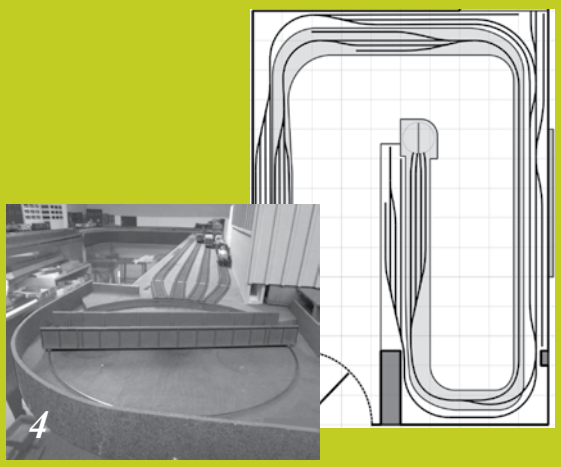
# LAYOUT DESIGN Journal 51

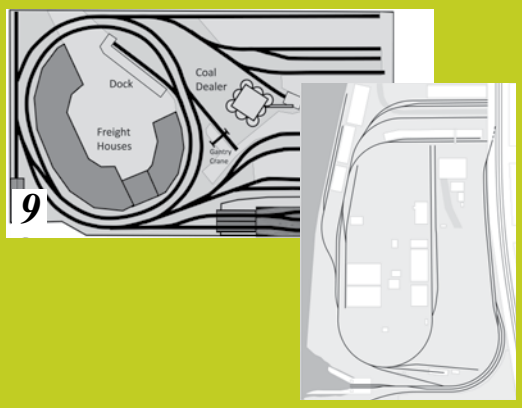
Summer 2013
$8.00 US

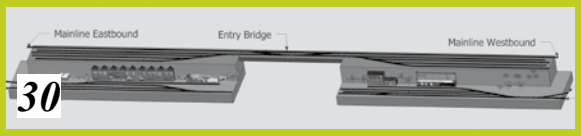
Official Publication of the Layout Design Special Interest Group, Inc.

## Features



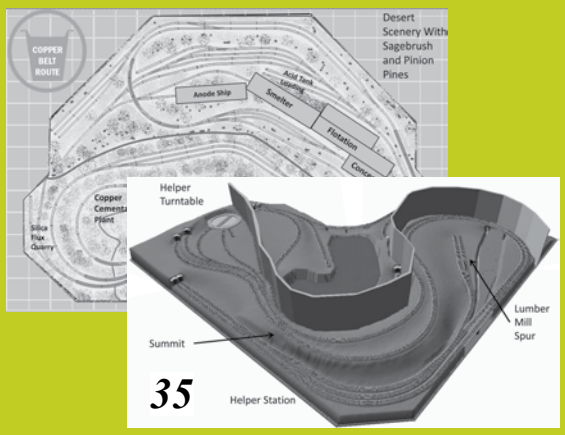



## News and Departments





## Layout Design SIG

The Layout Design Special Interest Group, Incorporated (LDSIG) is an independent, IRS 501(c)(3) tax-exempt group affiliated with the National Model Railroad Association (NMRA).

The LDSIG's goal is to act as a forum for the members' exchange of information and ideas, and to develop improved ways for hobbyists to learn the art and science of model railroad layout design.

### Visit the LDSIG website at:

www.ldsig.org

### LDSIG Discussion Forum

http://groups.yahoo.com/group/ldsig/

### Back Issues

Back issues of the *Layout Design Journal* are available for purchase. A current back issue list is available online at:
www.ldsig.org/publications

### Membership

Dues*: $25.00 USD; Canada $25.00 USD; Foreign $35.00 USD.
* One membership cycle includes four issues of the *Layout Design Journal*.
Please make checks payable to the "Layout Design SIG." Canadian and Foreign payments must be drawn on a US bank, paid using PayPal, or be via an international money order. No foreign checks, please. Contact Member Services (below) to join or renew; or visit:
www.ldsig.org/membership
Membership pricing and terms subject to change.

### LDSIG Member Services

Contact for new memberships, renewals, and change of address:
Fred Kurtz
668 Snyder Hill Road
Lititz, PA 17543
fkurtz@fredbkurtz.com

## Layout Design Journal

The *Layout Design Journal* (*LDJ*) is the official publication of the Layout Design Special Interest Group, Inc.

### Opinions

The opinions expressed in the *LDJ* are solely those of the original authors where they are not otherwise credited. The NMRA, the *LDJ* editor or the LDSIG Board of Directors does not necessarily endorse them, unless so noted.

### Reprinting



**We hope you enjoy this special "sampler" of the *Layout Design Journal*. Full issues of the printed magazine are regularly mailed to members. See links above for more information, to subscribe or to renew.**



# Amargosa Railroad Rathole Sub

## *Switching layout based on Pacific Electric memories*

**by Ralph Hougeson**

The idea for the Rathole had its beginnings when I was about ten years old. I have fond memories of riding my bicycle to Culver Junction on the Pacific Electric Railway to watch the afternoon freight train switch the industries and team track. There was always lumber being unloaded from box cars or flat cars one stick at a time. I suspect that before the tracks on Venice Blvd. were removed there was a lumber spur at Vineyard.

The lumber piles were transported from the Culver Junction team track by straddle carrier headed east to Vineyard where the lumber company was located. It was quite a sight to see this machine with the driver high up above the lumber load. I especially remember the chain drive from a differential up high at the rear of this machine going to the rear wheels. I will never forget those chains.

My first train memories are of the electric locomotives. Next came EMD diesel switchers. I think that the memories of these locomotives are the reason I like Southern Pacific "Tiger Stripes". In my eyes this is the prettiest paint scheme on a diesel switcher.

*Pacific Electric's Butte Street Yard was the center of the railroad's freight operations, handling thousands of cars each day at its peak. The yard was still under wire in this 1940s view, tiger-striped diesel switchers came later. Photo courtesy the Dorothy Peyton Gray Transportation Library and Archive at the Los Angeles County Metropolitan Transportation Authority, used under a Creative Commons License (CC BY-NC-SA 2.0)*

### Inspiration for a switching layout

After building many model railroads in my life (first O Gauge and later HO), I finally had a spare bedroom available. It was the ideal place to experiment with a small switching railroad that was inspired by my childhood memories of Culver Junction on the Pacific Electric and the switching areas in downtown Los Angeles. I had some ideas and wanted to see if they worked. One was to have three-foot-wide aisles, but if the choice was between track or scenery, track won.

I handlaid trackwork with #4 frogs and used flextrack with 18" minimum radius curves. Basically the layout was built to fit the space and the track plan was drawn much later.

### Problem and solution

I soon realized that there was a problem. I really needed one or more small double-ended yards for my operating scheme, but there was not enough room for an adequately long yard with ladder tracks at both ends. I knew the success of the railroad depended on some kind of runaround at the yards. What to do?

I thought about cassettes, since I had used them very successfully in the past. Inspiration came from Iain Rice and others designing for small spaces. A sector plate[1] was considered, as was a turntable. I finally ended up using a turntable long enough for a switch engine and a caboose (see sidebar page 6), as this allowed for both a runaround and turning power.

In order to test this concept, I decided to use flex track, as I knew I would be moving things around until I found a track arrangement that worked. That proved to be a good decision. I have built railroads completely with handlaid track and have found that it is not so easy to make changes when you handlay track.

As an example, the town now called Wise was a portion of an earlier layout that had many

*1 A sector plate is a pivoting section of roadbed and track that acts as a partial turntable, often used on model railroads to complete a runaround at the end of yards or sidings.* – BH

changes in the track arrangement by trial and error until I found one that worked.

## Building out the layout

I built Butte Street Yard and joined it to the existing Wise switching area. Operation on these two sections proved that the turntable concept would work. I then built 8th Street Yard that is a duplicate of Butte Street Yard. Holt and Tool House were inspired by the small Pacific Electric yard at Culver Junction.

Dyer started out as a two-track interchange and has grown to four tracks. The front track is the Team Track the center two tracks are the Santa Fe interchange, and the back track serves small industries. The long industrial spur at Culver Junction was my inspiration for the back track at Dyer.

## Operations at Butte Street

The Butte Street Yard switcher works the single Southern Pacific interchange track, Wise and Tool House. All cars from the SP are brought to Butte Street Yard. Since there is only a single SP interchange track, the interchange cars must be picked up before the outbound cars for the SP are shoved into the interchange track.

Back at Butte Street, the incoming cars are sorted, keeping the cars for Wise and Tool House at Butte Street. All other cars are sent to 8th Street Yard, using the Butte Street switcher for the transfer run. The engine and caboose come back light (no cars).

Typically the Butte Street job will have met the 8th Street Job proceeding to Butte Street Yard with cars for Wise and Tool house. After returning to the yard, the Butte Street job blocks cars for Wise and Tool House in preparation for working those towns.

## 8th Street Job

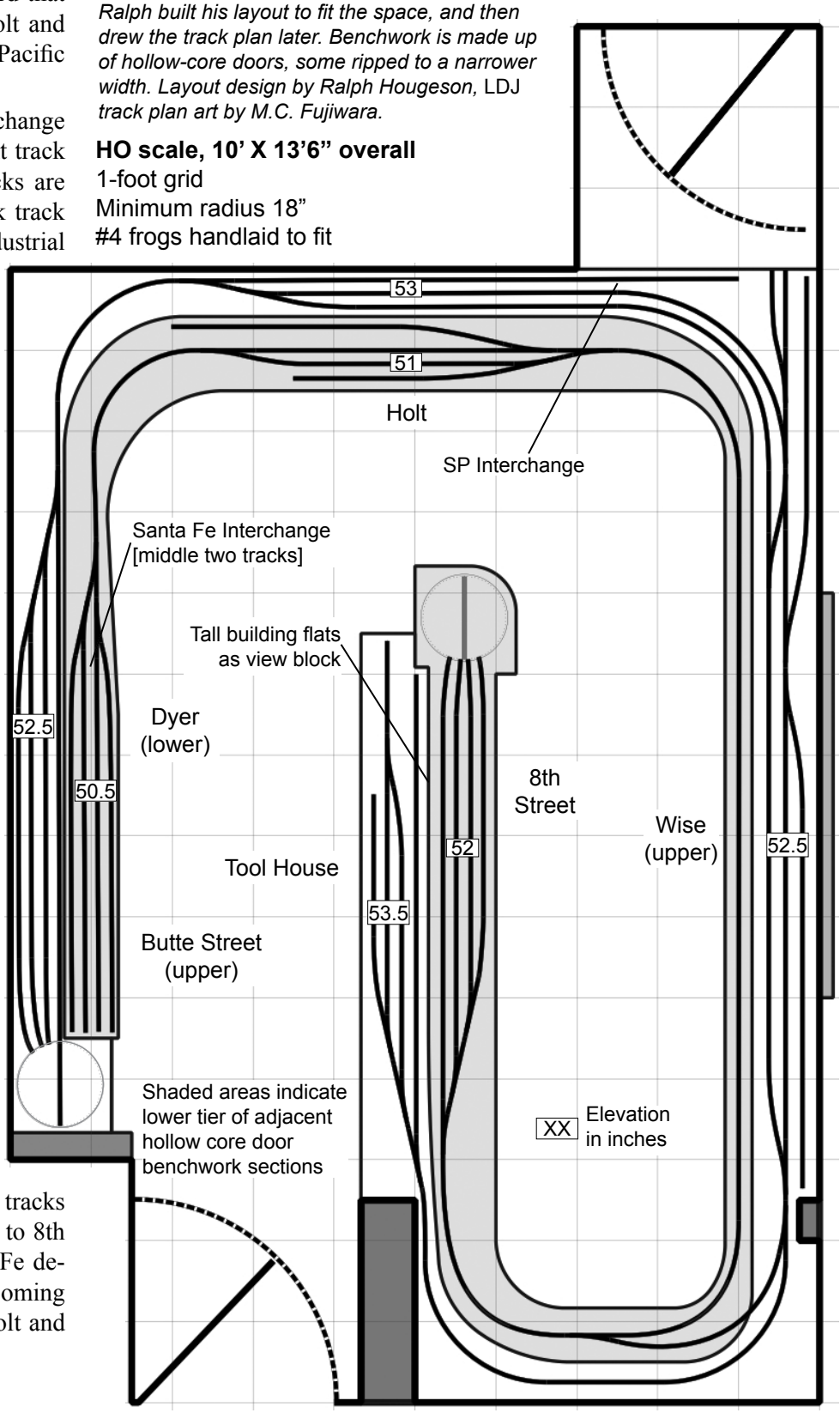
The 8th Street Yard switcher works Dyer, Holt, and the two Santa Fe Interchange tracks. These interchange tracks are pulled, with the cars being brought to 8th Street Yard and the cars for the Santa Fe delivered to the interchange track. The incoming cars are sorted, keeping the cars for Holt and Dyer at 8th Street.

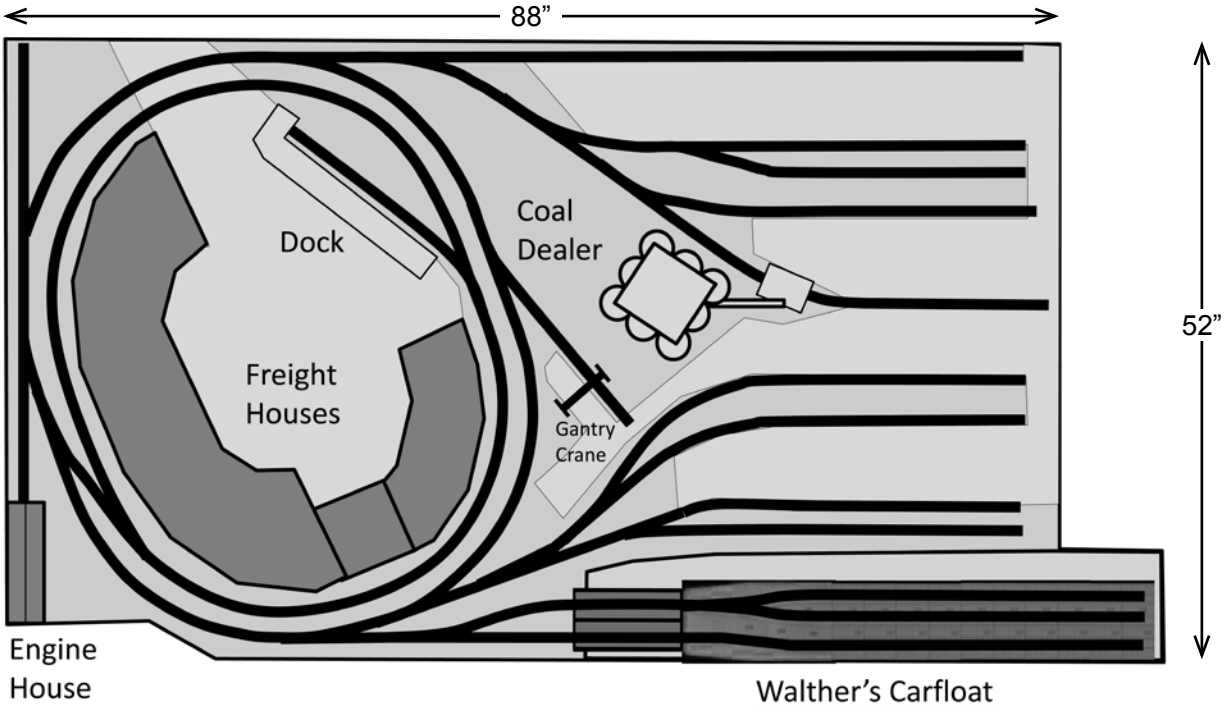
Similar to the Butte Street job, other cars go to Butte Street Yard using the 8th Street Yard switcher for the transfer run, the engine and caboose returning light. Then all remaining cars are blocked for Holt and Dyer. When working Dyer, the closest runaround track is at Holt.

*(text continues on page 8)*

*Ralph built his layout to fit the space, and then drew the track plan later. Benchwork is made up of hollow-core doors, some ripped to a narrower width. Layout design by Ralph Hougeson,* LDJ *track plan art by M.C. Fujiwara.*

**HO scale, 10' X 13'6" overall**
1-foot grid
Minimum radius 18"
#4 frogs handlaid to fit






*Charlie’s first HO variation is based on Atlas components. Although simplified from the N scale track plan, most of the major features are still incorporated. Aisles would be needed on three sides.*

**D&A Bronx Terminal**
**HO scale, ~52” X 88” overall (plus aisles)**
Minimum radius 15”
Minimum turnout Atlas 18”R Snap-Switch (frog ~3±)

ing/unloading. Outbound cars could be sent to a cleanout track for cleaning (prior to reloading on a different session) or directly to the car float.

### Mostly Snap, a little flex

A main feature of this plan is an 18” radius sectional Atlas code 83 Snap-Track main outer loop with 16.34” inner freight house loop (rendered in flex track using Fleischmann code 100 curved track pieces #6030 as a guide). Some leads have 15” radius Snap-Track curves. Code 83 18” radius Snap Switches are utilized throughout except for the wye on the “car float”. There are no grades, except a slight slope from the yard level across the float bridge to the car float deck, depending on the tide.

### Shorter engines and cars a plus

Power could be a small 0-4-0 or 0-6-0 saddle-tank steam engine or a Bachmann 44-Tonner. A repowered MDC AGEIR 60 Ton switcher (out of production) would also be appropriate. This layout is generally designed to service 40’ boxcars. Cars will have to be checked carefully to make sure they operate on the minimal radius track well and longer cars would be banned from the layout.

## *D&A Bronx Terminal HO – PECO Set Track*

This version of a Bronx Harlem River type terminal uses PECO HO/OO Code 100 Set-Track instead of Code 83 Snap-Track to capture the feel of the sharply curved radius-style switches. These switches are more compact and have a locking mechanism to allow throwing switches with the fingertips. The code 100 rail is far, far too heavy to be prototypical, but for the operations-oriented modeler willing to compromise on appearance, this would be easy to build.

### Even tighter!

I have upped the ante on sharp curves with this design. The outer freight house loop radius is a modified 17.24” radius: it is 17.24” radius through the Set Track switches (#ST-240 and #ST-241) with some curved 14.61” radius Set Track pieces and one curved flextrack piece to fit. The inner loop is Fleischmann 14.06” radius track (their R2). It seems weird but it works out in the planning program, and the result is a neat and compact yard.

# Lessons Learned: St. Paul Division

## *Design and construction ideas ten years along*

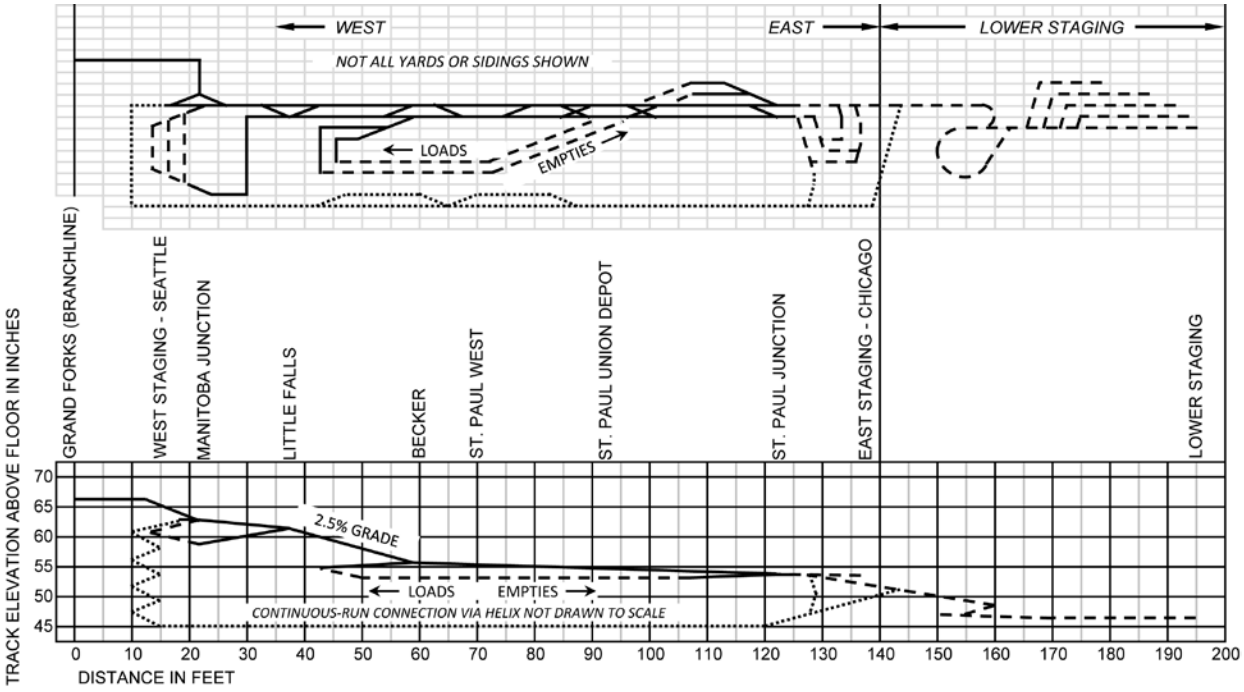
**by Doug Lee**

The Northern Pacific (NP) St. Paul Division (see *LDJ*-49, page 4) is the third layout that I have constructed over the past twenty-five years – and by far my most complex. From my prior layouts I learned about the merits of alternative track arrangements, construction techniques and materials selection. First hand, I experienced the frustration of trying to run trains on layouts with an S-curve on the mainline, inadequate staging, and overall track arrangements that could not provide enough variety of operation. The design, construction and operation of the St. Paul Division have all benefitted from those prior experiences.

As I noted in my article in *LDJ*-49, "from my reading of Armstrong, we should strive to obtain long term value for our expenditures and efforts by creating a reliable, operation-based layout … ." The layout has been operating for ten years, and for the past four years, four-hour-long op sessions have been held approximately every three weeks throughout the year. This has demonstrated the reliability of the layout: no electrically dead track sections, no balky locomotives, an average of less than one car derailing per session[1], and couplers fine-tuned so that they facilitate rather than frustrate the coupling and uncoupling of rolling stock. Typically, less than ten minutes of maintenance is required between op sessions – easily handled by the layout's one-person maintenance crew (me). Thus I will highlight what has been done in terms of design, materials and construction to ensure that the layout is, and remains, reliable.

At 18½' X 20', the HO scale St. Paul Division is nominally a mid-sized layout. But as I noted in *LDJ*-49, my desire to run NP A-class 4-8-4 steam engines and a dense schedule of prototype-length passenger trains requires 30" minimum mainline radius curves. In that context, the layout space is actually quite modest. So I

*1 Excluding those inevitable operator errors such as running a turnout without first lining the switch points.*




*St. Paul Division track schematic and grade profile. The helix provides a continuous-run connection between the east and west visible ends of the mainline. It also connects the reverted loop of lower staging to the east and west ends of the mainline. A train traveling between lower staging and the west end bypasses the east end of the layout without appearing at St. Paul Junction.*

switching would not be required. The design problem, then, was how to squeeze a staging yard eight or nine tracks wide (about 18 inches in HO) plus the grades for climbing from the main level to the staging level into the space available.

I decided a 58-inch clearance (about shoulder high for most men) at the entryway would be high enough. Adding an inch and a quarter for the bridge structure and roadbed would put the track at around 59 inches. Then, making the entrance under the staging fairly wide should make it reasonably easy for even older, stiffer, taller people to nod-under to enter the empire.

## Through-yard benefits

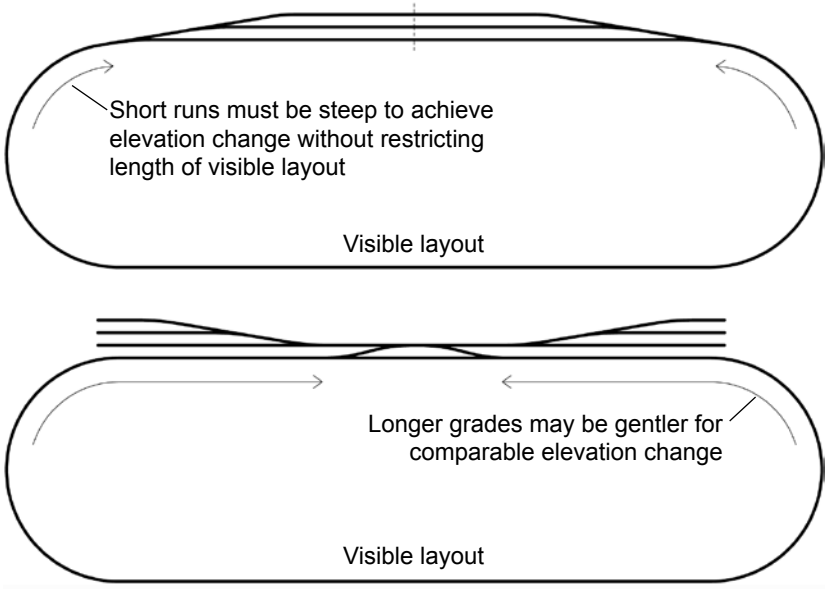
A circular track plan with a single big staging yard works like this: trains depart from staging, do their work as they wend their way around the layout, and return to the staging yard from the opposite end. In my case, had I been able to design it, that single through staging yard would represent both Sault St. Marie (pronounced Soo Saint MA-rie, better known as "The Soo") and Minneapolis. This would have satisfied my desire that there be no perceived direction shifts as operators proceeded around the layout.

The other very attractive characteristic of through yards is that trains largely re-stage themselves. A through passenger train, for example, will generally return to the yard with the same cars that it started with. If it has added an express reefer, diner, or mail car along the way, re-staging would be nothing more than changing the waybill for each car.

For freight trains, the consist will change as it goes around the layout, but when it returns to staging all one must do is update the waybills. [I assume that various operations software programs would permit similar updates.]

Even if you want to block the new consist for the next run it doesn't take long (especially in open staging) compared to other staging concepts that require locomotives and cabooses to be moved from end to end on the same staging track or even to an entirely different staging yard.

In order to get from the main layout operating elevation of 50 inches, I would need to have grades on both sides of the double-ended yard up to the staging level. Based on experience and some testing, I decided that a three percent grade would be about right for my train lengths using a single locomotive. I assumed that some of my trains would be heavier and would need helpers, but that would just add to the fun.




*A single through-staging yard (upper) is a logical choice for a continuous-run schematic. But often there is a desire to have the visible layout and staging yard at significantly different elevations, either to place staging out-of-sight but accessible below the visible layout or well above it. Creating enough mainline run to achieve that elevation difference between the visible yard and the staging yard limits the length of the visible layout, creates steep grades, causes the staging yard to be steeply graded, or requires the use of one or more helixes.*

*The author's concept (lower) cuts the through staging yard in half and places the two resulting stub-end yards "nose-to-nose" across a short stretch of mainline. This allows more of the visible layout to be used to (in this case) gain elevation to the short stretch of main that bridges the two staging yards together.*

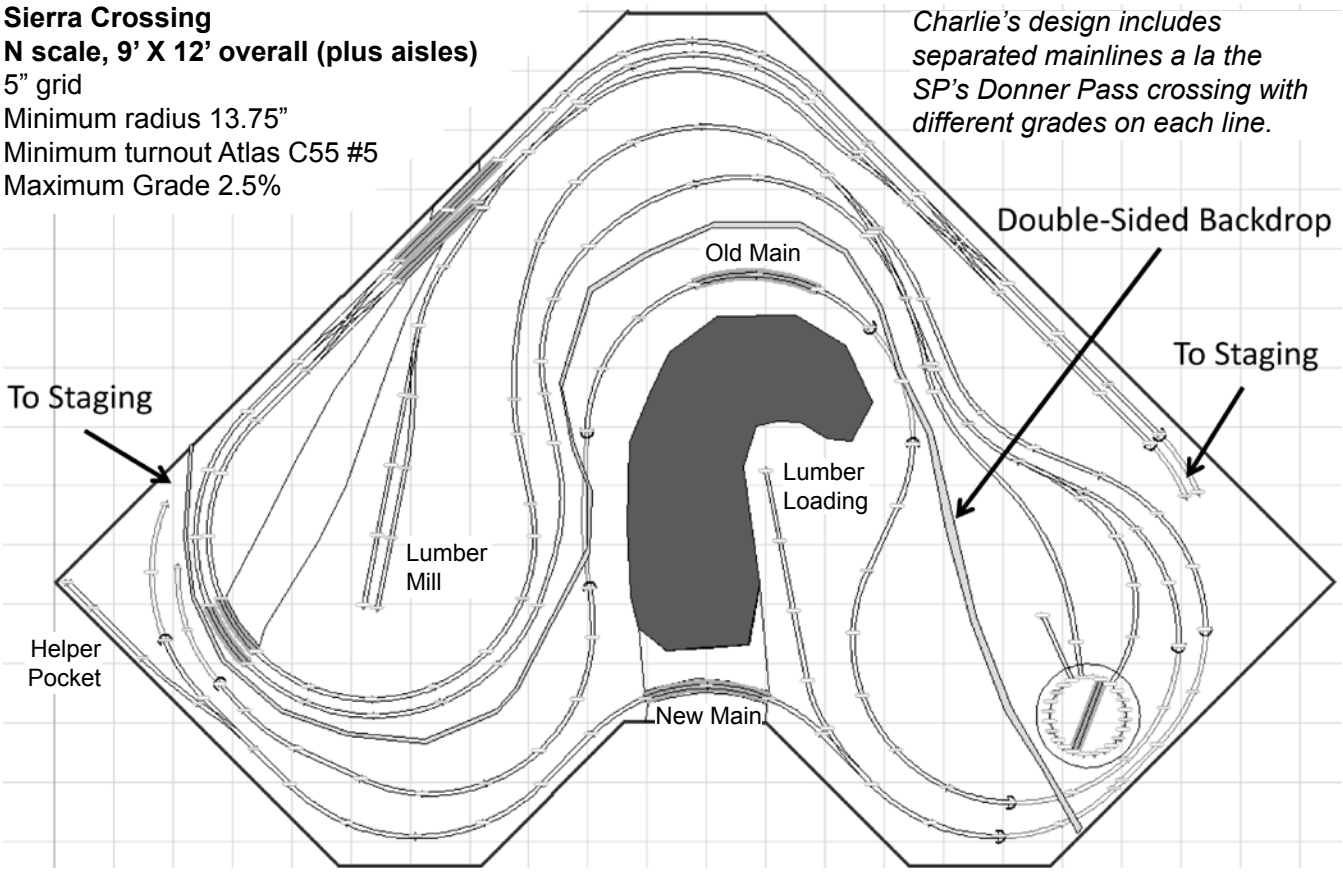
## Length for grades a challenge

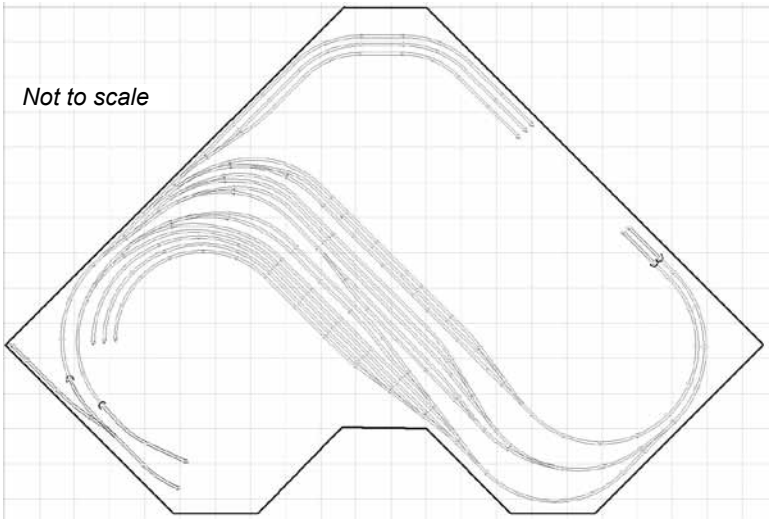
Simple math says that if I have to climb a 3% grade from 50 inches (operating elevation) to 59 inches (staging elevation), I would need 300 inches (25 feet) of grade on both ends of a double-ended through staging yard. Ouch!! I could shave a little by building a humped yard; that is, have the staging tracks slope a little downward on each side of the entrance bridge. That would complicate the carpentry and introduce other problems.

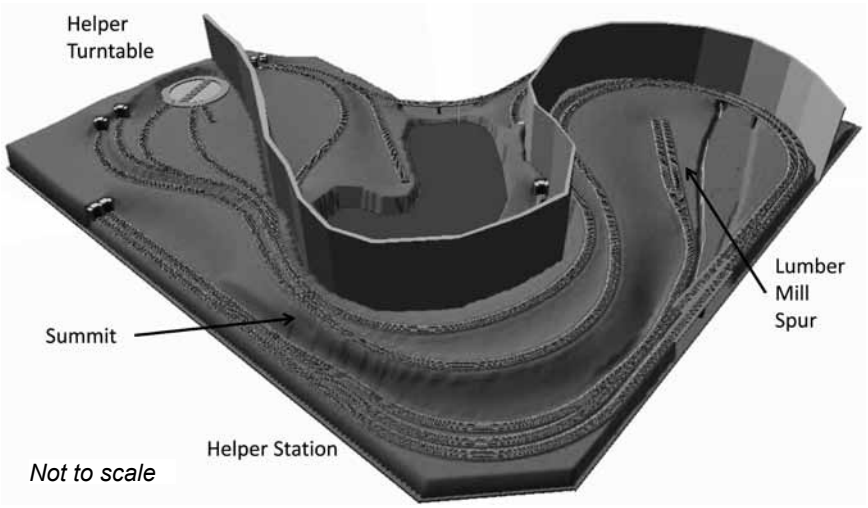
In the end, I realized that the only way to achieve the required rise in the space available and still maintain a "linear" layout would be to build helices on both ends of the staging yard. I definitely didn't want that hassle, not to mention the difficulty of accessing and main-

**Sierra Crossing**
**N scale, 9' X 12' overall (plus aisles)**
5" grid
Minimum radius 13.75"
Minimum turnout Atlas C55 #5
Maximum Grade 2.5%

*Charlie's design includes separated mainlines a la the SP's Donner Pass crossing with different grades on each line.*




*(Left) This rough staging concept would be designed around benchwork supports.*
*(Bottom left) A two-sided backdrop divides the scenes and gives a sense of distance for through-train operators.*

## Ragtag Tunnel Motors

I imagine the railroad running like the SP in the 1980s and 1990s when I lived in Sparks, NV. Road power would be multi-unit lash-ups of EMD power, especially tunnel motors. Large EMD road units would provide helper power. Weather the units very heavily due to all the tunnels. Trains can be anything the railroad ran and is limited by your collection and available staging space. General freight, grain trains, auto trains, reefer trains, and Amtrak passenger service are all possibilities.

Track is mixed Atlas and PECO Code 55 turnouts as needed to fit the specific track arrangement. Mainline turnouts are mostly #7 and the PECO double crossover[1], but there are some #5 turnouts that diverge from the main line that should not affect mainline trains. Minimum mainline radius is 13.75". There is an optional turntable at the summit.

*1 All PECO Code 55 turnouts have #6 frogs* – BH