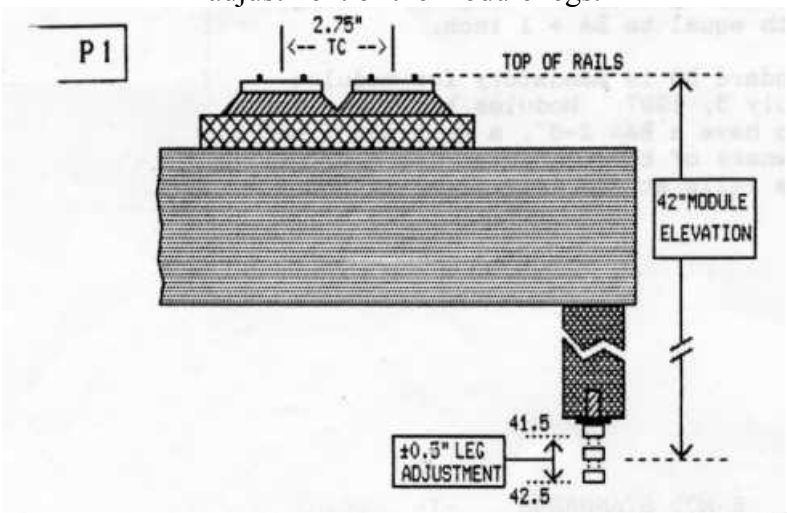
I. S-MOD PHYSICAL MODULE STANDARDS (S-10 STANDARDS) (Approved 7/3/87)

	Value
A. <u>TRACKWORK</u> TRACK (TR) shall accommodate wheels and wheelsets conforming to the N.A.S.G.'s standard S-4.	TR: S-4
B <u>MODULE INTERFACE</u> (See Figures P1 & P2)	
1) MODULE LEGS	
a] MODULE ELEVATION (ME) - The height of the trackwork railhead above the floor at the interface.	ME: 42"
b] LEG ADJUSTMENT (LA) - The possible vertical adjustment of the module legs.	LA: ±1/2"



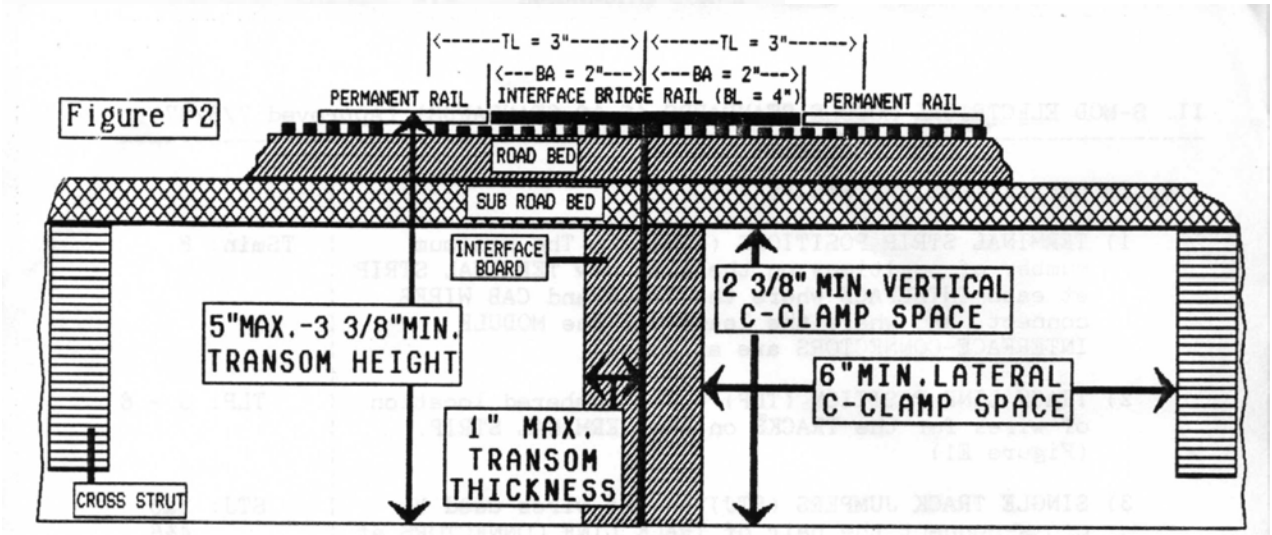
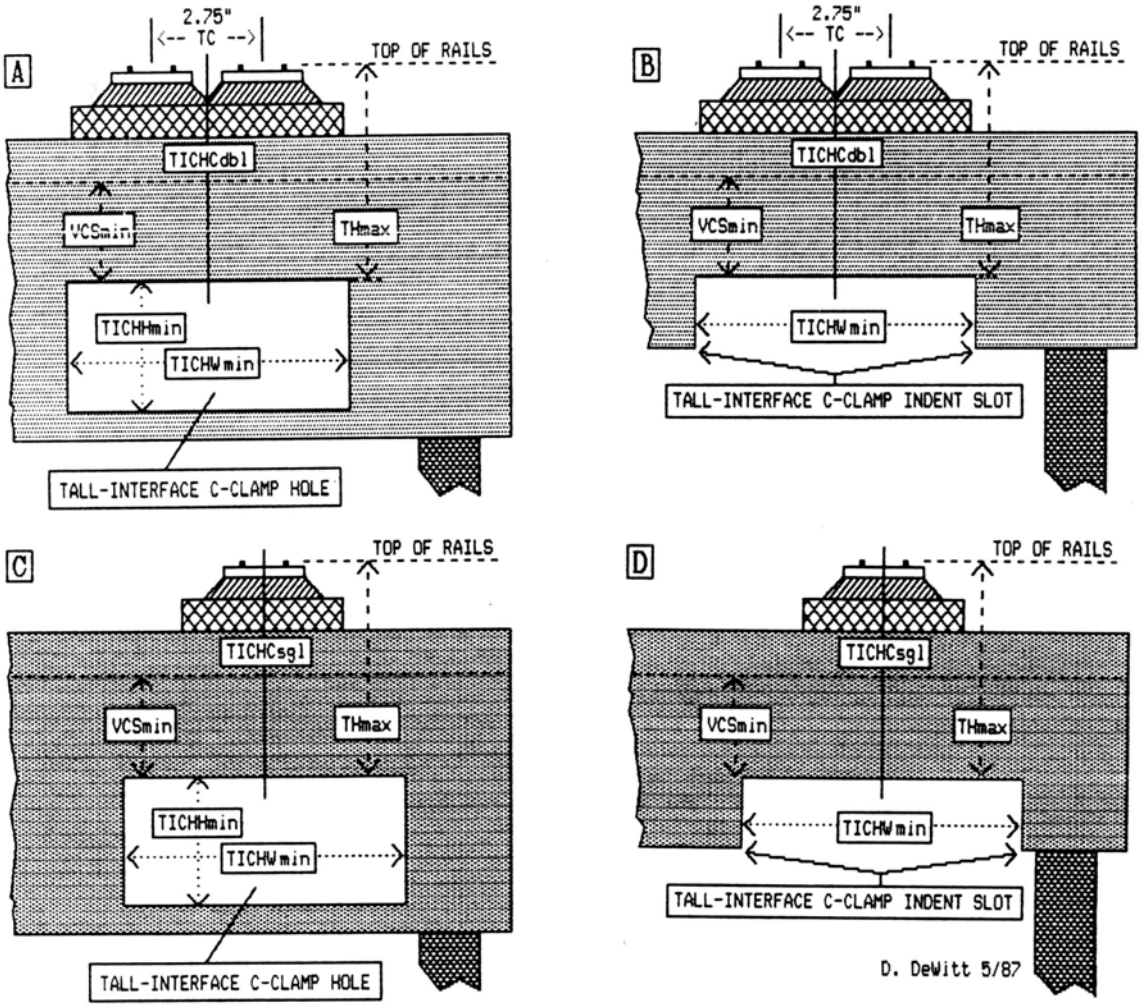


Figure P2

2) PERMANENT TRACK APPROACHING THE INTERFACE TRACK CENTERS (TC) - When there are two mainlines, the distance between centerlines of the mainline tracks at the interface.	TC: 2-3/4"

3) BRIDGE RAILS	
a] BRIDGE RAIL ALLOWANCE (BA) - The dimension from the module interface edge to the end of each track which will cross the interface. BA is equal to ½ the BRIDGE RAIL LENGTH. The BA area is made of wooden ties that are stained and ballasted.	BA: 2"*
b] BRIDGE RAIL LENGTH (BL) - The length of the removable rail sections which span the interface when adjacent modules are joined.	BL: 4"*
c] INTERFACE TANGENT LENGTH (TL) – Interfacing tracks shall cross the interface at a 90 degree angle, with zero grade, and tangent (straight) for a length equal to BA + 1 inch.	TL: 3"*
4) PHYSICAL ATTACHMENT OF MODULES AT THE INTERFACE**	
a] CLAMP (C) - The maximum opening for the C-clamp.	C: 3"
b] TRANSOM HEIGHT (THmin & THmax) - The dimension from the railhead to the bottom of the framing of the interface transom.	THmin: 3-3/8" THmax: 5"
c] TRANSOM THICKNESS (TM) - The maximum thickness of the interface board of the transom.	TM: 1"
d] LATERAL C-CLAMP SPACE (LCSmin) - The dimension between the interface transom and the first cross brace.	CSmin: 6".
e] VERTICAL C-CLAMP SPACE (VCSmin) - The dimension from the top to the bottom of the interface board.	VCSmin: 2-3/8"
f] TALL-INTERFACE C-CLAMP-HOLE/SLOT (See Fig. P3)	
1. DOUBLE-TRACK MODULES	
- CENTER (TICHCdbl): The center dimension of the hole or indent slot cut into tall interface boards.	TICHCdbl: Center line between tracks
2. SINGLE-TRACK MODULES	
- CENTER (TICHCsgl)	TICHCsgl: Center line of track
3. ALL MODULES	
- WIDTH (TICHWmin): The MINIMIUM width of the hole or indent slot cut into tall interface boards.	TICHWmin: 7"
- HEIGHT (TICHHmin): The dimension from the top to the bottom of a TALL-INTERFACE C-CLAMP-HOLE.	TICHHmin: 3"

Figure P3



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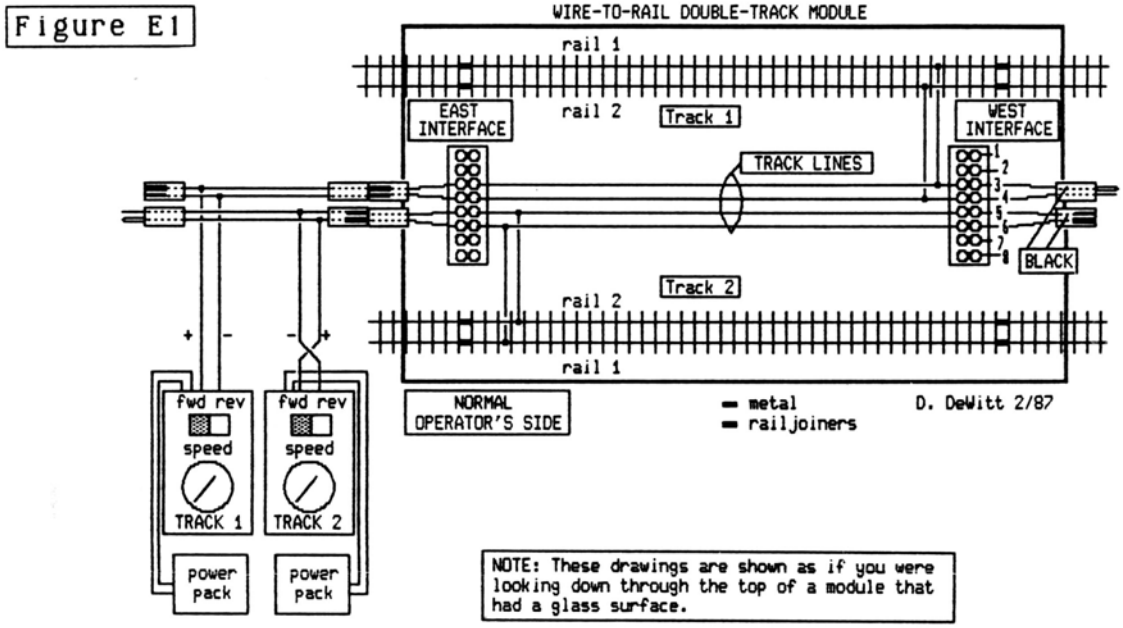
[*] *Interface Standard B3 is mandatory for modules built after July 3, 1987. Modules built earlier are allowed to have a BA= 2-3", a BL = 4-6", and a TL = 3-4". Owners of these modules are responsible for the bridge rails at ALL interfaces of their module.*

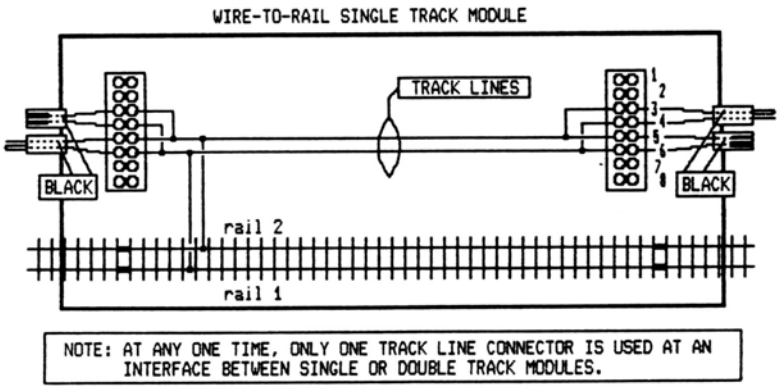
II. S-MOD ELECTRICAL MODULE STANDARDS (S-10 STANDARDS) (Approved 7/3/87)

A. INTERFACE TERMINAL STRIPS	Value
1) TERMINAL STRIP POSITIONS (TSmin) - The minimum number of positions on the dual row TERMINAL STRIP at each INTERFACE where the TRACK and CAB WIRES connect, and where the leads for the MODULE INTERFACE-CONNECTORS are attached.	TSmin: 8
2) TRACK LINE POSITION (TLP) - The numbered location of wires for the TRACKS on the TERMINAL STRIP (Figure El).	TLP: 3-6

S-MOD MODULE WIRING SCHEME
WIRE-TO-RAIL One Cab/Track Control System

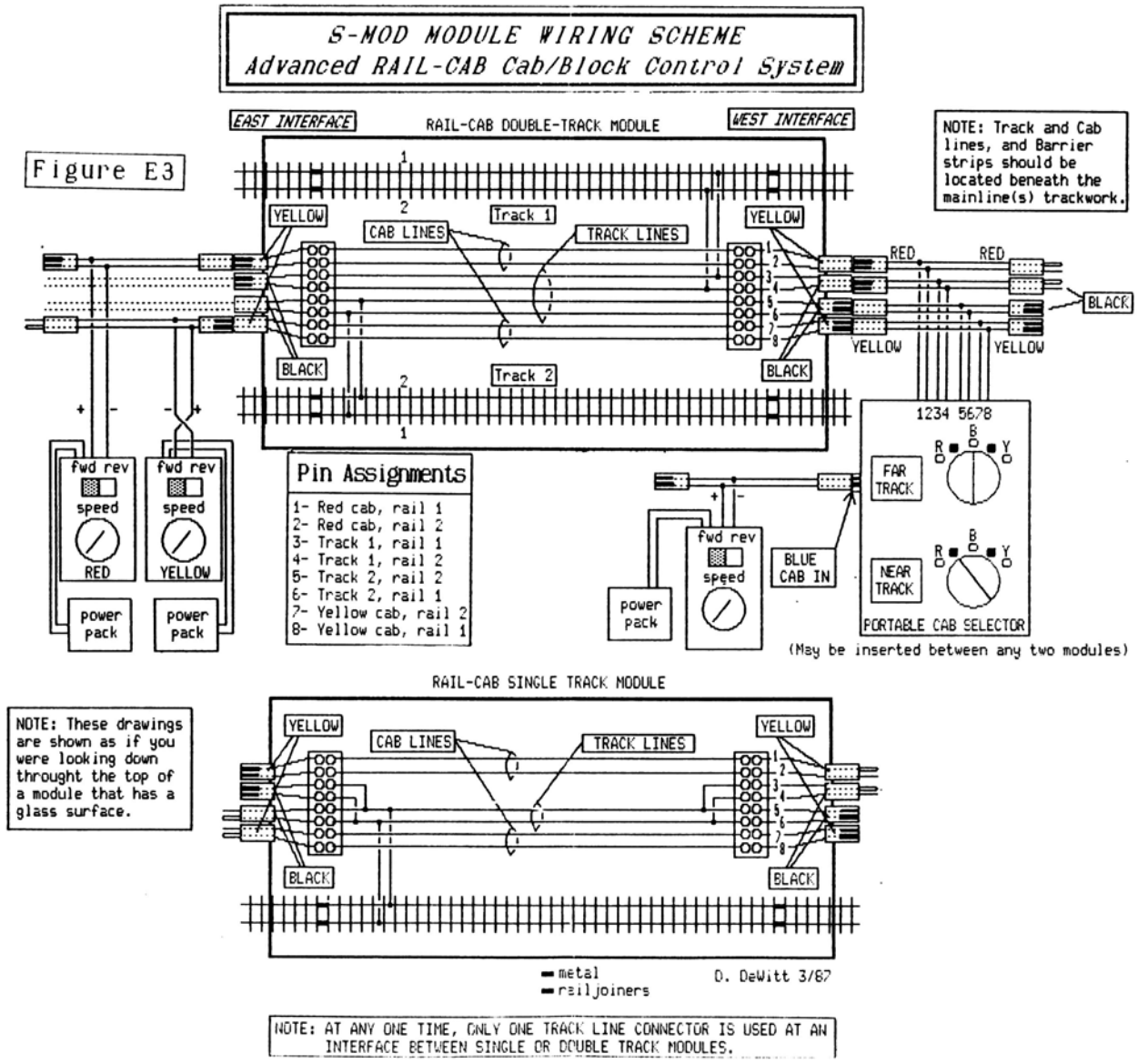
Figure E1





3) SINGLE TRACK JUMPERS (STJ) - The wires used to cross-connect the pair of TRACK LINE CONNECTORS at each interface of SINGLE TRACK MODULES (Figure El). — STJ: 3&5 4&6

4) CAB LINE POSITION (CLP) - The numbered location of wires for the CABS on the TERMINAL STRIP (Figure E3). (RAIL-CAB Modules ONLY.) — CLP: 1,2,7,8



B. MODULE INTERFACE-CONNECTORS

1) MODULE INTERFACE-CONNECTOR CONFIGURATION – Figures El & E3

2) INTERFACE PLUG (IP) is the male connector used to carry current between adjacent modules. — IP: Cinch P302-CCT or Radio Shack 274-201

3) INTERFACE RECEPTACLE (IR) is the female connector used to carry current between adjacent modules. — IR: Cinch S302-CCT or Radio Shack 274-202

4) TRACK-CONNECTOR COLOR (TCC) is the color of TRACK LINE connectors at the interface. — TCC: BLACK

5) CAB-CONNECTOR COLOR (CCC) is the color of CAB LINE connectors at the interface. (Figure E3). (RAIL-CAB Modules ONLY.) — CCC: YELLOW

C. WIRING BETWEEN INTERFACES IN A MODULE

1) All track associated wiring shall be discrete. There shall be no "common rail" connections.

2) The TRACK and RAIL NUMBER assignments are shown in Figure El.

3) SINGLE-TRACK-MODULE TRACK LINES (STL- The ONLY TRACK LINES that run between TERMINAL STRIPS in SINGLE TRACK modules (Figure El). — STL: 5 & 6

4) TRACK & CAB LINES MINIMUM GAUGE WIRE (TCLGmin) – The minimum size wire that shall be used in TRACK and CAB LINES or in ANY KIND of INTERFACE CONNECTOR CONFIGURATION. — TCLGmin: 16 ga.

5) FEEDER WIRE (Fwmin) – The MINIMUM number of wires used to electrically connect each piece of rail to the TRACK LINES. — Fwmin: 1

MINIMUM FEEDER WIRE GAUGE (FWGmin) – The minimum size wire used when only one feeder wire is used per piece of rail. — FWGmin: 20 ga.

D. THROTTLES

1) COLOR CODES

a] Throttles will be color coded AFTER connection with the CAB LINES (RAIL-CAB Subsystem) or TRACK LINES (WIRE-TO RAIL Subsystem) by affixing colored stickers (such as Avery Self Adhesive Color Coding Labels available at most stationery stores).

b] MAINLINE CAB A COLOR CODE (MCACC) – Color code of one mainline throttle as used in the RAIL-CAB subsystem. — MCACC: RED

c] MAINLINE CAB B COLOR CODE (MCBCC) – Color code of second mainline throttle. — MCBCC: YELLOW

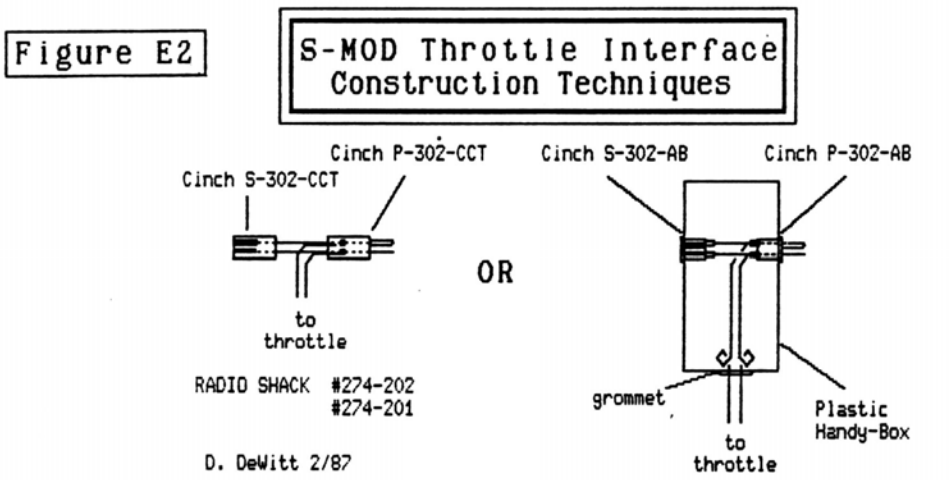
d] LOCAL CAB #1 COLOR CODE (LC1CC) – Color code of first local throttle as used in the RAIL-CAB subsystem. — LC1CC: BLUE

e] LOCAL CAB #2 COLOR CODE (LC2CC) – Color code of second local throttle. — LC2CC: WHITE

f] LOCAL CAB #3 COLOR CODE (LC3CC) – Color code of third local throttle. — LC3CC: GREEN

2) THROTTLE INTERFACE-CONNECTORS

a] THROTTLE INTERFACE-CONNECTOR CONFIGURATION – (Figure E2)



b] CONNECTOR COLOR CODE (TICCC) - Color of the THROTTLE INTERFACE-CONNECTORS. — TICCC: BLACK

3) THROTTLE CONSTRUCTION

NO throttle shall be used which does not have overload protection.

E. PORTABLE, CAB-SELECTOR-PANEL INTERFACE-CONNECTORS

1) INTERFACE CONFIGURATION - (Figure E3)

2) INTERFACE-CONNECTOR COLOR CODES - (Figure E3)

RED Cab Line Input (RCLin)	RCLin: RED
Track 1 Output (T1OUT)	T1OUT: BLACK
Track 2 Output (T2OUT)	T2OUT: BLACK
YELLOW Cab Line Input (YCLin	YCLin: YELLOW

F. BLOCK DELIMITATION

BLOCK GAPS shall be made either:

1) by installation of insulated rail joiners in both rails of each track, and disconnection of TRACK LINE CONNECTORS, or,

2) by installation of permanent insulated gaps in both rails of each track, and installation of BLOCK DELIMITING SWITCHES on the module.

III. S-MOD OPERATIONAL STANDARDS (Approved 7/3/87)

A. RESPONSIBILITIES OF A MODULE OWNER BEFORE ARRIVING AT A MODULAR LAYOUT MEETING.

BEFORE the day of the layout construction, it is the responsibility of a module owner to provide a layout coordinator with the following information about all modules that the owner will be bringing to the meet.

1) TRACK PLAN and MODULE DIMENSIONS

2) RAIL SIZE (code 148, 125, 100, etc.)

3) PRESENCE OF TURNOUTS

   a] TYPE OF TURNOUT (closed or open frog)

   b] SIZE OF TURNOUTS USED TO CREATE SIDINGS OFF OF MAINLINES: UNRESTRICTED TURNOUTS used to create sidings off of the mainlines are those that have #6 or larger frogs. All turnouts made using lesser numbered frogs are considered RESTRICTED TURNOUTS.

   c] SIZE OF TURNOUTS USED IN MAINLINE CROSSOVERS: UNRESTRICTED MAINLINE CROSSOVERS are those made from #8 turnouts or larger. All crossovers made from lesser numbered turnouts are considered RESTRICTED CROSSOVERS.

   d] DISTANCE OF TURNOUTS FROM THE INTERFACE: If the points of a turnout are closer than 8 inches from the interface edge, the turnout may become RESTRICTED if it is placed adjacent to another module with a turnout that creates a S-curve condition.

   e] DISTANCE BETWEEN TURNOUTS PLACED POINT-TO-POINT: If the points of a PAIR of RIGHT HAND or a PAIR of LEFT HAND turnouts are closer than 16 inches, then a RESTRICTED S-curve condition will exist.

4) PRESENCE OF DIAMONDS, GAUNTLETS, ROAD CROSSINGS OR GUARD RAILS

5) CURVED MODULES

   a] TRACK-RADII

   b] LENGTH OF TANGENT LENGTH IF LONGER THAN STANDARD If the Tangent Length is less than 8 inches, then the module will create a RESTRICTED S-CURVE condition if used with any other curved module with a TL less than 8 inches.

6) SETBACK DISTANCE: The distance of track(s) from the VIEWER'S SIDE of the module.

7) PRESENCE and HEIGHT OF A SKYBOARD

B. RESPONSIBILITIES OF A MODULE OWNER AT A MODULAR LAYOUT MEETING.

It is the responsibility of a module owner to supply the following items:

1) C-CLAMPS.

   a] If a module has TWO INTERFACES with Standard Interface Dimensions, TWO C-clamps for one end of the module, and TWO extra C-clamps for every additional Interface (for example, a Y-module).

   b] If a module has Non-standard Interface Dimensions that require C-clamps other than the standard 3-inch clamp, TWO non-standard C-clamps FOR EVERY INTERFACE that will connect with other modules that have Standard Interface Dimensions.

2) BRIDGE RAILS

   a] The appropriate number of bridge rails for each interface.

   b] If requested by the layout coordinator, the appropriate number of Transition bridge rails for each interface.

3) LEGS. If a module requires legs, then a MINIMUM of TWO LEGS to support one end of the module.

4) ACCESSORY POWER. All power supplies for lighting, switch machines, sound systems, etc.

S-MOD System Update

Common questions asked about S-MOD Modules.

1. What size should my module be? What are the standards for these dimensions?

We specifically tried to minimize the standards when we developed them. We did not include these module dimensions as standards to allow for flexibility. As a guide, the following Recommended Practice should be helpful.

MODLength MIN = 2 ft.
MODLength MAX = 8 ft.

The minimum length could be less than 2 ft, but that is usually done only for special circumstances such as special spacer modules. If you wish to build a very small module, then a 2 ft long module is helpful, because it allows us to include it with other 2 ft, or 6, or 10 or 14 ft modules, etc. to construct a loop layout made of modules that are multiples of 4 ft length.

The maximum length is actually dictated by your carrying capacity. For most, a maximum length of any one section of a multiple-section module, or a maximum length of a single section module, is 8 ft. However, for example, a 16, 24 or 32 ft. multisection module is completely acceptable. If you choose to use a length of 6 ft, you should realize that most modules are 4, 8, 12, 16, 20, 24, or 32 ft. long. If you wish to have your 6 ft. module used in a loop layout, then another 6 ft. module, or at least a 2 ft. module, will be required. This second module may or may not be available for that layout and thus you may be excluded.

MODWidthMIN = 1 ft.
MODWidthMAX = 3 ft.

The minimum width could be even less than 1 ft., but that is used primarily for special modules such as bridges. A useful minimum width for a module is 15 inches. This type of module is symmetrical on both sides of the tracks to the edge, if you are using the Recommended Practice of a 7-1/2" Setback Distance (see Item 2 below).

The maximum width of 3 ft. is suggested because it is difficult to reach across a module any wider than this. The most common widths are either 2 ft. or 2 ft. 6 inches.

2. What distance should I place my mainline tracks from the front edge of my module? What is the standard/or this distance?

Again, we specifically tried to minimize the standards when we developed them to allow for maximum flexibility and minimum aggravation. As a guide, the following Recommended Practice should be helpful.

RECOMMENDED SETBACK DISTANCES

To center Line between Mainlines in a Double Track Module with a 2 3/4 inch Track Center (TC) Distance between mainline =7-1/2"

To center Line of Mainline closest to outside edge =6-1/8"

To center Line of Mainline farthest from outside edge = 8-7/8"

Figure RP1

