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SPECIAL ISSUE

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Annual 2013

Model Railroad Planning 2013

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Prototypical design and operation on a Great Lakes ore dock railroad. See page 8

PLUS

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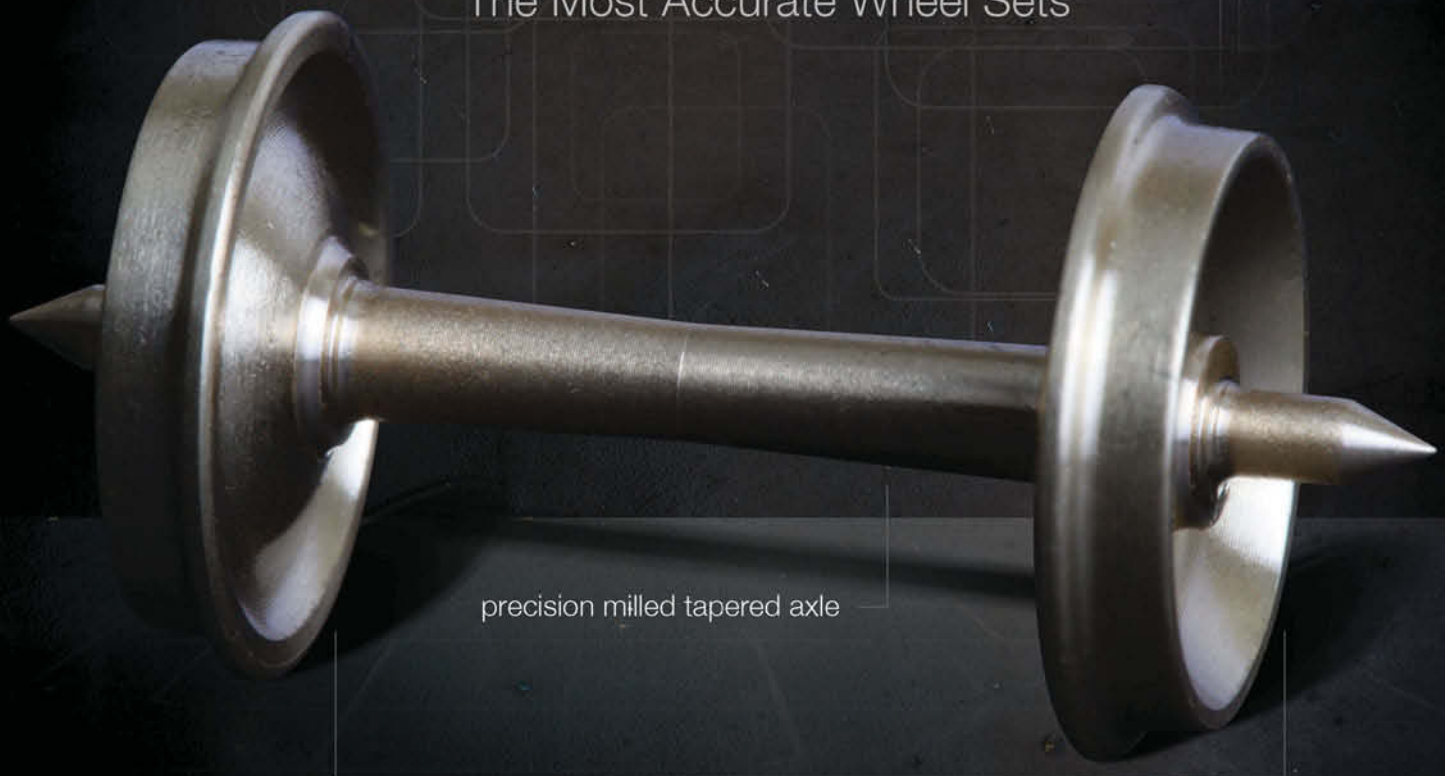

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Page 24: Curing a bottleneck between layout decks.

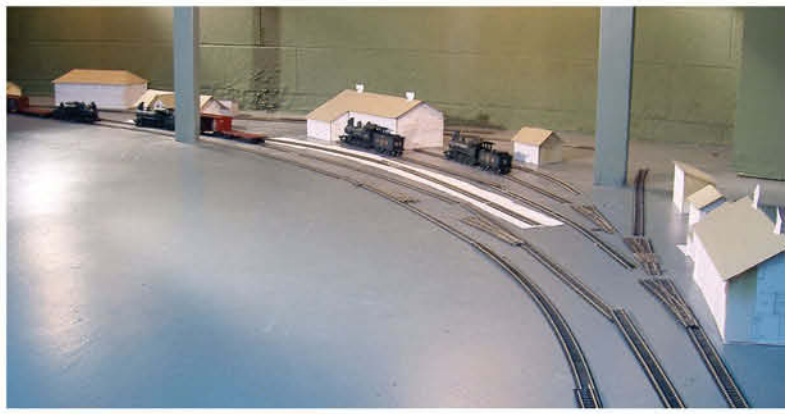
Page 16: Big-time Class 1 action in the upper Midwest.

Page 42: Multiple methods to tame turnback curves.

On the cover: Jeff Otto details the operation of his Missabe Northern Ry. which is focused on moving iron ore to the towering docks at Duluth, Minn. Jeff Otto photo

Photos, clockwise from top: Mike Burgett, Fred Lagno, Andrew R. Dodge, David Ogle, Craig Bisgeier, Daryl Kruse

Page 46: Thinking ahead produces layout views like this.



Page 72: Will it fit? The author finds out through testing.

Page 36: Fitting more action into a mid-sized space.

Model Railroad Planning 2013

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Editorial

A remarkable journey

Andrew Dodge found there were no commercially produced locomotives for the Colorado Midland in 1/4" fine-scale (Proto:48), so he set about scratchbuilding 11 of them, including these three 2-8-0s. He also took the photo.

As you'll discover on pages 72-77, Andrew Dodge has taken a remarkable journey to rekindle his passion for scale model railroading. He had an On3 model railroad that most of us can only dream of ever building, but it was "fully amortized." There was little ahead to challenge him as a researcher, layout planner, and model builder.

He then sought out a new project that would inspire him for another several decades. As you'll learn in his introspective commentary on getting here from there, he finally settled on one of those hard-luck cases that seems to inspire historians and modelers: the fabled Colorado Midland. Never mind that there was almost no commercial support for his proposed endeavor; he took that as a challenge, not an insurmountable obstacle.

To be sure, Andrew is a remarkably talented modeler. He is also a skilled researcher who knows how to kick over rocks until he has the information he needs. And he has the drive to press on no matter how daunting the tasks ahead of him.

His remarkably successful approach is attested to by the accompanying photo of three of the 11 O fine-scale locomotives he scratchbuilt after choosing the Midland to model. He also built more than two dozen structures, all to match prototypes found along the Colorado Midland, and he designed a track plan that accommodated them. Only then was he comfortable enough to contemplate dismantling his exceptional On3 edition of an equally fabled, and troubled, neighboring railroad, the Denver, South Park & Pacific.

In sharing Andrew's work with you, I have no illusions many of you will be inspired to model the Colorado Midland in any scale, although some of you already have. Nor do I believe you'll be inspired to scratchbuild a small fleet of steam locomotives to equip your next model railroad. But I do urge you to read this remarkable success story. There are myriad tips and techniques that almost any of us can use to bring our own more modest modeling efforts to fruition.

As the scale gets larger....

The photo by Bob Springs on the following page showing part of a 1:29 model of a Norfolk Southern (ex-Southern) SD40-2 makes an important point about large-scale modeling: It's in your face! As Bob put it, as the scale gets larger, your view gets closer.

Looking at this – literally – from a slightly different vantage point, each model assumes more importance and makes a greater impression on the viewer. That there are fewer models to deal with in a given footprint means more time and effort can be lavished on each to transform what could be a shiny toy into a realistic depiction of full-size railroading.

Several major manufacturers of large-scale equipment chose to bulk up standard-gauge models that operate on No. 1 gauge (45mm) track from the correct 1:32 to 1:29 in an effort to achieve a similar heft as 1:22.5 Gn3 or 1:20.3 Fn3 narrow-gauge models. This means Bob's SD40-2 runs on slightly narrow-gauge track, as he explains in his article. Though that still bothers the purist in me a bit, seeing Bob's equipment after it has been detailed

Up-close-and-personal views of the equipment are the norm when you model in any of the large scales, especially on a relatively tall indoor layout like the one Bob Springs describes beginning on page 30. Bob Springs photo

and weathered suggests that my concerns are misplaced.

'More X scale, please!'

Each year as our annual planning meeting approaches, I go through the electronic "stack" of articles that didn't quite make it in time for the previous issue and the new proposals that have arrived on my digital doorstep since then. My goal is to present an issue with a well-balanced selection of features and Planning Tips in terms of scale, gauge, era, region, and scope.

Each issue has to be both instructive – but not a textbook or user's manual – and a "good read." The *Model Railroader* staff and I then review the proposed content to be sure we can touch all the key bases we can manage.

Ideally, I'd love to see a cover line proclaiming we have coverage for those modeling in every scale from Z to F, but that isn't especially practical. I think we do a good job – this issue has features about great layouts in the Big Three scales: N, HO, and O, plus 1:29 – and will strive to be even more inclusive next year, and the year after.

But I believe being concerned about whether there's an article about a railroad in your favorite modeling scale is not a helpful – to you – point of view. Every article is about every scale in some way. If you skip an article because it's about a different scale, you'll miss cogent comments about the decisions that led to the writer's choice of scale, era, or region, or the hard-won lessons learned along the way.

Indeed, an author's argument for something may be just the proof you needed to not do it quite that way, as your objectives, experience, or skill sets may be markedly different.

We welcome your letters and e-mail messages about each issue, be they pro or con. That, and sales figures, are how we gauge reader reaction to our content choices. But before you write me to complain there was nothing for someone modeling in your favorite scale, take another look at what we offered. I think you'll find there was a lot for you to learn and enjoy after all.

Last run for Rich Loveman

Bill Botkin forwarded the sad news that one of MRP's most promising contributors, architect Rich Loveman of Centennial, Colo., has died. He was the author of the intriguing article "Mountain main lines with lift-out scenery" in MRP 2011.

Rich had been battling pancreatic cancer for almost a decade, yet he continued to impress us with his artist's eye and sculptor's touch as he crafted an HO masterpiece depicting the Canadian National and Canadian Pacific in Canada's Thompson River canyon. He also wrote a fine book: *Never on Wednesday – The First Decade of the Rio Grande Zephyr.*

We extend our most sincere sympathies to his family and many friends.

Back issues of MRP on DVD

Those of you who do not have a complete set of *Model Railroad Planning* or would like to have many of the track plans from those issues may be interested in the *Model Railroader Special Issue and Archive Collection* DVD, which includes all issues of MRP from its beginning in 1995 until 2011.

The DVD also includes *43 Track Plans From The Experts*, plus a number of other special publications since 1991 including *Great Model Railroads.*

It's available from Kalmbach by calling our customer service number: 1-800-533-6644.

Canadian National's and Canadian Pacific's transcontinental main lines along the Thompson River in western Canada were the theme of the late Rich Loveman's superbly crafted HO railroad. Rich Loveman photo

A railroad that feeds the iron-ore fleet

Orchestrating the endless parade of ore from yard to dock

By Jeff Otto//Photos by the author

Long trains of short cars, big steam engines, and massive docks loading ore into big boats are the brief images remembered from a time when a small boy visited Grandma in Duluth, Minn. I didn't fully realize the indelible impression those memories made until years later as a lifelong interest in trains grew into a railroad career. More knowledge and research over the years has led me to a tighter focus on capturing the flavor, operations, and switching needs of the iron-mining and steel-making industries of the Great Lakes region as I designed my railroad.

The challenge for all the mines and railroads surrounding the Great Lakes was that the raw iron ore didn't all have the same chemical mixture. The Mesabi Range ore alone was catalogued into more than 160 classifications. But making steel is an exact science requiring the right mix for each steel produced.

The only practical way to blend a commodity measured in millions of tons shipped per year was to enlist the railroads in the mixing process. They were charged with sampling and sorting cars to put the right ore classes together in the loading pockets of the ore docks. The ore mixed itself as it tumbled down out of the pockets into the holds of huge ore boats. All this mixing meant that large ore-sorting yards were needed near the docks, since it wasn't as practical or safe to sort the cars on the docks themselves.

The flavor of ore railroading

My Missabe Northern Ry. is a fictitious operating company jointly

An overview of the Missabe Northern's Lake Superior ore docks, built from Walthers ore dock kits, shows one of the huge 0-10-2 "hill engines" at left on Jeff Otto's scratchbuilt approach. An 0-8-0 farther out on the dock is "spotting pockets." Bruce Johnson built and super-detailed the dock kits and modified Sylvan (now Walthers) ore boat kits to create the *William Irvin*.

owned by the Duluth, Missabe & Iron Range and the Great Northern. These were the major (but not the only) players in the movement of iron ore from the Mesabi Range, with considerable intertwined and shared track on the Range to serve all the mines. My HO Missabe Northern scenario extends this facility sharing so I can model one main line to the Duluth ore docks while employing rolling stock from both roads.

My goal is to represent the full cycle of mine-to-dock ore transportation typical of the early 1940s, culminating in a Duluth harbor scene with two DM&IR steel ore docks side by side. Since the Walthers Cornerstone ore dock kit is based on a DM&IR all-steel design, this made the choice of dock prototype easy.

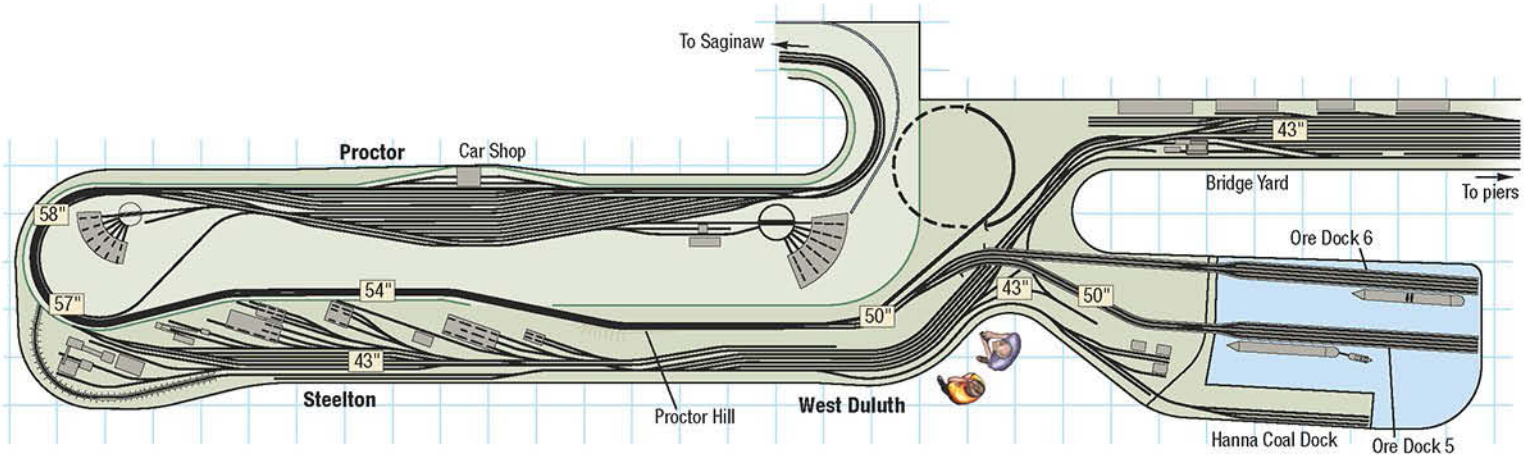
Moreover, Proctor Hill, southwest of Duluth, creates a steep grade up out of the Lake Superior basin, ideal for climbing to the upper deck of a double-deck model railroad. The top of the 2.2-percent, seven-mile, double-track grade enters Proctor Yard. My Missabe Northern grade is 2 percent with a combination of double- and single-main track continuing on to the Iron Range. The main (lower) deck out of Duluth represents predominantly GN's line to Minneapolis and St. Paul, with Northern Pacific and DM&IR trackage rights to get to NP's Bridge Yard in downtown Duluth.

Functional plan

Like most major yards, Proctor is organized into sub-yards for different functions. It was the primary base of operations for the Duluth, Missabe & Northern Ry., with complete locomotive, car, and maintenance-of-way shop facilities. In addition to many tracks for sorting ore, there were smaller numbers of tracks grouped for assembling empties off the docks to send back to the Iron Range, and for handling limited freight traffic. The Duluth & Iron Range Ry., based at Two Harbors, was merged with the DM&N to form the DM&IR. Most shop activity was eventually concentrated at Proctor.

Proctor Yard on my Missabe Northern is designed to support two

This view of the ore docks at Duluth shows a pair of lake boats being loaded and the tug *Edna G*. The beginnings of downtown Duluth are at right.



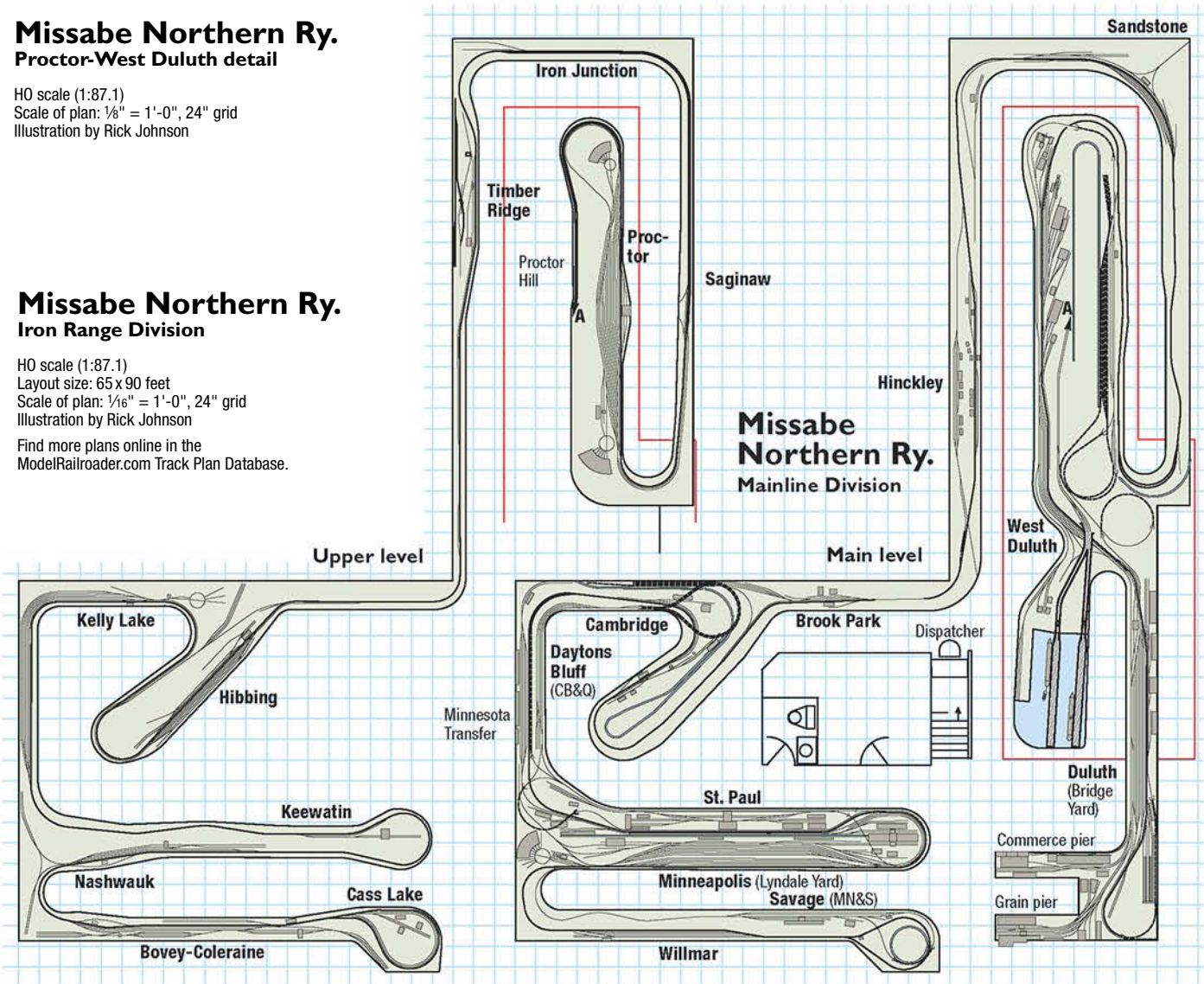
Missabe Northern Ry.
Proctor-West Duluth detail

HO scale (1:87.1)
Scale of plan: ⅛" = 1'-0", 24" grid
Illustration by Rick Johnson

Missabe Northern Ry.
Iron Range Division

HO scale (1:87.1)
Layout size: 65 x 90 feet
Scale of plan: 1/16" = 1'-0", 24" grid
Illustration by Rick Johnson

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



4-track ore docks. I chose to mirror this with an 8-track ore classification yard for operational simplicity. A 3-track empties yard and a modest 2-track freight yard near the car shop handle other switching needs.

Proctor's three sub-yards are served by five independent switching leads, as the potential exists for as many as four engines to be switching at once, not to mention a utility locomotive that might be working the engine servicing area. All can be productive while seldom blocking each other. Operators want to see their assigned engines move, not stand around because they're blocked in. For a transportation business, equipment time and man hours lost are serious money that justifies such designs on the prototype.

Operational design

My design process started with the selection of dock capacity to fit my space and visual goals. From this, it seemed logical to plan for the same

The layout at a glance

Name: Missabe Northern Ry.
Scale: HO (1:87.1)
Size: Proctor Yard and ore docks 25 x 66 feet; overall 64 x 90 feet
Prototypes: Duluth, Missabe & Iron Range and Great Northern
Locale: northeastern Minnesota
Era: early 1940s
Style: multi-deck
Mainline run: 1,000 feet
Minimum radius: 30" main
Minimum turnout: no. 7½ with custom 60" radius
Maximum grade: 2 percent
Train length: 35 ore cars on dock turns; 60 ore cars on ore trains; 25 cars on freights
Benchwork: open grid
Height: 43" to 58"
Roadbed: 2" Homasote splines
Track: handlaid code 70
Scenery: rosin paper and white glue
Backdrop: photos glued to tempered hardboard or drywall
Control: Digitrax Digital Command Control with wireless throttles

amount of mine and ore interchange capacity for balanced traffic flow.

Train size then entered the equation as a further consideration for sizing the yard used for sorting cars near the docks, and for building outbound trains of empties. Several smaller yards on the full-size Iron Range stored the empties until the mines needed them for loading, helping to assure prompt delivery of empties. I planned for one of these storage yards, which were also used to assemble cars gathered from various mines into big road trains of ore.

The Walthers ore dock kit is designed in a modular fashion. This makes it easy for a modeler to scale the scope of the operation to match the amount of space and interest devoted to ore-boat loading operations. (Vessels that ply their trade solely on the Great Lakes are called "boats," regardless of their size.) The dock kit can be built as a half-width, 2-track dock along a backdrop or as a full-width, 4-track dock with pockets and chutes (spouts, in Missabe terminology) for loading on both sides, like the prototypes. A dock can be built as long as desired by combining multiple kits. My docks are 8 kits each.

Missabe or Mesabi?

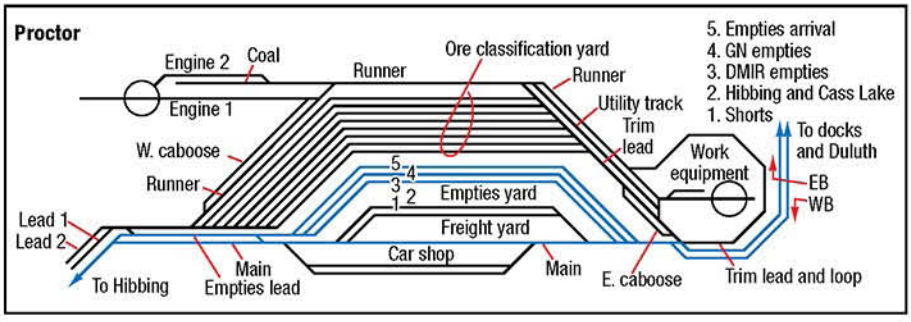
Native Americans in north-central Minnesota had a special name for a giant ridge covered by a massive forest of pine. Early European immigrants had their own ways of representing the sound of the natives' word for "giant": Mesabi, Missabe, Mesabe, and Mesaba among them. By the late 1800s, the world's largest deposit of iron ore was discovered under this land.

Two railroads in particular that tapped the Mesabi Iron Range did nothing to diminish the meaning of giant. Huge 16,000-plus-ton trains of 180 ore cars pulled by massive Duluth, Missabe & Iron Range 2-8-8-4 Yellowstones and Great Northern 2-8-8-0 class N-3 articulateds moved cars to the world's largest ore loading docks on the continent's largest body of fresh water, known as Lake Superior. In more recent decades, 220-car taconite trains total well north of 22,000 tons. Giant indeed! – *J.O.*

The laminated Homasote splines Jeff is using to build the roadbed are evident in this view of Proctor Yard. This construction creates a continuous, quiet roadbed while ensuring flowing curve easements.

The DM&IR's *Edna G.*, a 1,000-hp steam tug built in 1896 and now on display in Two Harbors, Minn., was painted in University of Minnesota's maroon and gold to honor the university's research that helped make taconite processing practical. This revitalized the state's iron-ore industry.

This 1976 view of the ore docks at Duluth shows the S-curve leading onto Dock 5. That's Superior, Wis., in the background.



Two are better than one

For me, the one thing neater than seeing a proper 4-track model of the Missabe's Dock 5 in Duluth is to also see its near-twin Dock 6 alongside. So my next decision was dock length. Full-scale models in HO scale would be about 26 feet long – not practical even in a generously sized basement. Ore boats from the 1930s are about 500 feet long. The modular Sylvan model (also offered through Walthers) with two hull extensions makes a boat 400 feet long (4½ actual feet). Ten feet of dock pockets would provide a nice feel of how the docks dwarfed the boats and could load several "parallel parked" at a time.

Ten feet of dock is 72 pockets per side, equivalent to 36 ore-car lengths. This is a reasonable match for my plan to keep ore cars together in 5-car mine blocks to simplify switching and allow use of one 5-number car card for each set. This way, only 12 waybills would be required for 60-car road ore trains.

It's an interesting coincidence that both the train lengths and dock lengths selected for nice visual effect are each about one third of the prototype lengths for the DM&IR heavy steam ore era. The use of 5-car mine blocks is entirely realistic, as ore was sampled and graded at the mines in blocks of 3 to 7 cars.

East is east and west is north?

The GN operated its Mesabi Division as east-west railroad with Duluth-Superior as the east end. Both the Twin Cities and the Iron Range are railroad west from Duluth. The Missabe Division of the DM&IR was operated as north-south, with Proctor and Duluth at the south end.

My Missabe Northern has adopted the GN east-west designation to keep simple map orientation for operators. Wherever an operator stands looking at either level, east is always to the right toward Duluth, with the sun at his or her back. – *J.O.*

Balancing operations

Most engines are based at Proctor, so the typical move will be to bring a cut of cars down to a dock, then pull a cut back up the hill. Each dock should ideally have three tracks of cars and one open track at the start of an operating session. Three tracks of 35 cars each times two docks is 210 empties ready to move. I also needed an allowance of up to 20 cars to be rotating through the car shop and 30 rotating in freight service down to a steel mill just outside Duluth, a total of 260 ore cars. Mine and interchange capacity should then also be about 260 cars – 520 total.

Allowance for car storage in a yard near the mines plus the many cars being switched in the sorting yard near the docks also needs to be factored. Since dock turns and mine turns involve shorter trains than the road ore trains, each facility needs extra cars to "make change" in both directions (loads and empties) so road trains are always filled out to my designed train size of 60 cars.

This worked out to a near doubling of the source and destination capacity to a total fleet of 900-plus ore cars. This projection will only be confirmed when full operation commences with the completion of the mines and both docks. Partial operation suggests 900 may be light, but should be reasonably close.

Simplifying operation

The correlation of eight classification tracks corresponding to the eight dock tracks on two ore docks is done to make it easier for first-time operators to match classification and delivery to the docks. This is also a reasonable number to clearly show the dominance of the yard without being overwhelming. Inbound road trains enter over a weigh-in-motion scale and are classified while another heavy switcher can work the other end of the yard preparing a dock turn.

Each class track can hold 35 ore cars, the same as each of the eight dock tracks. It's desirable to have one track more than the number of dock tracks so you have a place to hold extra cars.

This is a trade-off to avoid making the yard longer in the space I allocated. I use either the back thoroughfare or the second class lead for this purpose, depending on how long the cars need to be parked. Outbound 60-car trains of empties can double two tracks together, so the empties yard doesn't need 60-car track lengths.

Two dock turn engines will be available so that at times one may be working on each dock as well as creating

The west end of Proctor Yard is dominated by a coaling tower kitbashed by Bruce Johnson to capture some of its unusual features. Next to it can be seen the west-end caboose track and a thoroughfare track.

opportunities for running by each other on the double track of Proctor Hill.

Gathering and switching ore

The holding yard on the Iron Range – Kelly Lake was my choice – doesn't need tracks for extensive sorting, but does need long tracks to receive and originate the 60-car road trains. Kelly Lake is a simpler yard of six long tracks with a modest engine servicing area for the mine-turn engines and road ore engines. On average, this allocates three tracks each for DM&IR and GN operations. It's switched as one yard and can be varied as needed.

Ore waybills include information on boat, dock, track, and pockets to guide Proctor switching priorities and dock runs. I don't expect operators to do the extensive extra switching to sort each track in pocket order, but this level of detail has been included for purists. Such extra switching really should be supported by having more classification tracks, but that wasn't a practical option for what is already a large yard.

At Proctor, empties are sorted by railroad, not mine, for return to Kelly Lake for holding (prototype staging).

The winter of 1973 is already showing its hand as a pair of DM&IR SD18s bracketing an SD9 near the top of Proctor Hill with 90 empties.

The back of an ore waybill specifies the mine for assigning empties. Bills pulled from dock deliveries are then assigned to the empties at Kelly Lake rather than Proctor to meet mine requests. This assures switching of cars appropriately throughout the cycle.

It's not practical to model all ore classifications that applied to the Mesabi Range, but my approach generates the realistic switching necessary to blend the ore in the boats to the steel mills' chemical requirements, return the empties by railroad, then assign

Turnout geometry

Jeff's professional knowledge of prototype track led him to take extra pains to ensure flowing track alignments. The rails beyond the diverging route of each turnout continue to curve, allowing a higher-number frog angle to be used.

A full-size no. 6 turnout is designed for no more than 10-12 mph operation, depending on railroad and era. But like most modelers, I didn't want to give up the space needed to use prototypical-length turnouts, such as no. 8s for yard leads; nos. 10s and 12s for industry leads off the main line; nos. 10s, 15s, and 20s for crossovers; and in recent times even no. 30s with movable-nose frogs. A no. 20 crossover in HO scale is five actual feet long, yet it's only designed for 35-45 mph maximum operation.

Longer turnouts actually have a smoother design geometry than short turnouts. In other words, a no. 6 is not just a short, sharper version of a no. 10 or 20. This is because on sharp turnouts, the straight switch points and straight frogs used in North American practice represent a higher proportion of the turnout length, making the curve less smooth and making our equipment lurch along. High-speed turnout designs (used in some no. 10s and all longer turnouts) further reduce the straight proportion by using curved switch points.

My solution is a simple custom design that brings larger-radius smoothness to a turnout that effectively fits where a conventional no. 6 would fit. Much like a spiral easement, the broader closure radius and smoothness of my turnouts give an optical illusion that the equipment is moving through a turnout larger than it really is.

A purist has to ask whether it's better to have an accurate model of a no. 6 turnout, which is prototypically incorrect for 99 percent of the locations we use them on a model railroad; or is it better to have a selectively compressed turnout that allows your equipment to move with the kind of graceful flowing motion full-size trains display moving through longer turnouts? The longer your engines and cars, the more noticeable this benefit becomes, just as with spiral easements. My interest is more toward the realism-in-performance side of the ledger, so I handlay custom turnouts to fit each situation and never use standardized jigs.

Specifically, my turnouts are built using a 60"-radius guide for the diverging route, with points and frog forming short spiral easements depending on surrounding geometry. A no. 6 turnout has a closure radius of about 37" to 40", depending on brand or prototype. Because of the included straight segments of the points and frog, a pinwheel ladder (each turnout placed on the curved side of the previous turnout) built with no. 6 turnouts will produce an irregular lead of approximately 60" radius. I build the arrangement with a uniform 60" radius, which takes the identical space and results in a much better appearing and performing lead. – *J.O.*

Learning points

- A double-ended yard with multiple independent switching leads allows more operating opportunities to justify the space used.
- Equalize traffic flow by balancing visible origin capacity with destination capacity; interchange and staging can be used when needed to offset an imbalance.
- Magnetic uncoupling can be more efficient for yard classification than manual methods and encourages more realistic switching speeds. Powerful under-track magnets are reliable and can be "turned off" by sliding them sideways in hidden trenches.
- Guest comfort matters when planning for group operating sessions. Cushioned footing, wide aisles, good lighting, easy viewing and layout control, operating guides positioned where needed, stools in easy reach as needed, crew lounge, and refreshments add to an enjoyable experience.

home-road empties to the mines each railroad serves.

A dock turn coming back up the hill will enter the empties yard and then sort out the GN cars from the DM&IR cars. Road trains of solid GN or DM&IR hoppers depart with same-road engines and cabooses, so this sub-yard needs the lead only on the outbound side. However, it can be worked from the inbound end as needed.

The small freight yard is needed only to separate local cars from through cars for two or three freight trains coming up out of Duluth and to occasionally hold cars for Duluth. The yard is switched from either end from the otherwise seldom used freight main line, clear of the working leads for ore cars.

A construction and maintenance aisle on the back side of the yard can also be used as an operator aisle when desired for one person to more easily assemble dock-turn trains and handle the engine servicing areas. Appropriate switches have dual control rods.

Performance considerations

My highest hobby priorities are realistic operation and performance. To achieve top performance, I build spline roadbed out of Homasote, handlay track, and scratchbuild all turnouts in place to

Push/pull dowels control both switch points (with knobs) and hidden uncoupling magnets (without knobs). When not in use, the permanent magnets slide laterally under the track and ballast to prevent unwanted uncoupling.

assure they blend properly with the surrounding track geometry. Diesels are quite flexible, but longer- wheelbase steam engines are much more sensitive to bad track geometry, which can cause binding and poor electrical pickup. My Missabe Northern steam engines move at wonderfully steady slow speeds of 1 and 2 mph with back-electromotive-force Digital Command Control decoders.

Spline roadbed readily forms natural spiral easements entering and leaving curves, but just as important is that staggered splines allow the creation of roadbed with no discernible joints. It's the modeling equivalent of continuous welded rail. With spline roadbed, I saved the extra effort of stronger benchwork and splice plates to keep flat roadbed in vertical alignment.

For this reason, I build entire yards with splines added to the side of the main line just as one would add a simple passing siding with splines. This eliminates not only roadbed joints within the yard but also transitioning from a spline main to something else in the yard.

Turnouts and magnet control

Turnouts are controlled by fascia-mounted push-pull dowel rods linked to double-pole double-throw paddle-handle toggle switches. The paddle handle allows easy connection of the push rod as well as a brass rod linkage to move the points. One set of contacts routes power to the frog; the other set may be used to power fascia indicator lights or signals.

For uncoupling, I use under-track permanent magnets. Magnets that shouldn't be on all the time, such as on a main track, are "turned off" by sliding them horizontally 3⁄8" in a trench under the track, using a push-pull dowel and simple brass rod link. The trench is covered with 1⁄64" aircraft plywood to carry track and ballast over the fully concealed magnet.

A railroad's roadmaster marks bad ties needing replacement with a paint dot. On the Missabe, these just happen to coincide with the location of the center of every magnet at the safe clearance point for each track.

Use of push/pull rods for both track switches and movable uncoupling magnets greatly minimizes the need to reach into a scene during operation. I also like to view operations as a railfan would and don't like the disruption of giant hands reaching into a scene, especially when the scene is a yard with several engines working at once.

Status report

Starting from an unfinished basement in 2003, the Missabe Northern is now about 90 percent complete (benchwork and track) with its planned 4,200 feet of handlaid track and 570 scratchbuilt-in-place turnouts. Operating sessions began in autumn 2003 and have continued nearly every month since. Crew capacity is 32 operators. New structures have been added, but basic scenery is only 10 percent complete.

I'm grateful for friends who built my dispatcher's desk, assembled or weathered structures and cars, and shared research discoveries and material with me. I'm also blessed with a very supportive wife. Her fresh cinnamon rolls are the real reason operators keep coming back each month. **MRP**

The Missabe Northern's compact dispatcher's office was built by cabinetmaker Brad Hjermstad to fit under the stairs in Jeff's basement. Trains are dispatched by timetable and train orders with their locations recorded on a train sheet. The portable magnet board is used to help new dispatchers.

Jeff and his wife, Linda, are retired in rural Minnesota. His life-long interest in trains and model railroading led to a 31-year career as a professional railroader. Jeff spent half of those years in Chicago & North Western's Engineering Department, where he served as Director of Maintenance Planning and was part of the project management team for the C&NW's Powder River Basin Coal Line project.

Layout design element

Modeling UP's in N scale

It was time for a new railroad to realize new objectives

By Daryl Kruse//Photos by the author

Geneva Sub

1. In the model and prototype (inset) photos, the railfan viewing platform built by the city of Rochelle, Ill., is visible to the right of the diamonds where the Union Pacific (ex-Chicago & North Western) crosses the BNSF.

One hundred and twenty-five miles of Class 1 double-track main line is a lot to model in a basement, even in N scale. Veteran model railroaders would advise against such ambition, but a modeler wants what he wants. I wanted my next layout to include the Union Pacific main line in the Chicago area, with a big yard, several river crossings, the Global III intermodal facility, and the Rochelle, Ill., diamonds.

Choosing locations

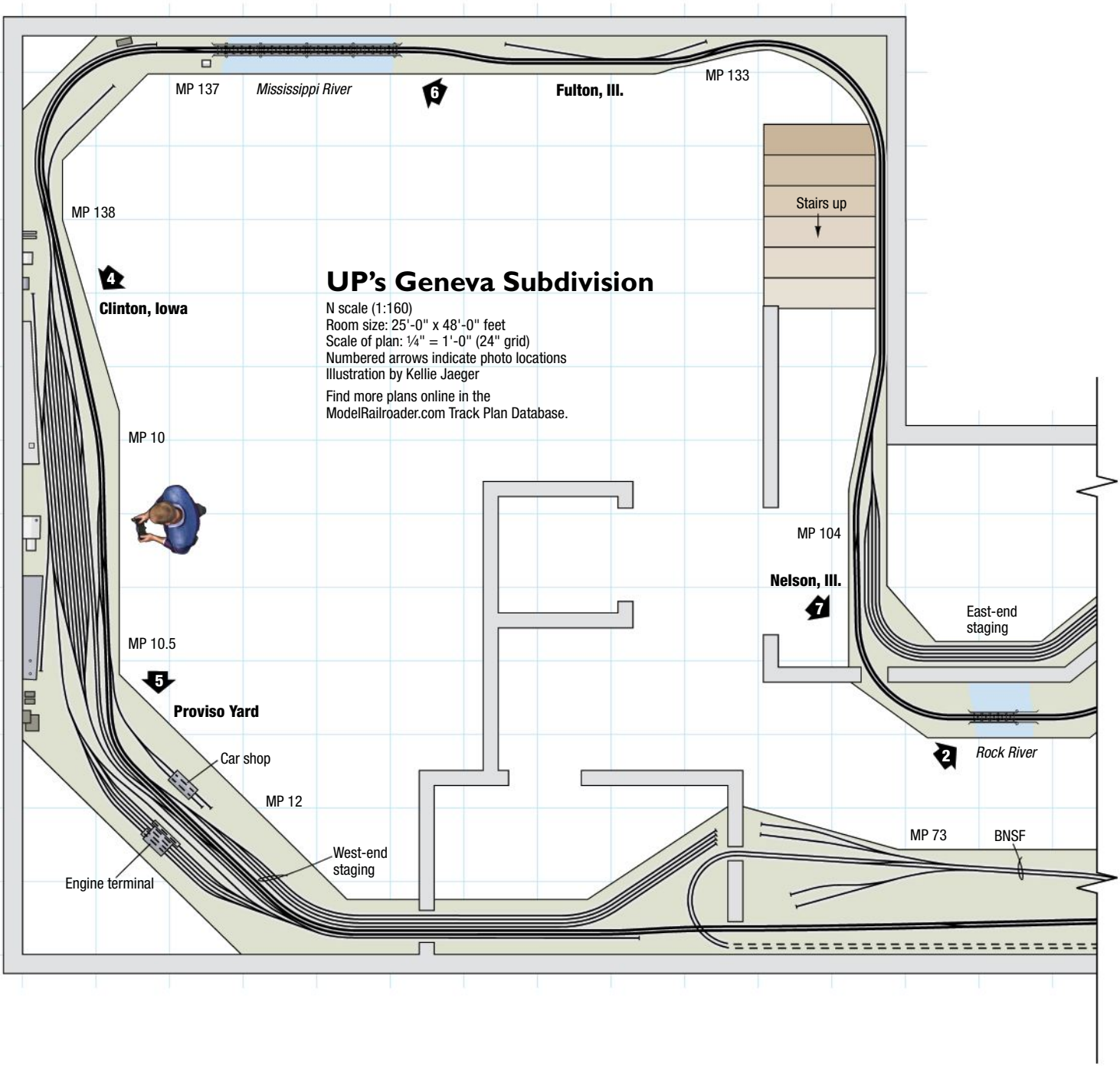
The former Chicago & North Western's Proviso Yard in the Chicago suburb of Berwyn is the definition of a big-time yard. For a major river crossing, there's none better than the Mississippi River bridge from Illinois into Clinton, Iowa, which has three spans, one of which rotates. Between these features lie the busy double-track main line, more river crossings, the UP Global III intermodal facility, and the Rochelle diamonds.

There are a lot of other features along those 125 miles that weren't going to fit in my basement. One challenge was to model the features I wanted while leaving out many others without destroying the integrity of the railroad.

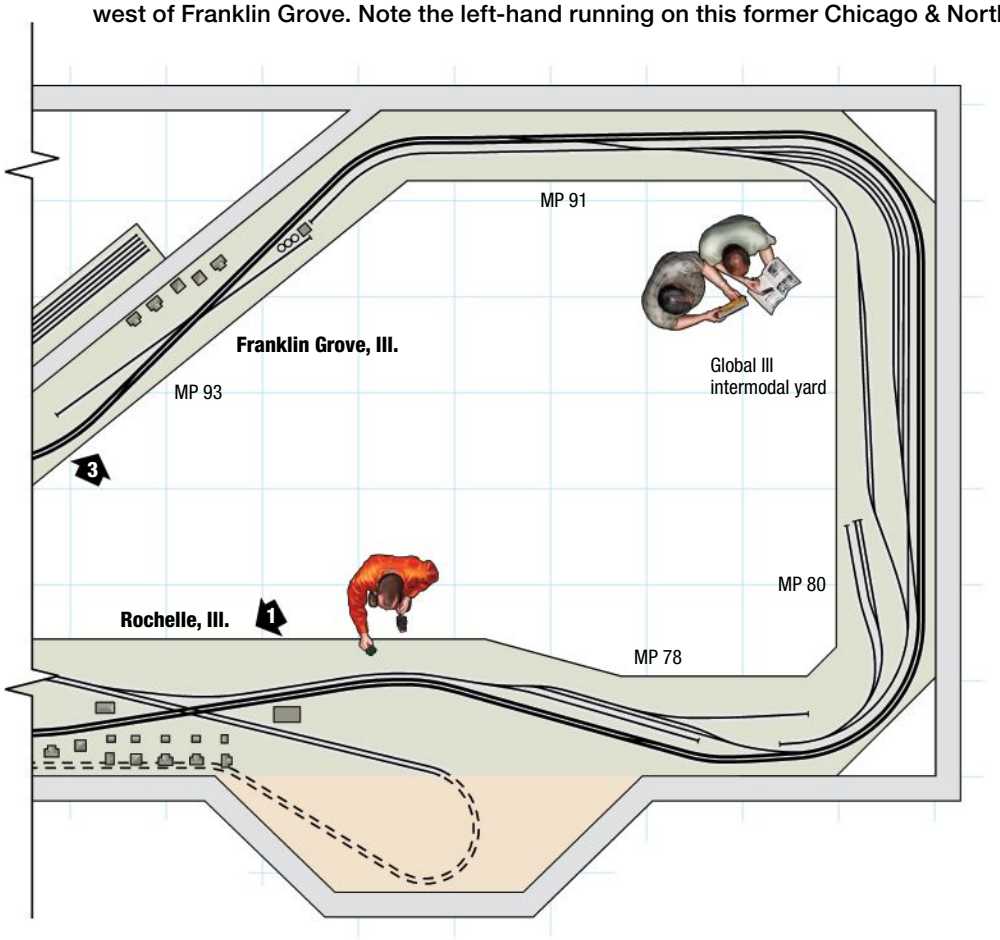
Construction objectives

Tearing down my existing Union Pacific Rochelle Subdivision [See the November 2008 *Model Railroader. – Ed.*] didn't make sense to a lot of people. But there were many things that I thought could be done better. The list of improvements includes:

- double-track main line elevated a prototypical 30" above grade
- no. 10 mainline turnouts, no. 8 elsewhere
- 36" minimum-radius mainline curves
- elimination of peninsulas and turnback curves



2. Daryl built the Geneva Sub's double-track main to model busy traffic, such as this meet at the Rock River Bridge just west of Franklin Grove. Note the left-hand running on this former Chicago & North Western line.



The layout at a glance

Name: Union Pacific Geneva Subdivision
Scale: N (1:160)
Size: 25'-0" x 48'-0"
Prototype: UP (ex-C&NW)
Locale: northern Illinois
Era: 2007
Style: single deck
Mainline run: 153 feet
Minimum radius: 36"
Minimum turnout: no. 10 (main), no. 8 (elsewhere)
Maximum grade: none
Train length: 15 feet
Benchwork: open grid
Height: 55"
Roadbed: cork
Track: Micro Engineering code 55
Scenery: plaster on screen wire
Backdrop: 2 x 50-foot sections of plastic roof flashing
Control: Digitrax Digital Command Control

3. Eastbound and westbound trains wait in Franklin Grove while a high-priority westbound stack train snakes between them. Who said double-track railroading was strictly follow-the-leader?

- Midwest river crossings
- layout height of 55"
- prototypical signaling

Although I considered incorporating the improvements into the existing Rochelle Sub, I eventually realized the only way get it all in properly was to start from scratch.

The basement is divided into four separate rooms – two large finished areas and two smaller unfinished rooms. For the main line to loop around the basement's perimeter while avoiding the need for duckunders, it would need to go through all four rooms. I needed to find a way to handle the room-to-room movements.

I designed the track plan so the time trains spend in the two unfinished rooms represents the areas of the prototype Geneva Sub not represented on the layout. Traveling east to west, the layout begins at Proviso Yard, then enters the first unfinished room. The time a train spends traveling through this room represents the missing mileage between Proviso and Rochelle. The unfinished room is also used to allow the BNSF line to loop back into Rochelle (more on that later).

The line reappears on the other side of the unfinished room in Rochelle. Overpasses will be used to disguise the holes where the main line passes from Proviso into the unfinished room and from the unfinished room into Rochelle. In Rochelle, the overpass will represent I-39, which crosses over both the UP and BNSF main lines on the eastern edge of the city. I devoted 2'-6" by 20'-0" of layout space to Rochelle.

From Rochelle, the line travels past the Global III intermodal yard located just west of town. The prototype yard is huge, covering 100 acres of land. The modeled yard is greatly scaled down, but it still occupies 2'-6" by 14'-0" of layout space.

From the intermodal yard, the main line enters Franklin Grove, Ill. There will be two industries in Franklin Grove with the turnouts for the two sidings facing in opposite directions, which should keep switching crews busy. From Franklin Grove, the main line crosses the Rock River and then enters the second unfinished (furnace) room, where there is a staging yard and a minimal representation of Nelson, Ill.

At first glance, the prototype in Nelson looks like not much more than a small yard in the middle of nowhere. However, Nelson is the junction of the UP's Peoria Subdivision, which goes all the way to the coal mines of southern Illinois, with the Geneva Subdivision. From Nelson, the line pokes through a hole in the stairs, runs on a narrow ledge along the wall, and enters the western Illinois town of Fulton.

The section of track along the stairs represents the missing mileage between Nelson and Fulton, which lies along the Mississippi River. Fulton will also have two yet-to-be-determined industries. From there, the main line crosses the Mississippi River and enters the Clinton, Iowa, yard.

Two yards in one

Although Proviso and Clinton yards are 125 miles apart in real life, they will actually be one yard on the layout. From a modeling standpoint, the yard will be heavily Proviso, with that yard's engine facilities, car shops, yard tower, office, and warehouses. Clinton's Thomas & Betts facility, however, will be modeled on the far eastern side of the yard.

From an operational standpoint, UP trains arriving eastbound into the yard or departing westbound will be arriving and departing Proviso. But UP trains arriving westbound into the yard or departing eastbound will be arriving and departing Clinton. Operations at the Proviso/Clinton yard will keep three operators busy handling incoming and departing trains, hostling locomotives, sorting cars, building trains, and delivering cars to industries.

Operations on the Geneva Sub

The overall design of my N scale rendition of the UP's Geneva Subdivision is geared toward operation. One thing that sets apart operation on the Geneva Sub from many other model railroads is the double-track main line. Instead of a single-track main line with numerous passing sidings, the Geneva Sub, like the prototype, is double-tracked end to end. The main line is more than 150 feet long with nine crossovers.

The crossovers alternate back and forth (north track to south track, south to north). This is a departure from the prototype, which normally has them in pairs so at each point, trains can go from either track to the other. I considered doing this on my layout, but I wanted to use no. 10 turnouts on the main line. A pair of crossovers

4. A Norfolk Southern stack train gets ready to depart eastbound from Proviso Yard, while a loaded UP coal train continues on the main to a Chicago-area power plant.

using four no. 10s ate up too much main line.

You might think having a double-track main line would eliminate interesting train meets and the puzzle solving both dispatcher and engineers engage in, especially in the timetable and train-order era. But train meets are still an important aspect of operation on a double-track main as trains moving in opposite directions cope with a third train picking up and setting out cars at industries along the line. The challenge is still there, but with even more possibilities for creative dispatching solutions.

Staging yards

As on the prototype, a large variety of trains travels across the N scale Geneva Subdivision. Trains originate and terminate at the west-end staging yard, east-end staging yard, or the combined Proviso/Clinton yard. I wanted to avoid having a train both begin and end a run at the Proviso/Clinton yard. So trains that originate

5. An earlier photo shows the construction at Proviso Yard as a long train of auto racks pulls into the arrival track. The engine terminal is in the right background, the car shop on the left.

6. An eastbound coal train and a westbound manifest freight cross over the Mississippi River bridge between Fulton, Ill., and Clinton, Iowa. Daryl's use of a photo backdrop will preclude modeling the highway suspension bridge. The inset photo shows a westbound autorack train at the prototype location.

there always end in staging without re-entering the Proviso/Clinton Yard.

With the Proviso/Clinton yard serving as both the starting point and ending point of the main line, the staging yards are set up a bit differently. The west staging yard is straightforward, as it's located next to the yard and represents Iowa and points west.

I could not fit the east staging yard adjacent to the yard, so I put it in the furnace room next to Nelson. East staging represents CSX, Norfolk Southern, other Chicago UP yards, the Peoria Sub, and points east.

Trains from the west staging yard simply run through Clinton and are then on their way across the Geneva Sub, but train movements from the east are a bit more complicated. Most trains from the east staging yard must "cheat," as they pass through Fulton on their way to the Proviso yard.

I toyed with the idea of putting a track behind the backdrop in this area so the trains would not be seen until they appeared by Proviso Yard, but I don't like hidden track. I would rather see a train "cheat" than wait for it to suddenly appear from hidden track. So westbound trains start at the east staging yards and travel to Proviso before continuing across the subdivision. Two trains each day – one NS and one CSX – stop on an arrival track and uncouple their power. UP power from the Proviso engine facilities couples up to the train, and the train then continues its run westbound across the Geneva Sub. There is a holding track at Proviso that CSX and NS locos can use to wait until they are needed to take eastbound trains back to the east staging yard.

On the prototype there would be a crew change as well as a motive power change, but on the N scale Geneva Sub, the same crew stays with the train. The change from CSX/NS to UP at Proviso definitely adds interest to running trains. Similarly, some eastbound trains that don't terminate at Proviso must switch over from UP motive power to CSX/NS before continuing east to the staging yard.

Coal train operations

Special consideration is given to coal train operations on the Geneva Sub. I have a set of 40 empty coal cars and a set of 40 loaded cars. Since empties should always move westbound and loads eastbound, coal train operations were not a simple matter of running from staging yard to staging yard and back again. Some system was needed to get the coal trains from place to place while always moving in the same direction on the layout.

I found a number of videos on YouTube that showed UP coal trains in the Chicago area being backed up to get from the UP main to non-UP tracks so the coal cars could then be taken to their destination.

I also researched the junction between the Peoria and Geneva Subdivisions in Nelson. I learned the Peoria Subdivision runs all the way down to southern Illinois, where the UP serves coal mines in the area.

Learning points

- When an existing layout no longer satisfies one's objectives, it may be time to dismantle it and begin anew.
- A well-defined list of objectives will keep the project on track.
- Even a large model railroad will require leaving out a lot of the prototype's physical features.
- Don't be intimidated by walls.
- The lack of peninsulas eliminates turnback curves and opens up the center area.
- Crossovers allow a double-track railroad to support interesting train movements.
- "Cheating" on train routings may be offset by the elimination of hidden track.

7. Eastbound and westbound trains pass under the coaling tower in Nelson, Ill. A photo of the concrete coaling tower disguises the hole in the backdrop that separates Nelson from Franklin Grove.

The empties start the day in the east-end staging yard and run from there to Proviso, cross the subdivision, and end up in the west-end staging yard. Later in the day, the empties become a different train, back out of the west-end staging yard, and run as empties from Proviso headed to Nelson and the Peoria Sub on their way back to the southern Illinois coal mines.

At Nelson, the coal train again backs into the east-end staging yard, representing a movement from the Geneva Sub to the Peoria Sub. The empties are now in position for the next day's operating session.

The loaded coal train runs the opposite route. The loads start in the west-end staging yard, run eastward across the main line to Proviso, and then make their way to the east-end staging yard. Later in the day, the loads represent coal from southern Illinois. UP motive power back the loads out of the east-end staging yard at Nelson, a movement from the Peoria Sub to the Geneva Sub. The train then moves eastbound to Proviso, where the train is backed into the west-end staging yard and is now ready for the next operating session.

BNSF too!

One great addition to the Geneva Subdivision is not part of the subdivision at all. Instead, it is BNSF track used by the railroad's switcher and allows run-through BNSF trains. At the Rochelle diamonds, the layout continues straight past the bay-window indentation. This created two feet of space behind the layout, which allows the BNSF track to do a turnaround behind the backdrop, continue behind a view block, and then do another turnaround in the bathroom to complete the loop. This will allow periodic BNSF trains to run across the diamonds and add to the operational interest of the layout.

Operating sessions

An operating session on the layout keeps up to 14 people busy running trains, working the yards, dispatching, and switching industries. This includes a crew of two or three at the Proviso/Clinton yard, two people at the intermodal yard, one person for the BNSF, a dispatcher, and four to seven people running the 17 trains of each 4-hour operating session. A general superintendent – me – oversees the operation. I sometimes operate the layout solo, which provides a lot of relaxation and fun and helps me keep the layout in top operating condition.

Progress report

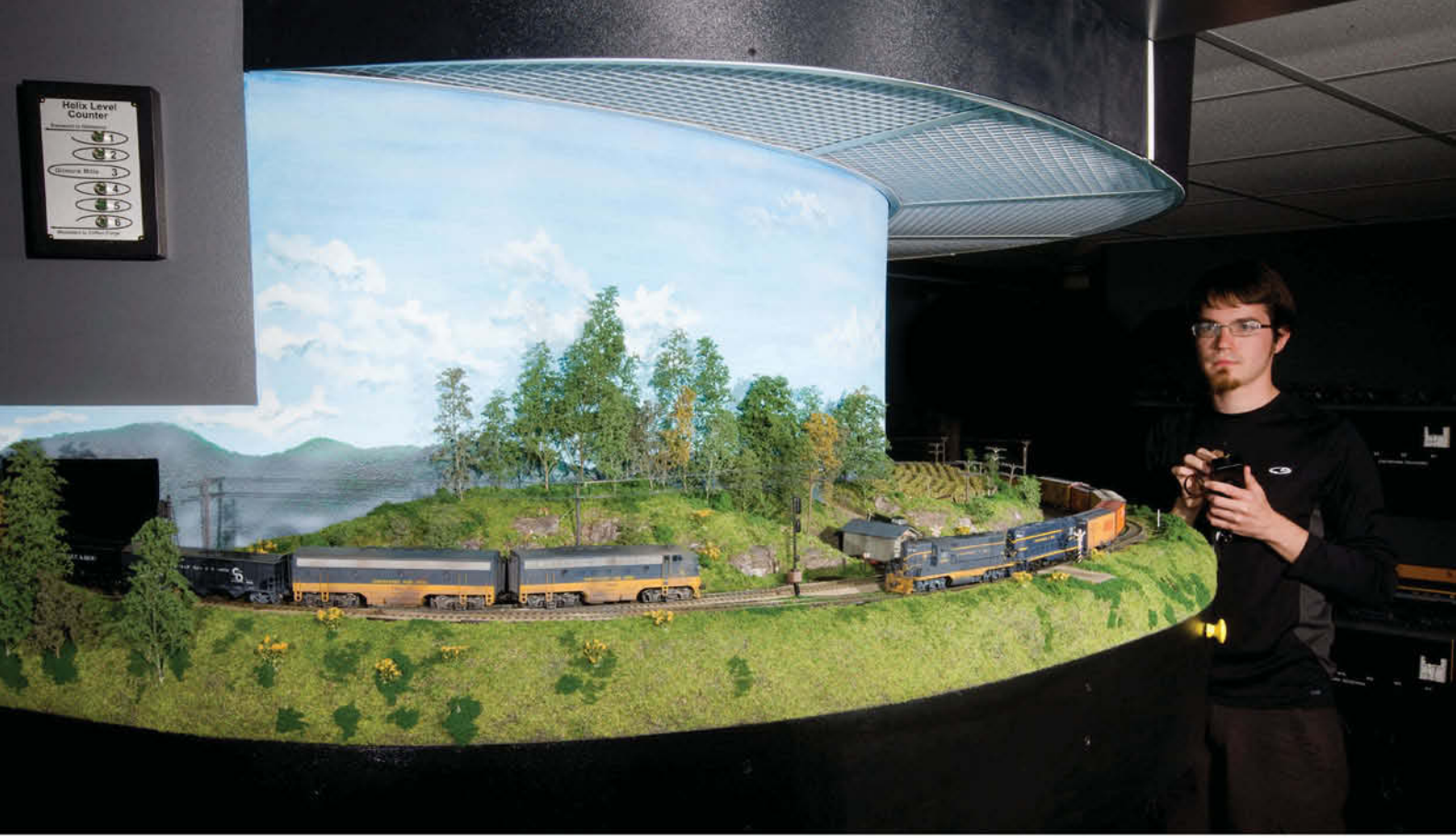
The UP Geneva Subdivision you see in the accompanying photos is three years into construction. All benchwork, track, and wiring are complete. Scenery, structures, and detailing are just getting under way. The railroad is completed to the point where operating sessions can take place.

The new layout employs open-grid benchwork with screen wire and plaster scenery. Track is laid on ⅜" plywood with cork roadbed. The main line has an extra 1/16" sheet of cork under the ⅛" inch N scale roadbed to put the total thickness of roadbed at 30 scale inches, which is more in line with Class 1 mainline track. Yards and other secondary track have ⅛" cork roadbed, and industrial sidings have no cork. Turnouts, all 113 of them, are handlaid using Fast Tracks jigs, powered with Tortoise by Circuitron switch motors and controlled with DCC stationary decoders.

The old Rochelle Sub was a lot of fun to operate, but operations on the new Geneva Sub really shine. Trains run flawlessly and look great flowing through the no. 10 turnouts and 36"-radius or greater curves. The lack of peninsulas provides wide-open areas for operators to move about. This allows everyone to watch the fun even when they're not running a train and encourages conversation and fellowship among those in attendance.

But as much as I enjoy operating sessions, for me most of the fun comes from planning and building the layout. The UP Geneva Subdivision has provided me with plenty of both for the past three years and will likely continue to do so for many more years to come. **MRP**

Daryl and his wife, Patricia, are both educators at St. Paul Lutheran School in Rochelle, Ill. They have four grown children and three grandchildren. An N scale model railroader since 1970, Daryl also enjoys working with computers, playing tennis, and most of all, spending time with his grandchildren.



John Ryan operates an eastbound train through Gilmore Mills, Va., on the now-visible third turn of the helix on Mike Burgett's C&O layout. Extending this turn outside of the helix cylinder allows crews to check on train progress and, more importantly, allows trains to pass at the mid-point of the climb.

Enhancing a helix

Creating a "sanity check" at the halfway point

By Mike Burgett// Photos by Mike Burgett and John Ryan

When I included a 6-turn, 42"-radius helix in the plans for my HO scale Chesapeake & Ohio Clifton Forge Division double-deck layout, I failed to consider the impact of the actual distance between the entrance and exit of the helix for operation. If anything, I thought the long running time up or down the helix would enhance the dispatcher's ability to space trains out across the railroad.

A major bottleneck

Fast forward seven years and a hundred or so operating sessions. The approximately 8-minute running time in and out of the helix had reared its ugly head as a major bottleneck and contributed to a third of my train delays. Trains had to wait at the top or bottom of the helix for an opposing train to clear.

Like many prototype railroads, including the one I work for, we track train-delay minutes as a way to gauge how well we perform every night. Some modelers judge performance by the number of car movements. However, in my opinion, tracking train delays is more indicative of your crew's and the physical plant's ability to handle train movements efficiently.

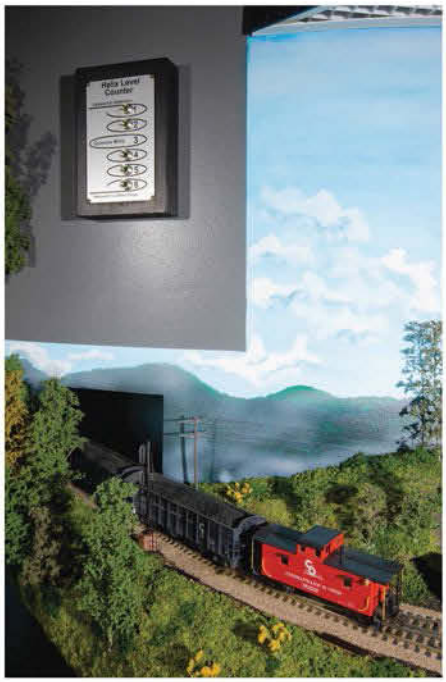
During a meeting with my operating crew, we agreed the solution to this bottleneck was to facilitate simultaneous movements up and down the helix. The obvious solution was to double-track it, but this wouldn't be prototypical for the line I model, which is single-track Centralized Traffic Control with relatively short passing sidings.

Mid-point passing track

It quickly became apparent we needed a visible passing track near the helix midpoint. One proposal called for a 2-stage helix – trains would enter the first three-turn stage then run over an open stretch of track to finish an additional two-turn stage to reach the upper deck. The visible passing track would be on the section between the two helixes – a fairly good idea, especially if you are in the initial stages of your benchwork.

By this point, however, my layout was almost complete. Moreover, the only remaining space for a second helix was taken up by the washer and dryer.

Finally, almost by accident, we settled on the elegant solution of "herniating" (extending) the third turn of the helix. By extending this turn



The indicator panel at top left allows crews to track train movements through the helix.

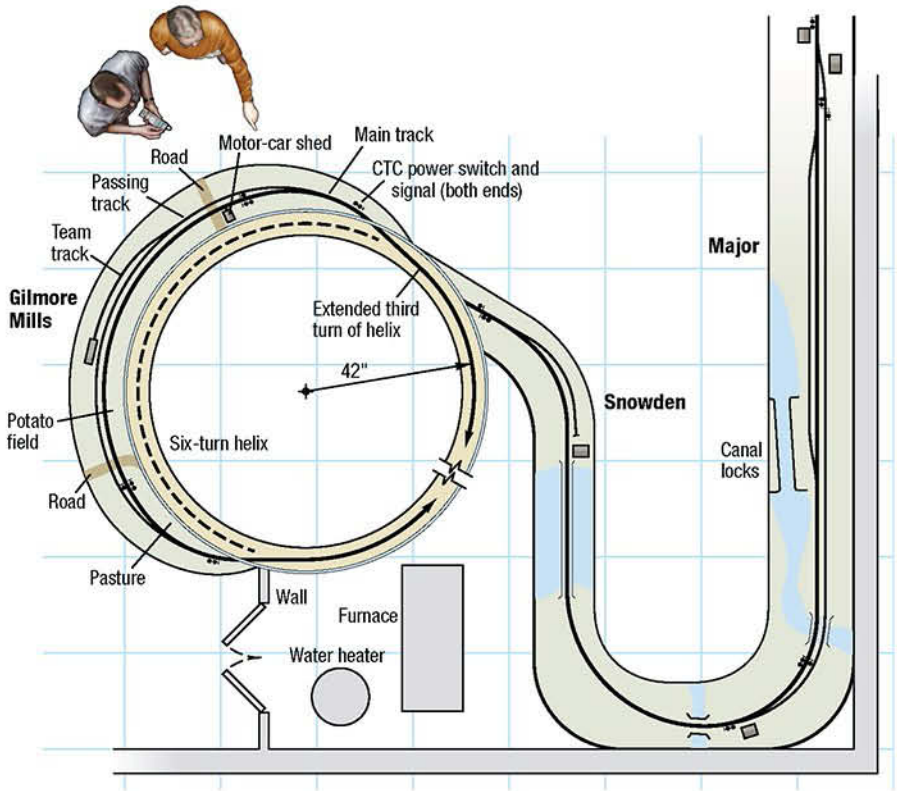
Extending the third turn of the helix into the open and adding a passing track has alleviated a major traffic bottleneck on Mike's C&O Clifton Forge Division layout. It also allowed room for a team track between the passing track and the aisle.

around the outside of the helix "cylinder" to form an oval, we could install the needed passing track while affording each crew a mid-helix sanity check on its train's movement. Opposing trains could now meet about halfway up or down the helix and then continue to ascend or descend the rest of the spiral.

A fluid railroad

This has made a substantial difference of the fluidity of the railroad. The long delays previously experienced by trains waiting for an opposing train to clear the helix are gone. Bonus: I could add a team track off the passing siding, which supports additional switching for local crews. **MRP**

Mike Burgett, Canadian National's Michigan Division Engineer of Signals, is building an HO layout representing the Chesapeake & Ohio's Clifton Forge Division in summer 1965. He's also the proprietor of Control Train Components, offering parts for modeling CTC systems and signal engineering services at www.CTCParts.com.



Learning points

- A multi-turn helix contains a lot of mainline track and requires several minutes to traverse.
- Long delays result from trains waiting at the top or bottom of a helix for an opposing train to clear.
- A series of lights showing what turn a hidden train is on proved insufficient to resolve delays or ease train-movement concerns of crews.
- Extending the middle turn of the helix outside the cylinder and adding a visible passing track resolved the problem.
- A spur off the passing track added work for local crews.

Lots of switching in a small space

A module that serves as a complete layout or part of a larger system

By Paul Newtson//Photos by Frank DiFalco

In today's world of long trains, big 6-axle locomotives, and flashing red lights replacing cabooses, it's comforting to know that spotting a single boxcar at a warehouse is still an integral part of railroading. As a railfan, I enjoy watching a local freight switch, and it can be equally entertaining to re-create that scene on a layout.

Despite covering only 12 square feet, my HO scale CSX Ridgecrest module serves as my home layout and as part of the 70-foot-long club layout of the Northeast Florida Model Railroaders.

Designing the module

As I designed my layout, I had to work within space constraints. I was adamant about including a small yard and at least three industrial customers, yet I didn't want so much track that the track itself became the focal point. I wanted the track to blend into the scene around the rail customers. The club's two standard main lines are Atlas code 100 track and turnouts, and the rest of the module uses code 83

1. As soon as its door is closed and a seal applied, a Chessie System boxcar re-stenciled with CSXT reporting marks will be pulled from Harlin Supply on Paul Newtson's HO module. Paul scratchbuilt the rickety fence in the foreground using corrugated siding from Campbell Scale Models.

2. Photographed outdoors, it's hard to believe this eye-level photo was shot on a 2 x 6-foot HO switching module. Its compact size allowed plenty of time for detailing.

3. Paul added a light-color wood fascia and tan upholstery fabric to the layout's frame to give it a finished appearance. It serves as both a stand-alone switching layout and as one of more than 25 modules comprising the Northeast Florida Model Railroaders layout.

track. All of the module's trackwork is laid on cork roadbed.

The powered mainline crossover is activated by a toggle switch wired into the interlocking signals. This helps create the effect of a CSX double-track main line with Centralized Traffic Control (CTC). The turnouts off the main lines have tall manual switch stands from Caboose Industries. The other switches use ground throws.

To spot cars in the stub-end tracks facing both ends of the layout, I had to include a runaround track that could comfortably hold a 60-foot car. I also added the crossover on the main line so both tracks could be used for switching. In fact, the outside main becomes a third yard track or storage track as needed.

To me, street running is an intriguing aspect of railroading, so I wanted to re-create a small piece of that. It occurs right outside the front doors of the layout's business district on the track that leads to the carshop. The street running certainly gives me a reason to embrace locomotives with sound, as the locomotive bell gets plenty of use.

Finally, I added a team track up front to create even more switching versatility. Like many team tracks, it's covered with weeds and adds a lot of detail and character to the foreground.

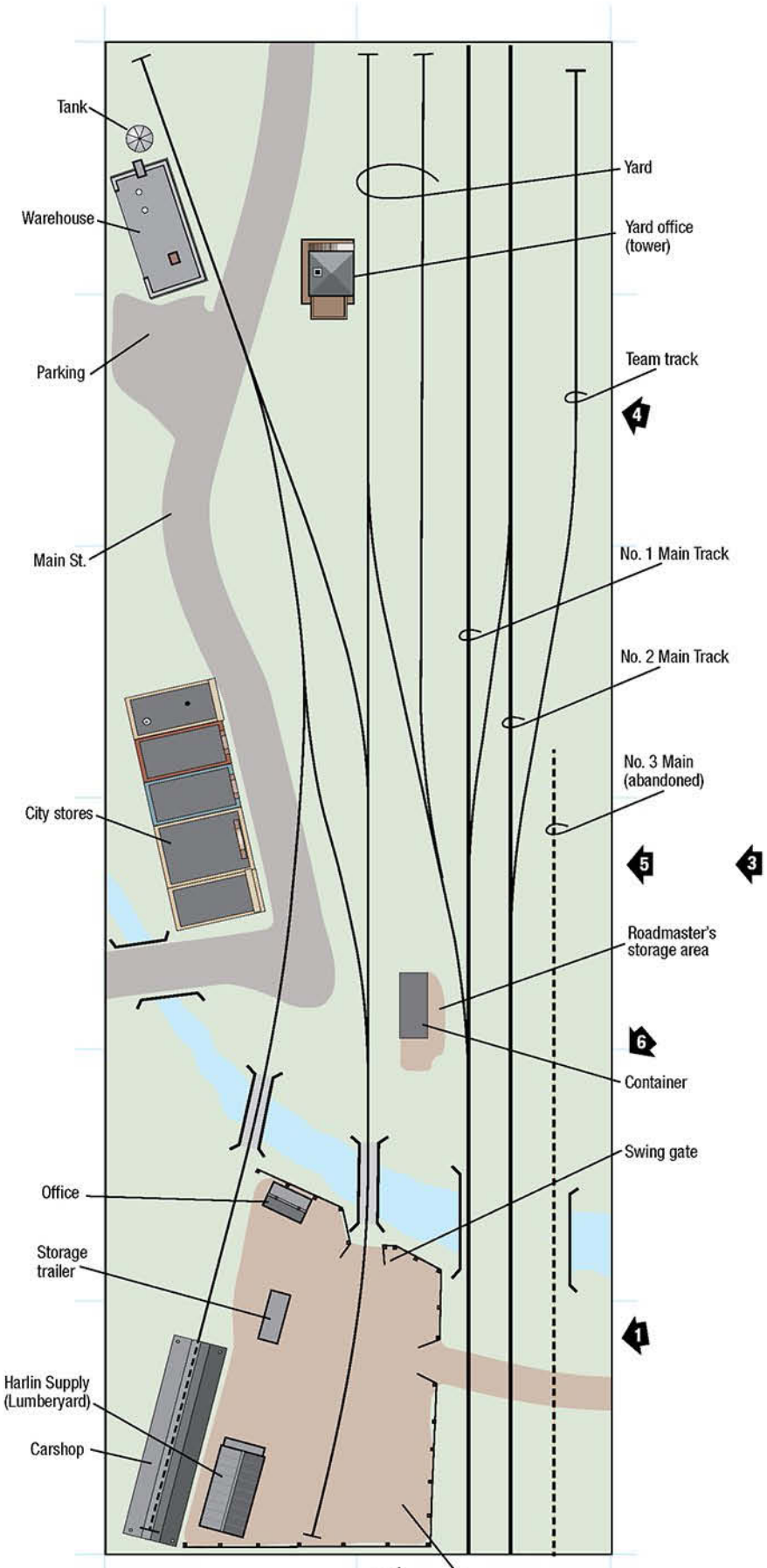
Freight cars and buildings

Collecting and operating freight cars is an important part of the hobby for most model railroaders, and I'm no different. That's why it was important for me to create customers that could logically receive a variety of car types.

Harlin Supply, the lumber and building-supply company on the left

Learning points

- A module can serve as both a self-contained switching layout and as part of a larger railroad.
- Making a list of desirable features to include is as important for a small module as for a large layout.
- Changing time periods is easier if timeless multi-era structures are carefully chosen.
- Intensive detailing and weathering is less time-consuming on a smaller layout.
- A portable module can easily become part of a permanent layout at some future date.
- Locomotives with sound are especially effective up close.



CSX Ridgecrest

HO scale (1:87)
Scale of plan: 1.5" = 1'-0" (12" grid)
Illustration by Jay Smith

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

4. EMD MP15DC no. 1145 pauses in the yard on Paul Newtson's CSX Ridgecrest layout. The former interlocking tower now serves as the yard office.

side of the layout, receives freight from boxcars and center-beam or bulkhead flatcars. The small brick warehouse on the back right side can receive many different types of boxcars. The narrow car shop at the back left can receive virtually any type of car as long as the car doesn't exceed the Association of American Railroads standard Plate C clearances [10'-6" wide and 15'-6" tall – *Ed.*]. The team track can handle a variety of cars as well.

Harlin Supply is kitbashed from the popular Atlas lumberyard kit. The carshop consists of two United Trucking Terminal kits from Walthers, kitbashed to extend the length of the building. I added a large opening at one end to allow railcars to enter the structure. It's not tall enough, however, for many of today's common excess-height cars. The brick warehouse is the

The layout at a glance

Name: CSX Ridgecrest
Scale: HO (1:87)
Size: 2'-0" x 6'-0"
Prototype: CSX
Locale: no specific area
Era: varies
Style: module
Mainline run: 6 feet
Minimum radius: 18" on sidings
Minimum turnout: no. 4
Maximum grade: none
Train length: not applicable
Benchwork: tabletop
Height: 40"
Roadbed: cork
Track: codes 83 and 100
Scenery: ground foam
Backdrop: Instant Horizons scenes glued onto hardboard
Control: NCE Digital Command Control (DCC) or MRC Tech II power pack

5. The switch engine heads into the street-running track in the business district. This photo shows how much scenery depth can be achieved in 24".

main building from Walthers' O.L. King & Sons Coal Co. kit with a roll-up warehouse side door added. The tower that serves as a yard office is the familiar interlocking tower kit from Atlas. The layout's business district is Walthers' Merchant's Row I.

For better or worse, the era that I model seems to keep widening. I'm a big fan of new, modern railcars, yet some of my earliest rolling stock represents a vanishing era is still fun to operate. I've tried to resolve this time-warp dilemma to my advantage by selecting buildings for the layout that span the years from the 1950s through today. Then, simply by replacing the modern vehicles with earlier-era counterparts, I can move the railroad back in time.

Scenery and weathering

Most of the layout's scenery is made from Woodland Scenics materials. The rolling hills are shaped layers of foam insulation board. For grass, I tend to use dark-green ground foam, as I've found that over time, dust and sunlight lightens the scenery. I also blend the colors of ground foam for variety.

The trees came from many manufacturers, and I made the water in the creek using Enviro-Tex Lite.

Everything on the layout is weathered to some degree. My rule is nothing goes on the layout until it's weathered. Rub your finger along even brand-new prototype cars or locomotives, and you'll discover they're already slightly grimy. Even the new red SUV rolling down Main Street has a light dusting of dirt on the underframe and sides as well as on the wheels.

I prefer powdered pastels, but I'm also a big believer in airbrushing, so nearly everything also receives some weathering with my airbrush and Floquil paints. I believe an airbrush applies the smoothest, most realistic coats of weathering and dulls unrealistically glossy items. But I also always keep a spray can of Testor's Dullcote handy.

Module operations

I can operate the layout either with Digital Command Control (DCC) or a DC power pack. Switching cars is enjoyable, but that enjoyment is enhanced when my layout is connected to other modules. Setting out cars from a long freight train into the small yard is fun. And moving a car from the team track across the main lines to the yard can be challenging while long trains are rolling past in either direction!

For modelers who are new to the task of switching cars into facing-point spurs, consider this scenario: An empty car at Harlin Supply has to be picked up and returned to the yard. Meanwhile, a manifest freight just dropped off a load at the yard to be placed at Harlin. You'll need to use the runaround track to swap these two cars around. When running around a car, I try to spot the freight car on the front side of the runaround, so that only the locomotive has to negotiate the diverging legs of the two no. 4 turnouts at the rear of the runaround.

A second module

I'm planning to construct a second module soon, as opposed to a permanent layout. The portability of modular railroading allows the layout to easily move with me. Moreover, I can incorporate my module into a permanent layout someday.

Meanwhile, this has been a fun switching layout to build and now to operate, whether or not it's connected to a larger layout. I can set up switching scenarios that take only a few minutes to complete, or may take quite a while to figure out. So while moving a long freight or high-speed passenger train around a layout is definitely a thrill, firing up the local switcher and serving nearby customers can be just as compelling. **MRP**

Paul Newtson grew up in St. Louis and has been a model railroader since age 9. He moved to Tampa during high school, where his love of trains grew. Paul, a graduate of the University of Florida and a 14-year veteran of CSX, manages a fleet of covered hopper cars from company headquarters in Jacksonville, Fla. Paul and wife,Vanessa, live in Jacksonville with their daughter, Sabal.

Open the gate to add realism

6. Paul made working hinges so the gate in the fence surrounding Harlin Supply has to be opened, adding another step to the switching moves.

It's the small details that add an additional level of realism and fun to a small layout. Take, for example, the security gate across the track entering Harlin Supply. Many railroad customers, including lumber companies and others that store materials outside, will fence their property with a gate across the tracks for access. When the local arrives to pick up or set out cars, a crewman unlocks the gate and swings it open. Later, they'll close and lock the gate before the engine leaves.

To create my gate, I fabricated the gateposts from Northeastern scale 6 x 6 lumber. The frames of the gates are made from brass rod bent to the general outline of a gate. The two tubes that the frame fits into are made from metal tubing, available from K&S Engineering, that's sized to accommodate the gate's brass rod. I then glued on panels of Scale Structures Ltd. chain link fence to complete the gate. – *P.N.*

1. Snowmelt on the road (actually thinned polyurethane) reflects the ditch lights on C44-9W no. 9042 as it rumbles across Mohawk Street on Bob Springs and Harry Kelley's 1:29 indoor railroad. The two locomotives are Aristo-Craft models.

A single-town railroad in 1:29

An operations-oriented, large scale, indoor layout

By Bob Springs//Photos by the author except where noted

You've probably seen large scale trains in a hobby shop or at a train show. That big stuff is impressive, about three times the length and 27 times the mass of HO scale trains. It comes in various scales, but all operate on the 45mm-gauge track called No. 1 gauge. For standard-gauge models, the correct proportion is 1:32 (⅜" scale), but 1:29 models are more popular. (See "One gauge, many scales" on page 33.)

And you've probably guessed that a little tweaking would turn that big boxcar into a great showpiece. Just body-mount some scale couplers, add a bit of weathering – and imagine how great it would be to have a whole layout in this scale!

Well, you can. The accompanying photos were shot on the 1:29 layout Harry Kelley and I are building. This is my second large-scale indoor layout. The first was featured in the *Great Model Railroads 2012* article "Modeling Miami in a big way" by Paul Dolkos.

Realistic equipment, scenery, and operation are characteristics of both the old layout (which I had to take down when my wife and I moved) and of the new one, which Harry and I call the Loganville Local.

Building a successful, operations-oriented, large scale layout is easier than you might think. Just be aware of a few differences from building in the smaller scales.

Planning a large scale layout

Let's see how planning a 1:29 layout compares to one in HO. The first difference is the trains are bigger in every dimension by a factor of three. The people who will operate this layout, however, aren't. Tracks, therefore, have to be closer to the aisles so operators can reach in and work the trains. A look at the

2. The sheer size of the 1:29 models is apparent as Harry uses a radio throttle to run a manifest freight. Tom Klimoski photo

The railroad resides on the top floor of this small barn on Harry Kelley's property in South Carolina.

Loganville track plan shows that in some places we've coved the aisles inward to allow access to the tracks.

Also, you'll be able to reach in over far fewer tracks. It's 6" between track centers now, not 2". Twelve-track-wide freight yards just won't happen.

You'll want to convert everything to body-mounted scale couplers. We used Kadee couplers on everything, mostly no. 820s. Body-mounted couplers mean the tight curves often associated with large scale are out. An HO scale 18" radius becomes 54", 24" becomes 72", and 30" equals 90". Loganville has a 60" minimum radius. These are big curves, and they eat up layout space. All but a couple of the turnouts are no. 6.

So what's the minimum area this large scale layout will need? Loganville is built in a 28 x 29-foot room on the top floor of a small barn. The same plan would be about 12 x 12 feet in HO (not 10 x 10, because aisles can't be condensed). Operationally, Loganville is the equal of a bedroom layout in HO, so I'd say we're approaching the minimum for a large scale layout that fits the operational pattern of what we'd think of as a "room-size" layout.

Again, thinking HO, the classic 4 x 8 layout would scale up to about 12 x 24 feet in 1:29, with access in the middle an obvious necessity.

Thinking in terms of HO scale again, a lot of good model railroading can be built into a 12 x 12-foot bedroom, but a long, over-the-road mainline run simply isn't practical, at least on a single deck. Modeling just two towns would put them only a train length apart. This space can accommodate switching and interchange, though, so that's the operation we emphasize on our layout.

The basic plan is an oval main line around the outer walls. There is a pair of hidden staging tracks along two adjacent walls and a small yard along the other two. The space above the mainline staging provides room for a sprawling paper mill, and a short line S-curves across the middle to end in another hidden staging track. Along this line is an industrial park.

Rounding out Loganville is the Norfolk Southern interchange track, which leads in from hidden staging to tie in at the south end of CSX's River Street Yard.

Our scaled-up "bedroom" layout has quite a bit going on. A CSX transfer run from Knoxville works River Street daily. The short line East Tennessee Ry. (ETRY) brings in cars for the interchange, then returns back up the branch, inbounds in tow.

Besides the ETRY interchange, NS handles a fair amount of the paper mill traffic. The CSX local switcher (Loganville Local), based at River Street, has lots of in-town work.

Advantages of a single town

Finding room for a lengthy over-the-road run can be difficult in HO or even N scale. For a large scale indoor layout, I don't recommend even trying. Instead, by using staging, interchange, and a number of industries, we can support an interesting array of prototypical operation in a single town. Our operating sessions, with three operators, typically run two hours or longer.

The essence of layout planning is to distill some phase of the prototype down to something one can satisfyingly model within one's available means and space. The common approach is somehow to shrink the space of the over-the-road phase of the prototype to a size we can handle.

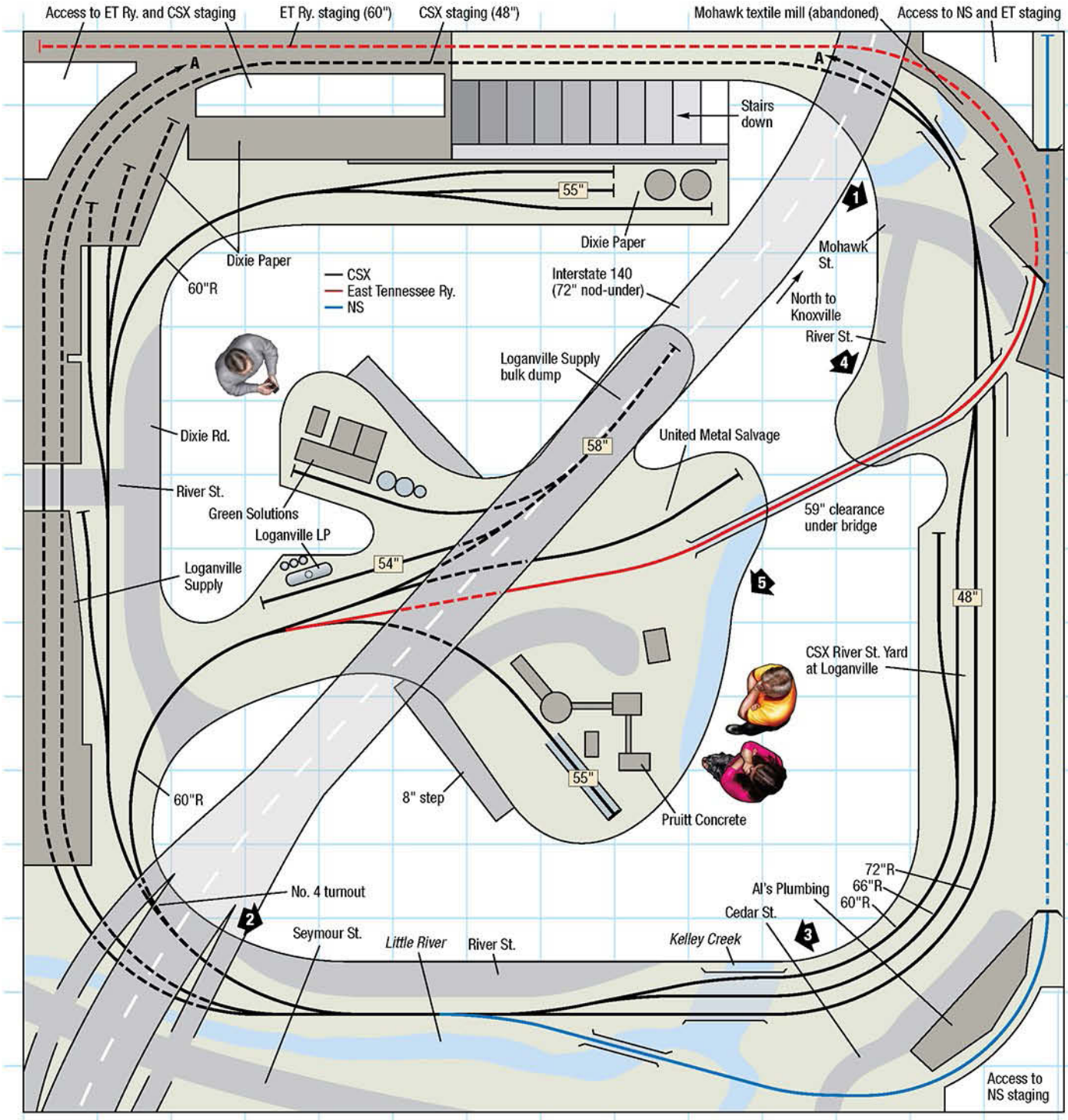
The single-town concept aims instead to shrink one's scope by looking only at the railroad work that takes place within one finite, local area. The "big picture" still exists, but only as a mental concept, and as such it costs nothing extra and requires no additional room. If one is able to forgo the romance of riding the high iron, the single-town layout is a most economical way to approach model railroading.

When planning any layout, it's far too easy to focus only on how much track one can fit in. But as important as play value per square foot may be, it pays to remember what drew us to this hobby in the first place. For me, it was to try to capture the look, the feel, the experience of full-size railroading.

A simulation, not a game

Quoting MRP editor Tony Koester, "Model railroad operation isn't a game; it's a simulation." The way we view staging reflects our understanding of this. On an operations-oriented model railroad, staging isn't just a place trains come from and return to; thinking that way does, indeed, make operating the layout merely a game. Instead, staging should be representative of a specific place or route, a mental extension of the physically modeled area and part of our overall picture of operation.

The modeled portion of our layout is but a small part of our operation's big picture. The CSX Loganville turn arrives from/departs for Knoxville, not "staging." It's the same for the NS local: Outbounds are forwarded to Knoxville, not to "staging." If they're loaded, it's



Loganville, Tenn., in large scale

Large scale (1:29)
Room size: 28 x 29 feet
Scale of plan: ¼" = 1'-0", 24" grid
Numbered arrows indicate photo locations

Illustration by Rick Johnson

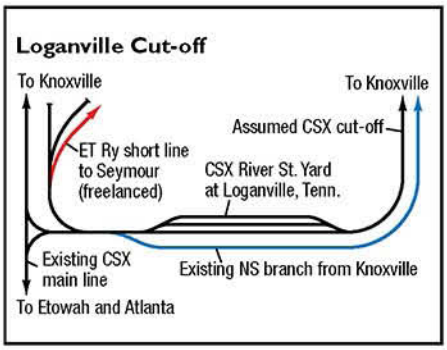
Find more plans online in the ModelRailroader.com Track Plan Database.

The layout at a glance

Name: The Loganville Local
Scale: large scale (1:29)
Size: 28'-2" x 29'-3"
Prototype: CSX, Norfolk Southern, East Tennessee Ry.
Locale: based on Maryville, Tenn.
Era: present day (winter)

Style: walk-in
Mainline run: 100 feet
Branchline run: 75 feet
Minimum radius: 72" (main), 60" (branch)
Minimum turnout: no. 6 (main), no. 4
Maximum grade: 3 percent
Train length: 32 feet (main)
Benchwork: 1 x 6 open-grid

Height: 48" to 57"
Roadbed: ½" extruded-foam insulation board on OSB
Track: code 332 (main), code 250 aluminum (elsewhere)
Scenery: natural materials
Backdrop: painted wall and ⅛" hardboard
Control: battery/radio control



the first step in their trip to a consignee. If empty, then it's on to an industry loading. A sense of what lies beyond gives meaning to operation.

There are no modeled industries on the Seymour Branch, but crews can form a mental image of what's there. The local crew at River Street gets paperwork telling them what to forward to the East Tennessee Ry.

That's all they really have to know, but it's more interesting to know why covered hopper loads of sugar are coming through. Our branchline map shows all sidings and lists all rail-served customers. So we know those loads of sugar are going to Enterprise Bottling Co. in Seymour, Tenn. We didn't actually model Enterprise, but we "know" what the place looks like.

As the ETRY train leaves town, it's easy to have a mental picture of that crew setting out those loads and picking up empty cars, which we'll probably see tomorrow. Once back at River Street Yard, those empty cars will go into the CSX outbound block, a step closer to cycling back to Sugar Land in St. Louis, Mo., for reloading.

Bottom line: Limited physical space doesn't have to limit the scope of operation. Mentally, we can model operations well beyond that which we could ever actually build.

Why not copy the prototype?

For those wondering why we didn't simply copy the actual operation of the Maryville/Alcoa, Tenn., area on which Loganville is based, the short answer is it's too big for large scale. We have room for only two mainline staging tracks, not nearly enough to represent the busy CSX main between Knoxville and Atlanta. But our cutoff lets us run just what would be going through this secondary main. Likewise, our free-lanced Dixie Paper is a workable major industry for a large scale layout, whereas the huge Alcoa Aluminum beverage can plant would be a daunting challenge, even in N scale.

Loganville is an example of a single-town layout and features the sort of local operation I've found works best in large scale. This isn't the overview approach to model railroad planning. Rather, it's a more closely focused, grassroots approach.

More railroad in smaller scale?

I'm sure some of you wonder why we chose to use our 28 x 29-foot area for such a simple large scale layout rather than a more extensive N or HO railroad. It's my experience that a simple layout can be just as rewarding as a more complex one. It's a matter of the aspect of railroading one is trying to replicate. And, after all, this isn't really a bedroom layout; it's actually pretty big. It's impressive to walk into and fun to run. It feels "real."

Another point to consider is this room full of large scale trains costs less in construction time than filling the same space with an elaborate HO layout. Surprised? Think about it. It would take nine times as many HO structures to fill this room. Each large scale item, whether structure, tree, or boxcar, has 27 times (3 x 3 x 3) the volume as the same item in HO.

Does this mean we don't have as much? No, it just means we don't have as many. There's still a roomful of interesting railroad. Large scale modeling forces the economy of simplicity.

This brings up another point: We don't run really long trains. We don't need to. A 10-car train is physically as long as a 30-car HO scale train. Short trains seem long enough, and a 20-car train seems really long.

Large scale pros and cons

In many ways, large scale modeling is quite similar to working in common scales like HO and N. On both the previous Miami layout and now Loganville, benchwork was built using the familiar open-grid method. Miami is flat, so the benchwork was simply topped with ½" oriented-strand board (OSB). The Loganville layout utilizes cookie-cutter OSB for the more dramatic landforms of its mountainous prototype.

Room prep, lighting, valances and fascia, etc., are about the same for any scale. And while we're using battery-powered locomotives with radio

One gauge, many scales

In the hobby's formative years, track gauges were designated by numbers: no. 0 gauge, no. 1, no. 2, etc. But standing alone, a typeset 0 looked like the letter O, so in the United States, 0 (1:48) became known as O (pronounced "oh") gauge and scale. When a smaller gauge (1:87.1) came along, it was called half-O, or HO.

In the 1960s, LGB used no. 1 gauge track, which measures just over 1¾" (1.766") between the rails, to represent Europe's common meter gauge. That resulted in a proportion of 1:22.5, which LGB called G scale. In G scale, every dimension is 2/45 as large as its prototype. LGB has produced both European and American narrow gauge prototypes in this scale, the latter with wheels gauged to fit on meter gauge (39.37") instead of the 36" track common to American narrow gauge.

Since that time, other manufacturers have introduced large scale narrow gauge equipment. Some, like LGB, use the 1:22.5 proportion. Others have chosen to work in ½" scale (1:24) or the larger 1:20.3 proportion. (In 1:20.3, common no. 1 gauge track scales out to 36" gauge.)

The growing sales in what's collectively known as G scale model railroading attracted other manufacturers who decided to use no. 1 gauge track to represent the American standard gauge of 4'-8½" instead of narrow gauge. This results in a 1:32 proportion (⅜" scale).

However, standard gauge trains in ⅜" scale are noticeably smaller than the narrow gauge trains already on the market, and many modelers like to mix equipment. So some manufacturers bumped up the proportion to 1:28 and even 1:29. These models still use the same no. 1 gauge track, but ride on only slightly narrow gauge wheelsets. For example, no. 1 gauge track scales out to about 51.2" in 1:29, or 5.3" narrower than standard gauge.

The result is that no. 1 gaugers who are fastidious about scale have their work cut out for them. Other than figures and vehicles, there's a relatively small selection of commercial models scaled to 1:32. Modelers could instead handlay the track to the correct gauge for 1:29 and space out the wheelsets to match the 1:29 body shells. By focusing not on the scale but on the operating potential, however, such concerns soon fade away. – *Tony Koester*

3. Remnants of a recent snowfall still show on the ground as General Electric Dash-9 no. 9042 and Electro-Motive Division SD40-2 no. 8128 (USA Trains) lead a northbound freight along River Street just north of the Interstate 140 overpass.

Invisible paint

Loganville is in the loft of Harry Kelley's barn in a room we built to house this project. Since this space is used only for the model railroad, we didn't have to answer to higher powers about how we'd decorate. We had the freedom to do whatever suited our goal of presenting our miniature world's best face with as few distractions as possible.

If you don't want guests to be distracted by something, make it invisible – paint it black. Matte black paint absorbs light of all wavelengths, reflecting nearly nothing.

We started with a black ceiling. Next, valances, lighting fixtures, fans, even surface-mounted wiring were all rendered "invisible" with black paint. The storage area below the benchwork is screened by ¼" oriented-strand board panels painted black. We initially tried a gray fascia, but later agreed it should be black too. Finally, the floor received a coat of black paint, then an overcoat of polyurethane for durability.

The effect of all this was to remove all distractions and to force one to focus on the railroad layout and the sky backdrop behind it. The layout itself seems to "float" in the room. – *Bob Springs*

throttles, those who prefer DCC should have no problem in large scale as long as the power decoder is sized to accommodate the motor current. There's plenty of room inside the locomotives for decoders.

There are some differences, of course. For one thing, older eyes and less-steady hands will find working in large scale much easier. This alone is a good reason to give the big stuff a serious look. And if you really like detail, you'll be delighted with what you'll be able to include. Scenery items used in HO are far more delicate-looking in large scale, giving an interesting new look.

A less positive difference is the lack of off-the-shelf items with which to work. This is a pioneer modeling arena, and aside from the trains and track there really isn't a lot on the market. Large scale is at the point HO was back in the '50s or '60s. Be prepared to do a lot of improvising, compromising, kitbashing, and scratchbuilding.

Almost all our scenic materials were gleaned from fields and roadsides. Our vehicles are toys, none exactly 1:29. We've used a lot of forced perspective, putting the larger cars and trucks in the foreground and the smaller stuff farther back.

All of our structures are scratch-built. There are some kits on the market, but scratchbuilding is easy in large scale. It requires a different mindset, however. Think table saw and jigsaw rather than X-acto knife, ½" OSB instead of styrene sheet, and nails or drywall screws where you're used to employing modeling cement.

A key element in this new mindset is to always keep a lookout for any product or material that might be used somewhere on the layout. Our details came from repurposing whatever we could find. I personally enjoy this kind of challenge, and, as an added benefit, it usually doesn't cost much at all.

Building a large scale layout the equal of today's excellent smaller-scale model railroads requires a great deal of resourcefulness. Some will revel in this challenge, but large scale is a most enjoyable branch of the hobby even if your aim is a bit lower. My advice would be to start slowly and keep things as simple as possible, and then grow from there.

Smaller large scale layouts

Harry and I are fortunate to have 812 square feet in which to build our layout, but don't give up on large scale if you have less space, even a lot less. Indeed, a simple switching layout on a narrow shelf is the ideal way to get a feel for this different approach to model railroading.

Remember, large scale's strengths are interchange and switching. You can likely find space for a large scale shelf layout of this type while still focusing on a single town or switching district. A surprising amount of 1:29 industrial switching will fit on a shelf just 24" deep. Even though 24" is equivalent to a miserly 8" in HO, it doesn't look skimpy because it's not 8" – it's still 24"! It's the same physical size shelf one might use on HO, but with large scale we get a much closer view, albeit with less relative depth for our modeling.

Keep in mind that the closer a layout is to eye level, the less apparent shallowness of depth becomes. The tradeoff is that working the train is easier if the layout is lower. On both layouts, I used fairly high layout elevations for the realistic view this gives and added a step-up where I'd need to reach in over other cars.

As noted previously, the tracks need to be located near the aisles, so one would do well to avoid the temptation to make the layout shelves too deep – 24" to 36" works well. I must confess that I don't always take my own advice; a look at our track plan will confirm this. Loganville's room has a sloping ceiling along two walls, which forced the outer rim of the layout to go a bit lower than I would have liked. I thought that at just 48" high, we needed more depth here for best scenic effect, but building scenery on 4-to-5-foot-deep benchwork proved difficult.

Switching and interchange

Most switching plans include a runaround track. Contrary to conventional wisdom, this isn't absolutely

Learning points

- Indoor large scale railroading is as practical as garden railroading, especially if the focus is on local switching and interchange.
- Moving to a larger scale may lead to surprises as you adjust to track spacing and building sizes.
- Limited space doesn't require limiting the scope of operations.
- As layout height increases, scenery depth should be reduced to prevent reach issues.
- Scale-size structure availability is limited in the larger scales, but scratchbuilding is easier owing to the large size of the components.
- A large scale layout may take less time to build than a smaller scale layout in the same space, as fewer models are needed.
- As the scale increases, one's focus moves in closer; large scale is not simply HO scaled up!

necessary. Railroads prefer to have all turnouts at a given switching location facing the same way (trailing point) so no runaround is needed, but having a few facing-point turnouts makes our model railroads more interesting.

In addition to switching, Loganville employs a lot of live interchange from hidden staging, but you could save some space by merely simulating the interchange. If you opt for hidden staging, be sure to provide a way to gain access to those tracks. In an unfamiliar scale, this is the sort of thing that might easily be misjudged.

The prototype you're modeling plays a big role in how much space you'll need. Avoid industries that handle long strings of cars in a single switching move. Look instead for those that get just one or two cars at a time. One reason I chose to model Miami on my previous layout was the abundance of single-car work CSX does there in a compact industrial area.

In 1:29, a 1 x 6 plank turned flat and supported every 24" is adequate to connect one layout space to another. Perhaps your layout could be built in separate, but connected, segments or even tied to an outdoor switching lead. Be creative, and you might be surprised how much space you can find.

For an in-depth look at an excellent mid-size 1:29 switching layout, I recommend reading Tony Koester's series on modeling the Claremont & Concord in 1:29, which began in the August 2005 *Model Railroader.*

4. The East Tennessee Ry.'s deck-girder bridge frames this view looking south at the CSX River Street Yard in Loganville.

5. Large scale allows intensive detailing, but the results of these extra efforts are clearly visible, as in this photo of CSX GP39-2 4313 (which Bob kitbashed from a USA Trains GP38-2) switching Pruitt's Concrete.

Mass and aesthetics

In the end, I believe, the aesthetics of your model railroad will play a major role in making it a success. So find your own core values and base your plan around them. Perhaps this is why, long ago, I switched from HO to large scale: I had found trains three times closer to full size – or, if you think not in terms of length but volume, 27 times. Maybe it has to do with the fact that 1:29 cars and locomotives are about the same physical size in our adult hands as O-27 was to us when we were kids.

These space-saving ideas and the economies of the single-town layout design apply to any scale, especially where layout space is at a premium. In HO scale, the entire Loganville layout would fit into a 12 x 12-foot space.

But if you enjoy switching and interchange, the closely focused operation large scale best supports, you just might like to give large scale a try. If you do, perhaps you'll agree that bigger is indeed better. **MRP**

Bob Springs and Harry Kelley have modeled in large scale for more than 20 years. Bob is a retired cabinetmaker and "serious amateur" artist. His other hobby interests include 7½"-gauge ride-on trains. He and his wife, Myra Ann, live in Seneca, S.C. He may be contacted via e-mail at bob@miamirailservice.com. Harry works as wastewater treatment technician. His modeling passion is scratchbuilding 1:29 articulated steam locomotives. Harry and his wife, Lena, live in Walhalla, S.C.

Coal hauler in a spare bedroom

Lead unit 3604, headed south with a manifest freight in April 1973, is one of the Clinchfield RR's seven relatively rare General Electric U36Cs, the only U-boats on the primarily EMD roster.
Tony Koester photo

Multiple laps and decks lengthen the run in a 12 x 13-foot space

By Byron Henderson//Model photos by David Ogle

Spanning nearly 300 miles in length, the Clinchfield RR was one of the smaller Class 1 railroads. Its route stretched from Spartanburg, S.C., in the south to Elkhorn City, Ky., in the north – much of it still in operation as part of CSX.

The Carolina, Clinchfield & Ohio, as it was formally known, has been a perennial favorite with fans and modelers. Formed from several unsuccessful railroads dating to the 19th century, the line was noted for spectacular scenery and the famous Altapass Loops: a series of hairpin curves allowing the railroad to crest the spine of the Blue Ridge Mountains while maintaining a grade of 2 percent or less.

Though controlled by the Louisville & Nashville and Atlantic Coast Line after 1924, the Clinchfield kept its own identity until being merged into the Family Lines in the mid-1970s. While coal hauling was the Clinchfield's primary business, other mineral traffic and general merchandise were also important. Hot manifest freights such as northbound No. 97, the *Florida Perishable*, kept the dispatcher at Erwin, Tenn., alert at his CTC console.

Length for "model railfanning"

The primary focus of this layout is to be the segment of the line from the yard and Seaboard Air Line interchange at Bostic, N.C., through the Loops and northward to Erwin, Tenn. The modeled era is the late 1950s to 1960s, so no steam servicing is required, thus saving a bit of a space. My layout-design client's main purpose for the layout is "model railfanning," so

A special CRR train behind Fs pops out of the tunnel at Ridge Siding near Altapass to meet a waiting northbound manifest in April 1973. Tony Koester photo

the longest possible mainline run was desired. If possible, he wanted me to design in some operating interest.

The track-planning challenge came from both scale and available space. In HO scale, the solution to a long mainline run in space of about 140 square feet while maintaining the desired 24" minimum radius was not immediately obvious. Moreover, a good-sized desk had to be accommodated!

A blob and a door

In this space and radius, there really wasn't room for more than one "blob" (turnback curve at the end of a peninsula) while maintaining reasonable aisles. Since some suggestion of the hairpin Loops was a must, that solitary blob was set aside for a visible 180-degree track curve. In order not to spoil this signature scene, I couldn't place a helix above it. I did make note of the possibility of using the blob for a subterranean staging loop later in the design process.

But this one-blob decision dictated an around-the-room helix arrangement to work in the longest possible main line on multiple decks. That, in turn, required crossing the door more than once. With the client's approval, we left the decision of duckunder versus movable bridge to be made during construction while laying out the key track-plan elements.

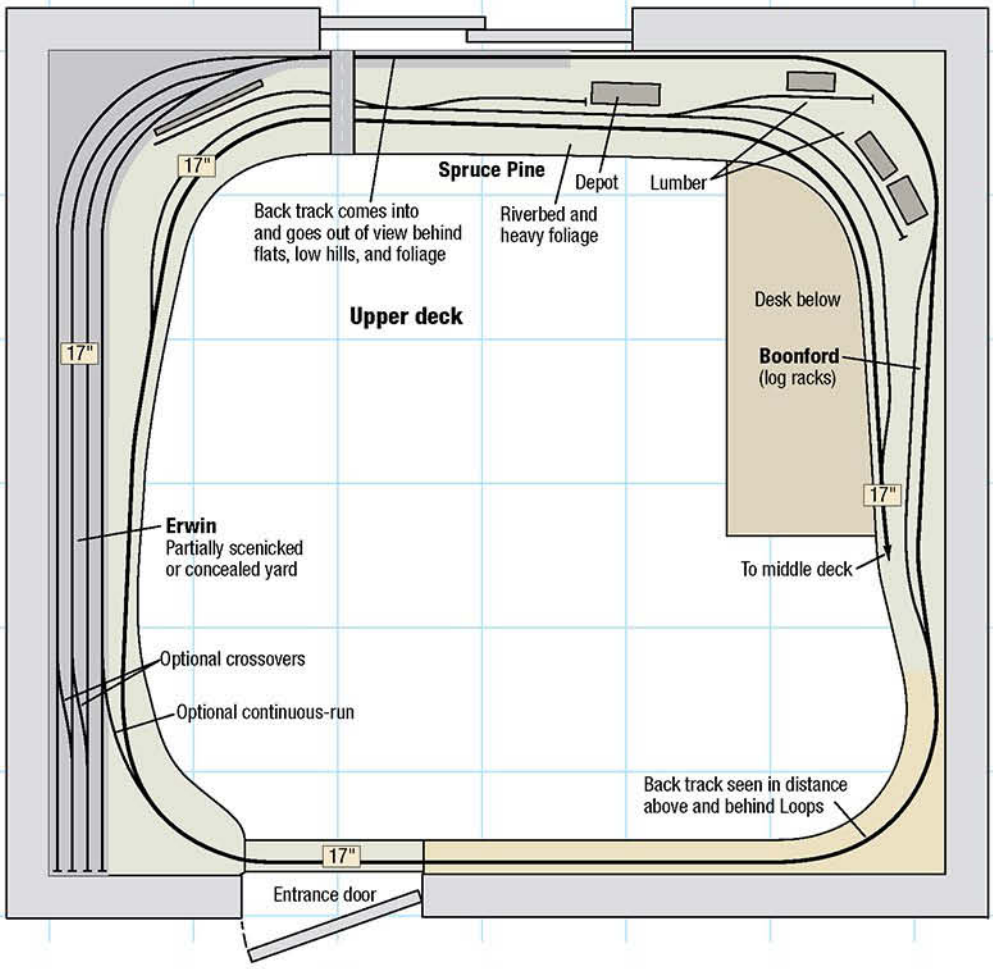
The 105-percent solution

My first approach was two visible decks tied together by track climbing around the room. But I soon realized that this arrangement left us short on running length, even by fully using the room. So I decided to try combining

Clinchfield RR

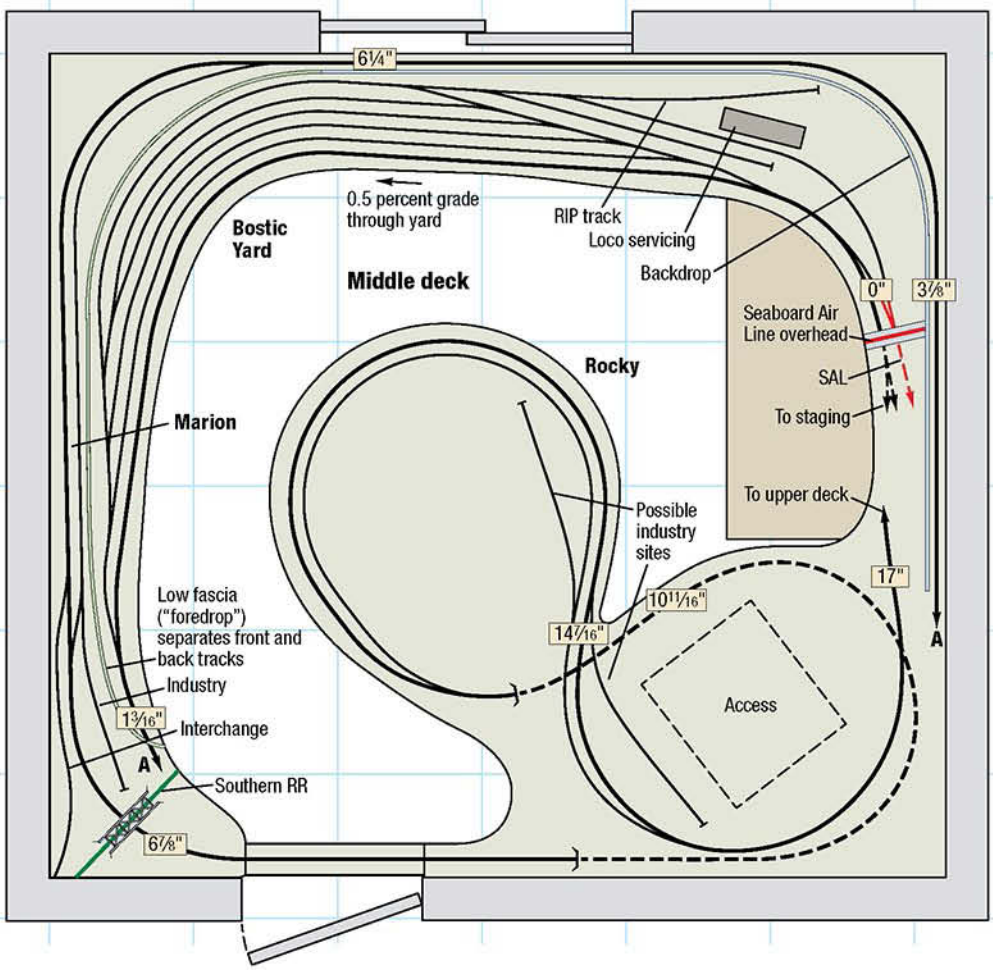
HO scale (1:87.1)
Room size: 11'-5" x 12'-5"
Scale of plan: ⅜" = 1'-0", 24" grid
Illustration by Rick Johnson

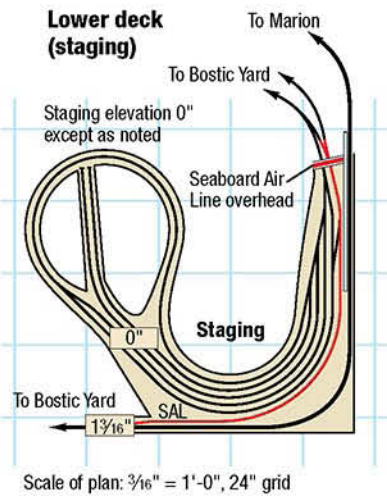
Find more plans online in the ModelRailroader.com Track Plan Database.



The layout at a glance

Name: Clinchfield RR
Scale: HO (1:87.1)
Size: 11'-5" x 12'-5"
Prototype: Clinchfield RR
Locale: North Carolina
Era: late 1950s to 1960s
Style: multi-deck
Mainline run: 155 feet
Minimum radius: 24"
Minimum turnout: no. 6 (main), no. 5 (yards), no. 4 (industries)
Maximum grade: 2.25 percent
Train length: 10 to 12 feet
Benchwork: open-grid
Height: 51" to 68"
Roadbed: cork
Track: Walthers flex and turnouts
Scenery: extruded foam and plaster over cardboard webbing
Backdrop: photos on hardboard
Control: Digitrax Digital Command Control





Scale of plan: ³⁄₁₆" = 1'-0", 24" grid

Byron's Clinchfield plan is taking shape in three dimensions as client David Ogle continues to make progress. This view shows the dispatcher's panel and a northbound Seaboard freight entering Bostic Yard. A CRR freight holding the main at Rocky on the top deck of the peninsula is visible at upper right.

multiple decks with multiple laps around the room. This "105-percent solution" created some scenicking challenges (and led to three pesky crossings of the door), but the client thought it was worth it for the increased length.

The result is a railfan-oriented plan using multiple laps and multiple decks to maximize the use of the available space. Running length between staging yards is very respectable for the 140-square-foot space at just over 155 feet (more than 2.5 scale miles). Scenes from Bostic, N.C., to Boonford, N.C., are modeled, with a semi-visible staging yard representing Clinchfield's big classification yard and engine terminal at Erwin, Tenn.

Bostic and Spruce Pine, in particular, attempt to replicate the full-size railroad in some details. CRR and Seaboard Air Line (SAL) traffic south of Bostic is represented by hidden staging below the famous Loops, making double use of our single blob. This lower staging includes both loop and stub-end tracks to maximize staging track lengths. Continuous-running

The south-end staging on the lower-most deck is visible inside the peninsula beneath the Loops. Note that the benchwork here is supported by bookcases.

The north end of Bostic Yard is visible on the lower deck at the right, with Marion immediately above and the benchwork for Erwin Yard (north-end visible staging) at the top right. Also visible are the three removable sections across the doorway.

The Clinchfield's main classification yard, diesel shop, and general offices, including the dispatcher's CTC console, were located near the middle of the railroad in Erwin, Tenn. Tony Koester photo

This wood-frame depot marked the small yard and Southern's crossing over the Clinchfield two miles east of Marion, N.C., a site appropriately known as Clinchcross on the SR. Tony Koester photo

In a twist of fate, F5A 802 was in the CRR's new black scheme while three-decades-newer GP38 2003 wore the original gray-and-yellow scheme at Dante, Va., in April 1974. Tony Koester photo

Learning points

- It's critical to understand primary design goals up front – here a desire to observe the railroad in action from a railfan's vantage point.
- Making multiple use (on two or more decks) of the turnback-curve "blob" at the end of the peninsula is more efficient.
- Combining multiple decks and multiple laps permits a longer mainline run.
- "Modulating" fidelity by selecting only some locations to model accurately helps cope with space constraints.
- A few signature scenes will help to convey the impression that the railroad is based on a specific prototype.

options are available on both the upper and lower decks of the layout.

A tour of the Clinchfield

From the south (staging), trains first appear on the visible portion of the layout at Bostic Yard, passing under the simulated SAL track crossing above. While significantly compressed, Bostic retains some of the features of the real thing, including the "back lead," an engine ready track, and a single track suggesting the remnants of the former steam engine service area for use as a clean-out or repair-in-place (RIP) track. SAL interchange traffic can enter the yard through the main ladder or via the back lead.

Northbound trains from Bostic cross the doorway to travel around the room again behind the Loops area. A backdrop and a short "foredrop" or fascia separate Bostic Yard from the middle-deck track running just behind. When constructed, this extra lap behind Bostic might be screened somewhat by vegetation or structures. (An optional continuous-running ramp track connects with the SAL staging track.) Continuing its climb around the room, this middle-deck track emerges from behind Bostic, becoming visible above the foredrop at Marion.

Measuring only eight feet long, the passing siding at Marion is a bit short. Consequently, the shorter train must take the siding. At the north end of Marion is a short spur to an industry such as a junkyard, as well as a good-sized interchange track with the Southern, whose simulated main line passes overhead as on the prototype.

After crossing the door again, the climb begins in earnest on the peninsula.

A well-known prototype

The railroad north from Marion marks the beginning of the famous Clinchfield Loops. A number of well-known locations on the prototype were candidates for inclusion on the layout, particularly Altapass, where a wye turned helpers; locals from the north and south could also turn here. But the constraints of the room ruled out an accurate representation.

When faced with this sort of compromise, I often choose to design the track plan feature as necessary for the function of the layout and avoid the well-known location name. In this case, I wanted a clear suggestion of the tunnels and hairpin curves of the area – and operationally we needed a long passing siding. So trains pass through a long tunnel before emerging into the S-curve siding representing Rocky. (The name is from the prototype, but the arrangement is not accurate.)

On to the upper deck

The two tracks at Rocky are 12 feet or so in the clear, so it's a good place for long trains to meet or pass. Although not prototypical, industrial spurs are an option here. Minerals and wood products industries would be good candidates, but most of the coal mining for which the Clinchfield is known took place north of the modeled area.

Although not shown on the track plan, the addition of another short tunnel or two on the single-track portion beyond Rocky siding would help capture the flavor of the real Clinchfield Loops area with its many tunnels. As on the prototype, the winding tracks allow us to gain significant elevation as we climb to the upper deck, with the maximum layout grade of 2.25 percent (uncompensated for curve-induced friction) in the Loops.

Emerging on the upper deck, trains enter Spruce Pine. Here I chose a somewhat more accurate representation of the town's large lumberyard, house track, and another industry track. The tracks of the second lap behind are shielded by structures, building flats, and foliage as much or as little as desired.

After one more crossing of the door, trains approach a short siding at Boonford, a wood-loading area. The siding was not actually double-ended, so one could do away with the turnout at the north end. From here, the track wraps around again behind Spruce Pine to a secluded or partially scenicked staging yard representing Erwin, Tenn., and the CRR's connections to the north. A continuous-run option is also provided for the upper deck.

One of the CRR's squat center-cupola cabooses trails a long string of hoppers through the middle portion of the Clinchfield's serpentine Loops just south of the Blue Ridge Parkway in April 1973. Tony Koester photo

Jim Boyd and Tony Koester pursued the executive special to the bottom of the Loops to get this shot of a latter-day CRR "passenger train." Tony Koester photo

Railfanning with operations

In keeping with the client's primary design goals, the major emphasis is on achieving a railfan's view of through trains. Trains can be made up and broken down in Bostic and power changed.

But a few online industries have been incorporated, so there is also a need for one or more locals. As on the prototype, locals from each end could meet at Rocky. Alternately, an out-and-back local could work from one of the staging yards or from Bostic and return.

Helpers might also add interest, joining the train at Bostic, pushing to Rocky or all the way to Spruce Pine, and returning light. The helpers could take the siding at Rocky or Marion to allow other traffic to pass before returning to Bostic.

Although the small room demanded a number of compromises, the "105-percent solution" of multiple decks and multiple laps works well to provide a very long run in a modest space without resorting to tangles of spaghetti. Modulating fidelity by making some scenes more true-to-life than others helps maximize the run – and the fun! **MRP**

Byron Henderson is a custom model railroad designer (www.layoutvision.com) from San Jose, Calif. He is also editor of the National Model Railroad Association's Layout Design SIG's (www.ldsig.org) Layout Design Journal.

Disguising turnback curves

Simplify the view, hide them, or break them up

By Paul J. Dolkos//Photos by the author except where noted

We celebrate curves like those on sleek sports cars or jetliners. But we often curse curves on a model railroad, especially the turnback variety forced on us by the boundaries of our layout space. I'm referring not so much to the mechanics of radius – those issues can be resolved through planning, proper equipment choices, and good workmanship. I refer here to those that occur where the benchwork ends, forcing us to balloon the main line back in the direction from which it came.

So the question is: How can we make turnback curves more scenically acceptable? A worst-case scenario is an oval of track on a 4 x 8-foot layout where a large portion of the layout space is occupied by the two turnback curves. Appearance concerns are compounded by multi-track curves. On larger layouts, there are usually turnback curves at the end of peninsulas. This configuration can be especially unappealing, since the viewing angle is from the outside, rather than the inside of the curve, which emphasizes the curvature.

Improving appearances

On full-size railroads, 180-degree curves are seldom called for, but they do exist, Horseshoe Curve in Pennsylvania being among the most famous. You may spot one on a map, but at ground level trees, buildings, or a ridge usually obscure your sight line.

With the normal bird's-eye view of our layouts, however, turnback curves are usually very obvious. So how can our selection of scenery at curve locations mitigate the problem?

A typical problem location is a peninsula with a mainline curve around the end of it. If one does nothing more than slightly superelevate the track, ballast it, and line the right-of-way with trees or crops behind a fence, it will be a simple, credible view that doesn't attract attention to itself. Save the straightaways before and after the curve for the eye-catching industrial or town scenes. Let the peninsula end become a "no-drama zone" – nothing more than a quiet transition between other parts of the layout.

As he designed the Allagash RR [see *Model Railroad Planning 2012 – Ed.*], Mike Confalone left the scene at the end of a peninsula wide open. The track curves around the edge at a 38" radius, but you can easily ignore the track geometry because you're captivated by the fallow field and weathered farm buildings in the distance, a scene right out of an Andrew Wyeth painting. The track simply passes quietly through some low-profile scenery. Not many of us would devote that much open space to such a scene, but Mike is modeling Maine's back country, where there's a lot of open space.

Editor Tony Koester's Nickel Plate Road has two 42"-radius turnback curves (one per deck) at the "blob" end of the central peninsula. He retained the layout's standard 16" shelf width throughout the curves to avoid calling attention to them with deeper scenery. This also kept the interior of the blob open for use as the dispatcher's office.

A caveat: The end of a peninsula may seem like the ideal location for a curved wood trestle or deck-girder viaduct. I've seen some gorgeous bridge models installed in such locations. But, frankly, we've all seen that movie before, and it serves to emphasize the presence of a sharp, likely unprototypical curve.

Knox Farm helps disguise the turnback curve on Mike Confalone's Maine-based HO scale Allagash RR. Mike Confalone photo

This high-angle view of Mike's layout shows how Spartan scenery masks the turnback curve, which is almost a complete circle. Mike Confalone photo

Cover it or block the view

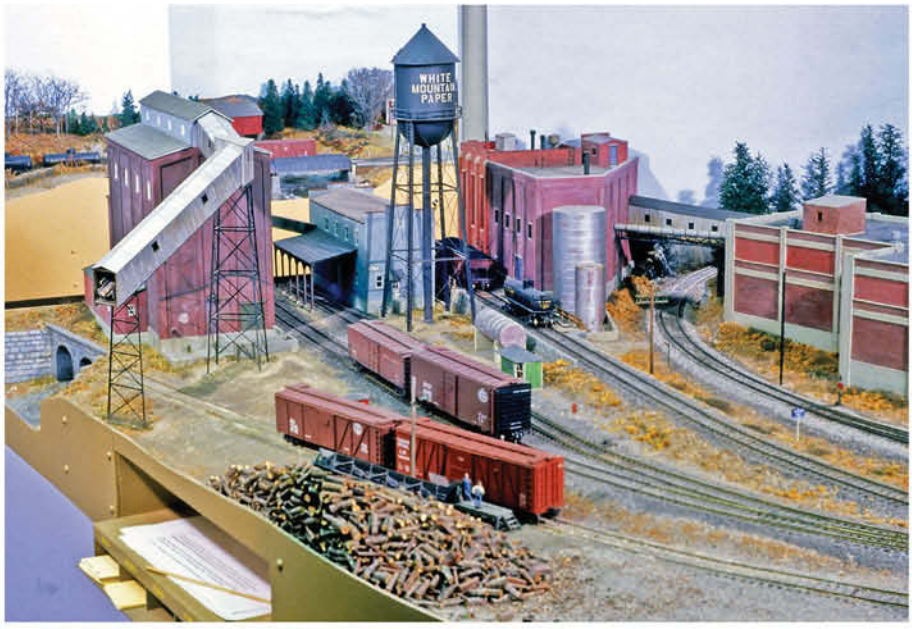
An opposite approach to the above is to completely screen the curve with scenery. This lets you hide curves that are operationally okay but visually tight and totally inappropriate, especially on a modern railroad. Covering the track with a tunnel is an obvious approach; the tunnel can provide space for a scene on the resulting hillside.

Another solution is to erect a high peninsula-end fascia. Perhaps the first to do this was the late Jerry Bellina. His idea was that a combined fascia-valance forced operators to move to the side aisles to follow their trains rather than standing some distance from their trains and blocking an invariably busy part of the main aisle. A side benefit was that as you moved into each new open viewing area, a different scene was revealed. This, in turn, gave you the impression that you had traveled a significant distance along on the railroad.

Craig Bisgeier, one of Jerry's friends who is building an HO layout based on Connecticut's Housatonic RR in 1892, encloses his peninsula ends in what we now call a "Bellinadrop." The area entering the curve behind the view

The turnback curve at the end of the central peninsula on Tony Koester's HO railroad retains the standard 16" benchwork depth rather than segueing to a deeper scene. The inside of the "blob" (behind the backdrop) contains the dispatcher's office. Tony Koester photo

A "Bellinadrop," named for designer Jerry Bellina, is intended to preclude viewing both sides of a peninsula by standing at the open end. This Bellinadrop is on Craig Bisgeier's 1890s Housatonic RR. Craig Bisgeier photos



Paul Dolkos built a paper mill at the end of a peninsula around a turnback curve to minimize the loop's presence. He set the curving main line back from the end of the peninsula to accommodate industry spurs and mill buildings. The curve is further broken up with a backdrop across its rear quarter.

The exception to the rule

Although they might pass by the roundhouse, you won't often find a prototype main line circling it as occurs on many layouts. But sometimes there were reversing loops for turning passenger-train consists. Such a configuration existed at Missouri Pacific's Omaha, Neb., engine terminal, says Dick Ryker, a modeler researching Omaha's railroads. As soon as passenger service was dropped, the turning loop was taken up. The Nickel Plate Road and successor Norfolk & Western had a "balloon track" to turn entire passenger-train consists at their Chicago passenger-train servicing facility near Lake Calumet. – *P.J.D.*

block is scenicked, with the track usually disappearing into a grove of trees. Craig says that view blocks not only screen one's sight of the turnback curves but also enhance the idea that trains are actually moving from terminal to terminal rather than just snaking around a room. The concept is similar to hiding the turnback curves in tunnels. Craig provides more information on this approach at www.housatonicrr.com/bellinadrop.html.

One concern would be maintaining access to the track and reaching stalled trains or derailed cars behind the backdrop. Craig was careful to provide access, but it's still not like being able to reach track out in the open. Also, depending on room aesthetics, peninsula-end view blocks painted black can loom large in the space and be overpowering. A neutral fascia color or open scenery might be more desirable in certain environments.

Break it up

A mainline oval on a 4 x 8 presents a worst-case scenario with not one but two turnback curves in close proximity. To mitigate the problem, some modelers install a view block lengthwise along the center to create two separate scenes. The view block can be arranged in any configuration as long as clear views of the turnback curves are disrupted.

Disrupting a clear view of the full turnback curve works well on larger layouts. On my Boston & Maine layout, I ran a backdrop across a turnback curve. On one side of the view block, a large paper mill surrounded the curve. Although the scene was located on a peninsula end, the turnback loop wasn't located at the edge. There was sufficient space between the end of the benchwork and curve to locate four spurs and mill buildings. With the foreground spurs attracting your attention, the curve wasn't as obvious. The spurs were also easier to switch, as operators didn't have reach over the main line to access them.

Another approach to breaking up a turnback curve at the end of the peninsula is to divide the territory into multiple pie-shaped segments. The separation can be nothing more than a thin view block across the track and perhaps some trees and hillside near

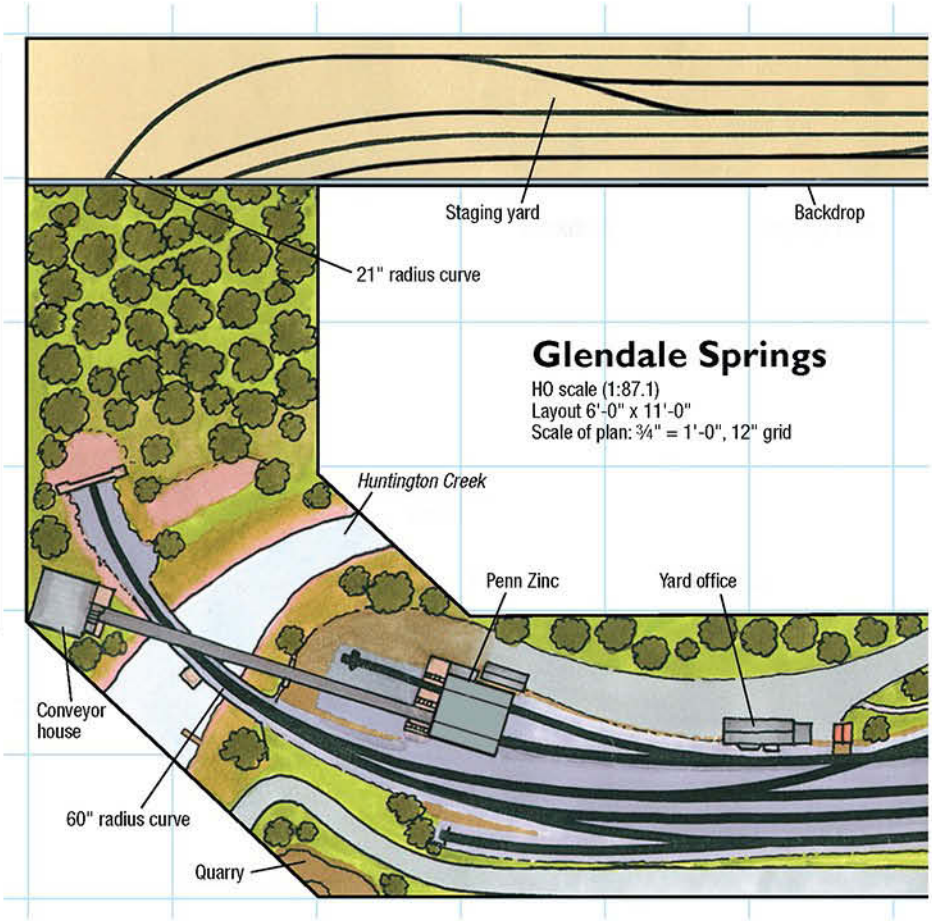
Learning points

- Although prototype examples of turnback (180 degrees or greater) curves do occur, they are usually hard to view in their entirety. Modelers should follow suit.
- The sharper the curve, the more annoying its appearance.
- Disrupting one's ability to view the entire turnback curve tends to minimize its impact.
- A "Bellinadrop" at the end of a peninsula prevents crews from viewing both sides of the peninsula from a single vantage point.
- Just because a lot of other modelers do something doesn't mean it's a good idea.

it, but this may permit you to get away with having two totally different scenic themes adjacent to each other. On one layout, I saw a multi-structure manufacturing facility backed up against a rock quarry, and the quick change of settings was acceptable.

An awkward situation that shows up regularly is a main line that loops 180 degrees around a roundhouse and turntable. From a geometric standpoint, a roundhouse and turntable fit into the inside of the curve very nicely. Nevertheless, such a situation doesn't typically occur on the prototype with the exception of a balloon track to turn complete passenger trains [see "Exceptions to the rule." – *Ed.*].

So how do we avoid that? If a roundhouse and curve need to be in the same area, then I'd allow some space, perhaps a foot or more, between the inside of the curve and the engine facilities. That permits the 180 degrees of curvature to be visually broken up with other structures or highway bridges. One might also introduce some elevation differences between the two elements. Better yet, I'd simply separate the curve and roundhouse/turntable so they aren't part of the same scene.



For his 6 x 11-foot Glendale Springs RR, Ian Wilson laid the turnback curve at left with a visible radius of 60" but reduced it to 21" after it passed under the zinc plant and entered the tunnel. Photo and track plan by Ian Wilson

Disguise the curve

The sharper the turnback curve, the more annoying its presence. If you've got, say, five feet of depth to work with, the turnback curve doesn't necessarily have to be a constant radius. You can ease the radius in the foreground and then, as the track ducks behind scenery, tighten it up to complete the 180-degree turn.

British modeler Ian Wilson did this on a Northeastern United States-themed 6 x 11-foot exhibition layout. At one end, the turnback curve started off at a 60" radius to match Peco large-radius turnouts and finished up at a 21" radius to complete the 180-degree transition into the staging yard. The sharpest part of the curve is hidden in a tunnel.

While we're consigned to using turnback curves on our layouts, there are ways to minimize their impact on our scenery. Consider some of these approaches so that these curves aren't the first thing visitors are aware of when viewing your railroad. **MRP**

Paul Dolkos is a veteran layout planner and a regular contributor to Model Railroad Planning.

Fig. 1. Fred Lagno has an eye for detail, yet considers everything from camera placement to backdrop height, as shown in this photo looking down Railroad Avenue. It's a scene that could represent almost any small North American town.

Layout design
with photography in mind

Planning ahead means better pictures later

By Fred Lagno//Photos by the author

When planning and building a layout, there are times when we're faced with difficult decisions. I've found the best thing to do is to walk away. I let the problem shift around in my brain until, in a week or so, I awaken from a sound sleep with a solution. This is how I avoid quick, and often regrettable, decisions.

The old adage "measure twice, cut once" rings true here. Such was the case a number of years ago. I was well into my new layout with most of the scenery completed. My track plan was a simple L-shaped, point-to-point configuration that occupied two sides of my garage. This shape accommodated a very large classic Lincoln Town Car that also lived there. Then two things happened: We sold the car, and two of my layout photographs were published.

Expanding the layout

About the same time, my wife, Sue, suggested I expand the model railroad to occupy the entire bay. This would give me another 150 square feet. I now had an opportunity to combine my two favorite hobbies, model railroading and photography, on a larger scale. However, I also wanted to conduct operating sessions in the future.

The additional space would give me a longer run, but would it be enough? Should I go with a double deck? Should I dismantle the layout I'd just completed or add on to it? There were more questions than answers.

After much thought I decided, for photographic purposes, a second deck was out of the question. I would be unable to take "long shots" without extensively retouching the photos using Photoshop, which I was unwilling to do.

I just didn't have it in me to tear out what I had already built, so I chose to add on. After some sketching, tweaking, and redrawing, I drafted a plan that suited my needs and goals. Realistic-looking model photography was a major objective.

Lighting

Using a black permanent marker, I drew the layout footprint directly on the garage floor. I was careful to give myself enough aisle space to allow for future operating sessions and to position lights and tripods for photography. After laying out the floor plan, I turned my attention to overhead lighting.

I like drop ceilings that follow the meanderings of the aisles. But this was a garage with automatic overhead doors, so a drop ceiling was out of the question. There were fluorescent fixtures already in the ceiling, so it was simply a matter of changing to 5,000-Kelvin fluorescent tubes. These daylight-balanced tubes provide a flat light similar to an overcast day. See **figs. 1** and **2**.

Although the fluorescents provided plenty of light, they were still too "cold" for my tastes. I much prefer the warmer lighting that incandescent bulbs emit. I decided track lighting with dimmer circuits was the way to go. The plan marked on the floor helped me determine where to place the lighting tracks. I installed two dimmers to control 50-watt incandescents and a third to control a series of blue bulbs for night lighting.

Lighting is now less of a problem when you take into account the color-balance capabilities of digital cameras and the associated software. In fact, the auto-color feature of programs such as Adobe Photoshop Elements is usually all you need for color correction. I often shoot with a combination of fluorescent and incandescent lighting. That may sound problematic, but it works.

A tall backdrop

After I built the basic benchwork frame, the next step was a backdrop. For photographic purposes, I recommend one that is at least four feet tall. This is especially important for "long shots" similar to **fig. 3**.

There are plenty of materials suitable for backdrop use. I use the back of linoleum runners against the walls and Masonite hardboard on the peninsula as a divider. The linoleum is flexible and curves nicely around corners. Both take paint well.

Be careful about what you select for a backdrop scene. If your goal is realistic model railroad photography, I recommend using photos or, if you're artistically inclined, hand-painting a scene in a realistic style. It's important that the backdrop be done correctly the first time. You may not have a chance to correct it after you've added scenery and structures.

Fig. 2. The daylight-balanced fluorescent bulbs that Fred uses on his HO railroad provide a flat light similar to that of an overcast day.

Fig. 3. A tall backdrop makes it possible to pull the camera back to show more of a scene – here an RS-3 switching the National Door plant. The haze was created with a fog machine.

Providing access

Whenever I'm photographing the layout, I strive to make my pictures appear as realistic as possible. Since most of my shots are taken from trackside, it's imperative I have access and a flat surface to put the camera on. This is important when I'm using my larger single-lens reflex (SLR) camera.

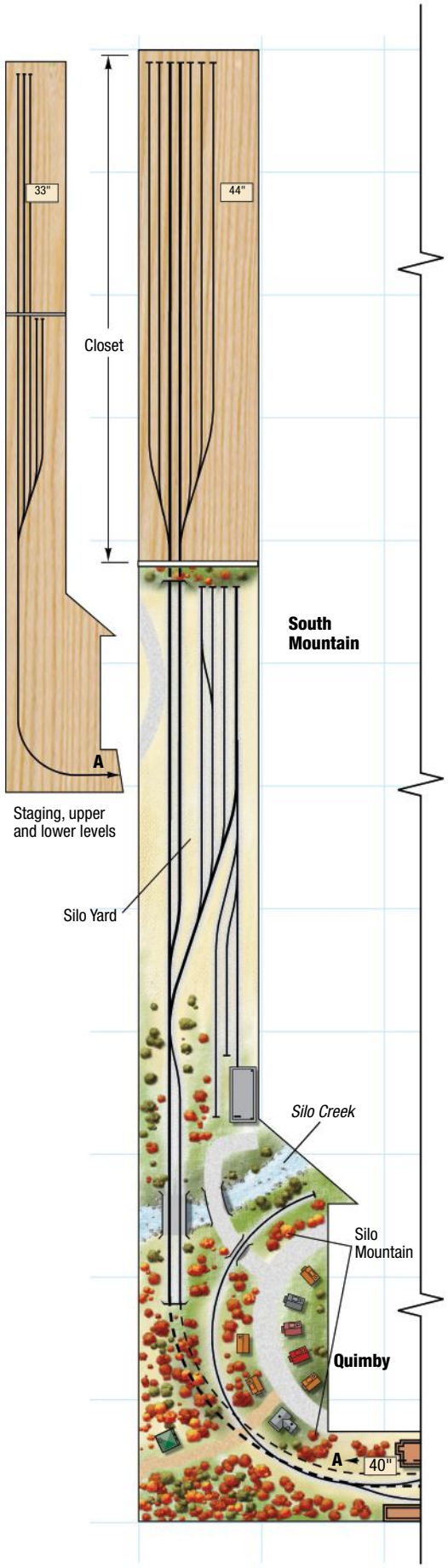
Fig. 4. This abandoned gas station, which started as a City Classics kit, is removable, allowing Fred to photograph the red National Door scene behind it.

Fig. 5. Fred's photo looking down Commerce Street illustrates several layout photography needs: a high backdrop; a camera with a lens that can be stopped down to achieve great depth of field (fore- and background sharpness); and removable structures. He took a building out of the photo to the right to make room for the camera and draw attention to detail such as phone and power lines.

Why not use my small point-and-shoot? It's because of the lack of control of the aperture (f-stop) and hence depth of field.

In many cases, I take advantage of removable structures that might otherwise block a desired angle (**figs. 4** and **5**). In some cases, an access door or hatch comes in handy. One section of my layout is five feet deep, so I installed a hinged fold-up door that is barely noticeable, yet provides enough room to set up a tripod. See **fig. 8.**

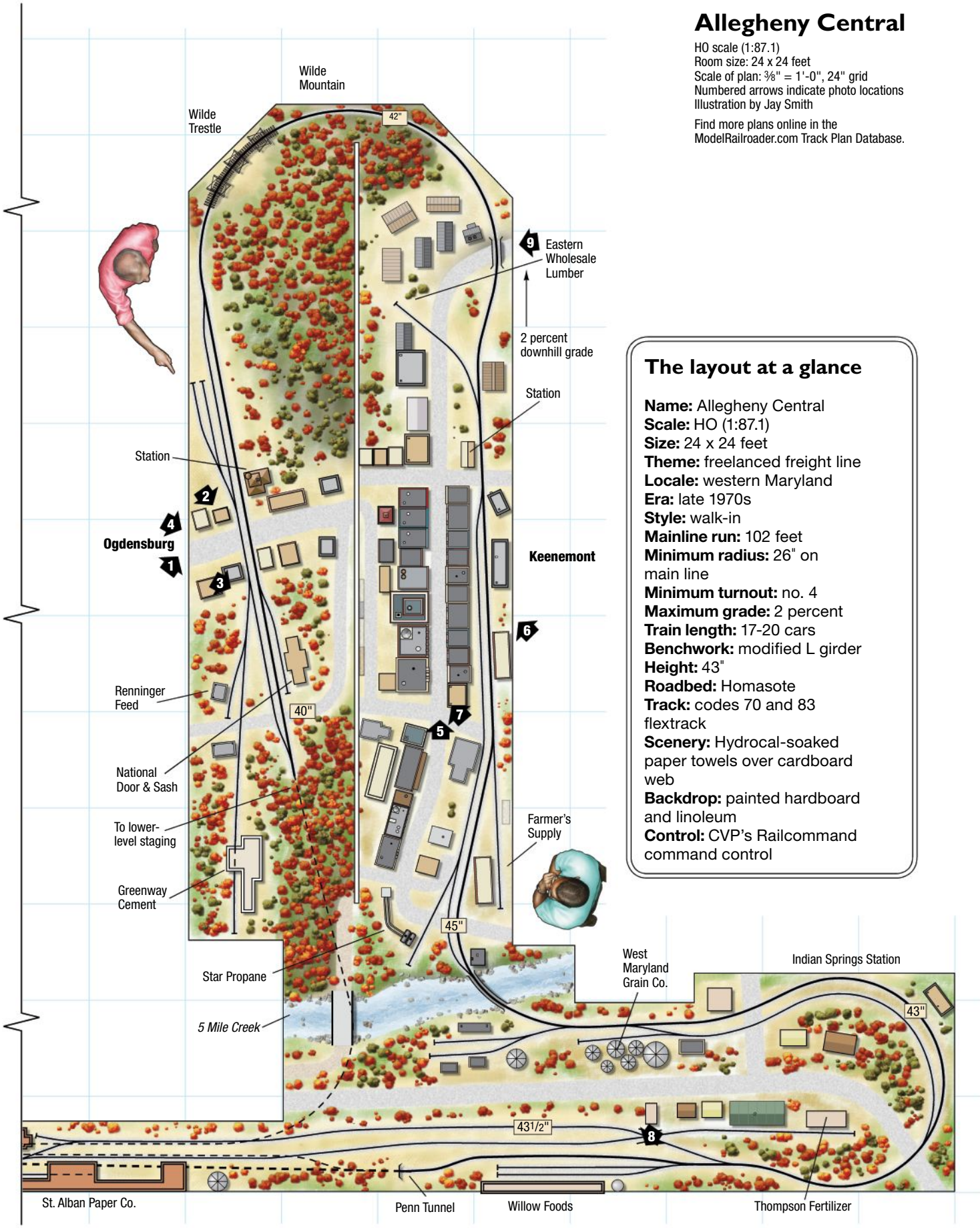
One ideal vantage point for camera placement is the edge of the layout. As shown in **fig. 9**, installing the fascia so it doesn't extend above the layout edge allows for close camera placement. **Figure 6** depicts how elevating the main line to make it higher than



Allegheny Central

HO scale (1:87.1)
Room size: 24 x 24 feet
Scale of plan: ⅜" = 1'-0", 24" grid
Numbered arrows indicate photo locations
Illustration by Jay Smith

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



The layout at a glance

Name: Allegheny Central
Scale: HO (1:87.1)
Size: 24 x 24 feet
Theme: freelanced freight line
Locale: western Maryland
Era: late 1970s
Style: walk-in
Mainline run: 102 feet
Minimum radius: 26" on main line
Minimum turnout: no. 4
Maximum grade: 2 percent
Train length: 17-20 cars
Benchwork: modified L girder
Height: 43"
Roadbed: Homasote
Track: codes 70 and 83 flextrack
Scenery: Hydrocal-soaked paper towels over cardboard web
Backdrop: painted hardboard and linoleum
Control: CVP's Railcommand command control

Fig. 6. Having the railroad elevated on a solid bed of ballast and the backs of stores perched on even higher ground makes it possible to record simple yet realistic, eye-catching views such as these auto racks passing through town.

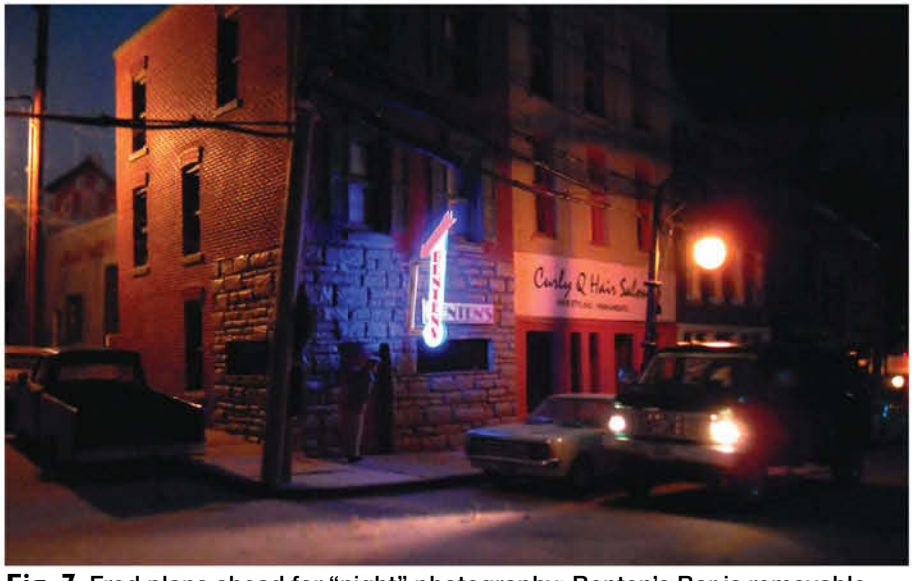


Fig. 7. Fred plans ahead for "night" photography: Benten's Bar is removable, which provides ready access to light bulbs, wiring, and electronics.

foreground scenery and structures can also be quite helpful.

Modeling considerations

Good modeling can really bring a layout to life, and this is especially important if you plan to do lots of photography. There's no escaping the scrutiny of a camera lens, especially on close-up shots.

Whether or not you are photographing your layout, it's vital you establish a sense of time and place. If, for example, your layout is set in the late 1970s, you will probably have plenty of vehicles from that era. You might have a number of automobiles from the 1960s, and maybe a few from the '50s. Anything much earlier or later would look out of place.

Structure selection plays an important role in establishing a setting, too. Try to keep buildings simple. The more commonplace your structures appear, the more realistic they become. Scratchbuilt structures are often a better choice, as they avoid the all-too-familiar-kit syndrome. In my fictitious town of Ogdensburg, Md., my goal was to portray a town in an economic slump. The modified City Classic gas station in **fig. 4** is an example. Note there are few external details surrounding the model. The weathering and boarded-up windows tell the story.

I avoid overcrowding. With the number of excellent kits on the market, it's tempting to try to fit as many as possible into a small space. However, too many closely spaced structures are distracting.

I am also careful with details. We have been told time and again about the importance of adding details to our scenes, but it's easy to overdo a good thing. Some of the larger craftsman kits, for example, have so many detail castings that they can make a scene too busy. In any photograph, it's important to have a center of focus – that is, something that will attract the eye. A photograph loses its impact if it causes the viewer's eye to wander.

Consider the placement of items such as utility poles, fences, billboards, and so on, especially if you plan to conduct operating sessions. Delicate models should be placed well behind busy track and out of reach if possible.

Plan ahead to capture night shots like the scene shown in **fig. 7.** Illuminated structures have bulbs, and bulbs eventually burn out. Most of my buildings have removable roofs for easy light changes and cleaning. On structures set farther back and out of reach, I installed tubing that runs through the floor. When a bulb burns out, I simply feed another one up through the tube.

Special effects

I use a fog machine to produce the fog or hazy-day effects evident in many of my photographs. Because I planned on shooting lots of pictures, the fog machine was a good investment. I bought it online some time ago, along with a gallon of smoke fluid, and I have yet to use even a quarter of it!

The machine will fill a room very quickly with a dense fog, so I use it sparingly. But the vapor is odorless, non-toxic, and harmless to scenery and structures. Keep in mind, though, that I'm using this in my garage.

One other problem you may encounter with a fog machine is streaks or waves of vapor. This effect results from using too fast a shutter speed. I shoot at a minimum of two seconds, another reason to use an SLR over a point-and-shoot camera.

Camera choices

Speaking of cameras, the type of camera you use and the type of viewfinder it has are of major importance for good model photography. Some locations on the layout may not allow easy access, and you may have to use a remote shutter release in some cases. A large LCD viewfinder on the back of the camera is very helpful.

My Nikon D70 has an eye-level viewfinder, and I have a right-angle

Fig. 8. This view of a pair of Allegheny Central Alco Centuries passing the Willow Foods plant was taken from an area accessed by a hinged, fold-up door with the camera on a tripod.

attachment that fits over the eyepiece. For tighter places, I use a much smaller Nikon Coolpix. However, the Coolpix does not have manually adjustable aperture and shutter speed. This can be a problem, especially where depth of field is concerned. Ideally, you want a camera with a lens that will stop down to a small aperture to maximize the distance that the subject matter will be in focus.

If you're in the market for a digital SLR, look for one rated at 8 megapixels or greater. Generally, these will produce an image of sufficient resolution for publication. The goal is an image file that measures 10 inches (3,000 pixels) across the long edge when the resolution is set at 300 dots (pixels) per inch, which is the printing standard.

Some newer point-and-shoot cameras that are fully adjustable can meet these specifications.

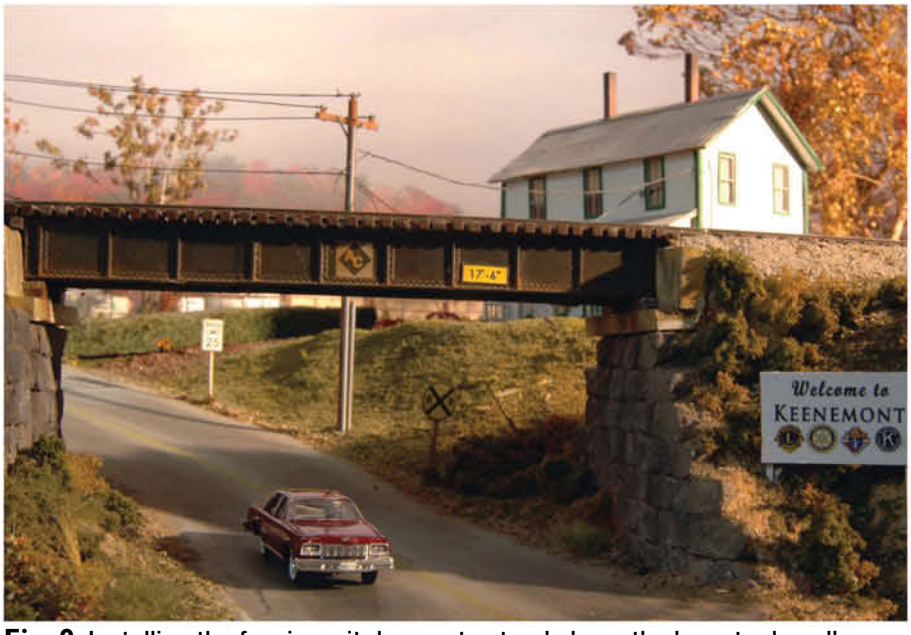


Fig. 9. Installing the fascia so it does not extend above the layout edge allows the camera to be placed low and close to evocative details such as the sign welcoming strangers to Keenemont.

Photography vs. operation

There is a school of thought that believes well-scenicked layouts and operating layouts are incompatible. They aren't; planning is the key to having them both. A carefully planned layout will allow for trouble-free operation and offer your operators a realistic setting. **MRP**

Fred Lagno is a retired airline pilot with a lifelong passion for model railroading and photography. He is a 2-time recipient of the Maryland State Arts Council Award for Visual Arts: Photography. He resides in Maryland with his wife, Sue, and daughter, Hannah. More of Fred's photography is featured in his hardcover book, Changes – A Model Railroad Comes to Life, *available directly from him at www.modelrailroad-photography.com/books.html.*

Modeling a modern short line

Don't let the age of its diesel fleet fool you

By Larry DeYoung with John Roberts//Photos by Larry DeYoung unless otherwise noted

Imagine a railroad set in the 21st century that operates a fleet of powerful diesel locomotives dating to the 1960s. It's not a museum line, and there's no sentimentality associated with its Alco and Montreal Locomotive Works motive power. Moreover, it operates over remnants of several predecessor railroads, much like a freelancer who wants to model some of this and a bit of that.

This may seem like someone's fanciful idea of an interesting model railroad composed of numerous Layout Design Elements, and it would indeed be intriguing to model. It's the Western New York & Pennsylvania RR (WNYP). I'm an officer of the prototype railroad as well as a model railroader, and I'd like to share its story and some ideas and suggestions with you about modeling it in HO scale.

Crossroads at Olean

The railroad lines that cross at Olean (pronounced Oh-lee-ann), N.Y., just north of the Pennsylvania border in the western part of the state, are a natural for modeling. They can represent the halcyon days when the main line of the Erie RR and a major route of the Pennsylvania RR crossed at X Tower, along with a PRR branch. Mergers brought Penn Central and Erie

A Montreal C-630M, appropriately numbered 630 and of Canadian Pacific and Arkansas & Missouri heritage, leads the westbound Hornell Turn near Cuba, N.Y., on July 26, 2009. The trailing units are rare Century 430s built for the New York Central.

No. 43, an M-636 – built by the Montreal Locomotive Works for the Canadian National and more recently employed by the New York, Susquehanna & Western – and two stable mates accelerate train DFT-1 past a former Pennsylvania RR signal at North Driftwood, Pa., on June 21, 2011. Pete Swanson photo

A Bowser HO scale C-630 in former Arkansas & Missouri paint, possibly the new standard for Western New York & Pennsylvania 6-axle units, and Atlas C-424 no. 421 in the scheme shared with Livonia, Avon & Lakeville and Bath & Hammondsport units, photographed on Ken McCorry's PRR Buffalo Line, show what a model railroad based on the accompanying track plan would look like.

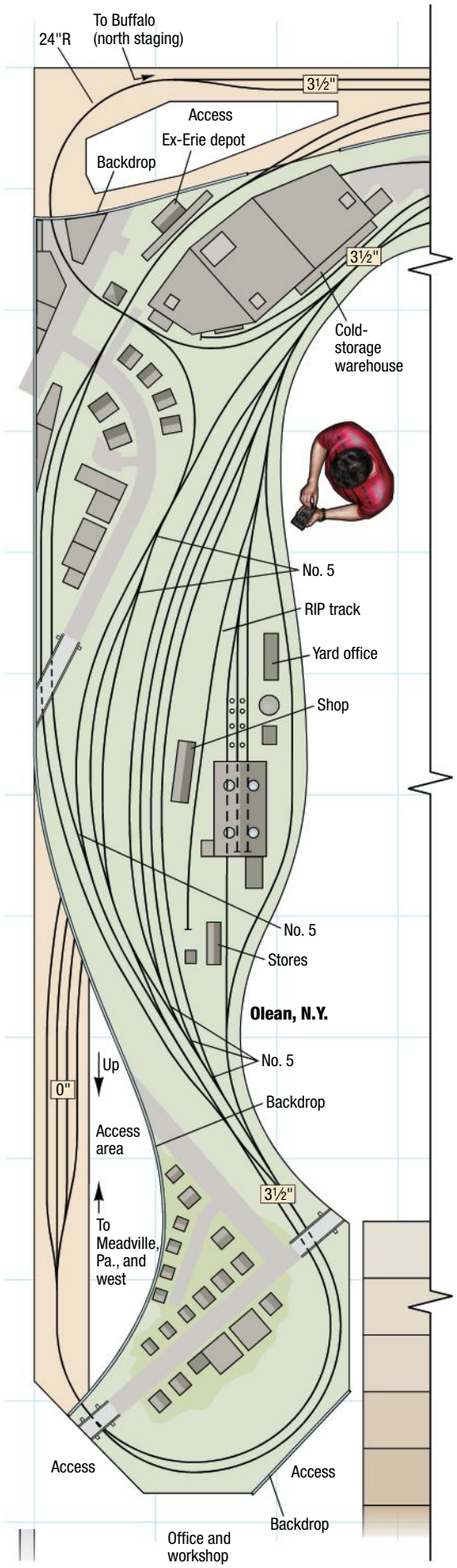
Lackawanna, the elimination of the PRR branch, and eventual bankruptcy.

What followed was Conrail, and in its process of paring itself down for profitability, Conrail reduced the mainline status of the former Erie, although it concentrated traffic on the former PRR "Buffalo Line," the north-south route through this small city. After Norfolk Southern and CSX split up Conrail, NS emerged with both of the routes, but eventual strategic line choices saw both lines drop from favor in Norfolk. During the first decade of this century, both routes became part of the same shortline system.

One could model any of these eras; all have their appeal. In fact, one could model *all* of the eras by switching structures and fleets of rail and highway equipment. Some compromises would be necessary, since both lines shrank over time from double- to single-track main lines. We'll concentrate here on the shortline era, because it's the most recent and the easiest to model in a relatively small space.

A brief look back

When the Livonia, Avon & Lakeville RR and a group of partners formed the Western New York & Pennsylvania (WNYP) Railroad in 2001, it took over a



former Norfolk Southern route between Hornell, N.Y., and Corry, Pa., more than half of which was out of service. In 2002, it added 46 contiguous miles from Corry to Meadville, Pa., that had been owned by a local governmental authority and operated by a nearby short line.

In 2005, WNYP expanded by leasing the Erie's Oil City branch between that city and Meadville. Although the details are complex, nearly all of this track had been part of the Erie and Erie Lackawanna railroads before becoming part of Conrail and then NS. The WNYP expanded again in 2007 by leasing from NS the one-time PRR (and, even earlier, the original Western New York & Pennsylvania RR) Buffalo Line from Machias, N.Y., to North Driftwood, Pa.

The WNYP RR is an exercise in rural economic development and infrastructure preservation. It's a partnership among the investors in the Western New York & Pennsylvania RR and the local and state governments to maintain rail freight access in a low-density market. The map above shows the railroad as it now exists.

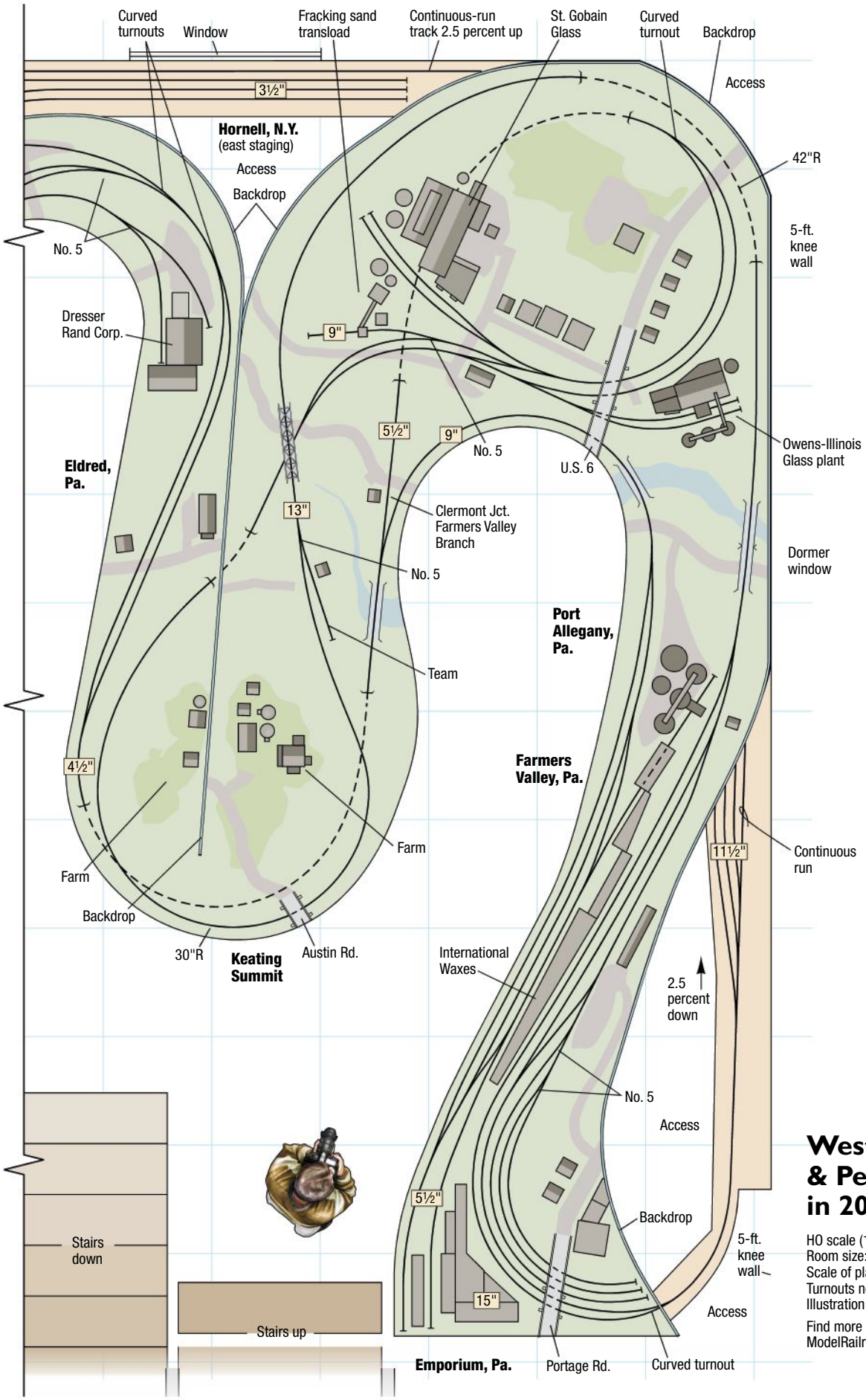
Freight service is provided on all these lines as needed to meet customers' requirements. There are two operations bases: Meadville Yard and Olean Yard. (Olean is also the location of the company's locomotive and car shop.) Trains radiate from the two yards, usually three days a week, from Meadville to Oil City, Rouseville, and Falconer, N.Y.; and from Olean to North Driftwood, Hornell, N.Y., and to Falconer. At Falconer, the Meadville and Olean crews swap trains. The line to Machias is served infrequently.

The Farmers Valley branch usually operates three days a week to serve the company's largest customer, the International Waxes paraffin refinery. However, until January 2012 the heaviest freight was on the ex-Erie "main line" from Meadville to Hornell. As often as once a day, Norfolk Southern ran a unit coal train or returned empties the length of the route.

This is a railroad ripe for modeling, especially by a "lone wolf" or someone who has only a small group of layout operating compatriots. It's a light-density railroad, so you won't see one train after another, nor will you see an

The track plan at a glance

Name: Western New York & Pennsylvania RR
Scale: HO (1:87.1)
Size: 20'-4" x 23'-6"
Prototype: WNYP
Locale: western New York and northwestern Pennsylvania
Era: today
Style: single deck
Mainline run: 105 feet
Minimum radius: 24"
Minimum turnout: no. 5
Maximum grade: 2.5 percent
Train length: 8 to 10 feet



Western New York & Pennsylvania RR in 2011

HO scale (1:87)
Room size: 20'-4" x 23'-6"
Scale of plan: ⅜" = 1'-0" (24" grid)
Turnouts no. 6 except where noted
Illustration by Kellie Jaeger and John Roberts

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

Ron Lundstrom took this evocative shot of fog shrouding the former oil refinery structures at Farmers Valley, Pa. It's now operated by International Waxes and produces paraffin from petroleum that's shipped in from Utah.

The converted refinery includes a wide range of production structures from many different eras. Rusting piping and equipment indicates former petroleum refining processes that are no longer in operation but remain on site.

The maze of overhead plumbing lines and catwalks linking numerous current and abandoned production systems and storage tanks would make a fascinating model industry.

Overhead piping transfers raw materials and finished products between the plant and these tank cars. The overhead rack is similar to Walthers' HO Cornerstone kit.

Learning points

- The WNYP offers a chance for diesel fans to model a modern era but use locomotives from the 1960s.
- The WNYP is an amalgam of several previous railroads and exhibits characteristics of each predecessor.
- Keating Summit, included in this plan, is the railroad's major hurdle.
- A variety of industries are served by the railroad, but boxcars are rare.
- Needed WNYP models have been offered in HO.

Amtrak train or a parade of double-stack containers. But it has the NS unit trains, serves an interesting and diverse customer base, tackles some tough geography, and has museum quality motive power in daily use.

Customers and geography

In addition to the coal trains, which traverse the main line end-to-end, the Western New York & Pennsylvania directly serves customers in glass, paving, oil and natural gas drilling, wax, cheese, animal feed, furniture, refractory brick, steel, tile, packaging, and chemicals industries. The predominant car types are covered hoppers and tank cars, although one can see open hoppers, gondolas, center-beam flat cars, and refrigerator cars regularly. Ordinary boxcars are rare, and container or piggyback intermodal traffic doesn't use the railroad at all.

The east-west main line follows scenic river valleys across the western part of New York State's "Southern Tier" of counties. From Hornell to Salamanca, it's the historic route of the original Erie RR. It travels between the Great Lakes and Allegheny River drainage basins, crossing several divides on modest (mostly less than one percent) but sustained grades. West of Salamanca, the line is on the route laid out by the lightly built Atlantic & Great Western Ry., which I characterize as being built as a "6-foot-wide, narrow-gauge" railroad – it clung to the lay of the land. Although the Erie invested in alternate routes and better grades, the line was never ideal for long, fast freights and it presented operating challenges until the advent of the diesel.

The Oil City branch was restricted to switchers until Conrail took over. To serve on-line customers at the end of the branch, "Big Blue" chose to upgrade the former Erie line and abandon the former PRR route to Oil City. But the line is still an active branch, next to French Creek for much of its journey. The branch encompasses bits of NYC and PRR as well as Erie

in serving the customers in the Oil City-Franklin area.

WNYP's real geographic challenge came when it leased the Buffalo Line from Norfolk Southern in 2007. With that acquisition came the Keating Summit grade, the steepest mainline grade on the former Conrail. It's a short (4-mile) but taxing 2.6 percent climb northbound from Emporium. Southbound from Port Allegany, there is a brief but intense 4.4 percent grade, followed by four miles of 0.5 percent and then 2.4 miles of 1.6 percent. The northbound grade is the big headache, as that's the direction of many loads coming from the NS interchange at North Driftwood.

The locomotive fleet

Since the Livonia, Avon & Lakeville RR that formed it has operated an all-Alco roster since about 1970, the Western New York & Pennsylvania also became an Alco road. The units were cheap to acquire, and the railroad's mechanical staff was familiar with them. With the addition of the Buffalo Line, however, things changed for WNYP. Until then, it had operated only 4-axle Century-series Alcos. But operations over the Keating Summit grade demanded motive power with greater lugging power in fewer units.

The railroad found a fleet of 6-axle Canadian Alcos, built by the Montreal Locomotive Works and Bombardier. Most of the units were in rough condition, having been thoroughly beaten up by their prior U.S. owner. But the combined shop forces of the Livonia, Avon & Lakeville, WNYP, and affiliated B&H Rail Corp. plus some outside help, were able to put the big units back into regular service.

Typically a dozen of these mixed 4- and 6-axle units are operating in regular service at any one time.

Modeling the WNYP

There are several segments of the Western New York & Pennsylvania RR that could inspire a model railroad. The line from Hornell to Olean is especially scenic and can feature the heavy Norfolk Southern coal trains slugging it out on the eastbound 1-percent grade. The Oil City branch has quite a bit of local work, some of which resembles old-fashioned switching puzzles because the remaining tracks are made up from segments of several previous railroads that were never intended to be coordinated.

John Roberts and I selected the Keating Summit route of the Buffalo Line, with its branch to Farmers Valley, for this track planning project. It features the heavy grades of Keating Summit and the highest density of on-line traffic on the WNYP, with glass sand customers in Port Allegany, gas drilling suppliers at Emporium and Port Allegany, a paving supplier at Turtlepoint (not to mention an old general store), the paraffin wax plant on the branch at Farmers Valley (on a remaining segment of a ghost railroad, the old Pittsburg, Shawmut & Northern), as well as the yard and some industry in Olean proper.

It's also possible to shift eras and model Norfolk Southern, Conrail, Penn Central/Erie Lackawanna, or Pennsylvania/Erie eras. Though the existing yard in Olean was built by Conrail in the 1980s, there previously was a PRR/PC yard on the long-gone Salamanca Branch in a similar location. In fact, due to space considerations, the yard we included in the track plan is closer to the old one than the new.

The accompanying track plan depicts an HO layout sized to fit in a loft above John's 2-car garage. Its operating scheme is based on realistic point-to-point operations with the possibility of a continuous run through the staging yard. Trains enter the layout from Meadville staging (representing the Norfolk Southern and Buffalo & Pittsburgh interchange), Hornell (NS and Canadian Pacific interchange), and North Driftwood (NS interchange); cars are sorted out; and trains depart for the same points as well as Farmers Valley. In addition, NS coal trains run through from Meadville to Hornell.

Western New York & Pennsylvania trains to and from Meadville will have 4-axle power; trains to Hornell may have either 6- or 4-axle power; trains to North Driftwood will have 6-axle power; and trains to Farmers Valley will have a single 4-axle unit. Units aren't assigned to certain jobs, so any unit may appear on nearly any assignment (no 6-axles to Farmers Valley, though). Because this is intended to be a layout operated by no more than three or four people, our major compromise is in aisle width.

WNYP locomotive roster

No.	Type	Notes
RRPX 41	M-636	CN, QCM 41, NYS&W
RRPX 43	M-636	CN, QCM 43, NYS&W
RRPX 85	M-636	QCM 85, NYS&W
421	C-424m	RDG, CR, D&H/G&W (2000 hp)
426	C-424	BRC
430	C-430	NYC, PC, CR, NYS&W
431	C-430	NYC, PC, CR, M&E
432	C-430	NYC, PC, CR, M&E
433	C-430	NYC, PC, CR, NYS&W (in Olean shop)
630	C-630M	CP, A&M
631	M-630	CP, MNNR
636	M-636	CN, QCM 45, NYS&W
637	M-636	CN, QCM 47, NYS&W
638	C-636M	QCM 75, NYS&W
RRPX 4223	C-424	CP, M&E (out of service)
RRPX 4228	C-424	CP
RRPX 4264	C-425	SP&S, BN, MCRR, M&E

Previous owners:
A&M: Arkansas & Missouri
BRC: Belt Ry. Co. of Chicago
M&E: Morristown & Erie
MCRR: Massachusetts Central
MNNR: Minnesota Commercial RR.
NYS&W: New York, Susquehanna & Western
QCM: Quebec Cartier Mining
RRPX: Rail Power Leasing, LLC
Upper-case M indicates Montreal Locomotive Works
Lower-case m is "modified."
– *Larry DeYoung*

A M-636 on train DFT-1 spots covered hoppers of glass sand at the Pittsburgh Corning plant in Port Allegany, Pa., on May 22, 2010. Pete Swanson photo

These Burlington Northern Santa Fe mechanical reefers are spotted at the cheese transloading warehouse in Cuba, N.Y., on August 8, 2006.

Operating the WNYP

A typical eastbound road train OL-2 will arrive in Olean three days a week, having swapped consists with ME-2 from Meadville at Falconer. Its typical consist includes empty center-beam lumber cars, tank cars of hot paraffin wax, a few empty tank cars for loading with gas-well brine, and small covered hoppers containing sand and other products used in the natural gas drilling business.

Local train DFT (Driftwood Turn) to North Driftwood will depart after the classification of cars from OL-2, taking the covered hoppers to set out at the Port Allegany and Emporium sand transloading facilities and brine tank cars to set out at Eldred or Emporium for direct transload from trucks. This train will also stop at Turtlepoint to pick up any empty open-top hoppers that have been released by the Hawbaker stone terminal.

At Port Allegany, it will set out two or three covered hoppers for Pennsylvania General Energy, along with the occasional gondola of drilling pipe. Then it will stop to place or pull a covered hopper or two at the Owens-Illinois glass block plant as well as cars for the Saint Gobain glass bottle plant before moving on to another gas-drilling transload south of town.

Then comes the hard work of surmounting Keating Summit before making the downhill run on the other side using full dynamic brakes. At Emporium, the train will work the transload site before moving on to North Driftwood. In the Conrail era and before, there was another line that branched off on a wye at Emporium that could be represented on the layout if space allows. Emporium also was a helper base for PRR, PC, and Conrail.

The returning Driftwood Turn will bring loaded sand and soda-ash cars for the glass plants at Port Allegany, BNSF or Union Pacific mechanical refrigerator cars for the cheese plant at Cuba on the Hornell line, and aggregates in old open-top hoppers for the Hawbaker plant at Turtlepoint.

The train will work the facilities along the way back to Olean. Upon arrival at Olean, the train is broken up and cars forwarded to destinations beyond. The empty drilling-sand cars and loaded brine cars are classified for Meadville and the reefers will be sent to Cuba on the line to Hornell.

Crew OL-1 will operate the Hornell Turn, which runs after DFT has been classified, usually the next day. It takes empty center-beam cars to the CP and the cheese cars to Cuba. Seasonally, it will be returning empty Cargill salt covered hoppers to NS and come west with loaded salt cars, loaded center-beams, and empty reefers. All of these cars are then classified for OL-3, the road train to Meadville.

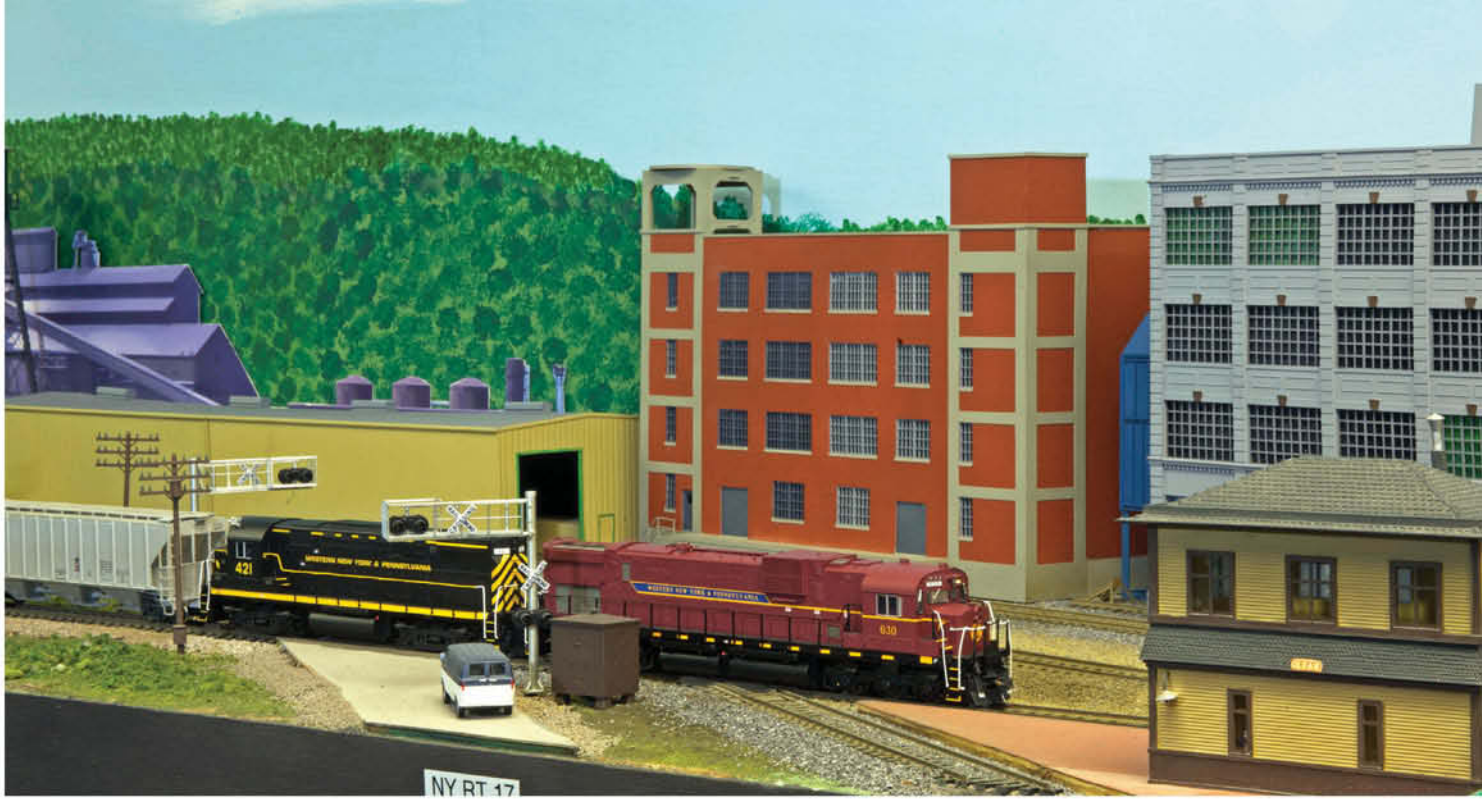
The reason the reefers arrive by one route and depart on another is, when loaded, they exceed the weight limits on both WNYP and NS on the Meadville Line. They are therefore delivered by NS to WNYP at North Driftwood, an unrestricted route. The primary interchange between the two lines is Meadville, however, so the cars are returned by that shorter route.

All the loaded paraffin wax cars and some of the brine cars are taken by the Farmers Valley Turn. It runs up to three nights a week to deliver loads of raw paraffin to International Waxes (IWI) at the one-time Quaker State refinery in the remote village of Farmers Valley. The brine cars are left outside the fence of the wax refinery for loading from tank trucks. The single Alco on the turn then switches the IWI plant, placing the loads and pulling the empties as well as loads of purified paraffin (different cars to avoid contamination) for shipment to IWI's rail customers off-line. Operation of this train normally keeps its crew busy for a 10- to-12-hour shift.

Because all operations are sequential, one person can legitimately operate this layout. However, it's more fun (and more sociable) if the operation involves up to three people. To expand beyond that, short of doubling up on jobs, would bring a lot of lounge time for someone or an increase in intensity of operations beyond reality (which could add a lot of fun and interest).

WNYP equipment

Models of two WNYP locomotives have been offered in HO: Bowser



Another photo of WNYP models on Ken McCorry's layout shows a scene that closely resembles the WNYP territory.

produced C-630M no. 630; Atlas offered C-424M no. 421. Atlas also produced a Livonia, Avon & Lakeville C-424m, one of which (no. 424) operates regularly on WNYP while C-430 no. 433 remains in the LA&L Lakeville Shop. At this writing, Bowser has announced an RRPX M-636 and new C-430s are in the works.

Drilling sand generally comes in 2-bay, 100-ton covered hoppers from BNSF and Union Pacific and their predecessor roads, although many types of relatively modern covered hoppers can be seen in this service. The most modern UP (ARMN) mechanical reefers are available from BLMA and Exact Rail but may need to be relettered. Suitable tank cars are available from Walthers, Athearn, and others. It's appropriate to mix up the tank car owners, but most of them are generic black.

Inbound wax cars are placarded as "hot" (high-temperature) loads. The brine cars carry no placards and should be heavily weathered, since they're nearing the end of their service lives. The open hoppers used in the stone trains are also old-timers nearing the end of their years and should be battered, heavily weathered, and touched-up with "patch" lettering jobs.

Trackside detail

Although much of the former Conrail line came to WNYP via NS, the influence of its earlier owners is present in various clues along the right-of-way. Former PRR stations still stand at Olean and Emporium, and remnants of old communications systems stand along the line in the form of abandoned pole lines, telephone boxes, and characteristic signals. Mileposts and whistle posts are also characteristic of the original owners, but they're often duplicated with newer reflective steel signs mounted on fence posts.

Dressed in its fresh WNY&P paint scheme, former New York Central Alco C-430 no. 430 awaits the return of visitors touring the operations office and engine terminal at Olean, N.Y. The LA&L business car 100 *Traveller* is assigned to carrying the visitors on today's tour of the railroad.

Although the former Erie type D three-light signals and type G searchlights have been vandalized, many of them still stand. Until early 2011, the PRR position-light signals along the Buffalo Line were still in service and can be seen in scenes taken along the WNYP in the recent action movie "Unstoppable." Atlas PRR signals could be used. The interlocking at Olean is still guarded by Erie searchlight signals on the Hornell-to-Meadville line and by PRR position lights on the Buffalo Line.

For more information, refer to Karl Zimmermann's WNYP article in the June 2012 *Trains* magazine, and see www.lalrr.com and gold.mylargescale.com/Scottychaos/NY-Alcos/. **MRP**

Larry DeYoung is vice president of WNYP and a member of its board of directors. He is a past president of the Erie Lackawanna Historical Society and a model railroader since 1954; he is modeling the EL and PRR in O scale.

John Roberts is a former president and currently the Eastern Director of the National Model Railroad Association. He models the Chesapeake & Ohio in O scale.

BEFORE

Before and “during” images show the tunnel, ridge, wall, and access panel that were removed to “daylight” the south end of the north staging yard at Midland, W.Va. A road overpass across the yard would signal the end of the scenicked yard throat. The ladder was replaced with handlaid turnouts.

AFTER

Design a space-saving freight yard

Combining classification and staging yards saves space and alleviates an operating headache

By Tony Koester//Photos by the author except where noted

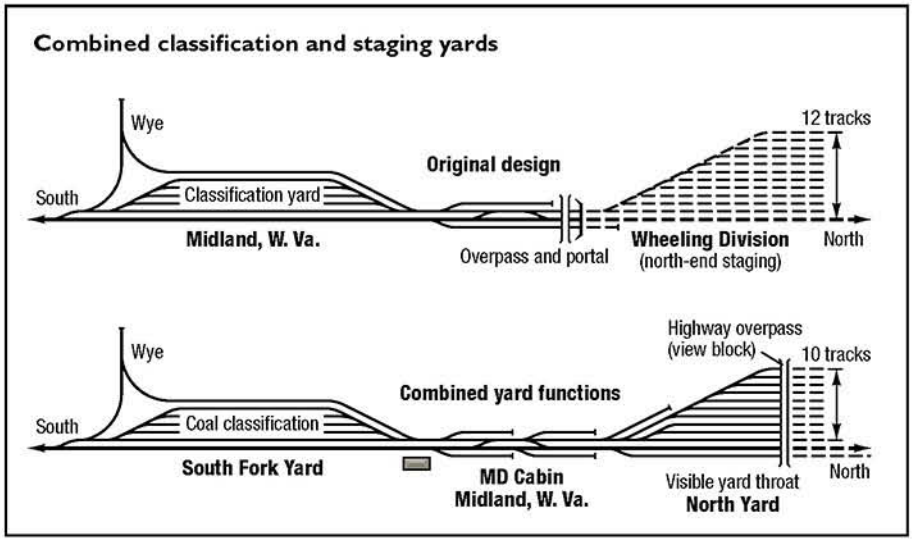
In the 2012 edition of *Model Railroad Planning*, we discussed where to locate passive staging and active fiddle yards. Now let's look at the advantages of combining a staging yard with an active classification yard, thus serving two functions in the space needed for only one.

Yard functions

A classification yard is where freight cars are sorted into blocks for specific destinations, much like mail is sorted into pigeonholes representing different addresses. Yard track 1 might be reserved for inbound trains, track 2 for cars going out on a local (way) freight to towns short of the next division-point yard, track 3 for cars headed to or beyond that division point, and track 4 for "propers" – cars billed to destinations in the same town or city in which the classification yard is located. These track assignments may be well established or could change during the day as needed to classify cars for other destinations.

A staging yard is a place where complete trains are made up prior to the start of an operating session. After the clock starts, trains move out of or into staging yards per a schedule or in a given sequence. It's akin to the off-stage "wings" of a theater.

A fiddle yard is like a staging yard, but is active during the operating session. Here incoming trains are rebuilt into new trains, either by hand or with a switch engine, thus providing a virtually endless supply of new trains. Operating sessions can therefore continue until someone cries "Uncle!" See the "Rear Platform" commentary on page 98.

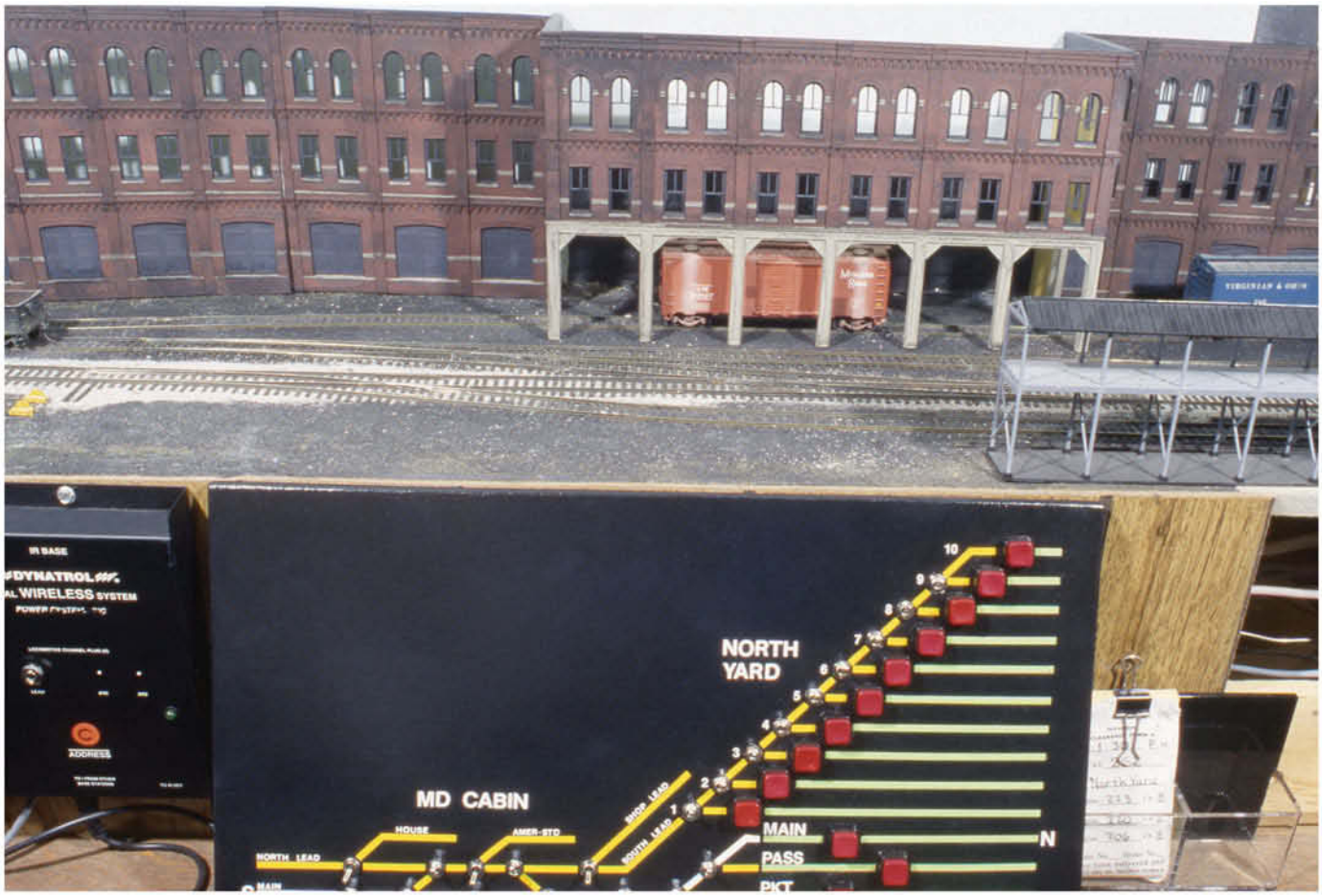


The problem with Midland

In MRP 1998, Allen McClelland described how he combined what had been separate classification and staging yards into a single yard. He had several reasons for doing this, including accommodating longer trains as his Virginian & Ohio transitioned into a more modern era. That, and a troublesome turnout located in the hole between the railroad room and dispatcher's office, pointed to a better idea: combine the classification and staging yards into one. This would move the yard ladder into the open, making it easier to maintain, and avoid having trains negotiate a hidden yard throat.

Just prior to dismantling my Allegheny Midland layout, I was in the process of emulating his example, but with slightly different goals in mind. As originally designed, the Midland Road had a division-point yard located at the midpoint of the railroad (actually, the north end of the modeled portion of the AM) in a small city appropriately called Midland, W. Va. Just north of Midland, the main line disappeared into a tunnel to reach the north-end staging yard, which initially represented the AM's unmodeled Wheeling Division.

Operating sessions – the most rigorous test of a railroad's design – pointed to several shortcomings. First, the yard at Midland was too small to serve as a major classification yard.



The area at Midland previously occupied by the ridge and an access panel shown in the "Before" photo on page 60 became available to expand the American-Standard plant and icing facilities. A new panel shows the revised combination classification and staging yard track arrangement, which included a main line, passing track, engine pocket, and B&O interchange.

Learning points

- A hidden staging yard can be "daylighted" and combined with a modeled classification yard to save space while avoiding the movement of trains through complex trackwork while they're out of sight.
- In the steam era, posing locomotives out in the open on many staged trains tends to look odd.
- Trains can be staged without road power attached and locomotives picked up by outgoing crews from a single ready track in sequence order.
- Making a hidden staging yard visible increases the space available for adding scenery and modeled industries.

And crews became somewhat nervous as they ran their trains into or out of the hidden north-end staging yard. If a locomotive or car derailed on a turnout, a lot of chaos could result before the problem became apparent.

The first problem was easily solved by changing the name of the area called Midland to South Fork, a southern suburb of Midland. The compact yard here became a coal-classification point, the place where mine runs began and ended their daily toil and loads were forwarded north. The north-end hidden staging yard then became known as North Yard. But that didn't solve the crews' concerns about operating trains into and out of unseen tracks.

Combining yard functions

The late Jim Boyd and I took a hard look at the problem and decided the best solution was to "daylight" the entire south end of the staging yard. I had erected the stud wall that separated it from the dispatcher's office, so tearing down this non-load-bearing wall wasn't a concern. But doing so afforded an unobstructed view of the unfinished utility room, so I built a new ceiling-height backdrop on the backside of the staging yard.

The goal here was to tear out the staging yard's commercial code 100 track and replace it with scale-size code 70 and 83 track, handlay the yard-throat turnouts, and scenic the visible part of the former staging yard to become a working (from the south end) classification yard.

Flats along the new backdrop representing the backs of stores would give it the look of downtown Grafton, W. Va., on the Baltimore & Ohio. As the photos show, this project was well along when I decided to dismantle the AM in favor of a prototype-theme railroad designed to support timetable and train-order operations.

Staging trains without engines

The major conceptual problem we pondered was one that might be less of a concern on a diesel-era railroad. In the hidden staging yard, all trains had their locomotive(s) attached and ready to head south. Now that the throat and first several feet of the yard were visible, it would look a bit strange to have up to a dozen yard tracks filled with southbound trains, most headed by steam locomotives. One or two trains might look OK, but a half-dozen or more would be a little much.

The solution was simple: Along the front side of the now-visible yard was an engine lead (pocket) to an unmodeled roundhouse. Southbound locomotives were parked one behind the other in the desired sequence. As train time approached, the engine crew would "get on" the next locomotive in line, move it through the yard throat to its train, couple on, and depart.

An inbound engine track wasn't needed, as locomotives on northbound trains would soon disappear into the portion of the yard that lacked scenery. The Midland yard goat would then remove the caboose from each arriving northbound and cut off and sort propers for Midland, shorts for the Wheeling Division Local North, and throughs billed either to the end of the main line at the Nickel Plate Road connection in Dillonvale, Ohio, and beyond, or for the branch line to Connellsville, Pa.

One change, five benefits

By opening up the south end of the previously hidden north-end staging yard, I not only added more scenery to the railroad but also ended the crews' anguish over having to enter or leave a complex hidden yard. I created a visual distinction between the coal sorting yard at South Fork and the now-visible main classification yard at Midland, and I gained space for more modeled industries in the area where the tunnel into staging had been. This included an expanded American-Standard "potty plant," a model of the Chesapeake & Ohio's handsome freight house at St. Albans, W.Va., an icing platform, and a spur on which to park the mine-branch gas-electric between runs. Last, the change removed a three-track tunnel portal that seemed a bit much for a rural West Virginia railroad.

Although some of my concerns and objectives were unique to the Midland Road, almost any railroad could benefit from a similar combination of classification and staging yards, just as Allen described back in 1998. Any yard consumes a lot of real estate, so combining two of them is a major plus, especially when the engine terminal – admittedly a scenic highlight – can also be eliminated.

But remember that during the steam era, it would not be realistic to pose a bevy of steam locomotives on the head ends of outbound trains, so an engine ready track is needed. **MRP**

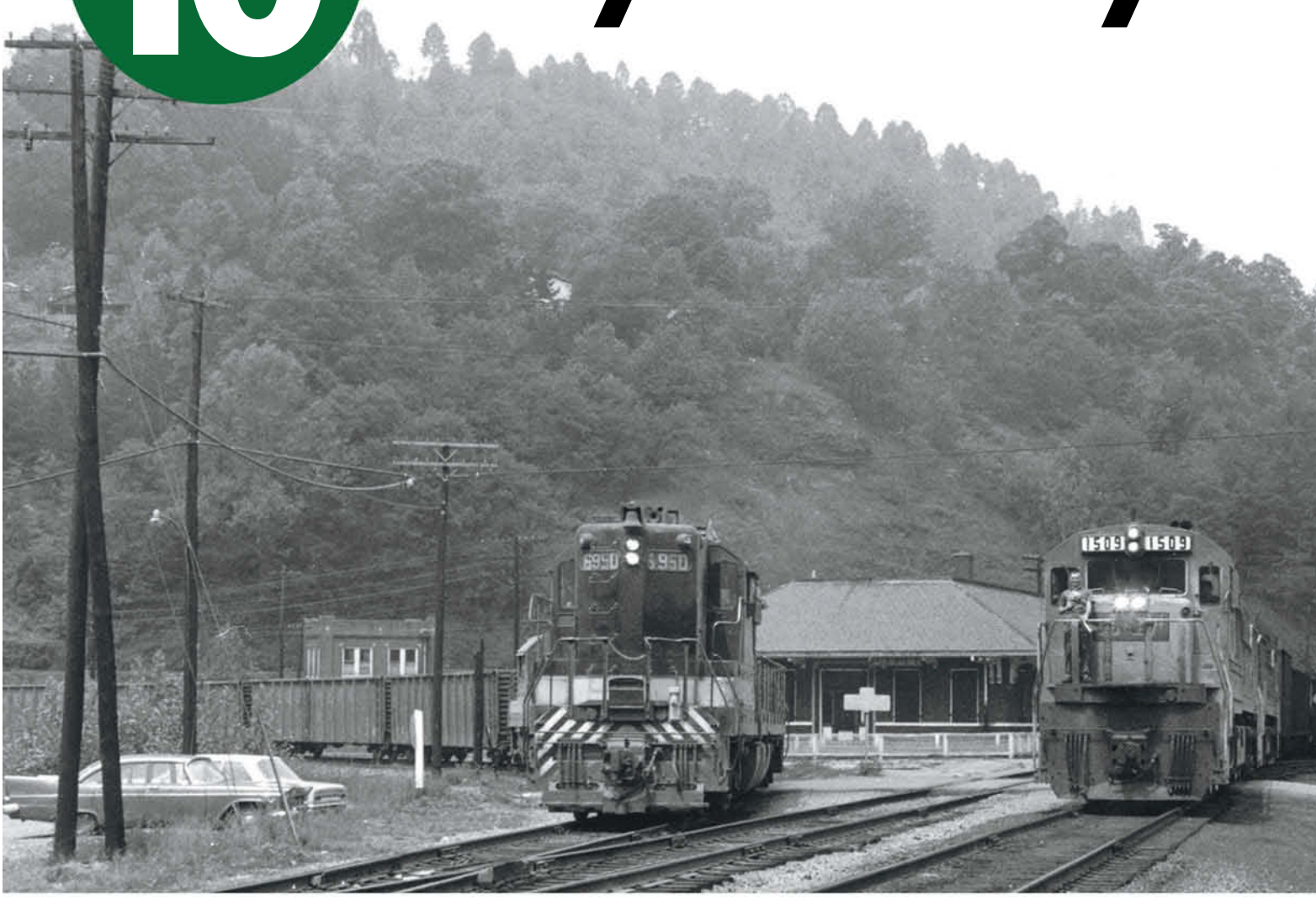
Tony Koester has been the editor of MRP since the inaugural 1995 edition. He's also a contributing editor to Model Railroader.

The hidden north-end staging yard was being rebuilt and scenicked when the AM was dismantled. Scenery would have extended from beyond the "hole in the wall" forward to the angle in the fascia near the clothes dryer.

The compact yard south of Midland, W.Va., was soon deemed too small to serve as a major classification yard, but it was adequate to handle coal traffic generated by mine runs. It was renamed South Fork.

In *Model Railroad Planning 1998*, Allen McClelland described how he combined the modeled Jimtown hump yard and the west-end staging yard to handle longer trains in a more modern era while eliminating hard-to-access turnouts. A mirror disguises the wall above the overpass. Allen McClelland photo

10 ways to wye



Louisville & Nashville freight 864 from Norton, Va., to Corbin, Ky., meets Southern First 88, a coal turn from Andover to Yuma, Va., on the wye at Appalachia on May 23, 1969. Although wyes are commonplace on prototype railroads, they can be challenging to model. Ron Flanary photo

A "wye" describes an area where three turnouts are arranged in a triangle, allowing cars, locomotives, or even complete trains to reverse direction. They're commonly found where a branch leaves the main line or where two railroads cross at grade. Many interchange tracks are built as parts of wyes.

I model railroading in the Appalachians, an area teeming with branch lines and wyes. On my favorite railroad, the Interstate (later part of the Southern Ry.), there were seven wyes in 88 miles of track.

While designing prototype-based track plans to share on my website, Appalachian Railroad Modeling (www.appalachianrailroadmodeling.com), I've used several design techniques to incorporate wyes into different kinds of layout spaces. Perhaps one or two of these ideas may be just what you need to get over that track planning hurdle that's been keeping you from realizing your layout dreams.

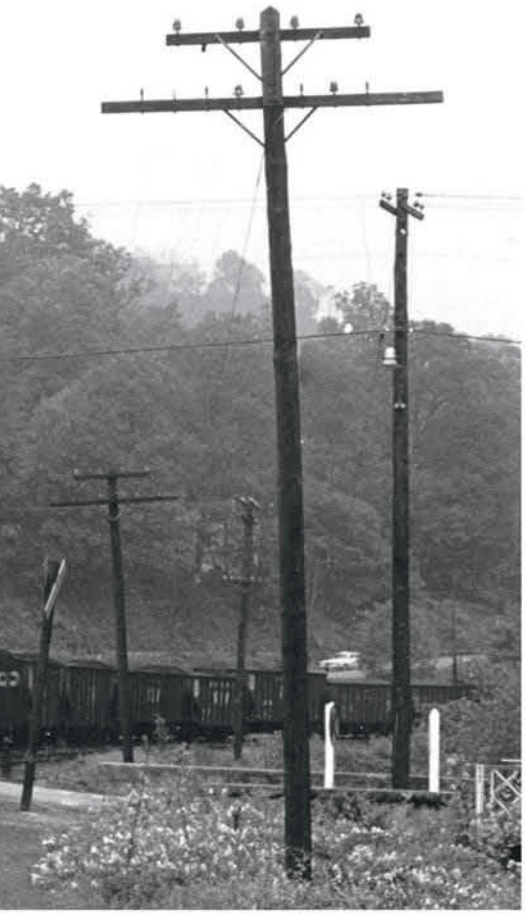
Types of wyes

On the prototype, wyes are used for two primary purposes. The first is turning locomotives. This was especially important for steam locomotives, which had to be operated facing a certain direction. Although turntables were available at major yards and facilities, wyes were much less complex and more common. On a wye built primarily for this purpose, the third or "tail" track was usually stub-ended and didn't need to be much longer than a locomotive and tender.

The second purpose for a wye is route selection at a junction. Most commonly, these wyes join one line, usually a branch, with a main line or another branch. Using a wye allows trains from either direction to enter the branch without backing up, and it lets trains coming off the branch go either direction on the main. While this type of wye is a common feature of many prototype railroads, it can present a design challenge for modelers.

Practical solutions to a common track-planning problem

By Dan Bourque
Layout photos by the author



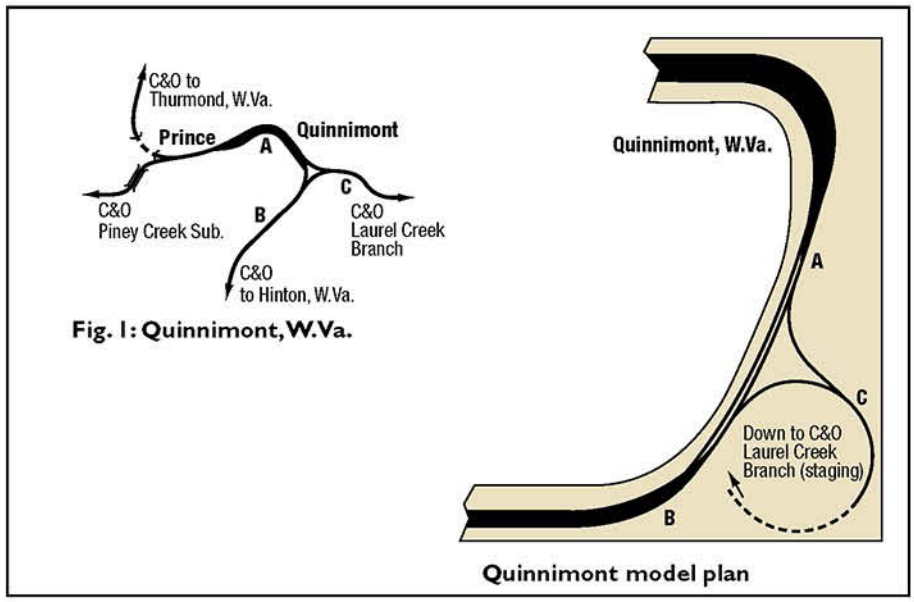


Fig. 1: Quinnimont, W.Va.

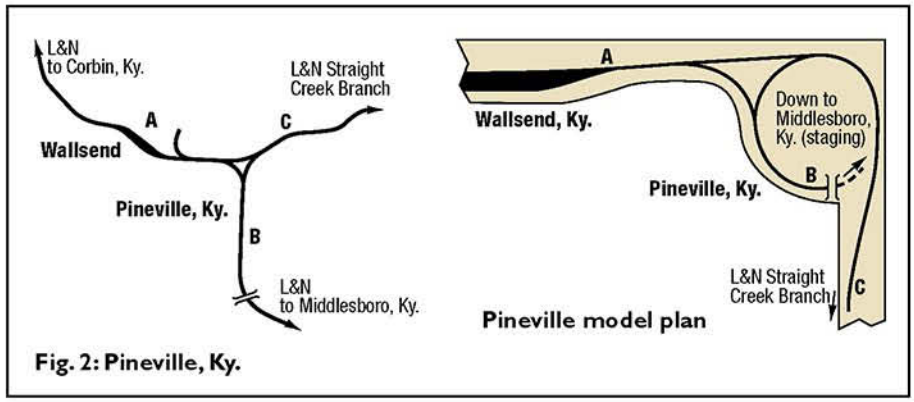


Fig. 2: Pineville, Ky.

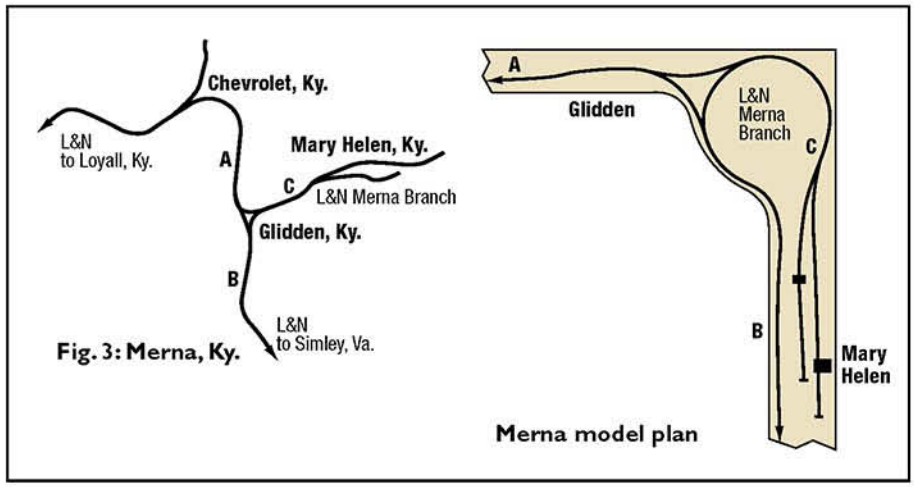


Fig. 3: Merna, Ky.

Wrestling with Murphy

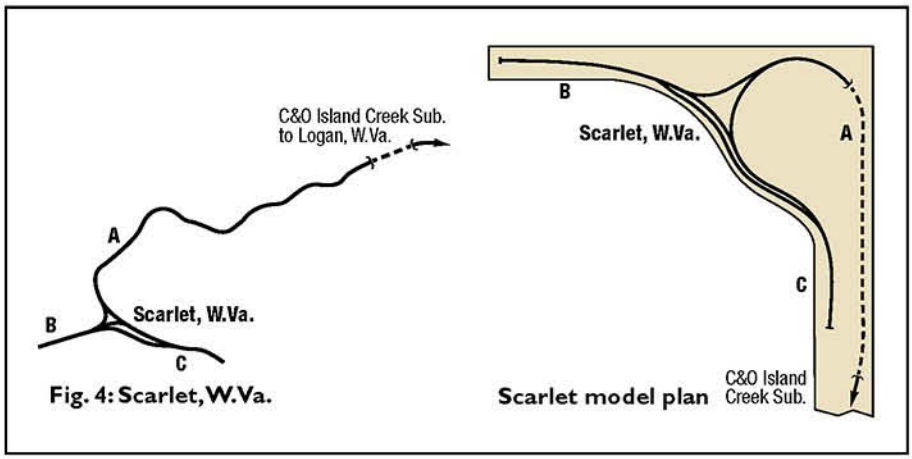
The routing type of wye is a difficult proposition to incorporate into a track plan for one primary reason: Our layouts are normally designed in a linear fashion, with the main aisle following the main line. A wye disrupts that path.

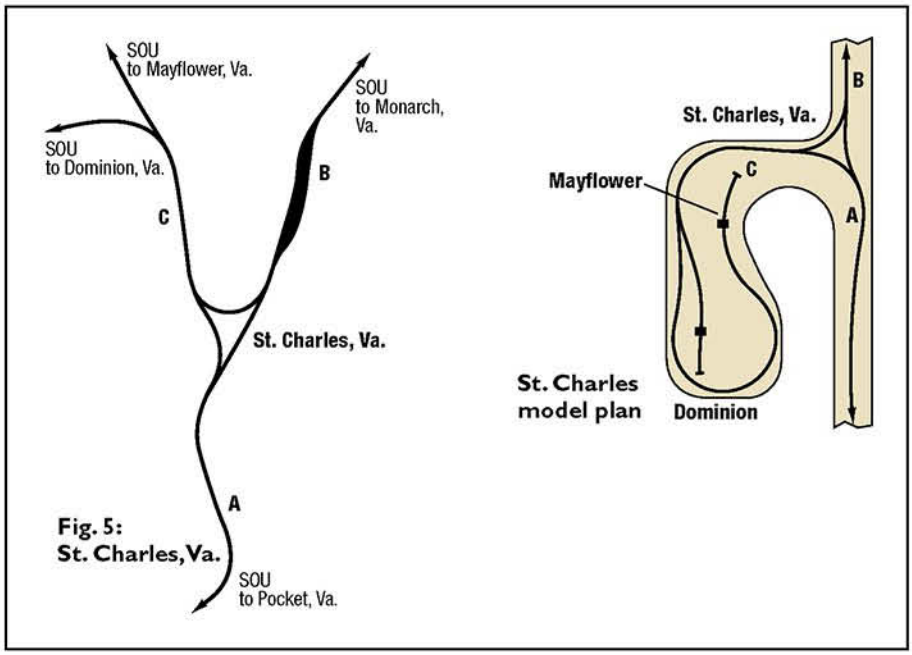
If only two legs of a wye are important to the modeler, it's easy to suggest a wye in a track plan by running one leg of the wye off the front edge of the benchwork or into the backdrop while the modeled line continues on. Things get a bit trickier, however, if you want all three legs to be operational.

Prototype modelers have things especially tough because Murphy's Law often ensures the wye comes off the main line on the wrong side of the tracks, or the line you want to model has two or more wyes in close proximity. If you've encountered these types of frustrations in your track-planning efforts, let me say that I feel your pain, and the following ideas are for you.

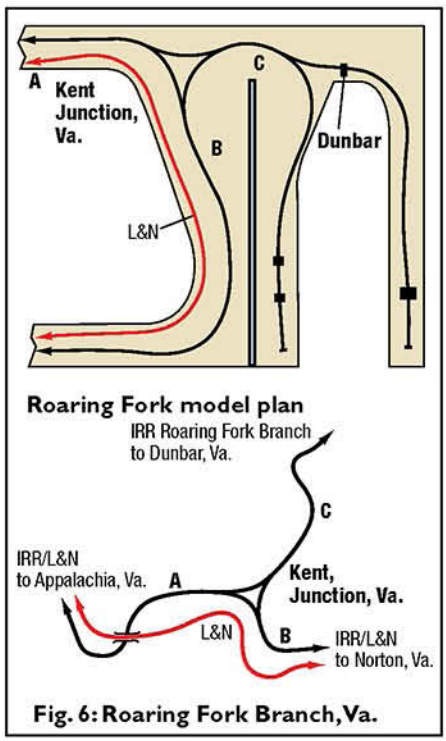
To build a common reference point to work from, all of my examples, driven by prototype track arrangements from the Appalachian coal fields, will have the routes labeled A, B, and C. For the examples with two wyes, letter C will designate the track between the wyes, while the second wye's legs are labeled D and E.

The first task is to choose which routes are most important to meet your operating requirements. If you want to model the operations of all three legs but only two need to be visible, you face an easier task. If you want to model and operate all three





Southern GP38-2 5169 and two sister units depart the former Interstate RR main line via the wye at Kent Junction, Va., to deliver empties to loaders on the Roaring Fork Branch in August 1985. Ron Flanary photo



legs, you'll have to get pretty creative. None of these solutions is perfect, but they offer alternatives to building dummy tracks, fudging your track plan, or choosing another prototype.

For simplicity's sake, only one version of a wye track plan is shown, but any of these plans can be easily mirrored or flipped to fit your particular prototype and layout space.

1 Staging off the back

Locating one leg of the wye in a corner to get to staging is perhaps the simplest way to incorporate a fully operating wye. In this approach, two legs are visible while the third leg disappears into staging. For our first prototype, I've chosen the Chesapeake & Ohio's (CSX's) main line through Qunnimont, W.Va., where the Laurel Creek Branch leaves the main via a wye (**fig. 1**).

As a modeler, I've decided I want to focus on the main line (routes A and B) but still have mine runs enter the layout via the Laurel Creek Branch and go up the branch to terminate to simulate the coal traffic on and off the branch. In this example, fortune smiles upon us because the prototype allows me to take the non-visible leg off the back of the layout instead of the front. The branch line takes a helix or ramp down to a staging yard. It's easiest to locate this kind of wye in a corner.

2 Staging off the front

This situation is a little more difficult because the route to staging (B) comes off the front of the layout, and we have to get it back to staging without disrupting modeling on the desired route (A and C). The prototype I've chosen as an illustration is the Louisville & Nashville's long Straight Creek Branch as it departs the main line at Pineville, Ky.

The focus of this layout is the branch line and Wallsend Yard on the A portion of the main (**fig. 2**). Our luck is holding because a highway crosses the B portion of the main just south of the wye, allowing us to use the overpass to hide where the track goes through the backdrop. If your prototype doesn't have a tunnel or bridge nearby, you'll probably have to get creative with trees, buildings, or hillsides.

3 Third leg in the background

Staging is a wonderful tool, but what if you want to visibly model all three legs of the wye? The easiest method is to run the third leg down the backdrop adjacent to one of the others.

The prototype in this case is the L&N's Merna Branch (C), a 1-mile-long branch servicing two coal loaders. This branch uses a wye to join the Martins Fork Branch, the main line between Loyall, Ky. (A) and Hagans switchback (B) (**fig. 3**). This track plan offers operation on all three legs, but many purists (including me) prefer not to stack unrelated scenes. If this bothers you, don't worry; there are other options.

4 Back-and-out

If at least one leg of the wye is a shorter branch that you want to model, it may be worth sacrificing some of another leg to model it. One leg (A) is operational and modeled for part of its length but becomes hidden under another leg to reappear at the wye and split into legs B and C.

This would be a great way to model the Twin Branch Coal operations at Scarlet, W.Va., at the end of the C&O's Island Creek Sub. The branch ends in a wye with two short branches serving a large coal loader. This method works well when at least one leg of the wye (B) is relatively short and one of the other legs (A) doesn't need to be fully scenicked all the way up to the wye (**fig. 4**).

5 Peninsula off the front

If you've got the space, planning a peninsula off the wye gives you more options. Two legs continue the line around the layout room while the third leg uses the peninsula.

Our example is the Southern's coal branches north of St. Charles, Va. In this case, both B and C legs are branches (**fig. 5**), so it doesn't matter which occupies the peninsula. If one of these were the main line, however, a choice would have to be made.

Running the main line onto the peninsula allows smoother walkaround operation, but a smaller peninsula would drastically shorten your main line. The other approach is trouble-some, too, though: continuing the main down the wall with the branch on the peninsula allows a longer main, but requires an operator to either duck under or walk around the peninsula to follow his or her train. Like I said, none of these solutions is perfect.

6 Room off the back

A variation of the peninsula method is to create a separate room for the branch line off the back of the peninsula. The Interstate RR's Roaring Fork Branch is a good prototype for this method. The Roaring Fork Branch leaves the Interstate main line via a wye at Kent Junction, Va., and splits to serve coal loading operations at Pardee and Pine Branch (**fig. 6**). On this track plan, the main line (A and B) stays in the main room while the branchline leg of the wye (C) goes to a separate room off the main layout.

If you have the space needed to employ this method, you get the added operational benefit of separating your mine runs and branch locals from the action on the main line, leaving them to do their work in relative isolation, just like the prototype. If your mainline run from B is long enough and you have the space, you can run the main under the branch and continue it in a third area of the layout.

7 Double-deck continuation

If you're amenable to constructing a second deck for at least part of your

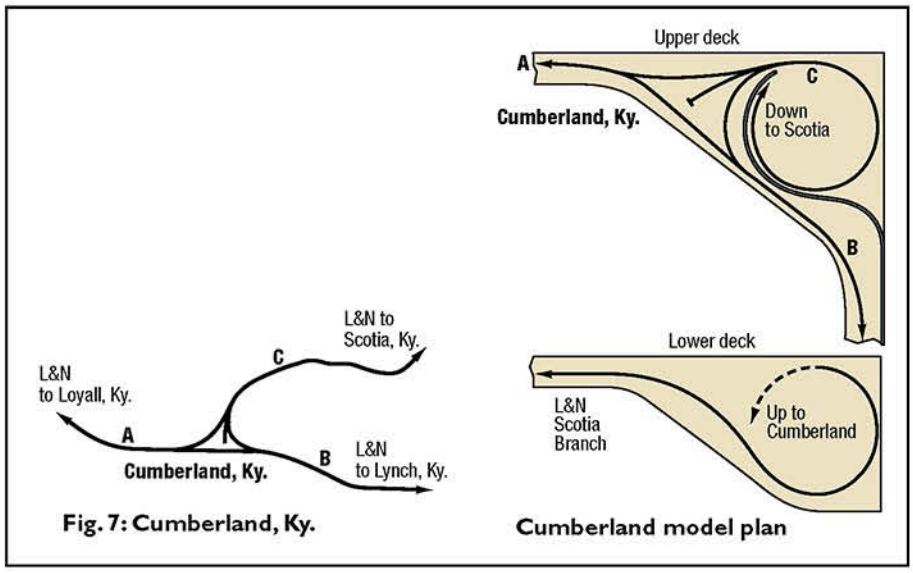
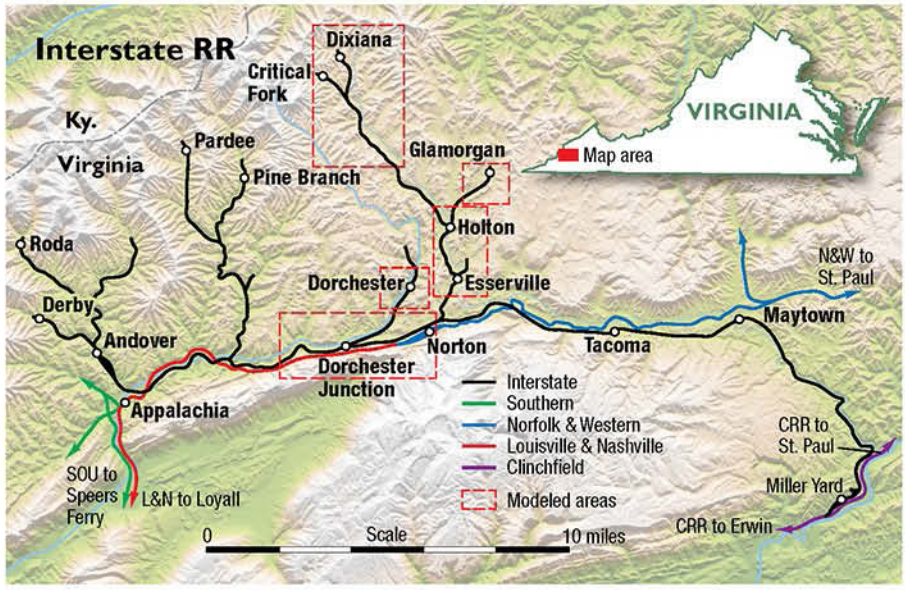


Fig. 7: Cumberland, Ky.

Cumberland model plan



Learning points

- Wyes are simpler than turntables and allow turning entire trains, but they take up a lot of space.
- Because of their large footprint, wyes should be among the first elements accommodated in a track plan.
- The examples shown here are based on actual prototypes in the Appalachian coalfields.
- There are more options for siting wyes than you may realize.

Now on ModelRailroader.com

For two more approaches covering how to handle paired wyes, see the Online Extras section of our website, **www.ModelRailroader.com.**

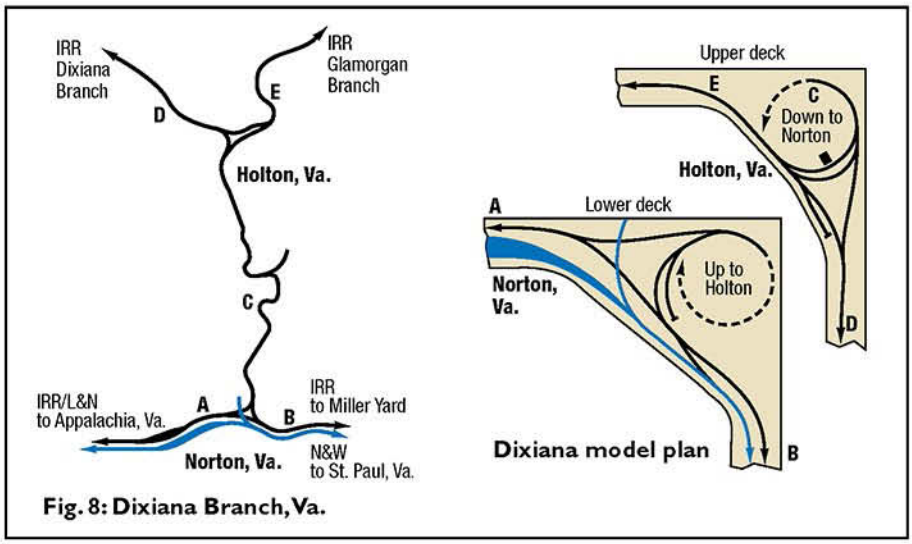


Fig. 8: Dixiana Branch, Va.

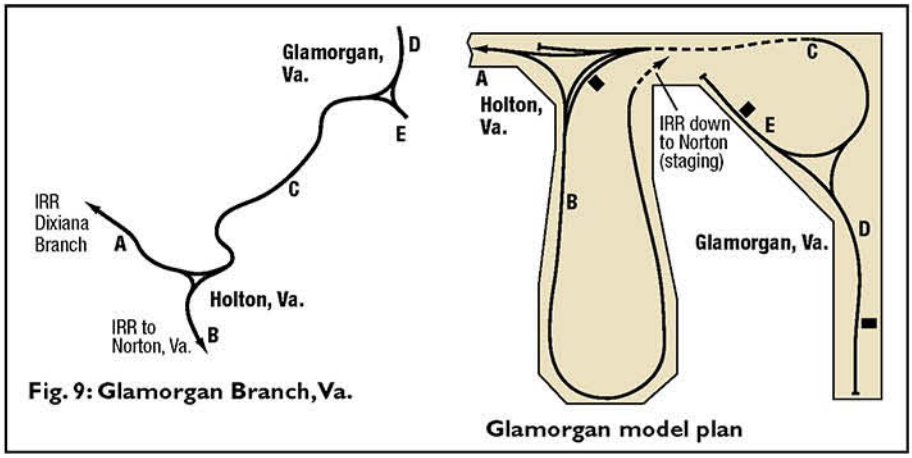


Fig. 9: Glamorgan Branch, Va.

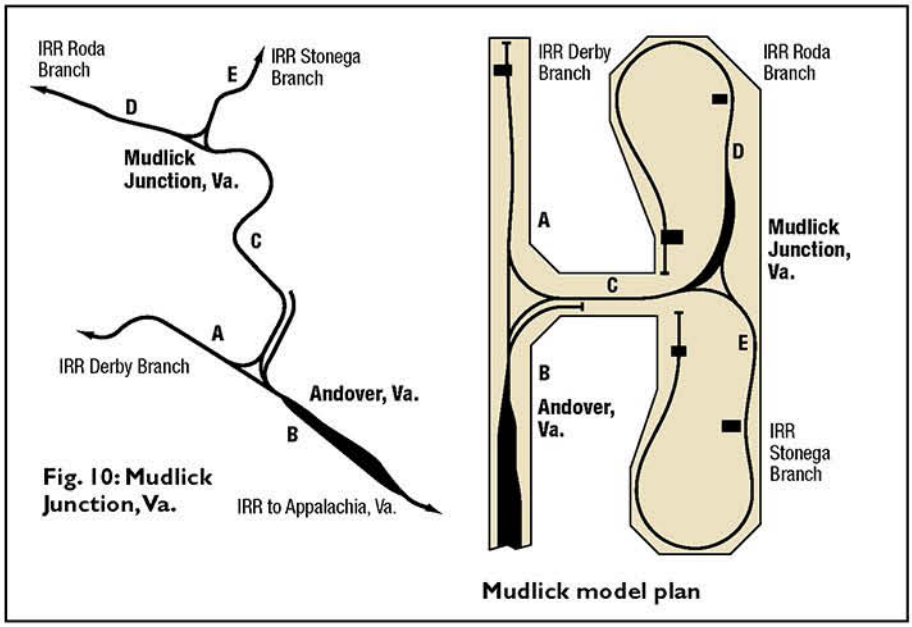


Fig. 10: Mudlick Junction, Va.

layout, myriad possibilities for wyes now open up. Continuing the third leg on a second deck is a useful option when the initial portion of that leg doesn't need to be modeled.

Many branch lines, including the prototype at Scotia, Ky., have industries only at the end of the line, so this isn't an issue. The L&N's Scotia Branch leaves the Poor Fork Branch at Cumberland, Ky., close to the latter's terminus at Lynch, Ky. The primary industry on the branch is the coal tipple at Scotia, about six miles from Cumberland. Because the loader is what I want to have on the layout, I used method 1 (third-leg staging off the back) on the upper deck, and used the helix to represent the miles between Cumberland and Scotia, modeled on the lower deck (**fig. 7**).

8 Two wyes, double deck

The prototype you're modeling may have two wyes in relatively close proximity. This means double the headache, but there are solutions! If the portion between the two wyes (C) can be left un-modeled, but the other four legs (A, B, D, and E) are important, a double-deck design is helpful.

A good prototype with this arrangement is the Interstate RR's Dixiana/Glamorgan Branch out of Norton, Va. The branch leaves the main line via a wye at Norton and then splits about three miles north via the wye at Holton before going to large loaders at Dixiana and Glamorgan at the ends of the branches (**fig. 8**). The area between Norton and Holton (C) has a few small coal loaders, but these would need to be sacrificed to use this method. To model the other legs, two Method 1s (third-leg staging off the back) are stacked on top of one another.

9 Two wyes, back-and-out

If you don't want a double-deck layout but you still want legs A, B, D, and E operational, this method may work for you. Methods 1 (third-leg to staging off back) and 4 (back-and-out) are combined to make this work. The portion between the wyes (C) is left unmodeled, but operational.

The Interstate RR's Glamorgan Branch, which I model on my HO scale Interstate RR layout, is a good prototype candidate. It has a large wye at Holton where the branch leaves the Dixiana Branch, and it terminates in a wye with coal loaders on both terminating legs (**fig. 9**). The hidden track (C) has the added advantage of creating the illusion of distance between the two scenes.

10 "Hammerhead" peninsula

When prototype wyes are in close proximity, you can create a "hammerhead"-shaped peninsula for one of the wyes. Consider the Interstate's branch lines just north of its main classification yard at Andover, Va. At the north (railroad west) end of the yard, the track splits at a wye to serve the Derby Branch (A) and the Roda Branch (C). About a mile down the Roda Branch, the track wyes again at Mudlick Junction to serve the Stonega

Branch (E) and the remainder of the Roda Branch (D) (**fig. 10**).

The hammerhead can be used either for two branch lines or for a branch line and the main line. If the main line is routed down the peninsula, it's easier for walkaround operators to follow their trains. If your prototype lends itself, you can use a tunnel or bridge to take the main line under the branch to continue it in another area of the layout room.

My Interstate RR layout

Many of these techniques for planning wyes were based on the experience I gained as I designed my own layout. I went through at least 20 different plans for my space before settling on the plan shown here. Nearly every plan included at least one wye, and I soon learned that the placement of the wyes affected nearly everything else in the plan. Therefore, I learned to start each track plan by sketching in possible locations for the wyes.

My double-deck HO layout is based on the Interstate RR circa 1969, after the Southern Ry. took over operations and the last year EMD F units were the primary power for mine runs. The lower deck captures a busy portion of the Interstate main line between Dorchester Junction and Norton, Va., including interchanges with the Louisville & Nashville and the Norfolk & Western. The upper deck captures every loader on the Glamorgan, Dixiana, and Critical Fork branches by employing two wyes.

The track on the branches near the wyes changed slightly between the 1960s and '70s. I have included all tracks from both eras to allow for flexibility in the era modeled; special rules will keep crews using only the tracks appropriate for the era of the operating session.

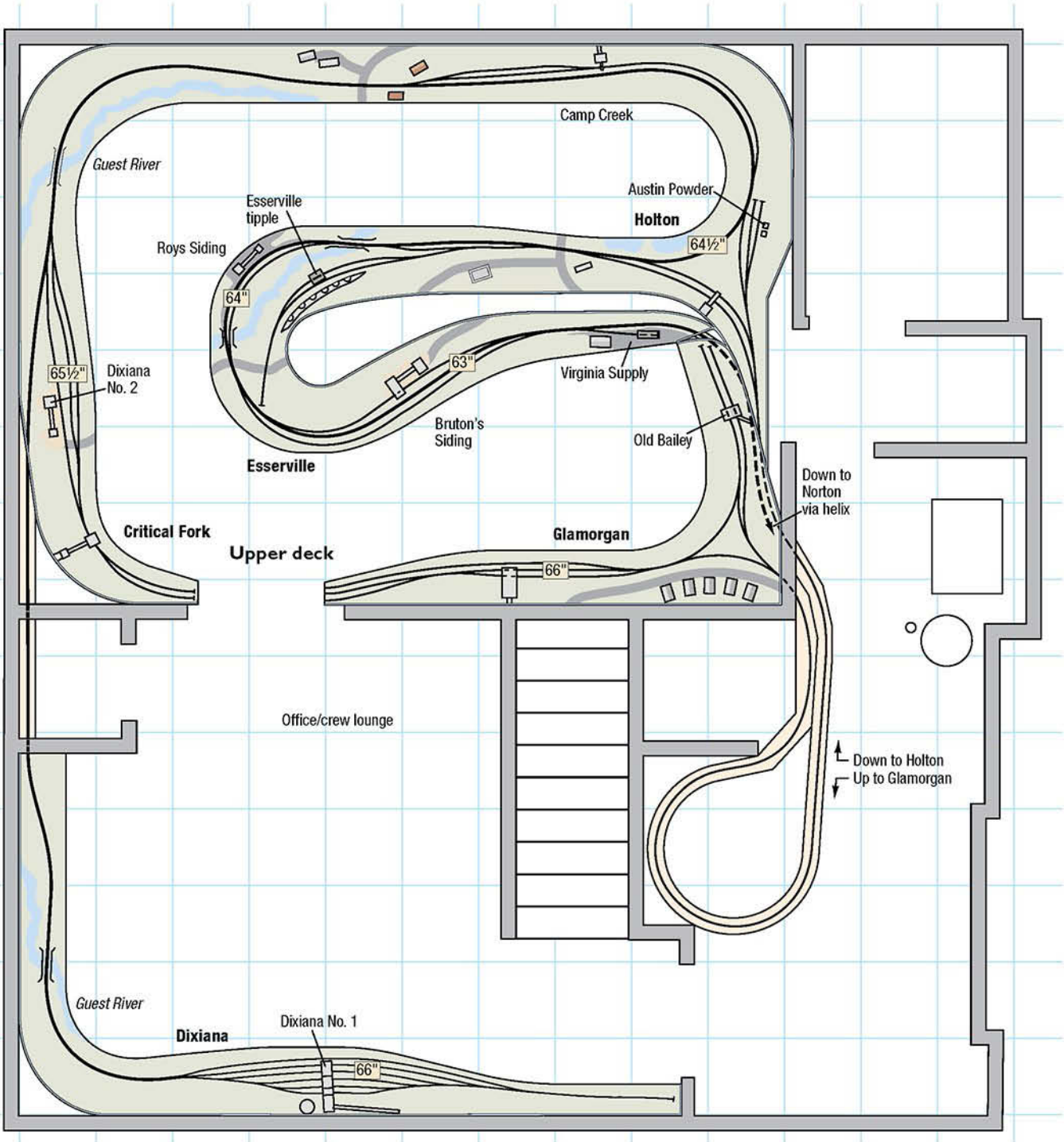
Operations include mainline trains and mine runs. The mainline runs, known as "Hill Crews" on the Interstate, work primarily as shuttles to move bridge traffic back and forth between the L&N at Dorchester Junction and the Clinchfield RR at Miller Yard (staging). Along the way, the Hill Crews also work the yard and N&W interchange at Norton.

Three mine runs work the branches. One mine run works the Dorchester Branch on the lower deck, and two mine runs work the upper-deck branches. To round things out, two L&N trains ferry Clinchfield interchange traffic to and from Dorchester Junction, and an N&W yard crew works the yard and industries at Norton.

A Southern mine run works Wicova Coal Tipple No. 1 at Dorchester, Va., on the author's HO layout. The tipple is a mock-up made from computer drawings pasted onto a foam-core structure to help visualize the scene.

The N&W's Norton Yard forms a small switching layout of its own within the bigger layout. The Interstate tracks go through the backdrop to staging while the N&W tracks stub into a mirror to make the scene appear larger.

Dorchester Junction has one of the more complex track arrangements on the layout. The Interstate had a 2-track yard between its main line and the nearby L&N, and its Dorchester Branch had to cross the main via a diamond.

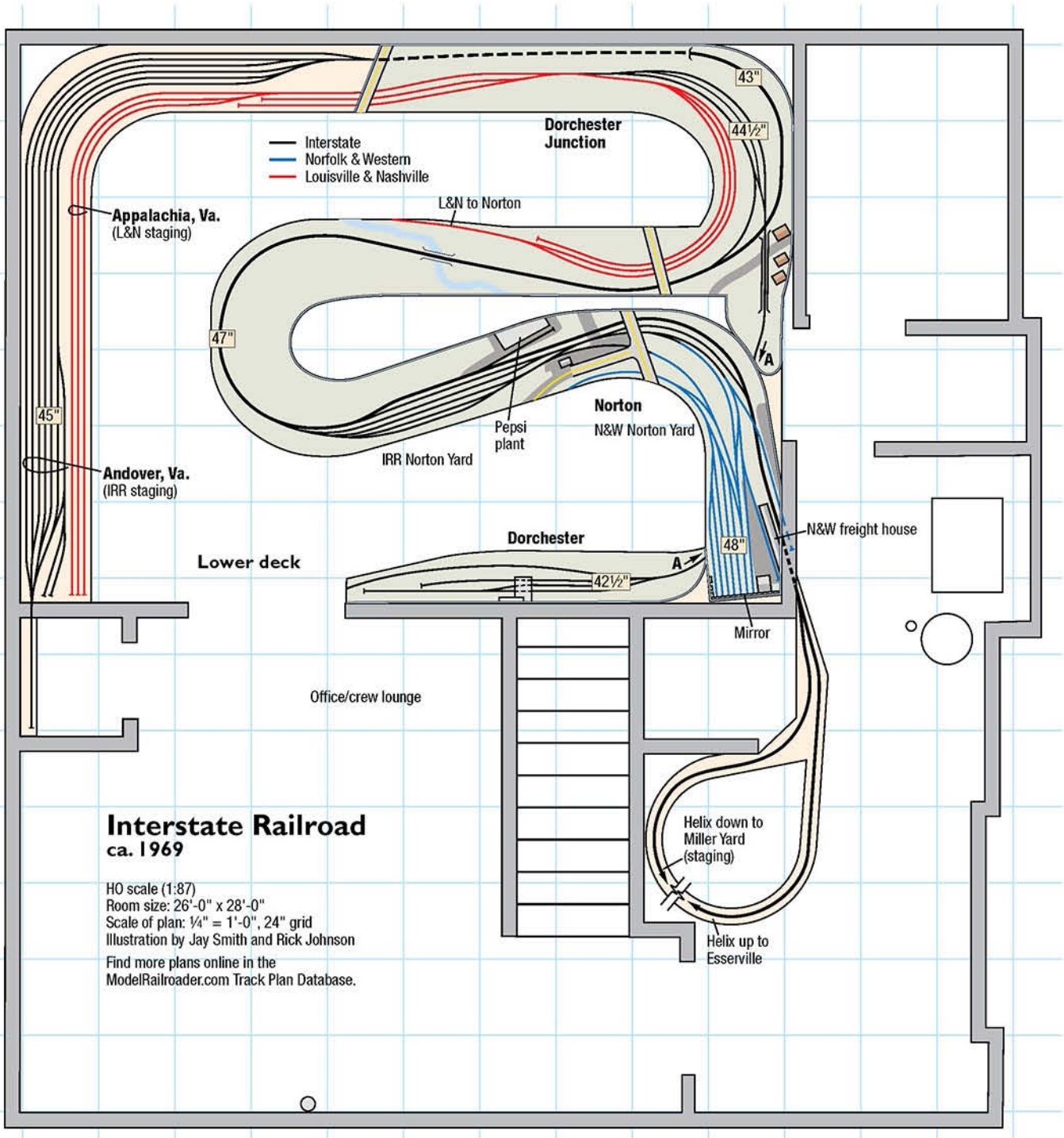


The layout at a glance

Name: Interstate RR
Scale: HO (1:87)
Size: 21'-0" x 28'-0"
Prototype: Interstate RR main and branches
Locale: Norton, Va., area
Era: late 1960s into 1970s
Style: multi-deck
Mainline run: 120 feet staging to staging; 50 feet visible
Branchline run: 200 feet
Minimum radius: 28"
Minimum turnout: no. 5
Maximum grade: 2.5 percent
Train length: 15 feet
Benchwork: open grid
Height: 38" to 66"
Roadbed: lauan plywood
Track: handlaid codes 70 and 83
Scenery: paper shell
Backdrop: lauan plywood
Control: Digitrax DCC with radio throttles

The N&W actually forms a self-contained switching layout within a layout that can keep me busy for a couple of hours.

I use a Digitrax DCC system with 2-way radio throttles for freedom of movement. All turnouts are controlled manually from the fascia in walk-around fashion, in keeping with the prototype, where all switches were operated locally. For operations, crews use train orders with generous time allotted between trains. Yard-limit rules are in effect for all interchanges. This eliminates the need for a dispatcher and lets everyone run trains.



To date, all lower-deck trackwork is complete, and construction of the helix connecting the two decks to each other and to staging is under way. Despite its current lack of scenery, I've held several operating sessions on the lower deck with two to four operators running as many as five trains. While this may not sound like much action for a road of this size, each train has quite a bit of switching to do.

Once the second deck is complete, the two wyes on the layout will offer crews the same switching and routing flexibility the prototype enjoyed on its branches, something that will be crucial to keeping all those hoppers brimming with black diamonds flowing to market.

Parting thoughts

Just as no two prototype wyes are exactly alike, no two layout spaces are alike. So every modeler's approach to this common track-planning problem will require some creativity. Designing a layout can be frustrating, but it can also be very rewarding when you figure out how to make everything fit without compromising too much.

I certainly don't have all the answers, and the solutions I've presented here may not fit your situation exactly, but I hope I've given you a few new tools for your planning toolbox to try the next time you're designing that dream layout. **MRP**

Dan Bourque, an officer in the U.S. Air Force; his wife, Angie; and their two boys live in Colorado, but Dan's railroad interests lie in the distant Appalachians. Dan also runs Appalachian Railroad Modeling (www.appalachianrailroad-modeling.com), a website featuring prototype-based track plans, photos, and other resources for modelers of Eastern coal-hauling railroads.

Layout design element

Test fitting standard gauge into an On3 space

Planning an O fine-scale Colorado Midland RR to supersede the current On3 narrow gauge Denver, South Park & Pacific

By Andrew R. Dodge//Model photos by the author

To make sure his new aspirations fit in the same space devoted to his old layout, Andrew used surplus HO track to make a full-size mock-up of his new Basalt, Colo., plan on the floor directly under Como on the still-standing On3 layout. His Plexiglas building cores were covered with ¼"-scale CAD drawings to help check clearances.

This is a story about change. It's also a story describing how I approached planning and building a new O scale standard gauge railroad in the space still occupied by my current On3 narrow gauge layout, thus confirming the viability of my plans without risking what I already had. I doubt any MRP reader will closely follow my new track plan, but I hope many of you will benefit from the rewards of test fitting a well-planned change.

New mountains to climb

As modelers, we enjoy planning and building our dream model railroads. However, after years of dreaming, planning, building, and operating my "ideal" layout, I realized that I had "no more mountains to climb." After years of modeling layouts with narrow-gauge themes, I felt it was time for a change.

I've enjoyed model railroading ever since my father introduced me to it as a child. Years later, the initial model railroad I built in my own home was a large HO and HOn3 Denver & Rio Grande Western layout that had too many engines and cars. I soon lost interest in the railroad because of its operational shortcomings and my lack of focus and attention to quality during its construction.

As I explained in *Model Railroad Planning 1997*, my interest in the hobby was revived when Overland Models imported brass On3 models of the Denver, South Park & Pacific's Mason Bogies. My long-held desire to create a

19th-century replica of the South Park was now feasible, even though I knew it would take many years of scratchbuilding structures and rolling stock.

The aspirations for my modeling passion seemed to be set for life, and I actually finished my On3 layout (see *Great Model Railroads 2009*).

One step at a time

In 2009, I participated in a long weekend of operating sessions in Kansas City. When I mentioned that I'd finished my layout, several people said, "That means trouble." At this juncture I came to a very important decision. For anyone relocating, choosing to build a new layout isn't really an option. But if, like me, you're making a change because you want a new challenge, how do you proceed? Picking up a crowbar and ripping up the old railroad may not be the answer if the new railroad or time period isn't supported by commercial motive power and rolling stock.

Each of us has to confront the what-to-model question from his or her own perspective, which includes abilities, experience, layout space, available time, interests in a specific period and geographical location, and, equally important, the specific railroad or type of railroading that best holds one's interest.

I remember being intrigued with a layout plan in the March 1958 *Model Railroader* depicting a large, freelanced logging railroad. I also considered returning to the type of layout my father began building in the 1940s, which was based on the Southern Ry. in the steam-to-diesel transition era. Each had its own appeal and drawbacks compared to my own interests. I was concerned about the operational limits of running a logging line, with repetitive movements of empties going up and loads coming back *ad nauseum*, or interpreting the transition era that's been done so well by so many others.

Top: The need for proper clearances near buildings such as the icehouse and the turntable in the corner is evident. **Above:** The track with the paper under it represents the elevated coal dock, and it showed the need for this structure to be on a slight curve that wouldn't adversely affect the scene.

Andrew appreciates the greater heft of O scale models – note the size comparison between an HO 2-8-0 Consolidation and one of his scratchbuilt Proto:48 Colorado Midland 4-6-0s. A 19th-century CM Ten-Wheeler locomotive would be very small in HO, but its compactness is a virtue in ¼" scale.

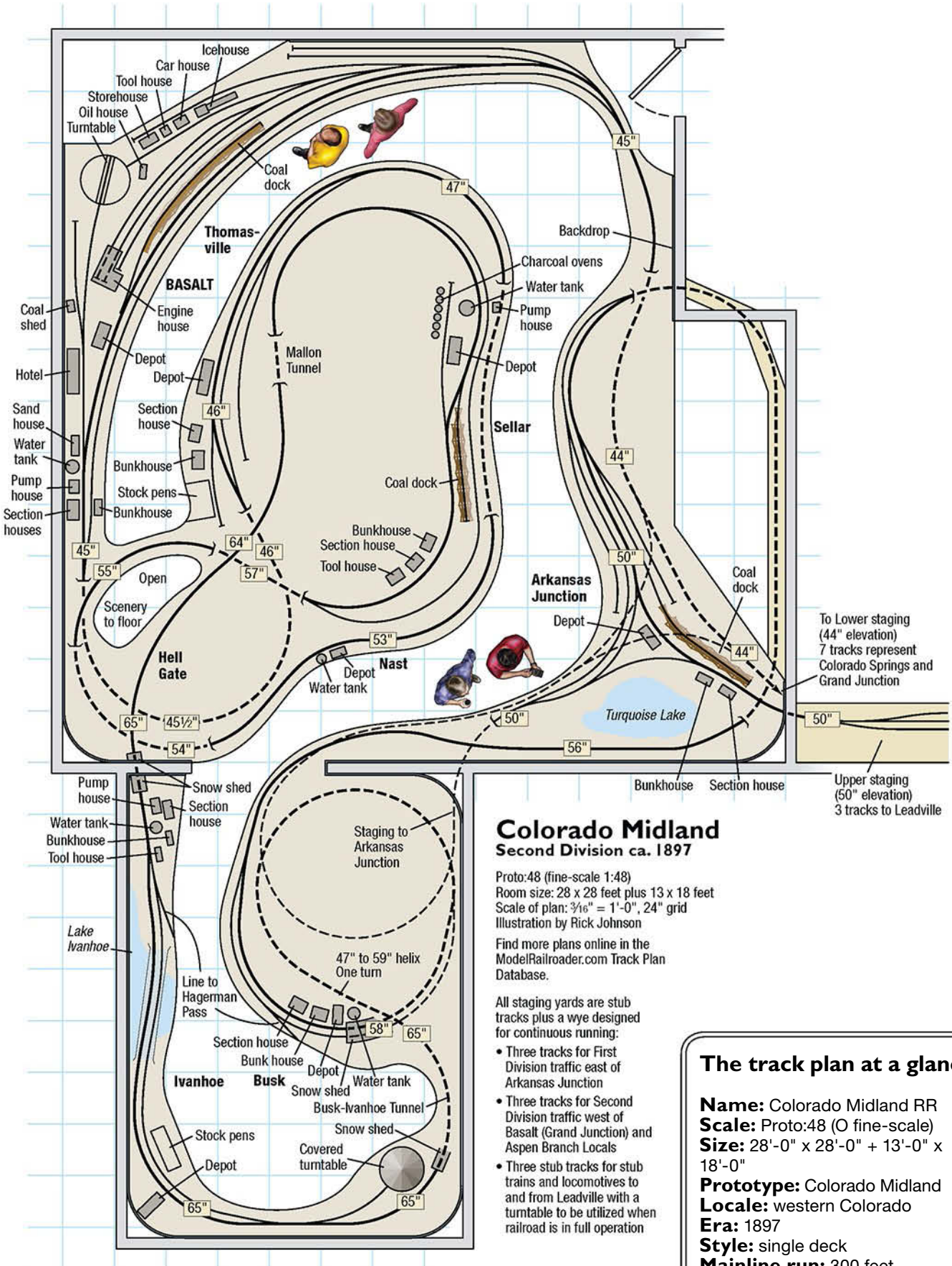
Same basement, new railroad

I have an operating railroad and enjoy running it with other modelers. Therefore, one of my first concerns was the time element involved in replacing my current railroad with something close to an operating layout. "Too long" was the answer if I followed the usual approach of dismantling and building anew. Why not enjoy what I have while I'm building equipment and structures for the new railroad?

Only three locomotives were operational during the seven or eight years I was building my South Park layout, and this greatly reduced my operational enjoyment. This time, I plan to continue operating my current layout while work continues on projects for the new railroad. This will greatly reduce the transition from removal of the old layout to my first open house or operating session on the new one.

After discounting many of the popular prototypes and periods, I decided to examine another former Colorado railroad to see what it might offer. I've never lived in Colorado, but I've the fondest memories of the area from many family vacations in the 1950s and my own trips in more recent years. Also, the sights, sounds, and smells of steam engines battling steep grades to move traffic over the mountains were and still are awe-inspiring.

These sentiments led me to a railroad that had first captured my imagination in 1965 when my father gave me a copy of Morris Cafky's *Colorado Midland* book for my birthday. "The Midland" was the first standard gauge line built through the Colorado Rockies. It operated from 1887 until World War I, when the United States Railroad Administration (USRA)



Colorado Midland

Second Division ca. 1897

Proto:48 (fine-scale 1:48)
Room size: 28 x 28 feet plus 13 x 18 feet
Scale of plan: 3/16" = 1'-0", 24" grid
Illustration by Rick Johnson

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

All staging yards are stub tracks plus a wye designed for continuous running:

- Three tracks for First Division traffic east of Arkansas Junction
- Three tracks for Second Division traffic west of Basalt (Grand Junction) and Aspen Branch Locals
- Three stub tracks for stub trains and locomotives to and from Leadville with a turntable to be utilized when railroad is in full operation

The track plan at a glance

Name: Colorado Midland RR
Scale: Proto:48 (O fine-scale)
Size: 28'-0" x 28'-0" + 13'-0" x 18'-0"
Prototype: Colorado Midland
Locale: western Colorado
Era: 1897
Style: single deck
Mainline run: 300 feet
Minimum radius: 48"
Minimum turnout: no. 6
Maximum grade: 2 percent
Train length: 8 feet

diverted the Midland's through traffic to the Rio Grande, and a judge ordered the line to cease operations. Some areas west of Colorado Springs survived until February 1949 as part of the Midland Terminal, which served gold and silver mines in the Cripple Creek area.

One can still follow the Colorado Midland right-of-way between Colorado Springs and Grand Junction, where it climbs through the Front Range via Ute Pass. Its alignment parallels today's U.S. Route 24, just west of the Springs, into the upper end of the South Park, up the Arkansas Valley past Buena Vista toward Leadville, over Hagerman Pass and the Continental Divide, down Frying Pan River to Basalt, and on to Glenwood Springs and Grand Junction.

All of these locations offered interesting modeling opportunities, such as tourist traffic to the summer resorts, the railroad's famous Wildflower Specials, and Rocky Mountain railroading at its best.

Some practical considerations

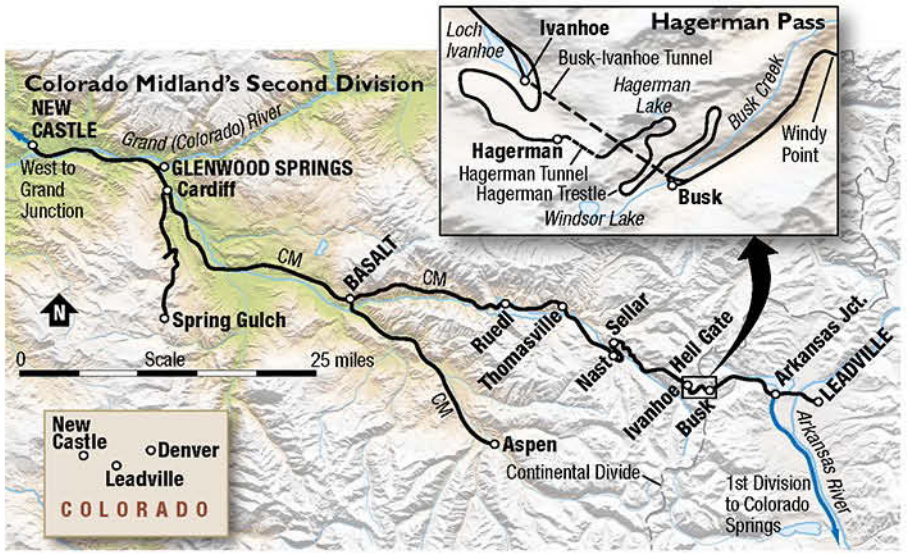
Before I made any final decisions, I had to make sure that replicating part of the Midland in miniature was viable. I had to keep in mind that each element of track design, buildings, locomotives, cars, and other details would all have to come together to produce a believable project.

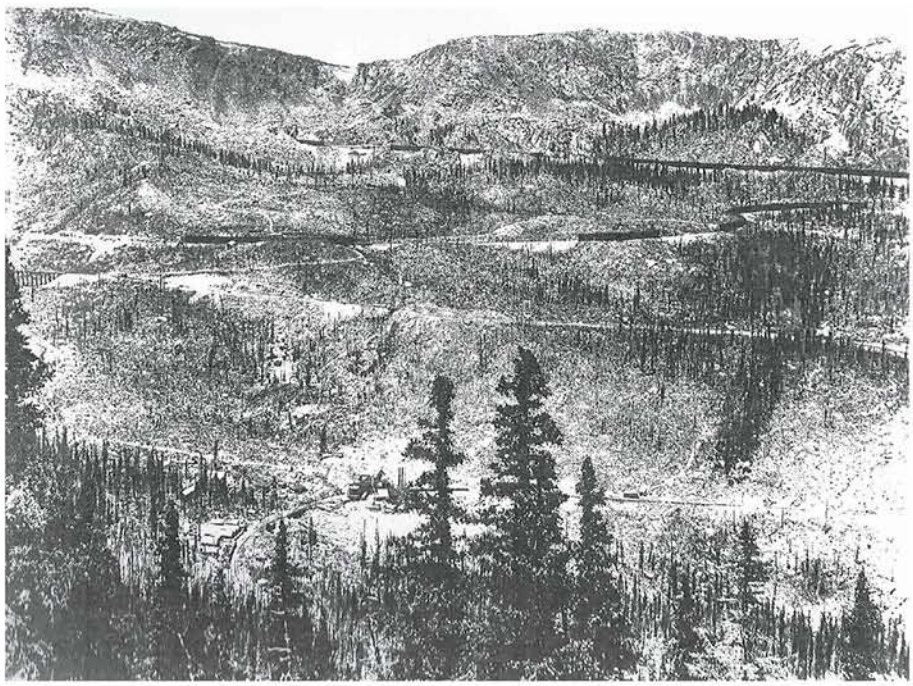
To achieve that goal, I looked into the availability of commercial kits or parts and assessed my ability to build or kitbash the rest. It was encouraging to find that a lot more is available than I initially thought.

One of my last projects on the South Park was scratchbuilding a model of the railroad's first engine, *Fairplay*, a Mogul (2-6-0) built in the 1870s. This project resolved the question of whether I could master the art of building a model steam locomotive from scratch. Its success opened the door to modeling any railroad in any time period I desired.

Making a good choice

I had to decide which segment(s) of the Colorado Midland could be scaled down to fit into the space presently occupied by my On3 South Park. One of the most important artistic aspects involved in designing a model railroad is its "presentation." I wanted those entering the layout to get the feeling of walking into a miniaturized version of the Rockies and Colorado Midland country in the late 19th century. This meant a mountainous layout with most of the space dedicated to scenery that truly towered above the trains.





This William Jackson photo captures the Colorado Midland's climb to the crest of the continent, and it shows the determination of 19th-century railroads to get where they wanted to go. The steep grades, sharp curves, snowsheds, and altitude all played a role in the demise of this spectacular route. The tunneling work at Busk is visible at the lower-left center. David P. Morgan Library collection

As important as the geographical aspects of a new layout would be, the inclusion of key operational features was of equal importance.

Heft wins the day

I've done modeling in N, HO, HOn3, and On3, but not in standard O gauge or Proto:48. The fine-scale option also raised the issue of how tight a curve I could use.

While thinking about building the engines from scratch, I unpacked one of my father's old HO Baltimore & Ohio 2-8-0 Consolidations, and placed it on my workbench. As it sat there day after day for several months, I thought about the issues involved in building locomotives, and pondered whether I wanted to return to something that small. As small as the B&O engine was, any similar 19th-century Midland engines would be significantly smaller.

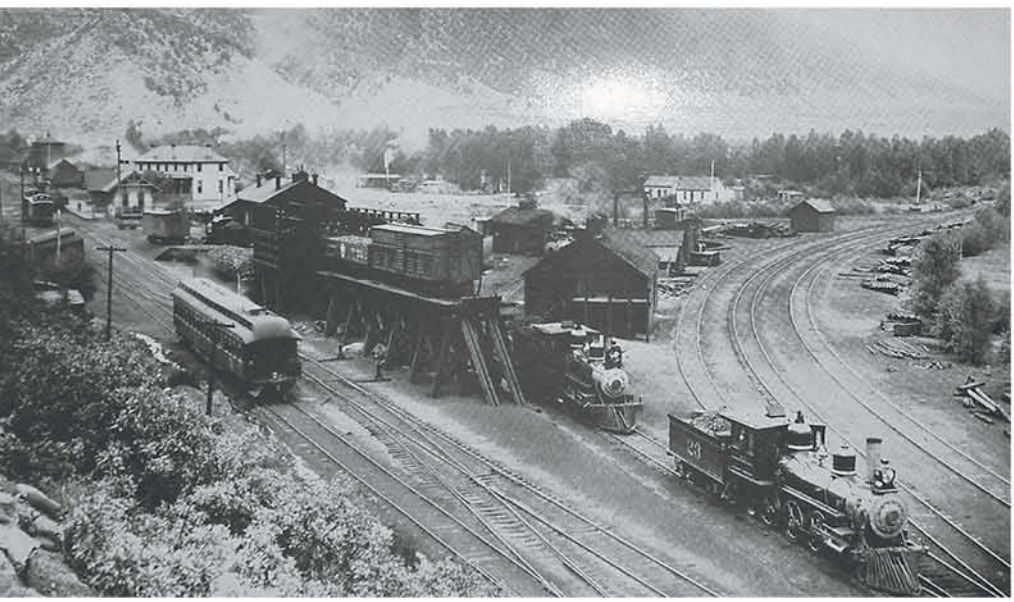
One of the reasons I modeled in O scale was the heft of the equipment. I loved watching and hearing the cars pass over grade crossings and through turnouts. That answered my question: I wanted mass in the locomotives that couldn't be achieved in HO.

I felt comfortable I could still achieve the beauty of the area and replicate mountain railroading with only modest adjustments to accommodate an O scale layout and still retain a high degree of historical accuracy.

This photo of the tunnels bordering Granite Canyon documents the rugged terrain facing the builders of this pioneer Colorado standard-gauge railroad as well as the appeal of modeling these landmarks. Author's collection

Learning points

- Approach a new railroad project methodically like any other major endeavor: Design it piece by piece until you're comfortable with the concept as a whole.
- Compromises will be required, but avoid major conflicts or shortcomings that make you uncomfortable.
- Don't dismantle your old layout until you have finished sufficient railroad equipment and buildings to take you well on the way to completing your new layout in fairly short order. This is especially true if one has to allocate time and reources to build most of the equipment.
- Historical research into railroading is rewarding and crucial in order to build a prototypical representation of any actual railroad – or even a prototypically based freelanced model railroad.



The yard at Basalt is sized for interesting operation but small enough to avoid overwhelming the layout. It's also a helper station. The main line runs off to the left while the Aspen branch curves to the right. David P. Morgan Library collection

One of the advantages I had in choosing the Colorado Midland in 1:48 was the fact that its trains were relatively short. Building O scale 34-foot standard-gauge rolling stock would be a significant step up from my 26-foot On3 DSP&P models. The small Midland locomotives, with a tractive effort of approximately 27,000 pounds, limited the train size. But I was also concerned how the wider 5-ft. (1¼") gauge traditionally used for O gauge equipment might look on such small engines. I therefore decided early on that if I chose to model in O scale, I would follow Proto:48 standards with an accurate 4'-8½" gauge.

Progress report

Since I began the Colorado Midland endeavor in December 2009, I've completed all my projects within the time envisioned – I don't watch TV during construction. The track plan was the first item on the list, but I always kept in mind the possible need for refinements, which have occurred. After constructing one Ten-Wheeler (4-6-0), I built a number of pieces of test track so I could confirm that the fine-scale engine would run well on a 48" radius curve.

Once this test was successfully completed, I proceeded to mass produce more locomotives in groups of three each. My building program included another trio of Ten-Wheelers, a set of three Midland Schenectady-built Consolidations (2-8-0s), and three of the road's five larger 1897 Baldwin Consolidations. With prompting from some friends, I decided during the summer of 2010 to include one of the railroad's 0-6-0 switchers, which brought my fleet to 11 locomotives.

My other projects have included constructing cars and buildings. Since working in O standard gauge was new to me, I built my initial passenger and freight cars from LaBelle kits. To shorten the building phase and move quickly to an operational stage, I also constructed all the railroad's buildings using a Plexiglas core, which eliminated mockups or having no buildings for a long time. Because of the simplicity of the process, I had 30-odd buildings done in three weeks.

The semi-completed buildings also allowed me to arrange the models on the floor of the layout room for a full

1:1 mockup. As shown in the photo on page 72, I used surplus HO flextrack to help me visualize the track arrangements. This final step allowed me to place the buildings to achieve a correct historical perspective while checking the clearances between the structures and locomotives.

During the initial planning of my layout, I allowed two hidden tracks at the neck of the Thomasville/Sellar peninsula to cross to the opposite aisles. This caused an engineer running out of Basalt to temporarily lose his train in the other aisle on the way to Thomasville. When I looked at page 66 in MRP editor Tony Koester's book *The Model Railroader's Guide to Mountain Railroading* (Kalmbach Books, 2011) I realized my mistake. By adjusting my track plan, I kept each main line in its own aisle so engineers could easily follow their trains. This cut the number of curves and lengthened the run.

Everything is now in place, and I've gained sufficient confidence that my proposed Midland project will provide rewards equal to that of my Denver, South Park & Pacific RR. While I'll deeply miss my South Park, I can now open a new chapter and continue to satisfy my modeling aspirations.

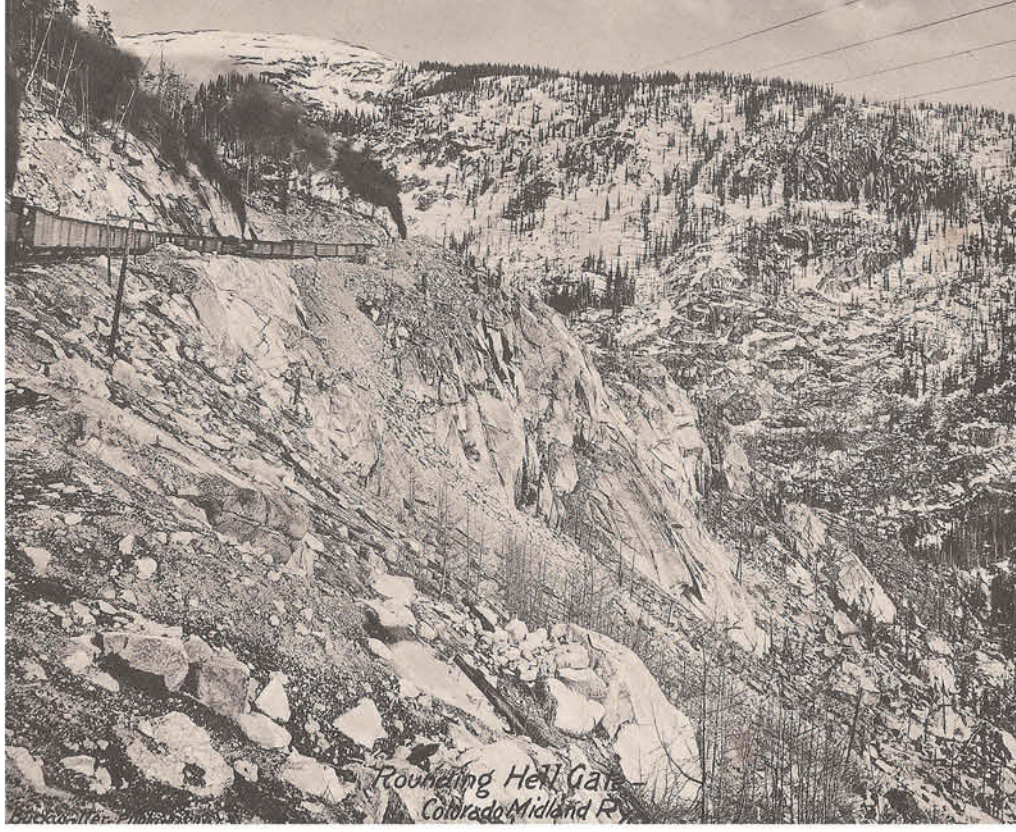
Final observations

All these design and planning steps have proven to be a lot of fun and critical to designing a new layout. History, geography, operations, and so on offer us an almost limitless number of disciplines to explore in our hobby.

While my focus on the Colorado Midland is outside of today's mainstream modeling activities, anyone making a change in their modeling objectives will face the same questions and have to confront similar issues. My advice: Don't let a hard decision stop you short of your goal.

Be assured that the process I went through was as rewarding and as much fun as finishing a new kit. It wasn't the least bit tedious or torturous. As with any problem solving, I approached it by breaking each task down into parts and worked at solving each aspect separately while retaining a vision of the end product. When I got to the point where something just wasn't coming together, I took a few steps back and then tried to resolve it from another perspective.

After I had "climbed the mountain" on my On3 South Park layout, change afforded me a new field of opportunities. If you're a bit apprehensive about change, ask around to get some help and ideas. Model railroading is somewhat of a fraternity, and you'll find plenty of others willing to share ideas and help you explore new vistas. **MRP**



Three locomotives work hard to haul a turn-of-the-century freight train past Hell Gate up to Ivanhoe. This scene is on Andrew's must-have list, but its vastness will require compression without losing its overall impact. Author's collection

The Midland ran all-day "Wildflower Excursions" for $1 to promote the natural wonders of the Rockies, the Front Range, and South Park areas. This service allows Andrew to run up to three sections of these trains. Author's collection

Andrew Dodge has worked as an engine mechanic, homebuilder, teacher, education specialist at the U.S. Holocaust Museum, and as a historian at the U.S. House of Representatives. He lives in central Maryland with his wife, Judith, and enjoys time with his grandchildren. Besides model railroading and running 1½"-scale live steam, Andrew teaches bagpipe music at Fork Union Military Academy, his alma mater.

1. Penn Central GP38 no. 7786 crosses the St. Joseph River near South Bend, Ind., with a local on the PC's Niles Branch.

Layout design element

Branch line meets short line on a narrow shelf

Modeling the interchange of Penn Central's Niles Branch with an industrial line

By Dave Fodness//Photos by the author

2. The southbound Penn Central local eases past the Torrington plant as it heads toward JK Tower and past the NJI&I connection at right.

My layout, set in the late spring of 1970, is a very simple rendition of two railroads – a branch of the Penn Central and a short line – that interchanged with each other on the south side of South Bend, Ind. One of those is the Niles Branch of the former Michigan Central, later New York Central and then Penn Central, which was less than a mile from my boyhood home north of South Bend. It was adjacent to the grade school I attended and in the back yard of one of my lifelong friends. So it's no wonder that it had an impact, even if it was at a subliminal level, on my choice as a modeling subject.

The other line I depict is a short segment of the New Jersey, Indiana & Illinois RR on the southwest side of South Bend. When I had become an active railfan canvassing the vicinity, long after my grade-school years, the industrial might of the area had waned. With this departure of heavy industry came the demise of local switching action, except for a few customers along the remnants of the NJI&I.

Dan Lawecki and Andy Laurent introduced me to this line during the lunch hours we would spend watching the rail action. I liked what I saw and vowed that this railroad would make its way into my future layout.

A new home – and layout

When my wife and I started designing a new home in 2006, I simultaneously began planning a new layout. I like branch and shortline operations, due in part to their slow pace and because they involve what I call "direct rail commerce" – delivering and/or picking up the goods of the customer (that is, switching). So the choice of what to model was easy: the Niles Branch and the NJI&I. I had some understanding of each line, and they both operated in a manner that paralleled my preferences.

I conceived the Niles Branch flowing south from a staging yard representing Niles, Mich., traveling through the north side of South Bend, crossing the St. Joseph River, and then interchanging with the NJI&I. The NJI&I would then proceed east, ending with a representation of an interchange, off layout, with the former Pennsylvania RR's Vandalia line, which came into South Bend on its south side from Plymouth, Ind. I like operating to and from interchanges, as this provides purpose and is the classic "universal industry" that can accept any type and quantity of freight car.

This is my sixth model railroad, and one that I'm determined to see through the finished-scenery stage. None of my other five layouts ever reached that degree of completion because we moved every few years. At this stage of our lives, however, we believe we have found a home where we will stay for awhile. So I was comfortable designing a railroad that would be big enough to accommodate the two lines I wanted to model. On the other hand, I didn't want it to be so large that it, like the others, would remain unfinished.

What to include?

I started planning by looking at total end-to-end railroad length with a primary objective of finishing this layout. Based on my previous models, something less than 100 feet of mainline run seemed doable; as it turned out, this layout is actually 86 feet long.

Next, I worked on what was perhaps the biggest design challenge: the interchange between the two lines. The

Learning points

- By developing the discipline to avoid getting bogged down with superdetailed scenery, you can forge ahead on the rest of the layout.
- The area devoted to scenery should be balanced by your enjoyment of constructing it.
- Slight changes to a prototype's dimensions, such as extending or shortening a bridge, can be managed effectively.
- Research is as important to the effective modeling of prototype railroads as good modeling.

3. One leg of the HO layout is devoted to the New Jersey, Indiana & Illinois. Here an NJI&I NW2 works the interchange with the PC's Niles Branch in South Bend. Torrington, a bearing producer, is at the right, and Armco Steel is at center.

4. A load of pipe is ready to be picked up under the overhead crane at Armco Metals. Armco also makes and ships corrugated drain pipe by rail. Drewry's is the low-profile, L-shaped industry in the background.

actual interchange arrangement was a tangle of track that included the Grand Trunk Western, Penn Central, and NJI&I. I developed several options that included all of the above. But because of my space constraints, their inclusion meant the exclusion of some industries that I wanted, so I opted instead for a simple interchange that left room for two key NJI&I rail-served customers.

These two industries are Armco Steel, maker of corrugated drainage pipe, and Torrington, a bearing producer. On the prototype, the NJI&I served these two customers even though they're both on the other side of the PC main line and interchange. To reach this area, the NJI&I has to seek permission from the operator at JK Tower to cross over, perform the switching, and then proceed back to home rails. Modeling this track arrangement makes operation more interesting on my layout.

Although my railroad is based on two prototypes, I used my modeler's license to delete or rearrange some elements to suit my available area and desires. All of the businesses are or were actual rail-served customers, but in some cases their configurations and their time period were altered to fit.

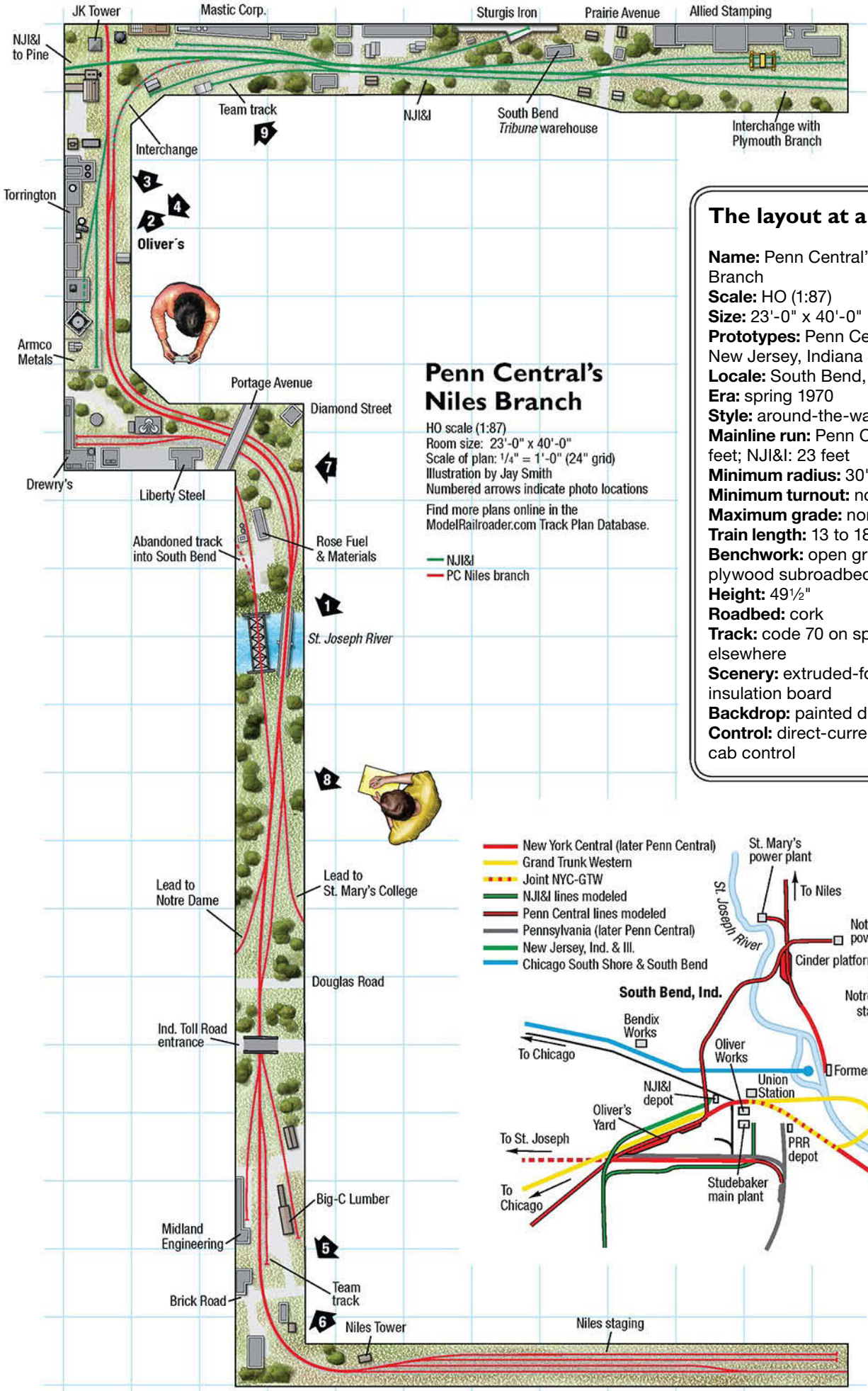
For instance, though roofing contractor Midland Engineering is still in existence on the Niles Branch, it hasn't had a rail spur since the 1930s. On my layout set in 1970, however, it still receives incoming roofing products. Big-C Lumber, also located on the Niles branch, should be on the opposite side of the railroad, and the adjacent team track should be two miles north of where it is modeled. Their locations were determined by the available space and what made sense in operations.

I made a list of the industries and businesses to be served as well as key scenic features that I felt were important, including the crossing of the St. Joseph River by the Niles Branch and the wooden Portage Avenue road overpass. With these parameters established, it was time to see how the pieces fit together.

Assembling the puzzle

I've always subscribed to Dave Frary's "themed scene" philosophy as a method to divide a railroad and make it seem longer. I used that planning philosophy here to develop six scenes, all of which contain prototypical industries and landmarks. This qualifies them as layout design elements – visually and operationally recognizable models of actual locations on the prototype.

These themed scenes are also work areas on the railroad, as each scene frames a set of industries that logically tie together as the locals do their switching. For example, Roseland, Ind., on the Niles Branch is defined on the north by a ridge of trees and on the south by the entrance bridge to the Indiana Toll Road. This scene contains



The layout at a glance

Name: Penn Central's Niles Branch
Scale: HO (1:87)
Size: 23'-0" x 40'-0"
Prototypes: Penn Central and New Jersey, Indiana & Illinois
Locale: South Bend, Ind., area
Era: spring 1970
Style: around-the-walls
Mainline run: Penn Central: 63 feet; NJI&I: 23 feet
Minimum radius: 30"
Minimum turnout: no. 6
Maximum grade: none
Train length: 13 to 18 cars
Benchwork: open grid with ½" plywood subroadbed
Height: 49½"
Roadbed: cork
Track: code 70 on spurs, 83 elsewhere
Scenery: extruded-foam insulation board
Backdrop: painted drywall
Control: direct-current cab control

6. The southbound local slows in preparation for picking up a jade-green New York Central boxcar at Midland Engineering in the background. The crew will then deliver cars to Notre Dame and St. Mary's College in South Bend.

Midland Engineering, Big-C Lumber, and a team track.

What I call the college area is the next scene south of Roseland, delineated by the toll road bridge on the north and the St. Joseph River on the south. Within this area are the rail spurs to the University of Notre Dame and St. Mary's College, as well as a passing siding once known as "cinder platforms." In the early years of the Niles line, this passing siding served as either a drop-off point or storage yard for Fighting Irish football specials, as many fans would travel to South Bend by rail for these fall events. Those modeling an earlier era could enhance operations with these fall specials.

Why the PC in spring 1970?

I graduated from college in 1974 and almost immediately began regular business trips to Pennsylvania, many of them on Amtrak. During these trips, I observed a lot of Penn Central action. I'm not sure why I like that troubled railroad; perhaps it's a desire to root for the underdog. But I like its black Geeps and jade-green rolling stock.

I also chose to model the late spring of 1970, which allowed me to incorporate a mix of 40-foot "fallen flag" boxcars (I like small boxcars with running boards) along with Penn Central GP9s and GP38s.

The intense burst of green that is late spring erases the gray of the winter just past, and as I progress into my golden years, winters become more and more problematic. So choosing spring as the timeframe for the layout just felt good. Moreover, I suspect it's easier to model a tree with green foliage than one aglow with autumn color – how much is too much? – or barren of leaves in the winter. And with the advent of great scenic products such as Scenic Express SuperTrees, modeling realistic foliage-laden trees is much easier now. So the spring of 1970 it would be.

Building the layout

The layout has detail but isn't what I'd call superdetailed. I try to adhere to Allen McClelland's "good enough" concept – everything built and detailed to the same adequate and uniform

5. Penn Central's southbound local eases past a well-kept residence and across Brick Road on the far north side of South Bend.

7. The local switches the Drewry's plant in South Bend. The boxcar contains a load of shipping cartons for the well-known regional brewery.

8. The local is passing under the South Bend entrance to the Indiana Toll Road and will stop to work the leads to Notre Dame behind the Geep and to St. Mary's College in the foreground.

extent – since a primary goal is to see the layout covered with scenery. To that end, I try not to linger too long on any given task.

I enjoyed Lance Mindheim's MRP 2012 article on "How to avoid the detailing trap," as it helped me justify this modeling philosophy. I can attest that it works. Once you develop the courage to forge on rather than lingering on tiny details, you can make rapid progress, which in turn builds momentum to get you started on whatever the next project is.

This railroad allows me to model both open countryside as well as compact industrial settings. Using static grasses, grass mats from Heki, and SuperTurf from Scenic Express, I've had fun experimenting with textures and color while modeling trackside meadows. I've noted an emphasis on what I call efficient modeling practices (e.g., how narrow a scene can be made and still have it "work"), but I've hung on to the concept of modeling with a larger ratio of scenery compared to actual railroad.

I caught this fever when I had the pleasure of visiting Bill and Wayne Reid's beautifully modeled N scale Cumberland Valley Line several years ago, and I observed how they exemplified this theory. Their layout felt real with both a purpose and place in the landscape. My railroad isn't as grand or large as theirs, but its meanders through the grasslands and modest industrial areas feel right to me. The space I devoted to pure scenery seems to be justified.

But even more satisfying than open scenery is the enjoyment I derive from structure modeling. I like both kitbashing and scratchbuilding. The structures are modest, but they fit the era and industries chosen.

The largest scratchbuilt structure on the railroad is the Portage Avenue overpass. Although the prototype spanned only a single track, mine vaults over three. When I looked for kits to adapt, I found that their approaches were too steep to be

9. An in-progress photo of Dave's Penn Central/NJI&I layout shows the short line's engine terminal in the foreground and JK Tower in the background. Note the dummy NJI&I siding and boxcar at the industry to the left of the tower.

realistic. So I realized that I would have to build it myself.

When I researched the techniques other modelers had used to build similar wooden bridges, I discovered that an extensive amount of energy had been used to build the jigs for the support bents. Again applying the "good enough" principle, I made jigs that were simple and effective, yet could be thrown away without a second thought at the conclusion of the project.

Train movements

Since the railroad is of modest size, at most it supports two crews during an operating session. Prototype train movements included a daily turn on the Niles Branch that headed southbound in mid-morning from Niles into South Bend, then returned north that same afternoon. I operate this branch as the prototype did using switch lists rather than individual car waybills.

The day begins with the local coming down from Niles (north-end staging), switching the trailing-point industries as it proceeds south, and finally working the NJI&I interchange. It then turns back north, working the northbound trailing-point customers before arriving back in staging.

The NJI&I, again using switch lists, departs its engine-servicing area to assemble its outbound train, picking up any cars along the way destined for the Niles Branch as well as those that have traveled up from Plymouth. Once the pickups have been completed, it departs to the PC interchange.

I stage cars meant for Armco Steel and Torrington at the Plymouth interchange and tack them onto this outbound train, as it provides for an interesting movement. Once this train has made its Armco/Torrington setouts and picked up any incoming cars, it moves back to home rails and switches this incoming traffic as needed.

When I have little time, I'll fire up my Penn Central GP38, assemble a train, and run at a lazy pace from staging to interchange and back. I do this frequently during the work week when I have little left-over energy, as I find this exercise not only relaxes me but also keeps track cleaning to a minimum on those areas of the railroad that are used often.

A little help from my friends

Many have helped with this layout. Russ Rettig, whose apartment layout was featured in *Model Railroad Planning 2012*, built a version of the NJI&I back in the 1980s that served as a catalyst for this plan. Dan Lawecki, who loves everything about prototype railroading in the Midwest and in particular the NJI&I, wrote two articles on the line: one for *The Banner* (the quarterly publications of the Wabash Railroad Historical Society) in June 2006, and the other for August 2011 *Model Railroader*, both of which served as guiding lights. Andy Laurent, who worked in the redevelopment department for the City of South Bend and now works for South Shore Freight, contributed his knowledge of how these railroads served the greater community. And Tom Johnson inadvertently contributed several pieces of rolling stock to my railroad when he changed eras.

Having good friends like these and others with whom to share my enthusiasm for this project has made it a lot more fun. **MRP**

After a 33-year career as an architect, Dave Fodness joined the development department of a Catholic senior-services provider. He has been a modeler since his pre-teen years, when his father introduced him to model trains via an American Flyer set under the family Christmas tree in the 1950s.

One of the author's compact shadowbox layouts, similar to the pair he describes here, sits on a shelf in his studio. This 1'-9" x 4'-9" layout depicts a historic kaolin drying plant in Cornwall, England. Iain Rice photo

2 shadowbox plans for On2½

Or just about any modeling scale and gauge

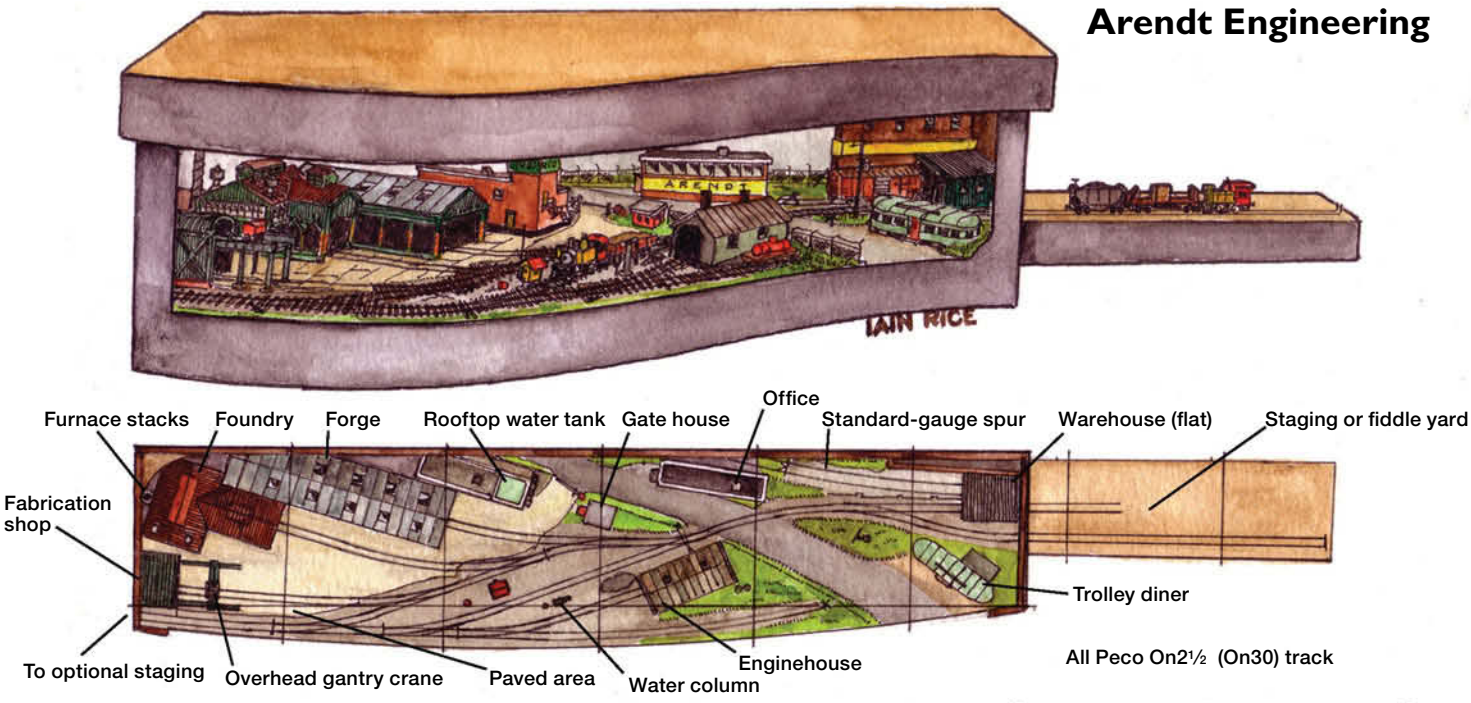
By Iain Rice//Artwork by the author

When I was a kid, my favorite trip out was a visit to the Science Museum in London, England. What most captured my fancy there wasn't the glamorous full-size exhibits but a series of animated shadowbox dioramas in the Industry Gallery. When I pushed various buttons, different parts of the display lit up and came to life. Magic! I often think that it was those museum dioramas that inspired my lifelong interest in models.

Since those days, I've designed and built quite a few shadowbox displays myself. It's a technique that lends itself well to the small model railroads popular in Europe, as a shadowbox makes up for lack of real estate with punchy presentation, good lighting, and the realism that comes from a natural viewpoint. Some of these principles can be applied to larger layouts, of course, but much of the effectiveness of the true shadowbox lies in its containment, in it being a complete scene bounded by a frame, rather like a painting but in 3-D.

What's a shadowbox?

Someone once described a shadowbox layout as "a model railroad in a lit-up fish tank," which is a pretty fair way of thinking about the concept. According to Wikipedia, a shadowbox is "an enclosed glass-front case



containing an object or objects presented in a thematic grouping with artistic or personal significance."

I think a model railroad can have artistic significance, although in the case of an operating layout we won't want a glass front that gets in our way. But the basic idea of the model being presented in a self-contained display has much to recommend it.

The practical advantage of an encased model railroad is that it's structurally self-contained and well protected, which makes it easy to move and exhibit at train shows. A well-executed shadowbox model also sits happily in a domestic setting – the den or living room as opposed to the attic, garage, or basement.

Ideally, a shadowbox should be constructed as a single unit, although any off-scene staging or fiddle yards can be separate plug-in modules. A single-unit shadowbox can be quite substantial – my largest shadowbox is nearly seven feet long by 30" deep by 19" high. With 3"-thick extruded foam insulation board as a base and thin, high-grade plywood for the rest of the structure, the result can be lifted by two people and fits in a minivan.

Most shadowbox railroads are smaller than this, the concept is popular with fans of the "micro layouts" advocated by the late and much-missed Carl Arendt. (See Carl's work at www.carendt.us/index.html.) Most of the shadowbox layouts (known as "cameos" here in Britain) that I've built over the past 20-odd years have been around five feet long, with a couple feet more of staging/fiddle yard. Width is around 18", and the height rarely more than 15". All feature lightweight construction techniques for portability and integral power supplies, control systems, and lighting.

Shadowbox presentation

Like the frame of a painting, a good shadowbox is carefully designed and crafted to complement the objects it displays. In the context of a model railroad, the shadowbox case incorporates the layout landscape and lighting fascias, together with side "wing" uprights, end panels, a back, and often a ceiling. I construct my shadowboxes with the base, layout fascia, wing pieces, ends, and back made integral, leaving the lighting fascia and ceiling panel removable for access.

I tend to steer clear of the straight rectangular box, preferring a sweeping, subtle curve to the front fascias, and often integrating the wings with the layout fascia. One of the advantages of a shadowbox is that it greatly facilitates a seamless backdrop with coved corners. I make such backdrops out of flexible 2mm – less than ⅛" – medium-density fiberboard (MDF) sheet, which picture-framers use as backing board; if your local lumberyard doesn't stock it, you might find it through an art-supply house. It takes latex paint well and is also good for making fascias. You can cut it with a utility knife, thus avoiding the creation of dust.

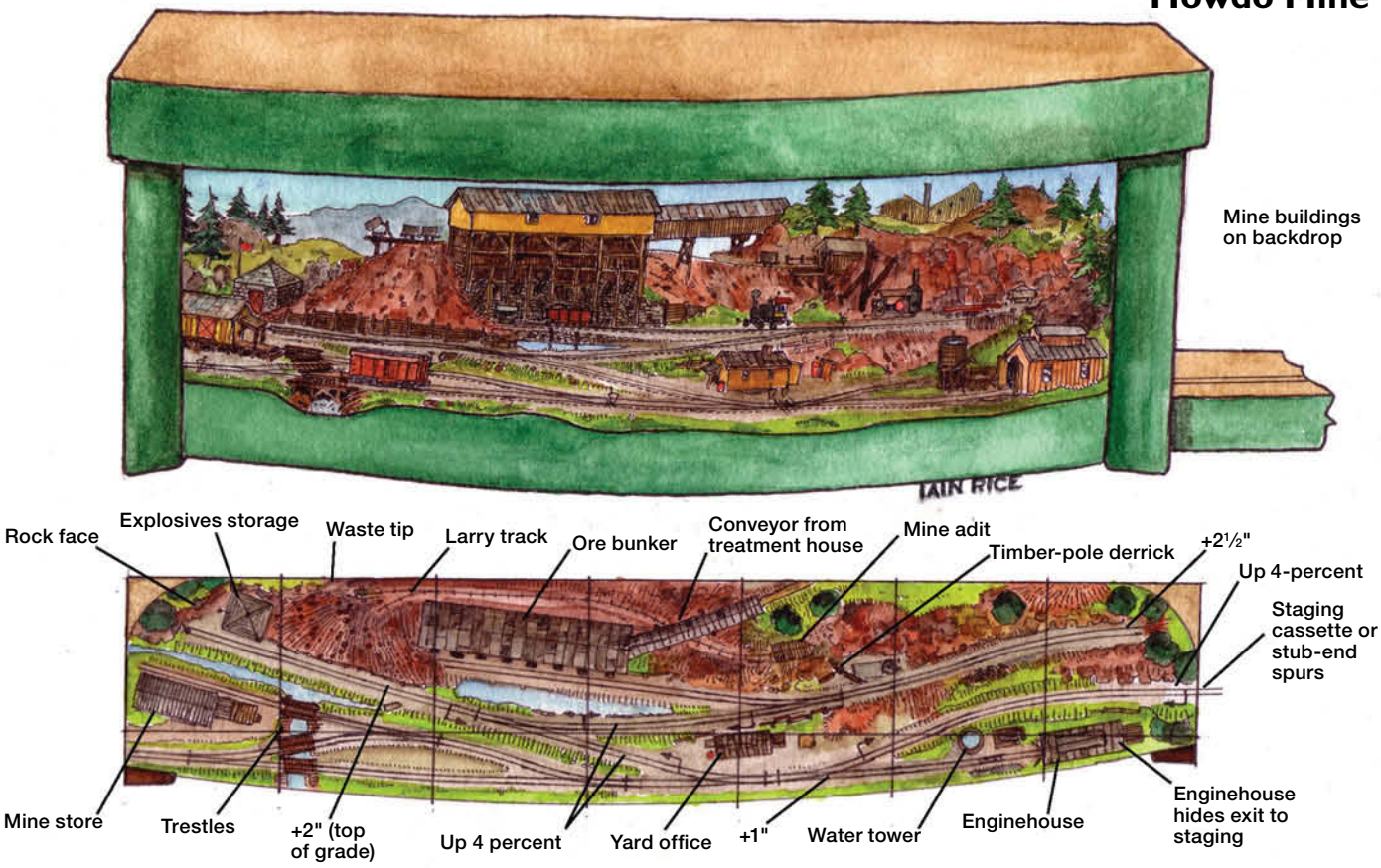
Lighting, an important part of any well-presented model railroad, is facilitated by shadowbox construction. A shadowbox, as its name implies, cuts out cast shadows, which allows total control over the layout illumination. An integrated lighting setup can be selected and positioned to light the model to best advantage.

One refinement I incorporate in shadowbox lighting is "stepping out" the main (front) lighting sources a few inches to ensure that objects at the front of the scene are properly lit rather than presenting a shadowy face to the viewer. I also add wash lights above the top of the backdrop both to light it and to kill any shadows.

Heat output from incandescent lamps can be a problem with shadowboxes, but compact fluorescent and light-emitting diode (LED) options have removed this difficulty. High-intensity LED light strips sold for mounting beneath kitchen cabinets are ideal for shadowboxes. Compact, lightweight, and operating at only 12 volts DC from a plug-in transformer, they provide punchy illumination at close-to-daylight color values yet put

The track plan at a glance

Name: Arendt Engineering
Scale: On2½ (1:48 30" gauge)
Size: 1'-4" x 5'-9"
Prototype: freelanced
Locale: metropolitan area
Era: 1930s and '40s
Style: shadowbox
Mainline run: 5'-6"
Minimum radius: 24"
Minimum turnout: no. 5
Maximum grade: none
Train length: 18" maximum



out virtually no heat and consume negligible power.

Shadowbox scales and subjects

A layout site offering only 10 square feet of real estate limits what you can put on it. Even in Z scale, you won't be looking at much mainline action! Although it might seem logical to match a modest space to a small scale, I favor the opposite approach; faced with a shadowbox-size footprint, I start thinking O scale or even larger.

Why? First, it's a fact that when there's not all that much to look at, we examine what there is much more closely. And generally, the larger the scale of the model, the closer the scrutiny it can stand. Second, where space is in short supply, intensive switching is the most rewarding form of operation. What we're really facing is lack of length of run, in which case a modest-size, large-scale switcher offers as much scope for running as a larger engine in a smaller scale. If you've only got a half-dozen feet of run, then that's as far as you can go; the scale doesn't make any difference.

What is significant is speed. Operating at realistic switching pace, a larger-scale model can exploit what track there is to the best effect – which is why virtually all shadowbox layouts feature a switching theme. For my pair of examples, I've followed two popular switching subjects: an industrial railroad serving an engineering works, and a mining railroad in mountain country. Both models are O scale narrow-gauge, using Bachmann's delightful On2½ (On30) equipment running on Peco's narrow-gauge flextrack.

The track plans are both conceived around small steam engines made by the H. K. Porter works: the diminutive 0-4-0 or 0-4-2ST for the turn-of-the-century Howdo Mine RR, and the more modern 0-4-0T side-tanker for Arendt Engineering set in the 1930s or '40s.

O: the modeler's scale

These two super-compact railroads have little in common apart from one sizable shared asset: the use of O scale (¼" to the foot, 1:48 proportion), which is a detail freak's delight and arguably the most satisfying scale for structure modeling. It's in the structures that the real scope and challenge of this type of mini-layout lies. The big mine hopper at Howdo or the open-fronted forge and foundry at Arendt offer the chance for close-up, blow-your-socks-off, detail-laden modeling that, in the context of this up-front presentation, can be readily appreciated.

"Objects of artistic significance" indeed! **MRP**

Iain Rice is a frequent contributor to MRP and author of several books on track planning and layout design published by Kalmbach.

The track plan at a glance

Name: Howdo Mine
Scale: On2½ (1:48 30" gauge)
Size: 1'-6" x 7'-0"
Prototype: freelanced
Locale: Black Hills
Era: 1900
Style: shadowbox
Mainline run: 6'-6"
Minimum radius: 24"
Minimum turnout: no. 5
Maximum grade: 4 percent
Train length: 18" maximum

Learning points

- A shadowbox allows the modeler to control all aspects of the presentation, including lighting.
- Most shadowbox layouts are portable and can be easily transported by two people.
- Small spaces favor switching layouts but not necessarily smaller scales.
- When there's not all that much to look at, we tend to examine what there is much more closely.

Ray Holton's father, Homer, photographed Santa Fe 2-10-2 no. 3934 and 4-8-2 no. 3741 as they teamed up to power varnish over Cajon Pass in the early 1940s.

Cajon kudos

I enjoyed reading Andy Sperandeo's article about his 1947 Cajon Pass layout [*Model Railroad Planning 2012*]. I am amazed with the accuracy of the track plan. I grew up in Corona (in the Third District), and my father, Homer, was an avid railfan. I can pinpoint the location that we used to visit in the late 1930s and early '40s. We had many picnics under the tree that was just across the tracks on the corner of the dirt road that led down to Cajon station.

I still have a few pictures my dad took. The one I included is not dated, but I suspect it was taken in the early '40s. Although I got my start in model railroading in those days, only recently have I begun to build a layout.

Thanks for the memories!

Ray Holton
Knoxville, Tenn.

Model Railroad Planning 2012 is another exemplary issue. Andy Sperandeo's article on his in-progress Cajon Pass layout demonstrates not only his talents but also synergistic interplay. In one of his Trains of Thought columns in *Model Railroader*, MRP editor Tony Koester championed showing off a layout while some or all of it is under construction. The lead photo in Andy's article provides an informative look into an expert modeler's underworld of benchwork, track support, wiring, and scenery landforms, and even offered a sampling of what the finished product will look like. Well presented!

I'm looking forward to more on Andy's Santa Fe as well as the layouts of Paul Dolkos, Mark Dance, Mike Confalone, and Tony's Nickel Plate, to name a few of the crème de la crème.

Woody Langley
Sherman Oaks, Calif.

Des Browne's Santa Fe layout in Northern Ireland includes this staging yard that represents Victorville, Calif.
Des Browne photo

Just wanted to let you know that I especially enjoyed the 2012 MRP. I always enjoy Santa Fe and Cajon Pass items, but as always there were lots of articles that proved fascinating to me. I am building a fairly small (10 x 24-foot) layout based on Victorville, Calif., which tends to be only mentioned in most Cajon Pass layouts.

Des Browne
Holywood, County Down, Northern Ireland

I'm a bit confused by the first paragraph in the "Back up the hill" section of Andy Sperandeo's Cajon Pass article. Heading back up the hill is actually eastbound, but the first paragraph talks about westbound trains. Is this paragraph about freights heading to Los Angeles, or is it really about eastbound freights?

Doug Akromas
Solon, Ohio

[My thanks to Doug, Les Beckett, John Thompson, and others who pointed out errors in my article, "Cajon Pass, San Bernardino to Summit in 1947" in *Model Railroad Planning 2012*. The fault for these is mine, but in no case do they alter my thoughts about my design. Here are the corrections:

• Under "Back up the hill" on page 14, the washout caused by flooding of Cajon Creek happened in 1938, not 1939, and it resulted in a shortened eastward, not westward, passing track when the lower end of the Cajon sidings was rebuilt. Consequently, it's the eastward siding that's shorter on my layout, as shown in the track plan.

• Under "To Victorville and beyond" on page 15, the skip in the first sentence should be to the timetable east end of Summit. Also, the station name "Thorn" is misspelled; it shouldn't have a final "e."

• On the track plan on page 10, the heavy line representing the eastward main track should be the one nearest the depot, with the eastward siding between that track and the westward main track. The tracks are labeled correctly in the photo of Summit with "Name every track" on page 5 of the booklet, *Workshop Tips: Layout design for operation*, included with that issue of MRP. – *Andy Sperandeo*]

Picking favorites

I've felt for a long time that if I were allowed to buy only one book or magazine per year, I would choose *Model Railroad Planning*. The 2012 issue is excellent, and I had fun considering all of the ideas presented.

Every article this year is outstanding; I can't choose a favorite, although Iain Rice's track plan with two railroads interchanging was very appealing. Thanks very much for another great annual.

Rick De Candido
Mississauga, Ontario

Staging ideas

Another great issue – thanks! I have all MRP issues except the first [1995] one, which I figure I'll find someday.

Regarding Tony Koester's staging article, and the "staging in the middle" suggestion: This is a good idea, and one that I've incorporated into my layout design. But I think the credit for the idea belongs to John Armstrong. See his *Track Planning for Realistic Operation*, 3rd edition, page 103, "The center-layover scheme." I got the idea (and many, many others) from John's book. In fact, I can't be sure, but it may be that his concept of "layover" tracks preceded the notion of "staging." He noted in the footnotes in the 3rd edition that "staging" is another word for "layover."

Craig Gaydos
Monument, Colo.

[It's hard to know who first embraced the idea of off-layout staging of trains, but I also credit John with being among the first to document its value. – *Ed.*]

Mountain vs. prairie

Regarding Bill Darnaby's article about mountain vs. prairie railroading in MRP 2012, I think one of his 4-8-2s would have been an excellent choice for a photo shot supporting his "Mountain Maumee." It would not be hauling merchandise freight, but some "varnish" behind the drawbar would have been quite appropriate.

John Bruno
Garden City Park, N.Y.

[The 4-8-2 was originally a lengthened 4-6-2 for passenger service in demanding territory. However, we're talking about the signature tonnage locomotive of my present railroad, which wouldn't be appropriate as the tonnage locomotive for the railroad proposed in the article. – *Bill Darnaby*]

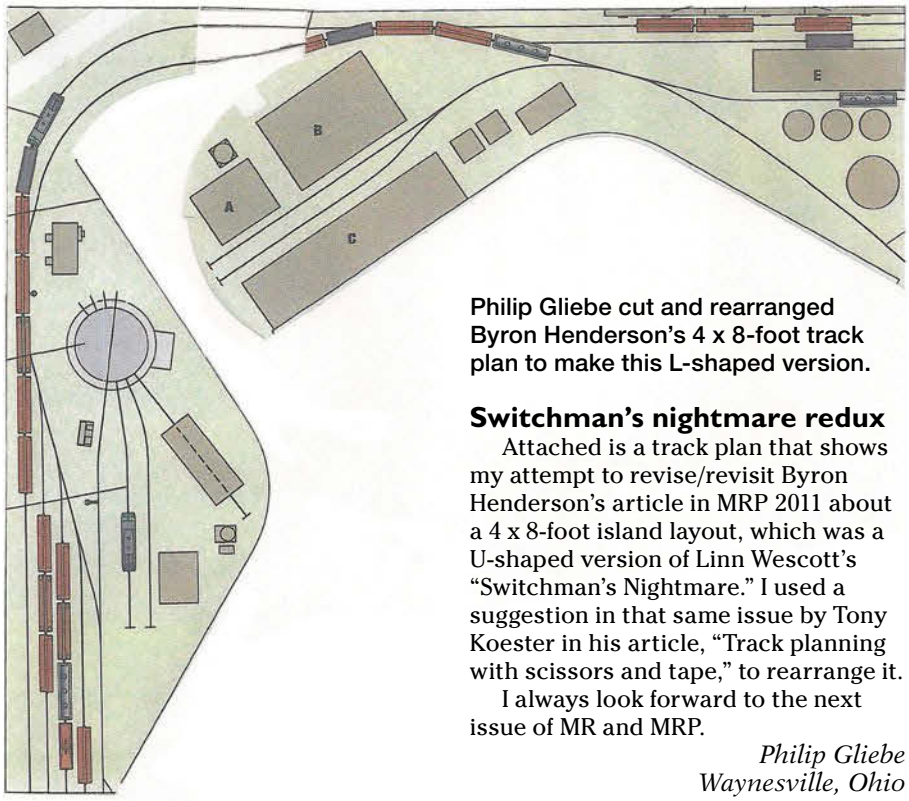
Maine-line railroading

I thank Mike Confalone for writing about his latest efforts for MRP 2012. I find his new track plan very intriguing, especially how he has replicated the branchline aspects of Maine railroading in model form – very inspirational! I'm planning to do the same thing for some Northern Pacific and Union Pacific branches in the Palouse area of Washington and Idaho, and Mike has given me hope that it can be done in a not-so-linear layout design, which appeals to me.

The nods to Jack Ozanich and Tony Koester were well deserved. Mike's Allagash feels a lot like Jack's Atlantic Great Eastern. I love the barn scene to help to hide the turnback loop. [For more ideas on concealing turnback loops, see Paul Dolkos' article beginning on page 42 of this issue. – *Ed.*]

I also really liked Mark Dance's N scale Canadian Pacific layout.

David Lehlbach
Tangent Scale Models



Philip Gliebe cut and rearranged Byron Henderson's 4 x 8-foot track plan to make this L-shaped version.

Switchman's nightmare redux

Attached is a track plan that shows my attempt to revise/revisit Byron Henderson's article in MRP 2011 about a 4 x 8-foot island layout, which was a U-shaped version of Linn Wescott's "Switchman's Nightmare." I used a suggestion in that same issue by Tony Koester in his article, "Track planning with scissors and tape," to rearrange it.

I always look forward to the next issue of MR and MRP.

Philip Gliebe
Waynesville, Ohio

[I'm pleased that Philip found my article inspirational and that he shared his track plan with us. A concern is the rather long reach into the back corner where one would need to uncouple cars on the runaround track. An aisle along the side or moving the runaround to the front would resolve this potential problem. – *Byron Henderson*]

Planning Tip

Unloading oil to pave roads

Any open siding will do

In July 1955 oil was being used to pave the county road between Haydenville, Minn., through Marietta to the South Dakota state line. The trailer was used to heat the oil enough so it could be pumped out of the tank car and later sprayed on the road. Vern Wingfield photo

They say there are two seasons in the North Country where I live: winter and road construction. Back in the day before the environmental regulations were tightly enforced, it was common for gravel city streets and well-used country roads to be given a coat of used oil, which was covered by a layer of sand. This created a semi-permanent hard surface that kept the dust down.

The photo above shows a one-man operation in the rural community of Haydenville, Minn. Tank cars of used oil were spotted on the elevator track and unloaded into a tank truck used to spread the oil.

The photos at right of a larger operation were taken at the Rock Island team tracks in Mason City, Iowa. Most likely, the insulated tank cars are carrying asphalt for a contracted city re-surfacing project.

A prominent piece of equipment in the photos is the trailer used to heat and pump the oil from the cars. Building one would make a fun modeling project.

Railroad documentation shows that asphalt was carried in GATX, NATX, SHPX, and UTLX tank cars. These cars were equipped with internal steam lines to help the liquid flow more readily.

These tank cars were being unloaded in Mason City, Ia., on Oct. 31, 1961. They most likely contained asphalt for paving local roads. S. Lock photos, Mason City Public Library Collection

These photos illustrate another use for sidings during an operating session, and for all those tank cars stored away in the closet. – *Clark Propst*

Planning Tip

Steam-to-diesel transition concerns

It's not just about a different type of motive power

The East Yard engine terminal at LaFontaine, Ohio, on Bill Darnaby's Maumee Route shows a potential concern when transitioning to or planning a diesel-era layout: If it takes three units to equal the horsepower rating of one modern steam locomotive, the diesels require more space in an engine terminal. Bill Darnaby photo

My steam fleet has been providing ton-miles for the Cleveland, Indianapolis, Cincinnati & St. Louis (the Maumee Route) for many years. Despite the best efforts of the railroad's mechanical forces, it's wearing out, and replacement parts are difficult to find or manufacture.

The obvious solution is to retire the steam fleet and add to the diesel roster, which already has Electro-Motive Division Geeps and E7s, Alco RS-3s and PA-1s, and some switch engines. I won't debate the aesthetics of steam vs. diesel here, but there are some purely dimensional concerns that those who are considering an all-diesel roster should keep in mind.

I kept this possible conversion in mind when I laid out the engine terminal, making sure that the ready tracks were long enough for two sets of 3-unit diesels. Indeed, the concrete inspection and fuel pits have three spots.

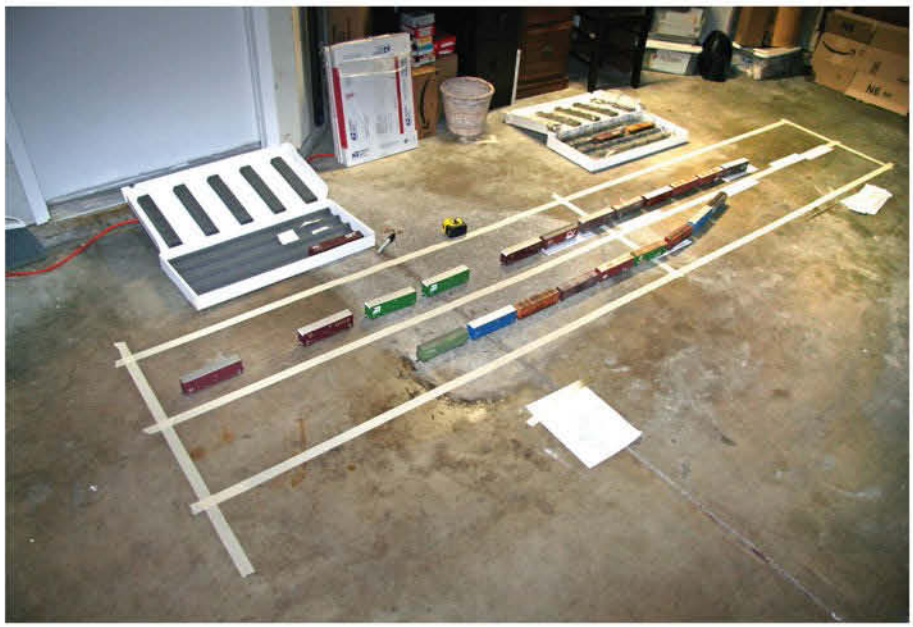
While it typically required three first-generation diesels to equal the horsepower of one modern 4-coupled steam locomotive, power equals speed, and the modeled segment of the Maumee Route is dark (non-signaled) with a maximum speed limit of 49 mph. So, while 60-mph freight trains would require three diesels, 2-unit sets would be reasonable on my railroad.

On the other hand, 2-unit consists will fit on the turntable and leave the engine-servicing tracks more fluid.

Out on the road, the finite length of my passing tracks means that long trains will of necessity be two or three cars shorter. Yet shorter trains behind a three-unit consist will look a bit strange, as diesels can easily handle longer trains; steam's high horsepower rating translates to greater speed, not more pulling capacity.

My point is that a change from steam to diesel power involves more planning than simply following your appearance or sound preferences. – *Bill Darnaby*

Planning Tip



Dan Risdon applied masking tape and turnout templates to the floor of his garage as a means of visualizing the size and track arrangements of his Free-mo modules. Dan Risdon photo

Visualizing two Free-mo modules

Masking tape and turnout templates did the trick

I was having trouble visualizing what the new Free-mo module I've been planning would look like and how it would look scaled down from the prototype. So I laid it all out on the garage floor using masking tape. The accompanying photo shows the module boundaries as well as the centered main line.

My plans called for construction of a pair of 24" x 72" modules with a total length of 12 feet. The turnout templates are Central Valley no. 7s. The boxcars are all 50-footers to provide a good idea about the plan's total car capacity.

You can view the actual area I'm modeling using Google Earth Maps: Search "McClellan Air Force Base, North Highlands, CA" and you'll find two parallel warehouses west of the airfield around Lang and 65th streets.

This former air force base is being developed into a 3,000-acre industrial park that's switched by Patriot Rail's (www.patriotrail.com) Sacramento Valley RR. The railroad, which handles lumber, petroleum, aggregate, and manufactured products, takes care of all rail-related activity in McClellan Business Park. To give you an idea of how big the park is, the prototype warehouses are 2,600 feet long – that's 30 feet of space in HO scale!

The Sacramento Valley often spots cars for storage or transloading on the lower track shown in the module mockup photo. I've seen covered hoppers of various kinds and tank cars spotted here. The warehouses are switched daily, sometimes twice a day. There's a paper recycling company and a logistics company that warehouses paper for a local cardboard-box plant. For someone who likes boxcars, it's a great area to model.

The idea of building this area as a Free-mo module allows the center track to be the main line or a branch line; the center track could then be used in prototype fashion as the industry lead. I plan to use it as a stand-alone part of a garage layout.
– *Dan Risdon*

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Bill stacked his stub-ended staging yards to allow him to easily add cars to the railroad or remove them between or during operating sessions. This way, train crews do not have to deal with hidden staging.

Over-and-under staging yards

Changing train consists is easy with stacked yards and storage drawers

By Bill Darnaby // Photo by the author

When I have people over for their first operating session on the Maumee Route, the first thing they see when they enter the basement is the 2-level staging. "This is it, the essence of the railroad," I tell them with a smile. "Everything on the lower deck goes to the upper deck, and everything on the upper deck goes to the lower deck. We can do this the easy way by moving cars between the two staging yards by hand while standing here, or we can do this the hard way by running the cars across the railroad between the two staging yards."

These remarks underscore an important message about my open, highly accessible staging: It really is easier to move the cars around by hand when restaging than having to run trains back over the layout into a hidden staging yard at the other end.

This arrangement was a deliberate design feature based on my experience with other layouts. As an operating crewmember on someone's layout, I dislike having to cope with running a train in or out of hidden staging, so I designed mine so crews never have to deal with staging yards. They pick up their trains on the layout after I run them out of staging.

In addition, there are several old IBM computer-card (remember those?) drawers under the lower (west-end) staging for storage of about 400 cars. This gives me a lot of flexibility in rotating cars off and on the layout. The drawers are organized for the western destinations of the layout and for empty cars that have not been billed to a destination on the layout.

Each staging yard has 11 tracks, enough for a 24-hour cycle. The inherent flexibility lets me restage in a couple of hours between sessions if I'm in a hurry. I can also restage on the fly during a session if I wish. It really is the best of all arrangements for a 2-deck layout like the Maumee Route. **MRP**

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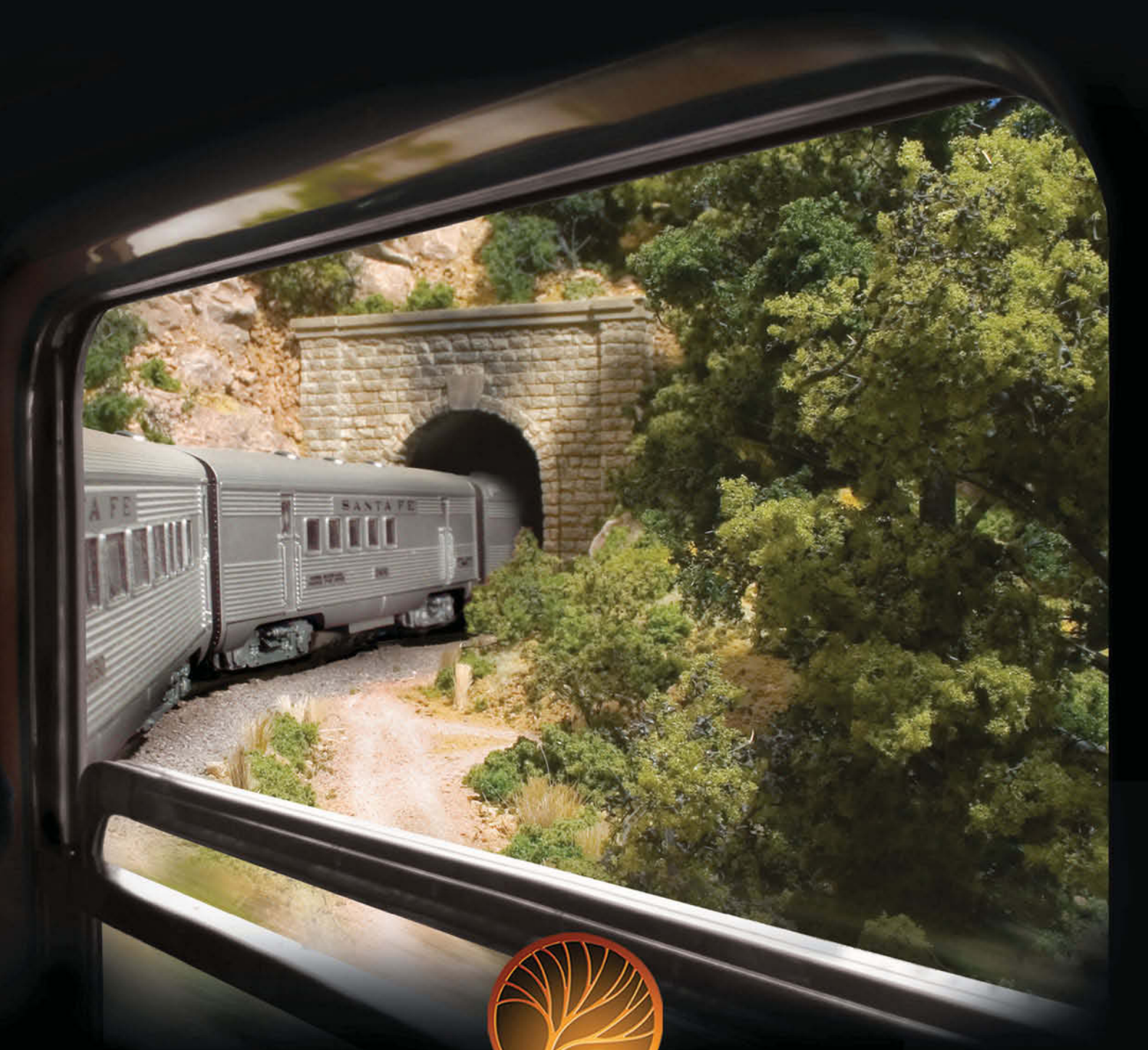

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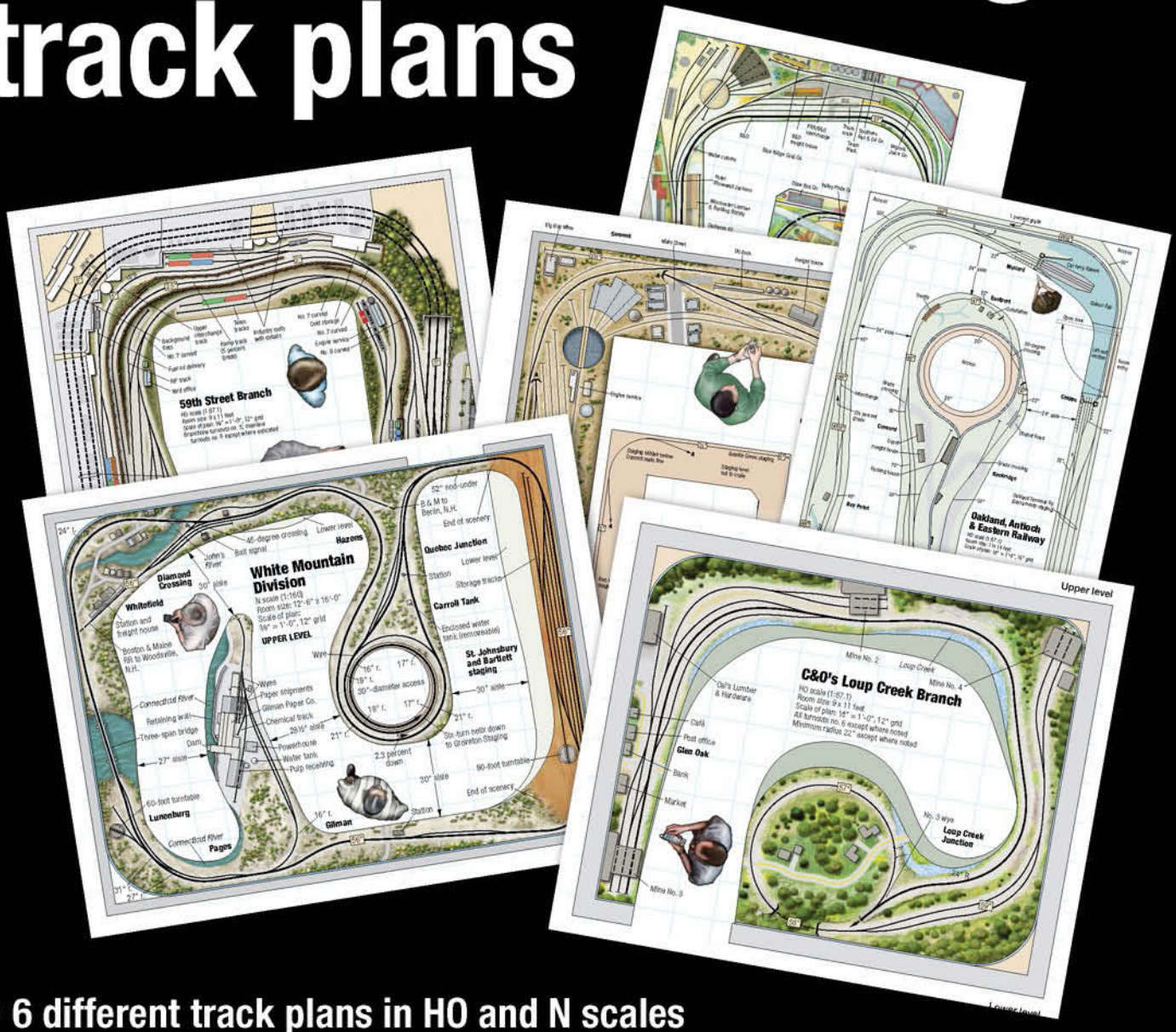

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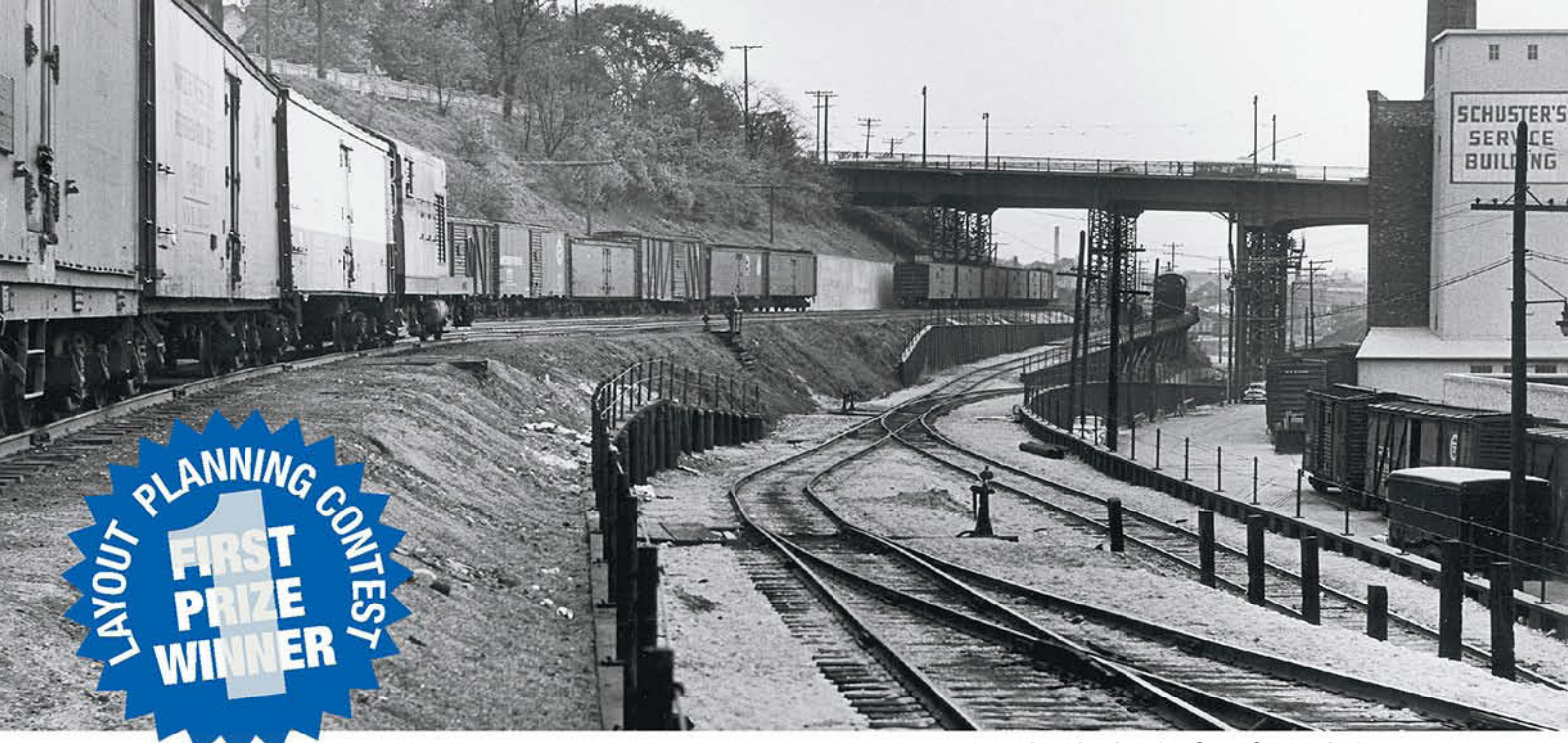


LAYOUT PLANNING CONTEST
FIRST PRIZE WINNER

Inspiration for Stan Sweatt's 9 x 11-layout plan came from photos of the Milwaukee Road's Beer Line in Milwaukee, Wis. Wallace W. Abbey photo

Urban switching on the 59th Street Branch

This freelanced track plan was *Model Railroader's* first-prize winner in 2007

By Stan Sweatt

When I set out to design my 59th Street Branch layout, I chose one of my favorite themes: congested urban industrial branch lines set in the eastern United States during the 1950s. In this case, the line snakes through canyons of tall, brick industrial buildings and is operated by the Erie RR. The premise behind the railroad is that it handles so much traffic that its rails are constantly choked with cars, and the narrow right-of-way leaves little room for the Erie to expand anything.

Design inspiration

The main inspiration for my plan came from a story published in the April 1955 issue of *Model Trains* (a former Kalmbach publication) about the Milwaukee Road's Beer Line in Milwaukee, Wis. The line served several of the city's breweries and featured some great urban canyon scenery.

One of the Beer Line's many details was a ramp track. As shown in the Wallace W. Abbey photo above, it gave the Milwaukee Road access to businesses below its hillside branch line. The ramp track had several switchbacks, making for some interesting operating moves to get cars where they needed to be spotted. I included both this feature and a brewery in my 59th Street plan.

I named the brewery on the track plan after Ballantine Brewing to reflect my New Jersey modeling interests. The original brewery was founded in 1840 in Newark, N.J., and was once the fourth largest in the United States. Ballantine lasted until the early 1970s, and today Ballantine Ale is made and distributed by another company.

On the plan, Ballantine Brewing occupies one corner of the layout. It has a fleet of colorful reefers and requires a wide variety of freight cars. Inbound loads include tankcars of syrup and fuel oil; refrigerator cars of hops; boxcars of malt, grain, bottles, packaging materials, plant supplies, and occasional loads of machinery. Of course, outbound car loads include reefers of bottled beer, but there could also be boxcars of spent grain and hoppers or gondolas of broken glass, called cullet.

To support the plant's needs for iced refrigerator cars, there's an ice

Track plan at a glance

Name: 59th Street Branch
Scale: HO (1:87.1)
Size: 9 x 11 feet
Prototype: Erie RR
Era: 1950s
Style: around the walls
Mainline run: 40 feet
Minimum radius: 23" except where marked
Minimum turnouts: no. 6 on main line, no. 5 on branch
Maximum grade: 5 percent on ramp track
Height: builder's eye level

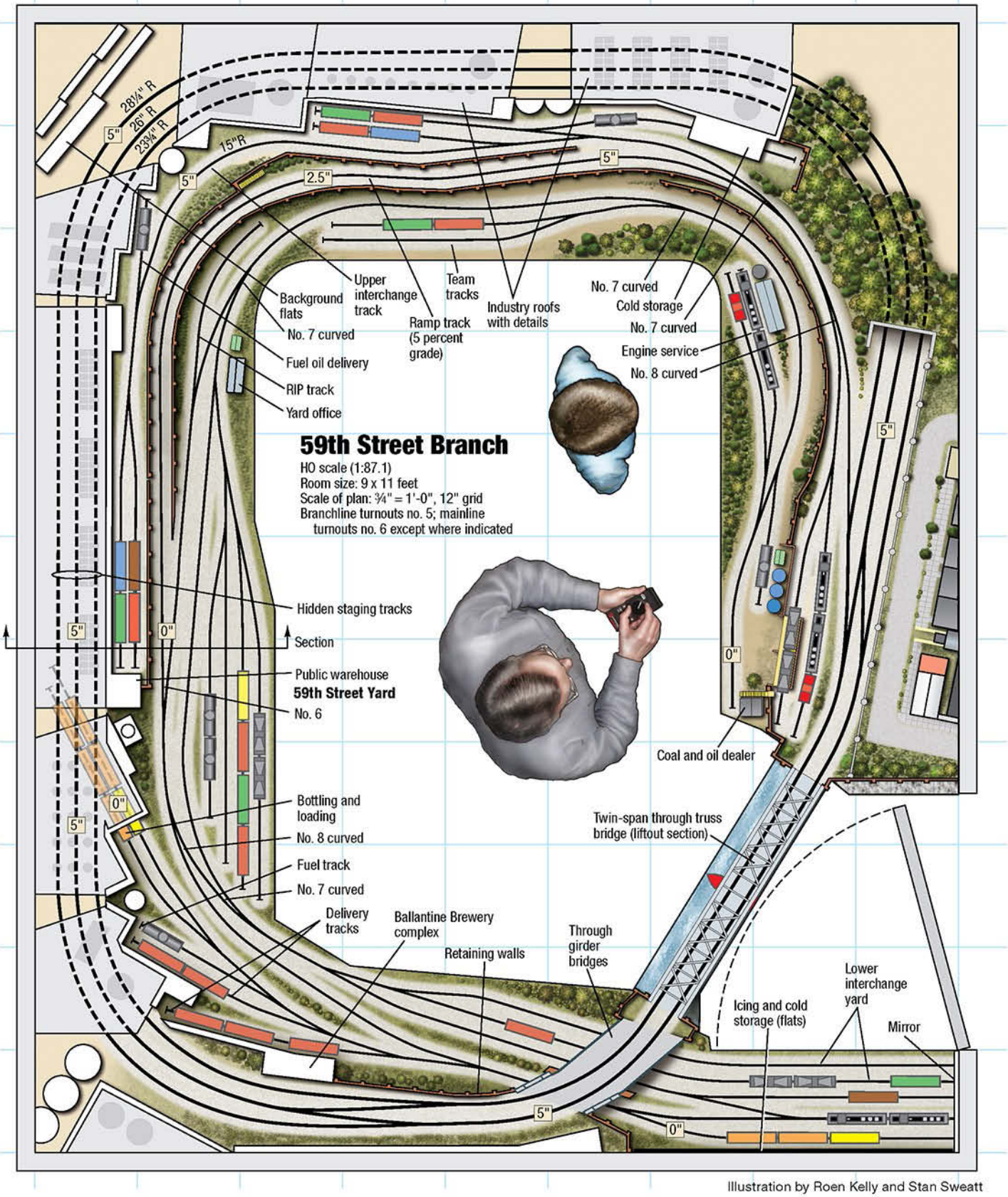


Illustration by Roen Kelly and Stan Sweatt

company located behind the lower interchange yard. Crews can be kept busy shuttling iced reefers to the brewery and spotting new cars to be cooled at the ice dock. I've also added a RIP (repair in place) track across from the yard office to have a place for light repairs on refrigerator cars.

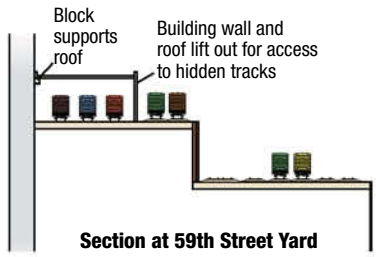
Besides the brewery, other large industries on the layout include a printing plant and a large public storage warehouse. There's also a cold storage company, team track, coal dealer, and an engine service track.

Mainline traffic

Most of the upper-level main line runs under the roofs of the branch's major industrial buildings. When used as hidden staging, each of the three tracks can hold 35 (40-foot) cars with double-headed locomotives and a

Though the photo was taken along the Cuyahoga River in Cleveland, Ohio, this scene could be very similar to one on Stan's Erie plan. Herbert H. Harwood Jr. photo

Hidden staging



The staging tracks are hidden by building flats with roofs and rooftop detail. For rigidity, the wall and roof sections could be built as a complete piece. The roofs could then connect to the backdrop using cabinet magnetic latches. – *S.S.*

Operations on 59th Street

Traffic patterns on the 59th Street Branch can be as simple or complex as you wish to make them. The layout's total car capacity is almost 200 revenue cars. I'd recommend using a car forwarding system with car cards and waybills, but you could use car forwarding computer software instead.

The lower interchange yard is where cars are moved on and off the layout from storage boxes or shelves below the benchwork. The upper interchange track (which doubles as the upper industrial lead) has a 14-car capacity.

Cars picked up from the branch are collected from the upper interchange track and put into an eastbound freight. To keep them from reappearing on the branch too soon, you could trade those cars with cars from the westbound freight. Later you can switch the set of cars back into an eastbound freight and eventually return them to the branch for new destinations. Since the upper interchange track can hold a block that's roughly half the length of a 30-car staged train, you should be able to keep the interchange pickups in motion on the main line for some time until they return to the branch.

To make motive power changes on the main for freight trains, you can use the third staging track as a runaround track. The locomotives would run light down the branch to the lower interchange track to be exchanged with off-layout motive power.

I think the layout would be an interesting one to build and operate. It could offer a lot of modeling opportunities, yet because of its small size, it would be easy to maintain. And, despite its compact nature, operations on the railroad would let you share it with friends. – *S.S.*

caboose. The visible portion of the main line emerges from this area as triple-track that squeezes down to double to get over the water on a through-truss bridge. Before the main line ducks out of sight again, it returns to triple track.

Because the bridge is at the room's entrance, it's one of the focal points of the layout. Herbert H. Harwood Jr.'s photo on this page of the bridge over the Cuyahoga River could serve as a good starting point. You could also make the bridge as a lift-out or swing-span section, making it easier to for operators to enter the room.

On the main line, you can let the trains roll, enjoying the sight of long eastbound and westbound freights crossing the bridge. This feature is also good for display running, allowing you to operate a train in both directions without having to pay much attention.

The main line could provide an opportunity to model a working signal system, too. Installing signals on the main to protect the bridge crossing, control the double-to-triple track interlockings, and protect the branch interchange are all appropriate. You could use signals to indicate the status of the hidden staging tracks, as well.

Scenic details

The design relies upon structures to give the urban canyon effect of buildings towering all around you. With that in mind, for the best visual impact, the layout should be built at roughly eye-level or higher (the dimension for which depends upon your own height).

As shown in the illustration above, the roofs on the buildings act as a bridge from the structure fronts to the backdrop, lending rigidity to the structure walls. The roofs, building walls, or both are removable to provide access to the staging tracks they conceal. I've also drawn the buildings with gaps in the roofs to allow for monitoring (by standing on a small step stool) of the trains that are running underneath.

To finish the city's appearance, you could add a printed city skyline background and some low-relief flats and smokestacks to the backdrop.

Another scenic element I've included is a small mirror set behind the lower interchange yard. With the ice company flat along the wall, the mirror will make the lower yard and ice dock look much larger. You could also place small mirrors in the gaps between the other industrial buildings to help give the illusion of depth.

In addition to industrial canyons, the layout offers a few other scenic options. To the right of the entry door is a city neighborhood scene that could be detailed with many points of interest. The tunnel portal by the branch junction is also different, as it's surrounded by small hills. You could cover those hills with summer or autumn trees to give the layout an East Coast feel. Both of these areas provide the layout with some scenic variety. MR

A mid-size HO track plan for the operator

This twice-around design fits many different prototypes

By Jerry Boudreaux

Jerry Boudreaux's Red Rock Northern plan could be adapted to many prototype railroads and eras. One possibility would be steam on the Sierra RR in the 1950s. Peter Hahn photo

Track plan at a glance

Name: Red Rock Northern
Scale: HO (1:87.1)
Size: 9 x 11 feet
Prototype: freelanced short line in rural America
Era: variable
Style: around-the-walls with lift-out section
Mainline run: 68 feet
Minimum radius: 24"
Minimum turnout: no. 5
Maximum grade: 2 percent
Height: 43" to 46½"

My Red Rock Northern is a twice-around track plan that can be easily adapted to a number of different prototype railroads and eras. I purposely kept the setting for the railroad and types of businesses it would serve fairly generic for the sake of versatility.

One prototype railroad the design could serve well would be the Sierra RR of California's mother lode country. If set before 1956, the railroad can have an assortment of small 4-6-0, 2-8-0, and 2-8-2 steam locomotives. If after, you can run 4-axle diesel road switchers.

One key to success will be in the equipment you choose. Compact layouts seem bigger if you use small equipment, so 40- and 50-foot freight cars and 60-foot passenger cars work well on the layout's 24"-radius curves.

The curves and grades are gentle enough that you could also change scales. You could build the layout as an HOn3, On3, On2½, or Sn3 railroad, making for an even larger number of possible modeling themes.

Interesting design features

My track plan uses several design features to make the layout seem bigger. One of the unique aspects is that the engine terminal that separates Red Rock from Granite Creek actually serves both of the towns. The turntable is the connection, letting operators turn locomotives at both ends of the railroad without eating up precious real estate for two turntables and roundhouses.

Though it's designed to operate as a point-to-point railroad, the twice-around main line is continuous with a connection behind the roundhouse. This sneak-around track serves as the lead for two hidden staging tracks tucked under the highest part of the layout (one in each direction). These tracks provide off-railroad entrances and destinations, making operating more interesting.

Another feature is that the two main towns on the line are significantly different. Red Rock is arranged in straight lines and includes a few small industries and a compact classification yard. The tracks through Granite Creek, however, are mostly curved and feature a number of small-industry possibilities, including an oil dock, lumberyard, team track, and a freight house.

One feature both towns have in common is train-length runaround tracks with center crossovers, allowing for shorter runaround moves. The two also have main streets with room for a few structures to add scenic interest.

The layout could keep three people busy during an operating session. One would handle switching at Red Rock. The other two would run the local freights, and the passenger and interchange trains.

Getting started

The Red Rock Northern could be a great layout for old heads and newcomers alike. Its size works well with time-tested layout construction techniques, and track components are commercially available.

If you're in the market for a room-size railroad, the flexible design of the Red Rock Northern has a lot to offer. Why not get started? MR

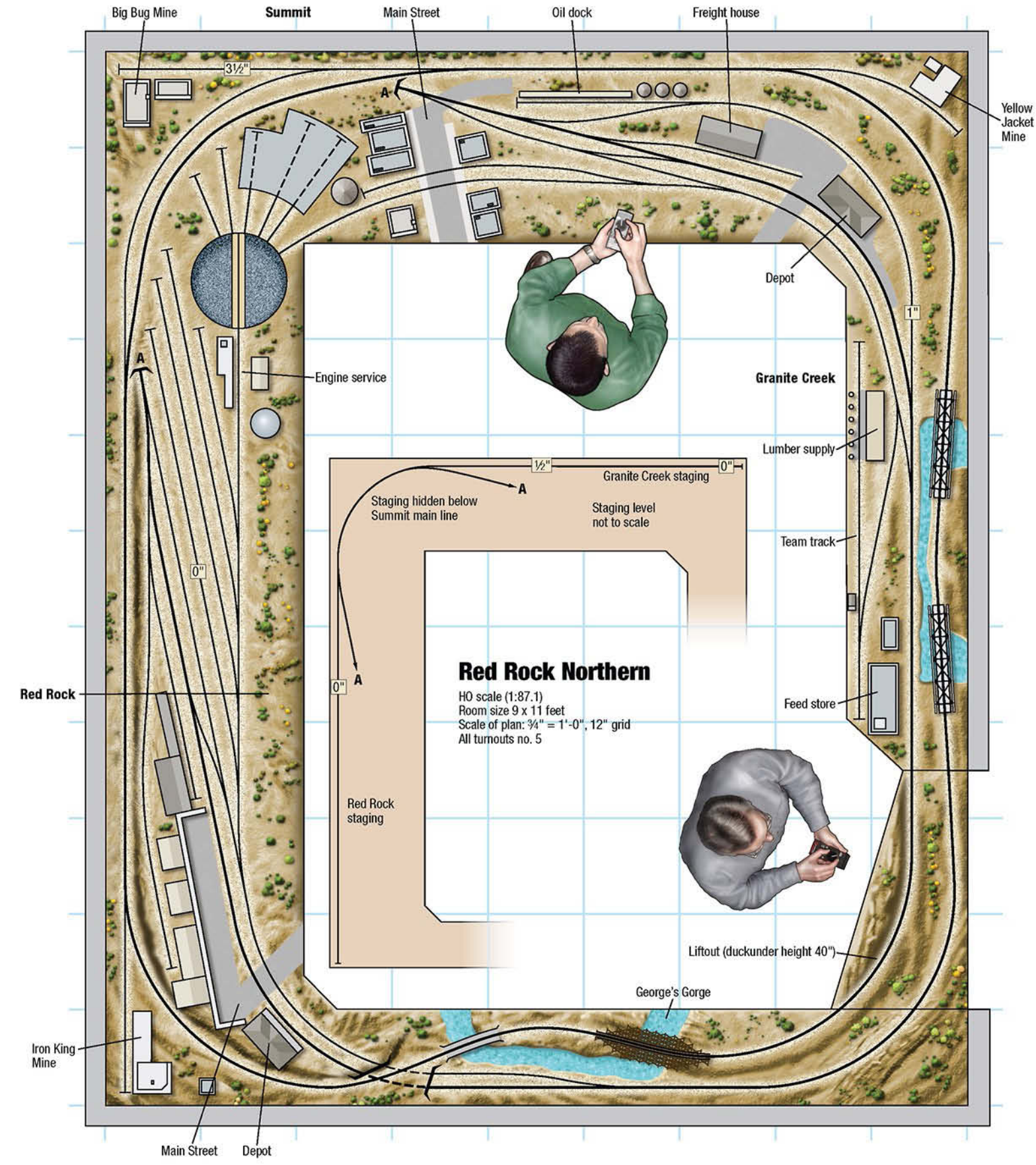
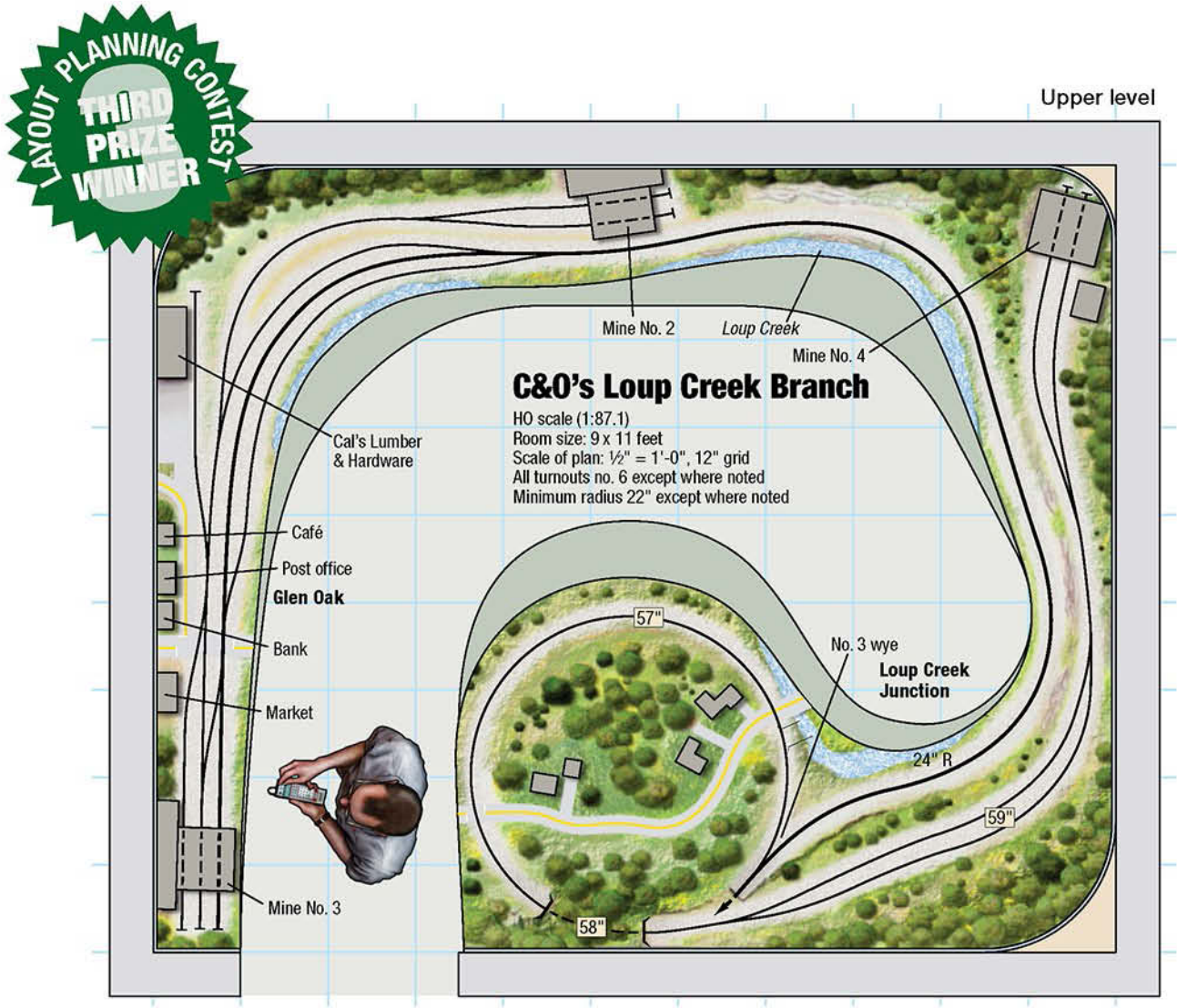


Illustration by Rick Johnson



C&O's Loup Creek Branch

A double-deck layout designed for hauling coal is a third-prize winner

By Jeremy Lidbeck

Of the many different coal branches and subdivisions the Chesapeake & Ohio Ry. operated, I chose to design my contest plan around the Loup Creek Branch.

The line begins at Thurmond, once a roughneck boomtown and the C&O's second-highest revenue terminal. The tiny town and compact yard, on the C&O's New River main line, are nestled tightly between the river and the gorge bluff – so tight the railroad also once was the main street through town.

Because of its charm, scenery, and twisting track, this part of the C&O lends itself well to a model railroad that will fit in a small bedroom.

A look at the design

I figured a double-deck layout would provide a good running distance, as well as offer more scenery. The lower deck is 40" above the floor, and the upper level is at 56". The staging level is set at 36", looping under the helix.

Finding a way to fit a helix into a layout this small proved difficult. After a few attempts, I came up with a design incorporating a 22"-radius helix without impeding the flow of the layout.

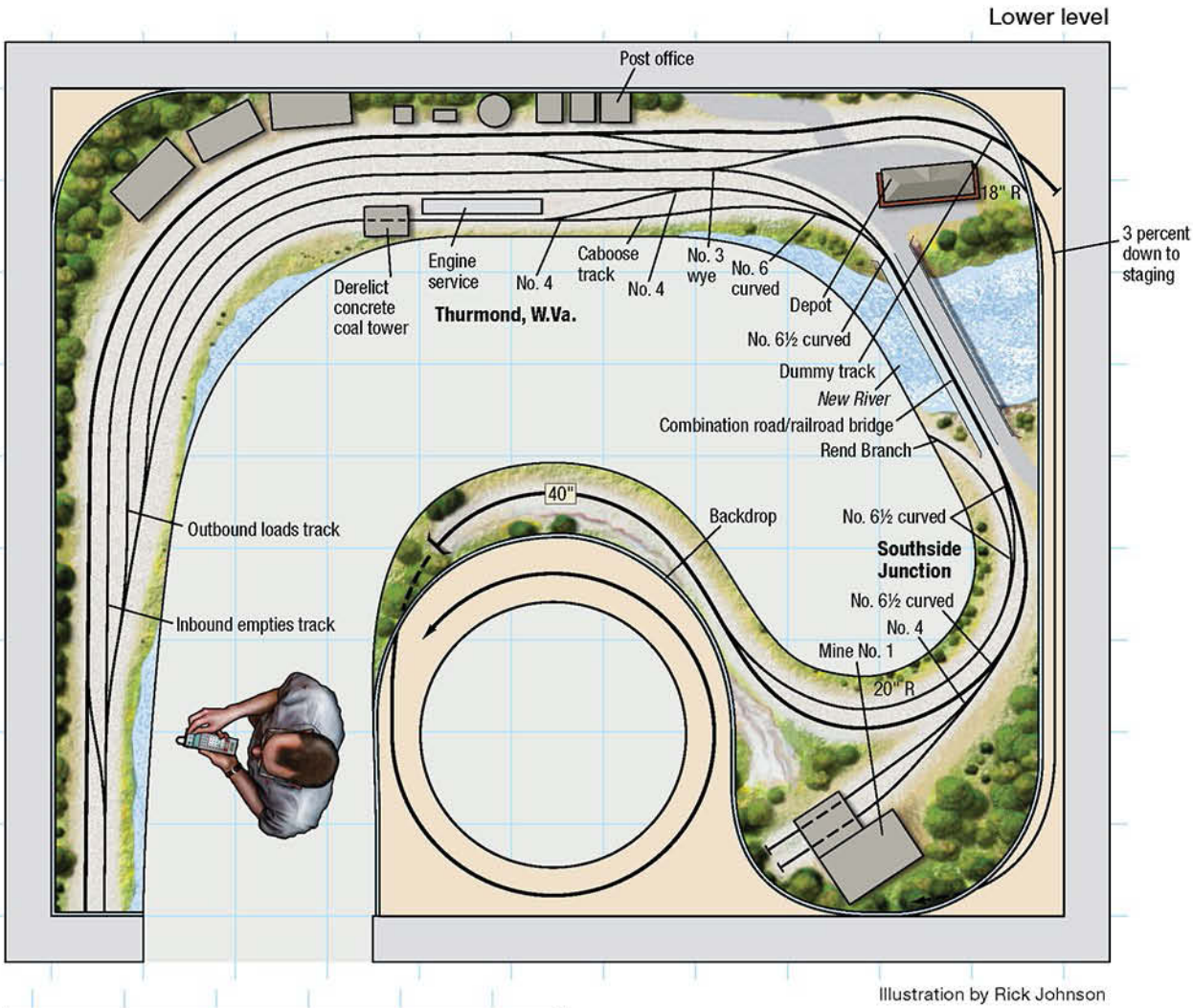
My minimum radius for mainline curves is 22", with 18" the *absolute* minimum. Because the layout uses mostly coal cars and 4-axle locomotives, the equipment won't look out of place.

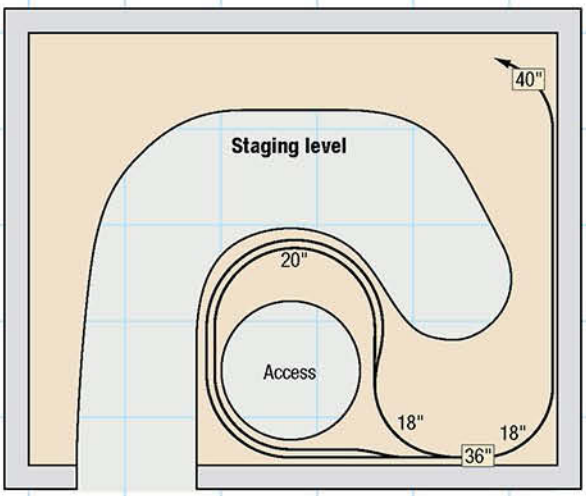
I included two tracks for hidden staging under the helix. These tracks represent the New River main line as it continues east to Newport News.

I used the 30" doorway as my minimum aisle width, continuing it through most of the plan. Since the layout would be run by one or two operators, that aisle size should be comfortable.

Taking a tour of the layout

Thurmond is the main focal point on the lower level, and the town and rail yard are situated along the banks of the New River. The yard has a small engine terminal used to service the





Track plan at a glance

Name: Loup Creek Branch
Scale: HO (1:87.1)
Size: 9 x 11 feet
Prototype: Chesapeake & Ohio
Era: 1970s
Style: multilevel walk-in
Mainline run: 95 feet
Minimum radii: 22" main line, 18" staging, sidings, and spurs
Minimum turnout: no. 6 main line, no. 4 spurs
Maximum grade: 3 percent
Height: 36" to 59"

branch power and road locomotives off of the mainline trains. The depot and the surrounding foliage hide the mainline's exit through the backdrop to the lower staging tracks.

The Loup Creek Branch leaves Thurmond at the east end of the yard. At Southside Junction, the line merges with the Rend Branch, represented by a track leading off the front of the layout.

Because of space limitations, from this point on my version of the Loup Creek Branch is freelanced, influenced by the prototype.

The branch follows its namesake creek to the town of Glen Oak. This is a remote center of commerce, with a post office, cafe, bank, and market, all nestled along the tracks. Along with two mines, the town also has a spur at Cal's Lumberyard & Hardware. This offers the opportunity to run cars of lumber or tractors every so often, breaking up the constant flow of hoppers.

Depending upon how you stage the trains and set up the operating schedule, the Loup Creek Branch could keep a couple people busy for several hours each session, making it a great operating layout for a small space. MR

Local freight no. 377, with a milk car for passenger train no. 163, pulls into Quebec Junction in August 1957. The junction is at the top of the helix on John Koukol's plan. Photo by Bill Gale, courtesy of the 470 Railroad Club collection

A double-deck New England track plan in N scale

This 12 x 16-foot walk-in layout represents Maine Central in the White Mountains of New Hampshire

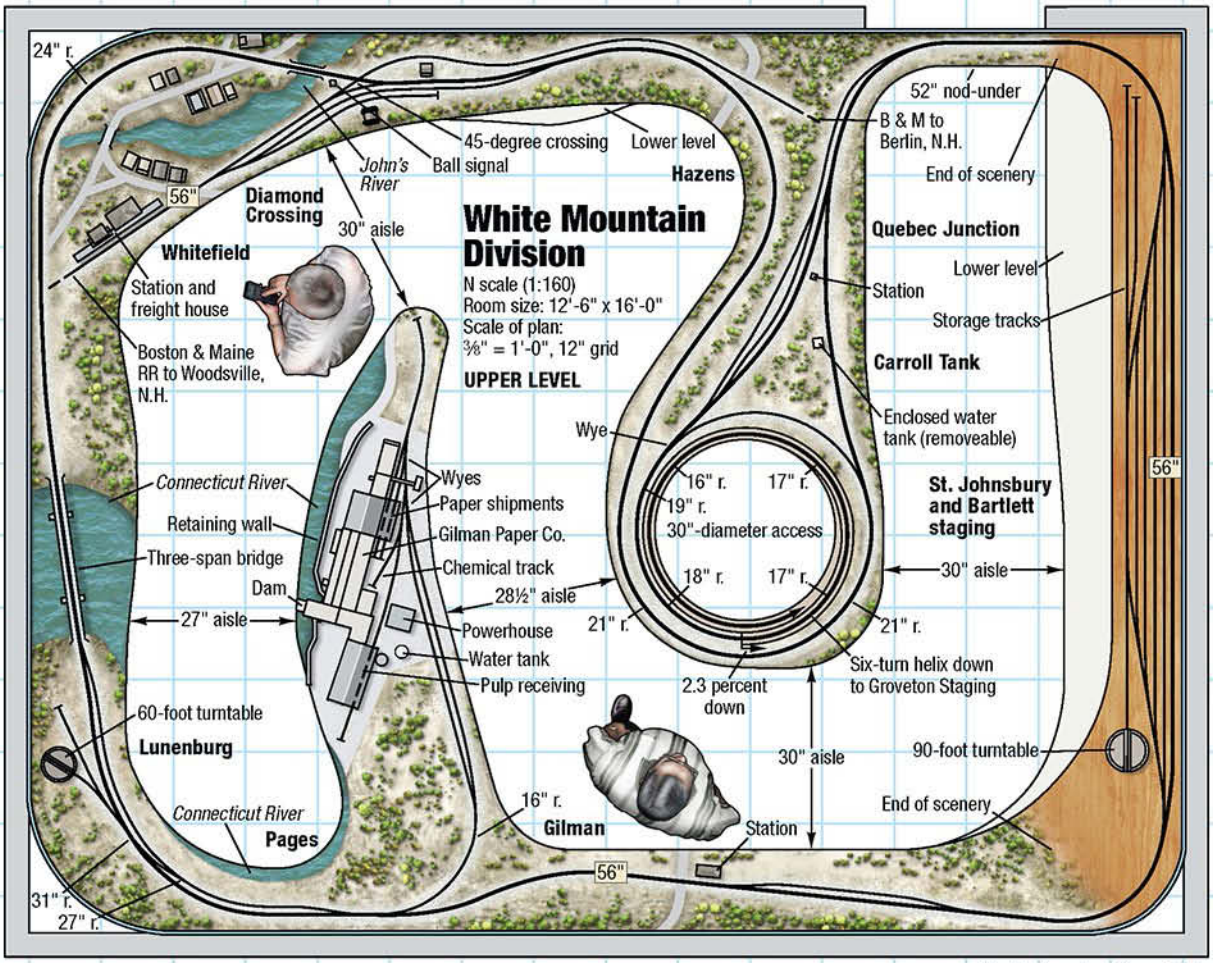
By John Koukol Jr.

My plan for the N scale White Mountain Division represents the western end of the Maine Central's Mountain Subdivision that ran from Portland, Maine, to St. Johnsbury, Vt. This prototype subdivision features the dramatic 14-mile run through the White Mountains to Crawford Notch. Westbound trains faced a 2.2 percent grade out of Bartlett, N.H. Local freights working to the west of Bartlett struggled on the other side of the Notch.

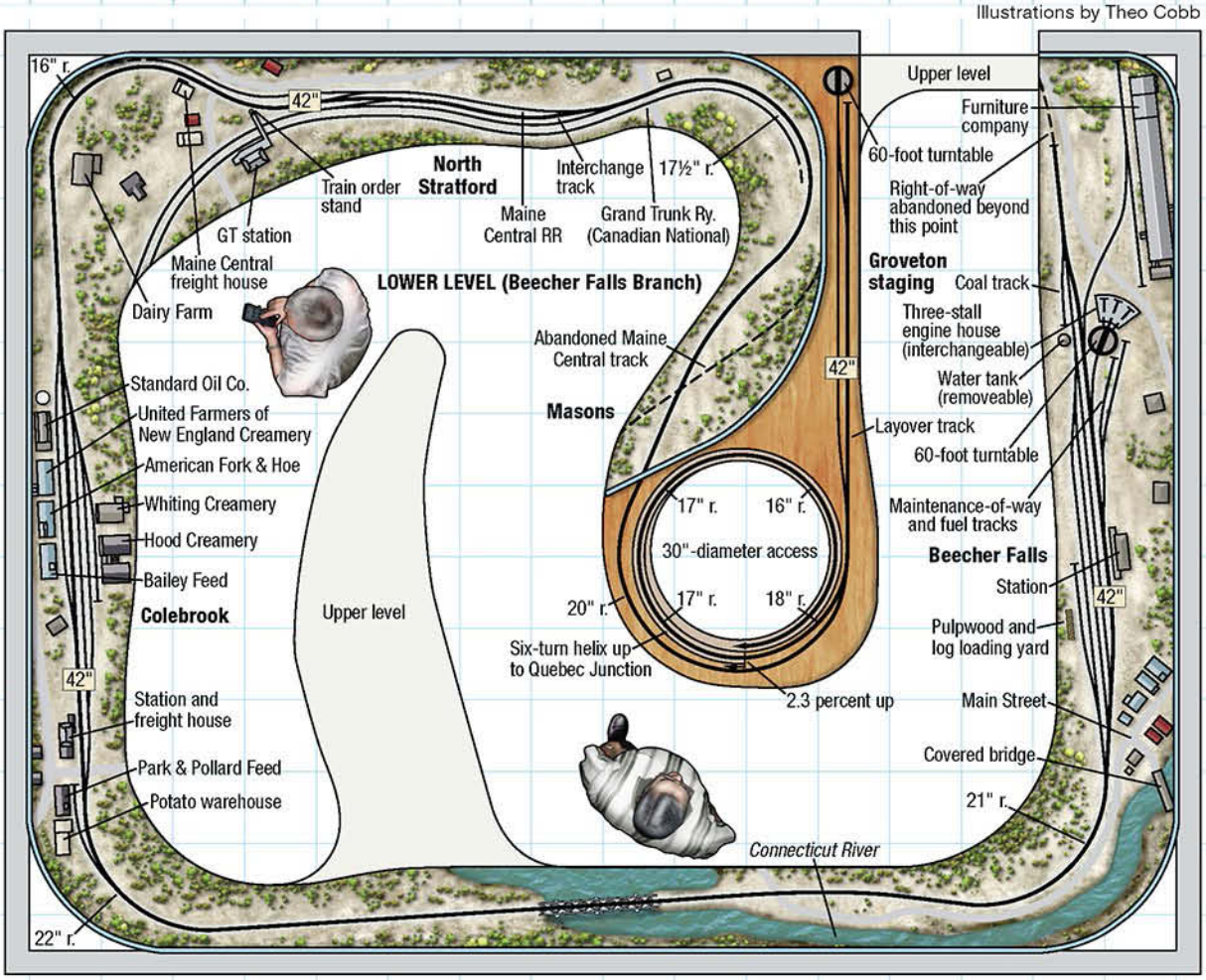
This is a mid-sized N scale railroad that offers a variety of trains, operating schemes, and modeling options. It's ambitious, but it lends itself to constructing a town at a time. MR

The track plan at a glance

Name: The White Mountain Division
Scale: N (1:160)
Size: 12'-6" x 16'-0"
Prototype: Maine Central
Locale: Northern New Hampshire and northern Vermont
Era: early fall 1949 to early fall 1960
Style: two-level, walk-in
Mainline run: 69 feet
Minimum radius: 16"
Minimum turnout: no. 6, except where indicated
Maximum grade: 2.3 percent



Illustrations by Theo Cobb



Motors 604 and 603 pull cars off the ferry *Ramon* at Mallard, Calif., on the south shore of Suisun Bay. Reginald McGovern photo

Sacramento by train... and by ferry

This plan for an 11 x 19-foot switching layout features street running and ferry operations

By John Williams

The Sacramento Northern Ry. (SN) was conceived by predecessor company Oakland, Antioch, & Eastern as an interurban route between the San Francisco Bay area and Sacramento. Although the SN abandoned passenger service in 1941, electric freight service continued until 1957.

From the 40th and Shafter Yard in Oakland, westbound freights continued over Key System tracks to the Oakland Terminal Ry., which served the important Oakland Army Base. This was the only access to the base for the Western Pacific, SN's parent company, until a new connection came in 1957.

The track plan at a glance

Name: Oakland, Antioch, & Eastern Ry.
Scale: HO (1:87.1)
Room size: 10'-6" x 19'-0"
Prototype: Sacramento Northern Ry.
Locale: San Francisco Bay area, California
Era: Late 1940s to early 1960s
Style: shelf with central peninsula
Mainline run: 108 feet
Minimum radius: 18"
Maximum grade: 4 percent
Minimum turnout: no. 4

Having researched the Sacramento Northern Ry.'s South End route (www.people.virginia.edu/~ggg9y/home.html), stretching from Oakland to Sacramento, Calif., I was easily convinced that its interurban origins, short trains, steep grades, tight curves, and minimal facilities would make it ideal for developing into an HO scale layout.

Though many signature elements found along the south end route can be re-created on a layout, I avoided the complexities of overhead wiring by designing my plan for diesel operation.

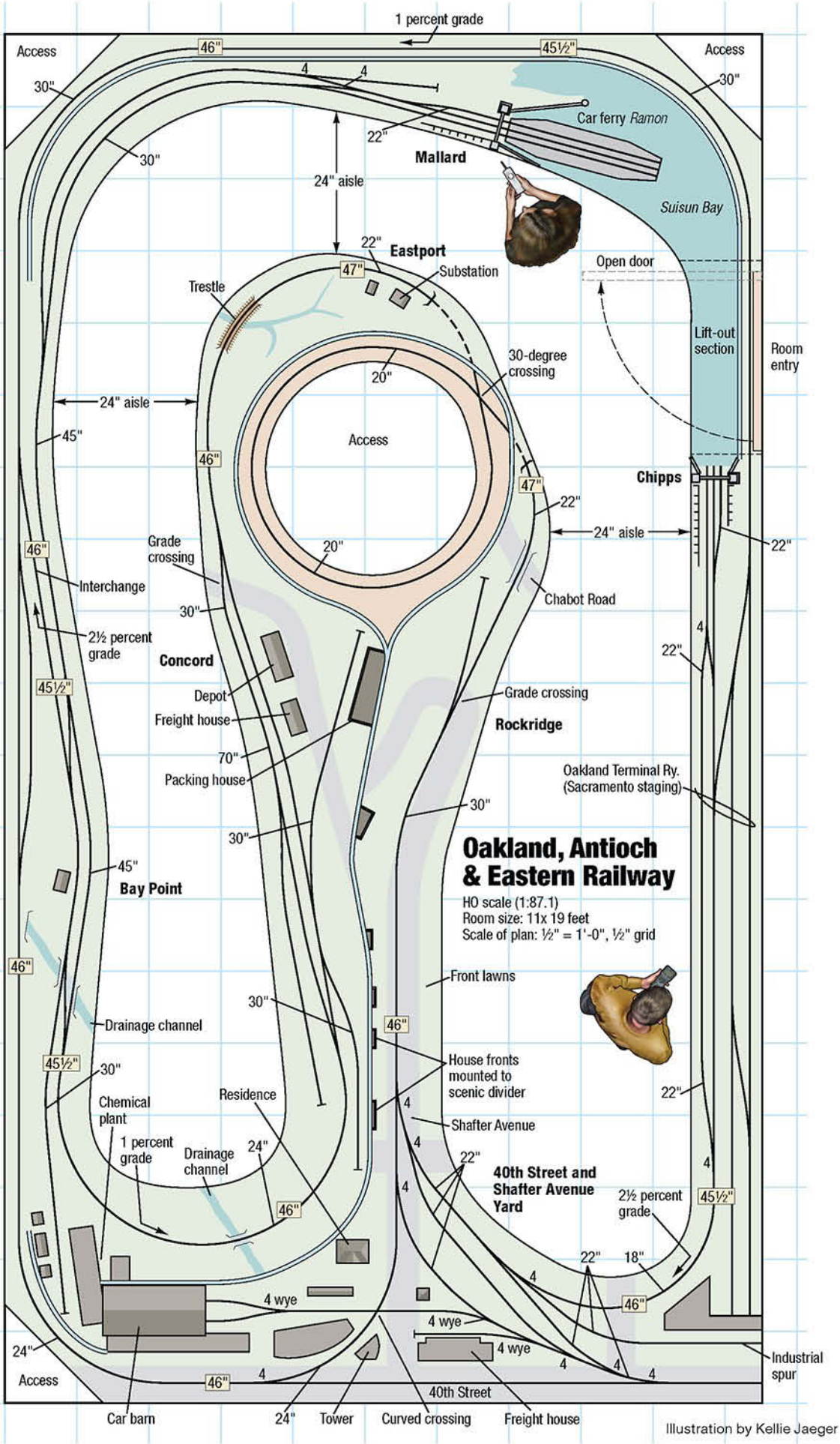


Illustration by Kellie Jaeger

A trip around the track plan

A typical eastbound freight to Sacramento departs from the staging area on track representing the Oakland Terminal Ry. The track curves left behind a scenic divider and encounters a 1 percent grade. When the line reappears along the opposite wall, it's running adjacent to the mainline between Bay Point and Mallard. Here, the track is masquerading as either a Atchison, Topeka & Santa Fe or Southern Pacific line and incorporates part of an interchange connection.

Beyond the interchange, the line disappears behind a scenic divider and curves left onto 40th Street in Oakland. At the west end of the wye at 40th Street and Shafter Avenue, the route swings north onto Shafter.

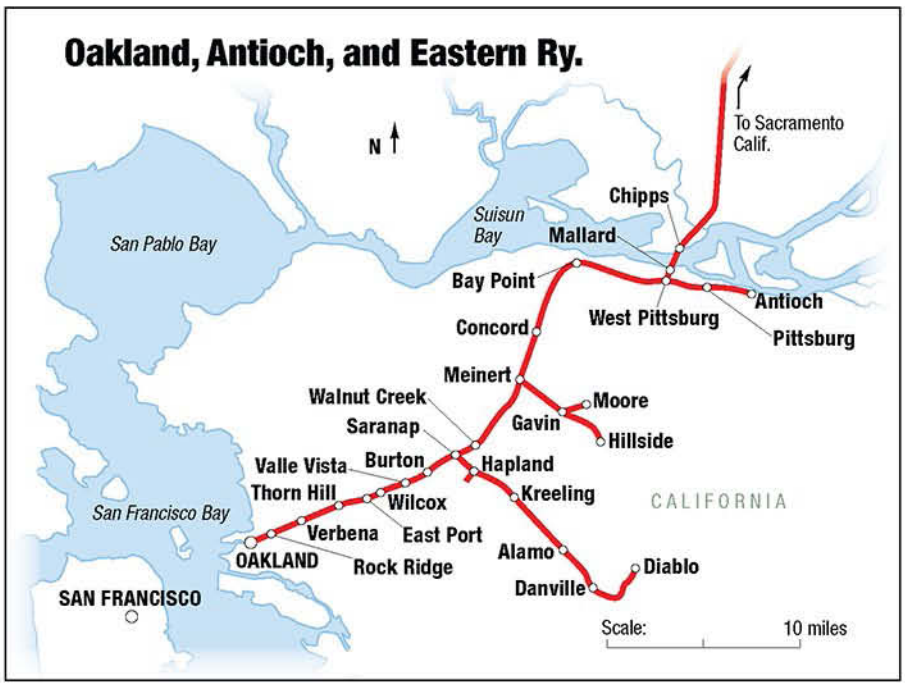
Most trains work at the 40th and Shafter Yard, typically pulling an SN boxcar in less-than-carload-lot (LCL) service from the freight depot track to the head end or switching out cars from the industrial spur. All freights between here and the next stop at Concord require a helper. The short spur at Rockridge is used by the helper on westbound trains, allowing it to cut off, back in, and return to the yard.

Continuing from the Rockridge turnout, the line reaches the end of its 4 percent grade, crossing a fill and Chabot Road, then entering a tunnel, where it makes a 360 degree turn. This may look like a helix, however, the track remains level at 47" and crosses itself at grade. This lengthens the mainline run within the tunnel and helps conceal a train so it isn't simultaneously visible at both tunnel portals.

At Eastport the line emerges into Pinehurst Canyon, passing the electrical substation on the left. Descending a 2 percent grade, the line reaches the depot at Concord, where helpers cut off. Leaving Concord, the line descends a 1 percent grade on a fill to reach Bay Point. This location represents the shore of Suisun Bay, where SN serves local industries and interchanges cars with the ATSF and SP. An industrial spur serves a chemical plant, and the interchange track is connected by a steep link to the main line above.

From Bay Point it's a short distance across marshes to a trestle at the water's edge and the slip at Mallard. The route continues over water aboard the ferry *Ramon* to the slip at Chipps. The locomotive, after splitting its train and shoving the sections onto the car ferry, crosses with its consist. Upon arrival, the locomotive pulls the cars off the *Ramon* and into the Oakland Terminal Ry. staging area. MR

The *Ramon,* a 3-track ferry, moved cars between Mallard and Chipps. Because of the width of the cars, only two tracks are in use here. William D. Middleton photo



A B&O branch line for a GARAGE

Baltimore & Ohio's no. 4592, a 2-8-2 Mikado, is typical of the steam power working the Shenandoah Subdivision. Jim Shaughnessy photo

This plan for a 10 x 18-foot layout is based on operations in the Shenandoah Valley

By Michael Flanagan

This HO scale layout was influenced by Baltimore & Ohio RR operations through the Shenandoah River Valley circa 1953. The prototype Shenandoah Subdivision begins at a switch that diverges from the B&O (now CSX) main line on the Maryland side of the Potomac River bridge at Harpers Ferry, W.Va. The northern end of this route opened in 1836 as the Winchester & Potomac RR. Under B&O control in 1870s, the W&P was connected with the newly built Winchester & Strasburg RR. That formed the present line, which runs roughly 50 miles in a southwesterly direction through the farm country of the lower valley to Strasburg Junction. The junction includes a wye interchange with the Southern Ry.'s Manassas-to-Harrisonburg line.

I developed my plan to highlight several key elements and locales along the route. On this point-to-point plan, the fictitious community of Shenandoah Springs occupies the same spot on the map as the actual city of Winchester, Va. I intentionally designed "The Springs" to be a smaller and hillier locale than Winchester. Lime City and Mount Zion are also fictitious locales, developed from elements found in Stevens City, Strasburg, and Mount Jackson.

Surveying the subdivision

Before settling on the Shenandoah Subdivision, I spent years studying other B&O branches or related lines. I finally chose to develop the Valley Sub because it offered so many of the features I desired in a model railroad.

Variety of traffic. During the 1950s, limestone was shipped out of the region's quarries by rail aboard covered hoppers, open hoppers, gondolas, and even boxcars loaded with bagged lime.

Winchester produced apples and fruit, so wood-sheathed reefers to handle seasonal produce are required. Other rail traffic in the valley included grain, textiles, coal, and fuel oil.

Short passenger trains. By the late 1940s, B&O passenger service in the valley was down to a daily train from Brunswick, Md., to Strasburg and back, often with just a milk car, baggage-Railway Post Office, and an A-18 coach in tow. Service ended in August 1949.

Interchange. The B&O's Valley Sub interchanged with four railroads. My track plan incorporates two – the PRR and the fictional Powhatan.

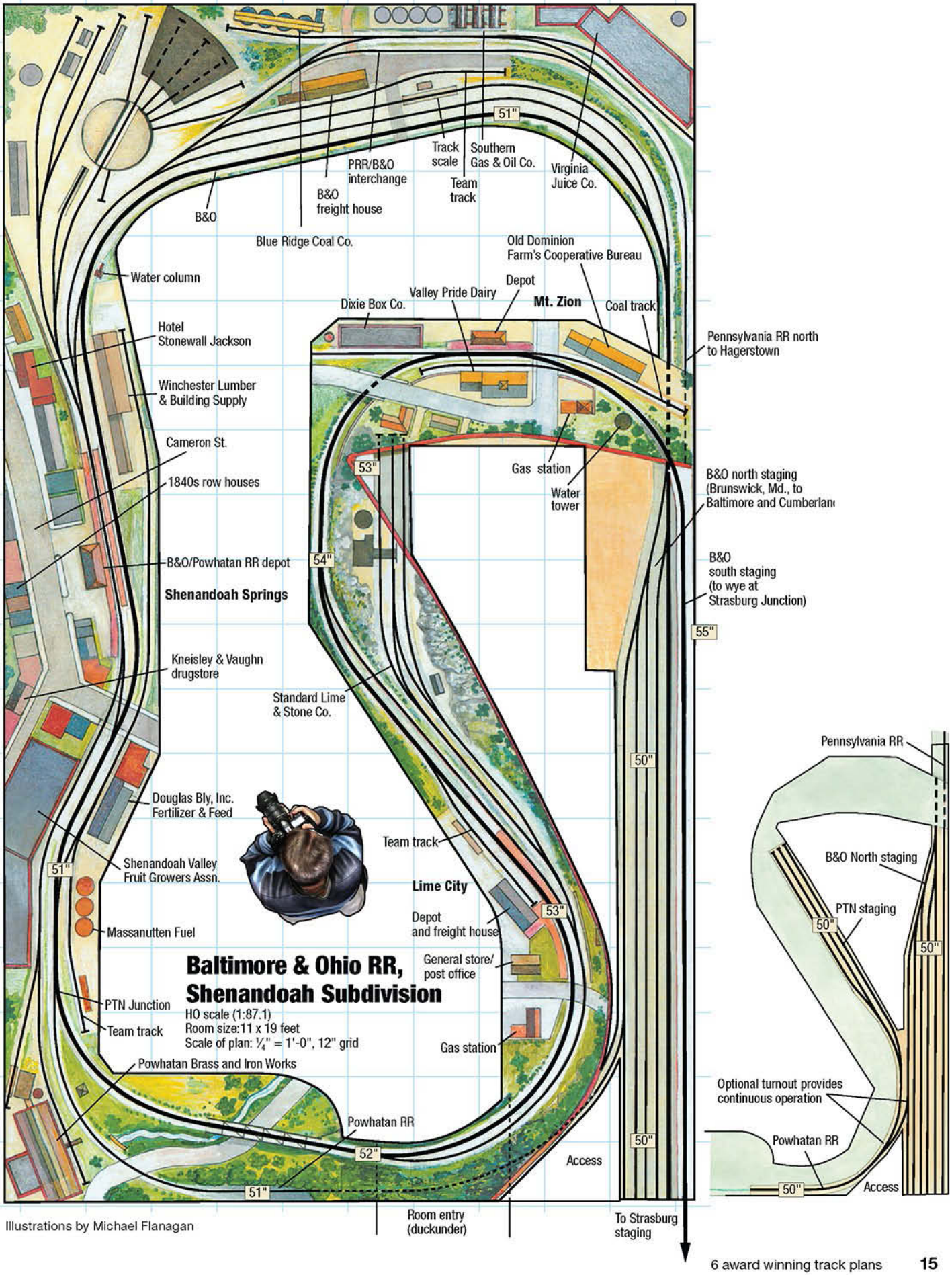
Mixed motive power. Steam, mostly represented by B&O's E-27ca Consolidations, and Q-1 and Q-7 Mikados, still ruled until 1953, when Electro-Motive Division GP7s began showing up.

Regional architecture. Shenandoah Valley towns display a variety of architectural styles unique to the area. They include freestanding Pennsylvania-German stone houses and classic brick row houses of the Federal Period.

Winchester's largest industry can be identified by its ungainly architecture. Virginia Apple Storage, ZeroPak, Robinson's, and Winchester Cold Storage occupy huge windowless warehouses of brick and concrete. MR

The track plan at a glance

Name: Baltimore & Ohio RR, Shenandoah Subdivision
Scale: HO (1:87.1)
Size: 10'-8" x 18'-6"
Prototype: B&O
Locale: Virginia
Era: 1953
Style: walkaround
Mainline run: 50 feet
Minimum radius: 27" main line, 24" in engine terminal and leads to PRR switching track
Maximum grade: 1.5 percent
Minimum turnout: no. 6, except where noted



Illustrations by Michael Flanagan

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