# Curved Scissors Crossover

Subsequent to Martin's initial, and very helpful, comments regarding my first attempt to create a "here's how I did it" (tutorial) on 'templotting' a scissors crossover, I have completely redone the sequences to show how elegantly the software can be used to create such a track formation.

This "how to" also works for a straight scissors crossover.

These sequences are done with PUG .091c in P4/S4 gauge. Minimum radius has been set at 48 inches or 1220 mm and the value for adjacent track centers is left at the default value of 44.67 mm. Zoom in and out as necessary to work and to view the results of your work. All templates should be named, I give suggested names. Menu items are in **bolded blue** and where you will be selecting from a sequence of menu items, they will be separated by the ">" sign. Where menu items are used on a regular basis they will not be preceded by an explanation. e.g. save control template to the background.
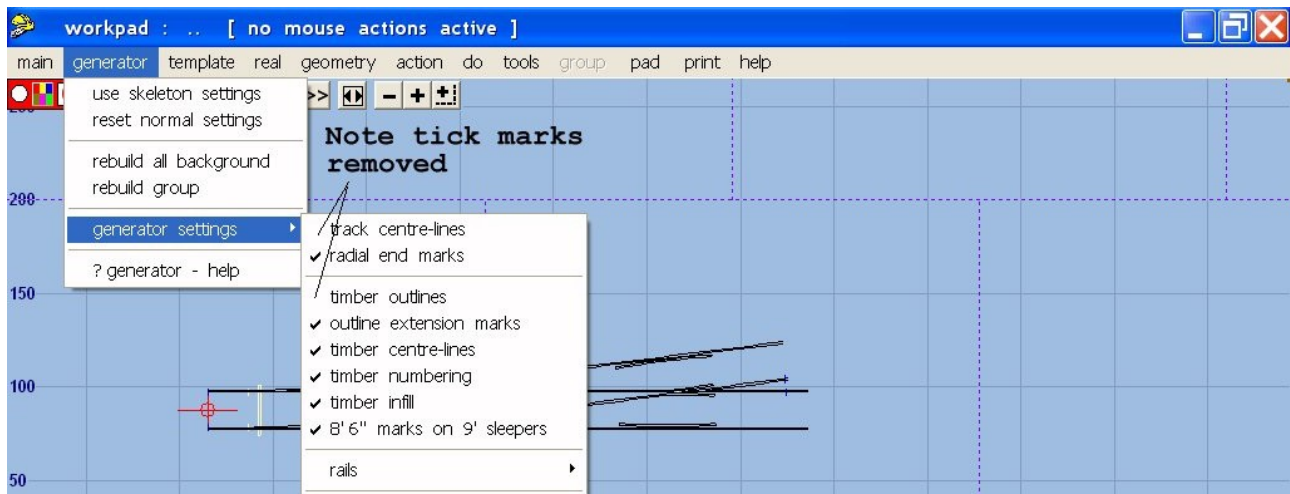
1. There are fourteen templates to this small section of track so it is best to hide name labels.

    pad > hide name labels

    You may wish to hide the information panel.

    pad > hide information panel or alternately **F2** toggles the panel on or off.

    Hide the zoom / pan window if you wish, it will reappear when you do.

    CTRL – F10.

    Change the generator setting to exclude timber outlines and track center lines as they just clutter up the screen.

    generator > generator settings > timber outlines

    generator > generator settings > track center lines

    Timbering is not covered in these sequences. Timbers are reinstated using the shove timbers menu items. You can reinstate track center lines if you require them. Note: these settings must be changed each time Templot starts as it starts with the default settings. Changed generator settings are not saved, not even in a template file.
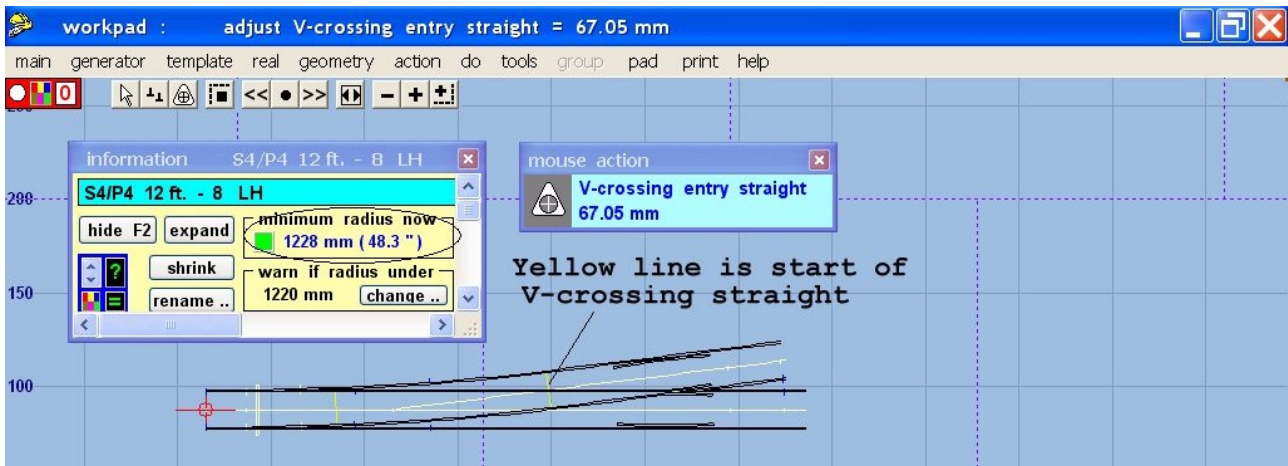
2. Start with a left hand B10 turnout on a 3000 mm curve, no timbers, as you will put them in at the end of these sequences.

template > new template (quick set) > template size – B10, main road curving – 10 chains

Name the template "**Lower left turnout**".

Change the switch type to BH or FB 12 ft. straight heel switch as this lengthens the turnout road arc between the switch rails and the turnout road crossing entry straight just before the V-crossing. The switch blades are the equivalent of the BH size B semi curved switch (REA).

template > switch options > BH or FB 12 ft. straight heel switch

For this "how to" it is necessary that the diamond V-crossings are on the turnout road crossing entry straight. This produces a regular diamond with all its crossings at the same angle.

With this procedure there are two factors to watch, a) that the minimum radius of the turnout does no go below your minimum requirements and, b) the V-crossing entry straight is long enough to allow the diamond V-crossings to be on the turnout V-crossing straight.

Using the mouse action adjust straight portion of V-crossing. Note how the adjustment both shortens the turnout and changes the turnout minimum radius. Here we have settled on V-crossing entry straight of 65.00 mm as it results in the turnout minimum radius slightly more than our chosen minimum radius of 48 inches.

Action > mouse actions : real > adjust V-crossing entry straight – adjust to 65 mm

If the adjacent track centers are spaced further apart than the minimum you will find that the V-crossing entry straight does not have to be as long in order to have the diamond V-crossings on the turnout V-crossing straight.

Omit the turnout road check rail as we do not need it.

do > omit rails and joint marks > remove tick from turnout check rail.

For other gauges and / or adjacent track settings you will have to experiment to find out what value to use for the V-crossing entry straight. Note that you cannot have the diamond V-crossing in line with the turnout V-crossings as it is not possible to provide proper check rails.
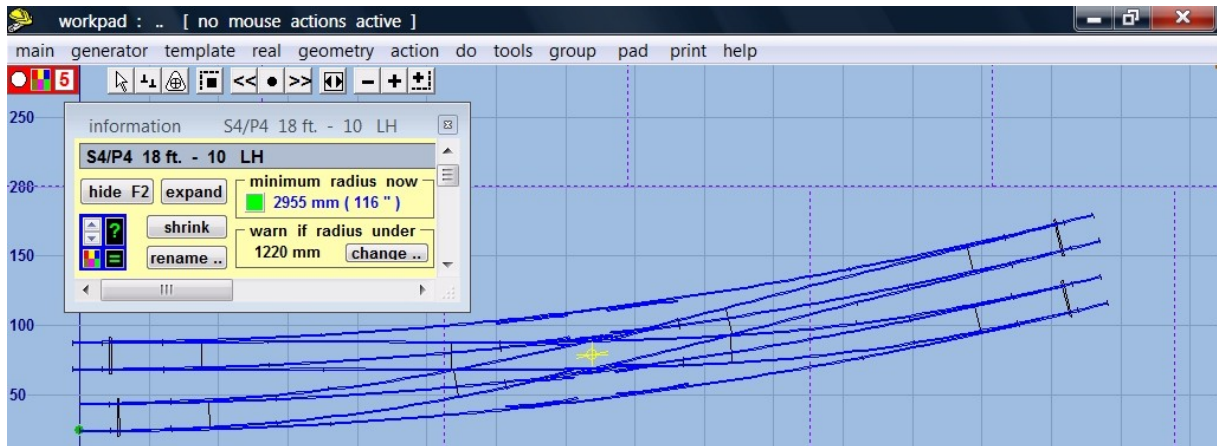
3.   Now that we have one turnout to our liking, create the other three turnouts for the crossover.
      First, shorten the turnout to only that portion required for the crossover.

do > turnout road > crossover

Put the peg on the turnout crossing point (TXP).

Geometry > peg positions > peg on TXP or alternately **(CTRL-5)**

Shorten the turnout to the turnout crossing point

do > snap to peg

Name the control turnout "Lower left turnout" then make second turnout by mirroring the first turnout. Note the peg has moved to the MXP.

tools > make mirror on peg

After this mirroring you will find that Templot has changed the switch option to an 18 ft straight heel switch. Note also that the turnout minimum radius has shrunk to just under 51 inches.

Name the control turnout "Lower right turnout" then make the crossover turnout.

tools > make simple crossover

Name the control turnout "Upper left turnout" then make second turnout by mirroring the first turnout.

Main > store & background

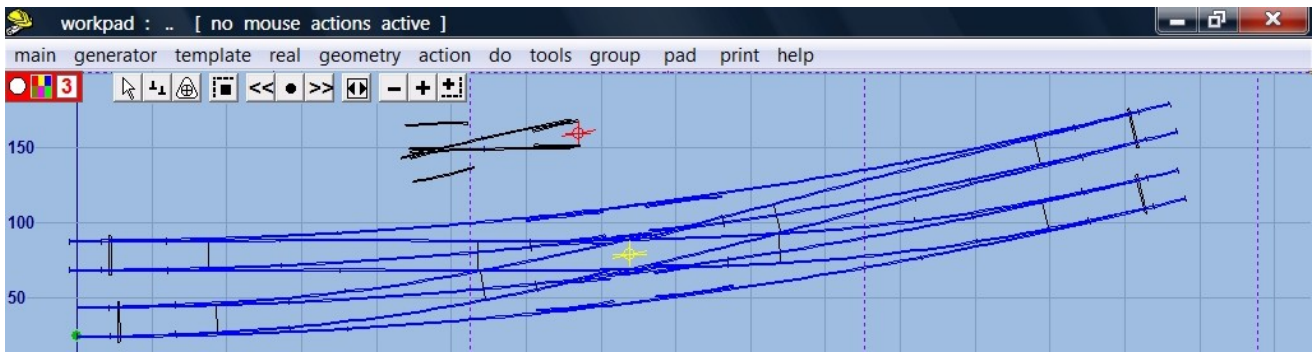To make upper right turnout left click on the Lower left turnout.

delete to the control

tools > make simple crossover

Name the control turnout "Upper right turnout" then store it to the background.

main > store & background

If this sequence is not followed you will not have a symmetrical diamond

4. Use **F7 shift position** to move the control template off the background. Convert to a half diamond, omit the main and turnout stock rails, reinstate the turnout check rail and swap the handing of the half diamond.

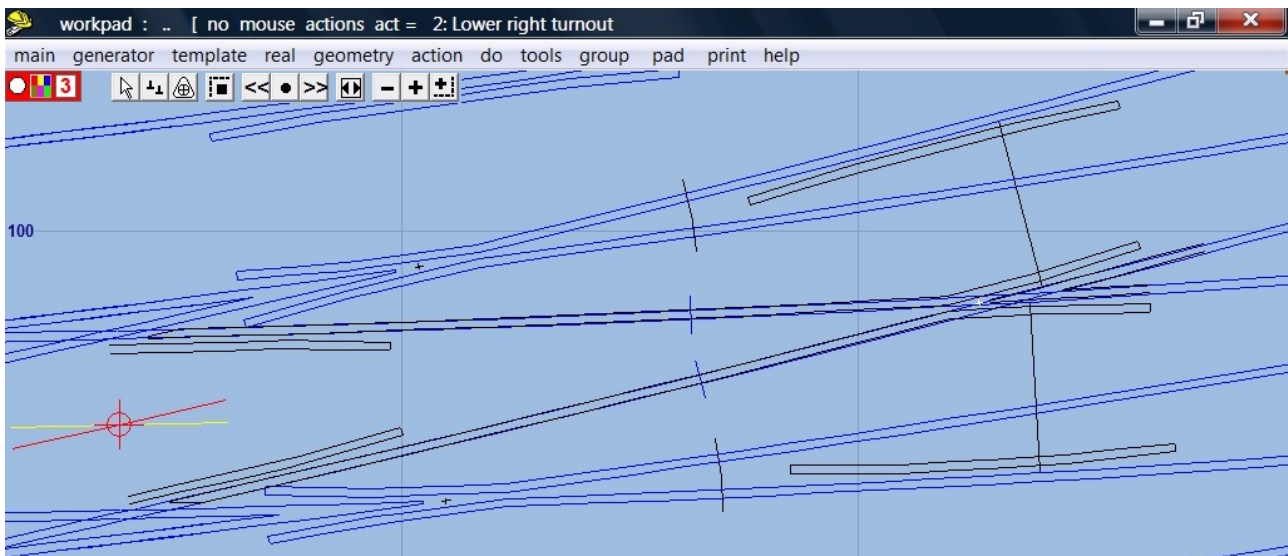   **template > convert turnout to a half diamond**

    do > omit rails and joint marks > remove tick from turnout road stock rail and main road stock rail, put tick mark on turnout road check rail.

   Swap handing of half diamond

    template > swap hand

    action > F5 V-crossing angle options > any angle

    Use **F5 size** to change the V-crossing angle to 1:5.

5. Now align the control template over the upper right turnout background template. Left click on upper right turnout.

    main > peg / align tools > snap control template onto background template > at peg

    geometry > notch > reset notch on pad datum

diamond V-crossing fine point
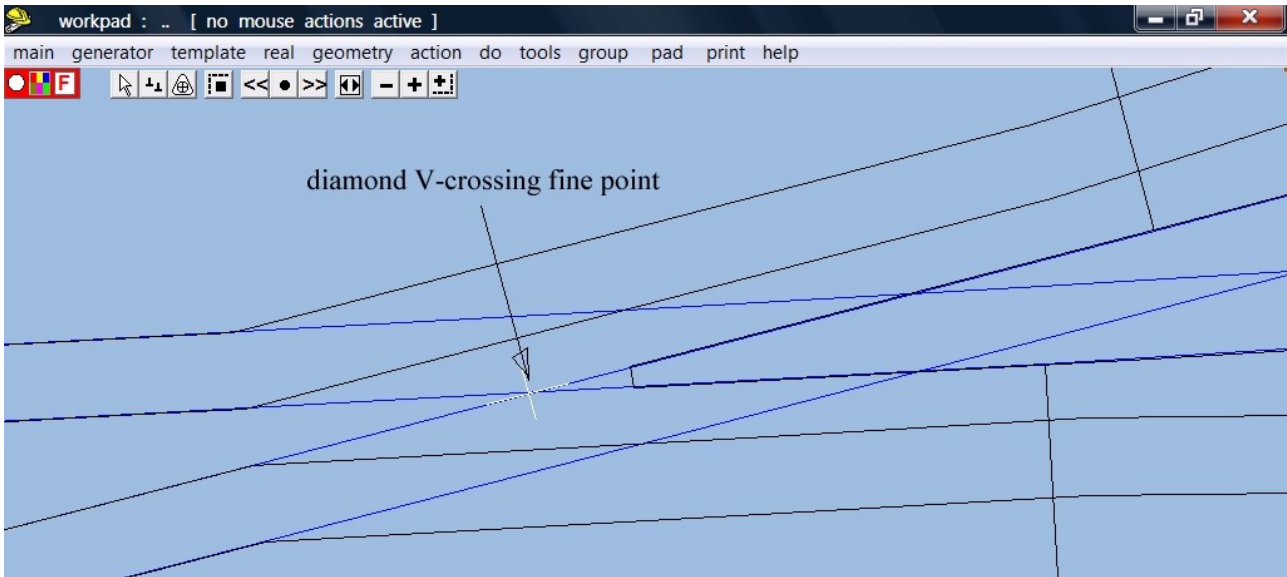
6. Zoom in on the diamond V-crossing. You will see there is a slight mis-alignment of the fine point with the intersection of the two turnout stock rails. Change the mouse action response to extra fine then adjust the alignment of the V-crossing fine point.

    Action > modify mouse response > extra fine

    Use **F8 rotate around peg** to align the control template cross hair with the inside face of the upper right turnout, turnout stock rail

    Use **F5 size** to align the V-crossing fine point with the intersection of the two turnout stock rails.

    Use **F4 overall length** to shorten the V-crossing. Make sure you do not shorten the check rails.

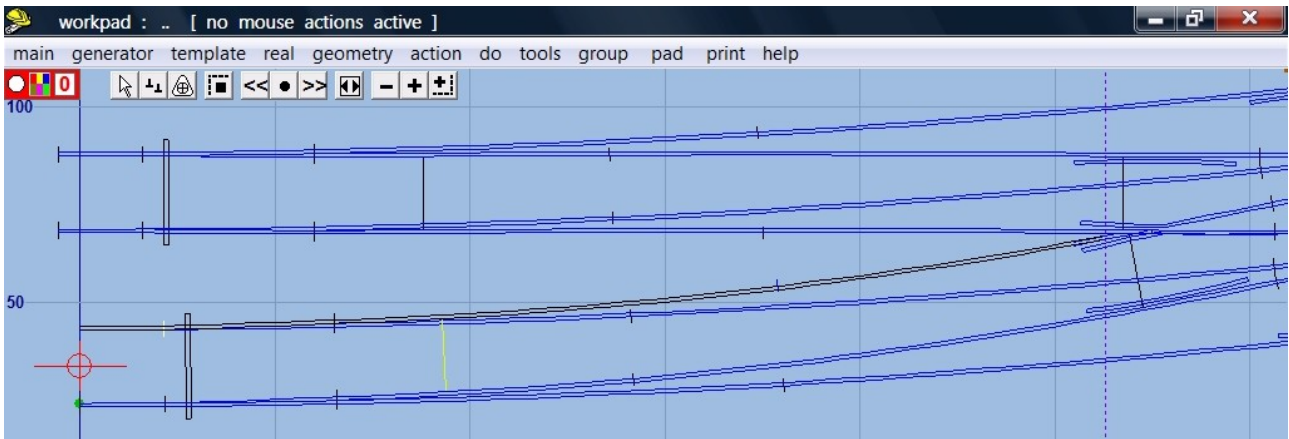   Name the control template "Right half diamond"
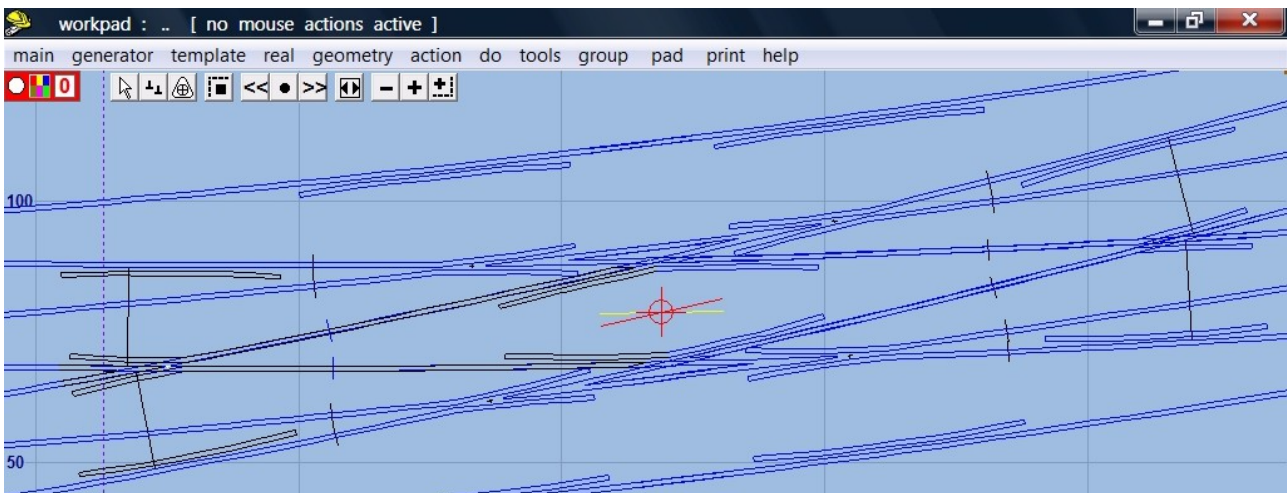
7. Make left half of diamond crossing.

    Tools > make diamond crossing

    Name the control template "Left half diamond". Repeat sequence 6 above.

    main > store & background

8. Now we clean up the turnout stock rails by shortening them to the diamond V-crossings. Left click on the lower left turnout.

delete to the control

geometry > peg positions > reset peg on datum   Ctrl 0

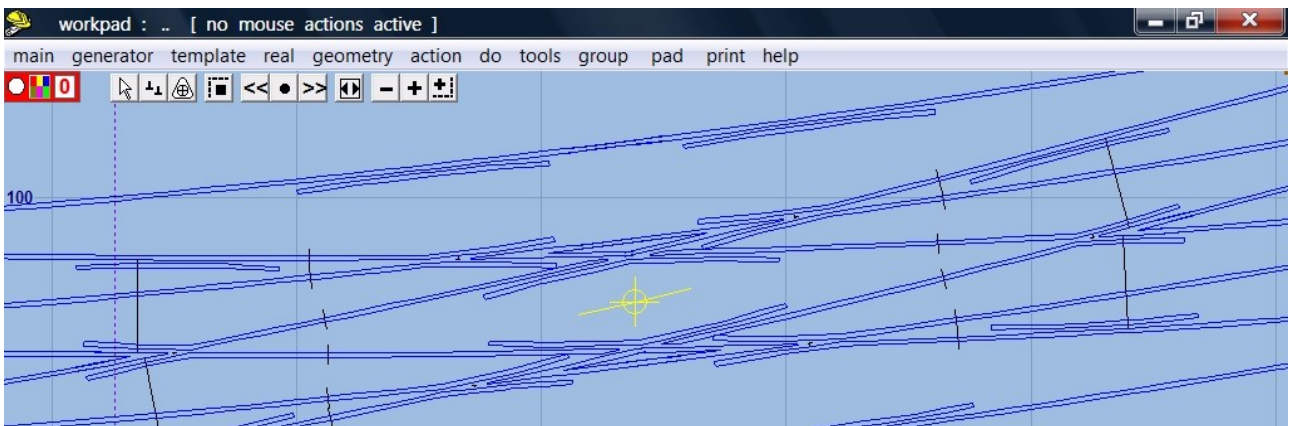**do > omit rails and joint marks > remove tick from turnout road stock rail**

main > store and background

do > omit rails and joint marks > remove tick from all rails, reinstate tick mark for turnout road stock rail
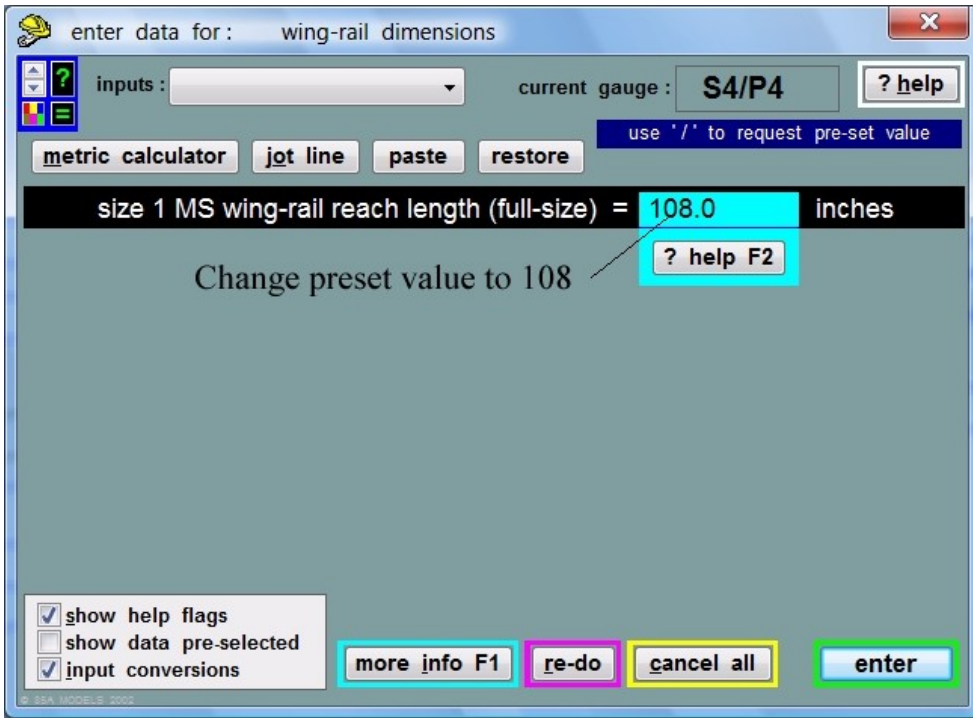
Use **F4 overall length** to shorten stock rail to meet diamond V-crossing.

Name control template "Lower left turnout, turnout road stock rail"

main > store and background

9. Repeat sequence 8 for the other three turnouts.

10. Let us clean up the main road crossing rail wing rails. Left click on the lower left turnout

   **delete to the control**

    do > omit rails and joint marks > remove tick mark from main road crossing rail

    main > store & background

    do > omit rails and joint marks > remove tick marks from all remaining rails and reinstate tick mark for main road crossing rail

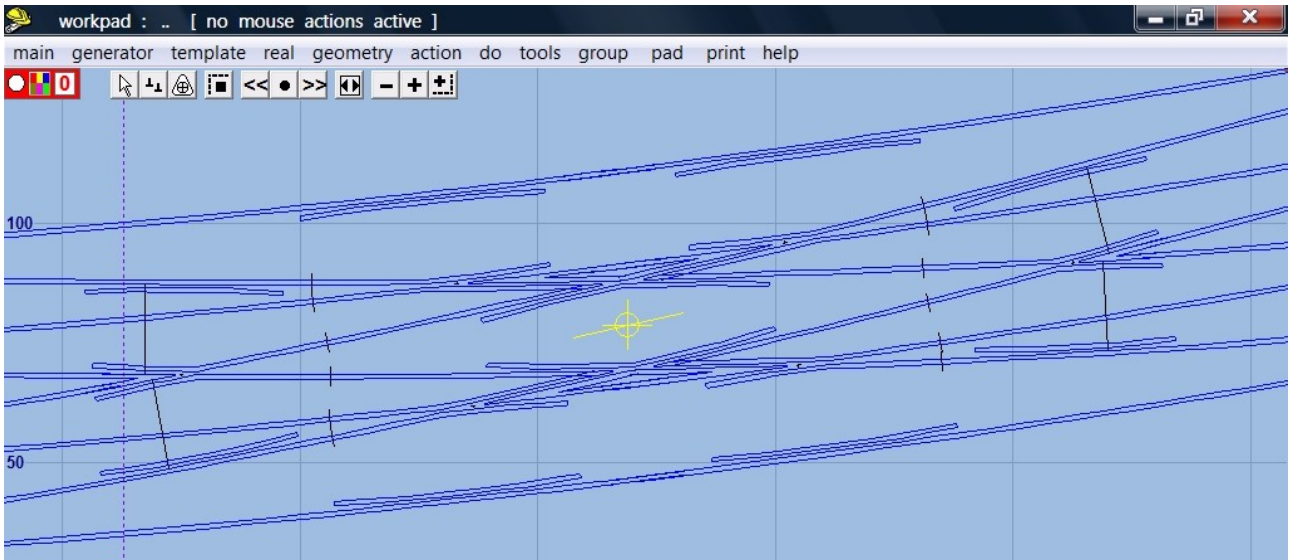   **real > customize V-crossing > wing and check rails…….**

    Change value of first choice to "108". Cycle through the remaining choices without making any changes
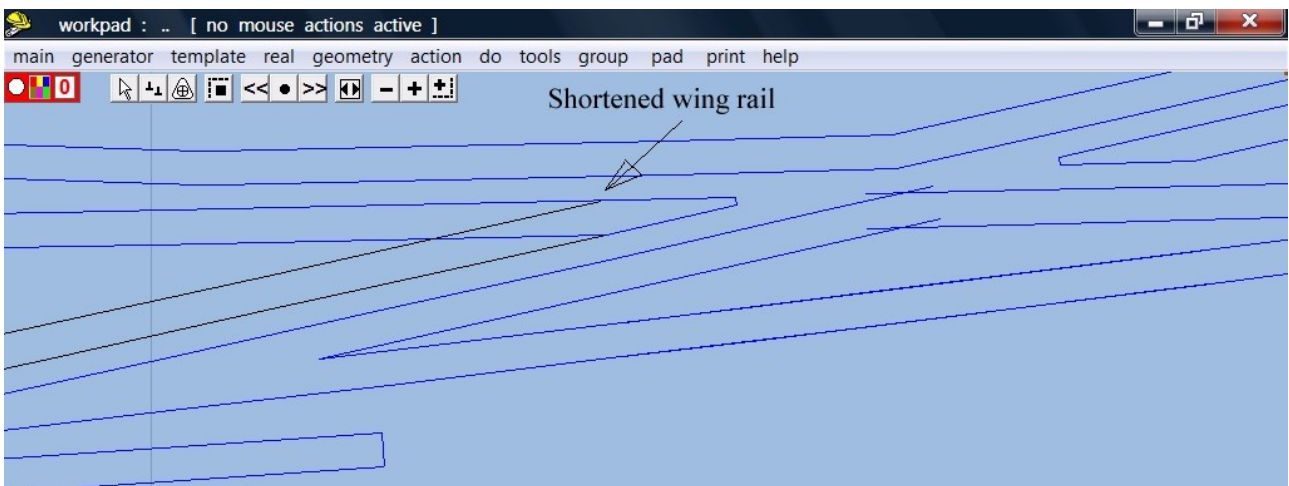
11. Use **F4 overall length** to shorten the wing rail to meet up with the diamond crossing rail

    Name template "Lower left turnout, main road crossing rail"

    main > store & background

12. Repeat for the other three turnouts.

Here is the finished rail product. Note the timbers still need to be reinstated, lengthened and shoved – all with the **real > shove timbers** menu item.