



POWAY STATION
ALL SCALE MODEL RAILROAD CLUB
a California 501c3 Non-Profit Corporation
www.powaystation.org

MODULE AND TRACK STANDARDS
AND
RECOMMENDED PRACTICES
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INTRODUCTION

Standards were originally developed by the National Model Railroad Association (NMRA) to allow reliable interchange of different manufacturers' equipment on an individual's home layout or a larger club layout. NMRA Standards are "cut in stone," so to speak. The NMRA has also developed Recommended Practices, which, while not as critical as standards to reliable interchange of equipment, result nonetheless in more reliable operations. Taking that concept one step further, Poway Station has adopted the following standards for module construction and track installation, to provide reliable connection of members' modules, considering reliability of construction, ease of connection, and consistency of operation. Additional standards cover electrical considerations, motive power, and rolling stock.

NMRA Standards and Recommended Practices (RPs) have not been reproduced here, but are available at the NMRA web page, <http://www.nmra.org/standards/>. Printed copies of the NMRA Standards and RPs will be available for review at most Poway Station club meetings. In addition, the majority of NMRA and Poway Station standards are based on the Ntrak Standards, developed by Ntrak, Inc., and published in *The Ntrak Module "How To" Book*, a copy of which will be available for review at most Poway Station club meetings.

GENERAL STANDARDS

Poway Station All Scale Model Railroad Club (Poway Station) subscribes to all National Model Railroad Association (NMRA) Standards and Recommended Practices (RPs). Specific exceptions and additions to NMRA Standards and RPs are noted below. Unless otherwise indicated, NMRA RPs are Poway Station minimum standards. In the event that a Poway Station member desires to connect his or her module to other NMRA standard modules at a function of the NMRA, or other public show not sponsored by Poway Station, that member will be responsible for providing appropriate transition between the modules. Likewise, Poway Station members who wish to construct modules strictly to NMRA standards may do so, but will be required to provide appropriate transition to Poway Station modules at the frontier¹. Questions on these standards should be directed to the Poway Station Standards Committee, who will make a recommendation to the Board for final action regarding any deviations from these standards.

Module construction must accommodate ease of erection and compatibility with other modules in the club, to facilitate setting up layouts at shows. Modules built and operated by members before the adoption of these Standards in this format are automatically exempted, although any reconstruction should attempt to bring the module(s) into compliance.

Non-conforming modules owned by members or prospective members will be evaluated by the Standards Committee, and an accommodation will be negotiated. Non-members wishing to operate their modules with Poway Station must provide suitable transition to Poway Station modules.

¹ "Frontier" is defined as the interface between two modules owned by different members, or by a member and Poway Station.

Members should discuss their general plans for new modules with the Standards Committee **BEFORE** beginning construction, whenever possible. This will help to identify any potential issues and associated solutions before members have time and money invested in something that may not be compatible with club operations.

It is recommended that new members, either with or without existing modules, or members wishing to rebuild existing modules or create new ones, consult with the Standards Committee regarding scenic issues. This will help to ensure that scenery transitions between modules flow as smoothly as possible.

SPECIFIC STANDARDS AND RECOMMENDED PRACTICES

I. STANDARDS

A. EXCEPTIONS

1. MODULES

a. Straight Modules

The standard Poway Station straight module shall be 48" by 30".

- 1) The maximum module depth remains 36".
- 2) The minimum module depth shall be 12".

b. Corner Modules

The standard Poway Station corner module shall be 48" by 48".

- 1) A corner module may have the inside and outside corners cut off, to form a diamond shape, provided appropriate bracing is included to maintain stability of the module.
- 2) A corner module may have a radius on the viewing edge, provided
 - a) Appropriate bracing is provided to maintain stability of the module, and
 - b) Appropriate mounting is provided for protective Plexiglas.
- 3) Alternate sizes may be used, provided
 - a) Minimum radius is observed, and
 - b) Modules are provided in pairs, to maintain appropriate spacing of the layout, or other accommodation is provided.

c. Skyboards:

Each module shall have a skyboard, which may be fixed or removable.

- 1) The standard height shall be 11.5 inches from the top of the basic table top.
- 2) Minimum and maximum heights shall be in accordance with NMRA standards, but the module owner shall be responsible for providing transition to the standard height. (Minimum height = 8 inches, maximum = 18 inches)

- 3) Skyboards shall be a total length of $\frac{1}{4}$ " less than the total module length, and mounted such that each end is inset $\frac{1}{8}$ " from the module end.

2. TRACK

a. Track centerline

Mainline tracks shall be measured from the front (viewing edge) of the module, BEFORE fascia [see section I.B.1.b) below] is mounted. For modules that extend to the front, centerlines shall be measured from the indicated standard front edge.

b. Mainline Rail Joints

All mainline rail joints, except those at the drop-in connectors and insulated joints, must be soldered. It is the intention of this standard that no joint rely solely on the rail joiner for electrical continuity.

c. Minimum radius

Minimum radius for mainline track shall be 30". Where two or more curves are adjacent to each other, centerline spacing shall be 2.5 inches between curves, measured at the apex of the curve. (Existing club corners are 34" minimum.)

d. Track Height

Track shall be Atlas Code 83 nickel-silver for all mainlines. Should a member wish to use a different size rail, or a different manufacturer, it must be brought back to Atlas Code 83 within seven inches (7") of the module frontier.

e. Vertical Clearance

Minimum vertical clearance shall be at least 3.5 inches above the railhead. This is more than adequate for AREMA Plate H dimensions, and is required to clear double-stacks.

NOTE: The current NMRA Standards gauge (as of the adoption of these standards) is for clearance Plate C (Figure 1, below). Plate C provides an overhead minimum clearance (prototype) of just over 15 feet (see legend of measurements in NMRA Standard S-7). For comparative purposes, Plate F (Figure 2 below) provides for 17 feet. Class I railroads now use clearance Plate H (Figure 3 below), which stipulates minimum height of 22 feet, 2 inches, and is nearly flat across the top.

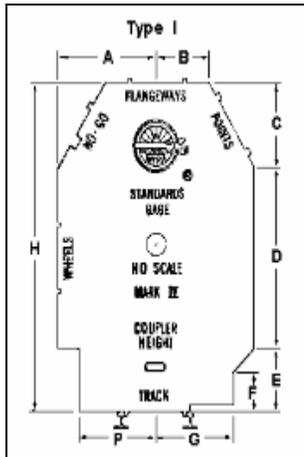


Figure 1 - See NMRA Standard S-7 for Legend of Letter Dimensions

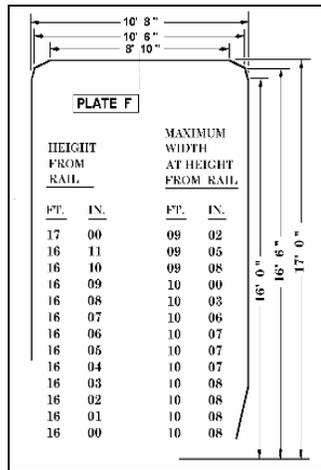


Figure 2

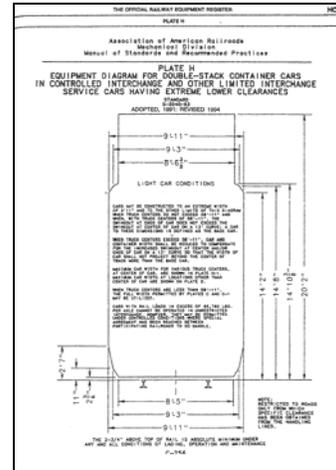


Figure 3

Also, the use of (cork) roadbed under the track generally implies a need to raise the base of commercial tunnel portal castings and structures a similar amount. Be sure to check your vertical clearances, particularly for such things as commercial tunnel portals or bridges, BEFORE permanently installing these things. Failure to do so may cause clearance problems with autoracks and double-stacks, and if installed in the mainline, will result in the owner needing to rebuild the tunnel opening. If unsure of the exact dimension you should use, consult the Standards Committee.

B. ADDITIONS

1. MODULES

a. Paint

ALL SURFACES MUST BE PAINTED TO PREVENT OR MINIMIZE WOOD MOVEMENT OVER TIME.

- 1) All module tops must be painted a base coat of the standard club beige undercoat, Valspar #326-3 "Wheeling," or equivalent color, available at Dixieline. (Equivalent paints may be available by color matching at Frazee or Home Depot.)

Tan/Light Brown Basic Module Cover.

From; Dixieline Lumber
 Valspar
 Exterior flat latex house paint.
 45502 tint base
 B 1Y 24 00/48
 C 1Y 24 00/48
 F 0Y 24 00/48
 Premium Ext. Flat
 Color 326-3 Wheeling Base Tint.

Note: The Valspar originally selected has been found to be "sticky" when compressed, even after several months of curing time. A limited amount of this paint is available from the club.

- 2) Module parts, such as legs, fascia, and skyboard backs, that are not meant to be viewed by the public should be painted flat black, except the inside bottom, which may be painted a light color for improved visibility.

Flat Black HO & N Legs, Fascia, Skyboard backs, etc.

From; Home Depot
 Behr Oil Shale (3B44-6) Deep Base (2-1300)
 Premium Plus Int. flat wall low vos

Colorant	<u>OZ</u>	<u>48</u>	<u>96</u>	
B Lamp Black	6	16	0	
KX White	1	6	0	
L Raw Umber	2	22	0	
R Exterior RE	0	10	0	

- 3) All skyboards must be painted a base coat of the standard club sky blue, to be supplied by the club, on the front. This should be applied before any mountains, trees, clouds, etc. are added to the skyboard. The backs should be painted flat black.

Basic Sky Blue Skyboard Cover

From; Home Depot
 Behr Ultra Pure White (base) 2050
 Premium Plus Int. Eggshell Colorant

Colorant	<u>OZ</u>	<u>48</u>	<u>96</u>	
AX Perm Tello	0	5	0	
F Thalo Blue	1	1	0	
U Magenta	0	1	1	

b. Fascia

Each module shall have a fascia that will support the club Plexiglas protectors, on the front (viewing) side.

- 1) Fascia shall support the bottom of the Plexiglas two (2") below the top of the table, before any scenery has been added to the module.
- 2) Fascia shall be a total length of ¼" less than the total module length, and mounted such that each end is inset 1/8" from the module end.
- 3) For modules having raised or lowered table tops, consult the Standards Committee to ensure correct positioning before installing fascia.
- 4) Reversible modules should have fascia mounted on both front and rear edges.

c. Module Ends

Module ends must be perpendicular to track and table top.

- d. Module Top
Module top must not overhang ends.

2. LEGS

- a. Basic leg construction is not specified, provided legs are sturdy and easy to install, raise the module to the correct height, and do not interfere with neighboring modules.
- b. Leg Caps
Legs should be capped with non-marring PVC caps with adjusting bolts installed, to be supplied by the club.

3. TRACK

- a. Uncoupling Magnets
No permanent magnet uncoupling ramps are allowed in mainlines or mainline passing sidings. (Use electro-magnetic type, if uncouplers are necessary.)
- b. Ballast
Mainline ballast shall be Woodland Scenics Gray, a 50/50 mix of medium and fine.
Note: No modifier was associated with this color at the time it was adopted. However, it was specified that the product of choice be Woodland Scenics (WS). WS offers two gray ballast colors in their line, light gray and gray; therefore the darker color should be selected to comply with this standard.
- c. Passing Siding Centerlines
Track centerlines for mainline passing sidings (tracks 0 and 3), if used, shall be at 3.0 inches (track 0) and 9.0 inches (track 3) from the front, or indicated front, edge of the module (on two-inch (2") centers with the mainlines).

II. RECOMMENDED PRACTICES

A. EXCEPTIONS

1. MODULES

- a. Leg Construction
Basic leg construction is not specified, provided legs are sturdy, raise the module to the correct height, and do not interfere with neighboring modules.
- b. Construction Materials
Construction of modules can be of any material, provided such modules are sturdy, can be connected reliably to neighboring modules, and do not present a safety

hazard to members assembling the layout. Questions shall be ruled on by the Board at the recommendation of the Standards Committee.

2. TRACK

a. Grade

Maximum mainline grade is 0%. No grade is allowed in mainline or mainline passing sidings. Any deviation from this RP requires specific approval by the Standards Committee.

b. Minimum radius, industrial track

Minimum radius for industrial track is not specified, provided reliable operation is maintained.

c. Horizontal Clearances

Minimum horizontal clearances: shall be at least seven and one half scale feet from the track centerline for tangent track. On curves, clearances must accommodate the longest equipment, currently passenger cars and 89' autoracks. This equipment should be tested on the curve before permanent installation of any feature that may have clearance issues.

Note: Platforms and loading docks have special considerations. Consult NMRA Standard 7 and the NMRA gauge.

d. Minimum parallel tangent track

Minimum parallel tangent track shall be 7.0 inches (This means the track must not contain any deviation, such as the beginning of curves or turnout points, sooner than 7.0 inches from the module frontier.) to prevent the introduction of reverse ("S") curves at the frontier. Modules constructed prior to the adoption of these standards will be granted an exception, provided operation is reliable.

B. ADDITIONS

1. MODULES

a. Module Joinery

HO Modules should be joined by Poway Station joinery plates (can be purchased from the club), that include alignment pins, using 1/4 x 20 bolts, through holes drilled in the ends of the modules. The location of the holes will be marked by the Standards Committee using the club template. The correct holes can be drilled by the Standards Committee if desired by the member.

b. Storage and Protection

Modules should be boxed, for protection in storage and transit, in pairs where possible.

c. Paint Primer

All modules surfaces to be painted (frames, legs, skyboards, etc.) should first be primed with a high quality primer/sealer.

d. Ends Caps

Ends caps should have furniture glides installed, to facilitate sliding across floors, in the trailer and at set up sites, without damaging the floors or the modules. Glides should raise the module box off the floor sufficiently to allow the mounting bolts to clear the floor. Alternatively, mounting bolts could be counter-sunk, so as not to protrude from the end cap.

2. TRACK

a. Turnouts

- 1) Modelers should strive to avoid “S” curves, that place undue stress on equipment and contribute to derailments, at all turnout locations.
- 2) All turnouts in the mainline should be powered. Selection of switch machine is at the discretion of the module owner.
- 3) All other turnouts require that operation be positive.

b. End of Track:

- 1) Track should extend to the frontier of each module and be soldered to PC board that has been glued to the module. Exact alignment of track will be set using the club template.
- 2) PC board should be securely mounted (gluing is preferable) to a solid surface (such as a wooden base) rather than to cork or other flexible roadbed.