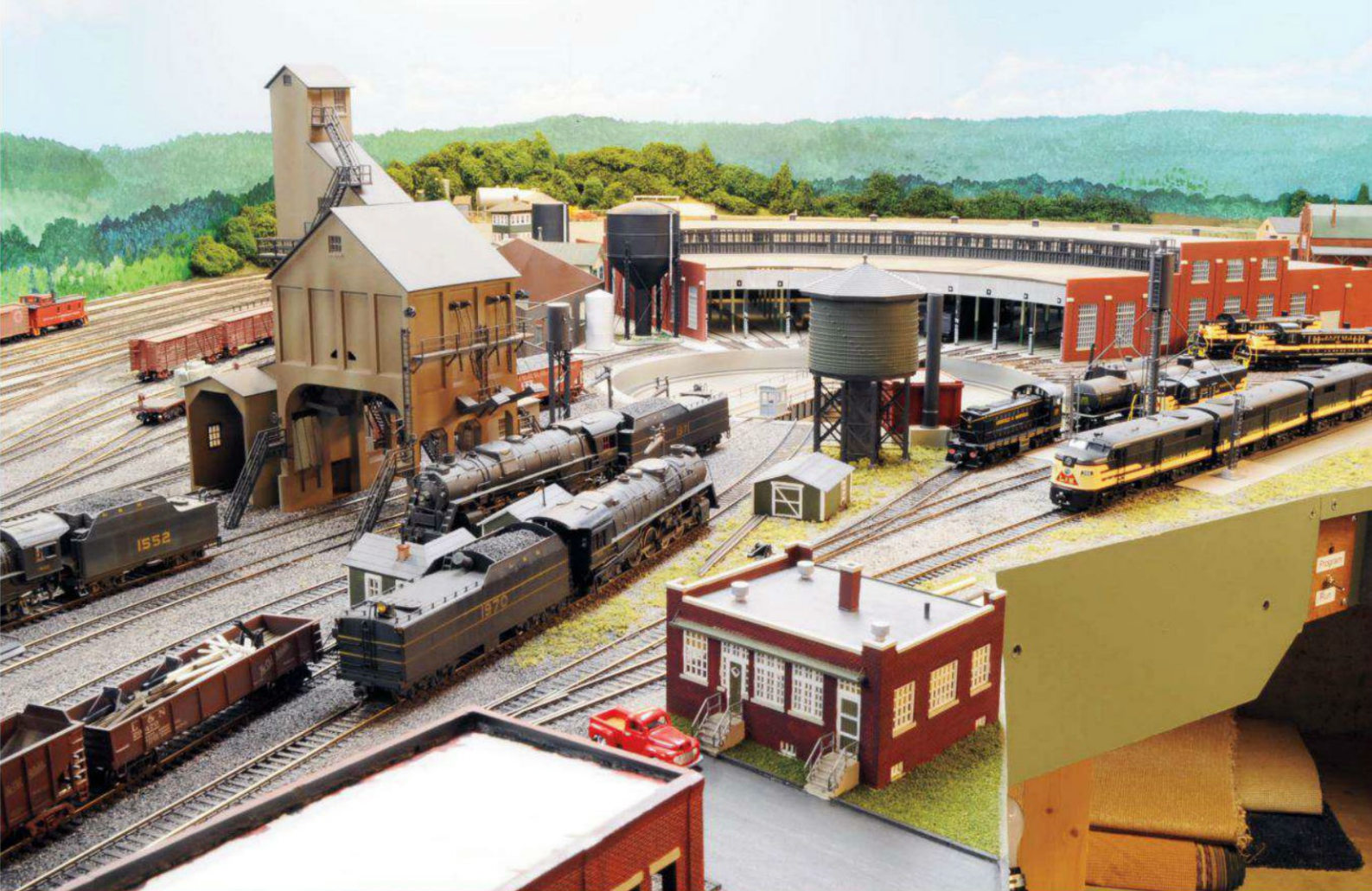


Louisville & Nashville

HO scale (1:87.1)
 Layout size: 34 x 42 feet
 Scale of plan: 3/16" = 1'-0", 24" grid
 Numbered arrows indicate photo locations
 Illustration by Jay Smith
 Find more plans online in the
 ModelRailroader.com Track Plan Database.

Now on ModelRailroader.com

See video of Perry Simpson's HO scale Louisville & Nashville in action. Click on Layout Visits under the Video tab at our website, www.ModelRailroader.com.



3 The roundhouse and locomotive servicing areas are busy at Coleman Yard. Perry's layout is set in 1955-56, near the end of the steam-to-diesel transition era.



4 This overall view shows Winchester (left) and the EK Branch leading to Hazard. Perry's model railroad features coal trains, fast freights, and passenger trains.



5 United States Railroad Administration Mikados, Mountains, and Pacifics were the backbone of the L&N steam fleet through World War II. L&N no. 1552, a light Mikado, is serving out its last days in coal service. The 2-8-2 is seen here at Winchester with empty hoppers.

continued from page 81

As work progressed, Perry added new layout room lighting and backdrops. The latter were made using 4 x 8-foot sheets of 1/8" tempered hardboard. Perry's friend John Listermann brush-painted the backdrop with acrylics.

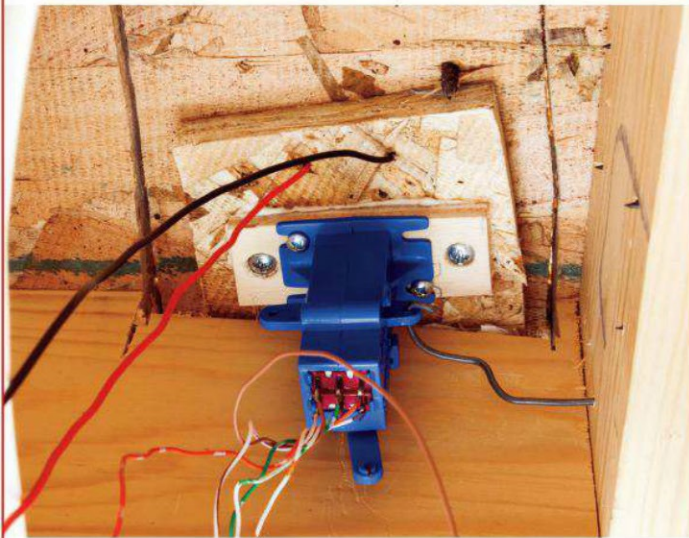
Though Perry's layout is big, he didn't have to build it all from the ground up. He incorporated 15 modules from his previous layout into the new L&N. These portions of the layout have L-girder benchwork. When Perry started work on the new portions

of the model railroad, he built open-grid benchwork.

When it came time to build the scenery supports, Perry turned to some tried-and-true methods. He used the cardboard strip method and extruded-foam insulation board, both covered with plaster-soaked cloth.

For the rock outcroppings, Perry spread Structo-Lite over aluminum screen and carved the rocks by hand. He used various shades of brown and gray acrylics to color the rocks and add highlights and shadows.

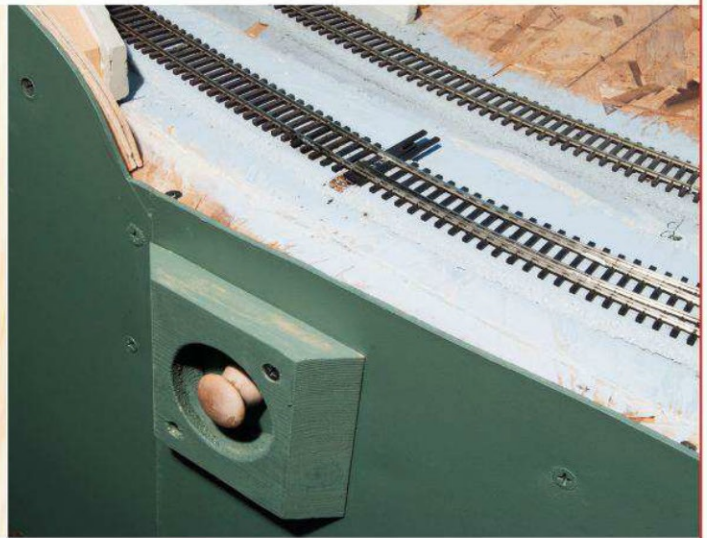
>>Build a manual turnout control



Perry installed an A-Line Blue Point manual turnout controller under the layout. He used a piece of $\frac{1}{8}$ " steel wire for the control rod.

Though my layout features electrically controlled mainline turnouts, many are manually controlled. On these, I've installed fascia-mounted controls using A-Line's (www.ppw-aline.com) Blue Point turnout controller as a starting point.

First, I installed the Blue Point per the manufacturer's instructions, as shown in the left-hand photo. Then I made a control rod from steel wire. I've had success with both $\frac{3}{32}$ "



To protect the control rod from being bumped, Perry made this plate from a piece of 1 x 4. He cut the clearance hole with a $2\frac{1}{4}$ " hole saw.

and $\frac{1}{8}$ " wire. I ran the wire from the controller through the fascia.

I made the mounting plate from a piece of 1 x 4. After beveling two of the edges at a 45-degree angle to eliminate the hard edges, I used a $2\frac{1}{4}$ "-diameter hole saw to cut a clearance hole. I then attached a wood cabinet knob to the rod with epoxy. Now operators can line turnouts without having to reach into the layout. — P.S.

Perry applied various colors and textures of ground foam from Woodland Scenics and Scenic Express to the scenery base. He used Woodland Scenics metal armatures and sedum plants as the starting point for his trees. He coated both with assorted colors of coarse ground foam.

The water features continue the theme of old and new techniques. Perry used Enviro-Tex two-part resin on some of the rivers and creeks. He also poured some of the water features using Woodland Scenics Realistic Water. This material is

6 Alco FA-2s 300 and 306 bookend FB-2 200 on train No. 46, seen here on the Cruise Creek Bridge. The bridge was kitbashed using parts from Atlas, Central Valley, and Micro Engineering. Perry cast the abutments and piers from Hydrocal with the help of friends Ray Schmidt and Bob Bales.



>> Spoon and paintbrush ballasting



Perry uses a plastic soup spoon to distribute ballast between the rails and on the shoulders. He keeps the ballast away from the working parts of turnouts.

Ballasting is a task that many modelers don't enjoy. But with a two items you most likely have in your house, you can quickly enhance the realism of your track.

I start by using a plastic soup spoon to distribute the ballast between the rails and along the shoulders. I'm careful to keep the granules out of the switch points and other working track components.

Then I use a 1" nylon paintbrush to spread the ballast between the ties and on the shoulders. I make sure there are no granules on the tie tops or in the web of the rail.



After the ballast is applied, he uses a 1" paintbrush to distribute the granules. He keeps the ballast off the tie tops and out of the web of the rail.

After the ballast is in place, I spray it with wet water (water with a few drops of dish soap added) and secure it with matte medium. An alternative approach is to use 70 percent isopropyl alcohol and commercial scenery glue such as Woodland Scenics Scenic Cement. Both of these techniques reduce the surface tension, making it easier for the glue to wick through.

After the matte medium is dry, I clean the railheads and run a test train through the freshly ballasted section. This lets me check for dirty track and any granules that might prevent equipment from rolling freely. — P.S.



7 An A-B-A set of Electro-Motive Division F7s emerges from a tunnel near Latonia. The dieselization of the L&N brought an end to the railroad's steam era by 1957.

ready to use straight from the bottle and doesn't have the strong odor that resin does.

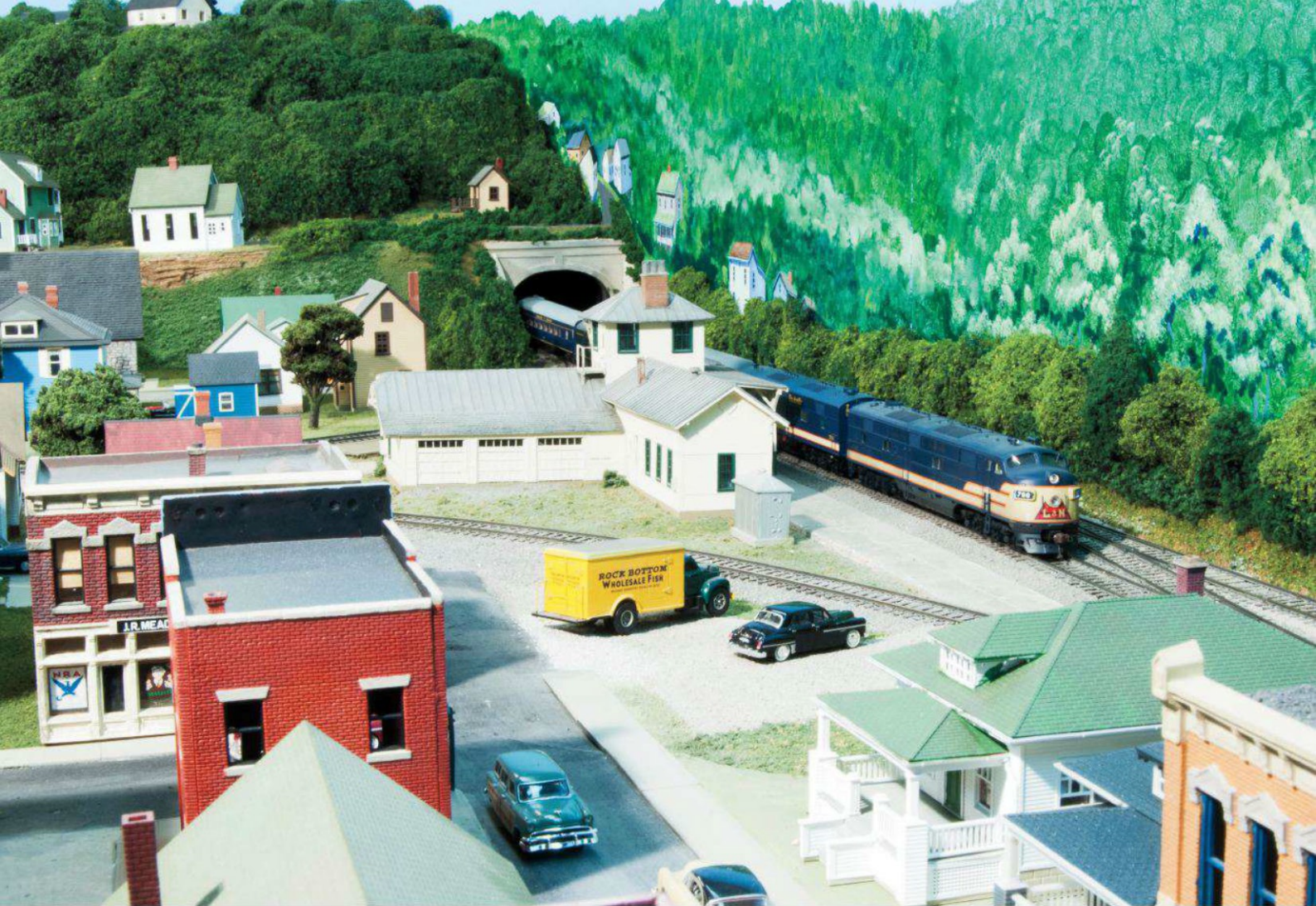
Structures and rolling stock

The structures on Perry's layout range from stock plastic to laser-cut wood kits.

He enjoys kitbashing structures so they fit the spaces he has to work with and don't look like those on other layouts. Perry also weathers his structures and adds signs and view blocks to enhance their appearance.

Although Perry built many of the structures, his friends have also made valuable contributions. John Roberts built the Latonia station. Perry worked at the full-size building during his days with the L&N. Bob Lawson, whose HO scale Southern Ry. layout was featured in *Great Model Railroads 2008*, built the coal tippie at Haddix.

In addition to buildings, Perry has also kitbashed several railroad and highway bridges. He altered a Central Valley bridge by curving the top chord and increasing the size of the side beams to make it appear heavier. Bridges on the L&N had to be robust to support the railroad's 2-8-4 locomotives.



8 Train No. 33 eases to a stop at the Latonia passenger station. Perry worked at the prototype station when he was employed by the L&N in the early 1970s.

Perry's locomotive fleet consists of 18 steam locomotives and 17 diesels, accurately reflecting the steam-to-diesel transition of the mid-1950s. He installed QSI or SoundTraxx Digital Command Control sound decoders in all of his L&N locomotives. He's yet to add sound to locomotives from interchange railroads.

In order to have his rolling stock accurately resemble the full-size counterparts, Perry works from prototype photos. He used an airbrush to apply a coat of grime to all of his locomotives and freight cars. On certain models, Perry applied extra weathering with powdered pastels.

Track in the staging yard and on the modules from Perry's previous layout is

code 100 flextrack, while all new track is code 83. The mainline turnouts are controlled electrically, while almost all others (the exception being a small section of Coleman Yard) are manually operated. Perry has installed semaphores, but they're non-operating.

Enjoying trains with friends

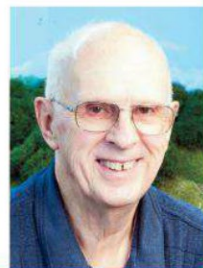
Perry started a round-robin operating group with Bob Bales in 1982. Since then, the group has grown to include John Listermann, Chuck Behymer, Terry Luginbuhl, Jim Gaines, Gary Orcutt, Tim Schereck, and Tim Cook.

Operations consist of moving coal trains, switching yards and industries, and running freight and passenger trains. A typical session keeps six to eight operators busy for two to three hours.

Perry feels he has reached his goal of having a well-built, operating model railroad that brings back fond memories

>>Meet Perry Simpson

Perry Simpson lives in Independence, Ky., with his wife, Terri, and their dog, Pebbles. They have four grown children, two grandchildren, and two great-grandchildren. He is a retired tool and gauge inspector for Ethicon Endo-Surgery, and is a part-time school bus driver.



of days past while allowing he and his friends to enjoy some relaxing time together. After visiting Perry and experiencing his railroad first-hand, I couldn't agree more. GMR



Though the scale changed from N to O, the Rocky Mountain theme remains on this narrow gauge layout

By Ted Brandon • Photos by Stephen Garey

The last time my layout was in *Great Model Railroads*, things were a bit different. Back in the 2001 issue, the railroad was known as the Rio Verde & Western and I was modeling in Nn3 (N scale trains running on Z scale track). Since then, I've simplified the railroad's name to Rio Verde, torn up the Z scale track, and started modeling in On2½ (often called On30 by narrow gauge enthusiasts). So why the change to On2½?



When I turned 80, I wanted to switch to a larger scale. The question was, which one? HO narrow gauge was still too small. The variety of ready-to-run equipment I wanted wasn't available in Sn3. Though enticing, On3 was way too expensive. Then I went to a train show in Allenton, Pa.

At the show, I came across a Bachmann On2½ train set. Inside was a 2-6-0 lettered for Colorado & Southern, three matching passenger cars, HO scale track, and a small power pack. The train stole

my heart. It oozed charm, and it was BIG! Here was the answer to my scale-changing quest.

I set up the train on the dining room table and ran it for days. What impressed me was that it was large and surprisingly heavy. Furthermore, the cost was affordable, the equipment was prototypical, and the locomotive ran well throughout its speed range.

The decision to switch scales was wrenching. In my basement was the

1 Rio Verde no. 8, a 2-8-0, leads the morning passenger local up the 3-percent grade into the hills. The scene takes place on Ted Brandon's On2½ Rio Verde RR, which he built on the remains of his former Nn3 layout.

railroad that had appeared in GMR. How could I think of destroying it?

Then came the "aha!" moment. I wouldn't destroy my masterpiece. No, I would convert it to On2½. Fortunately,

>>The layout at a glance

Name: Rio Verde RR

Scale: On2½ (1:48 narrow gauge on HO gauge track)

Size: 15 x 24 feet

Prototype: freelanced

Locale: Rocky Mountains

Era: 1890 to 1930

Style: walk-in

Mainline run: 150 feet

Minimum radius: 16"

Minimum turnout: no. 4

Maximum grade: 3 percent

Benchwork: open grid

Height: 40"

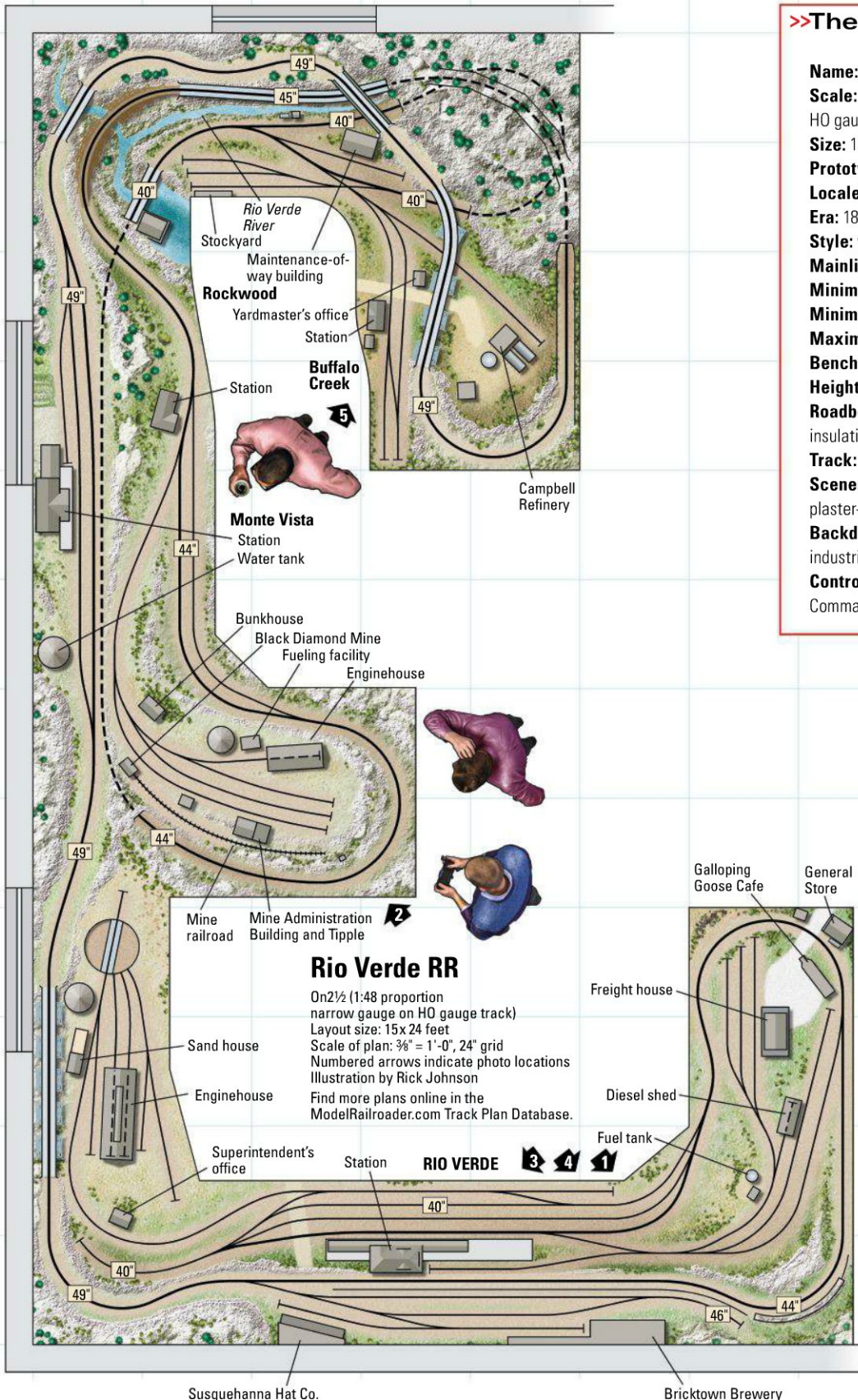
Roadbed: plywood and extruded-foam insulation board

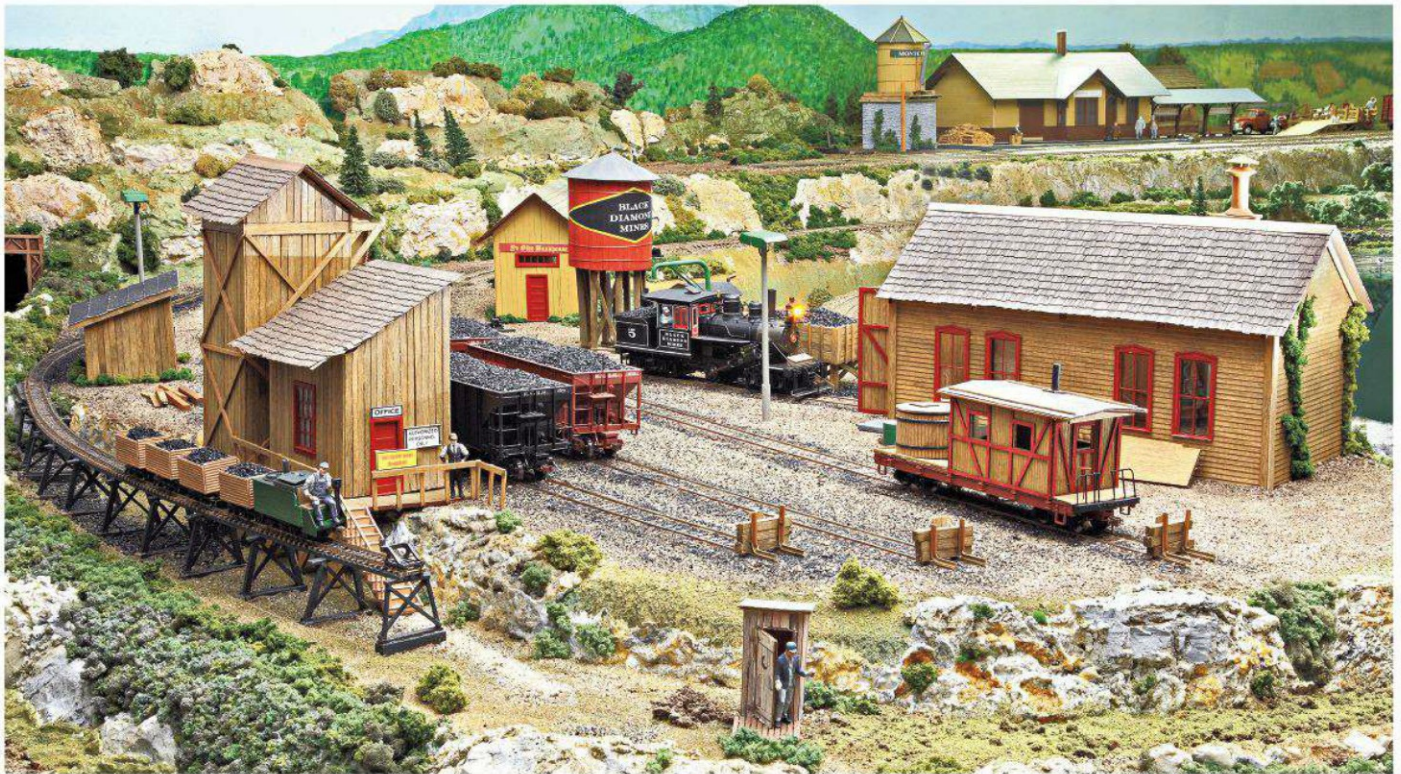
Track: code 83 flextrack

Scenery: chicken wire covered with plaster-soaked paper towels

Backdrop: painted mountains and industrial areas

Control: NCE Corp. 5-amp Digital Command Control





the curves on the layout were generous enough to be replaced by HO scale flextrack, provided I could gain enough clearance from the scenery and enlarge the tunnel portals to accommodate the 2-6-0s and 2-8-0s I planned to use.

Obviously, going to a scale with 37 times the physical volume of N scale equipment presented challenges, but one problem in particular could be averted. I could keep most of the rock scenery and hand-painted background, although my N scale pine trees would need to be replaced. Once tall, in O scale they'd hardly be more than seedlings.

The Rockies in a basement

The new Rio Verde is a walk-in layout in a 15 x 24 foot basement. The model railroad features two peninsulas – one accommodating a coal mine, the other a refinery. It's fairly close quarters in the basement for more than three or four people at a time, so visitors are invited down in shifts.

The far corners of the layout are hard to reach, so I didn't place anything there requiring operating or servicing, such as turnouts. But I violated my own rule with the turnout near the General Store.

The benchwork consists of 1 x 4s with support braces that extend down from the layout's front edge into the angle formed by the floor and wall. This eliminates the risk of someone kicking or tripping over vertical supports.

Another safety measure I included was low strips of Lexan along the edge of the layout. This prevents accidental bumps from sending equipment crashing to the floor.

The Rio Verde is set between 1890 and 1930 in the Rocky Mountains of Colorado. The freelanced railroad follows the operating practices of full-size lines that operated in the region.

The narrow gauge line's base of operation is its namesake. Rio Verde is home to an engine terminal and yard. If straightened out, this U-shaped complex would be 400 scale yards long, respectable even on a prototype narrow-gauge road.

The layout's mainline run is about 150 feet, but it feels longer because of the slow speeds of narrow gauge trains. It takes an out-and-back turn approximately 15 minutes to make a trip running at 12 to 15 scale mph. In addition to obeying speed limits, engineers must follow the operating rules for ringing the bell and blowing the whistle.

2 The Black Diamond Coal Mine is a major industry on the Rio Verde and rates its own switcher, a Bachmann Climax geared locomotive. The mine train at left runs on N scale track.

Crews are also kept busy switching industries along the route. One of the biggest customers is the Black Diamond Coal Mine. The industry has its own Climax locomotive for spotting cars left by the railroad.

Coal moves from the mine to the tipple on an 18"-gauge line. The 2-axle dump cars are pulled by a mini locomotive I built on an old N scale mechanism. All of the mine structures are scratchbuilt. The single-stall engine-house is a Deerfield River laser-cut wood kit.

I designed the track plan to provide operating challenges, something like what I experienced as a brakeman on the Reading after World War II. At Monte Vista, the track arrangement allows for extensive switching to make up freight and passenger trains, as well as storing all types of cars and moving locomotives around the engine terminal. At the other end of the layout, things are made difficult for locomotives running around



3 The morning passenger local is ready to depart the Rio Verde station. Though the trains on Ted's layout are O scale, they run on Atlas code 83 HO gauge track.

4 Rio Verde no. 7, the railroad's only diesel locomotive, spots three passenger cars at the station. Ted built the switcher using a Boulder Valley Models shell and Bachmann HO scale chassis.



their trains. The freight yard also has some tight clearances.

O scale trains, HO scale track

The choice of HO track to represent 30" gauge goes back to the On2½

pioneers, but surely Bachmann formalized it when it entered the market. Today, the only question is whether to handlay or use a commercial product. At 80 years old, I didn't think handlaying track was a viable option. None of the On2½

commercial track appealed to me, not only because of cost, but also because a friend had just given me hundreds of feet of new Atlas HO scale code 83 flextrack and Customline turnouts. Code 83 is the mid-range weight I would have chosen.



Yes, the ties are a bit on the short side and spaced too closely, but that is hardly noticeable once the ballast is down.

Once I'd removed the N and Nn3 track, laying the HO track was fairly simple. However, it required a degree of precision I didn't expect. Among my new locomotives was a Denver, Rio Grande & Western C-16 Consolidation from Broadway Limited. This 2-8-0 proved extremely fussy on the rails. It turned out that with its close-to-scale flanges, the engine would walk off the tracks with the least unevenness. I was forced to shim the rails with thin manila folder material and toothpicks.

Among my inherited Atlas track, I discovered a pair of three-way turnouts. These turned out to be very useful in tight places and permitted interesting track arrangements typical of narrow gauge operation. The other turnouts are no. 4s

>>Coffee stir stick structures

Few suitable O scale structures were available for the Rio Verde, so my friends and I scratchbuilt all but a handful of buildings. Our method is simple and cheap: recycled cardboard, wood coffee stir sticks, and commercial windows and doors.

We start by building a full-scale cardboard shell using recycled mailing boxes. Building the shell confirms that the building will fit in the scene.

Once we know the building will fit, we cut out the door and window openings with a sharp no. 11 blade. Then we attach the wood coffee stir sticks (4" scale width) to the cardboard and install the windows.

The final touches include weathering the stir sticks with various stains, painting the window and door frames, and installing the window glazing. We use assorted shingles from Paper Creek Model Works for the roofing material.

Winthrop's General Store and the Black Diamond Mine, built by Bob and Marty, respectively, were assembled using this technique. The finished buildings look great and prove the value of this technique. — T.B.



Ted scratchbuilds many of the structures for his layout using recycled mailing boxes and wood coffee stir sticks. He uses commercial door and window castings from Grandt Line and Tichy Train Group, among others.

and a couple of no. 6s. I use Caboose Industries hand-operated ground throws, since I follow my trains around the layout.

Scenery and structures

The Rio Verde's scenery consists mostly of mountainous terrain. I built the Nn3 Rio Verde & Western with removable mountain sections. This proved useful when the Nn3 track under the mountain had to be pulled out, the three-level helix roadbed removed, and room made for the single-level On2½ return loop.

There are a variety of structures on the layout, many of which were scratchbuilt. Above the main station is the Bricktown Brewery and the Susquehanna Hat Co. Both are low-relief structures that freed up space for the small freight yard in front. The limited siding lengths require operators to come up with creative switching solutions.

The main station building, shown above left, is an Atlas O scale kit with two attached platforms. The two-stall enginehouse is built from a laser-cut wood kit designed at my suggestion by Ed Fillion, owner of Deerfield River Laser.

The 12" diameter turntable is a Walther's HO scale model powered by an Arnold Rapido DC power pack. The pack's rotating speed knob has built-in direction control. Turning the knob either way causes the turntable to follow suit, making fine alignment possible.

I take pride in the engine terminal's water tank. I scratchbuilt it by attaching coffee stir sticks to an 11½ ounce coffee can. (See "Coffee stir stick structures" above.) The tank rests on a wood frame, and the ladder is a piece of Z scale track with the tie ends removed. I used black sandpaper for the roof.

Locomotives and rolling stock

An outside-frame Consolidation, a Ten-Wheeler, and a 2-6-0, all from Bachmann, along with two Broadway Limited 2-8-0s, constitute the primary power. All of the steam locomotives have sound.

The railroad's only diesel is a free-lanced 44-tonner. The model uses a Boulder Valley Models shell and a Bachmann HO chassis.

An unusual piece of equipment is my kitbashed Doodlebug. I built this model



5 A pair of railfans greets the *Mountaineer* as it eases to a stop at Buffalo Creek. The station is at the end of the line, so the 4-6-0 will use the crossover to run around its train for the return trip.

with a modified Bachmann combine body and a Precision Craft Models Galloping Goose mechanism. The Doodlebug never fails to delight visitors with its sound effects. Just hearing the labored start-up sequence makes me laugh.

With the exception of brightly colored refrigerator cars, all of my freight cars were bought undecorated. I used a computer to print letters and numbers, matching the car's basic color. For the green passenger cars, I covered up the original Colorado & Southern lettering with computer-generated yellow lettering on a red background.

Control system

I grew up with control panels, double-pole double-throw (DPDT) switches, and the cab control system with miles of wire required to make it all work. My friend

Bob Morrisette insisted Digital Command Control (DCC) was the way to go. No DPDT switches, no blocks, no miles of cables. I would have preferred to jump out of airplanes again rather than learn this new stuff. But Bob persisted, and I'm very happy with the result. The new Rio Verde is equipped with an NCE Corp. 5-amp DCC system using one wireless and one tethered throttle, enabling us to operate two trains at a time.

Running trains with friends

Bob and Marty Flanagan are good friends who share my model railroading enthusiasm. I first met them 20 years ago when I was teaching an adult night school course on model railroading. Without these two, I wouldn't have had the courage to attempt this new layout. They arrive each Tuesday morning to help work on the Rio Verde.

I've also made several friends around the world online in the On30 group at Yahoo! This is a friendly consortium of "muddlers" who don't have any rivet-counting bones in their bodies. The rule is simple: Let's just have fun!

>>Meet Ted Brandon

Ted is a retired U.S.

Army officer with 26 years of service, including combat as a paratrooper in the Pacific during World War II. In addition to his modeling skills, Ted wrote an early description of what would eventually become N scale in the February 1964 issue of *Model Railroader*. Ted lives in Wyckoff, N.J., and invites modelers to visit the new Rio Verde RR. You can reach Ted via e-mail at tedOn30@aol.com.



And that's my goal on the Rio Verde. It took courage to make the switch from Nn3 to On2½, but I'm glad I did. The big ready-to-run trains look great rolling past scratchbuilt structures and Rocky Mountain scenery. GMR

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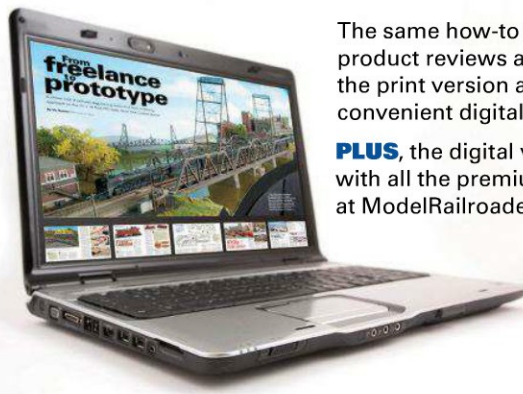
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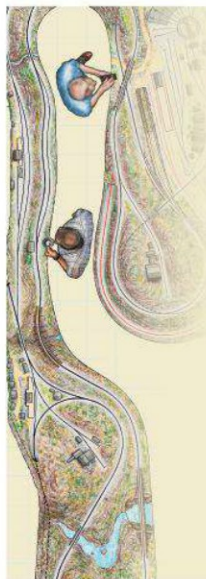
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You, too, can build a great model railroad

By Lance Mindheim • Photo by the author



Whenever I listen in on discussions about wonderfully executed model railroads I notice a common undercurrent, a theme running through the conversation. As the individual or crowd admires the creation, they seem to be shaking their heads and thinking, “Unbelievable, I could never do that.”

The belief seems to be that the builder has something they don’t – skill, money, or decades of experience. Sadly, they view the necessary tools as something that they not only don’t have now, but likely never will.

The reality is exceptional results are achievable by even those relatively new to the hobby. In order for those exceptional results to be achieved, however, there has to be a desire to achieve them, and more importantly, a very clear understanding of the aspects that contribute to building an excellent model.

The elements that contribute to an excellent model railroad are within reach of anyone of any experience level, and don’t involve large outlays of money. The three most important are scene composition, color selection and weathering, and selecting the correct materials. Running close behind are basic neatness, applying convincing grass and brush, keeping tree shapes appropriate, and finally, avoiding distracting backdrops.

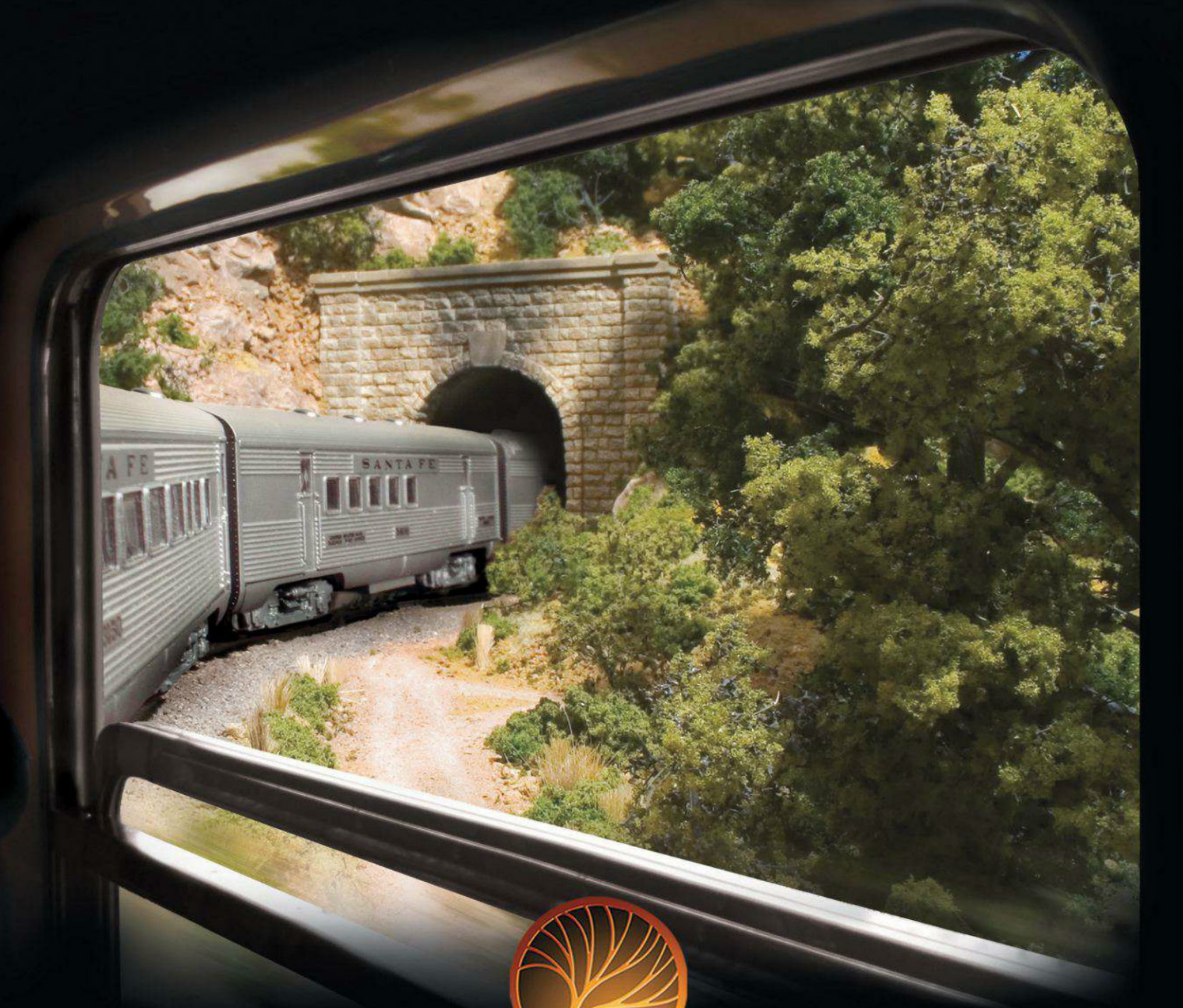
Scene composition, color selection, and weathering are the keys to success on Lance Mindheim’s HO scale CSX Downtown Spur, featured in *Model Railroad Planning 2009*.

Scene composition is at the top of the list and has to do with what elements we choose to put in our scenes, their size and shape, their location, and of critical importance, the spacing between them.

It’s the spacing issue that gets model railroaders in trouble. In an attempt to incorporate more elements than space allows, they end up placing them too closely together.

In terms of the items we select for our scenes, self-discipline is the key. The order of the day is to model what is most commonly found as opposed to the extraordinary. For example, three single-story off-white clapboard row houses viewed as a combination are often more convincing than an architecturally magnificent Victorian mansion.

So, as you look through the pages of this issue, think of how you can direct your efforts where they will have the most impact. You’ll find that creating a great model railroad for yourself is more attainable than you might think. GMR



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