

## Requirements and Best Practices:

Below are the basic requirements and best practices for the construction of a module for inclusion in the SWSC modular layout.

Requirements are essentially the basic rules for building a module that need to be adhered to ensure compatibility with other member's modules or equipment. These requirements are not meant to exclude people or be a burden, but instead to maintain a certain level of reliability and allow all members to have enjoyable time. If you have any questions or concerns about a particular requirement please feel free to ask the membership.

Best Practices are primarily suggestions to improve the quality and durability of your module or equipment. It is not required that you follow a best practice, but it is recommended. These best practices reflect the lessons learned from our own and other's previous mistakes.

### Overall Dimension Requirements:

**Width:** 2'-6"

**Length:** "L" can vary from 2' to 8' in whole 2'-0" increments. (4' & 6' preferred)

**Height:** 40" from floor to top of rail (Legs shall provide min. +/- 1" adjustment)

#### **Track Locations:**

Centerline of Track 1 (outside main) shall be 5" from front of module

Centerline of Track 2 (inside mains) shall be 2" from centerline of Track 1. (7" from front)

Centerline of any track running parallel to the main track shall be a minimum 2" from the centerline of the adjacent main track.

**Back Drop Height:** Back drop shall be 14" from top of benchwork. (Top of bench work is defined as the bottom elevation of the cork roadbed on the main tracks, typically the top of the plywood.)

### Main Track Work Requirements:

**Roadbed:** Both main tracks shall be laid on Midwest Products HO scale cork roadbed running the full length of the module.

**Track:** Both main tracks shall be HO Scale Code 100 Nickel Silver flex track.

**Switches:** Main track switches shall be new HO Scale Code 100 Peco and Shinohara switches. Any switch carrying mainline traffic on the diverging route shall be a medium or large radius for Peco, or a #6 or greater for Shinohara. Shinohara switches shall have a switch machine or ground throw to maintain point alignment.

**Curves:** Minimum 40" radius on all main line tracks.

**Connector tracks:** All main tracks shall end 1½" from the edge of the table to allow for a 3" HO Scale Code 100 Nickel Silver connector tracks between modules. *Best Practice Note: If two modules are owned by the same individual and are designed to routinely work together as a single unit, the owner of these two modules may use a different track connector design between these two adjacent modules only. The owner of these modules must be prepared to provide modified connector tracks in case the need arises to separate the modules.*

### **Wiring Requirements:**

**Isolation:** All track and track wiring shall be isolated into three power districts: 1) Track 1 or outside main, 2) Track 2 or inside main, and 3) Branchline or all tracks outside of the main tracks. Insulated joints (plastic or airgaps) shall be installed on any crossover tracks connecting the two mains, and any branch line tracks connecting to main track.

**Bus Wires:** Each module shall have three (3) set of two (2) bus wires running the full length of the module. Bus wires shall be 14 gauge or better (12 gauge is preferred). One set will power the outside Track 1 power district, one set will power the Track 2 power district, and one set will power the Branchline power district.

**Feeder Wires:** Each main track shall have at least one set of 20 gauge feeder wires connecting both rails to the appropriate bus wire. Pre-wired feeder rail joiners, such as those available from Atlas, are acceptable. *Best Practice Note: Preferably feeders shall be installed for every 3' of track, with at a minimum of two feeder drops per track per module. Preferable feeders shall be provided on the point side of all main line switches to reduce dead spots of switches. The length of the feeder from rail to bus wire should be keep to a minimum.*

**Electrical Connectors:** Modules shall utilize XXXXX Brand 6-prong connectors. Instructions for wiring the connector is below. When facing the front (crowd side) of the module, the male connector shall be on the RIGHT side of the module and the female connector shall be on the LEFT side.

### **Misc. Requirements:**

**Backdrop Color:** The base color of the backdrop shall be the ACE Hardware *Florida Sky* as supplied by the SWSC.

**Skirts:** Every module shall have a black cloth skirt on the front of the module running down to the floor for the full length of the module.

**Clamps:** Each module owner shall provide at least four clamps to secure their modules to the adjacent modules. The size and configuration of the clamp shall meet the requirements needed to secure the owners module to an adjacent module with an unobstructed 1"x4" end board.

**Scenery Clearance:** All scenery and structures adjacent to the main line shall meet the clearance requirement of the NMRA Mark IVb Gauge.

### **Equipment Requirements:**

**Scale:** All equipment shall be standard gauge HO Scale (1:87 scale) to operate on the main tracks.

**Three Strikes Rule:** If a particular piece of equipment derails or becomes uncoupled more than three times during operation it shall be removed from operation until the defect causing the failure is corrected.

### **Bench Work Construction Best Practice:**

- a. All lumber should be new, dry, premium grade pine, or if desired, hardwood.
- b. The base for the main tracks should consist of a minimum of ½” plywood.
- c. Homasote and particle board should be avoided for a main line base. Both are very susceptible to the changes in moisture that are common in the transportation and operation of module railroads. If homasote is used it should be fastened and glued to a plywood subbase secured to the benchwork, and not secured directly to the benchwork.
- d. All benchwork joints should be glued as well as secured with no less than two (2) wood screws of sufficient length to provide ¾” of embedment in the piece being joined to.
- e. All benchwork should be painted to seal out moisture.
- f. A wood screws should be installed into appropriately sized pilot holes.
- g. Check, double check, and triple check that your benchwork is square. If you are using an open benchwork design, provide a means to keep the benchwork square.
- h. To aid in the transportation of larger modules it may be advantageous to install handles and casters onto the benchwork.

### **Scenery Best Practice:**

- a. Try to avoid extensive use of plaster or hydrocal in the construction of scenery because these materials add weight and are brittle. Preferably hills and other ground features should be carved from insulation foam and plaster applied only in those areas where exposed rock is going to be modeled.
- b. All main tracks should be ballasted with a variation of CNW Pink Lady Ballast. Scale Reproductions of Sheboygen, WI and Mountain Modelcraft both produce variations of this type of ballast. Ballast should be a fine gradation.
- c. The overuse of adhesive is highly recommended. Any piles or trails of scenery material that originate from your module are your responsibility to clean-up. Avoid materials that can stain – e.g. iron ore dust!

### **Equipment Best Practice:**

#### **Locomotives:**

- a. **The SWSC layout is primarily operated in DCC mode.** Preferably all locomotives will be DCC equipped. DC locomotives are acceptable, but the operator of DC locomotives will be subject to certain restrictions on the number of DC locomotives being operated at a given time.
- b. Locomotive wheels should meet current NMRA standards for gauge and flange depth. Some out of gauge will be allowed if it does not adversely affect operations.
- c. Locomotive couplers should be Kadee #5 or similar sprung knuckle coupler. Coupler height should meet NMRA requirements.

- d. Preferably all locomotives will have flywheel drives and all wheel electrical pick-ups. Locomotives with rubber traction tires that can dirty the track are discouraged.
- e. There are no restrictions on the size, type, era, roadname, or nationality of any particular locomotive, though I personally really dislike the Guilford and am liable to cause a mishap resulting in the destruction of a Guilford locomotive.

**Cars:**

- a. Car couplers should be Kadee #5 or similar sprung knuckle coupler. Coupler height should meet NMRA requirements.
- b. Car wheels should meet current NMRA standards for gauge and flange depth. Some out of gauge will be allowed if it does not adversely affect operations. Preferably, cars should be equipped with metal wheels.
- c. Cars should be weighted to meet the NMRA requirement of 1oz + ½oz for each inch of length.
- d. There are no restrictions on the size, type, era, roadname, or nationality of any particular car.