12. D&C Manager – Element Symbology

We have used D&C Manager to display chains and profiles as well as to access special programs. In this exercise, we will demonstrate its use to control symbology when drawing in MicroStation. At the same time we will demonstrate the use of another GEOPAK tool, Draw Transition.

We will be drawing the edge of roadway pavements (traveled way) as well as other line work for the S.R. 95 roadway. These lines are needed for our plans but they will also control certain widths on our proposed cross sections when we re-run them.

I.) Edge of Roadway Pavement

1) Open the MicroStation file

C:\Projects\Roane\SR95PoplarCr\ROSR95Proposed.dgn

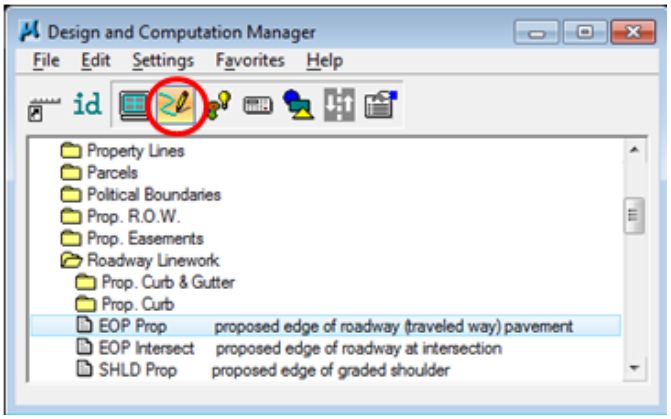
Access Project Manager.

2) Open MicroStation's Reference File dialog and turn off all references except for the alignments DGN file (logical name: alignment). You should only see slope lines and the centerline. Go ahead and delete the slope lines (they are a graphic group). Once we fine tune our roadway a little more, we will re-run our cross sections and generate new slope lines.

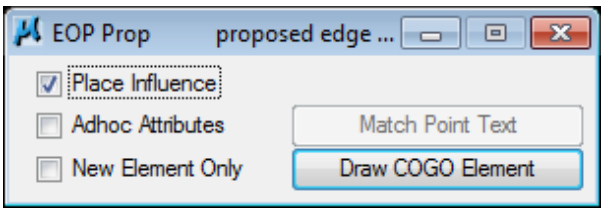
3) From the Project Manager dialog, select Plan View Design to open the Plan View Design tool box and access D&C Manager.

Select the item Drafting Standards → Roadway Linework → EOP Prop.

4) Check the selected icon at the top of the dialog. Ensure that you are in the Design mode of Design and Computation Manager.

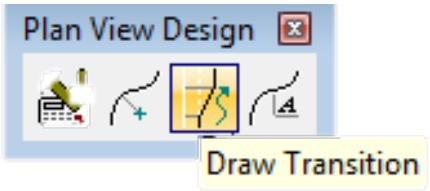


5) Activate the toggle for Place Influence. You can find it on the secondary dialog.



NOTE:
Place Influence forces all graphic elements which are created to match the selected item's symbology and can be used with MicroStation's Change Element tools to change existing elements. When running D&C Manager in expanded mode, the New Element Only option will restrict that functionality to affect only elements that are created.

6) In the main Project Manager dialog select Plan View Design. From the Plan View Design tool box, select the Draw Transition tool.

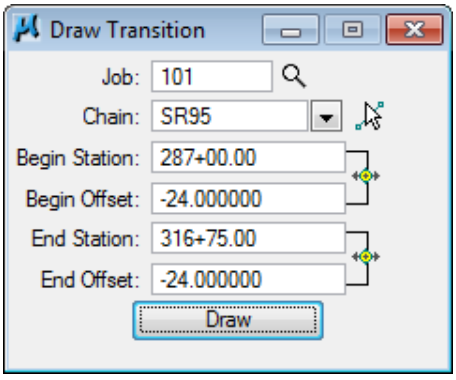


This will access the Draw Transition dialog.

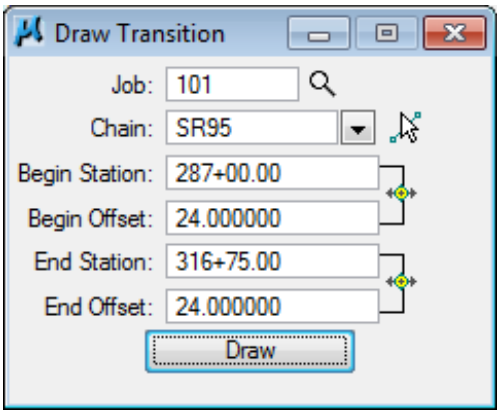
a) Station 287+00 to Station 316+75

7) Set the chain name to SR95.

To draw the left inside edge of pavement at an offset of -24 from Station 287+00 to 316+75, fill out the dialog as shown and press Draw.



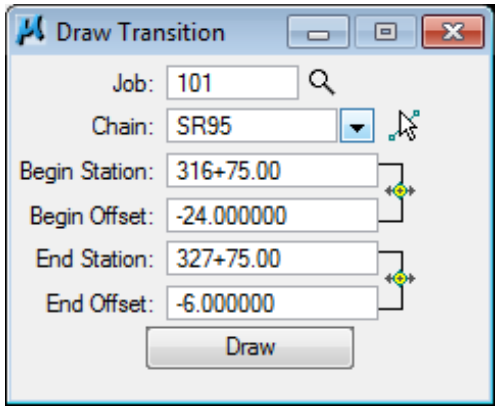
8) To draw the right inside edge of pavement from Station 287+00 to Station 316+75, fill out the dialog as shown. Notice that the only difference is the offset, simply remove the negative signs and press Draw.



9) To draw the **outside** edge of pavements from Station 287+00 to Station 316+75, repeat Steps 7-8 with 48' offsets. Remember to use negative signs with numbers for offsets to the left.

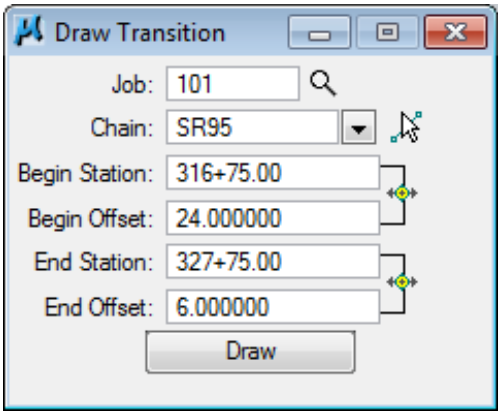
b) Station 316+75 to Station 327+75

10) To draw the left inside edge of pavement from Station 316+75 to Station 327+75, fill out the dialog as shown and press Draw.

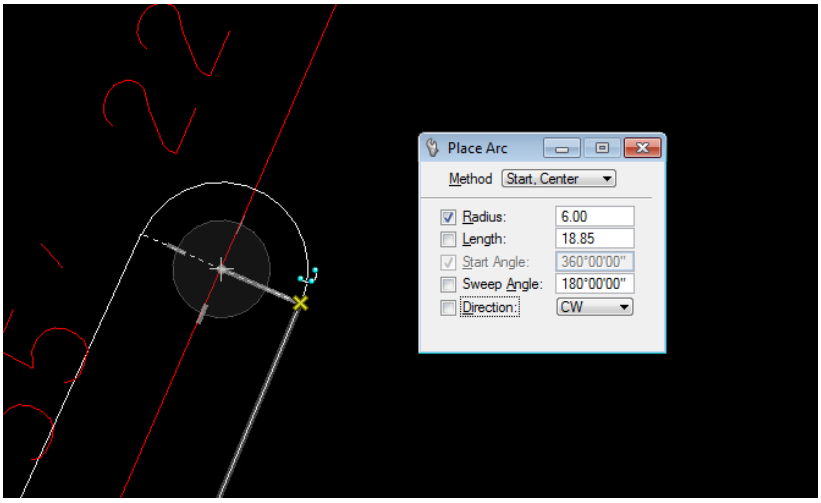


NOTE:
The area from Station 316+75 to Station 328+25 is where we are transitioning from the 4 lane depressed median typical to the 5 lane urban typical and is reflected by the offsets which vary. The pavement transition actually ends at 327+75 allowing an additional distance to transition the finished grade location from the inside edge of pavement to the crown of the roadway. We will discuss this further when we set up superelevation for the roadway.

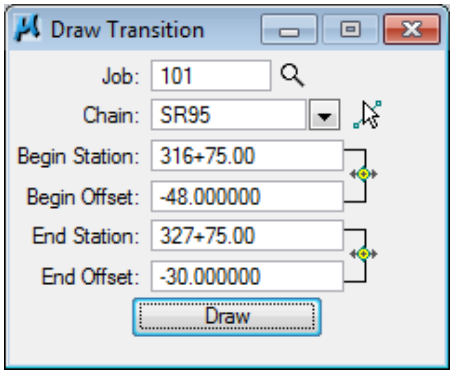
11) To draw the right inside edge of pavement from Station 316+75 to Station 327+75, fill out the dialog as shown and press Draw.



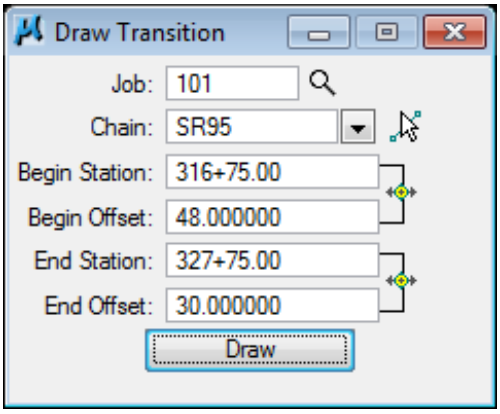
12) Use MicroStation's Place Arc command to add an ending "nose" to the ends of the inside edge of pavements at station 327+75 (Radius = 6').



13) To draw the left outside edge of pavements from Station 316+75 to Station 327+75, fill out the dialog as shown and press Draw.

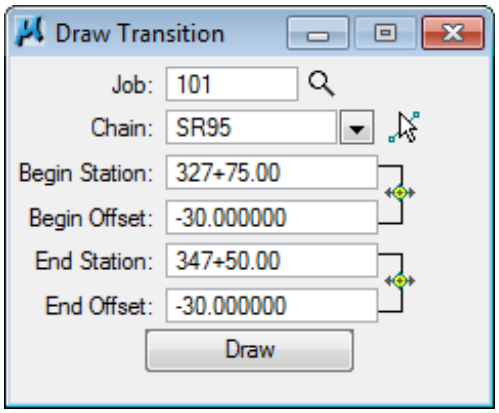


14) To draw the **right outside** edge of pavements from Station 316+75 to Station 327+75, fill out the dialog as shown and press Draw.

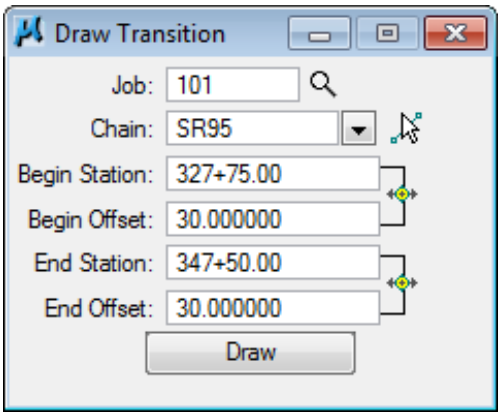


c) Station 327+75 to Station 347+50

15) To draw the left edge of pavement from Station 327+75 to Station 347+50, fill out the dialog as shown and press Draw.



16) To draw the right edge of pavement from Station 327+75 to Station 347+50, fill out the dialog as shown and press Draw.



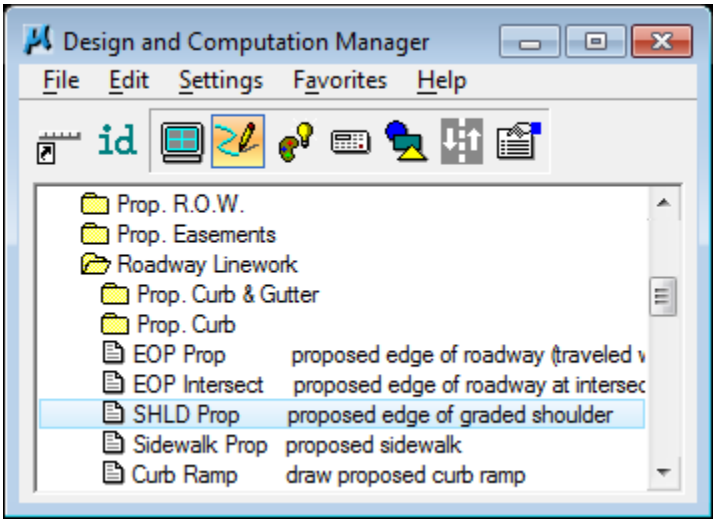
II.) Shoulders and Curbs

a) Station 328+25 to Station 347+50

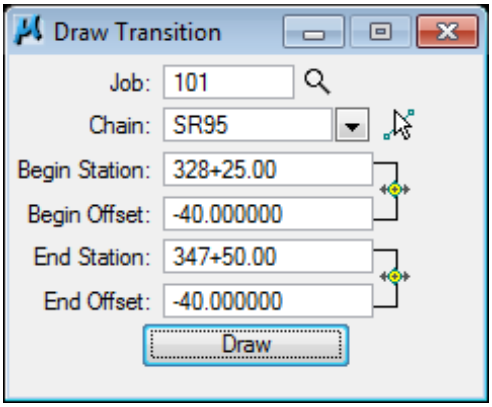
We need to add shoulder lines and linework for 6-30 curb & gutter in the urban section of the job and we can do so continuing with D&C Manager and the Draw Transition tool.

For this exercise, we will ignore side road breaks that would be needed on this project.

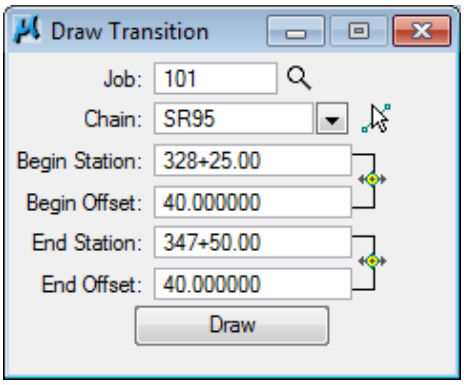
1) In D&C Manager, select the item Drafting Standards → Roadway Linework → SHLD Prop



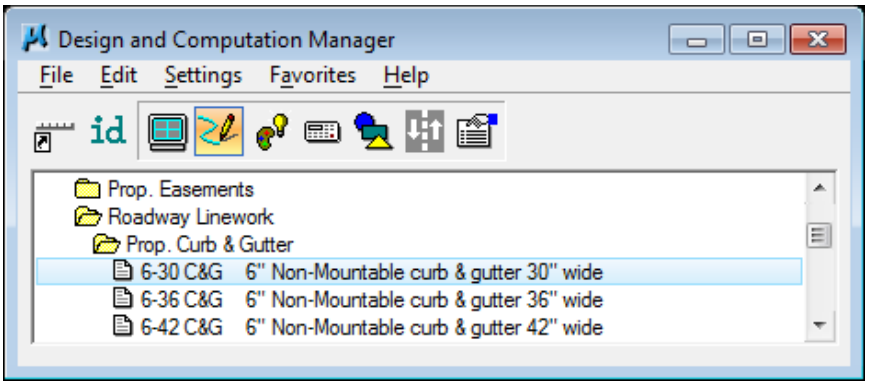
2) Our shoulders in the urban section are 10' wide so to draw the left shoulder from Station 328+25 to Station 347+50, fill out the Draw Transition dialog as shown and press Draw.



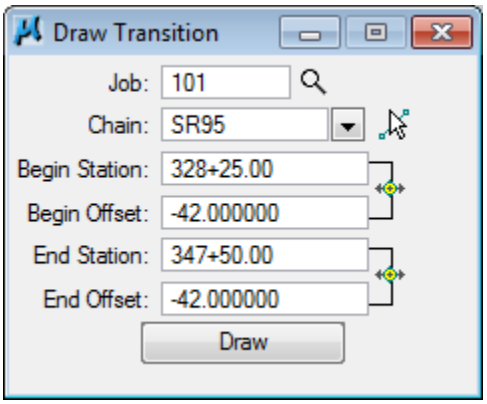
3) To draw the right shoulder from Station 328+25 to Station 347+50, fill out the dialog as shown. Notice that the only difference is the offset, simply remove the negative signs and press Draw.



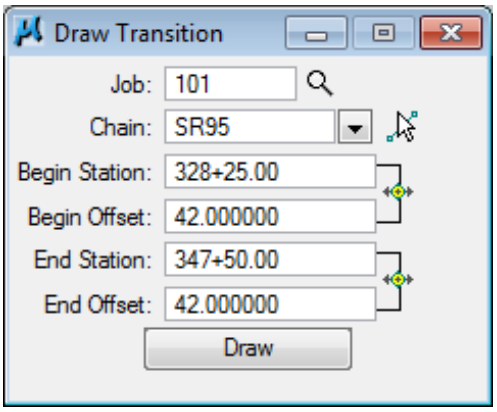
4) To draw the curb lines we will need to go back to D&C Manager. Select the item Drafting Standards → Roadway Linework → Prop. Curb & Gutter → 6-30 C&G. Notice this is in a subcategory of Roadway Linework so you have to set the sub-category first and then the item.



5) To draw the left curb line from Station 328+25 to Station 347+50, fill out the dialog as shown and press Draw.



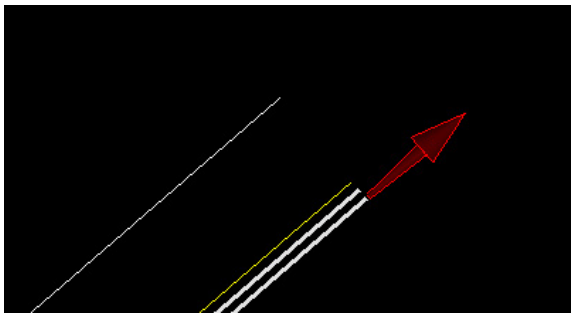
6) To draw the right curb line from Station 328+25 to Station 347+50, fill out the dialog as shown. Notice again that the only difference is the offset, simply remove the negative signs and press Draw.

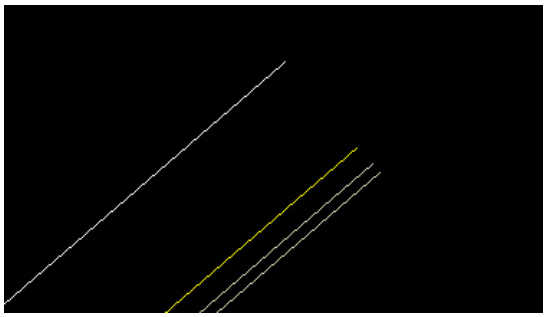


7) Curb lines use custom line styles and are built with the lower line as the curb face. Since this is the case it will be necessary to reverse/flip the direction of the right curb line so that it appears correctly. That is easily done with MicroStation's Change Direction command.

Go to the drop down menu option TDOT → Custom Line Styles → Reverse/Flip Pattern.

You are prompted select the element and to click the direction handle to change the direction. Click on the red arrow to reverse the line and once more to accept the new direction.



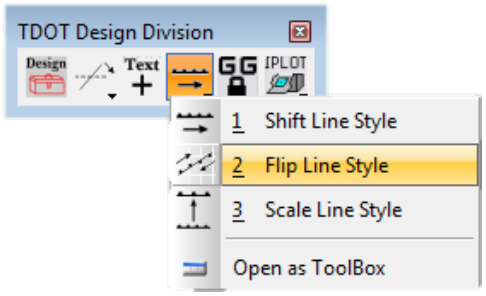


NOTE:
If you do not see the TDOT drop down options from the MicroStation menu bar the TDOT interface has not been activated. Go to File → Close and in MicroStation Manager set the interface option to TDOT. Re-open the DGN file and the TDOT options should now be available.

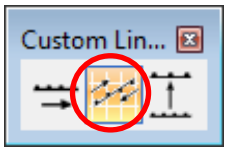
8) Alternate methods of getting the Reverse/Flip Pattern custom line style tool are from D&C Manager or from the TDOT Roadway Design Division tool strip. Most options under the drop down menu are available through D&C Manager. The TDOT drop down menu and the TDOT Roadway Design Division tool strip are provided so that commonly used tools are more accessible.

It is found in D&C Manager at Drafting Standards → Tools → Custom Line Styles → Flip LineStyle. To activate the Reverse/Flip Pattern tool with D&C Manager in tool box mode click on the Execute Design Keyin icon. In the expanded dialog mode double click on the item as illustrated in previous exercises.

The TDOT Roadway Design Division tool strip itself can be opened from the drop down menu at T.D.O.T. → Tools → Design Division Tool Strip or from D&C Manager at Drafting Standards → Tools → Design Tool Strip. To activate the Reverse/Flip Pattern tool click on the Custom Line Style Tools and choose the 2nd option as shown.



The Custom Line Style Tools can be opened as its own tool box if you are in the process of cleaning up several instances of custom line styles. Reverse/Flip Pattern is the center icon.



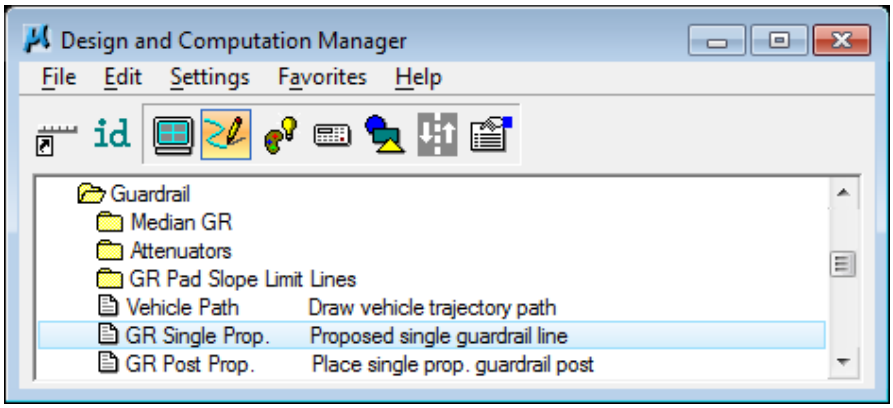
III.) Guardrail

a) Station 289+00 to Station 292+50

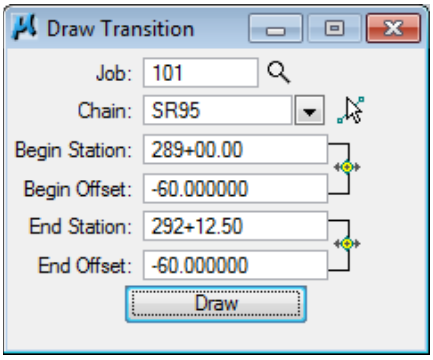
It has been determined that we need guardrail on the left from Station 289+00 to Station 292+50. A Type 13 terminal is required at 289+00 and a Type 38 terminal is required at the 292+50 end so we need regular guardrail from 289+00 to 292+12.50.

1) Access the D&C Manager.

2) Select the item Drafting Standards → Guardrail → GR Single Prop.



3) To draw the guardrail from Station 289+00 to Station 292+12.50, fill out the Draw Transition dialog as shown and press Draw.



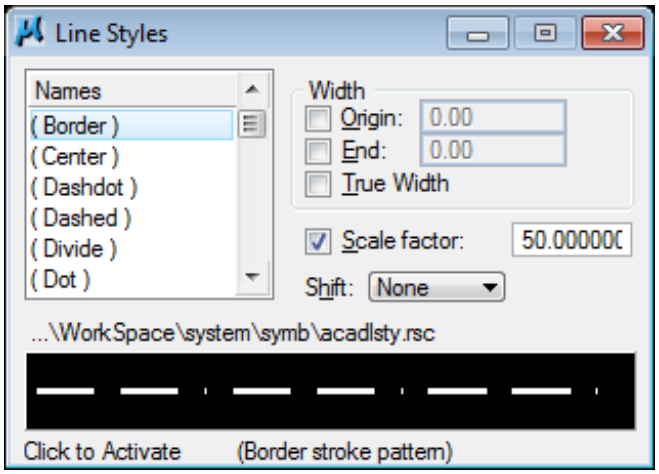
4) Click on the Place Influence option box to turn it off. The programs we use to place the guardrail terminals will be placing multiple graphic elements for us and will handle the symbology settings.

NOTE:

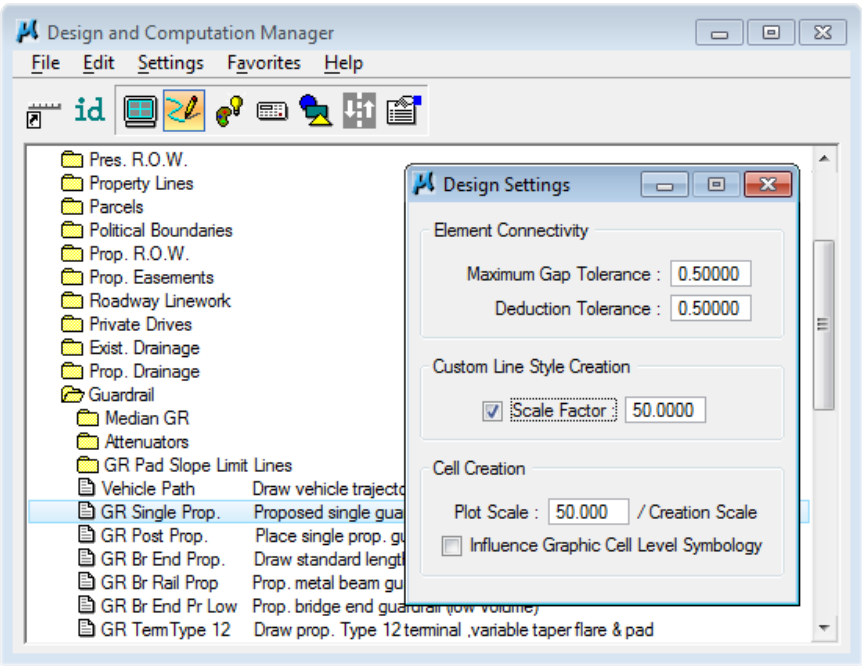
It is recommended that you always turn off Place Influence when you don't need it. This is a powerful function and you may accidentally change graphics without meaning to.

5) Special guardrail placement programs accessed through D&C Manager utilize MicroStation commands to place graphics, so the custom linestyle Scale Factor must be set in the MicroStation Line Styles dialog.

From the MicroStation drop down menu, go to Element → Line Styles → Custom and make sure the Scale Factor is set to 50.



NOTE:
When using D&C Manager's Place Influence to draw linework with custom linestyles, the scale is controlled by the setting for Scale Factor under Settings → Design from D&C Manager's drop down options. This can only be accessed with D&C Manager in expanded mode.

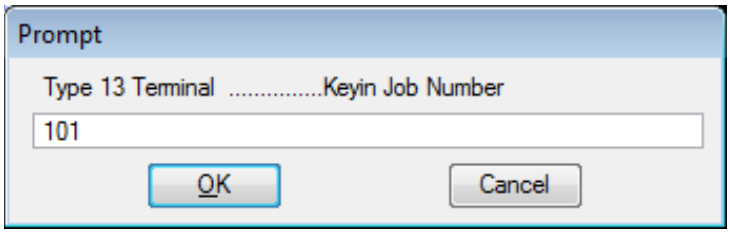


The default value for both of these locations in English files is 50. The only exception to this is for cross section DGN files where the MicroStation setting is 10.

6) Now we need to place our terminals. First zoom in on the area from 289+00 to 292+12.50 where we placed our guardrail run so that the ends are visible.

Station 289+00 is the trailing end of this guardrail and this is a roadway with a median so we need to place a Type 13 terminal there. Go to D&C Manager and select item Drafting Standards → Guardrail → GR Term Type 13. Click on the Execute Design Keyin icon.

7) You are prompted for a job no. Key in 101 and click OK.

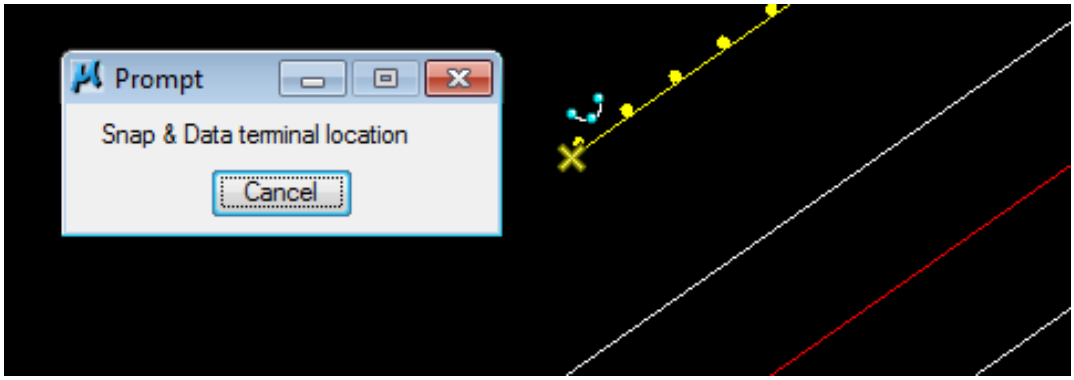


8) You are then prompted for the chain name. Key in SR95 and click OK.

9) You are then prompted for the terminal location in the guardrail run, Begin or End and Left or Right. Our location is on the left at the beginning so pick Begin_Left from the list box and click OK.

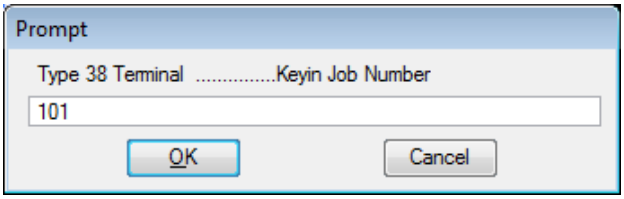
NOTE:
Begin or End and Left or Right are based on the guardrail in relation to the alignment's direction and orientation.

10) Finally you are prompted to Snap & Data terminal location. Snap and Data Point on the guardrail at 289+00.



11) Now, we can place the Type 38 terminal at the other end. Go to D&C Manager and select item Drafting Standards → Guardrail → GR Term Type 38 and click on the Execute Design Keyin icon

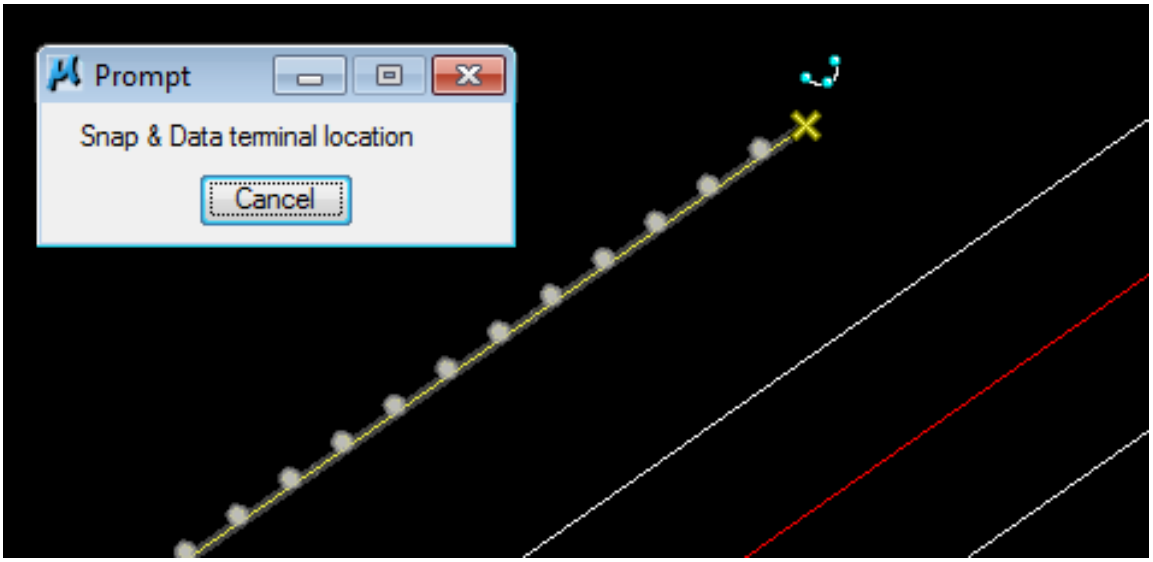
12) You are prompted for a job no. Since we have just used a similar tool, it should default to our previous entry. Key in 101 if necessary and click OK.



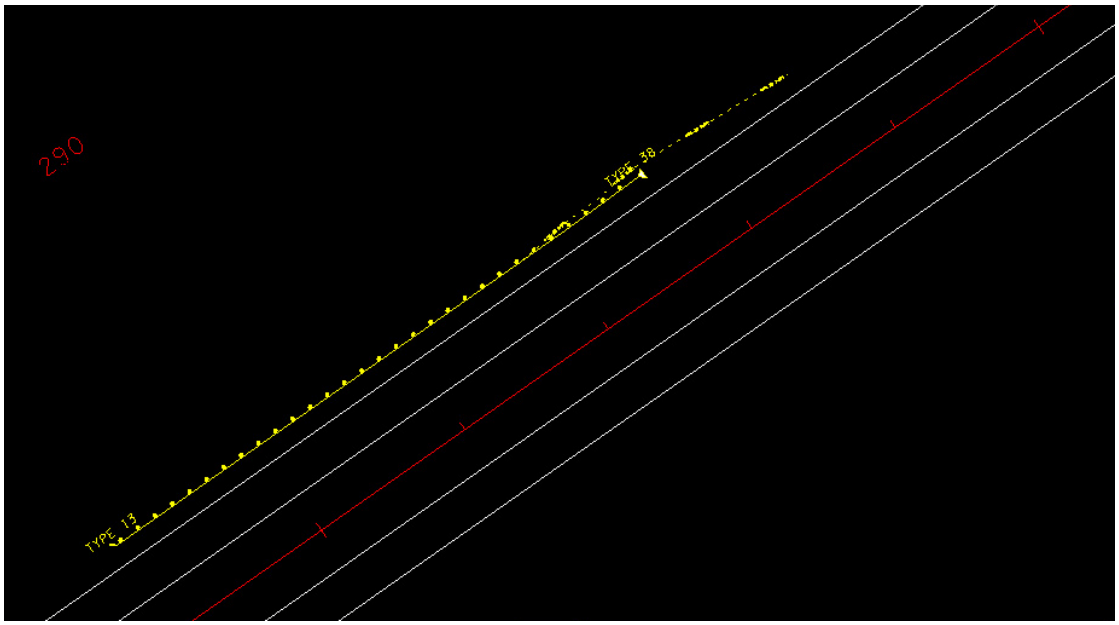
13) You are then prompted for the chain name. Key in SR95 if necessary and click OK

14) You are then prompted for the terminal location in the guardrail run. Our location is on the left at the end so pick End_Left from the list box and click OK

15) Finally you are prompted to Snap & Data terminal location. Snap and Data Point on the guardrail at 292+12.50.



All graphics are placed for the Type 13 and 38 terminals. Now our guardrail run is complete.



You may notice that line work in addition to the type 38 terminal itself was placed. These lines are on the level "DESIGN - TRANSPORTATION - GR Special Slope Limit Lines" and represent the limits of the pad required for installation of this terminal. When cross sections are processed, these lines are recognized by the software and additional widening of the shoulders will be reflected in the cross sections.