

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](#) (or use Shift key + Left click on it's name label) 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](#) (or use Shift key + Left click on it's name label) 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** (or use Shift key + Left click on it's name label) and select **< wipe to the control >** from the popup menu.
- 3.0007. Then select **< geometry >**
 - ↳ **< track centre-lines only >**.
- 3.0008. Next select **< main >**
 - ↳ **< re-store & background >**.
- 3.0009. The resulting screen is shown in Figure 2 below:

Figure 2.



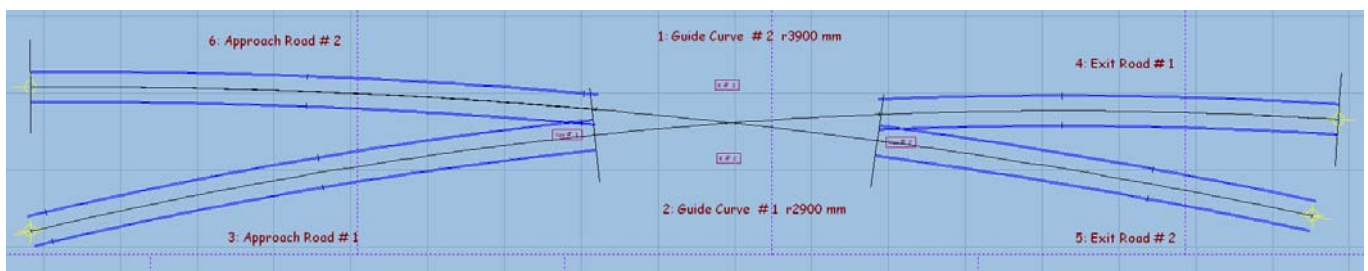
STEP 4.

- 4.0001. Left click on **Guide Curve # 2 r3900 mm** (or use Shift key + Left click on it's name label) 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, **Exit Road # 2**.

STEP 5.

- 5.0001. Left click again on **Guide Curve # 2 r3900 mm** (or use Shift key + Left click on it's name label) 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 (**Ve # 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, **Approach Road # 2**.
- 5.0006. Next, Left click on **Guide Curve # 2 r3900 mm** (or use Shift key + Left click on it's name label) and select **< delete to the control >** from the popup menu.
- 5.0007. Then select **< geometry >**
 - ↳ **< track centre-lines only >**.
- 5.0008. Next select **< main >**
 - ↳ **< re-store & background >**.
- 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.

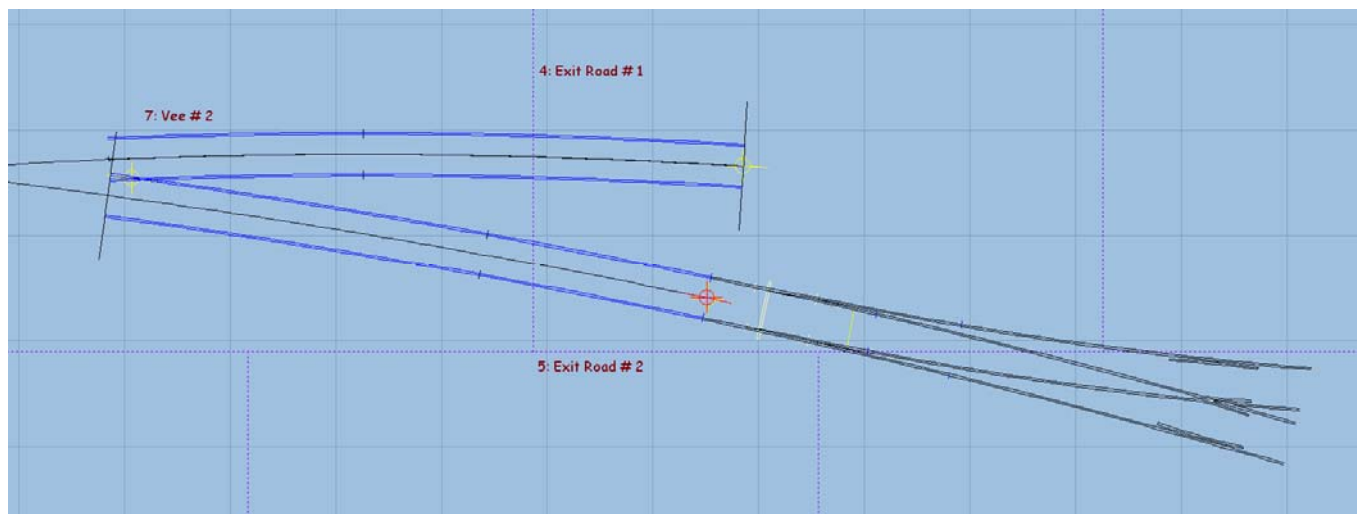
STEP 6.

- 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`, (or use Shift key + Left click on it's name label)
- 7.0002. and select `< peg/align tools >`
↳ `< align control template over, and snake onto peg >`
↳ `< facing – trailing >` from the popup menu.
- 7.0002.1. The result of this action is shown in Figure 4 below.

Figure 4.



- 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, as shown in Figure 5 below.
- 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, as shown in Figure 6 below.

Figure 5.

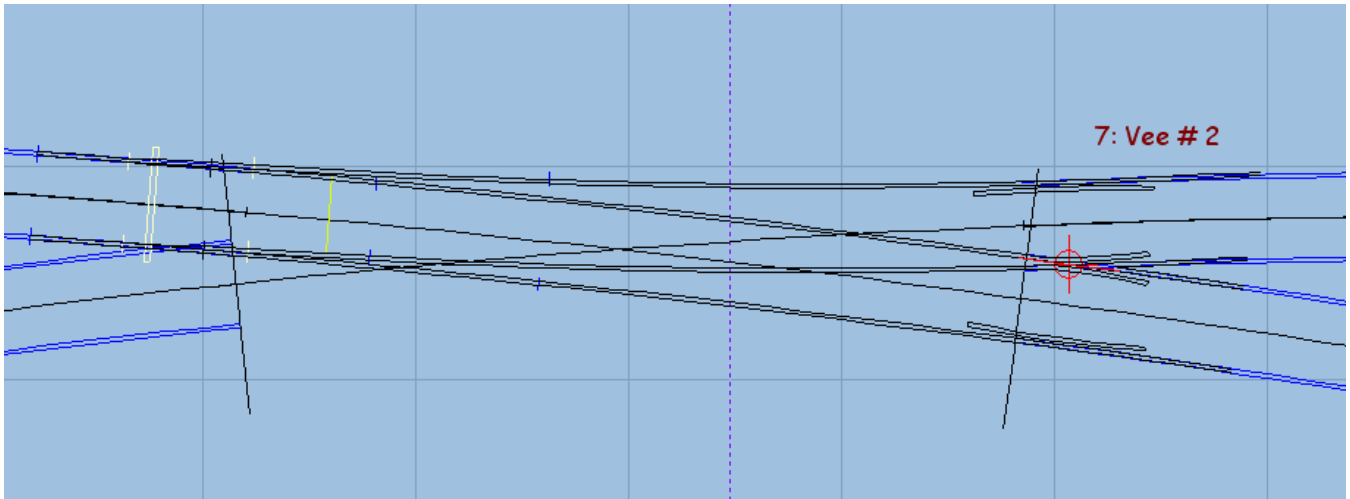
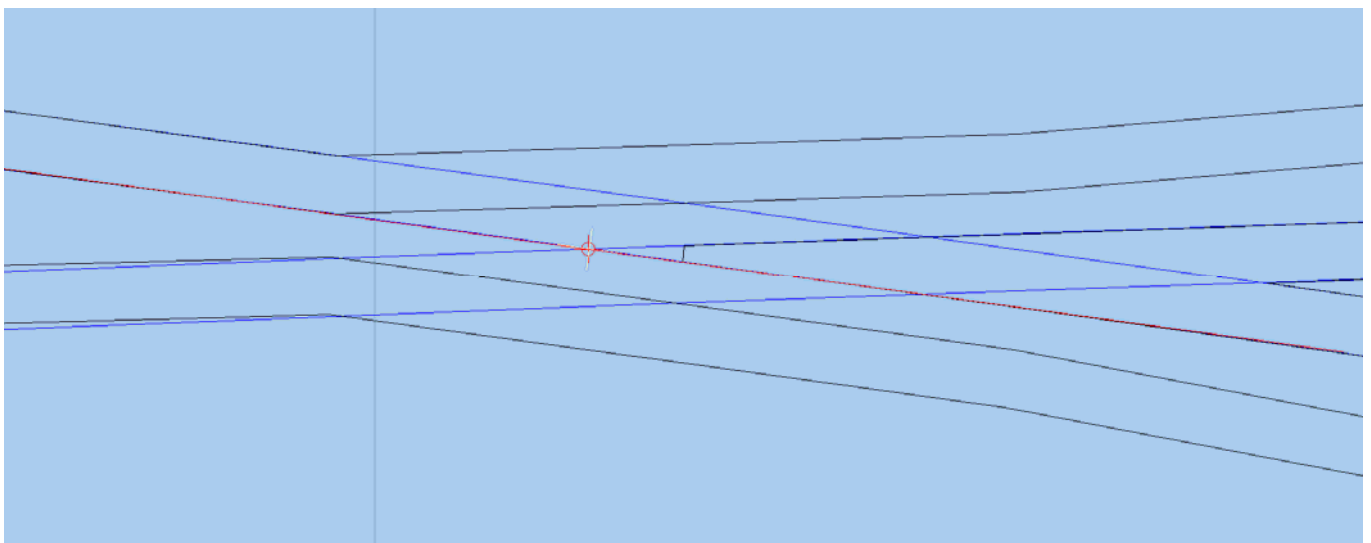


Figure 6.



- 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.

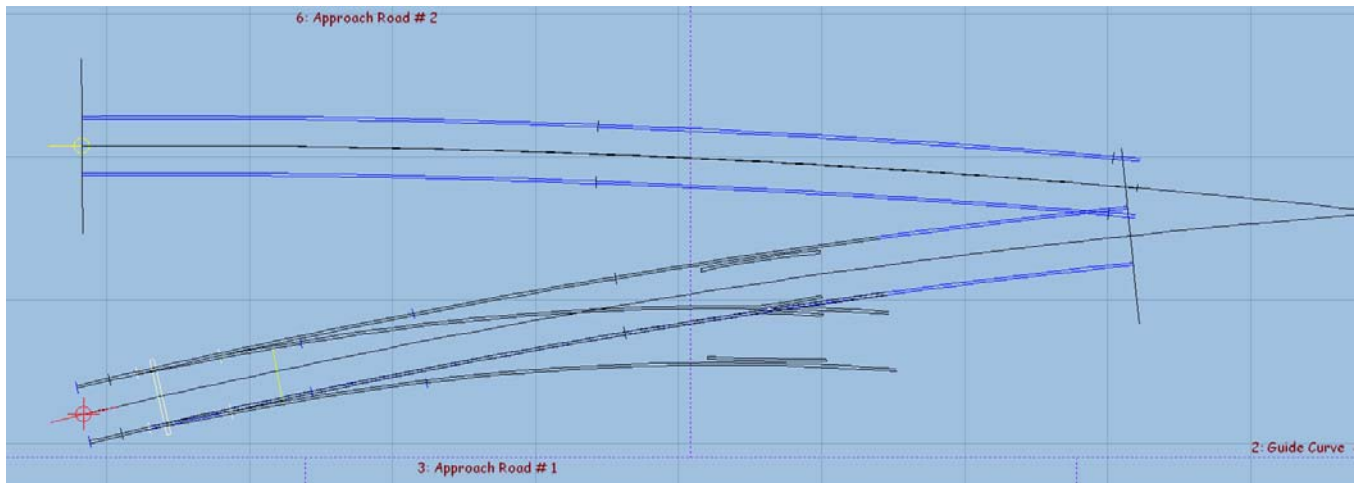
Please note, there is no adjustment of transitions in this tutorial.

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.

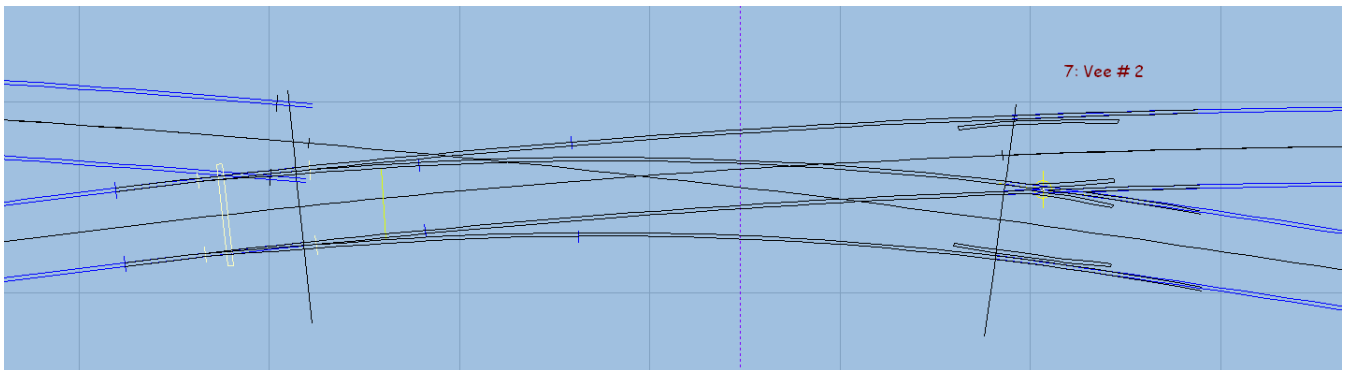
- 8.0006. Now store this using **< main >**
↳ **< store & background (CTRL+V) >**.
- 8.0007. Next, Left click on the template just stored (or use Shift key + Left click on it's name label) and select **< rename >** from the popup menu to give the template the name of say, **Vee # 2**.
- STEP 9.**
- 9.0001. Next use **< do >**
↳ **< parking bay >**
↳ **< bay 1: retrieve "no-name" (CTRL+R) >**
- 9.0002. Now select **< geometry >**
↳ **< peg positions >**
↳ **< reset peg on datum (CTRL-0) >**.
- 9.0003. Select **<template >**
↳ **< swap hand (CTRL+H) >**
- 9.0004. Next left click on **Guide Curve # 1 r2900 mm**, (or use Shift key + Left click on it's name label)
- 9.0004.1. and select **< peg/align tools >**
↳ **< align control template over, and snake onto peg >**
↳ **< facing – facing >** from the popup menu.
- 9.0004.2. The result of this action is shown in Figure 7 below.

Figure 7.



- 9.0005. Next, use **< action >**
↳ **< mouse actions: geometry >**
↳ **< snake through peg (CTRL + F6) >**
- 9.0005.1. In order to snake fine point cross-hair of turnout template vee to where Exit #1 and Exit #2 roads cross at Vee # 2, as shown in Figure 8 below.
- 9.0005.2. 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.

Figure 8.



- 9.0006. Then set `< geometry >`
↳ `< peg positions >`
↳ `< peg on FP (CTRL-4) >`.

STEP 10.

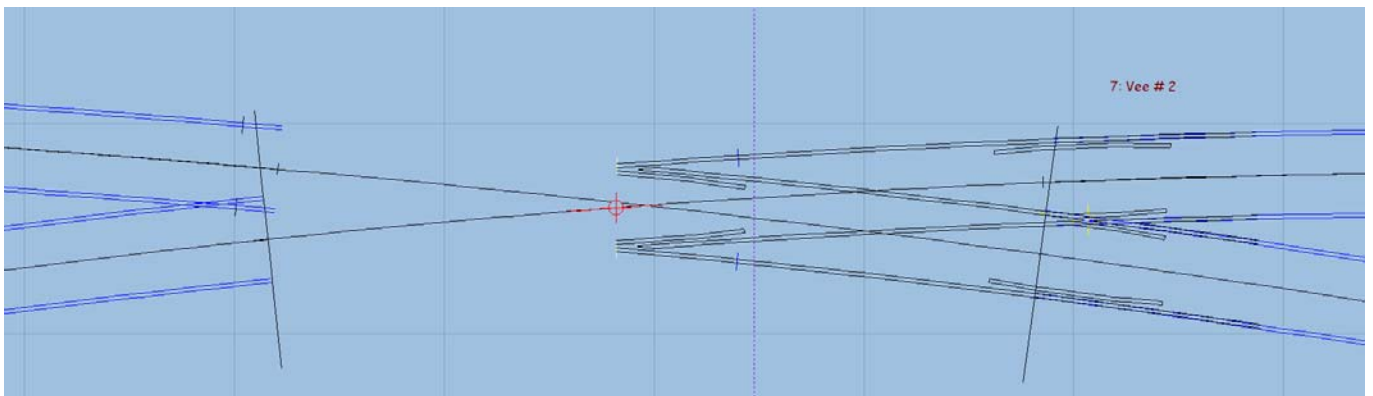
10.0001. Next ensure Peg is located on the FP of the template.

- 10.0001.1. Use select `< geometry >`
↳ `< peg positions >`
↳ `< peg on FP (CTRL-4) >`.

- 10.0002. Then use `< template >`
↳ `< convert turnout to half diamond (CTRL-K) >`.

10.0002.1. The result of this action is shown in Figure 9 below.

Figure 9.



- 10.0003. Now set `< geometry >`
↳ `< peg positions >`
↳ `< peg on FP (CTRL-4) >`.

- 10.0004. Here, set `< geometry >`
↳ `< track centre-lines >`.

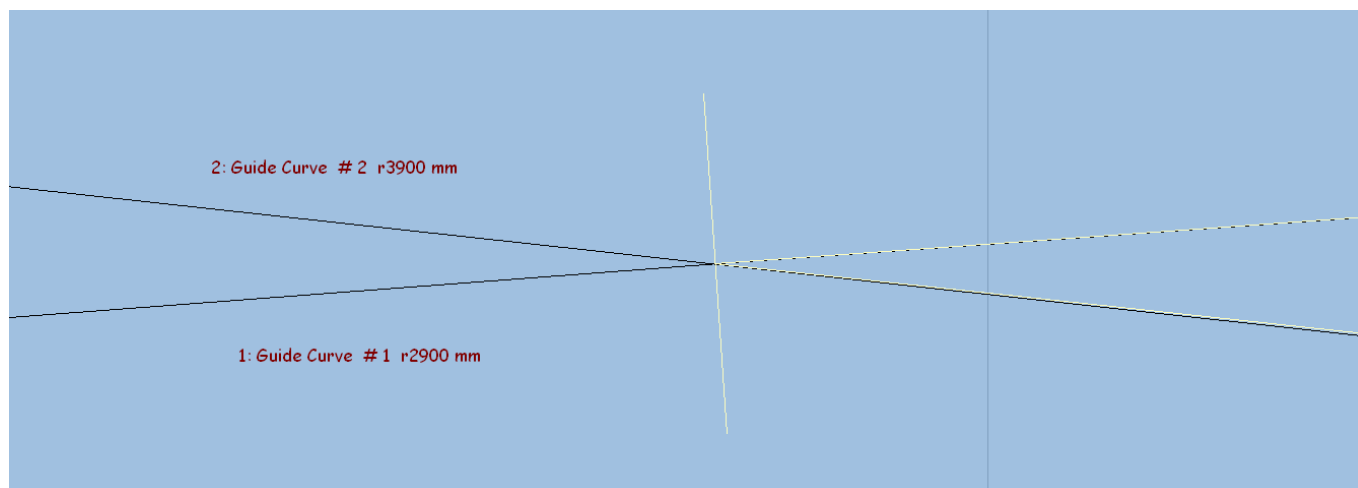
- 10.0005. Then use `< action >`
↳ `< mouse actions: real >`
↳ `< adjust turnout size only (F5) >`

10.0005.1. 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.

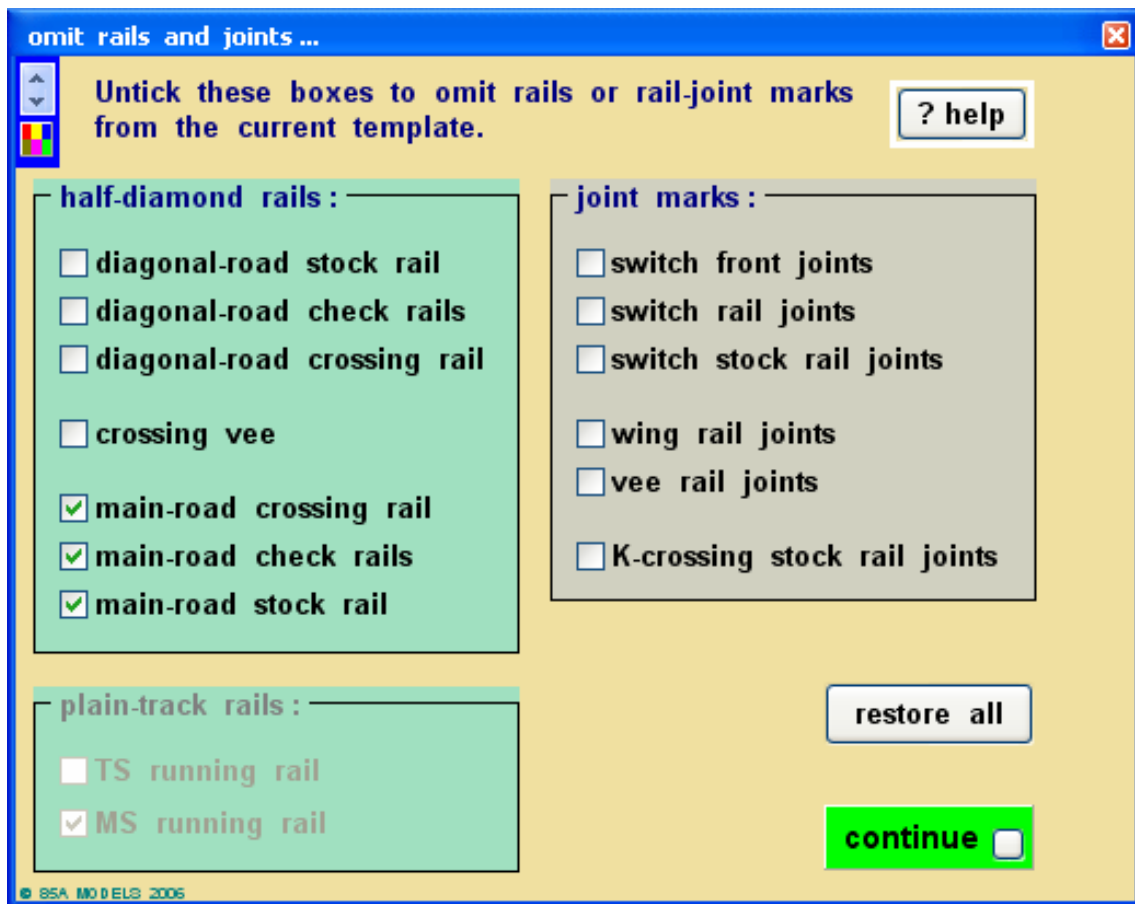
- 10.0005.2. You will need to ZOOM in very close to the centre line crossing point, then re-select **F5** in order to accurately position the half diamond centre lines.
- 10.0005.3. Do not worry about the lower half diamond centre line not quite lining up with the centre line of curve **Guide Curve # 2 r3900 mm**, as this is not significant at this time, but do ensure the crossing point centre is correctly aligned by the upper half diamond centre line.
- 10.0005.4. The alignment position is shown in Figure 10 below.

Figure 10.



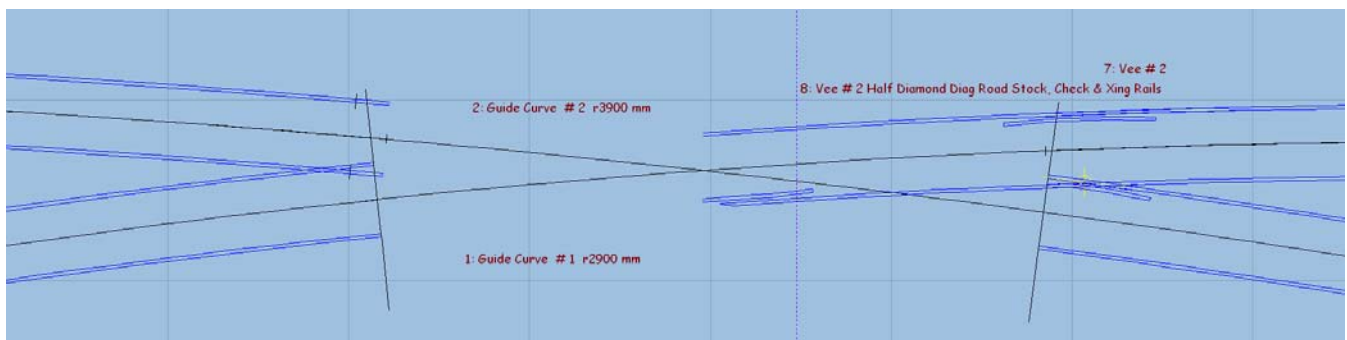
- 10.0006. Now, un-set **< geometry >**
↳ **< track centre-lines >**.
- 10.0007. Next use **< action >**
↳ **< mouse actions: geometry >**
↳ **< adjust overall turnout length (F4) >**,
- 10.0007.1. and adjust the length of turnout to extend just beyond the back tips of the wing and check rails, until these are fully formed.
- 10.0008. 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,
- 10.0008.1. Use **< do >**
↳ **< omit rails and joint marks...(CTRL+O) >** , as shown in Figure 11 below.

Figure 11.



- 10.0009. Now use `< main >`
↳ `< store & background (CTRL+V) >`.
- 10.0010. 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 & Xing Rails`
- 10.0010.1. The resulting Quarter Diamond is shown in Figure 12 below.

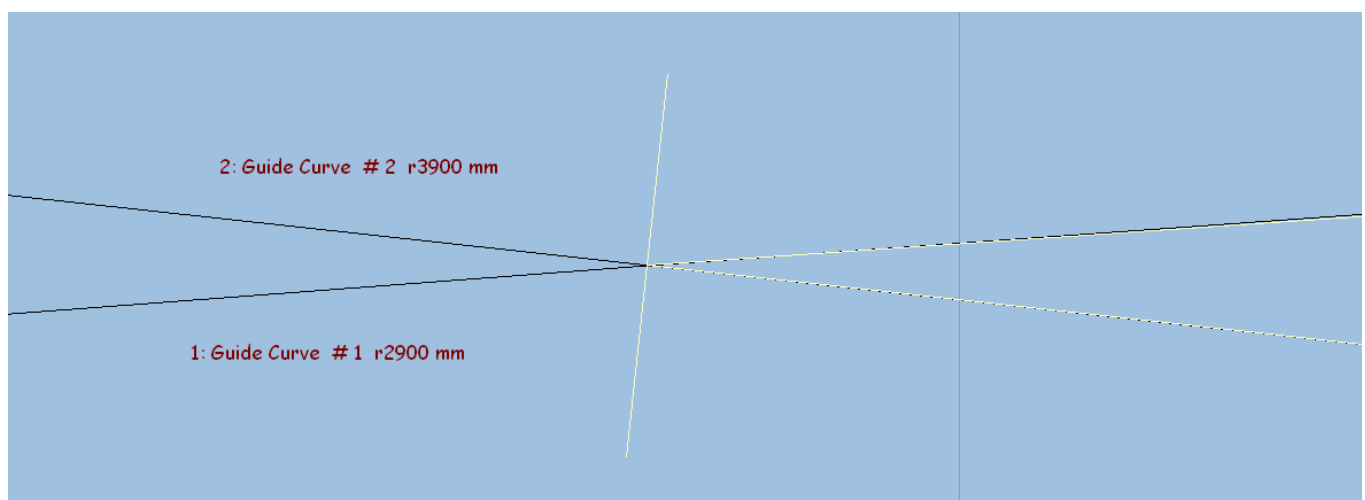
Figure 12.



STEP 11.

- 11.0001. Next, use `< do >`
↳ `< parking bay >`
↳ `< bay 1: retrieve "no-name" (CTRL-R) >`.
- 11.0002. Now set `< geometry >`
↳ `< peg positions >`
↳ `< peg on FP (CTRL-4) >`.
- 11.0003. Then use `< template >`
↳ `< convert turnout to half diamond (CTRL-K) >`.
- 11.0004. Now set `< geometry >`
↳ `< peg positions >`
↳ `< peg on FP (CTRL-4) >`.
- 11.0005. Here, set `< geometry >`
↳ `< track centre-lines >`.
- 11.0006. Then use `< action >`
↳ `< mouse actions: real >`
↳ `< adjust turnout size only (F5) >`
- 11.0006.1. 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.
- 11.0006.2. 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.
- 11.0006.3. Do not worry about the upper half diamond centre line not quite lining up with the centre line of curve **Guide Curve # 1 r2900 mm**, as this is not significant at this time, but do ensure the crossing point centre is correctly aligned by the lower half diamond centre line.
- 11.0006.4. The alignment position is shown in Figure 13 below.

Figure 13.

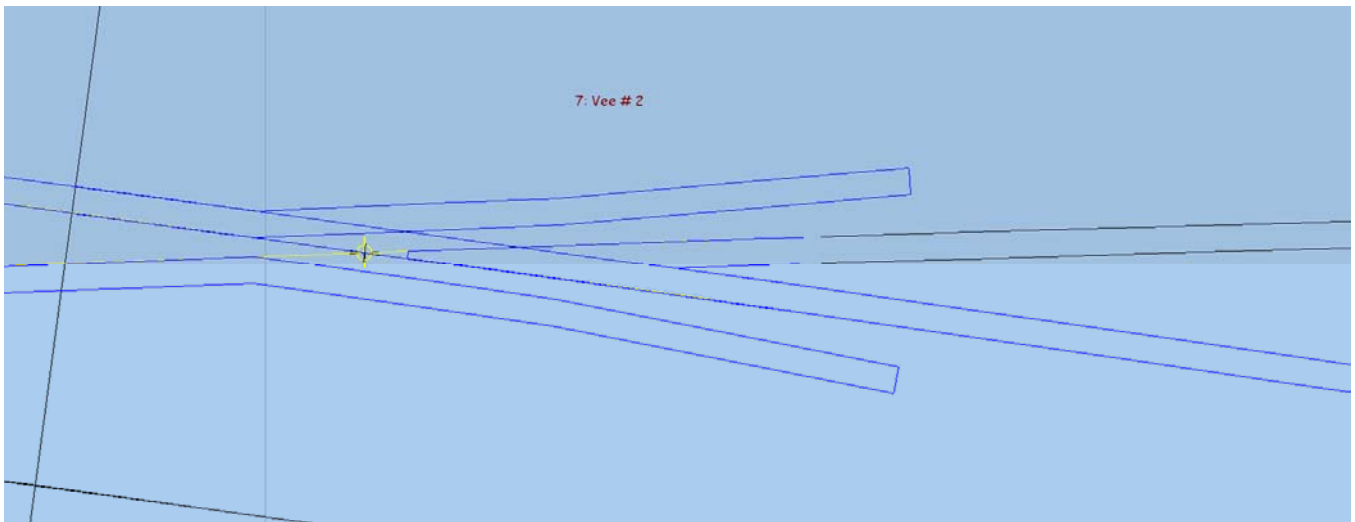


- 11.0007. Now, un-set < geometry >
↳ < track centre-lines >.
- 11.0008. Next use < action >
↳ < mouse actions: geometry >
↳ < adjust overall turnout length (F4) > ,
- 11.0008.1. and adjust the length of turnout to extend just beyond the back tips of the wing and check rails, until these are fully formed.
- 11.0009. 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, See Figure 11 above.
- 11.0009.1. Use < do >
↳ < omit rails and joint marks...(CTRL+O) >
- 11.0010. Now use < main >
↳ < store & background (CTRL+V) >.
- 11.0011. 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 Main Road Stock, Check & Xing Rails**

STEP 12.

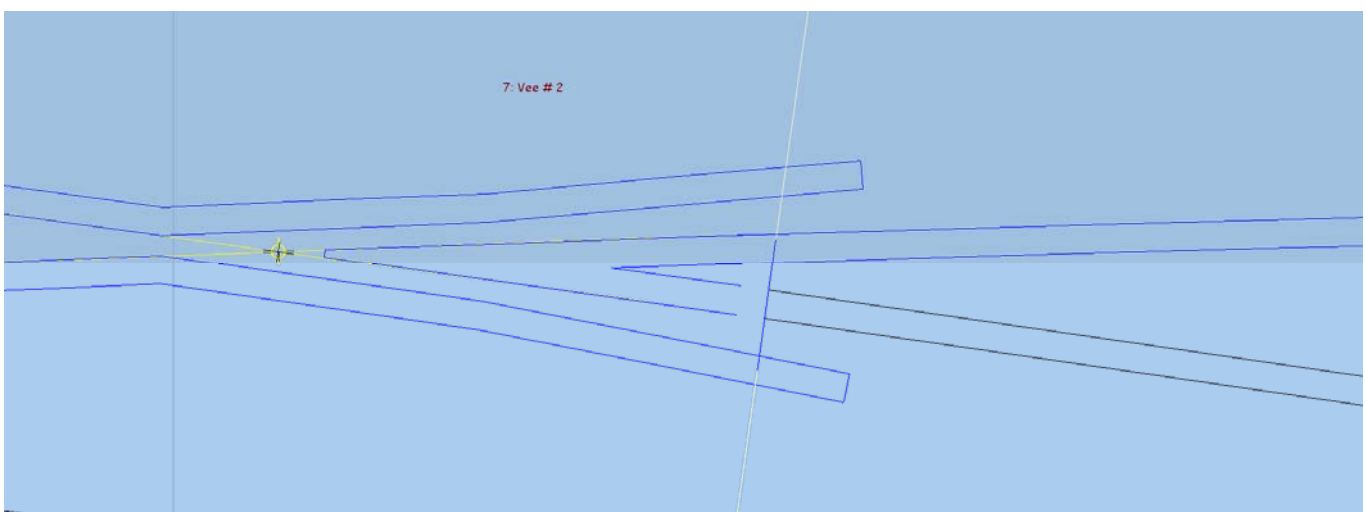
- 12.0001. We are well on the way to completing the first half of the diamond crossing, but now need to tidy up this half by properly connecting in the links to the Exit Roads 1 & 2.
- 12.0002. Now, Left clicking on **Exit Road 1** template (or use Shift key + Left click on it's name label) and select < wipe to the control > from the popup menu.
- 12.0003. Then use < action >
↳ < mouse actions: geometry >
↳ < adjust plain-track length (F4) >
- 12.0004. and reduce the length of the plain track until it just meets the **Vee # 2** diagonal road rail break point.
- 12.0004.1. You may need to ZOOM in close to adjust this, and then again re-select **F4** to make the final closure adjustment.
- 12.0004.2. The meeting position is shown in Figure 14 below, a gap has been purposely left open in this figure for clarity, but this should be completely closed to the vee rail, before saving.

Figure 14.



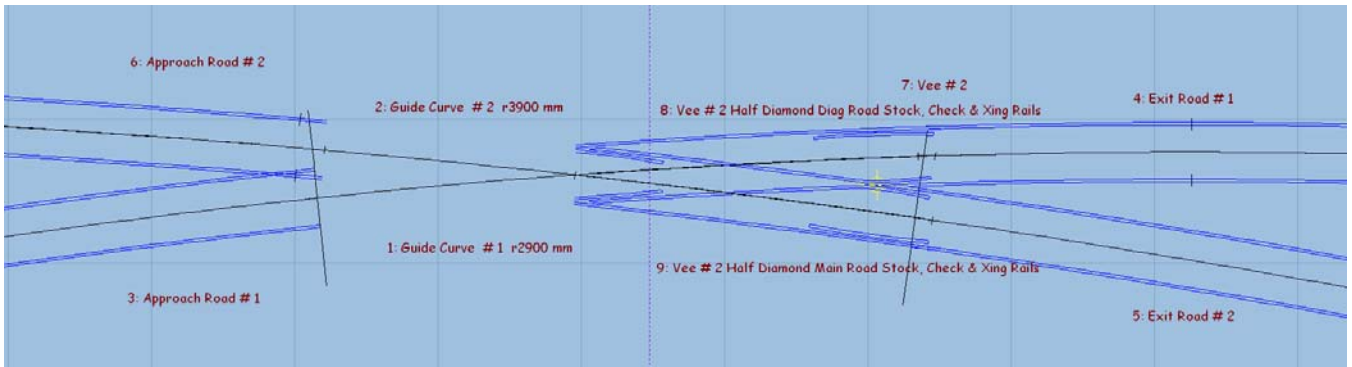
- 12.0005. Then select **< main >**
↳ **< re-store & background >**.
- 12.0006. Now, Left clicking on **Exit Road 2** template (or use Shift key + Left click on it's name label) and select **< wipe to the control >** from the popup menu.
- 12.0007. Then use **< action >**
↳ **< mouse actions: geometry >**
↳ **< adjust plain-track length (F4) >**
- 12.0008. and reduce the length of the plain track until it just meets the **Vee # 2** main road rail break point.
- 12.0008.1. You may need to ZOOM in close to adjust this, and then again re-select **F4** to make the final closure adjustment.
- 12.0008.2. The meeting position is shown in Figure 15 below, again a gap has been purposely left open in this figure for clarity, but this should be completely closed to the vee rail, before saving.

Figure 15.



- 12.0009. Then select **< main >**
 - ↳ **< re-store & background >**.
- 12.0010. The resulting Half Diamond is shown in Figure 16 below.

Figure 16.



STEP 13.

- 13.0001. Now we must construct the other half of the diamond crossing.
- 13.0002. Now use **< do >**
 - ↳ **< parking bay >**
 - ↳ **< bay 1 : retrieve "no-name" (CTRL+R) >**.
- 13.0003. Then select **< geometry >**
 - ↳ **< peg positions >**
 - ↳ **< reset peg on datum (CTRL-0) >**.
- 13.0005. Now, Left clicking on **Guide Curve # 1 r2900 mm** template (or use Shift key + Left click on it's name label)
- 13.0006. and select **< peg/align tools >**
 - ↳ **< align control template over, and snake onto peg >**
 - ↳ **< facing – trailing >** from the popup menu.
- 13.0006.1. The result of this action is shown in Figure 17 below.

Figure 17.



- 13.0007. Next, use **< action >**
 - ↳ **< mouse actions: geometry >**
 - ↳ **< snake through peg (CTRL + F6) >**

- 13.0007.1. 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, as shown in Figure 18 below.
- 13.0007.2. 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, as shown in Figure 19 below.

Figure 18.

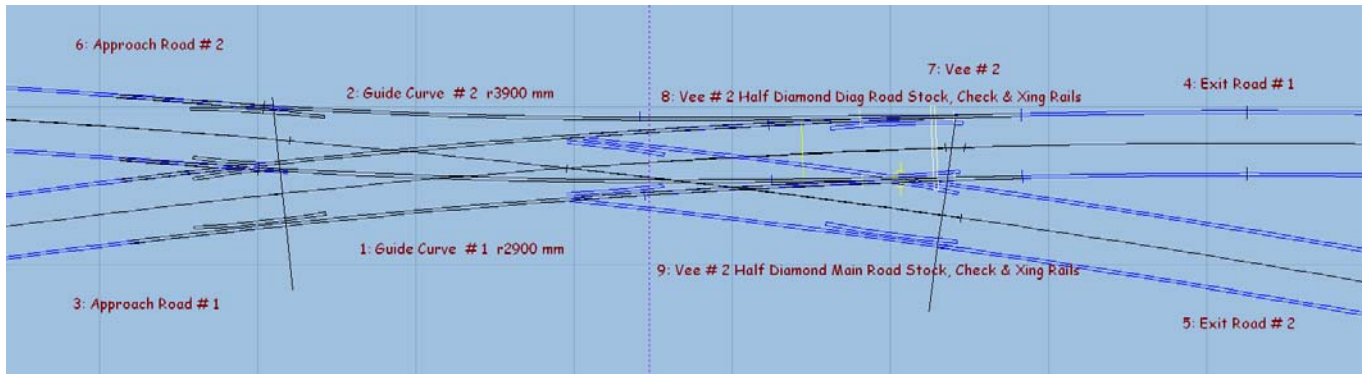
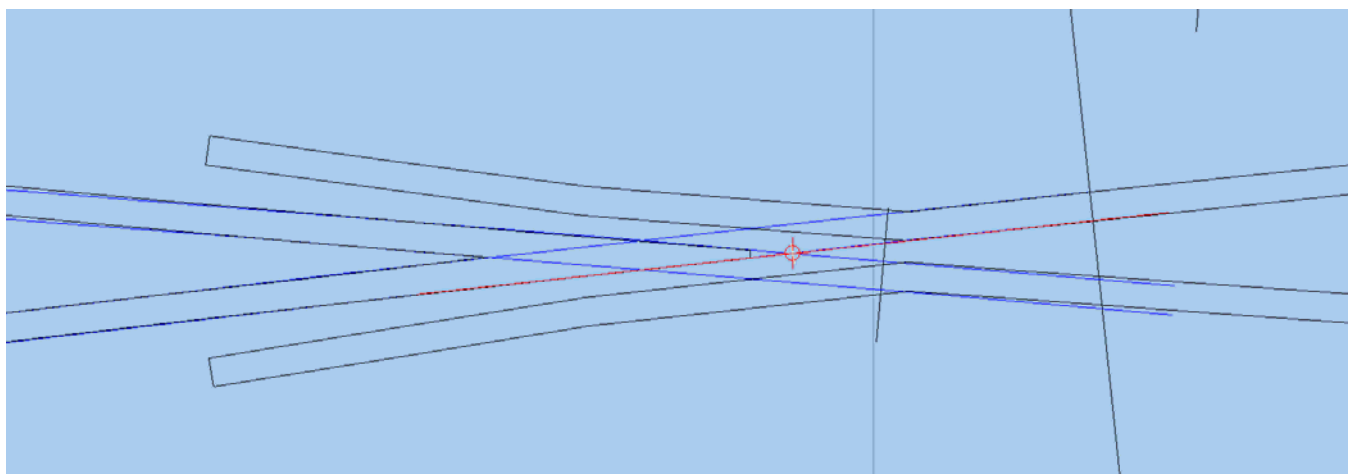


Figure 19.



- 13.0008. Then set < geometry >
 - ↳ < peg positions >
 - ↳ < peg on FP (CTRL-4) >.
- 13.0009. Next set < action >
 - ↳ < F5 V-crossing angles >
 - ↳ < any angle >
- 13.0010. Then select < action >
 - ↳ < F5 sizing options >
 - ↳ < length locked >.
- 13.0011. Next, use < action >
 - ↳ < mouse actions: real >
 - ↳ < adjust turnout size only (F5) >
- 13.0011.1. 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). See Figure 19 above.

- 13.0011.2. 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.
- 13.0012. Finally, unset **< geometry >**
↳ **< track centre-lines >**
- 13.0013. Please read important notes above in Step 7, regarding Transitions, before moving on from step 13, and if applicable follow the note instruction in order to complete step 13.

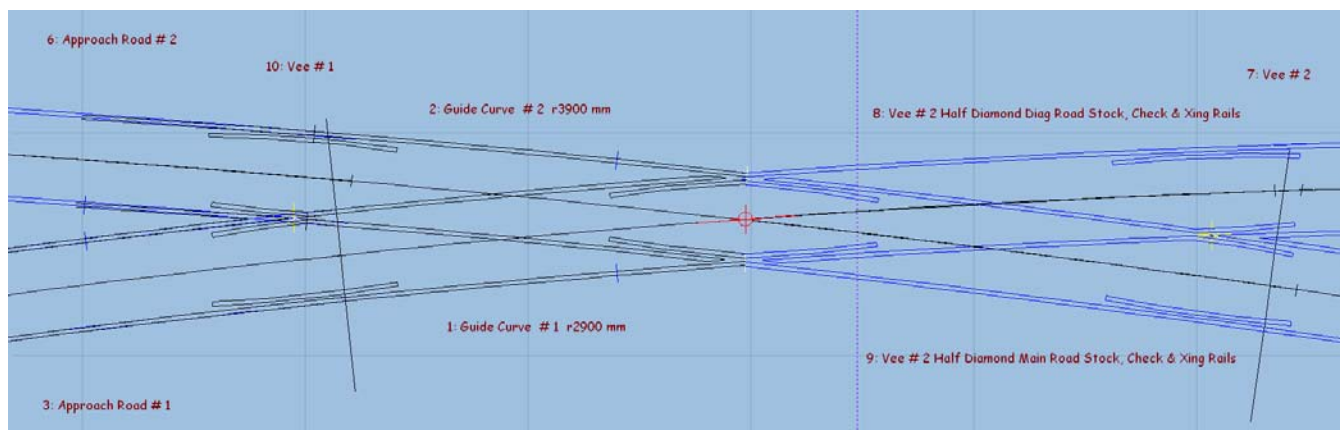
STEP 14.

- 14.0001. Now keep this template for further use by doing the following,
- 14.0002. Now use **< do >**
↳ **< parking bay >**
↳ **< bay 2 : park template >**.
- 14.0003. Visually ensure that the peg is on the FP of the template vee.
- 14.0004. Then use **< action >**
↳ **< mouse actions: geometry >**
↳ **< adjust overall turnout length (F4) >**,
- 14.0004.1. and adjust the length of turnout until just the aligned part of the vee is visible.
- 14.0004.2. 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,
- 14.0005. Now remove all rails and joint marks except for the crossing vee,
- 14.0005.1. Use **< do >**
↳ **< omit rails and joint marks... (CTRL+O) >**.
- 14.0005.2. And un-tick all the boxes except the crossing vee box, leave this ticked.
- 14.0006. Now store this using **< main >**
↳ **< store & background (CTRL+V) >**.
- 14.0007. 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 15.

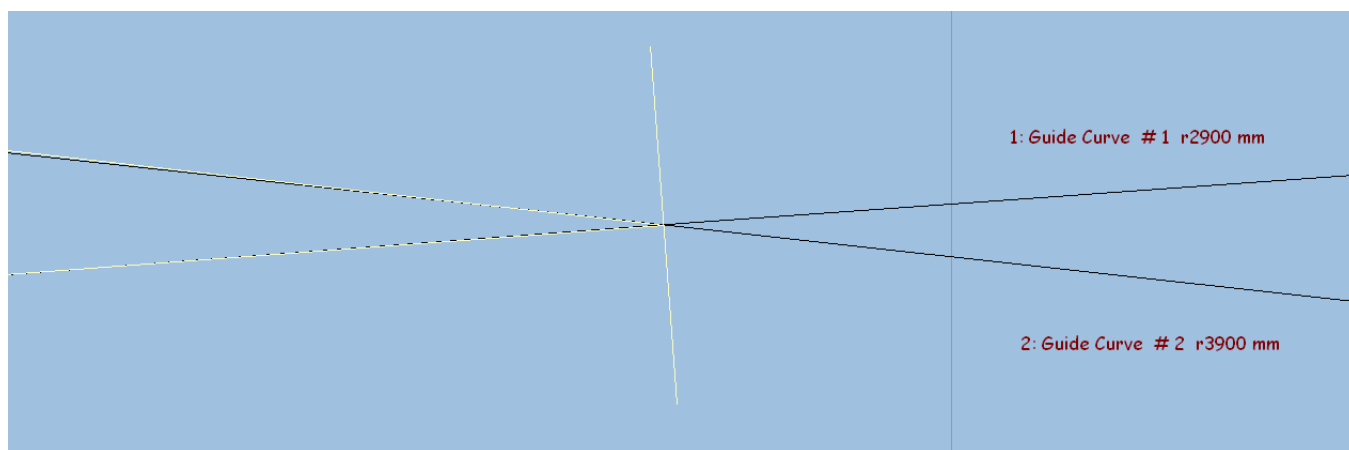
- 15.0001. Next, use **< do >**
↳ **< parking bay >**
↳ **< bay 2: retrieve "no-name" >**.
- 15.0002. Now set **< geometry >**
↳ **< peg positions >**
↳ **< peg on FP (CTRL-4) >**.
- 15.0003. Then use **< template >**
↳ **< convert turnout to half diamond (CTRL-K) >**.
- 15.000431. The result of this action is shown in Figure 20 below.

Figure 20.



- 15.0004. Now set **< geometry >**
 - ↳ **< peg positions >**
 - ↳ **< peg on FP (CTRL-4) >**.
- 15.0005. Here, set **< geometry >**
 - ↳ **< track centre-lines >**.
- 15.0006. Then use **< action >**
 - ↳ **< mouse actions: real >**
 - ↳ **< adjust turnout size only (F5) >**
- 15.0006.1. 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**.
- 15.0006.2. 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.
- 15.0006.3. Do not worry about the upper half diamond centre line not quite lining up with the centre line of curve **Guide Curve # 2 r3900 mm**, as this is not significant at this time, but do ensure the crossing point centre is correctly aligned by the lower half diamond centre line.
- 15.0006.4. The alignment position is shown in Figure 21 below.

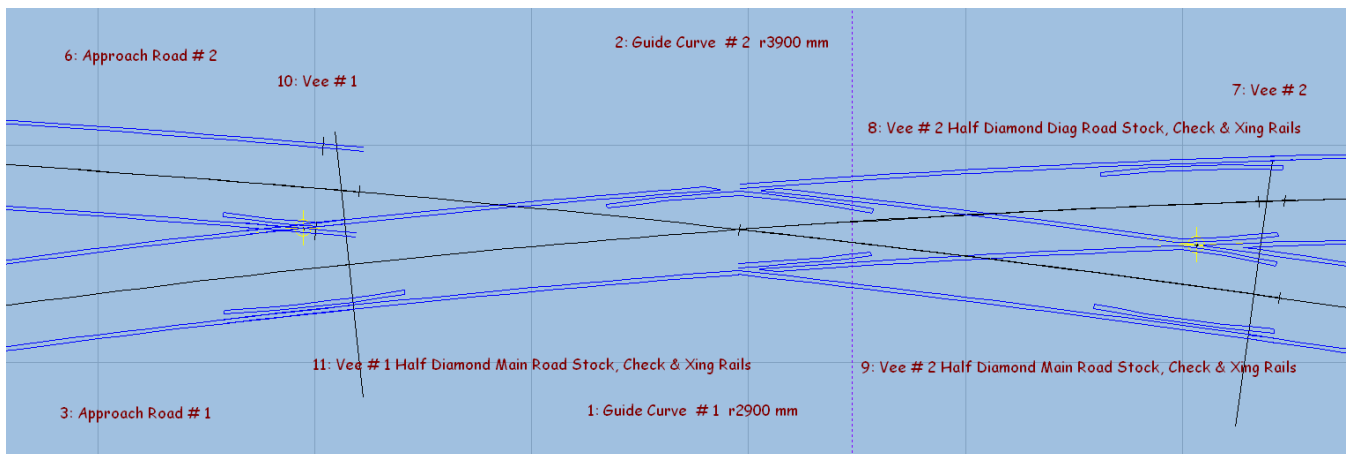
Figure 21.



- 15.0007. Now, un-set **< geometry >**
 - ↳ **< track centre-lines >**.

- 15.0008. Next use **< action >**
 - ↳ **< mouse actions: geometry >**
 - ↳ **< adjust overall turnout length (F4) >**,
- 15.0008.1. and adjust the length of turnout to extend just beyond the back tips of the wing and check rails, until these are fully formed.
- 15.0009. 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,
- 15.0009.1. Use **< do >**
 - ↳ **< omit rails and joint marks...(CTRL+O) >**
- 15.0010. Now use **< main >**
 - ↳ **< store & background (CTRL+V) >**.
- 15.0011. 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 Main Road Stock, Check & Xing Rails**
- 15.0011.1. The resulting Quarter Diamond is shown in Figure 22 below.

Figure 22.



STEP 16.

- 16.0001. Next use **< do >**
 - ↳ **< parking bay >**
 - ↳ **< bay 2: retrieve "no-name" >**
- 16.0002. Select **<template >**
 - ↳ **< swap hand (CTRL+H) >**
- 16.0003. Now select **< geometry >**
 - ↳ **< peg positions >**
 - ↳ **< reset peg on datum (CTRL-0) >**.
- 16.0004. Now, Left clicking on **Guide Curve # 2 r3900 mm** template (or use Shift key + Left click on it's name label)

- 16.0004.1. and select < peg/align tools >
 - ↳ < align control template over, and snake onto peg >
 - ↳ < facing – facing > from the popup menu.
- 16.0004.2. The result of this action is shown in Figure 23 below.

Figure 23.



- 16.0005. Next, use < action >
 - ↳ < mouse actions: geometry >
 - ↳ < snake through peg (CTRL + F6) >
- 16.0005.1. 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.
- 16.0005.2. 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.
- 16.0006. Then set < geometry >
 - ↳ < peg positions >
 - ↳ < peg on FP (CTRL-4) >.

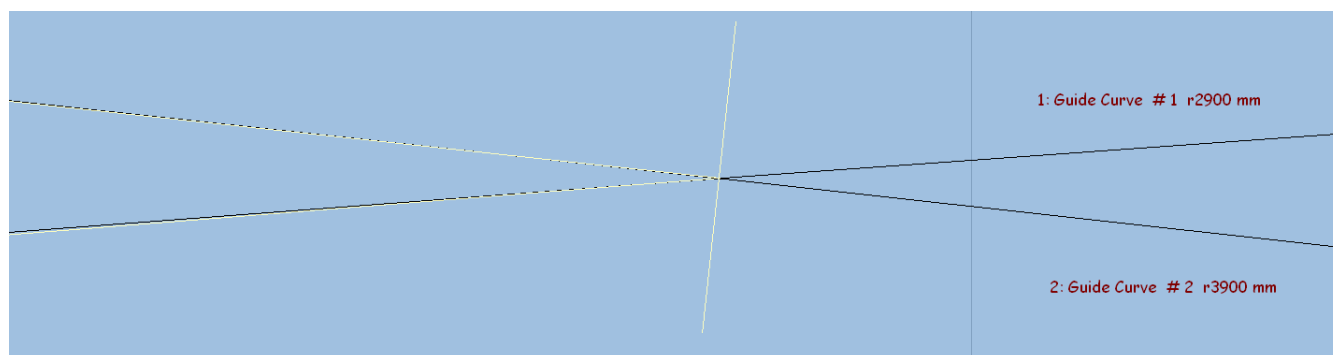
STEP 17.

- 17.0001. Visually ensure that the peg is on the FP of the template vee.
 - 17.0001.1. Select < geometry >
 - ↳ < peg positions >
 - ↳ < peg on FP (CTRL-4) >.
 - 17.0002. Then use < template >
 - ↳ < convert turnout to half diamond (CTRL-K) >.
 - 17.0003. Now set < geometry >
 - ↳ < peg positions >
 - ↳ < peg on FP (CTRL-4) >.
 - 17.0004. Here, set < geometry >
 - ↳ < track centre-lines >.
 - 17.0005. Then use < action >
 - ↳ < mouse actions: real >
 - ↳ < adjust turnout size only (F5) >
 - 17.0005.1. 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.

- 17.0005.2. 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.
- 17.0005.3. Do not worry about the lower half diamond centre line not quite lining up with the centre line of curve Guide Curve # 1 r2900 mm, as this is not significant at this time, but do ensure the crossing point centre is correctly aligned by the upper half diamond centre line.
- 17.0005.4. The alignment position is shown in Figure 24 below.

Figure 24.



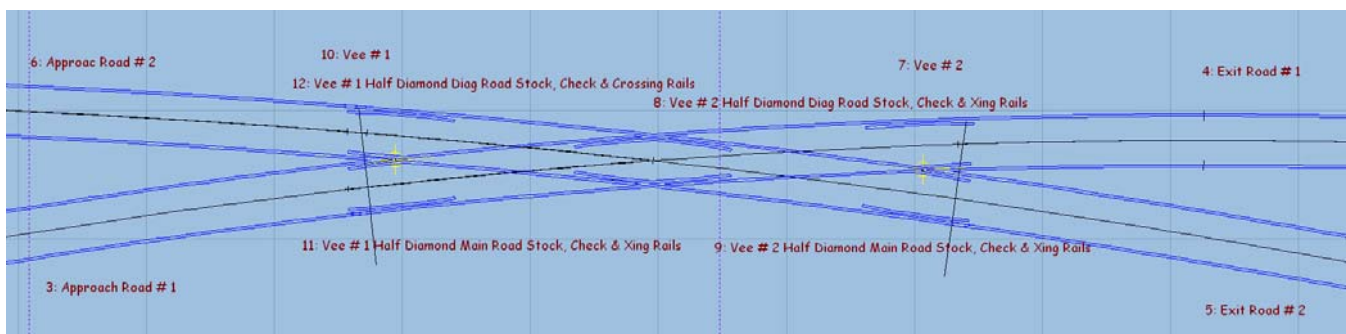
- 17.0006. Now, un-set < geometry >
↳ < track centre-lines >.
- 17.0007. Next use < action >
↳ < mouse actions: geometry >
↳ < adjust overall turnout length (F4) >,
- 17.0007.1. and adjust the length of turnout to extend just beyond the back tips of the wing and check rails, until these are fully formed.
- 17.0008. 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,
- 17.0009. Use < do >
↳ < omit rails and joint marks...(CTRL+O) >
- 17.0010. Now use < main >
↳ < store & background (CTRL+V) >.
- 17.0011. 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 18.

- 18.0001. We have now almost completed the second half of the diamond crossing, but now need to tidy up this half by properly connecting in the links to the Approach Roads 1 & 2.
- 18.0002. 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.

- 18.0003. Then use [< action >](#)
↳ [< mouse actions: geometry >](#)
↳ [< adjust plain-track length \(F4\) >](#)
- 18.0004. and reduce the length of the plain track until it just meets the **Vee # 1** diagonal road rail break point.
- 18.0004.1. You may need to ZOOM in close to adjust this, and then again re-select **F4** to make the final closure adjustment.
- 18.0005. Then select [< main >](#)
↳ [< re-store & background >](#).
- 18.0006. 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.
- 18.0007. Then use [< action >](#)
↳ [< mouse actions: geometry >](#)
↳ [< adjust plain-track length \(F4\) >](#)
- 18.0008. and reduce the length of the plain track until it just meets the **Vee # 1** main road rail break point.
- 18.0008.1. You may need to ZOOM in close to adjust this, and then again re-select **F4** to make the final closure adjustment.
- 18.0009. Then select [< main >](#)
↳ [< re-store & background >](#).
- 18.0010. Finally, we can now remove the two original curve templates (centre lines).
- 18.0011. Now remove template **Guide Curve # 1 r2900 mm**
- 18.0011.1. Use the [Left - Right](#) arrows to locate the correct template number (or title),
- 18.0012.2. Then click [wipe from the background](#).
- 18.0013. Now remove template **Guide Curve # 2 r3900 mm**
- 18.0013.1. Use the [Left - Right](#) arrows to locate the correct template number (or title),
- 18.0013.2. Then click [wipe from the background](#).
- 18.0014. The resulting formation is shown in Figure 25 below:

Figure 25.



STEP 19.

- 19.0001. The last job is now to put the timbers back into the correct positions for the whole diamond crossing.
- 19.0002. It 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.
- 19.0003. Select one of the quarter diamond templates, in this case I elected to use [Vee # 2 Half Diamond Diag Road Stock, Check & Xing Rails](#)
- 19.0004. 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.
- 19.0005. Because we have used "no timbering" throughout, we will have to restore the timbers by using the following:
- 19.0005.1. Select [< real >](#)
↳ [< timbering >](#)
↳ [< equalized – constant >](#)
- The timbers for this template will now appear on the template.
- 19.0006. Ensure that the timbers are centralized, do the following:
- 19.0006.1. Select [< real >](#)
↳ [< timbering >](#)
↳ [< timbers centralized >](#)
- 19.0007. 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:
- 19.0007.1. First select [< geometry >](#)
↳ [< peg positions >](#)
↳ [< reset peg on datum \(CTRL-0\) >](#).
- 19.0007.2. 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.
- 19.0008. Then select [< main >](#)
↳ [< re-store & background >](#).
- 19.0009. Now for the timbering of the other half of the diamond crossing.
- 19.0010. Next, Left click on the other quarter diamond template (or use Shift key + Left click on it's name label), [Vee # 1 Half Diamond Main Road Stock, Check & Xing Rails](#), and select [< wipe to the control >](#) from the popup menu.
- 19.0011. Again, because we have used "no timbering" throughout, we will have to restore the timbers by using the following:
- 19.0011.1. Select [< real >](#)
↳ [< timbering >](#)
↳ [< equalized – constant >](#)
- The timbers for this template will now appear on the template.

- 19.0012 Ensure that the timbers are centralized, do the following:
- 19.0012.1. Select **< real >**
 ↳ **< timbering >**
 ↳ **< timbers centralized >**
- 19.0013. 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:
- 19.0013.1. First select **< geometry >**
 ↳ **< peg positions >**
 ↳ **< reset peg on datum (CTRL-0) >**.
- 19.0013.2. 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.
- 19.0014. We now need to remove the overlapping timber K1 at the centre of the diamond.
- 19.0015. Select **< real >**
 ↳ **< Shove timbers (SHIFT + F10) >**
- 19.0016. When the 'shove timbers' dropdown box opens, do the following:
- 19.0017. Left click on the K1 number below the actual timber on the template (the timber will then highlight in RED), and then,
- 19.0017.1. In the 'shove timbers' dropdown box, click the 'omit timber' button.
- 19.0017.2. The timber will then disappear, but the K1 number will remain.
- 19.0018. In the 'shove timbers' dropdown box, click the yellow 'hide' button, and the box will close and disappear from the screen.
- 19.0019. Then select **< main >**
 ↳ **< re-store & background >**.
- 19.0020. You have now completed the construction of an Irregular Diamond Crossing, and the resulting formation is shown in Figure 26 below:

Figure 26.

