The Catskill, Adirondack and Berkshire Railroad

An HO Modular Model Railroad Club

Standards and Specifications For HO Modules

Contents

Introduction

These Standards and Specifications are meant to serve as guidelines for construction of modules intended to be part of the Catskill, Adirondack and Berkshire Railroad. They prescribe dimensions, acceptable materials, electrical requirements, construction methods and other details to ensure compatibility with modules included in Club layouts and displays.

It is intended that these Standards and Specifications will be consistent with the National Model Railroad Association (NMRA) "Module Standards and Recommended Practices."

The establishment of Standards and specifications is meant to ensure operational compatibility between modules built by members. Within the limits of these specifications and our scenic guidelines, the individual modeler should find adequate freedom to express his talents and individuality.

What is a module?

A module is a portable section of table type structure that is but one part of a large group of like tables which when assembled together form a large and fully operating model railroad. Modules are built by individuals or groups specifically for use interfacing with other modules in a large setup. All are built to a set of standards that allow each module unit to interface exactly with other units anywhere in the overall system. A module may be either a single table or a group of tables that must be capable of interface at each end but may deviate between these ends so long as the type of operation is not compromised or restricted. By being portable, they may be disassembled for transport to conventions or public displays.

What is a transition module?

A transition module is a unit so constructed that it will interface at one end with an existing non-standard unit and interface with a standard module at the other. These are necessary when existing modules built to other than CA&B RR standards are used with CA&B RR modules.

What are common tracks?

The two main tracks and the optional branch track that connect to adjacent modules are "Common" tracks. That is, they are tracks upon which all trains may run. Common tracks are subject to these standards and specifications. Diorama tracks located behind the common tracks upon which only a module owner's trains operate may be built to standards compatible with the equipment to be used.

Module Specifications

These standards apply to the modules, as well as transition modules as defined previously.

General

When the directions “Left” and “right” are used in these Specifications with respect to modules they apply when facing the module from the viewing (front) side.

Modules shall be constructed to provide a top of rail height forty inches (40”) above the floor.

Straight Modules

Standard module length is four (4) feet. Standard module width is two (2) feet.

Minimum module length is four (4) feet. Module length may be increased in multiples of two (2) feet to a maximum length of eight (8) feet. Owners of modules not a multiple of four (4) feet in length must provide filler modules to provide total length eight (8) feet. Bear in mind that modules greater than four (4) feet may be excluded from displays where space allotted to the Club is limited.

Standard module width is twenty-four (24) inches. It is permissible to increase module width up to six (6) inches front and/or back up to a maximum width of thirty–six (36) inches. It is recommended the rearward extensions be removable to avoid interference with staging tracks clamped to the rear of modules.

Corner Modules

The Club will own and maintain four (4) corner modules to guarantee a complete setup in the absence of any member. Members desiring to build corner modules should apply to Club officers for requirements.

Table Construction

Tables should be constructed to permit quick set up, break down and preparation for transportation. Structures should either be permanently mounted or designed to be installed and removed quickly.

Frame

Table frame may be constructed of commercial lumber, plywood or other acceptable material. Ends must be a nominal four (4) inches in height to permit clamping to adjacent modules. If end framing deeper that four (4) inches is required, provision must be made for a depth of four (4) inches nominal height in the clamping areas. Clamping areas are from five (5) inches to nine (9) inches from front and

back of twenty four (24) in wide modules. Owner must provide compatible clamping area for wider modules.

Tabletop

Tabletop may be constructed of plywood, structural foam, or other material capable of supporting HO model railroad tracks, trains, and scenery. Tabletop must be adequately braced to maintain structural integrity of module and avoid deflection or warping. Open grid or other construction may be used at owner's option. Tabletops of finished modules must be solid to prevent equipment from falling to floor.

Legs

Table legs may be made of commercial lumber, plastic pipe, prefabricated legs or other acceptable material.

Legs must be of proper length to provide a top of rail height of forty (40) inches above the floor. Legs must provide a height adjustment of +/- one (1) inch. "For wooden legs this can be provided with 5/16 inch Diameter carriage bolts and "Tee" nuts installed in bottom of legs..

Nominal size of legs is two (2) inches by two (2) inches. Legs should be detachable or made to fold up under table. Detachable legs may be attached by way of slip-in boxes, bolts, hinges or cleats.

Backdrop / Skyboard

A Skyboard backdrop extending fourteen (14) inches above the tabletop shall be attached to the rear of each module. Skyboard shall be ¼" shorter than the module to provide a 1/8" clearance at each end of module. Skyboard may be made of plywood or other material with sufficient strength and stiffness to stand in place. The front face should be smooth with no grain showing. Decoration of Skyboard is at option of module owner. Any areas of sky are to be painted blue using Wal-Mart #3154 "Harbour Sky" blue paint. Skyboard may be mounted using spring clamps.

Painting

Frames of modules to be painted "Skirt" Green. Legs, bracing and backs of modules are to be painted so no unfinished wood is present. Enamel paint is recommended for appearance and ease of maintenance. See Appendix A for formula of "Skirt" Green paint.

Trackwork

These standards apply to the two main tracks and the optional branch track (the common tracks). Diorama tracks behind the common tracks may be built to lesser geometric standards (curvature and gradient) consistent with equipment to be operated.

General

The outside main track is designated the “RED” line and its center is to be five (5) inches from the front of a standard twenty-four (24) inch module.

The inside main track is designated the “YELLOW” line and its center is to be two (2) inches from the RED line and seven (7) inches from the front of a standard twenty-four (24) inch wide module.

The optional branch track is designated the ‘BLUE” line and its center is to be four (4) inches from the YELLOW line and eleven (11) inches from the front of a standard twenty-four (24) inch wide module.

The standard locations of the RED, YELLOW, and BLUE lines specified above are effective for seven and one-half (7 ½) inches from the end of the module when the module is intended to connect with a standard module.

Roadbed

Roadbed may be cork, pine, or other acceptable material.

Roadbed must be installed on accurately established track centers and secured to the tabletop with suitable adhesive.

Track

Common tracks shall be of good grade commercial prefabricated CODE 100 flex track with Nickel Silver rail.

Tracks shall be laid on accurately established centerlines at locations specified above. Track must end:

- **Right side of the Module**: Four and one-half (4 1/2) inches from end of module
- **Left Side of the Module**: Three-quarters (3/4) of an inch from end of module

An adequate number of ties (usually three (3)) at end of track must be modified to permit rail joiners to slip on rail clear of end of rail for placing of five-and-one-quarter (5 1/4) connecting track to adjacent module. Track should be fixed in alignment by track nails, adhesive, or bonded ballast.

Track joints except insulated joints are to be soldered.

Track insulation is to be provided in each common track at each interface between modules. See ELECTRICAL section.

Turnouts in Common tracks are to be Number six (6) or larger and D.C.C. compatible. If solid frog turnouts are used, module owner must provide for necessary rail insulation and routing of track power and to provide D.C.C. compatibility

EXCEPTION: Turnouts in the Blue Line where through trains do not take diverging routs may be number four (4) or larger.

The following minimum radii and track centers will apply to common tracks on all modules:

	Minimum Radius	Track Centers
All Tracks	Tangent	Two inches
RED Line	Thirty-two (32) inches	Two and ¼ inches
YELLOW Line	Twenty-nine ¾ (29 3/4) inches	Two and ½ inches
BLUE Line	Twenty-six (26) inches	Two and ½ inches
OTHER *	Twenty-four (24) inches	Two and ½ inches

**This minimum will apply to tracks to and within staging areas.*

Mainline curves shall be provided with easements. See N Trak manual for one way to make easement.

Ballast

Ballast for RED and YELLOW lines will be “Woodland Scenics” medium or fine grit grey ballast. “Woodland Scenics” fine grit cinder ballast is recommended for the BLUE line.

Diorama tracks

Diorama tracks located in front of or behind the common tracks shall be insulated (both rails) from the common tracks. Owners of modules are responsible for providing power to diorama tracks, switch machines and other accessories on their modules.

Electrical

Wiring

Modules are to be wired for straight DC operation. No electrical connection is permitted between tracks—common rail wiring is not permitted. Crossovers between common tracks must be fully insulated (both rails). Wiring must be provided to power all track rails, switch machines and other accessories on the module. Rails must be powered from the module Bus wires. No section of main or passing tracks shall depend on power being fed through the bridge tracks. Rail connections must be soldered. Other electrical connections must be soldered and taped.

Insulated rail joints (plastic rail joiners) are to be located in all rails at the left side of the module.

BUS wires are to be provided on all modules to carry track and accessory power through to adjacent modules.

Jumper wires are provided to connect power and accessory busses to adjacent modules.

It is recommended for trouble shooting that bus, track and accessory wires be color-coded.:

- Red wire for RED line
- Yellow wire for YELLOW line
- Blue wire for BLUE line
- White wire for ACCESSORY power
- Green wire for DIORAMA tracks

Minimum recommended wire sizes are:

Bus lines (Track power) on modules	18 Gauge solid
Bus Line (Accessory power) on modules	16 Gauge solid
Feeder wires to tracks	24 Gauge Solid
Jumper lines (Track) between modules	16 Gauge stranded (zip cord)
Jumper lines (accessory) between modules	16 Gauge stranded (Zip cord)

Module bus wires and jumper wires shall connect by means of a barrier block centered on the inside of the module frame end.

Jumper Wires and Electric Connectors

Electrical connections between modules are made using TRW-Cinch #P-302CCT Plug (male) and TRW-Cinch #S302CCT Socket (female) connectors. Track bus connectors are wired so the WIDE pin of the TRW-Cinch connector is connected to the front (Outside) rail and the NARROW pin to the rear (Inner) rail. The white (accessory) jumper should be wired so the WIDE pin is attached to the front terminal block location (for use of AC accessory power).

Male connectors are located on the right side of the modules on a twelve (12) inch tether.

Female connectors are located on the left side of the module on six (6) inch tethers. (NOTE: if desired the female connectors may be chassis mounted using TRW-Cinch connector #S302-AB.)

Connectors are to be color coded as follows:

RED Line bus	Red
YELLOW Line bus	Yellow
BLUE Line bus	Blue
ACCESSORY bus	White
Diorama Track Bus	Green

NOTE: The Club maintains an inventory of TRW-Cinch connectors for resale to Club members at cost.

110 Volt busses and jumpers are not required.

Scenery

Here the individual can express his individuality. We only require that the scenes modeled be representational of upstate New York or northwestern New England in mid summer.

All module scenery must be placed to provide standard NMRA clearances.

Setup Hardware

For each module the following hardware is required to connect to adjacent modules for shows.

Two (2) three (3) inch or larger “C” Clamps

One five-and-one-quarter (5 1/4) inch track section for each common track.

Two (2) metal rail joiners per track.

Two (2) Plastic rail joiners per track.*

Skirting

At present, skirting in the form of green dyed fabric curtain is used to finish off the front of the layout for public displays.

Appendix A

Paint Formulae and Specifications

1. **Harbour Sky** is Walmart paint #3154.

It appears that this color had been discontinued but the formula should be in the Walmart book of discontinued colors.

The Walmart formula for Harbour Sky is:

Latex medium base inside flat 5051

Tints: E – Y 12

L – 12

V – 4

2. **"Skirt" Green** is a special color developed for the C A & B by Walmart.

The formula for "Skirt" Green is:

Latex semi-gloss wall and trim accent base 5453

Tints: E – Y 19.5

L - 23

KX – 27

T – 27.5