

# LAB 11 - The Superelevation Wizard

This lab demonstrates the use of the Superelevation Wizard. The wizard is the easiest way to add superelevation to a corridor.

## Chapter Objectives:

- Use the Superelevation Wizard to enter data into the corridor.
- Edit a Superelevation Control Line.

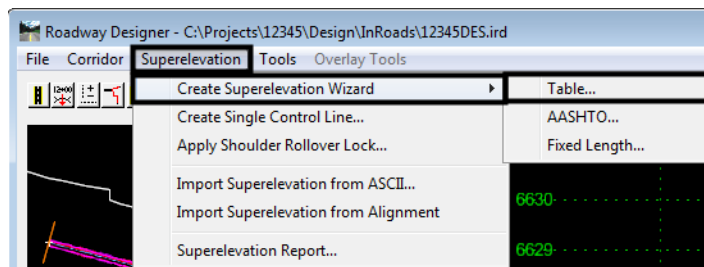
Before beginning this lab, verify that the following files are loaded:

- C:\Projects\12345\Design\Drawings\Reference\_Files\12345DES\_Model.dgn
- C:\Workspace\Workspace-CDOT\_V8i\Standards-Global\InRoads\Preferences\CDOT\_Civil.xin
- C:\Projects\12345\Design\InRoads\12345 existing ground.dtm
- C:\Projects\12345\Design\InRoads\12345DES\_Geometry.alg
- C:\Projects\12345\Design\InRoads\DES12345\_Templates.itl

## Lab 11.1 - Using the Superelevation Wizard

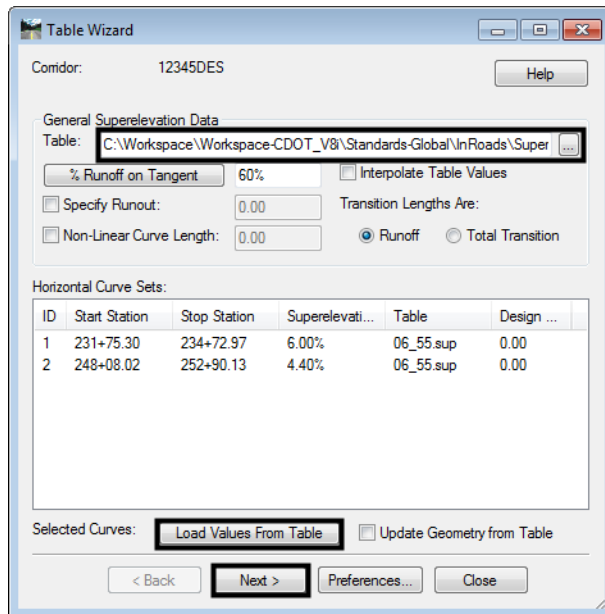
This lab uses the DES12345 corridor built in the previous lab. There are two main steps to using superelevation:

- ◆ Select the superelevation rate table and
  - ◆ Calculate the rate for each curve
1. Select **Modeler > Roadway Designer** from the InRoads menu bar.
  2. From the Roadway Designer dialog box, select **Superelevation > Create Superelevation Wizard > Table** from the menu bar. The Table Wizard is displayed.



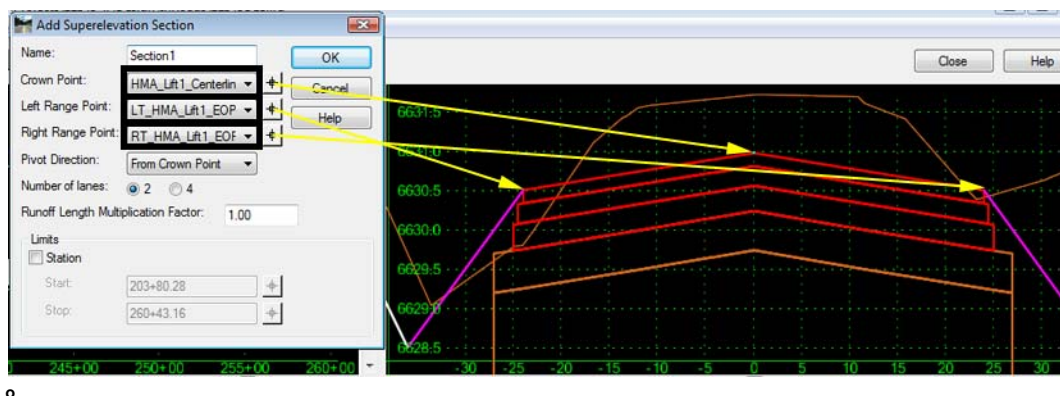
3. <D> the **Browse** button and select:  
 C:\Workspace\Workspace-CDOT\_V8i\Standards-Global\InRoads\Superelevation Tables\AASHTO 2004\06\_55.sup.
4. <D> the **Load Values From Table** button. The superelevation table has been selected.

5. <D> Next.



On this screen the template points that define the superelevation range and pivot points are identified. It doesn't matter which station is active when these points are selected.

6. On the **Superelevation Section Definitions** dialog box, <D> **Add**. This displays the **Add Superelevation Section** dialog box.
7. <D> the target button for the **Crown Point**. Then <D> on the finish grade centerline point.
8. <D> the target button for the **Left Range Point**. Then <D> on the finish grade left edge of pavement point.
9. <D> the target button for the **Right Range Point**. Then <D> on the finish grade right edge of pavement point.
10. <D> OK.

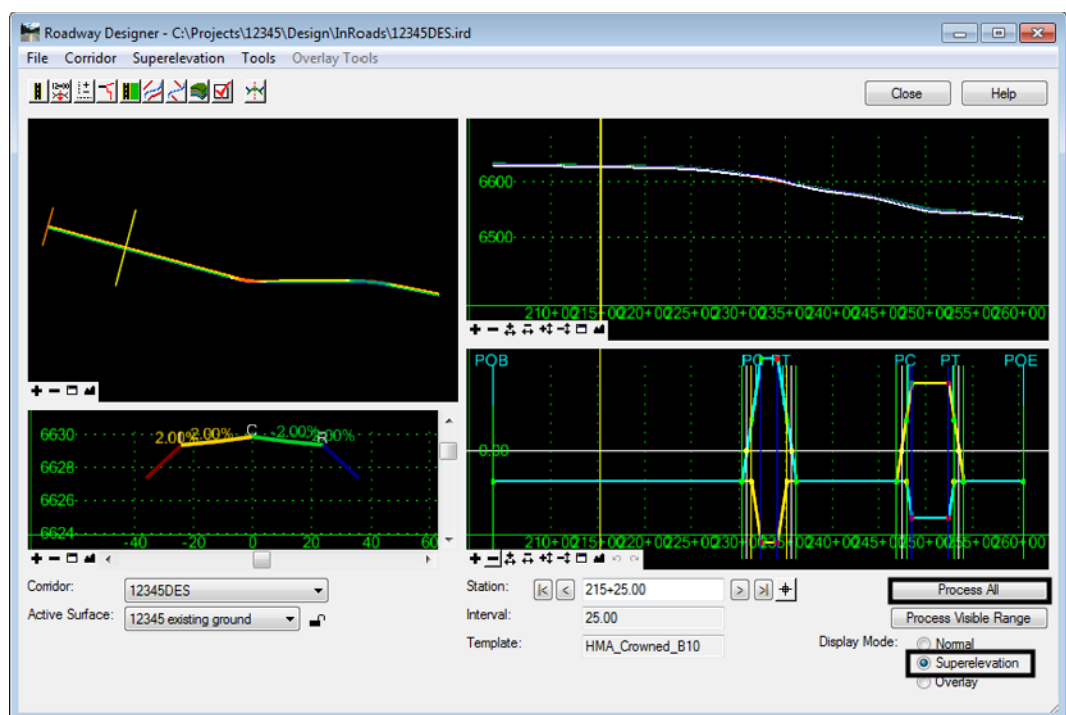


11. <D> Next on the **Superelevation Section Definitions** dialog box. This displays the **Superelevation Controls** dialog box.

This dialog box is mainly for informational purposes. It is provide so that the superelevation control line properties can be reviewed/updated before they are applied.

12. <D> the **Finish** button to complete the superelevation entry.
13. Toggle on **Superelevation** for the *Display Mode* on the **Roadway Designer** dialog box.  
This adds the superelevation view window to the Roadway Designer dialog box.
14. <D> the **Process All** button. If it appears, Close the Results window.
15. <D> the **Fit** button for the *Plan View* and the **Superelevation Control Line** views.

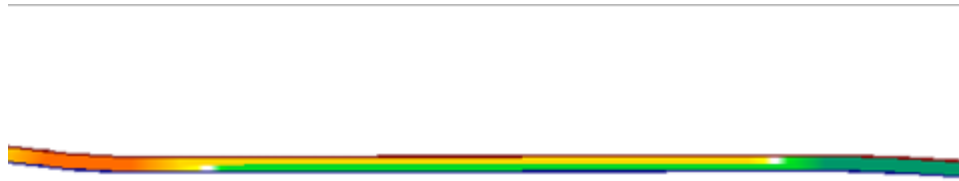
The illustration below shows the data generated by the **Superelevation Wizard**.



The data in the plan view is color coded to show different cross slopes. The colors that represent the cross-slope values are:

- ◆ Green-Blue for slopes from 0.5% to 10% to the right with dark blue representing slopes greater than 10% to the right
- ◆ Yellow-Red colors for slopes from 0.5% to 10% to the left with dark red representing slopes greater than 10% to the left

- ◆ White for slopes less than 0.5%

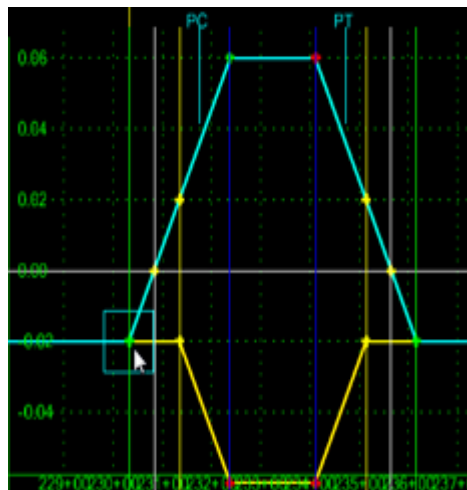


16. Select **File > Save** from the Roadway Designer menu bar.

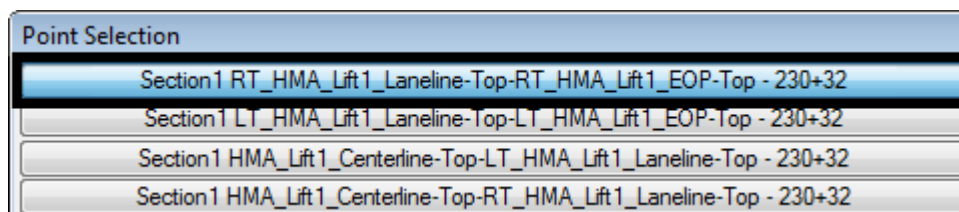
## Lab 11.2 - Edit a Superelevation Control Line

In this exercise the superelevation stations for the first curve are edited to even stations. This illustrates the procedure for editing superelevation. There are a couple of methods for editing superelevation stations:

- Edit the superelevation points from the superelevation view and
  - Use the **Edit Curve Set Stations** tool
1. This first example is to edit the superelevation points directly from the view window. **<D>** **<D>** on the first superelevation point.



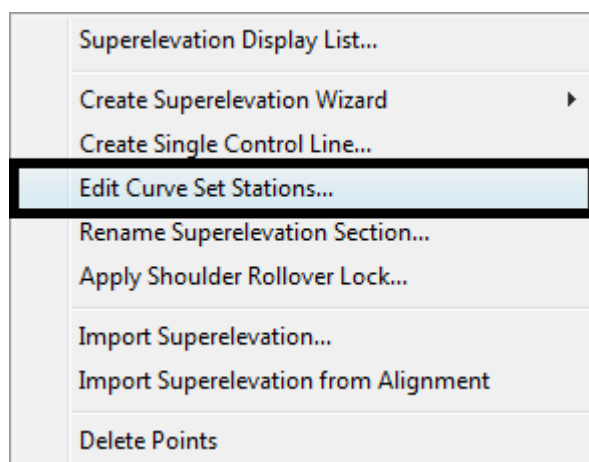
2. The **Point Selection** dialog box is displayed. **<D>** **<D>** on the **Section1 RT\_HMA\_Lift1\_Laneline-Top-RT\_HMA\_Lift1\_EOP-Top - 230+32.50**.



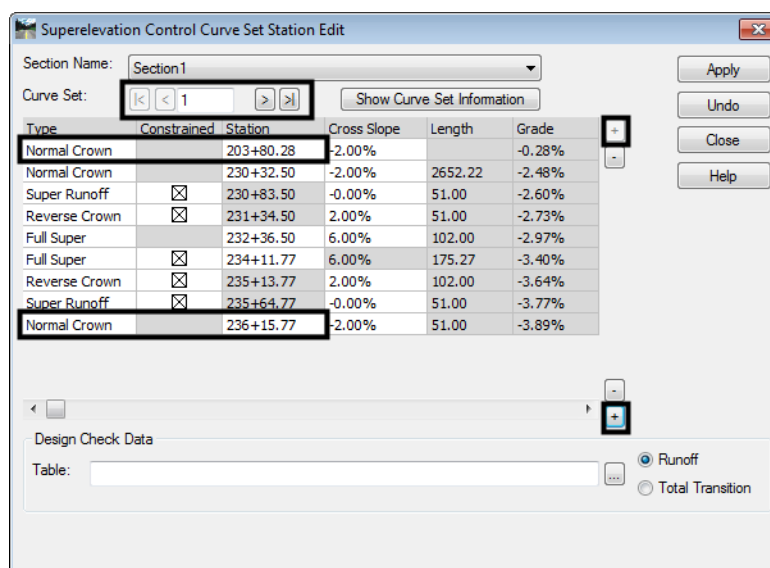
3. The **Superelevation Point Properties** dialog box is displayed. Key in **230+32.00** in the **Station** field.
4. <D> **Apply**.
5. <D> **Close**.

The other method is to use the Edit Curve Set Stations command. The dialog box may be more use since it uses common terminology used to define superelevation stations such as Full Super, Reverse Crown, Super Runoff, and Normal Crown.

6. <R> in the Superelevation Control Line view and select **Edit Curve Set Stations** from the menu. The **Superelevation Control Curve Set Station Edit** dialog box displays.



7. Set the **Curve Set** to **1**. This can be done with a key in or by using the arrow buttons.
8. <D> the upper “+” button to display additional stations. Continue to display additional stations until the **Normal Crown** at station **230+32.00** appears at the top of the list.
9. <D> the lower “+” button until the **Normal Crown** at station **236+15.77** is displayed.



10. **Toggle off** the **Constrained** toggle for Super Runoff at station **230+83.12**. Superelevation station that have a **Grey** background cannot be changed without turning off the **Constrained** toggle.
11. Round the Station value from **230+83.12** to **230+83.00**. Be sure to use the Tab key to accept the new value.
 

**Note:** The rounding of stations is a design decision. Consult the Project Manager for guidance with this change.
12. Repeat steps 10 and 11 as needed and round the other stations as indicated below.
  - ◆ Reverse Crown **231+34.00**
  - ◆ Full Super **232+37.00**
  - ◆ Full Super **234+12.00**
  - ◆ Reverse Crown **235+14.00**
  - ◆ Super Runoff **235+65.00**
  - ◆ Normal Crown **236+16.00**
13. <D> **Apply**.
14. <D> **Close**. This dismisses the **Superelevation Control Curve Set Station Edit** dialog box.

Type	Constrained	Station	Cross Slope	Length	Grade
Normal Crown		203+80.00	-2.00%		-0.28%
Normal Crown		230+32.50	-2.00%	2652.50	-2.48%
Super Runoff	<input checked="" type="checkbox"/>	230+83.50	-0.00%	51.00	-2.60%
Reverse Crown	<input checked="" type="checkbox"/>	231+34.50	2.00%	51.00	-2.73%
Full Super		232+36.50	6.00%	102.00	-2.97%
Full Super	<input checked="" type="checkbox"/>	234+11.77	6.00%	175.27	-3.40%
Reverse Crown	<input checked="" type="checkbox"/>	235+13.88	2.00%	102.12	-3.64%
Super Runoff	<input checked="" type="checkbox"/>	235+64.94	-0.00%	51.06	-3.77%
Normal Crown		236+16.00	-2.00%	51.06	-3.89%

**Note:** If the constraints are toggled back on, the stations will revert back to those calculated by the wizard.

15. <D> the **Process All** button. The computer will now apply the template drops and superelevation to all the stations in the corridor.
16. Scroll through the first curve to see how the superelevation works.
17. Select **File > Save** from the Roadway Designer menu bar.
18. <D> **Close**.

**Chapter Summary:**

- *Lab 11.1 -Using the Superelevation Wizard* demonstrated how to use the Superelevation Wizard to define the location of the Crown and Range points using the cross section view window. These points are used to determine how the template superelevates through a curve.
- *Lab 11.2 -Edit a Superelevation Control Line* showed two methods to edit a Superelevation Control Line; 1) manually and 2) using the Edit Curve Stations... dialog box. It is important to remember that editing superelevation stations is a design decision based on standard design criteria from the AASHTO manual and project specific conditions.

