Wiring for Reverse Loops and Wyes

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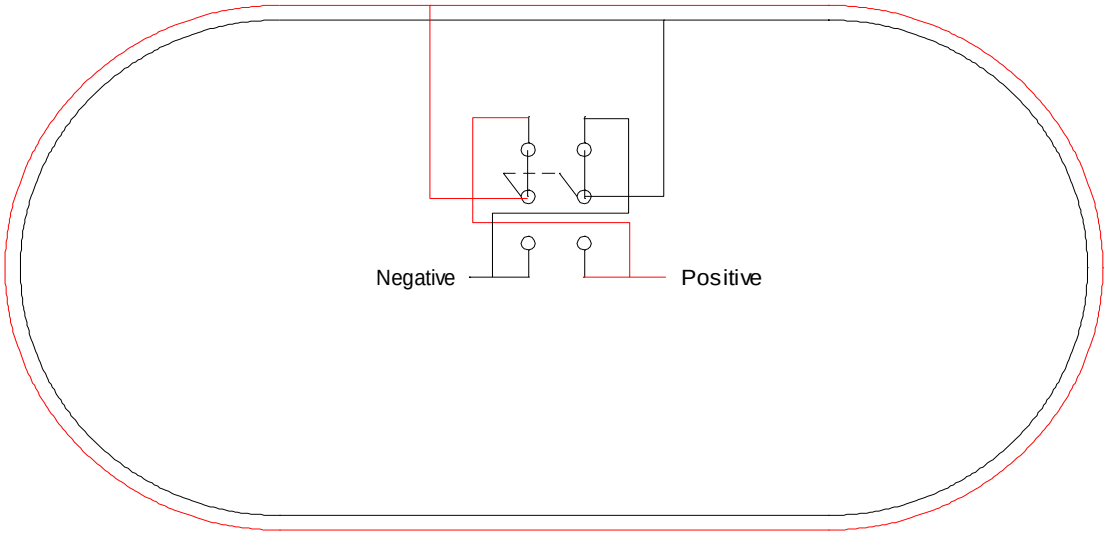
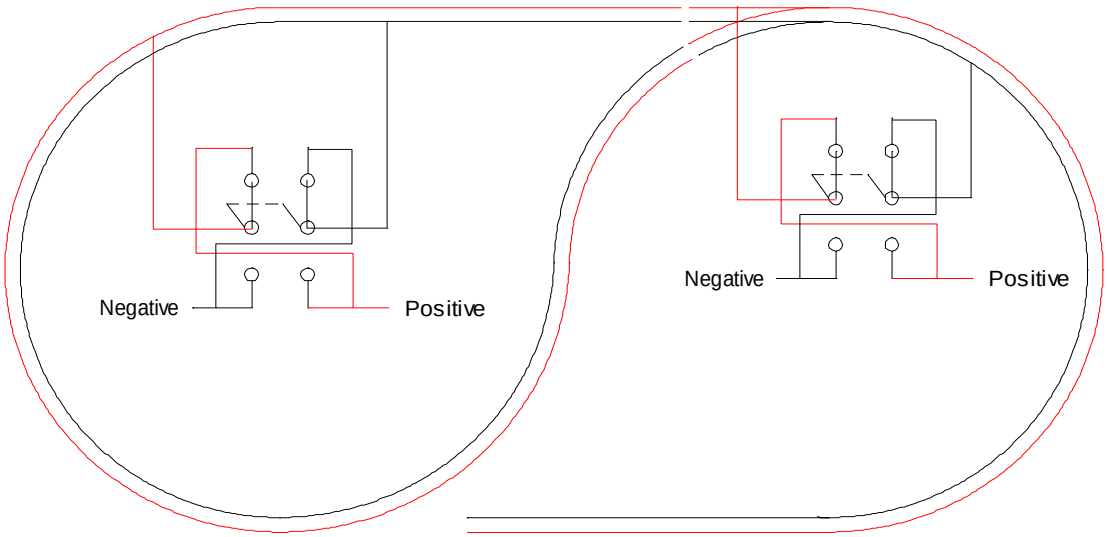
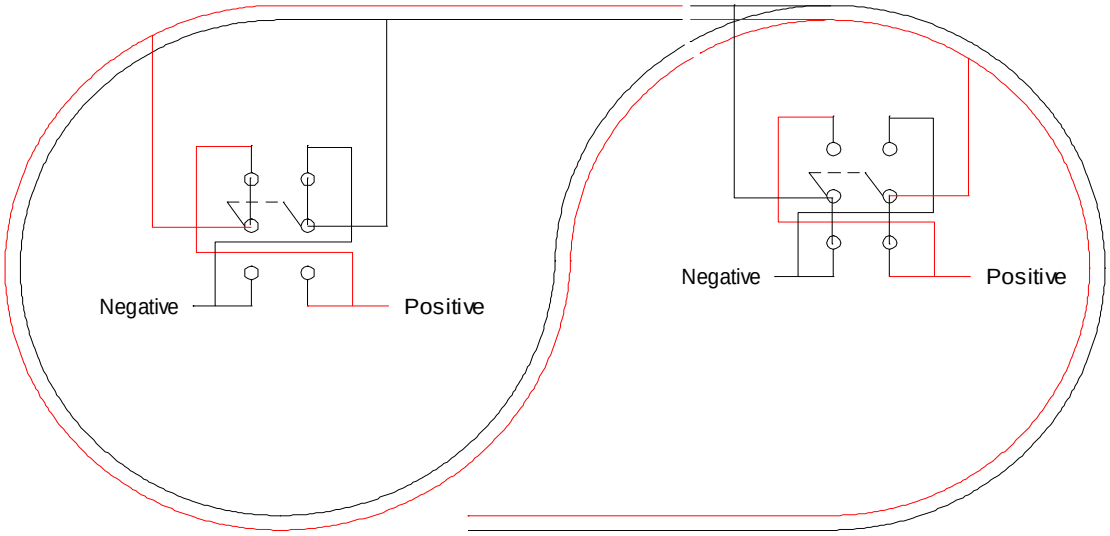
1. The standard for DC model railroads is the right rail is positive when a locomotive is going forward. The drawing below indicates a continuous loop of track and a locomotive would be running forward counterclockwise. A schematic of a double pole-double throw reversing switch is also shown.



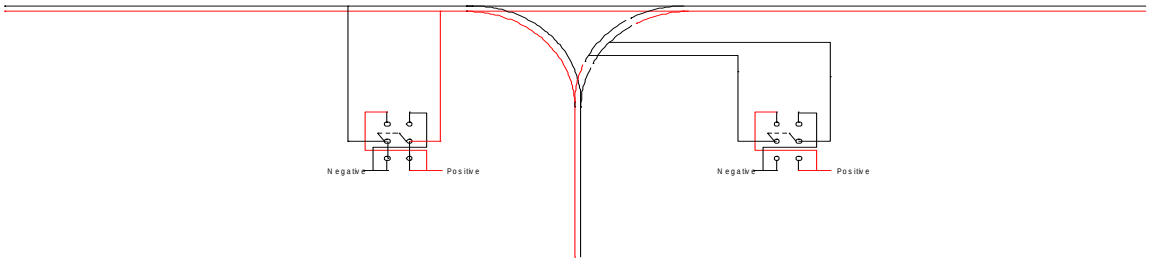
2 When a reverse loop is added to the track plan, two direction switches are needed. They must be wired so they control the polarity independently of each other. Below, the drawing shows the loop and the polarity of the rails. The switch on the left controls the direction inside of the loop and the one on the right controls the train direction outside the loop. Note that with the polarity as shown the train may enter the top of the loop but will short upon reaching the gap near the turnout.



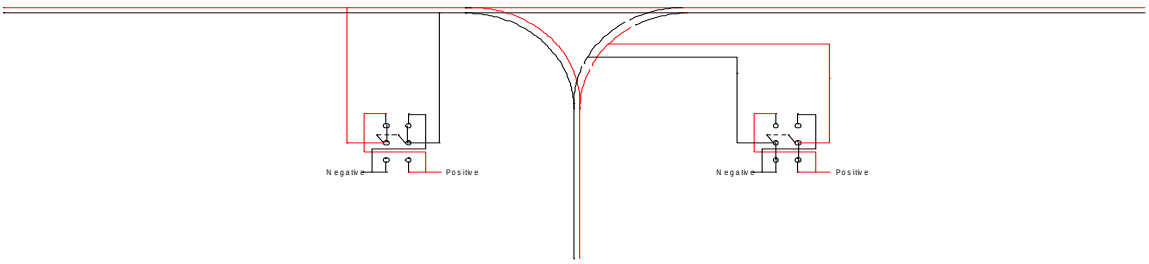
3. While the train is in the loop section, the polarity switch on the right is thrown, thus changing the polarity allowing the train to continue without delay. The schematic shows the gaps near the turnout, but they may be anywhere providing they are at least a train-length apart. The further apart they are, the easier it is to have time to throw the switch while the train is moving. The train need not stop in the loop!



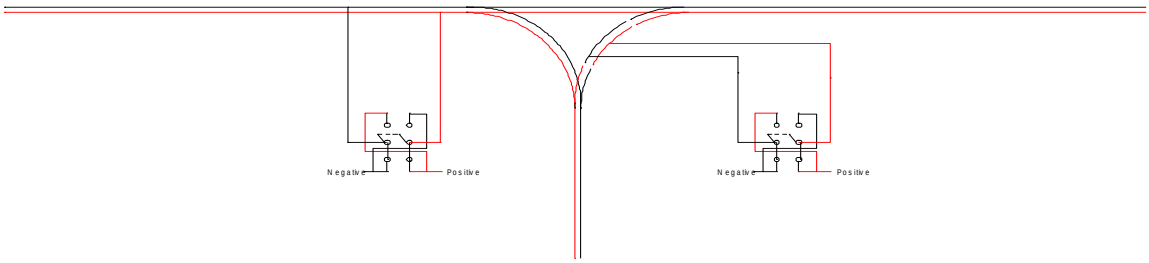
4. When a wye is used, similar controls are needed. In schematic below, the train enters from the left and turns down the leg of the wye. The polarity of the isolated section is not important as the train isn't entering that section yet.



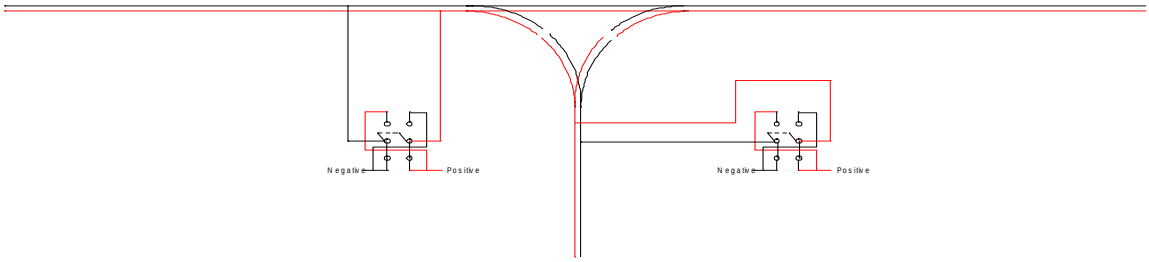
5. After the train is in the wye leg and stopped, it is reversed and the turnouts are thrown. Now the polarity of the isolated section is important and must agree with the direction of the train. Note that at the upper right hand turnout, the polarity conflicts with the isolated section.



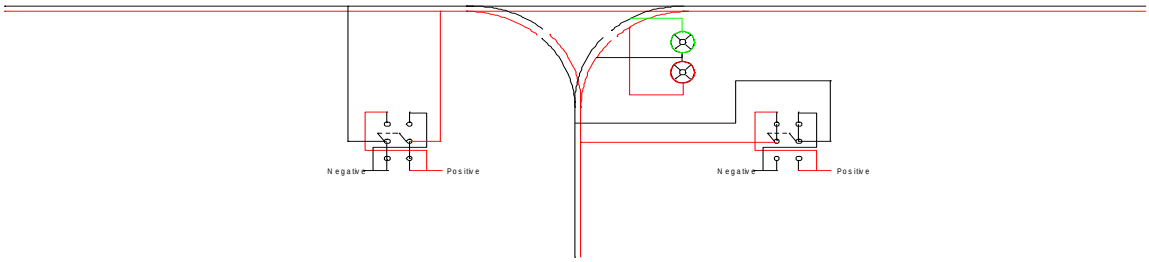
6. While the train is in the isolated section, the main polarity switch is thrown to change the polarity of the mainline. Again, the length of the train is limited to the length of the isolated section (about 36" for 24" radius curve). After the train enters the right hand leg of the wye and stopped, the left direction switch is thrown and the train is turned around, ready to go out.



7. Another way of wiring a wye is to have the entire leg as an isolated section. Below, the train can enter the wye leg as before. The length of train is limited only by the length of the wye leg. This is the scheme used on Bremerton Northern Model Railroad's new Kitsap Western Railroad.



8. After stopping, the turnouts are aligned for the third (right hand) leg, the polarity switch for the wye leg is thrown to change direction of the train, and the reversed train backs onto that leg. All that remains is to stop the train, align the turnouts, change to forward and proceed in the opposite direction.



9. Sometimes it is difficult to determine the proper direction of the polarity switch. Adding indicator lights allows the operator to visually see that the polarity is correct. The figure above shows one method of providing indication. The circuit uses incandescent bulbs that indicate polarity when power is applied to the track. The bulbs rely on track power to light. LED lights will not work with this circuit reliably as LED's are polarity dependant. LED's also require a resistor in series to limit the current through the LED. In the schematic, above, the green indicator would glow.

10. Kitsap Western has LED indicators on their wye. Below is the circuit used which allows use of either DC or DCC power. If DCC is the only power used the full wave bridge rectifier is not needed. The sizes of the resisters are determined by the characteristics of the LED's used. Here they are those specified by Oregon Rail Supply for their double light dwarf signal (#123).