North Raleigh Model Railroad Club

Standards and Recommended Practices

NTRAK Module Standards & Recommended Practices

Standard

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Questions, comments, corrections and suggestions should be addressed to the NRMRC Standards Committee at wallisjm@att.net

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Introduction

This publication was authorized by the Standards Committee on June 11, 1991, and proposed to the general membership. The Club ratified it on August 7, 1991. It is updated from time-to-time.

It is established that the current edition of the NTRAK Manual be the adopted base guideline for standards and materials. The standards contained therein are mandatory for member-owned and club-owned NTRAK modules, except as modified and stated below. The intent of these standards is to ensure compliance during construction, and to enable ongoing maintenance with minimal effort.

Newly constructed NTRAK modules must be certified as being in compliance with these standards before they can be incorporated into a show layout. Recertification will be required if a major problem develops, or modifications made to the module. Also, re-certification is required every five (5) years. The Standards Committee and/or the Show Superintendent (see "Show Operating Procedures") will certify new NTRAK modules and designate modules for re-certification where necessary.

Existing NTRAK modules are to be brought into compliance with these standards prior to the next 5-year recertification of the modules.

Any corrections or suggestions for changes or improvements should be directed to the Chairman, Standards Committee, North Raleigh Model Railroad Club.

Standards

The following requirements provide additional information and/or are in addition to, or modify, those in the NTRAK Manual:

Modules

- New NTRAK modules *must* be built with folding legs rather than the bolt on legs specified in the NTRAK manual. Follow the directions in the reference "How to Build a NTRAK Module", or use the Dave Thompson design. The use of folding legs significantly reduces set up and tear down time at shows.
- The module wood base, legs and any exposed styrofoam must be painted. The standard color is available at Lowe's, according to the following formula:

Lowe's Tinter "B" Valspar, Quart, Adjusted Formula, Interior Semigloss, VUP Interior, B 4-44975 101-1Y27 107-17 109-16 113-17

- Skyboards are to follow NTRAK manual requirements, with 14" being the preferred height for Member- and Club-owned modules, and must be painted front and back. The Club has a light blue paint standard for skyboards to ensure that all skyboards are the same color, as defined in the following box:

American Tradition Wall & Trim Interior Latex Flat Base: B 1-94785 Gallon			
Colorant	Ounces:	Shots:	Half Shots:
101	0	0	1
102	0	2	0
103	0	8	1

The front of the skyboard must be a flat finish, while the rear must be a gloss finish. This can be achieved by application of clear gloss over the flat skyboard color.

The length of the skyboard should be approximately 1/8" less than the length of the module on which it is mounted. This is to prevent any alignment problem with the skyboard on the adjacent modules.

The front, top edge and side edges of all skyboards must be kept in good repair. Chips, gouges, dents, etc. must be smoothed and filled, then painted the standard color.

Scenicking may be applied to the front of the skyboard as desired. This may include clouds, trees, mountains and other scenic effects. The use of an overcoat of a darker blue than the standard skyboard paint is permitted to achieve specific scenic effects.

- The module owner is to furnish two "C" clamps (at least 3" size) and connecting track sections for all tracks connecting to the adjacent module, for each module, one with insulated gaps.
- Up to 6" may be added to either or both the front and rear of modules to make room for scenery or track plans. If extra is added at the rear, the skyboard must come forward at each end to match the standard position.

Track

- The standard for track used for the main lines, the branch and alternate branch lines, and the mountain division is Peco or Atlas Code 80, or equivalent brands.

  Before fastening the track at the ends of a module a small bevel must be filed on the inside corner of the rail heads as well as a bevel filed on the rail web. Any bur on the bottom of the rail must be removed. The bevel on the rail head will help keep wheels from picking the rail if the connector track does not line up exactly. The bevel on the rail web will make attaching rail joiners a much easier task. Connector tracks should receive the same modifications.
- The use of first generation Atlas turnouts is prohibited on all tracks; current production Atlas No. 6 turnouts are permitted. Peco code 80 long electrofrog turnouts are preferred.
- To prevent operational problems with advanced control systems, either analog or digital, the use of insulated-frog (insulfrog) turnouts is seriously discouraged. Existing insulated frog turnouts from any manufacturer must be modified so locomotive wheelsets cannot bridge both rails at the frog causing a short circuit. (The modification is to cover the frog with a very thin layer of non-conducting material, such as paper glued with CA, or to slightly file down the point and smooth over with epoxy.)
- Sharp offsets in the mainline or branch line tracks must be avoided in all modules (not only corner modules). The minimum radius for the mainline tracks is 24" and for the branch and alternate branch lines is 18".
- All flangeways must be clear of ballast, and all turnouts must work properly.
- The surface of the track bed should be shaped (sanded) into a slight downslope for the last 3" at each end of the module, to help ensure the connecting tracks remain level. This allows the connector track to be fully supported at the ends, but keeps the cork from pushing the connector track up in the middle.

Electrical

- All new modules and any existing modules being refurbished must be wired according to the document "Recommended Practices for NTRAK Module Wiring". Any toggle or other electrical switches used for local control must be of the double-pole type and wires from the bus to the electrical switch must be 16-gauge or larger.
- Insulated rail joiners or electrical gaps are *mandatory* in all four (4) rails at the frog end of all turnouts, *located as close to the frog as practical but never further away than the fouling point of the track*. This helps ensure the electrical integrity of the module, and significantly helps in case of electrical problems. Powering of track beyond the turnout gaps can be via the contacts of a turnout machine or by a toggle switch. (Powering of track by the points themselves is unreliable and not recommended.) In either case, terminal blocks in the wiring, as opposed to soldered leads, are *mandatory* for ease of troubleshooting.

  Where turnouts are located closer to the module end than the first track feeder, the end section of track must have its own feeder wires.
- Common rail type track wiring must not be used. There must not be any electrical connection between any of the rails of the three tracks.
- Powering of private tracks on a module must be clearly indicated so they can be run by others in the absence of the owner. Private tracks must be powered with their own power supply/throttle, or connected to DCC power through a double-pole switch.

- Digital Command Control (DCC) Universal Panels (UP) must be installed on corner modules (on the inside and outside diagonal), yard modules and any module with industrial switching (on both sides of the module). For most cases such as corner modules and some industrial switching modules an unpowered UP, such as the Loy's Toys PH-UP, will be satisfactory. For yard modules and modules with extensive switching where throttles can be plugged into LocoNet for an extended period, a Digitrax UP3 or UP5 panel must be used as these can be powered when required to augment LocoNet power.

  The mounting surface for the UP should be inset into the module using a router so that the UP cannot be damaged during transportation and storage.

Scenery

- In order to accommodate current-era rolling stock, such as double-stack cars, the NTRAK recommended clearance height is modified as follows. Minimum clearance height measurement above the railhead is 23.3' which scales to 1.75" (1¾") or 44.5 mm.
- Structures overhanging or adjacent to the track, such as tunnel portals, tunnels, bridges, signal bridges, stations, station platforms, etc., must meet clearances as checked with an NMRA N-Scale standards gauge, as modified for clearance height above, and/or the NTRAK standards gauge. Rolling stock, such as hi-cube boxcars, trilevel auto carriers, 85' passenger cars, deep-well double-stack cars, and locomotives with extended pantographs must be able to clear all main and branch line tracks. In addition, placement of structures and scenery should be made with the need for ease of track cleaning and access kept in mind.
- Tunnels are prohibited on the two main lines and on the branch line, unless access to the hidden tracks is available by removing the tunnel or from the rear or bottom of the module.
- Any uncouplers on the main lines or on the branch line must be the electromagnetic type.

Recommended Practices

While not mandatory, the following items should be included on all new modules, and are highly recommended for retrofit on existing modules, to the extent they do not compromise the design of modules patterned after a specific prototype location.

Module

The retrofit of folding legs to existing modules, using the construction methods defined in the reference "How to Build a NTRAK Module," is highly recommended, and is mandatory prior to 5-year recertification. The use of folding legs significantly reduces the set up and tear down time at shows.

Track

- The use of Peco Fine Scale code 55 track and electrofrog turnouts is permitted providing a transition section of Atlas track is installed at the module ends per the next item.
- The first part of any track at either end of a module should be a full- or half-section of Atlas track. The rails in these tracks hold their position better than flextrack, thus ensuring a constant distance from the module end, and a better fit of the connecting track.
- Builders of 6' or 8' modules should include a set of crossover tracks (either hand) between the mainline tracks, and between the inner mainline track and the branch line, if they fit with the track plan. Insulated gaps are needed in both rails of any crossover tracks. Use Peco large radius electrofrog turnouts or current production Atlas No. 6 turnouts.
- The construction of the mountain division track and/or alternate branch track, as defined in the NTRAK Manual, is recommended for inclusion on all new modules and, where appropriate, for retrofit to existing modules. The alternate branch track will be referred to as the "blue/yellow" track and the mountain division track will be referred to as the "green" track.
- The inclusion of industry tracks on new modules is recommended to enhance prototypical operations.

Scenery

- The construction of action oriented attention grabbers, designed for local operation, is highly recommended for inclusion on new modules and, where appropriate, for retrofit to existing modules. Some possible items for inclusion are: operating trolley, yard, industry tracks and industrial switching, separate track with train.

  Modules should be "brought to life" through the addition of people, vehicles and other details to "justify" the existence of the buildings and scenery on the module.

References

- NTRAK Manual, Current edition, NTRAK Publishing, Templeton, CA.
- How to Build a NTRAK Module, Bob Gatland, Long Island NTRAK.
- Building a Winning Module, Bob Gatland, Long Island NTRAK.