LAB 2 - Review Geometry

The purpose of this lab is to go into a detailed review of the contents of the *12345DES_Design* geometry project *(12345DES_Design.alg)* file.

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

## Lab 2.1 - Review Geometry Project

Section Objectives:

- ♦ 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.

2. Open the geometry project named **12345DES_Design.alg** located in the folder **C:\Projects\12345\Design\InRoads**.

3. **Expand** the geometry project tree by selecting the + (plus) symbol located to the left of the geometry project name. You should see something similar to the image below
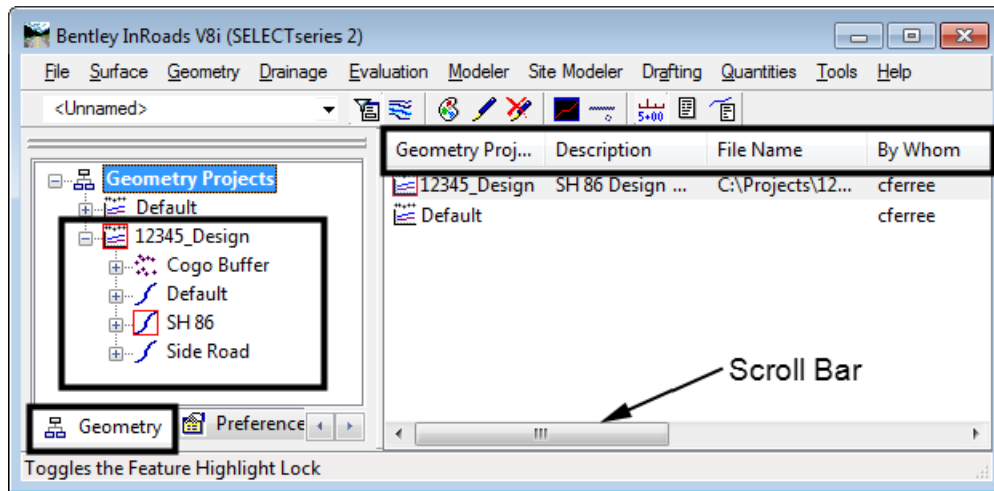

4. Look at the information pane on the right side of the InRoads main menu. Use the **Scroll bar** at the bottom of the window to view the columns of information to the right. The following is a list of columns you will see (they may be in a different order):

    ♦ *Name* - The horizontal alignment name and the Cogo Buffer are shown here.

    ♦ *Style* - The Style name attached 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.

5. **<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.
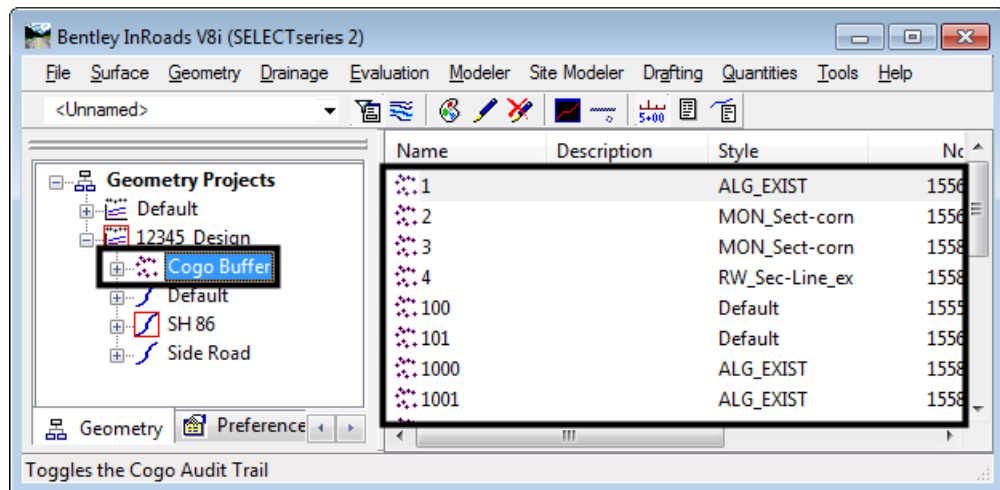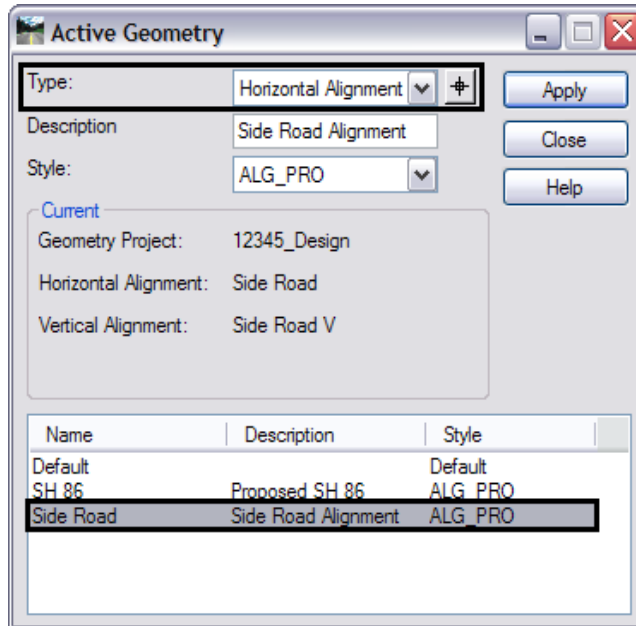

8. **\<D\>** on the first horizontal alignment listed. Notice the associated vertical alignment.
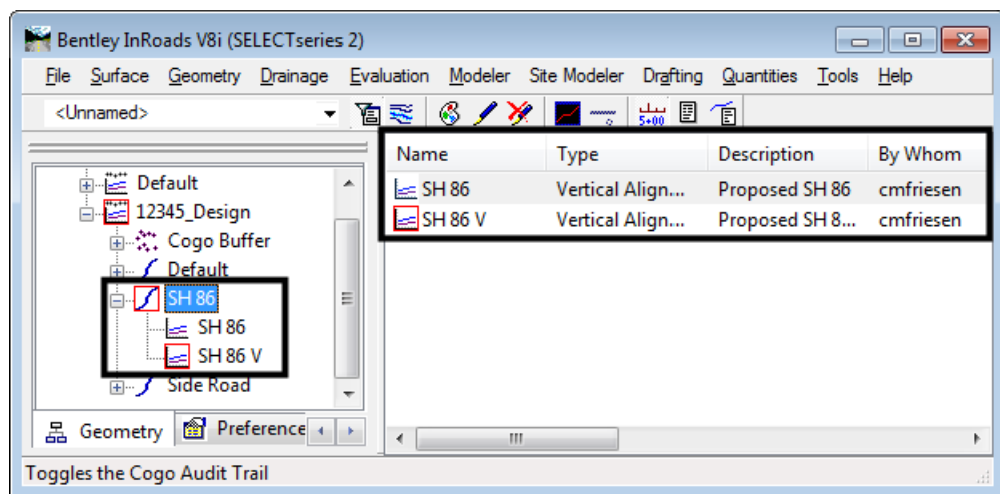
Only one horizontal alignment can be active at a time. Being *active* specifies the alignment to be modified, displayed, or defined by default in dialog boxes. To set a horizontal alignment active:

9. Select **Geometry > Active Geometry.** To display the *Active Geometry* dialog box.


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.
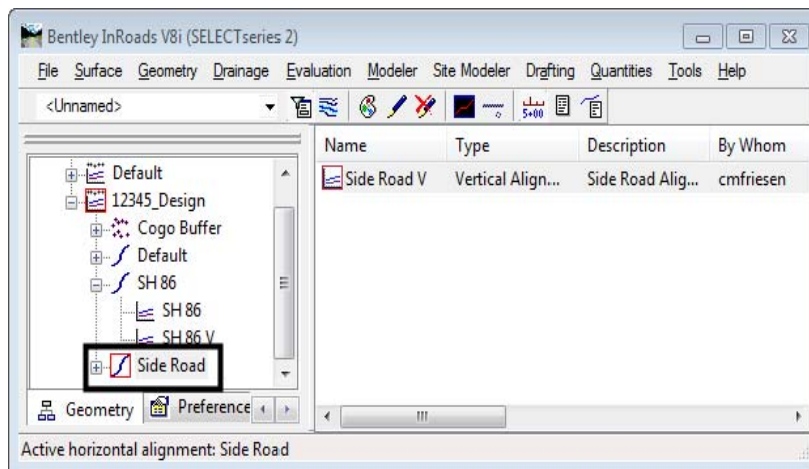

13. Select **Geometry > Review Horizontal** for a textual display of the active alignment. When reviewing an alignment, a temporary dynamic display is shown in MicroStation representing the location of the alignment being reviewed.

14. Explore the four main areas of the dialog box.
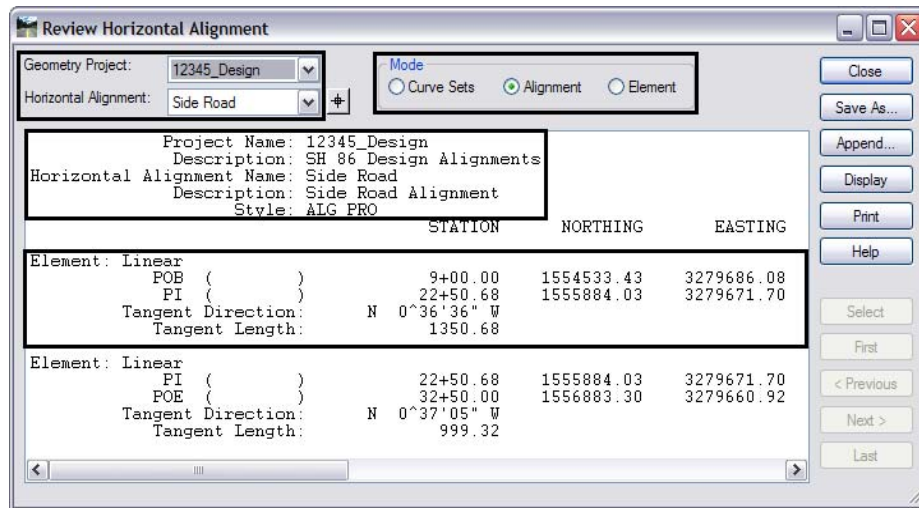
- ♦ *Geometry Project* and *Horizontal Alignment (in the dialog box frame)*
    - ○ Change the Horizontal Alignment
- ♦ *Mode (in the dialog box frame)*
    - ○ Change the Mode and watch how the information in the dialog box changes
- ♦ *Geometry header (in the view port)(not displayed in Element Mode)*
    - ○ Note the change to the **P***roject Name, Description, Alignment name*, *Description, Geometry Style*
- ♦ *Element Details (in the view port)*
    - ○ 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. Verify that the *Side Road* alignment is active.

18. Select **Geometry > View Geometry > Active Horizontal** to display the alignment in the MicroStation file.

    Note: It may appear that nothing happened. This is because the view window is not positioned correctly to see the data. The next step will resolve this.

19. 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, use the key in **dp = -10000, 30000** and left click in *View 1* to expand the MicroStation clipping planes.
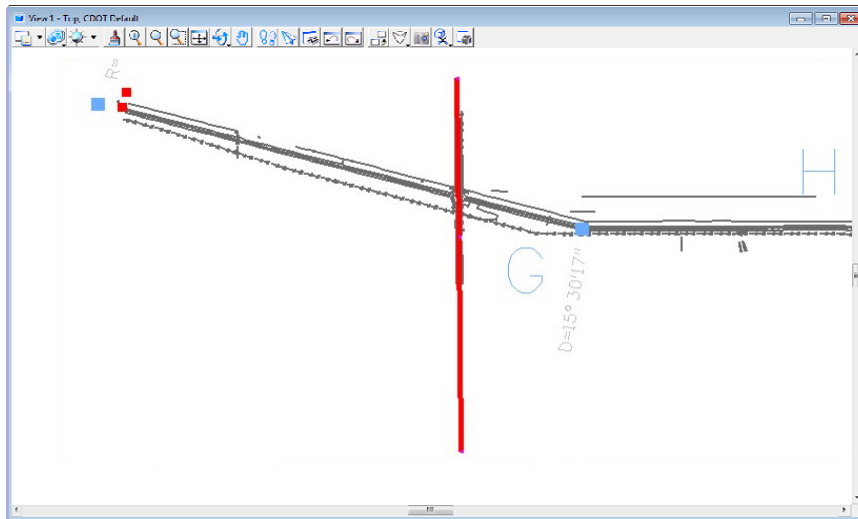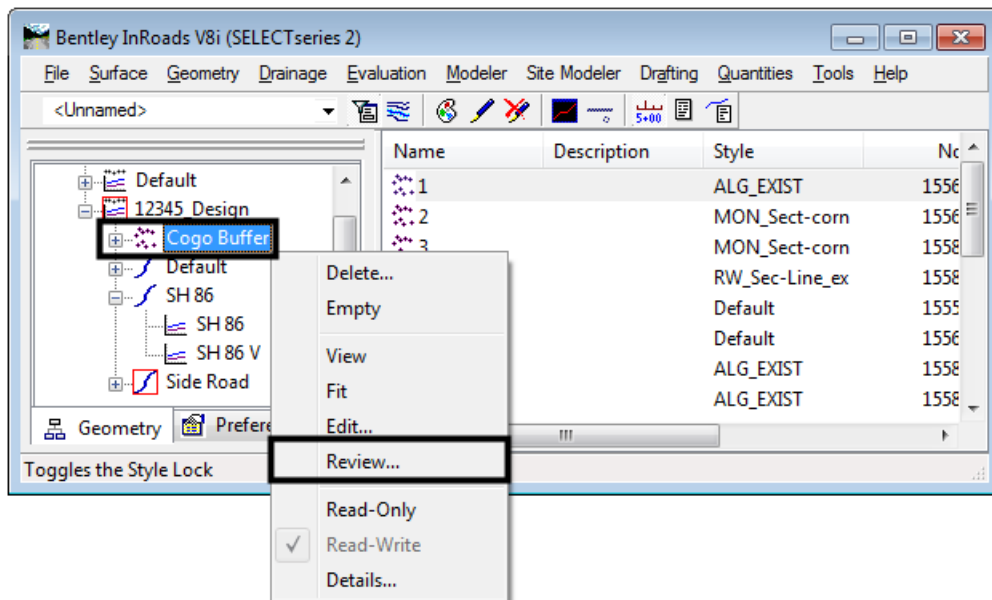

20. In the InRoads Explorer pane **<R>** (right-click) on the active alignment name. Note the *Active*, *View*, *Fit*, and *Review* commands are available from the right click menu*.*
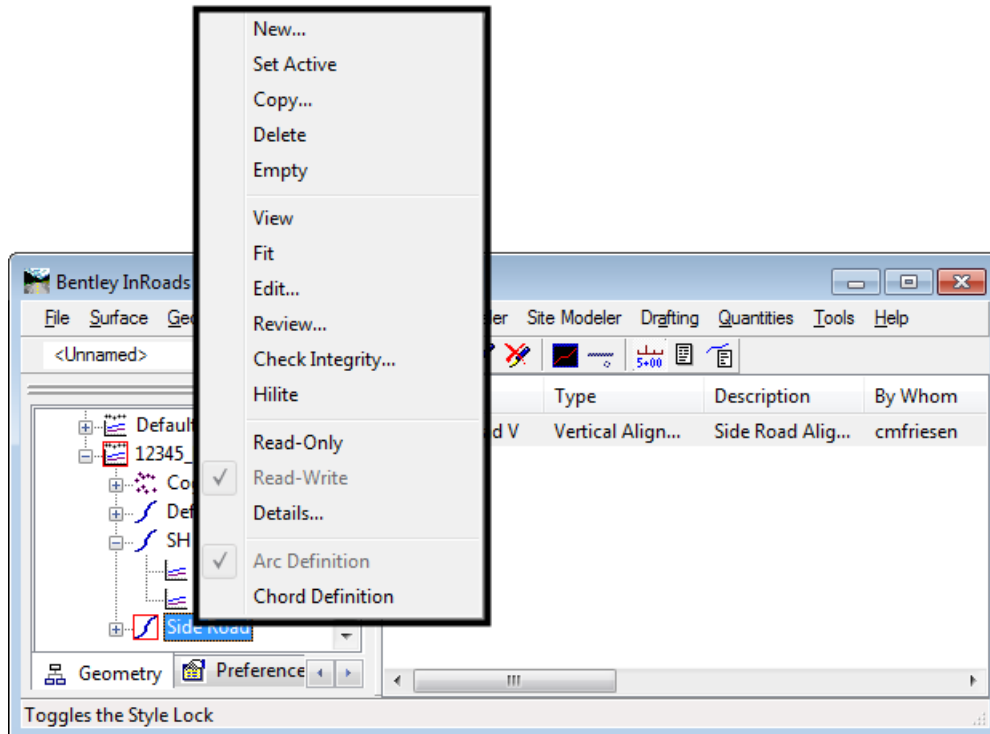

21. Experiment using this right click menu with any alignment*.*

22. In the InRoads Explorer pane **<R>** on the **Cogo Buffer** and select **Review...** to display the *Review Geometry Points* dialog box.

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

24. **<D> Report** to list all Cogo points stored in the active geometry project.
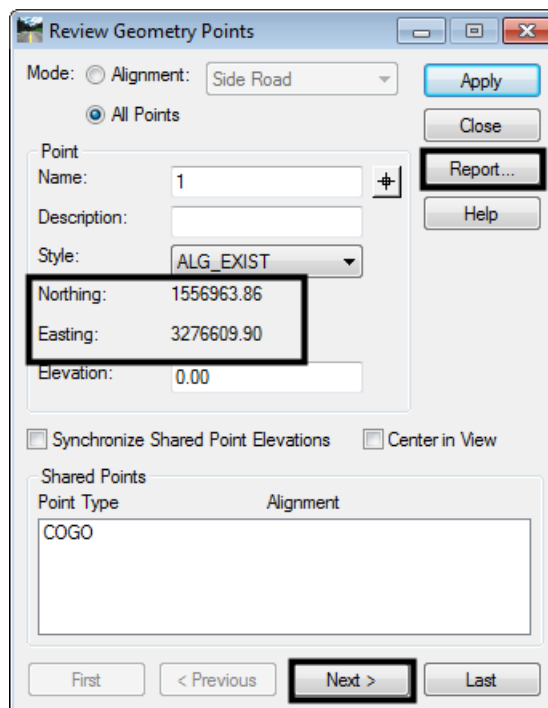
25. Examine the Results dialog box.
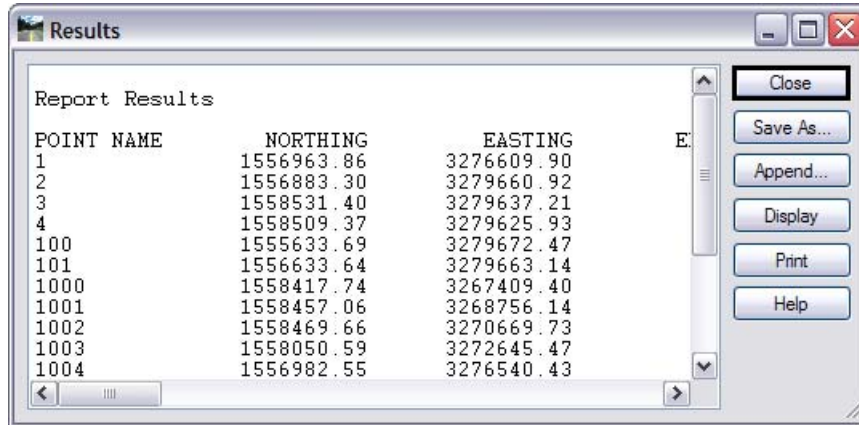
The buttons on the right side of the ***Results*** dialog box allow you to save or display this report. Below is a description of each button's function:

- ♦   ***Close*** - closes the ***Results*** dialog box
- ♦   ***Save As*** - saves the contents of the dialog box 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

26. **<D>** the **Close** button in the ***Results*** dialog box

27. In the ***Mode*** section of the ***Review Geometry Points*** dialog, toggle on **Alignment**. Notice that the Alignment drop-down list is activated.

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

29. **<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.
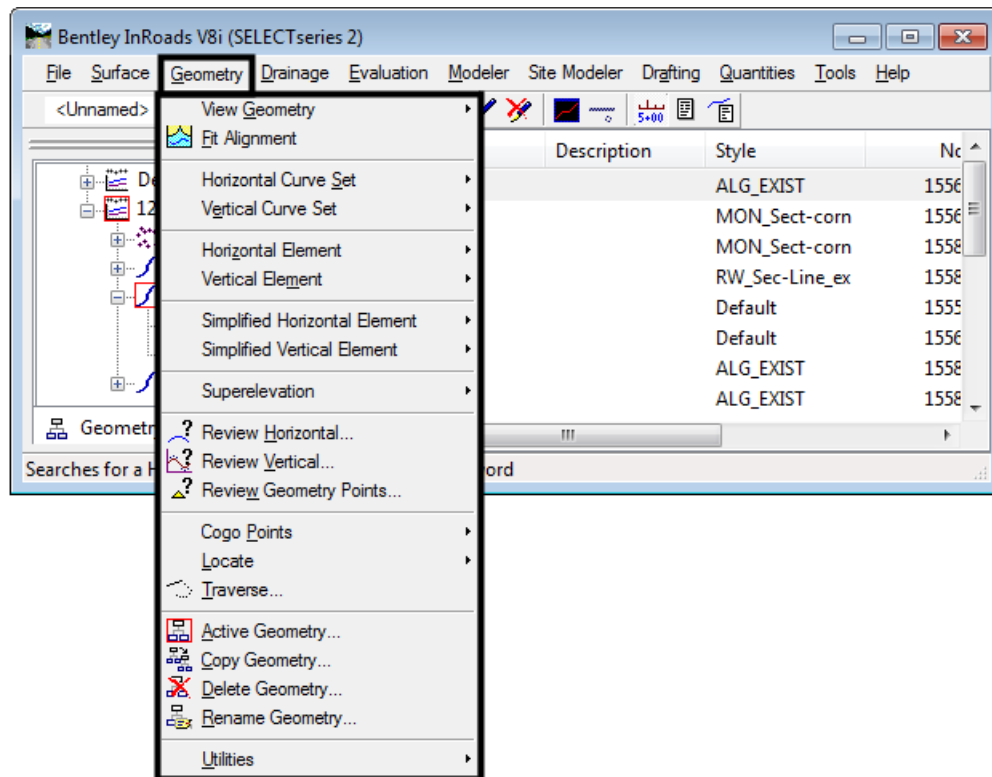

30. **<D>** the Close button in both the *Results* and *Review Geometry Points* dialog boxes.

> ***Note:*** The previous steps used the right click menus, all actions can also be found under
> the ***Geometry*** pull-down menus.

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.
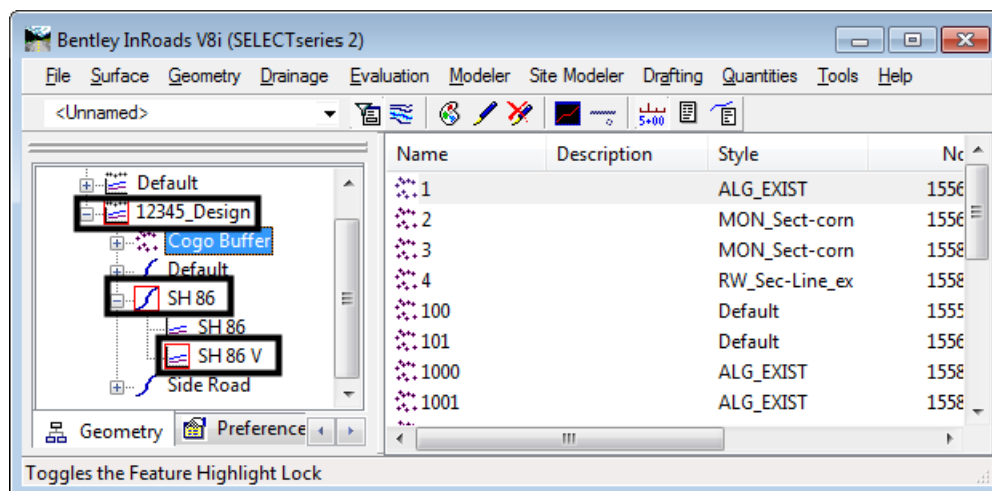
31. Use the previously covered commands to display the horizontal alignments ***SH 86*** and ***Side
    Road***.

32. 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 it is 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…**
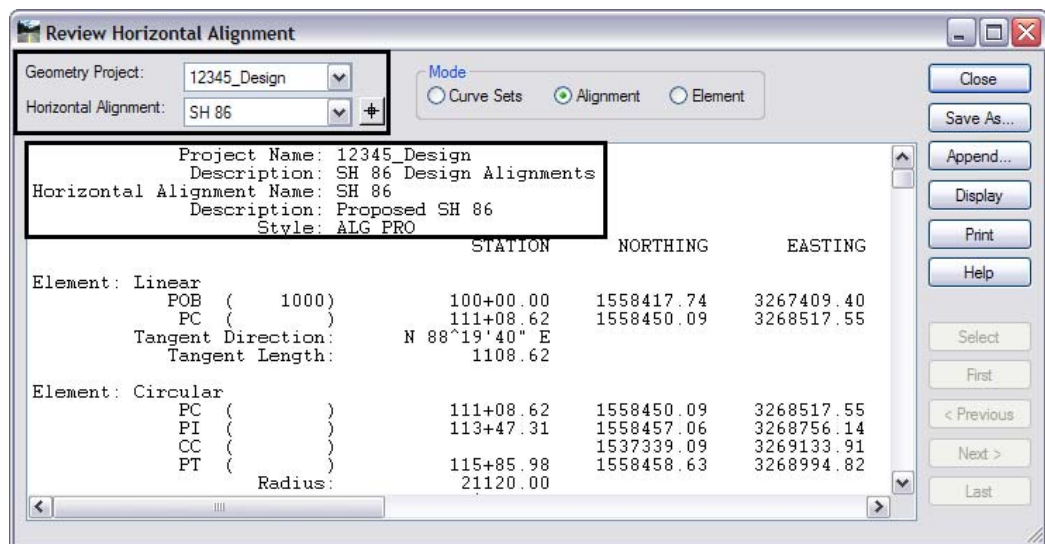
2.   Using the selection box labeled ***Horizontal Alignment***, Compare the settings for alignment **SH 86** with the attributes for *alignment* **Side Road**. Note the changes in Description and Style.

3. Close the ***Review Horizontal Alignment*** dialog box.

4. Select **Geometry > Review Geometry Points…** to review Cogo point names, descriptions, and style assignments.

> ***Note:*** This dialog box is used to review both alignments and Cogo points based on the *Mode* setting.
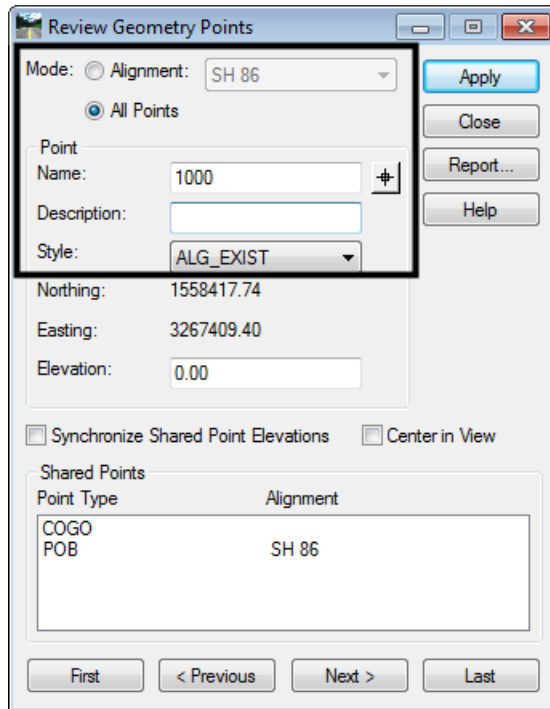
5. This information can also be accessed through the InRoads explorer pane.**<D>** on the ***Cogo Buffer*** and notice the description(s) and Style(s) as displayed in the information pane.
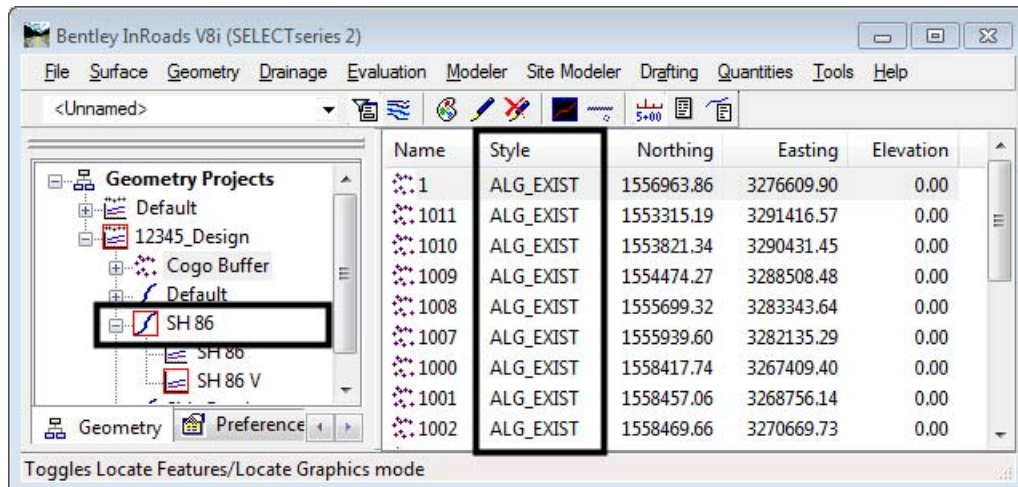
Section Summary:

♦ Geometry data can be reviewed through a variety of commands, accessed through the Geometry menu on the main bar or from right click menus

Lab 2.3 - Review Alignment Stationing

The default station at the beginning of a newly created horizontal alignment is 0+00. If the alignment previously existed, the beginning station may not be 0+00. The beginning station 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 current beginning station by using the review alignment commands.

1. Make **SH 86_West** alignment active by **right-clicking** on the alignment name and selecting **Set Active** from the right click menu.
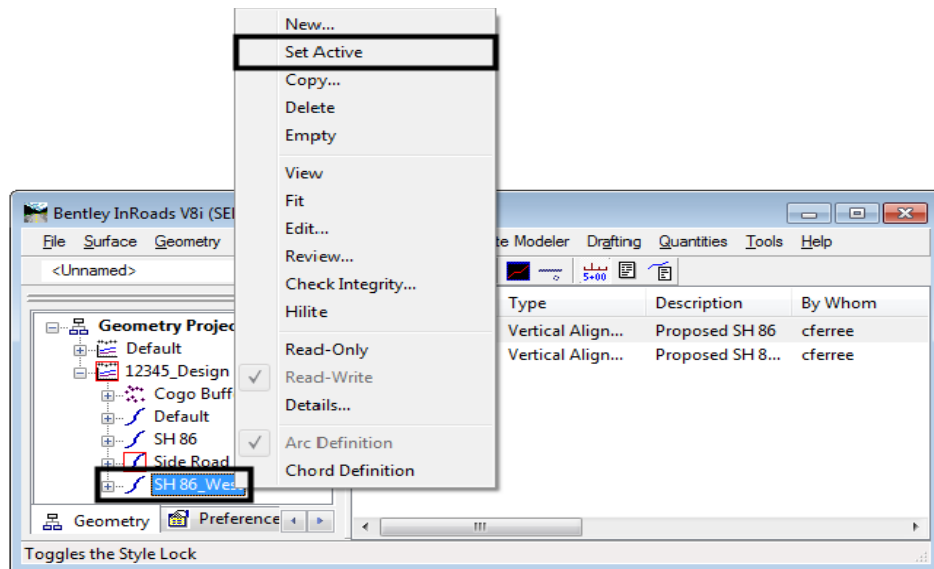
2. **Right-click** on the alignment **SH 86_West** and select *Review* from the right click menu. The *Review Horizontal Alignment* dialog box is displayed.
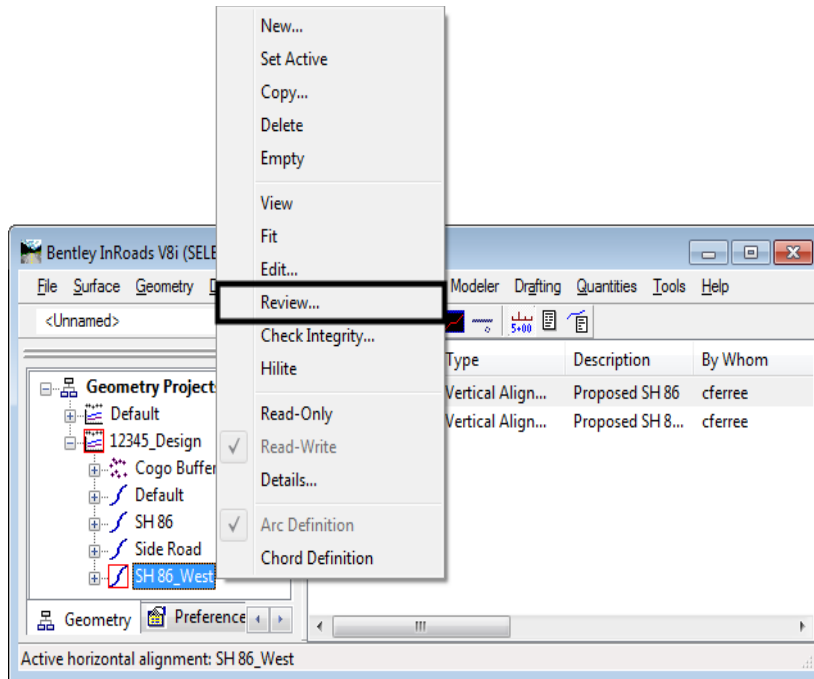

Note: Right click menus can be accessed from either the InRoads explorer or information panes. Also note that selecting an alignment for review switches it to being the *active* alignment.

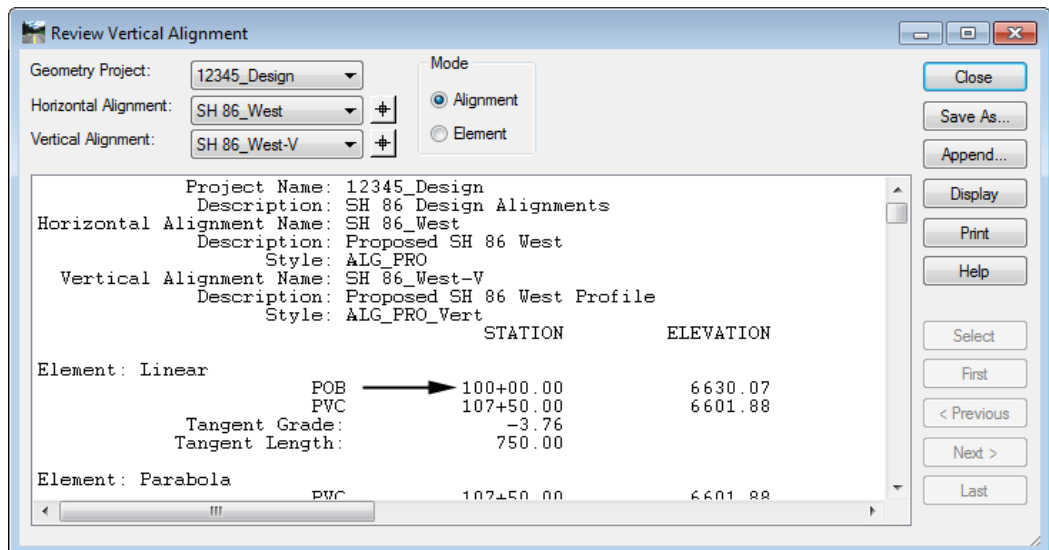3. Write down the initial station value assigned to horizontal alignment **SH 86_West**: _____.
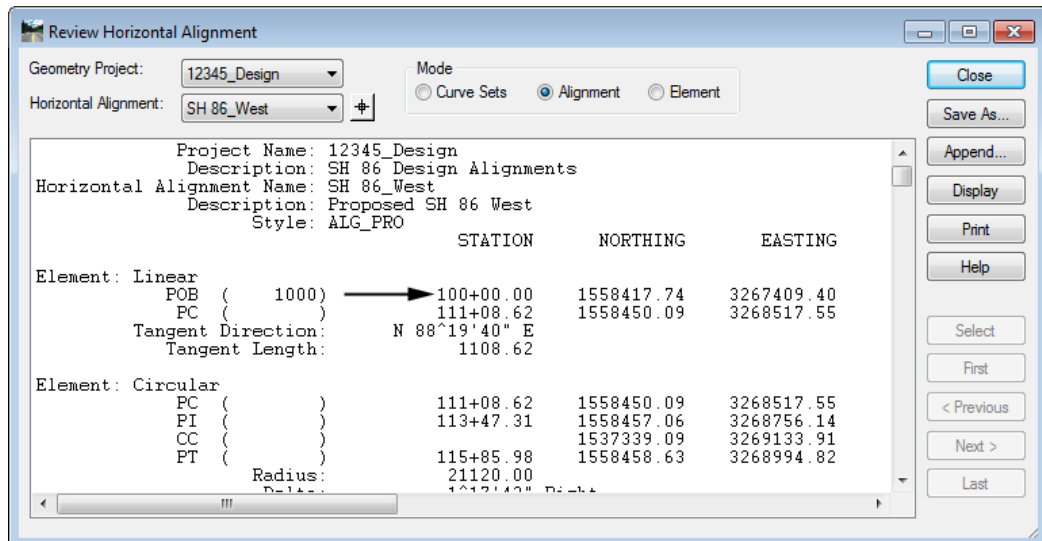
4. Close the *Review Horizontal Alignment* dialog box.

5. Review the *Vertical* alignment **SH 86_West-V** associated with the horizontal alignment SH 86_West.
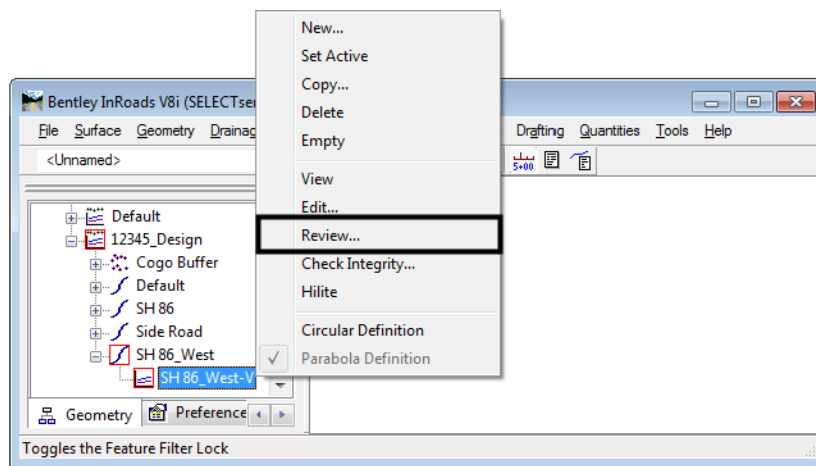
6. Write down the initial station value assigned to vertical alignment **SH 86-West-V**: _____.

7. Close the ***Review Vertical Alignment*** dialog box.

8. Delete all of the graphics in this file, then close InRoads and MicroStation.

Section Summary:

♦   The beginning and ending stations can be found in the information 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 information pane or in review reports