the S-MOD-SYSTEM of "MODULE" RAILROADING

by Don Dewitt & Don Thompson with illustrations by DOUG MILLER

In a previous issue we discussed the plan and installation of the track work. Whether the module, which may contain more than one section, will be part of a layout at shows or meets, or whether it is used at home, it must be wired for compatibility with other S-MOD System modules. This time, we will outline how to set up the interconnecting electrical system.

UNDERSTANDING THE S-MOD WIRING SYSTEM

Lets assume that our module consists of three sections. West End, the Center and the East End. For simplicity, only the two mainline tracks are shown. The basic interconnect wiring is the same regardless of the size and complexity of each section.

(The S-MOD system allows for two types of modular layout operation: Rail Cab and Wire to Rail method. We will cover Rail Cab in this article).

The S-Mod System requires special electrical connectors at places where there is an interface with another S-MOD module. Otherwise, the intersectional interfaces, which have no outside connection are compatible only to themselves. Only the outside sections have S-MOD interfaces as shown in *Figure 1.* Thus the electrical connection between sections are not the same as those at the interfaces. We will work with the connectors at each interface first.

There are four two-conductor connectors at each interface. They are Radio Shack P/N 274-201 and P/N 274-202. (Or Cinch-Jones P302-CCT and S302-CCT [available at other electronic suppliers). Half the connectors are plugs and half are receptacles. These connectors are the only types allowable in the S-MOD SYSTEM.

MAKING THE DROP CORDS

Examine the connectors in *Figure 2.* You will find that each has a large and a small pin or socket. A length of heavy duty "zip" cord, (Radio Shack P/N 278-1384), is soldered to each connector. First, examine the zip cord. you will find that the insulation on one wire is rough and the other is smooth. By convention, we attach the rough wire to the large pin or socket of each wire, (and the smooth to the other). The length is determined by how far the terminal strip is located from the end of each section. (18" or more should be sufficient). The loose ends of the wires have spade lugs. These are Radio Shack P/N 64-3043. Caution should be exercised here. Although these connectors can be crimped onto the wire, we have found that repeated use will tend to cause the lugs to work loose. Therefore, to insure a permanent bond, solder them in place. Upon completion of this task, you should have four plug and four receptacle "drop cords". The interconnecting hardware.

The hardware used in this exercise is different than the S-MOD interface connectors for economy. Since the sections between interfaces will never be used separately, a less expensive interconnect is used. Cinch-Jones P308-CCT and S308-CCT are recommended for the connections between A & B and B & C. These are available at an electronics supply store. (As an alternative, Radio Shack 4 conductor plugs can be used, P/N 274-204 & 205, but twice as many are needed).

Figure 3. shows how these 8-wire drop cords are made. For both intersection interfaces, you will need two each of 8-conductor plugs and receptacles, sixteen lengths of zip cord and thirty-two spade lugs.

ADDING TERMINAL STRIPS AND JUMPERS

First, establish the viewer's side of the module. With the module upright, stand on the side that the West section is to your left. This is the viewer's side. This is important to the wiring instructions that follow. Then turn the sections over on a flat surface. Attach two dual row terminal strips, Radio Shack P/N 274-670, near

S-MOD INTERFACE

These are the plugs and receptacles shown in Figure 2.

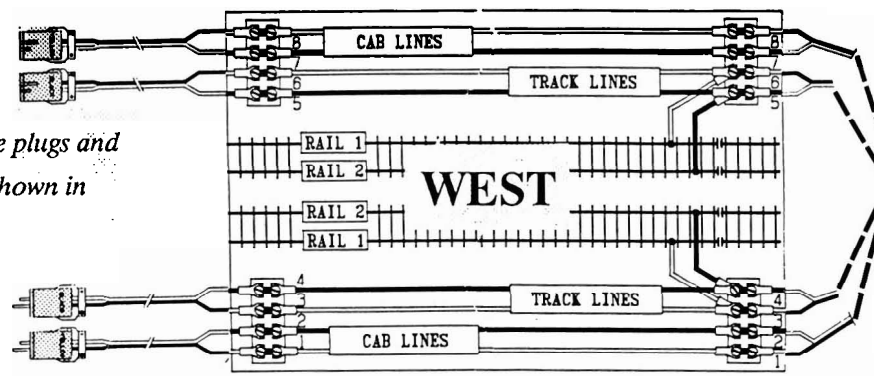
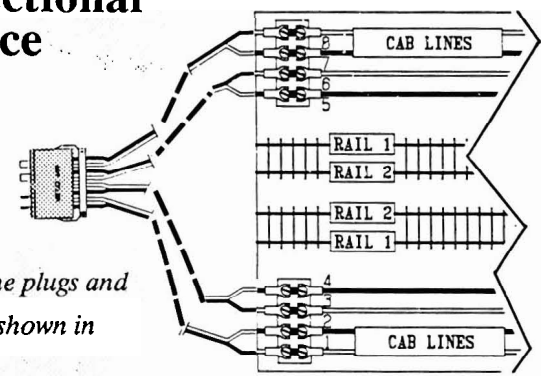


Figure 1.

Intersectional Interface

These are the plugs and receptacles shown in Figure 3.



S-MOD INTERFACE CONNECTOR ASSEMBLY

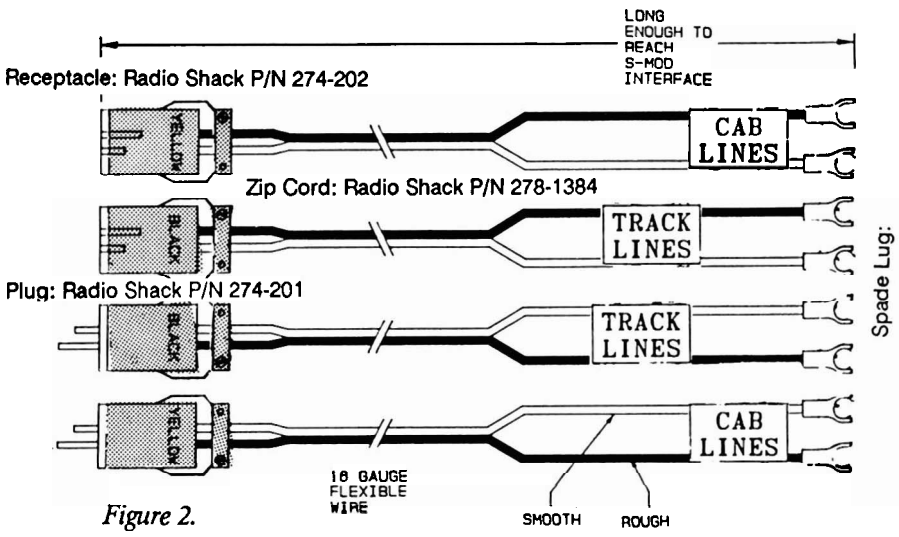


Figure 2.

INTERSECTIONAL INTERFACE CONNECTOR ASSEMBLIES

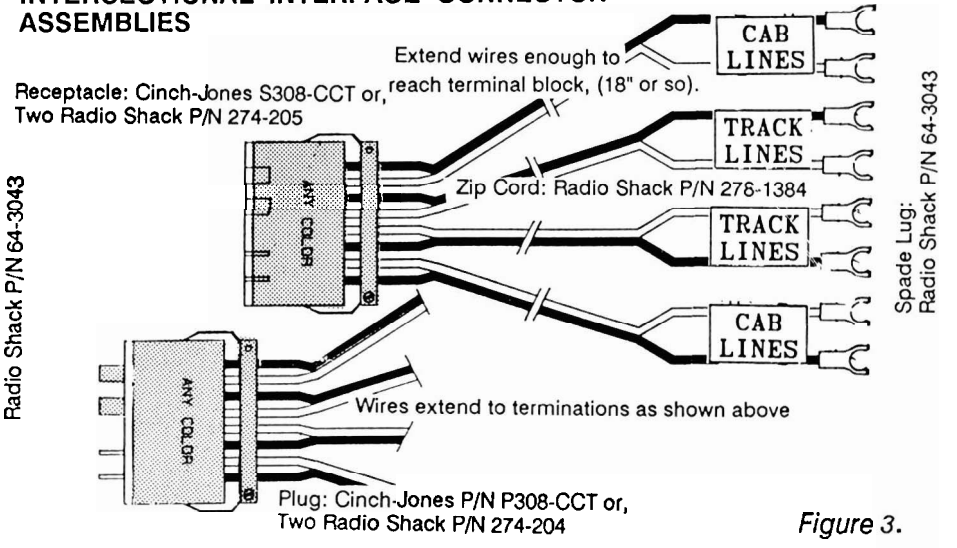


Figure 3.

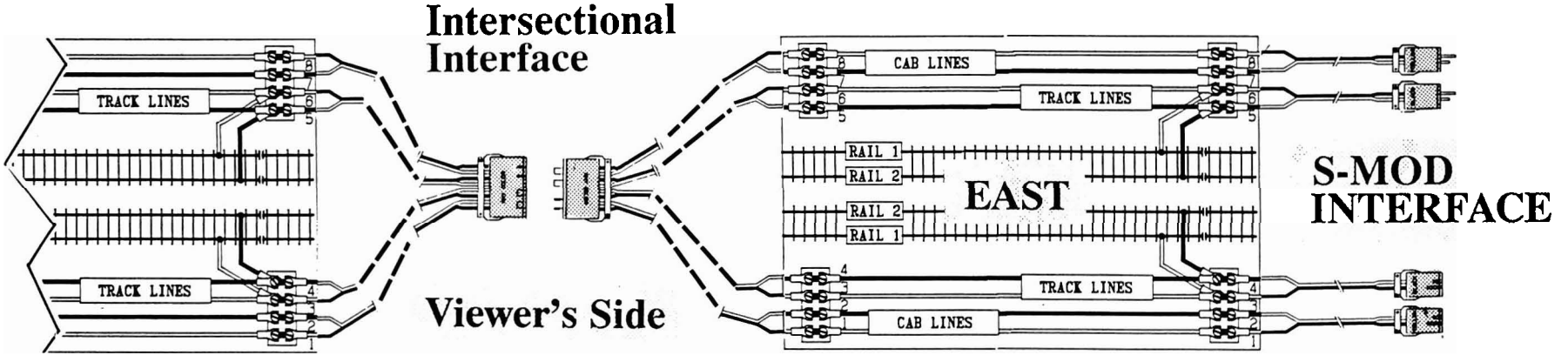
each end of each section beneath the mainline tracks. Number position 1 closest to the viewer's side. (Remember to locate the strips no closer than 6" from either end of the section. This will allow clearance for the C-clamps that lock each section together).

Then make four two-conductor zip cord jumpers for each section, (four for each section), to connect the terminal strips together. Terminate the wires with spade lugs as before. These can be attached to the strips upon completion. When placing the wires, the rough insulated conductor should be attached to terminal positions 1, 3, 6, and 8, (see *Figure 1.*). When finished, each section should have two terminal strips, four 2-conductor jumper wires and sixteen spade lugs.

ATTACHING S-MOD INTERFACE DROP CORDS

We know which side of the module is the viewer's side, now let's establish East and West. With the module upright, stand on the viewer's side. Mark the left end West and the right end East. Be sure to transfer these labels to the underside of each section.

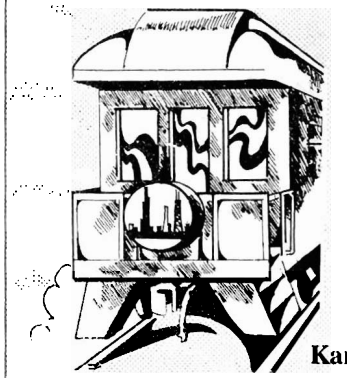
The next step is critical. Care must be taken to attach the S-MOD interface cords in the proper manner Begin with the West end terminal strip of section A. (See *Figure 1.*) Attach the drop cords with the plug connectors to terminal strip positions 1/2 and 3/4. Observe in *Figure 1.* that the large plug wires are connected to positions 1 and 3. Next, the drop cords with the receptacles are attached to positions 5/6 and 7/8. Again, observe the orientation in *Figure 1.*



...continued on the next page...

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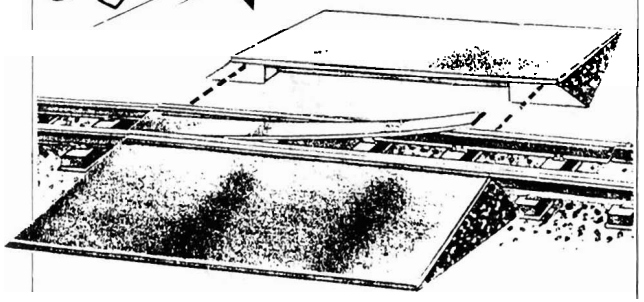
Dave Engle, 876 North Troost,
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Midnight Modeler

by Erin Donnelly

GRADE CROSSING
FROM CARDBOARD



A simple grade crossing can be mad from a few scraps of strathmore. Cut the stock to fit the roadbed, then make a filler section to go between the rails. Glue the ramps in place and paint black.

...S-MOD continued...

Now go to the East end of section C. Receptacle connectors are attached to positions 1/2 and 3/4 in the same manner as above. The plug connectors are similarly attached. When finished you should have sections A & C wired as such that at either S-MOD interface, the plug are always on the right and the receptacleare always the left. This configuration makes the module electrically reversible.

ATTACHING THE DROP CORD BETWEEN SECTIONS

Once you have gained experience in the technique of installing the drop cords, the rest is straight forward. Just be sure that the terminal position 1 is connected to the 8-conductor plug or receptacle. Follow the diagram in *Figure 1.*

ASSUMING A MISTAKE HAS BEEN MADE

All of us are prone to making mistakes, especially where wiring is involved. Therefore, we shall address testing the electrical system.

To make the test, a sixteen foot length of flexible wire with an alligator clip soldered on either end and a volt-ohm meter is required. First, connect all three sections together. Attach one alligator clip to the meter probe, then insert a piece of 22 ga. wire into the receptacle wired to position 1 at the East end. Attach the other alligator clip to this wire. Then take the other meter probe and touch it to the large pin connected to position 1 at the West end. The meter should read low resistance, (short). This is good! Then touch positions 2 through 8 at the West end to be sure that line 1 is isolated from all the other lines. Repeat this process with lines 2 through 8. If any wire is connected wrong, the meter will show infinite resistance, if wires are not isolated along the terminal strip, a short will show.

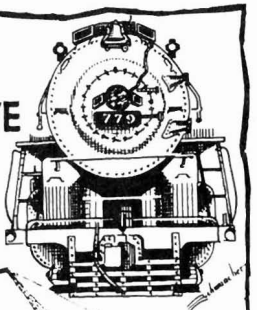
SAGE ADVICE

Do not skip this testing exercise. It is often neglected by module builders and invariably leads to problems, (usually at a meet when the module is hooked up for the first time). Note that it must be done before any track wiring is undertaken. The ramifications are obvious. This is part of module building that may be unappetizing, but the results are worth the effort.

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