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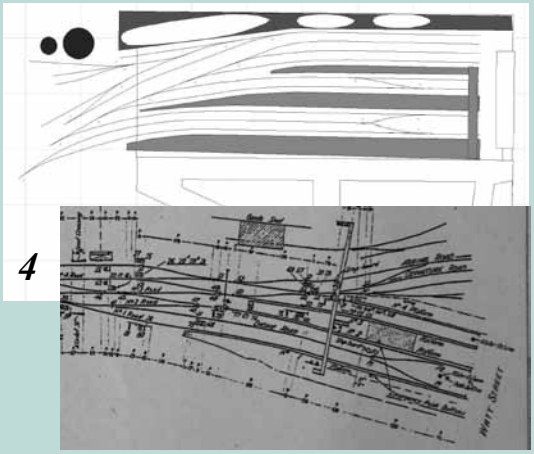

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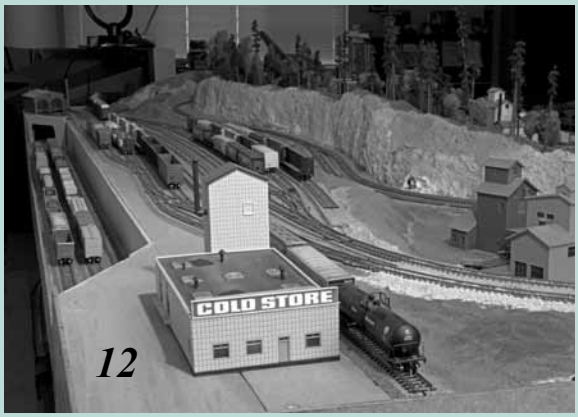

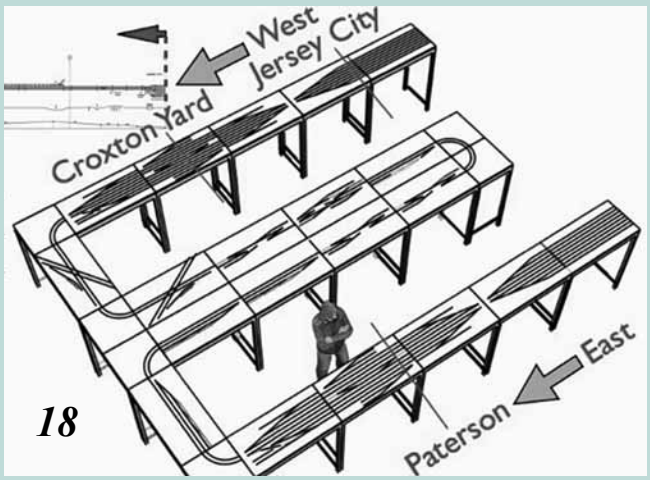

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Planning the Newcastle-Fassifern Ry.

LDEs are the basis for a busy mid-sized Australian layout

by Garry Glazebrook

In 1965, at the age of 15, I travelled to one of the last bastions of steam locomotive operations in Australia – the Hunter Region of New South Wales. This area saw over 300 trains per day at that time, the majority steam-hauled. These ranged from coal trains hauled by double Garratts – Australia's largest steam locomotive – to express passenger trains running at up to 80 mph, hauled by streamlined C-38 class Pacific locomotives. In addition, there were diesel-hauled interstate express freights, steel and ore trains, local freights and suburban passenger trains hauled by 50-year old 4-6-4 tank locomotives. For someone who had grown up on Queensland's delightful but diminutive narrow-gauge trains, this was railway heaven!

Many years later, the memories of that trip led me to design and build my current layout, based on the New South Wales Railways' Newcastle-Fassifern section of the main line between Newcastle and Sydney.

Busy and interesting prototype

Newcastle grew up on coal and steel (and was named after England's famed Newcastle coal region – *BH*). It had Australia's first coal mines, and in 1965, the Broken Hill Proprietary (BHP) steel mill was one of the most modern in the world, hosting visits from Japanese steelmakers to see its basic oxygen furnaces. The adjacent Port Waratah was then Australia's largest coal export facility, served by numerous small coal trains which then dominated the scene hauled by ancient saturated steam 2-8-0s built in the 1910s.

Today the steelworks is closed, but Newcastle has become the world's largest coal export port, with 120 million tons[1] of coking and steaming coal exports in 2010 and plans for expansion to 200 million tons by 2017. Over 40 coal trains, up to 13,000 tons loaded, currently arrive at the port daily.

In addition to its railway interest, Newcastle boasted many modelgenic 19th century buildings, including the Customs House adjacent to the main Newcastle station. Another key attraction of this area was its highly curved and steeply graded (up to 2.5%) main line – ideal for modelling[2].

This area also included a large locomotive depot at Broadmeadow, featuring two roundhouses and housing over 100 locomotives (mostly steam). Broadmeadow yard was a large division-point facility where many freight trains changed from steam to diesel or vice versa.

The big squeeze

While the line between Newcastle and Fassifern was only about 17 miles long, squeezing the city of Newcastle, Broadmeadow yard, the main line, coal mines and staging into a small 12 feet by 17 feet attic proved quite a design challenge! The sloping side walls precluded a double-deck layout, but staging under the layout was a possibility (indeed a necessity).

Figure 1. Streamlined Pacific 3801 departing Newcastle on 31 May 1969 with one of the thrice daily each way "Newcastle Flyer" expresses between the Steel City and Sydney. These trains were timetabled to the nearest half-minute and some ran non-stop for the 105 mile trip to the New South Wales capital. Australian Railway Historical Society collection

1 I have used U.S. tons (2,000 lbs) throughout this article, although Australia uses English tons (2,240 lbs). We also now use kilometres but in 1965 were still in the imperial age!

2 We're using Australian English spelling and terminology for this article – BH

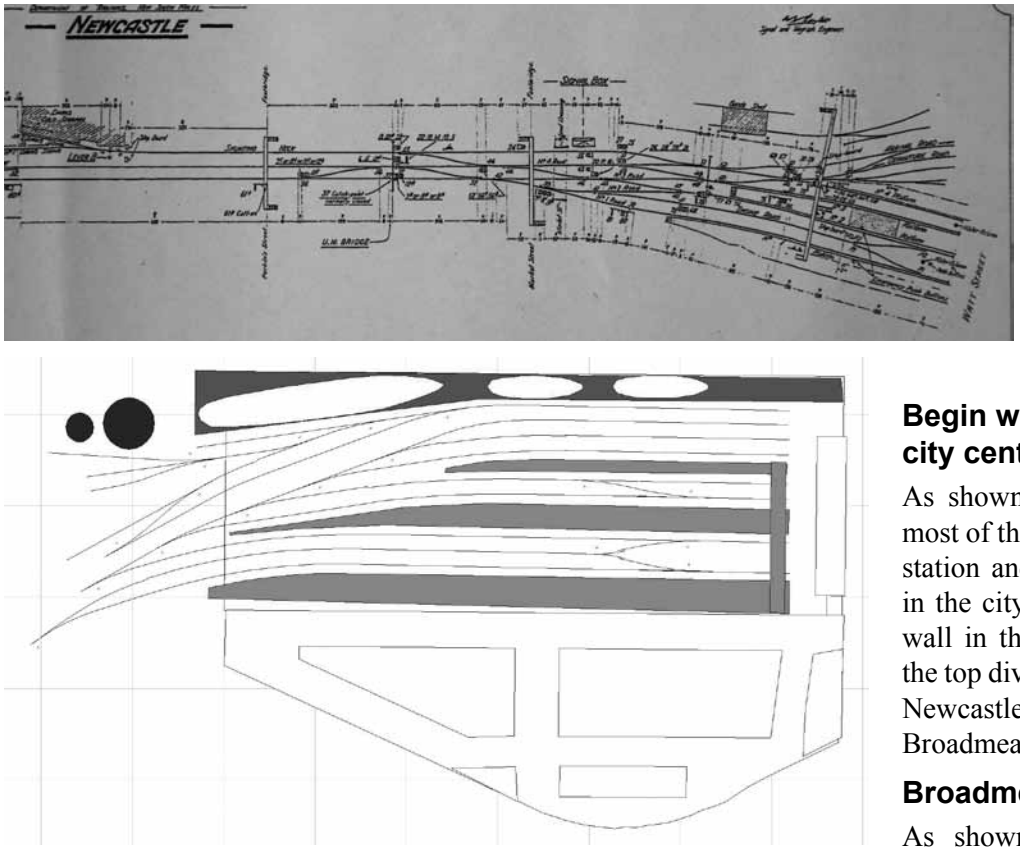


Figure 5. Prototype Newcastle track work and station (upper) and model design (lower).

wall; Broadmeadow yard along the top wall, with the locomotive depot in the top left-hand corner; and the main line to Fassifern winding around loops at B and C before returning to staging located under Broadmeadow. The main line to the north of Broadmeadow uses a loop at D under Newcastle to run to the main staging under Broadmeadow.

Begin with Newcastle station and city centre

As shown at left, it was possible to model most of the prototype track work at Newcastle station and yard together with key buildings in the city centre and a port scene along the wall in the background. The track shown at the top dives under the harbour and runs under Newcastle to return to the staging track under Broadmeadow.

Broadmeadow

As shown below, Broadmeadow yard included around 20 tracks with separate "up" [3]

3 "Up" is toward Sydney on the prototype (southbound here), "Down" away from Sydney

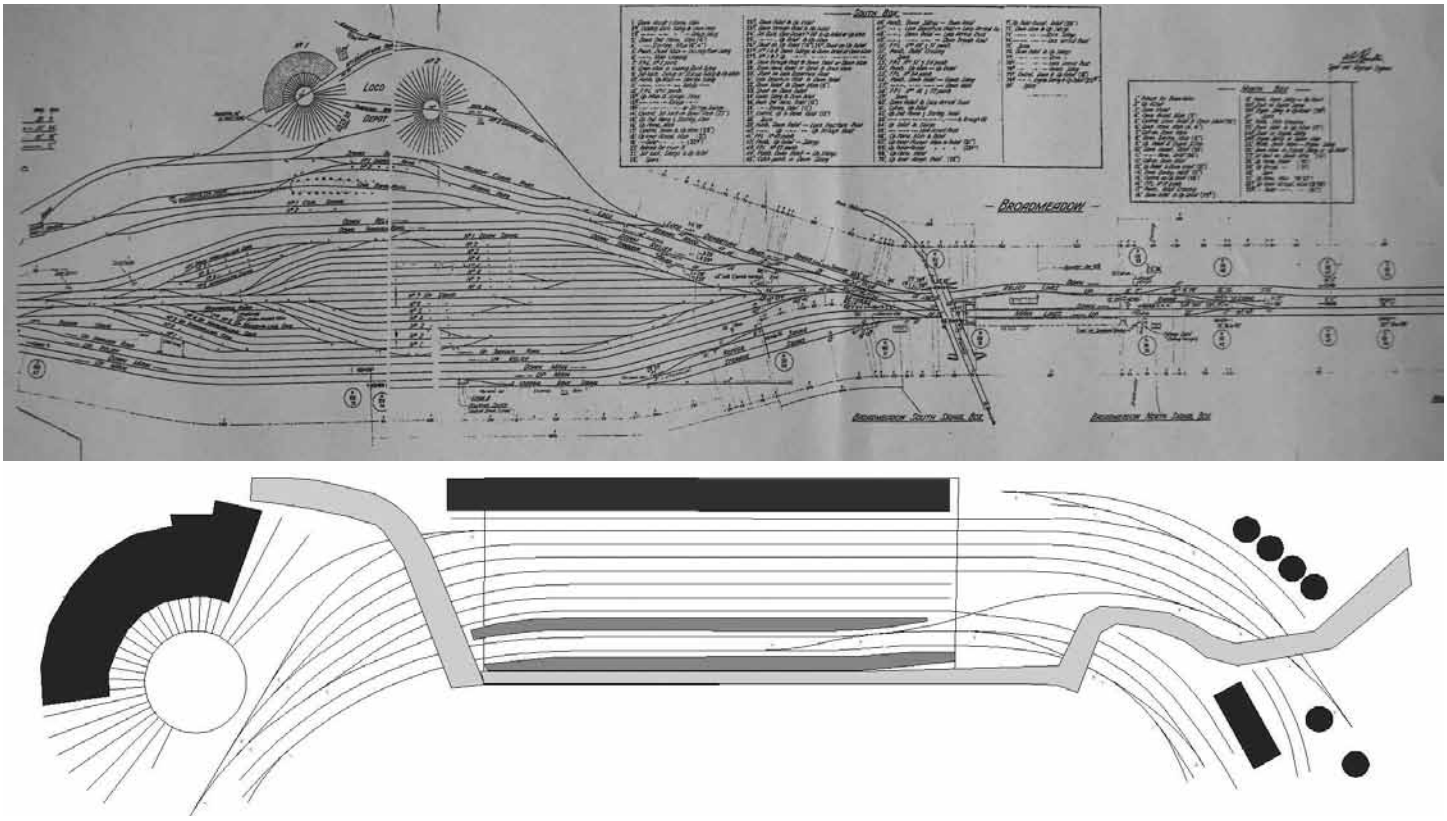


Figure 6. Broadmeadow station, yard and depot showing prototype trackage above and the modelled solution below. The industrial building at rear is based on actual structure near Broadmeadow station and covers a number of hidden staging tracks.

Improving a Classic Armstrong Plan

Broader curves and staging are great N scale additions

by Burr Stewart

Never underestimate the power of gifts to children to stimulate a lifetime of enjoyment. I started model railroading as a boy, when my uncle gave me a HO Mantua 0-4-0 that he had built up from a kit, my father helped me build a 4' X 6' snap-track layout, and I ended up in high school constructing a 10' X 20' HO logging layout in my parents' basement using handlaid track on balsa ties. I was very inspired by modelers like Jack Work, Norris Zinn and John Allen, and especially loved looking at track plans by people like Ed Vondrak and John Armstrong, and thinking about how to get the most interesting operations into small spaces.

Tight space plants N scale seed

One of my model railroading friends at the time was an art student He casually gave me a couple of Atlas N scale cars that he had expertly weathered to look like they were ancient. I didn't know what to do with them, but they were beautiful and took up little space to display, so when I moved on to college and graduate school I tore down the layout, gave all my HO buildings and rolling stock away to younger friends, and kept a few N scale pieces.

"... I was thrilled by the idea of being able to operate trains more flexibly and realistically."

I didn't realize how addicted I had become to model railroading until one spring break from graduate school when I compulsively took a 2' X 4' piece of foam-core, a knife, some white glue, flextrack, brown paint, and lichen, and built an operating N scale cookie-cutter layout in about three days. It was a mining railroad, rising up seven inches from the base in 3 or 4 figure eights through a lichen forest, with one engine, eleven ore cars and a caboose. It was crude, but I was back in revenue service with a minimum investment in time and capital. And, at 2' X 4', it fit in my one-room apartment – and for moving, in the back seat of my small car.

At the time, *Model Railroader* magazine was running a series of articles on a project railroad they were building based on the Clinchfield coal-hauling road (beginning in November 1978). They later published the entire series as a stand-alone book (*Modeling the Clinchfield Railroad in N Scale*, Kalmbach, 1979, out of print). I don't recommend reading this if you are trying to avoid an interest in N scale track planning, operations, or coal-hauling. In my case, it was too late.

Yard appeal

One feature of *MR*'s Clinchfield layout design that I couldn't stop thinking about was a small double-ended classification yard that was only about six feet long. My earlier HO layout had only had space for a stub-ended yard, and I was thrilled by the idea of being able to operate trains more flexibly and realistically. The Clinchfield layout showed that such operations were possible, even in a small space, although the Clinchfield layout in total was considerably larger than anything that would fit in my available space.

Inspired by MR's Clinchfield project layout, Burr added this curved double-ended classification yard to his expanded version of Armstrong's plan. All photos by Burr Stewart.

Armstrong's influence in 3' X 6'

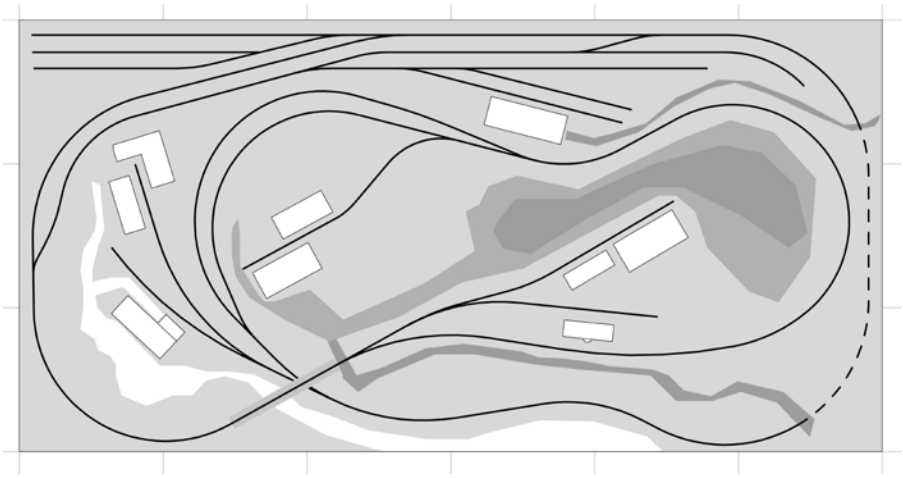
Then, disaster struck. I was reading a book called [*John Armstrong on*] *Creative Layout Design* (Kalmbach, 1978, out of print), and right there on page 45 was a track plan for a 3' X 6' N scale layout he had developed with two separate switching towns, one with the beginnings of a stub-ended yard (facing page). (This layout was, in turn, derived from Armstrong's "Scenic and Relaxed" track plan from Atlas' *Nine N Scale Railroads* book – *BH*)

What if I stretched the layout to nearly a full plywood sheet, increased the minimum radius from 9” to 12”, and put a six-foot-long double-ended yard (facing page) along one long edge as I had seen in *MR*’s Clinchfield? Lots of local switching at three completely different towns and a classification yard to sort everything out for both directions – all in a reasonable space! My layout ended up 45” wide (to fit in a vehicle) by 96” long.

In building my expanded version of John’s brilliant track plan, I found it really worth studying. He has placed the towns at different elevations, each with its own runaround track (passing siding) and spurs facing in both directions. There is a decent length of mainline between each town, for the most part. There is room for a soaring curved trestle (and you don’t want to be without that!), stations for passenger service, and a three-track stub yard for organizing the way freights to handle cars for the three towns.

The main limitations are the very sharp curves (and the constrained yard and engine space) because of its small size. Expanding this plan to gave me room to make the yard double-ended, add some industrial trackage to the largest town, and add a decent engine terminal area. By adding a passing siding to create a third town, the plan was perfect for exercising realistic way freight operations.

To test things out, I made a 3” X 6” clay model of the layout showing the scenery contours and building masses, and the more I looked at it, the more I liked it.



The author says that he couldn’t stop thinking about how well John Armstrong’s original plan, designed for N scale in 3’ X 6’, would support local way freight switching operations. It inspired him to build a 4’ X 8’ version with broader curves and a larger double-ended main yard (facing page).
In Armstrong’s description of the design, he notes that only broader (and thus, more realistic) curves can be seen when viewing from the bottom side of the plan. A view-blocking ridge separates this view from the tighter curves at the top, which are needed to incorporate more operating elements. Track plan by John Armstrong from Creative Layout Design.

N scale, 3’ X 6’ overall
1-foot grid
Minimum 9 ¾” radius
Atlas Code 80 #4 (actually #4.5) turnouts

Wheels solve space challenge

By this time, I was living with my new wife in a “ballroom” style apartment that had enough space for a layout in one corner, but only if it stuck out four feet or less from the long side of the wall. The trouble is, to operate a roughly 4’ X 8’ layout (of any scale), you need to have an operating aisle on at least three sides.

This had me stumped for a while until I thought of putting lawnmower wheels on the bottoms of the four legs of the layout (at right), and rolling it out into the room whenever we were actually running trains. This worked great. To level the layout, I carefully measured and drilled holes in the 2X2 legs to accept carriage bolts that fit in the lawnmower wheels, and hoped that wherever I lived would have

Lawnmower wheels bolted to each leg of the benchwork allow the layout to be stored against the living room wall while not in use.

The Continuous Model Railroad

Modeling more railroad than the room can hold

by Riley Triggs

If one were to combine the layout planning and construction methods of domino construction and an abstracted form of Layout Design Elements (LDEs), it would result in a dynamically flexible and effective system for modeling the operations of an entire railroad by allowing for continual reconfiguration of domino sections from one operating session to the next.

"... model the operations of an entire railroad ..."

By combining modified ideas of domino construction and LDEs, one has an opportunity to model the operations of an entire railroad by allowing for rearrangement and reuse of domino sections from one operating session to the next. To get to that point, it is useful to place domino construction and LDEs in contemporary layout design context.

Precedents

The hobby of model railroading has continually advanced in the areas of craft, manufacturing and technology since modeling became distinguishable from simple toy train activities in the early part of the twentieth century. For some hobbyists, the reason for modeling itself also has continued to evolve over the course of the last 100 years from simply being a quest for more accurate models and better looking scenery to modeling the railroad operations and prototype practices – as more than a model of the places and things of a railroad to more of a simulation of the operations of a railroad.

Some modelers focus on the trains as actors moving through a landscape as Frank Ellison practiced model railroading, while the new simulators are focusing "on re-enacting the railroaders and the occupational tasks"[1] and workings of the entire railroad. In the twenty-first century "model building has become building model railroads."[2]

Layout planning has very directly been affected by this evolution in approach to the hobby. Over the last two decades, the forward-thinking ideas of David Barrow and Tony Koester have had a great influence on those of us who are striving for clarity, realism and operations-oriented model railroading. Two of those ideas, the domino benchwork construction and planning method of David Barrow and the Layout Design Element, or LDE, of Tony Koester have both shaped current discourse of layout planners and are particularly interested in the simulation, or game of model railroading.

Dominoes and minimalist modeling

David Barrow used the term "domino" for a benchwork construction method in an article for *Model Railroader* magazine in 1995 and gives credit for the term to Bruce Goehmann who wrote about "domino" planning for traction layouts in an *MR* article in October, 1985.

Besides referring to the obvious 1:2 size ratio of being like a playing piece of the game of dominoes, the term is related to Swiss architect Le Corbusier's *Maison-Domino*. Le Corbusier introduced the idea of a basic building prototype for mass production housing with free-standing pillars and rigid floors that privileged modularity and clarity in architectural form and construction.

The effect of domino planning on model railroading has been significant in that it reinforces the around-the-room, or shelf-style layout that is sincere[3] (the train moves through each scene only once maintaining the same direction). It has also given rise to the orderly track plan and layout room as an extension of standardized and simple benchwork construction and arrangements.

I feel confident in saying that it is impossible to create a messy, spaghetti bowl track plan using domino benchwork (although I would love to see someone try), and rarely do I see a room with a layout built with dominoes that is unkempt or ill-considered.

In his own layout evolution, Barrow has fully taken advantage of the domino method of construction in a way very closely aligned with Corbusier's emphasis on modularity through

1 LDSIG Founder Doug Gurin in email to the author, January 6, 2011

2 John Armstrong in Creative Model Railroad Design*, Kalmbach: Waukesha, WI, 1978, pg 7.*

3 The LDJ *generally uses the term "once through" for this track arrangement.* – BH

the re-use of benchwork modules in new track configurations as well as an organizational method during the re-design of iterative representations of Santa Fe track and operations around Lubbock, Texas. (See *MR* August 2009 for his latest track plan and *Model Railroad Planning* 1999 for domino planning basics.)

Barrow has redesigned the layout sixteen times at last count using various arrangements of modules, and he has realized and operated several of them. The domino benchwork has allowed him to reconfigure his layout room in radically different ways to try out these different approaches to modeling the same basic area of West Texas.

What I take from the domino planning and construction method is the ability to rearrange standard modules in the manner of NTRAK or

New Terms Used in this Article:

Continuous model railroad: An unending and unbroken model railroad that is limited neither by space nor time, which can represent a prototype railroad in its entirety.

Dynamo: DYNamic Abstracted MOdule

DYNAMOS: DYNamic Abstracted Modular Operating System

ODE: Operational Design Element. A typologically identifiable portion of a model railroad layout that is linked to the operation of the prototype railroad. A section of a model railroad that has a discrete set of (or particular combination of) operating elements such as an interchange, siding, yard (or separate yard element), passenger station, industry spur or spot, etc. Can also be used for type of landmark or scenery element such as a bridge, tunnel, cut, roadway or other part of the natural or built environment that affects operations. -- *RT*

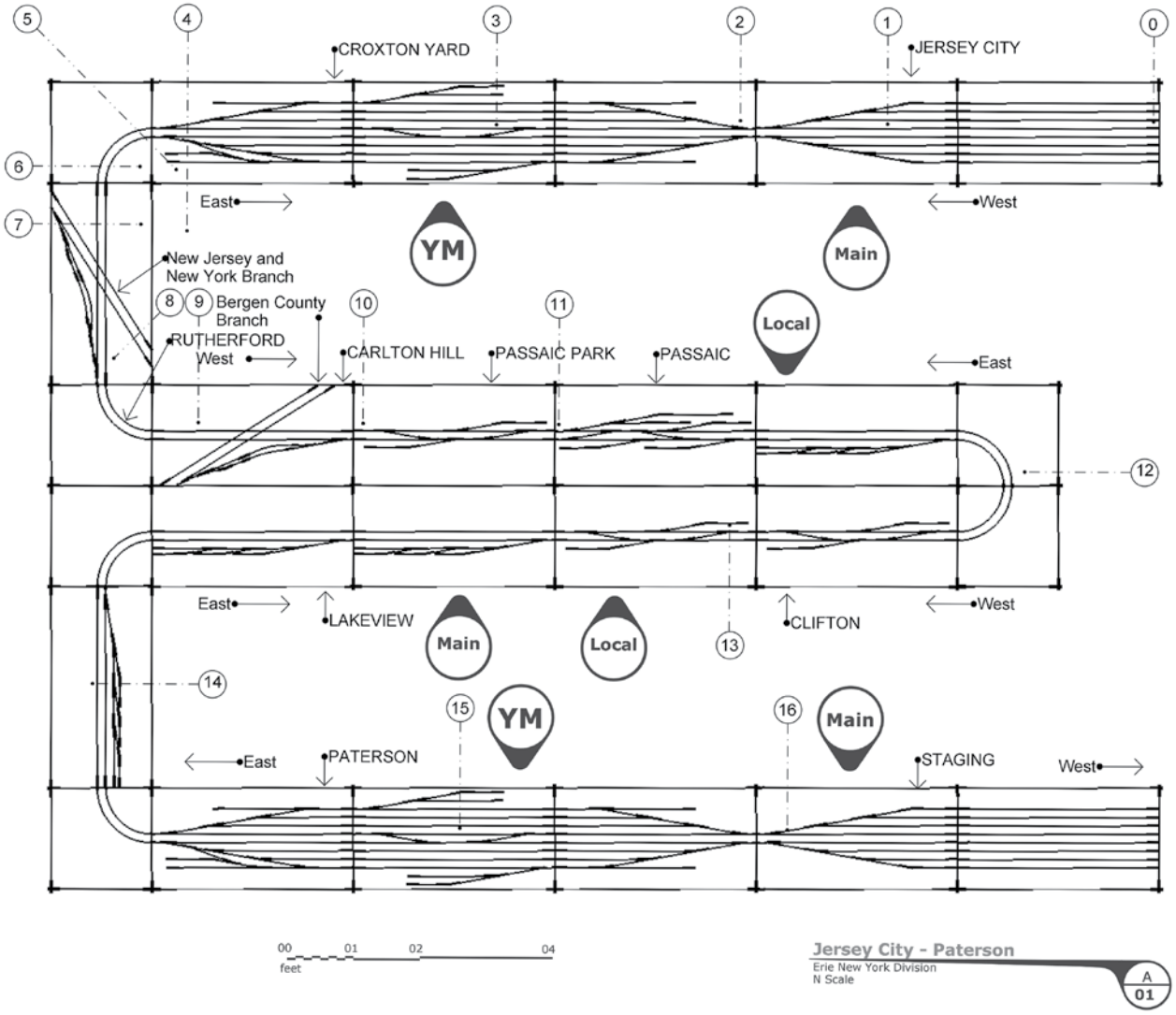


Figure 1. A single-session plan for a DYNAMOS layout developed for operations of the Erie Railroad from New York to Chicago. With abstracted track arrangements, one can model any railroad in any era with the same layout components.

Proto-Freelance Midwest NYC Layout

Published track plans inspire industry-driven sectional design

by David Butts

The New York Central Railroad is one of my favorite fallen flag railroads. Eighty percent of my model railroad collection is based on the NYC with an emphasis on the 1960s. On the layout I am currently constructing, I've endeavored to capture the flavor of the NYC in a proto-freelance style. I'm not trying to model exact scenes on the Central, but instead have designed an industrial switching layout serving a core of industries utilizing NYC equipment representative of the 1960s. The setting for the layout is the Midwest: Ohio, Michigan, Illinois and Indiana. I would like to share my experience thus far in the design and construction of the layout.

Begin with the industries

The starting point for me was to zero-in on a theme and purpose for the railroad. I wanted to impart a Midwestern visual tone, preferably focusing on the NYC's Michigan Central Division. I knew that I could not model everything in the limited space that I had available.

To narrow down the layout, I chose to focus on the automotive and food products industries of the area. I started my design using some key structures from these industries; thanks to Walthers Cornerstone, I had an automotive assembly plant, automotive stamping plant, automotive parts warehouse, small power plant and combination slaughter house/meat packing plant to drive freight traffic. Additionally I had a brewery and grain silo by Heljan, Swift Meat plant by California Models, and Pillsbury flour mill by Walthers Cornerstone.

As a result of my mix of industrial structures, I knew that I needed a large number of spurs and car spots. This led me to develop an industrial switching layout with a high ratio of track versus scenery. Another driver in my layout design process was the rolling stock mix needed to serve the industries – auto parts box cars, cushion coil cars, covered hoppers, reefers, gondolas and open hoppers. The spurs on my layout are tailored for the industries served and to fit certain car types with a 50 foot car length being the average. The switches and track to the auto assembly plant will accommodate long high cube auto parts boxcars extending over 80 scale feet.

Defining key criteria

I had a spare bedroom about 10' X 13' at my disposal. Over the years, it had housed two 6' X 13' layouts that were not very satisfying, but were a start. My present layout is designed to utilize the entire room in order to allow me to maximize my operational potential. The key criteria are as follows:

- Double Track
- Broad Curves
- City Yard
- Branch Line
- Large Industries
- Staging Tracks or Cassette System

These key criteria and my already-chosen industries set the baseline for what I wanted in

Inspiration: The New York Central

At its peak, the Central was one of the largest railroads in the United States with over 11,000 route miles of track through eleven states, as well as some track reaching into Canada. The NYC began with the Mohawk & Hudson, the first chartered railroad built in America in 1826. Through the mergers and consolidations of a number of Eastern railroads, the NYC grew larger over the years under the control of Cornelius Vanderbilt, one of the great business moguls of his era.

Many rail fans and modelers associate the Central with passenger trains (20th Century Limited, Pacemaker, Mercury), however it was a big-time hauler of freight, from which it derived the majority of its revenue. In the late 1960s the Central merged with its rival, the Pennsylvania Railroad, and by 1969 the Penn Central, as the combined railroad was called, filed for bankruptcy. The Penn Central's demise ushered in the era of Conrail in the early 1970s. An excellent reference is Brian Solomon's and Mike Schafer's book *New York Central Railroad*; MBI Publishing, 1999 (reprinted by Voyageur Press; 2007).

Emery Gulash and David Sweetland have each written a number of books on the NYC published by Four Ways West and Morning Sun. These color pictorials provided the inspiration to set the location of my railroad in the Midwest. The NYC was a major player moving automobiles and auto parts throughout the Midwest: Detroit, MI, Toledo, OH, and Cleveland, OH, et al to destinations east and west on its various routes. A key industrial reference has been the book *America's Driving Force; Modeling Railroads and the Automotive Industry* by Laura Sebastian-Coleman (Walthers, 1998), which provided me with an education on how the railroads and auto industry are tied together. In addition to this industrial traffic, meat trains out of Chicago, IL and St. Louis, MO, headed east toward New York State were prominent. I wanted to reflect all of this character in my layout.-- *DB*

servicing facilities, caboose track, and MOW storage capability.

The **branch line** creates a sense of distance for trains to travel with additional car spots for freight. It features a runaround track, and has capacity for holding freight car overflow.

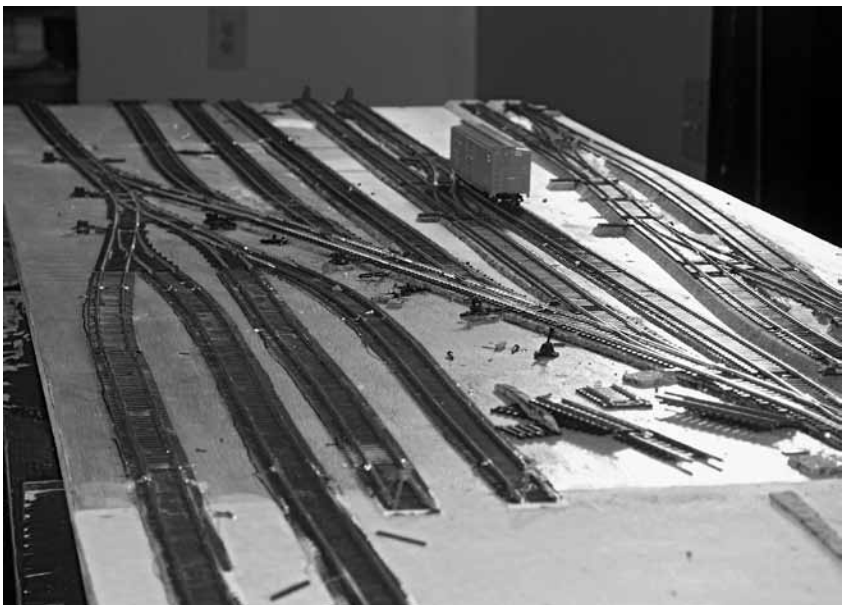
Large industries generate more freight traffic volume in more combinations than do small pocket industries, allowing me to utilize more freight car types. **Staging tracks** (or a cassette system) are a must-have for a wider variety of trains and cars moving on-and-off the layout.

Do I have a lot of track and switches? Yes. Would the prototype have approached the switching solutions with the track work that I have in place? Probably not. However, in my thinking, I had to compress the trackwork and gain flexibility to switch. Depending on how the trains are made up and blocked coming out of the yard, the shoving and pulling to work the industries is relatively simple and does not require puzzling zig-zag movements that are not prototypical.

Construction

The layout is sectional using a flat table-top style for simplicity. The layout will ultimately be composed of seven sections (as seen in the track plan at left). Over the past few years, I have been building the layout one section at a time using L-Girder techniques; so far, five have been built. Railhead elevation is 51".

I wanted a sectional layout this time around so that I could preserve my investment this time. In the past, I had to throw the whole layout in the dumpster when major changes were required. Instead, I hope to be able to change some sections if necessary. Also, my sectional layout can be reused if I need to move, or expanded should I move to a home with a larger space for the layout.



(Top right) NYC Geep coming off the curve on the "Meat Branch Line" and preparing for switch moves in Zone 4.

(Middle right) View of triple track on Zone 2 with spur tracks off to the right with covered hopper parked. Third track from left is the combination switch lead / siding.

(Bottom right) A view of the body of the yard in Zone 1 with main tracks in the rear off to the right. David's sections are built with flat tops and could be easily moved and incorporated into a new layout.

Weighing the Scales

Multi-scale modelers share the benefits and challenges of different scales and gauges

David Adams, Paul Deis, Bob Hemmer, Pat LaTorres, Ed Loizeaux, and Bruce Morden, Moderator

Story Editing by M.C. Fujiwara

At the 2012 PCR/LDSIG/OpSIG Meet in Mountain View, CA, moderator Bruce Morden asked the audience, "How many of you out there have a layout? How many of you out there with a layout have ever considered changing scales? [If] you changed, what considerations would you have? What makes you think that the scale you changed to is any better than the one you had before? How many of you have a layout and would never change scales because you're so fixed on the one you have?"

Between them, the panelists (page 38) have built many layouts in scales from N through 3-foot live steam narrow gauge, with many having modeled in multiple scales on either consecutive or concurrent layouts.

Most of the time, layout design focuses on issues of physical space and how to manipulate the models of our chosen scales into satisfying scenes and operation within that space. While the panelists did discuss those issues – keeping or changing scales when faced with a new room, home, etc. – another factor that came up time and time again was the influence of other modelers on the scale chosen. While level of detail and availability of models play a major role in selection of scale, the power of personal, emotional connection to a specific scale and to the modelers around them cannot be discounted.

Based on their joint experience of modeling almost every scale except Z between the five of them, the panelists discuss how they finally decided on the scale(s) that they currently model. Reasons given vary from joining clubs that model a specific scale, to availability of equipment in a certain scale, to even the gift of a model in an unexpected scale. – *MCF*

Scaling down the choices

Bruce Morden started the panel proper by asking the panelists, "Most of you have modeled in more than one scale, what made you change from one scale to another?"

Paul Deis: "I started with my Dad's Lionel trains, but when I started to do my own railroads I bought my nephew an N scale set for Christmas, and I set it up on the dining room table to make sure it worked before I wrapped it… and he never got it. So that started [me in] N scale.

"I was in the service then, and travelled around the country – you know: move every couple of years – and it was easy to move an N scale layout. That was the day when everything was just freelance and of seeing how many trains I could get to run and make them work.

"I started to build a serious N scale layout back in the late '70's, but when I went to an open house for the San Luis Obispo Model Railroad Club, I said, 'Wow, it'd be cool to join these guys, except they're all HO.' So I decided to sell all the N scale and start building HO layouts. Again, freelance, and building modules to watch trains run.

"Then I started to find out about this LDSIG group and started reading it and thought, 'Wow, actually model something!' So I started researching the San Luis Obispo locale and kinda locked into building the ... area from the end of late steam and early diesel. It was a pretty good-sized layout: it went from Guadalupe to King City [about 110 real-life rail miles], and included almost every town. But that layout was lost in a life change.

"[Today] I still like HO – the realism and how much railroad I can fit into the space. I'm still modeling the Southern Pacific Coast Line, trying to be as historically accurate as possible, but I've also always had this love for narrow gauge. Back when I was freelancing I would ask: 'How can I get my SP but also interchange