This Tutorial Video shows how to construct a Template for An Irregular Diamond Crossing– using Templot 0.91c

The original source demonstration document PDF for this tutorial was written and illustrated with captured screen shots by - Richard_t.

This instruction tutorial has been produced on the basis of that document with some corrections and additions for clarity by - Brian Nicholls.

This tutorial demonstrates, the usage of the default dropdown menus for the Templot operating functions.

However, where the user of Templot is familiar with the use of the 'shortcut keys' for certain functions, these may be appropriately used, as required during the construction of the Irregular Diamond Crossing template.

Each of the individual operation instructions has been separately numbered in the left-hand margin to assist with functions that may need repeating during the construction of the template.

STEP 1.

1.0001.   Start off with two plain track curves (or a straight and a curve, as required by your plan). These should be position to follow the background track plan diamond crossing of which you wish to make a template. For the purpose of this tutorial example, pre setup curves have been placed in a typical crossover position on the workpad screen. These curves have been chosen by arbitrarily pre-setting curve data, and one is set to 2900mm and the other 3900mm: (Your own custom plain track curves would, of course, follow the background plan).

Again for the purpose of this tutorial example, the position of the peg set onto each of the template's datum point, is on opposite sides of the screen view at the lower quadrants.

10002.   Once you have correctly placed your two plain track start curves, it is recommended that you remove or hide your background plan image, in order to avoid possible system crashes or blackouts whilst zooming in very close to achieve accurate positioning of individual templates during the construction of the irregular diamond crossing.

1.0002.1.   Do this by using the following:

1.0002.2.   Select < pad >

↳ < pad background options >

↳ < hide background shapes >.

1.0003.   Please ensure the timbers are removed from these two plain track templates.

1.0003.1.   If in doubt, use < real >
↳ < timbering >
↳ < no timbering > on both templates before going to Step 2.

1.0004.   Remember to re-save each one when timbers have been removed.

1.0004.1.   If in doubt, select < main >
                                ↳ < re-store & background >.

1.0005.   Start screen should look like this as shown below in Figure 1:

Figure 1.
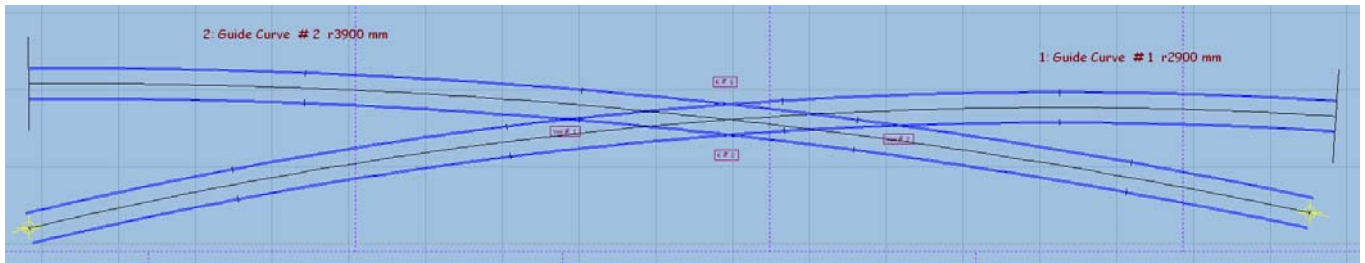
STEP 2.

2.0001.   Left click on Guide Curve # 1 r2900 mm and select < copy to the control > from
                 the popup menu.

2.0002.   Then use < action >
                                ↳ < mouse actions: geometry >
                                                ↳ < adjust plain-track length (F4) >

2.0002.1.   and adjust the length of the plain track until it is just positioned on the inside of the
                 first vee (Vee # 1 in this example). The inside overhang length at the vee is not
                 critical, but should be kept fairly short.

2.0003.   Then select < main >
                                ↳ < store & background (CTRL+V) >.

2.0004.   Now rename this new template by, Left clicking on of the new template (or use
                 Shift key + Left click on it's name label) and select < rename... > from the popup
                 menu. Re-name to say, Approach Road # 1.

STEP 3.

3.0001.   Left click again on Guide Curve # 1 r2900 mm and select < copy to the control >
                 from the popup menu.

3.0002.   Then select < geometry >
                                ↳ < peg positions >
                                                ↳ < peg on joint (CTRL -1) >.

3.0003.   Next use < action >
                                ↳ < mouse actions: geometry >
                                                ↳ < adjust plain-track length (F4) >,

3.0003.1.   and adjust the length of plain track until it is on the inside of the second vee (Vee #
                 2 in this example). The inside overhang length at the vee is not critical, but should
                 be kept fairly short.

3.0004.   Then select < main >

                                     ↳ < store & background (CTRL+V) >.

3.0005.   Now rename this new template by, Left clicking on of the new template (or use Shift key + Left click on it's name label) and select < rename... > from the popup menu. Re-name to say, Exit Road # 1.

3.0006.   Next, Left click on Guide Curve # 1 r2900 mm and select < delete to the control > from the popup menu.

3.0007.   Then select < geometry >

                                     ↳ < track centre-lines only >.

3.0008.   Next select < main >

                                     ↳ < store & background (CTRL+V) >.

3.0009.   The resulting screen is shown in Figure 2 below:

Figure 2.

STEP 4.

4.0001.   Left click on Guide Curve # 2 r3900 mm and select < copy to the control > from the popup menu.

4.0002.   Then use < action >
                             ↳ < mouse actions: geometry >
                                         ↳ < adjust plain-track length (F4) >

4.0002.1.   and adjust the length of the plain track until it is just positioned on the inside of the first vee (Vee # 2 in this example). The inside overhang length at the vee is not critical, but should be kept fairly short.

4.0003.   Then select < main >

                                     ↳ < store & background (CTRL+V) >.

4.0004.   Now rename this new template by, Left clicking on of the new template (or use Shift key + Left click on it's name label) and select < rename... > from the popup menu. Re-name to say, Approach Road # 2.

STEP 5.

5.0001.   Left click again on Guide Curve # 2 r3900 mm and select < copy to the control > from the popup menu.

5.0002.   Then select < geometry >

↳ < peg positions >

↳ < peg on joint (CTRL -1) >.

5.0003.   Next use < action >

↳ < mouse actions: geometry >

↳ < adjust plain-track length (F4) >,

5.0003.1.   and adjust the length of plain track until it is on the inside of the second vee (Vee # 1 in this example). The inside overhang length at the vee is not critical, but should be kept fairly short.

5.0004.   Then select < main >

↳ < store & background (CTRL+V) >.

5.0005.   Now rename this new template by, Left clicking on of the new template (or use Shift key + Left click on it's name label) and select < rename... > from the popup menu. Re-name to say, Exit Road # 2.

5.0006.   Next, Left click on Guide Curve # 2 r3900 mm and select < delete to the control > from the popup menu.

5.0007.   Then select < geometry >

↳ < track centre-lines only >.

5.0008.   Next select < main >

↳ < store & background (CTRL+V) >.

5.0009.   The resulting formation is shown in Figure 3 below:

Figure 3.
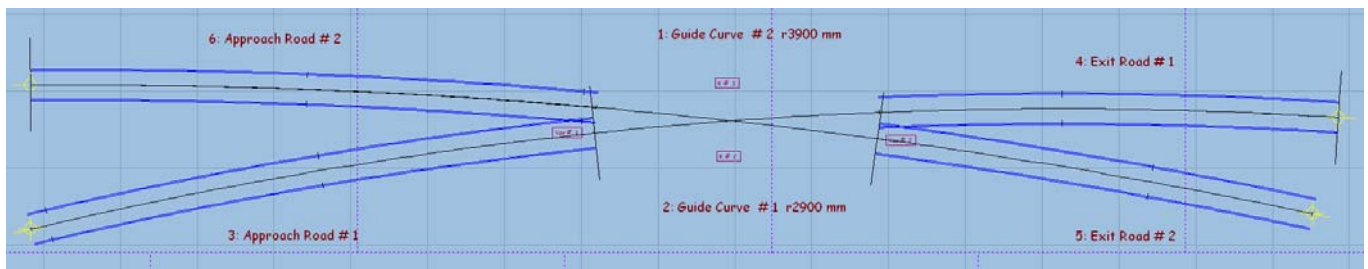
5.0010.   It is recommended that, at this point, you then perhaps, save your work as a precaution.

5.0010.1.   Do this by selecting < main >

↳ < save all templates … >

5.0010.2.   and choosing a name for the file, and save it.

STEP 6.

6.0001.   We can now start to construct the actual crossing parts, by using appropriate partial templates.

6.0002.   First use < template >
                    ↳ < new template (quick set)...(CTRL+Q) >

6.0002.1.   to create a B6 turnout.

6.0002.2.   It is important to note, for this tutorial example, the turnout is set to Right-Hand and the main road curving Positive, by clicking, if required, the appropriate radio button's in the dropdown menu.

6.0003.   Next use < real >
                    ↳ < timbering >
                            ↳ < no timbering >,

6.0003.1.   to hide the timbering for this template.

6.0004.   Now use < template >
                    ↳ < switch options... >

6.0004.1.   to change the switch to a 'BH or FB 9ft. straight heel switch'.

6.0005.   Then use < template >
                    ↳ < V-crossing options... >

6.0005.1.   to set the V-crossing geometry to 'Curviform' type crossing.

STEP 7.

7.0001.   Left click on Guide Curve # 2 r3900 mm,

7.0002.   and select < peg/align tools >
                    ↳ < align control template over, and snake onto peg >
                            ↳ < facing – trailing > from the popup menu.

7.0003.   Next, use < action >
                    ↳ < mouse actions: geometry >
                            ↳ < snake through peg (CTRL + F6) >

7.0003.1.   In order to snake fine point cross-hair of turnout template vee to where Exit #1 and Exit #2 roads cross at Vee # 2.

7.0003.2.   You will need to ZOOM in very close to align the template FP cross-hairs, and then re-select CTRL + F6 again to finely and accurately position the FP.

7.0004.   Then set < geometry >
                    ↳ < peg positions >
                            ↳ < peg on FP (CTRL-4) >.

7.0005.   Next set < action >
                    ↳ < F5 V-crossing angles >
                            ↳ < any angle >

7.0006.   Then select < action >
                    ↳ < F5 sizing options >
                            ↳ < length locked >.

7.0007.   Next, use < action >
                    ↳ < mouse actions: real >
                            ↳ < adjust turnout size only (F5) >

7.0007.1.   so that the turnout side of the template vee matches that of the crossing formed of Exit #1 and Exit #2 roads at Vee # 2 (only a reasonable portion of the vee needs to exactly match the crossing rails).

7.0007.2.   You will need to ZOOM in very close to align the small portion at the vee, and then again re-select F5 to complete the fine alignment.

7.0008.   Finally, unset < geometry >
                            ↳ < track centre-lines >

7.0009.   Please read important notes below on transitions before moving on from step 7, and if applicable follow the note instruction in order to complete step 7.

Transitions

If the diamond is within a transition zone, it is necessary to reposition the transition start location when modifying the size of a turnout or a diamond's crossings (as in Step 7) with the peg set at the fine point (FP) of the template.
To do this, use < action >
                    ↳ < mouse actions: geometry >
                                    ↳ < move transition start (SHIFT+CTRL+F3) >,

to reposition the start of the transition having adjusted the size in step 7.

After adjusting the start of the transition, you will most likely need to readjust the size of the template vee, as in step 7, and then go back again to adjusting the start of the transition, and then back to adjusting the size of the vee again, repeating these adjustments, until both finally line up.

This may also apply if the turnout is within a slew.

Please note, there is no adjustment of transitions in this tutorial.

STEP 8.

8.0001.   Now keep this template for further use by doing the following,

8.0002.   Now use < do >
                    ↳ < parking bay >
                            ↳ < bay 1 : park template (CTRL+P) >.

8.0003.   Visually ensure that the peg is on the FP of the template vee.

8.0004.   Then use < action >
                    ↳ < mouse actions: geometry >
                                    ↳ < adjust overall turnout length (F4) >,

8.0004.1.   and adjust the length of turnout until just the aligned part of the vee is visible.

8.0004.2.   You will need to ZOOM in very close to adjust this length, then re-select F4 again and adjust length to where only the aligned part is visible,

8.0005.   Now remove all rails and joint marks except for the crossing vee,

8.0005.1.   Use < do >
                    ↳ < omit rails and joint marks... (CTRL+O) >.

8.0005.2.   And un-tick all the boxes except the crossing vee box, leave this ticked.

8.0006.   Now store this using < main >
                            ↳ < store & background (CTRL+V) >.

8.0007. Next, Left click on the template just stored (or use Shift key + Left click on it's name label) and select < rename > from the popup menu to give the template the name of say, Vee # 2.

STEP 9.

9.0001. Now use < do >
   ↳ < parking bay >
     ↳ < bay 1 : retrieve "no-name" (CTRL+R) >.

9.0002. Then select < geometry >
   ↳ < peg positions >
     ↳ < reset peg on datum (CTRL-0) >.

9.0003. Next use < action >
   ↳ < mouse actions: geometry >
     ↳ < adjust overall turnout length (F4) >,

9.0003.1. and adjust the length of turnout to extend just beyond the back tips of the wing and check rails.

9.0004. Now remove all rails, crossing vee and joint marks, except for the main-road crossing rail and the main-road check rail, un-tick all the boxes except the two rails mentioned, leave these ticked,

9.0005. Use < do >
   ↳ < omit rails and joint marks... (CTRL+O) >.

9,0006. Next use < action >
   ↳ < mouse actions: geometry >
     ↳ < adjust blanking length (CTRL+F3) >

9.0006.1. To reduce the front length of the crossing rail to a point where it just crosses the centre line of the original plain track curve.

9.0007. Now use < main >
   ↳ < store & background (CTRL+V) >.

9.0008. Next, Left click on the just stored template (or use Shift key + Left click on it's name label) and select < rename > from the popup menu to give the template the name of say, Vee # 2 Main Road Wing & Check Rails.

STEP 10.

10.0001. Next use < do >
   ↳ < parking bay >
     ↳ < bay 1: retrieve "no-name" (CTRL+R) >

10.0002. Now select < geometry >
   ↳ < peg positions >
     ↳ < reset peg on datum (CTRL-0) >.

10.0003. Select <template >
   ↳ < swap hand (CTRL+H) >

10.0004. Next left click on Guide Curve # 1 r2900 mm,

10.0004.1.   and select < peg/align tools >
        ↳ < align control template over, and snake onto peg >
           ↳ < facing – facing > from the popup menu.

10.0005.   Next, use < action >
        ↳ < mouse actions: geometry >
          ↳ < snake through peg (CTRL + F6) >

10.0005.1.   In order to snake fine point cross-hair of turnout template vee to where Exit #1 and Exit #2 roads cross at Vee # 2.

10.0005.2.   You will need to ZOOM in very close to align the template FP cross-hairs, and then re-select CTRL + F6 again to finely and accurately position the FP.

10.0006.   Then set < geometry >
        ↳ < peg positions >
          ↳ < peg on FP (CTRL-4) >.

10.0007.   Next set < action >
        ↳ < F5 V-crossing angles >
          ↳ < any angle >

10.0008.   Then select < action >
        ↳ < F5 sizing options >
          ↳ < length locked >.

10.0009.   Now use < action >
        ↳ < mouse actions: real >
          ↳ < adjust turnout size only (F5) >

10.0009.1.   so that the turnout side of the template vee matches that of the crossing formed of Exit #1 and Exit #2 roads at Vee # 2, and that the Check and Wing rails are fully formed (not cut off short) at the back of the vee. (Note: only a reasonable portion of the vee needs to exactly match the crossing rails)

10.0009.2.   You will need to ZOOM in very close to align the small portion at the vee, and then again re-select F5 to complete the fine alignment.

Please read important notes referring to Transitions at Step 7 before moving on from step 10, and if applicable follow the note instruction in order to complete step 10.

STEP 11.

11.0001.   Now keep this template for further use by doing the following,

11.0002.   Use < do >
        ↳ < parking bay >
          ↳ < bay 2 : park template >.

11.0003.   Now remove all rails, crossing vee and joint marks, except for the main-road crossing rail and the main-road check rail, un-tick all the boxes except the two rails mentioned, leave these ticked,

11.0003.1.   Use < do >
        ↳ < omit rails and joint marks...(CTRL+O) >

11.0004.   Next use < action >
        ↳ < mouse actions: geometry >
          ↳ < adjust blanking length (CTRL+F3) >

11.0004.1.   To reduce the front length of the crossing rail to a point where it just crosses the centre line of the original plain track curve (as in Step 10 was for the other curve).

11.0005.   Now use < main >
   ↳ < store & background (CTRL+V) >.

11.0006.   Next, Left click on the just stored template (or use Shift key + Left click on it's name label) and select < rename > from the popup menu to give the template the name of say, Vee # 2 Turnout Road Wing & Check Rails.

STEP 12.

12.0001.   Next, use < do >
   ↳< parking bay >
   ↳< bay 1: retrieve "no-name" (CTRL-R) >.

12.0002.   Now set < geometry >
   ↳< peg positions >
   ↳< peg on FP (CTRL-4) >.

12.0003.   Then use < template >
   ↳< convert turnout to half diamond (CTRL-K) >.

12.0004.   Now set < geometry >
   ↳< peg positions >
   ↳< peg on FP (CTRL-4) >.

12.0005.   Here, set < geometry >
   ↳< track centre-lines >.

12.0006.   Then use < action >
   ↳< mouse actions: real >
   ↳< adjust turnout size only (F5) >

12.0006.1.   Until the two track centre lines converging point of the diamond, matches that of the crossing point formed by the centre lines of Guide Curve # 1 r2900 mm and Guide Curve # 2 r3900 mm. You will need to zoom in to achieve accurate line up.

12.0006.2.   You will need to ZOOM in very close to the centre line crossing point, then re-select F5 in order to accurately position the half diamond centre lines.

12.0007.   Now remove all rails, crossing vee and joint marks, except for the main-road crossing rail, main-road stock rail and the main road check rails, un-tick all the boxes except the three rails mentioned, leave these ticked,

12.0007.1.   Use < do >
   ↳ < omit rails and joint marks...(CTRL+O) >

12.0008.   Now use < main >
   ↳ < store & background (CTRL+V) >.

12.0009.   Next, Left click on the just stored template (or use Shift key + Left click on it's name label) and select < rename > from the popup menu to give the template the name of say, Vee # 2 Half Diamond M Road Stock, Check & Crossing Rails

STEP 13.

13.0001.   Next, use < do >
   ↳< parking bay >
   ↳< bay 2: retrieve "no-name" (CTRL-R) >.

13.0002.   Now set < geometry >
                ↳< peg positions >
                         ↳< peg on FP (CTRL-4) >.

13.0003.   Then use < template >
                ↳< convert turnout to half diamond (CTRL-K) >.

13.0004.   Now set < geometry >
                ↳< peg positions >
                         ↳< peg on FP (CTRL-4) >.

13.0005.   Here, set < geometry >
                ↳< track centre-lines >.

13.0006.   Then use < action >
                ↳< mouse actions: real >
                         ↳< adjust turnout size only (F5) >

13.0007.   Then use < action >
                ↳< mouse actions: geometry >
                         ↳< rotate around peg (F8) >

13.0008.   Keep repeating the last two instructions (13.0006 & 13.0007) until the two track centre lines converging point of the diamond, matches that of the crossing point formed by the centre lines of Guide Curve # 1 r2900 mm and Guide Curve # 2 r3900 mm. You will need to zoom in to achieve accurate line up.

13.0008.1.   You will need to ZOOM in very close to the centre line crossing point, then re-select F5 and/or F8 as required in order to accurately position the half diamond centre lines.

13.0009.   Now remove all rails, crossing vee and joint marks, except for the main-road crossing rail, main-road stock rail and the main road check rails, un-tick all the boxes except the three rails mentioned, leave these ticked,

13.0010.   Use < do >
                ↳ < omit rails and joint marks...(CTRL+O) >

13.0011.   Now use < main >
                ↳ < store & background (CTRL+V) >.

13.0012.   Next, Left click on the just stored template (or use Shift key + Left click on it's name label) and select < rename > from the popup menu to give the template the name of say, Vee # 2 Half Diamond Diag Road Stock, Check & Crossing Rails

STEP 14.

14.0001.   We are well on the way to completing the first half of the diamond crossing, but now need to tidy up this half by removing unwanted bits of partial templates that were generated in the process so far, and to properly connect in the links to the Exit Roads 1 & 2.

14.0002.   Now, Left clicking on Exit Road 1 template (or use Shift key + Left click on it's name label) and select < wipe to the control > from the popup menu.

14.0003.   Then use < action >
                ↳ < mouse actions: geometry >
                         ↳ < adjust plain-track length (F4) >

14.0004.   and reduce the length of the plain track until it just meets the Vee # 2 diagonal road rail break point.

14.0004.1.   You may need to ZOOM in close to adjust this, and then again re-select F4 to make the final closure adjustment.

14.0005.   Then select < main >

                    ↳ < re-store & background >.

14.0006.   Now, Left clicking on Exit Road 2 template (or use Shift key + Left click on it's name label) and select < wipe to the control > from the popup menu.

14.0007.   Then use < action >
                    ↳ < mouse actions: geometry >
                                   ↳ < adjust plain-track length (F4) >

14.0008.   and reduce the length of the plain track until it just meets the Vee # 2 main road rail break point.

14.0008.1.   You may need to ZOOM in close to adjust this, and then again re-select F4 to make the final closure adjustment.

14.0009.   Then select < main >

                    ↳ < re-store & background >.

STEP 15.

15.0001.   Now we must construct the other half of the diamond crossing.

15.0002.   Now use < do >
                    ↳ < parking bay >
                              ↳ < bay 1 : retrieve "no-name" (CTRL+R) >.

15.0003.   Then select < geometry >
                    ↳ < peg positions >
                               ↳ < reset peg on datum (CTRL-0) >.

15.0004.   Select <template >
                    ↳ < swap hand (CTRL+H) >

15.0005.   Now, Left clicking on Exit Road 1 template (or use Shift key + Left click on it's name label)

15.0006.   and select < peg/align tools >
                    ↳ < align control template over, and snake onto peg >
                               ↳ < facing – trailing > from the popup menu.

15.0007.   Next, use < action >
                    ↳ < mouse actions: geometry >
                               ↳ < snake through peg (CTRL + F6) >

15.0007.1.   In order to snake fine point cross-hair of turnout template vee to where Approach Road #1 and Approach Road #2 roads cross at Vee # 1.

15.0007.2.   You will need to ZOOM in very close to align the template FP cross-hairs, and then re-select CTRL + F6 again to finely and accurately position the FP.

15.0008.   Then set < geometry >
                    ↳ < peg positions >
                               ↳ < peg on FP (CTRL-4) >.

15.0009.   Next set < action >
                    ↳ < F5 V-crossing angles >
                               ↳ < any angle >

15.0010.   Then select < action >
                        ↳ < F5 sizing options >
                                    ↳ < length locked >.

15.0011.   Next, use < action >
                        ↳ < mouse actions: real >
                                    ↳ < adjust turnout size only (F5) >

15.0011.1.   so that the turnout side of the template vee matches that of the crossing formed of Approach Road #1 and Approach Road #2 roads at Vee # 1 (only a reasonable portion of the vee needs to exactly match the crossing rails).

15.0011.2.   You will need to ZOOM in very close to align the small portion at the vee, and then again re-select F5 to complete the fine alignment.

15.0012.   Finally, unset < geometry >
                        ↳ < track centre-lines >

15.0013.   Please read important notes above in Step 7, regarding Transitions, before moving on from step 15, and if applicable follow the note instruction in order to complete step 15.

STEP 16.

16.0001.   Now keep this template for further use by doing the following,

16.0002.   Now use < do >
                        ↳ < parking bay >
                                    ↳ < bay 1 : park template (CTRL+P) >.

16.0003.   Visually ensure that the peg is on the FP of the template vee.

16.0004.   Then use < action >
                        ↳ < mouse actions: geometry >
                                    ↳ < adjust overall turnout length (F4) >,

16.0004.1.   and adjust the length of turnout until just the aligned part of the vee is visible.

16.0004.2.   You will need to ZOOM in very close to adjust this length, then re-select F4 again and adjust length to where only the aligned part is visible,

16.0005.   Now remove all rails and joint marks except for the crossing vee,

16.0005.1.   Use < do >
                        ↳ < omit rails and joint marks... (CTRL+O) >.

16.0005.2.   And un-tick all the boxes except the crossing vee box, leave this ticked.

16.0006.   Now store this using < main >
                        ↳ < store & background (CTRL+V) >.

16.0007.   Next, Left click on the template just stored (or use Shift key + Left click on it's name label) and select < rename > from the popup menu to give the template the name of say, Vee # 1.

STEP 17.

17.0001.   Now use < do >
                        ↳ < parking bay >
                                    ↳ < bay 1 : retrieve "no-name" (CTRL+R) >.

17.0002.   Then select < geometry >
                            ↳ < peg positions >
                                            ↳ < reset peg on datum (CTRL-0) >.

17.0003.   Next use < action >
                        ↳ < mouse actions: geometry >
                                        ↳ < adjust overall turnout length (F4) >,

17.0003.1. and adjust the length of turnout to extend just beyond the back tips of all wing and check rails so that they are fully formed.

17.0004.   Now remove all rails, crossing vee and joint marks, except for the main-road crossing rail and the main-road check rail, un-tick all the boxes except the two rails mentioned, leave these ticked,

17.0004.1. Use < do >
                        ↳ < omit rails and joint marks... (CTRL+O) >.

17,0005.   Next use < action >
                        ↳ < mouse actions: geometry >
                                        ↳ < adjust blanking length (CTRL+F3) >

17.0005.1. To reduce the front length of the crossing rail to a point where it just crosses the centre line of the original plain track curve.

17.0006.   Now use < main >
                        ↳ < store & background (CTRL+V) >.

17.0007.   Next, Left click on the just stored template (or use Shift key + Left click on it's name label) and select < rename > from the popup menu to give the template the name of say, Vee # 1 Main Road Wing & Check Rails.

STEP 18.

18.0001.   Next use < do >
                        ↳ < parking bay >
                                        ↳ < bay 1: retrieve "no-name" (CTRL+R) >

18.0002.   Select <template >
                        ↳ < invert handing (CTRL+X) >

18.0003.   Now select < geometry >
                        ↳ < peg positions >
                                        ↳ < reset peg on datum (CTRL-0) >.

15.0004.   Now, Left clicking on Exit Road 2 template (or use Shift key + Left click on it's name label)

18.0004.1. and select < peg/align tools >
                                ↳ < align control template over, and snake onto peg >
                                                ↳ < facing – facing > from the popup menu.

18.0005.   Next, use < action >
                        ↳ < mouse actions: geometry >
                                        ↳ < snake through peg (CTRL + F6) >

18.0005.1. In order to snake fine point cross-hair of turnout template vee to where Approach Road #1 and Approach Road #2 roads cross at Vee # 1.

18.0005.2. You will need to ZOOM in very close to align the template FP cross-hairs, and then re-select CTRL + F6 again to finely and accurately position the FP.

18.0006. Then set < geometry >
↳ < peg positions >
↳ < peg on FP (CTRL-4) >.

18.0007. Next set < action >
↳ < F5 V-crossing angles >
↳ < any angle >

18.0008. Then select < action >
↳ < F5 sizing options >
↳ < length locked >.

18.0009. Now use < action >
↳ < mouse actions: real >
↳ < adjust turnout size only (F5) >

18.0009.1. so that the turnout side of the template vee matches that of the crossing formed of Approach Road #1 and Approach Road #2 roads at Vee # 1, and that the Check and Wing rails are fully formed (not cut off short) at the back of the vee. (Note: only a reasonable portion of the vee needs to exactly match the crossing rails)

18.0009.2. You will need to ZOOM in very close to align the small portion at the vee, and then again re-select F5 to complete the fine alignment.

Please read important notes referring to Transitions at Step 7 before moving on from step 18, and if applicable follow the note instruction in order to complete step 18.

STEP 19.

19.0001. Now keep this template for further use by doing the following,

19.0002. Use < do >
↳ < parking bay >
↳ < bay 2 : park template >.

19.0003. Now remove all rails, crossing vee and joint marks, except for the main-road crossing rail and the main-road check rail, un-tick all the boxes except the two rails mentioned, leave these ticked,

19.0003.1. Use < do >
↳ < omit rails and joint marks...(CTRL+O) >

19.0004. Next use < action >
↳ < mouse actions: geometry >
↳ < adjust blanking length (CTRL+F3) >

19.0004.1. To reduce the front length of the crossing rail to a point where it just crosses the centre line of the original plain track curve (as in Step 17 was for the other curve).

19.0005. Now use < main >
↳ < store & background (CTRL+V) >.

19.0006. Next, Left click on the just stored template (or use Shift key + Left click on it's name label) and select < rename > from the popup menu to give the template the name of say, Vee # 1 Turnout Road Wing & Check Rails.

STEP 20.

20.0001.   Next, use < do >
        ↳< parking bay >
                ↳< bay 1: retrieve "no-name" (CTRL-R) >.

20.0002.   Now set < geometry >
        ↳< peg positions >
                ↳< peg on FP (CTRL-4) >.

20.0003.   Then use < template >
        ↳< convert turnout to half diamond (CTRL-K) >.

20.0004.   Now set < geometry >
        ↳< peg positions >
                ↳< peg on FP (CTRL-4) >.

20.0005.   Here, set < geometry >
        ↳< track centre-lines >.

20.0006.   Then use < action >
        ↳< mouse actions: real >
                ↳< adjust turnout size only (F5) >

20.0006.1.   Until the two track centre lines converging point of the diamond, matches that of the crossing point formed by the centre lines of Guide Curve # 1 r2900 mm and Guide Curve # 2 r3900 mm.

20.0006.2.   You will need to ZOOM in very close to the centre line crossing point, then re-select F5 in order to accurately position the half diamond centre lines.

20.0007.   Now remove all rails, crossing vee and joint marks, except for the main-road crossing rail, main-road stock rail and the main road check rails, un-tick all the boxes except the three rails mentioned, leave these ticked,

20.0007.1.   Use < do >
        ↳ < omit rails and joint marks...(CTRL+O) >

20.0008.   Now use < main >
        ↳ < store & background (CTRL+V) >.

20.0009.   Next, Left click on the just stored template (or use Shift key + Left click on it's name label) and select < rename > from the popup menu to give the template the name of say, Vee # 1 Half Diamond M Road Stock, Check & Crossing Rails

STEP 21.

21.0001.   Next, use < do >
        ↳< parking bay >
                ↳< bay 2: retrieve "no-name" (CTRL-R) >.

21.0002.   Now set < geometry >
        ↳< peg positions >
                ↳< peg on FP (CTRL-4) >.

21.0003.   Then use < template >
        ↳< convert turnout to half diamond (CTRL-K) >.

21.0004.   Now set < geometry >
        ↳< peg positions >
                ↳< peg on FP (CTRL-4) >.

21.0005.   Here, set < geometry >
                        ↳< track centre-lines >.

21.0006.   Then use < action >
                        ↳< mouse actions: real >
                                    ↳< adjust turnout size only (F5) >

21.0007.   Then use < action >
                        ↳< mouse actions: geometry >
                                    ↳< rotate around peg (F8) >

21.0008.   Keep repeating the last two instructions (21.0006 & 21.0007) until the two track centre lines converging point of the diamond, matches that of the crossing point formed by the centre lines of Guide Curve # 1 r2900 mm and Guide Curve # 2 r3900 mm.

21.0008.1.   You will need to ZOOM in very close to the centre line crossing point, then re-select F5 and/or F8 as required in order to accurately position the half diamond centre lines.

21.0009.   Now remove all rails, crossing vee and joint marks, except for the main-road crossing rail, main-road stock rail and the main road check rails, un-tick all the boxes except the three rails mentioned, leave these ticked,

21.0010.   Use < do >
                        ↳ < omit rails and joint marks...(CTRL+O) >

21.0011.   Now use < main >
                        ↳ < store & background (CTRL+V) >.

21.0012.   Next, Left click on the just stored template (or use Shift key + Left click on it's name label) and select < rename > from the popup menu to give the template the name of say, Vee # 1 Half Diamond Diag Road Stock, Check & Crossing Rails

STEP 22.

22.0001.   We have now almost completed the second half of the diamond crossing, but now need to tidy up this half by removing unwanted bits of partial templates that were generated in the process so far, and to properly connect in the links to the Approach Roads 1 & 2.

22.0002.   Now, Left clicking on Approach Road 1 template (or use Shift key + Left click on it's name label) and select < wipe to the control > from the popup menu.

22.0003.   Then use < action >
   ↳ < mouse actions: geometry >
                                    ↳ < adjust plain-track length (F4) >

22.0004.   and reduce the length of the plain track until it just meets the Vee # 1 diagonal road rail break point.

22.0004.1.   You may need to ZOOM in close to adjust this, and then again re-select F4 to make the final closure adjustment.

22.0005.   Then select < main >

                        ↳ < re-store & background >.

22.0006.   Now, Left clicking on Approach Road 2 template (or use Shift key + Left click on it's name label) and select < wipe to the control > from the popup menu.

22.0007.   Then use < action >
　　　　　　　　↳ < mouse actions: geometry >
　　　　　　　　　　　　　↳ < adjust plain-track length (F4) >

22.0008.   and reduce the length of the plain track until it just meets the Vee # 1 main road rail break point.

22.0008.1.   You may need to ZOOM in close to adjust this, and then again re-select F4 to make the final closure adjustment.

22.0009.   Then select < main >
　　　　　　　　↳ < re-store & background >.

STEP 23.

23.0001.   Now we can remove unwanted partial turnout templates.

23.0002.   First select < main >
　　　　　　　　↳ < Storage box … (CTRL+B) >

23.0003.   Now remove template Vee # 2 Main Road Wing & Check Rails

23.0003.1.   Use the Left - Right arrows to locate the correct template number (or title),

23.0003.2.   Then click wipe from the background.

23.0004.   Now remove template Vee # 2 Turnout Road Wing & Check Rails

23.0004.1.   Use the Left - Right arrows to locate the correct template number (or title),

23.0004.2.   Then click wipe from the background.

23.0005.   Now remove template Vee # 1 Main Road Wing & Check Rails

23.0005.1.   Use the Left - Right arrows to locate the correct template number (or title),

23.0005.2.   Then click wipe from the background.

23.0006.   Now remove template Vee # 1 Turnout Road Wing & Check Rails

23.0006.1.   Use the Left - Right arrows to locate the correct template number (or title),

23.0006.2.   Then click wipe from the background.

23.0007.   Finally, we can now remove the two original curve templates (centre lines).

23.0008.   Now remove template Guide Curve # 1 r2900 mm

23.0008.1.   Use the Left - Right arrows to locate the correct template number (or title),

23.0008.2.   Then click wipe from the background.

23.0009.   Now remove template Guide Curve # 2 r3900 mm

23.0009.1.   Use the Left - Right arrows to locate the correct template number (or title),

23.0009.2.   Then click wipe from the background.

23.0010.   The resulting formation is shown in Figure 4 below:

Figure 4.
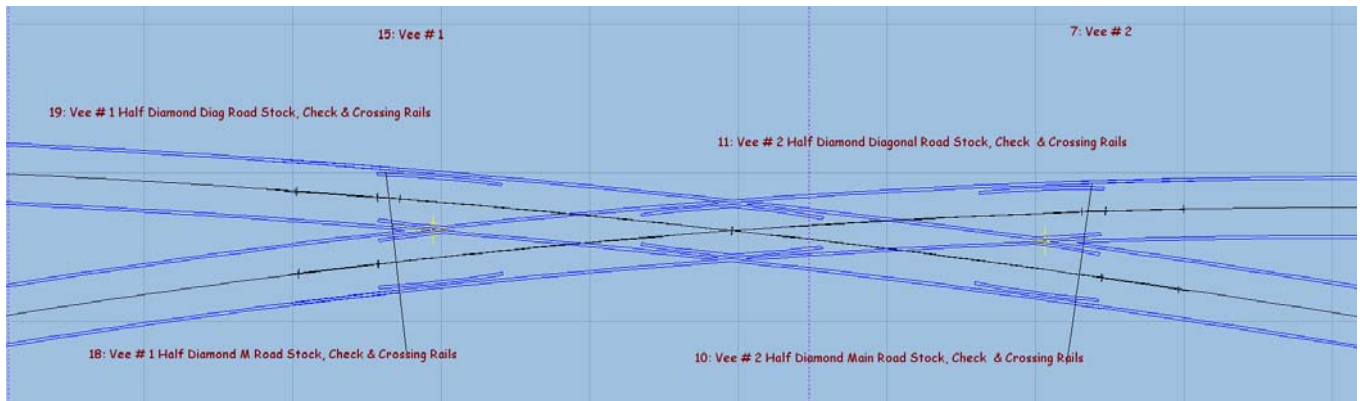
STEP 24.

24.0001.   The last job is now to put the timbers back into the correct positions for the whole diamond crossing.

24.0002.   If is recommended that you use two of the quarter diamond templates which follow the same curve radii on either side of the diamond, in this case I elected to use Guide Curve # 1 r2900 mm. This will mean you will use templates associated with Vee # 1 and Vee #2 quarter templates on the same radii.

24.0003.   Select one of the quarter diamond templates, in this case I elected to use Vee # 2 Half Diamond Diagonal Road Stock, Check & Crossing Rails

24.0004.   Next, Left click on this template (or use Shift key + Left click on it's name label) and select < wipe to the control > from the popup menu.

24.0005.   Because we have used "no timbering" throughout, we will have to restore the timbers by using the following:

24.0005.1.   Select < real >
   ↦ < timbering >
     ↦ < equalized – constant >
The timbers for this template will now appear on the template.

24.0006   Ensure that the timbers are centralized, do the following:

24.0006.1.   Select < real >
   ↦ < timbering >
     ↦ < timbers centralized >

24.0007.   We now need to extend the timbers behind the vee, wing and check rails, including the first timber on the Exit road # 1, do this as follows:

24.0007.1.   First select < geometry >
   ↦ < peg positions >
     ↦ < reset peg on datum (CTRL-0) >.

24.0007.2.   Then use < action >
   ↦ < mouse actions: geometry >
     ↦ < adjust plain-track length (F4) >

And adjust the overall length until the timbers extend to, and include, the first timber of the Exit Road # 1 track.

24.0008.   Then select < main >
     ↳ < re-store & background >.

24.0009.   Now for the timbering of the other half of the diamond crossing.

24.0010.   Next, Left click on the other quarter diamond template (or use Shift key + Left click on it's name label), Vee # 1 Half Diamond M Road Stock, Check & Crossing Rails, and select < wipe to the control > from the popup menu.

24.0011.   Again, because we have used "no timbering" throughout, we will have to restore the timbers by using the following:

24.0011.1.   Select < real >
    ↳ < timbering >
      ↳ < equalized – constant >
The timbers for this template will now appear on the template.

24.0012   Ensure that the timbers are centralized, do the following:

24.0012.1.   Select < real >
    ↳ < timbering >
      ↳ < timbers centralized >

24.0013.   We now need to extend the timbers behind the vee, wing and check rails, including the first timber on the Approach Road # 1, do this as follows:

24.0013.1.   First select < geometry >
      ↳ < peg positions >
         ↳ < reset peg on datum (CTRL-0) >.

24.0013.2.   Then use < action >
     ↳ < mouse actions: geometry >
        ↳ < adjust plain-track length (F4) >

And adjust the overall length until the timbers extend to, and include, the first timber of the Approach Road # 1 track.

24.0014.   Then select < main >
     ↳ < re-store & background >.

24.0015.   You have now completed the construction of an Irregular Diamond Crossing, and the resulting formation is shown in Figure 5 below:

Figure 5.