

NMRA ROCKY MOUNTAIN REGION MODULE STANDARDS

Adopted 9/9/07 – revised 9-8-2011

1.0 SCOPE

While most of the dimensions in the RMR Module Standards are from NMRA Standards and Recommended Practices (MRP 1.0 through MRP 1.4 and MS 1.0 through MS 1.3) The RMR Module Standards differ primarily in construction materials and in DCC and local control wiring. Modules built prior to the acceptance of these Standards will be exempt from these standards. However, if non-conforming modules are to interface with conforming modules, a transition module and/or transition jumper cables will be required to accommodate any differences in trackage, electrical, etc.

2.0 ACCEPTANCE CRITERIA

Any new module must be inspected for compliance by either a member of the RMR Region Module Committee or by a division module chairman.

3.0 MECHANICAL STANDARDS

Scale	Height from Floor to Top of Rail	Hand Laid or Commercial Rail Code	Track Clearances H=Horiz V=Vertical	Interface Track Center Lines from Module Front	Track Setback From End of Module	Center Lines on Curves	Track Centers for Parallel Tracks
Z	36" (914.4mm) 40" optional (1016mm)	60 (40) n1	H=15/32" (12mm) V=1-19/64 (33mm)	(*) 5" (127mm) 6" (152mm)	2-3/16" (55mm)	1" (25mm)	1" (25mm)
*Two through tracks required							
N	36" (914.4mm) 40" optional (1016mm)	80 n5 55-70(*)	H=19/32" (15mm) V=1-21/32" (42mm)	4" (101.6mm) 5-1/2" (139.7mm) 7" (177.8mm)	2-15/32" (62.7mm)	1-1/2" (38.1mm)	1-1/2" (38.1mm)
*Three through tracks required, Mainline. One through track required, Secondary							
TT	36" (914.4mm) 40" optional (1016mm)	70	H=3/4" (19mm) V=2-3/16" (56mm)	4" (101.6mm) 5-3/4" (146mm) 9-1/2" (241mm)	3" (276mm)	1-3/4" (44.5mm)	1-3/4" (44.5mm)
*Three through tracks, Mainline.							
HO	36" (914.4mm) 40" optional (1016mm)	100 or 83	H=1-1/32" (26.2mm) V=3.5" (76.2mm)	4"(127mm) 6"(177.8mm) 8"(237.1mm)	4-1/2" (114.3mm)	2-1/2" (63.5mm)	2" (50.8mm)
*Three through tracks required, Mainline. Others optional.							
OO	36"	100	H=1-3/16"	5" (127mm)	4-1/2"	2-5/8"	2-3/8"

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	(914.4mm) 40" optional (1016mm)		(30.2mm) V=3-7/16" (87.3mm)	7-3/8" (187.3mm)	(114.3mm)	(66.7mm)	(60.3mm)
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*Two through tracks required, Mainline.

S	42" 38" optional (1067mm 960.3mm optional)	**	H=1-3/32" (27.8mm) V=4-1/8"" (104.8mm)	6-1/8" (155.6mm) 8-7/8" (225.4mm)	2" (50.8mm)	3-1/2" (88.9mm)	2-3/4" (69.8mm)
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*One or two mainlines optional. Check local NASG group for details.

O	36" (914.4mm) 40" optional (1016mm)	148	H=1-7/8" (47.6mm) V=5-1/2" (139.7mm)	6" (152.4mm) 10" (254mm)	2" (50.8mm)	5" (127mm)	4" (101.6mm)
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*Two mainlines required.

High Rail Tinplate	36" (914mm)	O Gauge Tinplate	H=5-1/2" (39.7mm) V=1-7/8" (47.6mm)	4" (101.6mm) 7-1/2" (190.5mm)	5" (127mm)	21" n2 (533.4mm) 35" n3 (89mm)	3-1/2" (88.9mm)
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*Two mainlines required.

Module lengths for all scales shall be in 2' increments with 2' allowed as transition module. (n4)

* All track clearances are per S-7 and include all other pertinent Standards.

** No rail code recommended, S scale only use RP-3 for track gauge.

*** Hand laid track in N scale and smaller is very fragile and easily damaged in handling and is not recommended.

**** Recommended but not required S scale only.

NOTES: (n1 = note 1., n2 = note 2., etc.)

- (1) If code 40 rail is used, it must be brought back to code 60 rail 2" from interface.
- (2) Inside radius on corner.
- (3) Outside radius on corner.
- (4) NSG has larger modules in 2' increments up to 24'.
- (5) NTRAK uses Atlas or Peco code 80 rail. Code 55-70 is allowed within module but must be brought back to code 80 at interface.

4.0 HO SCALE STANDARDS

4.1.1 Outside Corner Modules

Outside corners must be designed to properly fit in "multiples of 4" configurations. Track 2, the middle mainline, shall have a radius of 32 inches minimum. Track 1, the outer mainline, shall be spaced 2 1/2 inches on center from track 2. Track 3 shall be spaced 2 1/2 inches on center inside of track 2.

4.1.2 Inside Corner Modules

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Inside corner modules will be 6 feet on each side. This may require two 2-foot modules to compensate for length. Track 2, the middle mainline, shall have a radius of 32 inches minimum. Track 1, the outer mainline, shall be spaced 2 ½ inches on center from track 2. Track 3 shall be spaced 2 ½ inches on center inside of track 2.

4.1.3 Mainline Tracks 1, 2, and 3

HO Standard Gauge commercial flex track (or hand laid) in code 83 or code 100 Nickel Silver. If code 83 is used, the module owner must provide adapter bridge tracks to enable connection to code 100 track on the adjacent module. Any crossovers between tracks 1, 2 and 3 must be #6 minimum. All three tracks must be able to run freely and independently across the module and throughout the layout with no obstructions. The grade on all mainlines shall be 0%. Drop-feed wires soldered to the rails must be 16 gauge for DCC. Permanent uncoupling magnets are not allowed on the mainline tracks 1, 2 & 3. Track work must provide problem free operation.

4.1.3.1 Narrow Gauge Track

Narrow gauge track is permitted in addition to the three standard gauge loops. The owner (private or club) of the module is responsible for any turning loops required. The narrow gauge track centerline will be 8 inches from the backstop and 6 inches above the sub-roadbed (see Figure 1).

4.1.4 Mainline Switches

#6 switches or larger are required for mainline cross-overs. Although #6's are recommended, you may use #4 switches to exit track 3 to enter yards and sidings. If you are building a siding on track 1, min. #6's are required. Track work must provide problem free operation. DCC friendly turnouts are required.

4.1.5 Joint Tracks

Joint tracks between modules shall be 9" long to minimize uncouplings. The use of re-railer joint tracks is encouraged.

4.1.6 Module Construction

4.1.6.1 Sub-roadbed shall consist of ½" plywood or 2" dense foam insulation to prevent warping. If 2" foam is used, it must be braced as shown in Figure 2.

4.1.6.2 Roadbed shall be ¼" thick and consist of either cork or homabed.

4.1.6.3 Finished track and/or roadbed shall be subjected to the following test. A 4-foot long level or straight edge shall be placed along the length of the roadbed or track. Any gaps between the straight edge and roadbed or track shall not exceed 1/16".

4.1.7 Inter-module Buss Cables

Buss cables must be 12 gauge between the inter-module 6-pin connectors. (See diagrams)

4.1.8 "C" Clamps

Two 4 inch clamps to secure your module to the module to your left. (The module to your right will clamp to you...etc.)

4.1.9 Ballast

Woodlands Scenics' Gray medium B-82 required for tracks 1, 2, and desired on track 3. (Other tracks your choice.)

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4.1.10 Overall Height

The module's height from the floor to the top of the rail shall be 36 inches (40 inches optional) inches adjustable to plus or minus 1 inch. Carriage bolts or threaded metal feet are required on the bottom of the legs to make height adjustments.

4.1.11 Module Appearance

Scenery that ends at the module's edge must be finished and painted. No bare wood or white plaster should be showing. The scenery cannot extend beyond the module edges. Paint all visible frame sides, legs, and backside of the backboard with the required brown color.

4.1.12 Sidings

Sidings must be no less than 2" from either main line track.

4.1.13 Signals

All block signals and grade crossing flasher systems shall be independently powered and will not employ track detector circuits which need to be connected to the main line track current to operate.

4.1.14 "S" Curves

All "S" curves must have a tangent section of track 90 scale feet long between the two curves. The minimum radius of the curves shall be 32 inches.

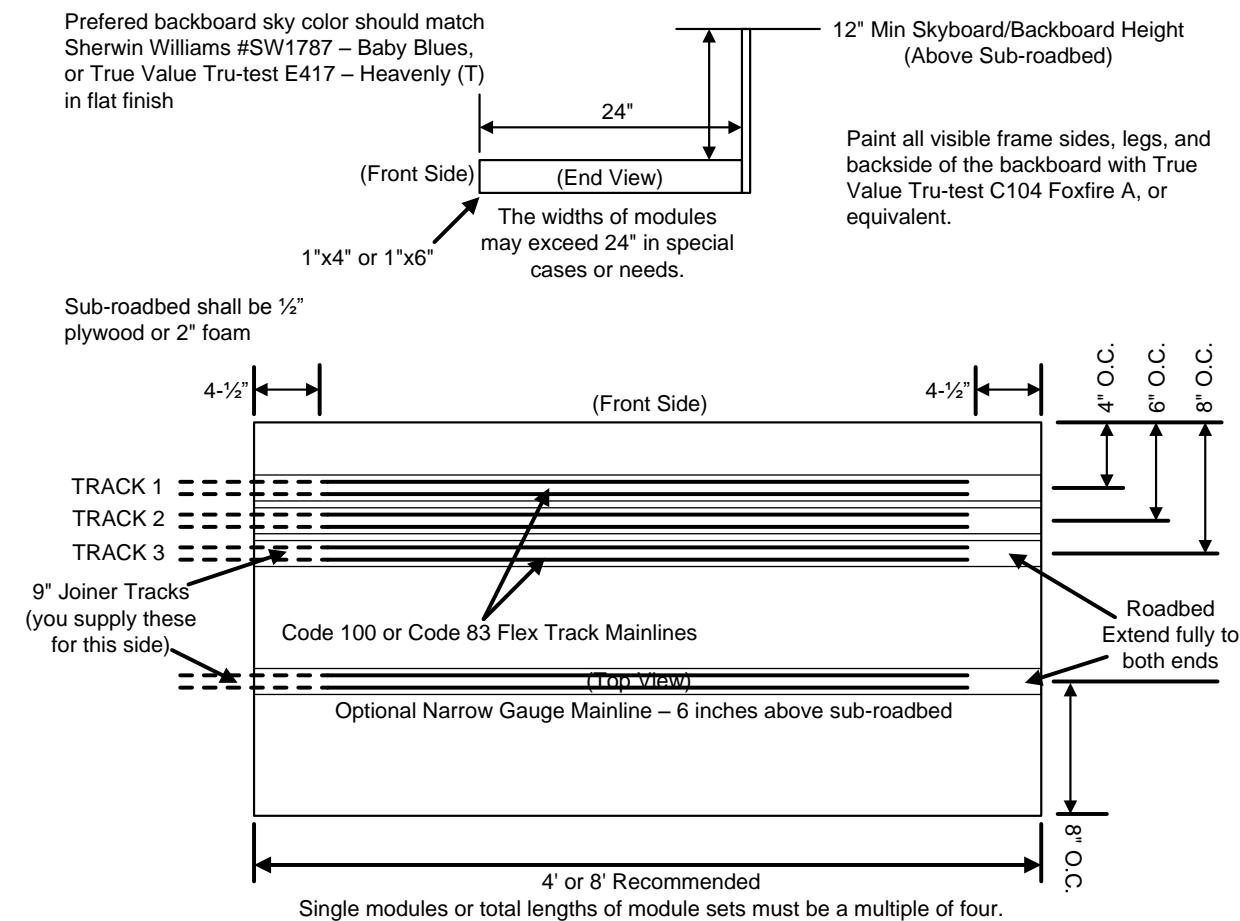
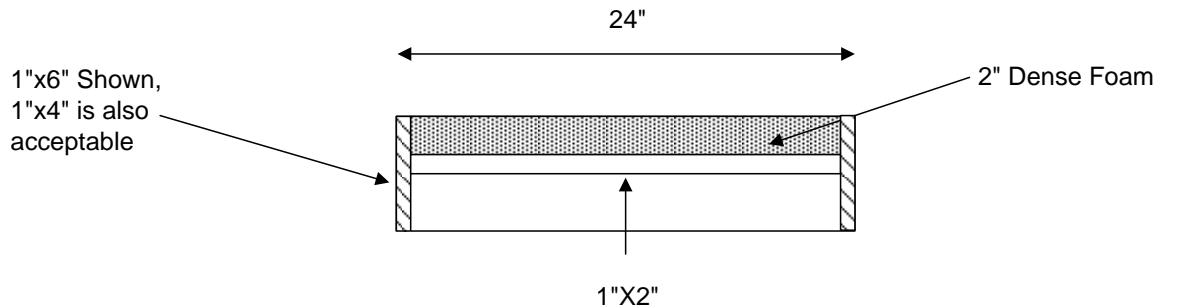


FIG 1 - RMR MODULE DIMENSIONAL AND FINISH STANDARDS – HO

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½" plywood ripped to 4" or 6" width is recommended. It will be straighter and lighter than conventional 1"x4" or 1"x6" lumber. 6" width is recommended for 8 foot modules.

Section A-A

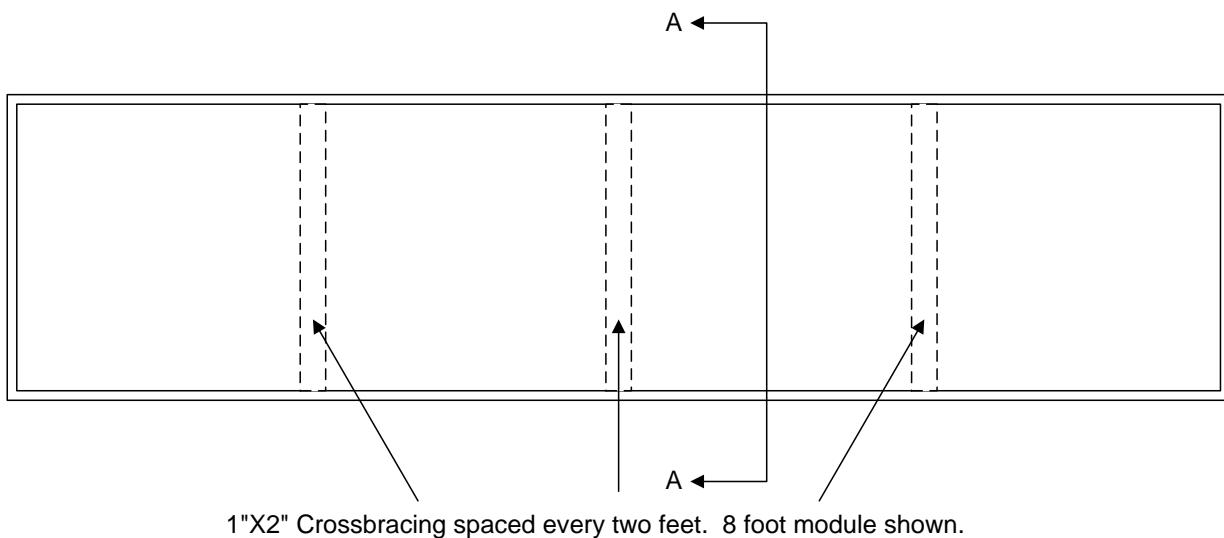


FIG 2. - MODULE CONSTRUCTION USING 2" FOAM

5.0 ELECTRICAL STANDARDS FOR ALL SCALES, (EXCEPT WHERE NOTED IN PARENTHESES). See notes for S scale.

5.1 Track power is carried under modules will be 12 gauge minimum for DCC operation. Two-conductor cable is recommended for neatness.

5.2 Modules shall be wired according to Figure 2. All electrical connections shall be soldered and insulated with heat-shrink tubing or tape. Suitcase connectors are recommended for connections between buss and feeder wires. No section of mainlines or passing track shall depend on power being fed through bridge tracks.

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5.3 Track Gaps (Insulated)

Insulating material shall be used to fill rail gaps. No air gaps are allowed. Crossovers between mainlines and tracks leading from mainlines to other trackage on the module shall have both rails gapped (insulated). All tracks gapped for block control shall have both rails gapped (insulated).

5.4 DC Power

Electrical Standard S-9 shall be observed. (Exception for Nn3 & Z scales; Full throttle voltage at the railhead shall not be more than 8 volts.) Mainline track #1 (outer main) shall be equipped to run under both DC and DCC operation.

NOTE: The use of 110V power is acceptable provided all components carry UL labels and are secured to the underside on the module and measures taken to prohibit any possible connection to the low voltage wires. Local electrical requirements may vary at different locations so it is advisable to contact the local fire inspector for details.

NOTE: Cinch-Jones and Radio Shack Connectors ARE COMPATIBLE.

*S Scale only:

NOTE: S Scale wiring is entirely different. Check NASG module specs for full details.

All electrical connectors should be painted black. See also note at bottom of page. Two mainline and single mainline modules have a male & female 2 pin connector (same type as used for HO or N scales) at each interface. This configuration allows for reversing modules within layouts.

For TWO-MAINLINE modules, the following is the configuration as you look at the end of the module. The male connector is on the right and connected to the wiring for the right mainline. The wide blade is connected to the outside (right-most) rail terminal and the small blade is connected to the inside rail for that mainline. A female connector is connected to the wiring of the second mainline on the left. The wide socket is connected to the left-most rail terminal and the small socket is connected to the inside rail.

For SINGLE MAINLINE modules, a male and female connector is attached to the same terminals. Looking at the end of the module, the wide blade of the male connector is connected to the outside (right) rail terminal and the small blade is connected to the inside (left) rail. The wide socket of the female connector is connected to the inside (left) rail terminal and the small socket is connected to the outside (right) rail terminal. (For single mainline modules, during use. ONLY ONE connector is used per interface. The other will be used only if the module is reversed in the layout).

N SCALE ONLY: A 4th line should be used to carry low voltage DC. This shall consist of a pair of 16 gauge (Zip cord is OK) wires with a Cinch-Jones or Radio Shack connector as outlined above. No connection is made to the track.

5.5 DCC Wiring

Tracks 1, 2 and 3 shall be equipped with individual boosters or circuit breakers to allow independence from short circuits on adjoining tracks and to provide sufficient power for multiple sound-equipped locomotives.

5.6 Module Wiring

5.6.1 Tracks 1, 2, and 3 shall each be separate whole blocks and insulated from each other at crossovers with insulating rail gaps. Track drop-feeders should be at least 16 gauge wire soldered to the rails.

5.6.2 Inter-module Connectors - The connector ends should be able to reach at least 6 inches beyond the ends of the module. This insures you and your neighbor's connectors will reach each other.

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5.6.3 Terminal Strips –The use of terminal strips between the plugs of your module is optional but recommended. This allows easy trouble shooting and connection corrections with only a screwdriver instead of cutting wires. On very large modular set-ups, multiple terminal strips could cause a voltage drop on DC track.

5.6.4 Track Power Kill Switches (Optional)

Kill switches to rails 1, 3 and 5 (see wiring diagram Fig.3) shall be mounted on the back of each module. This enables killing the power on individual tracks in the event of derailment. Insulating rail gaps shall be used on rails 1, 3 and 5 on the right ends of the track when viewed from the front side of the module. The gaps shall be six inches back from the bridge tracks. The short rail sections shall be powered from the module joined on the right. This will insure that the bridge tracks are powered from both modules, minimizing the chances of electrical failures due to loose fitting bridge track rail joiners.

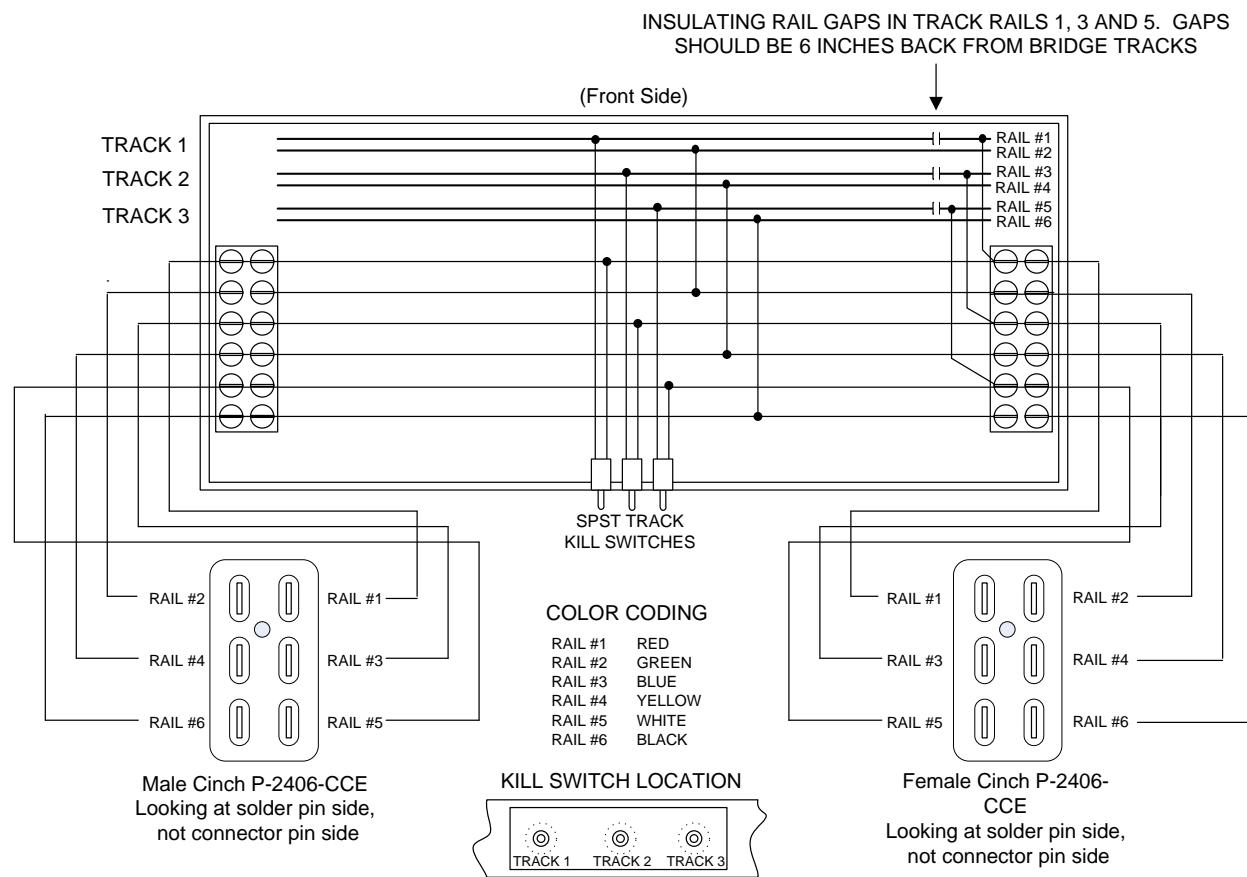
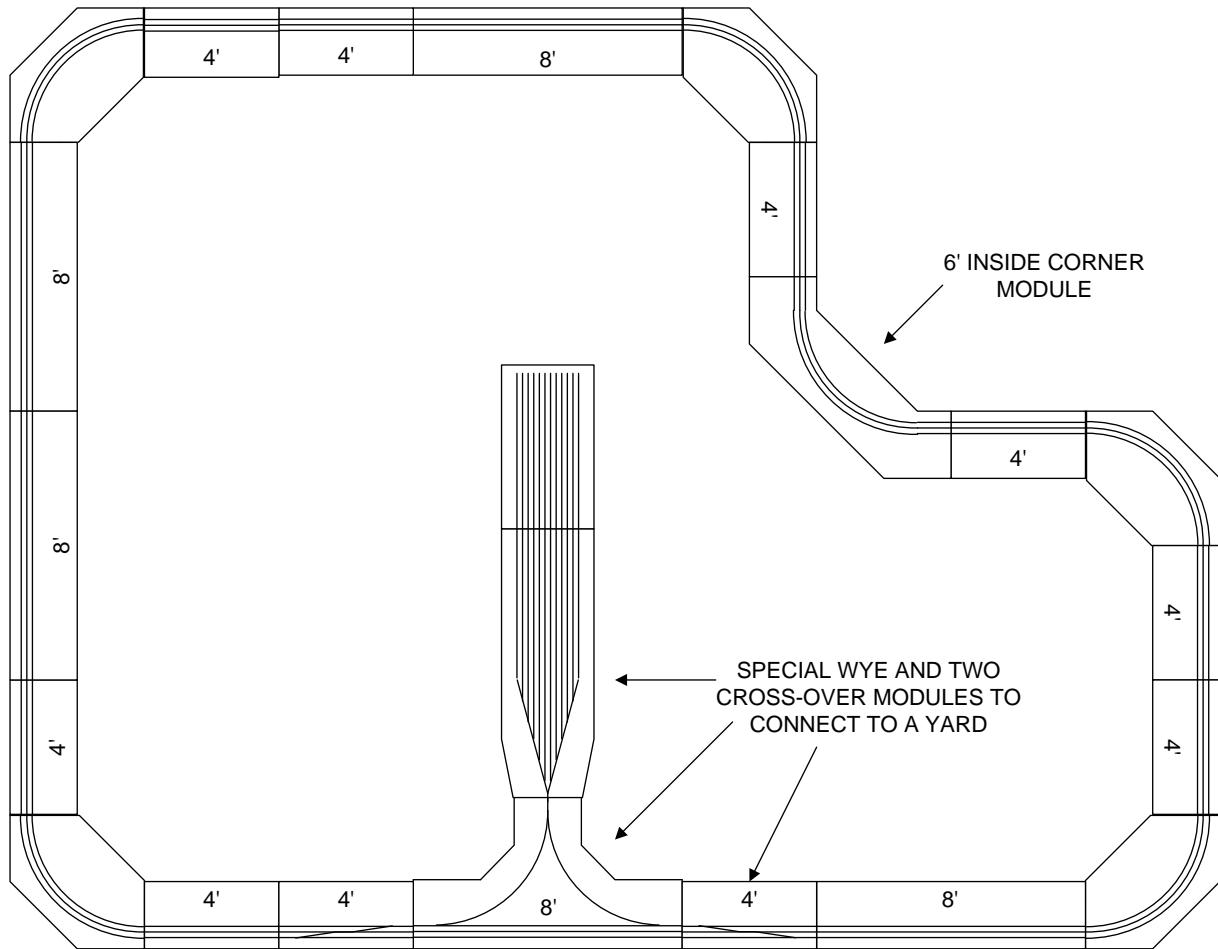


FIG. 3 - RMR REGION STANDARD MODULE WIRING DIAGRAM

Module viewed from bottom side

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A POSSIBLE LAYOUT CONFIGURATION