

STACK TALK SUPPLEMENT!

HOW TO BUILD A SCENARIO (RUN SCRIPT)

Part I – Designing a Track Plan and the Single Engineer Scenario

Story, graphics and photos by Ken Giordano

Model railroading is truly a hobby with something for everyone.

Everyone has a hobby during their lifetime, one that usually involves activities that are governed by their personal skill levels and interests, and that fulfills their need for accomplishment and entertainment. Through the years, I have been a member of several model railroad clubs, but have never owned any trains of my own.

But, not to worry, my friends have introduced me to all of the different ways to enjoy model railroading. Several of my friends enjoy building highly detailed engines and rolling stock from scratch. Their layouts, though, are just the basic circular mainline around their basement. I asked them how, after years of labor building that equipment, do they find running it in a circle to be enjoyable. To this, they said that the majority of the fun was in building the equipment. And, being such a highly detailed replica, when they watch it running around their basement, they are actually visualizing the full-scale prototype making a cross-country trip. They are providing the scenery and orchestrating the interactions with other trains using the original Virtual Reality with which everyone is born – their imagination.

Many model railroaders have a favorite real-life railroad that they try to duplicate with their modeling, while others just design a fictitious railroad of their own. Those of my friends that enjoy building structures from scratch or by kit-bashing are usually trying to duplicate the actual structures that exist on their favorite real-life railroad. Although the track they lay around those structures always does a great job modeling the real-life scenes, the remainder of their track plans are usually just the basic circular mainline around their basement. Again, they say that the fun is in constructing the buildings and scenery, and their imagination fills in the rest of details that they feel are unimportant to model.

Most of the model railroaders that I've known really enjoy steam engines, and can name every make and model when looking at photos. What impresses me the most is that sometimes the difference between engines comes down to only one small detail, which they not only can spot in the photos, but they can give the date when the manufacturer made that improvement to its engines. These are average, everyday-type folks who have become self-taught experts in antiques that they could never hope to own, but for which they are willing to pay thousands of dollars to collect finely detailed scale models to put on display in a freight yard or roundhouse setting, or in a display case. This definitely explains why 2-rail modelers tend to avoid associating with 3-rail Lionel (so-called "toy train") modelers.

Although 3-rail equipment may be far less than perfect replicas of the prototype railroads, and the third rail may be somewhat unrealistic, Lionel and other brands still fill a need by providing a low cost way for railroad hobbyists to maximize their layout on a very limited budget. And for the hobbyists without any talent for kit construction, scratch building or scenery, the ability to run "right-out-of-the-box" is a heaven-sent benefit. Just as 2-railers enjoy their hobby in different ways, and use their imagination to fill in the gaps where the modeling is less important to them, so do the 3-rail hobbyists use their imagination to ignore the third rail and see past the lack of realistic detailing of the equipment and structures.

Before discussing how I personally participate in this hobby, I must give you some background information about my skill levels and interests, so that you can understand why I "play with trains" differently than most people. Through this article, I am allowing you (the readers) an intimate look into my head, sharing my thought processes as I explain how I build and operate my layouts. Then, later, you will have a chance to run trains with me.

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HOW TO BUILD A SCENARIO (cont'd)

When I started college, I thought I wanted to be an architect, since I enjoyed designing functional things. Well, after 2 years, I realized that architecture wasn't right for me. I changed majors and became a computer programmer instead, since software coding requires the same type of designing as architecture does. The artistic skills learned in the architecture curriculum easily carried over to the design of graphics, charts, reports and webpages generated by the computer software that I have written through the years. Your enjoyment of the Stack Talk during the past 6 months is a prime example of the result of blending art with computer skills. (I'm assuming you have enjoyed it.)

Through the years, I have been given several opportunities to help out on my friend Doug's layout – building benchwork, wiring a large layout to a CTC Control Panel, designing and building switch machines with built-in cascading relays (that, through route selection, will throw the switches, re-route track power and control the block signals), painting a backdrop mural around all 4 basement walls, and scratch building the coal washery complex that had been located on the East Broad Top RR in Mount Union, PA. Although all that remains of the washery are the concrete support footings and concrete tub in which the coal was washed, Doug was able to get the original blueprints from the EBT archives in Orbisonia, PA, on which I applied "selective compression" to reduce the entire complex to a 3 foot by 3 foot by 2 foot high model of the 3 story complex, with 4 tiple tracks and one coal dump track with enclosed conveyor system. It took 30 days



circa
1930's

of my life cutting styrene sheets and I-beams to build it, but what a sigh of relief when I confirmed that my scale drawings were so precise that, when I fit the 4 separate sections of the complex together, there was only one small 1/16 inch (easily shimmed) gap in one seam. But, I guess, that could be another story. Let's just say, I'm a designer, NOT a builder.

And this brings us to Jack's layout. Having discussed our other friends' layouts prior to that, he knew what I considered to be the traits of a good layout, so he gave me the task of designing his layout. This article follows the entire process that I followed in designing it for Jack, and includes the graphics and story that I created to help him visualize the layout in action. I believe that knowing whether a layout will support realistic operation is priority one before any money or time is spent building it.

In my opinion, realistic operation is the one aspect of the full-scale prototype that is the most important part to model. It shows how railroads earn a profit for their owners by carrying passengers, or by carrying freight and servicing industrial spurs. It shows how interstate commerce requires trains to cross the country on shared tracks, and how they meet and pass each other in an orderly fashion, controlled by signals that keep the traffic moving as quickly and safely as possible. Unfortunately, I have seen very few model railroads being operated like MLS does during the January Ops Meet. And I can count on one hand the number of layouts that I've seen in my lifetime with correctly operating signals – MLS being the best of them!

DESIGNING A TRACK PLAN

When designing a railroad layout, the requirements should be written on paper. Of course, everyone wants every aspect of the full-scale, prototype railroad reflected in their layout. Sadly, not many of us have a den, basement or garage large enough to construct an entire prototype railroad, not even at Z-scale. So, then we must use the technique of "selective compression." Examples of this would be: one row of store fronts to give the impression of a large city; one row of houses to give the impression of a suburb; four-track freight yard instead of 12 tracks; only a few spur tracks with industries that correspond to the freight cars that are in the railroad's fleet, instead of many unused spurs with industries that never get serviced; or one really nice bridge and water scene, instead of many smaller creeks and bridges.

(continued)

DESIGNING A TRACK PLAN (cont'd)

In addition, Jack wanted the entire layout built on free-standing modules, so as not to injure the finished basement walls, and so that he could take it with him, if he ever moved to another house. Another benefit (to the model railroad community), is that it could be sold after his passing, instead of getting torn down and scrapped, like so many of my friends' layouts have been in the past. But, being modular, I only had a depth of 3 - 4 feet in which to model, restricting the amount of room available for scenery. And, of course, the overall shape and size of his basement was another restriction.

I, also, have a number of personal restrictions that are always built into my designs. My first priority is to vigorously discourage using the circular around-the-walls design. Trains that chase their caboose in a circle around the basement walls are anti-prototypical. You would never see a full-scale train doing that. But, sometimes it is unavoidable due to space restrictions, which leads us to . . . Second priority, there must be more trains running concurrently than there are mainlines. That is, for a single-track mainline, there must be at least two trains running at the same time, and for a double-track mainline, there must be three trains running, etc. . . Third priority, as a consequence of the second priority, there must be several crossover switches and passing sidings to allow for a multitude of head-on meets, overtaking meets and route changes. Since there will be more trains running at the same time than there are mainlines to support them, typical train movements become unavoidable, such as switching onto passing sidings, stopping at red signals to wait for traffic to pass that is sharing the same mainline, and not being on the same mainline each trip around the basement. This forces the circular running around-the-walls to NOT LOOK or FEEL like circular running around-the-walls.

Jack already had a large inventory of Lionel buildings purchased, in preparation for the layout, so my list of requirements had to include those. The layout would have a large passenger station and platform, a large city with several storefronts (plus a fire station, bus terminal, gas station, movie theater, etc.), a farm with an agricultural spur for the grain elevator, a reefer icing spur for his icing platform and a meat packing industrial spur for the reefers, a two-stall engine house with servicing tracks, and a passenger station spur for his sleeper cars.

So, with all of these requirements on paper, I opened my RR track software and began to design. The first disappointment was that the size of the basement and position of the staircase did not allow for any O scale turnaround loops with a 5 foot radius. Secondly, the modules were too narrow for two levels of track, since there wasn't enough room for a sufficient amount of scenery to separate the two levels, unless the bottom level was directly under the top level (hidden? – not really functional). Therefore, fate left me with only one alternative, the dreaded circular around-the-walls design.

To begin, I needed to determine how many passing sidings the size of the basement would support. Of course, every passing siding must be longer than the length of the longest train. When a passing siding is too short and the last car is left hanging out on the mainline to be hit by the passing train, it has failed its purpose. Another requirement was that one side of the basement had to accommodate a display case, which took up half of the width of the modules on which it was resting. Although, only a double mainline fit there, a double mainline could act as a passing siding, as long as the third train didn't need to use either mainline at that same time. Then I measured the largest building that Jack had, the passenger terminal and platform, and found that it also needed the entire length of one side of the basement. But again, the multiple tracks of a passenger terminal could also act as passing sidings.

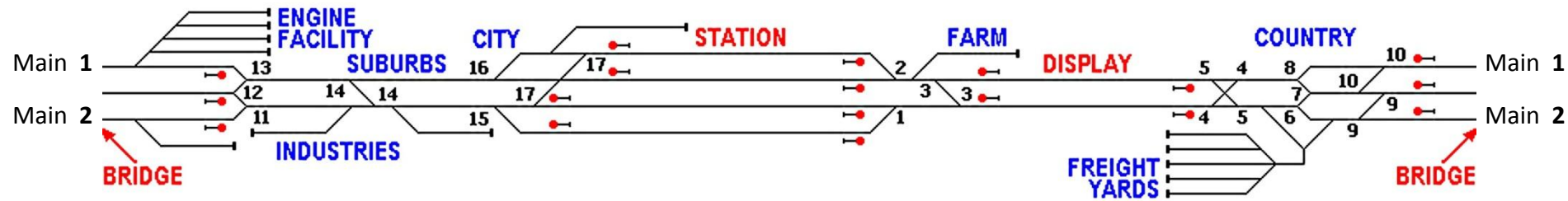
With only two walls of the basement remaining, and the required interchange onto the detachable Freight Yards module yet to be added, I had to be satisfied with only one, true passing siding. Thus, we had the layout -- three signaled blocks (Station, Display and Bridge) with several crossover switches between them for passing meets and route changes.

(continued)



BUILDING A SCENARIO

STEP 1: Once the track plan has been designed, the next step is to draw out the track plan as a CTC Control Panel diagram, as seen here.



The track plan is in black, and every mainline switch is numbered. Crossovers use two switches, with each assigned the same number, such that they are both thrown in tandem (at the same time) when that number is activated by the DCC hand-held controller. Ross switches have that programmable DCC/switch interface available, allowing the engineer to run the train and throw the needed switches using only the hand-held controller as he progresses around the layout, without ever having to reach over the layout to throw a switch by hand, or needing to run wires to push buttons on a control panel.

The three signaled blocks are shown in red (Station, Display and Bridge), where trains are allowed to stop for passing meets. Other landmarks are shown in blue. Mainline 1 is closest to the wall (back) and mainline 2 is closest to the audience (front). The diagram is split at the bridge, which makes it easier to orient yourself, when looking at the actual layout while trying to follow a train's route on the diagram. And finally (the only benefit of having a circular layout), from wherever you may be sitting or standing in the room, if you are looking at the layout, you are looking north. Therefore, any train traveling to your right is eastbound and any train traveling to your left is westbound.

STEP 2:

Once the control panel diagram is drawn, it should be duplicated as many times as possible on one sheet of paper, as seen on the next page. This is in preparation for building a scenario. In order to define what a scenario is, you must understand the dimensional space in which the model railroad operates. The actual layout, of course, is in three-dimensions (length, width and height). But since the track is screwed down to a flat tabletop, it really has no height, corresponding easily to the track plan diagram, which is only in two dimensions, because the paper is flat. However, a model railroad also operates in the 4th dimension – time. As time is passing, the trains are traveling around the layout, being repositioned elsewhere based on how the switches have been set. So the problem this creates is “how do you show the passage of time on a sheet of paper.” This, too, is easily done, once you understand the concept of intervals. Like time-lapse

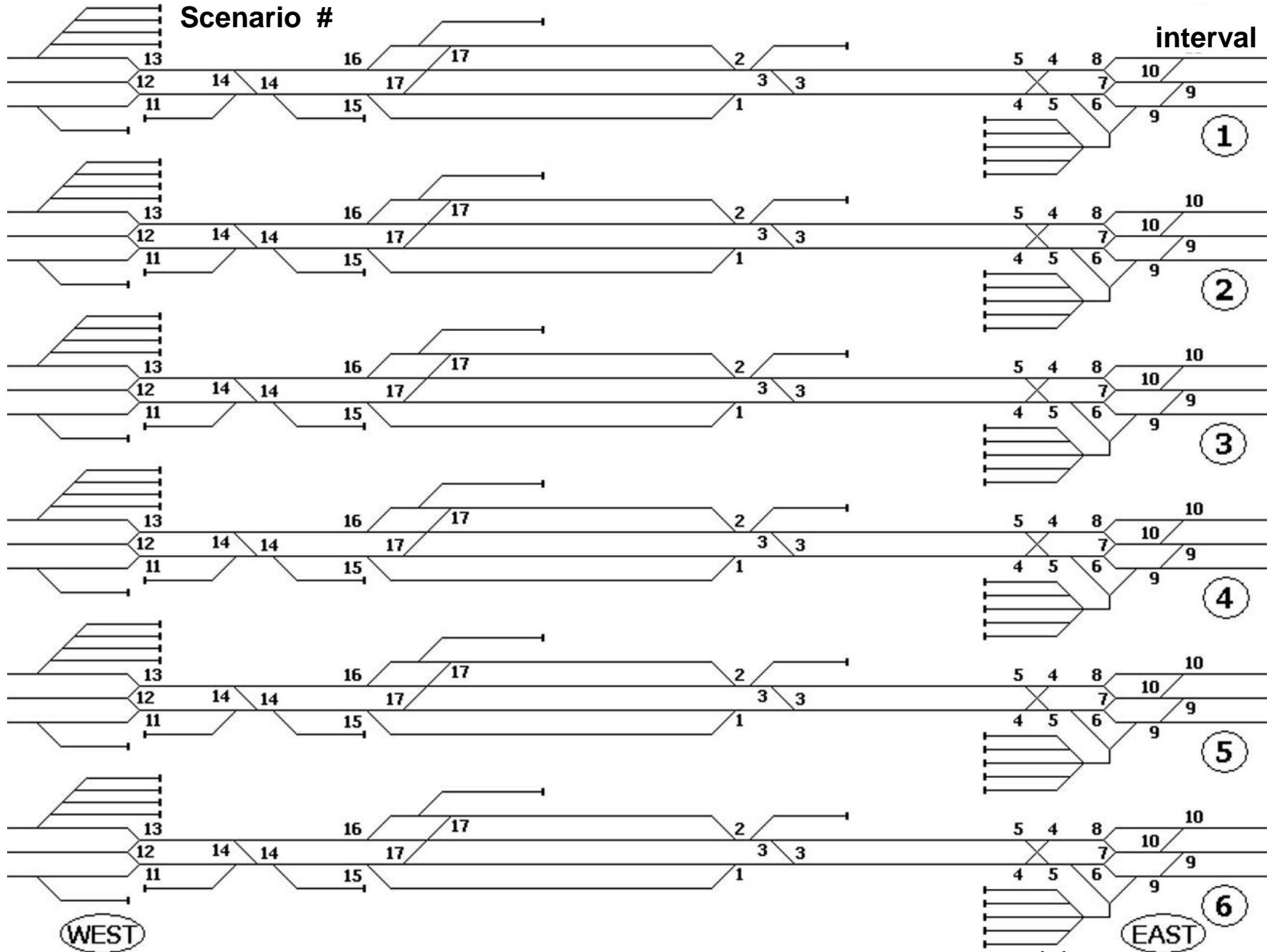
photography, you “paint a picture” of where your trains are located on the layout at the **END** of each interval, which could be a time interval (such as every 15 minutes, as seen on a timetable) or when a certain event happens (such as one loop around the basement). For this article, we will be using the simplest illustration of the concept.

Since Jack lives alone, he wants to be able to run his trains by himself. But, in order to maintain his sanity and avoid collisions, he engineers only one train at a time, alternating between the three trains that are required to run concurrently on a double-mainline layout. So the interval used in this scenario will be: **the movement of one train from the block** where it gets a green or yellow signal to move onto the mainline, through all of its switching maneuvers along the route, **to the block** where it gets a red signal and must stop and wait for the mainline to clear again.

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Scenario

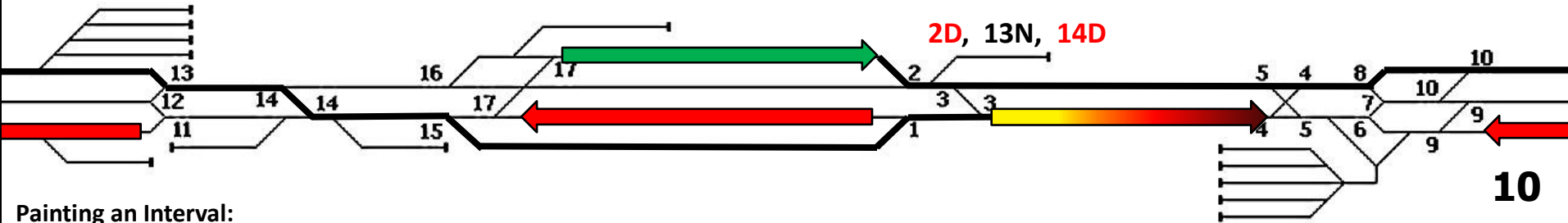
interval



BUILDING A SCENARIO (cont'd)

STEP 3: Before continuing, I need to explain the additional restrictions that I built into this Single Engineer Scenario for this specific track plan.

- All passenger trains must stop and drop-off/pick-up passengers whenever passing a station, unless a special order to run express has been received.
- Usually, but not always, passenger trains begin and end their interval at the Station (in one of the 4 Station signaled blocks).
- Usually, but not always, freight trains begin and end their interval on the Bridge (in one of the 3 Bridge signaled blocks).
- When passing a station, all freight trains should try to be placed on Station mainline 1, when possible, to avoid traveling adjacent to the platform where passengers are present.



Painting an Interval:

The diagram above is of one interval. The numbers and letters at the top of the diagram (2D, 13N, 14D) are switch numbers that need to be set **before** this interval can begin. Only these listed switches are to be changed. All other switches must remain in whatever position they ended up in at the end of prior intervals. The letter **N** stands for normal (straight or mainline) and the letter **D** stands for divergent (curved or alternate route). I like to color code (red vs. black) the switch settings to highlight those that are divergent, as a secondary cue in case my eyes miss the difference in the letter. An incorrectly thrown switch can be disastrous.

The solid red arrows are trains that had advanced during previous intervals, until they were stopped in those specific blocks, and will stay stopped in those blocks during this interval. The solid red arrow in the Station block that's pointing westbound is probably a W/B Passenger, and the solid red arrow in the Bridge block that is pointing westbound is probably a W/B Freight.

The solid green arrow in the Station block, that is pointing eastbound, is probably an E/B Passenger. The color green means that this train

had been stopped in this block during a prior interval, but has now received the green or yellow signal to leave the block during this interval, because the mainline has cleared. During this interval, this single train will follow the route, as determined by the switches that were set before this interval began, until reaching and stopping in a block with a red signal. The arrow that starts yellow and transitions to a red arrowhead indicates the block in which this train will slow down and stop, thus indicating its position at the end of the interval. The actual route that this train will travel through all of the switches during this interval is shown as a thick black line (following the track plan) that connects the green arrow with the yellow/red arrow.

Before the Scenario can begin being executed:

The diagram of the very first interval must be handled special. The correct trains must be staged in their correct blocks and in their correct direction of travel, as indicated by the solid red or green arrows, prior to beginning the scenario. Once all of the trains have been staged correctly, then all of the 17 mainline switches must be initialized (set to their starting position). The diagram of the first interval must list all 17 mainline switches and their proper starting positions. (continued)

BUILDING A SCENARIO (cont'd)**SOME FINAL THOUGHTS:**

❖ Unfortunately, the Freight Yards module must be backed into, since it is a peninsula with only dead-end tracks, which would leave the engine with no way to get out from behind its consist, if it entered head-end first.

Interval #6 is designed for the Freight train to do some continuous running (typical lapping around the basement). Using the Freight Yards yard lead wye, it is possible to swap out the freight consist and become an E/B Freight for several laps around the basement (and do some industrial spur drop-offs and/or pick-ups from either the W/B or E/B direction, or both), before needing to use the wye one last time to become a W/B Freight again and finish the scenario.

Just remember, interval #7 cannot be started until interval #6 is completed, which requires the Freight train to be stopped and facing westbound in the Display mainline 1 signaled block.

Likewise, interval #12 is designed for the two Passenger trains to also do some continuous lapping around the basement, while alternating for passenger stops at the station. Since interval #12 is the final interval, it does not matter where the two passenger trains end up.

❖ In an effort to keep this article as short and simple as possible, I chose to introduce only the Single Engineer Scenario, giving everyone a month to read through the process a couple of times, to fully understand it before introducing the rest of the process. Next month I will explain how to build a Scenario in which all three trains are running concurrently (at the same time), which requires three engineers and one CTC (Centralized Traffic Control) Operator. This type of scenario is more complicated because the CTC Operator must be changing the block signals from red to green to red, in addition to changing the switches, based on the required changes in each train's route during each of the intervals.

Although it would seem to be more fun to be running trains with 3 friends, rather than running the Single Engineer Scenario by yourself, SES is better for teaching the concepts of a Run Script, before clouding the process with signals. The Single Engineer Scenario can ignore the issue of signals, since only one train is running at a time. Signals are meant to stop other trains before they intrude on the route that has been set for your train, thus preventing a crash. When only one train is running at a time, signals become unnecessary. However, within the story that accompanies this scenario, signals have been included for realism, to seem as though multiple trains are running concurrently.

So, next month in Part II, we will be discussing signals and the job of the CTC Operator. It is truly fascinating to watch three grown people walking in different directions and personally performing head-on and overtaking meets (and sometimes bumping into each other) as they follow their assigned train around and around (and around) the room, desperately trying to concentrate on the signals ahead of their train, and stop their train in enough time to avoid an accident.

❖ Since the graphics presented in this article probably look foreign and undecipherable to most people, I am including drawings of the track plan in actual basement format (see the template on the next page) with switch numbers and the Run Script diagram graphics included (showing the trains and their routes). That way, it should be easier to follow along with the Run Script, as you are reading the story.

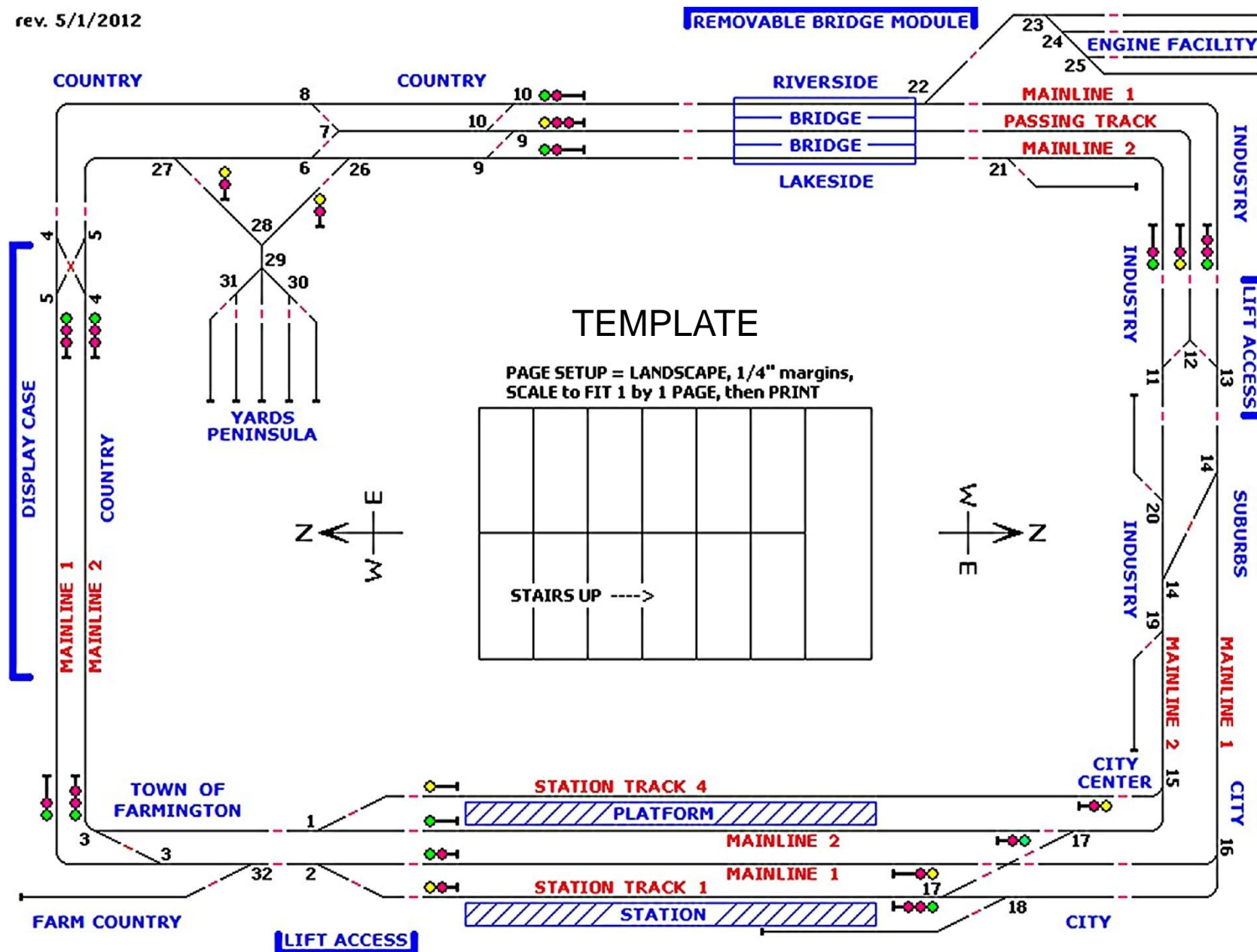
So, the remainder of this article contains:

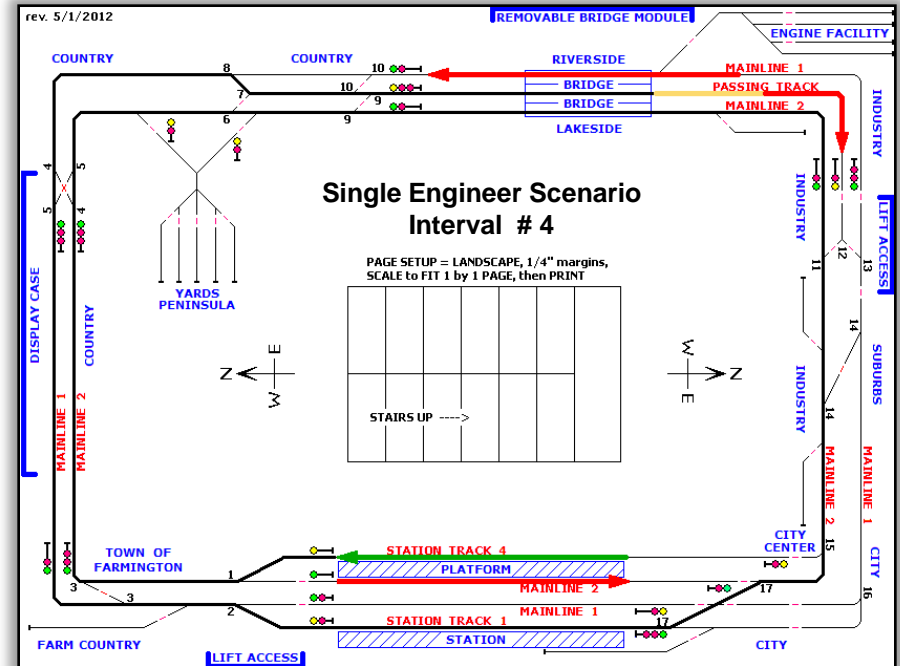
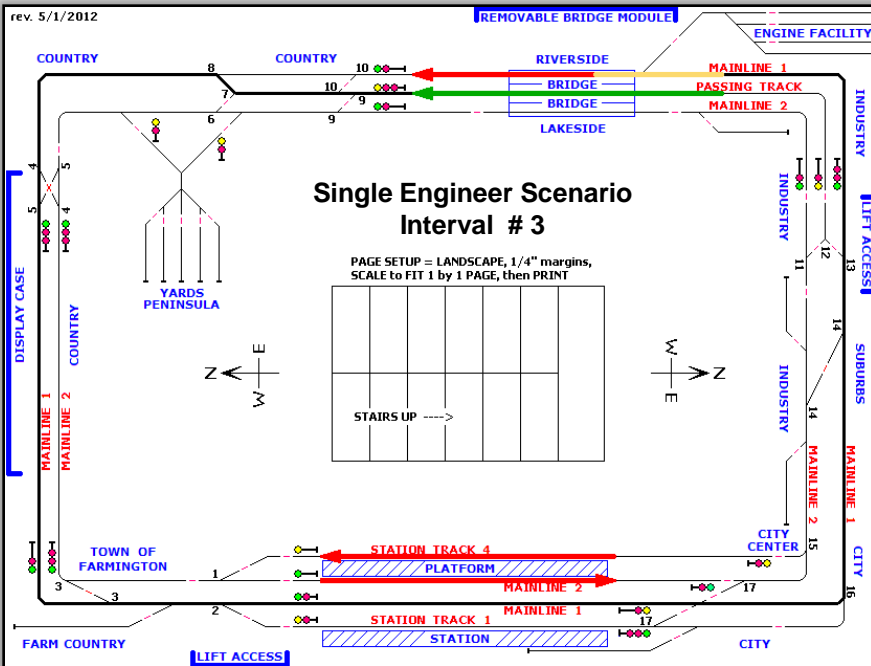
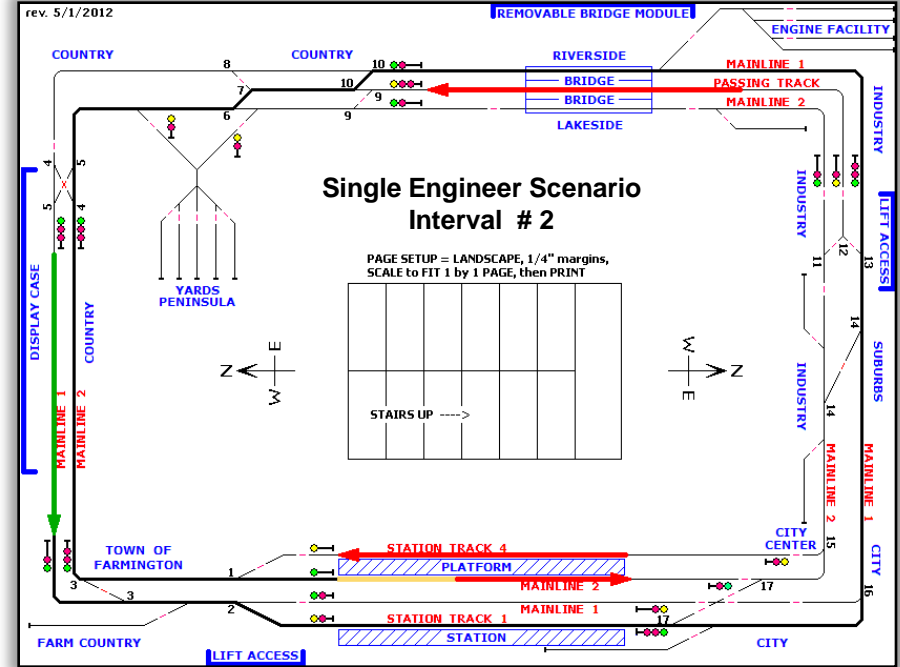
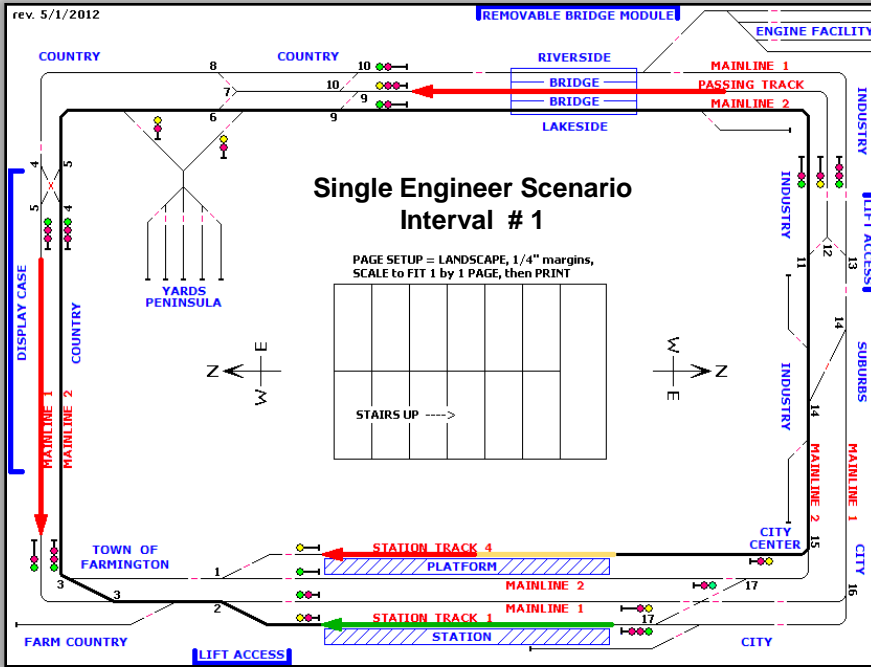
- (A) 3 pages containing the basement views of the 12 intervals, then
- (B) the entire Single Engineer Scenario (Run Script), which is a total of 12 intervals on 2 pages, followed by
- (C) 6 pages containing the thrilling story behind this scenario, and finally,
- (D) 10 pages of photos of the actual layout.

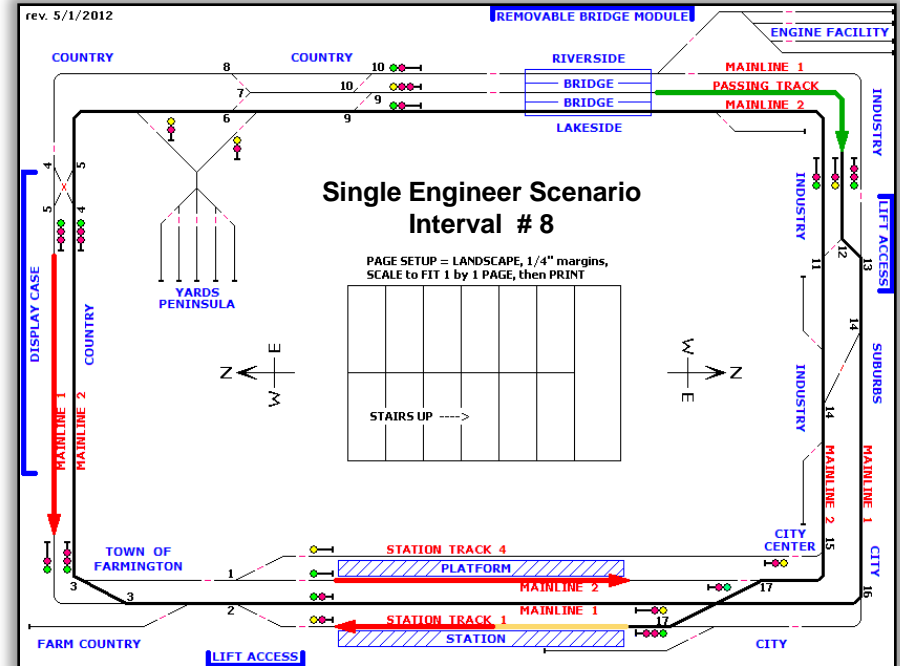
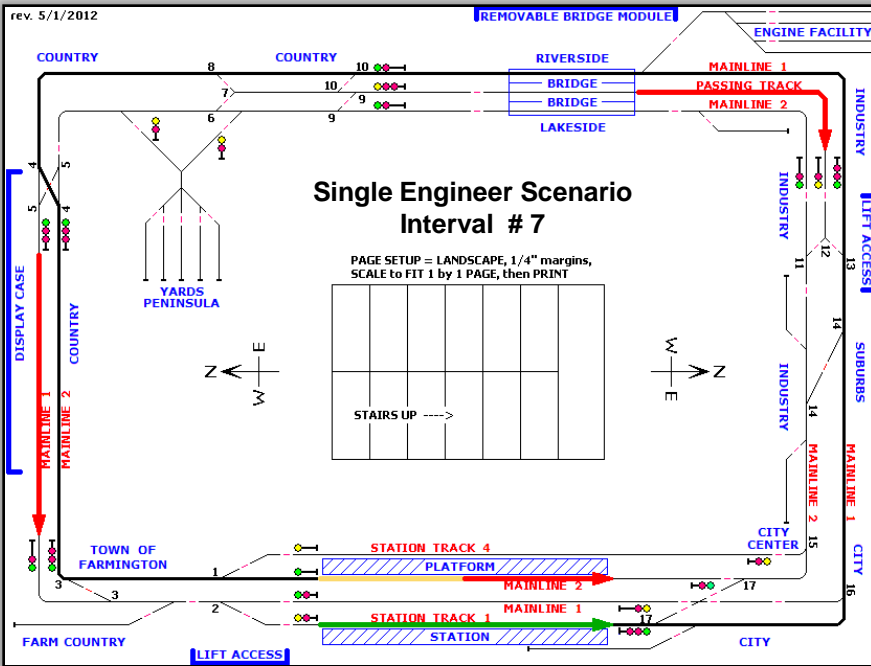
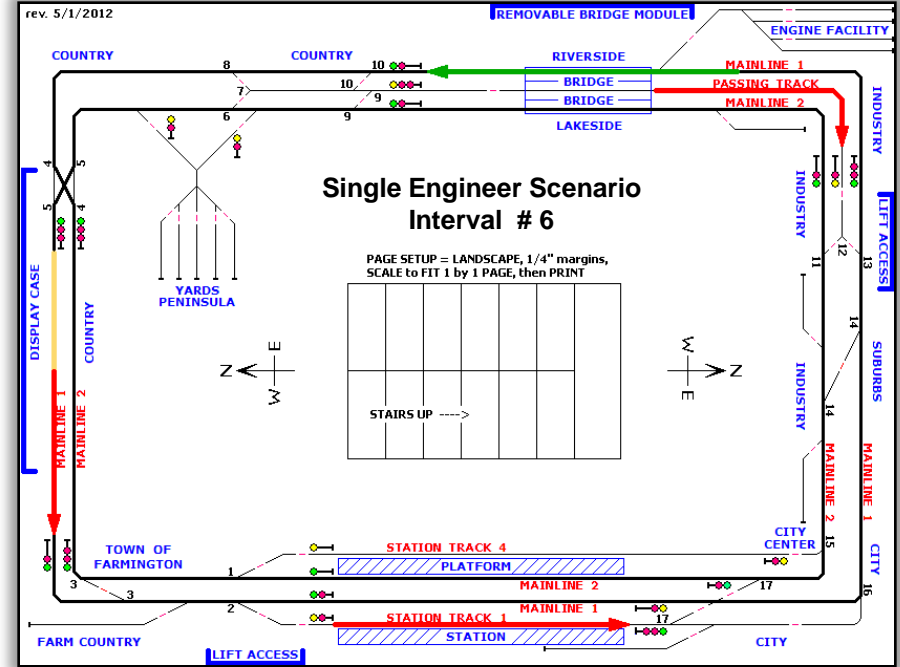
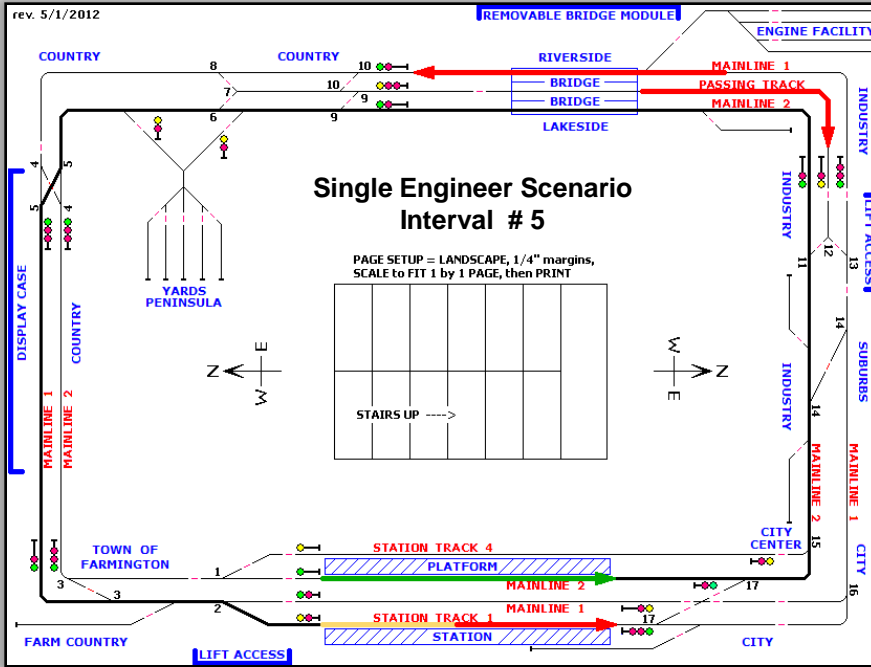
I hope this article gives you insight into how multiple trains, even on a small circular layout, can be run in a full-scale, prototypical, and realistic manner by only one person. Every layout has a story – you just have to visualize it.

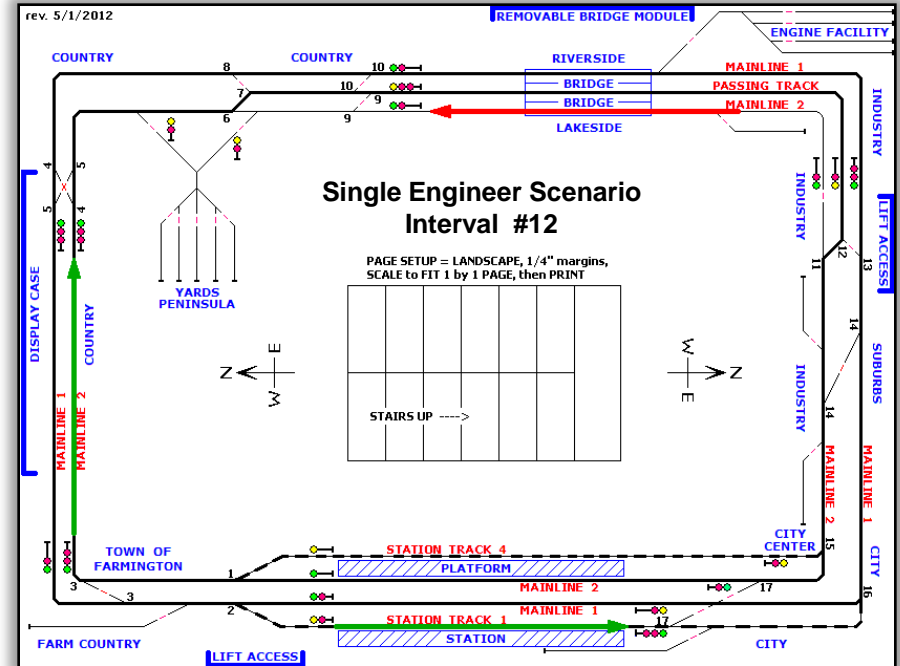
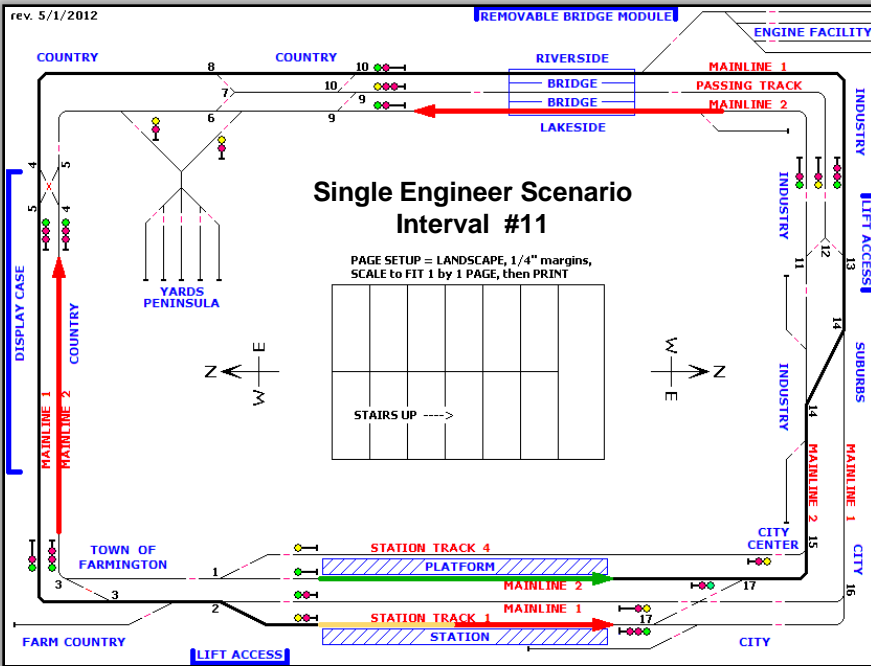
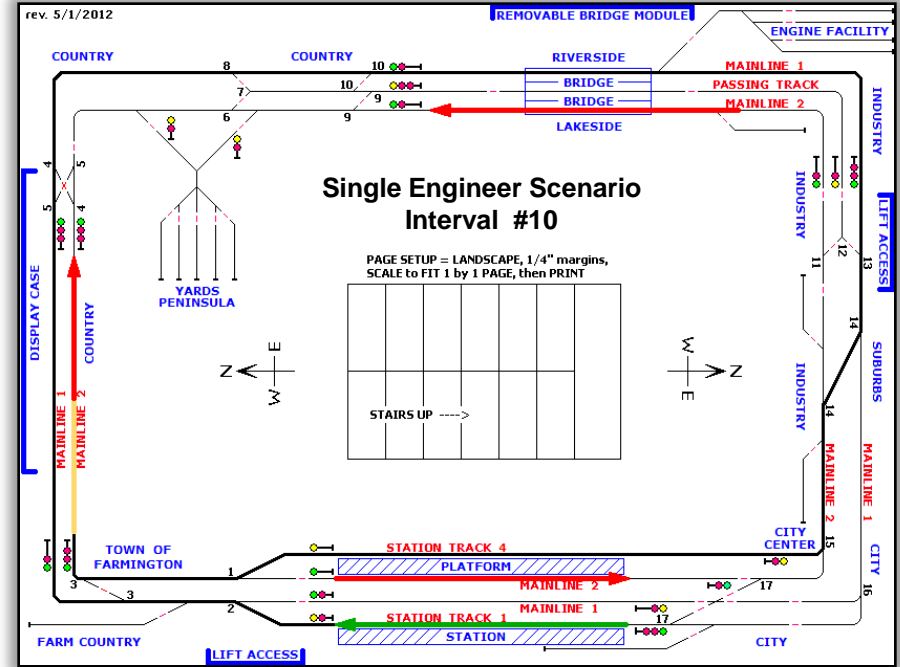
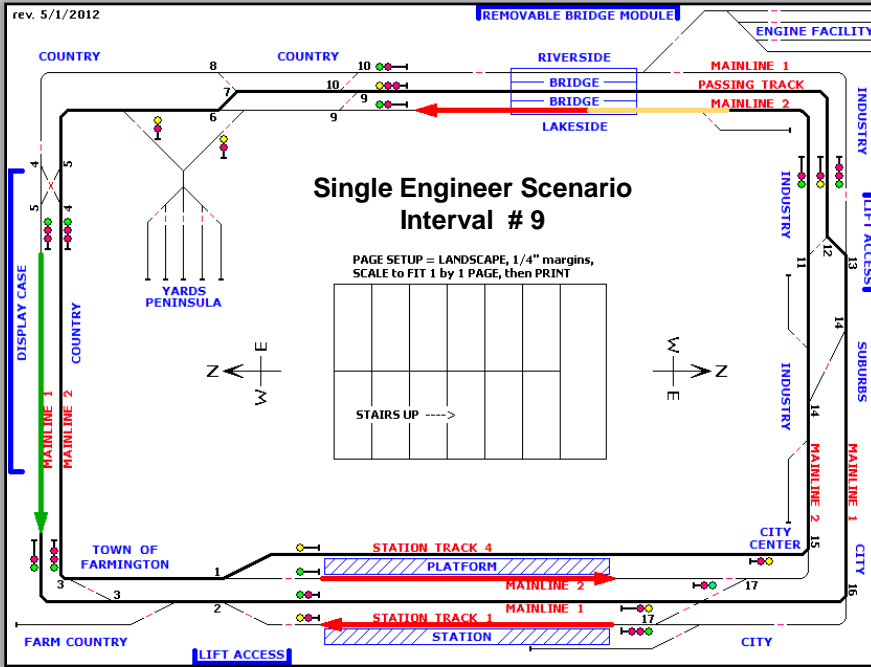
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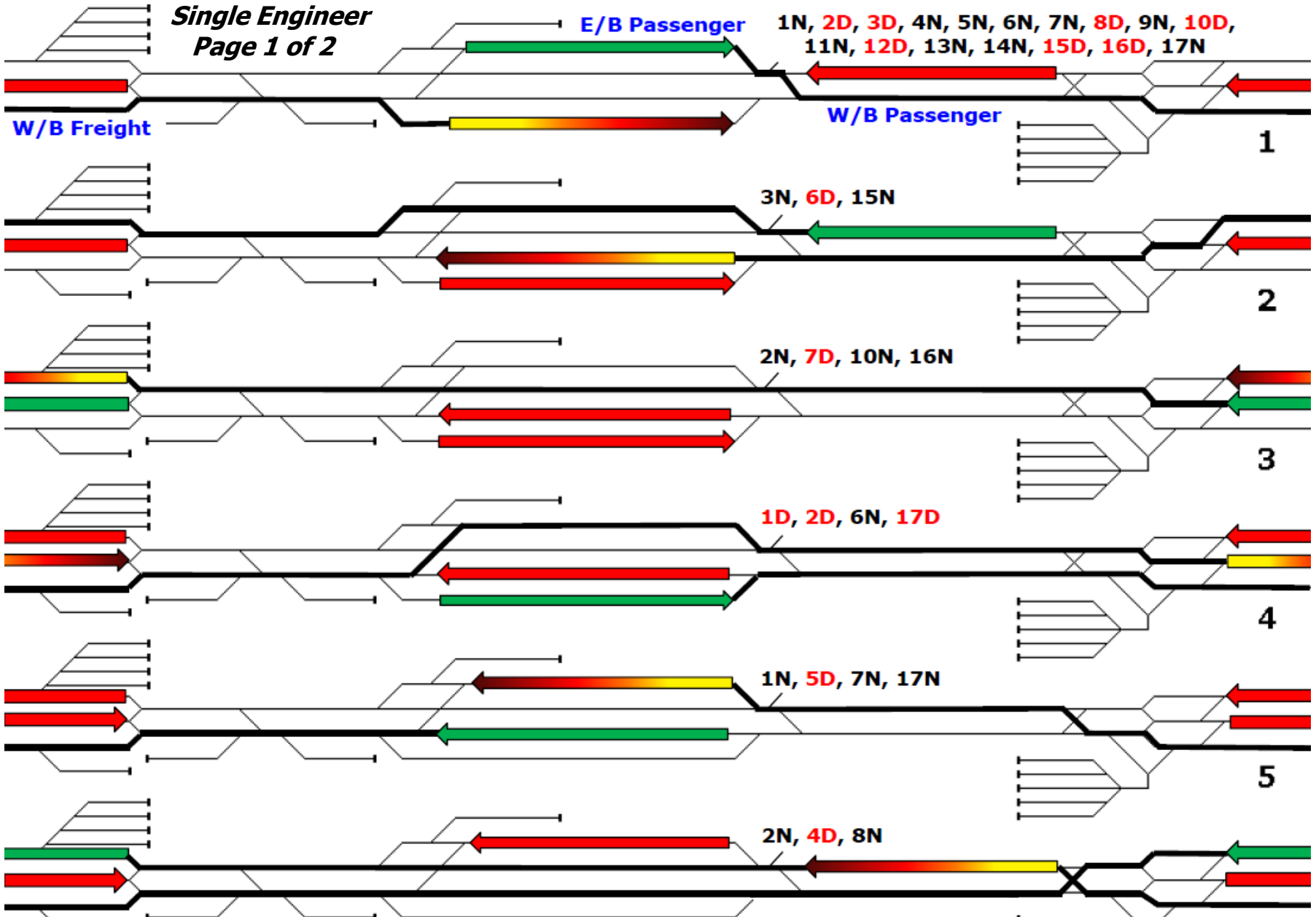








**Single Engineer
Page 1 of 2**



W/B Freight

E/B Passenger

1N, 2D, 3D, 4N, 5N, 6N, 7N, 8D, 9N, 10D,
11N, 12D, 13N, 14N, 15D, 16D, 17N

W/B Passenger

1

3N, 6D, 15N

2

2N, 7D, 10N, 16N

3

1D, 2D, 6N, 17D

4

1N, 5D, 7N, 17N

5

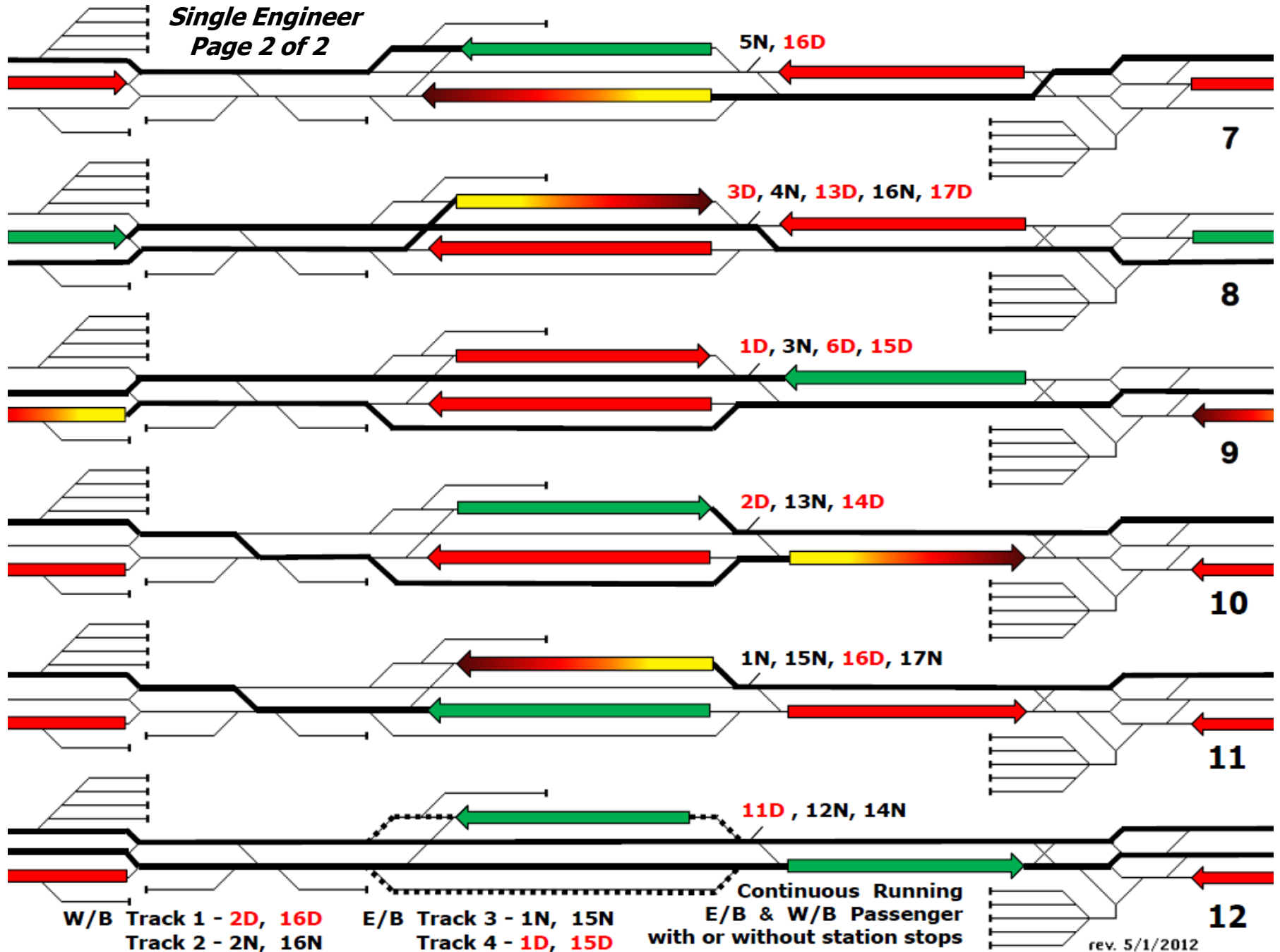
2N, 4D, 8N

6

W/B Freight --

Continuous Running, as well as Swapping Freight Consists and/or Industrial
Switching with access to Engine Facility, Freight Yards, and all Spurs

**Single Engineer
Page 2 of 2**



STORY for SINGLE ENGINEER SCENARIO

INTRODUCTION – Please, READ ME FIRST

As you read the story, please keep in mind this one major concept:

Each interval is a separate chapter in the story. Since each interval involves the movement of only one train, that one train becomes the main character (named in the title) of that chapter, and the other two trains are ignored in that chapter.

Because Jack will be alternating between the three trains while running this scenario, the chapters in the story will be alternating between the three main characters, so please rely on the train named in the chapter title to know to which train, and therefore to which one of the three stories, the chapter applies.

Since each chapter refers to only one individual train and its continuing story, there will not be any references to the other two trains or their stories. Any trains that each chapter's main character may encounter in passing are only random, generic trains that do not refer in any way to either of the other two main character trains or their stories.

In light of what was just said, since there are three different trains named in the chapter titles, there are three different stories being told. Since the chapters alternate between the three trains, the chapters are therefore alternating between telling the three stories.

I hope I have explained this sufficiently, because, if you try to read the chapters sequentially as one continuous story, it will not make sense. It also won't make sense if you try to place either of the other two trains in the locations discussed in any one chapter. Remember, thinking logically now, that one train is going in the opposite direction from the other two. In real life, if they were to meet at all, it would only be once, and not in every chapter. Likewise, the W/B passenger overtakes and passes the W/B freight. In real-life, if they were to meet at all, it would only be once, and not in every chapter.

Please enjoy the story and visualizing the 3 trains on their holiday run!

INTERVAL #1 – E/B Passenger

We begin with Eastbound Passenger stopped on Station track 1, picking up an overwhelming crowd of passengers taking public transportation into Big City for the July 4th parade and festival. Due to heavy crowds at every station that they have stopped at this morning, E/B Passenger is behind schedule, and the delay has caused other trains to start backing up. First in line is a Westbound Passenger, also due into the station on track 1, now forced to sit patiently on Display mainline 1 until E/B Passenger clears the station. Behind it, a Westbound Freight is stopped off the mainline on the Bridge passing siding. The W/B Freight was the first to arrive, having moved onto the Bridge passing siding to allow a higher priority W/B Passenger to pass on Bridge mainline 1.

Finally the E/B Passenger conductor closes the doors, and the engineer slowly moves the train onto Station mainline 1 on its way out of the city, meandering through the fields and pastures of the little town of Farmington, slowly negotiating the switches onto Display mainline 2. There it passes a W/B Passenger, with dozens of late and angry faces peering out from the coach windows. Now building up steam to try to make up for lost time, E/B Passenger is traveling at full throttle through the countryside, and, while crossing the Bridge on mainline 2, passes a W/B Freight that is stopped on the Bridge passing siding. In no time at all, E/B Passenger begins its trek through the suburbs, rolling past the local industries on its way into the City. The engineer slows the train as it enters Station track 4 from Station mainline 2. As the train rolls to a stop, the conductor announces their arrival over the intercom, and wishes everyone an enjoyable holiday.

INTERVAL #2 – W/B Passenger

Once the switches have been aligned, the signal goes yellow and W/B Passenger is able to continue on its way through the switches into City Station on Station track 1. After slowing to a stop in front of the station, the conductor could hardly get the doors open as the late passengers began pushing their way through the crowd, impatient to begin their busy day. As the conductor yells "All aboard," the last of the westbound passengers are choosing seats, and the coach doors close. As soon as the engineer sounds the whistle, black smoke billows and W/B Passenger begins to pick up speed. The engineer is anxious to make up for lost time and tells the fireman to shovel faster. As W/B Passenger bids farewell to the City on Suburban mainline 1, passengers are treated to the delightful views of families enjoying BBQ and pool parties in the backyards of the suburban community.

Once the W/B Passenger train that was up ahead and blocking Display mainline 1 had cleared, the W/B Freight should have been given the yellow signal to move ahead, but was ordered to remain there by the CTC Operations Center due to a higher priority W/B Passenger coming up fast from behind. Once past the industries that have been shuttered for the holiday, W/B Passenger, which is now on Riverside Bridge mainline 1, passes a W/B Freight that is waiting on the Bridge passing siding. The engineer blows the horn as W/B Passenger overtakes the rear of that W/B Freight and crosses the bridge.

Most of the lost time has been recovered when the engineer spots a yellow signal ahead and begins slowing the train. Grumbling under his breath, the engineer negotiates the crossover switches onto Display mainline 2. Soon W/B Passenger has cleared the switches and is at full throttle through the countryside again, with just a few more miles left before reaching Big City Station. Once past the sprawling farms that cover the rolling hills just outside of the city, the conductor announces

their arrival into the station. As W/B Passenger stops at the platform on Station track 3, an E/B Passenger, already stopped at the platform on Station track 4, is already filling the platform with masses of passengers that it brought to Big City to enjoy the July 4th festival.

INTERVAL #3 – W/B Freight

At last, the second W/B Passenger train has passed, the switches have been aligned, and the signal goes yellow for W/B Freight to ease into the throttle and move out onto Display mainline 1. The route looks straight and green ahead. As the last car of the consist clears the switches, the engineer increases to cruising speed and gets comfortable in his seat, watching the rolling countryside go by, as mile after mile of track is left behind.

Once the town of Farmington comes into view, the engineer starts to pay closer attention to what's ahead. W/B Freight will soon be entering the City on Station mainline 1 and passing through City Station, where pedestrians and drivers alike tend to be in a hurry and go around the lowered crossing gates. Although the station is full of people who have come to the City for the holiday parade and festival, nobody has attempted to beat the train today, and W/B Freight is soon out of the city on Suburban mainline 1, passing through the suburban towns with their many industries and residential communities.

Up ahead, the yellow signal announces that W/B Freight will be coming to a stop at the end of the next block, so the engineer begins to slowly apply the brakes. Once across Riverside Bridge, the red signal is just ahead, and the squeal of worn brakes can be heard as the heavy train rolls to a stop on Bridge mainline 1. W/B Freight must wait for three higher-priority passenger trains to clear. The first will be an E/B Passenger, which is currently up ahead, followed by another E/B Passenger behind the first, and finally a W/B Passenger, which will be coming from behind.

INTERVAL #4 – E/B Passenger

E/B Passenger, now filled with parents and children on their way to Big City for the July 4th festivities, slowly pulls away from the platform and onto Station mainline 2. It's an annual treat for the kids to take the train during this time of the year, when the fields of the local farms are awash with color – the many shades of greens and browns across fields of corn and beans – and cattle are out grazing in the pastures. With E/B Passenger at full throttle on Display mainline 2, the countryside flies by, and before the parents realize it, the children are screaming at the sight of the lake from the train's vantage point on Lakeside Bridge mainline 2. The children just won't quiet down until their parents promise to bring the family back to the lake for a summer weekend of camping, fishing, and swimming.

Soon, the engineer spots the congestion in the downtown area of Big City and begins to slow the train. He knows that the train will soon be negotiating the switches into Big City Station, and, if previous years have been any indication, he can expect large crowds milling around on the station platform. As the train crosses over Station mainline 1 from Station mainline 2 onto Station track 1, it gently rolls to a stop, and hoards of anxious children and their parents hop off the lower step of the train and rush off, getting lost in the crowds.

E/B Passenger is now many tons lighter as it pulls away from Big City Station and onto Station mainline 1 to resume its schedule to the end of the line. It's a beautiful day for watching the clouds drift by as the train meanders through the countryside on Display mainline 1, soon to be slowing for a switching maneuver onto the Bridge passing siding for a brief stop just past the river adjacent to a W/B Freight, which is already stopped on Bridge mainline 1. Both trains must wait for a W/B Passenger to pass them on Bridge mainline 2, thus clearing the way for E/B Passenger to continue on its way east, and leading the way for that lower priority W/B Freight on its way west.

INTERVAL #5 – W/B Passenger

From among the overwhelming crowds of parents and children loading and unloading on this busy holiday, W/B Passenger has finally cleared the platform of all westbound passengers and has closed its doors. After sounding the whistle, the engineer slowly engages the driver wheels, and the train begins its long run from Big City Station on Suburban mainline 2 to other station stops along the way to the end of the line.

As the train passes through the suburban neighborhoods, kids stand near the tracks intent on waving to the passengers that are staring out from the coach windows and daydreaming of less stressful times in their lives. The signals ahead are green for W/B Passenger's straight and easy run along Bridge mainline 2. Soon the engineer spots the upcoming bridge, which, on this day, offers an infrequent consecutive meet of three trains on the bridge. Without having to negotiate any switches, W/B Passenger will stay at full throttle as it passes over the bridge (clickity clack, clickity clack), breezing past an E/B passenger train and a W/B freight. Down below, fishermen are out on the lake in their boats, patiently waiting to snag a 7 pounder, while children wade in the shallows chasing minnows.

Once over the bridge, the signal ahead is yellow, so the engineer begins slowing the train for its crossover from Bridge mainline 2 to Display mainline 1. It's a beautiful day for taking in the sights, as the minutes pass and passengers ponder the slow pace of life in the country. Soon, W/B Passenger is passing through the crop-laden fields of Farmington, and the next station along the line is coming up fast. The engineer begins braking in earnest as W/B Passenger moves from City Station mainline 1 onto Station track 1. According to the schedule, this train isn't due to depart from City Station for 20 minutes, allowing for some freight traffic to clear. That gives the engineer enough time to open his thermos and enjoy a cup of his wife's coffee.

INTERVAL #6 -- W/B Freight

With the higher priority W/B Passenger now out of sight, the switches are aligned and the signal goes yellow for W/B Freight to continue on its way. The yellow signal warns of the upcoming crossover from Bridge mainline 1 to Display mainline 2. Once clear of the crossover, W/B Freight has green signals ahead for its long journey on mainline 2.

The miles fly by as W/B Freight continues unimpeded past all of the country farms and into City Station on Station mainline 2. City Station is rather quiet today, being a holiday. On a normal workday, there would be heavy passenger traffic, with the higher priority passenger trains forcing the Freight to make frequent stops on passing sidings. But today, W/B Freight is the king of the (rail)road.

The signals are all green as the W/B Freight engineer maintains full throttle through City Station and onto Suburban mainline 2. Because of the reduced passenger traffic, today would have been the perfect day for switching maneuvers to drop off and pick up freight cars among the many industries along the mainline. But alas, today's consist does not include any freight maneuvers among these industries, since they are closed for the holiday.

Soon W/B Freight will be crossing Big Steel Bridge on mainline 2. An E/B Passenger is sitting on the Bridge passing siding. The Freight's engineer blows the horn upon approaching the Passenger train, and he wonders if those passengers have been waiting long for his Freight train to clear the mainline.

Once clear of Big Steel Bridge, a yellow signal on Bridge mainline 2 warns of the upcoming crossover to Display mainline 1, so the engineer slowly reduces speed. After negotiating the crossover, the engineer is not able to resume full throttle because the signal ahead is red. W/B Freight will have to wait on Display mainline 1 for one E/B Passenger train and one W/B Passenger train to clear the mainline through Big City Station ahead.

[Before stopping on Display mainline 1, use interval #6 for continuous running, as well as swapping freight consists and industrial switching, since access to Engine Facility, Freight Yards, and all Spurs is available.]

INTERVAL #7 -- W/B Passenger

With his cup of coffee finished and the freight traffic cleared, W/B Passenger is next on the schedule to depart from City station. Once the switches are aligned for the train's movement from Station track 1 onto Station mainline 1, the signal goes yellow and the conductor closes the coach doors for departure. An uneventful run from here to the next station is planned.

As W/B Passenger leaves the station tracks and begins to pick up speed on Suburban mainline 1, those kids are still playing alongside of the tracks and are still waving at all of the trains that pass by. In a particularly good mood on this beautiful day, the engineer blows the whistle, and the kids giggle and dance around in delight.

It doesn't take long for W/B Passenger to reach Bridge mainline 1, where an E/B Passenger is waiting on the Bridge passing siding for the mainline to clear, so that it can continue on its way into City Station. Once past the bridge, the signal ahead is yellow, and the engineer starts to slowly apply the brakes. Upon rounding the curve, a freight train is seen sitting on Display mainline 1 ahead. The engineer keeps a close eye on the points of the switch ahead, to hopefully stop the train before rear ending the Freight, if the switch has not been set for the divergent crossover to Display mainline 2. But, as always, the CTC Operations Center has done its job well, and the W/B Passenger slowly negotiates the crossover and passes the W/B Freight.

Now on Display mainline 2 with a green signal ahead, the W/B Passenger cruises past the gently rolling hills and farms that are spread across the countryside, and begins slowing for a stop at the platform on City Station track 3. Although the platform is void of riders on this particular day, W/B Passenger is running on the holiday schedule and must stop at every station all the way to the end of the line.

INTERVAL #8 – E/B Passenger

The engineer of E/B Passenger is fuming mad now and anxiously squirming in his seat. What was supposed to be a brief stop to let a W/B Passenger clear the mainline into the city has turned into nearly 30 minutes of delay, after a call from the CTC Operations Center about freight interference ahead. "The mainline must be clear now," thinks the engineer, "since a second W/B Passenger has also just passed."

Sure, enough. The switches are aligned for E/B Passenger's movement from the Bridge passing track onto Suburban mainline 1 and the signal goes yellow. Another call from the CTC Operations Center gives the E/B Passenger's engineer the special order to run express through the next station for a stop at Second City Station which follows this upcoming one, in an effort to make up for lost time and get back on schedule. Eastbound passengers will have to wait for the next train, which must be close behind by now.

With the throttle wide open, E/B Passenger flies by suburban backyards on Suburban mainline 1 and enters the city. Signals are green for a full-speed run through City Station on Station mainline 1. Passengers can be seen amassing in the station with bewildered looks on their faces as E/B Passenger fails to pull into Station track 1 to pick them up. Even more peculiar is that the engineer of E/B Passenger has started braking to slow the train. The passengers at the station must be thinking that he's stopping on the wrong track to be able to pick them up. They don't realize that the engineer is only slowing for the yellow signal ahead.

It's a good thing he is slowing down, too, because immediately around the curve ahead is the head-end of a W/B Freight stopped on Display mainline 1. It sure wouldn't be a fair match in a head-on collision between a Passenger train and a Freight train. Immediately past the yellow signal, E/B Passenger negotiates the crossover from Station mainline 1 to Display mainline 2. After clearing the crossover, the engineer once again accelerates to full throttle, for the 15 mile trip on mainline 2 through the town of Hillside to the next station stop.

The passengers on E/B Passenger are sure happy to see miles of hills and prairie fly by, indicating that they may arrive at their destination station on schedule. Soon they are crossing Big Steel Bridge, and the increasing number of industrial sidings heralds their advancement through the suburbs and into the City. The signal ahead is yellow, and E/B Passenger must slow down for the crossover from Suburban mainline 2 to Second City Station track 1, where it will stop to pick up eastbound passengers. After crawling through the crossover, E/B Passenger is soon stopped in front of Second City Station. The conductor quickly opens the coach doors, and dozens of families exit the train and disappear into the crowds on the station platform.

INTERVAL #9 – W/B Freight

Once the E/B Passenger has cleared Station mainline 1, W/B Freight gets the green signal to proceed through Big City Station on Station mainline 1. This type of meet, with two Passenger trains stopped in the station picking up passengers and a Freight train on the mainline between them, is a common sight on regular workdays, but is special when encountered running on the holiday schedule.

W/B Freight is now at half throttle as it leaves Big City on Suburban mainline 1, proceeding through the many quiet communities that line the tracks to the west of Big City Station. The signal ahead is yellow for W/B Freight to move onto the Bridge passing siding. It doesn't take long before the heavy Freight is passing the engine facility on its way over the Bridge and through the hills and prairies. Signals are still yellow ahead, as W/B Freight makes another move from the Bridge passing track onto Display mainline 2. Soon W/B Freight is passing Hillside and yet another yellow signal, which will mean a move from Station mainline 2 into Station track 4, necessary because of a W/B Passenger train stopped at the platform on Station track 3. The move around the platform requires the engineer to be at one quarter throttle due to the air currents generated by freight cars under the platform roof.

Passenger safety on the platform is number one priority, to avoid any delay-causing accidents. Once clear of the platform, W/B Freight is back on the mainline again, picking up speed and passing all of the industrial spurs along Suburban mainline 2. The yellow signal ahead means that the freight train will be staying on Bridge mainline 2 as it crosses Lakeside Bridge, but stopping at the end of the block. The engineer has been contacted by the CTC Center about an extended wait here, due to heavy passenger traffic that is way behind schedule and must get caught up.

INTERVAL #10 – E/B Passenger

It certainly has been a frustrating day for E/B Passenger's engineer, but it will soon be over. There's only one more station stop before the end of the line, and he will be able to go home and enjoy the rest of this July 4th holiday. The switches have been aligned, the signal has gone yellow, the conductor has closed the coach doors, and the engineer now moves the train slowly out of Station track 1 onto Station mainline 1. Once clear of the switches, E/B Passenger begins picking up speed and is soon at full throttle on Display mainline 1, as the track ahead seems to slide under the front of the engine and disappear.

Soon E/B Passenger is nearing Riverside Bridge on Bridge mainline 1. Seeing the fishermen in their boats down on the river gives the engineer an idea about what to do for the rest of the day. It would only be a short drive back, once he gets home and grabs his gear. That would sure take the edge off his frayed nerves. The engineer's daydreams get interrupted when he sees the yellow signal that warns of the switching maneuvers ahead. E/B Passenger, now rolling through several suburban communities, must crossover from Suburban mainline 1 onto Suburban mainline 2, and then onto City Station track 4 for a quick stop at the platform to drop off any remaining passengers still on the train. This being the last station stop to the east of Big City, E/B Passenger will be parked just ahead on Display siding track 2 for an overnight stay.

INTERVAL #11 – W/B Passenger

With the E/B Passenger clear of the mainline ahead, the switches are aligned and the signal goes yellow for W/B Passenger to continue on to the final station stop west of Big City. Slowly building up speed, W/B Passenger passes City Center as the engineer keeps his attention forward for the first sign of the crossover ahead, where his train will be moving from Station mainline 2 onto Suburban mainline 1. It's only minutes before the engine is negotiating the crossover, and soon the entire train has cleared the switches. The engineer applies full throttle for W/B Passenger's 10 mile trip on mainline 1 to the end of the line.

The signals ahead are green, as W/B Passenger, which is traveling on mainline 1, passes a W/B Freight stopped on mainline 2 of Lakeside Bridge. The tree-covered rolling hills are so beautiful on this sunny afternoon – it would be so easy to lean back and take a nap. But alas, one more station stop to make. The countryside flies by quickly, and soon the train is passing an E/B Passenger sitting on Display mainline 2. The signal ahead is yellow, so it's time for the engineer to slow the train for its movement into City Station on Station track 1.

After rolling to a stop, the conductor opens the coach doors and slowly walks through the train to ensure that all passengers have gotten off. This is the end of the line. The train will sit here for about 30 minutes, until a new engineer comes on board for the return trip east.

And everyone lived happily ever after.

INTERVAL #12 – Continuous Running E/B Passenger and W/B Passenger

Let both passenger trains run continuous loops around the layout while working the Station switches, moving one Passenger train at a time off its mainline onto the platform siding to stop and pick up passengers!



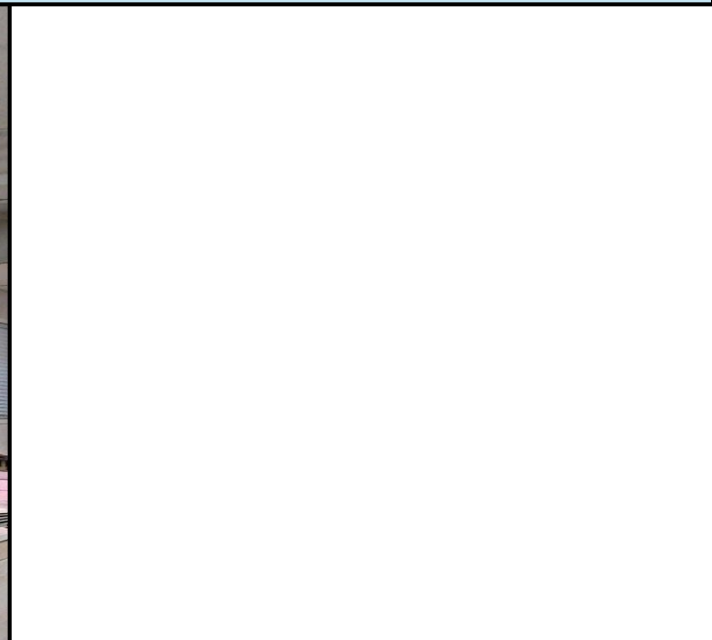
This is the corner now known as Farmington.

Farmington was originally planned for the Hillside corner, and the agricultural spur was originally installed where the double crossover is now.

This change was made to provide greater flexibility when accessing the Freight Yards from the west. This is what caused the revisions to both my graphics and the story in May of 2012.

These photos were taken in Sept. of 2012. The photo in the upper right corner shows that the agricultural spur switch had not yet been installed, and was just laying there waiting for the track crew to start the installation.





This is the 16' Display Case, with the Display signaled block in front of it. That double crossover shortened the Display signaled block by several feet.



These two photos show the countryside, from the Hillside portion (far left corner, hiding the sump pump) to the Bridge module, just past the red-white striped lighthouse (below).

In the photo to the left, the steam engine (left of the watering bridge) that looks like it is about to run off the table, is on the western yard lead to the Freight Yards module, which, at this point, had not been built yet.



In the photo to the right, the eastern yard lead to the Freight Yards module is to the right of the watering bridge.

As seen in the photo to the right, the homeless have taken over the old water tank in the foreground, which forced the railroad to upgrade to a watering bridge to replace that water tank. During the steam era, you didn't want to get low on water way out here in the country, so far from the Engine Facility.





This is the Bridge module, with its Bridge signaled block, which includes Bridge mainline 1 (rear track), Bridge mainline 2 (front track), and the Bridge passing siding (middle track). The Bridge signaled block extends east all the way around the corner past the Engine Facility and into the Industrial Spur area.

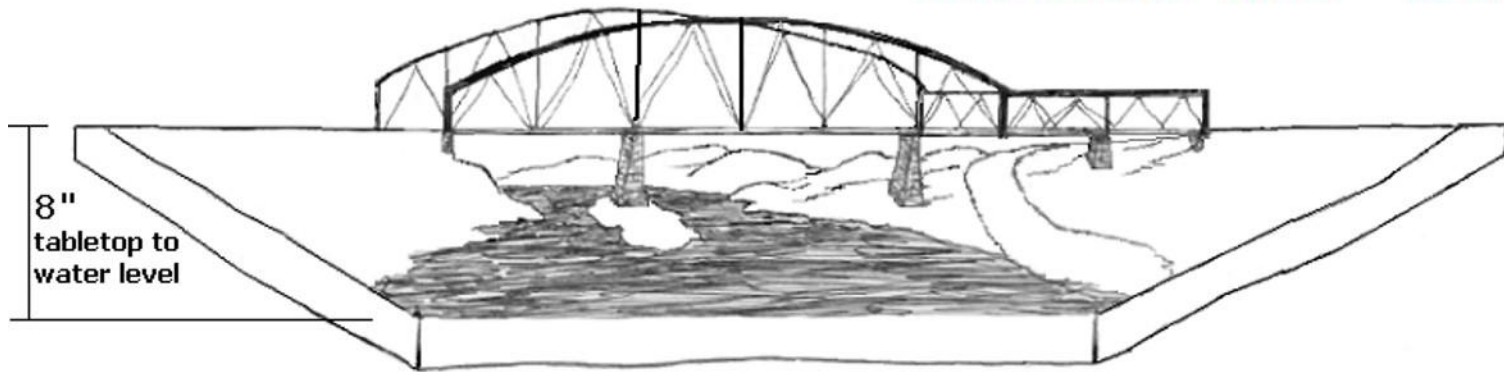
The Ski Train photo is hiding the electrical and cable boxes, hence the need for a movable Bridge module.

Lakeside campground doesn't look like much more than a trash dump right now, but after the Spring snow melt runoff, we're expecting the lake to fill in and become a fisherman's paradise.

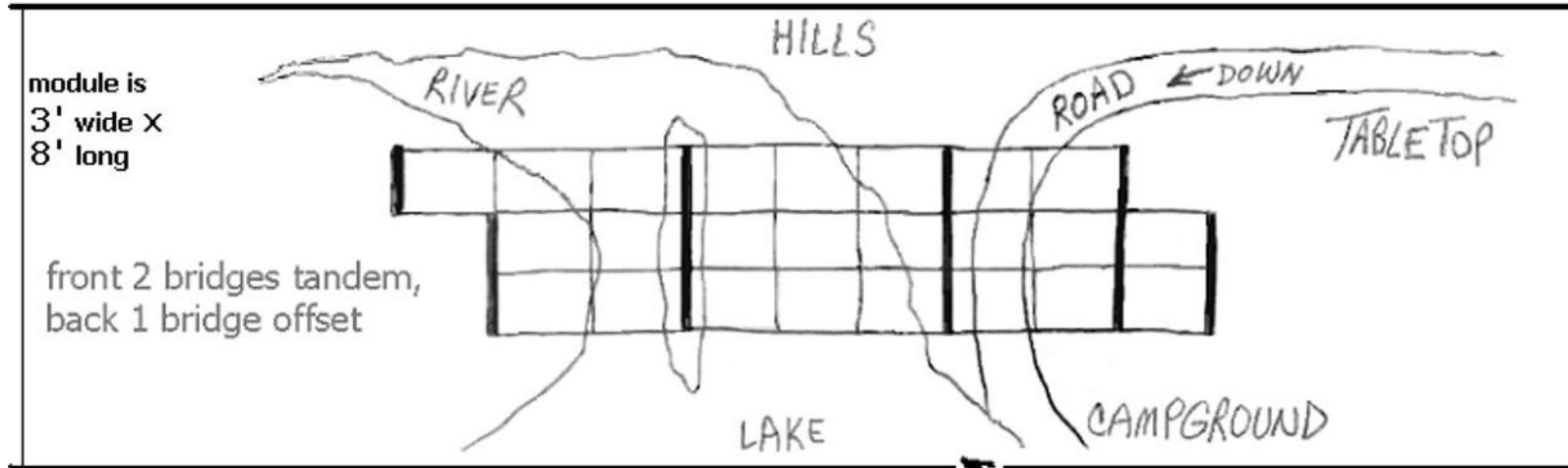
On the next page is Ken's rendering of his design for this Bridge module.



PAGE SETUP = LANDSCAPE, 1/4" MARGINS, SCALE TO FIT 1 BY 1 PAGE, THEN PRINT



8" tabletop to water level



module is 3' wide x 8' long

front 2 bridges tandem, back 1 bridge offset

hills along rear obscure wall when viewing under bridges

from this direction, the bridge supports block the view of the end of the river



Above is the Engine Facility, tucked away in the back corner.



In the top right photo, behind the 3-story building with the green roof, is the end of the Bridge signaled block, just before the switches that end the center track Bridge passing siding.

In the bottom right photo, this area will be the Industrial Spur area, with its two main industries, a Meat Packing plant and a Reefer Icing Facility. A Reefer is a refrigerated car that transports food. It has doors on the roof of the car where blocks of ice, from an ice house, are dropped in for keeping the interior of the car cold, so that the food won't spoil during transport. This is a remnant of bygone days, before Mr. Tesla invented alternating current (AC) electricity and Mr. Westinghouse invented the refrigerant compressor, both required by refrigerators and air conditioners.





Welcome to the Suburbs, with its main source of tax revenue, McDonald's Happy Meals.



Now entering City Center.

Take a leisurely stroll through Central Park and along tree lined streets. Visit the many cafés and boutiques, or spend a restful afternoon in the air-conditioned theater watching a movie.



City Center had a huge growth spurt recently. Skyscrapers sprang up almost overnight, due to the City Council's overwhelming compulsion to hide the city's sewer waste disposal and water supply line infrastructure.



City's downtown area is a high activity center, with lots of pedestrian and vehicle traffic. Spend the day shopping, strolling, or just sitting in Central Park watching the trains go by.

The business district enjoys full occupancy, resulting in continued economic growth and expansion. There's always something fun happening in this progressive community.



Four hand-held DCC controllers can be seen in the right side foreground of the photo below. The three with the circular, red speed rheostat are for each of the engineers of the three trains. The fourth controller, without the speed rheostat, is for the CTC (Centralized Traffic Control) Operator, and is used for changing the switches as required by the Scenario's Run Script.



These two photos show the entire 4-track Station signaled block.