



BNMRR N DIVISION INFO BULLETIN



OCTOBER 13, 2021

TRACK WORK

This is the first in a series of offerings presented to help division members understand the NTRAK standards and methods used to build modules. There is room for much improvement of our layout at this point. By presenting this information in this format I hope we can all improve our modules to achieve better running trains and thus have more fun.

Blue underline text will link to websites of interest. The links at the bottom of the page will take you to the respective standards documents. *BC*

Three key pieces to reliable train running are the rolling stock (weight, wheels, and couplers); the power supplied to the loco via the rails; and the track. Most of the rest of the layout is visual.

TRACK: According to the NTRAK standard “recommended track material is Atlas code 80 flex, Peco code 80 or code 55, or Kato Unitrack. Modules are connected with 5” Atlas Snap track sections...”. I recommend we only use code 80 track. By the way, track code, in all scales, is the height of the rail in thousands of an inch, thus code 80 rail measures 0.080” high. The “community property tracks” are the standard three tracks, that being the Red, Yellow, and Blue. Spurs serving industries are not considered community tracks.

There are several methods to affix the track to the roadbed. Bruce and I use yellow carpenter’s glue. We feel this glue holds the track well enough and allows the track to be ‘pried’ up in the likely event a change is needed.

Kato Unitrack can also be glued down or screwed onto plywood module tops. I have a

box of the very small wood screws used for the purpose. The Unitrack on the reversing loop is screwed down.

We have a selection of Unitrack in the storage room for our use, if you care to use it. There is a very limited selection of turnouts.

The advantage of Unitrack is that cork roadbed is not needed. But some people object to the look of the track. If you are seeking a more realistic look this is not the way to go.

A very important track laying consideration is at the endplates where the jointer tracks connect the two modules. It is best to study the text and image in the national standard in the “Module construction Odds and Ends” section. Unfortunately the manual pages are not numbered, however this section begins on the eighteenth page with the image on the nineteenth page. **DO NOT** purchase joiner tracks since we have more than 40 of them in our stash! We also have several of the “1/2 sections” mentioned in the text referenced above for our use.

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Rail joiners are something that need attention when laying track. We have found that the Peco brand (#SL-310) are the most desirable to use due to their size and quality. The Atlas joiners seem to come in two different sizes and don't work as well, being loose. We reserve them for use with the jointer track sections. The Atlas joiners can be gently 'crimped' with needle nose pliers during installation to hold more firmly

Track Arrangement: You may have noticed that all of the tracks are straight and parallel. How boring - what were we thinking?

The arrangement of tracks is only specified for the first 4 inches in from the endplates. Between the endplates you are free to route your tracks wherever you desire. Keep in mind that the Red and Yellow track must not have any grade, i.e. flat all the way across the module. The Blue track is limited to no more than 1.5% grade and must be back to endplate grade.

Take a look at the How-to book Chapter 2 "Module Examples". There are a few examples to give you ideas. Another and better source of examples is a [track plan set](#). You can order your own or take a look at mine. Just ask.

Multi-set Modules: Several modules can be designed to always be set up together as a unit. Thus the locations, where the tracks cross the internal endplates, can be wherever you want them to be. This option gives us the ability to create very interesting scenes of either rural, natural areas or involved urban and industrial areas.

I feel it is best to make a track plan as the first step in module construction. Take some time to study it well, sleep on it, and sketch different arrangements. Attempt to

make a scale drawing using templates for any turnouts you intend to use. It will be a big disappointment if you find, as you are laying track, that your plan won't fit.

ROAD BED: The cork roadbed forms the foundation for the track. It needs to be flat on top so the track doesn't have dips or rises and so the joints between sections of track are even. Both problems can contribute to derailments. The module top is just as important in this regard. Both plywood and foam tops need adequate support to prevent sagging. The larger return loop is a prime example of poor support with the resulting sagging - my error! That module needs some rework or a replacement. We suggest using the yellow carpenter's glue to affix cork to the module top.

Foam module tops can be planed flat using a [Stanley 6" Surform Pocket Plane](#). I have one of these available. The disadvantage of using foam is the mess it creates when removing material with the plane. Static causes the small removed pieces to stick to everything! The advantage is the lighter weight compared to plywood.

Ballast: Applying ballast is a time consuming task and requires attention to detail. It is very important for reliable running to keep those little rocks off the top of the ties, away from turnout point rails, and out of the webs of the rails. Not only can misplaced ballast cause derailment, but the little rocks can foul the gears of locomotives resulting in a teardown of trucks for cleaning.

I feel it is best to leave ballast for the last step of module construction. Use the module in a setup for awhile to ensure the track work and arrangement are ok. It is a major effort to move track after the ballast has been installed.

I use Arizona Rock and Minerals ballast which I prefer over Woodland Scenics. The latter is

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made from crushed nut shells and tends to float during the gluing process. The former is made from actual rock. I use a combination of three types to get a look I like.

I have a ballasting procedure which I will share at a later date.

TURNOUTS: The standards do not recommend specific turnouts except to warn against older Atlas manufactured in Europe prior to the 1990s. I began with Peco turnouts due to the sprung points feature. However I intend to use Atlas with ground throws when those are available. Here are the turnouts I recommend:

Atlas: 2750 left; 2751 right; 2752 #6 left; and 2753 #6 right; 2754 wye. These are insulated frogs without sprung point rails so some sort of ground throw must be used to hold the points against the rails.

Atlas 2755 #8 left and 2756 #8 right have metal frogs thus both require a device (a throw) to route power to the frog.

Refer to the Caboose Industries ground throws noted below.

PECO: medium SL-395 right; SL-396 left; long SL-388 right; SL-389 left; SL-397 wye; SL-386 right curved; and SL-387 left curved - all have insulated frogs.

Use the #6, #8, or long turnouts for cross-overs between mainline tracks and the shorter ones for siding and industry tracks.

Besides being very well built, the Pecos have sprung point rails, so no ground throws are needed, but may still be used if desired.

Caboose Industries ground throws can be used for the Atlas turnouts. These are the suggested ones: 206S are sprung throws, can be used with Pecos; 220S also sprung with SPDT contacts needed to route power to metal frogs such as the Atlas 2755 and 2756.

The How-to Book Chapter 6 has a good deal of information on track and installation. Please refer to it before beginning if you have questions.

One last item about turnouts. Insulated rail jointers **MUST** be placed between the rails at cross-over turnouts on the three mainline tracks. This is required to maintain the electrical isolation between the tracks. Each track (Red, Yellow, & Blue) is protected from short circuits by PSX breakers in the command cart. The fiddle yard and the two return loops are powered by the DCS-51 and a Digitrax PM-42 unit. This arrangement isolates these portions so that a short circuit in one section does not shutdown the entire layout. We have a stash of insulated rail joiners, so if you need some let me know. Use Peco SL-311 or Atlas #2538.

What I have not mentioned here is construction of the module frame. There are a few challenges to overcome but not difficult if you are informed and take your time. This can be discussed more at face-to-face meetings we hope to have on a regular basis.

I strongly suggest the NTRAK Standards Manual and the How-to book be studied before you begin building a module. That could save some time and money in the long run and result in a better product when you finish. We have both available in the clubhouse in the layout area.

This is more than I wanted in one bulletin but it is all closely related and needs to be addressed at one time.

Next issue will address wiring of the DCC buss and the LocoNet cable.