

LAB 2 - Review Geometry

The purpose of this lab is to go into a more detailed review of the contents of the *12345DES_Geometry* geometry project (*12345DES_Geometry.alg*) file used in the previous lab.

The *12345DES_Geometry* geometry project is a collection of all the data from the initial topographic survey. Existing linear objects such as pavement lines, breaklines, streamlines, etc are stored as horizontal alignments. Survey shots of singular features such as signs, utilities, ground shots, trees, etc. are written to the cogo buffer and stored as individual points.

In subsequent labs geometry data will also be loaded from the ROW_Survey directory structure for reference purposes only. To maintain the integrity of the ROW_Survey geometry data, subsequent exercises will show you how to copy geometry projects in their entirety and also how to selectively copy information (alignments and cogo points) to a separate geometry project.

Important! Data from the ROW/Survey directory should only be modified by the ROW/Survey group. Staff from other disciplines should not modify ROW/Survey geometry projects in any way and take any precautions to ensure that it is not changed.

Chapter Objectives:

- Illustrate the process of setting active geometry.
- Review an existing geometry project.
- Review alignment attributes.
- Review alignment stationing.

The following files are used in this lab:

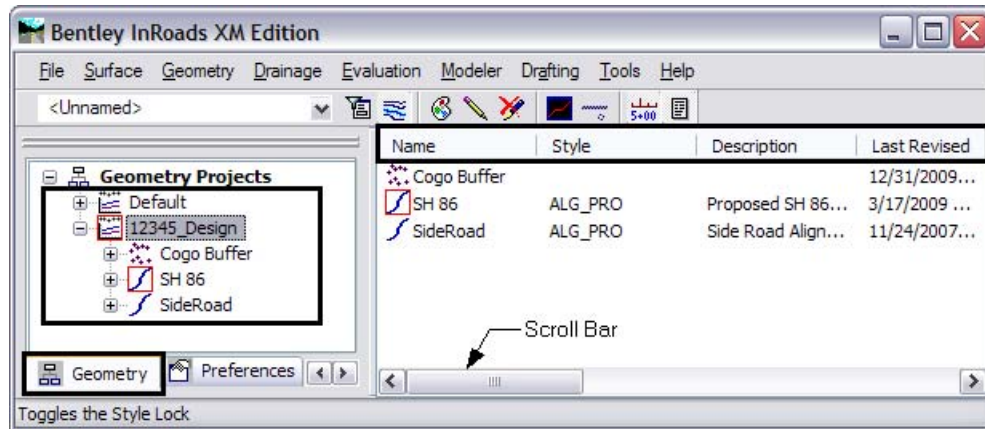
- C:\Projects\12345\Design\Drawings\Reference_Files\12345DES_Model.dgn
- C:\Projects\12345\Design\InRoads\12345DES_Design.alg
- C:\Projects\12345\Design\InRoads\12345 existing ground.dtm

Lab 2.1 - Review Geometry Project

Section Objectives:

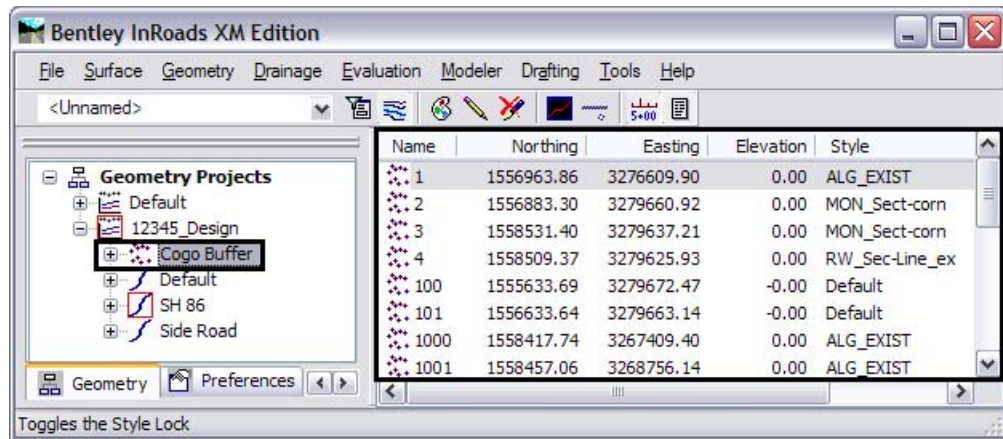
- ◆ Verify the correct geometry is loaded.
 - ◆ Learn how to identify and change the “active” geometry.
 - ◆ Learn how to review and view geometry including cogo points.
 - ◆ Learn how to save the results of an InRoads report.
 - ◆ Learn how to clean up MicroStation graphics and keep them in sync with InRoads data.
 - ◆ Practice gathering alignment information.
1. Open the file in the *12345DES_Model.dgn* file from the C:\Projects\12345\Design\Drawings\Reference Files folder.

- Open the geometry project named **12345DES_Design.alg** located in the folder **C:\Projects\12345\Design\InRoads**. You should see something similar to the image below.

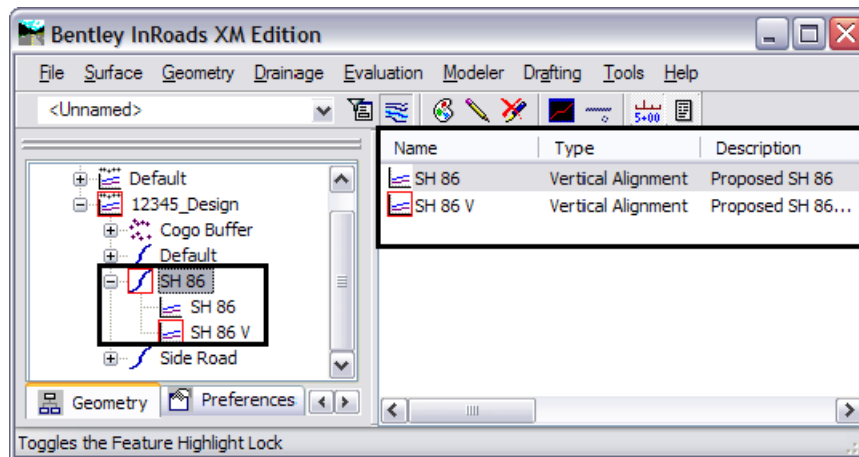


- Expand** the screen display of the geometry project by selecting the + (plus) symbol located to the left of the geometry project name.
- Look to the right side of the InRoads pane. Use the **Scroll bar** at the bottom of the window to view the columns of information to the right. The following is a list of columns you should see but may be in a different order:
 - ◆ **Name** - The horizontal alignment name and the Cogo Buffer are shown here.
 - ◆ **Style** - The Style name attached the the horizontal alignment is listed here.
 - ◆ **Description** - The horizontal alignment's description, if any, is shown here.
 - ◆ **By Whom** - The Windows user ID of the person who created the alignment is shown here.
 - ◆ **Last Revised** - This column lists the most recent revision date for the file.
 - ◆ **Access Mode** - This column indicates whether the file has write access or is read only.
 - ◆ **Integrity** - This column indicates whether the alignment elements are connected properly or not.
 - ◆ **Curve Definition** - This column indicates whether curves are defined by arc or chord.
 - ◆ **Start Station** - This column lists the beginning station value for the alignment.
 - ◆ **End Station** - This column lists the ending station value for the alignment.
 - ◆ **Number of VAs** - This column lists the number of associated vertical alignments.
 - ◆ **Number of Superelevations** - This column lists the number of associated superelevation definitions.
- <D> on any of column headings to sort ascending or descending.

6. To reposition the columns either to the left or right, <D> and hold down the column heading and slide the mouse on to any of the column headings.

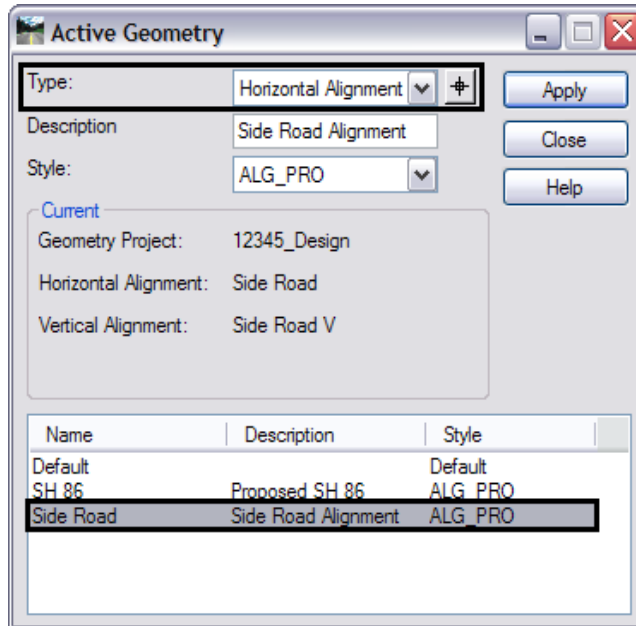


7. <D> on the Cogo Buffer. Notice the detail screen to the right showing the contents of the Cogo buffer. Also notice the columns showing Northing, Easting, and Elevation by adjusting the view pane.
8. <D> on the first horizontal alignment listed. Notice the associated vertical alignment.



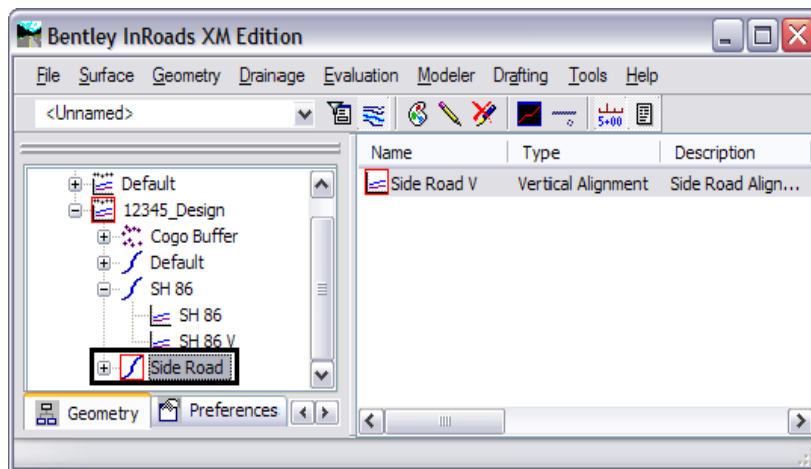
Note: Only one horizontal alignment can be active at a time. Being *active* specifies the alignment to be modified, displayed, or defined by default in dialog boxes.

9. Select **Geometry > Active Geometry**. The *Active Geometry* dialog will appear.

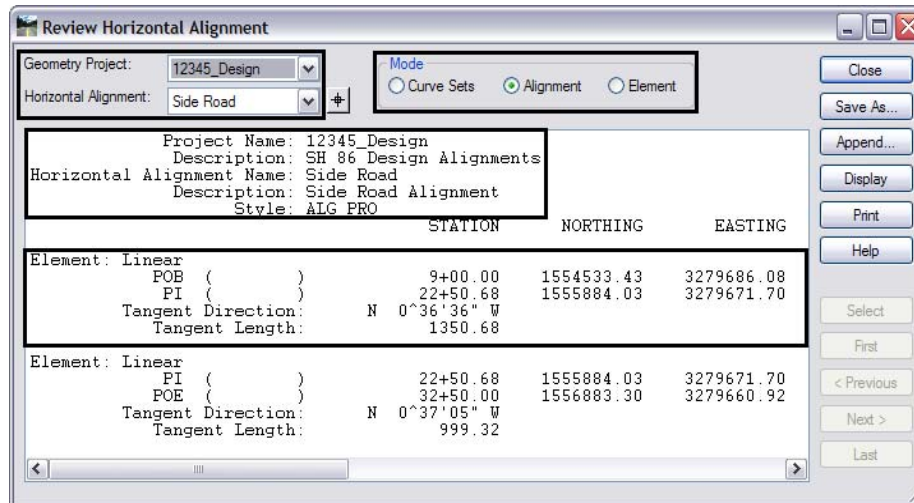


10. Set *Type* to **Horizontal Alignment**.
11. <D> on alignment **Side Road**.
12. <D> **Apply** then **Close**.

Notice that the alignment called *Side Road* in the InRoads explorer pane shows a red indicator box around it signifying that it is the *active* alignment.

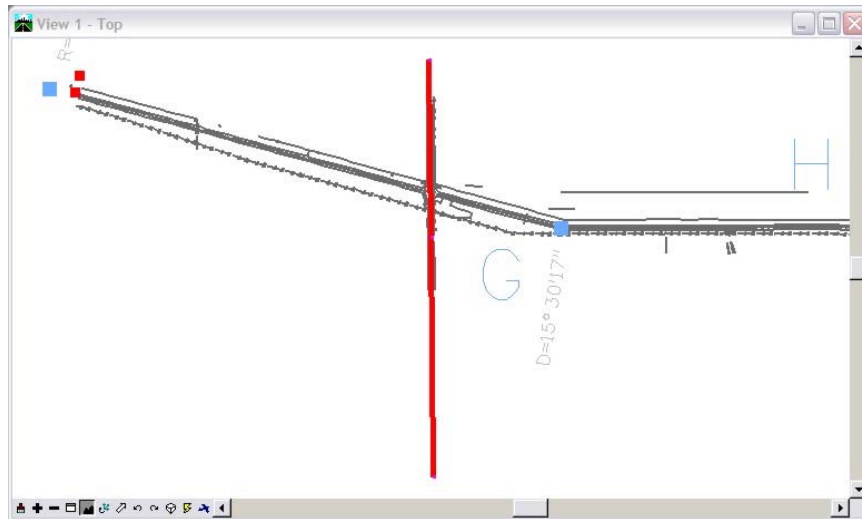


13. Select **Geometry > Review Horizontal** for a textual display of the active alignment. When reviewing an alignment, a temporary dynamic display is shown in MicroStation representing the location of the alignment being reviewed.

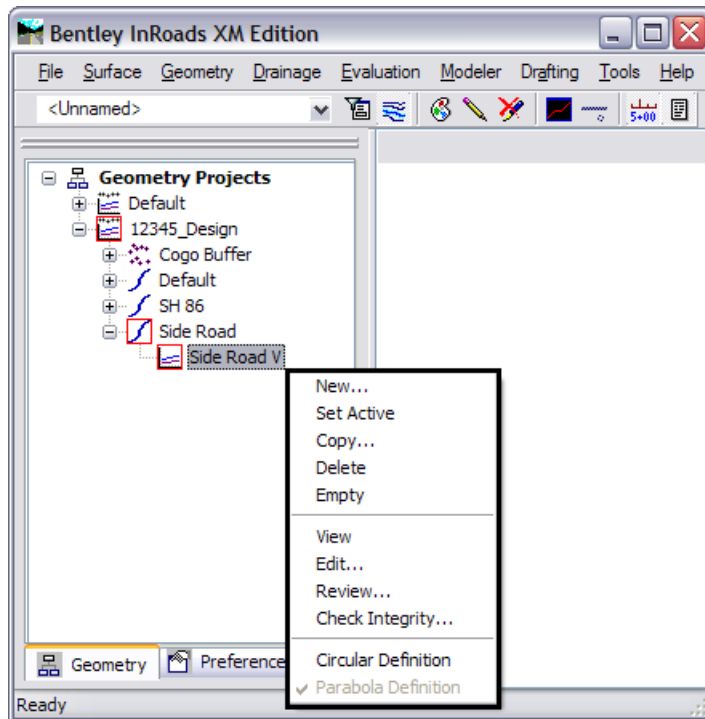


14. Explore the four main areas of the dialog box.
- ◆ **Geometry Project and Horizontal Alignment (in the dialog box frame)**
 - Change the Horizontal Alignment
 - ◆ **Mode (in the dialog box frame)**
 - Change the Mode and watch how the information in the dialog box changes
 - ◆ **Geometry header (in the view port)**
 - Note the change to the **Project Name, Description, Alignment name, Description, Geometry Style**
 - ◆ **Element Details (in the view port)**
 - Note how the element details change according to what mode is selected.
15. **Review** this display for alignment information such as Cogo point ID assignments, bearings, distances, northing, easting, etc.
16. <D> the **Close** button.
17. Select **Geometry > View Geometry > Active Horizontal** to write the alignment to the MicroStation file.
- Note:** It may appear that nothing happens. This is because the view window is not positioned correctly to see the data. The next step will resolve this.
18. Select **Geometry > Fit Alignment** and <R> (press the right mouse button) in a MicroStation view to reposition the MicroStation view to the limits of the active alignment.

Note: If the graphics for the existing features disappear, us the key in **dp = -10000, 30000** and left click in View 1 to expand the MicroStation clipping planes.

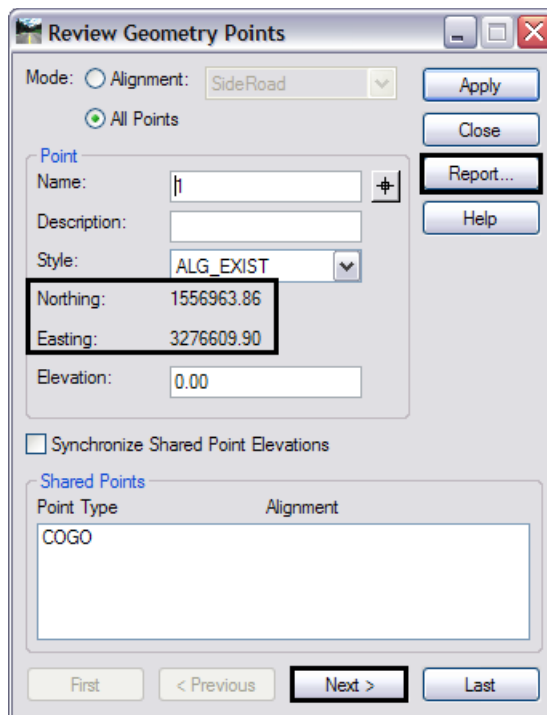
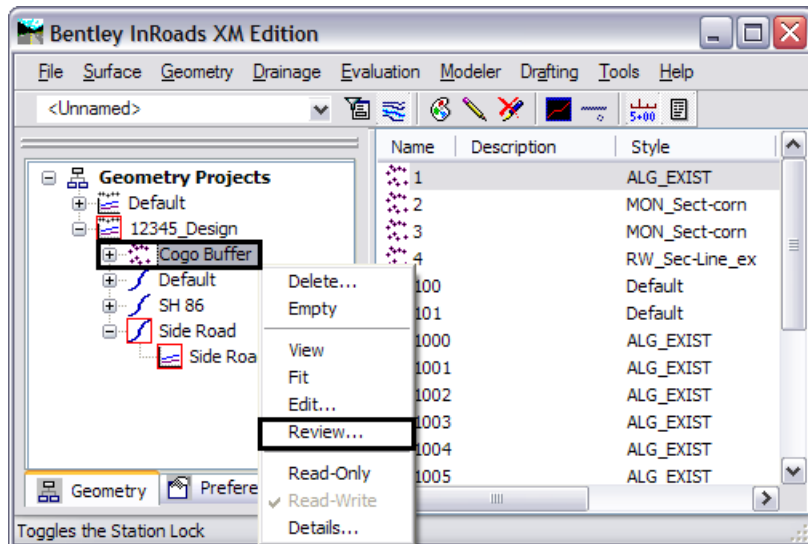


19. In the Workspace Bar <R> (right-click) on the active alignment name. Note the **Active**, **View**, **Fit**, and **Review** commands are available from the short-cut fly-out menu.



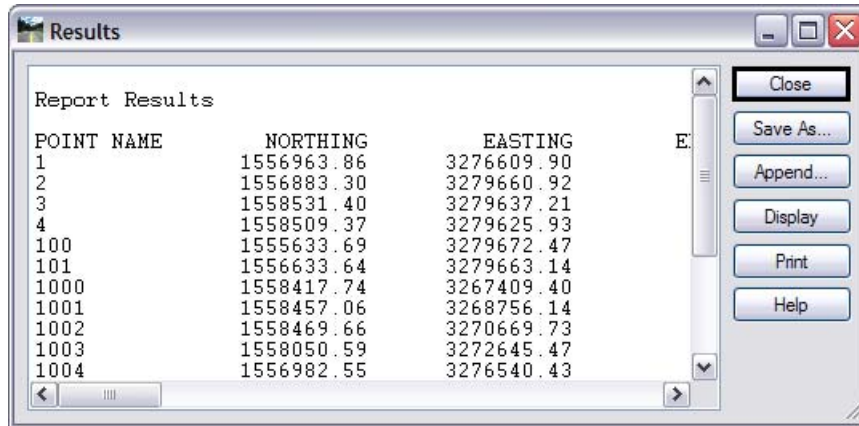
20. Experiment using this fly-out menu with any alignment.

21. In the Workspace Bar <R> on the **Cogo Buffer** and select **Review...** The **Review Geometry Points** dialog will appear.



22. <D> the **Next** button to review the information about subsequent points. Notice the available navigation buttons **First**, **Previous**, **Next**, and **Last**

23. <D> **Report** to list all Cogo points stored in the active geometry project.



Note: The buttons on the right side of the **Results** dialog allow you to save or display this report. These options exist in many InRoads dialogs.

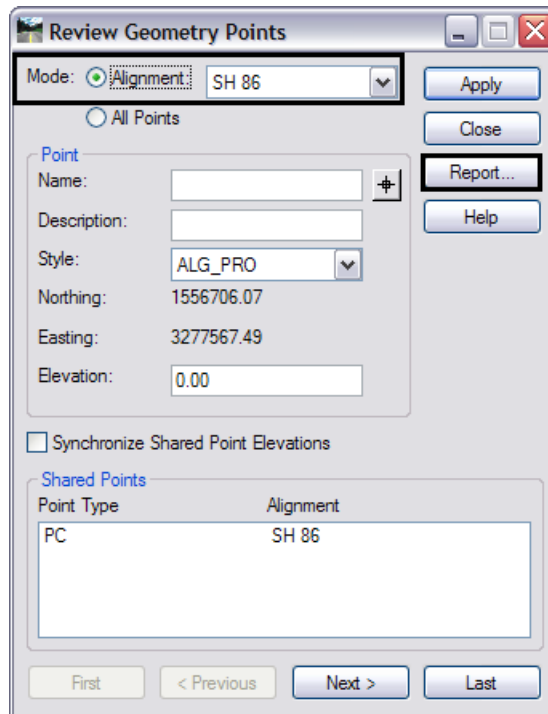
24. They are:

- ◆ **Close** - closes the **Results** dialog
- ◆ **Save As** - saves the contents of the dialog to an ASCII (text) file
- ◆ **Append** - appends to an existing ASCII file
- ◆ **Display** - allows the user to select a location in the MicroStation drawing to place the dialog contents as text and using the active text and element settings when writing the text to the CADD file
- ◆ **Print** - sends the contents to the default system printer
- ◆ **Help** - displays the InRoads help file for this command.

25. <D> the **Close** button in the **Results** dialog

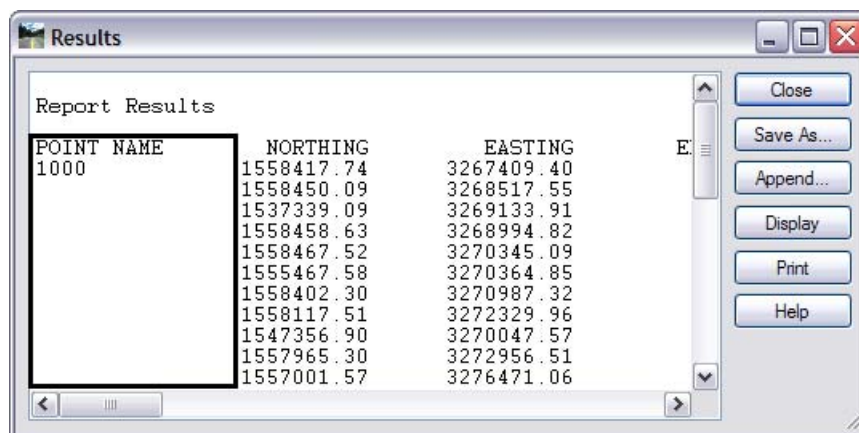
26. In the **Mode** section of the **Review Geometry Points** dialog, toggle the radio button to **Alignment**. Notice how the Alignment drop-down list is activated.

27. Select **SH86** in the *Alignment* drop-down list.



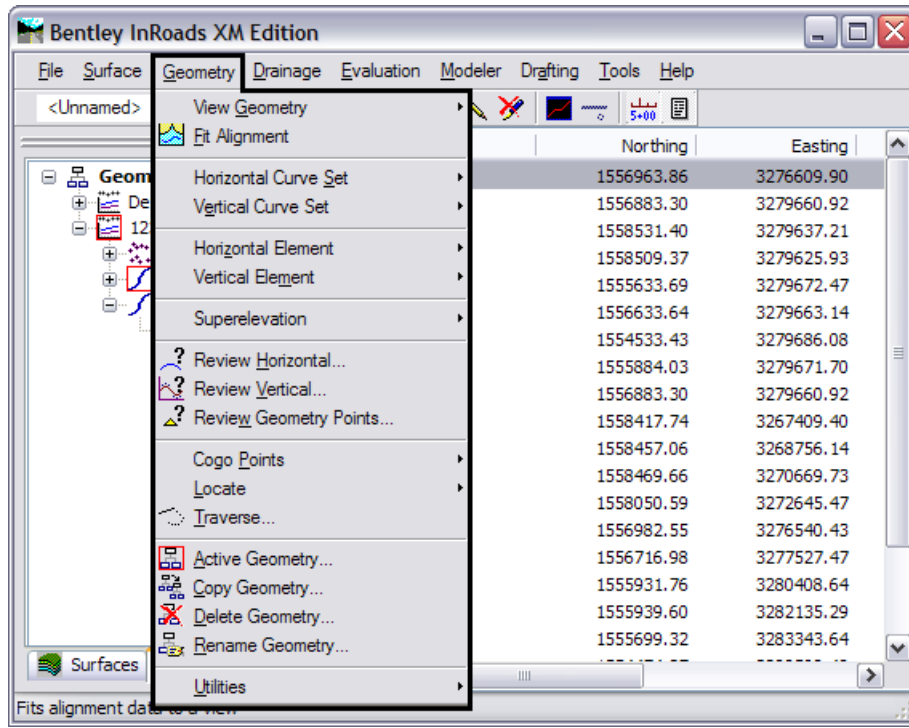
28. <D> the **Report** button again to review the vertices of the selected alignment.

Note: The Point Name column is not showing point numbers or names (except for point 1000) indicating this alignment was created as unnamed geometry points.



29. <D> the **Close** button in both the *Results* and *Review Geometry Points* dialogs.

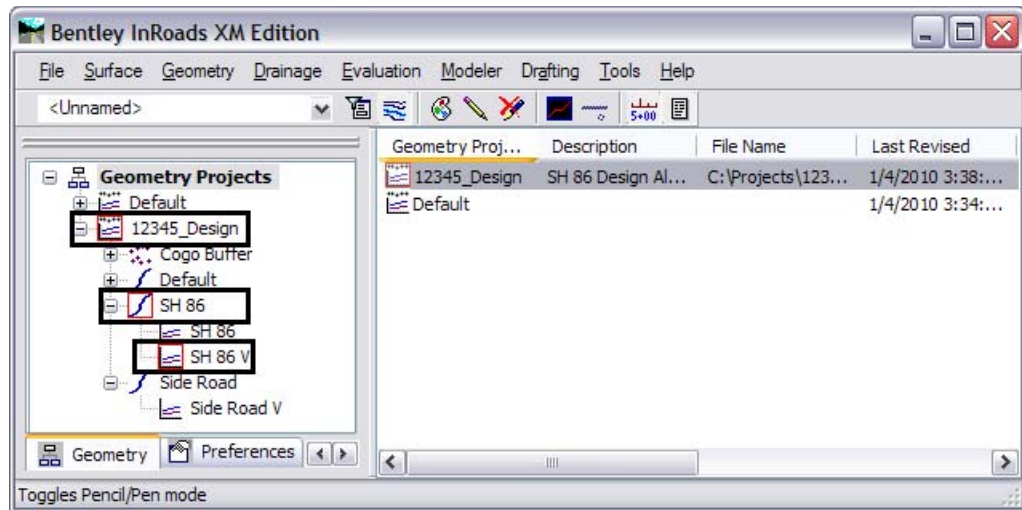
Note: The previous steps used the short-cut fly-out menus, all actions can also be found under the *Geometry* pull-down menus.



At anytime during these labs you can delete all visible graphics in your MicroStation file using the element selection tool or a fence. Note that you are deleting the graphical display of data, not the data itself. The graphics can be redisplayed using the InRoads display commands shown in previous sections.

Note: The screened topography and the graphics used as training guides are either locked graphics or are attached as a reference file so they can not be deleted. These graphics will be used in future labs.

Multiple Geometry Projects can be loaded into memory simultaneously. However, only one geometry project, horizontal, and vertical alignment can be active at any given time.



30. Use the previously covered commands to display the horizontal alignments **SH 86** and **Side Road**.
31. Use the review command to investigate the various data for the same two alignments.
 - ◆ What is the beginning station value for:
 - SH 86 _____
 - Side Road _____
 - ◆ What is the overall length of:
 - SH 86 _____
 - Side Road _____
 - ◆ What is the shortest radius used in:
 - SH 86 _____
 - Side Road _____

Section Summary:

- ◆ Many of the view and review commands can be accessed from the right click menu as well as the main toolbar.
- ◆ Reports displayed by review commands can be saved to a text file.
- ◆ Use the Mode options, where available, to display data in different formats.

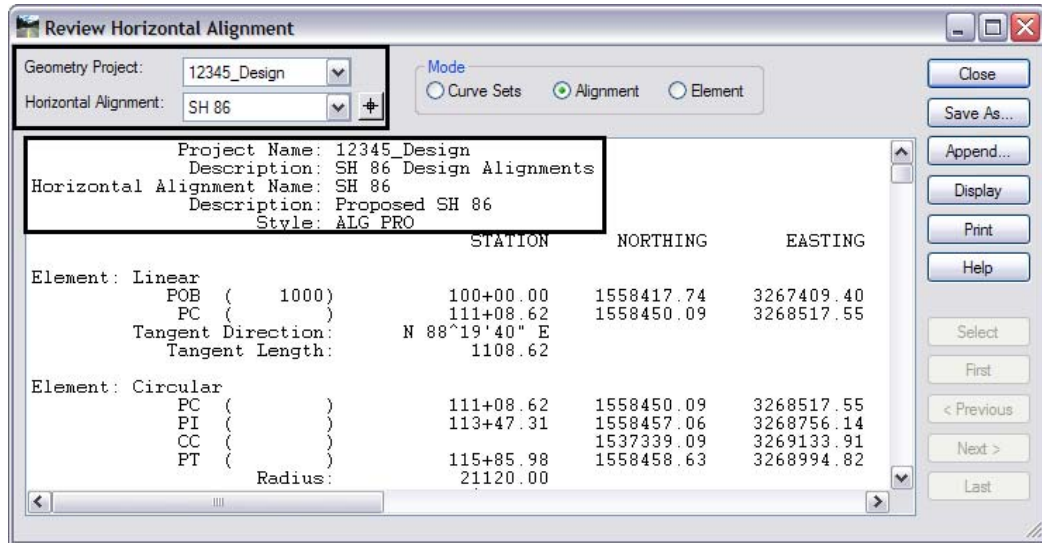
Lab 2.2 - Review Alignment Attributes

The geometry *Name*, *Description*, and *Style* are assigned to an alignment or Cogo point when they are created. These attributes can be queried by utilizing the review geometry command.

Section Objectives:

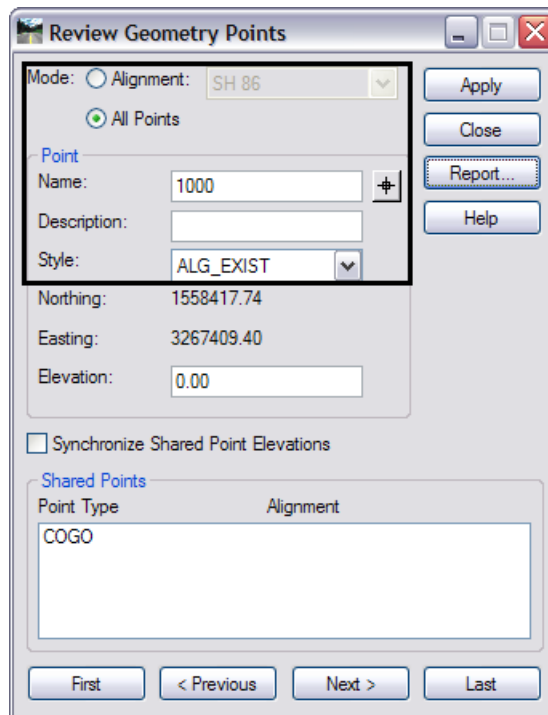
- ◆ Review Alignment Attributes
- ◆ Review Cogo Point Attributes

1. Select **Geometry > Review Horizontal...**

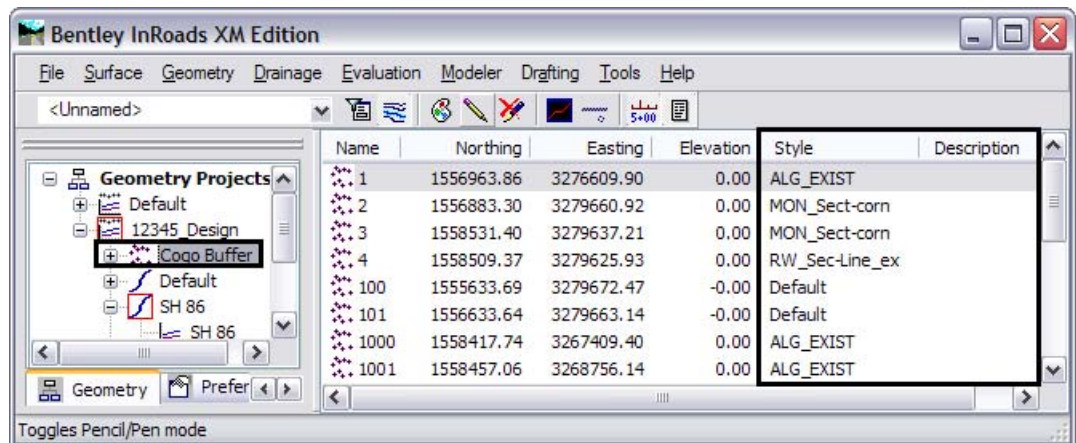


2. Using the selection box labeled **Horizontal Alignment**, Compare the settings for alignment **SH 86** with the attributes for **alignment Side Road**. Note the changes in Description & Style.
3. Select **Geometry > Review Geometry Points...** to review Cogo point names, descriptions, and style assignments.

Note: This dialog is used to review both alignments and Cogo points based on the *Mode* setting.



4. This information can also be seen in the InRoads explorer pane. <D> on the *Cogo Buffer* and notice the description(s) and Style(s) as displayed in the feedback pane.



Note: If the *Style* assigned to the data is not a valid name when displaying an alignment or Cogo point (not existing in the Style Manager), a *Style* by the name *Default* will be used.

The *Default* CDOT Style for all geometry elements has the same properties as the defined style *ALG_Proposed*.

Section Summary:

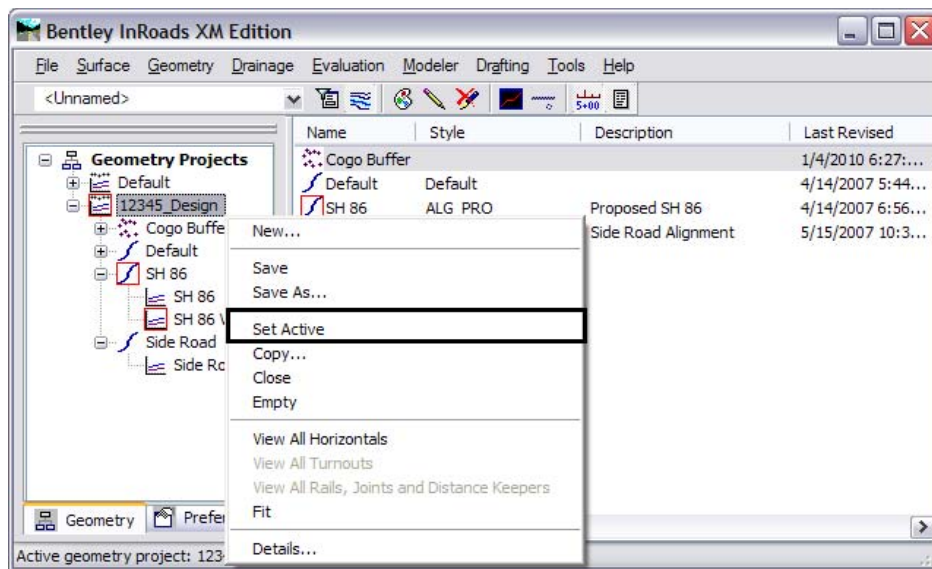
- ◆ Geometry styles are stored along with surface and survey styles in the CDOT_Civil.xin file.

Lab 2.3 - Review Alignment Stationing

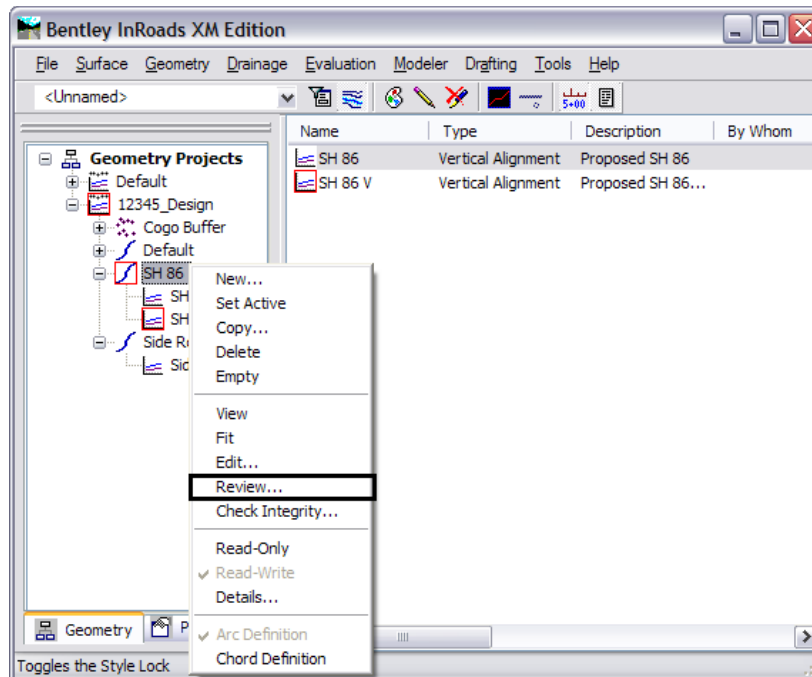
The default station at the beginning of a newly created horizontal or vertical alignment is 0+00. If the alignment previously existed, the beginning station may not be 0+00. Stationing values value can be changed to accommodate the needs of the project as shown in a later lab.

The first thing to do is to determine the existing assigned stationing values by using the alignment review commands.

1. Make **12345DES_Geometry** the active geometry project by **right-clicking** on the geometry name and selecting **Set Active** from the fly-out menu.



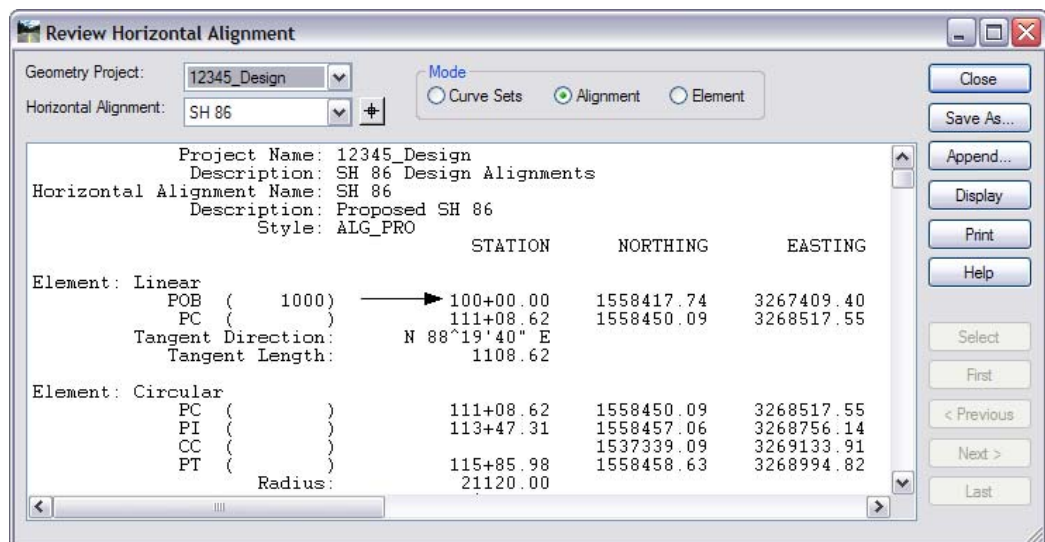
2. Right-click on the alignment **SH 86** and select **Review** from the Fly-out menu. The **Review Horizontal Alignment** dialog will appear.



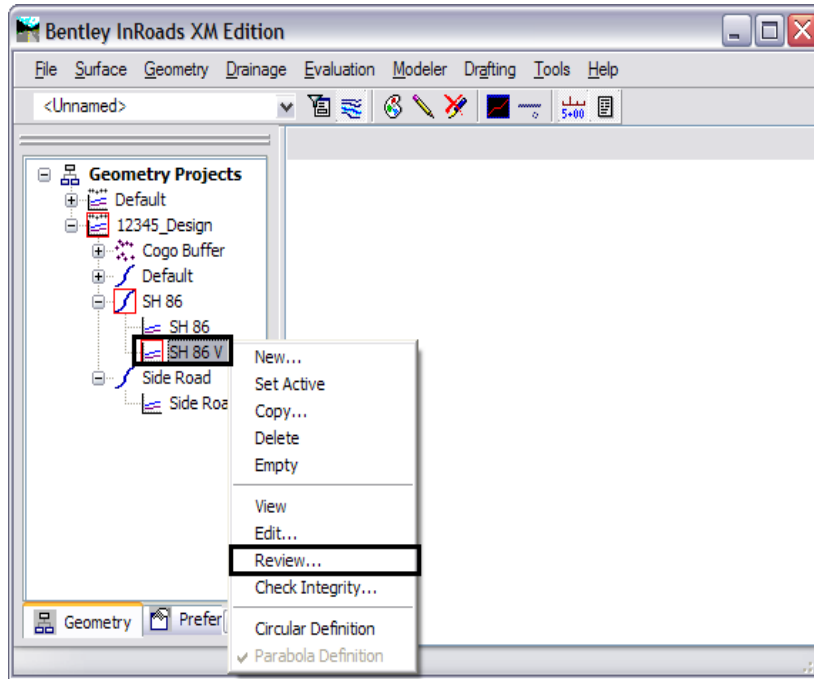
Note: Fly-out menus can be accessed from either the workspace or feedback panes. Also note that selecting an alignment for review switches it to being the **active** alignment.

3. Write down the initial station value assigned to horizontal alignment **SH 86**:

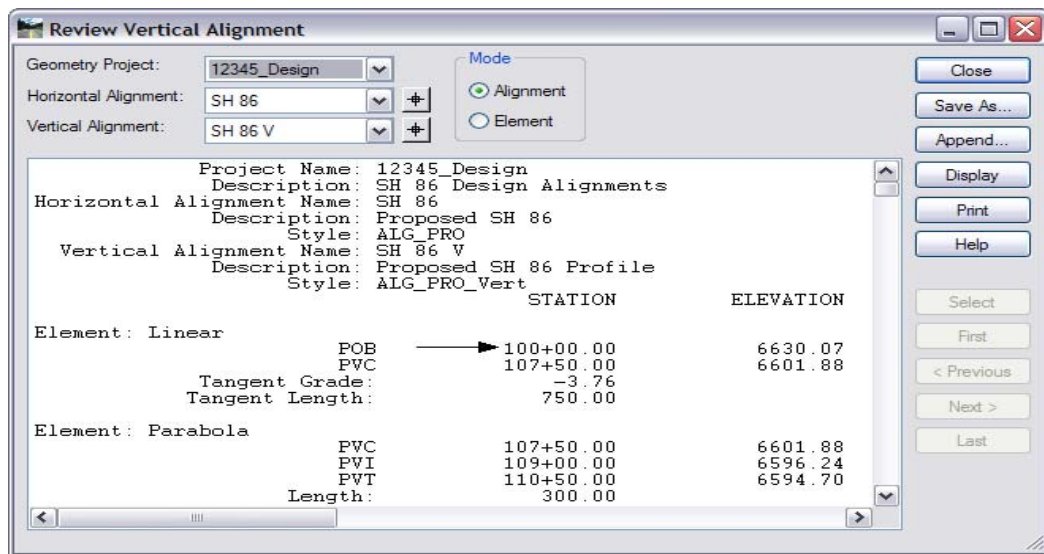
_____.



- Review the *Vertical* alignment **SH 86 V** associated with horizontal alignment SH 86.



- Write down the initial station value assigned to vertical alignment **SH 86 V**:
_____.



If the horizontal and vertical stationing are not synchronized it will cause confusion in the design and construction processes. Is the stationing for the horizontal and vertical alignments synchronized?

Section Summary:

- ◆ The beginning and ending stations can be found in the feedback pane or the review alignment dialog boxes.

Chapter Summary:

- Use the right click menus to find many of the view and review geometry commands without searching the InRoads main menu.
- Use the navigation buttons provided in the review dialog boxes to move through long reports.
- The attributes for geometry elements can be found in the feedback window or in review reports.

