

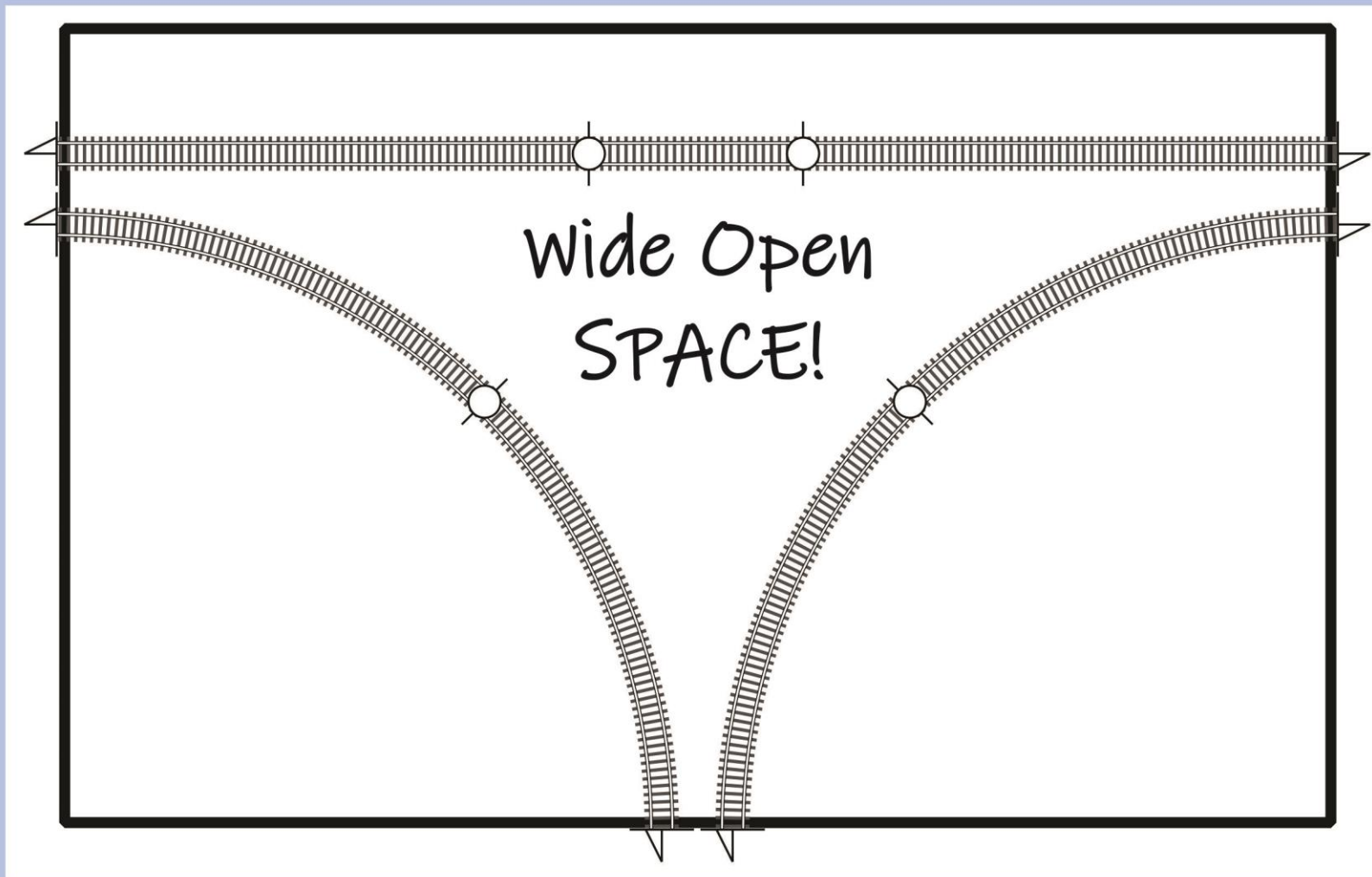
Living With Large Junctions^{FM}

Professor Choo Choo

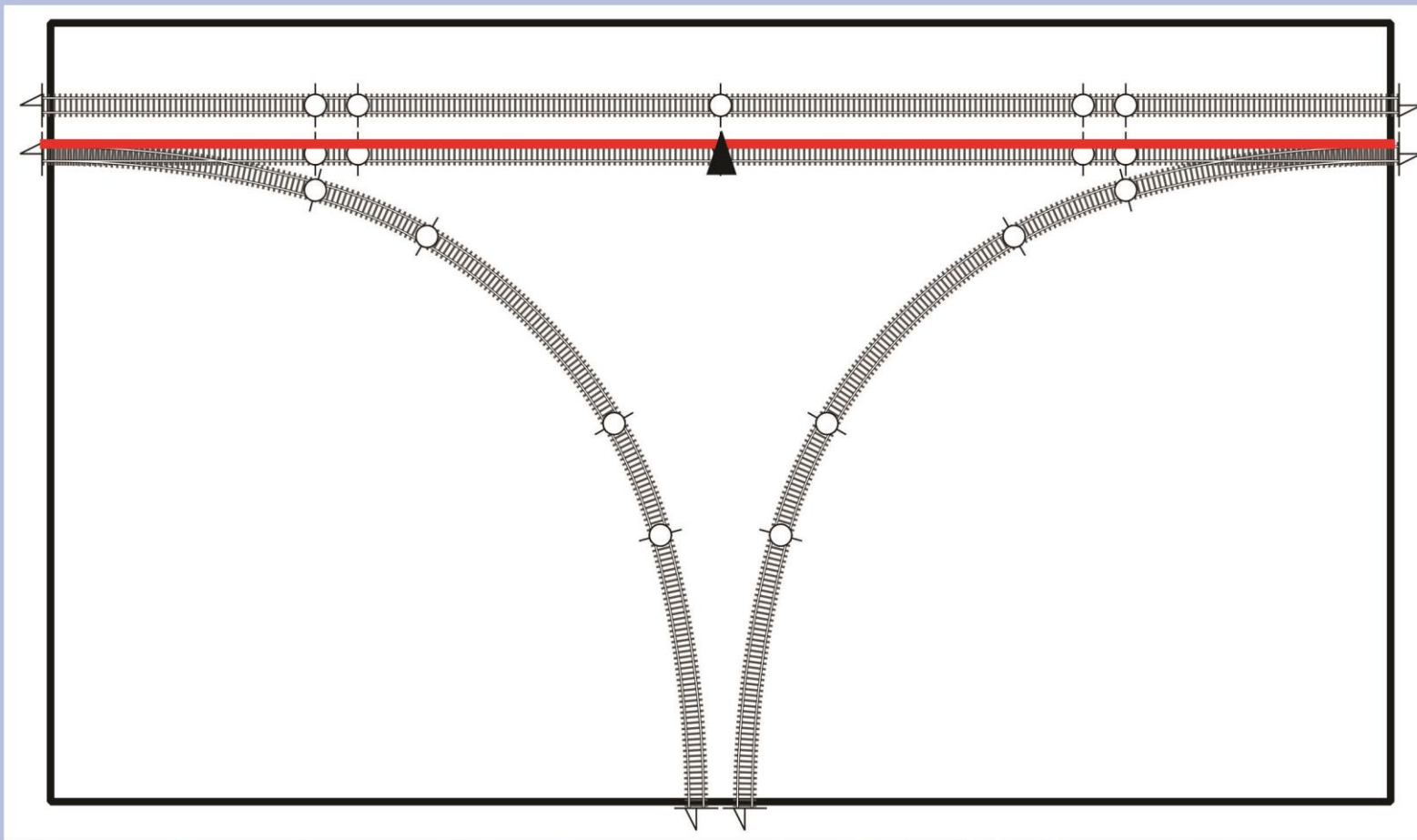
T-TRAK 101



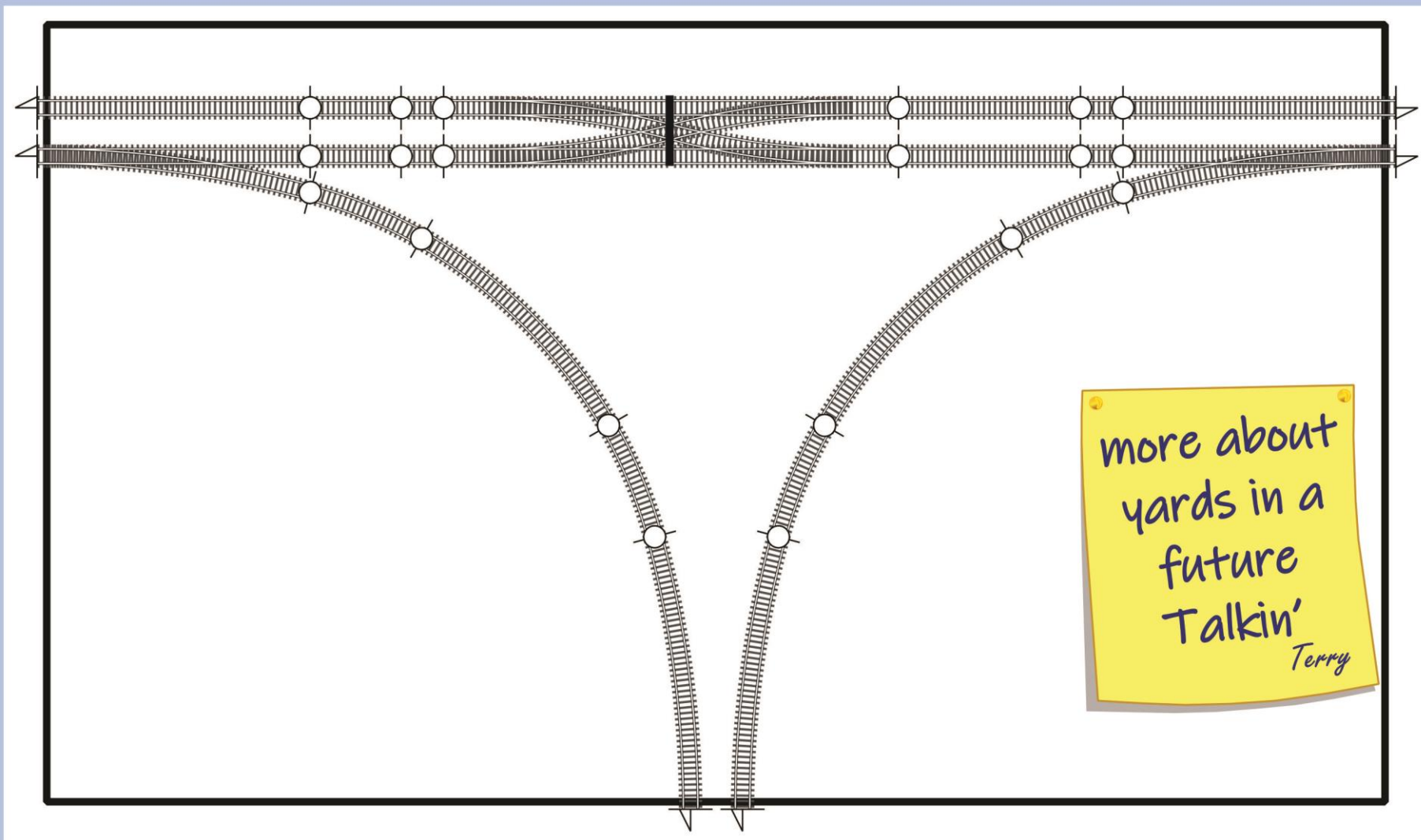
The new large T-TRAK
junctions **MUST** have a
rail gap in the straight
track between the curves.
Here's why . . .



When the only junctions we had were the original Steve Jackson Junctions we didn't have any problems. We had one BIG insulator between the 2 curves - great big open space. Nothing but scenery! The adjacent loops using those corners could be anything we wanted - DC, DCC, BWWB or yellow bus reversed BWBW. No connection, no problem!

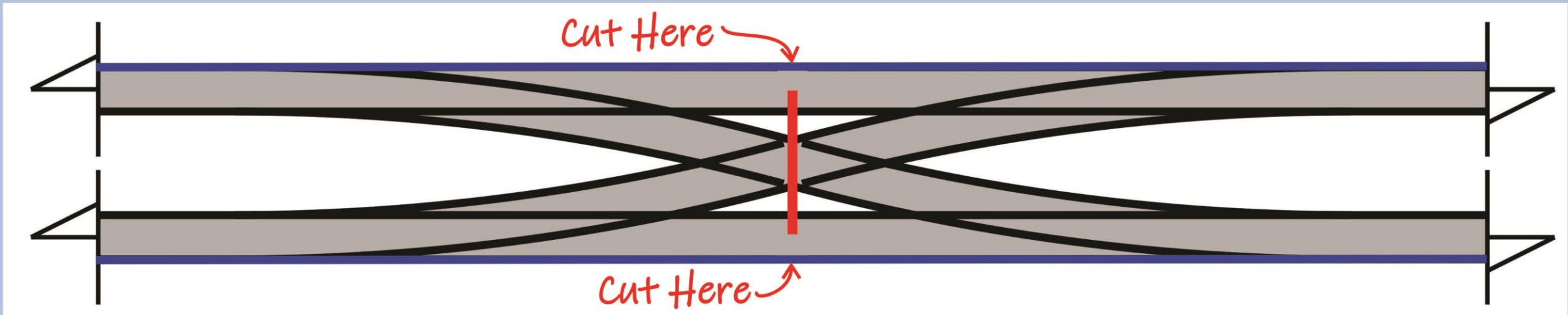


But now we have large junctions with that wonderful added straight track between the curves. Now there is an electrical connection between the 2 corners regardless of whether those turnouts are power routing or not! The BWB white rail of the yellow track shown in red is continuous! BOTH adjacent loops using those corners are connected together and must be the same - DC, DCC, BWB or yellow bus reversed BWBW **unless** a pair of insulated Unjoiners are installed to separate them, shown in the middle to prevent electrical faults.

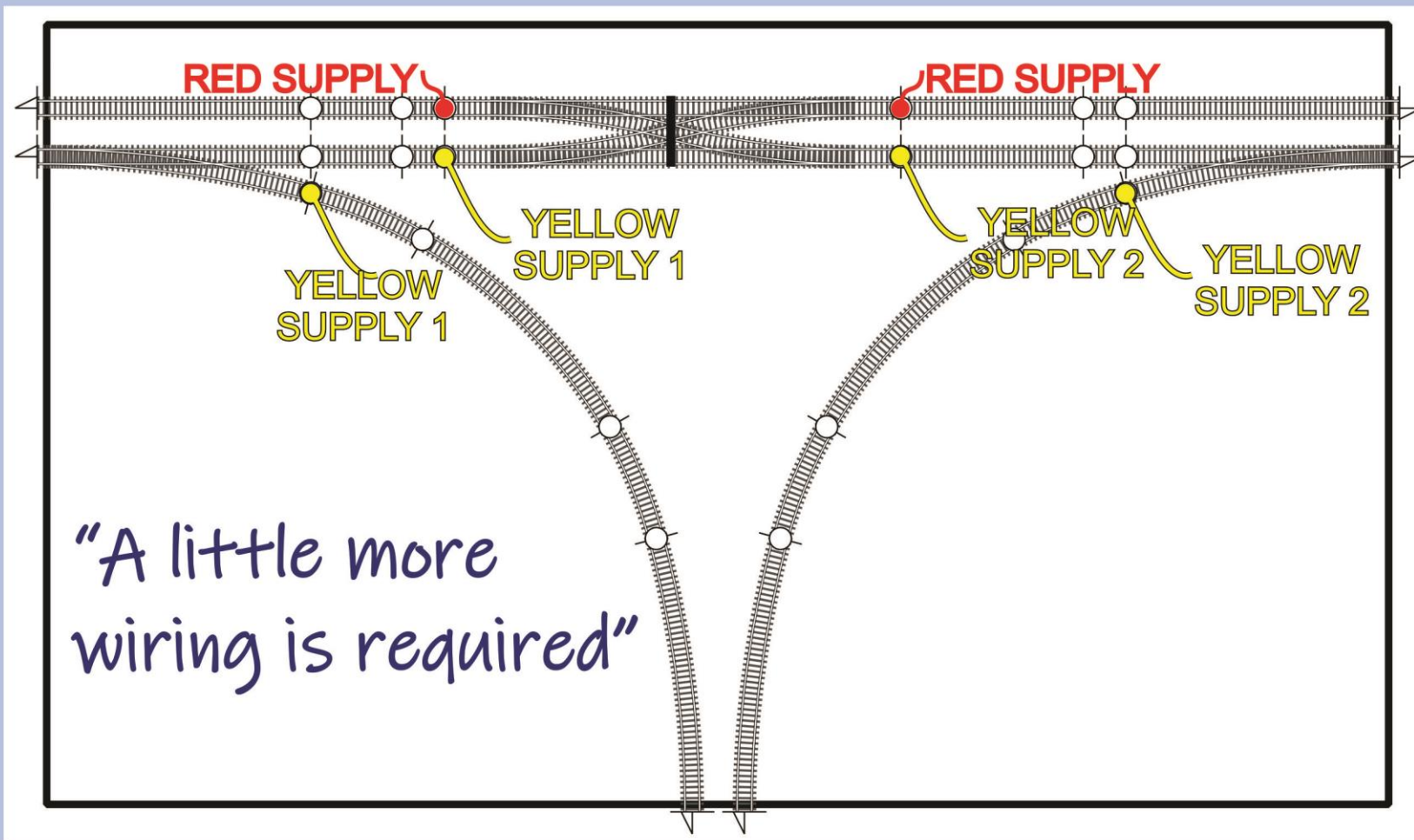


My favorite way of providing that required rail break is the use of a modified double crossover that has a rail break in all 4 rails. Because of that a little more wiring is required. Why the double crossover? I use a pair of junctions to supply my 8 track yard loop. My yellow busses always have reversed electrical power connections for pseudo BWBW conditions.

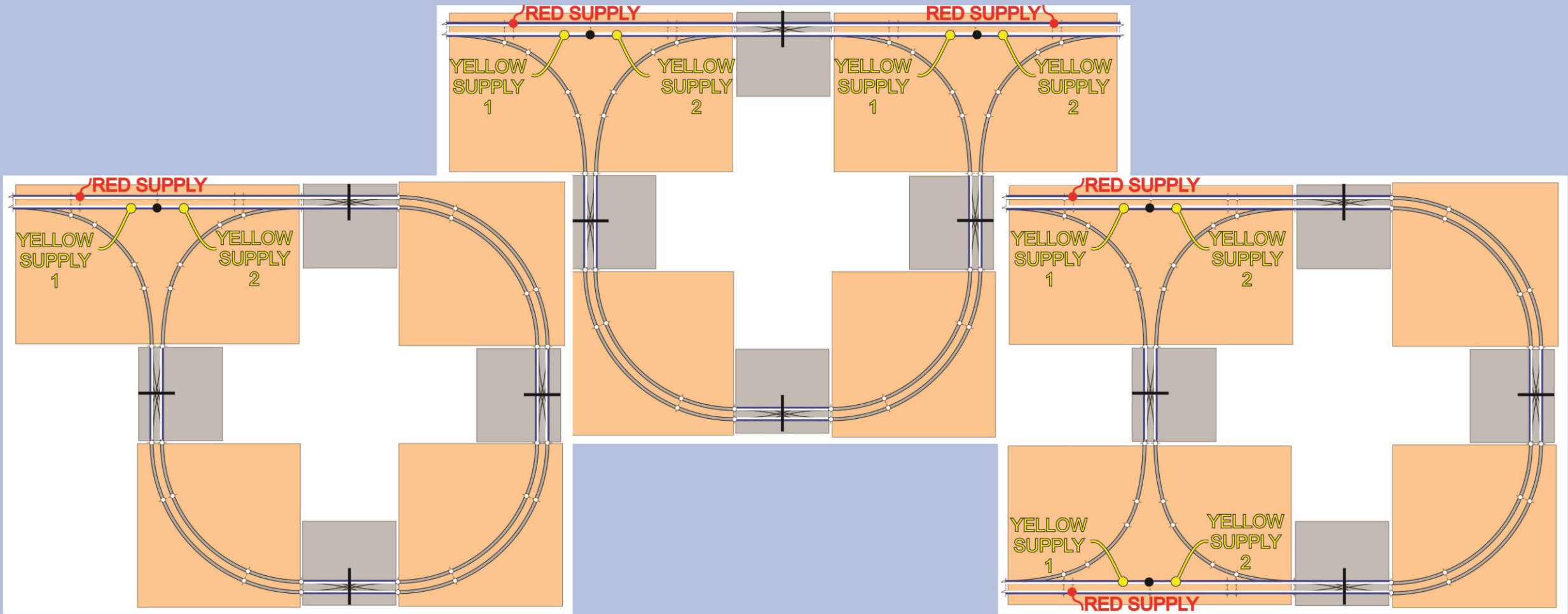
USING DOUBLE CROSSOVERS



Considering KATO's double crossover in T-TRAK standard the two outer BLUE rails do not have a rail break in the center as do the WHITE rails and the rails making up the diamond, as shown. As a result they can not be used as layout blocking or DCC district separation. So, for my use in large junctions with the added straight track between the curves I cut the outside rails in the center at the location of the factory cut. Those two cuts allow blocking and district separation if required and allows the operations I will outline in this presentation.

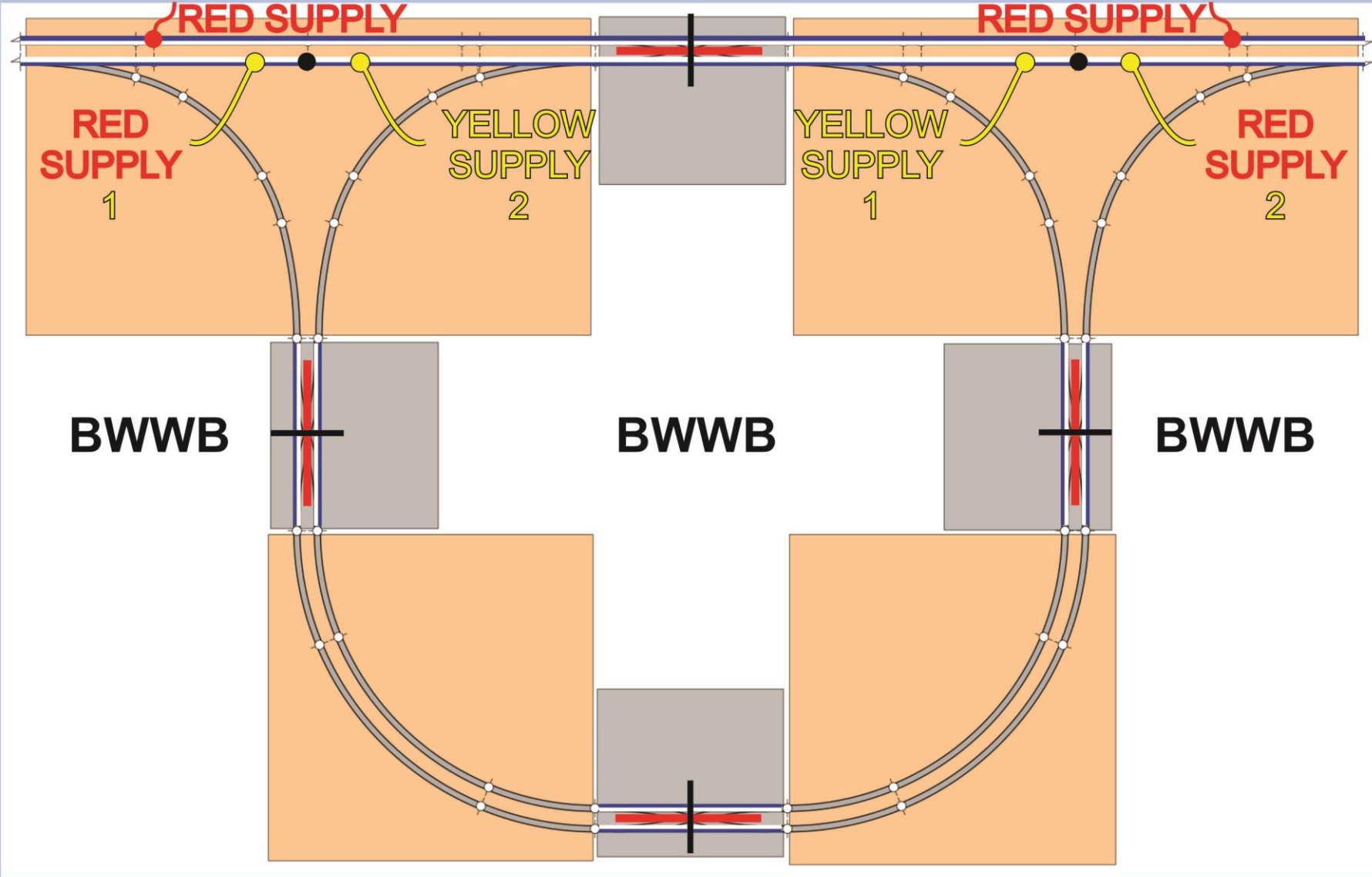


Let me explain that statement. Each module should have red and yellow track leads to connect to their respective busses. (although they may not be used) Due to the known electrical continuity break required in the yellow track and created in both tracks by the double crossover, power must be supplied on both sides of the break. Both red track leads can be connected to the same plug.



During this presentation I will show these 3 layout scenarios in various electrical modes of BWB and yellow bus supply reversed BWB. I will include double crossovers on the large junctions to show their benefit, or lack of, and show the concerns and benefits created by the added straight track between the curves of the junctions.

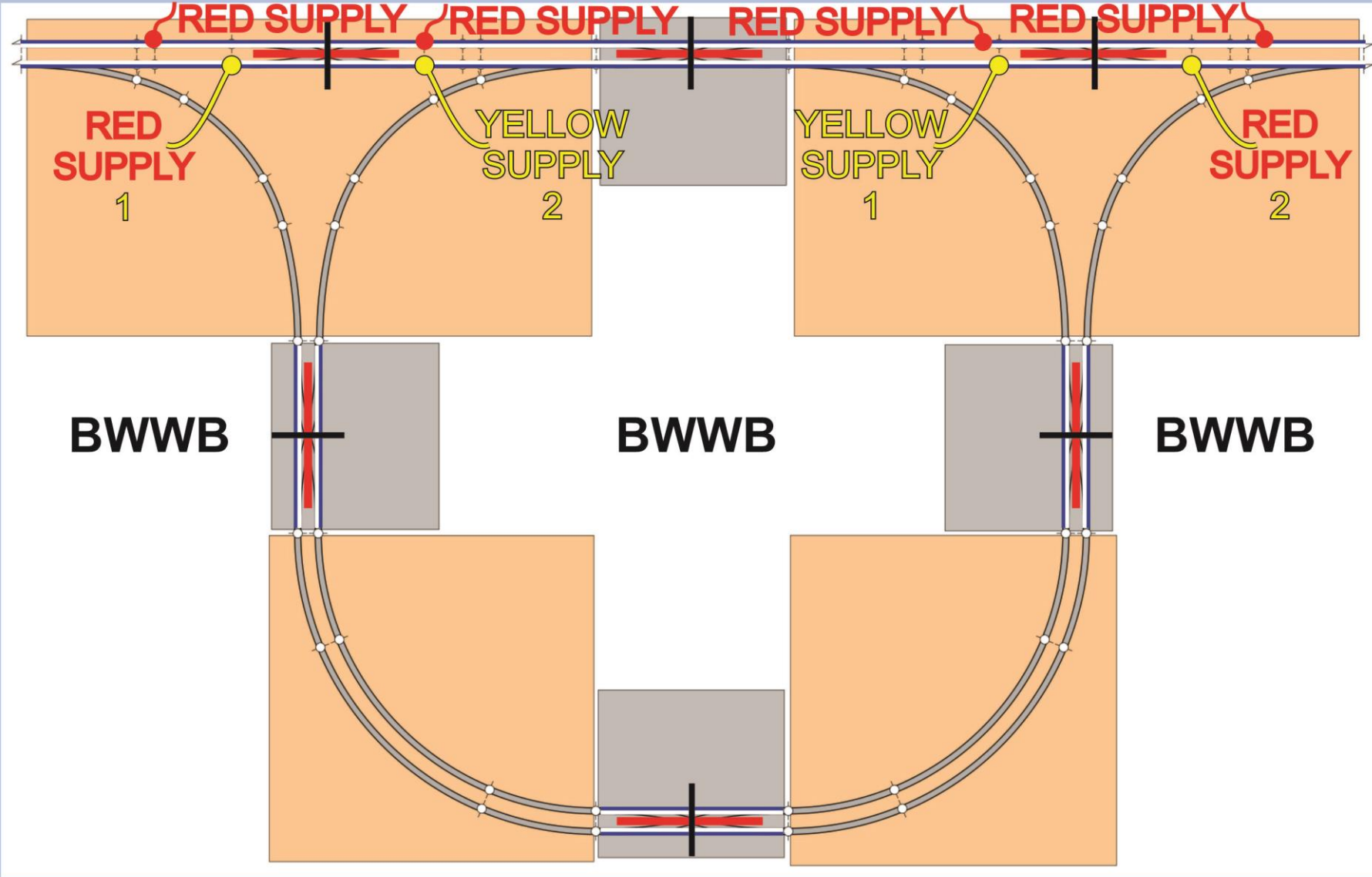
A single row spine situation where everything is wired BWWB. In this case all 4 turnouts are useful. Trains can run straight through avoiding the branch loop. Trains can take the first turnouts to access the branch's outer track OR take the third turnout to access the branch's inner loop in the opposite direction and exit back out onto the spine.



(NOTE: The inner loop could be supplied from the red bus)



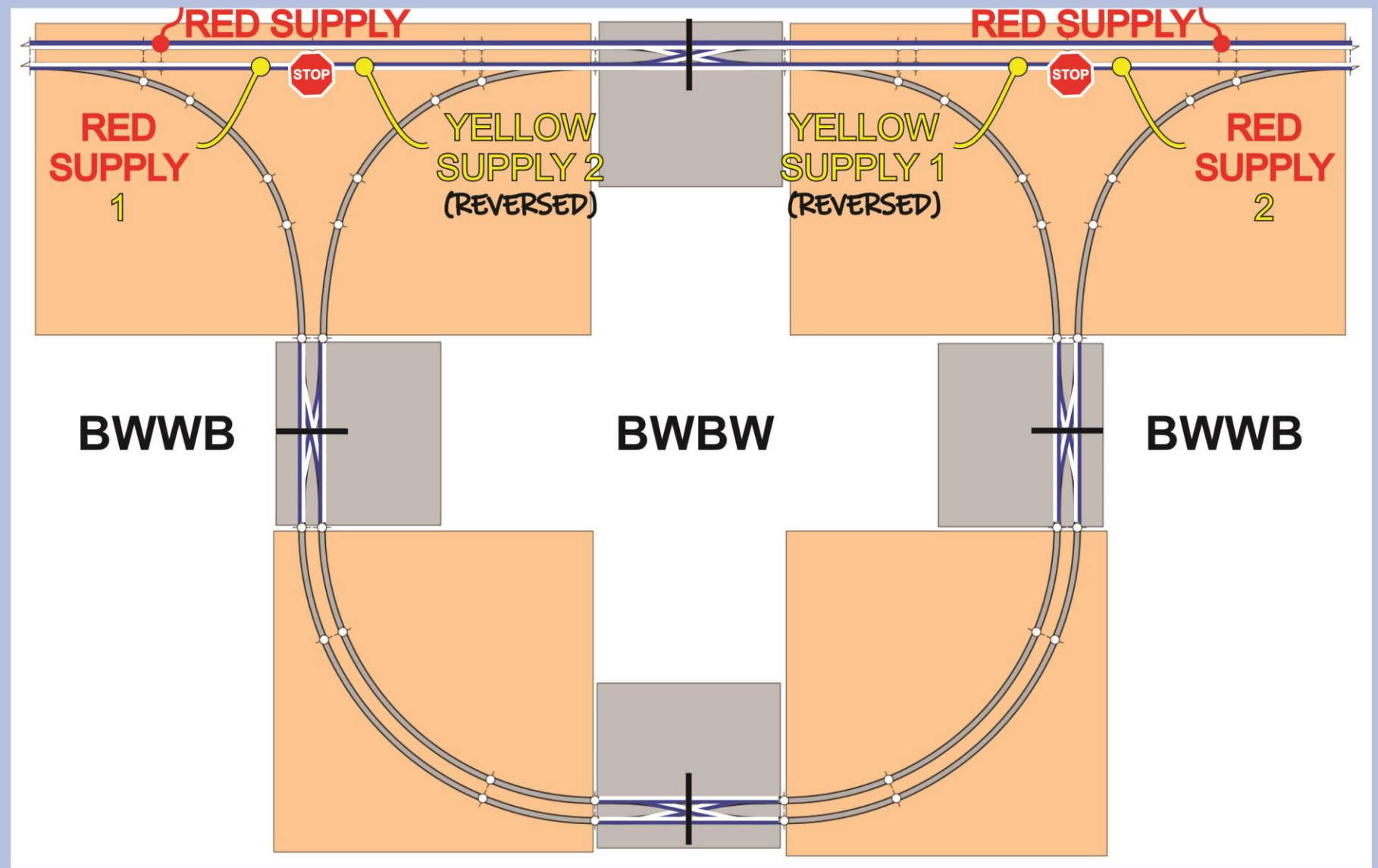
The same single row spine situation where everything is wired BWWB with double cross-overs added to both junctions but are totally unavailable just like the others. As before all 4 turnouts are useful. Trains can run straight through avoiding the branch loop. Trains can take the first turnouts to access the branch's outer track OR take the third turnout to access the branch's inner loop and exit back out onto the spine.



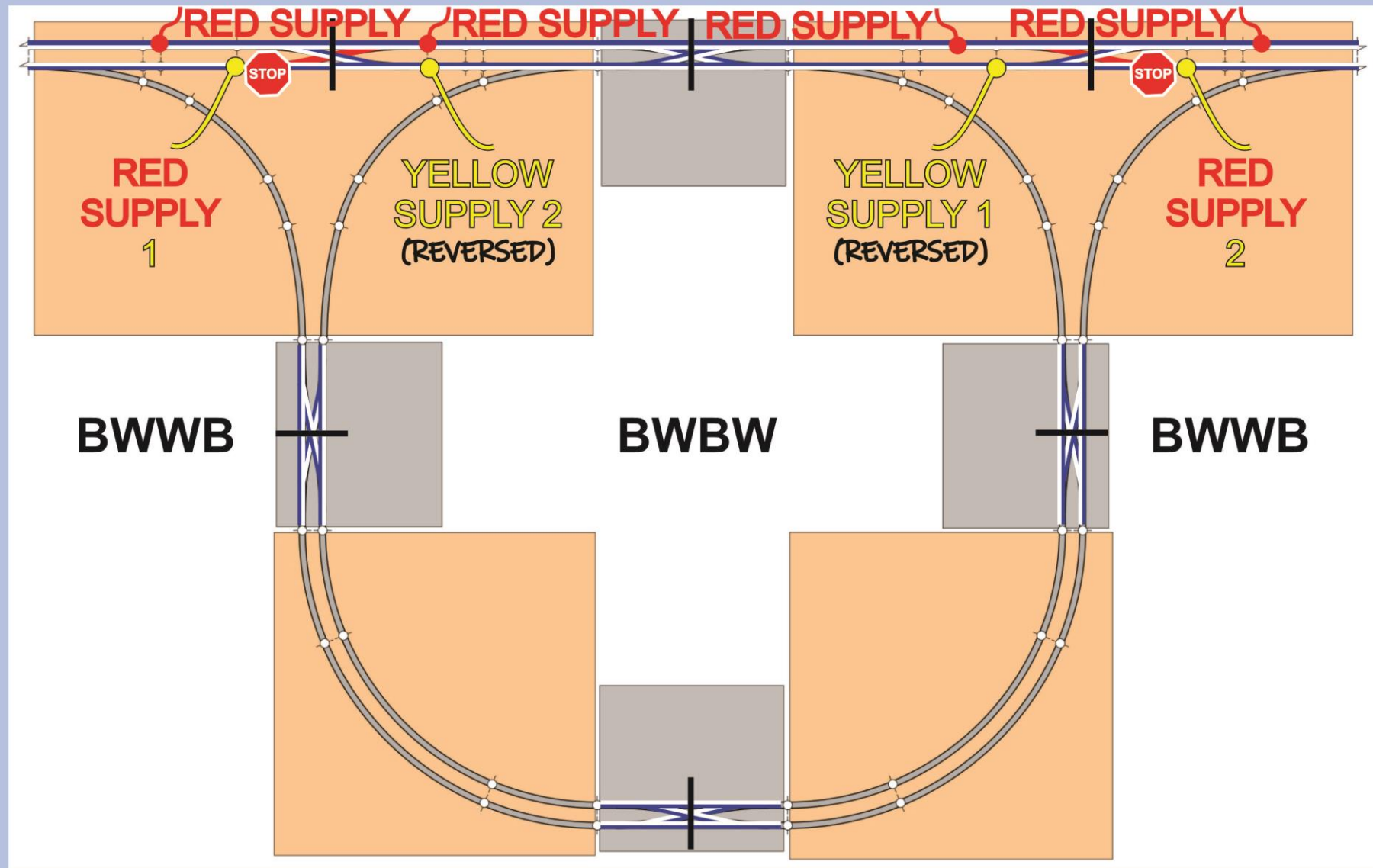
(NOTE: The inner loop could be supplied from the red bus)



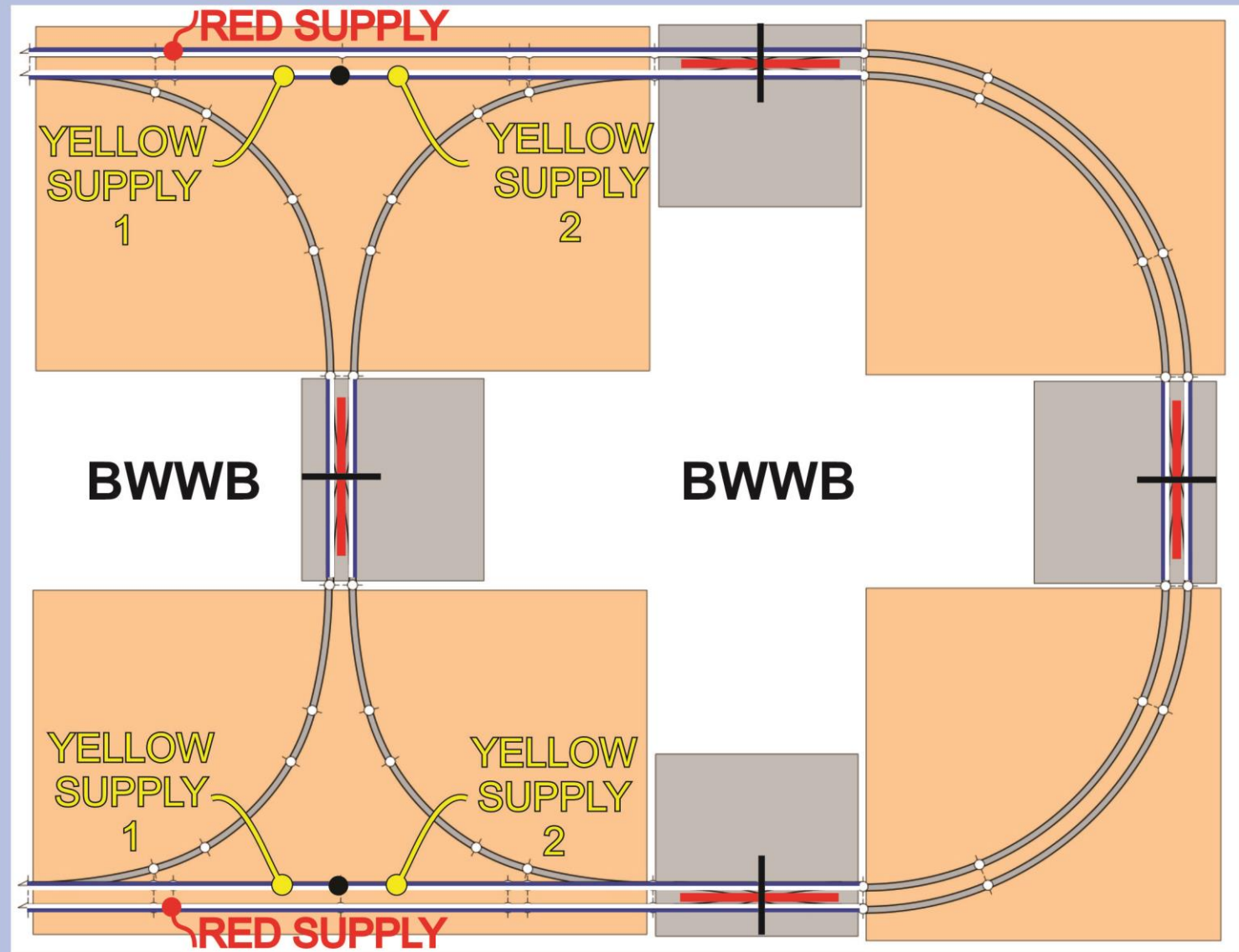
The same single row spine situation but the branch loop is BWBW. In this case all four turnouts are used since trains **CAN NOT** run straight through to avoid the branch loop. Trains **MUST** take the first and last turnouts around the branch's outer track. Trains on the branch's inner yellow loop **CAN NOT** use the junction's turnouts to access the spine. Crossovers in the branch loop could be used to access the branch's outer track and, subsequently, the spine depending on the direction of the trains.



The same design again with double crossovers added to the junctions available in **one direction only**. In this case only 1 turnout of each junction is useful. Trains **CAN NOT** run straight through to avoid the branch loop. Trains **MUST** take the first and last turnouts around the branch's outer track. The double crossovers of the junctions allow the red line trains access the branch's inner loop and exit back out onto the spine. Crossovers in the branch loop could also be used.



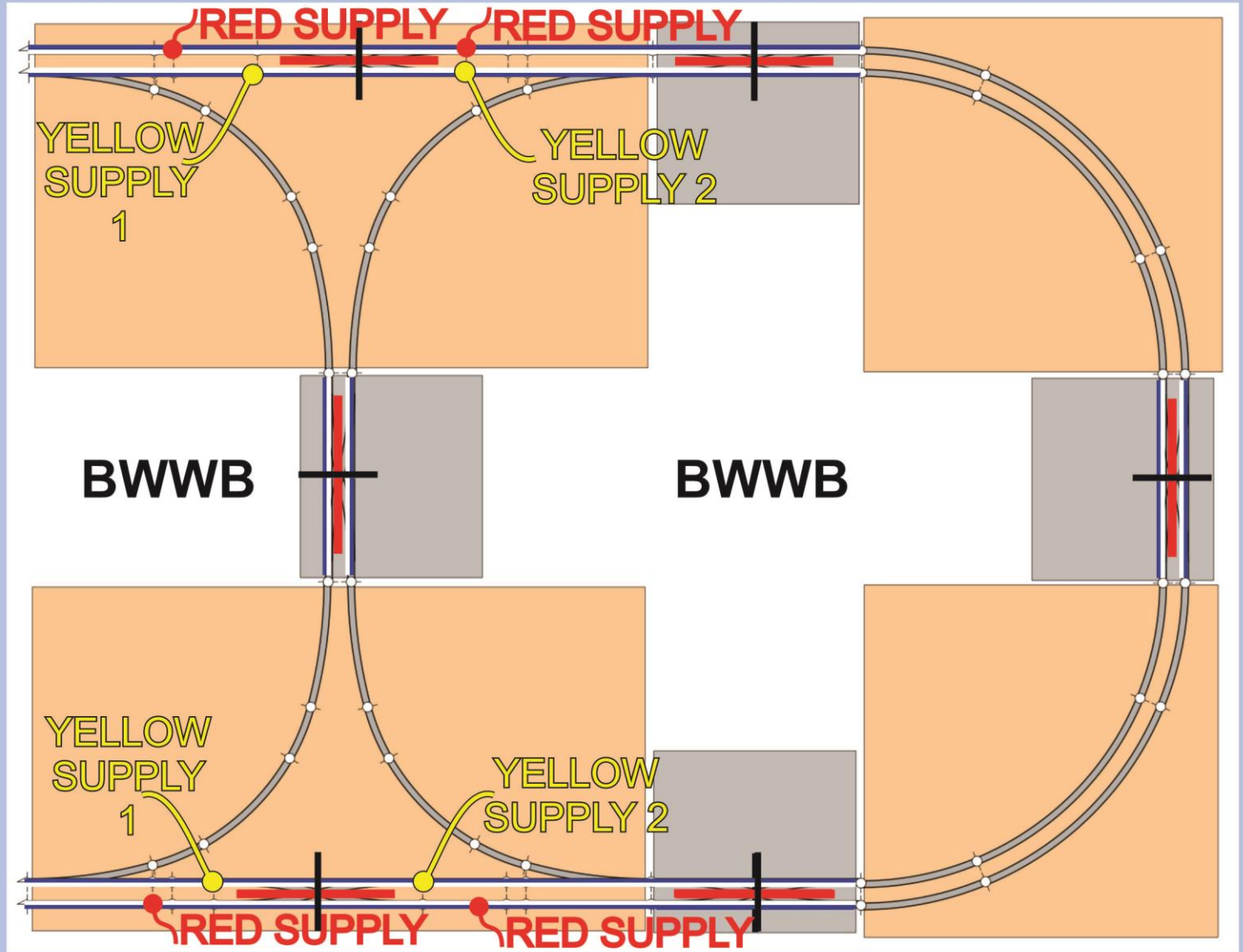
With all standard T-TRAK BWWB wiring the double crossovers (ANY crossovers!!) are unavailable. The turnouts to the curves allow trains to continue straight, avoiding the inner loop OR follow the curve to run on the inner loop. Trains may also leave the inner loop and follow the yellow track to the next inner loop or farther into the layout design.



(NOTE: The inner loops could be supplied from the red bus)



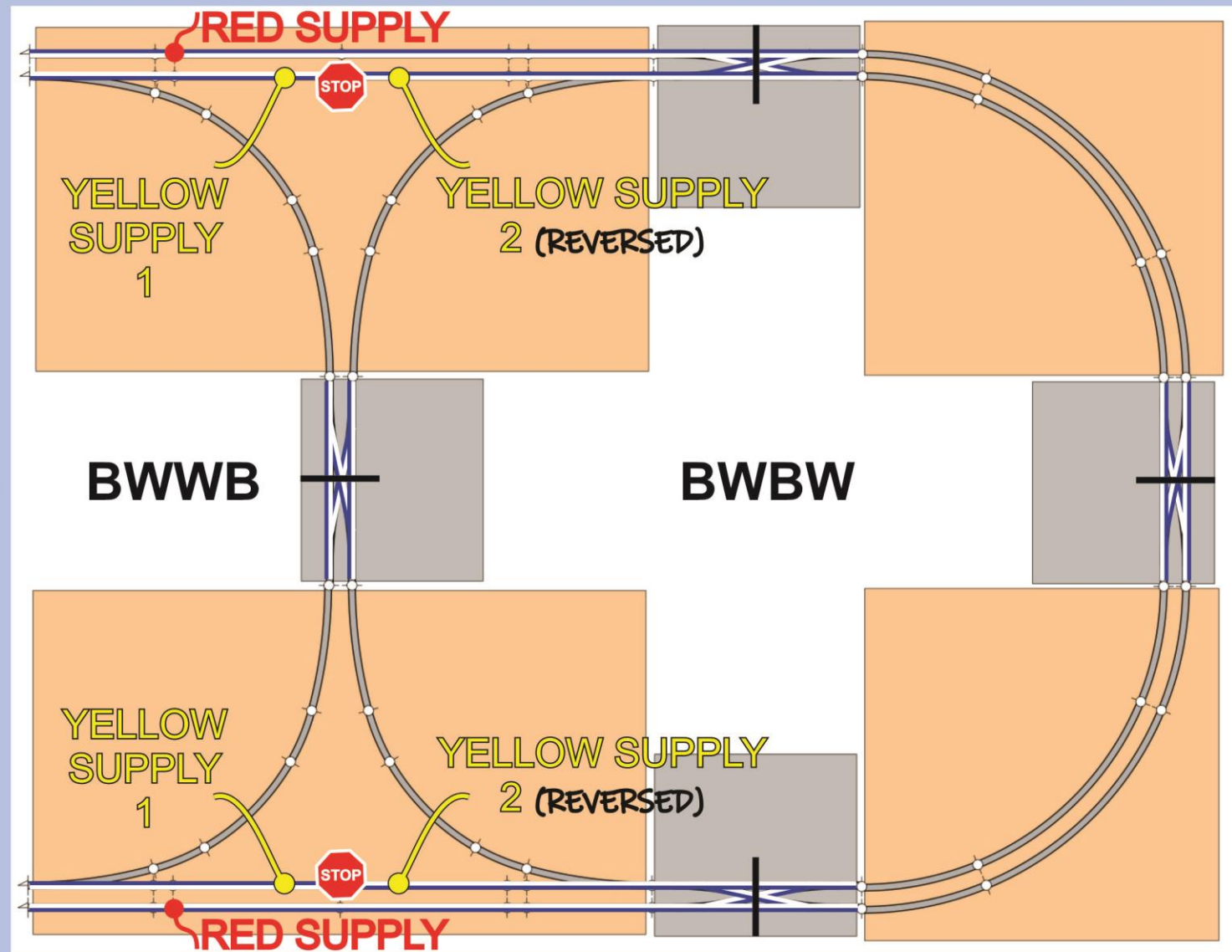
With all standard T-TRAK BWWB wiring the double crossovers (ANY crossovers!!) are unavailable, so the double crossovers in the junctions are no help at all! The turnouts to the curves allow trains to continue straight, avoiding the inner loop OR follow the curve to run on the inner loop. Trains may also leave the inner loop and follow the yellow track to the next loop or farther into the layout.



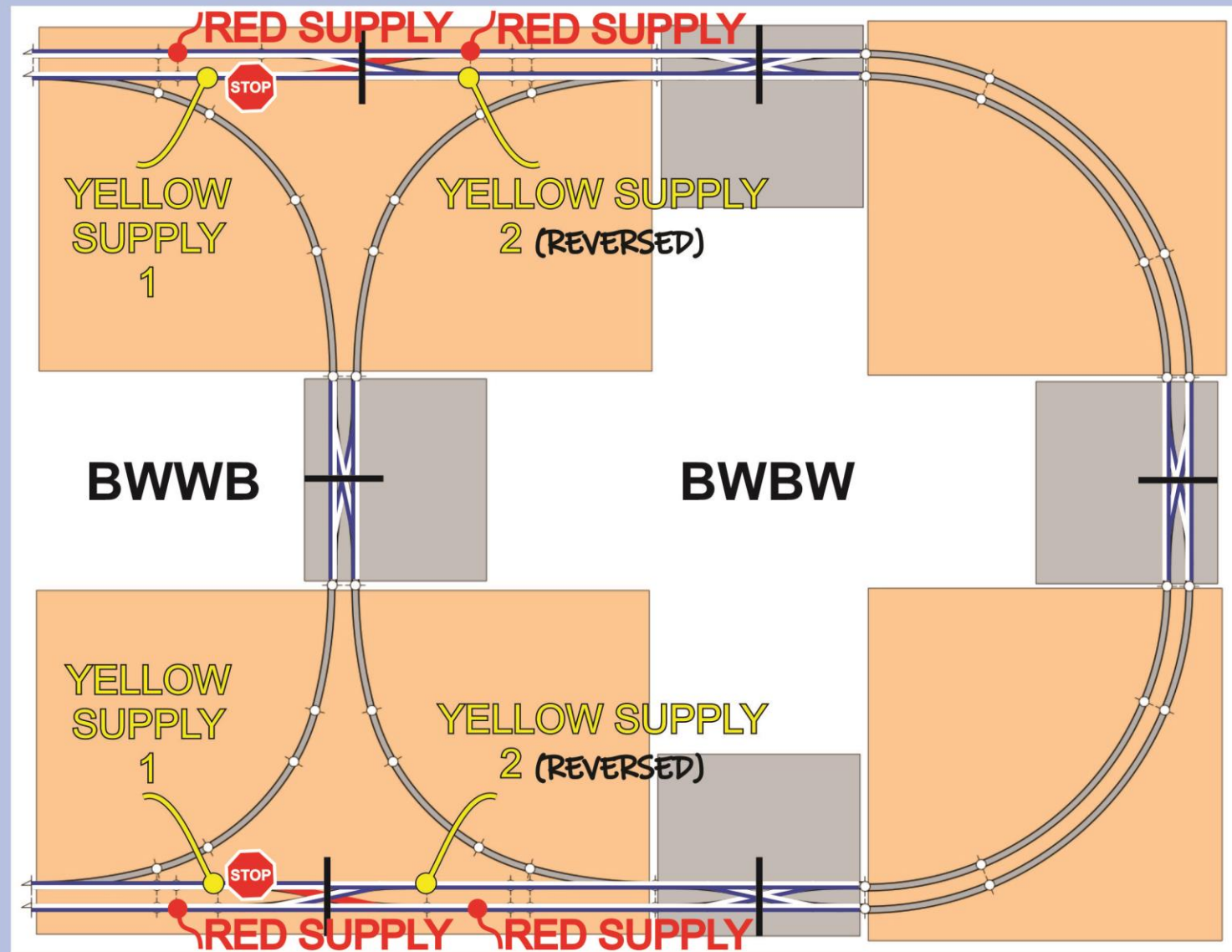
(NOTE: The inner loops could be supplied from the red bus)



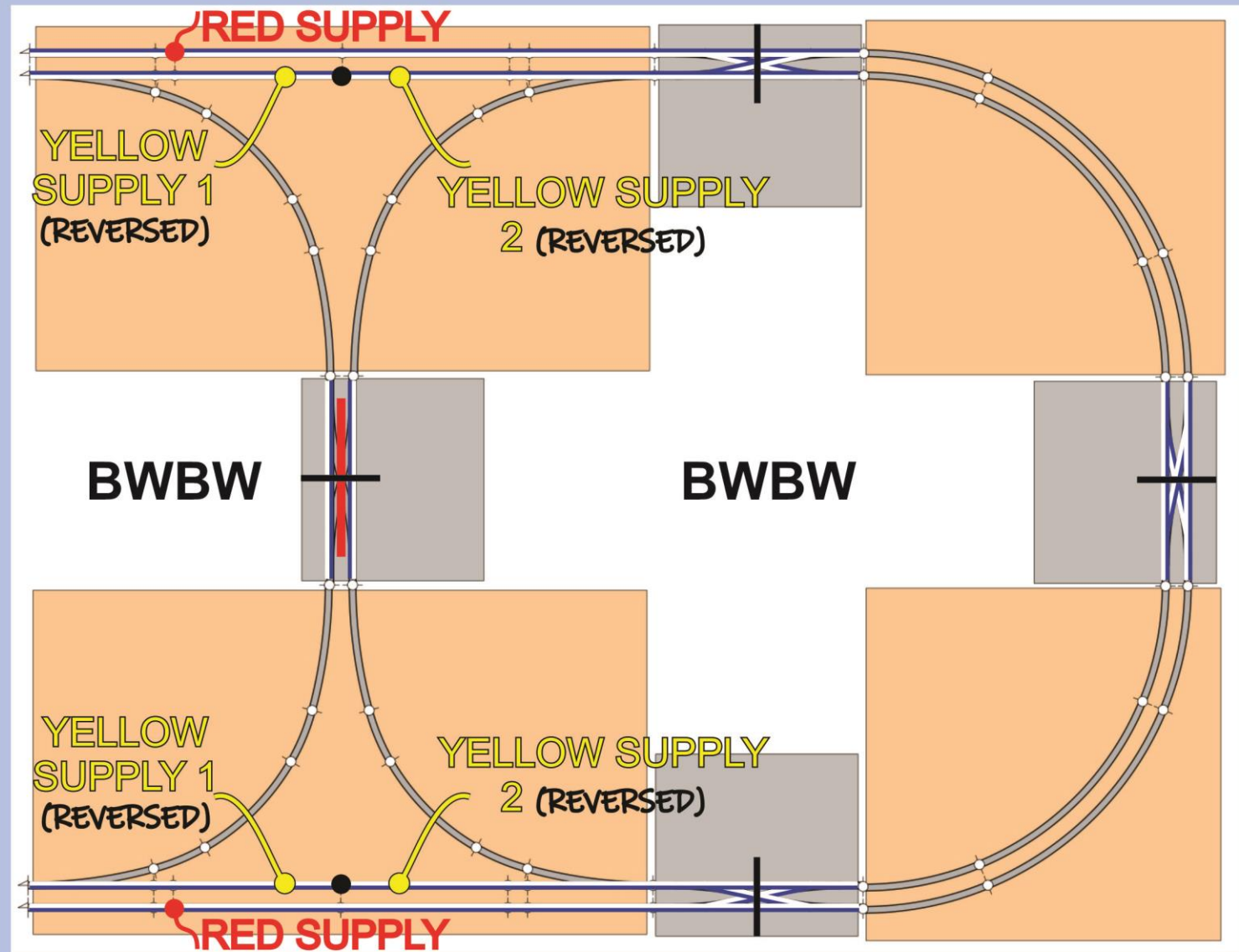
Standard T-TRAK BWWB wiring to this end loop adjusted to create a pseudo BWBW situation allows any crossovers in the end loop to be used allowing trains to cross between the red and yellow tracks of the loop. Notice also that the double crossover between the BWWB loop on the left and the BWBW loop on the right can be used allowing trains to travel from loop to loop. All 4 of the junction's turnouts **MUST** be set to the curves around the inner loops.



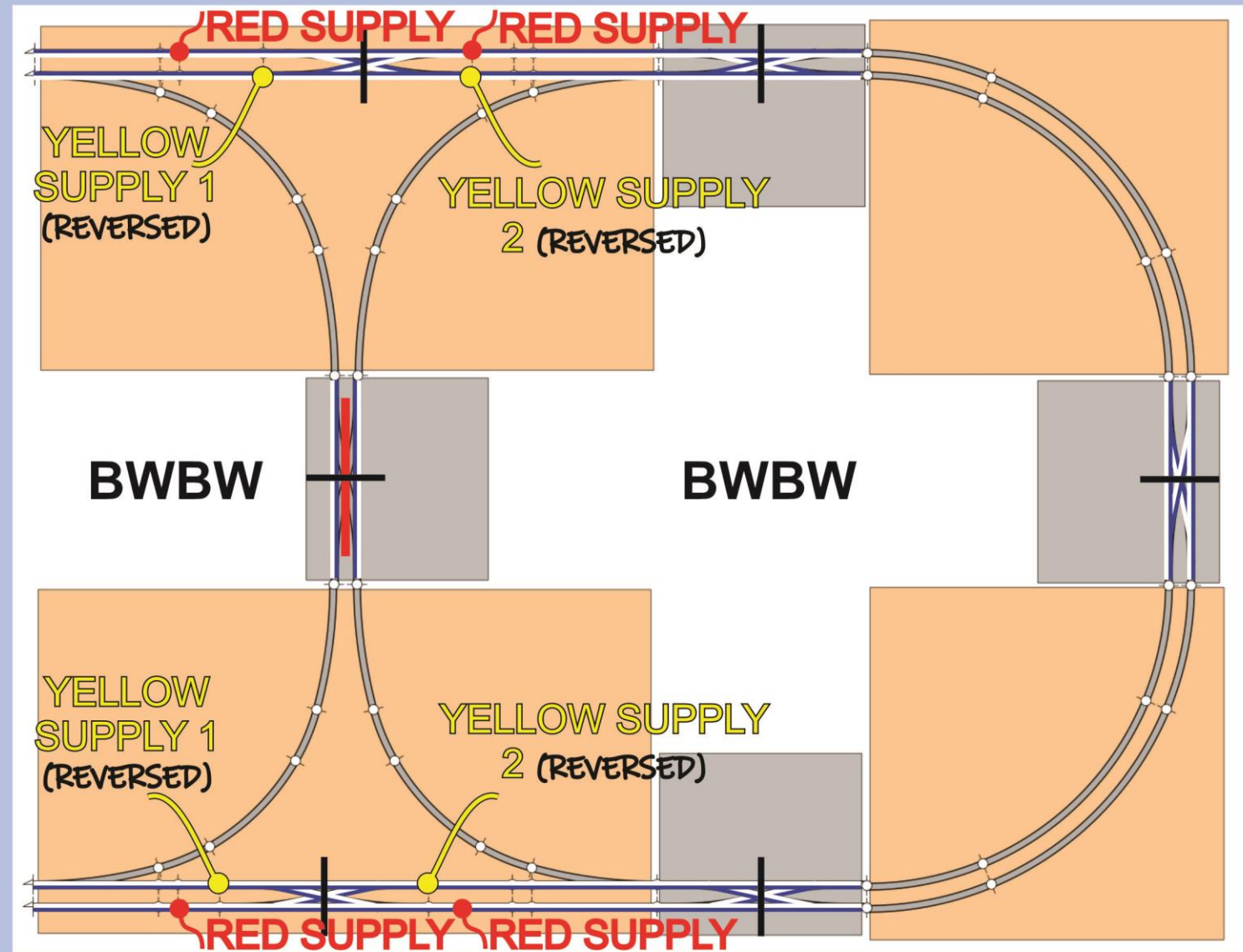
Standard T-TRAK BWWB wiring to this end loop adjusted to create a pseudo BWBW situation allows any crossovers in the end loop to be used allowing trains to cross between the red and yellow tracks of the loop. The double crossovers on the junctions can also be used, **BUT ONLY ONE WAY!**



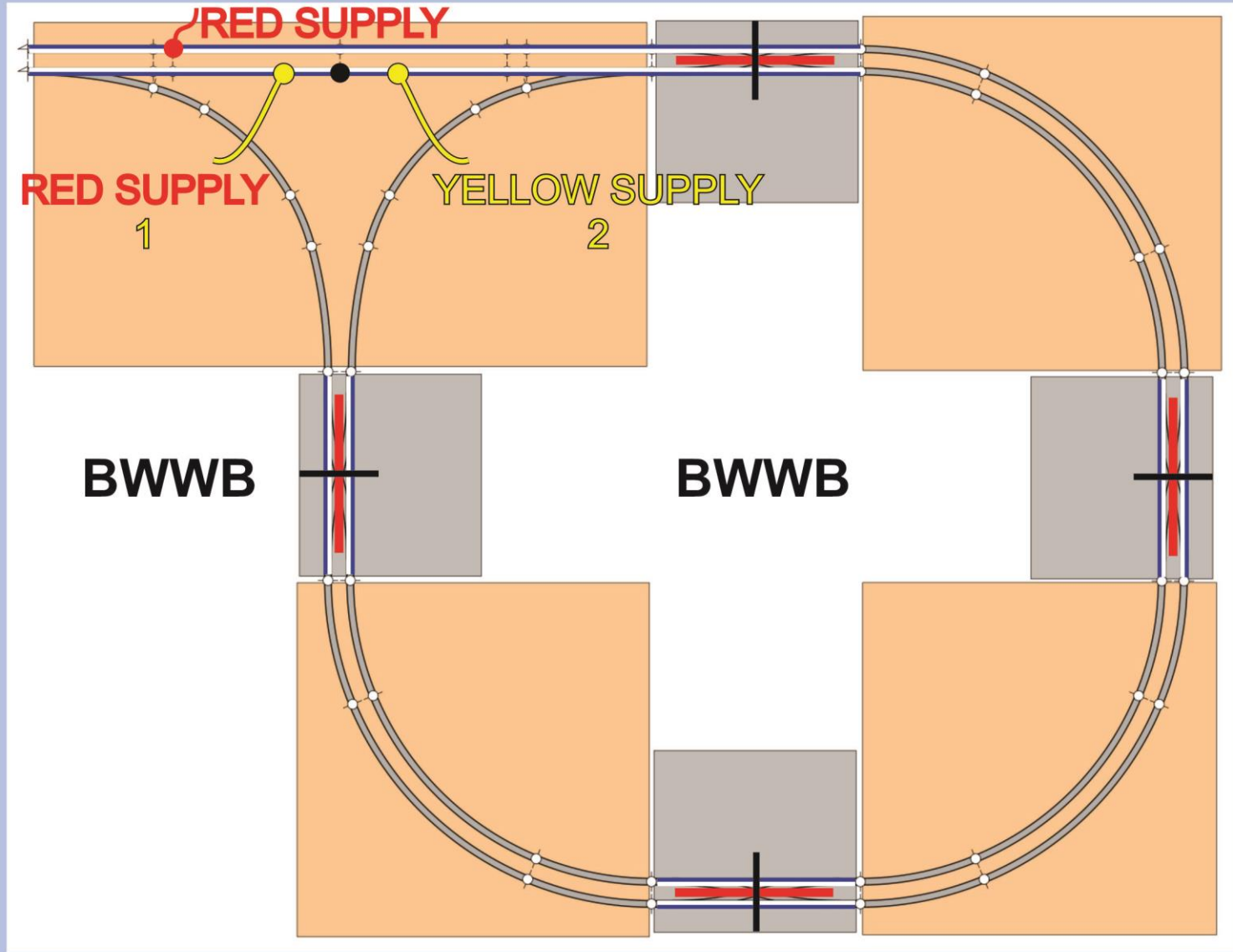
With 2 adjacent BWBW loops the crossover between the 2 inner loops is unavailable. Crossovers between the inner and outer tracks are available. All 4 turnouts will allow trains to access or avoid the inner loops.



With 2 adjacent BWBW loops the crossover between the 2 inner loops is unavailable. Crossovers between the inner and outer tracks are available including those added to the junctions. All 4 turnouts will allow trains to access or avoid the inner loops.



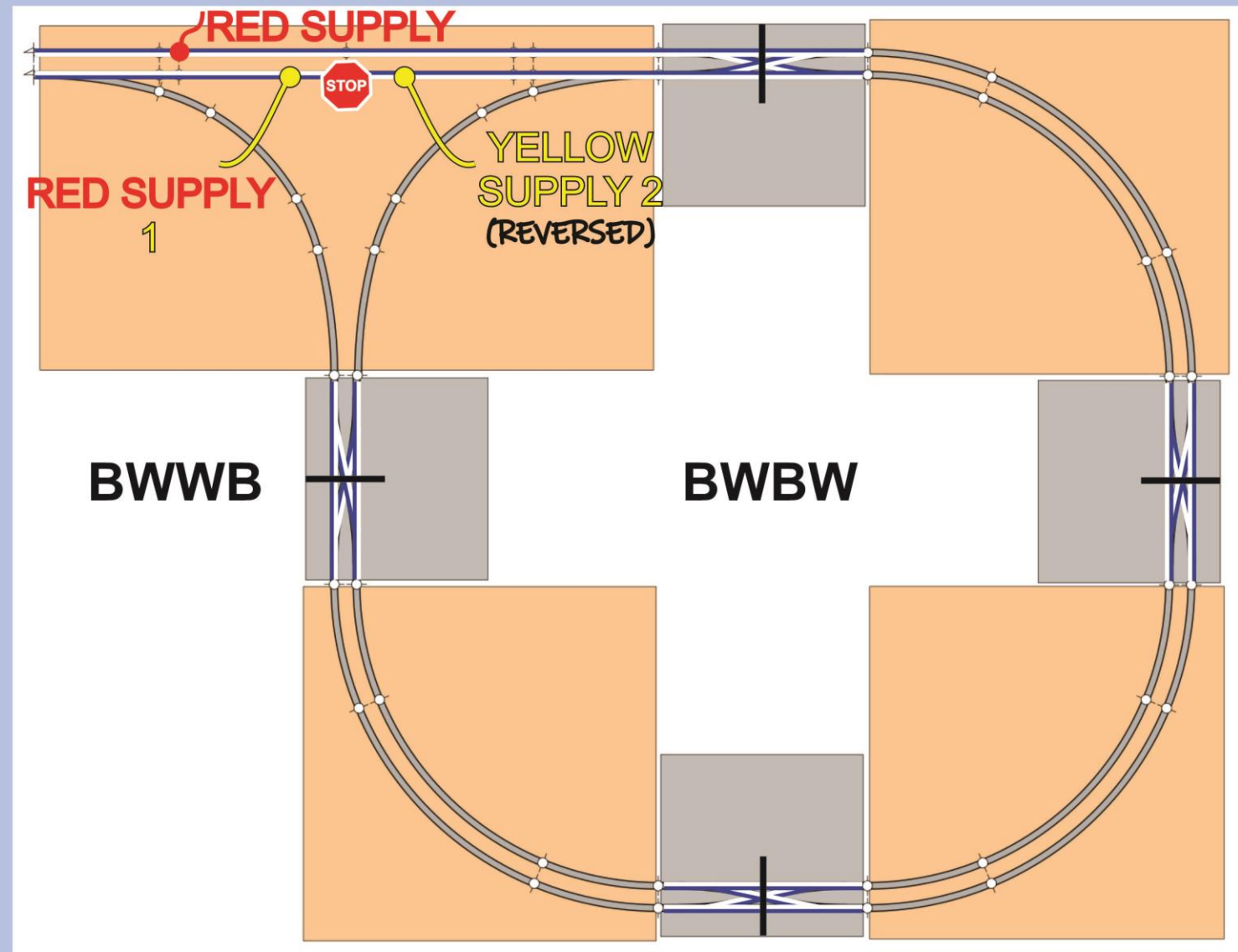
A single module row spine is red track exclusive and therefore can only be BWWB (to the left of the diagram). Red line trains run around the end loop and back out the spine in the opposite direction. Due to the BWWB standard wiring the double crossovers are unavailable but the turnouts to the inner yellow loop can be used depending on the direction of travel of the trains.



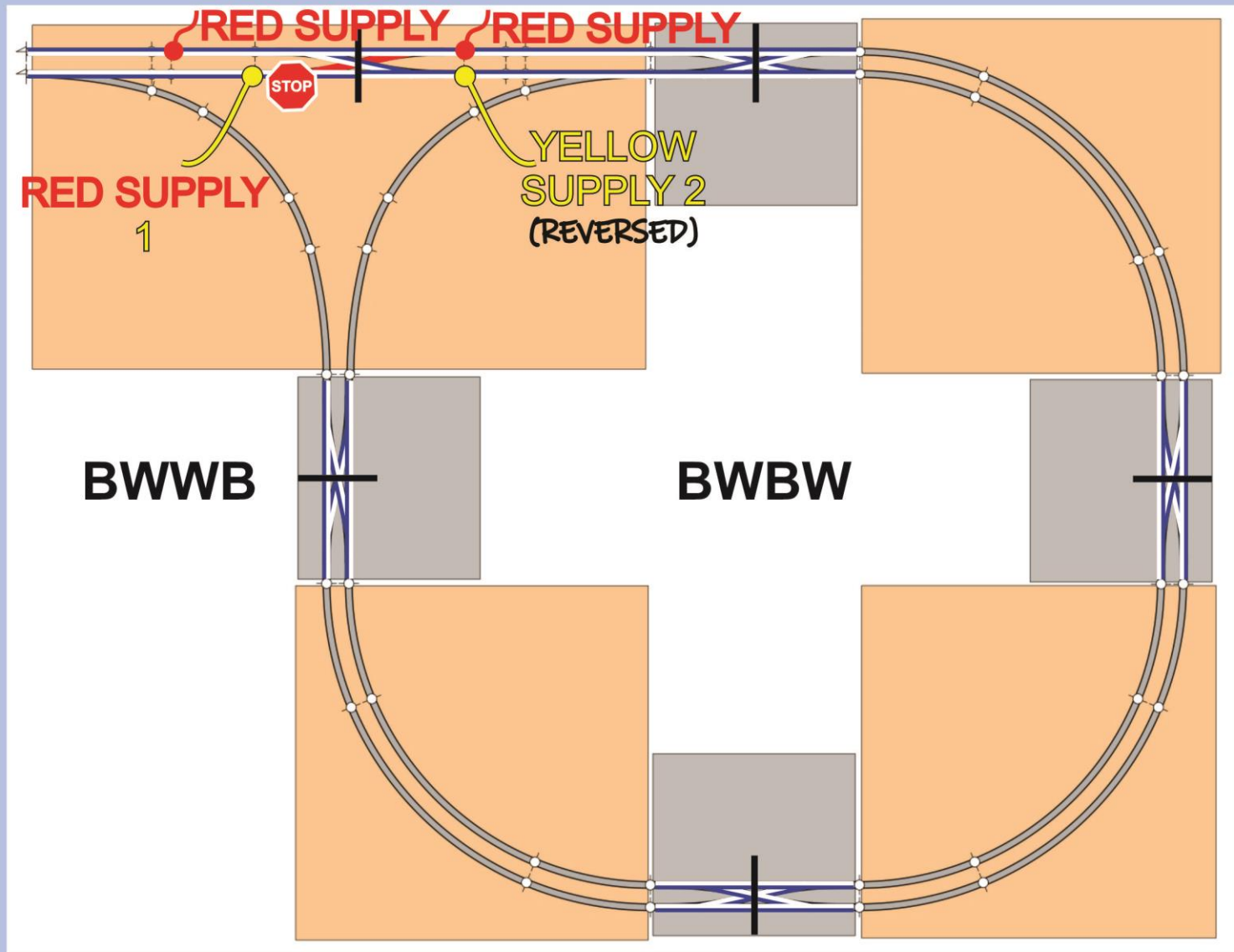
(NOTE: The inner loops could be supplied from the red bus)

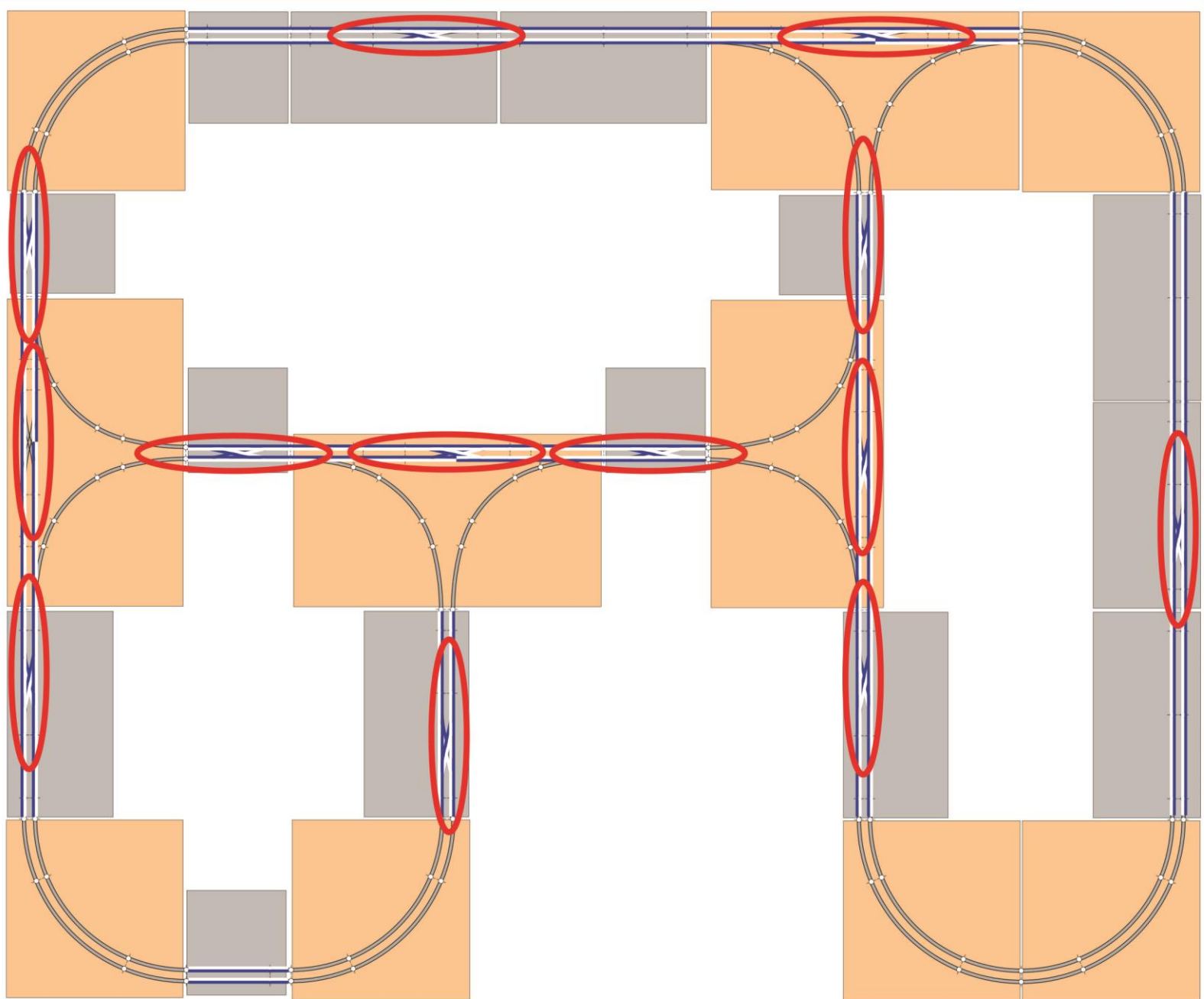


A single module row spine is red track exclusive and therefore can only be BWWB (to the left of the diagram). Red line trains run around the end loop and back out the spine in the opposite direction. The junction's insulated rail joiners prevent shorts when the end loop wiring is adjusted to create a pseudo BWBW condition allowing full access between the inner and outer tracks. The junction's turnouts must be used to direct trains to the curves around the end loop. A double crossover inside the end loop allows full operational flexibility between the red and yellow tracks of the end loop.



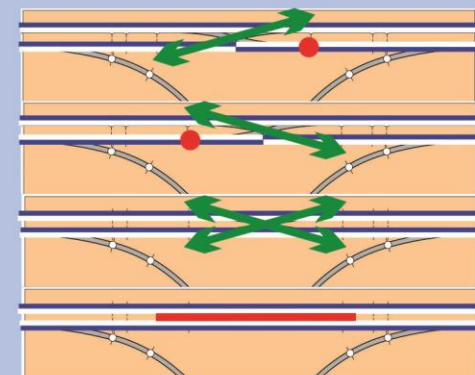
A single module row spine is red track exclusive and therefore can only be BWWB (to the left of the diagram). Red line trains run around the end loop and back out the spine in the opposite direction. The junction's double crossover is available one way when the end loop wiring is adjusted to create a pseudo BWBW condition allowing full access between the inner and outer tracks. The junction's turnouts can be used depending on the direction of travel of the trains. A double crossover inside the end loop allows full operational flexibility.



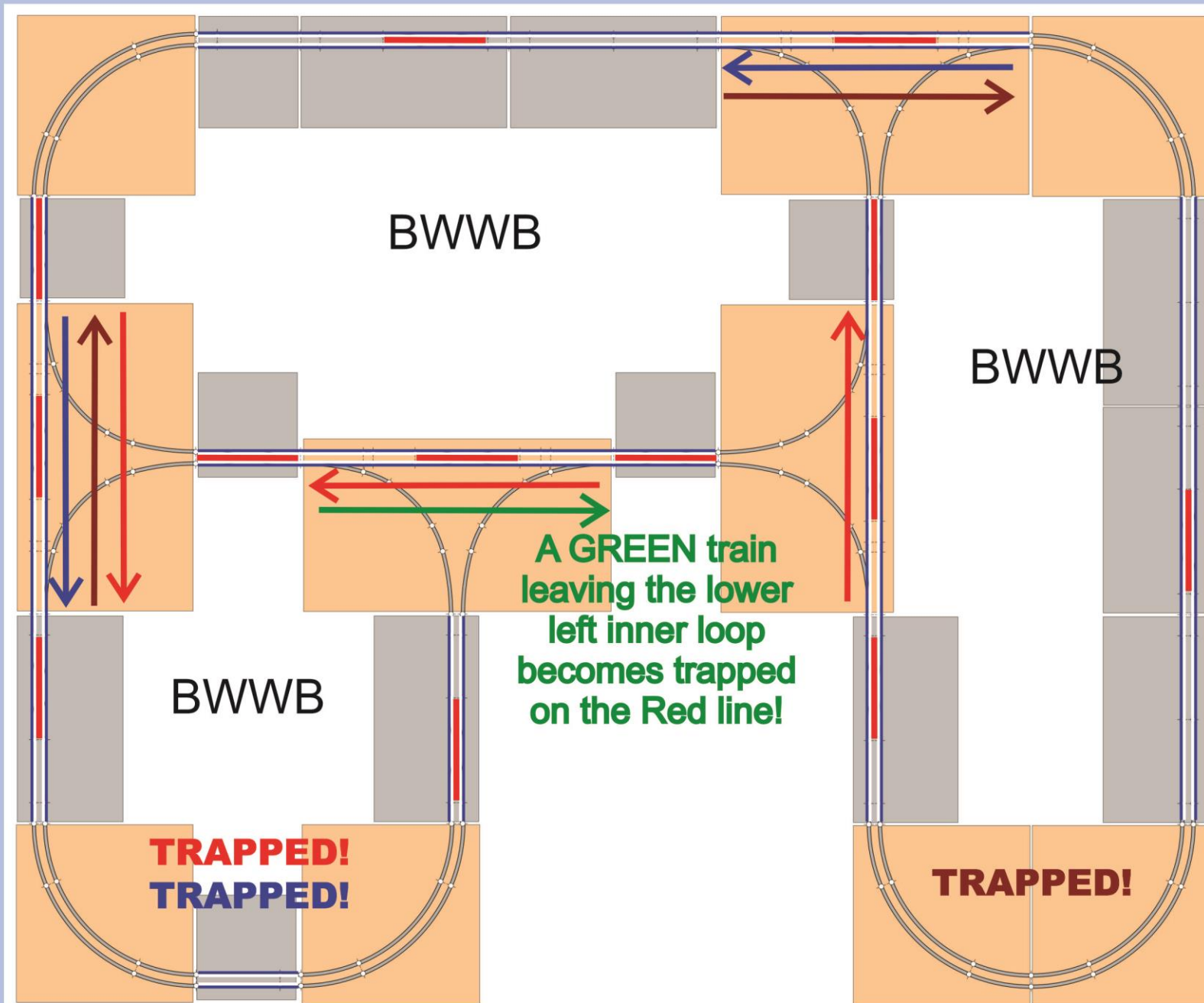


There are 13 double crossovers on the following diagrams, their locations shown by the red ellipses. I used the double crossovers to illustrate how including them in the construction of the popular large junctions can be beneficial. Their locations elsewhere in these diagrams show that left OR right turnouts could also be used, or not.

Turnout Availability Codes

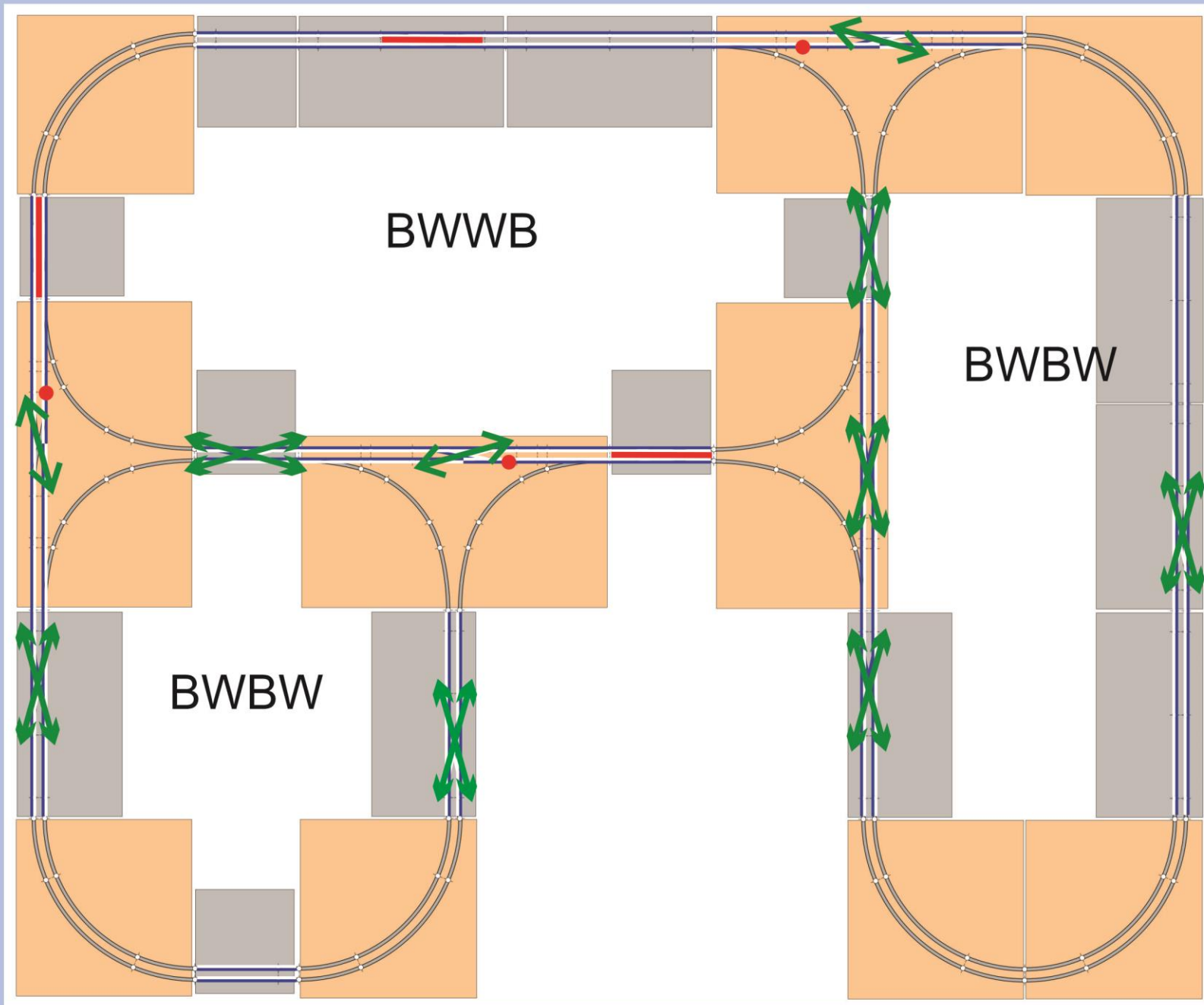


- One way only
- One way only
- Both ways
- Unavailable

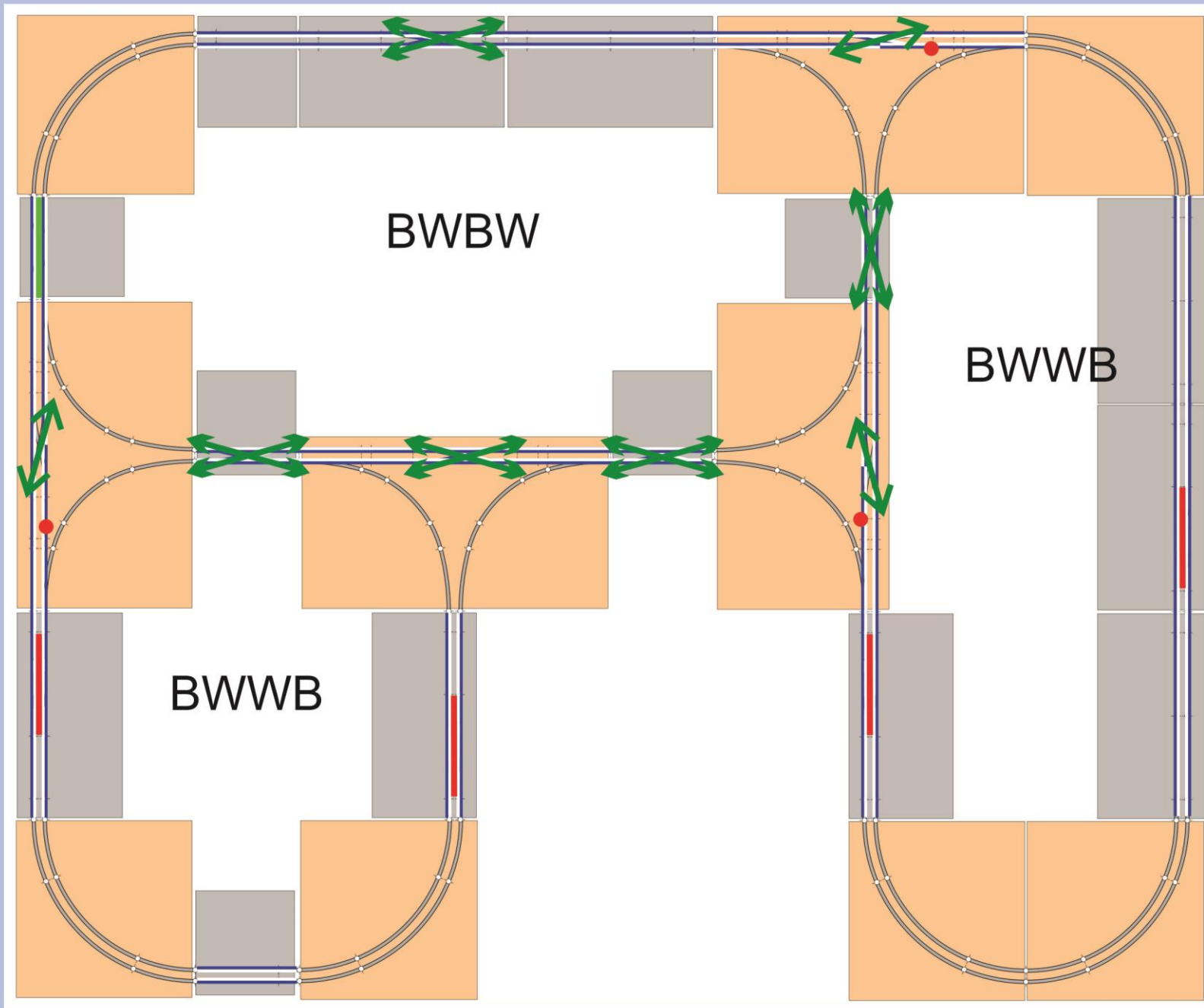


With ALL BWWB wiring this is the WORST case scenario. As with all BWWB wiring NONE of the crossovers can be used at all! The best thing to do here is to operate trains on their assigned loops only regardless of direction. Trains leaving their loops will require reverse ops to return. Although this is the easiest layout to wire (could all be supplied from one bus) it is the most restrictive and least fun to operate.

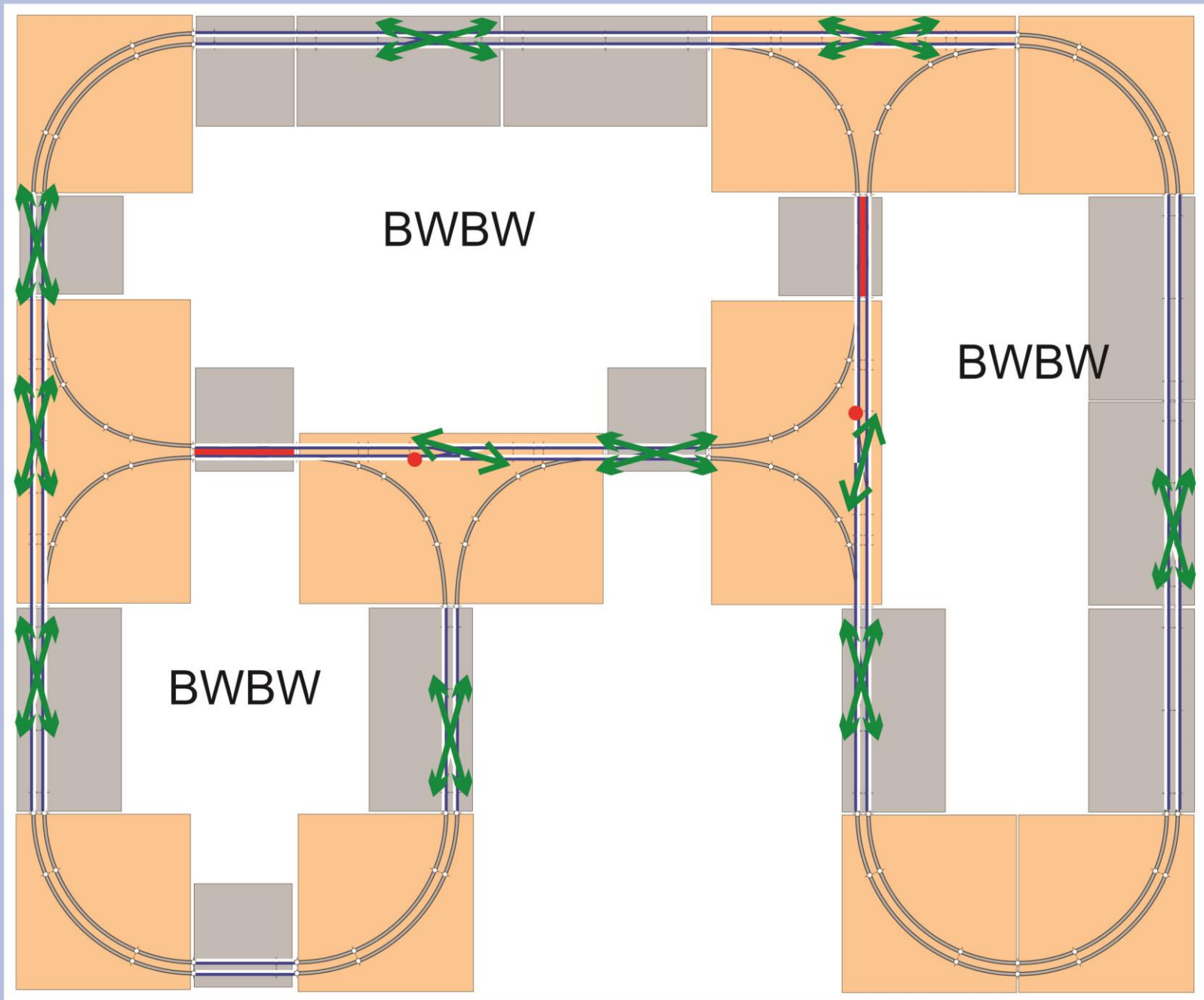
The following examples are far more fun but you must keep your wits about you as you lay the busses and wire the layouts.




With only the middle loop wired as BWWB three crossovers are unavailable and three others can be used in one direction only. No trains will be trapped on any inner loops. When using the crossovers and turnouts there may be train direction issues requiring some advanced rail-roading in order to avoid meets! The biggest issue with ALL these scenarios is keeping the wiring straight as the Yellow busses are created. The Red bus is just a simple loop all the way around the outside of the layout.



As usual with BWWB wiring four crossovers are unavailable in the BWWB loops. But, the adjacent BWBW middle loop allows those inner loop trains an escape route. Three crossovers are available in one direction only. No trains are trapped in any of the inner loops. When using the crossovers and turnouts there may be train direction issues requiring some advanced rail-roading in order to avoid meets!



With the Yellow bus connections to each of the three inner loops reversed to create a pseudo BWBW condition throughout the layout only two crossovers are unavailable and two others can be used in one direction only. Trains can operate in and out of all loops without being trapped in a loop requiring reverse moves to get out. When using the crossovers and turnouts there may be train direction issues requiring some advanced railroading in order to avoid meets!



THANKS

For Watching

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