

Northern Virginia NTRAK "How-To" Article

ROADBED AND LAYING TRACK JULY 2019 BY JIM DAVIS

This article discusses installing cork roadbed and laying straight track on a module. Installing turnouts will be covered in a separate, more focused article. It is assumed that you have a solid and very level sub-roadbed to work on at the start of this part of the module construction. This can be the plywood deck installed on the module, or if a foam layer was added, plywood strips laid on or in the foam. Any deficiencies should be corrected before trying to lay track, since it is very hard to compensate for irregularities during this phase of construction.

Caution: Do not lay the roadbed directly on a layer of foam. The foam is not structurally sound and will sag or deform over time. The foam will not hold nails or glue well.

At a NTRAK modular railroading train show, when the modules have all been hooked together there are, as a minimum, three main lines that go around the entire layout. On a module, these "community lines" must be carefully laid and operate properly. Poor track work on any main line that causes frequent derailments or electrical issues affects train operations on the entire layout. On the other hand, a problem on a module's branch line does not impact main line operations.

Tools: In addition to the normal set of tools most people have, there are some special tools that are useful in laying track on an N-Scale module.

- **Small hammer.** Used to start the track nails.
- **Angle Pliers:** Very useful in starting nails straight. The jaws of the pliers are taller than the rails reducing the chance of striking the rails with the hammer, making a dent that takes a lot of effort to sand out.
- **Nail Set or Spring-Loaded Nail Set:** A standard nail set and a small hammer can be used to set the track nails below the rails. A spring-loaded nail set provides very precise control in setting track nails.
- **Rail Nippers:** Used to make a clean cut on the track rails.
- **Chip Lifter:** A forked tool that is useful in adding and removing rail joiners.
- **Flat File:** Used to square the ends of the track that has been cut and to make small length adjustments.
- **Pin Vice Drill:** You may need to drill new holes for nails in short sections of track.
- **Soldering set:** A 25 to 30 watt soldering iron with a narrow point, small size rosin core solder and a package of rosin. These are needed to solder rail joiners, and later to attach electrical wire to the track.



Roadbed: We use cork to represent the ballast roadbed. There are some commercial foam rubber roadbed products which are too soft and spongy for use on a show module. The cork comes in 36-inch lengths and has a pre-cut split in the middle. The two halves are then mated to form the roadbed. The centerline between the two halves will be used as a guide for laying track, so the roadbed needs to be aligned carefully.

The NTRAK standards call for three parallel main lines on each module. The center of the front line, called the "Red Line", is to be located 20-inches from the back of the module. The next line, the "Yellow Line" is 18 1/2-inches from the back, and the third line, the "Blue Line" is 17 inches from the back of the module.

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Maintaining the centerline to centerline spacing of 1 1/2-inches is key to the tracks lining up between modules.

In this picture, the Blue Line track, on the right side, is not aligned properly and will not mate well with the track on the next module. This section of track had to be replaced



1. Carefully measure the centerline for the Red Line 20-inches from the back of the module. This would also be 4-inches from the front if that is easier. Use a straight edge and draw the centerline. It will be used to align the roadbed.

2. Mark the center of the Yellow Line and Blue Line with 1 1/2-inch spacing from the Red Line.

3. Cut the two halves of the 36-inch sections of cork apart with a sharp knife. Just pulling them apart will leave ragged edges. Sand the two pieces as necessary to restore the even slope.

4. One piece will be a little wider than the other. Mark the wider pieces to use towards the front of the module and the other piece towards the back.

5. Use full strength white glue and glue the front piece of cork roadbed down, using the Red Line centerline as a guide. A four-foot straight edge can speed the process but is not essential.

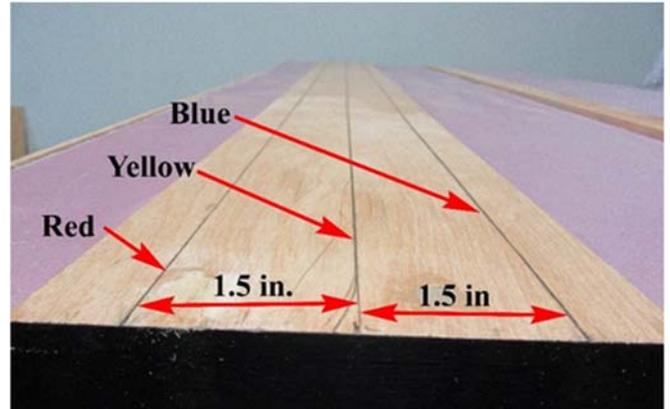
6. Use short pins, available for craft stores, to tack the cork down every two inches to hold it in place until the glue dries. Let the cork hang over the end of the module slightly and ensure the ends are glued down firmly.

7. Using the front piece as a guide, immediately glue down the back piece of cork roadbed and pin it in place. If the glue for the front piece dries, it may prevent a close fit of the two pieces of cork.

8. In a similar manner install the roadbed on the other two lines.

9. Allow the glue to dry overnight, then remove the pins and cut the ends of the roadbed flush with the end of the module.

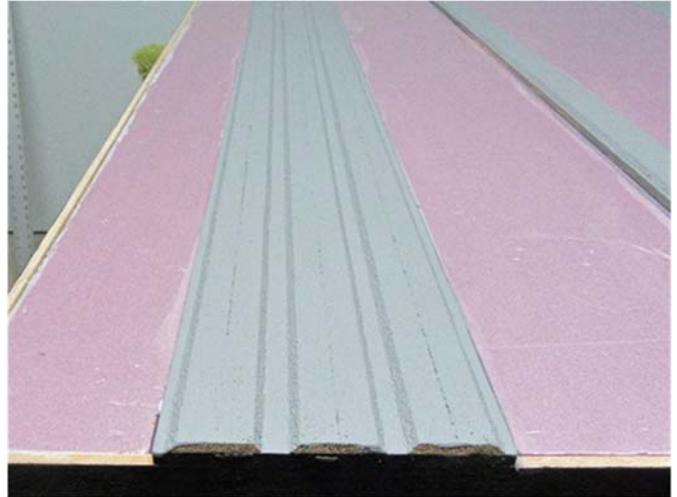
10. Sand the roadbed with 150 grit sandpaper to ensure a smooth surface for laying track.



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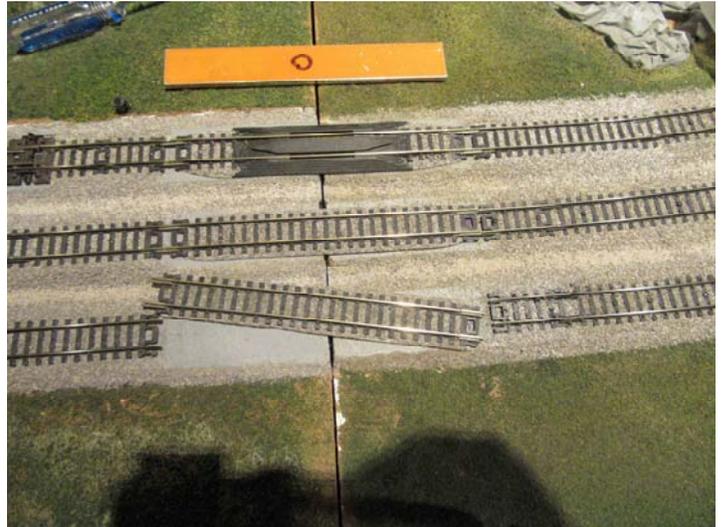
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11. It is recommended that the roadbed be painted the same color as the ballast to be used. Any gaps in ballast will not be as evident, and the exposed roadbed at the end of the module will look better. Since a mixture of light grey and dark grey ballast will be used, the roadbed on this module was painted a medium grey, as shown.



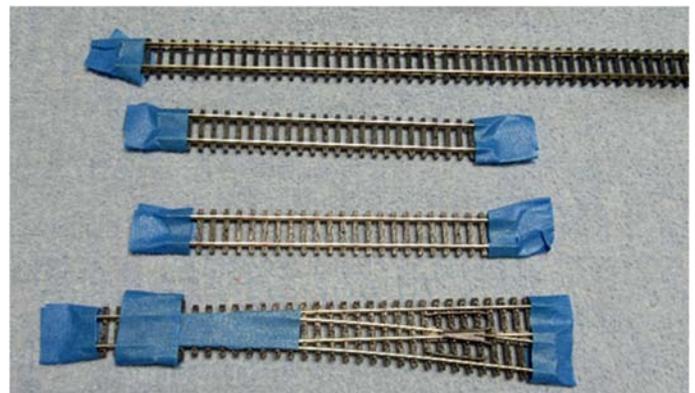
Laying Track on the Main Lines: This section discusses laying Atlas Code 80 track on the main line without any turnouts. It is recommended that a first show module avoid turnouts, since they significantly complicate the track laying and electrical hookup.

If track were laid to the end of the module it would be impossible to get a satisfactory alignment between modules during the setup for a show. NTRAK standards call for the track to be set back 2.47 inches from the edge of the module, so that a 5-inch section of Atlas snap track can be installed. This approach corrects for any slight misalignments. Atlas sells a code 80 straight track assortment, Part No N2509, that contains two half-sections of track. These half-sections will be used to get the proper standoff at the end of the module.



Installing and removing the connecting track between modules for each show will, over time, put stress on the ends of the track. The rails are much more firmly attached on sectional track than on the flex track. To provide extra strength, a short piece cut from a 5-inch straight track will be added at the end of each line. If damaged, it is relatively easy to remove and replace.

Painting Track: Although not required, painting the track gives a more realistic look to the rails on the layout. There are several “rail colored” spray paints available. For this project, a spray can of flat black primer was used.



1. Mask the ends of the track to be painted. This saves time later when paint would have to be cleaned from the area of the rail joiners to provide electrical contact. Note that any turnouts that will be painted need to have all the “moving parts” masked.

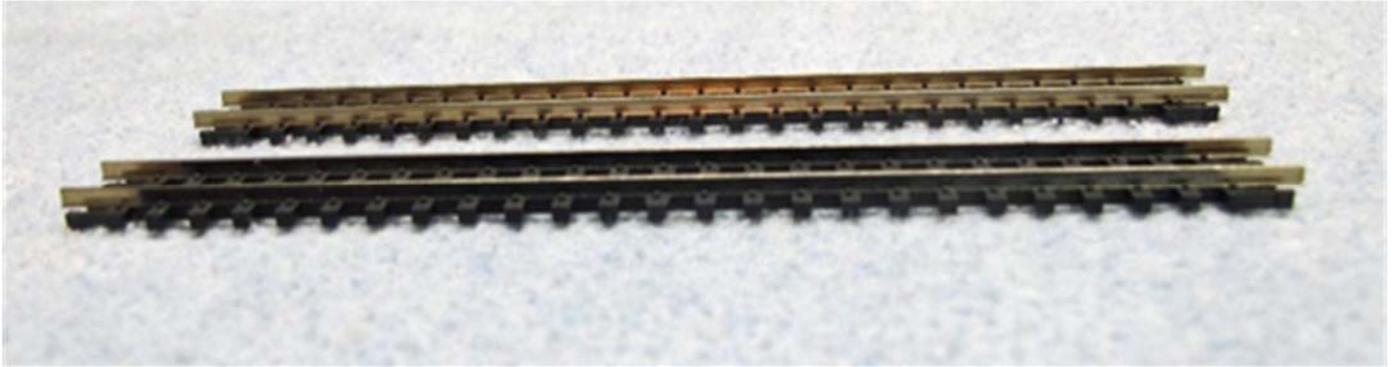
2. Spray paint the masked track from both sides

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and allow it to dry for about 30 minutes.

3. Clean the paint off the top of the rails using a rag soaked in isopropyl alcohol and wrapped around a small block of wood. Keep the rag tight around the block so that it only takes paint off the top and not the sides of the rails. The picture below shows sections of track before and after painting.



Laying Track: This section focuses on laying the red line, which is at the front of the three main line tracks. Atlas Code 80 5-inch sectional track and flex track were used for this project.

Cutting and filing the end of track that has already been laid is difficult and it is easy to pull the rails loose from the ties, particularly on the flex track. The sequence is designed to lay track in a method that avoids having to cut, file or adjust the track pieces that are already down. Any adjustments are made to the next piece of track that is laid down.

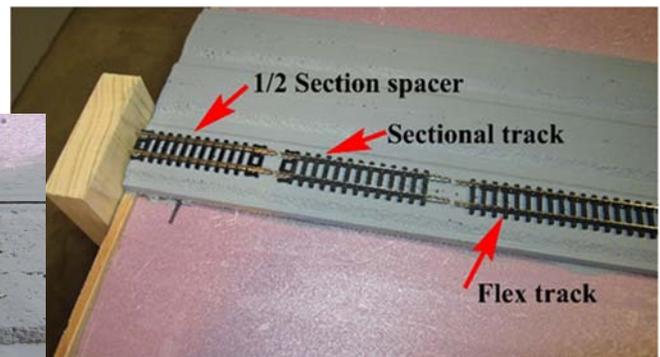
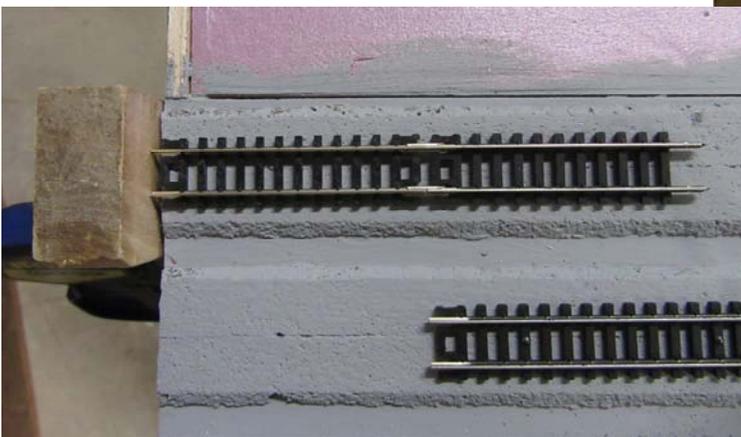
1. Starting on the red line, if all else is equal, clamp a board at one end of the module and use a half-section of Atlas straight track as a guide for the gap at the end. If available, a four-foot straight edge can be used to help get the track aligned while nailing.

2. Cut a section of five-inch Atlas straight track in half, cut back one tie so a rail joiner will fit and file the ends of the rail square. If there is a burr on the bottom of the rail, file it off as well.

3. Remove any paint from the ends of the cut section and install new rail joiners on both ends.

4. Prepare both ends of a full 30-inch section of flex track.

5. Hook the three sections of track together; the spacer, the short section, and the flex track.

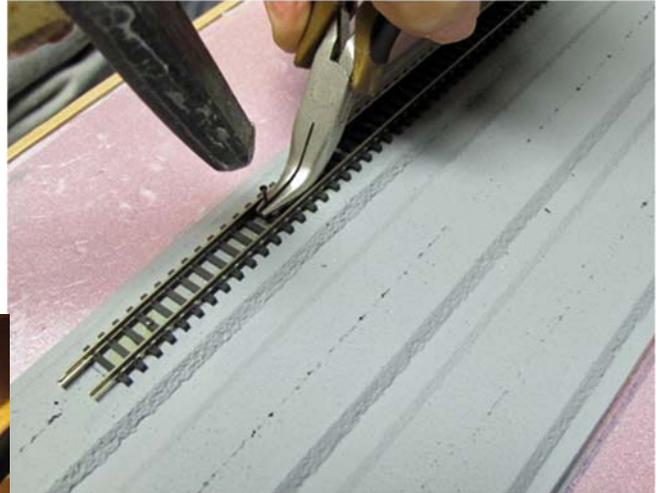


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6. Using the seam in the roadbed, nail the track down, keeping it straight. Use the angle pliers to hold each track nail straight while starting it with a small hammer. Be very careful not to hit the rails with the hammer, since it will leave a dent that is hard to get out.

7. Use a nail set and a hammer, or the spring-loaded nailset, to finish driving the track nails. Be careful not to drive the nail too far and bend the tie.



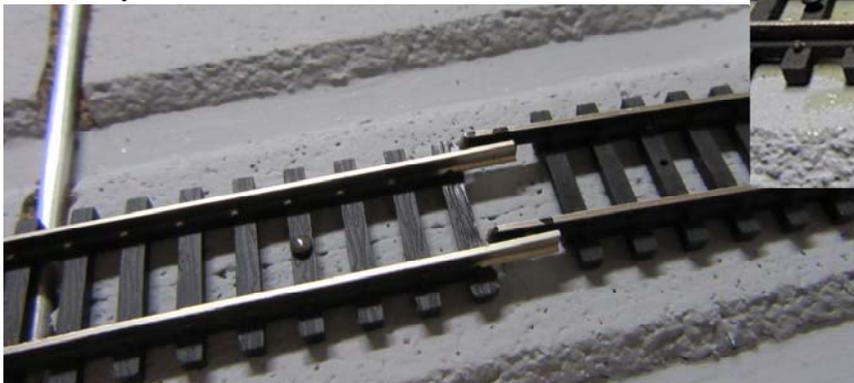
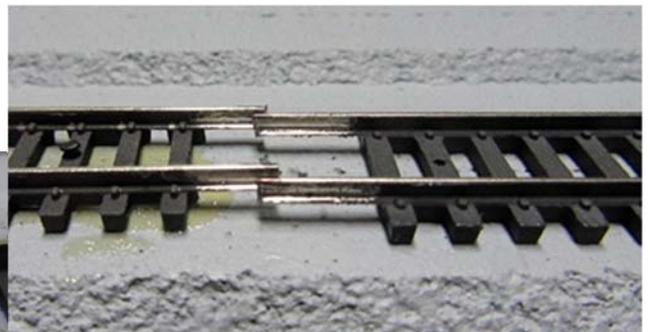
8. Make a mark on the roadbed between 5 1/4 and 5 1/2-inches at the other end of the module to leave room for a short section of straight track at that end.

9. Cut a section of flex track to run to the mark, prepare both ends for rail joiners and nail it in place.

10. The final step is to cut and fit a piece of 5-inch sectional track for this end of the module. This step should be performed carefully to keep from cutting the track too short.

a. To get the right length, clamp a board to the end of the module and hook a half track spacer to a piece of 5-inch sectional track.

b. Align the track with the end of the track that has already been laid and mark the proper length. Cut the rails a little long, as shown, and remove any ties that are in the way.

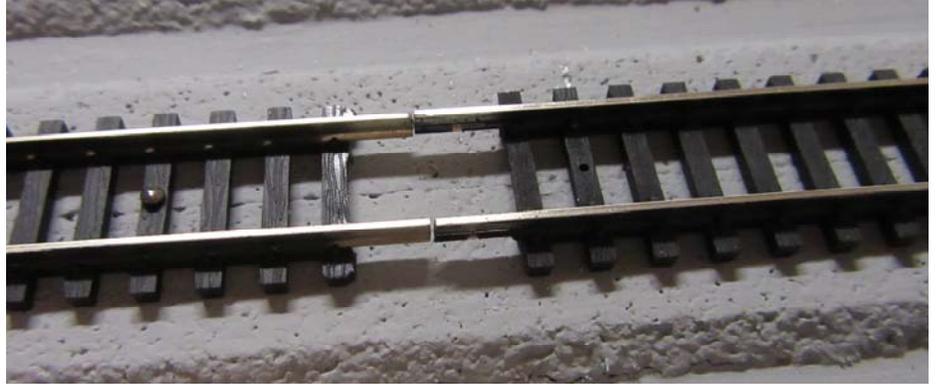


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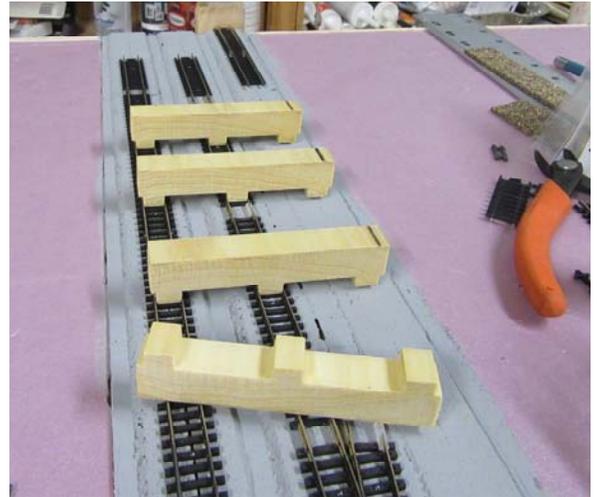
c. Carefully mark, cut, and file the track piece until it is exactly the right length.

d. Remove the spacer, install the section of track, and nail it down.

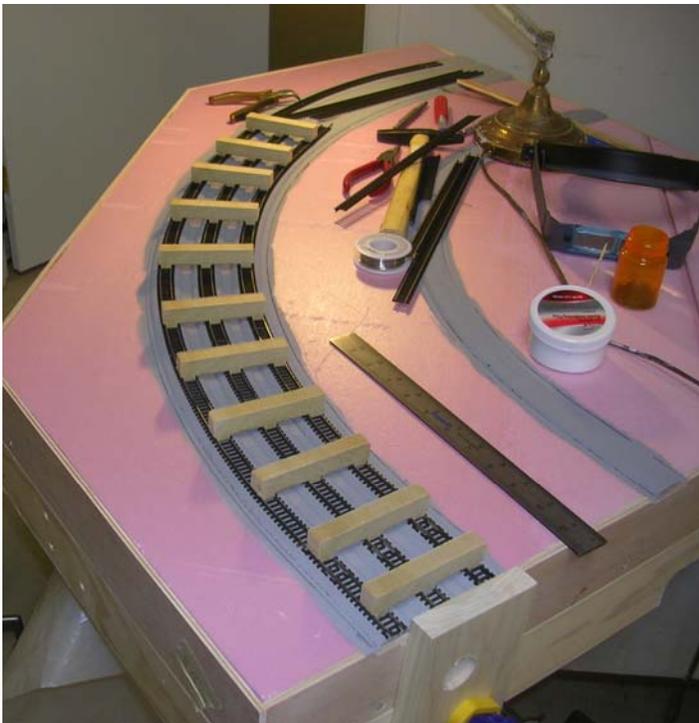


Yellow and Blue line track: Repeat the process described above to lay the Yellow and Blue line tracks. Once the red line is down, the other track position needs to be measured from the red line, providing the 1.5 inch spacing needed.

Wooden track spacers, that provide the 1.5 inch separation are easily made and reduce the effort in positioning the yellow and blue lines.



The spacers are particularly helpful when laying track on corners.



Soldering rail joiners: All the rail joiners should be soldered on the outside of the track to ensure electrical conductivity. Soldering on the inside would interfere with the flanges on rolling stock.

1. Place a small dab of flux on the outside of each rail joiner.
2. Use a 25 to 30-watt soldering iron with a thin point and a thin rosin core solder. Place a small

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amount of solder on the iron and touch it to the outside of the track and joiner. Move the soldering iron to get the solder to flow to both rails in the joint in both directions. This should all take about one second, since longer will add too much heat and can melt some of the ties.

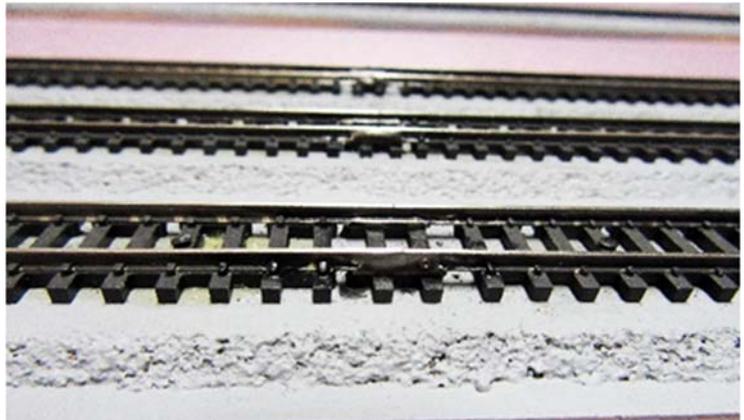


3. Inspect the joint and make sure it is soldered to both rails. Touch it up if necessary.
4. Clean off excess rosin using a little isopropyl alcohol and a rag.
5. If any solder got on the top of the rail, sand it off with 600 or 800 grit sandpaper.

Fill in the empty ties: Cut one or two ties, as needed to fill the gap under the joint, from scrap sections of flex track. Using a knife cut off the nibs that held the rail in place. Sand the bottom of the ties with 150 grit sandpaper until they will slide under the rails without lifting them up. When properly fit, remove the tie, add a drop of white glue between the rails, and slide the tie back in place.

Final painting touch-up: If the rails were painted, the joints should be touched up with the same color that was initially used on the track. After the paint has dried, clean excess paint from the top of the rails using a rag and alcohol.

When soldered, with dummy ties added and painted, the joint blends nicely with the rest of the track as shown.



Here is the completed track work on a module. There is an extra line of track at the back of the module shown here, called the alternate blue line, located 10 inches from the back of the module.

