

## InRoads – Manual Superelevation Entry

### Overview

There are several ways to create a superelevation definition in a Roadway Designer corridor. The preferred method is to use the **Create Superelevation Wizard**, because this process automatically creates all of the point constraints.

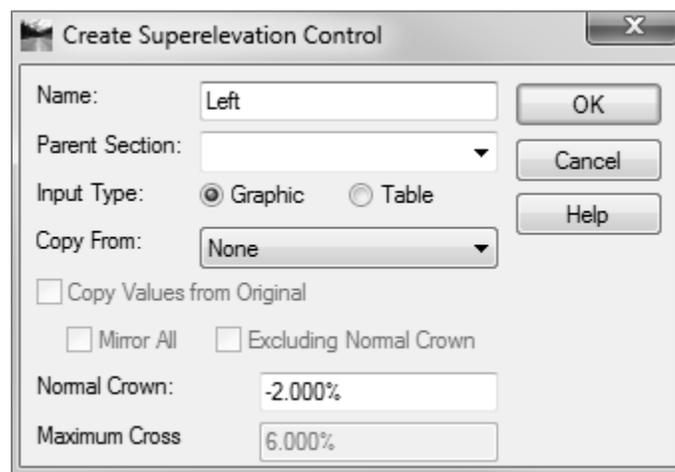
If you need to create the superelevation outside of the wizard, you can manually enter the data in the form of stations and cross slope data for the transition points such as begin and end full super. Define the Superelevation Control lines first, and then create superelevation point controls tying template points to the control lines.

**NOTE:** when you create the control lines manually, you will not be able to use the *Edit Curve Set Stations* command in the Superelevation area.

### Workflow

#### Superelevation Control Lines

1. In the *Modeler > Roadway Designer*, select the **Superelevation** radio button at the lower right corner of the dialog, which opens a new window in the lower right part of the display. Right-click in this new window, or use the menu option Superelevation, and select **Create Single Control Line**.
2. There are two Input Types: **Graphic** and **Table**. Graphic mode places the control line at the user defined cross slope between the corridor station ranges. Table mode allows for tabular entry or importation of a previously defined spreadsheet or text file. Create two control lines - one each for the left and right sides. The parent section is the centerline. Use the *Graphics Extent* button at the bottom of the superelevation display to view the lines.



Station	Cross Slope	Type
57+25.000	-2.000%	Normal Crown
65+00.000	-2.000%	Normal Crown

The Superelevation Display List dialog lists the created superelevation controls and can be used to view one or all of the control lines. This command can be accessed by right-clicking in the **Superelevation Display**.

- Place the cursor on one of the control lines in the display. Right-click and select the **Insert Point** command. If both control lines are displayed, you will be asked which line you want to create a point for. The control line will “rubber band” and the Dynamics Settings dialog will display.

There are two ways to enter the transition stations into this dialog box:

- Use the dynamic snapping to create a point at or near the desired station, and then enter the precise station if necessary when you update the slopes (see step 4). The **station** and **% slope** Step fields are useful in controlling the entries when using this method.

- The precise station can also be entered directly into the Dynamic Settings dialog using the x+xx,x% format.

Dynamics Settings

Station: 75+03.500 Step: 0+01.000

Cross Slope: -4.000% Step: 1.000%

x+xx,x%= 5977.772,8%

Snap To:

Cardinal Points  Superelevation Points

After the last station for that control line, close the dialog box. Because it is a dynamic dialog, you will need to end the process by right-clicking and then selecting **Finish**.

- At the beginning of your superelevation diagram, right-click (or double click) on the first super point and select the **Edit Point** command. The Name field is grayed out and indicates whether it is on the left of right control line. Enter or edit the slope for that station from your station list. You can identify the type of superelevation point, including Normal Crown and Full Super, from the dropdown *Type* field.

Superelevation Point Properties

Name: Left - 59+78

Station: 59+78.000

Cross Slope: 8.000%

Type: Undefined

Non-Linear Curve Length: 0.000

Apply

Close

< Previous

Next >

Help

Constraints

Constraint 1

Constraint 2

Type: None

Type: None

- Click on the **Next >** button to progress through the points.

As you are editing the station values, cross slopes and super types, it is a good practice to add constraints in the Superelevation Point Properties dialog. There are several constraints available, including Horizontal, Vertical, Slope, Vector-Offset and Mirror Cross Slope. These constraints work similar to the point constraints in the **Create Template** interface, with the addition of the Mirror Cross Slope constraint, which causes a point's cross slope value to the same extent, but opposite sign, of its parent point.

The **Superelevation Wizard** automatically creates point constraints, so these will need to be configured if you choose to create the superelevation settings manually. Constraints serve to tie the superelevation points together as a solid, cohesive entity.

## Superelevation Point Controls

- When all of the points on your superelevation control lines have been established, select the *Corridor > Point Controls* command.

Point controls are necessary to identify the left and right “range” points on the template. Additional point controls can be created for shoulder rollover locks.

- Select the **Vertical** mode, and select **Superelevation** as the *Control Type*.
- You can snap on the point in the cross section view (lower left side of the dialog) or pick the point from the list. The reference point is the template centerline (**CL\_FIN**). Create superelevation controls for the left and right sides (**L\_ETW** and **R\_ETW**), adding them to the lower portion of the *Point Controls* dialog.

Corridor: RAMP\_BLine\_Fin

Control Description:

Point: L\_ESP\_FIN

Mode  
 Horizontal  Vertical  Both

Control Type: Superelevation

Superelevation: Left

Reference Point: L\_ETW\_FIN

Station Limits  
 Start: 57+25.000  
 Stop: 75+96.541

Horizontal Offsets  
 Start: 0.000  
 Stop: 0.000

Vertical Offsets  
 Start: 0.000  
 Stop: 0.000

Priority: 1

Horizontal and Vertical Controls:

E...	P...	Name	Start St...	Stop St...	Mode	Type	Control
X	1	L_ESP_FI...	57+25.000	75+96.541	Vertical	Superelev...	Left:L_ETW_FIN

- Review the template to determine if it is behaving as desired.

Additional controls may be needed to control the slope of the shoulders using the *Superelevation > Apply Shoulder Rollover Lock* command. Note that the superelevation controls for the **\_ESP** template points are referenced from the **\_ETW** points and not the **CL\_FIN** point.

For questions or comments on this tech note, contact your regional CAE Support Coordinator or the WSDOT CAE Help Desk at (360) 709-8013.