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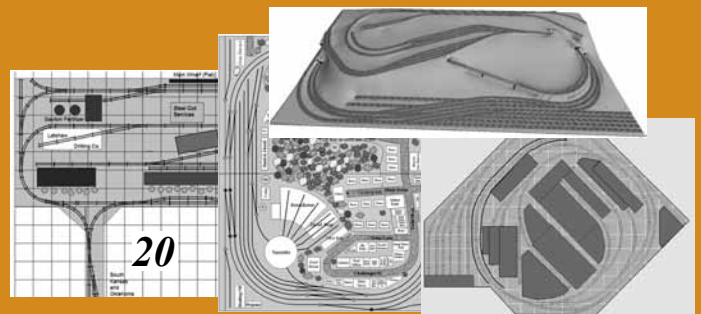
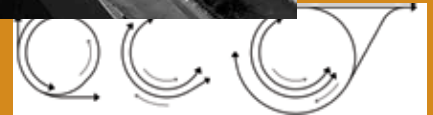
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SP's Santa Barbara Subdivision

Refined dreams and unique benchwork for an HO multideck

by Bruce Morden

This is the story of a journey from a dream to a real layout: how I decided on a layout plan that would let me capture the scenes and operation I desired and the unusual construction needed to build the layout I wanted.

Capturing the SP Coast Line in a garage

When we first moved into our new home in Carpinteria, I staked out a space in the two car garage to build my railroad empire. Initially, I began small: I painted a white stripe down the floor and claimed my half. The other half was to be for one of our cars.

I tried to design something to fit in the half-garage but without success; my dreams were still of long mainline runs, reefer blocks, drag freights, and signature passenger trains. I thought about how much of Carpinteria I

could fit in. I thought about Santa Barbara with its roundhouse, yard, passenger, and freight depots. I started learning about the local industries.

Researching and refining

To begin, I collected SPINS switching maps¹. I also went out on forays of what I call industrial archeology where I'd find where the tracks led and see what buildings were served by rail. I took lots of photographs and dreamed lots of dreams of a large Santa Barbara layout.

Joe Heumphreus (a charter member of the local model railroad club and former local train shop owner who has built several beautiful layouts over the years) has a saying: "Any model railroad tends to exceed its available space and finances." I was exceeding my space and finances, and I hadn't even started building! I started to face reality.

The land grab – and reality

Even though I had eventually negotiated the entire garage for the layout – weather is very mild in Carpinteria and leaving the cars out is not devastating – I still wanted to provide my wife with room for the washer and dryer, leaving a roughly 20 X 20 foot space for the layout. The dreams of 6000 foot sidings (69 feet in HO scale) or even shorter 78 car trains (51 feet in HO scale) were starting to occur less frequently. I still wanted to capture some of the action along the Coast where I lived.

I looked at the local freights and thought we might be able to do that. I thought if I selectively compressed the route and chose carefully, I might be able to get a couple towns in with some reflection of reality. The garage was only half finished, but I drew up basic floor plans of the space and started doodling.

I tried to stay within the bounds of the garage and drew a plan with Carpinteria, Summerland, Santa Barbara, Goleta, and La Patera arrayed along the tracks. I used 3rd PlanIt to do some of the design work. One of my early designs is on the facing page; I liked the de-

¹ See LDJ-26 [Spring 2001] for more information on SPINS and other track/industry maps.

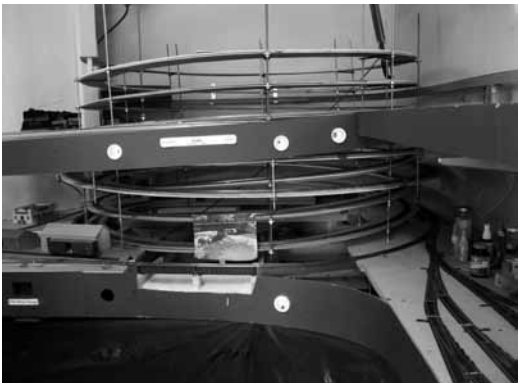
From Dreaming to Planning the SP Coast Line

For a long time, I have dreamed about having a model railroad. Dreaming is inexpensive and does not take up a lot of space, but it fills lots of time. It is also hard to run your model trains on a dream, so I have tried over the years to make those dreams become a reality. I have also found that the ideas that I dreamt about were not always realistic.

I have built or worked on several layouts over the years. I started, like many of you, with a children's train set. First wooden trains, then cheap wind-up trains, then my father decided to give me a Lionel train so he could enjoy it too. As it turned out, we had a large room (about 15' X 20') in which we could build a permanent 3-rail layout. A work friend of my father's was a member of the NMRA and had a beautiful HO scale layout. All this helped me dream. Even when I was at the university, I built two shelf layouts for my dorm room and belonged to a model railroad club. After graduation, my model railroad dreams hibernated a bit, but I still enjoyed reading about models and watching prototypes. After I got married, my wife and I lived in several different places as our family grew and job opportunities forced relocation, but eventually we settled into a house we hoped to stay in and I started doing more than just dreaming.

When we relocated to Carpinteria, CA, two blocks away from the Southern Pacific Coast Line, I started to learn more about the Southern Pacific, and my model railroad dreams began to focus on the SP. It is easier to research the railroad in your back yard, and that initial research led to even more research. I became interested in operation, so I acquired SP rulebooks and timetables.

I was not sure which era I wanted to model, so my research, while still focused on the SP, spanned the entire twentieth century. Fortunately, there are numerous books about the SP – something on every division, steam engines, diesels, freight and passenger cars – so I was able to continue to dream and arm-chair model until I began the layout described in this article. – *BM*



Bruce's two nested helixes occupy one corner of the layout space. Here we see the west-end staging to the right at the lowest tier, with a track leading behind the helix for the X-Factor connection to the east-end staging yard. A turnout leaves this track to connect the west-end yard to the inner helix for the climb to Devon on the upper deck. Bruce hasn't yet decided how to disguise the helix. A mocked-up bridge in front on the lower deck will be the crossing of Carpinteria Creek. Surf occupies the visible upper deck.



Bruce uses threaded rods and metal crosspieces to support the helix sub-roadbed. Because the helixes climb in opposite directions, a series of "windows" is created for access from within at points around the helixes.

Outside of the yards, the track and fascia is cantilevered off the Thin Wall using hardboard spline for roadbed.

For track, I'm using Central Valley tie strips with code 83 rail for the mains and code 70 for the sidings and yard tracks. There is some code 55 on some of the industrial spurs. I reverted to L-girder bench work for the yards. Gary Siegel assisted with the construction of the L-girder benchwork. On top of the L-girders, plywood and Homasote serves as the roadbed for the yards in Santa Barbara and Carpinteria as well as the two staging yards.

Hinging the layout on the helix

My entire design only works because of the helix in the corner, which is actually comprised of two helixes nested together (see graphic below).

The outer helix takes the mainline between the lower and upper level. It raises the track over two and a half turns from Goleta at 45" up to Surf at 55". The inner helix handles trains heading from Devon (at the west end of the visible layout) at 61" down to the

X-factor staging crossing at 38", where the train could either enter West Staging or return to the east end at Carpinteria and traverse the layout again.

The two helixes turn in opposite directions with the inner helix ascending counter-clockwise, and the outer helix ascending clockwise. Doing so keeps the direction of train travel the same – left around the layout is always railroad "west" (except for the first few feet from the staging yards).

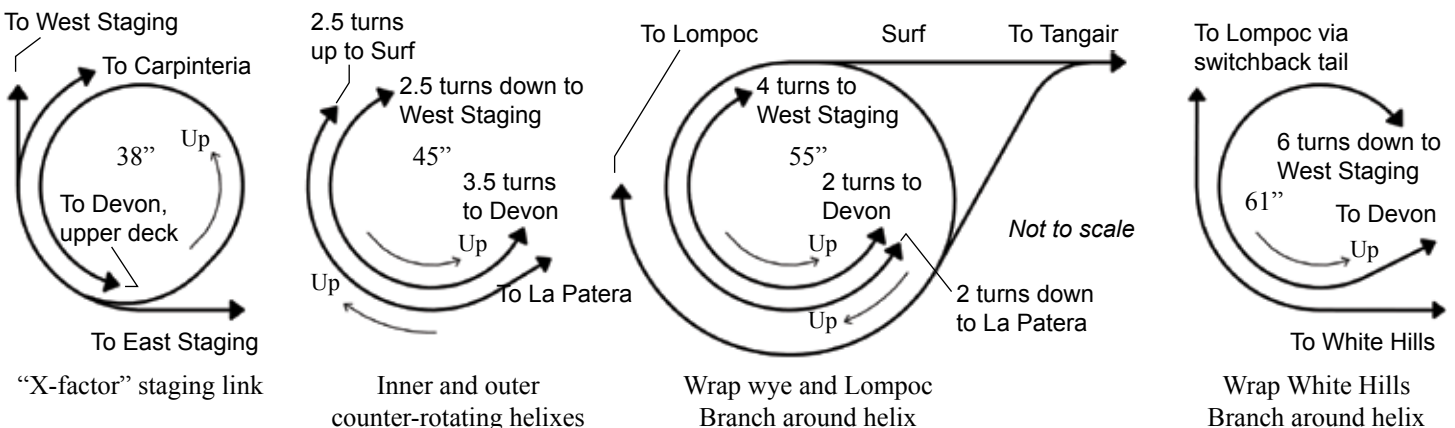
The helix footprint is reused for more than just the helix tracks, which is great considering the square footage that a helix requires. I borrowed the idea of reusing the helix area from Gary Siegel's L&N EK Division; he has multiple staging yards and branches leading from his helix area.

On my layout, east and west staging are connected to the mainline at Devon and Carpinteria via the X-Factor staging crossing; the inner helix to Devon on the upper deck departs from this crossing. In addition, the wye at Surf leading to the Lompoc branch wraps around the helix, and a switchback from Lompoc to the White Hills mine wraps around the helix above the track to Lompoc.

I built the two helixes using a method learned from a clinic by Bob Hamm at the NMRA convention in Hartford in 2009. Bob's helix uses threaded rod and laminated plywood.³

³ See <http://spsbsub.blogspot.com/2010/03/new-helix-part-1.html> for more on building helixes using Bob Hamm's approach.

LDJ Story Editor Robert Bowdidge developed the graphic below to illustrate the various paths on and around the two helixes. Note that multiple tracks use the same "footprint" at different elevations.



Thin Walls: a New Structural Support

... when every inch counts in building a model railroad

by Bruce Morden (based on concepts developed by Walter Naumann)

Many model railroaders complain that they do not have enough room for their layout. Rather than shrink my layout, buy a larger house, or find a larger space, I chose to minimize the space needed for the benchwork.

Problem: supporting two decks in minimal floor space

For my two-deck HO layout (see preceding article), I considered building stud walls and cantilevering the benchwork for each level off the wall. Stud walls can require 3 to 5 inches of space if built with 2X4s – 15 to 25 scale feet. That's all space being taken away from the layout.

Walter Naumann, our club's resident physicist, asked "What happens if you use $\frac{1}{8}$ " plywood? If the plywood is curved, it would create structural strength. Adding horizontal ribs below the track level and anchoring the edges of the sheet should keep the wall from buckling." I noted that plywood on edge would consume a tiny scale foot of space. The ribs supporting the track, while wider, would fit below the layout surfaces and not consume additional space for the layout. So, we agreed one day to try it.

Anchoring the Thin Wall

First we attached anchor ribs at the ceiling and floor. We marked the floor with the approximate location of the wall, and then cut $\frac{3}{4}$ " boards matching the desired curve. We attached the anchor ribs to the ceiling and floor as the wall's mounting points (photos page 14). Because the floor-to-ceiling distance in my garage is 99", but the plywood is only 96" high, we used additional blocking to raise the bottom anchor rib.

We then attached one floor-to-ceiling stud at the beginning of the wall, secured one end of the

first plywood sheet to that stud, then bent the first sheet of plywood and attached it to the blocking. We anchored the bottom and top edges of the plywood with a continuous line of screws into the blocking on one inch spacing. The screws can be small because the plywood will fail long before the screw pulls out.

This continuous line of screws is most important at the extremes of the curves. In the center of the sheets, the pressure of the ribs alone keeps the sheet sufficiently curved, so the screws aren't as essential – but are still useful to keep everything in place.

Horizontal ribs

We then added horizontal ribs as the mounting points for each deck of the layout, and additional ribs to stiffen the wall where curves



Walter Naumann shows that he's confident of the strength of Thin Wall construction by climbing on the first installed section. His feet are on the stiffening ribs set just below the layout's planned levels. Note also the wide boards screwed to the ceiling to provide convenient places to mount the upper anchor ribs. Two photos by Bruce Morden.



Anchor points were secured to the floor with powder-actuated anchors (.22 caliber). Additional blocks were added to raise the nominal 96" plywood sheets to reach Bruce's 99"-high ceiling. Dark strip at left is tape used to roughly define benchwork edges, partially-obscured wavy line set the desired curves of the Thin Wall.

Layout Design Considerations for Realistic Waybill Boxes

There's more to it than zapping the prototype with a Shrink Ray

by Trevor Marshall. Photos by author except as noted

For my S scale CNR Port Rowan layout (featured in *LDJ-45*), I decided pretty early on that I would use prototype-inspired paperwork to manage operating sessions. For car forwarding, this meant that crews would handle realistic-looking waybills and write up their own switch lists, instead of using a pre-printed switch list or the popular “car-card + waybill” system.

Where to put 'em?

To provide an equally realistic place to store waybills at the two towns I'm modeling – St. Williams and Port Rowan – I decided I would use waybill boxes fashioned after prototype boxes. These would be mounted on the fascia of my layout in front of each depot.

My friend Chris Abbott asked if he could build the two boxes I would need, in order to polish some of his woodworking skills. I was glad to set him loose on the project.

Chris and I went looking online for suitable prototype photos and data and found the best information on the *Modeling The SP* blog written by Tony Thompson (<http://modelingthesp.blogspot.com>). A posting in March 2012

included two terrific color photos and some basic dimensions. (Thanks, Tony!) Chris and I both loved the letter slot and big hinges on the front, the fold-up lower face and the bottom-mounted clasp with railroad switch lock.

Smaller bills, smaller boxes

The first thing we realized is that the prototypes would be too big to recreate full size. As Tony notes, his bill box is 14” high at the back, 11” high at the front, 9” wide and 5.5” deep. That's a lot of real estate on a fascia – and quite a projection into an aisle.

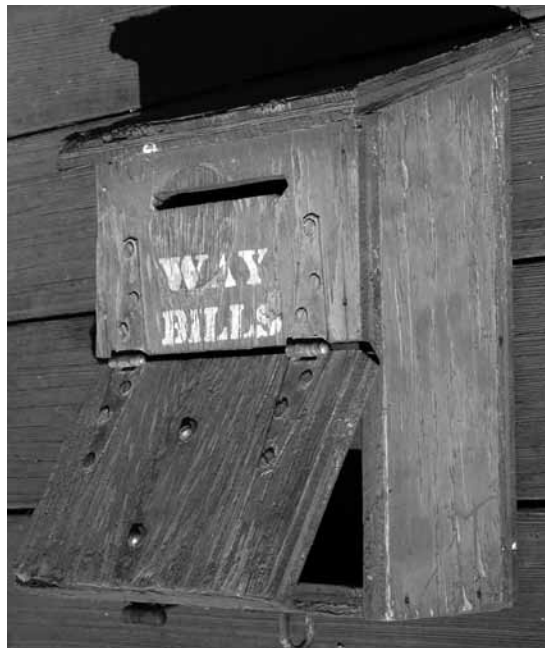
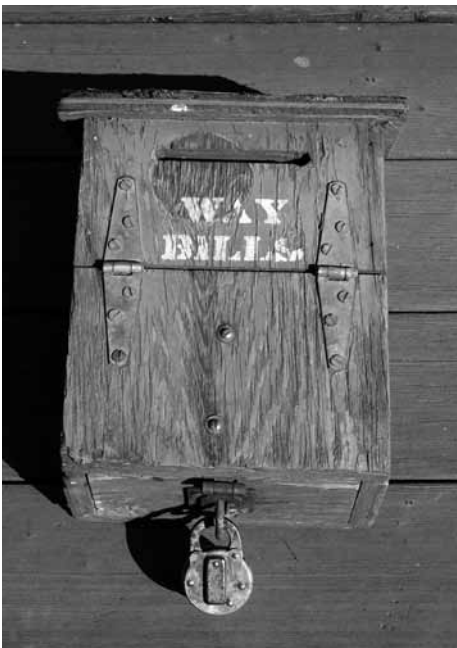
Fortunately, my model waybills are significantly smaller than a prototype document – at 4.5” wide by 5.75” tall. This meant I could use a smaller box to store them in. And this is where the layout design lessons started to come into play.

In science fiction, miniaturization is easy: In the 1966 film *Fantastic Voyage*, a team of doctors and their submarine were zapped with a Shrink Ray so they could be injected into the blood stream of a scientist to save his life. But it doesn't work that way in the real world. Just as changing layout plans from one scale

to another isn't as simple as resizing the image, changing the scale of an object with which operators must interact must also be done with care so that the resized object is still usable.

Tony Thompson took these two photos of a vintage prototype Southern Pacific Waybill Box he purchased at the Winterail show. What paint is left on the box is red, and Tony notes that the boxes were often painted in a contrasting color to the station wall upon which they were mounted. Note also the solid top and the switch lock used to secure the box.

“... equally realistic place to store waybills ...”



These locks are quite small – meant to lock together the pulls on zippers – and the hasp is down at belt height when mounted on a bill box on the fascia.

I thought this might be a problem, but it's easy to manipulate the lock by feel alone. I did deviate from the prototype by adding a keeper chain for the luggage lock, so that operators wouldn't have to crawl around the floor looking for the thing if they dropped it.

Add a kicker

When Chris presented me with the bill boxes we played with them for a while at the kitchen table to make sure they worked as intended. We found that sometimes, a waybill would land with its bottom wedged into the back of the box and be difficult to retrieve. The problem is that the bills are almost as wide as the box interior so there's no way to get a finger behind a recalcitrant waybill to hook it out.

Working together, we fashioned a "kicker". We bent a lever from 1/16" square brass stock so that it looked like a nose in profile. We soldered this to a simple hinge formed from a piece of brass tubing slipped over a brass rod. This kicker is mounted on the inside of the back wall of the box, to the right of center so it clears the hasp. We cut a slot in the box bottom to accommodate the lever, and trimmed it so it projects about an inch below the box.

To retrieve waybills, operators unlock the box and flip up the lid, then cup their right hand below the box. They use a finger to flick the kicker arm forward and the bills drop right into the waiting hand. It works beautifully.

This project has added some great play value when friends and I get together to run trains. It also reminded me that as with many of the design questions that face us in the hobby, the solution is to create mock-ups and test theories, and then adjust our design assumptions to achieve the desired result.

For more on Trevor's layout, visit:

<http://themodelrailwayshow.com/cn1950s/>

(Right) Here's a better look at the kicker, the pivot, and the wedge. The last inch of the kicker was filed to remove hard edges and make it "finger-friendly". The screw to the right of the pivot is one of two that mount the box to the fascia.

(Below right) Trevor's billboxes are sized for his prototype-inspired waybills. The top one routes a car to the Team Track in St. Williams, while the waybill underneath has an "empty car bill" attached to it, which returns the same car to Hamilton (staging). To keep track of the waybills, he picked up a storage box for 4" X 6" file cards at a local office supply store. Several dividers make it easy to find the waybills needed to set up an operating session.



Lessons learned ...

- It's possible to miniaturize objects such as switch stands and bill boxes to contribute to realistic operating sessions, but they must still accommodate full-size operators. That means they need to work with 1:1 fingers and designers must be cognizant of issues such as aisle-space intrusions.
- Even though we can miniaturize objects such as waybills, we must take into account the properties of the materials used to create them. For example, we may change the height and width of a waybill, but the thickness of the paper isn't going to be reduced. That means what works in full size may not work as expected in miniature.
- Designs must also accommodate changes in relative location or other changes in the environment. In this case, changes were required because the layout bill boxes are mounted lower than prototype boxes and because the layout room lighting is darker than light in the great outdoors. – TM

32-Square-Foot Challenge, Part 2

Island and lobed designs from Tulsa 2012

Plans and text by Graeme Nitz, Steve Gillett, and Charles J. Tapper with additional text and editing by Charles J. Tapper

This article continues with more designs from the 32-square-foot-design challenge presented at the Tulsa, OK Regional NMRA/LDSIG/OpSIG Meet in 2012.

Shelf layouts were featured in *LDJ-49*, now we turn to island and lobed layouts. A number of intriguing benchwork shapes were presented along with some very interesting prototypes and layouts.

Parameters for the challenge

Challengers were encouraged to present operationally interesting designs of an attainable scope. The space could be configured in any way. Hidden under-deck staging or return loops were not counted in the surface area as long as they were within the overall footprint. The scale, gauge, theme, railroad (real to free-lanced), place, era, and layout room setting were entirely up to the designer. For more details on the challenge, see *LDJ-49*.

Port of Catoosa in N Scale

by Graeme Nitz

The Port of Catoosa is a 2000-acre industrial park northeast of Tulsa, OK which was opened in 1971. The site is adjacent to the McClellan-Kerr Arkansas River Navigation System, hence the word “Port” in the name. Railroad connections include the BNSF Railway directly and the Union Pacific and Kansas City Southern via the shortline South Kansas & Oklahoma (SKOL). On-site rail service is done by the site’s own railroad, the Port of Catoosa (POC).

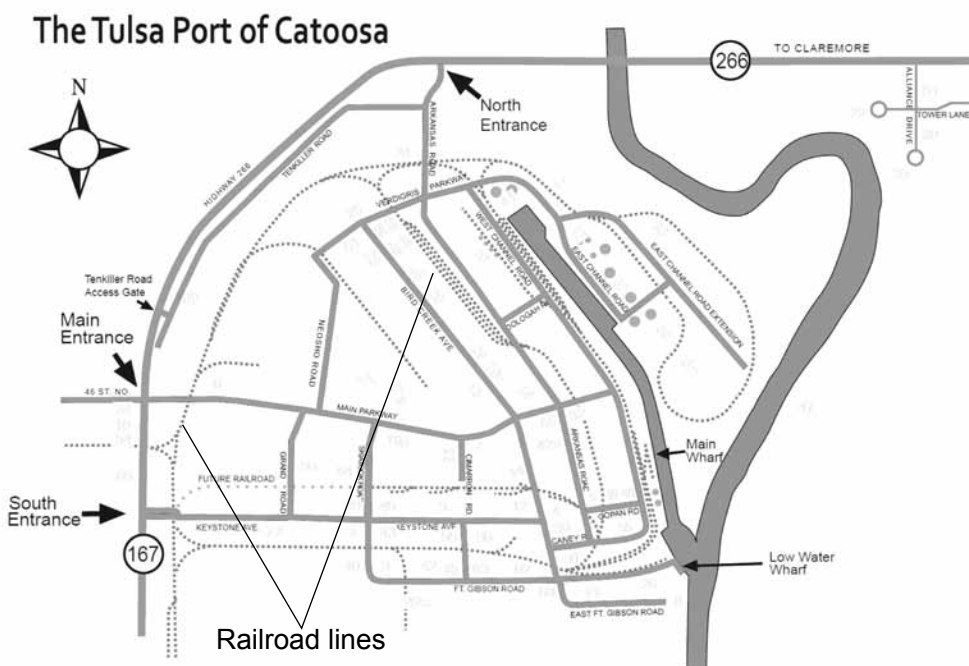
There are 65 companies on-site at present employing about 2,500 people. Approximately 2.2 million tons is shipped through the port annually. Some of the types of businesses on site are structural manufacture, grain, oil & petrochemicals, car parts, aerospace, fertilizer, oil industry services, and more. This means a large variety of rolling stock can run on the layout.

Signature wyes

One of the signature features of the POC is the presence of four wyes in the track-plan. I have included three in the plan, two operational and one static. Because of the active wye track arrangements, I would recommend DCC operation to allow automatic polarity reversal. I think the layout is basically a one-man operation although there is room for two switchers to be operated simultaneously.

Easy to model

Most of the buildings in the Port are steel and would be easy to scratch build with Evergreen styrene or similar. A large number of the buildings are long and narrow as per the plan. I have included a cross-section of the available industries to make the building and operation of the layout more interesting. A few large buildings would realistically dwarf the trains.



make a plausible stand-in for P&WV's powerful consolidations. P&WV used NE cabooses exactly like those made by Proto N by Walthers.

Since the South Side Belt is a subsidiary, I felt that it would use Fairbanks Morse (FM) equipment like the P&WV, but painted in a modified P&WV paint scheme (a handsome black and yellow scheme with red separation striping). But instead of the H-20-44 Heavy Duty model used by the P&WV, the SSB instead settled on lower-powered FM roadswitchers. This allows the use of H-15-44 and H-16-44 locomotives available in N scale from Atlas and Bachmann.

Montour power would be 3-4 unit lashups of SW9 locomotives, sporadically available from

Proto N by Walthers. These were painted in a solid black scheme. No decals are known, and they would have to be custom made. Montour used wood cabooses until those were replaced by ex-UP CA-3 cabooses. The Montour basically was a coal-hauler and only owned hopper cars, many of which are available from Micro-Trains.

I have included a great diversity of industrial spots on the South Side Belt layout, so essentially every type of car can be accommodated, including boxcars and reefers for the warehouse area, various cars for the brewery complex, hoppers for the mine complex, and the usual heavy emphasis on gondolas and hoppers for the steel mill.

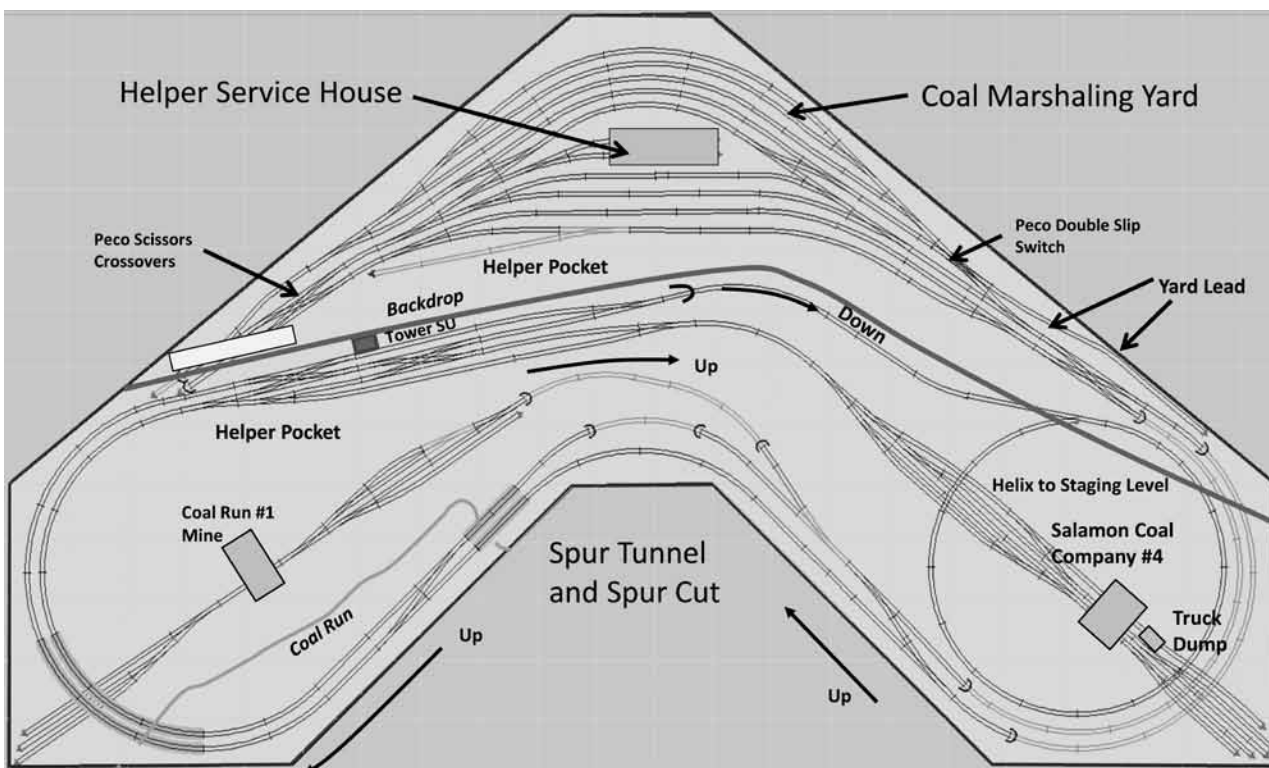
N Scale Allegheny Western Variations

by Charles J. Tapper

I was curious to see if a realistic mainline operation, involving several operators, could be designed to fit the Challenge's 32 square foot restriction. I was thinking of mountain railroading, multiple-track mainlines, signals, helper operations, towers, and train orders. After trying some ideas with various bench-

work shapes, I felt that "bending" a roughly rectangular layout in the middle might allow for the sweeping curves more characteristic of, say, an Appalachian crossing. The resulting shape was reminiscent of water wings (for old-timers) or a stealth fighter.

Allegheny Western I
N scale, ~5' 3" X 8' 10" overall
 (plus aisles)
 Minimum radius 12.5"
 C55 Atlas #5 and PECO "Small"
 Turnouts
 2% maximum grade
 5-inch grid



N scale allows an impressive amount of Appalachian railroading in 32 square feet. Charlie used a double-sided backdrop to manage the appearance of very different elevations on either side and to conceal the yard at the base of the grade from the summit and vice-versa.