

# Relocating A Railroad



*One of the yards on my in-progress S scale layout. Originally this was a freelanced railroad, with equipment of the B&O, NYC and PRR sharing trackage rights everywhere. After further thinking and research, I eventually established a prototype setting for the layout, and this process has led to more prototypical operations.*

## By Gaylord Gill

This is a story about the process of relocating my railroad. By that I don't mean moving a layout, but rather selecting a different location which the model railroad is meant to represent.

What I have been constructing in my basement started out as a freelanced layout. In setting out my objectives I had made some choices as to era and the type of railroading I like: the year would be 1953 and I wanted to portray Class I railroading (railroad classes were defined by the Interstate Commerce Commission according to gross revenues, and the Class I's companies were the biggest). Regarding location, I was more general: my railroad would simply be located "somewhere" in the region of the Great Lakes. For equipment I narrowed it some, but not to one specific railroad: over the years I had been purchasing locomotives and cabooses of the Baltimore & Ohio, New York Central and the Pennsylvania (all Class I's).

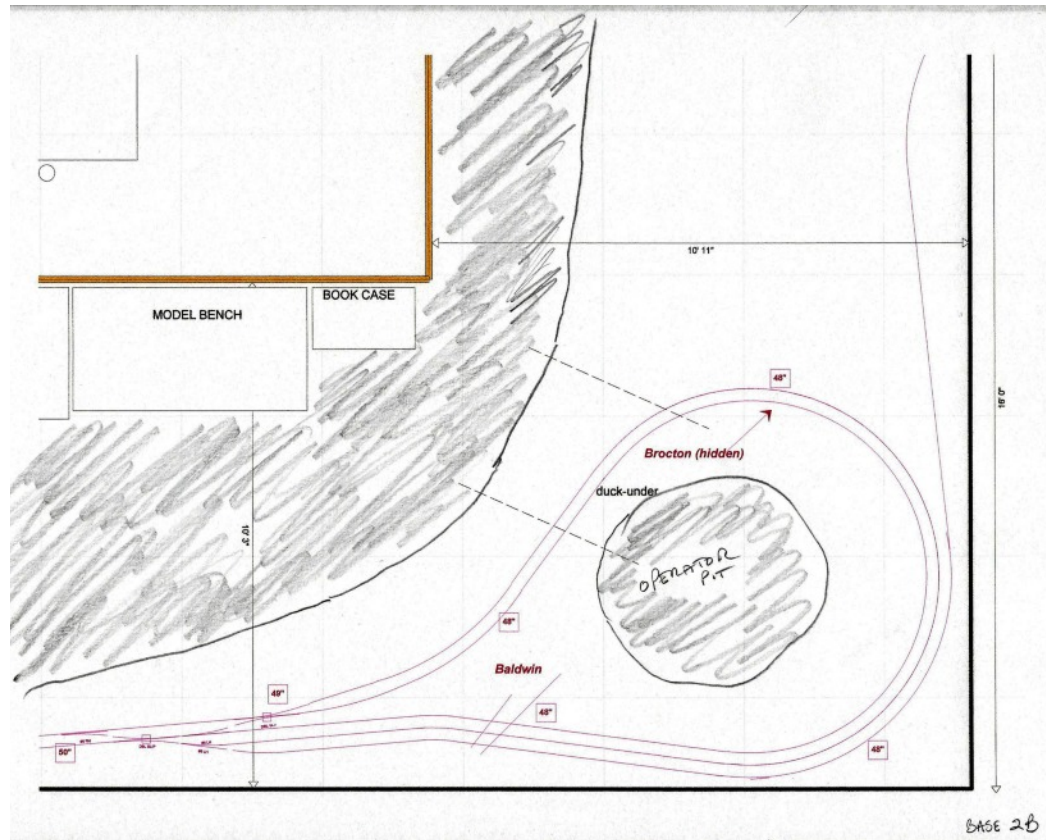
From the time I first studied layout plans, I have admired those people who can select a prototype railroad and then translate a portion of its physical operations into a model version. As I worked on early track plans, however, I thought it would be too time-consuming to do a lot of research on various roads, pick a particular railroad and location, and then do even more research to identify specific equipment and structures to purchase or build. For that reason I continued to work with my freelanced format.

By 2003, I had completed finishing out the basement in our new house; and I was working on a track plan that would fit. My goal was to design for **operations**, which in this context means simulating real-world railroading – not just the *look* of it, but also the *action* of it. For many modelers, this facet of the hobby provides the ultimate in realism.

Reduced to its simplest definition, railroading is about the efficient movement of goods and people. Whereas a prototype railroad operates in response to the needs of its many customers, the owner of a model railroad has to create his/her own scenarios for why these particular cars have to get to those particular places. I think of it like writing a script for a movie, where the trains are the actors whose every movement has to be thought out, especially their interaction with the other actors. While I wasn't ready at that time to jump fully into planning specific operation scenarios, I had read enough to know I wanted to include these design features in my plan for the new layout:

1. point-to-point scheme – going from Location A to Location Z gives purpose to the railroad, in contrast to just running in circles
2. single-track mainline – causing opposing trains to work around each other adds to the operational challenge (in a good way). I planned for three passing sidings, each capable of holding at least a 15-car train
3. classification yards – many towns and cities become logical places for yards, where an arriving train would be broken up, its cars would be classified and grouped as to their final destinations, and then other trains would transport the cars to those destinations. I added three classification yards to the design, a large one at the center of the railroad and two others that were smaller.
4. staging areas – staging is a strategy that lets you set up a future train movement in kind of an “offstage” way. I accomplished this by way of two hidden reversing loops, one inside the other, at each end of the railroad. Each loop can accommodate an entire train.
5. branch line – for operational interest I created a branch line, which would allow access through a junction point (controlled by a single turnout) to a small town not on the mainline.

By this point, I had purchased the software package 3<sup>rd</sup> PlanIt, a computer-aided design (CAD) program designed specifically for model railroads. Such a tool is a great help in avoiding situations where your track might be laid with a radius that's too tight or a grade that's too steep. I loaded in all the key dimensions of my basement and then began developing a track plan that would incorporate the above design features. The process took me through many revisions, but with each revision, I could simply modify my working 3<sup>rd</sup> PlanIt file without having to start over.



*I found the software program 3rd PlanIt to be a useful tool for drawing my track plan as I developed my design features. This shows the hidden staging reverse loops at the west end of the railroad.*





*The state of my layout construction at the time of the 2006 NASG convention. Designing for operations was always a priority, but the specifics evolved over time.*

Although still following my freelanced concept, I nonetheless wanted to convey a sense of location. I made the western end of my railroad represent Chicago and the eastern end represent Buffalo. The staging areas at both ends are hidden below other benchwork, so I didn't need to worry about trying to model such big cities. Between the two ends, I planned four towns or industrial areas, plus my branchline town; and I gave each one a fictitious name (actually, for most locations I picked surnames from my family tree). For my city and large yard in the center of the railroad, I created the name Grand Valley and then dubbed the layout the Grand Valley Northeastern. I stuck with my chosen year of 1953, as I have always liked steam locomotives alongside first-generation diesels.

With help from some friends, I began construction of the layout. By the time our club hosted the 2006 NASG convention, our work crew had completed almost all my benchwork and probably 60% of the trackwork. I was able to run trains and show off a few areas which had been relatively finished with ballast and scenery. Over the next seven years the railroad continued to grow – more trackwork, more structures, more scenery.

After further reading and consulting with others, I finally began to design some operations scenarios for my railroad. A full explanation of model railroad operations is beyond the scope of this piece, but I will give some highlights of my experience. I created a list of the scheduled trains I would call for, with about half of them to be eastbound and half westbound. Not all the trains would begin their assignments at the railroad endpoints; some would start at the intermediate towns. Next, I developed switchlists for each stop that each train would make.

Train C-5      Switchlist for 3. Seneca St

	<input checked="" type="checkbox"/> Pick-Ups	<input checked="" type="checkbox"/> Set-Outs
Di Trapani	FR: PFE 729	
Food City		
Wolverine	FX: RUT 299	
Fairview	FR: GPEX 978	FR: IC 328
Boardman		
Wagemaker		FX: SOO 448

**Freight Class:**  
 FB Express  
 FF Flat  
 FG Gondola  
 FH Hopper  
 FN Caboose  
 FR Refrigerator  
 FX Box

Notes: 1. Wagemaker set-outs to be flush with factory end

*A sample of the switchlists I created to tell train crews which specific cars are to be picked up and set out at each location. These were done with Excel and printed on 3" x 5" cards.*

The printed switchlists tell what actions are to be taken at the designated locations. Typically these include setting out certain cars (uncoupling them from the train and leaving them at particular spots, usually sidings or yard tracks), picking up other cars (identifying previously set-out cars and adding them to the train) and moving cars (a combination of picking up and setting out, all at the same location). I formatted my switchlists using Microsoft Excel, and printed them on blank 3" x 5" index cards.

Regarding the control of train movements (remember, all the trains are sharing a single-track mainline) I started with one of the simpler methods called track warrants. This method uses a person who acts as dispatcher, somewhat like a traffic cop. Whenever a train has completed one of its switchlist assignments, and is ready to depart a town for the next town, the crew must request authority from the dispatcher. The dispatcher, who sits in front of a large graphic panel showing the entire railroad, uses tokens representing each of the trains currently active. If the way is clear to that next town, he will give authority (the warrant) for the crew to advance their train. At the same time, the dispatcher moves that train's token to the new location so he can keep a current picture of where all the trains are.

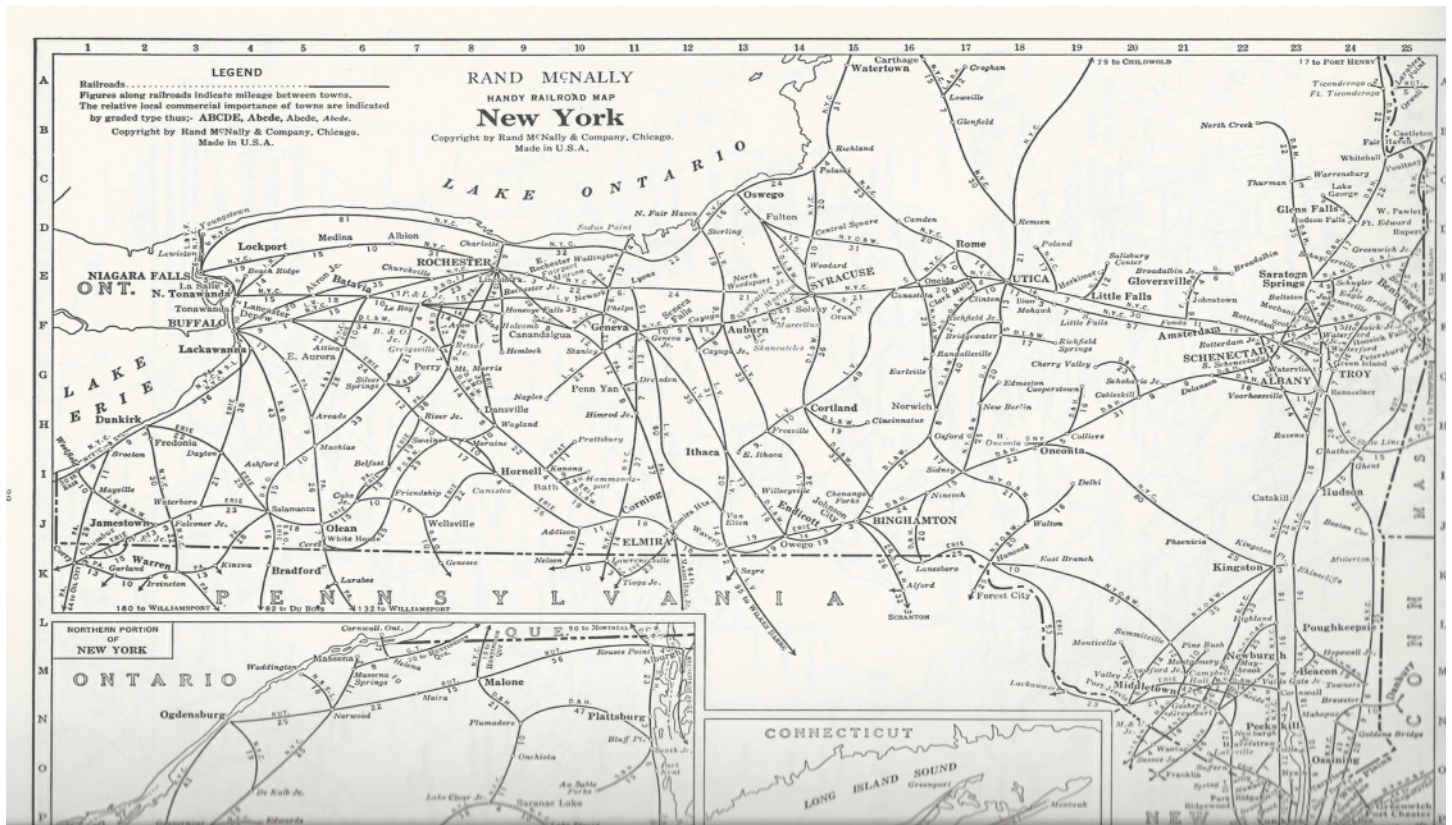
In 2008, I hosted my first operating session, utilizing nine operators – a dispatcher plus four train crews of two operators each. While there were some glitches, overall I felt really good about how it went. I hosted a couple more sessions and also attended operating sessions at other layouts to gain additional experience. You should note that most of these others were not S scale layouts, as model railroad operations is generally a scale-independent activity.



*In preparation for performing their switching assignments, operators use toggles on the control panels to align mainline turnouts.*

As my operations experience continued to increase, however, I began to rethink what I was creating in my basement. In the very recent May-June 2016 issue of NASG Dispatch, Jeff Madden had a thought-provoking article titled Prototype Modeling. In this article, Jeff referred to stages of prototype modeling, essentially saying we often go through a progression of applying greater and greater attention toward matching our models to the prototypes they're representing. That evolution was exactly what I was going through two years ago.



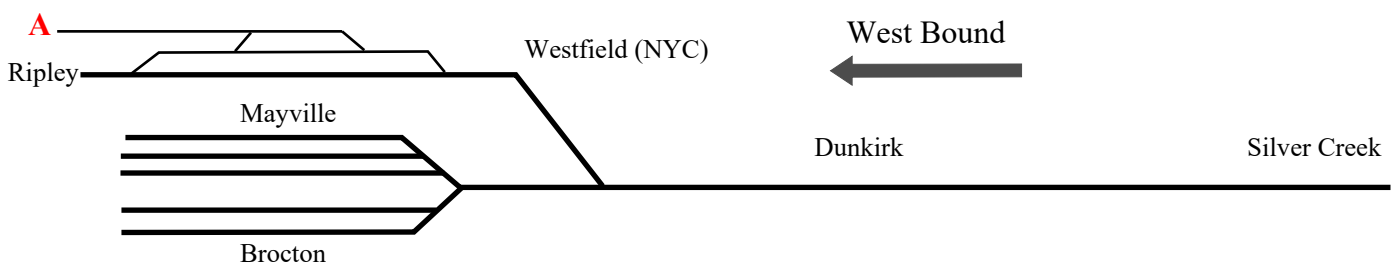


*A page from the 1948 Railroad Atlas, showing western New York state. The atlas shows where all the railroads operated, which helped me decide that Buffalo would be the central location for my layout.*

My layout no longer seemed prototypical enough for realistic operations. Here are the points that were becoming less satisfactory to me:

1. Location: I had been trying to represent mainline railroading between Chicago and Buffalo, but my mainline was all single-tracked, while most of the Class I roads had double-track mains through their east-west corridors. Also, I was trying to portray a distance of 600 miles, which was a stretch.
2. Equipment: as mentioned, I had locos and rolling stock of the B&O, NYC and PRR – three large, competing railroads. I hadn't designed any interchanges or crossings into my track plan, so my operations scenarios had trains of all three roads sharing trackage everywhere.
3. Structures: All the structures I had built to that point had been off-line ones – houses and commercial buildings. I hadn't yet built the railroad-related structures – depots, towers and the like – because I hadn't landed on a single railroad to be the primary owner of the trackage.

Midway through 2014 I started seriously exploring alternatives. While I was certainly open to making changes to my layout, I also wanted to achieve two goals: 1) minimize redoing any of the existing trackwork and 2) maximize the use of equipment I had already purchased. In that latter category were a number of road signals, custom-made with the position-light targets that the Pennsy had used. Although the signals weren't installed yet, I decided pretty early in this process that the layout would be based on the PRR.



Initially, I began soliciting ideas from friends in the hobby, S folks, as well as, those in other scales. My good friend Brooks Stover was a huge help in this regard – not only has he built a layout demonstrating faithful adherence to his chosen prototype, he has the most operations experience of anyone I know. Some of my consultants shared their experiences of how they arrived at their own prototype decisions, and several people sent me ideas of specific locations that might serve the railroads I mentioned.

One resource I already owned was very useful in this exploration of prototype roads. It's the book "1948 Handy Railroad Atlas of the United States," put out by Kalmbach Publishing. The paper-bound booklet measures 9" x 12", and it features simple line-drawing maps of each state. Only the cities/towns/junctions and the connecting rail lines are shown, and each line is marked with the owning railroad's initials and the mileage between adjacent points. Some line sections show multiple roads, indicating shared trackage in that section. While the book appears to be out of print, there are still used copies available (i.e. Online at Amazon).

Using the atlas, I began looking for regions where my three railroads would have co-existed. I still liked keeping to the area in the general vicinity of the Great Lakes, so I concentrated on the states of Michigan, Indiana, Ohio and New York. I also realized that my large central yard should be the first feature to be "planted" in a prototype location. After considering options such as Columbus, OH and Fort Wayne, IN, I decided on Buffalo, NY. To be honest, one of the factors that influenced me was that I had already painted a generic backdrop scene of one of the Great Lakes. The town behind my yard could become a portion of Buffalo, and directly behind that could become Lake Erie.

INDEX		Pages
List of Stations, Interlockings, Distances, Sidings, etc.		8-11
Schedule Pages:		
Main Line—Buffalo		13-15
Main Line—Erie		14-15
Opening and Closing Hours of Ticket Offices		16
U. S. Mail Work		17
Arranged Freight Train Service		18-20
<b>SPECIAL INSTRUCTIONS</b>		
Automatic Block Signal System		94
Automatic Highway Crossing Protection		34-38
Divisional Medical Officer and Company Surgeons		21-23
Employees in charge of Sidings		47
Engines and Other Equipment Restrictions		71-80
Facing Hand-operated Switches connected with Manual Block Signal System		27
First-Aid Boxes and Stretchers		24
General Orders, Bulletin Boards, Employes' Regulations, Standard Clocks		29-30
Hand-Operated Switches Equipped with Electric Locks		40-41
Hospitals		28
Interlocking		94
Letters and Characters		25
Manual Block Signal System		92-93
Minimum Running Time		105-108
Movable Bridges not part of Interlocking		34
Movement by Train Orders		31-47
Passenger Train Operation		47-48
Passenger and Freight Train Operation		42-54
Normal Position of Switches		29
Non-Interlocked Railroad Crossings at Grade		81-85
Overhead Clearance		85
Qualified for Service		44-45
Secondary Tracks of Assigned Direction		46-48
Secondary Tracks of No Assigned Direction		49-51
Signal Rules		40
Signalmen in Charge of Main Track Hand-Operated Switches		28
Side Protection Fence		66-67
Speeds and Speed Restrictions		41
Spring Switches		25
Standard Time		38
Superiority of Trains		43-43
Track Assignments		38
Use of Signals		31-32
Yard Limits		

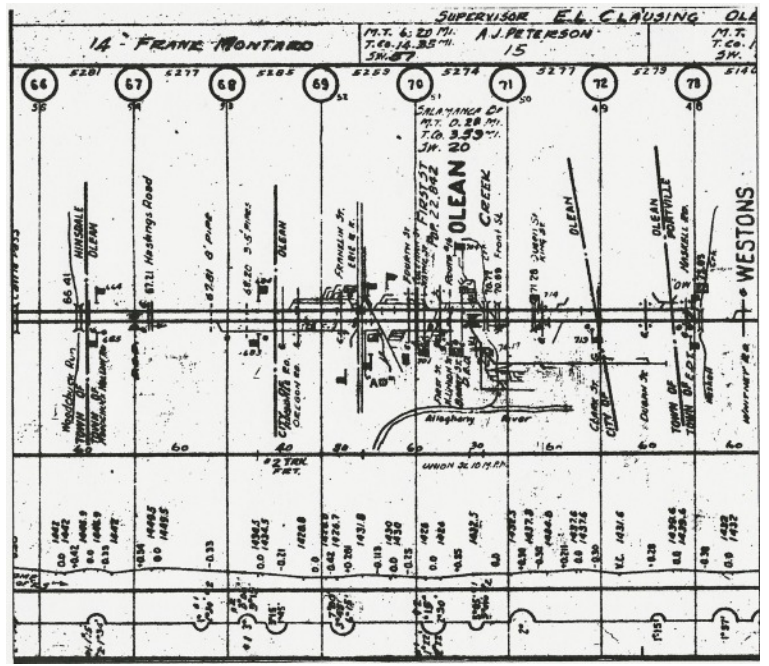
MAIN LINE—BUFFALO							
Interlocking	Protective	Block Station	Signal	STATIONS	Mileage from Buffalo	Siding	
						North	South
X	X	X	X	BUFFALO (N.Y.C.R.R.)	0.0		
X	X	X	X	DM	1.8		
X	X	X	X	WYCHESTER	5.7		
X	X	X	X	LEWIS	6.3		
X	X	X	X	GRAVITZ CREEK	6.5		
X	X	X	X	JAMISON ROAD	14.1		
X	X	X	X	EAST AUBURN	17.2		171
X	X	X	X	WALSH	19.1		
X	X	X	X	SOUTH WALES	22.0		
X	X	X	X	WOLAND	26.1		75
X	X	X	X	PROTECTION	30.3		75
X	X	X	X	BUCK	34.3		61 147
X	X	X	X	ASCADÉ	40.3		
X	X	X	X	DW	38.3	68	71
X	X	X	X	LAURENS	42.3		
X	X	X	X	FRANKLINVILLE	48.3		90
X	X	X	X	DEWITT	51.3		
X	X	X	X	WATERLOO	55.3		
X	X	X	X	ERIE R.R. CROSSING	64.4		
X	X	X	X	AD STREET	65.1		128
X	X	X	X	CLEAN	70.4		
X	X	X	X	CREEK	70.6		
X	X	X	X	PORTVILLE	72.8		
X	X	X	X	WV	75.1		
X	X	X	X	ELDERED	84.3		97
X	X	X	X	CLEMONT JCT.	87.3		
X	X	X	X	LANSBIE	87.7		99
X	X	X	X	TURTLE POINT	91.7		
X	X	X	X	WILKESBORO	93.7	145	150
X	X	X	X	WRIGHTS	103.9		74
X	X	X	X	HEATY	107.6		
X	X	X	X	HEATING SUMMIT	107.7		
X	X	X	X	SPRINGVILLE	114.9	74	
X	X	X	X	WINDOR	126.6		
X	X	X	X	EMPORIUM	131.3		
X	X	X	X	ON	131.3		

NOTE—X indicates in service continuously.  
O indicates trainphone in service.

Mileage in station list is based on the numbered Mile Posts from Buffalo.

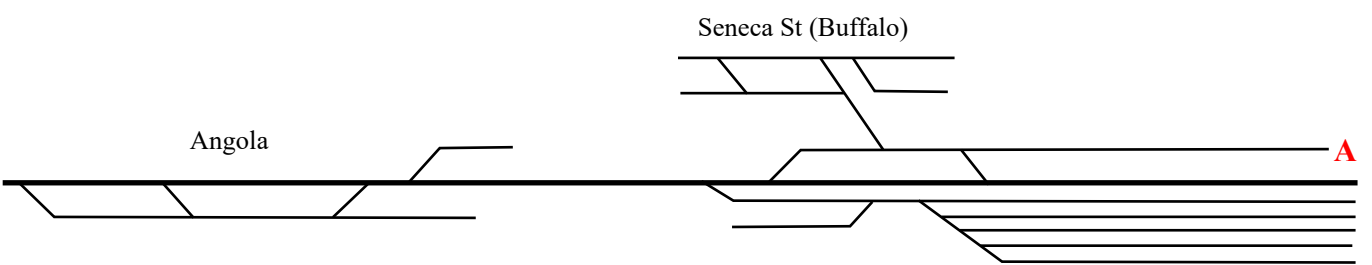
— Siding between south end of southward siding and north end of northward siding assigned for movement in both directions, capacity 20 cars, in charge of operator at Port Allegny.

KS is an emergency block station and will be in service only when opened by train order.

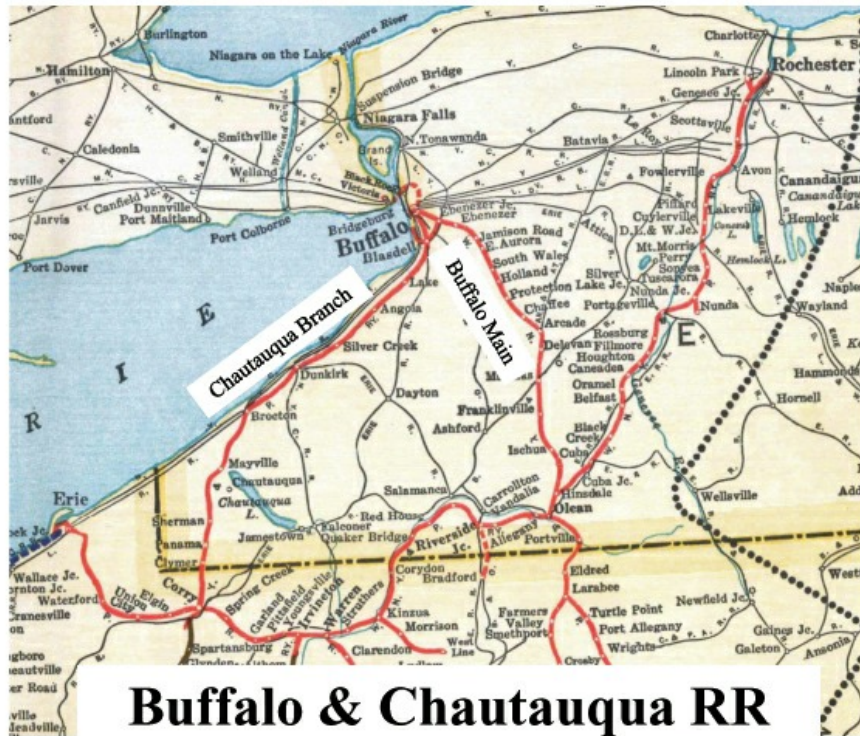


This page from the 1954 PRR employee timetable shows all the stations on the Buffalo Main Line and their distances from Buffalo.

Track charts show actual track diagrams and even the elevations and grades along the mainline. This page from the PRR's 1955 track chart shows their facilities in Olean at milepost 70.4.







*One of the Internet resources I discovered was a system map of the Pennsylvania RR for my chosen modeling year of 1953. From that, I zoomed in to highlight the area my layout represents.*

My next task was to begin searching for information on the PRR in and around Buffalo. As most of us have learned, the internet is an enormous source of information. Here's a sample of what I was able to find online for the Pennsylvania Railroad in western New York:

1. A colored system map as of 1953, my year (the size of this image file is over 18 megabytes!). The map would give a real sense of the actual geography.
2. A series of very detailed maps of all the rail lines through Buffalo in 1950, courtesy of the US Geological Survey. These are annotated with lots of information about the railroad operations.
3. A 1954 employee timetable of the PRR's Northern Division, showing details of all the stations that I later selected for inclusion on the layout. There is a wealth of information in these.
4. Track charts from 1955, again showing details for all trackage the layout would encompass.

These new resources solidified the choice of Buffalo as my central location. Proceeding south-southeast from there was Pennsy's Buffalo Main Line, a mostly single-tracked line that went through Olean, NY and ended up in Emporium, PA. Going southwest from Buffalo was Pennsy's Chautauqua Branch, which followed Lake Erie's southern shore to Brockton, NY before swinging inland and terminating in Oil City, PA.

All that remained was to correlate my five existing towns with comparable places on the PRR charts. My main central yard became Babcock Street yard, which was located east of downtown Buffalo. Down the Buffalo Main, I situated one of my secondary yards at Olean, and my endpoint would be Emporium. Down the

Babcock St. Yard (Buffalo)

Wales

Machias



*A New York Central Mikado chugs along the Chautauqua Branch. In my new operations scenarios, the NYC equipment will be limited to the facility at Westfield.*

Chautauqua Branch, I situated my industrial switching area at Seneca Street, where there was a large Pennsy freight house, then the small town of Angola followed by my endpoint at Brocton, NY. The small town and yard on my branch line became the town of Westfield, NY. The two named lines even presented a natural new title for my layout: The Buffalo and Chautauqua.

Although this had been a time-consuming process, it was an enjoyable exercise; and I'm really pleased with the way it has turned out. No track changes were required. Operationally, I will run my PRR equipment across the entire railroad. The B&O will have trackage rights on the Buffalo Main, under the scenario that its parallel line from Buffalo to East Salamanca is temporarily unusable. The NYC will operate at Westfield (my former branchline) and interchange cars at the junction in Dunkirk.

As with any model representation of the real world, there are compromises in this configuration. For example, both the Buffalo Main and the Chautauqua Branch were actually north-south lines, but I thought it would be confusing for operators to be traveling north into Buffalo, then suddenly to be traveling south as they passed that central point. So my layout is oriented east-west throughout. The run from Brocton to Emporium, my two endpoints, is now about 170 miles, a little more reasonable span.

I still have many location-specific structures to build, but now I have a plan to guide me. If you want to do your own internet research of a prototype, you should know that without a doubt, the online trove of data is much greater for the large well-known railroads than it would be for more obscure lines. I was fortunate in my selections. Once you start your research, I have two pieces of advice. First, try multiple searches with different sets of keywords. I have had the experience of searching on some topic one day, then coming back on a later day and searching again for what I thought was the same topic only to find new stuff I hadn't seen before. Second, be prepared to scroll past the first page of results. Search engines such as Google give extra weight to what is most frequently requested by the general public, and our topics probably don't fit that category.

If you had felt that relocating your own layout to a more prototypical setting was too daunting a task, I hope my example will provide some encouragement. I invite you to come operate on my Buffalo & Chautauqua at the NASG Convention August 10-14 in Novi, Michigan. And check out all the other layouts which are hosting operating sessions during convention week. It's all listed on our web site: [www.smsgtrains.org](http://www.smsgtrains.org) . I hope to see you there!

