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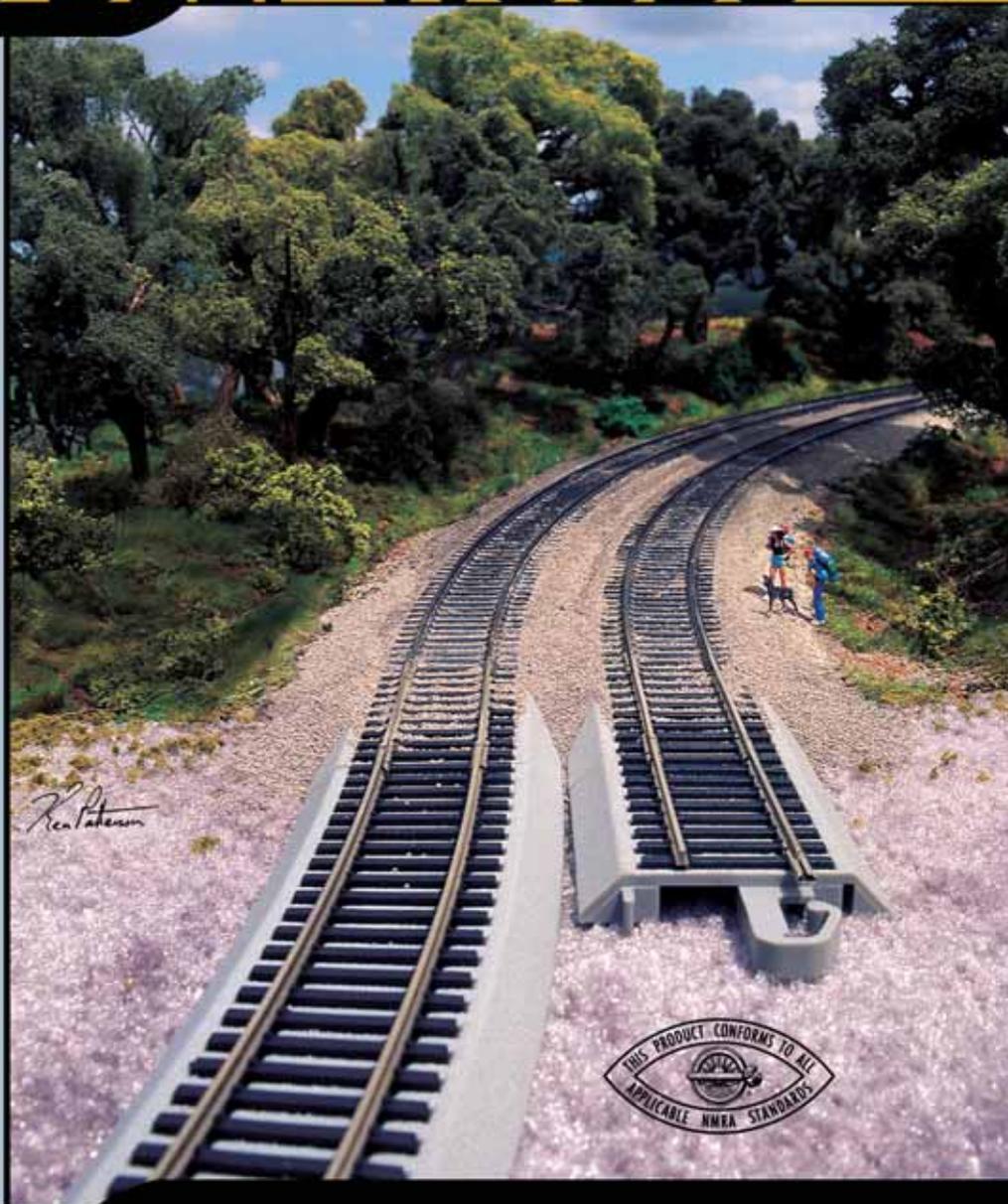


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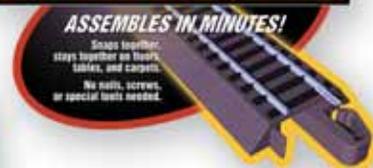
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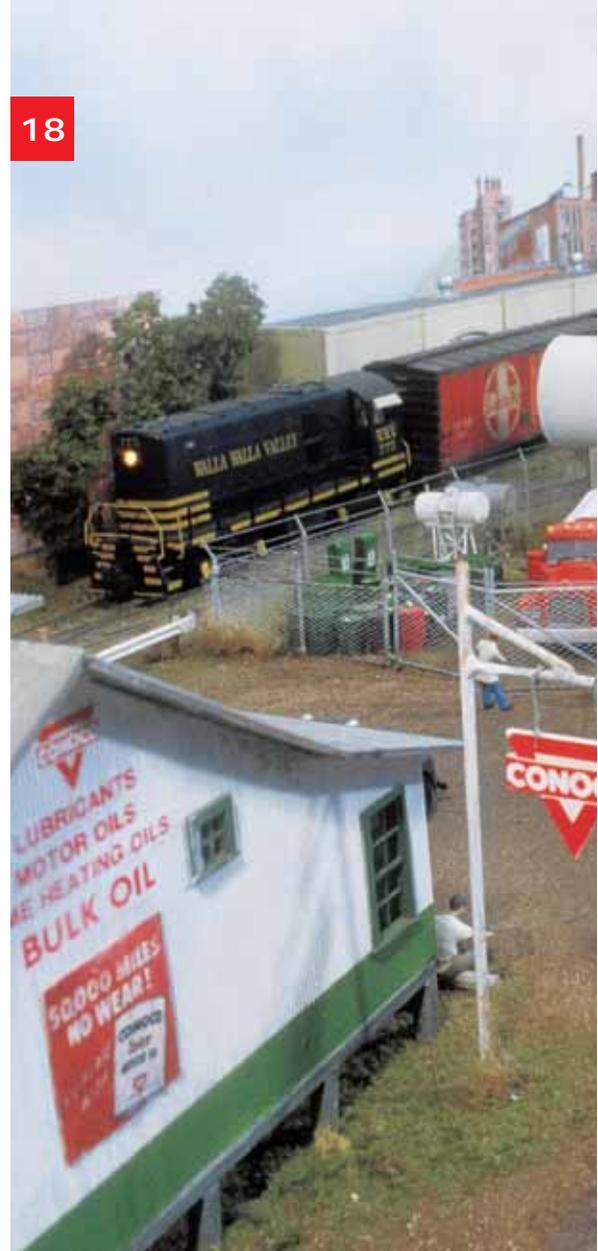
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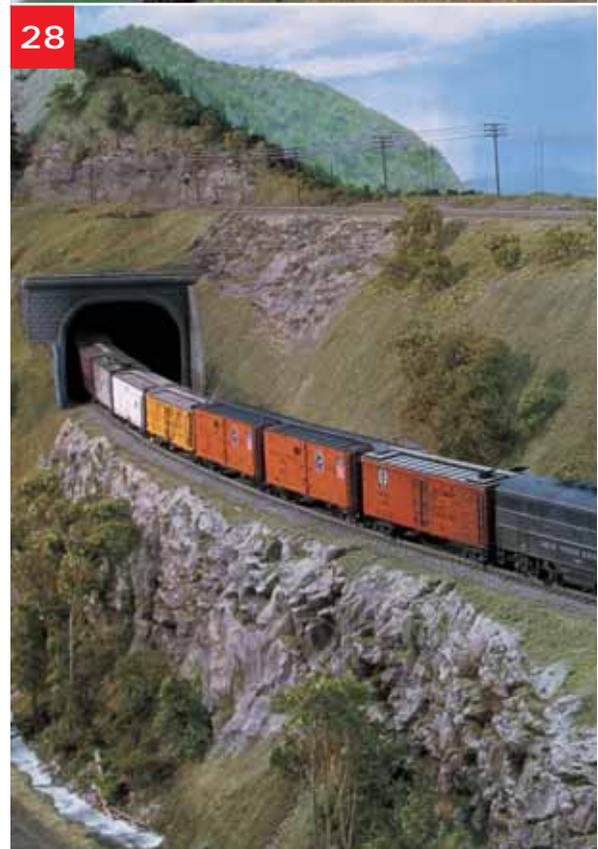
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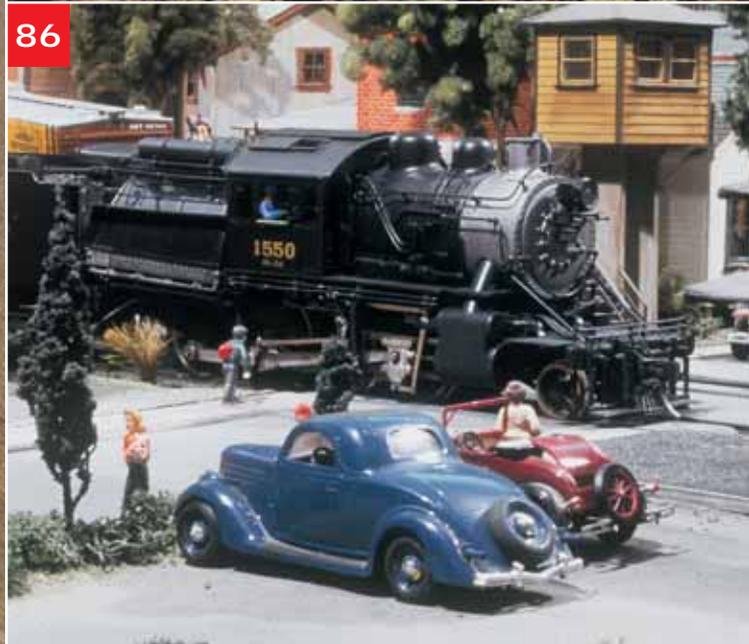
Santa Fe 51-class Alcos lead the *Fast Mail Express* past Fifth Street Tower on Ted York's HO scale Cajon Pass layout. Ted York photo

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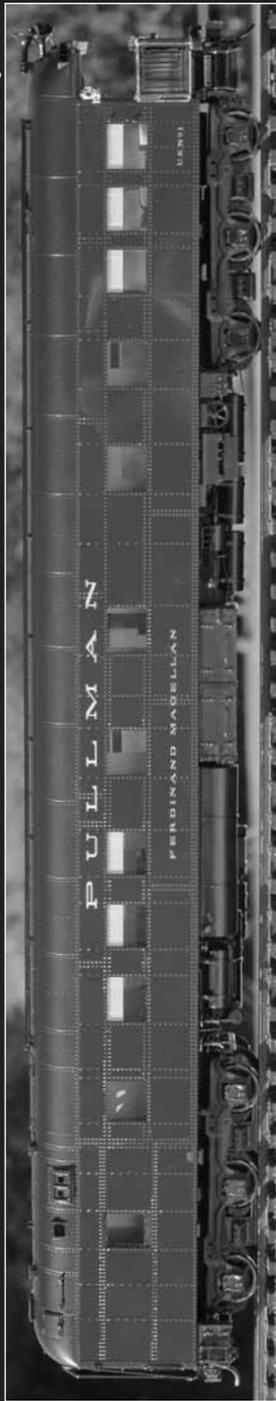
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# The President Travels By Train . . .

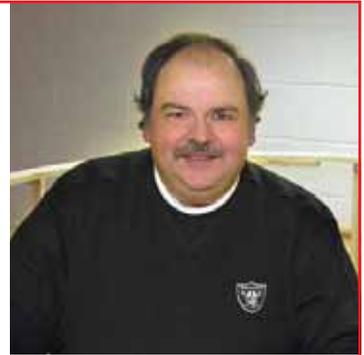
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## GREAT Model Railroads 2005



### >> Why not get started? \_

**All of the layout builders** we're introducing in this edition of *Great Model Railroads* started with model railroad dreams of various sizes. Ted York, author of this year's cover story, points out that dreaming is a big part of the fun of model railroading. The lengths some hobbyists go to realize their dreams is often amazing, as I'm sure you'll agree when you read the story of Jack Ozanich's Sandy River & Clear Lake Ry., beginning on page 58.

There can be drawbacks to dreams, however, if they become so ambitious that they inhibit action. As *Model Railroader* author Lance Mindheim recently wrote in a letter to the magazine's Railway Post Office column, it's a misconception to associate the idea of a "dream layout" with large size. How much better it would be, Lance proposed, if we dreamed of layouts we could actually manage to build.

In that vein I think Blair Kooistra's "Washington shortline adventure" on page 18 deserves your special attention. Blair found inspiration and opportunity on a manageable scale, and produced a layout that's a dream of fine modeling and realistic operation. Why don't you get started on your model railroad dream?

*Andy Sperandio*

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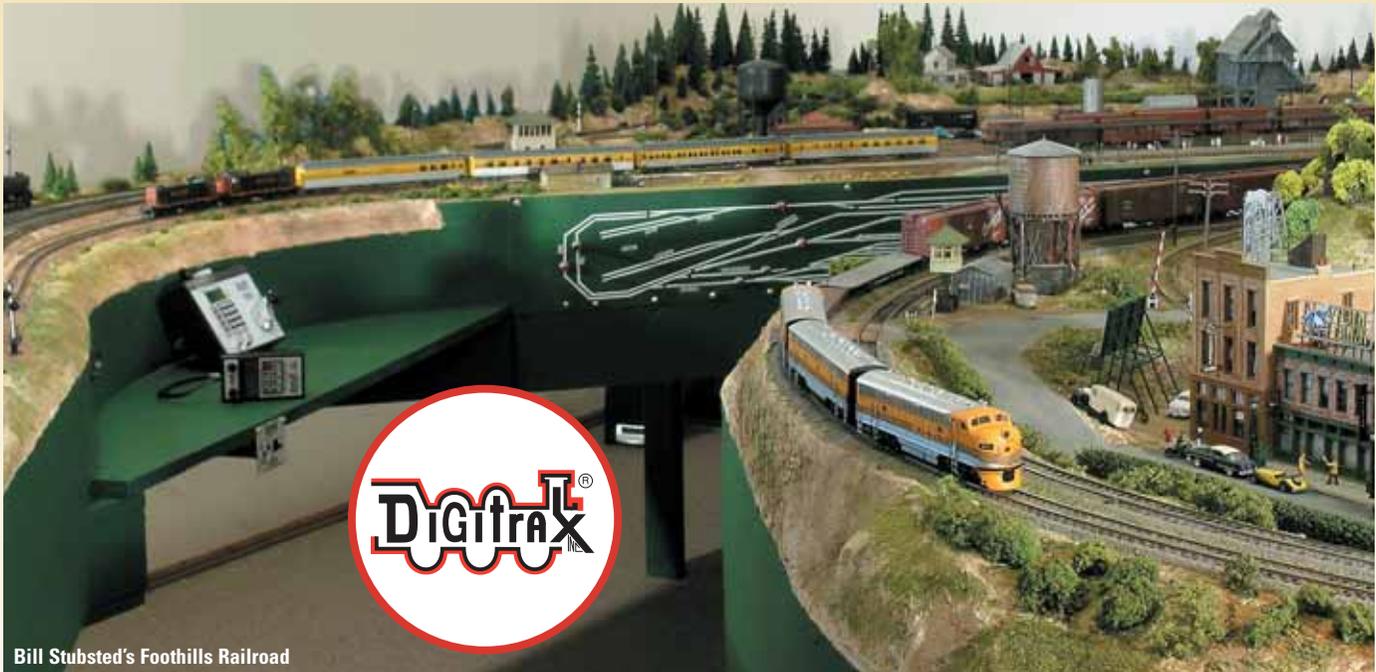
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# >> Railfan's paradise in Southern California

Santa Fe's Cajon Pass line in HO scale

By Ted York • Photos by the author

**Northbound Interstate 15** out of San Bernardino, Calif., climbs a hill before it descends back into the canyon called Cajon [Say "ka-HONE." – *Ed.*]. Below the highway, the eastward track of the former Atchison, Topeka & Santa Fe two-track main line diverges towards the well-known horseshoe bend called Sullivan's Curve. My first visit to Cajon Pass found me and three of my children in a cheap rental car heading down the north side of that hill when we glimpsed our first train.

A mixed freight in Southern Pacific livery was snaking its way down the former SP main line, built through the pass in 1967. Only a moment later we spotted a Burlington Northern Santa Fe (BNSF) "pig" train in the distance, coming downgrade towards Cajon station on the south track, formerly the westward Santa Fe main line. As we exited the freeway I spotted yet another BNSF train, this one struggling uphill on the north track, the Santa Fe's old eastward track.

I turned the car back under the freeway and pulled over on the shoulder of a once highly traveled Route 66 (now called Upper Cajon Blvd.). We jumped out of the car in time to watch all three trains pass in review before us.

I was hooked. I'd been looking for a prototype railroad to model, and this was going to be it. I would be modeling the First District of the Santa Fe's Los Angeles Division, better known as the line over Cajon Pass.



**1** Right: Santa Fe no. 19, the west-bound *Chief*, emerges from Big Cut to cross Route 66 on its way to San Bernardino, as a Green Fruit Express (GFX) waits in the Alray siding in the foreground. Ted York's HO railroad reproduces the action that attracted so many railfans to Cajon pass in the 1940s and '50s.

**2** Left: Two 2-10-2s push hard on the rear of an eastward freight crossing Highway 138. Ted modified American Limited wig-wag kits to build the grade crossing signals.



## Reservations overcome

Before my visit to Cajon Pass I had reservations about modeling that area. When I'd imagined my dream layout, I thought about deep, rocky gorges; steep, granite mountains; rushing trout streams; lots of tunnels; and other features seemingly conceived as prototypes for a dramatic model railroad. You know the image, Donner Pass or Feather River Canyon in California, or the San Juan Mountains of Colorado. The word "Cajon" brought only images of sand and sagebrush.

Another reservation I had was about operation. I wanted a layout that would support group operating sessions with family members and friends. From San Bernardino to Summit, the aptly named top of the grade, the prototype is virtually all mainline railroading. There were, and still are, only a few industries for local freight trains to serve. With no experience at operating a model railroad, I had to depend on what I'd read, and that told me a lot of switching was a requirement. I worried that, other than just running trains from one end of the line to the other, a First District layout would have little to offer in terms of operation.

But my concern over those two issues faded as I stood near the tracks with my children watching three freight trains slowly winding through a background of tan and pink sandstone formations highlighted by carpets of vegetation in various shades of green and gray. The scenery was more appealing than I'd imagined.

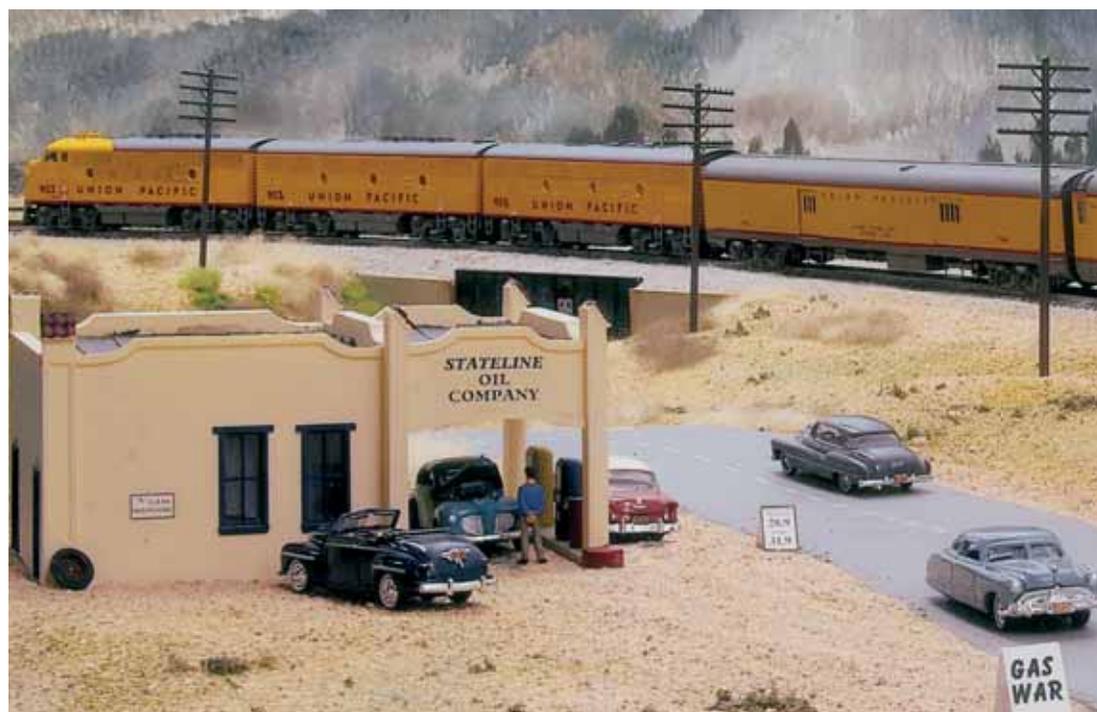
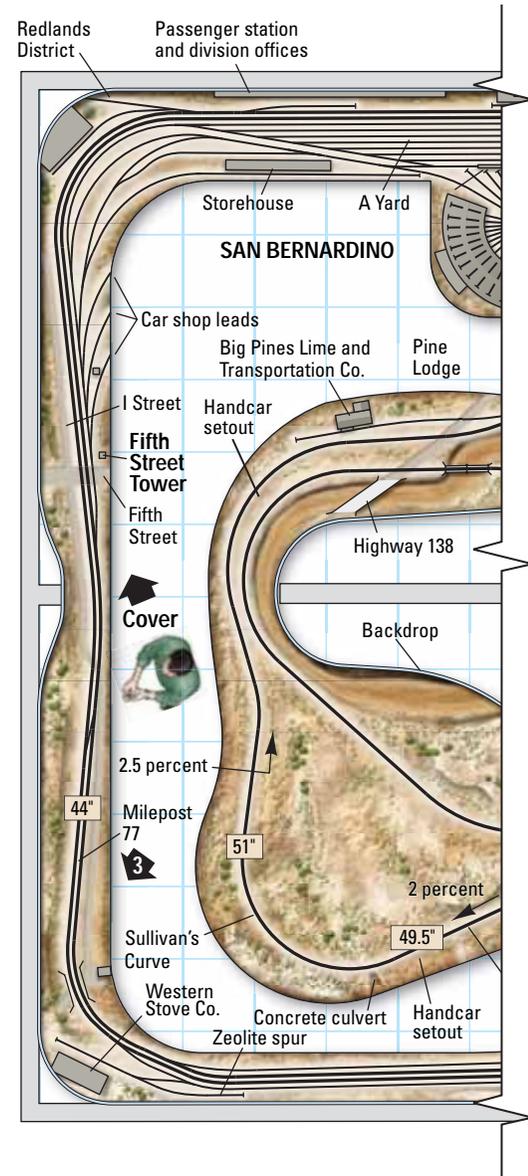
A creek that the railroad follows as far as it can provides water for a good many trees in the canyon. The tunnels and the cuts around them are quite interesting, and it's obvious that the cuts are shaped not only by the men and machines that dug them, but by the yearly rains washing out the soft, sandy soil to form odd patterns of erosion. The rock formations around Sullivan's Curve and Pine Lodge are spectacular, laced with lines in subtle hues of color. There are plenty of bridges, cuts, and fills. Finding interesting scenes to model in the pass wasn't a problem at all. The challenge was deciding what areas to exclude to compress the prototype into my basement.

I wouldn't find answers to my questions about operation until I began researching the late 1940s to early 1950s period I wanted to model. Still, I was so enamored by what I saw on my first visit to

## >>The layout at a glance\_

**Name:** Cajon Pass  
**Scale:** HO (1:87.1)  
**Size:** 26 x 56 feet  
**Prototype:** First District of the Los Angeles Division, Atchison, Topeka & Santa Fe  
**Locale:** Southern California  
**Period:** 1947-1957  
**Layout style:** linear walkaround  
**Layout height:** 44" to 66"  
**Benchwork:** L girder, with grid for Summit and upper staging yard  
**Roadbed:** pine lath on hardboard splines or ¾" plywood (yards)  
**Track:** handlaid code 83, 70, and 55  
**Length of mainline run:** 280 feet  
**Turnout minimums:** no. 8 on main line, no. 6 elsewhere  
**Minimum curve radius:** 36"  
**Maximum grade:** 2.5 percent  
**Scenery construction:** plaster on cheesecloth over cardboard webbing  
**Backdrop construction:** Masonite hardboard  
**Control:** Digitrax Digital Command Control (DCC) with radio wireless throttles

**3** Union Pacific trains operate over Cajon Pass on Santa Fe rails under a trackage-rights agreement dating from 1905. This is the eastward *Utahn* bound for Las Vegas and Salt Lake City, running parallel to Route 66 below Devore.



**SAN BERNARDINO B YARD**  
(lower staging yard)

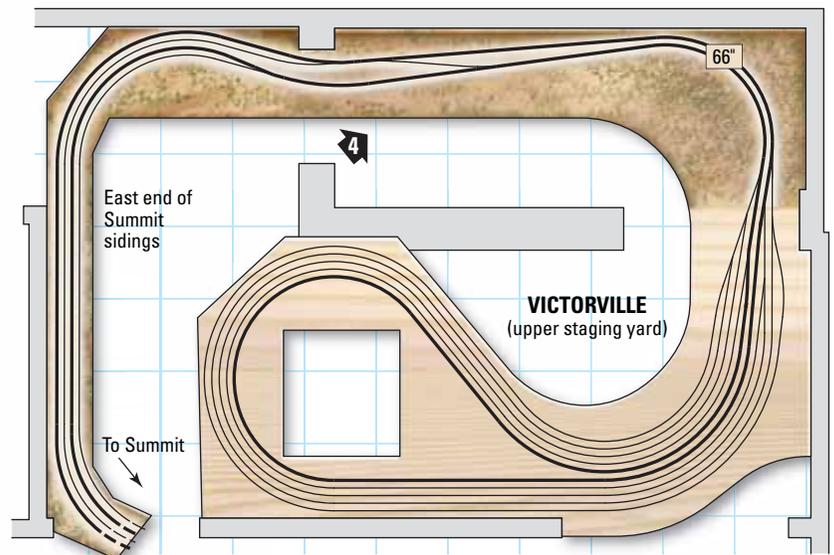
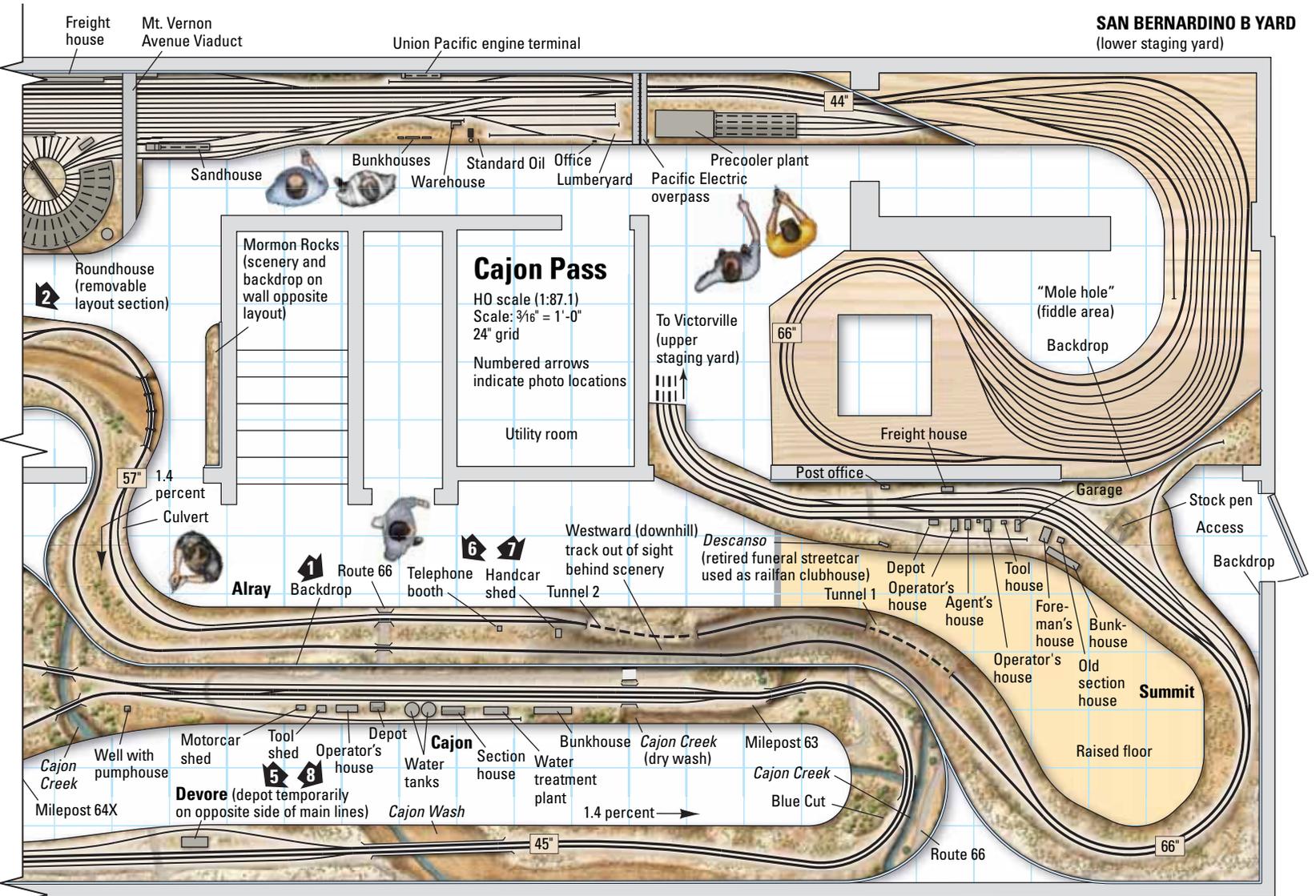


Illustration by Rick Johnson



**4** A westbound freight climbs past the Joshua trees toward Summit with a second 3700-class 4-8-2, a Victorville helper, ahead of its road engine. The first car in the train is a war-emergency composite gondola that's been modified to carry auto frames to assembly plants in the Los Angeles Basin.

Cajon Pass by Pete Youngblood and another book about the Los Angeles & Salt Lake Railroad Co. by John Signor. [The LA&SL was the Union Pacific predecessor that acquired trackage rights on the Santa Fe's line over Cajon Pass. – Ed.] It wasn't until after beginning construction that I saw a note in *Model Railroader* from John Thompson. He was trying to put together a group of folks interested in Cajon Pass. Making contact with him opened up a wealth of information that helped to develop my model railroad.

At John's suggestion I contacted Chard Walker, who's become one of my single greatest sources of information. Chard is a retired Santa Fe train-order operator who worked and lived at Summit and has written three books about the pass. He's since become a good friend and spent many

**5** Number 20, the eastbound *Chief*, rolls through Devore. The station has been closed and the windows boarded up for some time. Ted modeled this scene with the scratch-built station on the wrong side of the tracks. He plans to revise this area as shown on the track plan, with the station in the foreground between the eastward main line and a relocated eastward siding.

Cajon Pass that I pressed on, hoping that if the prototype was so interesting to railfans, then the model railroad would be just as interesting – and fun to operate.

### Research

Returning from California, I enthusiastically began planning my version of the First District. At the start my resources were pretty limited: a book on modeling

## >>Modeling Joshua Trees\_

### The distinctive Joshua tree

is a variety of yucca plant known for its twisted branches and spikey leaves. Joshuas dot the countryside between Summit and Barstow, and also grow west of Summit to a lesser extent.

In modeling Joshua trees I worked from photos. The trees come in many different sizes and shapes, and following photos helped me make more-convincing models. Here's how I do it:

I begin by cutting green pipe cleaners into 2" to 3" lengths – any light color will work because they'll be painted. Next I untwist the wires down to about 1/2" from the end of each piece, take out the

fibers, then twist the wires back together. These pieces will be the armatures for the trunks and branches.

Selecting an armature to be the main trunk, I twist separate wire branches around it to form the tree. Joshua trees can have many branches or just the single trunk, depending on their age development – again, photos are important.

Once I have a tree formed, I hold it in a vise and flow solder into the twisted wires. This bonds them and fills in some of the empty spaces, somewhat smoothing out the trunk. Finally, I paint

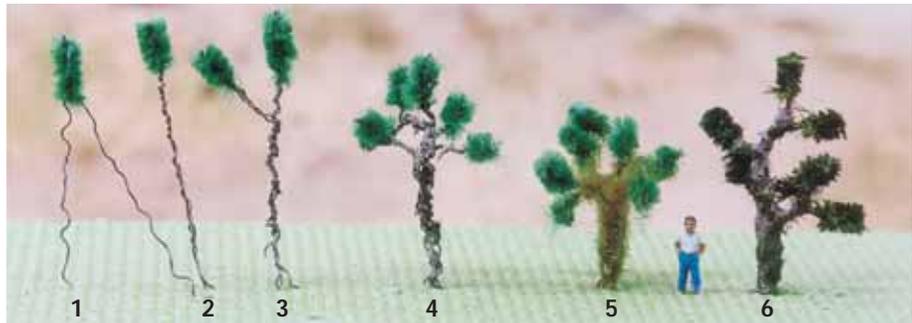
the branches and trunk with Elmer's white glue and push Woodland Scenics' static grass flock into the glue. I want the trunk to look fuzzy but don't want fibers sticking out too much. Painting will help to mat down the fibers.

My last step before painting the tree is to trim the top of each branch to a couple scale feet.

I paint the leafy tops an olive green and the trunks gray, using acrylic paints. For dying leaves I drybrush on a little yellow oxide. That's all there is to it, except for planting them along the tracks. – T.Y.

### Joshua trees step-by-step, left to right:

**1. pipe cleaner segment untwisted and fibers removed, 2. segment retwisted for use as trunk or branch, 3. trunk and branch twisted together, 4. trunk and branches filled with solder, 5. static grass flock glued to trunk, 6. trunk, branches, and leaves painted.**



hours with me sharing photographs, information, and stories about the old days on Cajon Pass. There are numerous others, many of them participants in the Cajon Pass Group and modelers of the pass themselves, whose willingness to share information has helped me focus my design into a better representation of the prototype. My thanks go to all of them.

Although further research has lead to many changes along the way, I'm glad that I didn't wait until I felt I knew it all before I started the railroad. Had I done that, my basement would still be little more than an empty dream. The desire to do too much research often leads to a big depression in the bottom of an easy chair, and I've found that building the railroad leads to questions that might not otherwise come up. For those reasons I always encourage other model railroaders to learn what they can in a reasonable amount of time and then get started on their railroads.

### Compromises

Building my dream railroad began with a set of standards for its design. Although I set a lot of requirements in the planning stage, the standard for train length, 16 feet,

had the most profound affect on how the railroad took form. My desire to run trains long enough to require helpers and to maintain a reasonable distance between sidings led to the omission of two of the prototype's stations, Ono and Keenbrook. That compromise in turn led to other compromises. Industries switched at Ono were moved to Devore. Water stops that the real railroad made at Keenbrook are done at Cajon on my railroad.

Another standard that had a profound affect on the design was aisle width. From the beginning I understood that it would take a lot of operators to run this railroad, so I designed the aisles to be as wide as they could be. I maintained a 42" minimum as much as possible, and when I could I made the aisles even wider. I still ended up with a few "no parking zones," as we call them, where the aisles vary between 18" and 24". These zones are only a couple of feet long and don't cause any real problems.

Other parameters I set for myself were a 36"-minimum-radius curve and no. 8 turnouts on the main line. All my curves have easements and are superelevated (banked), a practice I highly recommend.

It makes the trains look so great that once you've done it you won't build another layout without it.

### Construction

Most of the layout is built on L-girder benchwork. The exception starts at Summit and runs through the upper staging yard, where I used grid construction to reduce the thickness of the benchwork to raise the headroom at the "lean-unders" and to increase the clearance between the stacked staging yards.

The fascia is 1/4" Masonite screwed to the ends of the joists. I used 1/8" Masonite for the valance because it was lighter. The valance is screwed to 2 x 2s fastened to the drywall ceiling. Both the valance and fascia are painted black for a shadowbox effect, but I painted the backs of the valances white, which made an amazing difference in the brightness of the scenes.

I also used Masonite for the backdrops, screwing the sheets to the wall studs. Where a joint between sheets didn't fall at a stud, I placed pine lath behind the joint and screwed the ends of the Masonite into the lath, countersinking the screws. Next, I painted on latex wallpaper paste and



**6** One-hundred-class diesels – the Electro-Motive FTs that launched freight dieselization on the Santa Fe – lead a GFX train of loaded reefers across Route 66 at Alray. The track in the foreground is the Alray passing siding.

glued drywall tape over all the joints, then finished them with drywall mud, which also covered the screw holes. After seven years these joints haven't cracked.

The layout is lit with standard four-foot fluorescent fixtures. I started in San Bernardino with double-bulb fixtures mounted every couple of feet until Pine Lodge, where the layout starts getting close to the ceiling. From that point I used single-bulb fixtures spaced closer together.

## Scenery

To me, scenery is the most important element in producing a credible replica of the original, and the one thing that readily identifies a basement empire as a model of a particular actual location. If done correctly, specific rock formations, plants, streams, and other features all contribute to create recognizable scenes.

I adapted scenery-building techniques I learned from Kelly Newton, who builds scenery on Lee Nicholas' Utah Colorado Western. [See page 36. – Ed.]. The base for the landforms is cardboard webbing. Hot-gluing strips of cardboard together can be a bit time-consuming, but the webbing is easily and quickly changed, a big help when modeling something specific.

I covered the webbing with cheesecloth and then painted on a couple coats of plaster of paris mixed to the consistency of latex paint. It sounds messy, but trust me, it's a lot neater than strips of newspaper dipped in plaster. Finally, I applied a coat of casting plaster as the final surface.

Modeling Cajon's easily recognized rock formations was a challenge. I carved the rocks into the final coat of plaster as it began to set, using sponges, a small pallet knife, a model knife with a chisel blade, and a small wire brush.

I'm no artist, so as I work I keep photographs close by for reference. Checking the photos while experimenting with carving techniques helped me to duplicate what I saw in the pictures.



I'm convinced that desert modelers actually have to model more plants than those who favor greener regions. It takes a lot more sagebrush to cover a layout than large trees! There hasn't been a lot written on modeling desert plants, so I've had to experiment quite a bit. Initially I used Woodland Scenics' clump foliage for much of my greenery, but I'm now replacing it with materials I've learned about or developed over the past couple of years that give a more-detailed look.

For example, now I make sagebrush from pieces of green Woodland Scenics' polyfiber spray-painted with black and gray and covered with AMSI Spruce Green foam. By changing the color of the foam and the paint I can represent other kinds

of plants. Using just a few fibers painted and dipped in red or purple foam, I've been able to model some of the flowers I've seen in the pass.

I make larger shrubs from cheap scouring pads, which I rip apart into a pile of fibers. Then I paint wads of fiber and cover them with ground foam. I use the same method to make cottonwood trees, using pieces of sagebrush and rabbit brush stems for the armatures.

Palm trees I make with feathers, trimmed to look like the particular tree being modeled. I model Joshua trees with pipe cleaners as shown in the box at the top of page 13.

I'm fortunate to have railroad artist Gil Bennett for a neighbor. He painted my backdrops, more than 200 feet of them. He's also been my resident color consultant whenever I've had questions about mixing paint and finding the right color for a scenery project.

## Structures

With a few notable exceptions, my structures are scratchbuilt following the actual buildings. When I could I used plans that had already been drawn by others, but sometimes I've had to make my own drawings. Fortunately most of the bridges and tunnel portals are still there, so I was able to photograph and measure them. In a couple of cases friends were kind enough to do the legwork for me when I needed information for a project.

**7** Diesels lead a GFX train into Tunnel No. 2 while the eastward First District local freight, behind 2-10-2 no. 3841, waits at the uphill end of the Alray siding. Ted made his own molds to cast the portals for this tunnel and its twin, No. 1, a short distance up the grade.

Most of the buildings are gone so I've had to guess at measurements, using what photographs I can find. Occasionally I've found measurements in the Santa Fe System Standards books published by Kachina Press, but their usefulness is limited because so little on Cajon Pass was actually standard!

I kitbashed most of my bridges from commercial bridge parts. If I can't see under a bridge on the layout I just build the sides and glue them onto the track subgrade. I've built abutments out of both wood and styrene. For wood abutments I cut the pieces I need with a table saw and cover them with Durham's Rock Hard Water Putty. Then I carve form lines into the dry putty before painting and weathering the abutments.

The tunnel portals I cast in plaster. Using a styrene master I formed a two-part mold from Alginate, the mint-flavored pink material that the dentist uses to make a mold of your teeth. The material is not strong enough to last through a lot of castings, but Alginate sets quickly and picks up detail well. I needed only five castings so it was fine for that project.



## Motive power and rolling stock

My engines and cars follow those on the actual railroad between 1947 and 1957, depending on what's available at the hobby shop. To this point, my steam roster is mostly older brass models that I've detailed and remotored and regears as needed. Locomotives must run well or I won't use them. My diesel roster consists of appropriate first-generation models.

My freight cars are a mixed collection extending from Athearn plastic to Sunshine Models resin kits. Even the oldest cars meet a minimum standard of appearance. I replace oversize door tracks and add wire stirrup steps, uncoupling levers, and air hoses. All cars receive InterMountain metal wheels, and recently I started converting to Kadee no. 58 scale couplers.

Cajon Pass hosted a lot of passenger trains. Not being able to afford many brass

passenger cars, I've had to get by with what's made in plastic. Fortunately, Walther's new line of plastic passenger cars has started to change the look of my trains for the better. I'm hoping to see more cars I can use in the future. I doubt I'll be able to duplicate all the various trains exactly, but by using the types of cars found in the trains and detailing those models, I think I can produce a credible passenger fleet.

## Helper operations

The central theme of my operating sessions is helper service. The engineer of a typical eastbound freight train from Los Angeles starts out from staging and right away arrives in the San Bernardino yard. The yard crew goes to work, first pulling the caboose and then setting out any cars to be handled at San Bernardino, and

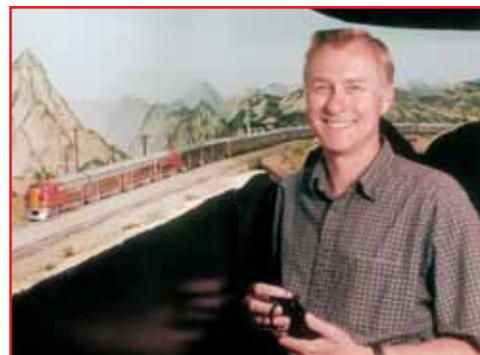
adding eastbound cars. After the train is worked, the second assigned "hogger" (engineer) moves a helper locomotive onto the rear of the train, and the yard switcher tacks the caboose on behind. Once they have clearance to depart the yard, the two engineers begin a coordinated effort to reach Summit.

One of the things that makes the operating sessions so much fun is the interaction between the two engineers on the uphill trains. Operating sessions are the social end of the hobby, and two hoppers working a train together make the event more enjoyable.

As they climb the grade, the engine crews' first concern is to maintain train speed. On the pass, that was about eight to nine miles per hour. They must also clear for passenger trains, which may require holding in one of the sidings on the way to Summit.



**8** An eastward Santa Fe freight meets a Union Pacific westbound on the bridge across the Cajon Creek Wash just north – east by timetable direction – of Devore. The scratchbuilt bridge is a compressed version of the actual bridge still in use today.



### >>Meet Ted York\_

#### Ted is an airline captain

who lives with his wife Tracey and seven of their eight children not far from Salt Lake City. He started his Cajon Pass layout nine years ago and is an enthusiastic member of the Santa Fe Ry. Historical & Modeling Society ([www.atsfrr.net](http://www.atsfrr.net)). You can keep up to date on Ted's model railroad activities and learn more about Cajon Pass at his own Web site, <http://mywebpages.comcast.net/cajonnpass52/index.htm>.

If either engine is a steamer, the train must stop for water at Cajon. After the road engine stops at the east plug (water column), the helper uncouples and backs to the west plug. After a suitable wait to simulate filling the tenders, the helper recouples and the train continues its ascent.

Upon reaching Summit, the helper backs the caboose onto the engine spur, then moves into the clear so the road engine can back the train to recouple the caboose. When the train is reassembled, the freight presses on to Barstow – staging. The helper zigzags through several crossovers, backs into the wye, and turns for its return trip running “light,” without cars, to San Bernardino.

### The railroaders

We run about a five-hour session on a 4-1 clock. Because we generate about 55 to

60 train movements plus yard work, it takes about 20 operators to run the railroad.

We have two people in the dispatching office. They assign engines to the DCC throttles, feed trains out of staging according to the schedule, usher trains into staging, and call crews.

A yardmaster oversees the San Bernardino yard and acts as the Fifth Street Tower operator. Three yard engineers keep busy handling setouts and pickups for the through trains and local industries. One of these engineers doubles as the West Yard Tower operator, lining trains in and out of the west end of the yard. A hostler turns the helpers and moves them in and out of the roundhouse, assigns helpers to throttles, and services road power.

The remaining operators work as engineers in rotation off the call-board, catch-

ing both road and helper assignments as the trains are sent out.

### Things to come

The layout is far from finished. Many structures still need to be built, and I hope to install signaling soon. There's a tremendous amount of sagebrush and shrubbery to be added, and I'd like to redo Devore to make it more prototypical.

Finally, I'd like to extend the layout into one of my garage stalls. Then I could lengthen the final turn into Summit and straighten the tracks to more accurately model that well-photographed location. This wouldn't substantially enlarge the layout but would make space for a crew room and better workshop. That's a long way off, if it happens at all, but it gives me something to dream about. And dreaming is one of the chief joys of model railroading. GMR

# >> Washington shortline adventure

Fatherhood, prototype research, and an interest in operation led to a great bedroom HO layout

By Blair Kooistra • Photos by the author

**It's funny what motivates** a model railroader. In my case, the push to build an HO scale model railroad came in the summer of 2000, when my wife Mary and I learned we were expecting a baby boy. Suddenly, those carefree days *sans l'enfant* became finite. If I were ever going to build a railroad – even a 10 x 11-foot switching layout – I'd better do it right away.

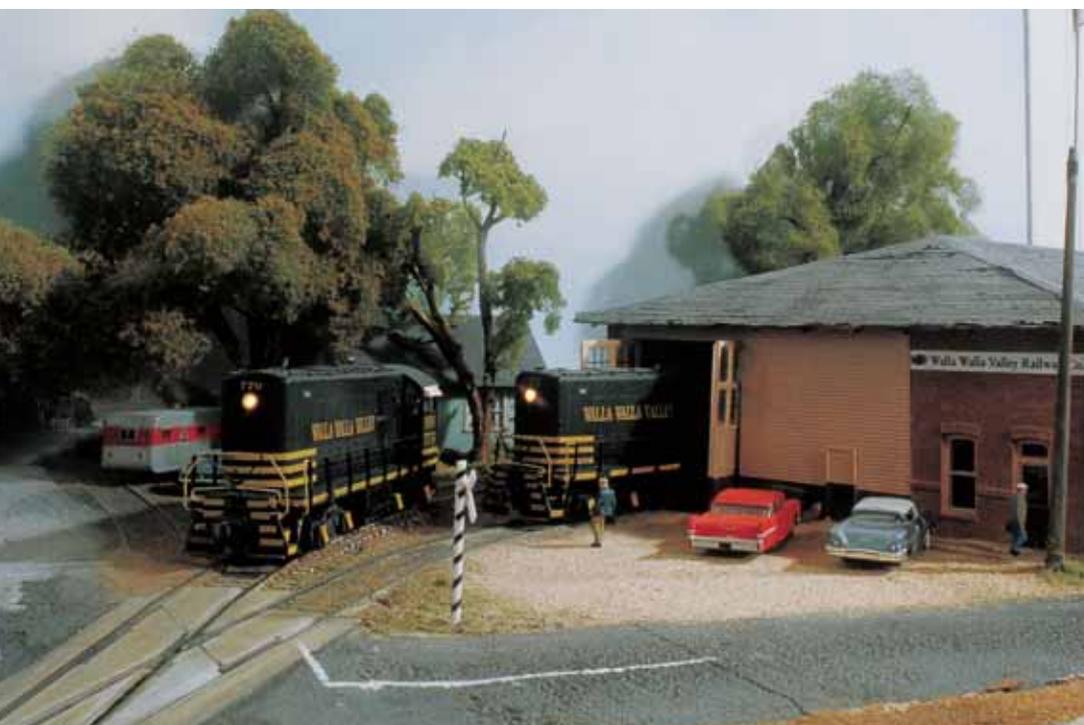
Each time I'd read the mantra "No Space is No Excuse," I squirmed, knowing that even if I didn't have room to build my dream model railroad, I did have room to

build something. Like many of us, I kept putting off constructing a layout, instead collecting equipment and dreaming of the day the planets aligned and I'd awake to find a big, new empty basement underneath my house. That wasn't very likely to happen, especially here in Texas, where basements are nearly unheard of.

Then fatherhood was imminent. I took the nine-month countdown to our son's birth as a challenge to build a model railroad that would fit a relatively small space, offer interesting and varied operations,

and reflect its geographic setting in eastern Washington State. The result is the bedroom-sized Walla Walla Valley Ry.

The real WWV was a 12-mile subsidiary of the Northern Pacific between Walla Walla, Wash., and Milton-Freewater, Ore., constructed in 1912. Originally an electric interurban dieselized in 1950, it served an agricultural region producing peas, prunes, wheat, apples, and sugar beets. The WWV lasted into the Burlington Northern era before abandonment in 1985. I'm modeling it as it was in 1968.



**1** Left: It's morning at the former electric railway's car barn on Blair Kooistra's HO scale Walla Walla Valley Ry., a bedroom-size layout modeling an industrial short line in Washington State. Both WWV diesel switchers are former Northern Pacific Alco HH660s.

**2** Right: Switcher 770 squeals around the tight curve of the Potlatch Forest Industries lead and out onto Rose Street. The brakeman is stopping the road traffic at this unprotected crossing.



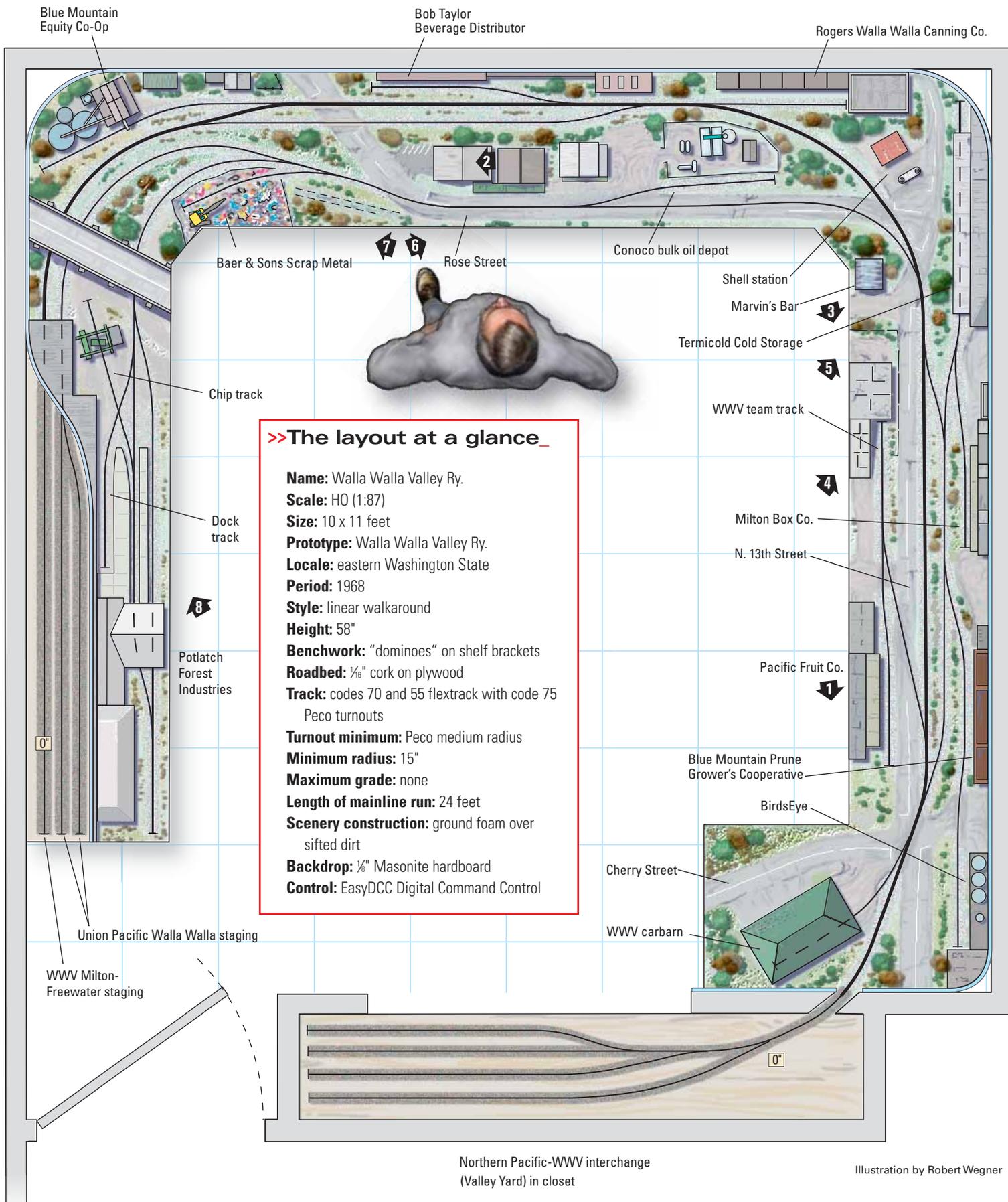
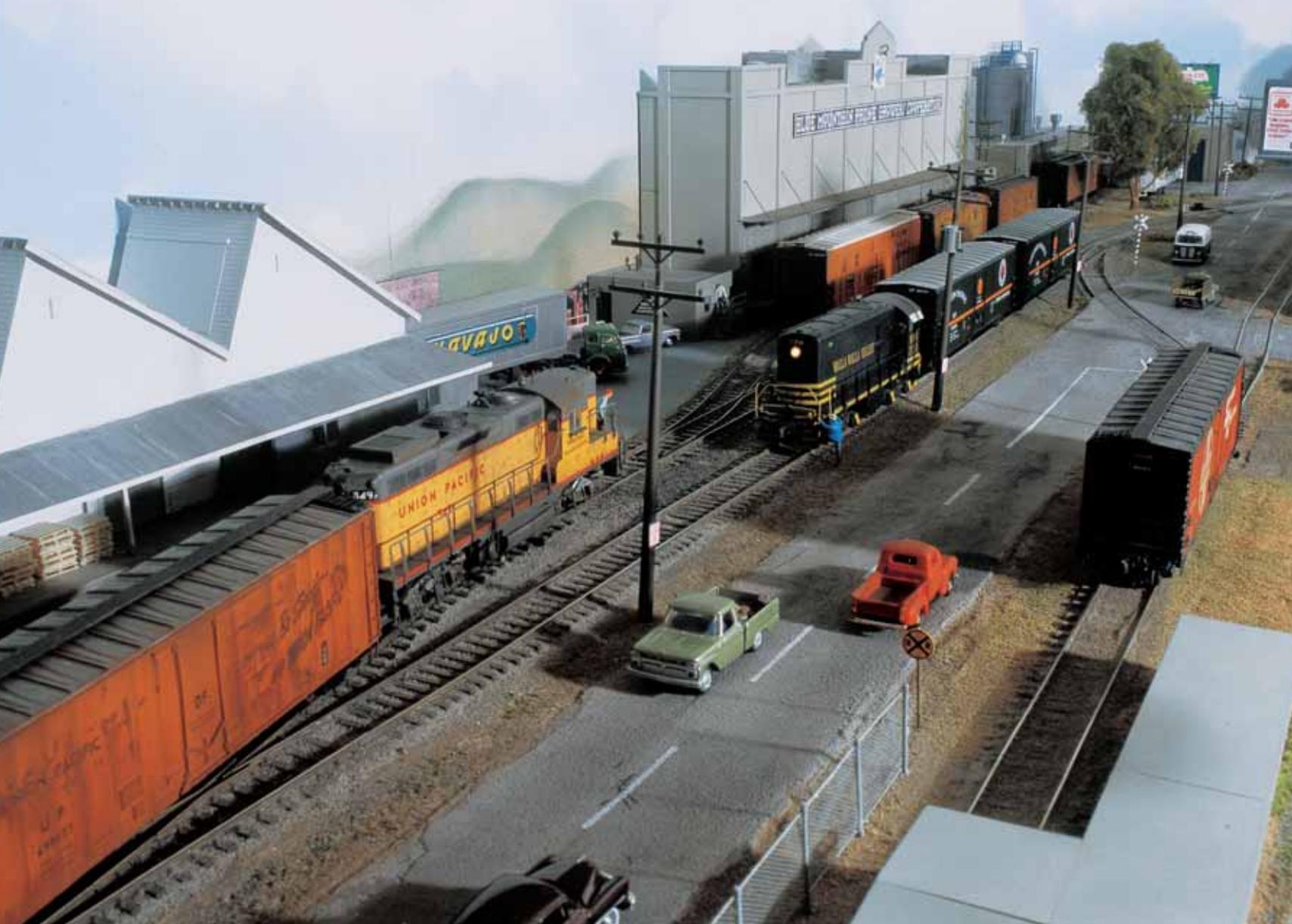


Illustration by Robert Wegner

## Walla Walla Valley Ry.

HO scale (1:87.1)  
 Scale: 3/4" = 1'-0"  
 12" grid  
 Numbered arrows indicate photo locations



### Phase I: the free-lance short line

I like modeling that dry region east of the Cascade Mountains in the Pacific Northwest. And I'm fascinated by perishable and lumber traffic, as well as the laid-back feel of shortline railroading. The search for what to model led to Walla Walla, a small town in the far southeastern corner of Washington, where the Northern Pacific and Union Pacific based local operations.

So I originally built the "Walla Walla Traction Co.," a free-lance short line inspired by the NP-owned WWV and Union Pacific's Yakima Valley Transportation, both roads that relied on perishable traffic. Their interurban heritage was reflected in street running, sharp curves, and light rail – perfect for a switching layout on a shelf. And since my fictional WWT would be dieselized with Electro-Motive SW1s and General Electric 70-tonners, there'd be no hassles with trolley wire!

I was realistic about what I could fit into my space – an 18"-deep shelf around three walls. A track plan quickly came together. Three hidden staging tracks would feed the WWT. On the far end of the layout would be the "Produce District," including a frozen-food processor, a cold-storage house, and a local produce shipper. In front of the staging tracks, reached by a spur, I placed a lumber mill, with spots for boxcars, flats, and wood-chip cars. In the middle was a four-track yard, a grain elevator, a bulk oil dealer, a three-car ice dock, and the WWT's car barn and RIP (repair-in-place) track.

### Nuts and bolts

Construction began in August of 2000 and proceeded quickly, thanks to "domino" layout sections 18" wide and varying from four to five feet in length, constructed of cabinet-grade ½" plywood. I placed these on 16"-deep, double-hook shelf brackets,

**3** The 0700 WWV switcher waits in the clear at Orchard siding as the Union Pacific's daily transfer run arrives behind GP9 349 to drop its cars. The WWV crew is en route to the Rogers cannery for their first spot of the day, then they'll return and start classifying the UP and NP inbound interchange cars for the rest of the day's switching.

available at most home improvement stores. While more expensive than wood girders and brackets, the shelving system is rock-steady, reusable, and can also support storage shelves below the layout.

My railroad room serves multiple uses, sharing space with a computer and desk, my library, and a futon for overnight guests. I wanted the railroad high above the floor to maximize the space below it, so I chose a relatively lofty layout height of 58" (about chin level to me).



I installed a backdrop of  $\frac{1}{8}$ " Masonite hardboard, painted it light blue, and added rolling hills typical of the country around Walla Walla using stencils and spray cans. Using flat white spray paint, I also stencilled on some cumulus clouds. To add depth, I glued photos I'd taken in Walla Walla to the backdrop, showing street scenes with structures and the ubiquitous fruitpackers' "field boxes."

Six 48" fluorescent fixtures suspended 18" above track level illuminate the layout. Most turnouts are hand-thrown. My rail is a mixture of codes 70 and 55, and my

tightest curves are about 15" radius – very manageable with small switch engines and cars under 60 feet in length. I use Digital Command Control (DCC) to run the trains.

Our son, Eliot, arrived in late January 2001, and by then the layout was already in operation. The Walla Walla Traction Co. was "complete" in time to be included in a National Model Railroad Association Lone Star Region layout tour in June 2001. I'm very deadline-oriented, and the approaching open house helped focus my modeling efforts, allowing me to accomplish quite a bit in a short time.

### **Phase two: the Walla Walla Valley**

My modeling has always been based on the prototype, so it wasn't long until Walla Walla's real short line, the WWV, began pushing the free-lance WWT off the layout. The more I researched railroad operations in Walla Walla, the more intrigued I became with the WWV. That was thanks in no small part to Marc Entze, a model railroader who lives in Walla Walla and who was glad to share his interest in his hometown railroads. The WWV came to life for me through the maps, newspaper clippings, and photographs Marc provided.



The Walla Walla Valley dieselized with hand-me-down Northern Pacific Alco switchers, and the NP used the WWV to compete with the Union Pacific for the thousands of carloads of canned goods, frozen food, fresh fruit and vegetables, and lumber generated around Walla Walla each year. As late as the mid-1970s, nearly 1,500 cars of sugar beets moved off the railroad in three-month winter “campaigns.”

The WWV wandered through back alleys, down busy city streets, and squealed around curves as tight as 38 degrees to serve packing sheds and canneries. It’s end

came after rate deregulation, the collapse of the local sugar beet industry, and the loss of its perishable and canned-goods traffic to trucks in the early 1980s.

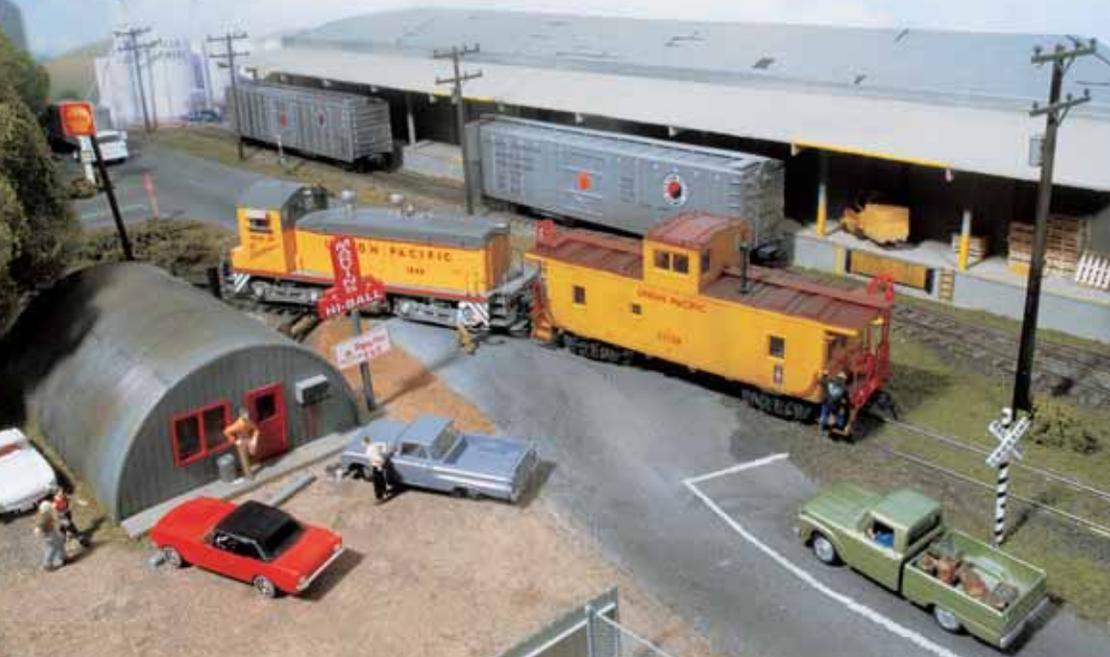
In late 2001, I began the first of several changes to the layout’s track plan to suggest – but not exactly duplicate – track arrangements on the real WWV. The four-track yard was replaced by street running and some back-alley spurs more in character with Walla Walla’s light industrial ambience. I added a model of the distinctive brick carbarn that the dieselized WWV used as its enginehouse. An empty closet

**4** On a day when one of the WWV’s Alcos is in the shop, a leased Northern Pacific VO1000 switches Termicold. Crew members pass signals while hanging from the ladders on the silver NP mechanical reefers.

adjacent to the layout was too tempting to pass up, and I tunneled through the wall to reach the new Northern Pacific interchange yard.

Though the real WWV never served a Potlatch lumber mill, the mix of flatcars, double-door boxes, and wood-chip cars was just too tempting to give up, so, for

**5** Patrons at Marvin's High Ball lounge head for succor in its cool, dark confines as a transfer job runs "caboose light" back to the Union Pacific yard.



## >>Paperwork for the Walla Walla Valley\_

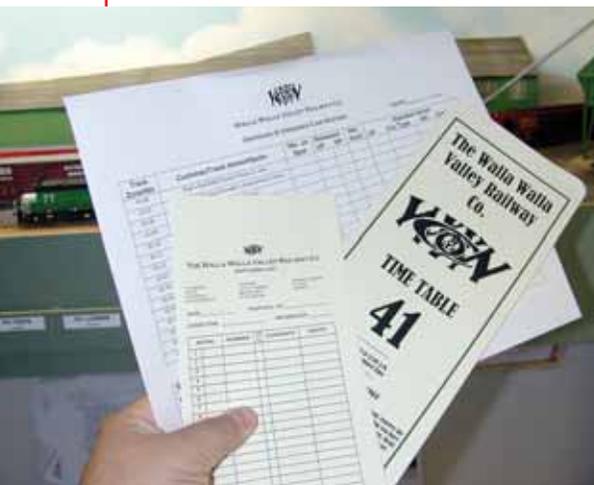
**Among operations-oriented** model railroaders, discussions about car-forwarding can become heated. There are many good systems, but for a small railroad like the Walla Walla Valley, I prefer handwritten switch lists. To me, switch lists just feel more "rail-road" than other methods, and I'll try anything to enhance the feeling that you're really working on the WWV in 1968 (including country-and-western

music of the era – some of it not very good at all – playing in the background).

Since all cars on the layout are either going to or coming from the Union Pacific or Northern Pacific, I'm not concerned with a large number of destinations or origins. Switch lists let me keep things simple, although they do take time to write. I choose appropriate amounts of traffic based on the actual car movement records in the Whitman College library archives.

The front of the switch list, created in Microsoft-Word, is a simple grid, with columns for reporting marks, car number, load or empty, type of car, and destination. The back of the list is more specialized and includes a line designated for each car spot on the railroad.

Switch crews also carry a WWV timetable, also created in MS Word. The timetable provides track schematics with locations of shippers as well as operating rules peculiar to the WWV (such as a prohibition of train traffic on street trackage during morning and afternoon rush hours). – B.K.



now, Potlatch stays. This revamped version of my layout is what's shown in the track plan on page 20.

Nearly all the rail customers on the layout are now named for actual shippers on the WWV. A few buildings are scratchbuilt copies of prototype structures, an aspect of the hobby I'd never attempted before but found I truly enjoy. I used Adobe Photoshop to print structure signs and billboards, and these really help tie the layout to its place and era.

Like its prototype, my WWV uses a pair of Alco HH660 switchers. I kitbashed them



from Like-Like Proto 2000 S-1s, using resin castings for the high long hoods. Wearing Northern Pacific's switcher paint scheme with Walla Walla Valley lettering, they look right at home pulling strings of silver NP mechanical reefers, green insulated boxcars, and yellow ice-bunker reefers down the streets of Walla Walla. The occasional NP locomotive – an Electro-Motive SW1200, GP7, or Baldwin VO1000 – may be seen as well. The Union Pacific connections are handled by GP9s, SW9s or GP30s.

The freight car fleet numbers around 150, and as you might guess, is heavy with

insulated boxcars and refrigerator cars. I've tried to construct a car fleet faithful to the rolling stock actually found on the WWV in the late 1960s, using information gleaned from car-movement records preserved in the Whitman Library collection.

### The payoff: operation

To me, operating the railroad in a prototypical manner is as important as its appearance. Trains operate under Rule 93 yard limit authority, meaning that trains and engines can use the main track without any other permission but must clear

**6** We're looking down Rose Street as both WWV HH660 switchers are at work. In the background, the morning crew with the 775 switches Rogers Walla Walla Canning. Coming down the street with two empties for the Potlatch mill is the 1100 job behind the 770.

the main when other trains approach. I use a 4:1 fast clock to add structure to the day's operations – for instance, a shipper such as Rogers Walla Walla Canning requires service several times daily at specific times.



**7** Union Pacific shares trackage with the WWV down Rose Street and to serve Potlatch mill. The UP also handles most of the traffic at Baer & Sons Scrap Metal, as this switch job is doing. In the background is a Northern Pacific ballast train. The big scrap pile is a foam form covered with aluminum foil that Blair painted, then ran through a blender, cemented to the foam, and colored with a rusty wash.

## >>Wall bracket supports for a layout\_

**I'm no great shakes** with carpentry, so I eschewed traditional methods and supported my shelf-layout benchwork from the wall with double-slotted shelving brackets. You can find these at mega-home-improvement stores like Home Depot or Lowe's, and they're more than sturdy enough to support my 18"-deep "domino" boxes. The slotted u-channels you hang the brackets from come in a variety of

lengths, so in many cases I opted for 48" or 60" supports I could also use to carry shelving underneath the layout. I extended the vertical channels 22" above the surface of my layout to allow for a lighting valance cantilevered from the walls, something I haven't gotten around to working on yet! With the channels screwed into wall studs, they provide a rock-solid foundation for the layout's benchwork. – B.K.



### Should the planets align . . .

With the hard work of construction and scenery done, I keep entertained by holding operating sessions, upgrading the freight car fleet, and adding to the Web site I've created about the WWV. You're invited to visit <http://wallcloud.home.mindspring.com/www/index.htm>.

Someday I'd like to build a new WWV, one that would be more faithful to the prototype track arrangements and with more authentic structures. This would give me a chance to feature rural running through some typical Washington apple orchards and to accurately model the WWV's interchanges with the NP and UP

But that will have to wait for those planets lining up and the big empty basement magically appearing under the house. One never knows. GMR

**8** Engine 775 pulls two chip loads from the loader at Potlatch Forests Inc.'s stud mill, which is switched by both the UP and the WWV. Union Pacific double-door boxcars and a new Northern Pacific bulkhead flat (in pre-merger Burlington Northern green paint) await loading.

### >>Meet Blair Kooistra\_



**Blair earns his living** as a train dispatcher for BNSF in Fort Worth, Texas, though he grew up in the Pacific Northwest. He's married and has two sons. The oldest, 3½-year-old Eliot, shown with his dad, is already completely nutz-o about trains.

## TRAINS MAGAZINE

Read more about the real-life Walla Walla Valley Ry. in a "Railroad Blueprint" feature by Blair Kooistra and Marc Entze in the December issue of *Trains* magazine.

Crews use written switch lists, combined with a "trainmaster's turnover" sheet that outlines the day's work, specifies "hot moves" for customers, and gives any special handling requests for the upcoming shift. The WWV will generally run two switch jobs a session, depending upon traffic. A third UP job delivers interchange to the WWV in the morning and switches Potlatch Lumber via shared access with the WWV. With 10 to 15 cars inbound and a similar number outbound per shift, WWV crews can keep quite busy for two hours or longer in each operating session.

# >> The other side of the Catskills

Edward Loizeaux's S scale NYC Valley Division is a dream come true – thanks to a little help from his friends

By Edward Loizeaux • Photos by Andy Sperandeo

**New York State's** picturesque Hudson River Valley is bounded on the west by the Catskill Mountain range. The West Shore Line of the New York Central System serves communities along the western shore of the Hudson River, but that part of the NYC didn't originally extend westward over the Catskills. I wanted to model NYC operations in a setting of my own choosing, and the "other side" of the Catskills seemed ideal.

According to my layout's alternate history, a modest railroad was established long ago to serve a large and verdant valley, and grew as the area prospered. A connection to the nation's rail network was established via an interchange track with the NYC's West Shore Line along the Hudson River. In the late 1930s, the short line was acquired by the NYC and became known as the NYC's Valley Division.

## Turning a dream into a layout

My 20 x 30-foot S scale layout is a childhood dream come true. After years of wishful thinking, I finally had the space, time, money, and spousal approval to build a large model railroad layout. But where would I begin?

Thanks to my long-standing interests in S scale, the New York Central, and the transition era's large steam locomotives and first-generation diesels, some key decisions had already been made.

Other decisions, such as train operations, were more complex and required some thought. I wanted to run scale passenger cars and 4-8-4 steam locomotives. Lengthy rolling stock requires large-radius curves and long mainline runs, while the presence of passenger trains suggested the need for a substantial terminal and a commuter station.

Those broad curves also created sizable triangles of empty space on the layout's corners that were perfect for industries. A large and busy freight yard would be needed to serve the Valley Division's numerous on-line customers. Naturally, steam and diesel engine terminals would also be necessary.

It took several sheets of graph paper and a couple of pencils before I realized that an around-the-wall layout design would be my best choice for a long mainline run. The resulting duckunder at the room's doorway was a tolerable inconvenience in exchange for the grandeur of long trains gliding around broad curves. Besides, as my wife pointed out, I could use the exercise. So that decision was finalized and we installed a dutch door at the room's entrance.

Designing the track plan was an interesting learning experience. It's amazing how simple decisions about scale and rolling stock drive so many other aspects of layout design.

## Filling a "California basement"

I built my railroad in a "California basement" – a converted three-car garage. After relocating our automobiles and many years of accumulated junk, I set about turning a large but raw space into a pleasing home for the Valley Division.

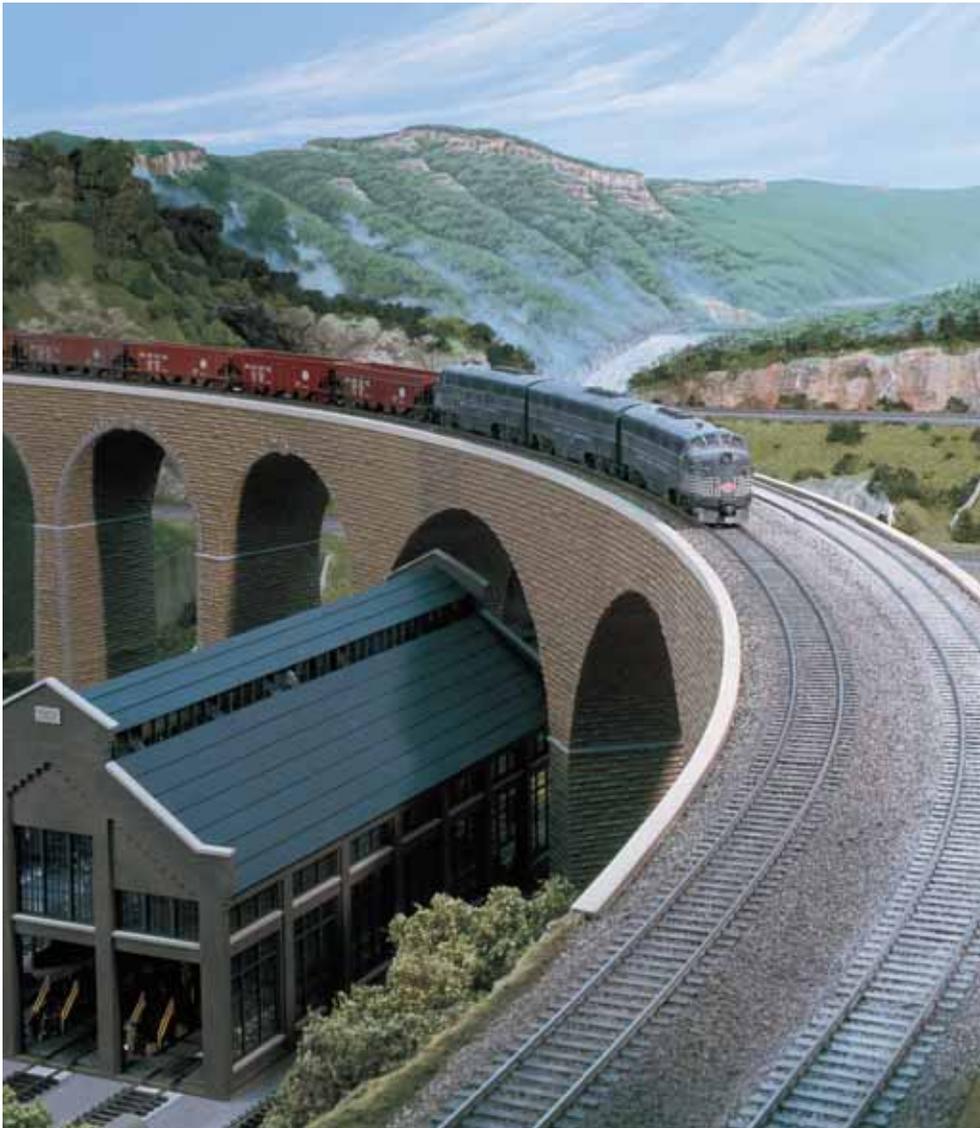
I began by installing the cheapest carpeting I could find. This proved to be an outstanding decision and one I'd repeat in a heartbeat. The carpet adds both physical and aesthetic warmth to the space and makes it easy to work while standing or kneeling for long periods of time.

I also installed drywall over the exposed stud walls. The smooth walls allow my painted backdrop to extend all the way to the ceiling. The new walls help make the room clean and dust-free – track cleaning is only an occasional activity.

Decent working light is provided by 15 twin-tube fluorescent fixtures with plastic

**1** Ed Loizeaux's 20 x 30-foot S scale layout features the New York Central operating through the spectacular Catskill Mountains of Upstate New York. Don Ledger scratchbuilt this bridge from 6,400 pieces of styrene. Mike Kotowski did the scenery detailing and created the 5-foot-tall waterfall with plaster and glossy gesso.





## >>The layout at a glance\_

**Name:** New York Central Valley Division

**Scale:** S (1:64)

**Size:** 20 x 30 feet

**Prototype:** New York Central

**Locale:** Upstate New York

**Era:** 1948 to 1952

**Layout style:** around the walls with operating aisles

**Length of mainline run:** 305 feet

**Layout height:** 42" to 61"

**Benchwork:** open grid, 1 x 3 joists on 1 x 4 stringers with 2 x 2 legs

**Roadbed:** beveled cork roadbed glued to 5/8" plywood supported on 1 x 4 risers

**Track:** code 100 flextrack

**Minimum radius:** mainline 48" (hidden), 54" (visible), 24" industrial

**Maximum grade:** 1.4 percent

**Turnout minimums:** mainline, no. 6, industrial no. 4

**Scenery:** cardboard lattice, cheesecloth, hardshell, Hydrocal rock castings, and Gypsolite

**Backdrop:** painted wallboard

**Control:** North Coast Engineering Digital Command Control

**2** A late afternoon hopper drag hauls empties back to the Pennsylvania RR interchange track to avoid per diem charges for the next day. The stone arch bridge is more than 10 feet long and is constructed of tempered Masonite covered with embossed styrene.

diffusers. Surprisingly, the heat produced by these fixtures is sufficient to warm the room during California's mild winters. At mid-day in the summer, however, the temperature in the train room can become a bit uncomfortable. If I had to do it over again, I would consider placing the heat-producing ballasts of the fluorescent fixtures in the attic space above the ceiling of the train room.

To simulate morning and evening during operating sessions, I also installed a series of 25-watt incandescent lights on a dimmer switch. Operating the dimmer is a

good job for visitors who don't want to concentrate on serious operation!

I added two quiet, bathroom-type exhaust fans to rid the room of excess heat, glue fumes, and paint odors. The fans are much appreciated by my wife, who has a super-sensitive nose.

Finally, the overhead garage doors were replaced by a stud wall. Removable sheets of plywood cover the windows to provide continuity for the backdrop painting – the view of my neighbor's California stucco house doesn't provide a realistic backdrop for the NYC's bucolic Valley Division!

It took extra time and money to prepare the train room, but I'm convinced that nicely finished surroundings greatly enhance a layout.

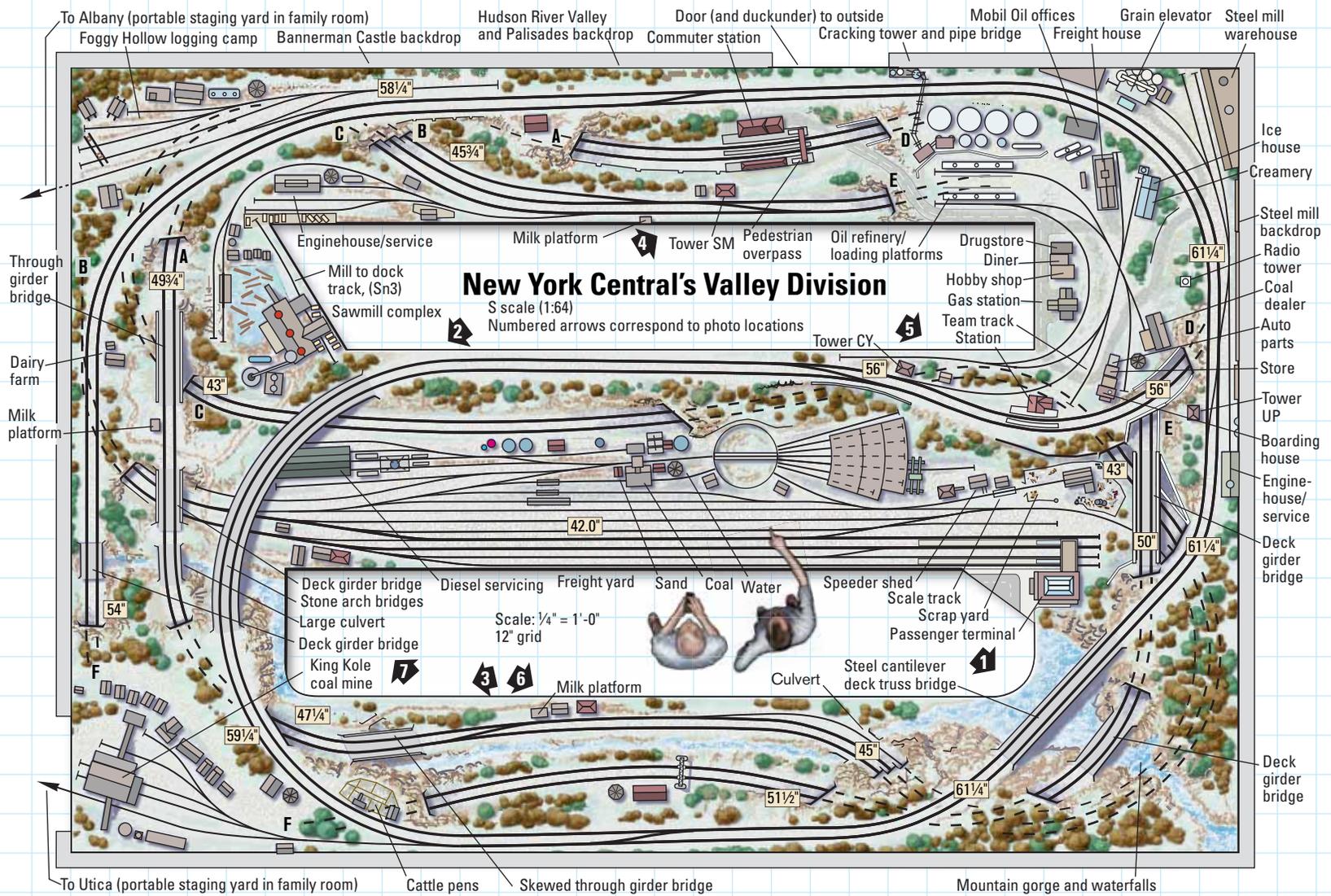
### Solid foundation, soaring scenery

The Valley Division has a great deal of mountainous terrain and relatively few flat

areas. In other words, it's the sort of terrain that lends itself to open-grid benchwork.

My benchwork is similar to the well-known L-girder approach, except my girders are not "L" shapes, just simple sections of lumber. L girders provide rigidity and stability, but I was able to screw my long girders directly to the wall studs. Even without the "L," I have all the stability and rigidity I need – barring an earthquake, my house isn't going anywhere!

The optimum spacing of the joists was scientifically calculated to be two inches greater than the width of my shoulders. This allowed me to move in and out of these spaces with ease. All the legs on the layout are supported by a pair of 45-degree



Illustrations by Robert Wegner

wooden braces. These legs are solid and have survived many accidental body blows and kicks. Leg braces are worth the effort.

The Valley Division's subroadbed is made from lengths of plywood. Early in the layout's construction, I tested  $\frac{1}{2}$ " plywood as a subroadbed, but it appeared to sag a bit between the risers so I opted for  $\frac{3}{8}$ " plywood. I would urge fellow modelers to use quality plywood with many layers. Plywood with fewer layers is less stiff and more likely to sag over time.

The cost of benchwork for a large layout is not cheap, but I was able to save considerably by shopping around. I calculated my exact needs, prepared a detailed list, and solicited bids from several lumberyards. The winning bidder's price was about 30 percent lower than that of the high bidder – but even the high bidder was somewhat below normal retail price.

To sweeten the deal, the low bidder also offered to cut all the plywood subroadbed pieces if I would mark the cut lines for them. My daughter Sarah and I

spent an entire morning at the lumberyard calculating and drawing big circles on sheets of plywood. A few days later, the cut pieces were ready. I was thankful I didn't have to use my saber saw for that job.

### Proven techniques speed work

When it was time to lay track, I didn't spend much time experimenting. I used time-proven materials and techniques, including cork roadbed, flextrack, and commercial turnouts. I'm happy to say that operations have been flawless.

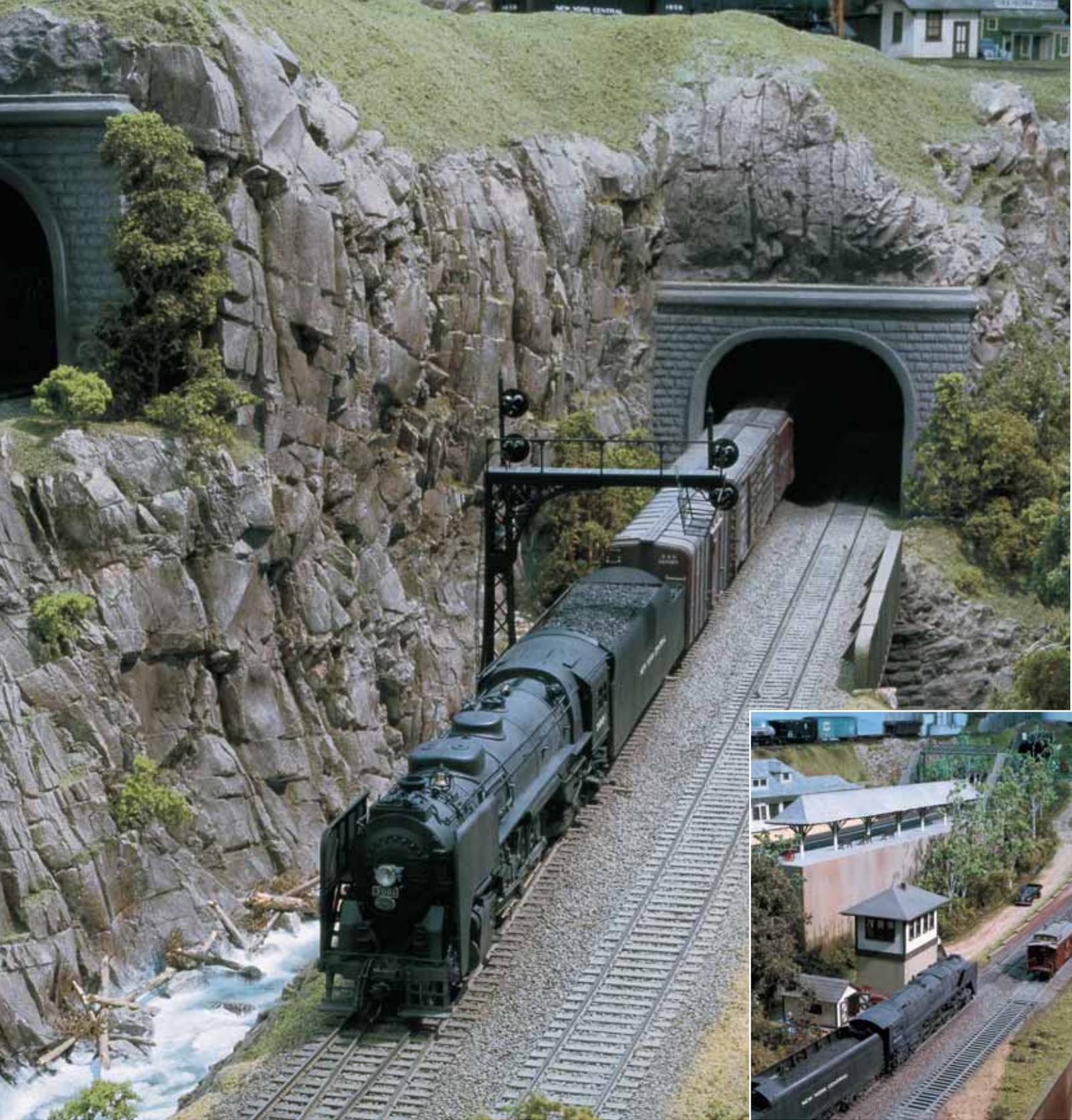
I formed the rough terrain by stapling and gluing cardboard strips into a lattice. The web of cardboard makes it easy to visualize mountains and valleys and make adjustments as needed. When I was satisfied with the contours, I used a hot-glue gun to attach a layer of cheesecloth to the cardboard webbing, followed by layers of plaster-soaked paper towels. Yes, this process can be messy, but I remembered to protect the carpeted floor with newspapers before I started.

One fact worth mentioning is that the mountain supporting my layout's waterfall contains 300 pounds of plaster and rises about eight feet from the floor. The waterfall on the mountain is more than five feet high and is made from white gesso with green and blue gloss acrylic highlights.

I don't like to rush when I model, so I used U.S. Gypsum's Hydrocal FGR-95, which takes about 45 minutes to cure. It's just as strong and about the same price as the fast-curing Hydrocal, but the longer drying time allowed me to cover larger areas with each batch. The slow approach is much more enjoyable, and very little hardened plaster had to be discarded.

I made rock outcroppings using commercially available latex molds and casting plaster. I slapped the semi-cured rock castings onto the Hydrocal and allowed the casting to cure fully in place.

For the final layer of terrain material, I applied a coating of Gypsolite, which smoothly blends the Hydrocal into and around the edges of the rock castings.

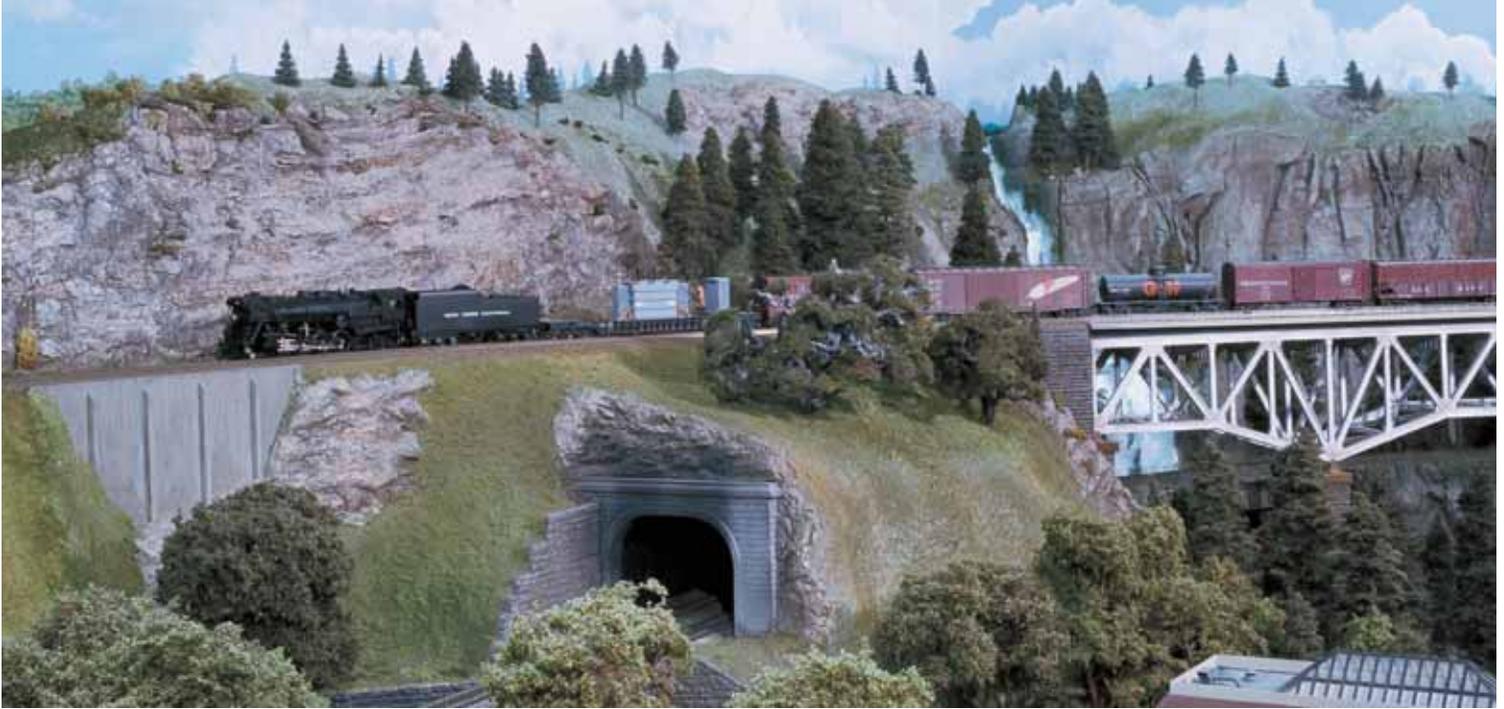


**3** Imagine the noise and quivering ground as the Mohawk-powered fast freight blasts out of the tunnel and hammers across the bridge. Each shadow area and crevice in the rock cliff was brushed with dark-brown paint or stain.

Gypsolite is a plaster with many small lumps and bumps, providing a nice texture for paint and scenery.

I colored the terrain with water-based acrylic paints. I then placed ground foam, bushes, trees, fences, structures, and a myriad of other scenic details starting with the smallest and working up to the largest.

**4** That nearly empty tender seems to be longing for the full loads of coal on the adjacent track. In the foreground, the maintenance-of-way crew has removed ballast from a section of track to prepare for installation of a new turnout.



**5** The mid-day mixed freight was assigned a recently shopped H10 Mikado for today's run over the Valley Division and on toward Albany, N.Y. That large electrical transformer behind the tender is a Walthers HO kit that fits perfectly on an S scale flatcar. The beautiful rock formation was cast and carved by Keith White.

Having a professional artist as a long-time friend was pure serendipity. When it came to the backdrop and scenery painting, Mike Kotowski was amazing. Who else would individually paint shadows on the bottom surfaces of hundreds of rock outcroppings, or stain each and every crack and crevice of huge rock cliffs?

As is the case with Mike's backdrop painting, I strive for highly detailed layout scenery. I figure that if we're going to demand that our steam locomotives be correct down to the last rivet, it's reasonable that we try to create equally detailed surroundings for the engines.

### Tentatively embracing complexity

I don't like the term "control system" because I think it implies complexity. I like things to be simple – just give me a few volts and a double-pole, double-throw switch to get the juice to the right place and I'm happy.

So how did a low-tech guy like me wind up building a layout with Digital Command Control (DCC), customized software for signaling logic, computerized Central-

## >>Time saved and friendships forged\_

**After working on** my layout for about four years, I stopped and assessed my progress. I was dismayed. The benchwork was finished, the main line operated, some of the models were painted, and the unbuilt kit pile was only modestly larger than five years earlier. But I had no backdrop, no scenery, no yards, no structures, no control system, and no signals. At this rate the layout would likely not be finished in my lifetime.

I was confronted with two choices: reduce the size and complexity of the layout or try to enlist a great deal of help from my friends.

Reducing the size would involve tearing out a major portion of the layout, rebuilding something half as large, and running the risk of not being satisfied with the result. On the other hand, asking for help offered the possibility of being able to have my cake and eat it too – and I could still revert to the small-layout option as a last resort.

Asking for help succeeded beyond my wildest expectations. I discovered there are many people who love model railroading but do not have layouts of their own. Some don't have the space or the money for a sizable model railroad, others prefer building individual models or like to work only in a specific areas – such as structures, scenery, bridges, or DCC.

They all have two things in common: they enjoy working on some aspect of layout construction, and they are willing to help attain a clearly communicated goal.

I assigned tasks tailored to each person's interest. In other words, I didn't ask the guy who liked wiring to do scenery, or the painter to build benchwork, or the structure guy to lay track. Our overriding philosophy was to enjoy everything we were doing at all times. I believe that's the reason quality problems were nonexistent.

Nearly 20 people contributed to the construction of this layout. Their geographical dispersion is quite amazing. The fellow who builds trees lives in Arizona, my logging expert resides in Oregon, one structure builder lives in Los Angeles, a passenger car builder lives in Maine, and I have rolling stock painters in Houston and San Jose. My local friends work on tasks that can't be moved off-site.

Nearly all of my volunteers are HO modelers who are not particularly interested in S scale. But trains are trains, and we all have a good time.

Developing new friendships was an unanticipated benefit of involving other people in the layout's construction. Nearly half the friends working on this layout were unknown to me six years ago. – *E.L.*



**6** Cars filled with perishable fruits and vegetables are rushed to East Coast markets by a hotshot freight racing against a threatening thunderstorm. The telephone poles are from Atlas' HO line, while the signal bridge is a modified Plasticville HO scale product.

ized Traffic Control (CTC) panels, and remote dispatching?

It all started with Rick Fortin. During an open house in the layout's early days, I showed Rick where the control panels would be located and how the block toggle switches would work. Rick noted that the layout would be perfect for a DCC system.

Around this time, the National Model Railroad Association approved its DCC standards, which meant I could have a system of interchangeable components and avoid the risk of any one manufacturer's failure causing major grief for my railroad.

But DCC isn't for everyone. Visitors frequently bring locomotives that don't have decoders. To accommodate these folks, each block can be quickly switched back to conventional DC. I often set one main line to DCC while the other is DC. Crossovers between the main tracks can't be used during these sessions and is prevented by electrically disabling the turnout motors.

## >>The wide world of S scale products\_

**Visitors frequently tell me** they had no idea that such a variety of structures and rolling stock is available in S scale. That's my cue to tell them about the pros and cons of S scale.

Few hobby stores carry a broad assortment of S scale products, but many items are available, generally via mail order direct from manufacturers, importers, or retailers.

Many brand names familiar to HO enthusiasts are available in S scale, including Shinohara flextrack and turnouts, Kadee couplers, NorthWest Short Line wheelsets, Overland Models brass imports, and Grandt Line details. The Wm. K. Walther's Inc., Large Scale catalog has a good S scale section.

Plastic and brass rolling stock, laser-cut wood structures, decals, plastic and brass details, signals, craftsman kits, sectional track, and almost-ready-to-run equipment are all commercially available in S scale.

Thanks to the Internet, finding S scale products is much easier than ever before. I've created a Web site with helpful links and other information to get you started, [www.S-scale-RR.com](http://www.S-scale-RR.com).

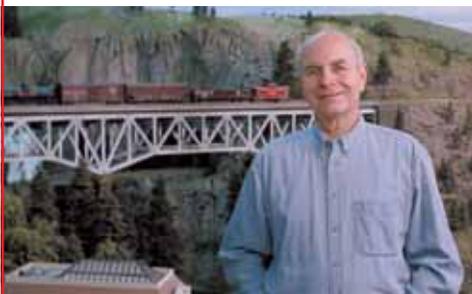
While the variety of S rolling stock does not match that available in HO, it is not difficult to amass more equipment than you can ever build or run on your layout. Taking the time to explore S scale might result in an interesting journey for you as it did for me. – E.L.

Just as I was coming to grips with DCC, Seth Neumann visited and suggested that we install operating signals. He even offered to help write the software for signaling logic. Software-based logic is preferable to numerous hardware-based circuit boards scattered around the layout and allows the signals to run in different operating modes. For example, "beginner

mode" is a simple red-yellow-green traffic light display that non-train folks – such as my children, wife, and neighbors – can easily grasp. For the local model railroad enthusiasts here in California, "Southern Pacific mode" mimics that railroad's signal logic. For New York Central purists, speed signaling logic was possible simply by running another software program.



## >>Meet Ed Loiseaux\_



**Ed converted from** HO to S scale in 1969. At that time, only six S scale locomotive kits and a handful of craftsman freight cars were commercially available. Ed helped establish an S scale club in San Francisco, wrote numerous articles and product reviews for S scale publications, served as chairman of the first S scale convention on the West Coast, and is a past-president of the National Association of S Gaugers. He also published *3/16 'S'cale Railroading* magazine, served on the NMRA's DCC Working Group, and co-authored the book *Digital Command Control – the comprehensive guide to DCC*.

In short order, Seth had me hooked on software, computerized CTC, Bruce Chubb's Computer-Model Railroad Interface system, and custom software. Thanks to Seth's programming skills, the signaling accommodates bidirectional traffic on both main tracks. The turnout control program even prevents the accidental throwing of a turnout while a train is passing. And it's all done with software. Amazing.

### A layout rich in operation

With five major industrial areas rich in switching possibilities separated by at least 30 actual feet or more of railroad, it's possible to have several way freights setting out and picking up cars simultaneously. Through trains can progress along the double-tracked main weaving from track to track to avoid conflicts with the local freights. Passenger operations include significant express traffic as well as switching mail and express cars, baggage cars, and diners in and out of various trains in the main terminal area.

When full operations start, I expect the layout will keep 10 to 12 engineers busy operating a realistic schedule. With CTC dispatching and tower operators at work, the number of people required to operate the layout can increase as needed to

**7** Always one to use motive power efficiently, the NYC assigned an idle passenger Geep to haul empty milk cars back to the loading docks on this Sunday run. The deck girder bridge shown below the center arch was made from a plastic HO through girder bridge. The edg-trim stones on each arch were individually cemented in place – all 8,000 of them!

accommodate additional visitors. For instance, each train could have a crew of one (engineer/conductor) or two (engineer and conductor). The crew could either operate mainline turnouts themselves as they traverse the layout, or the dispatcher, if there is one, can operate turnouts from the CTC panel. Also, each of the five major industrial areas can have an assigned switcher. Major industries include a coal mine, oil refinery, sawmill, logging camp, an industrial area with many small factories, a Railway Express Agency freight terminal, and a team track.

Much work remains before the first genuine operating session begins, but everyone is looking forward to the big day. As *Model Railroader* magazine says, "Model railroading is fun." Well, the fun is about to begin. GMR

# >> Rocky Mountain

Celebrating 35 years on the Utah Colorado Western

**Today's** Utah Colorado Western RR is the result of a 35-year journey that has included continual revision and refinement. All of this effort was driven by my desire for realistic operation and for the social interaction that's brought me life-long friendships.

## Beginnings

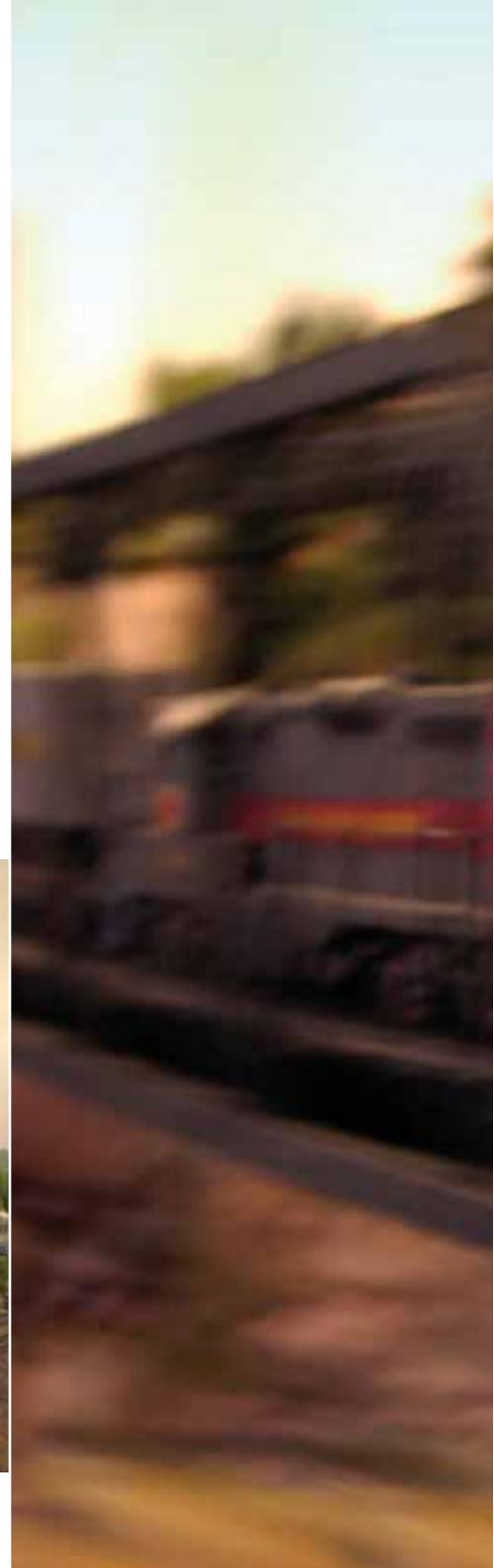
Many people have helped create the Utah Colorado Western (UCW), starting with my parents, who introduced me to the hobby with a Christmas train set. My dad built that first train table in the basement, painted the top green, and installed the track while encouraging me to dream of my future empire. To a six-year-old, that loop of track, pair of switches, and passing siding seemed like the entire Union Pacific. Those days were great fun and filled with many happy memories.

Years later I returned to modeling, but this time it was in HO scale. By 1970 I was

married to my wife, Kris, and living in a rental house that had no room for a layout. My parents were nearby and offered me space in their basement, but it was difficult to leave the family behind to work on the layout. Progress would have been slow at best were it not for my understanding and supportive wife.

My first HO layout followed a small published track plan to the letter, and I had trains running in a few months. More real estate became available in the basement, and I developed a larger track plan based on a June 1969 *Model Railroader* magazine article about Earl Cochran's Ute Short Line. It provided the nucleus for a layout that lasted nearly 15 years, giving

**1** Below: A Chicago, Burlington & Quincy E8 leads no. 36 near Jiggs. This train uses the UCW for part of its run between Denver, Colo., and Casper, Wyo., on Lee Nicholas' operation-oriented HO railroad.



**2** A pair of Utah Colorado Western  
Geeps race eastward near Hamilton  
as they forward manifest train no.  
202 bound for Denver, Colo.

By Lee Nicholas • Photos by Tommy Holt

# bridge line





**4** The UCW's busy Denver engine terminal is located at East Yard, facing the huge Centennial Mills elevator complex. This massive concrete mill building was kit-bashed from several Walthers kits.

& Ohio (V&O) which have inspired countless others in the hobby. Once the excitement of creating the new layout kicked in, I couldn't build it fast enough.

### The 1985 UCW

I began work on the new UCW in 1985, and this time it followed a linear walk-around design similar to the CM&SF and the V&O. Progress was rapid and it was operational in about 18 months. For the next 10 years it remained a work in progress as suggestions from my friends kept me busy refining the UCW's train operations and scenery.

**3** An eastbound local freight rolls slowly past the Shasta yard office so the clerks can read the car numbers and check its consist as the train pulls into an arrival track.

me a chance to hone my modeling skills and many hours of operating fun.

When my parents retired, they offered their ranch home to us in exchange for a new mobile home located on the family

farm. We jumped at the chance and made both moves in 1976. Working on the layout was much more convenient once we lived in the house. By 1984, the layout's numerous changes and additions had reached the point where further progress became impractical, so I started over.

My third track plan was influenced by David Barrow's Cat Mountain & Santa Fe (CM&SF) and Allen McClelland's Virginian



My crew often discussed the “beyond the basement” concept of car movement to simulate traffic moving to and from other railroads. I didn’t consider staging yards in the layout’s design, but the need for them became evident after several years of operation.

I added two staging yards, stacking one above the other, inside one of the layout’s peninsulas. These yards represented the UCW’s connections to the east at Denver and to the west at Salt Lake City. Each yard had 10 tracks with reverse loops to return trains to the visible part of the layout.

After several months of work, I discovered it was hard to operate these yards because everything was hidden from view and access was difficult. My crew suggested placing an operator inside the hollow mountain to manage the traffic. So I built a work space, roughly 3 feet square,

inside the reverse loops that provided just enough room for an operator to sit on a chair, turn the waybills, and do limited fiddling with the trains.

This arrangement worked out fairly well, and the operator’s job was affectionately dubbed the “Mole” due to the tight quarters of his assignment. Although successful, the Mole’s working environment was less than desirable, which led me into the next remodeling of the UCW.

### The 1995 version

To incorporate more active staging with ample space for the operators, we tore out nearly two-thirds of my finished layout in 1995. In the process, I upgraded the scenery and backdrops and transformed a mixture of motive power and rolling stock into a free-lanced mainline railroad with its own corporate image.

My friends pitched in so the new construction continued at warp speed, and one year later, almost to the day, we had our first operating session. The active staging yard was the first thing constructed with the rest of the layout following close behind. Since the new track plan closely matched the footprint of its predecessor, I recycled most of the original benchwork.

New scenery was expertly crafted by Kelly Newton, whose fantastic rockwork and attention to detail really captures the Utah and Colorado landscapes. Rob Spangler, another veteran UCW crew member, painted the beautiful backdrops and western vistas that highlight the scenic journey between Denver and Salt Lake. Dave Schen used his talents to add many detailed scenes to the layout.

After numerous experiments with paint schemes and colors, I finally settled on an



## >>The layout at a glance\_

**Name:** Utah Colorado Western  
**Scale:** HO (1:87.1)  
**Size:** 28 x 33 feet  
**Prototype:** free-lance  
**Period:** 1967  
**Locale:** Utah and Colorado  
**Layout style:** linear walkaround  
**Mainline run:** 320 feet  
**Layout height:** 42" to 58"  
**Benchwork:** L girder and laminated I beams  
**Roadbed:** spline  
**Track:** code 100 flextrack  
**Turnout minimum:** no. 6  
**Minimum radius:** 30" on the main line,  
 26" on the branch line  
**Maximum grade:** 1.5 percent  
**Scenery:** plaster over cheesecloth textured  
 with ground foam and natural materials  
**Backdrop:** Masonite and drywall  
**Control:** Rail Lynx infrared wireless  
 command control

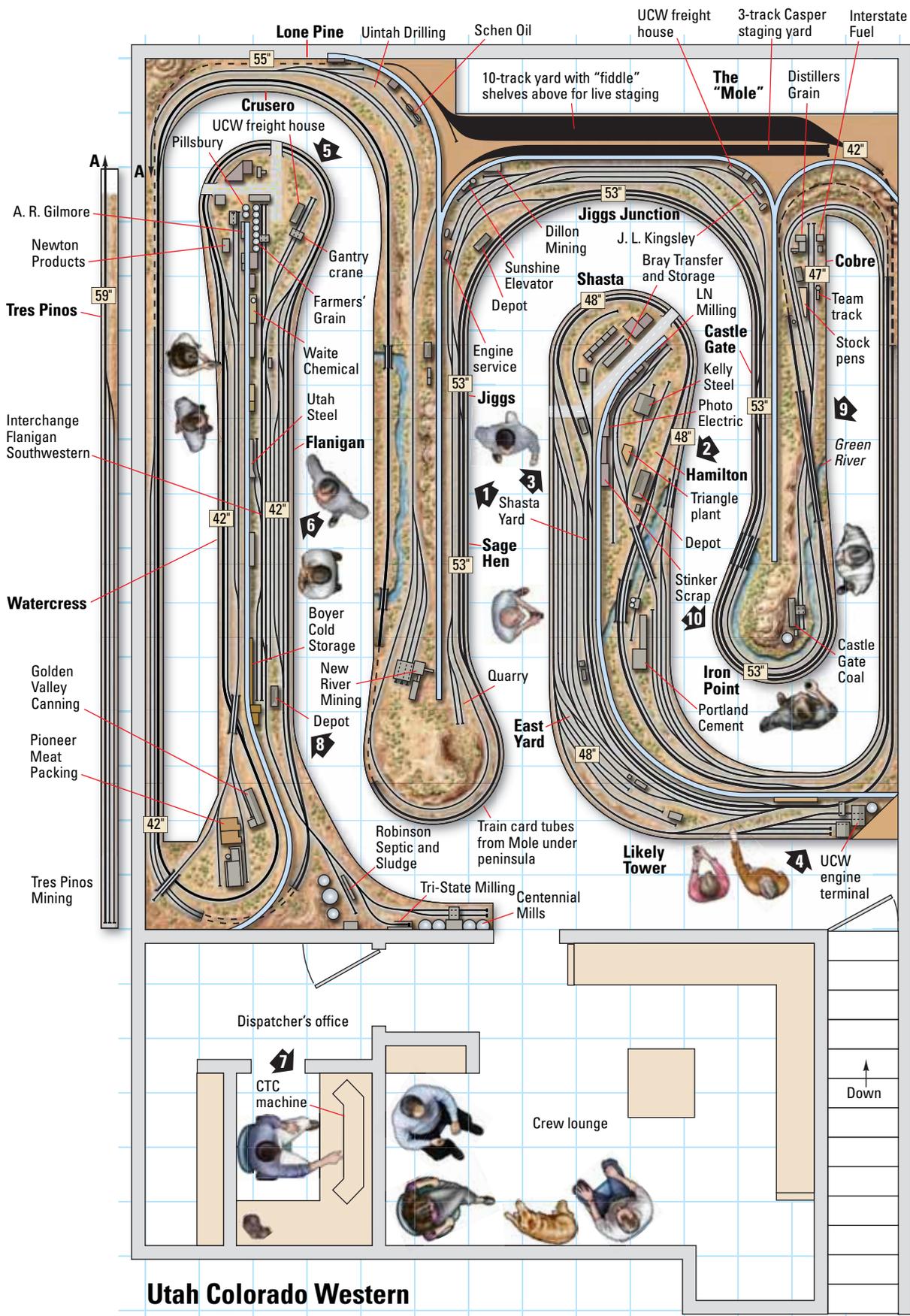
appropriate free-lanced corporate image for UCW motive power and equipment. I also decided to keep some of my favorite prototype locomotives to use as run-through power. At the same time, Jim French established a standard color scheme for the UCW structures.

### Car forwarding

The UCW's car movements are handled with traditional car cards and waybills which are changed at the staging yard. My waybills have only one or two destinations. Single-destination waybills represent a car traveling either east or west across the railroad. A two-destination waybill routes a car from staging to an on-line industry during the first move and from the industry to an off-line destination on the second move.

Spot cards are a wrinkle that I've added to regulate inbound traffic at the on-line industries. One spot card is available for each place where a car can be spotted for a local customer. These spot cards are inserted into the car card pockets on top of the waybills during the billing process. As cars are routed for on-line delivery, the spot cards indicate the specific cars to be delivered. This procedure continues until all of the spot cards are used. Cars that aren't billed remain at the billing locations until the next operating cycle when the process is repeated.

**5** The Flanigan Southwestern's local freight spends hours working the numerous industries at Flanigan. This shortline subsidiary parallel's the UCW main line to serve customers in Watercress and Flanigan.





**6** Utah Steel is another major customer switched by the FSW at Flanigan. It's typical of the shallow-relief structures Lee uses to simulate major on-line industries.

During the waybill turning process, the spot cards are removed from the car cards in town pickup boxes and recycled.

(CTC). This system gives the dispatcher remote control of its interlocked track switches and signals, so all trains operate on signal indication.

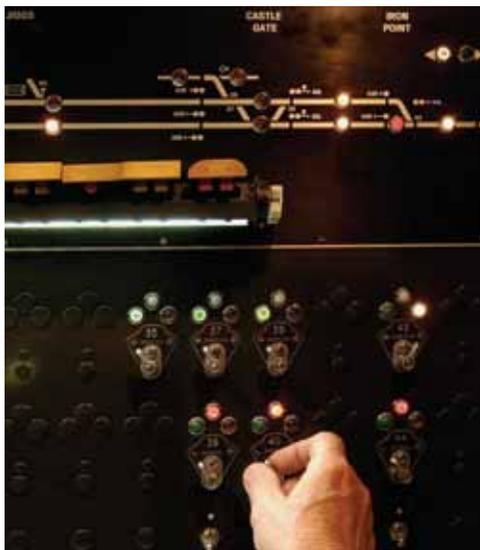
### Cab controls

My controls have evolved through the years as the UCW moved from DC cab control to command control in 1980. The freedom to run multiple engines in the same block was amazing and has certainly had an effect on how we operate today. When the UCW outgrew the original limited number of locomotive channels, the old system was replaced with Rail Lynx command control.

Early in 2000, the original custom-designed computer interface system that provided the interlocking logic and three-color signal controls needed upgrading. Jon Robinson, another regular UCW operator, designed the original CTC system which served the railroad well for nearly six years.

After some discussion, I switched to Bruce Chubb's Computer Model Railroad Interface (C/MRI), more of an off-the-shelf control system that would be easier for me to maintain. I had previously used some C/MRI circuits, and its similarity to Jon's system helped reduce the learning curve. This installation took several months, but the system has performed flawlessly since it went on-line.

About the same time, a collector offered to buy the former Southern Pacific CTC machine that Rod Loder and Gary Waite had restored to operate the UCW in 1990. The ensuing sale covered the cost of a "new" machine.

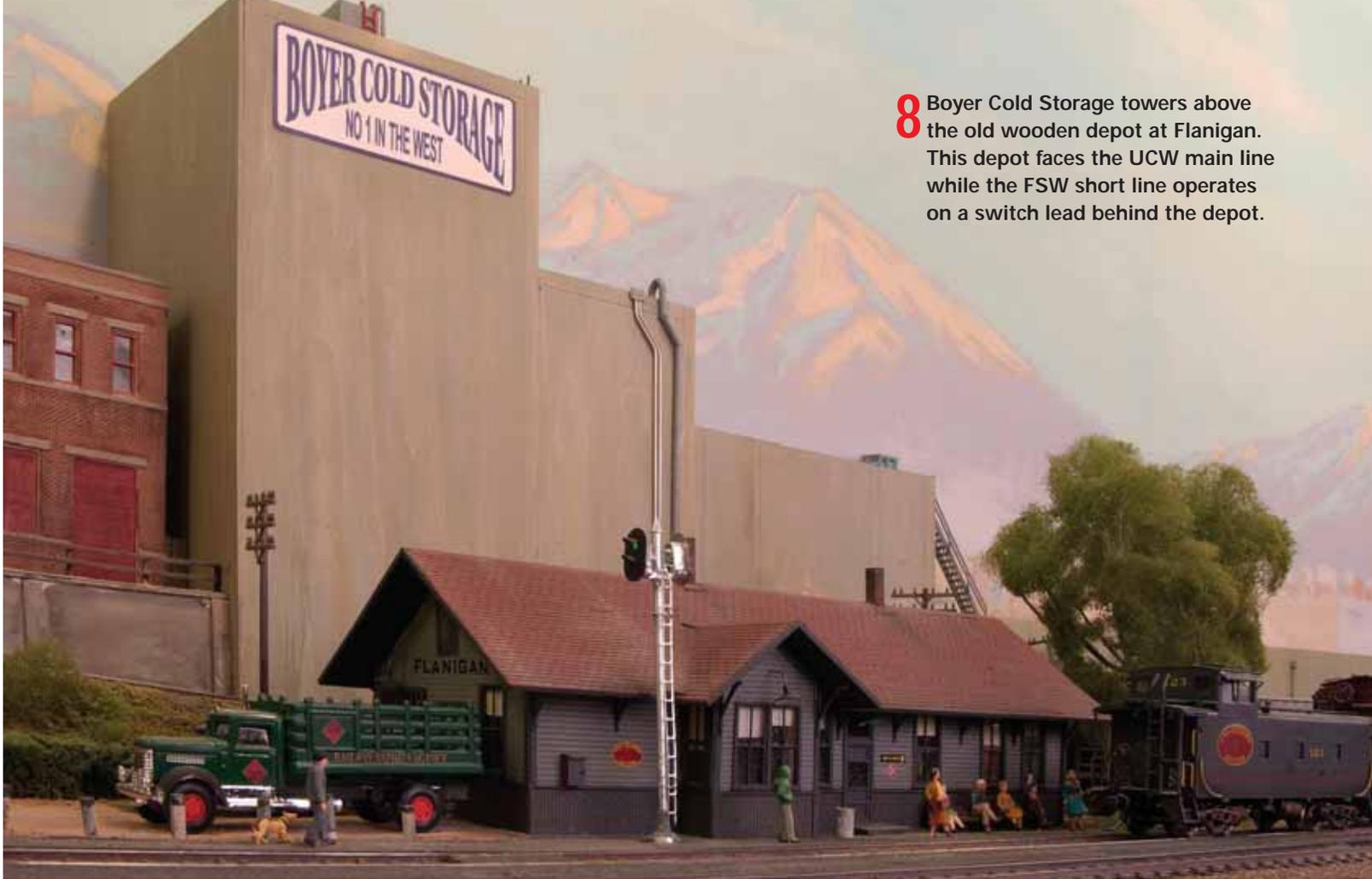


**7** A restored prototype Centralized Traffic Control machine controls the interlocked mainline turnouts and signals that keep traffic moving across the UCW main line.

Rail Lynx uses a small tetherless handheld transmitter to send an infrared, line-of-sight signal directly to the locomotive. It requires only 12 volts DC to the track, which really simplifies the wiring. With 255 channels available the system has more than enough capacity to handle the 70 locomotives now in service. See the Rail Lynx Web site at: [www.rail-lynx.com](http://www.rail-lynx.com).

### Centralized Traffic Control

Since 1990, the UCW has been operated under Centralized Traffic Control



**8** Boyer Cold Storage towers above the old wooden depot at Flanigan. This depot faces the UCW main line while the FSW short line operates on a switch lead behind the depot.

## >>Active staging with the Moles\_

**The UCW** is a point-to-point railroad, but both ends are joined by a hidden staging yard. This yard has 10 tracks, each of which holds 24 cars, and it's backed up by three rows of storage shelves. These shelves are divided and labeled to hold as many as 400 cars, all of which are billed and waiting for their next outbound trip. Labeled waybill boxes at both ends of the staging yard hold the unused waybills until they're needed for the next billing process.

Two operators (Moles) handle all of the car billing for trains originating or terminating in the staging yard. As trains arrive, the Moles separate the waybills from the car cards and attach appropriate new waybills. Then the car and its new waybill and car card are placed on the proper destination shelf. The loose inbound waybills are then sorted by car type and placed at the bottom of the pile in their appropriate boxes.

Waybill packets are delivered to the train crews using Pinewood Derby cars

fitted with spring clips to hold the bills. These cars travel through a pair of 6"-diameter drain pipes that angle down through a peninsula. A race car with a waybill packet is placed in the high end of the pipe, and gravity takes care of its delivery to the train crew at the end of the second peninsula. The second pipe angles in the opposite direction.



**Judging from the smile, Lee has the Mole job well in hand as he reports to the dispatcher on the telephone. The shelves hold cars billed for departure.**

This active staging is a continuous process, so we can literally run for hours non-stop. About 30 minutes is required between sessions to turn the waybills for cars at each industry.

My concern about not having anyone bid on the staging jobs has never materialized, and time seems to fly when you're working as the Mole. – L.N.



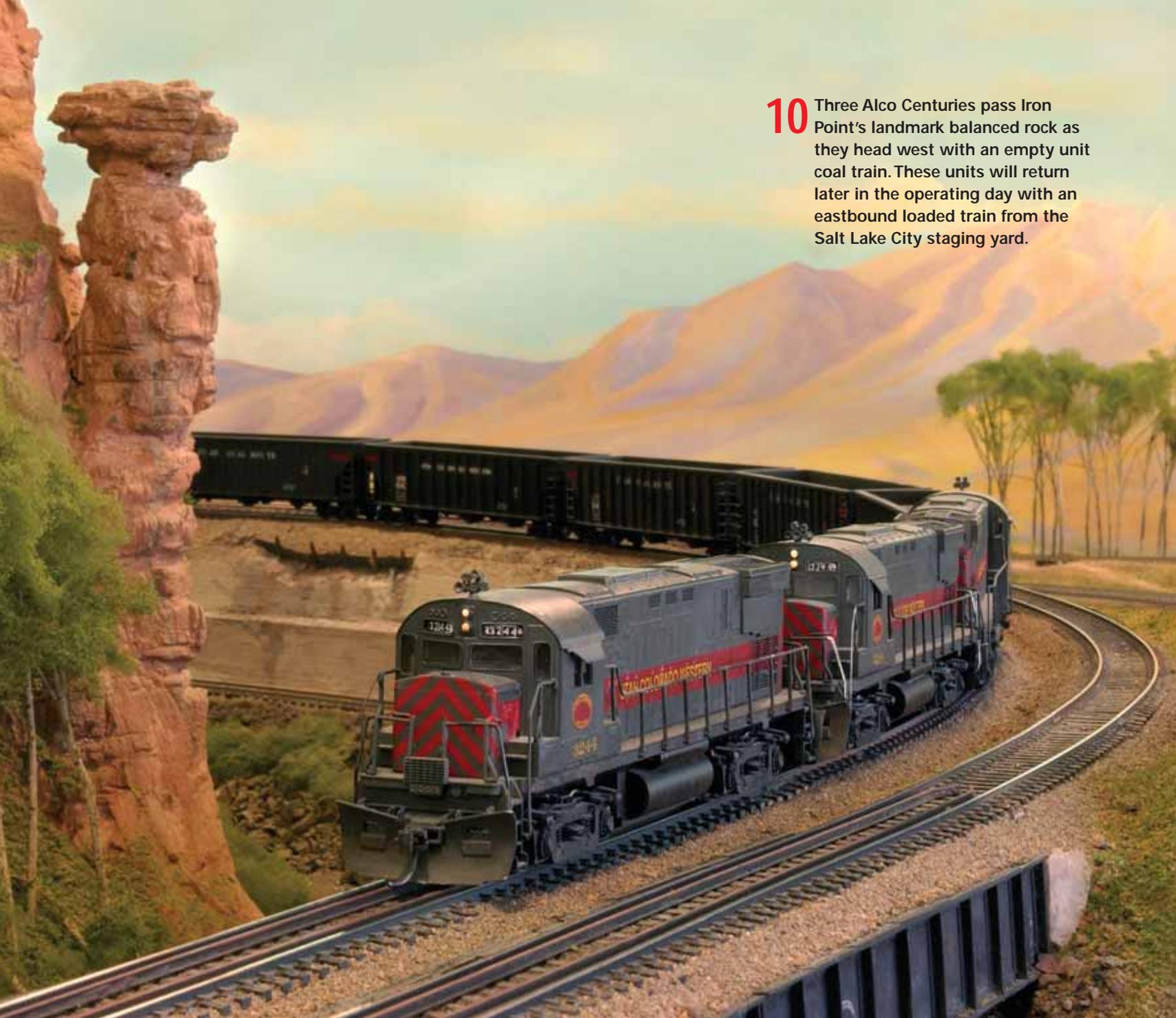
**Modified Pinewood Derby cars travel through a pair of sloping drainpipes to deliver waybill packets to the staging yard or to outbound train crews.**

**9** Two first-generation Geeps roll an eastbound manifest freight across the Green River bridge on the main line, while another Geep switches the Castle Gate Coal Co. on the Old Main Line Subdivision.



My new CTC machine is a five-foot section of a former UP machine that Rod restored. John Signor supplied the artwork for the track diagrams, which are photo-etched aluminum panels depicting the UCW main line.

For anyone interested, Rod has turned his CTC-machine-preservation efforts over to Michael Burgett and his Control Train Components Co. Mike is a real-life signal maintainer who's doing a great job of continuing where Rod left off. A full line of CTC parts is available through Mike's Web site at [www.CTCCParts.com](http://www.CTCCParts.com).



**10** Three Alco Centuries pass Iron Point's landmark balanced rock as they head west with an empty unit coal train. These units will return later in the operating day with an eastbound loaded train from the Salt Lake City staging yard.

### Continuing fun

Though the railroad looks complete, additional details can always be added. Recently, I started replacing all the visible code 100 track with new code 83 components – a project I look forward to completing during my retirement. The future of the UCW looks bright – who knows what changes lie ahead?

The UCW participates in the Great Basin Getaway, an intense semi-annual operating weekend held during the fall. It's hosted by myself, Rob Spangler, Gary Peterson, and Ted York, all of whom have

operating layouts and share in the fun. Our guest operators rotate among the railroads, spending a full day on each one. The final evening is topped off with a barbecue, which gives everyone a chance to visit. Meeting others who enjoy the operations side of the hobby has been most gratifying, and we hope to meet more operating hobbyists in the future.

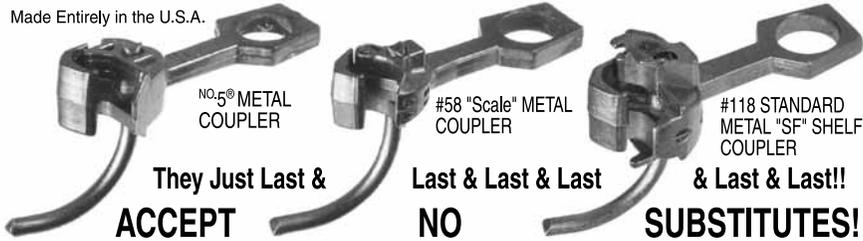
The Utah Colorado Western will celebrate its 35th anniversary in 2005, and I can say without hesitation that it has met or exceeded all my expectations in the hobby. Not only has it provided many

enjoyable hours of operation, but the opportunity of meeting other modelers has been rewarding.

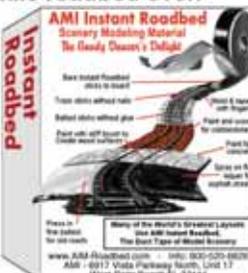
To learn more about the UCW visit our Web site: [www.ucwrr.com](http://www.ucwrr.com), or get a copy of Allen Keller's *Great Model Railroads* video no. 27. GMR

*Lee Nicholas is a full-time modeler since he retired from farming last year. He and his wife, Kris, have three grown sons and seven grandchildren. They live in Corinne, Utah, just east of the Golden Spike site at Promontory.*

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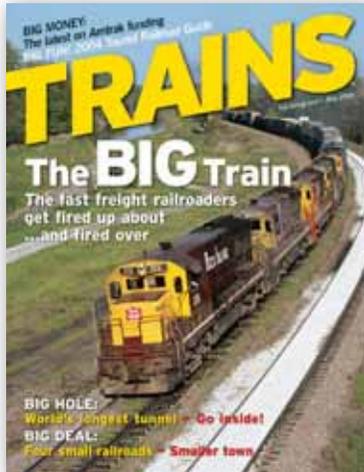
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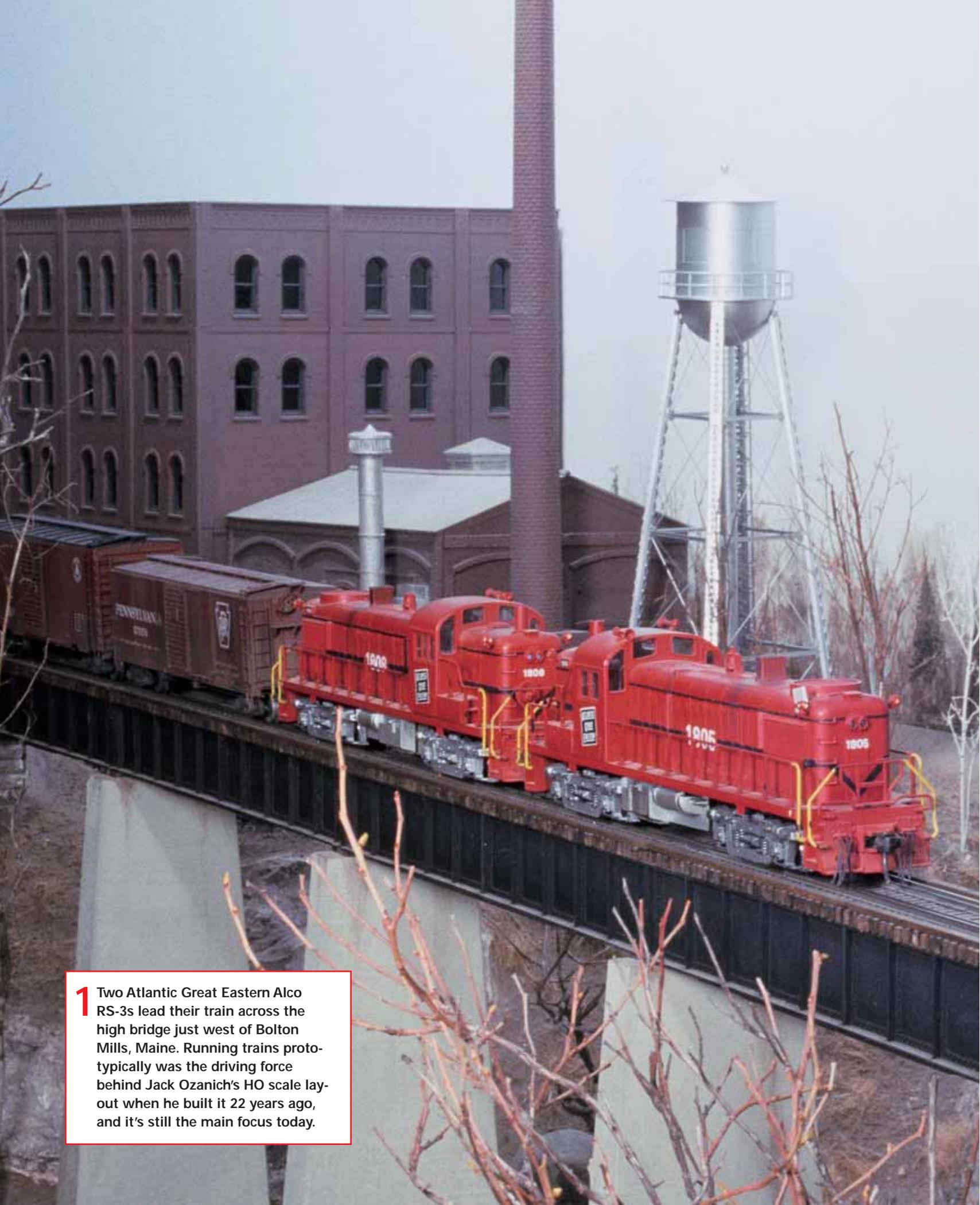
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# F3

**HO Scale**  
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**1** Two Atlantic Great Eastern Alco RS-3s lead their train across the high bridge just west of Bolton Mills, Maine. Running trains prototypically was the driving force behind Jack Ozanich's HO scale layout when he built it 22 years ago, and it's still the main focus today.

# >> Running trains with authority

Preserving historic railroad operation is the main goal of this HO scale New England-themed layout

By Craig Wilson and Jack Ozanich • Photos by the authors





### Often after a modeler has

had a layout for a number of years, he gets restless with it, looking to either expand it, modify it, or simply tear it down and start over. That isn't the case with Jack Ozanich's HO scale layout, Atlantic Great Eastern Ry. [first featured in *Model Railroad Planning 1995*. – Ed.].

Though the New England-themed layout has been in operation for more than 20 years, Jack has made no changes in the track plan or fundamental operating scheme, a tribute to the detailed planning put into the AGE's original construction.

And he's as pleased as ever with how his railroad runs, using prototypical timetable and train-order operation.

The Atlantic Great Eastern was designed to be an operating layout, and that was the guiding principle behind AGE from the very beginning – starting with the house itself. Jack built a new house in 1982, taking special care to construct the basement with a model railroad in mind. He included an entrance to the layout room from the garage to facilitate moving layout construction materials in and out, and so his operating crew wouldn't have to

**2** Consolidation 2317, working in helper service, is cut in ahead of the buggy (caboose) of a westbound freight. Heavy westbound trains usually require helpers up the 3.5-percent grade to Mahoosic Notch.

walk through the house. Through strategic placement of items such as a bathroom, crew lounge, furnace, and water heater, Jack was able to use 85 percent of the basement for the layout.

In planning this layout, his sixth, Jack drew on things he'd learned from his previous model railroads as well as from railroads he'd helped others build or operate. One important design consideration was aisle widths. Areas where operators were likely to pass each other are wider, three feet or more. Others, like the aisle along Center Monson, are narrower because only one person at a time normally uses that area. Just as with the basement utilities, by thinking through how the layout would be used, Jack made the model railroad comfortable to move around while optimizing the actual layout area.

A second consideration during the design stage was that trains would pass through any scene only once. He set about working toward a linear design and built a portion of the layout with multi-level benchwork. Having the layout on two levels allowed him to have the branch to New Landsport completely separate from the rest of the layout once it leaves the main line at Rangeley River Junction.

Another idea Jack incorporated to make his linear main line work is a concealed turn-back loop. Between Ellen and Bolton Mills, the main line loops through a hidden turn-back curve long enough to

**3** At the engine terminal in South Dover, Mikado 3825 is being serviced to take the afternoon Laker up to Clayton Lake. Meanwhile, the crew of the South Dover tramp job heads their SW1 for the diesel track after finishing switching duties in the city.





**4** By 1964 on the AGE, veteran Alco FAs were being traded in for second-generation diesels, like this C-424 seen here leading a short eastbound freight. Jack holds operating sessions on the layout in two different eras, depicting the dramatic changes made in railroading between the 1950s and 1960s.

**5** It's 2:56 p.m. and train no. 6, the *Maritimer*, is right on time, making its scheduled station stop at Rangeley River Junction. The long mainline run combined with a 2:1 fast clock make running passenger trains by the timetable a fun challenge.



hide an entire train. This concealed horse-shoe is actually sandwiched between the grade up to Mahoosic Notch and the lower-level New Landsport branch.

The hidden track represents about 20 miles of running through Briar Tank, so a crew needs to hold its train in the loop for a set amount of time. This simulates the time it would take to cover the imagined distance and makes the layout seem larger. When the loop time is up, the crew then moves its train back onto the layout and off to the next town.

Jack used the loop idea, borrowed from the Midwest Railroad Modelers' former Batavia, Ill., club layout to keep the two towns from seeming too close to each other. As another plus, use of the turn-back loop let Jack use a much larger-radius curve at that location without taking up valuable aisle space elsewhere in the layout room.

*continued on page 54*

## >>New England inspiration\_

### I got interested in modeling

New England after reading several books and articles by Philip Hastings and Jim Shaughnessy and visiting the region in 1974. I enjoy the architecture and climate and felt the location was full of appealing scenes just begging to be modeled.

My Atlantic Great Eastern Ry. is a free-lanced railroad connecting Auburn, N.Y., with central and northern Maine. The modeled portion represents the South Dover Subdivision from East Berlington, N.H., to South Dover. The main yard at Berlington is represented by the fiddle yard. East from South Dover, the line runs into the fiddle yard as well, representing connections with

the Canadian Pacific and the Bangor & Aroostook at Brownville Junction and the Clayton Lake Subdivision to northern Maine via Lake Junction. At Rangeley River Junction the New Landsport Subdivision branches off to the seaport town of the same name. After departing the junction the branch tracks enter a short hidden helix and emerge on a lower level at the village of Warren Depot.

I drew the route of the AGE on maps to determine the right-of-way and created the town names by modifying the names of real towns in the same area. For example, South Dover is very close to the actual town of Dover. New Landsport was derived from Portland, and so on. – *Jack Ozanich*

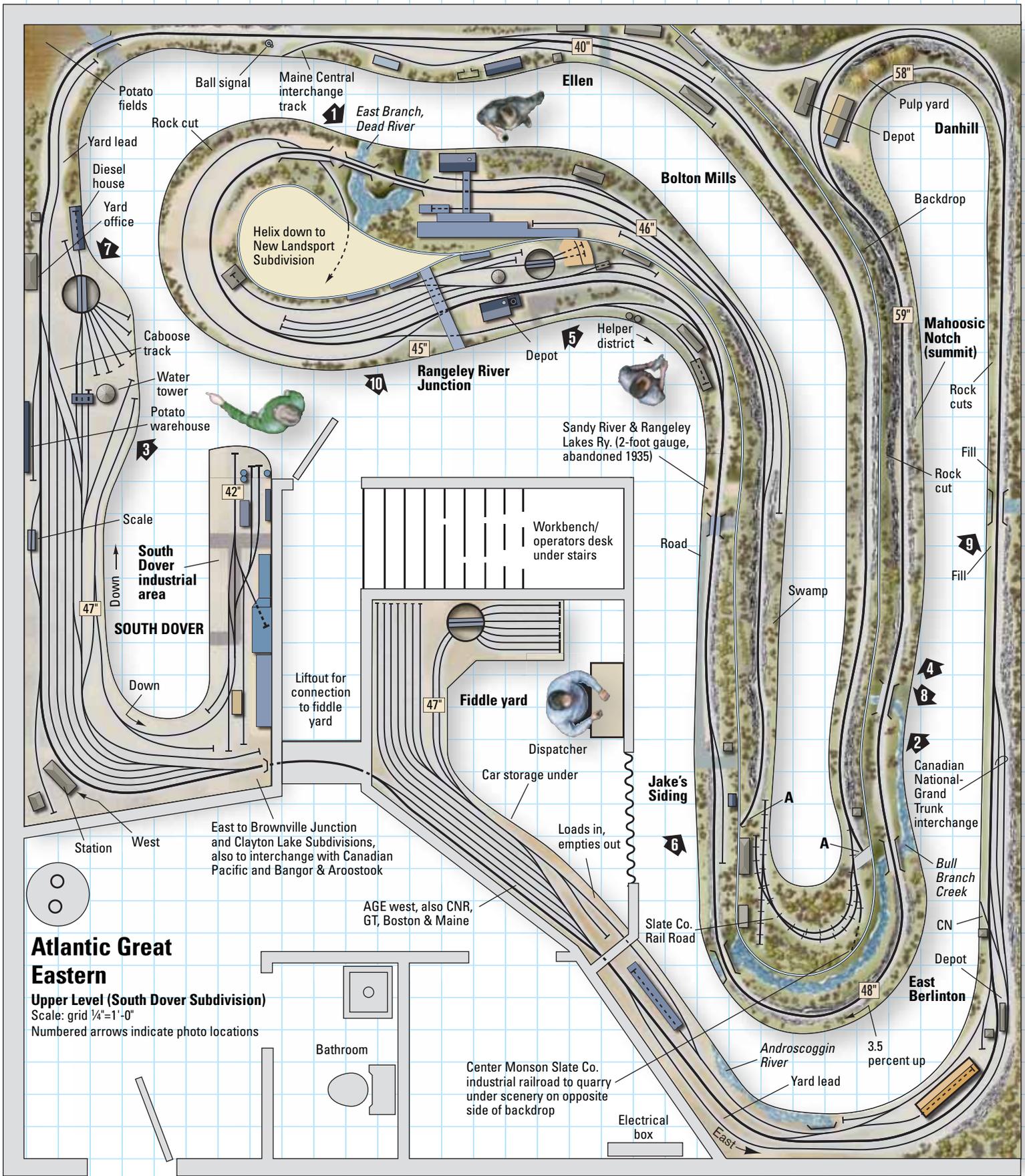
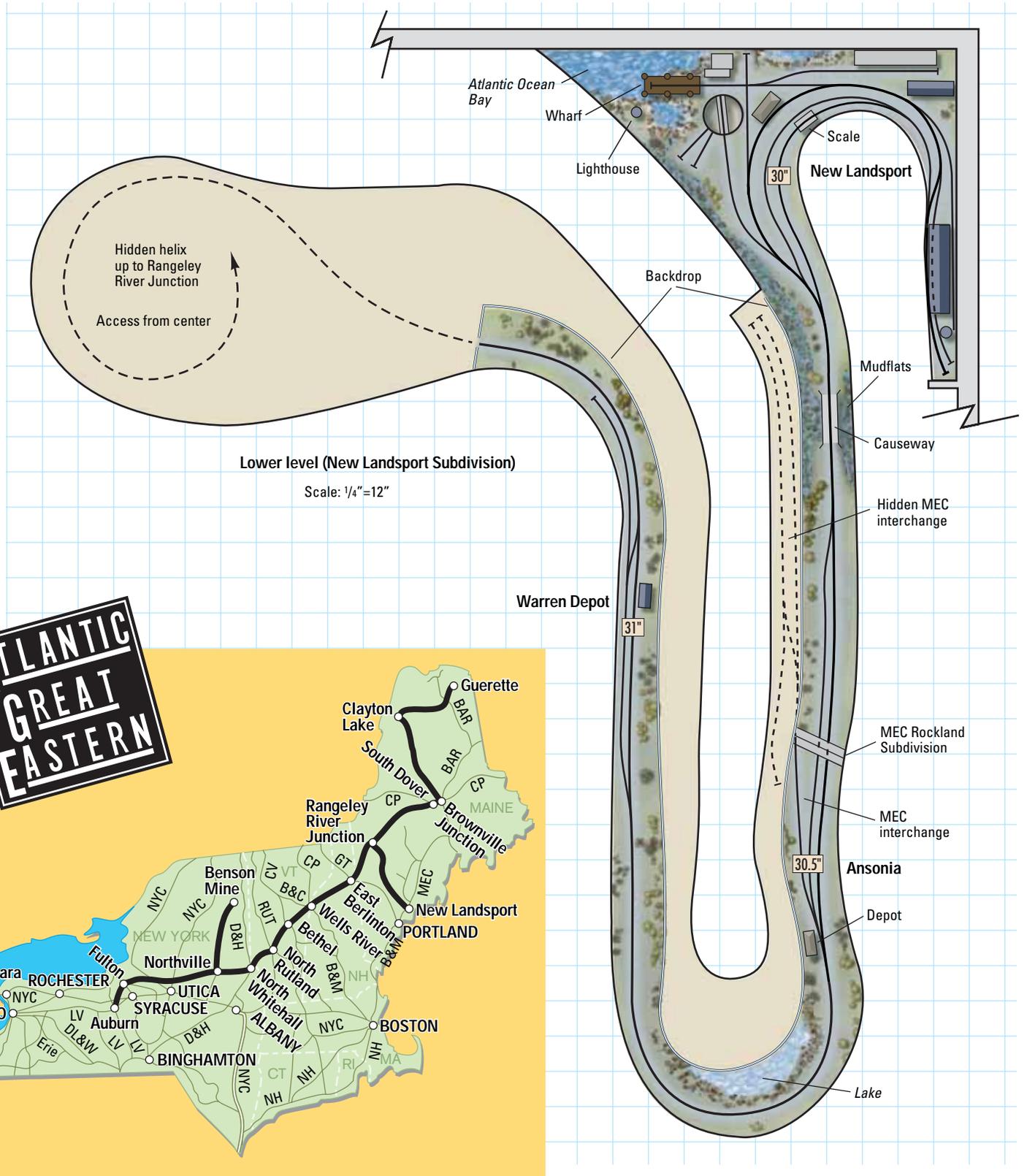


Illustration by Jay Smith



**>>The layout at a glance\_**

**Name:** Atlantic Great Eastern  
**Scale:** HO (1:87)  
**Size:** 30'-6" x 35'-0"  
**Prototype:** free-lance  
**Locale:** southwestern Maine, eastern New Hampshire

**Period:** winter 1959 or '64  
**Layout style:** linear walkaround  
**Layout height:** 30" to 59"  
**Length of main line:** 250 feet  
**Benchwork:** L girder  
**Roadbed:** Homasote on wood splines  
**Track:** handlaid code 83 main line, code 70 and 55 sidings and spurs

**Turnout minimum:** no. 6  
**Minimum radius:** 33"  
**Maximum grade:** 3.5 percent  
**Scenery:** plaster over screen  
**Backdrop:** hardboard and drywall  
**Control:** CTC-80 with wireless throttles and cab-assignment interface designed by Bruce Chubb

## >>Days of steam on the AGE



**6** A westbound extra led by engine 3761 passes the pulpwood loading spur at Jakes Siding. The train is about to begin its long climb up to Mahoosic Notch on a damp and hazy afternoon.

**7** Mountain 6094 takes a turn at the South Dover roundhouse to get ready for its next run. In the background, the yard crew uses AGE 8504 to push a cut of cars past the two-story brick yard office.



*continued from page 51*

### Fiddle yard staging

Jack also wanted to include live interchanges on the layout – places where the AGE exchanges cars with connecting railroads. To make the concept work, he used a fiddle yard for staging trains.

A fiddle yard is a staging yard with an operator who takes apart trains as they arrive and then makes up new trains to send out onto the layout. The fiddle yard lends flexibility to Jack's operating sessions because he never has to stop a session to re-stage trains. It also allows the yardmaster to call extra trains to handle overflow traffic, just as on the prototype. Once the extra train gets to the fiddle yard, the yard

operator removes it from the track, putting the cars away until they're needed again.

Jack's fiddle yard is located in a separate room shared by the dispatcher's office. There are rows of shelves above the yard to hold the cars, locomotives, and associated paperwork to make up all the trains used during a session. To simulate interchange activity during an operating session, the fiddle yard operator makes up the Grand Trunk interchange job for East Berlington, as well as the Canadian Pacific and Bangor & Aroostook transfers that deliver cars to South Dover Yard.

The main fiddle yard isn't the only one on the layout. The interchange with the Maine Central at Ansonia on the New

Landsport branch has its own two-track fiddle yard behind the backdrop. This yard is accessible from the opposite side of the aisle, creating the illusion that the interchange trains actually come and go from some other location. Of all the interchanges on the layout, only the MEC's at Ellen requires cars to be handled on and off the "onstage" portion of the layout.

### Complete it before you run it

Jack and his friends worked on the layout for about two years building the benchwork and basic scenery before they laid any track. An important lesson Jack learned from his friend John Korstange was that once the trains started running,



**8** A husky whistle cuts through the cold New England air on a winter day in 1959, announcing the approach of a double-headed freight. This potato extra, lead by Mikado no. 3761, is headed from Rangeley River Junction up the 3.5 percent grade to Danhill on the AGE's helper district.

the scenery seemed to always be put off. With that in mind, Jack and his crew put as much of the scenery in place as they could before laying the track. There seems to be some truth to John's philosophy as some areas of the AGE have not progressed much beyond the basic initial scenery stage since the trains started running!

The layout is set in late winter, so the scenery's brown grass and leafless trees may look a bit Spartan at first glance. Jack has worked hard, however, to achieve the correct look for this season, so that a visitor gets the impression of railfanning on a typically grubby New England day during late winter or early spring.

The winter appearance of the layout actually starts with the fascia, which is painted in a semi-gloss coat of the basic scenery color. Painting the non-layout features in similar colors helps to subtly blend the benchwork with the rest of the scene. After roughing in the contours of the landscape, Jack and his crew painted it

## >>Stamping backdrop trees\_

**Jack's layout features** late-winter scenery. Modeling this season requires a lot of bare trees, particularly on the backdrop. At first, Jack and his crew had thought about painting all of the trees on the backdrop by hand, but it was soon apparent that this was going to be a huge job. Jack's friend Dan Holbrook suggested they try making rubber stamps with tree and branch

shapes. Following Dan's advice, Jack had a number of different tree-pattern stamps made from his own designs.

He used the stamps with diluted acrylic paint to print the trees on the 300-plus feet of backdrop. By varying the colors and intermixing the stamps, Jack was able to quickly and easily produce convincing winter background trees for his layout. – C.W.



Using custom-made rubber stamps simplified the project of adding bare winter trees to the backdrop – a project that seemed daunting if painted by hand.

the same earth-tone tan color as the fascia, but with a flat finish.

Before going too far, they painted the backdrop. The sky is more gray than blue to give the impression of an overcast win-

ter day. Jack and his crew painted the slopes of the distant hills in layers. They painted the farthest hillsides first and then tinted the paint with more earth colors for each successive layer of hills, making



those in the foreground appear to be closer. They used rubber stamps to add stands of trees to the backdrop. [See the sidebar on page 55. – *Ed.*]

Because of the difficulties involved with painting clouds that look right from all viewing angles, Jack didn't include any clouds on the backdrop. However, the plain gray sky and the various shadows produced by the layout room lighting effectively combine to give the impression of an overcast day all on their own.

With the basic scenery and backdrop in place, Jack and his crew went to work on the track. This is handlaid on wood ties, using code 83 rail for the main line, code 70 on the sidings, and some code 55 on the spurs.

**9** In this 1964 view, a pair of Alco C-424s have just entered the East Berlington yard limits and are at the westbound approach signal for the interlocking plant. With careful placement of scenery and backdrop features, Jack has been able to give even the narrowest scenes on the layout a feeling of depth.

### Operating the line

Even though Jack has been a model railroader since an early age, he didn't fully understand how railroads moved trains until hiring out on the Grand Trunk Western as an operator in May 1967; he later became a locomotive engineer. Working in timetable-and-train-order territory on the

GTW helped Jack develop a healthy appreciation for how real railroads responsibly and safely operate trains. To Jack, running a model railroad accurately is just as important as building locomotives, rolling stock, or structures with the proper details. He feels operation is a significant part of railroad history that shouldn't be lost, so he runs his layout with the same timetable-and-train-order system he learned back in the 1960s.

The traffic patterns of the AGE's New England region correlate nicely with his chosen operating season. Pulpwood and paper dominate winter-revenue traffic along with the seasonal potato rush. The potato shipments start to build in November and continue through March, so solid blocks of refrigerator cars running as extras in either direction are a common sight.

Operations begin with the calendar set to November, and each session starts where the last one left off. When the calendar reaches March, Jack starts the cycle over again. He can operate the railroad in two different eras, with each period requiring a different number of operators.

The larger operating sessions are held during the months of September through April. During this season, it's 1959 on the AGE and steam locomotives are running out their final miles on the line. The railroad still runs several scheduled passenger trains with heavyweight equipment, and traffic moves at a steady pace with frequent trains. A 1959 session can keep a crew of 12 busy all day and requires a dispatcher, agent/operator, two yardmasters, a fiddle yard operator, and an assortment of road crews.

Indoor operations shift to a lighter pace in the summer months, as Jack spends a lot more time with his Sandy River & Clear Lake 3/4" scale outdoor railroad. [See the story on page 58. – *Ed.*] For the warmer months, the calendar jumps ahead on the AGE to the winter of 1964. Here, steam has been retired and the venerable Alco FA cab units are being traded in on the same builder's new C-424s. The wood-underframe buggies (caboose) have been replaced with new International steel cars, and a single Budd RDC (Rail Diesel Car) maintains what is left of the passenger service. This session is easily run with as few as six operators.

The AGE operates with an adjustable fast clock that can be set to either 2:1 or 3:1, depending upon the pace of opera-



**10** The yard crew positions themselves for a roll-by inspection of a westbound train at Rangeley River Junction. The track in the foreground is the main track for the branch line running to New Landsport.

tion. Jack likes the slower “fast time” (some operators use 6:1 or 12:1) because certain tasks, like switching cuts of cars or writing train orders, take just as much time as on the prototype.

### A typical 1959 session

As an example of operating on the AGE, let’s take a look at the traffic associated with a 1959 session. A typical day in 1959 sees two regular freight trains running in either direction, plus one passenger train running each way. Westbound freights have a timetable schedule, while the eastbounds run as extras. A local job works the industries between South Dover and Rangeley River Junction.

On the east end of the layout, there is a “lead job” that switches the yard, while the “South Dover tramp” switches the city industrial area. Both the CP and the BAR run transfer jobs into South Dover twice a day. There’s also one AGE freight turn to Clayton Lake (represented by the fiddle yard) originating from South Dover, making South Dover Yard a busy place.

Elsewhere on the layout, at Rangeley River Junction, the yard engineer, in addition to his regular duties, also runs the

### >>Plenty of assistance\_

#### The Atlantic Great Eastern

is a successful railroad thanks in part to the assistance of many talented people. John Korstange was instrumental in the layout’s design and construction. Jack Tyson has helped with many of the structures, including the paper mill at East Berlington. Brothers Bob and Fritz

Millhaupt installed the fast clocks and have been invaluable in troubleshooting the computer and electrical components. Craig Wilson did the layout and printing of the timetables and other paperwork and can often be found running the fiddle yard during operating sessions. – J.O.

helper engine to assist trains up the 3.5 percent grade to Mahoosic Notch. The only regularly scheduled train on the New Landsport branch is a daily-except-Sunday mixed train that runs from the seaport to Rangeley River Junction and returns. At East Berlington, the Berlington Paper Co. mill complex is served by two switch jobs each day. The Boston & Maine operates the 3 p.m. mill job, while the AGE counter-part goes to work at 11 p.m.

Because it’s potato season, extra trains in each direction are common. On weekends, crews may see a passenger extra called for a ski train that runs from the Maine Central connection at Ansonia up Mahoosic Notch to Danhill. Other jobs include crews for the Ansonia MEC interchange and the twice-daily Grand Trunk interchange at East Berlington. The Center Monson Slate Co. also needs a daily switch crew to run its GE 44-ton switcher.

### Built to last

Jack’s interest in the AGE remains high despite building the SR&CL outdoors. The HO railroad continues to evolve as he adds more structures to complete the scenes. Most important, however, Jack feels that operating sessions on the AGE remain as interesting and entertaining today as they were 20 years ago. Because the railroad still serves the purpose for which it was built – preserving the history of timetable-and-train-order operation – the Atlantic Great Eastern should continue to have an exciting future. GMR

*Craig Wilson is a public school music teacher and has been a regular member of Jack’s AGE operating crew for the past 15 years. Craig is a member of the Ann Arbor RR Technical & Historical Association and has worked on its quarterly publication, The Double A.*

# >> Over the hills and through

**When people visit** my Sandy Ridge & Clear Lake Ry. for the first time, they inevitably ask how I came to the decision to construct the 3 $\frac{3}{4}$ "-scale railroad that runs through the 29 acres around my home. The truth is, I didn't decide to do it overnight – the idea grew on me for a long time.

The seeds were planted when I was four years old and my parents took me to visit the House of David RR in Benton Harbor, Mich. What really fascinated me was that people could ride in the trains, not just on them. Years later, Arnt Gerritsen introduced me to Harold Allen who had built a 4"-scale, 12" gauge live-steam logging railroad in Ann Arbor, Mich. The sight and sound of a pair of Shay locomotives working up and down the hills was

enough to rekindle my interest in outdoor railroading. The size and hilly, wooded topography of Harold's property was similar to what I had in Battle Creek, so that trip was the motivation behind building my SR&CL.

After the visit to Ann Arbor, I discussed the possibility of building something similar on my property with my friend John Korstange. We agreed that what I really wanted were trains that you rode in (not on), so we were certain that we didn't want to build it in 1" scale or smaller. Our decision, however, meant that everything we'd need had to be scratchbuilt.

A layout this size is something you can't build alone, so John and I split up the tasks early on. I was in charge of the surveying, grading, and track laying. John's responsibilities were to design and construct the equipment. Though we were ready to move ahead, we still hadn't picked a modeling scale.

**1** Sandy Ridge & Clear Lake Forney 2-4-4T no. 7 couples to the passenger car *Ailina* at Highpoint on Jack Qzanich's 29-acre 3 $\frac{3}{4}$ " scale live steam railroad.



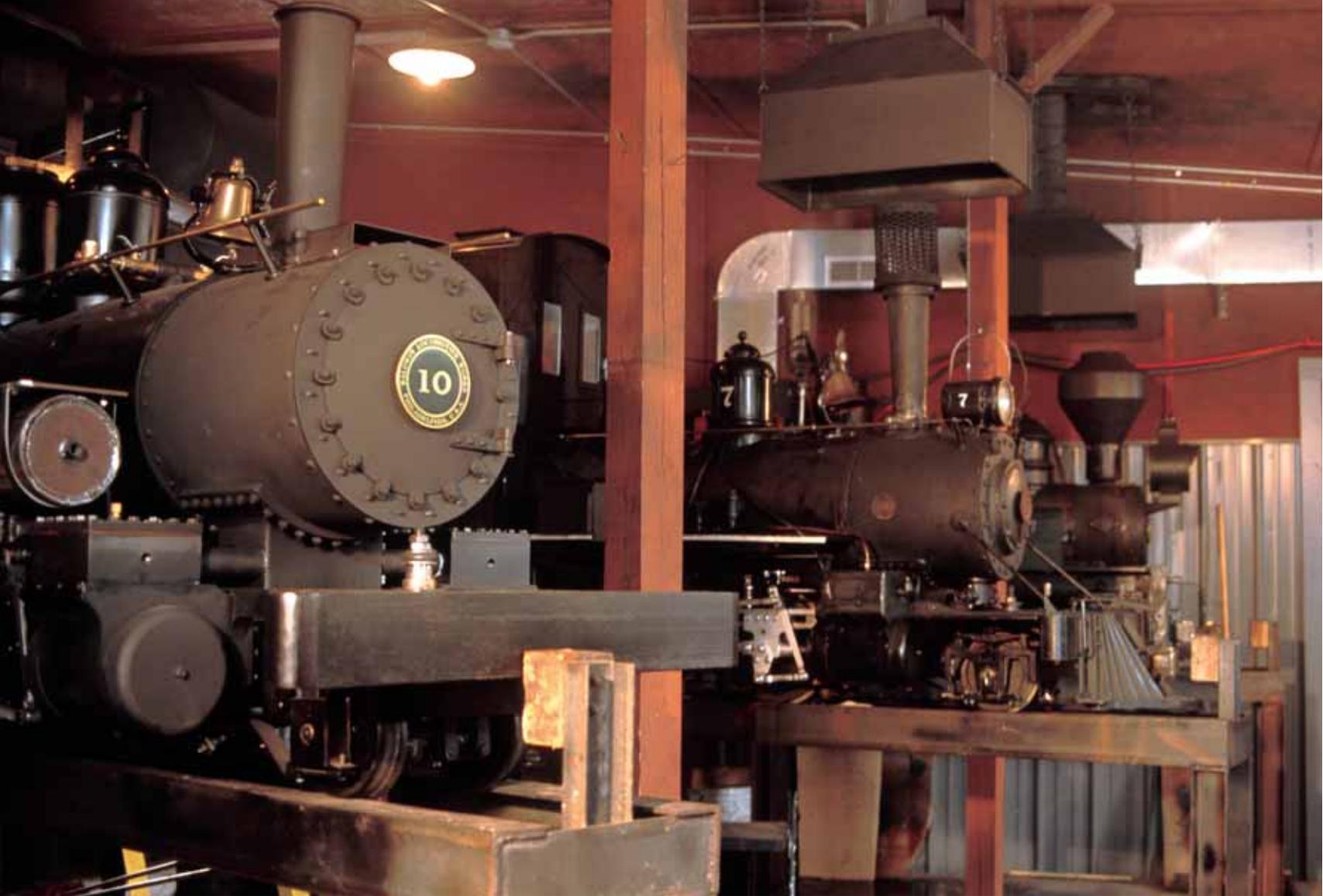
A free-lanced Maine two-footer in a large scale format

By Jack Ozanich with Craig Wilson • Photos by the authors

# the woods



**2** Clear Lake Lumber Co. Shay no. 4 crosses Nobrook Trestle on a crisp winter day. Jack wanted an outdoor railroad with trains he could actually ride in, so he picked 3 $\frac{3}{4}$ " scale. His railroad is a free-lanced version of a Maine two-foot gauge line.



**3** A view from inside the roundhouse shows the SR&CL's steam fleet, including (from right to left) no. 4, Mike Allen's Shay; no. 7, Jim Small's 2-4-4T; and no. 10, Jack's 2-4-4T, built by Marty Knox.

At this point I happened to see the beginnings of a large scale steam locomotive during a visit to the Huckleberry RR shops at Crossroads Village near Flint, Mich. While there, I inquired about the infant locomotive's ownership and was told by HRR motive power superintendent Marty Knox that it could belong to "anyone who wanted it." The question of scale for the SR&CL was settled on the spot –  $3\frac{3}{4}" = 12"$  – the scale of that locomotive.

The name of the railroad was derived from the sandy hill on which my house sits near Clear Lake. Also, the initials SR&CL are reminiscent of the Sandy River & Rangeley Lakes Ry., a prototype Maine two-footer. Ever since I read Linwood Moody's book *The Maine Two-footers*, I've

been fascinated with Maine narrow gauge railroads. [For more on Maine two-foot gauge railroads see page 63. – *Ed.*]

### Moving earth

We started construction during the summer of 1994. After having the property surveyed, we drew up a point-to-point track plan. Though I have 29 acres to work with, the landscape is hilly, making it challenging to come up with reasonable grades. There is a 90-foot elevation difference from the east end of the line at Clear Lake to the west end at Highpoint.

Railroad construction began at an existing pole barn (Phelps) where the railroad's shop is now located. We laid the first track east toward Jack's Pit – a natural gravel pit where we get fill material and ballast. John built all the switch stands, switch frogs, and other track requirements.

We used 12-pound rail for the main line and eight-pound rail for the sidings and spurs. Eight-pound rail scales out to about

### >>The layout at a glance\_

**Name:** Sandy Ridge & Clear Lake Ry.

**Scale:**  $3\frac{3}{4}" = 1$  foot

**Size:** 29 acres

**Prototype:** free-lance based on Maine two-foot gauge railroads

**Period:** present day

**Locale:** Michigan

**Layout style:** point-to-point outdoor railroad

**Layout height:** 850 to 950 feet above sea level

**Length of main line:** 6,000 feet

**Roadbed:** gravel

**Track:** handlaid 12-pound rail main line, 8-pound rail on sidings and spurs

**Minimum turnout:** no. 10

**Minimum radius:** 75 feet

**Maximum grade:** 5.2 percent

**Scenery:** real dirt sifted over glacier-carved landforms

**Backdrop:** natural trees and sky

**Control:** live steam and gas engine

**4** Engineer Tom Casper eases locomotive no. 7 down the 5.2-percent grade at Casper Cut with a load of logs. The wood is heading to Phelps for cutting and splitting.



## Sandy Ridge & Clear Lake Ry.

Not to scale  
Layout covers 29 acres  
Numbered arrows indicate photo locations

— Completed track  
- - - - - Planned track

**850** Elevation in feet above sea level

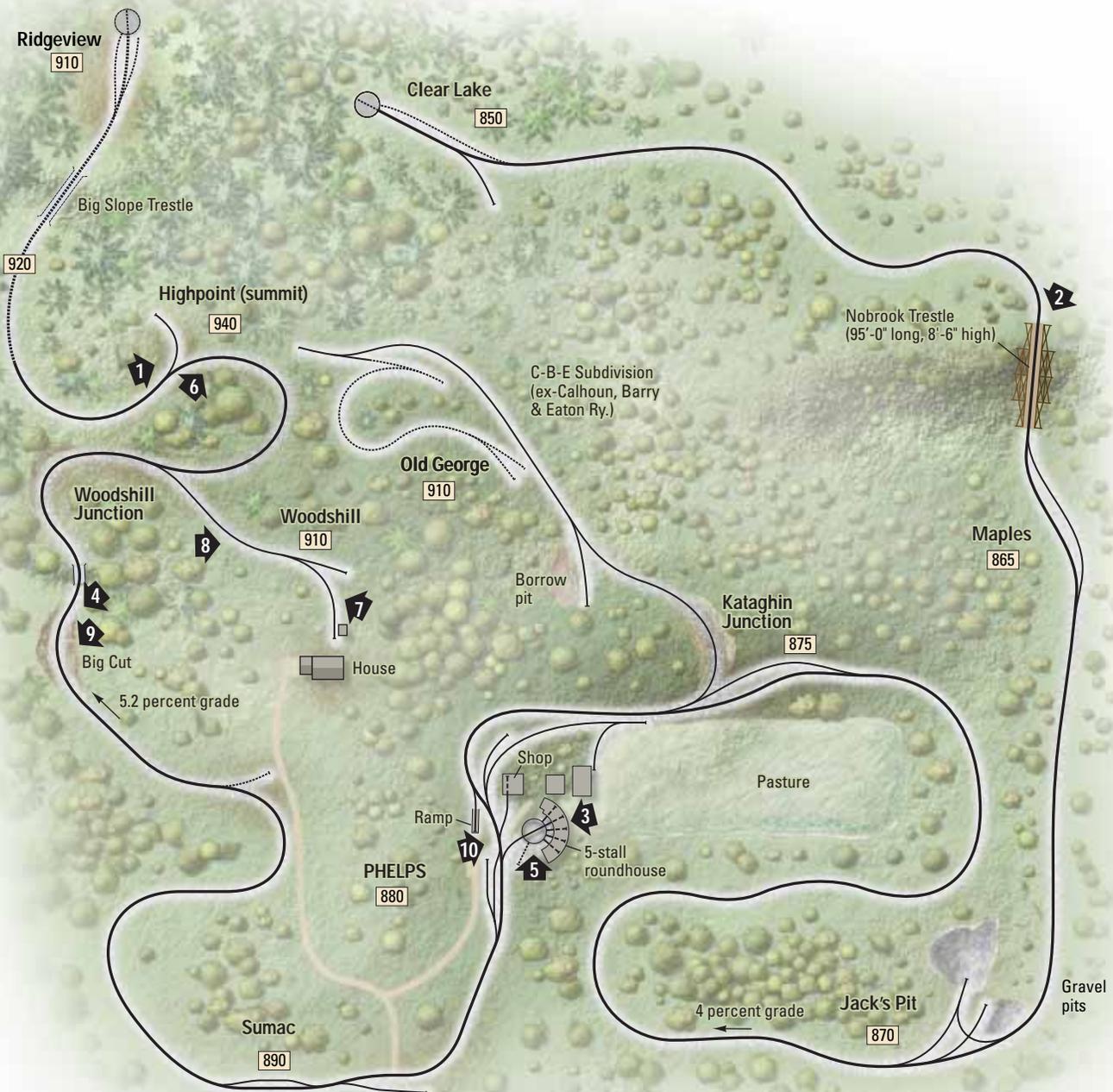


Illustration by Terri Field and Rick Johnson



**5** Turning a locomotive for another run, the train crew uses the hand-operated turntable. Part of winter operations include snow-removal work, and just like a real railroad, the turntable pit is no exception.

**6** Michigan can get a lot of snow and to help clear it, Jack's crew built a wedge snowplow to fit on the front of one of the gondolas. Here, locomotive no. 10 teams up with gas-engine switcher no. 25 to clear the curve at Highpoint station.

65-pound rail in 3/4" scale – very close to the weight used by the prototype Maine two-foot gauge railroads. Unfortunately, usable eight-pound rail is hard to come by; 12-pound rail, on the other hand, is readily available, and you can still buy it new. Even though 12-pound rail is much heavier in 3/4" scale, it's easy to work with if you don't try to bend it tighter than a 75-foot-radius curve – the minimum radius on the SR&CL.

After reaching Jack's Pit, we spent the next several summers laying track west, working on the grade toward Woodshill station where the woodshed is located.

I heat my house with wood cut on the property and use the railroad to move the wood from the fell site to the shed. Cut logs are first hauled to the shop for splitting and then run up the line to the woodshed for seasoning and storage. Because I've incorporated this process into the operation of the railroad, *Great Model Railroads'* editor Andy Sperandio has referred to operating sessions on the SR&CL as sort of a "Tom Sawyer" enterprise.

Once we'd finished the line to Woodshill, we started eastward again toward Clear Lake station.

## Major construction projects

During several summers we tackled a few larger projects that slowed progress on the main line. The work seasons of 1997 and 1998 were spent building a turntable and five-stall roundhouse at Phelps. The roundhouse was built into the side of a hill, and from the front (the top of the hill) it appears to be in scale with the equipment. From the back, however, the roundhouse is full height. The locomotives are elevated above the roundhouse floor on steel trestles, so we can work on the engines from all angles.



The roundhouse also features an office, crew room, and a working hand-operated turntable. We added two more roundhouse stalls for car storage a couple of years after the main structure was completed.

In the summer of 2000, we built Nobrook Trestle to bridge a ravine east of Maples station. The wood structure is 95 feet long and measures 8½ feet tall at the valley's low point.

### Equipping the railroad

Since the steam locomotive at the Huckleberry RR shops wasn't ready, John designed and built locomotive no. 25 to help with construction. The gas-powered engine loosely resembles a General Electric 70-ton switcher. In rapid succession, John followed with a flatcar, a gondola, and a four-wheeled caboose – enough equipment to make up a work train.

**7** The main industry on the SR&CL is timber. Here the crew spots a car of split logs outside the shed at Woodshill. Jack uses the wood to heat his home, and his crew is only too happy to move it for him in exchange for a chance to operate the railroad.

## >>Maine two-footers\_

In the latter part of the 1800s a crop of small narrow gauge railroads, operating on rails spaced two feet apart, were built to support Maine's growing natural resource industry. These narrow gauge lines collectively became known as the "Maine two-footers." The railroads operated with compact locomotives, usually Forney 0-4-4Ts, 2-4-4Ts, and some small 2-6-0 Moguls. Many lines offered both freight and passenger service.

The two-foot lines all started as isolated independent roads linking one or more towns. In most cases, when two railroad lines met, the companies would merge to form a larger railroad. The biggest of these entities was the Sandy River & Rangeley Lakes RR, which in 1929 boasted just under 100 miles of track. Though some lines like the SR&RL connected with standard gauge railroads, all materials needed to be transloaded between the cars.

One of the early selling points of building narrow gauge railroads (with rail spacings less than the standard gauge of 4'-8½") was that being smaller, the railroads would be cheaper to build and operate. This philosophy proved to be economically misguided, however, as pointed out by George W. Hilton in his book *American Narrow Gauge Railroads* (Stanford University Press). A main reason the little railroads couldn't survive when faced with competition from automobiles,

trucks, and their standard gauge counterparts was that they were simply too small and lightweight to haul enough material to be competitive.

Though almost always in financial trouble, many of the Maine two-footers hung on longer than most narrow gauge lines in the United States. The SR&RL lasted until 1935 and the Bridgton & Harrison made it until 1941. For more information, see Linwood Moody's book *The Maine Two-Footers* (Heimbürger House Publishing). – David Popp, associate editor



Photo from the Cornwall-Martin collection

**A Sandy River & Rangeley Lakes train prepares to leave the station at Farmington, Maine, in 1934. The small size of the railroad's track is very evident when compared to the standard gauge Maine Central track in the foreground.**





**8** Shay no. 4 was built by the late Harold Allen in 1964 for his Sumac Central RR. The Shay is currently on loan to the SR&CL. Harold's son Mike is at the throttle in this photo.

Recent rolling stock additions include another flatcar and gondola and a boxcar for hauling tracklaying tools. John and Tom Casper collaborated to build the railroad's only passenger car, the *Ailina*, named after my mother. The car features varnished woodwork, upholstered seats, and a clerestory with etched glass. The roof is hinged to allow easy loading of passengers, and the car seats three adults.

The locomotive roster includes three steam engines. Locomotive no. 7 is a replica of a 2-4-4T owned by the Bridgton & Saco River. It was built by Jim Small of Brampton, Ontario, Canada, and has been in service on the SR&CL since 1996.

In an ironic twist, Mike Allen approached me with an offer to use Shay no. 4, one of the two locomotives I'd seen in operation on his father's layout in Ann Arbor years before. Harold Allen had passed away, and his railroad was being partially dismantled. The Shay came to Battle Creek in the fall of 2002, and John Korstange built a new set of trucks so the engine could operate on our 7½" gauge track.

The SR&CL's newest arrival is 2-4-4T no. 10, the steam locomotive I'd seen inside the Huckleberry RR shops. Marty Knox is completing work on this engine, and I hope to have it in service soon.

### Operations on real iron

Similar to my HO scale Atlantic Great Eastern layout [see page 48. – *Ed.*], I operate the SR&CL by timetable and train order. Clear Lake, Phelps, and Highpoint are register stations, and we have train order boards at intermediate stations.



**9** Extra 25 East runs downgrade through Casper Cut near the west end of the railroad. The mixed train includes a gondola loaded with logs, an empty flatcar, passenger car *Ailina*, and the SR&CL's ride-in bobber caboose.

### >>The people who make it work\_

**The construction of a** railroad involves a lot of physical labor. I'm fortunate to have a dedicated group of people who have volunteered their time and efforts. There are always things to be repaired or built.

Much of the SR&CL would not exist without the creative talents of John Korstange. Tom Casper has spent

untold hours working both outside and inside the shops and is currently the primary engineer when the steam engines are fired up. Steve Lorenz and John Bauer have made many long trips from Illinois to help build the trestle and lay track. In addition, many others have made significant contributions, and I thank all of you. – *J.O.*



During formal operating sessions, the crews run scheduled passenger trains by the timetable, while freights operate as extras. Work trains haul gravel, rail, and rocks. Wood, the railroad's major commodity, is collected from all parts of the line and hauled to Phelps and Woodhill.

The Sandy Ridge & Clear Lake operates year-round, and just like a full-size railroad, it has to overcome the obstacles of weather. We modified one of the gondolas to fit a wedge snowplow so we can clear the line in winter. Wet leaves on the rails can also cause problems, so "leaf blower" work extras have to be dispatched during the fall.

On a layout like this, crew members need to keep in mind that the SR&CL is an authentic working railroad and not a tourist operation. The cars have functional handbrakes, which must be set to keep cuts of cars from rolling away. And with trains this size, it's possible to "kick" and "drop" cars, moves that don't work with smaller scale trains. Because of the size and weight of the locomotives and cars, safe operation is of the utmost concern, and to that end, visitors are welcome only by special invitation.

**10** At Phelps, the Shay and a Forney are steamed up for a day's work. The roundhouse was built into the side of a hill so that from the front it looks in scale with the railroad.

### Looking ahead on the SR&CL

We still have about 1,000 feet of main-line track to complete, but we need to build a bridge west of Highpoint first. Current tracklaying efforts are being directed toward completing the branch line, which works its way up the hill through a series of switchbacks. The full-time task of maintaining the existing right-of-way also keeps the track crew busy.

Because we have to make our own 3 1/4" scale parts for just about everything (from switch stands to knuckle couplers), I've decided to build a foundry adjacent to the shop building. When the foundry is operational, we'll be able to make our own aluminum castings for many of the specialty items used on the railroad.

I look forward to developing the SR&CL in the years to come. And, I can't wait to see and hear double-headed steam locomotives plow through a fresh snowfall upgrade in the crisp winter air. GMR

### >>Meet Jack Ozanich\_



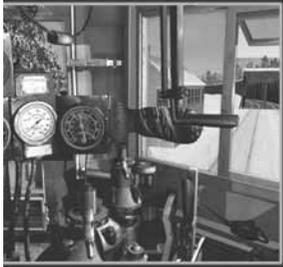
**Jack got his start** in model railroading with a Lionel O train set but really became interested in trains after attending the Chicago Railroad Fair in 1948. He switched to HO scale in 1955 when he purchased two Varney gondolas, both of which are still in service. Jack hired on with the Grand Trunk Western RR in 1967 and retired in September 2004. In addition to his two model railroads, Jack's other interests include cycling, canoeing, hiking, and photography.

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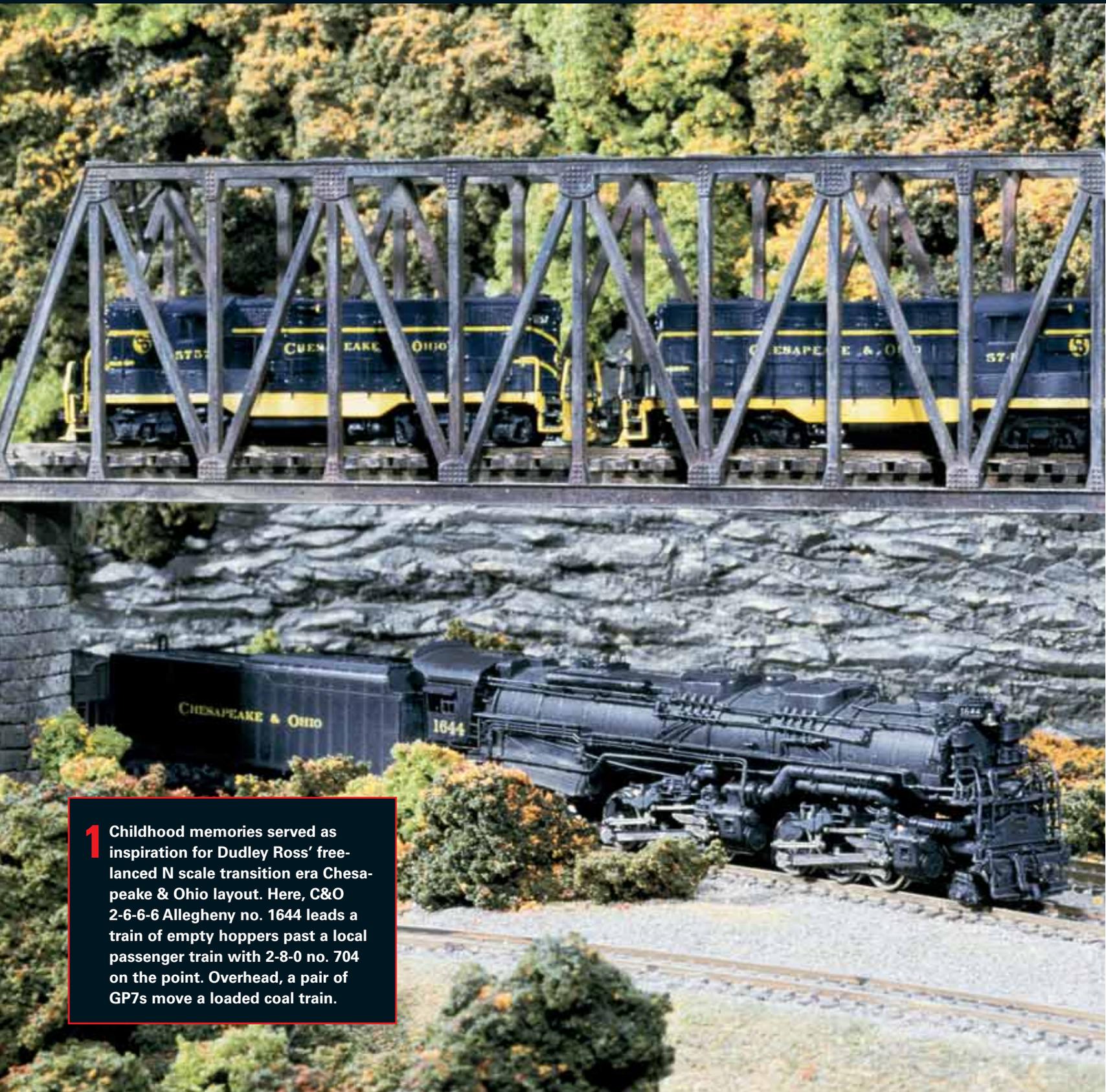
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# >> Rollin' through

Appalachia is the backdrop for this free-lanced  
Chesapeake & Ohio N scale layout



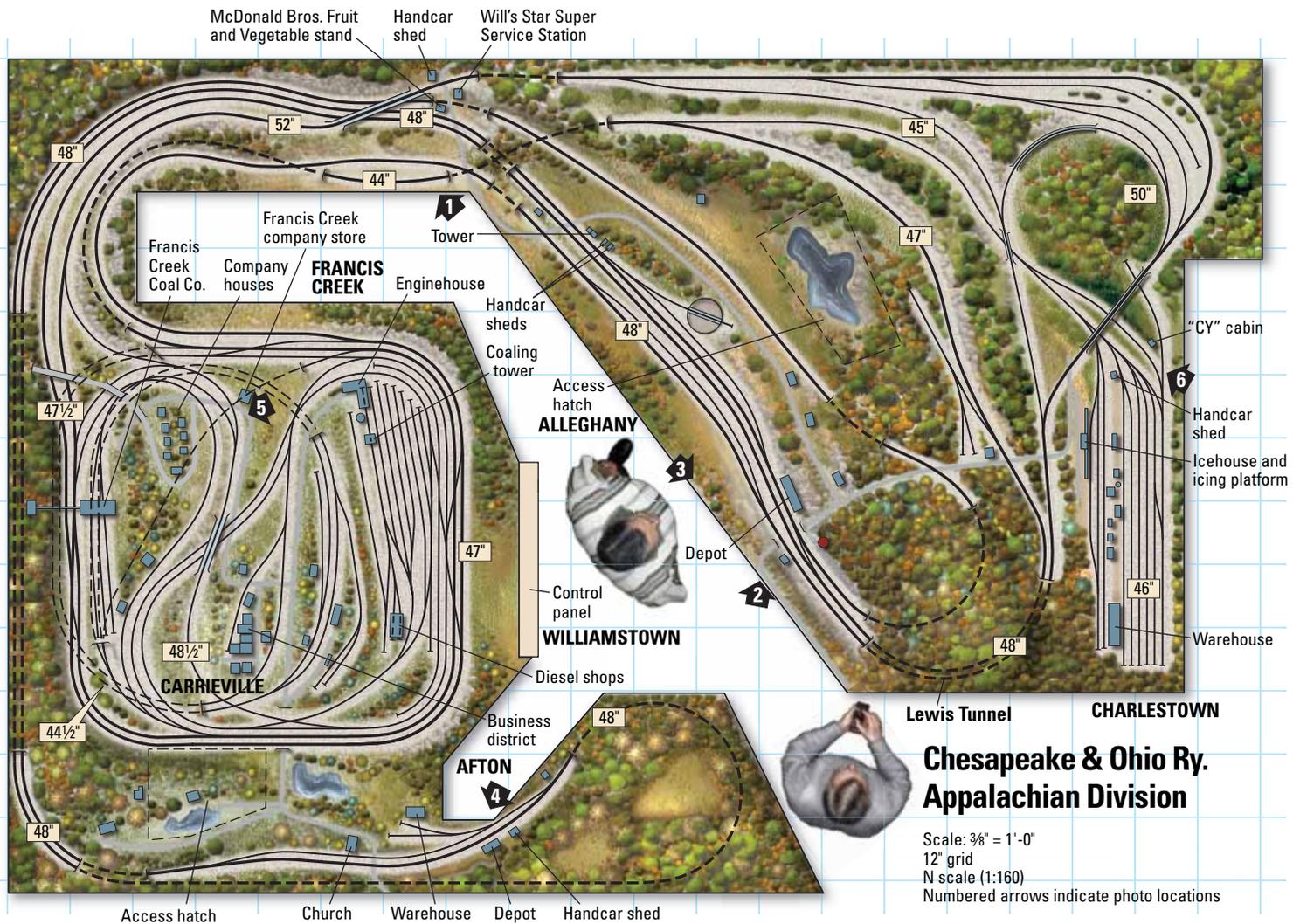
**1** Childhood memories served as inspiration for Dudley Ross' free-lanced N scale transition era Chesapeake & Ohio layout. Here, C&O 2-6-6-6 Allegheny no. 1644 leads a train of empty hoppers past a local passenger train with 2-8-0 no. 704 on the point. Overhead, a pair of GP7s move a loaded coal train.

# C&O country

By Dudley Ross • Photos by Bernard Kempinski







**2** Coal was big business for the C&O, and many loaded and empty trains passed through Allegheny over the years. As a cut of empties returns to the mine, the engineer aboard C&O 2-6-6-6 Allegheny no. 1644 eases his train onto the main line. The prototype 1644 tipped the scales at 778,000 pounds, making it one of the heaviest reciprocating steam engines ever built.

Strings of coal hoppers being led up steep grades by steam and diesel locomotives. Crack passenger trains such as the *Fast Flying Virginian (FFV)*, *George Washington*, and *Sportsman* gracefully winding through cuts in the densely forested Appalachian Mountains. This not only describes the operations of the Chesapeake & Ohio in Appalachia during the transition from steam to diesel locomotives, but it also describes the action on my 13 x 20-foot N scale layout.

Some of you may be wondering, “What’s so great about the C&O in Appalachia during the 1940s and ’50s?” Well for starters, massive 2-6-6-6 Alleghenies and 2-6-6-2 Mallets worked side by side with early Electro-Motive Division diesels such as SW9s and GP7s. Heavy-weight passenger cars were being replaced by streamliners. In short, it was a time of great change.

Even though the transition era has long since passed, it’s fun to re-create the C&O’s glory years in N scale. Big steam, new diesels, and black diamonds were all part of the C&O’s mystique in the 1940s and ’50s.

### Inspiration

My interest in railroads, more specifically the Chesapeake & Ohio, goes back to the 1930s and ’40s when I was a child living in Fort Thomas, Ky. The town was on the C&O (now CSX), and I often rode the *FFV* to visit my grandmother.

Then, in the mid-1940s, my family took a driving vacation through Virginia to Wash-

### >>The layout at a glance\_

- Name:** Chesapeake & Ohio Ry. Appalachian Division
- Scale:** N (1:160)
- Size:** 13 x 20 feet
- Prototype:** fall in Appalachia
- Locale:** mountains of Virginia and West Virginia
- Era:** late 1940s to early 1950s
- Layout height:** 46" to 52"
- Layout style:** walkaround
- Length of mainline run:** 253 feet
- Benchwork:** L girder and open grid
- Roadbed:** ½" Homasote on ¾" plywood
- Track:** code 80 flextrack
- Turnout minimum:** no. 6
- Minimum radius:** 16"
- Maximum grade:** 3.2 percent
- Scenery:** extruded foam insulation board and plaster cloth
- Backdrop:** painted drywall
- Control:** cab control with walkaround cabs



**3** A pair of Electro-Motive Division E8s are the power for today's *Fast Flying Virginian*. The units are easing up to the platform at Alleghany station with a string of heavy-weight passenger cars. The *FFV* has a special place in Dudley's heart because he rode the train many times to visit his grandmother.

ington, D.C. It was during this trip I became engrossed in the Appalachians and mountain railroading.

Nearly a half-century later, when it came time to plan my N scale layout, there was little doubt that my model railroad

would be set in Appalachia and would represent the C&O.

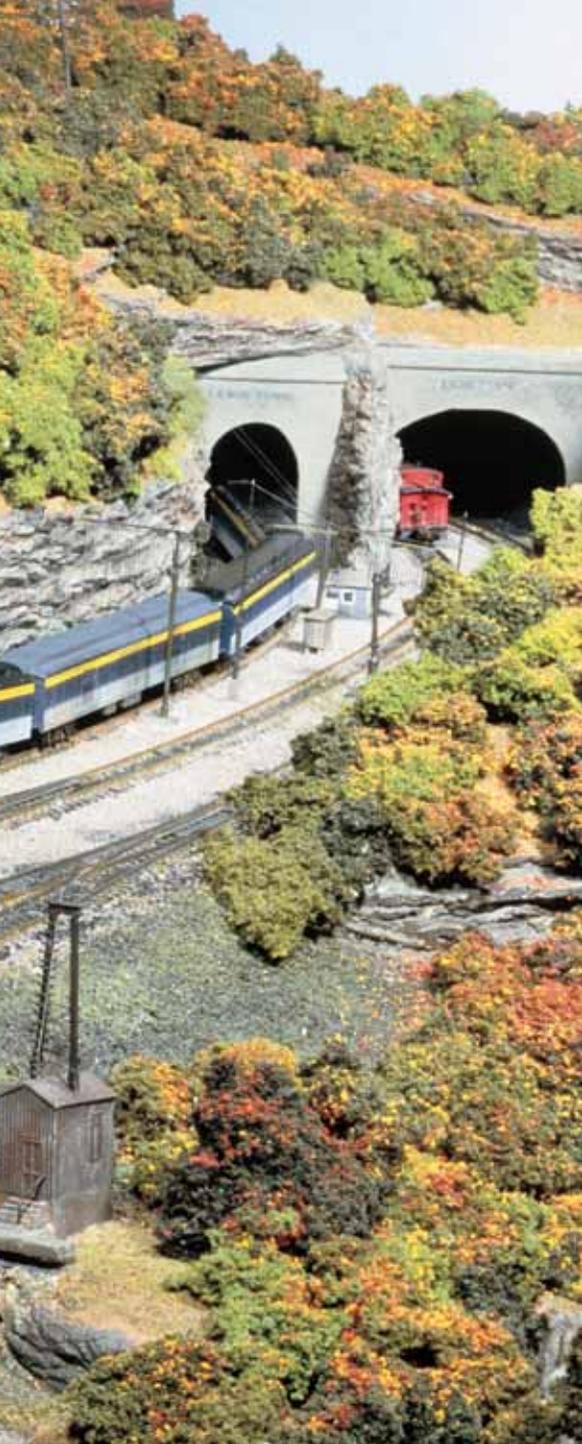
### Getting started . . . again

When I built my first layout in the 1950s, I modeled in HO scale. A family move in 1960 into a home with no space for a layout caused me to put my trains away and pursue other modeling interests. In 1990, my wife suggested I use one of our spare bedrooms for a new model railroad layout.

That was enough encouragement to get me to the local hobby shop. I planned to return to HO scale until I saw the store's

N scale layout. I was amazed at how well-proportioned the trains and scenery looked in relation to each other. This was the first time I'd seen an operating N layout, and I was instantly sold on the scale. I realized modeling in 1:160 proportion would allow me to get much more layout in the space I had available.

Since I'd been away from the hobby for many years, I decided to start small and build a 6'-8" x 7'-0" layout that featured an open-grid deck with L-girder benchwork. This was a wise decision because it afforded me the opportunity to try new products such as ground foam and



## >>Scratchbuilding from photographs\_

### When I first started work

on my layout, I built wood and plastic structure kits. I quickly grew frustrated with these buildings as few of them represented those found in Appalachia and along the C&O. So I began scratchbuilding my own structures from wood and styrene.

Some of the buildings on my layout are modeled from memories, such as the farmhouse I built to resemble my grandmother's home in Maysville, Ky. Other buildings, however, I model following prototype photographs and drawings. I constructed the Afton, Va., depot from photos in the C&O Historical Society collection. Thomas W. Dixon, Jr., president of the C&OHS, also sent me a copy of a page from Walter G. Burg's book, *Buildings and*

*Structures of American Railroads*, that had a sketch and dimensions of a combination station typical of those found on the Pennsylvania Lines west of Pittsburgh, Pa. It appears that the prototype C&O station in Afton was based upon these plans. Between the photos and the drawings I was able to scratchbuild a fairly accurate model of the Afton station.

It's important to document the structure from as many sides as possible, so whenever I go on trips I always take my digital camera. I also carry a 100-foot tape so I can measure a structure's exterior dimensions. [Don't trespass to get photographs or measurements; get written permission before entering railroad or private property. – Ed.] – D.R.



From the collection of the Chesapeake & Ohio Historical Society

extruded foam insulation board. Those were new since I last modeled. The basics of the hobby were largely the same, but the new materials and methods were light years ahead of those in the 1950s and '60s.

### Expanding Appalachia

I retired in 1997 and began to work more extensively on my layout. The biggest project was building a 20 x 20-foot model railroad room above our garage. Once this was completed, I moved my existing 6'-8" x 7'-0" layout into the room to serve as the core for a larger N scale model railroad.

When I expanded the layout I used Homasote mounted on plywood for the roadbed, and I attached the benchwork to the walls using angle brackets made from square steel tubing. I set the other parts of the layout on L-girder benchwork that has 2" x 2" braced legs.

The next year I built a 9-foot Ntrak module of Alleghany, Va., with help and encouragement from my good friend, Matt Schaefer. After displaying the module at a convention, I lengthened it to 11 feet and incorporated it into my layout. Alleghany is the only prototype-specific scene on my layout. I scratchbuilt and placed all the

structures based on plans and photographs from John C. Paton's book *Alleghany with an A* (Chesapeake & Ohio Historical Society, 1989). I further detailed the Alleghany section by hand-carving the Hydrocal rock castings and stringing wires on the telegraph and telephone poles using Berkshire Junction's EZ-Line.

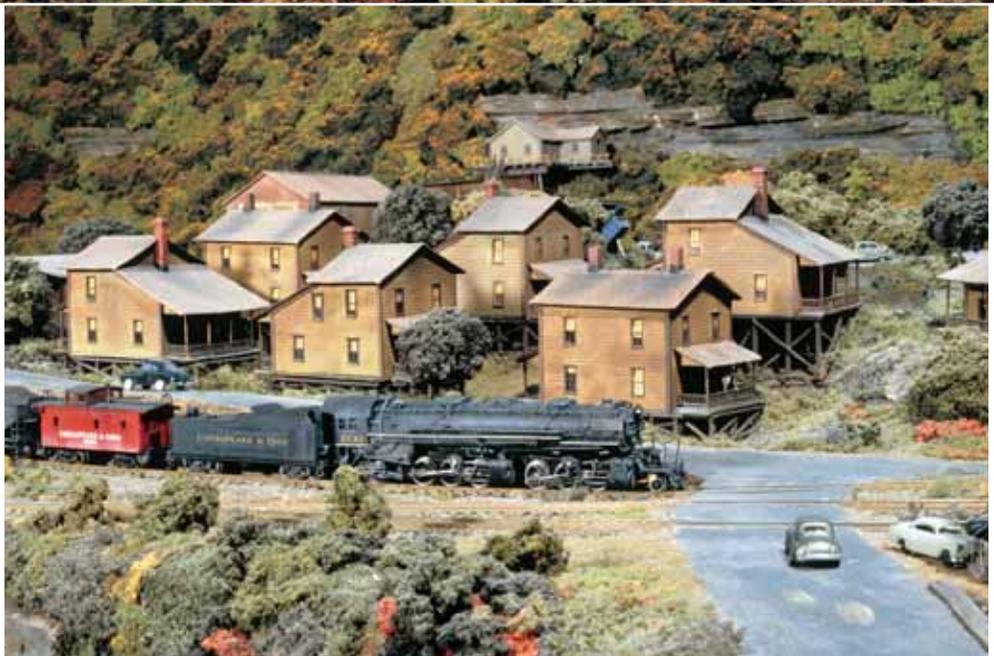
### Scenic delight

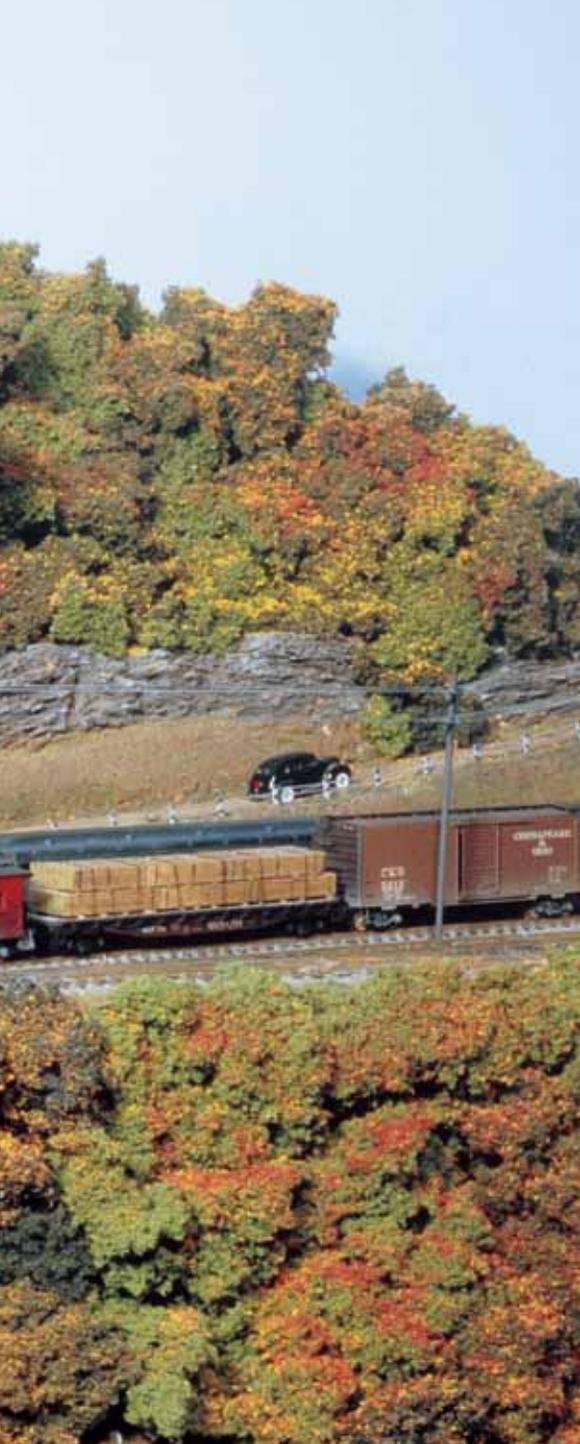
My layout is set in early fall, which means the leaves on the trees are various shades of orange, yellow, brown, and red. To simulate this on the model railroad, I used Woodland Scenics light, medium,



**4** Handling two trains at one time is old hat for the operator in Afton. With no orders or special instructions to give to the passing freight, he can assist the passengers on the arriving train.

**5** Francis Creek Coal Co. is on the outskirts of Carrieville, and its company houses aren't far from the mine or the tracks. Undoubtedly, some miners have been awakened by the whistle of C&O no. 1530, seen here departing from the mine with a loaded coal train.





The most prominent scenic element on the layout is the Appalachian Mountains. I used a combination of plaster cloth and extruded foam insulation board for the scenery base. Before I wet the plaster cloth I stretched and shaped it, using staples to hold it place. I then sprayed the cloth with water. Once the plaster had dried I added another layer of cloth. This technique yields a light but strong shell, and I didn't have to use wire or cardboard to shape the terrain.

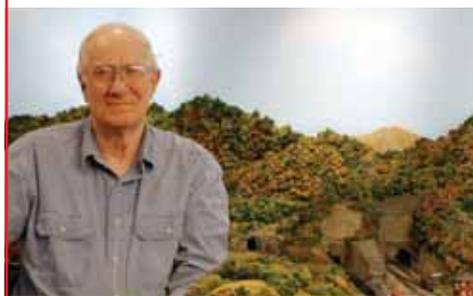
### The future of Chessie's Road

While I feel I've accomplished a great deal on my layout, there's still work to do. I recently added a new yard with structures inspired by those found along the C&O: the icehouse and platform are based on the prototype in Hinton, Va.; the diesel fueling terminal is modeled after the real one at Rainelle, W.Va.; the sand tower and out-buildings represent those found in Thurmond, W.Va.; and the warehouse depicts the one at White Sulphur Springs, W.Va.

I try to visit Virginia and West Virginia frequently to get prototype photos. When I can't get to Appalachia, I just head up to my layout room. (Or as I say to my wife, "I'm heading to the mountains.") No matter how hot it is during the summer in Montgomery, Ala., it's always a cool, beautiful fall day in my Appalachian Mountains. *GMR*

**6** Dieselization changed the look of many railroads in North America, and the C&O was no exception. As a pair of GP7 road switchers ease downgrade with a manifest freight, a new crew has boarded SW9 no. 5244 and is ready to begin its switching duties in the Charlestown yard.

### >>Meet Dudley Ross\_



**Dudley and his wife** Carolyn live in Montgomery, Ala., where they have resided for the past 44 years. They have three grown children and three grandsons.

Dudley worked in the construction and automobile businesses. He is a member of the Chesapeake & Ohio Historical Society and National Model Railroad Association.

and dark green foam clusters. I then misted the trees with diluted matte medium and lightly sprinkled finely sifted yellow, orange, rust, and red ground foam on the trees.

Of course, no mountain railroad would be complete without rock outcroppings. I modeled the rocks using Hydrocal and Woodland Scenics rock castings as well as Durham's Water Putty. I also laminated ceiling tiles and made the edges jagged using a wire brush. I painted all of the rocks with an earth-colored latex paint and stained them with Woodland Scenics earth colors to help bring out the details.



**This good-looking** modular layout began as a viable alternative that kept our club, the Four County Society of Model Engineers (FCSME), going when we lost the lease on our layout site. This modular layout has been a huge success, serving as the glue that's held our group together, and it has also become a great learning experience for all of us. Our success as a modular group is proof that a permanent layout isn't needed to succeed as a club.

Our modular railroad gives members with limited space a chance to enjoy all the rewards of building and operating a large layout. Since everything is built in 48" increments, we've all learned every aspect of model railroading including carpentry, track laying, wiring, and scenery. Modules also offer a great way to experiment with new modeling techniques without having to worry about ruining a key part of the layout. We don't have to use every module every time.

# >> Modular magic

A beautiful HO scale  
traveling club layout

By **Susan Bond** • Photos by Bernard Kempinski



## The Mount Airy & Western

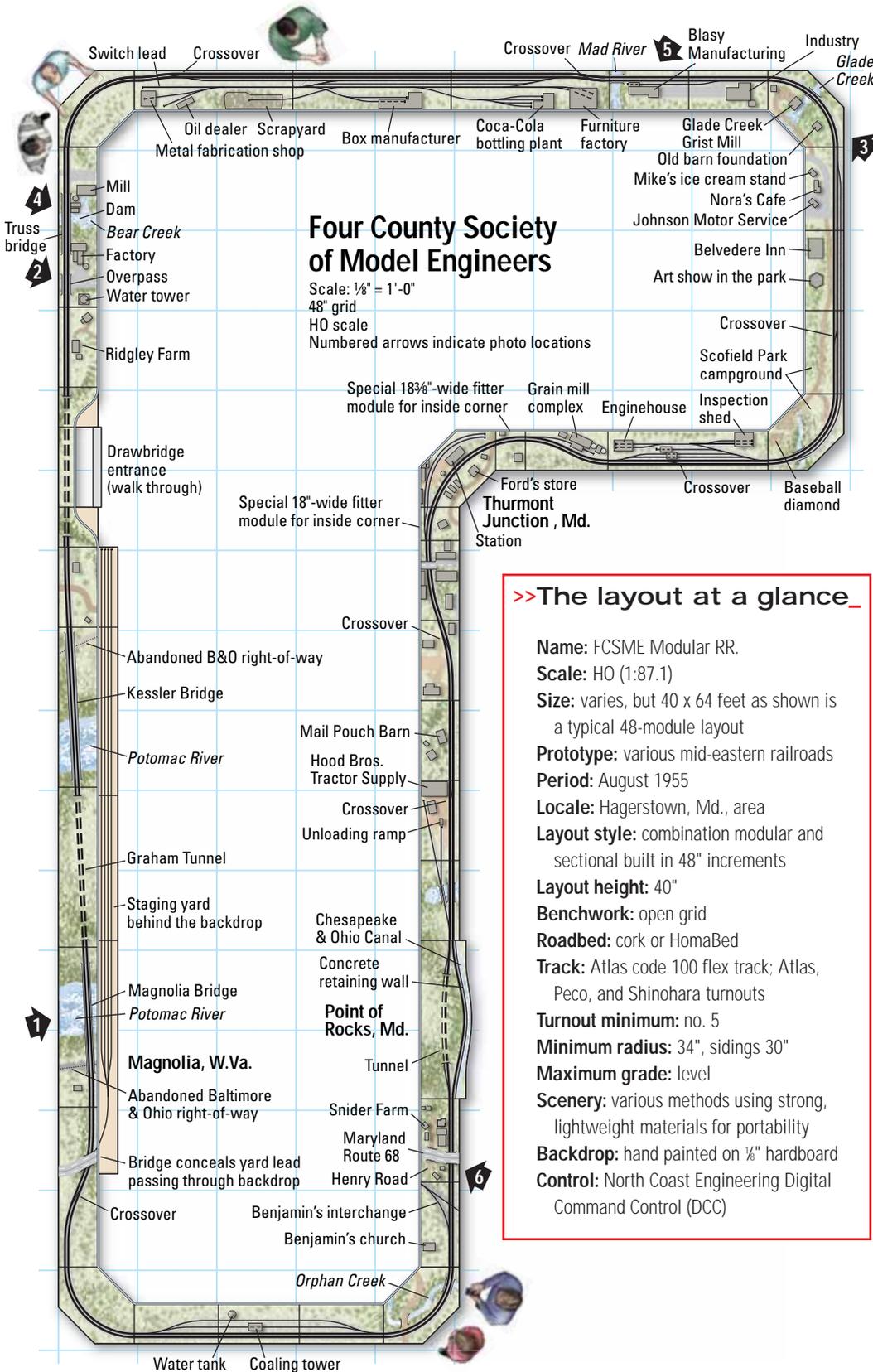
The FCSME was established in 1980 to serve a membership drawn from the Central Maryland area including its namesake Carroll, Howard, Frederick, and Montgomery counties. Meetings were held in a small second floor room above a hobby shop in Mount Airy, Md., where we built a permanent layout named the Mount Airy

& Western (MA&W). The success of this layout saw the group expand into a larger room, which the club occupied for the next ten years of good times and growth.

Rumors that our landlord was trying to sell the building in 1995 started an investigation into modular railroading in case we had to move. We also began to develop our set of modular standards. This foresight

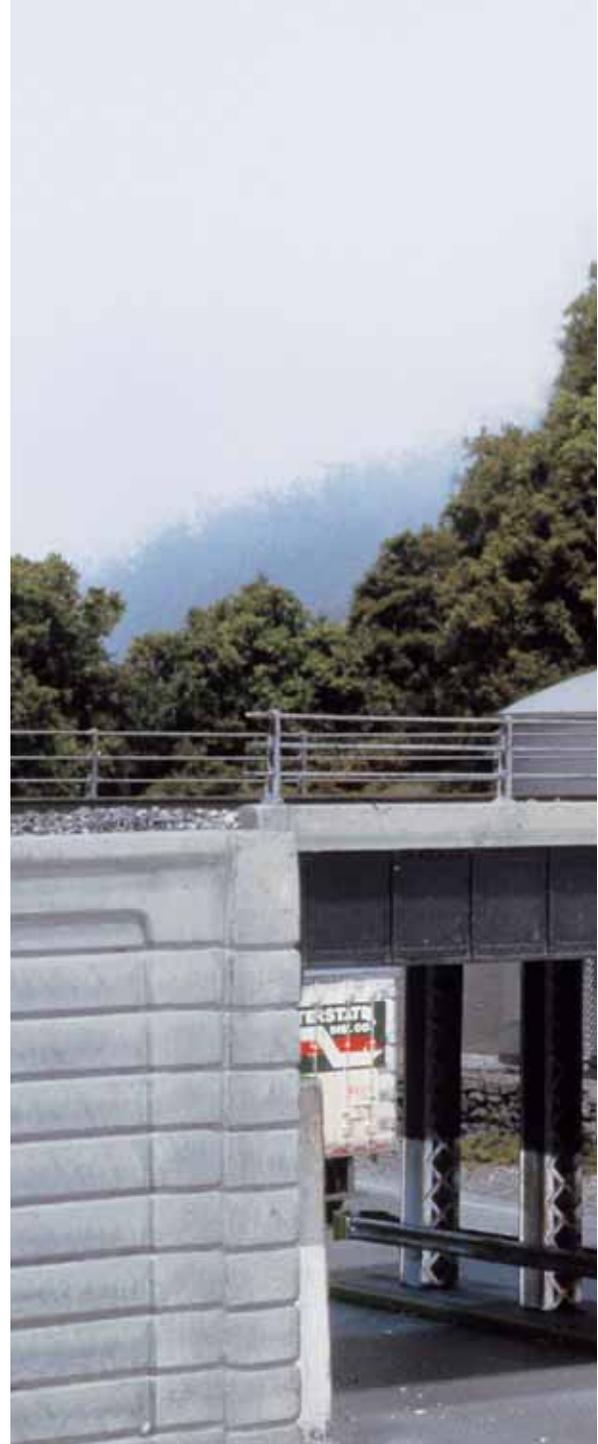
**1** There's always plenty of action on the HO modular layout of the Four County Society of Model Engineers. This meet between a Chessie System manifest freight and a coal drag is taking place on a replica of the Baltimore & Ohio's Magnolia Bridge. It's in Bill Carl's group of modules which represent a portion of the B&O's Magnolia Cutoff.

**2** Three B&O and C&O GP38s rumble over a modern highway overpass as they approach the Bear Creek bridge on Bob Mott's module.



**>>The layout at a glance\_**

**Name:** FCSME Modular RR.  
**Scale:** HO (1:87.1)  
**Size:** varies, but 40 x 64 feet as shown is a typical 48-module layout  
**Prototype:** various mid-eastern railroads  
**Period:** August 1955  
**Locale:** Hagerstown, Md., area  
**Layout style:** combination modular and sectional built in 48" increments  
**Layout height:** 40"  
**Benchwork:** open grid  
**Roadbed:** cork or HomaBed  
**Track:** Atlas code 100 flex track; Atlas, Peco, and Shinohara turnouts  
**Turnout minimum:** no. 5  
**Minimum radius:** 34", sidings 30"  
**Maximum grade:** level  
**Scenery:** various methods using strong, lightweight materials for portability  
**Backdrop:** hand painted on 1/8" hardboard  
**Control:** North Coast Engineering Digital Command Control (DCC)



proved correct when the building was sold and we lost our lease in February 1997.

Unable to locate a suitable replacement location, we dismantled the layout and dove into building a new modular layout. The lack of a club room also meant our membership meetings shifted to a round-robin schedule at members' homes. Thanks to good leadership and a few good business decisions, the club was able to march on.

**Evolving modules**

We built the original modules using 1 x 4s and the traditional scenery tech-

Illustration by Rick Johnson



niques we had used on our old layout. These modules were very heavy, and moving the corners required two people.

We experimented with different materials to lighten the benchwork. Some club members swapped plaster hardshell scenery for extruded foam insulation board while others built modules on a laminated grid of thin lauan plywood.

**3** A Pere Marquette United States Railway Administration 0-8-0 switcher double heads a long C&O freight passing a small farm on Walt Muren's rural corner module.



**4** Karl Bond's massive Western Maryland 4-8-4 has a coal drag in tow as it crosses Bob Mott's Bear Creek bridge module. Much of the WM lies south of the Mason-Dixon Line, so its 4-8-4s were named Potomacs.



Based on these experiments, we came to the conclusion that physical and electrical compatibility between modules was all that was important. Nobody really worried what method was used for the benchwork.

We have recently revised our club standards book, which provides all of the basic information necessary to build interchangeable modules. The new edition has

75 pages of club standard dimensions, scenery techniques, and wiring. [It's available as a CD for \$10 postpaid in the U.S.A. See the club's Web site at [www.fcsme.org](http://www.fcsme.org).] This gives us a more unified module appearance and eliminates the "patchwork" look of most modular layouts. Even though they include different scenic elements, all of our modules blend together.

Individual modules can be any length as long as they add up to a multiple of 48". The straights and corners are compatible with the National Model Railroad Association's modular specifications.

Our track standard is Atlas code 100 flextrack. The turnouts are Atlas, Shinohara, and Peco. We use sections of Atlas 6" Snap Track to bridge the module joints.



industrial areas that would have been common around Hagerstown in 1955.

Most of the landforms are carved insulation board to reduce weight. We use various textures of ground foam from Woodland Scenics and Scenic Express for the ground cover. Our forests include commercial and scratchbuilt trees made from natural materials. The water in the streams is made of Enviro-Tex applied over a painted base.

We painted our 1/8" Masonite backdrops with an "overcast" blue that's a standard PPG Industries paint color, Balmy Day.

To offset the poor lighting at shows, we use Ikea black articulated desk lamps for supplementary illumination.

### Appropriate structures

All of our bridges and most of the buildings are kitbashed or scratchbuilt. A few are built straight from the kit, but most of these were assembled well before our members gained enough confidence to make changes. We now have members who build structures from memory as well as from vintage photos and drawings. Most of the structures include lights.

### Appropriate trains

Our most prevalent display trains are mixed freights with consists of typical eastern rolling stock. Large unit trains of coal or aggregates also appear regularly. Many prototype railroads from our area are represented including the B&O, C&O, Norfolk & Western, Pennsylvania RR, and Western Maryland. A few other favorites, like the Chessie System, CSX, Maryland Midland, the American-Orient Express, and Richmond, Fredericksburg & Potomac, appear on occasion.

Sometimes the casual observer may feel that they're in a time warp. Long-time member, Bryce Workman, has several models of circa-1843 trains which occasionally make an appearance. And Karl Bond, who used to be a conductor on excursion trains, runs his models of the now-defunct Entertainment Line's tourist passenger trains.

### Flexible controls

A North Coast Engineering Powerhouse Pro Digital Command Control (DCC) system powers the entire layout. The club owns six DCC throttles of various types, and about half of our members bring their own NCE cabs to run trains at the shows.

### Era and scenery considerations

The original MA&W was set in the 1950s, so we agreed to stay in that time period – specifically August 1955. This date was chosen to maintain a common thread among the modules. We don't use snow scenes or fall foliage that competes with green trees, and we can logically operate steam and diesel locomotives.

All of our scenery is based on the beautiful rolling country in and around Hagerstown, Md. We have farms, towns, industries, and mountain vistas on the various modules. One member is modeling a portion of the Baltimore & Ohio's Magnolia Cutoff, another has built the Western Maryland's Thurmond, Md., station, while others model small towns and



**5** Here's the B&O's first GP30 road diesel doing some local switching at Blasy Manufacturing Co. (kit-bashed from Walthers kits) on Bob Mott's industrial module.

The choice of switch machines and their control is left to the module owners. Many use manual ground throws, while others use stall-motor machines.

Several locomotives now have Sound-Traxx sound decoders, and a few modules have built-in sound effects. Walt Muren's marshy river scene is one that captures a lot of attention with its chirping crickets and croaking frogs.

On occasion, some of our younger visitors are enthralled to see a small bright blue engine on the move with a couple of cars and a smiling face on its smokebox front. That's Thomas the Tank Engine and his coaches Annie and Clarabel. Operating Thomas or his friends James, Gordon,

Duck, and Percy is guaranteed to attract a crowd of young fans.

### Ambassadors for the hobby

It's hard to gauge the enthusiasm of show visitors, but the layout's finished appearance always attracts attention. We encourage some of our train crews to operate from outside the layout so they can meet people and answer questions.

Our modular layout began as a way to keep the club together, but its success as a traveling exhibit has brought us many new friends and contacts. We've found there's always something new to learn, whether it's from other modular groups or just by watching trends in the hobby. Getting stuck in one method can make a club go stale, but our open-minded attitude has kept our membership growing.

Our veterans continue to enjoy the hobby's challenges, and we've added some

husband-and-wife teams, father-and-son teams, and entire families to the club. Our members range in age from 13 to 77, so we have a lot of experience and enthusiasm available. Hopefully our club will continue to be an ambassador for model railroading for many years to come. GMR

*Susan Bond is a stay-at-home mom and home-school teacher who volunteered to write this article. She's a former member who's seen the FCSME's modular railroad grow since its inception. Susan and her husband Karl live in Westminster, Md., with their three sons (ages 8, 13, and 15).*

**6** A typical concrete overpass separates road and rail traffic as this Maryland Central 4-6-0 works its way down the line with a local freight. Bryce Workman built the detailed farm module.



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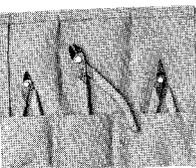
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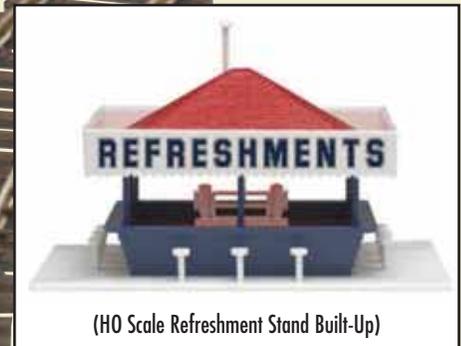
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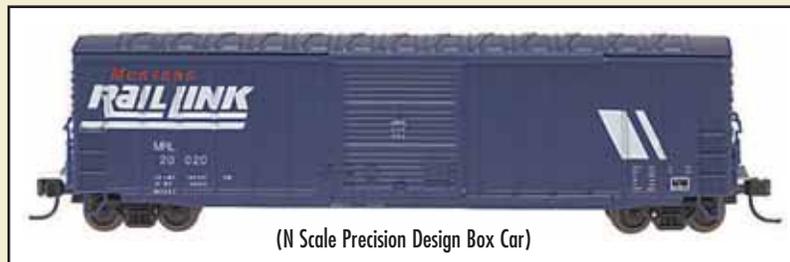
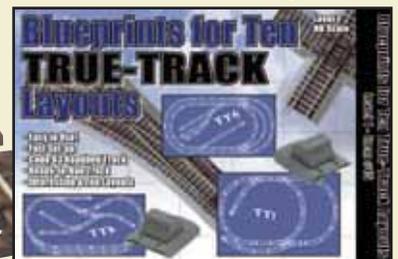
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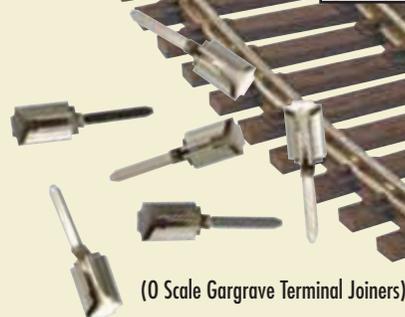


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# >> Bringing a legend to life

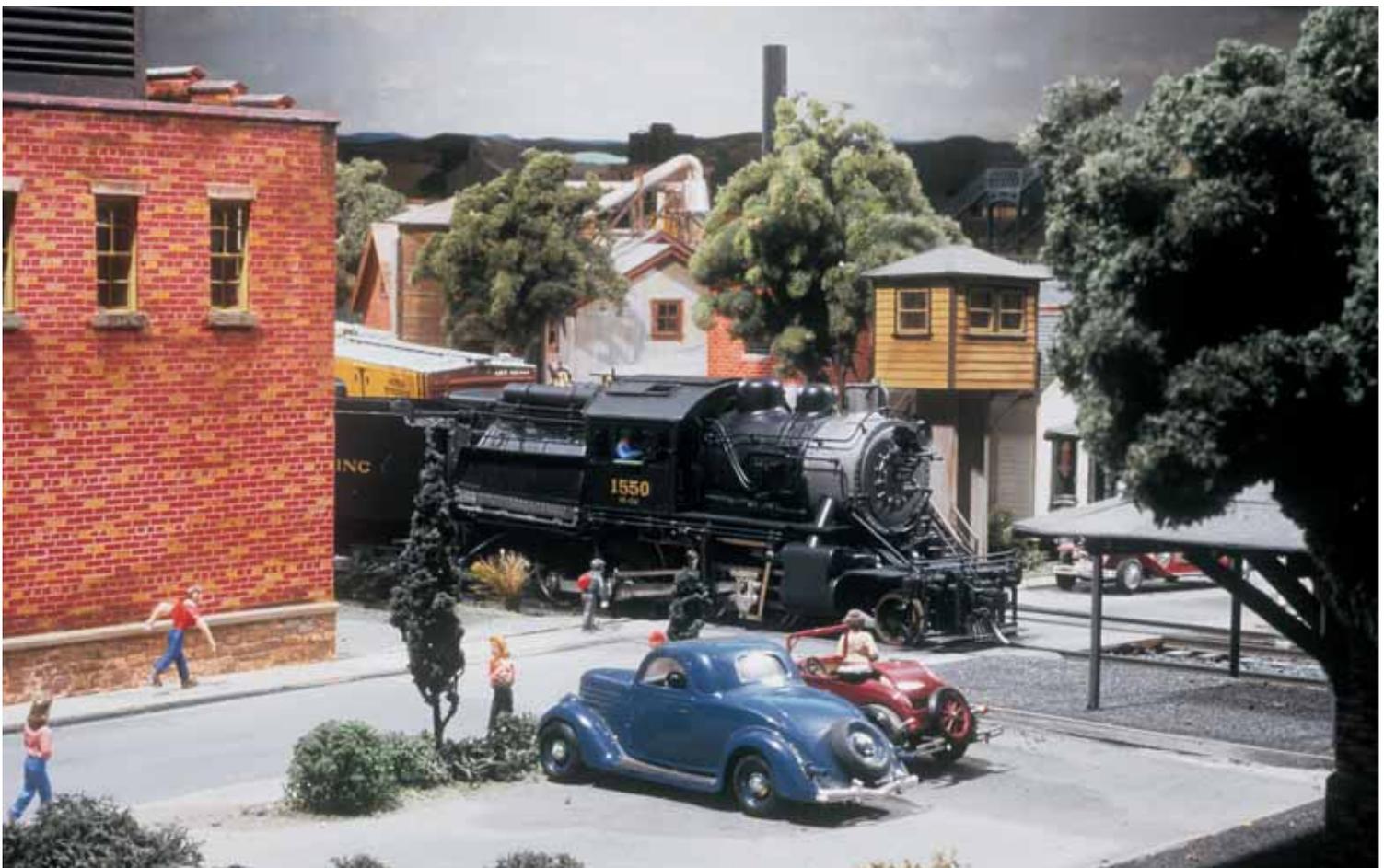
A homebuilder captures the essence  
of Frank Ellison's Delta Lines

By Paul J. Dolkos • Photos by the author

**Frank Miller builds things** both big and small. Before retirement, his profession was building houses, but his hobby has always been model building. Boats, automobiles, airplanes, and of course, his model railroad – he's built it all, and usually from scratch. Frank bases his struc-

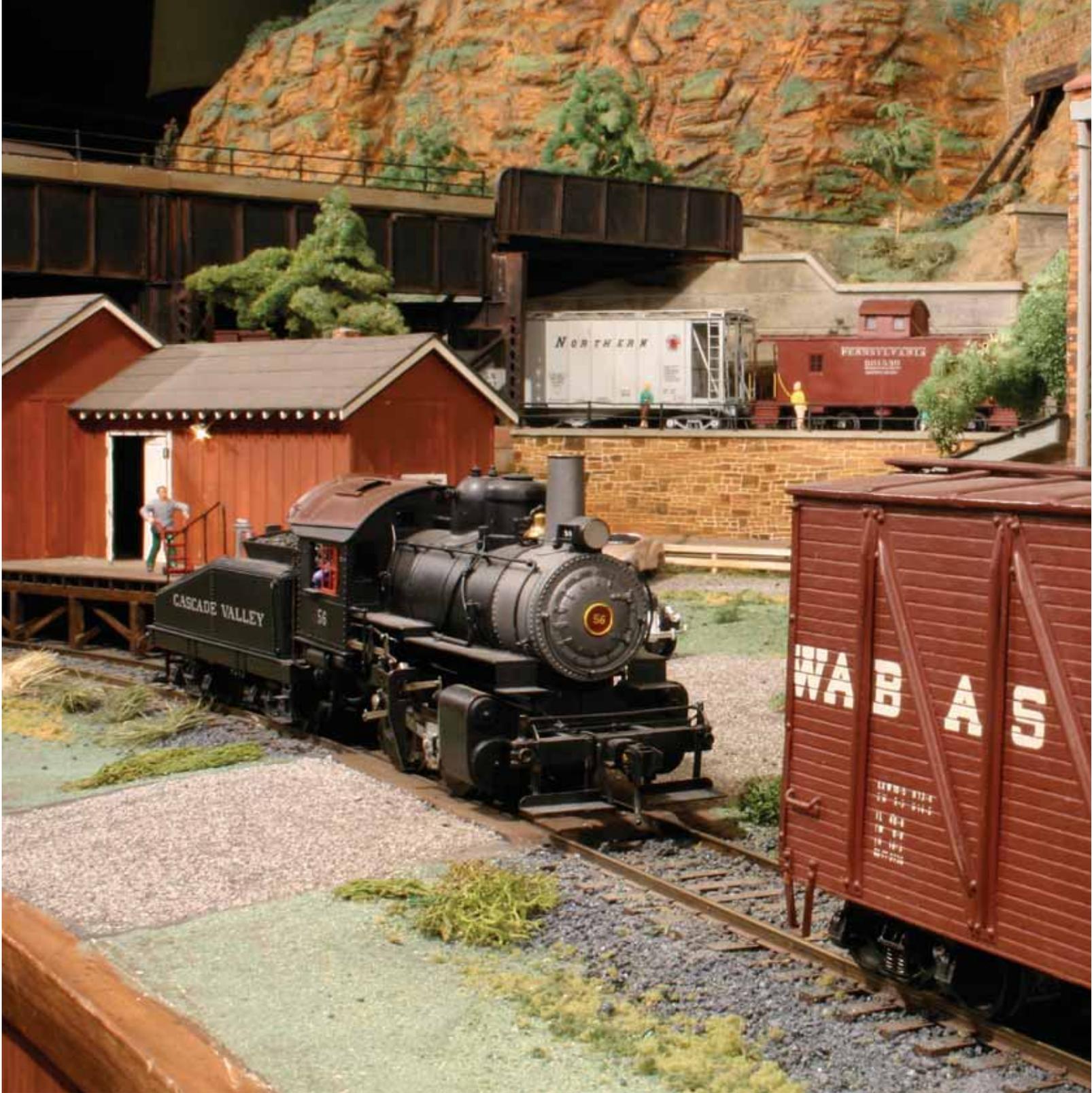
tures on model magazine articles and other designs to fit the atmosphere of his O scale Cascade Valley, inspired by Frank Ellison's legendary Delta Lines. (He named his railroad the Cascade Valley simply to provide a common identification for his eclectic roster of rolling stock, which

**1** Below: A Reading RR I-1 2-8-0 passes through the center of the town of Morrisville on Frank Miller's O scale Cascade Valley. The passenger station is at right. Miller was inspired to create the Cascade Valley after he discovered Frank Ellison's legendary Delta Lines.



**2** A Pennsylvania RR H10 2-8-0 with a mine run passes a tipple. As a retired professional homebuilder, Frank's scratchbuilt structures include an extra level of detail.





reflects his wide-ranging taste in prototype railroads.)

Frank Miller's railroad began even before he built his home in the 1950s. According to Frank, he designed his house for the purpose of covering the basement to protect his railroad. And true to his passion for modeling, Frank built a 1/4"-scale model of the house long before a lot had even been purchased.

### Researching a plan

Frank's first layout was simply four large loops. Among other lessons, this taught him that running trains in circles gets old quickly. He decided he wanted a provision for switching and operation, so he paged through various magazines to find a layout that incorporated these aspects. When Frank saw a plan of Ellison's O scale Delta Lines, he knew he had to

bring this legend to life. Not only would the layout fit well in his basement, but it was a design, as Ellison explained, with which you could replicate the varied operations of a prototype railroad.

In "The Art of Model Railroading," Ellison's popular and now classic series that ran in *Model Railroader* from March to August of 1944, he described how to base a layout on prototype-style operation. This



**3** Frank scratchbuilt this Cascade Valley 0-4-0 that's working a branchline siding at Clifton.

**4** An RS-3 in Cascade Valley colors passes through the town of Morrisville. Frank scratchbuilt most of the structures on the Cascade Valley, including many of the businesses shown here.





**5** A Southern Pacific *Daylight* train passes over a cascading river, the source of the layout's name. Two other segments of the main line are visible in the background.

was a new idea. Many model railroaders considered scheduling trains and switching industries advanced operations.

Frank started building his layout in 1964. At the time, homebuilding was his main focus, not model railroading, so he didn't realize the large following the hobby had or how popular the Delta Lines were. Before long, however, other modelers began hearing about Frank's railroad and wanted to see the layout.

"They'd always exclaim, 'My goodness, you're re-creating the Delta Lines,'" Frank said, "and I'd always wonder who this Ellison guy was. Over time it began to sink in," Frank said.

### Modifying the original plan

Frank adjusted the track plan to fit his wants and needs instead of simply trying to duplicate Ellison's Delta Lines. Based on his first layout, Frank decided that he wanted a minimum mainline radius of 60" and wasn't aware that Ellison's minimum had been 48". This change forced Frank to move sidings to accommodate the broader curves. He also relocated a branch line, repositioned a yard, and made other subtle changes.

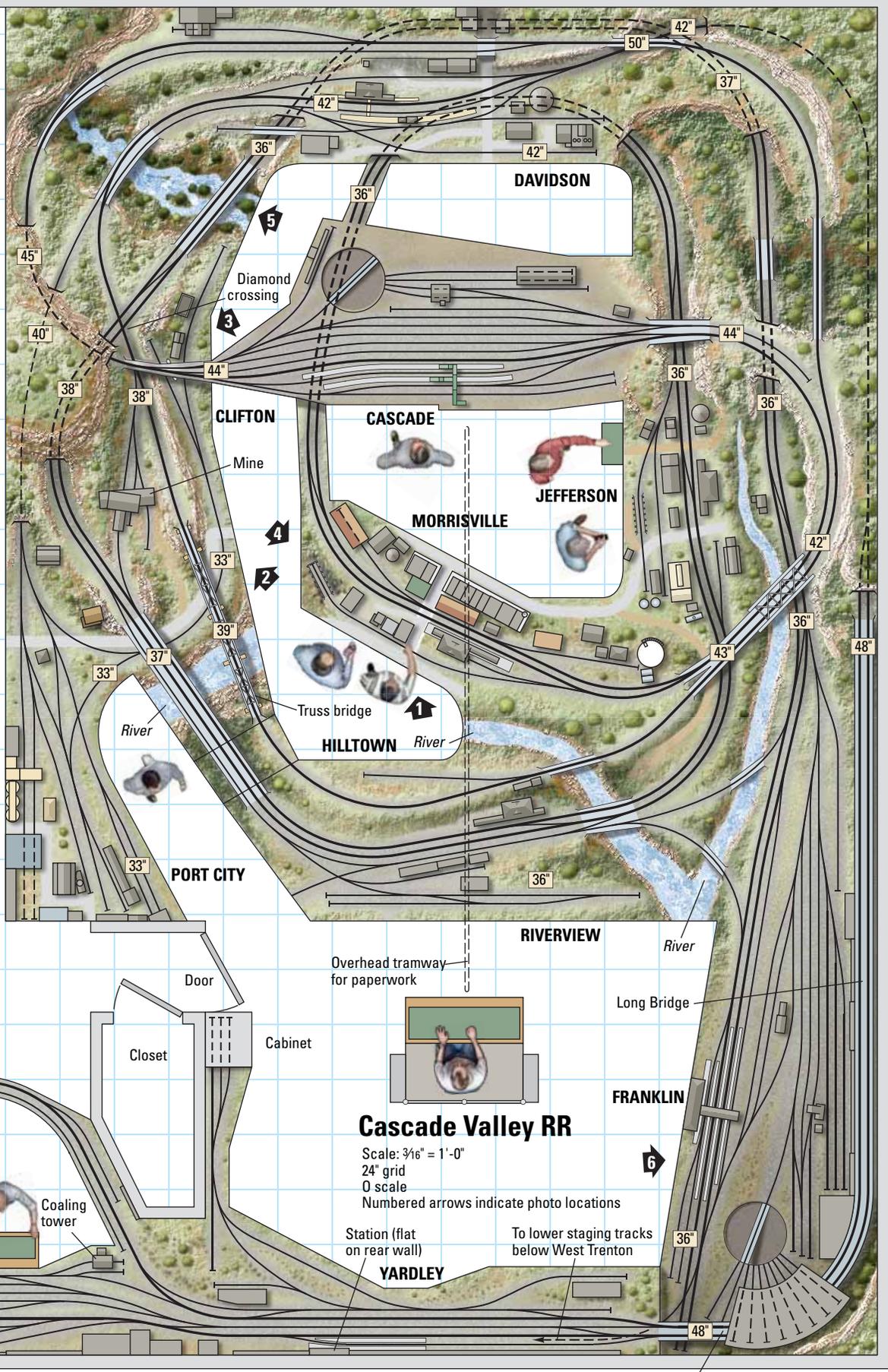
Even with the modifications, the basic scheme of Ellison's plan remained intact. Trains originate in one corner of the basement in Franklin Yard and make four trips around the room. Then they head back in the direction of the origin, bypassing this point to end in West Trenton in the adjoining room. Like Ellison's layout, the Cascade Valley RR has a division point yard in

### >>The layout at a glance\_

**Name:** Cascade Valley  
**Scale:** O (1:48)  
**Size:** 32 x 49 feet (plus a 23 x 10-foot extension)  
**Prototype:** free-lanced  
**Locale:** eastern United States  
**Era:** 1950s  
**Layout style:** point-to-point with access aisles  
**Length of mainline run:** 532 feet  
**Layout height:** 36-50"  
**Benchwork:** tabletop and open grid  
**Roadbed:** Celotex on plywood or pine boards  
**Track:** handlaid, steel code 172 rail  
**Turnout minimum:** no. 7  
**Minimum radius:** 60" main line, 48" sidings  
**Maximum grade:** 1.75 percent  
**Scenery construction:** cement and sawdust mix over window screen  
**Controls:** Cab control



SUMMIT



**Cascade Valley RR**

Scale:  $\frac{3}{16}'' = 1'-0''$   
 24" grid  
 0 scale  
 Numbered arrows indicate photo locations

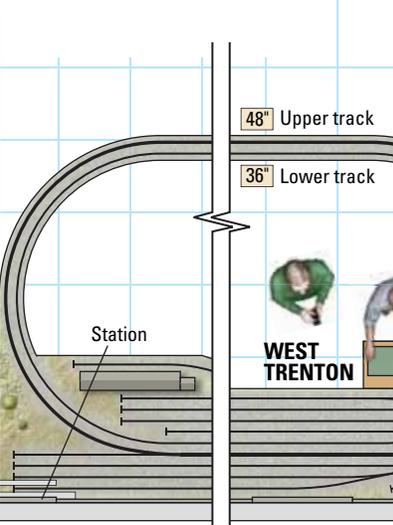
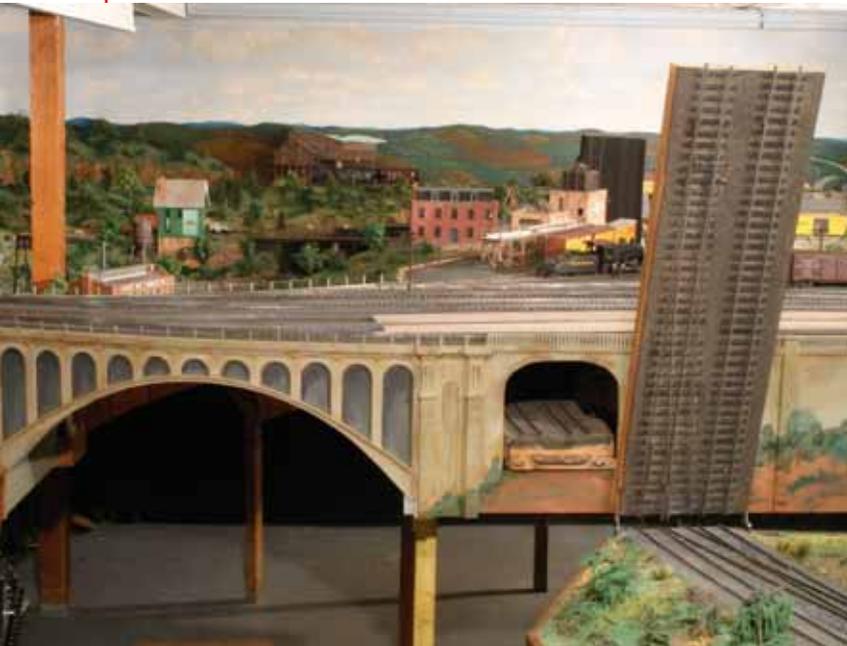


Illustration by Rick Johnson

## >>Lift-ups and duckunders\_

**In a perfect world**, you wouldn't lay track where you need to walk. This is an admirable and often achievable goal, but this limits design options in many layout spaces. On Frank Miller's layout there are several places where tracks



cross aisles, but he has made these places quite painless to navigate. He uses hinged lift-ups that let you pass through with no more effort than opening and closing a door. As long as a train isn't coming, people are free to pass without ducking under.

As a precaution, the lift-ups are electrically interlocked so the train will stop if someone doesn't put it down. But this ingenious idea does pose a challenge to reverse moves.

Frank built the sections using two layers of  $\frac{3}{4}$ " plywood mounted with cabinet fixtures (he uses Amrock brand) designed for flush-mounted doors. He aligned the lift-up section at the other end of the layout with pins that drop into two holes. When the section is lifted, a chain keeps it from folding back on itself. This is one of many ways to make a lift-up, but Frank's method is simple and has worked flawlessly for 30 years.

On the layout there is also one yard throat with multiple tracks where Frank couldn't use a lift-up section. Here he resorted to a permanent duckunder and constructed the fascia to look like a concrete arch bridge. It's very attractive but difficult to negotiate.

Duckunder passages work best when they're as high and narrow as possible, transited infrequently, and the approach and exit are not inhibited by adjacent benchwork. – *P.D.*

the middle of the mainline point-to-point route. Many of Frank's towns are similar to those captured in the black-and-white photographs of the Delta Lines from the 1940s and 1950s. This is where the similarity ends between the Delta Lines and Cascade Valley, despite a claim from some model railroaders that Frank's layout is a Delta Lines clone.

### The builder goes to work

Frank has more than 2,000 feet of track on the layout, all of it handlaid with steel code 172 rail. During construction, Frank spiked every sixth tie. His pre-teen sons helped out by spiking the ties in between.

Some of the materials used in layout construction were crossover items from Frank's construction business. For example, he used 4 x 8-foot sheets of Celotex, an insulation board used to tile ceilings, for the roadbed.

Frank also experimented with partially used bags of dry cement to create the substantial amount of terrain shell needed for his O scale scenery. Used alone, the cement would have set too fast for him to work with. So Frank added sawdust to the mix to help retain moisture and extend the

setting time. He also occasionally added powdered lime to help the mixture adhere to vertical surfaces, like rock outcroppings, while it was still wet.

Frank scratchbuilt most of his layout's structures, basing many of his designs on magazine photos and others on Ellison plans. He built most structures with wood and cardstock, and he used printed brick paper to represent masonry structures. Frank's professional experience shows through in the inclusion of certain details (like appropriate trim for the structures and detailed roofs) that are other modelers commonly don't include.

### Evolution through time

Model railroading techniques, like many things, have changed with time. Just by looking at the track plan, it's evident that Frank's layout is the product of an earlier era. The design attempts to squeeze in as much mainline running (532 feet) as possible. In many areas, portions of the main line run parallel to each other so a train can pass or skirt the same point more than once. Virtually every track plan published years ago followed a similar scheme, but this practice is no longer typical.

### The modeling continues

The layout is basically finished, so most of Frank's current modeling work includes maintenance and detailing. He also spends a significant amount of time scratchbuilding O scale steam locomotives for his friends – they supply him with prototype information and a set of driver wheels, and Frank does the rest. He estimates that it takes 300-plus hours over a nine-week period to build a locomotive from scratch.

Frank's love of model-building doesn't apply just to railroads. In his layout room, numerous shelves and cases proudly display his work, including ships, airplanes, and structures.

The layout, however, is much more than a display. Every fourth Monday, Frank gathers with his operating crew to run the railroad. They run some 25 trains over a simulated 24-hour period using a 6:1 clock. The crew handles a variety of operations including passenger runs, through freights, branchline locals, and yard jobs. The model work comes alive on the Cascade Valley and the legend becomes reality, just like Frank Ellison described in his writings over 65 years ago. GMR

## >>Paperwork\_

**As with most** operation-oriented layouts, the exchange of orders, car cards, and waybills is important on the Cascade Valley. Because the layout is a large open railroad with operating pits instead of aisles, crews in the past tossed the packets across the layout instead of walking back and forth. But sometimes the operators missed their targets, and the packets threatened to deforest hillsides and knock over rolling stock.

To solve this problem, Frank installed a motorized overhead tramway system controlled from the dispatcher's position. Packets are hung on the line and pulled from one end to the other, a convenient method that allows operators to fully concentrate on their jobs. – P.D.



## >>Meet Frank Miller\_



**After a long career** in homebuilding, Frank spends much of his time in his workshop. He and his wife live in the home he built in Yardley, Pa. His four children aren't model railroaders, but Frank hasn't given up on his grandchildren yet!



**6** A U.S. Hobbies USRA 0-8-0 switcher simmers in the engine terminal next to the Franklin Yard passenger platforms. Frank has added many closeup details to various parts of his layout, including working lights on the coal tower pictured here.

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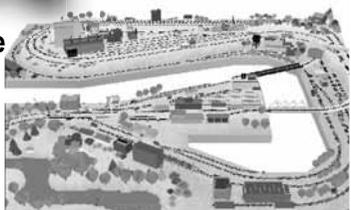
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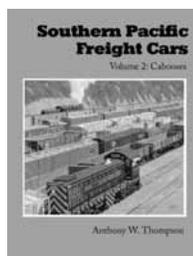
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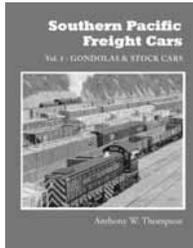
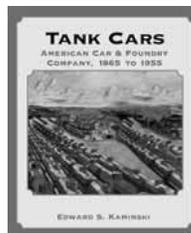


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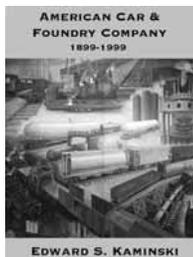
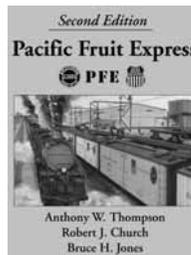


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# >> A lesson in teamwork

Dedicated builders and operators keep the HO scale Muscote Valley rolling

By John Stamatov • Photos by Lou Sassi

**Some modelers like** being lone wolves, working on their layouts by themselves. Others, myself included, enjoy working with an operating crew. But my crew doesn't come to the layout just to socialize and run trains – they helped build my HO scale Muscote Valley.

The MVRR is unusual in that it's a combination of two layouts, my original 9 x 15-

foot Muscote Valley and the 4 x 14-foot Sugg Bay peninsula. However, the MVRR isn't just about the trains. It's a testament to years of hard work by a group of model railroaders with diverse talents.

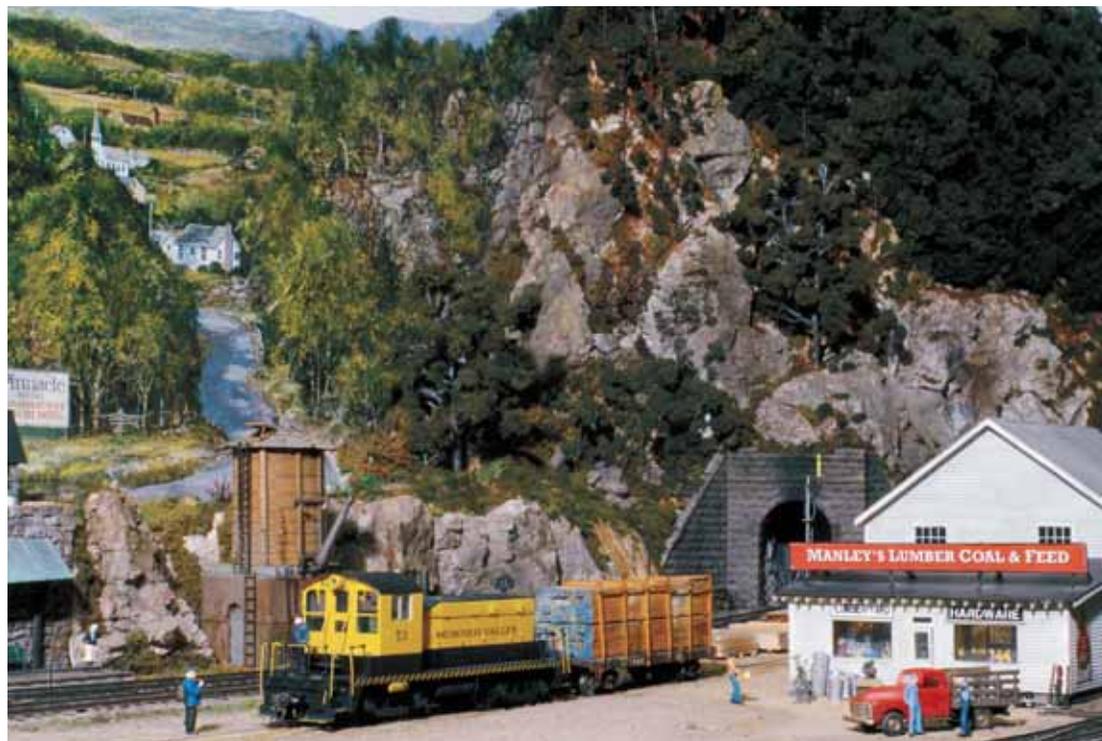
## A team effort

In 1970 I began working and operating on Bob Arnold's HO scale U Line. It was

here that I met many of the members of my current operating crew and developed my model railroading skills. Since my primary interests are scenery and structures, that's what I contributed to the U Line. Over the months and years I worked on Bob's layout, I got in the habit of thinking of ways to enhance structures and scenery to improve the model rail-

**1** Left: John Stamatov and several friends built the Muscote Valley RR, an HO scale layout set in mid 20th century New England. Since the MVRR is a small connecting railroad, it held onto steam longer than most Class 1 railroads. Here, MVRR 2-10-0 Decapod no. 11 spots three empty open-top hoppers at Madyda Stone Works. Rich Cobb built the Sheepscoot Models kit.

**2** Right: Structures and scenery are key parts of John's layout. He scratchbuilt Manley's Lumber, Coal & Feed, a trackside industry being switched by MVRR SW1 no. 53. Jack Wemp painted the backdrop on canvas and affixed it to the wall with wallpaper paste.



**>>The layout at a glance\_**

**Name:** Muscoot Valley RR  
**Scale:** HO (1:87.1)  
**Size:** 9 x 15 feet and 11 x 28 feet  
**Prototype:** free-lance  
**Locale:** New York, New England  
**Era:** 1950s-1960s  
**Layout style:** walkaround  
**Length of mainline run:** 235 feet  
**Layout height:** 48"  
**Benchwork:** 1 x 4 frame  
**Roadbed:** Homabed  
**Track:** code 83 (main line) and code 70 (yards and sidings)  
**Turnout minimum:** no. 5  
**Minimum radius:** 30"  
**Maximum grade:** 1.5 percent  
**Scenery:** hardshell (Sugg Bay) and extruded-foam insulation board (Muscoot Valley)  
**Backdrop:** painted on canvas  
**Control:** North Coast Engineering Digital Command Control

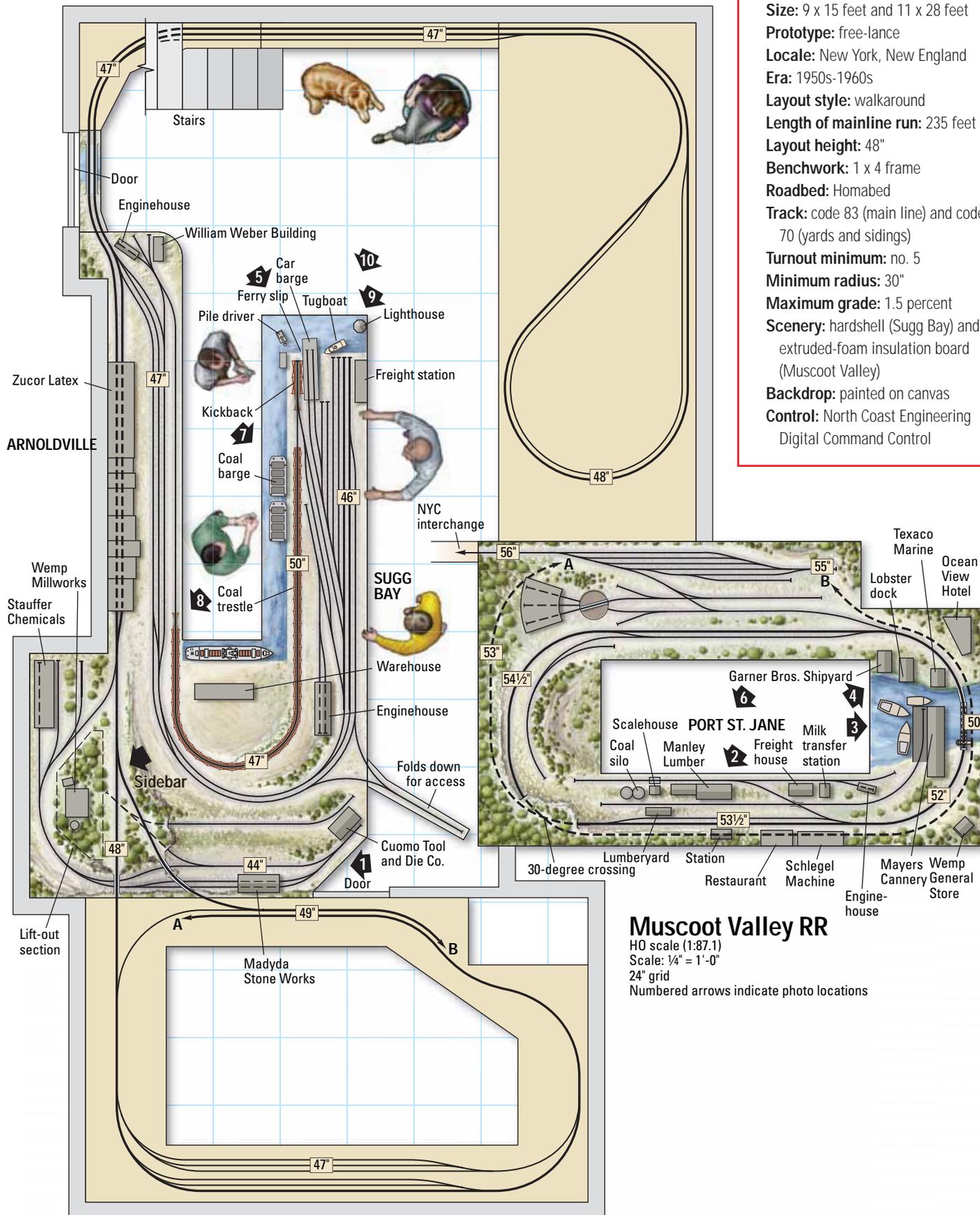


Illustration by Rick Johnson

**Muscoot Valley RR**  
 HO scale (1:87.1)  
 Scale: 1/4" = 1'-0"  
 24" grid  
 Numbered arrows indicate photo locations



**3** The MVRR earns its keep serving a variety of industries, including Mayer's Seafood in Port St. Jane. The SW1 seen earlier is now spotting a refrigerator car at a waterfront business. The car will soon be loaded with fish.

**4** John's interest in trains goes back to his childhood when he watched New York Central freight and passenger trains on the Hudson Division, so it's no surprise to find NYC equipment on his layout. A NYC gas-electric passes over the harbor. Rich Cobb kitbashed the Ocean View hotel in the background; Garner Bros. Shipyard is a modified Builders in Scale kit.



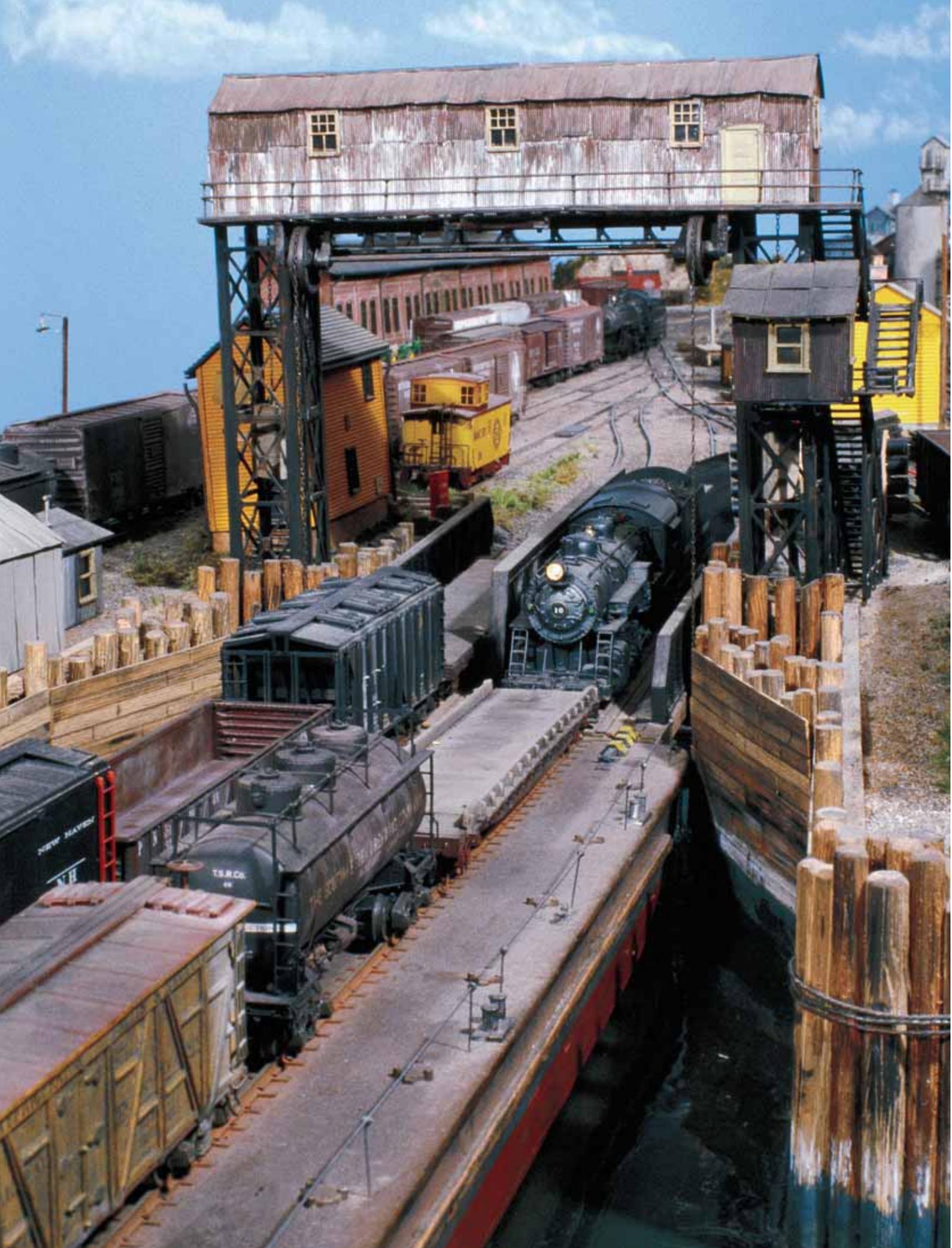
road. I often asked myself, "Wouldn't that building be fun to model?" and "Wouldn't that structure look great on the layout?" It wasn't long before I was photographing, measuring, and scratchbuilding structures.

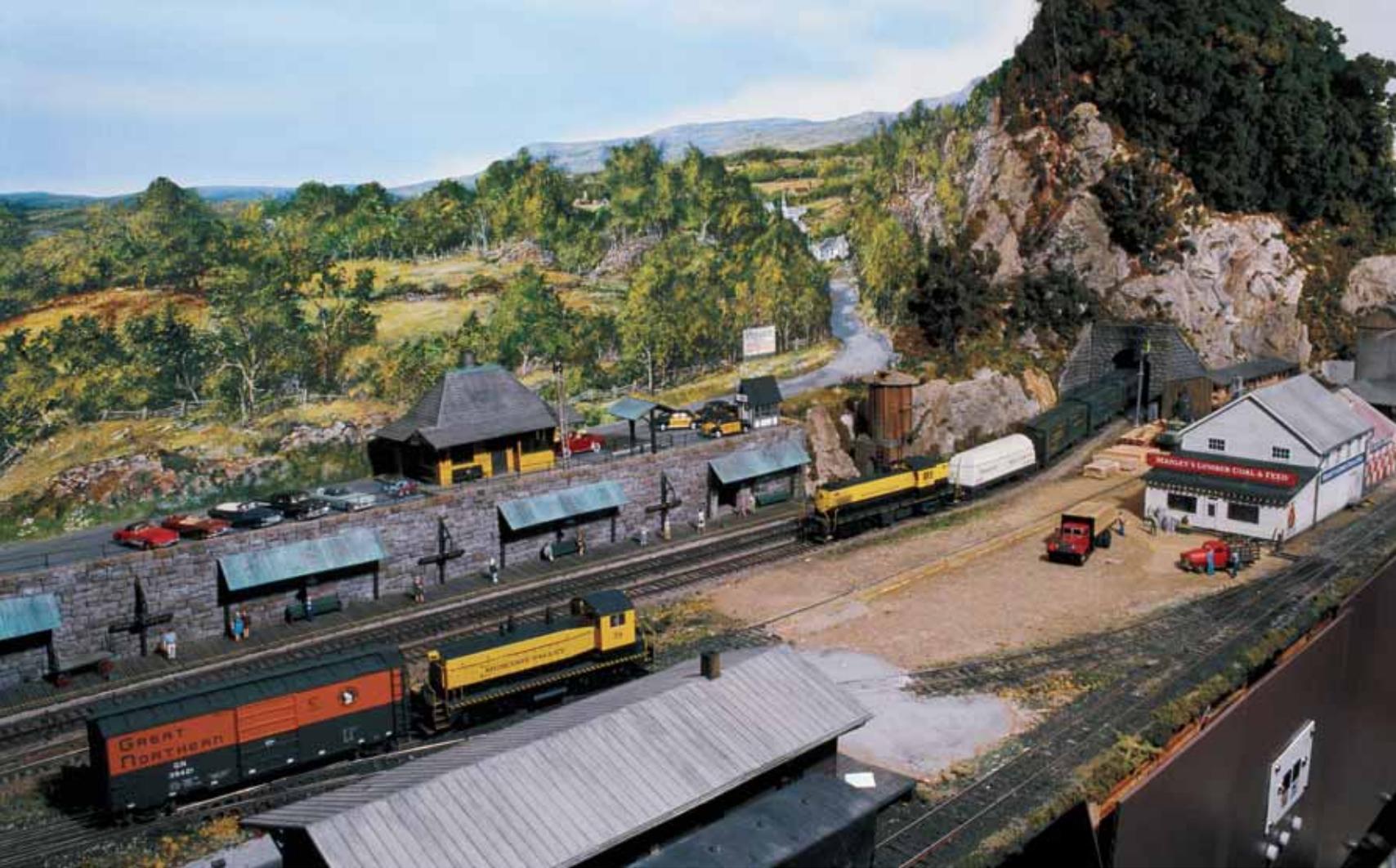
Then, in 1985, I began work on my own Muscoot Valley RR, a 9 x 15-foot layout. I

decided to build a medium-sized model railroad because I wanted a layout I could extensively detail and scenic yet still have time to work on the U Line. The original MVRR was an ideal layout because I didn't have to spend several hours working on benchwork or wiring. To me those were

necessary basics, but not the most interesting aspects of the hobby.

I spent many hours working on the MVRR's backdrop and scenery. My inspiration for these scenes came from dioramas at the Museum of Natural History in New York City. I carefully studied how the





artists seamlessly blended the three-dimensional foreground into the two-dimensional background and tried to re-create that effect on my layout.

### End of the U Line

I was progressing nicely on the MVRR, but soon work time became scarce since my spare hours were being spent at the U Line. Unfortunately, Bob Arnold passed away in 1990. We kept the U Line running for a few years until his house was sold and the layout had to be removed. At that time the U Line was almost 40 years old, so the unsalvageable parts were thrown away.

**5** John was a regular builder and operator on Bob Arnold's U Line. After Bob's passing in 1990, John acquired the Sugg Bay portion of his layout, which features this interesting harbor scene. Today MVRR no. 10, a 2-8-0 Consolidation, is busy shoving cars onto the rail barge. The locomotive is a Pacific Fast Mail brass import.

Sadly, much of the layout was thrown out. We were able to save some bridges, structures, and track. We also saved Sugg Bay, a 4 x 14-foot peninsula that included a waterfront scene, coal dock, and classification yard. We moved the peninsula into my basement in the room adjacent to the existing MVRR.

While the U Line no longer existed in its original form, we did have a layout for the operators to work on. The group started coming to my house for work nights and operating sessions. One of our first orders of business was putting a hole in the wall and building connecting tracks to link the two layouts.

Cutting the hole in the sheetrock wall was fairly easy. We determined the track level by putting a small hole in the wall and running track between the two layouts. Once the track elevation was established, we cut a larger hole in the wall to give us more room to work. We used tunnel portals to cover the oversized hole.

The hardest part of the project was adding the turnouts necessary to complete the wye. We used the ascending track from

**6** The setting for the free-lanced Muscoot Valley RR is New York and New England, and signs of Eastern railroads abound. The paint scheme for MVRR's diesel locomotives, including Electro-Motive SW1 no. 58 and Alco RS-3 no. 62, was inspired by the New York, Susquehanna & Western Ry.

the staging yard to connect the MVRR with Sugg Bay.

### A new, improved layout

With Sugg Bay connected to the Muscoot Valley RR, I now had a larger layout with expanded operating potential. The layout is a point-to-point operation, with cars leaving the layout via a car ferry at Sugg Bay and the New York Central interchange track at Watchubak Yard. My friends and I also included a track for continuous running, primarily so passenger trains don't end up in the yard.

With the expanded model railroad came regular operating sessions. Eight operators are needed for the two-hour session. We build up trains (milk, coal, and

## >>Easy access

**One of the challenges** of maintaining a large layout is being able to reach all portions of it. We solved that dilemma on the Muscoot Valley RR by constructing a lightweight lift-up section. First, we determined the location we needed to access and cut a hole in the layout. We then cut a piece of 2" extruded-foam insulation board to match the contour of the hole. Foam is an ideal medium to use because it's lightweight yet rigid.

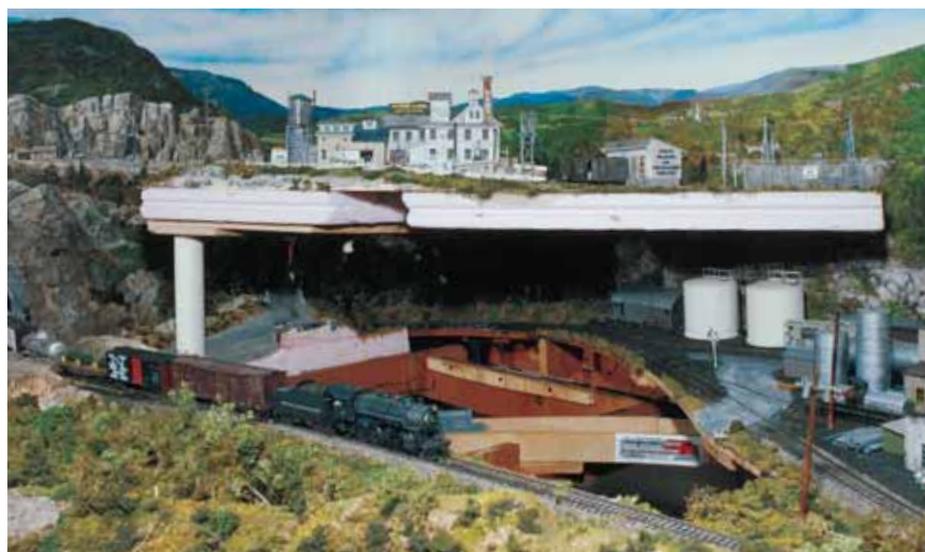
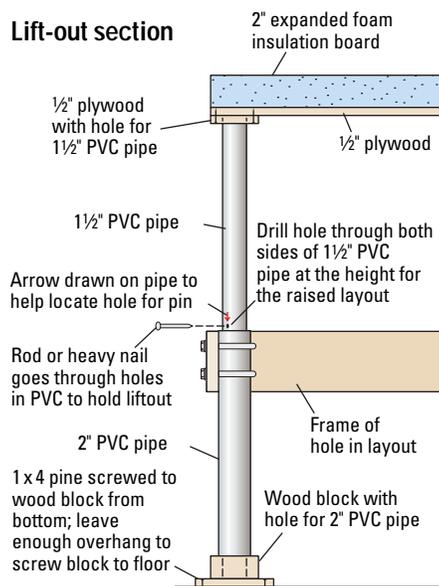
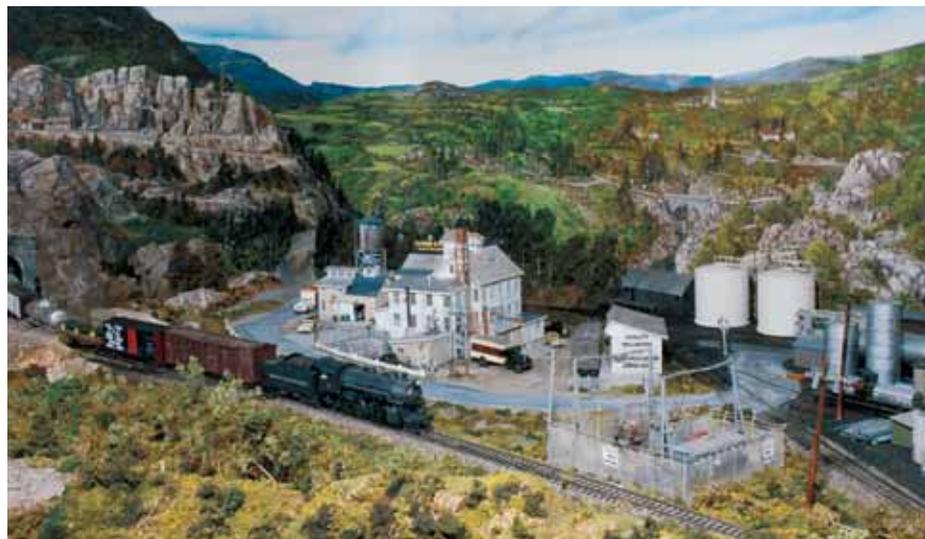
Next, we built a telescoping pole using 1½" and 2" PVC pipe, as shown in the illustration. Even though the foam is rigid, we added two pieces of ½" plywood to the corner where the PVC pipe connected with the lift-out section.

We then made a base for the telescoping pole using scrap wood. We started by drilling a hole in the wood

block and sliding the 2" PVC pipe in place. We then set a piece of 1 x 4 pine under the wood block, leaving enough excess wood to screw the base to the floor.

Once the lift-out section was in place, we raised it to a height all of the

operators could comfortably stand up in. We then drilled a ¼" hole through both PVC pipes to accommodate a removable pin (either a heavy nail or small metal rod works well) used to hold the lift-out section in place. – J.S.



local freights) in the Watchbak Yard and Sugg Bay, and we have hidden staging tracks to hold passenger trains and through freights. We use the car-card-and-waybill car-forwarding system, and we operate with timetables and train orders.

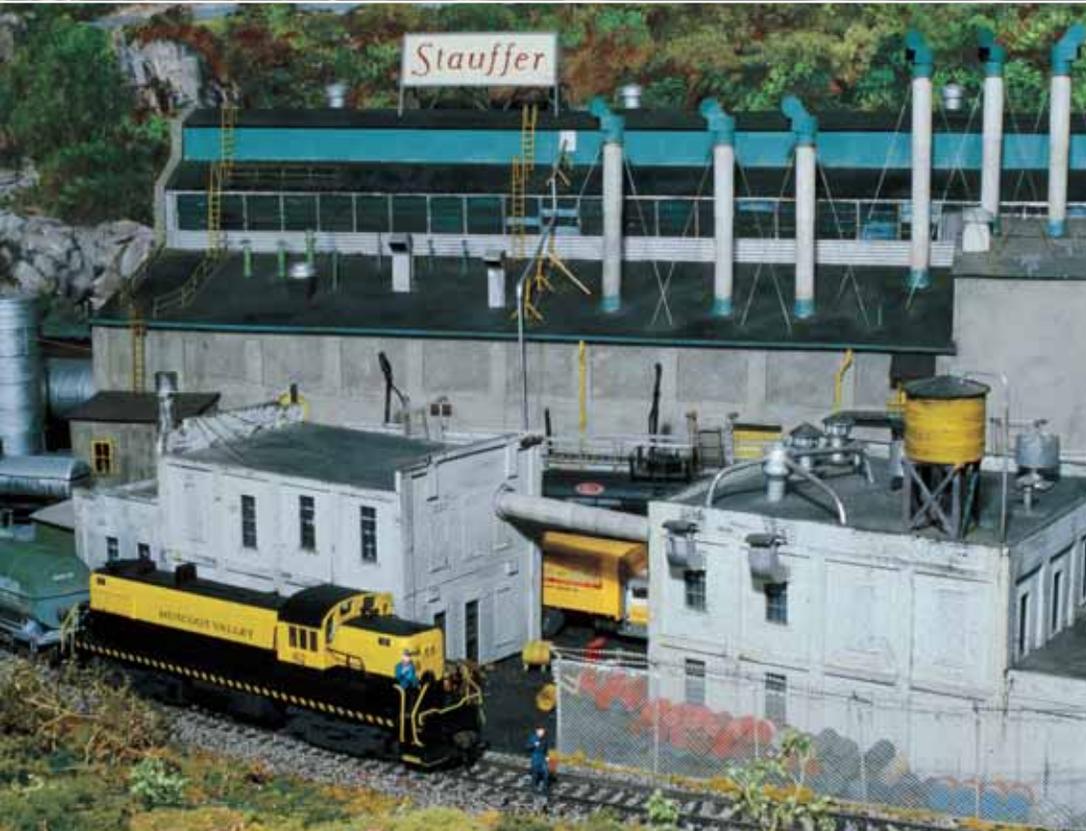
My regular crew isn't just a talented group of operators; it's a talented group of modelers as well. Jack Wemp, a professional artist, painted the backdrops on canvas and affixed them to the wall with wallpaper paste. Others have shared their

talents by modeling trees using armatures and ground foam, making lakes and rivers with Enviro-Tex resin, and casting rock outcroppings with Hydrocal.

The structures on the layout are kit-bashed and scratchbuilt, and a few are out-of-the-box kits. With a quality paint job and some weathering an inexpensive plastic kit looks great. Some of the buildings on the layout, such as Wemp General Store, are named after members of the MVRR operating crew.

## Layout environment

Dust is one of a layout's biggest enemies. To minimize the dust, we installed a drop ceiling and we continuously run air filters in both rooms. We also replaced the incandescent lightbulbs with screw-in fluorescent bulbs, which give off far less heat and better illuminate the room. Since we've all worked hard detailing structures, freight cars, and scenery, we want the room to be sufficiently lit so people can enjoy the fruits of our labors.



**7** One of the more interesting jobs on the MVRR is operating the Sugg Bay coal dock switcher. An MVRR 0-8-0 switcher is working the dock today, pushing a loaded coal hopper to the chutes near the empty barge. Real coal is dumped into the barges via operating chutes. Empies are pushed down grade and free roll over to a kickback.

**8** Stauffer Chemicals, scratchbuilt after a real plant in Ardsley, N.Y., is one of the biggest industries on the MVRR and requires frequent switching. Alco RS-3 no. 62 carefully moves a tank car through the sidings at the plant. With tight clearances and lots of turnouts, crews have to exercise caution while switching cars at the chemical factory.

## >>Blending in backdrops\_

**While trains are** the focal point of any layout, it's the backdrops that serve as the frame for a model railroad. Over the years many articles have appeared in the hobby press that state backdrops should be simple and not detract from the trains. However, I think backdrops can add a lot to any model railroad layout.

While studying dioramas at the Museum of Natural Science in New York City, I noticed how well-done backdrops can add depth and dimension to a scene. On most of these dioramas the

main subject was done so well that the backdrop didn't compete with it at all.

We are very lucky to have the talents of Jack Wemp, who is both a great model railroader and superb artist. Some of the philosophies we have for backdrops include:

- **Establish the scene you want.** A backdrop should give a sense of perspective. We develop a horizon line on the backdrop and blend the rest of the scenery into it.

- **Consistency.** Whether it's roads or trees, the colors on the back-

drop should match those of the foreground items. If the colors don't match, the transition between the foreground and background can be quite jarring.

- **Use scenery to your advantage.** Blending trees into a backdrop works well because there aren't sharp separation lines such as those on structures.

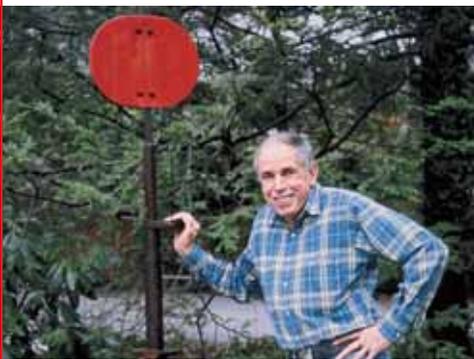
There are spots on our layout where there is only two feet of separation between the foreground and backdrop. However, the backdrop makes these scenes appear much deeper. – J.S.

## Celebrating success

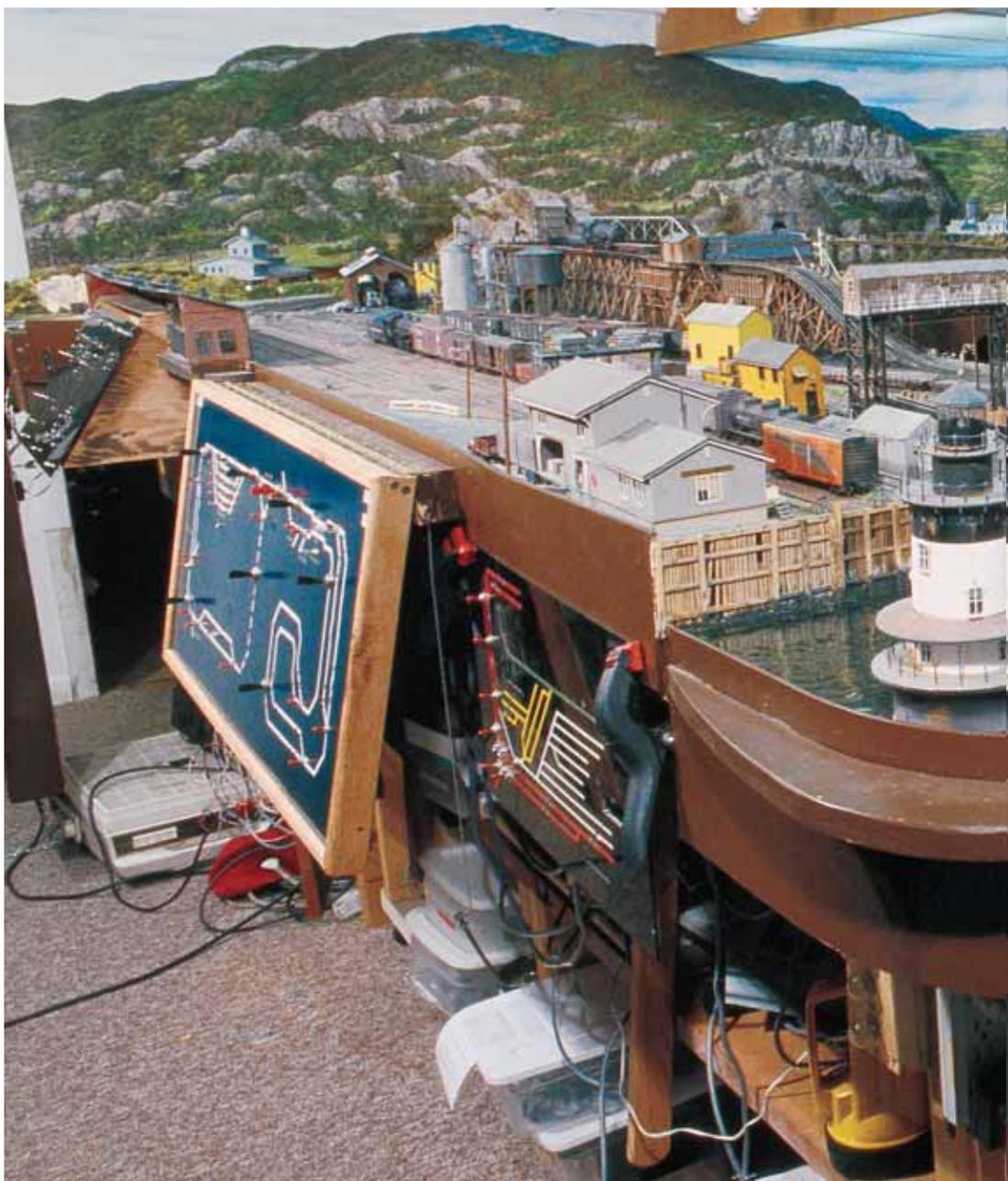
The Muscoot Valley RR has come a long way since the 9 x 15-foot model railroad I started in 1985. While it was a sad event that led to my layout's expansion, it's great that part of the U Line is still running with some of its original operators.

My years operating on the U Line and MVRR have been enjoyable. Being part of an operating crew has greatly increased my enjoyment of model railroading. I've formed many life-long friendships and have had the pleasure of working with talented modelers. I look forward to hosting operating sessions and work nights on the Muscoot Valley for many more years. GMR

## >>Meet John Stamatov\_



**John** and his wife live in Armonk, N.Y. His interest in trains dates back to his childhood when he watched steam locomotives on the New York Central and milk trains passing through Yonkers on the Hudson Division.





**9** As a tribute to the late owner of the U Line, the tugboat at Sugg Bay is named the *Robert J. Arnold*. The tug is seen here waiting in the harbor for the rail barge to be loaded. Steve Cryan built the Crow River lighthouse kit.

**10** This overall view shows how Sugg Bay fits into the rest of the layout. The tunnel that connects Sugg Bay with the original 9 x 15-foot Muscoot Valley can be seen just above the coal dock in the background.



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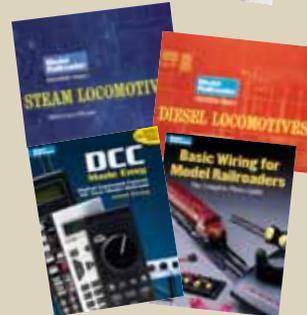
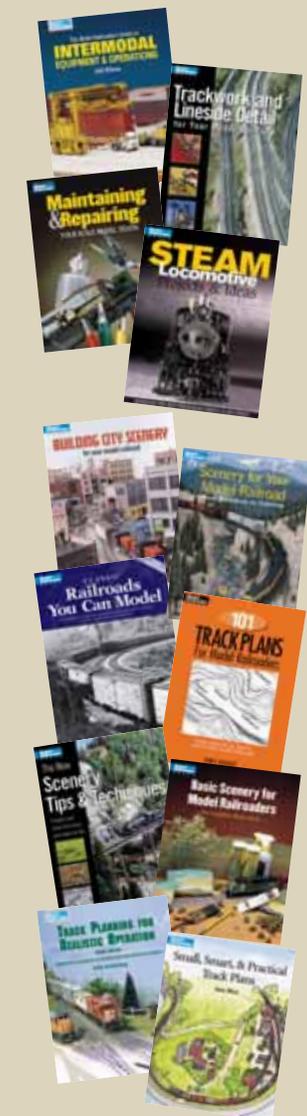
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# >> The view from down under

By Paul J. Dolkos • Photo by the author

**Until now in this issue** of *Great Model Railroads* you've seen the topsides of 10 model railroads. But beneath all those beautiful scenes are labyrinths of joists, forests of uprights, and myriad slices of plywood. As so many of us know, this structure is far more important than the scenery, because we can enjoy running trains on bare benchwork without a shred of landscape.

A model railroad's supporting structure can be built in many different ways. There is L girder, which is forgiving of imprecise carpentry, but I find that the girder always gets in the way when working underneath. There are grid arrangements often used

for flat-topped layouts. The British use thin plywood fabricated much like the structure of an airplane wing to produce strong, lightweight portable layout sections. Others use metal sections, shelf brackets, or Styrofoam insulation board.

## Underground excursions

There are often spirited discussions among modelers on which kind of benchwork is best. I'm not sure it really matters, other than the method and materials should produce a solid structure that resists warping. If anything there probably is a tendency to overbuild. Perhaps that's good because sometimes I see layout owners

walking or crawling on the top of layouts to reach something. I also remember seeing layout benchwork that included a 10" x 10" beam. The owner acknowledged it wasn't required and that he'd had to build especially sturdy legs to support it, but he had the beam and couldn't resist using it.

What's underneath model railroads is what makes them go. When you visit a scenicked railroad, stoop down and look underneath. Usually it's kind of a maze, but check out the switch machine linkages, signal mechanisms, and the roadbed structure. It can be very instructive.

Sometimes you can take an excursion under a layout without stooping. Some

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This is a down-under view of Paul Dolkos' HO scale Boston & Maine layout. The benchwork on the right is L-girder and the peninsula to the left uses grid construction. The helix was built to reach a proposed quarry scene on a lower deck, but Paul decided there was plenty of railroad on top and will not build it.

clubs, including the La Mesa Model Railroad Club at the San Diego Model Railroad Museum, The Model Railroad Club of Union, N.J., and the Northern Virginia Model Railroaders of Vienna, Va., have full-height passageways under the benchwork for maintenance and access. It's a unique experience to explore these subterranean spaces. But these are clubs in rooms with high ceilings. Don't try this at home.

### Unexpected discoveries

You never know where under-the-lay-out exploration will take you. Long ago the student members of the Massachusetts Institute of Technology Model Railroad Club decided that a fully working signal system was needed. As that project progressed, on the basis of personal interests,

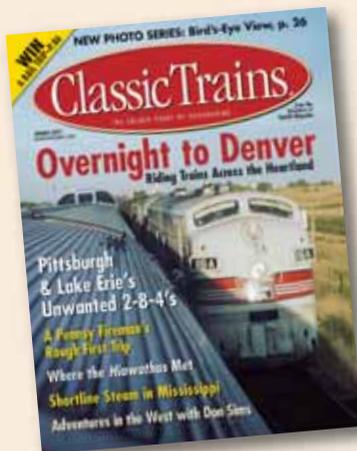
two groups developed, one that focused on the trains and track on top, and the other that was always working underneath the layout on the signal system. Mechanical relays, the logic technology of that day, were employed.

As you'd expect with a group of science and engineering students, the signal system was quite complex and required the underneath group to develop some innovative logic schemes. As the story goes, the payoff was that these schemes ultimately led to some of the pioneering efforts that created personal computers.

You might think that today the MIT club would have banks of PCs hooked to the club layout. No. Instead the members have resurrected a huge, old Western Electric, mechanical-relay, telephone central office switch to control layout functions. They're kind of like the guy with the 10 x 10 beam. They just couldn't trash it. GMR

*Paul Dolkos is a prolific contributor to both Great Model Railroads and Model Railroader. The top side of his HO B&M New Hampshire Division layout was featured in the December 1995 MR.*

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>>Viewpoint\_

# The Cornfield

By Bob Smaus

# and the Bullring



Bob Smaus

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*Los Angeles resident Bob Smaus models the SP in his hometown on a garage-size HO layout and is a frequent contributor to Model Railroader magazine.*

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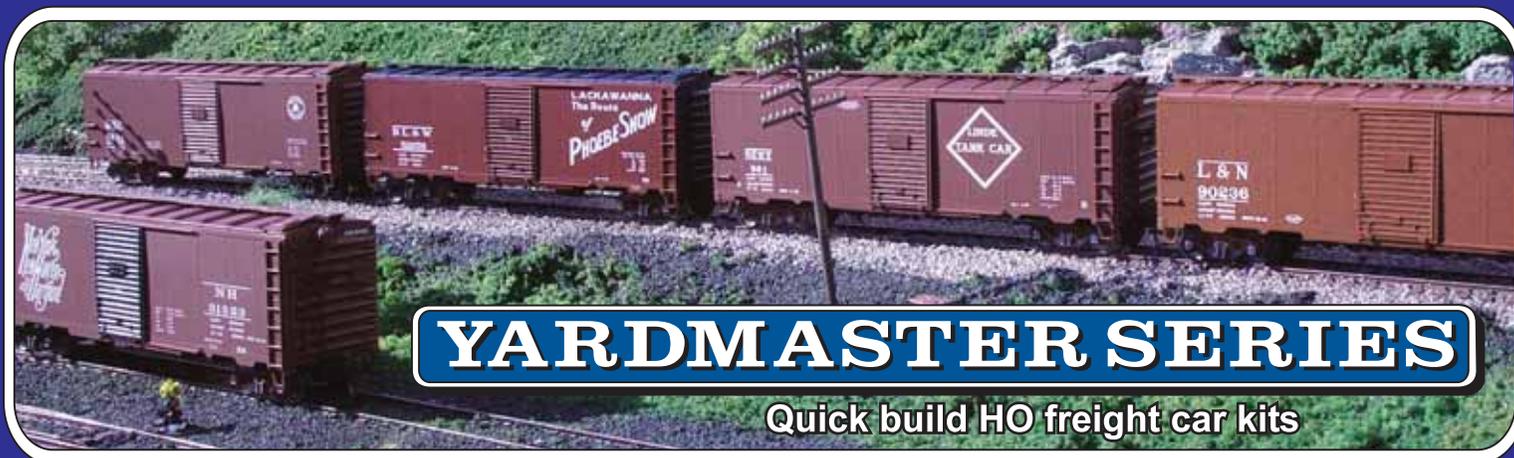
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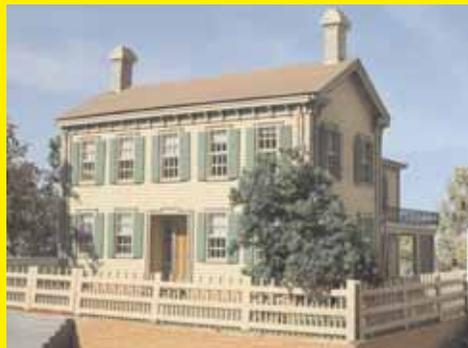
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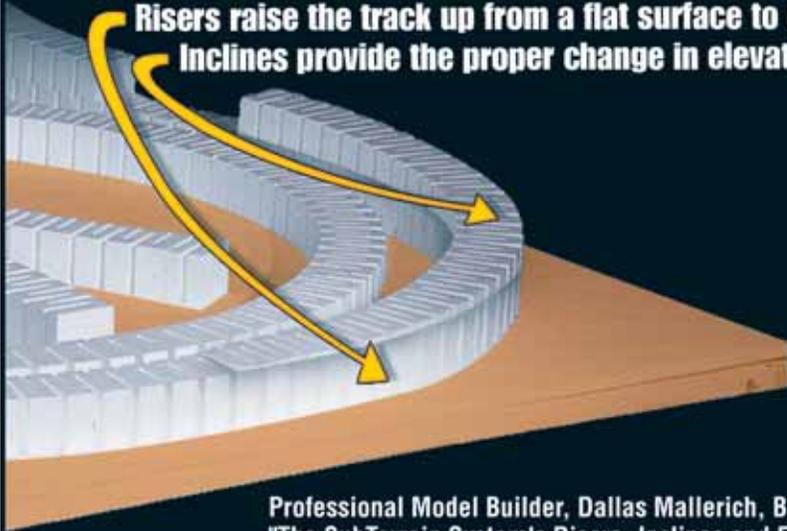


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