

NTRAK Layout Planning

June 1, 2020

Preparing for a train show is a simple task for an individual who has only one or two modules that will be inserted into a layout, but the planning and coordination of the total layout is much more complex. The decision to take an NTRAK club layout to a show requires organization and planning in order to orchestrate the myriad of tasks required to make that decision a reality. The steps involved include layout design, member education and preparation, process description, logistics, operations and, most importantly, communication. With the proper tools and techniques, these tasks can be made much easier to accomplish. Some may argue that the following is over-kill, but I've found that in over 15 years as my club's layout coordinator along with my involvement in large shows such as Louisville Derby City Express – 2008, these processes make that responsibility much easier and provide the peace-of-mind that nothing has been forgotten.

Step 1 —Layout Design

You might think that if your club has a fixed set of modules and they always are assembled in the same way, this step doesn't apply to your situation. But what happens if your layout won't fit in the area made available by the venue coordinator or if you need a left-hand junction and you only have a right-hand junction or don't have a junction at all?

Prior to designing the layout, one must have an inventory of which modules are available. Club members must be polled to see if they want to bring their module(s) and/or if they will be available to work the show. Concurrently, the venue sponsor must provide details of the space available, including dimensions, location of any posts or other obstructions, floor covering (cement, carpet, etc.) and access. Once this data is in hand, the design process can begin.

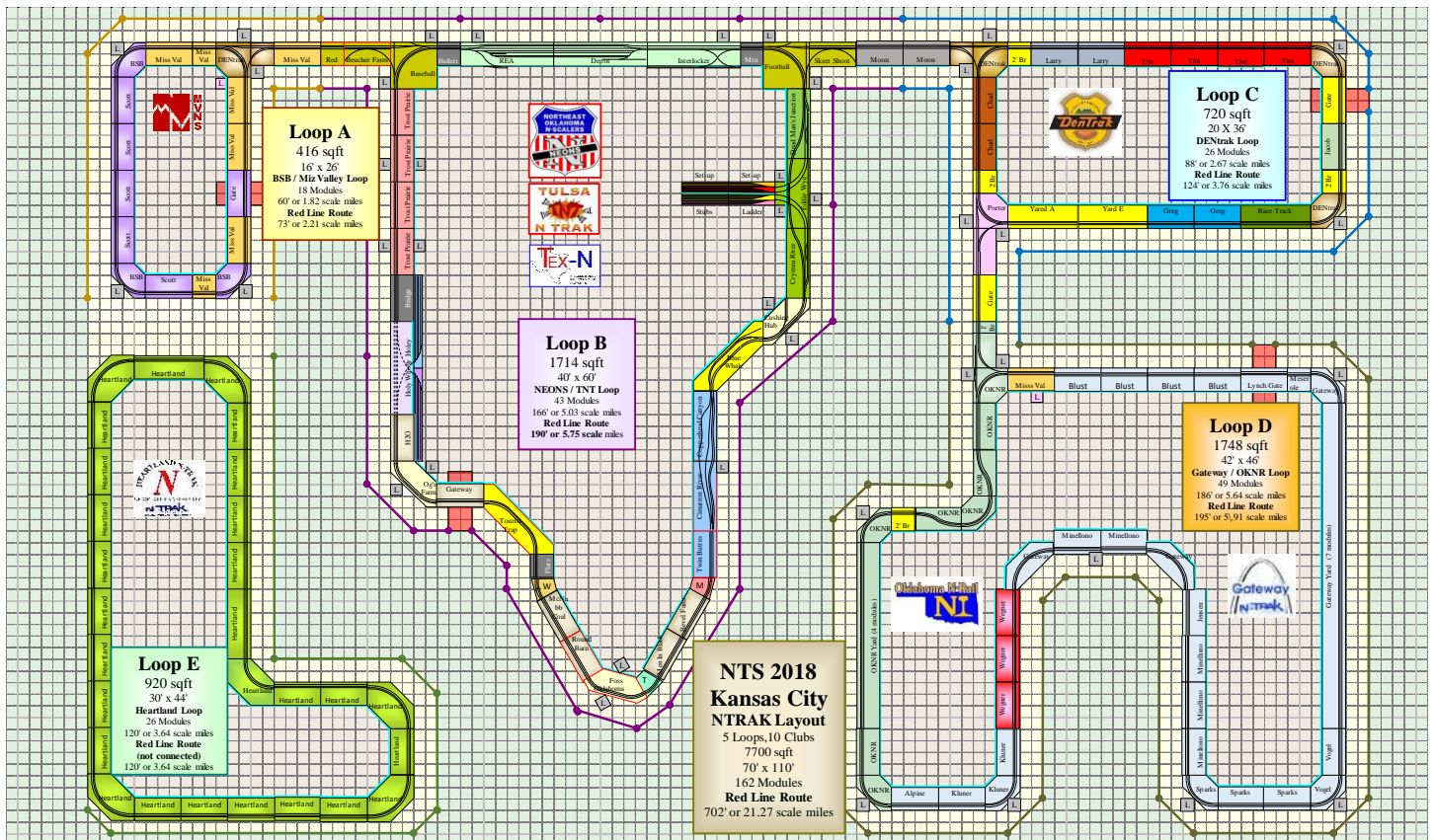
The NorthEast Oklahoma N-Scalers (NEONS) designs its layouts using the drawing tools available in Microsoft's Excel program. We use Excel because it is commonly used software that is available on most computers, is graphical in format, and because the resulting documents can be easily transmitted via email. Not only does it allow us to send a virtual visualization of the layout plan to our club members, it is an excellent way to coordinate a multi-club layout plan among participating clubs that could be hundreds of miles apart, facilitating the back and forth layout negotiations that are integral to planning an event.

In preparation for this step, one must first set up a grid. This is simply a spreadsheet with rows and columns of the same width and height that make a rectangular grid. It is essentially electronic digital graph paper with each square representing one square foot. I recommend a grid with rows and columns of 20 pixels x 20 pixels, as shown at the top of the next page.

Finally, outline the layout area assigned to your club on the grid, then copy and paste the diagrams of the modules you want to bring and move them around until you find the layout that works for the show you're attending. Don't forget to save your work! When it's time to make changes or tweak things, copy the tab as a separate sheet, so you'll still have your original.

Tips on using Excel's drawing tools:

- Activate the Drawing ribbon by going to INSERT and clicking on Text Box. The Drawing ribbon has a wide variety of shapes, lines, arcs and free-forms from which to choose.
- Always COPY pre-drawn objects from the template, leaving the originals in place.
- Depressing the ALT key during drag and drop snaps object to gridline intersections.
- Depressing the Shift key during object selection allows multiple objects to be selected.
- Depressing the Ctrl key during drag and drop causes copy instead of move.
- Depressing both the Ctrl and Alt keys during the drag and drop process causes the object to be copied and snapped to the grid at its destination.
- The Group and Ungroup commands on the ribbon combine multiple objects into one object and break them back to individual objects. (Groups can be nested)
- The Rotate commands on the ribbon allow objects to be rotated in any direction by as small an increment as one degree.
- Depressing the Shift key with the cursor on one of the object's corner points makes the object shrink or expand proportionally.
- Depressing the Ctrl key with the cursor on one of the object's corner points makes the object shrink or expand proportionally from the center point of the object.
- Use Zoom to enlarge an area where detailed work is required.



This diagram can be easily modified if conditions change. It can be printed, emailed or otherwise transmitted to the show coordinator, other clubs and to your members.

Step 2 — Determine the Wiring Blocks and Power Hookup Locations.

Depending on the club's power equipment, the plan for locating power supplies may be a no-brainer or very complex. First, the location of block breaks (if any) must be identified and marked on the layout plan. This will include the location of all insulated joiners and where power bus lines must remain unconnected.

There are special considerations on multi-loop layouts. Each loop should be set up and wired as if it were an independent layout, with its own wiring blocks and hookup locations. Somewhere along each spine between loops there must be a block break to isolate each loop. At the spine block break, all tracks must have insulated rail joiners. The bus wires on each side of the block break must be connected as follows:

- Plug the blue bus wire into the red bus wire of the same module
- Leave the yellow bus wire unconnected.

This will loop the Red line power back around to make it loop back to the other side of the junction module. The Powerpole connectors will automatically take care of the polarity reversal between the red and blue lines on the spine. With that done, you may place internal block breaks in each loop wherever you want since the spine and the junction module are an integral part of one block. If possible, the bus lines should not go more than 50' in either direction from the source, and in no case more than 60'. The block breaks within each loop are suggestions that will keep the length of the bus lines short enough that there will be no significant line loss of the DCC signals. Finally, identify and mark the location for your master command station, each power booster, all radio towers, LNRP's and throttle access ports (UP5s).

Step 3 — Plan the LocoNet® Cables (if using Digitrax® or NCE®) and Skirting.

Many clubs forget that extra-long LocoNet cables add additional resistance and result in signal degradation, so the shorter the LocoNet cables, the better. NEONS has Digitrax UP5s on the inside and outside of all corner modules and at least one on each multi-module diorama so that, in most situations, an operator is never more than 12' from a LocoNet port. We have a box full of LocoNet cables of varying lengths, all labeled. We use the shortest cable possible to link the UP5s together. After the layout is designed and power hookup positions are determined, LocoNet cables of the proper length are layered onto the diagram. This ensures that we only use the length of cable we need and thereby minimize any unnecessary line resistance and signal degradation. It also ensures that all equipment that needs a LocoNet connection gets one (if the installer properly follows the diagram) and that the LocoNet cables do not form a loop. **WARNING:** UP5s use power. If they are not powered by a wall wart, they will drain power from the LocoNet. No more than four UP5s not powered by a wall ward should be connected to a loop's LocoNet.

Just like LocoNet cables, NEONS has several sections of skirting that range from 10' to 30' in length. Most of our layout designs need several runs of skirting, running from the spine interface with another loop that must end at our infield gateway module, and running in either direction from one special module with a deep gorge that has a special section of skirting. By planning which length sections go where, we avoid being a foot or two short or several feet long in each section.

See the diagram at the top of the next page.

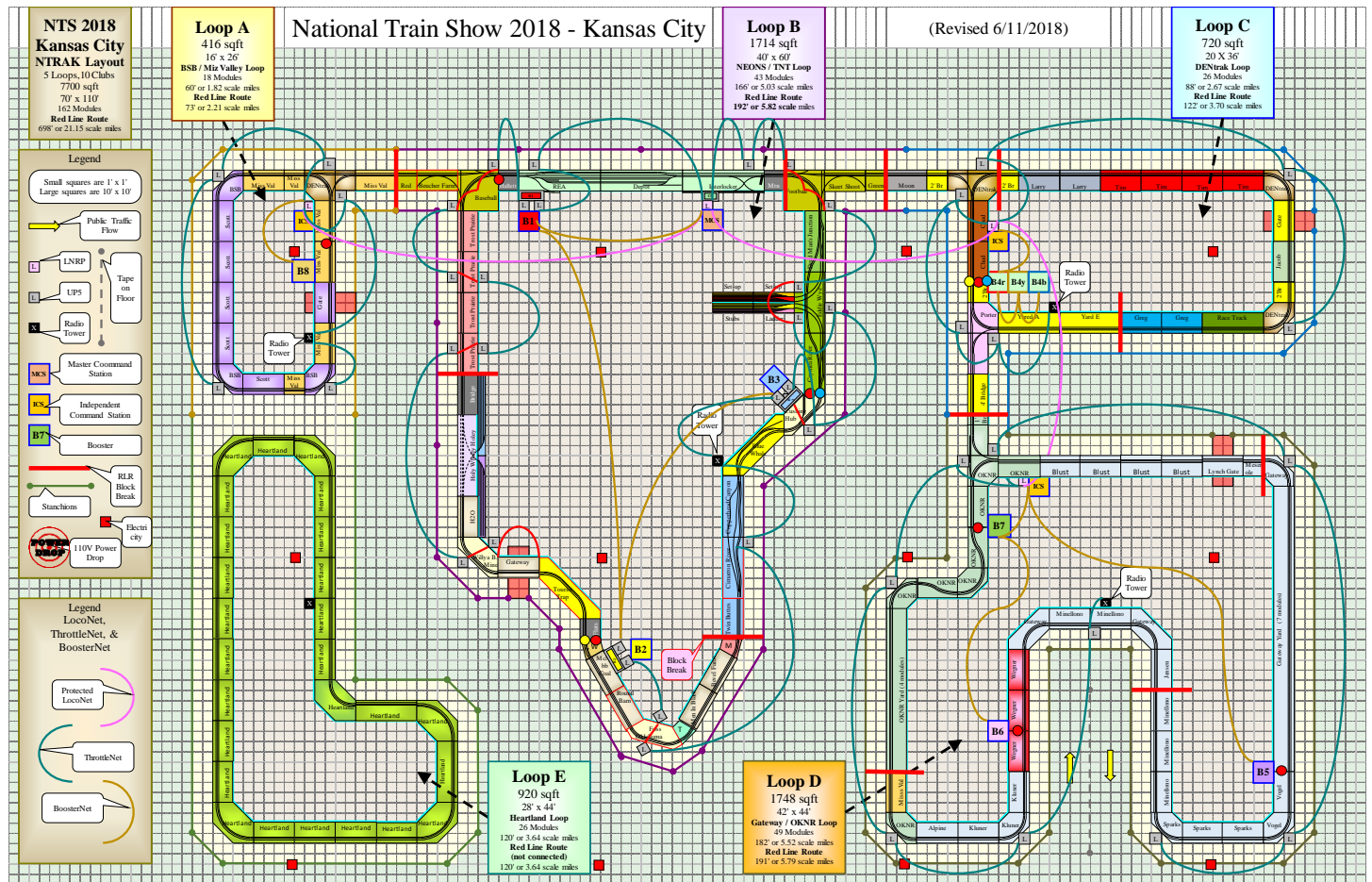
Step 4 — Planning Radio Frequency Assignments.

This includes Digitrax, NCE, AristoCraft, Wi-Fi and any other radio control systems. Not only must this be done for the layout, but there must be some coordination with other layouts at the show to avoid interference.

Step 5 — Logistics

This covers the physical activity of getting the modules and support equipment to the venue. A "Travel Checklist" is an excellent way to ensure that everything you need at the venue will be there. Again, an Excel spreadsheet listing all the items that need to be brought and who is to bring them is a most valuable tool. But it

is only valuable if someone actually checks off the items as they are loaded onto or into the vehicles or trailers that are heading to the show. Besides the list of modules, items include legs, clamps, LocoNet cables, extension cords, ground wire, power strips, batteries, Powerpole/Cinch-Jones adaptors, bus line jumper cable set, radio tower, skirting, signs, leg shims, bolts, T-nuts, joiner tracks, rail joiners (regular and insulated), a stick of flex-track, power equipment, club throttles, fuses, stanchions & rope, creeper chair, levels, duct tape, electrical tape, track cleaners, drill motors w/ bits, etc.



Layout detail diagram with LocoNet and block break

Step 6 — Final Step

Have fun, run our trains and find bargains and treasures in the show's vendor booths. To make sure all of our members have an opportunity to run trains and adequate time to shop and browse, and to ensure that there are always trains running for the pleasure of the public, we have a signup sheet for running times (another Excel spreadsheet).

By using these tools, processes and techniques, the preparation and execution of taking an NTRAK layout to a show can be accomplished with a minimum of problems. From my perspective, as the show coordinator for NEONS, its most valuable attribute is that it minimizes stress and worry and reduces the time required to complete each phase of the process.

When it comes to layout design, NEONS embraces variety. Over the years we have assembled our modules in a U shape, a dogleg, rectangle, zig-zag, ell, bulging rectangle, triangle, and other unique patterns. When you're designing your club's layout, remember that it doesn't necessarily have to be a rectangle. Having one or two inside corners in your inventory of modules provides a lot of flexibility to your layout design options. If you don't have an inside corner, get one!

All the data described in this article, including the spreadsheets, checklists, procedures and past NEONS layout designs (all Excel or Word documents) are available for scrutiny and download on the NEONS website: www.tulsa-neons.com in the Show Organization section. The website also has detailed instructions on how to build a module, including lumber and hardware lists, cutting and assembly diagrams and other useful information.

Author

Steve Gillett of the Northeast Oklahoma N Scale (NEONS) club is the author of this TipsNTechniques. It was originally published in the May/June 2015 NTRAK Newsletter.