Georgia Department of Transportation

Introduction to InRoads for Survey Data Processing

****InRoads Select Series 2****

Training Guide

Office of Design Policy & Support

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Revisions

Revision History

Date	Revision Number	By	Section	Description
02-01-13	1.00	CB-HC-JB	ALL	ALL
04-07-14	1.1	CB-HC	Lab 16 Steps 10-22	Added steps and procedures for annotating the PROP_E_PCF Feature Style\Code in the PROP.dgn File.
	“”	“”	Lab 16 P. 16-1, 16-6 & 16-8	Added Feature Styles for the Prop.dgn Alignments and Prop.dgn Points Filter Preferences.

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Introduction

Objective

Survey Data Processing consists of verifying, coordinating, formatting and processing full field survey data, field mapping enhancement data, additional survey data and existing right of way and property data. This data is then submitted to end users as planimetric MicroStation (.DGN) files, topographic 3D Digital Terrain Model (.DTM) files and Geometry Project (.ALG) files in InRoads. The digital field/mapping data is used as a database in the development of highway project plans.

This tutorial is grouped into several Sections – each of which comprises stand-alone Labs depicting the Survey Data Processing workflow.

Lab Objectives

Section 1: Processing Full Field Survey Data

- **Lab 1:** Start InRoads and Set Project Defaults
- **Lab 2:** Create Survey Data Project and Import CSV Survey Data
- **Lab 3:** Create/Import a Geometry Project (.ALG) and a Surface Project (.DTM)
- **Lab 4:** Resolving Crossing Segments
- **Lab 5:** Create/Import an Exterior Boundary
- **Lab 6:** Resolve DTM Errors
- **Lab 7**: Final Processing of the Field Surface

Section 2: Processing of Mapping and Field Survey Enhancements

- **Lab 8:** Create Survey Enhancement Project and Import CSV Enhancement Data
- **Lab 9:** Process the Mapping Obscured Areas and Merge Field Enhancements into the Mapping Surface

Section 3: Generate and Input Existing Alignment, Existing R/W and Property Data

- **Lab 10:** Create & Store the Existing Centerline (ACL) from Field Surveyed Points
- **Lab 11:** Modifying Centerline Alignments
- **Lab 12:** Store Existing R/W
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- **Lab 15:** Additional Property Alignment Creation and Editing Commands

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- **Lab 16:** Preparing the 1234567_Prop.dgn for Delivery to the Designer
- **Lab 17:** Preparing the DTM Surface, TOPO and UTLE Files for Initial Delivery

Lab Format Standards

In the following labs, user input and action will be displayed in **bold** type. You will be instructed to either type-in information, click on a command or button, or press a particular key or function button. When instructed to click on something, you will need to press on the left mouse button and then release it. When instructed to double-click, you will need to quickly press the left mouse button twice in rapid succession and then release it. Additionally, the ► symbol is used to designate successive pull down menus. ie. **File►Save**. If the lab asks you to press a particular key on the keyboard -- Key strokes will be displayed in < > brackets (ie. **<CTRL>** or **<F4>**).

The lab format will be as follows:

Step Number	The **top line** will display the instructions or the **user input**. The user actions will be displayed in the format described above. *The **bottom line** will be in italics and will indicate the **system response**. It will also display some additional information regarding the process you have just performed.*

Note:

Each step of the lab depends on a previous step, so please ***read everything carefully*** and ***DO NOT*** skip any steps.

InRoads and MicroStation Delineation

In the following labs, the user will be working in both the **InRoads Design Software** and the **MicroStation CADD Software**. The **InRoads Software** is the database in which the surveying data is created and processed. The **MicroStation CADD Software** is used for the viewing and manipulation of graphics derived from **InRoads**.

In order to differentiate between the two software(s) the following symbolization will be utilized:

InRoads Software	User performs steps in InRoads
MicroStation Software	User performs steps in MicroStation

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Processing Full Field Survey Data Training Guide – Section 1

Lab 1
Start InRoads and Set Project Defaults

Objective

The recommended File Structure for InRoads is a Project Folder (which is named for the PI # of the Project – *Example:* **1234567**) located as a sub-folder under **C:\InRoads Data** – *Example:* **C:\InRoads Data\1234567**. The Project Files are then located in an SDE sub-folder under the PI #. *Example:* **C:\InRoads Data\1234567\SDE**

This Project Folder will contain the individual InRoads Data Files. Some Examples of InRoads Data Files are:

1. **.DTM** ------ (Digital Terrain Model File) – contains Surface data
2. **.FWD** ------ (Survey File) – contains Field Survey data
3. **.ALG**------- (Geometry File) – contains Geometric Point, Horizontal and Vertical data
4. **.IRD** ------- (Roadway Design File) – contains the Design Surface data
5. **.RWK**------ (Project File) – contains project data for InRoads files in ASCII format
6. **.ITL**-------- (InRoads Template File) – contains InRoads Templates for cross-sections
7. **.SDB**------- (Drainage File) – contains the InRoads Storm and Sanitary data

It is highly recommended to backup the Project Folder (which contains these individual data files) after each work session to your Group Account on the GDOT Server if you are a GDOT Employee (or to an appropriate Business Server if you are a GDOT Consultant).

The objective of Lab 1 is to:

- Create a Project Folder
- Start InRoads
- Set the InRoads Project Defaults
- Set Survey Default Preferences
- Set the InRoads “Locks”
- Add the Application and Variable Manager Add-Ins

Lab1A Create a Project Folder & Copy Lab Project Files

In this section of the lab you will be creating a folder or directory. This folder is where your projects and all of your InRoads project data files will be located. The newly created InRoads project directory will be (**C:\InRoads Data\PI#)**. This is the recommended file structure for InRoads projects. (For this tutorial only -- you will also copy the "SDE Lab" Files to this folder in order to access the InRoads "1234567" Lab Files.)

1.	From the desktop, double-click on the **My Computer** icon. *This will open the My Computer dialog box. This is your computer's file manager. Via this dialog box, you may view the content of your computer's various hard-drives.*
2.	Double-click on the **C:** directory (also referred to as folder or drive). *This will open the **C:** directory box, listing the contents of the **C:** drive.*
3.	If the **C:** directory does not contain a folder named **InRoads Data --** create the folder. *Creates folder **InRoads Data** under the **C:** drive.*

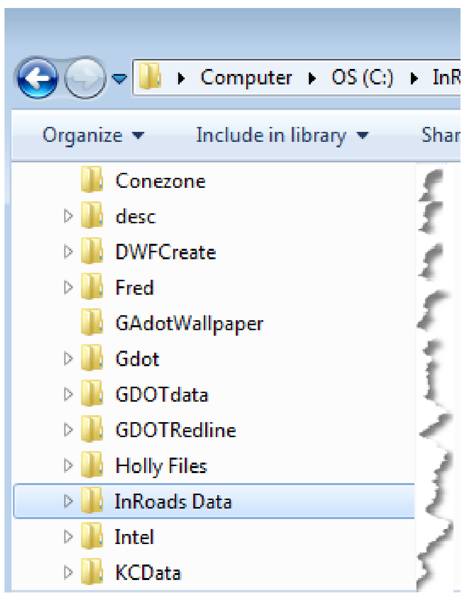


Figure L1-1 InRoads Project Folder In **C:** directory

4.	Using Windows Explorer, create a new folder under **InRoads Data** and name it **1234567**. This is the project folder you will use for the Lab Lessons (**C:\InRoads Data\1234567).** *Creates folder **1234567** under **C:\InRoads Data**.*
5.	Using Windows Explorer, copy the folder **SDE Labs** from **C:** to (**C:\InRoads Data\1234567)**. *Places the **SDE Labs** in **C:\InRoads Data\1234567***

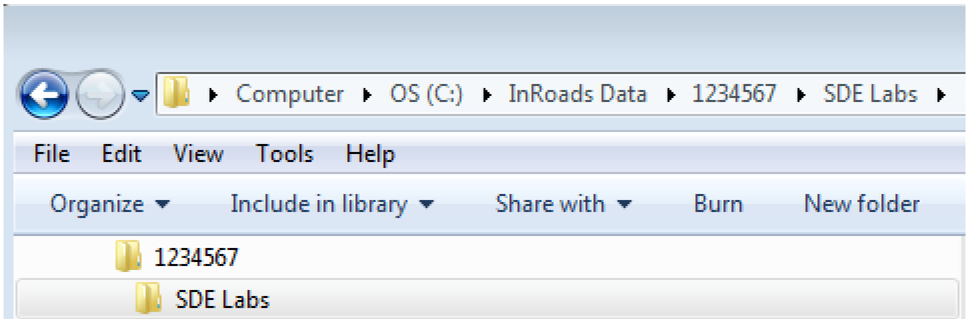


Figure L1-2 Folder **SDE Labs** in the **C:\InRoads Data\1234567** folder

6.	Close the **Explorer** window by clicking on the  in the upper right-hand corner of the window. *This will close the* ***Explorer*** *window.*

Lab1B Start InRoads

In this section of the lab you will be opening **MicroStation V8i Select Series 2** in the 'GDOT-Corporate Workspace' and **InRoads Suite V8i Select Series 2.** You will also select a "seed" file to use for the "Working" DGN file. This "Working" DGN file is used to display the temporary and/or permanent graphics in **InRoads**. **MicroStation** is opened first and then **InRoads** is opened from the MicroStation Menu bar.

7. From the desktop, double-click on the **GDOT MicroStation V8i SS2 (x86)** icon.

Double click on the icon labeled **GDOT MicroStation V8i SS2 (x86)**.

- When the **MicroStation Manager** dialog box opens – navigate to the **C:\InRoads Data\1234567\SDE Labs\Standards** folder and select the "**GDOT 3D Working File.dgn**". (Creation of the 'GDOT 3D Working File.dgn' is documented in the ***SDE Guidelines***). Click **Open**.

- Now open InRoads from within MicroStation by selecting: **InRoads ▶ InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu].

*After the **MicroStation** Splash Screen appears, the **MicroStation Manager** dialog (See Figure L1-3) will open so that you can select a "**Working**" DGN file. Once **InRoads** and **MicroStation** are up and running, your desktop should look similar to that of Figure L1-4 and Figure L1-5.*

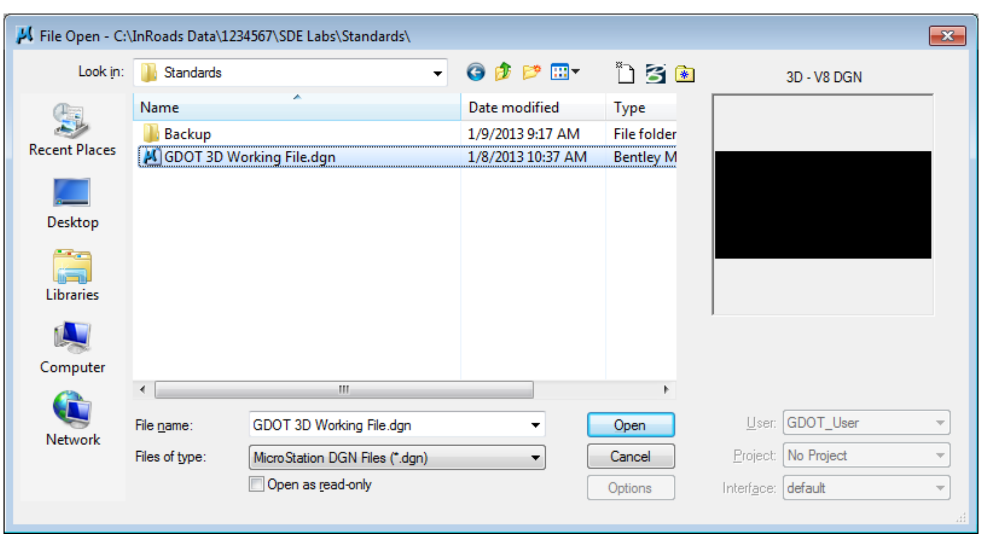


Figure L1-3 Starting **MicroStation V8i** and **InRoads Suite**

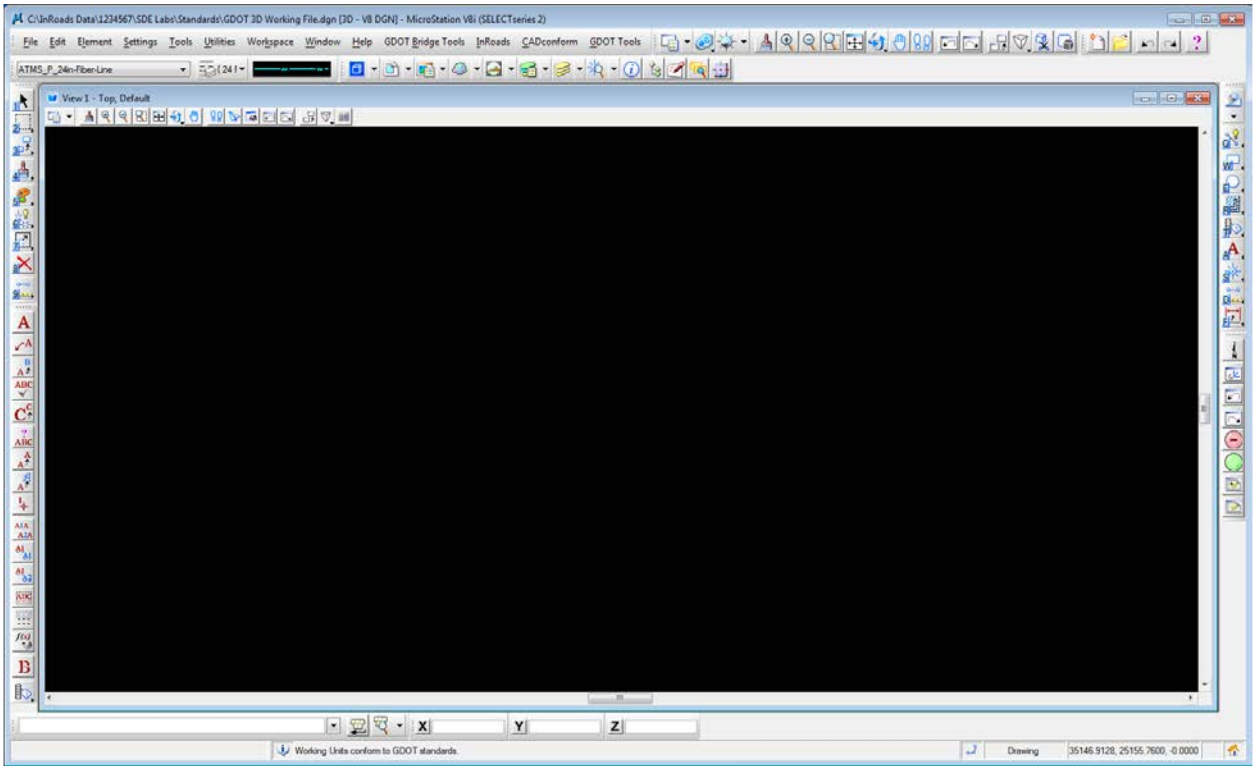


Figure L1-4 Main **MicroStation V8i** Window

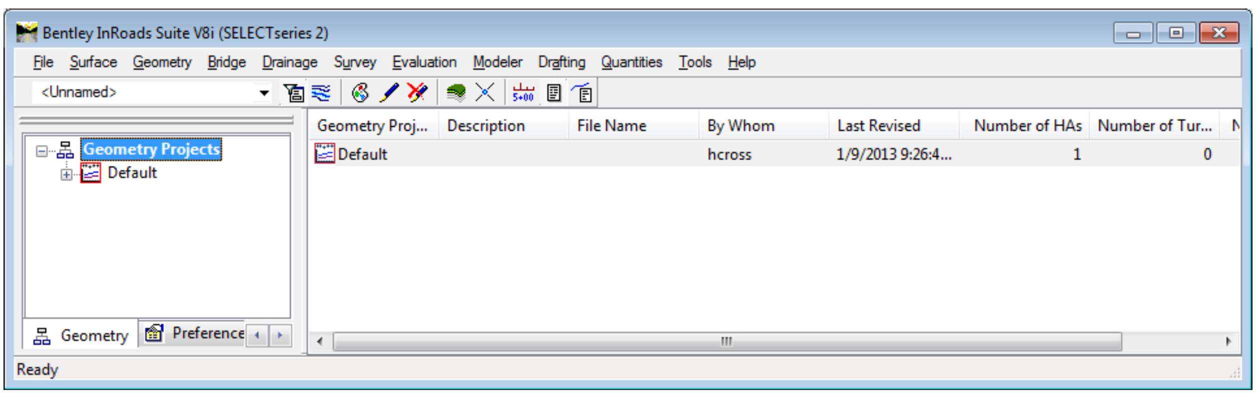
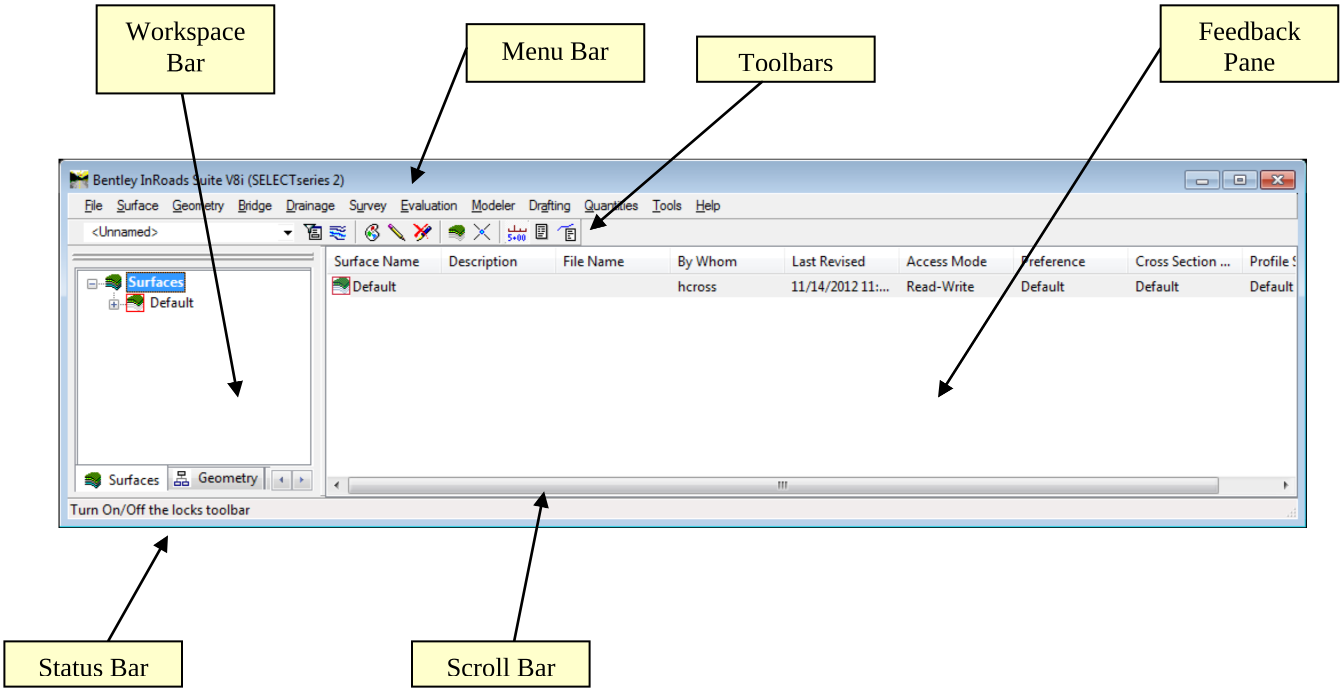


Figure L1-5 Main **InRoads Suite V8i** Window

8.	As mentioned previously - you will be working in both the **InRoads Design Software** and the **MicroStation CADD Software**. The **InRoads Software** is the database in which the Surveying data is created and processed. The **MicroStation CADD Software** is used for the viewing and manipulation of graphics derived from **InRoads**. Please review the **diagram** depicted below for a brief overview of the InRoads Explorer Interface: *Details the components of the InRoads Explorer Interface.*



- **Workspace Bar –** Contains all of the InRoads Project Data information
- **Menu Bar –** Contains the pull-down menus to access InRoads commands
- **Toolbars –** Contains default and customized toolbars to access InRoads commands
- **Feedback Pane –** Contains details of selected Project Data from the Workspace Bar
- **Scroll Bar –** Enables the user to view more of the InRoads Explorer Interface. (The Scroll Bar may not be visible if the InRoads Interface is already viewed to extents).
- **Status Bar –** Contains InRoads messages and prompts (Please note: InRoads may direct you to locate something graphically in MicroStation -- some of these prompts may display in the MicroStation Status Bar instead). It is very important that the user review both the InRoads and the MicroStation Status Bar for prompts and information.

Lab1C Set InRoads Project Defaults

The **InRoads Project Defaults** setting allows you to define the "default folder locations" for projects. A ***Project Default*** configuration can then be saved for each project so that multiple projects can be accessed. This configuration allows you to easily navigate between projects. Once the Project Folder locations are saved in the Configuration, the projects can be accessed by selecting the appropriate Project Configuration Name. The Project Defaults also contains the location for selecting the standard GDOT InRoads Preference File (**GDOT_Standard V8i_SS2.xin**).

9.	Click **File▶Project Defaults** from the InRoads pull-down menu. *The Set Project Defaults dialog box appears. Each Project will require an individual setup as detailed in the following steps.*
10.	Click **New** and enter **1234567_SDE** in the **New Configuration** dialog box. Then click **OK**. *The New Configuration dialog box will appear. After entering in the Project Name and clicking OK – a new configuration will be created that is named 1234567_SDE.*
11.	Under the **Default Preferences** section - Click in the **Preferences (*.xin):** field and then click the **Browse** button to navigate to the following file: **C:\InRoads Data\1234567\SDE Labs\Standards\GDOT_Standard V8i_SS2.xin**. Select the **GDOT_Standard V8i_SS2.xin** file and click **Open**. *The **GDOT_Standard V8i_SS2.xin** file is added as the Project Preference File.*
12.	Under the **Default Directory Paths** Section - Click in the **Project Default Directory:** field and then click the **Browse** button to navigate to the folder: **C:\InRoads Data\1234567\SDE Labs**. Next **-** click **Open**. *The Current Configuration for the 1234567 project will now default to the following path: **C:\InRoads Data\1234567\SDE Labs**.*

13.	Under the **Default Directory Paths** Section – copy and paste the following text into each entry field shown below: **C:\InRoads Data\1234567\SDE Labs** • Report Directory: **C:\InRoads Data\1234567\ SDE Labs ** • Projects (*.rwk): **C:\InRoads Data\1234567\ SDE Labs ** • Surfaces(*.dtm): **C:\InRoads Data\1234567\ SDE Labs ** • Geometry Projects:(*.alg): **C:\InRoads Data\1234567\ SDE Labs ** • Template Libraries:(*.itl): **C:\InRoads Data\1234567\ SDE Labs ** • Roadway Design: (*.ird): **C:\InRoads Data\1234567\ SDE Labs ** • Survey Data: (*.fwd): **C:\InRoads Data\1234567\ SDE Labs ** • Drainage: (*.sdb): **C:\InRoads Data\1234567\ SDE Labs ** • Quantity Manager: (*.mdb): **C:\InRoads Data\1234567\ SDE Labs ** • Site Modeler Projects: (*.gsf): **C:\InRoads Data\1234567\ SDE Labs ** *The Configuration for the 1234567 project will now default to the path listed above.*
14.	Under the **Default Directory Paths** Section - Click in the **Style Sheet (*.xsl):** field and then click the **Browse** button to navigate to the folder: **C:\InRoads Data\Style Sheets\GDOT**. Next **-** click **Open**. *The Current Configuration for the Style Sheets will now default to the following path: **C:\InRoads Data\Style Sheets\GDOT**.*
15.	The **Project Defaults** should now correspond to the screen capture depicted in *Figure L1-6* (as shown below). Verify to ensure that your 1234567 Project Defaults match the inputs in the screen capture. *The Project Default Fields are verified for accuracy.*

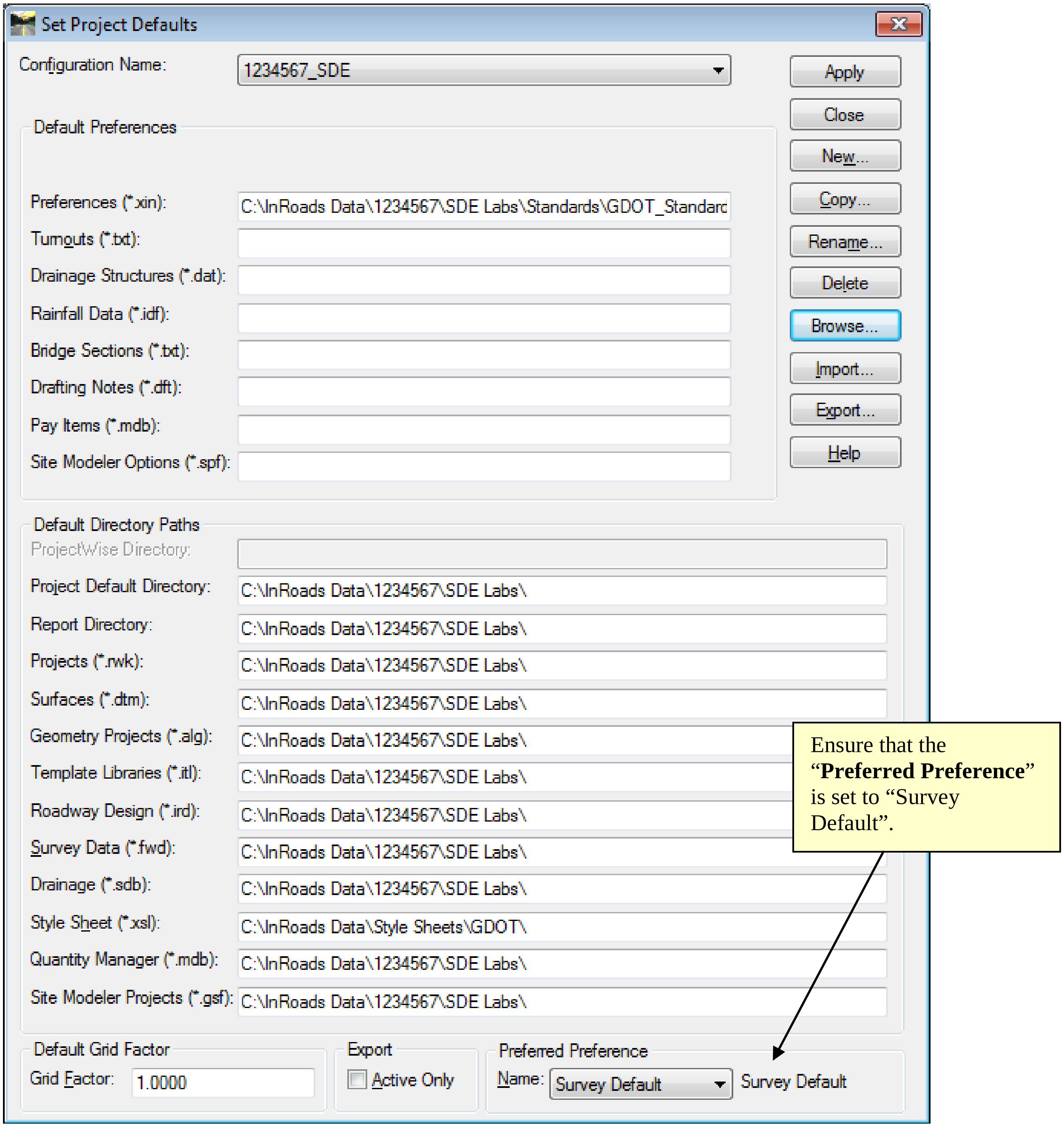


Figure L1-6 Set Project Defaults

16.	Click **Apply** and then click **Close**. The **Set Project Defaults** dialog box will close and the settings for this configuration of Project 1234567_SDE will be the default settings until the configuration is changed to another Project. This folder location will also be the default folder when **File**►**Save** and **File**►**Close** are used.

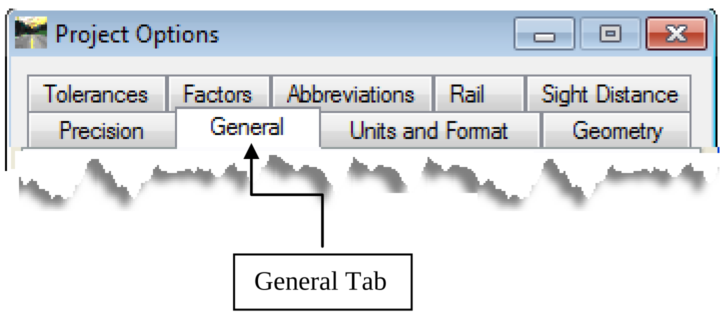
Lab1D Set Survey Default Preferences

The **Survey Default** Preferences must be loaded in InRoads in order to conform to standards for the processing of Surveying Projects. <u>This is a very important step to ensure that standards are followed for any Survey data that will be processed.</u> The **Survey Default** Preference loads the Precision Settings, Tolerances, Units and Formats, etc. Once the **Survey Default** Preference is loaded – the project will retain these settings each time the project is accessed.

17. Click **File ▶ Project Options** from the InRoads pull-down menu to access the **<u>Project Options</u>** dialog box.

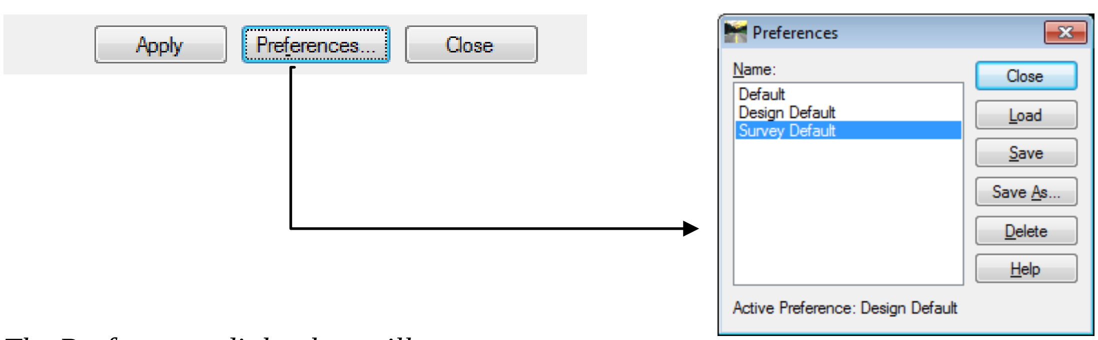
The <u>Project Options</u> dialog box appears.

18. In the **<u>Project Options</u>** dialog box - click on the **General** Tab.



The <u>General Tab</u> dialog box appears.

19. In the **General Tab** dialog box click the command button named **Preferences…** (Located at the bottom of the dialog box).



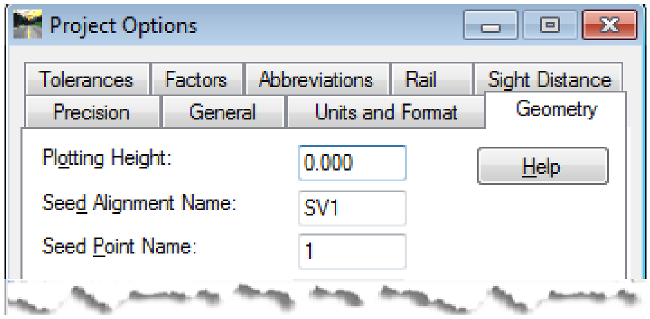
The <u>Preferences</u> dialog box will open.

20. In the **<u>Preferences</u>** dialog box – select **Survey Default**. Then click **Load** and then click **Close**.

*The **Survey Default** Preference will be loaded. This will load the appropriate data for ALL of the tabs in the <u>Options</u> dialog box. The individual tabs (Tolerances, Geometry, Units and Format, etc.) will automatically be configured for use in Mapping and Surveying. These individual tab options will NOT need to change. Once the **Survey Default** Preference is loaded – the project will retain these settings each time the project is accessed.*

21. **Important Information:**

In the **Project Options** dialog box - click on the **Geometry** Tab.



Notice in the image at right, the **Seed Alignment Name:** and **Seed Point Name:** default settings of ***SV1*** and ***1***. These values were set when the **Survey Default** Preference was loaded in the preceding step.

These settings are of particular importance to the SDE. Alignments must have a **SV** prefix. Points must have NO prefix as well as numbering starting at **1**. In order for survey enhancements to be properly to a project, it is essential that SDE's pay particular attention to this setting. **SV** stands for survey.

22. **Click** back to the **General** Tab.

The **Survey Default** Preference should now correspond to the screen capture depicted in *Figure L1-7* (as shown below). Verify to ensure that the **Project Options** dialog box for Project 1234567 matches the inputs in the screen capture.

The Project Options are verified for accuracy.

Ensure that the "**Refresh Command Settings on Preference Change**" is checked:

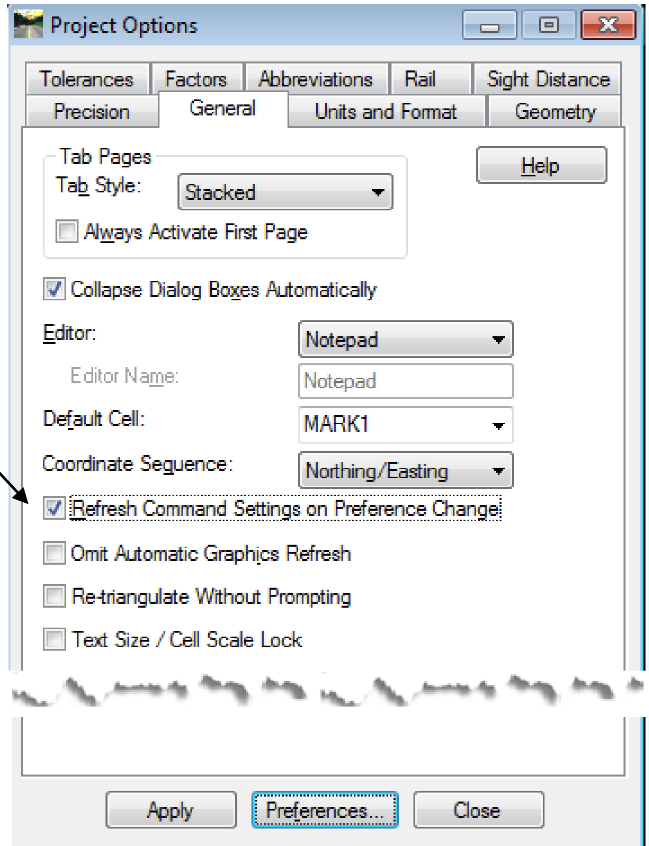


Figure L1-7 Survey Default Settings

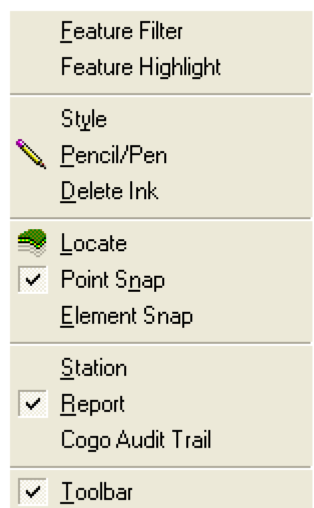
23.	Click **Apply** and then click **Close**. *The Project Options dialog box will close and the Survey Default Preference for this configuration of Project 1234567 will be the default settings until the configuration is changed to another Project.*

Lab1E Set InRoads “Locks”

InRoads contains several “Locks” which are used by many InRoads commands to control different aspects of the selection and viewing of data as well as the reporting of data. There are basically two types of “Locks” – On/Off “Locks” and Switch “Locks”. (Switch “Locks” contain different modes but one mode is always active and the user can switch between modes). Both types of “Locks” can be changed by the user as the situation dictates during the course of the database generation. These locks affect many commands – so it is very important that the user understand the use of these locks.

The following Lab contains a brief overview of <u>some</u> of the InRoads “Locks”. Only the “Locks” pertaining to the Survey aspect will be reviewed. These “Locks” must be set according to the following Lab --- (**Lab1E**) ---- for the use in upcoming Labs.

24.	Click **Tools**▶**Locks** from the InRoads pull-down menu. *This command accesses the available InRoads “Locks”. Each time a “Lock” is changed – the pull-down menu will close and the user must click on **Tools** ▶**Locks** again to access the Locks pull-down.*
25.	Ensure that the following locks are selected/unselected as appropriate: Feature Filter _____ Unchecked Feature Highlight __ Unchecked Style _____________ Unchecked Pencil/Pen ________ Set to Pencil Delete Ink ________ Unchecked Locate ____________Set to Features Point Snap ________ Checked Element Snap ______Unchecked Station ____________ Unchecked Report ___________ Checked Cogo Audit Trail ____ Unchecked Toolbar ________ Checked *The InRoads “Locks” are set accordingly.*



26.	Following is a brief overview of the "Locks": **Feature Filter** displays or obscures Surface Features based on a filter (also controls Survey Style Filter) **Feature Highlight** highlights the feature in plan view when selected from a list **Style** determines if a dialog box is displayed for a surface command or cross sections **Pencil/Pen** controls the redisplaying of Graphics **Delete Ink** allows redisplayed graphics to replace graphics in pen mode **Locate** controls if Locate Buttons snaps to Graphics or Features **Point Snap** controls the ability to snap to points in Geometry Project **Element Snap** controls the ability to snap to elements in Geometry Project **Station** controls the Stationing as it pertains to Cross Sections **Report** controls if Report is displayed or not displayed in a dialog box **Cogo Audit Trail** controls the reporting of coordinate geometry results to a text file **Toolbar** displays or turns off the Locks Toolbar *Describes a "brief" overview of the InRoads "Locks".*

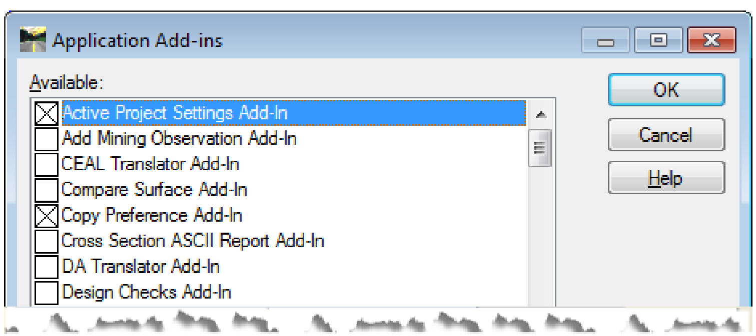
Lab1F Add Application and Variable Manager Add-Ins

InRoads contains several Application and Variable Manager “Add-Ins” which must be selected and added to the InRoads Program in order to access the standard GDOT customized menu applications/translators for Survey. Once the Application and Variable Manager Add-Ins are selected – the settings are written to registry keys in the <u>user’s profile</u>. This ensures that each time InRoads is accessed in the user profile -- these settings will already be available. These add-ins will only need to be added once and will then be accessible in all of the InRoads Modules and InRoads Projects.

The following Lab contains a brief overview of the InRoads “Application and Variable Manager Add-Ins”. These “Application and Variable Manager Add-Ins” must be set according to the following Lab --- (**Lab1F**) ---- for their use in upcoming Labs. <u>This is a very important step to ensure that the “Add-Ins” are set accordingly.</u>

27. The Application Add-Ins will be selected:

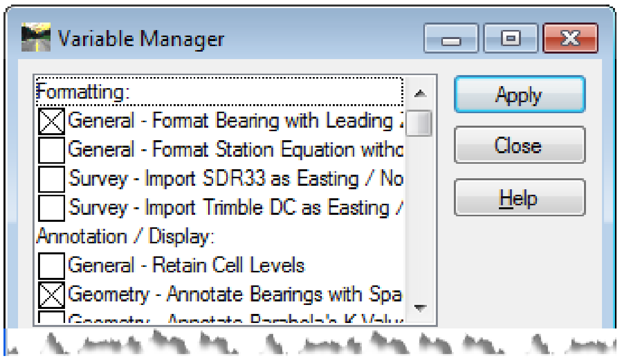
Click **Tools ▶ Application Add-Ins** from the InRoads pull-down menu and the following dialog box will appear:



Select the following Application Add-Ins by clicking an ☒ by the appropriate Add-In:

- ☒ Active Project Settings Add-In
- ☒ Copy Preference Add-In
- ☒ Display Superelevation in Plan Add-In
- ☒ Global Scale Factors Add-In
- ☒ Horizontal and Vertical Elements Add-In
- ☒ Hydrology and Hydraulics Add-In
- ☒ Import AMSA Add-In
- ☒ Import SRV Add-In
- ☒ Lot Layout Add-In
- ☒ Multiple Horizontal Element Regression Analysis Add-In
- ☒ Multiple Vertical Element Regression Analysis Add-In
- ☒ Named Symbology Tools Add-In
- ☒ Remove User Data Add-In
- ☒ Traverse Edit Add-In
- ☒ Variable Manager Add-In

The InRoads “Application Add-Ins” are selected accordingly.

28.	Click **OK** to accept the settings and to close out of the dialog box. *The <u>Application Add-Ins</u> dialog box will close and the selected Application Add-Ins will be available for use.*
29.	Next the Variable Manager Add-Ins will be selected: Click **Tools**▶**Variable Manager** from the InRoads pull-down menu and the following dialog box will appear:  Select the following Variable Manager Add-Ins by clicking an ☒ by the appropriate Variable: ☒ General - Format Bearing with Leading Zero Option ☒ Geometry - Annotate Bearings with Spaces ☒ Geometry - Alphanumeric Names in Create/Edit Alignment by Cogo Points *The InRoads "Variables" are selected accordingly.*
30.	Click **Apply** to accept the settings and then click **Close** to close out of the dialog box. *The <u>Variable Manager</u> dialog box will close and the selected Variables will be available for use.*
31.	 This concludes Lab 1. Do not proceed until the Instructor directs you to do so.

Lab 2
Create Survey Data Project and Import CSV Survey Data

Objective

An InRoads Survey Data Field Book (.FWD File) must be created and must be made active in order to import and translate the GDOT Trimble CSV Data from Survey. In this tutorial, Project 1234567_A.fwd (Survey Data Field Book File) will be created. This active field book database will be used to import, generate and translate the GDOT Trimble "CSV" data from Survey.

InRoads contains a **GDOT Trimble CSV to InRoads Translator** which converts the CSV file into a format that is usable for InRoads. The translator converts the .CSV file based on a format of **Point Number**, **Northing**, **Easting**, **Elevation**, **Alpha Feature Code** and **Attribute Name** and **Attribute Value** if applicable. After the CSV file is translated and imported into the Field Book, the data can then be imported into a Surface Project and/or Geometry Project. The processing and triangulating of the Surface Data/Geometry Data will be discussed in more detail in later Labs.

Please Note:
The Attribute Value (such as Pipe Size, Tree Dimensions, etc.) are now included during the import. The value that is entered in the CSV file will appear in the Description Field in InRoads after the conversion.

The objective of Lab 2 is to:

- Create a Survey Data Field Book Project (Project 1234567_A.fwd)
- Save the Survey Data Field Book Project (Project 1234567_A.fwd)
- Translate and Import the Trimble CSV File(s)
- Review the Survey Data in the Field Book and correct errors as needed
- View the Planimetric Survey Data in InRoads/MicroStation

Lab 2A Create 1234567 Survey Data Project (1234567_A.fwd)

In the following Lab – an InRoads Survey Data Field Book (1234567_A.fwd) will be created and saved to the Project Folder. This Survey Data Field Book data will be used in later Labs to create a .DTM (Digital Terrain Model database) and an .ALG (Geometry database).

1.	If **MicroStation** and **InRoads** are not open, follow **Step 7** in **Lab 1B** to open MicroStation and InRoads. *Starts the MicroStation and InRoads Software Product(s).*

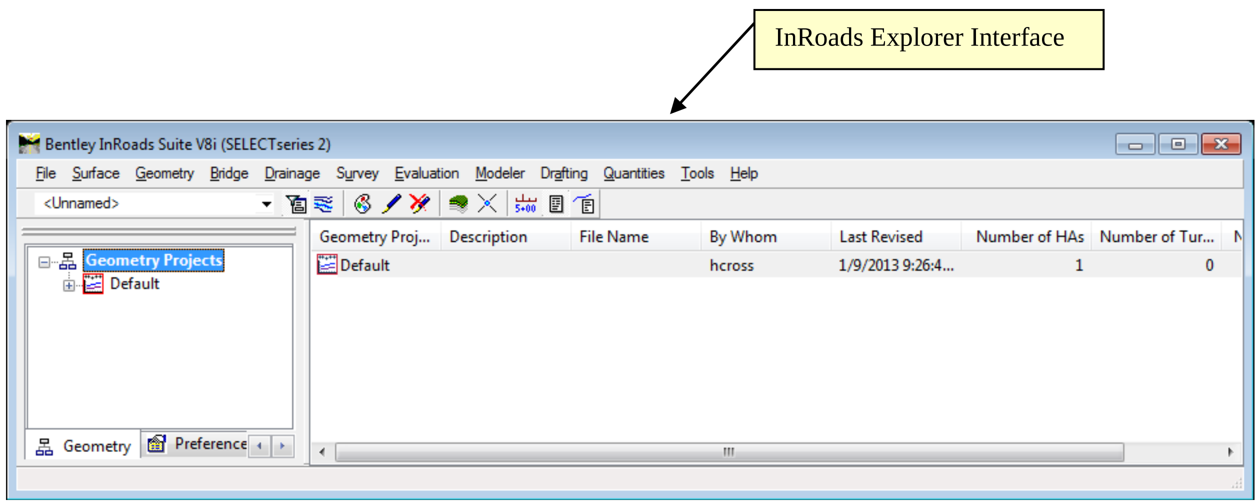
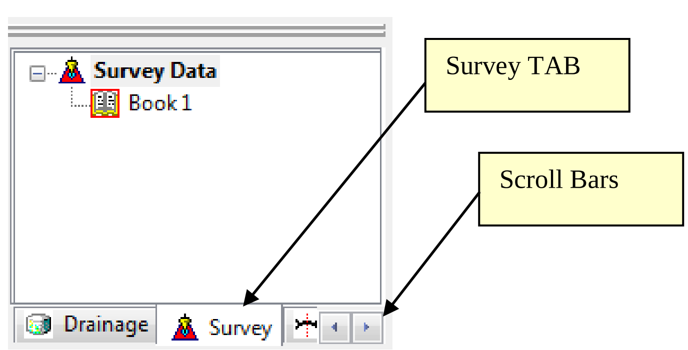


Figure L2-1 InRoads Interface

2.	Click on the **Survey Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Survey Tab**.  *Opens the <u>Survey Tab</u> in the InRoads Explorer Interface.*

3.	Create the ***1234567_A.fwd*** Survey Data Project by selecting **File▶New** from the **InRoads Menu**. The **<u>New</u>** dialog box will open. Select the **Survey Data Tab**. • In the **Name:** Field – enter ***1234567_A*** The inputs should now correspond to the screen capture depicted in *Figure L2-2* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the <u>New</u> dialog box allowing you to create a Survey Data Project.*

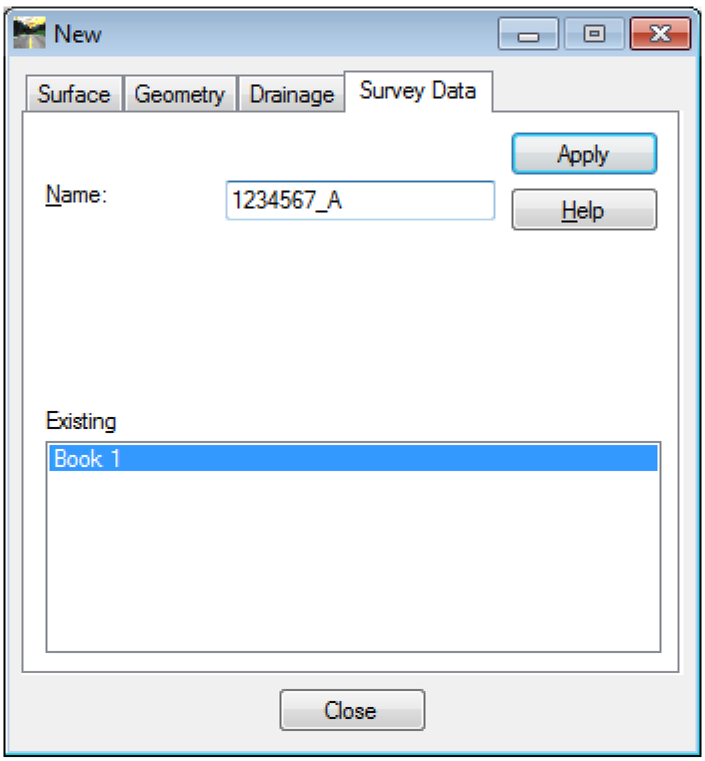


Figure L2-2 “New” Survey Data Project

4.	Click **Apply** and then click **Close** to create the **Survey Data Project**. *The Survey Data Project is created and the <u>New</u> dialog box closes.*

5.

Even though the InRoads Survey Data Project was created – it has not yet been saved. InRoads retains the data in temporary memory but does not save the data on the fly. It is highly recommended to Save the project periodically after any major modifications or changes to the data.

- Select **File**►**Save**► **Survey Data** from the **InRoads Menu**.
- The **Save As** dialog box will appear as shown in *Figure L2-3*.

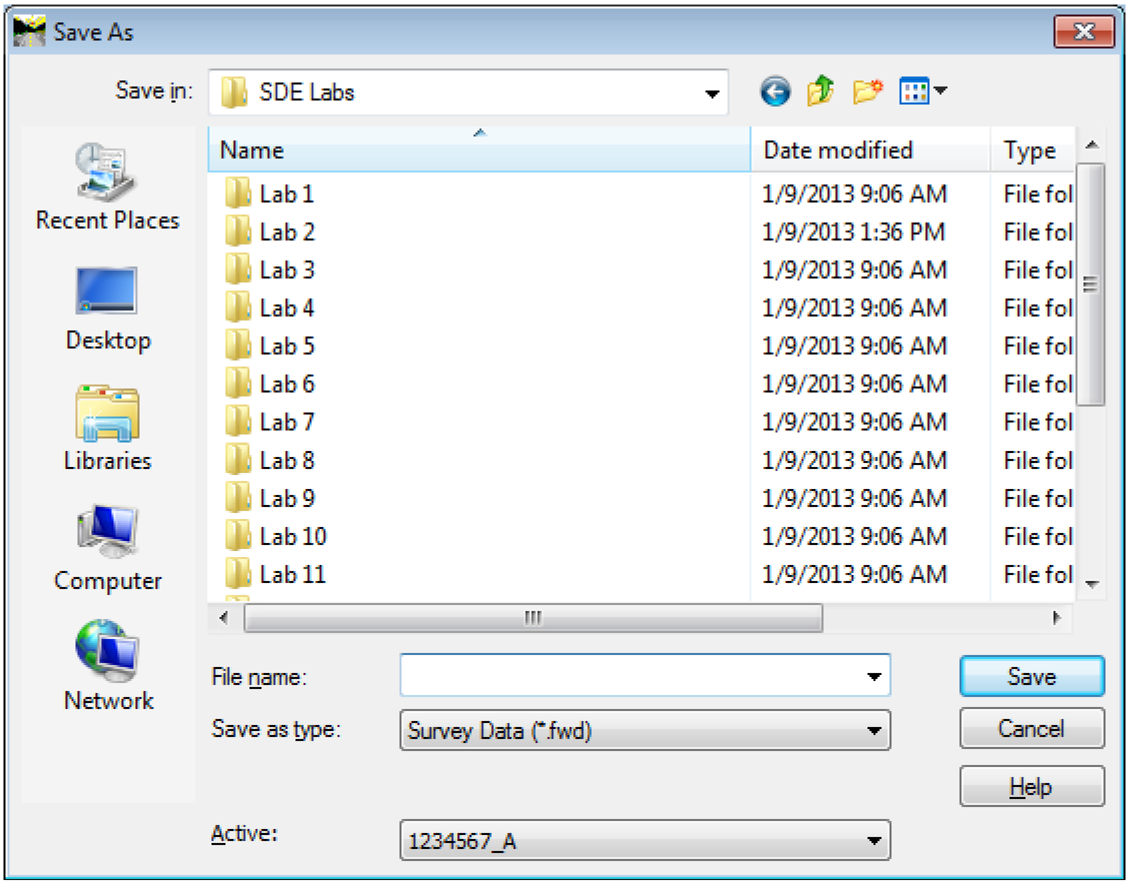


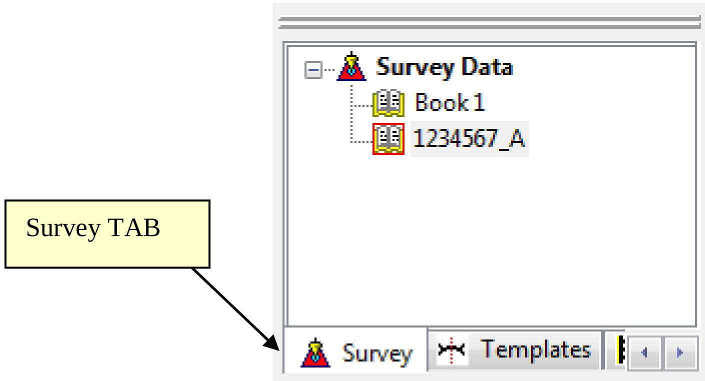
Figure L2-3 Save As 1234567_A.fwd

6.

Save the 1234567_A.fwd file.

- Navigate to **C:\InRoads Data\1234567\SDE Labs\Lab 2**
- Enter the **File name:** as ***1234567_A***
- Enter the **Save as type:** as ***Survey Data (*.fwd)***
- Click **Save** and then click **Cancel.**

The FWD File is saved to the following location:
C:\InRoads Data\1234567\SDE Labs\Lab 2

7.	Click on the **Survey Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface).  Then *double-click* on the **1234567_A** Survey Data Project. Note that the Survey Project has been created but is currently empty and contains no data – this is denoted by the "blank" coordinate data in the InRoads Explorer Interface. See *Figure L2-4* (as shown below). *Opens the InRoads Survey Tab and displays the 123456_A Survey information in the InRoads Explorer Interface.*

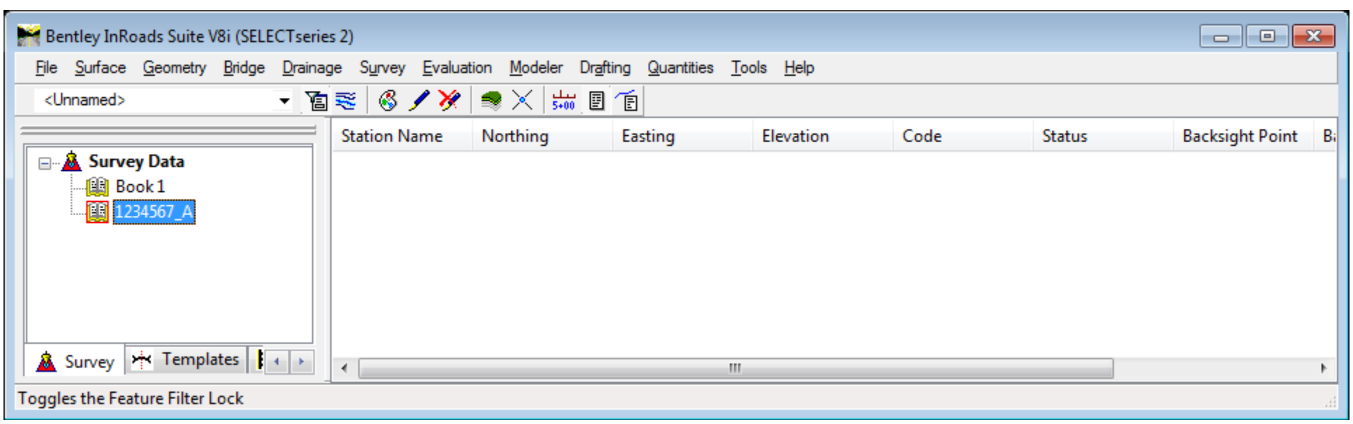
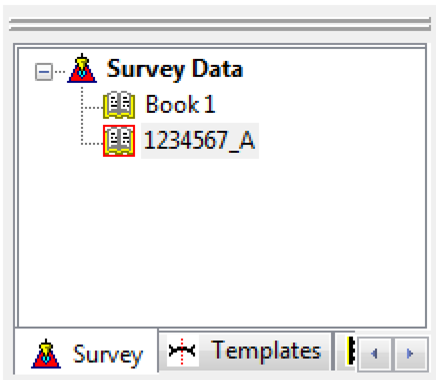


Figure L2-4 Survey Tab – InRoads Explorer (Before File Importation)

8. In the screen capture depicted below –

Note that in the InRoads Explorer Interface Workspace Bar that the **1234567_A** Survey project has a "Red Rectangle" around the icon.

This denotes that this is the "Active" Survey Project. Any survey commands will be initiated and performed on the current "Active" Survey Project.



Also note that there will <u>always</u> be a Default "Book 1" Project listed. InRoads includes this Default "Book 1" for internal InRoads functionality --- <u>**Remember to never save data to this Default Survey Data Book.**</u>

Displays a red rectangle around the 1234567_A Survey icon to reflect that this is the Active Survey Project upon which commands will be performed.

Lab 2B Translate and Import the GDOT Trimble "CSV" File

In the following Lab – a Trimble "CSV" Field Survey File will be translated and imported into the 1234567_A.fwd field book by using the InRoads "**Import Survey Data**" command. After the data has been translated and imported – the Survey Data will be saved to the 1234567_A.fwd Survey Project.

9. Following are two example formats of the GDOT standard Trimble CSV File. The data in both are the same, the only difference is if the File is opened in Excel, it will look like the first screen capture depicted in **Figure A**. If the File is opened in a Text Editor such as NotePad or WordPad, it will look like the second screen capture depicted in **Figure B**:

<u>It is highly recommended to only open the CSV file in a Text Editor and NOT in Excel.</u> The reason is when opening in Excel; additional commas are placed at the end of the attribute name and may cause issues in the InRoads description fields**.**

Figure A: (Screen Capture from Excel)
PT # –Northing–Easting–Elevation–Feature Code–Attribute Name–Attribute Value

	A	B	C	D	E	F	G
1	203	1263914	2244692	922.143	SDCD	ATTRNAME	CD203
2	204	1264916	2244407	929.411	SDCD	ATTRNAME	CD204
3	205	1265780	2244196	945.983	SDCD	ATTRNAME	CD205
4	206	1266807	2243939	948.854	SDCD	ATTRNAME	CD206
5	207	1268577	2243523	941.923	SDCD	ATTRNAME	CD207
6	208	1269723	2243230	932.556	SDCD	ATTRNAME	CD208
7	209	1271707	2242673	941.302	SDCD	ATTRNAME	CD209
8	531	1278246	2237121	863.166	DSBST61		
9	532	1278248	2237120	862.491	DSEST62		
10	533	1278249	2237118	861.555	DSCST63		
11	534	1278230	2237105	864.358	DSB61		
12	535	1278231	2237102	862.359	DSE62		

Figure B: (Screen Capture from WordPad)
PT # –Northing–Easting–Elevation–Feature Code–Attribute Name–Attribute Value

```
203,1263914.015,2244692.182,922.143,SDCD,ATTRNAME,CD203
204,1264915.721,2244406.908,929.411,SDCD,ATTRNAME,CD204
205,1265779.781,2244196.015,945.983,SDCD,ATTRNAME,CD205
206,1266807.164,2243938.752,948.854,SDCD,ATTRNAME,CD206
207,1268577.467,2243523.159,941.923,SDCD,ATTRNAME,CD207
208,1269722.906,2243229.502,932.556,SDCD,ATTRNAME,CD208
209,1271707.277,2242672.591,941.302,SDCD,ATTRNAME,CD209
531,1278246.098,2237121.145,863.166,DSBST61,,
532,1278247.861,2237119.81,862.491,DSEST62,,
533,1278248.867,2237117.916,861.555,DSCST63,,
534,1278229.978,2237105.246,864.358,DSB61,,
535,1278230.896,2237101.55,862.359,DSE62,,
```

10. The GDOT Trimble “CSV” File will be translated and imported: **(1234567A.csv)**

Select **File ▶ Import ▶ Survey Data** from the **InRoads Menu**. The **<u>Import</u>** dialog box will open.

Select the CSV file by browsing to the file in the “**Look in**” drop down box. Navigate to the CSV file which is located in the following path:

C:\InRoads Data\1234567\SDE Labs\Lab 2\Trimble CSV Files

Select the **1234567A.csv** file --- by <u>left-clicking</u> on the file.

- In the **File name:** Pulldown – ensure ***1234567A.csv*** is listed
- In the **Files of type:** Pulldown – ensure **GDOT Trimble Format(*.csv)** is listed
- The **Template:** Pulldown – should be blank
- The **Linear Units:** Selection - should be **US Feet**
- The **Angular Units:** Selection – should be **Degrees**

The inputs should now correspond to the screen capture depicted in *Figure L2-5* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the <u>Import</u> dialog box allowing you to import a CSV File.

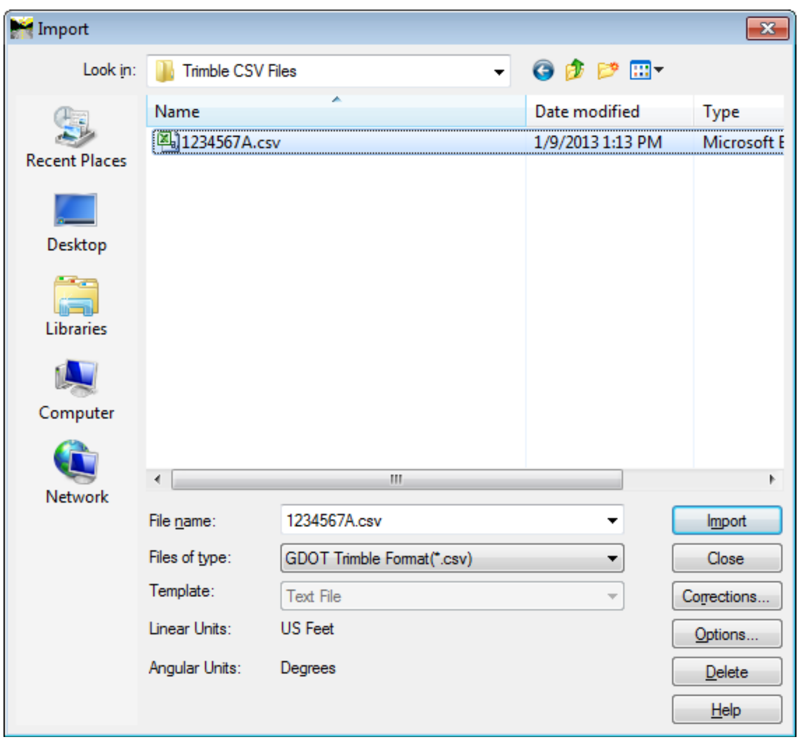


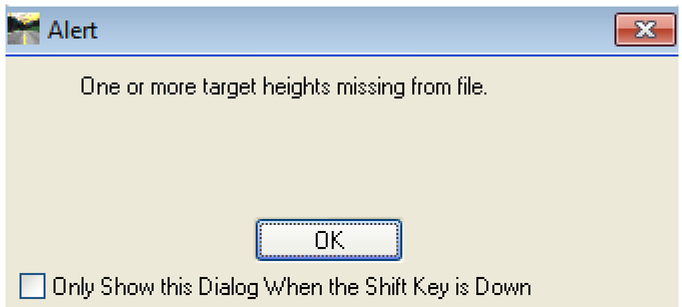
Figure L2-5 Import CSV Translator

<table>
<tr>
<td>11.</td>
<td>

Click **Import.**
(This command selects the data to be imported.)

Click **Close**.
(The Survey Data is actually imported when the **Close** command is selected.)

Please Note:
In certain situations, you may receive an error message that says "*One or more target heights missing from file*". If you click **OK**, the data will still import in correctly - but the message means that one or more points in the CSV file are missing coordinates and/or elevations. If this situation does occur, the CSV file should be reviewed to correct the errors and then import in the data again.



Please Be Patient!
It may take a while for the CSV data to import depending on the size of the file!

Once the data is imported – the **Import** dialog box will close automatically.

<u>**Please Note:**</u>
In this tutorial – only one CSV file will be imported for demonstration purposes.

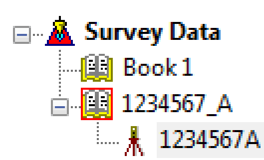
In a "real world" project, if additional CSV file(s) need to be imported – create a new Survey Project (**Ex. 1234567_B**) and repeat Steps 3-10.

The CSV File data is translated and imported into the 1234567_A Survey Project.

</td>
</tr>
<tr>
<td>12.</td>
<td>

The CSV File data is now imported into the **1234567_A** Survey Project. Click on the **Survey Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface) and then <u>*double-click*</u> on the **1234567_A** Survey Project.

A **1234567A** folder will appear. <u>*Double-click*</u> on the **1234567A** folder.



Review the InRoads Explorer ***data*** frame and note that the Survey Project now contains point data and coordinate information. Your InRoads Explorer Interface should look similar to the screen capture shown below (See *Figure L2-6*).

</td>
</tr>
</table>

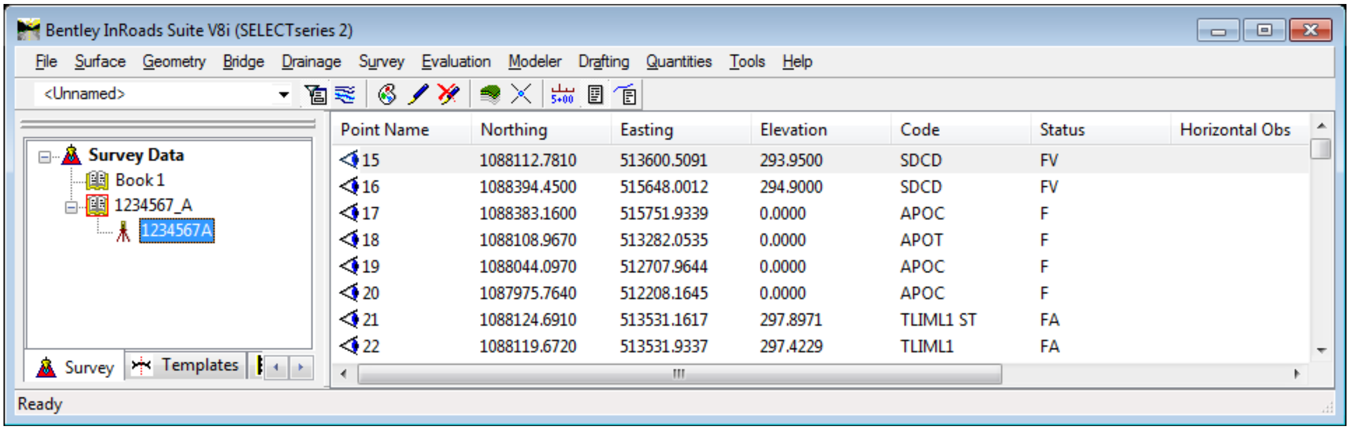
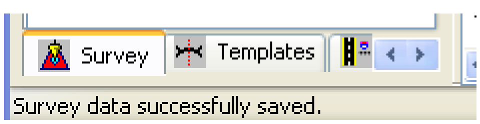


Figure L2-6 Survey Tab – InRoads Explorer (After File Importation)

13.	Even though the CSV data has been imported into the InRoads Survey Project (**1234567_A.fwd**) – the data has not yet been saved. As mentioned previously, InRoads retains the data in <u>temporary</u> memory but does not <u>save</u> the data on the fly. Whenever a change has been made to an InRoads Survey Project – it is advisable to <u>Save</u> the project and its associated modifications or changes. Select **File ▶ Save ▶ Survey Data** from the **InRoads Menu**. <u>Please Note:</u> (The “Save As” dialog box may not appear because the Survey Project has already been saved initially). The Survey Project (***1234567_A.fwd***) will be saved to **Lab 2** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 2** Note that the **<u>InRoads Status Bar</u>** (Located at the bottom of the InRoads Interface) will depict a message when the Survey Project has been saved. (See screen capture below): Survey Project Saved →  *The **1234567_A** Survey Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab2***

Lab 2C Review the Survey Data in the Survey Field Book

In the following Lab – the GDOT Trimble CSV Field Survey data will be reviewed for accuracy in the Survey field book to determine if there was any erroneous data introduced in the CSV file. Although the Field Book is a good tool to utilize for reviewing and determining error in the data – it is highly advisable to use this field book as a review tool only. If any errors are found during the review – the user needs to make any corrections or adjustments of the data in the **original GDOT Trimble CSV file** or recompile the survey data contained in the data collector to create a new CSV file.

The field book can be utilized to determine the validity of many aspects regarding point and alignment data represented in the CSV file. Although this tutorial does not demonstrate all of the review functions contained in the field book – following are some of the tools available for point/alignment verification:

- Unrecognized Feature Codes which are not found in InRoads (will be in Bold Red text)
- One Point on Chain collection errors may be found in InRoads. They will be in Bold Black text in the Fieldbook. Appendix B of the Survey Processing Guidelines details using the InRoads Fieldbook to locate One Point on Chain errors.
- Errors in Elevation (Busts in elevations)
- Errors in points which should contain attribute(s). (Example: attributes for Drain Pipes). Attributes include the pipe sizes, dimensions, etc.

As mentioned previously if any errors are found during the review of the field book data – all corrections should be made in the original CSV file or data collector.

14.	Select **Survey ▶ Fieldbook Data ▶** from the **InRoads Menu** and the ***1234567_A*** Survey Field Book will open. Briefly review the field book data information for potential errors/problems. See the Survey Field Book screen capture depicted in *Figure L2-7* (as shown below). *Opens the Fieldbook dialog box for review.*

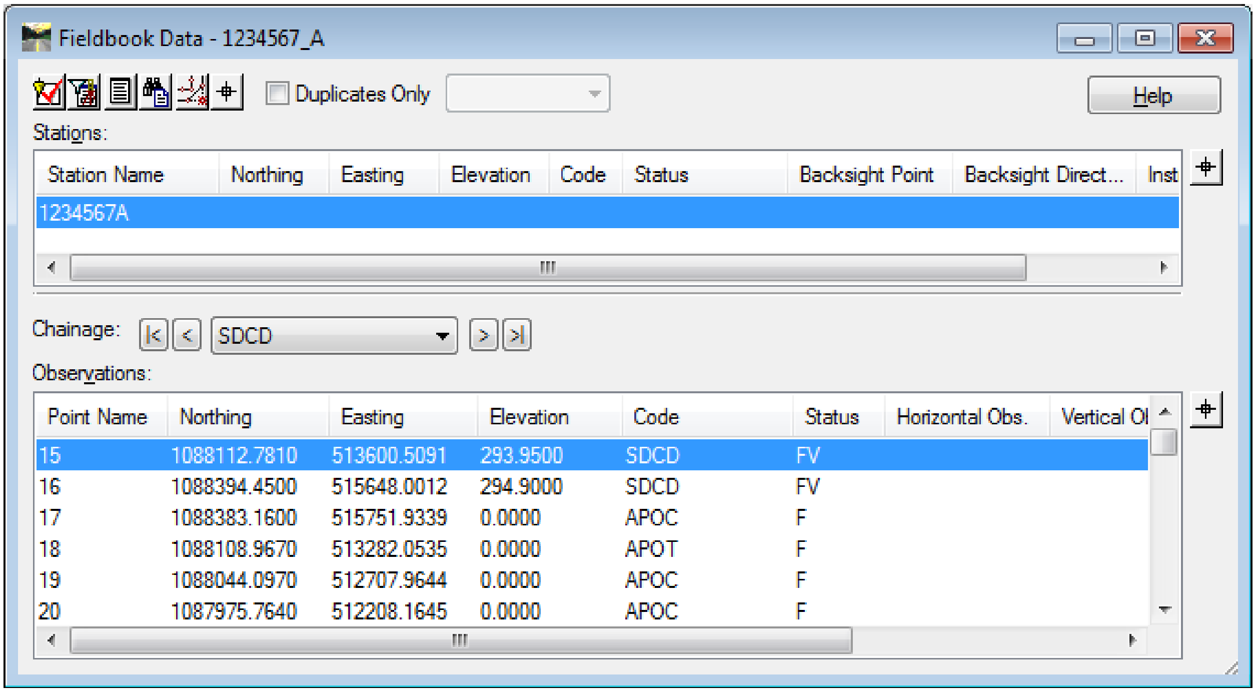
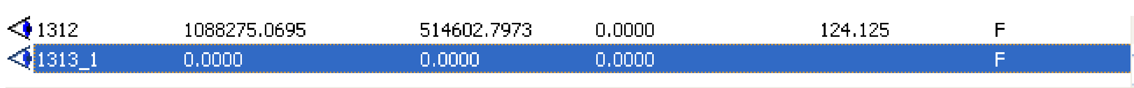
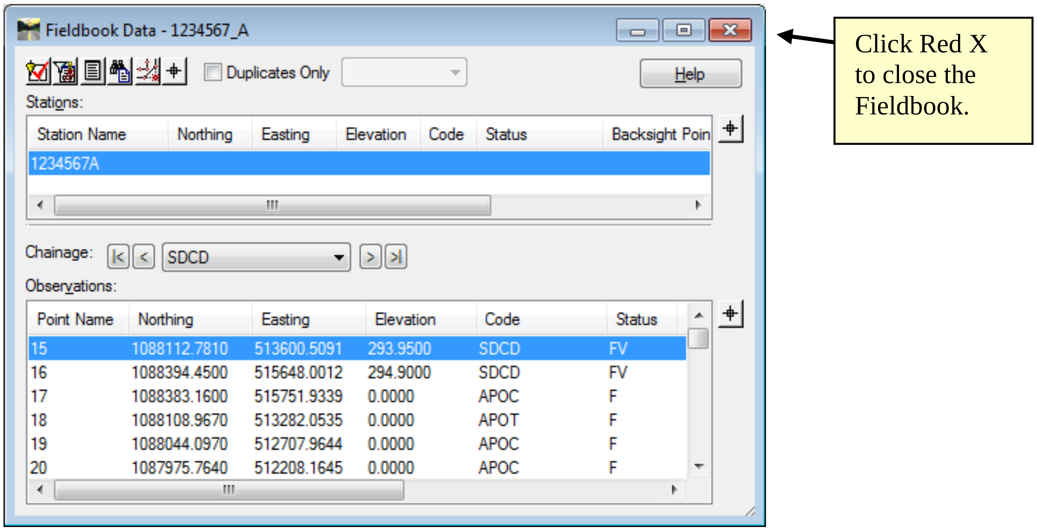


Figure L2-7 Survey Field Book

15.	**For Information Only:** <u>Very Important!</u> If the CSV file is manually edited to correct an error – please be sure that there is NOT a hard return after the last entry in the CSV file (Depicted by a blank line beneath the last entry). If this should occur and is not corrected in the CSV file – the last entry in the InRoads Field Book will be erroneous. If this situation is present in the field book – it will be as depicted by the screen capture shown below highlighted in Blue –  To resolve the issue – edit the CSV file by deleting the last blank line represented in the CSV file. *Depicts example of a common error in the InRoads Field Book.*

16.	**Close the Fieldbook Data dialog box.** Left click on the Red X in the upper right corner of the Fieldbook Data dialog box as shown here.  *Closes the Fieldbook Data dialog box.*

Lab 2D View the Planimetric Survey Data

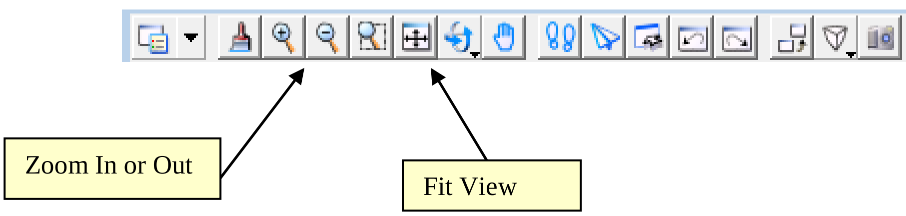
When the Survey Data is imported into the Survey Field Book, the data can be viewed as Planimetric data in MicroStation.

Please Note:
At this time - the data can be viewed only. This data is not actually written as Graphics to the DGN file. The user may zoom in or out in MicroStation but actual manipulations to the data cannot be initiated because it has not yet been imported into a Surface or Geometry database. The steps to write the survey data to the Surface and Geometry InRoads modules will be detailed in later Labs.

<table>
<tr><td>17.</td><td>View the selected Features in the [MicroStation Software] by using the following commands located under the MicroStation View 1 Window:

In the [MicroStation Software] –

Select the “Zoom In or Zoom Out” or “Fit View” Icons as appropriate to view the Features.



Views the Features in MicroStation.</td></tr>
<tr><td>18.</td><td>To turn Planimetric Survey Data on/off:

The Planimetric View can be turned on/off in InRoads by the following steps:

Select Survey ▶ View Survey Data ▶ Planimetrics from the InRoads Menu.

A check mark by Planimetrics – turns the planimetric data on for viewing.
Removing the check mark by Planimetrics – turns the planimetric viewing data off.

Steps to view the Planimetric Survey Data in InRoads/MicroStation.</td></tr>
<tr><td>19.</td><td>
 This concludes Lab 2. Do not proceed until the Instructor directs you to do so.</td></tr>
</table>

Lab 3
Create/Import a Geometry Project (.ALG) and a Surface Project (.DTM)

Objective

In the previous Lab, the field survey data was translated and imported into InRoads by using a Survey Project (an .FWD Survey Field Book). The next Lab depicts the process of creating a Geometry Project (.ALG) and a Surface Project (.DTM file) and importing the translated survey data into these database(s).

The survey data which is imported into the Geometry Project (.ALG) is survey that consists of Property data, Existing Right of Way, Alignment data, etc. Basically it is survey which is "Geometry related" and which will be used in the creation of the property, alignment and COGO database. This Geometry data will not be represented in the DTM. All other Survey Data will be imported into the Surface Project (.DTM) and will be represented as Surface Features.

In order to automate this process - Survey Style Filters have been created which automatically "filters" the data so that the appropriate data will import into the Geometry Database and/or Surface Database as required.

The following Lab depicts the procedures to create the Geometry Project (.ALG) and the Surface Project (.DTM) and the process of importing the Survey Data into these database(s).

Please Note:
The naming conventions used for the creation of the ALG and DTM are critical in order for additional survey data to be added in later Labs.

The objective of Lab 3 is to:

- Create and Import data into an InRoads ALG (Geometry Database Project)
- Create and Import data into an InRoads DTM (Surface Database Project)
- Learn how to use Survey Style Filters and Feature Filter "Locks"
- View the Graphical Geometry and Surface Information

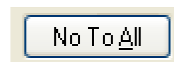
Lab3A Create a Geometry Project Database (.ALG)

In this section of the lab you will be creating a Geometry Database Project. This database will be used in the next Lab to import the Geometry information contained in the Survey Field Book (.FWD) into the Geometry Database Project (.ALG).

<table>
<tr><td>1.</td><td>Starting Clean

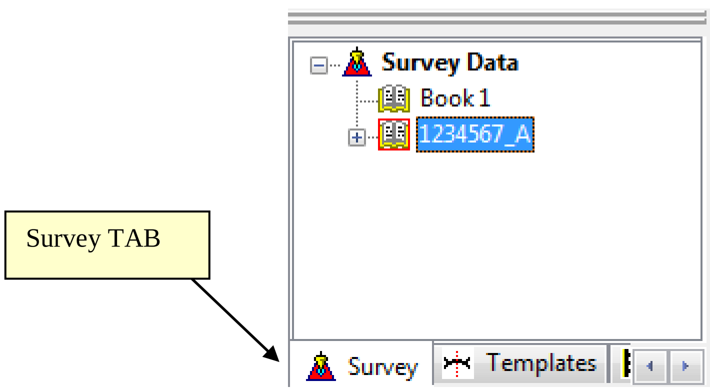
In order to ensure that you are working with a “clean” database – you will close MicroStation and InRoads if they are still running from a previous Lab:

To CLOSE MicroStation and InRoads -

Select File ▶ Exit from the [MicroStation Menu].
If any messages appear regarding the saving of projects – Select 

This closes BOTH the MicroStation and InRoads Software(s).</td></tr>
<tr><td>2.</td><td>From the desktop, double-click on the MicroStation icon labeled GDOT MicroStation V8i SS2 (x86).


Double click on the icon labeled GDOT MicroStation V8i SS2 (x86).
When the MicroStation Manager dialog box opens – navigate to the C:\InRoads Data\1234567\SDE Labs\Standards folder and select the “GDOT 3D Working File.dgn”. Click Open.
Now open InRoads from within MicroStation by selecting:
InRoads ▶ InRoads Suite (SELECTseries 2) V8i 08.11.07.566 from the [MicroStation Menu].
The MicroStation and InRoads Software(s) will open.</td></tr>
<tr><td>3.</td><td>Clear the MicroStation Window (This step may be ignored if your MicroStation Window is already clear of graphics)
Select Edit ▶ Select All from the [MicroStation Menu].
Then select the <DELETE> key on the computer keyboard.
The MicroStation Window is now clear of all graphics from the previous lab and ready for this lab.</td></tr>
</table>

4.	**Load the InRoads Survey File** Select **File▶Open** from the **InRoads Menu**. The Project Defaults (which were set up in **Lab 1C**) are set to the following Path: **C:\InRoads Data\1234567\SDE Labs**. Browse to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab3** Select the file named: **1234567_A.fwd** Click **Open** and then click **Cancel**. *The 1234567_A.fwd Survey file will open.*
5.	Click on the **Survey Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). Note that the "Red Rectangle" denotes that the **1234567_A** project is the active Survey Project.  *Opens the "Survey Tab" in the InRoads Workspace Bar.*
6.	**Turn off the Planimetric Survey Data:** The Planimetric View can be turned on/off in InRoads by the following steps: Select **Survey▶View Survey Data▶ Planimetrics** from the **InRoads Menu**. Remove the check mark by Planimetrics to turn the planimetric viewing data OFF. *Steps to turn the Planimetric Survey Data OFF in InRoads/MicroStation.*

<table>
<tr><td>7.</td><td>Click Tools▶Locks from the InRoads pull-down menu. Ensure that the following Locks are turned <u>ON</u>.

There should be a <u>check mark</u> next to the following:

Feature Filter is checked

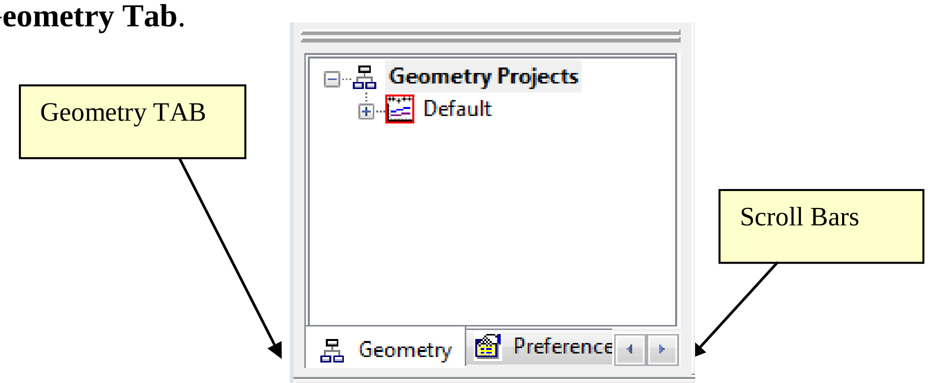
Point Snap is checked

Report is checked

Toolbar is checked

<u>This is an important step</u>. If the Feature Filter is not turned on (has a check mark next to it) – the Survey Style Filters will not work…

Ensures that the appropriate Locks are turned ON.</td></tr>
<tr><td>8.</td><td>Click on the Geometry Tab (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the Geometry Tab.



Opens the <u>Geometry Tab</u> in the InRoads Explorer Interface.</td></tr>
<tr><td>9.</td><td>Create the 1234567_SDE.alg Geometry Project by selecting File▶New from the InRoads Menu. The <u>New</u> dialog box will open. Select the Geometry Tab.
In the Type: Pulldown – select Geometry Project
In the Name: Field – enter 1234567_SDE
In the Description: Field – enter Training Data
In the Style: Field – (Leave Blank)
In the Curve Definition: Field – (Leave Blank)
The inputs should now correspond to the screen capture depicted in Figure L3-1 (as shown below). Verify to ensure that your input matches the screen capture.

Opens the <u>New</u> dialog box allowing you to create a Geometry Project.</td></tr>
</table>

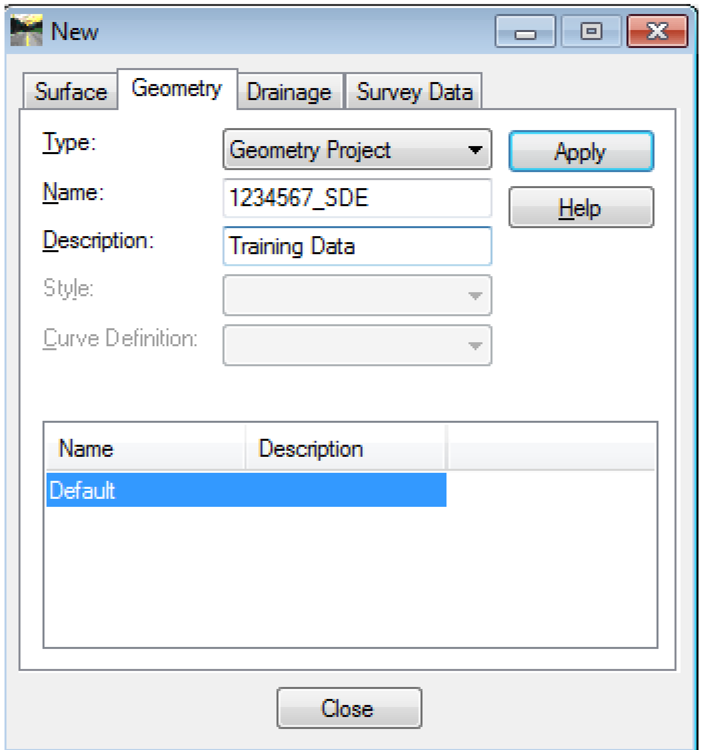


Figure L3-1 “New” Geometry Project

10.	Click **Apply** and then click **Close** to create the **Geometry Project**. *The Geometry Project is created and the <u>New</u> dialog box closes.*
11.	Even though the InRoads Geometry Project was created – it has not yet been saved. InRoads retains the data in temporary memory but does not <u>save</u> the data on the fly. It is highly recommended to <u>Save</u> the project periodically after any major modifications or changes to the data. • Select **File ▶ Save ▶ Geometry Project** from the **InRoads Menu**. • The **<u>Save As</u>** dialog box will appear as shown in *Figure L3-2*. • Navigate to **C:\InRoads Data\1234567\SDE Labs\Lab 3** • Enter the **File name:** as ***1234567_SDE*** • Enter the **Save as type:** as ***Geometry Projects (*.alg)*** • Click **Save** and then click **Cancel.** *The **1234567_SDE** Geometry Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 3***

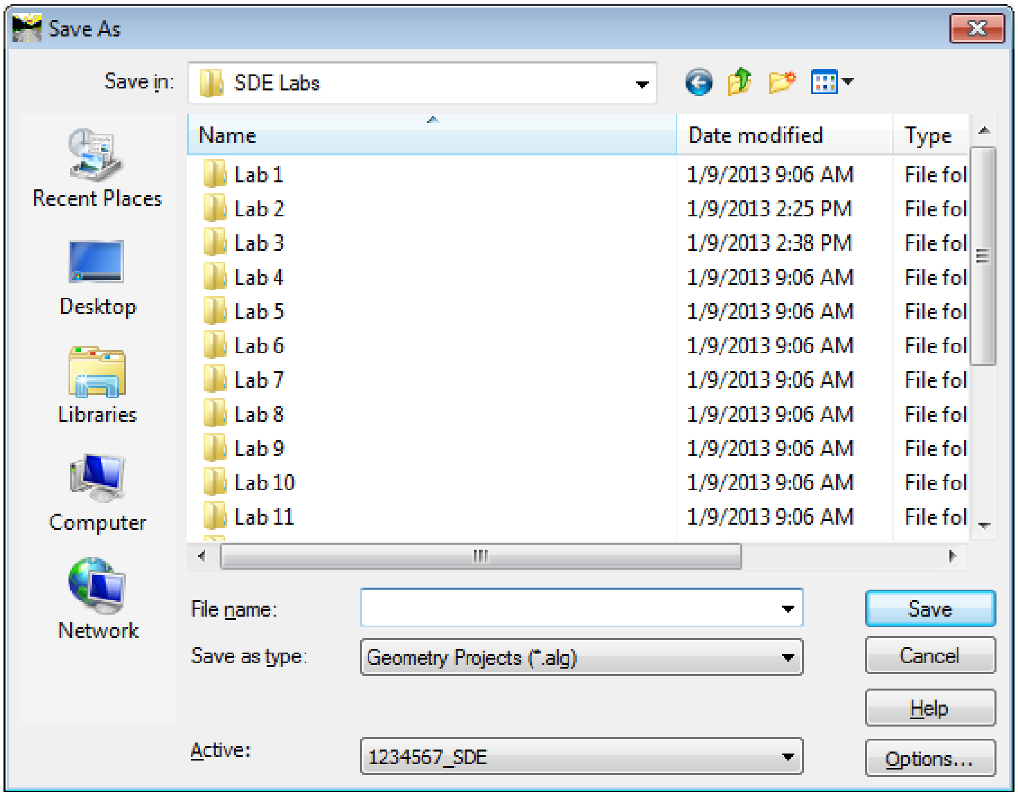
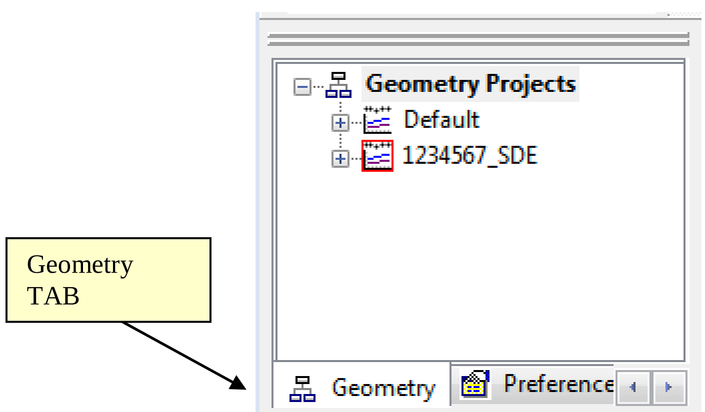


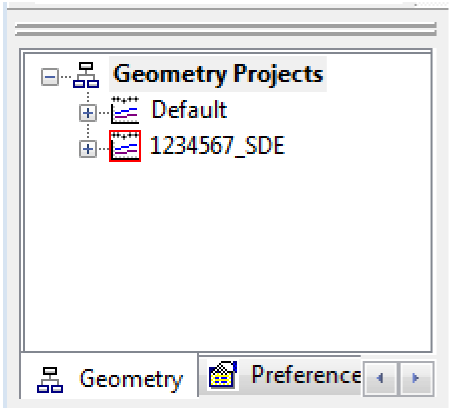
Figure L3-2 Save As 1234567_SDE.alg

12. Click on the **Geometry Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Geometry Tab**.



Then *double-click* on the **1234567_SDE** Geometry Project. Note that the Geometry Project has been created but is currently empty and contains no data – this is denoted by the "blank" point/coordinate data in the InRoads Explorer Interface.

Opens the InRoads Geometry Tab and displays the 1234567_SDE Geometry information.

13.	In the screen capture depicted below – Note that in the InRoads Explorer Interface Workspace Bar that the **1234567_SDE** Geometry project has a "Red Rectangle" around the icon.  This denotes that this is the "Active" Geometry Project. Any Geometry commands will be initiated and performed on the current "Active" Geometry Project. Also note that there will <u>always</u> be a Default Project listed. InRoads includes this Default Project for internal InRoads functionality --- <u>**Remember to never save data to this Default Project.**</u> *Displays a red rectangle around the 1234567_SDE Geometry icon to reflect that this is the Active Geometry Project upon which commands will be performed.*

Lab3B Import Survey Data into the Geometry Project (.ALG)

The following Lab depicts the process of importing in the Survey Data (property, alignment, etc) into the 1234567_SDE Geometry Project. A Survey Filter has been created which will automate the selection of the appropriate Survey Data which is to be imported into the Geometry Project. The following codes/styles (which are composed of data which will be used for the generation of Property and Alignment information) are included in the Survey Style Filter which is named ***Property and Alignment Codes***:

Property and Alignment Codes Survey Style Filter	
PROP_E_RWM	Right-of-Way Marker Found
PROP_E_RWC	Right-of-Way Point Computed
PROP_E_RWU	Right-of-Way Utility Company
PROP_E_RWE	Right-of-Way Prescription Pt
PROP_E_POEL	Point on Easement Line
PROP_E_PCF	Property Corner Found
PROP_E_PPOL	Property Point on Line
PROP_E_PPC	Property Point Computed
PROP_E_APOT	Point in Tangent, Existing
PROP_E_APC	Point of Curvature, Existing
PROP_E_APOC	Point on Curve, Existing
PROP_E_APT	Point of Tangency, Existing
PROP_E_API	Point of Intersection
PROP_E_ACL	Alignment Centerline
PROP_E_BCOL	County Line
PROP_E_BCTL	City Limit Line
PROP_E_BLDL	Land District Line
PROP_E_BLLL	Land Lot Line
PROP_E_BSL	State Line
TOPO_E_SNGSCM	NGS Control Monument
TOPO_E_SLCM	Location Control Monument
TOPO_E_SLCD	Location Control Delta
TOPO_E_SDCD	District Control Delta
TOPO_E_SBNCHMK	Benchmark

These codes are imported into the Geometry Project (.ALG File). All Codes which are not listed in the above tables – will be imported into the Surface Project (.DTM File).

14.	**Important Step!** Click **Tools▶Locks** from the InRoads pull-down menu. Ensure that the **Feature Filter Lock** is turned **ON**. There should be a **check mark** next to the Feature Filter Lock. *Ensures that the Feature Filter Lock is turned ON.*

15. **Select the Property and Alignment Codes**

**** WARNING ** – During this step take care not to roll the scroll button on your mouse.**

Click **Survey ►Survey Style Filter** and the **Survey Style Filter** dialog box will appear:

In the **Survey Style Filter** dialog box --- input the following:

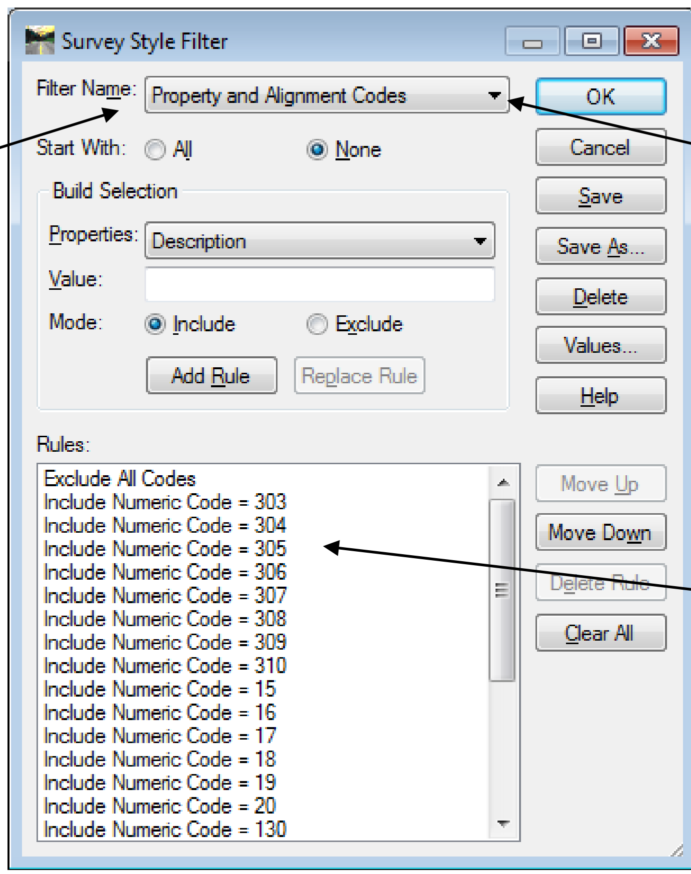
- In the **Filter Name:** Pulldown – select ***Property and Alignment Codes***

Leave all other entries as default!!

The inputs should now correspond to the screen capture depicted in *Figure L3-3* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the Survey Style Filter dialog box.

WARNING - Take care not to accidentally move your scroll wheel on your mouse while the Filter Name field is active.



Use the pull-down arrow to select the Filter named '**Property and Alignment Codes'.**

When the filter name is selected the data will be filtered as depicted here.

Figure L3-3 Survey Style Filter

16.	Click **OK** and the <u>**Survey Style Filter**</u> dialog box will Close and the Filter will be made active. *Closes the <u>Survey Style Filter</u> dialog box.*
17.	From the **InRoads Menu** - click **Survey** ▶**Survey Data to Geometry** and the <u>**Survey Data to Geometry**</u> dialog box will appear: • In the **Project Name:** Pulldown – select ***1234567_SDE*** • In the **Description:** Pulldown – select the default ***Use Style Description*** • In the **Curve Stroking:** Pulldown – select the default ***Horizontal and Vertical*** • In the **Duplicate Names:** radio button – select default of ***Rename*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L3-4* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the <u>Survey Data to Geometry</u> dialog box.*

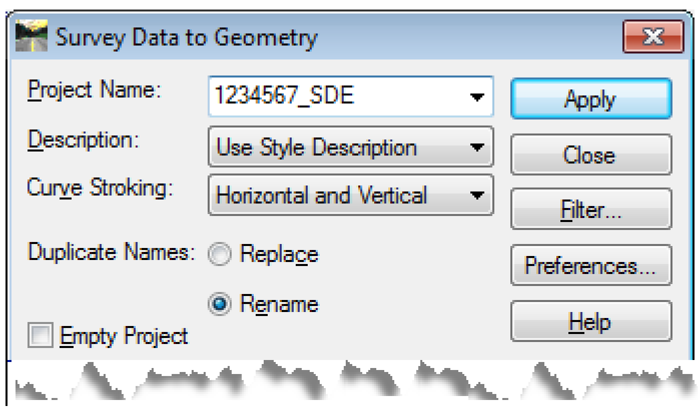
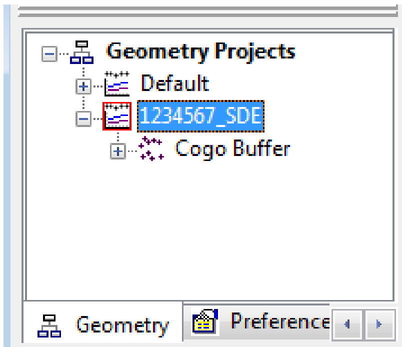


Figure L3-4 Survey Data to Geometry

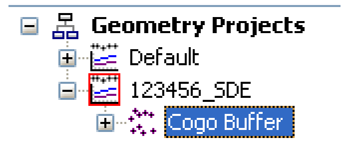
18.	Click **Apply** and then click **Close**. The Survey Data will be imported into the ***1234567_SDE*** Geometry Project and the <u>**Survey Data to Geometry**</u> dialog box will close. *The Survey Data is imported and the <u>Survey Data to Geometry</u> dialog box closes.*

19. The Survey Data is now imported into the Geometry Project. Click on the **Geometry Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface).



Then *double-click* on the **1234567_SDE** Geometry Project. A **Cogo Buffer** folder will appear.

Double-click on the **Cogo Buffer** folder.



Review the InRoads Explorer ***data*** frame and note that the Geometry Project now contains point data and coordinate information. Your InRoads Explorer Interface should look similar to the screen capture shown below (See *Figure L3-5*).

*Opens the InRoads Geometry Tab and displays the **1234567_SDE** Geometry Data information in the InRoads Explorer Interface.*

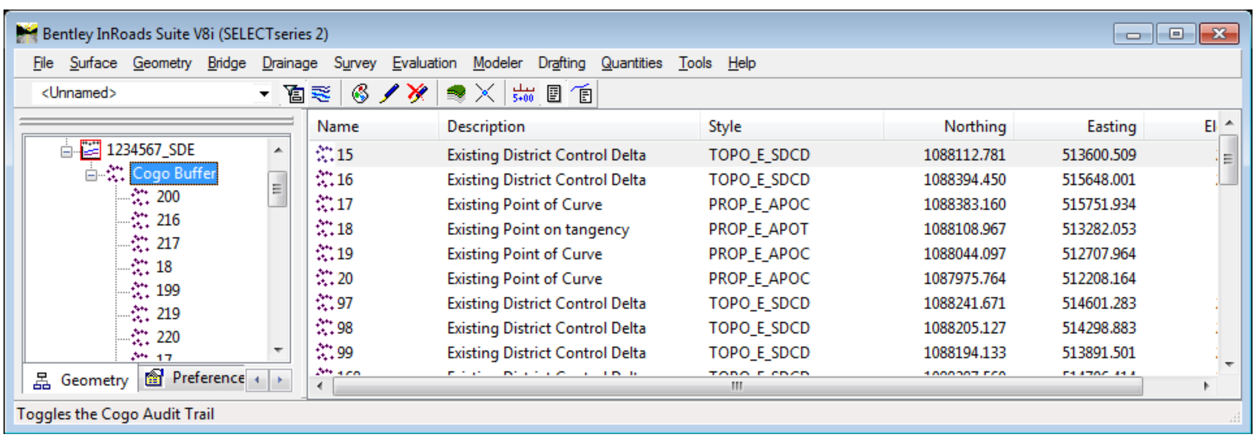
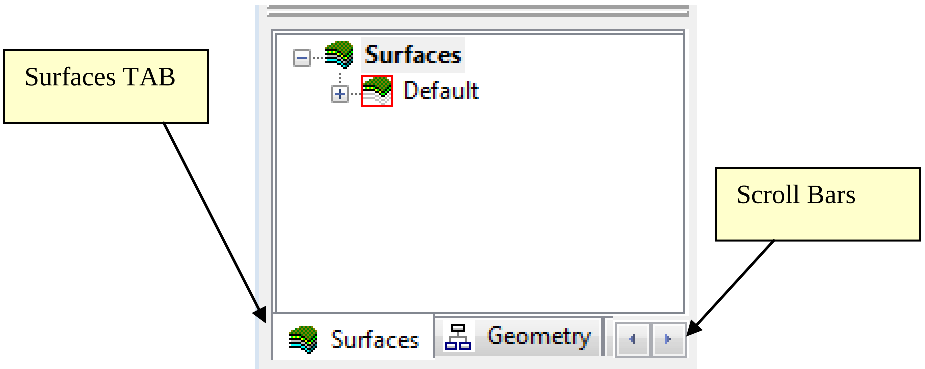


Figure L3-5 Geometry Tab – InRoads Explorer (After File Importation)

20.	**Save the InRoads Geometry Project:** Even though the Survey data has been imported into the InRoads Geometry Project (1234567_SDE.alg) – the data has not yet been saved. As mentioned previously, InRoads retains the data in temporary memory but does not save the data on the fly. Whenever a change has been made to an InRoads Geometry Project – it is advisable to Save the project and its associated modifications or changes. Select **File**▶**Save**▶ **Geometry Project** from the **InRoads Menu**. Please Note: (The "Save As" dialog box may not appear because the Geometry Project has already been saved initially). The Geometry Project (***1234567_SDE.alg***) will be saved to **Lab 3** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 3** Note that the **InRoads Status Bar** (Located at the bottom of the InRoads Interface) will depict a message when the Geometry Project has been saved. *The **1234567_SDE** Geometry Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab3***

Lab3C Create a Surface Project Database (.DTM)

In this section of the lab you will be creating a Surface Database Project. This database will be used in the next Lab to import the Surface information contained in the Survey Field Book (.FWD) into the Surface Database Project (.DTM).

21.	Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Surfaces Tab**.  *Opens the Surface Tab in the InRoads Explorer Interface.*
22.	Create the ***1234567_SDE.dtm*** Surface Project by selecting **File▶New** from the **InRoads Menu**. The **New** dialog box will open. Select the **Surface Tab**. • In the **Type:** Pulldown – select ***Existing*** • In the **Name:** Field – enter ***1234567_SDE*** • In the **Description:** Field – enter ***Training Data*** • In the **Maximum Length:** Field – enter ***300.00*** • In the **Preference:** pulldown – select ***EXISTING*** The inputs should now correspond to the screen capture depicted in *Figure L3-6* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the New dialog box allowing you to create a Surface Project.*

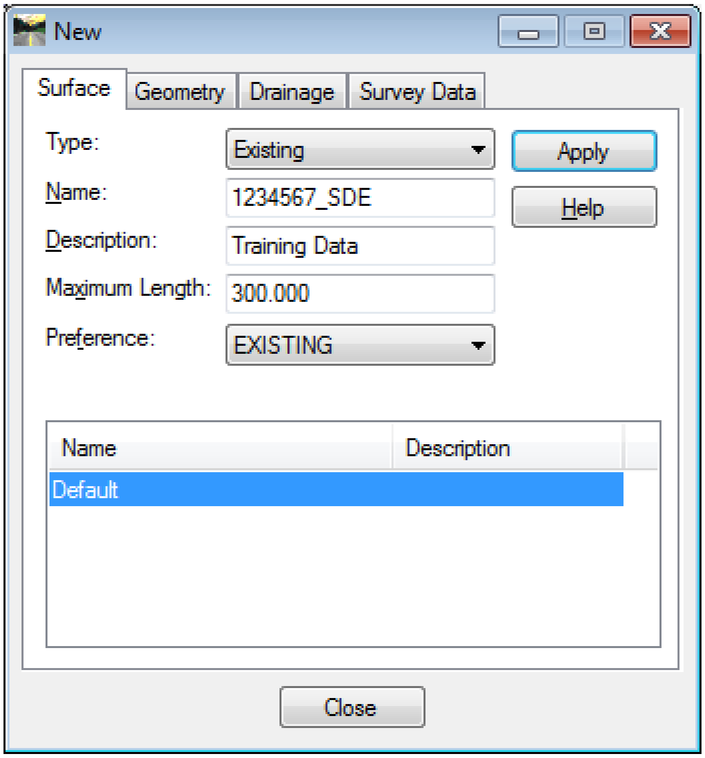


Figure L3-6 "New" Surface Project

23.	Click **Apply** and then click **Close** to create the **Surface Project**. *The Surface Project is created and the New dialog box closes.*
24.	Even though the InRoads Surface Project was created – it has not yet been saved. InRoads retains the data in temporary memory but does not save the data on the fly. It is highly recommended to Save the project periodically after any major modifications or changes to the data. • Select **File**►**Save**► **Surface** from the **InRoads Menu**. • The **Save As** dialog box will appear as shown in *Figure L3-7*. • Navigate to **C:\InRoads Data\1234567\SDE Labs\Lab 3** • Enter the **File name:** as ***1234567_SDE*** • Enter the **Save as type:** as ***Surfaces (*.dtm)*** • Click **Save** and then click **Cancel.** Select **File**►**Save**► **Surface** from the **InRoads Menu**. *The **1234567_SDE** Surface Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 3***

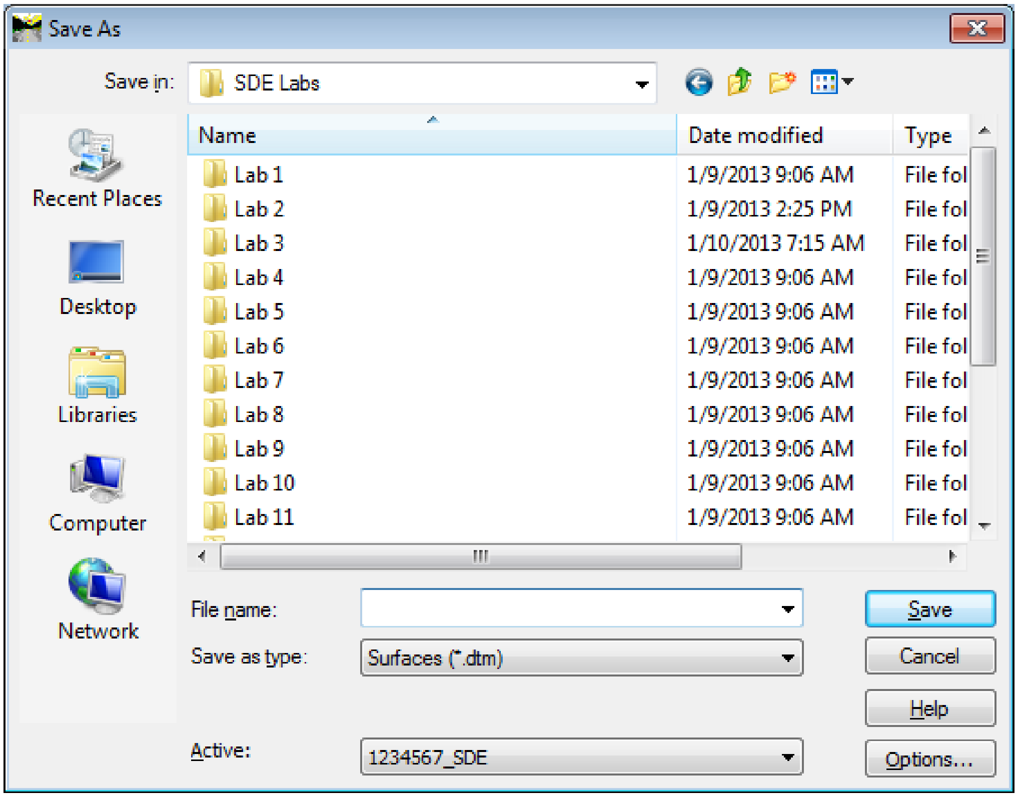
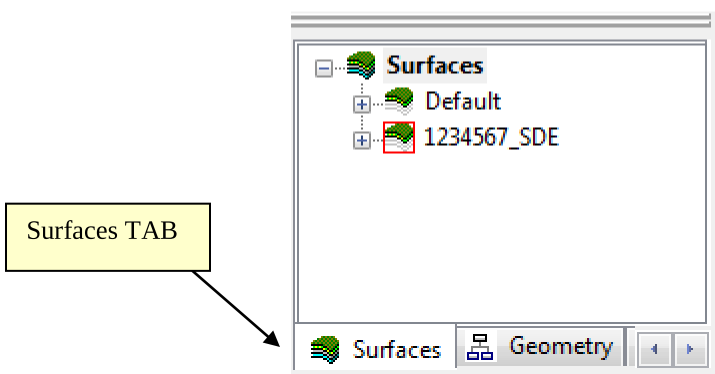


Figure L3-7 Save As 1234567_SDE.dtm

25.	Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface).  Then click on the **1234567_SDE** Surface. Note that the Surface Project has been created but is currently <u>empty and contains no data</u> – this is denoted by the ***0's*** depicted in the ***Data Types*** in the InRoads Explorer. See *Figure L3-8* (as shown below). *Opens the InRoads <u>Surface Tab</u> and displays the 1234567_SDE Surface information in the InRoads Explorer Interface.*

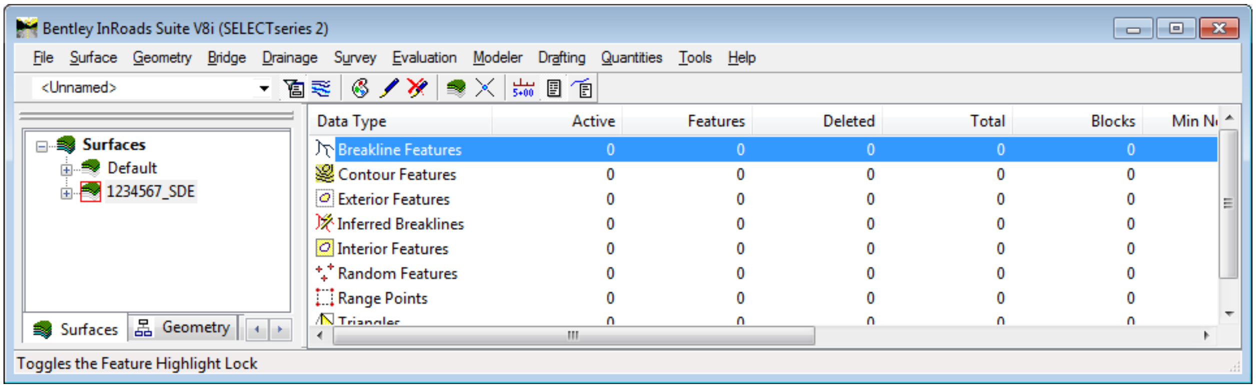
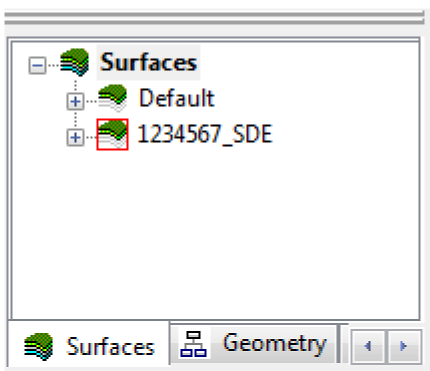


Figure L3-8 Surface Tab – InRoads Explorer (Before File Importation)

26. In the screen capture depicted below –

Note that in the InRoads Explorer Interface Workspace Bar that the **1234567_SDE** Surface Project has a "Red Rectangle" around the icon.



This denotes that this is the "Active" Surface Project. Any Surface commands will be initiated and performed on the current "Active" Surface Project.

Also note that there will <u>always</u> be a Default Project listed. InRoads includes this Default Project for internal InRoads functionality --- **<u>Remember to never save data to this Default Project.</u>**

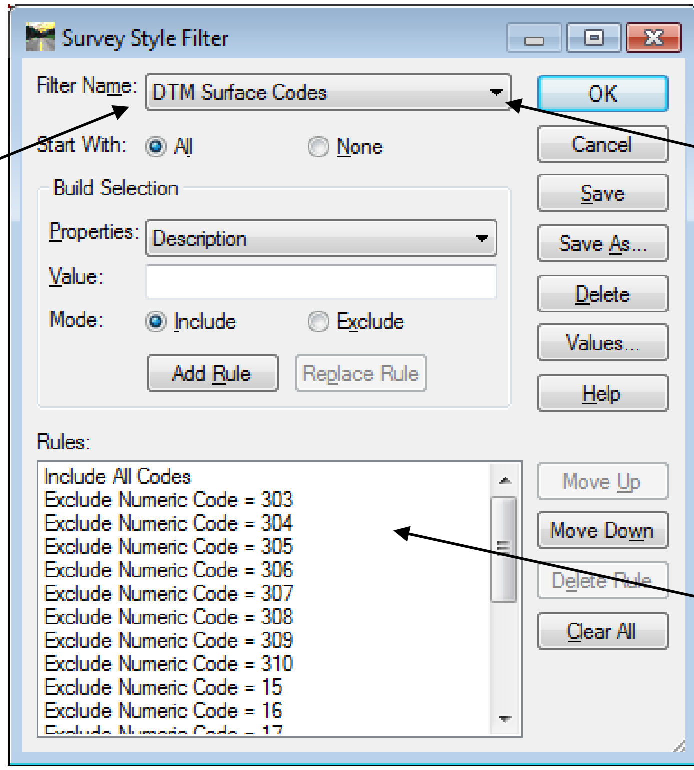
Displays a red rectangle around the 1234567_SDE Surface icon to reflect that this is the Active Surface Project upon which commands will be performed.

Lab3D Import Survey Data into the Surface Project (.DTM)

The following Lab depicts the process of importing in the Survey Data (Random Terrain Data, Breakline Data, etc.) into the 1234567_SDE Surface Project. A Survey Filter has been created which will automate the selection of the appropriate Survey Data which is to be imported into the Surface Project. The following codes/styles (which are composed of data which includes all survey data --- except --- Property and Alignment information) are included in the Survey Style Filter which is named ***DTM Surface Codes***:

27.	**Important Step!** Click **Tools▶Locks** from the InRoads pull-down menu. Ensure that the **Feature Filter Lock** is turned **ON**. There should be a **check mark** next to the Feature Filter Lock. *Ensures that the Feature Filter Lock is turned ON.*
28.	**Select the DTM Surface Codes** **** WARNING ** – During this step take care not to roll the scroll button on your mouse.** Click **Survey ▶Survey Style Filter** and the **Survey Style Filter** dialog box will appear: In the **Survey Style Filter** dialog box --- input the following: • In the **Filter Name:** Pulldown – select ***DTM Surface Codes*** Leave all other entries as default!! The inputs should now correspond to the screen capture depicted in *Figure L3-9* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the Survey Style Filter dialog box.*

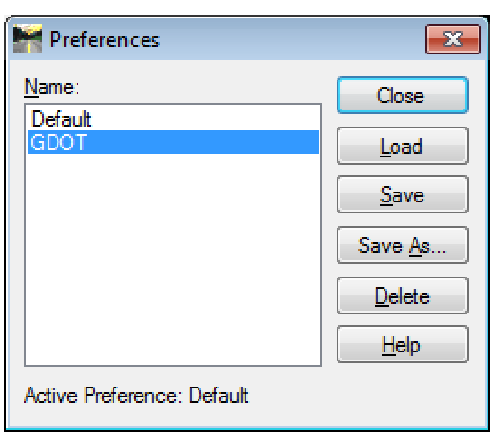
WARNING - Take care not to accidentally move your scroll wheel on your mouse while the Filter Name field is active.



Use the pull-down arrow to select the Filter named **'DTM Surface Codes'.**

When the filter name is selected the data will be filtered as depicted here.

Figure L3-9 Survey Style Filter

29.	Click **OK** and the **<u>Survey Style Filter</u>** dialog box will Close and the Filter will be made active. *Closes the <u>Survey Style Filter</u> dialog box.*
30.	From the **InRoads Menu** - click **Survey ▶Survey Data to Surface** and the **<u>Survey Data to Surface</u>** dialog box will appear: • In the **Surface Name:** Pulldown field– select ***1234567_SDE*** • In this dialog box – click on the **Preferences…** button and the following dialog box will appear: 

- In the dialog box – select the Preference of **GDOT**. Then click **Load** and then click **Close** and the **Preferences** dialog box will close.

The following entries will automatically be set after selecting the Preference named **GDOT**:

- In the **Parent Name:** Field – (Blank)
- In the **Description:** Pulldown –***Use Attributes***
- In the **Tolerance:** Field – ***0.0000***
- In the **Maximum Segment Length**: Field – ***300.0000***
- In the **Curve Stroking:** Pulldown – ***Horizontal and Vertical***
- In the **Triangulate Surface**: Check Box – ***Checked***
- In the **Duplicate Names:** Radio Button – ***Rename***

The inputs should now correspond to the screen capture depicted in *Figure L3-10* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the Survey Data to Surface dialog box.

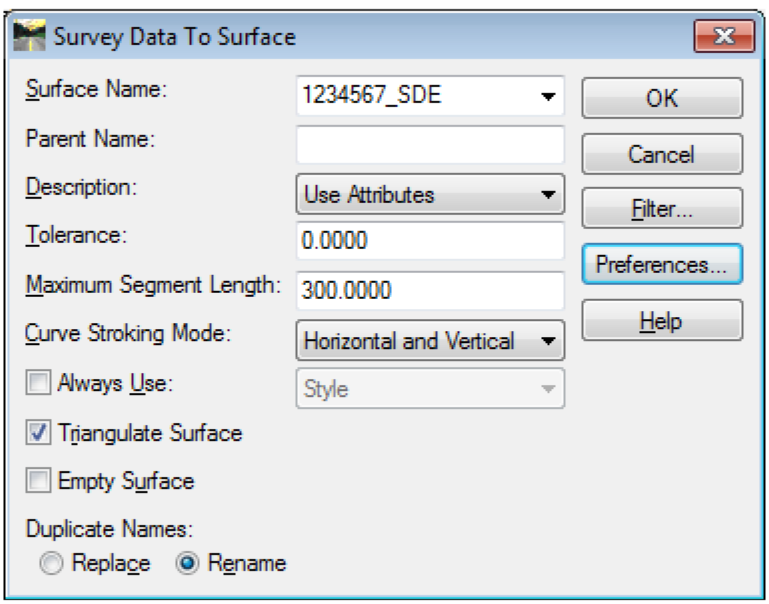


Figure L3-10 Survey Data to Surface

31.	Click **OK** and the Survey Data will be imported into the ***1234567_SDE*** Surface Project and the **Survey Data to Surface** dialog box will close. The **Triangulate Surface** dialog box will then appear in order to create a "Preliminary" Triangulated Surface. *The Survey Data is imported and the Survey Data to Surface dialog box closes.*
32.	In the **Triangulate Surface** dialog box: • In the **Surface:** Pulldown – select ***1234567_SDE*** • In the **Maximum Length:** field enter – enter ***300.000*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L3-11* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the Triangulate Surface dialog box.*

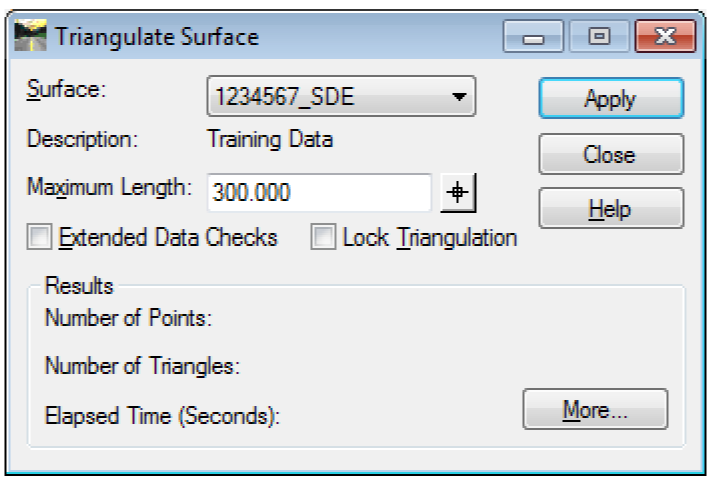
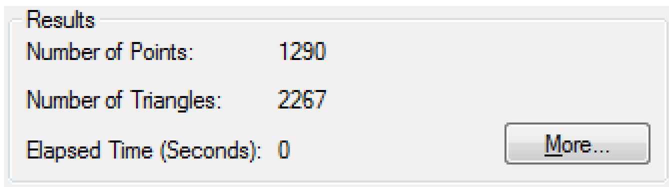


Figure L3-11 Triangulate Surface

33. Click **Apply.**

For Information Only:

Depending on the size of the project – (on most Field Survey Projects which are smaller in size) – the triangulation of surfaces is usually ***very fast***. On these types of projects a **Results** Box will appear which lists the number of Points/Triangles/Elapsed Time. (See screen capture below). When these **Results** appear – the surface has completed triangulating.



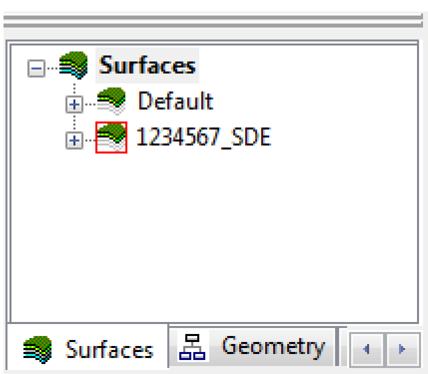
On larger projects (such as Mapping Projects) – the triangulation may take awhile. On these types of projects --the InRoads Status Bar (Located at the bottom – left hand side of the InRoads Interface) usually will depict the completion percentage of the triangulation on larger projects. (See screen capture below):

The "Preliminary" DTM Surface is triangulated.

34. After the triangulation is completed – click **Close** to close out of the **Triangulate Surface** dialog box.

Closes the Triangulate Surface dialog box.

35. The Survey Data is now imported into the **1234567_SDE** Surface Project. Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface) and then click on the **1234567_SDE** Surface.



Review the InRoads Explorer ***Data Type*** frame and note that the Surface Project now contains ***Data Types*** that have Features that are active and have been populated with points and breaklines. Your InRoads Explorer Interface should look similar to the screen capture shown below. (See *Figure L3-12*).

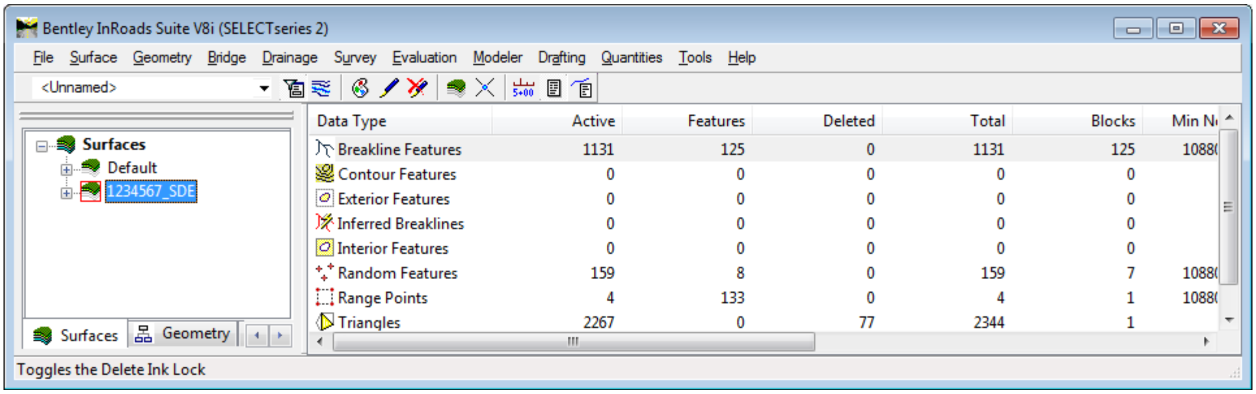


Figure L3-12 Surface Tab – InRoads Explorer (After File Importation)

36. **Save the InRoads Surface Project:**

Even though the Survey data has been imported into the InRoads Surface Project (1234567_SDE.dtm) – the data has not yet been saved. As mentioned previously, InRoads retains the data in temporary memory but does not save the data on the fly. Whenever a change has been made to an InRoads Surface Project – it is advisable to Save the project and its associated modifications or changes.

Select **File ▶ Save ▶ Surface** from the **InRoads Menu**.

Please Note: (The “Save As” dialog box may not appear because the Surface Project has already been saved initially).

The Surface Project (***1234567_SDE.dtm***) will be saved to **Lab 3** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 3**

Note that the **InRoads Status Bar** (Located at the bottom of the InRoads Interface) will depict a message when the Surface Project has been saved.

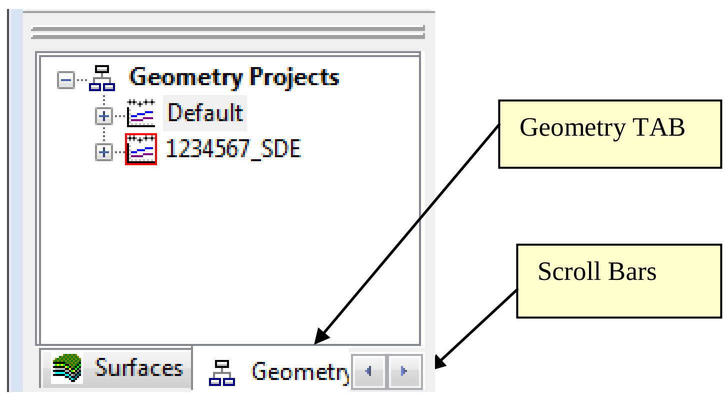
*The **1234567_SDE** Surface Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 3***

Lab3E View the Graphical Geometry and Surface Information

The following Lab depicts the process of viewing the Geometry Database information and the Surface database information in InRoads and MicroStation. During the viewing of the data – numerous commands are utilized in the [MicroStation Software]. The user will need to become familiar with MicroStation commands in order to successfully perform the steps required to view the Geometry and Surface data. A good resource for this information is the "MicroStation Help Files" which are located in the [MicroStation Menu] under **Help▶Contents**. Please refer to this resource for additional information.

37. **Steps to view the Geometry Data:**

Click on the **Geometry Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Geometry Tab**.



Then click on the **1234567_SDE** Geometry Project. Note that the **1234567_SDE** Geometry Project has a "Red Rectangle" around the icon. This denotes that this is the "Active" Geometry Project. Any Cogo and viewing commands will be initiated and performed on the current "Active" Geometry.

Opens the InRoads Geometry Tab and displays the 1234567_SDE Geometry information in the InRoads Explorer Interface.

38. **View the Horizontal Annotation (Geometry Cogo Points)**

In the **InRoads Software**:

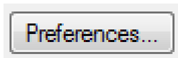
Select **Geometry▶View Geometry▶Horizontal Annotation** from the **InRoads Menu**.

The **View Horizontal Annotation** dialog box will open. Select the **"Main"** Tab.

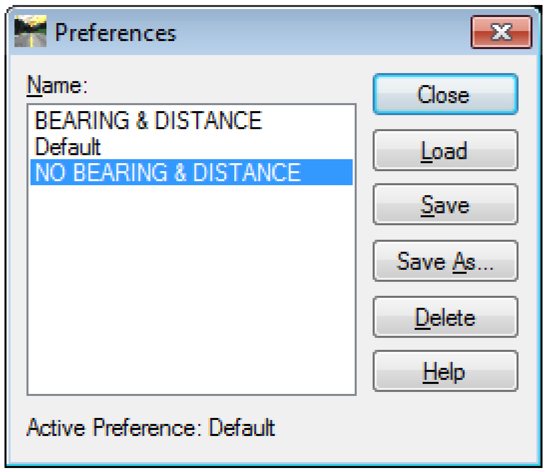
The View Horizontal Annotation dialog box opens.

39. In the **View Horizontal Annotation “Main”** Tab:

- Click the **Preferences** button located at the bottom of the dialog box.



- In the **Preferences** dialog box that opens, highlight **NO BEARING & DISTANCE** by left clicking on it once.



- Click **Load** & **Close**.
- You are then returned to the **View Horizontal Annotation** Dialog.

The inputs should now correspond to the screen capture depicted in *Figure L3-13* (as shown below). Verify to ensure that your input matches the screen capture.

Sets the Viewing Options for the View Horizontal Annotations dialog box.

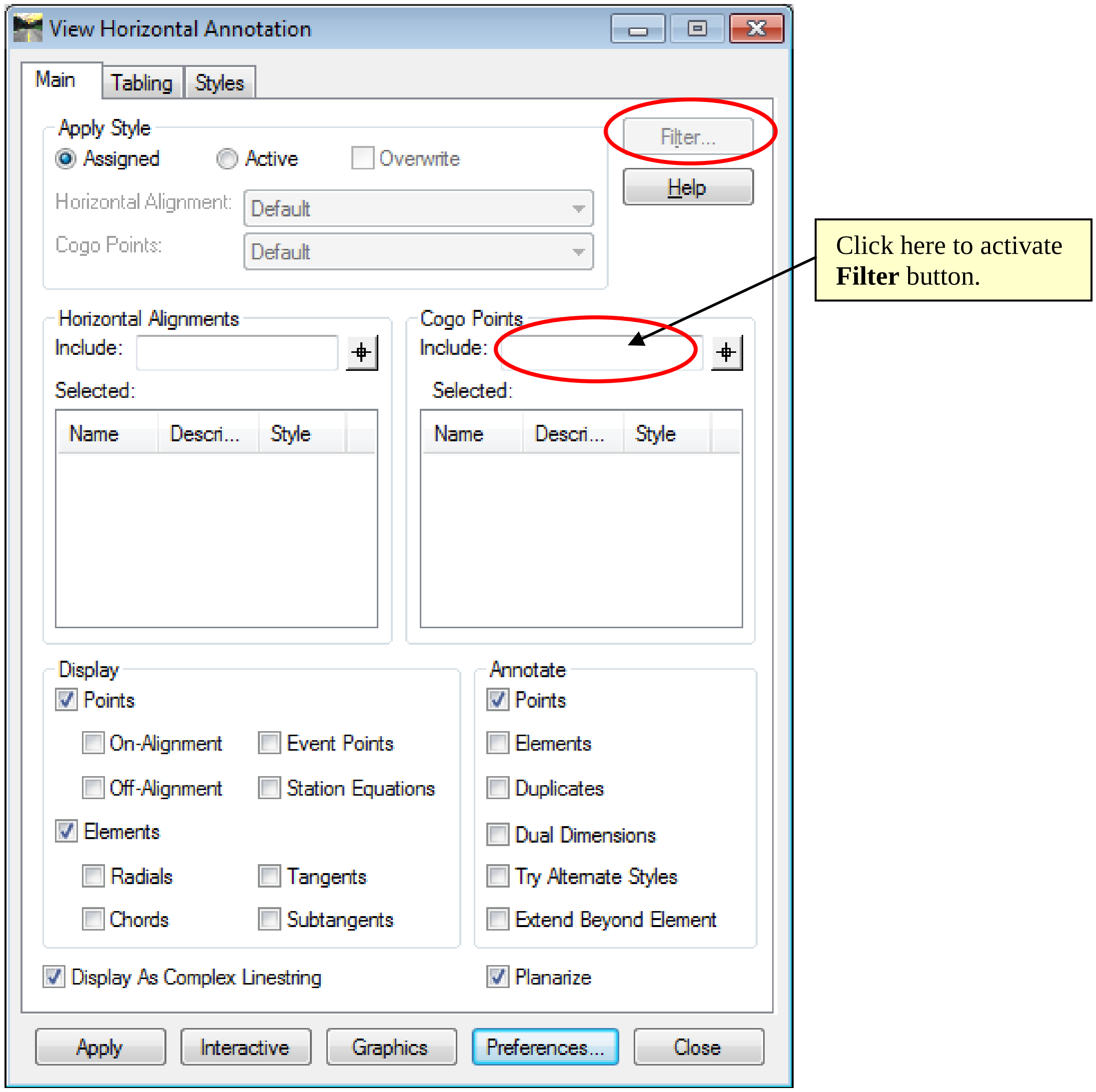


Figure L3-13 View Horizontal Annotation

40.	**Note:** This Geometry Project contains only Cogo Points (which were collected in the Field Survey) and does not contain any Horizontal Alignments. So only Cogo Points will be viewed in this Lab. • The **Filter** button on the dialog box will be grayed out. Place the curser in the **Cogo Points** **'Include'** field to activate the **Filter** button. (See Screen Capture depicted above). • Click the **Filter** button to open the **Geometry Selection Filter** dialog box. See *Figure L3-14* (as shown below). *Activates the Filter button and opens the Geometry Selection Filter* dialog box.

Left Click once in the **'Available:'** field to accept the Feature Styles.

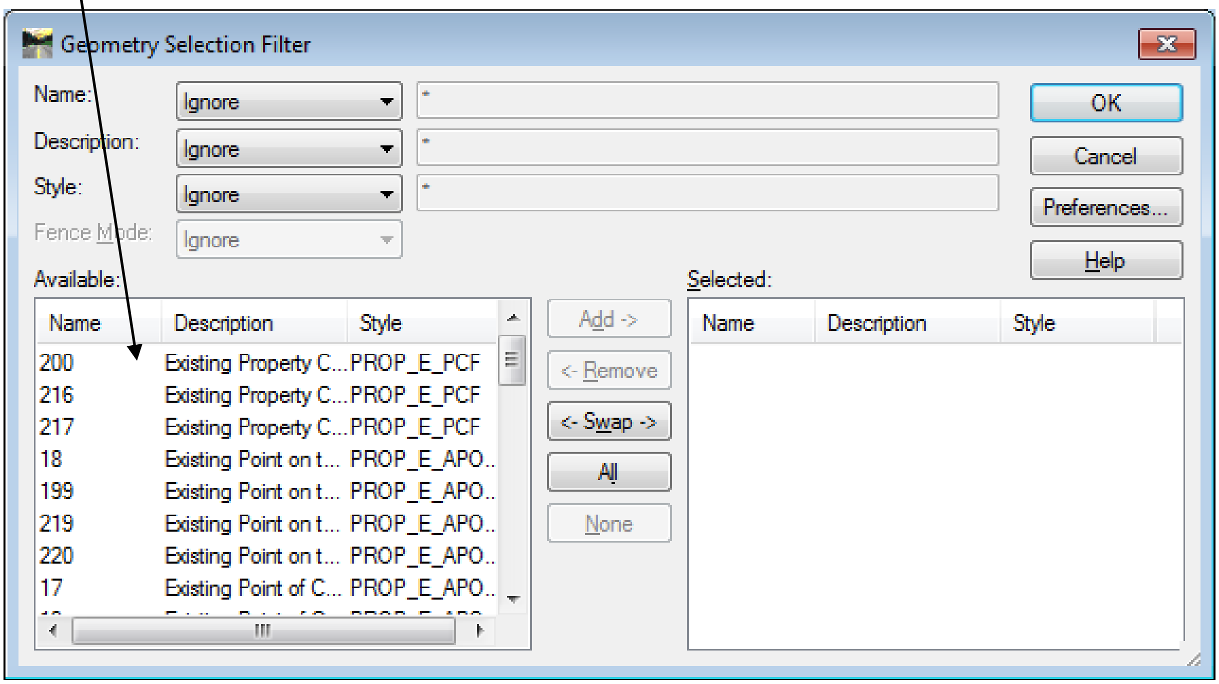


Figure L3-14 Geometry Selection Filter

41.	The **<u>Geometry Selection Filter</u>** will be utilized to view all of the Geometry Cogo points in the ***1234567_SDE.alg*** Project. ■ For this Lab – we will leave all entries of **Name**, **Description** and **Style** -- as default of ***Ignore*** Once the default entries are selected – use the mouse to left click in the **Available:** field. See *Figure L3-14* (as shown above). *Selects the Feature Styles in the <u>Geometry Selection Filter</u>.*
42.	Once the data has been selected – it will be moved from the **Available:** field to the **Selected:** field. Click the **ALL** button. The data will be selected and moved -- then displayed in the **Selected:** field. The inputs should now correspond to the screen capture depicted in *Figure L3-15* (as shown below). Verify to ensure that your input matches the screen capture. *The filtered data is moved from the Available field to the Selected field.*

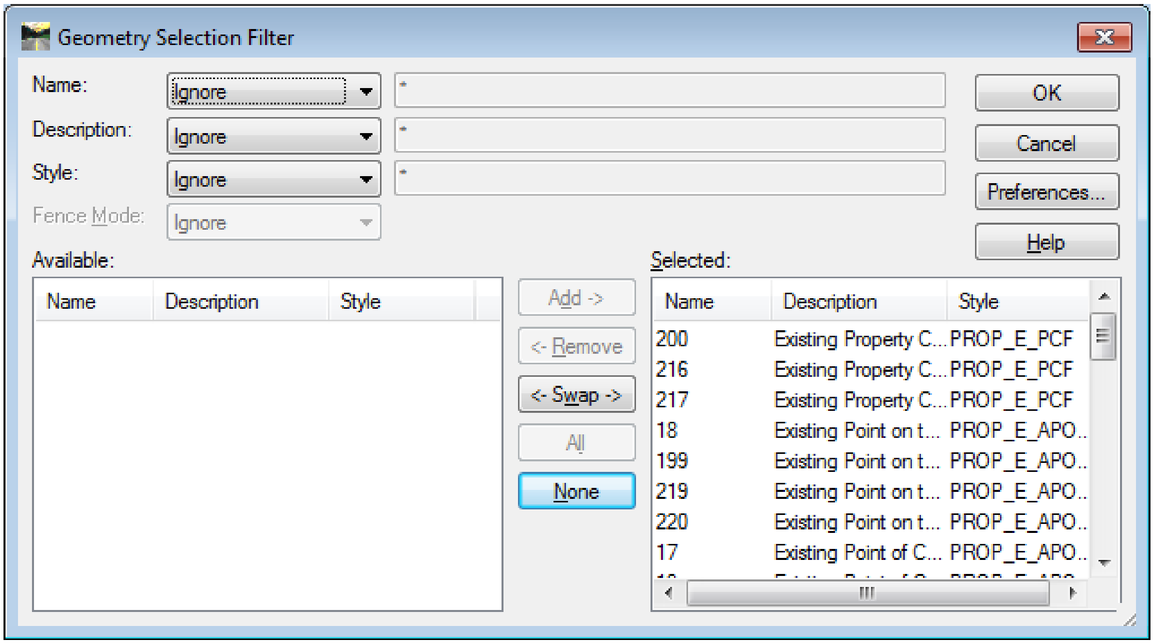


Figure L3-15 Geometry Selection Filter

43.	Click **OK** to close out of the **<u>Geometry Selection Filter</u>** dialog box**.** *Closes the <u>Geometry Selection Filter</u> dialog box.*
44.	**View Filtered Points** The Cogo points have been filtered and are available for viewing. The **<u>View Horizontal Annotation</u>** dialog box should still be active from the previous steps. This dialog box depicts the filtered points in the **Cogo Points** Area as **Selected:** points. The inputs should now correspond to the screen capture depicted in *Figure L3-16* (as shown below). Verify to ensure that your input matches the screen capture. *The filtered point data is available for viewing.*

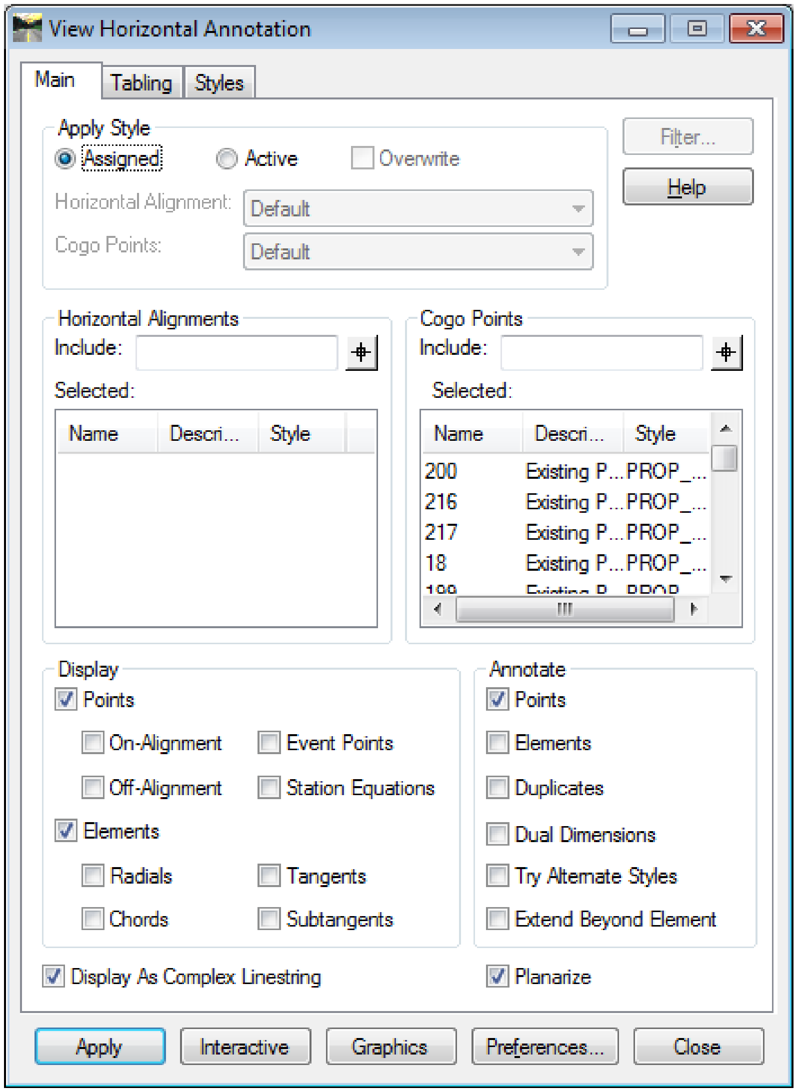


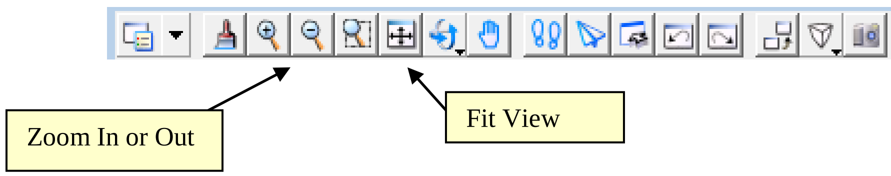
Figure L3-16 View Horizontal Annotation

45.	Click **Apply** and then click **Close** to close out of the **View Horizontal Annotation** dialog box. *The View Horizontal Annotation dialog box closes and the filtered Cogo Points are viewed in MicroStation.*

46. **View** the selected Points in the [MicroStation Software] by using the following command located under the MicroStation View 1 Window:

In the [MicroStation Software] –

- Select the “Zoom In or Zoom Out” or “Fit View” Icons as appropriate to view the Points.



- Verify that the MicroStation view window matches that shown in *Figure L3-17* below.
- Then clear the MicroStation view by selecting **Edit ► Select All.**
- Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***.

The points are displayed and the view is then cleared.

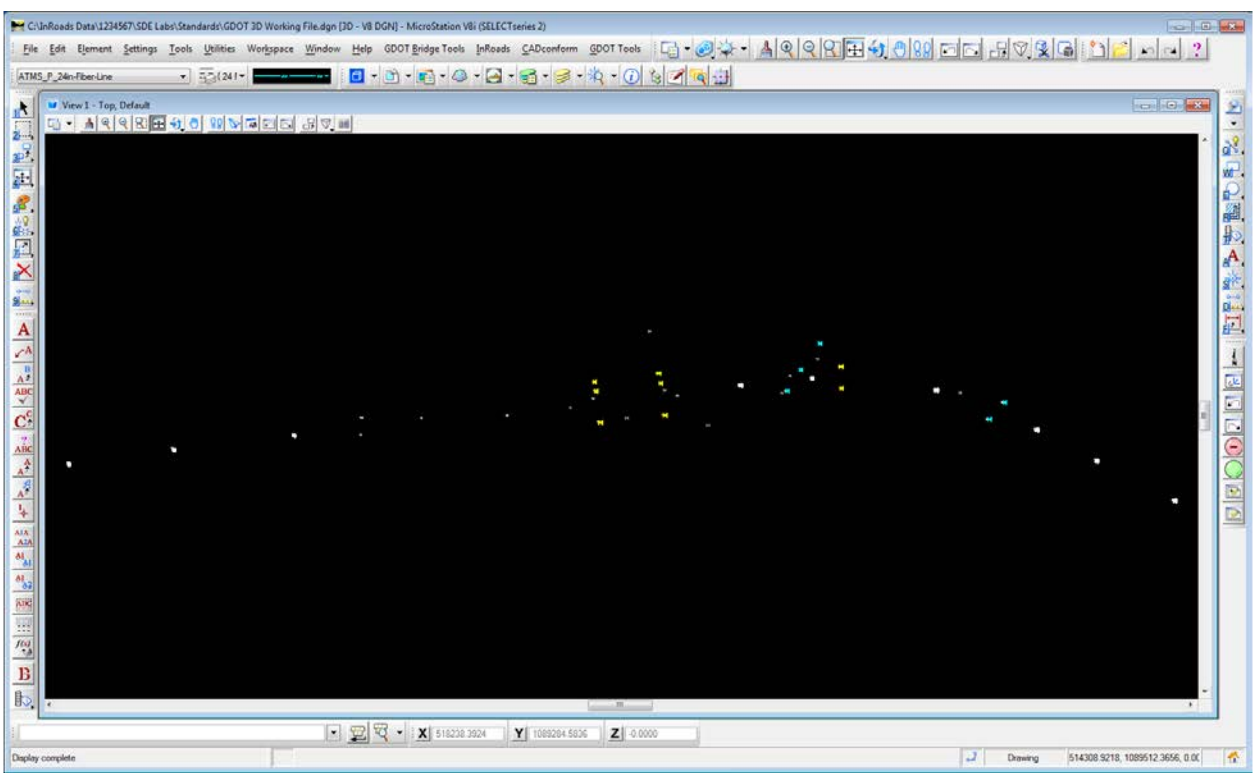
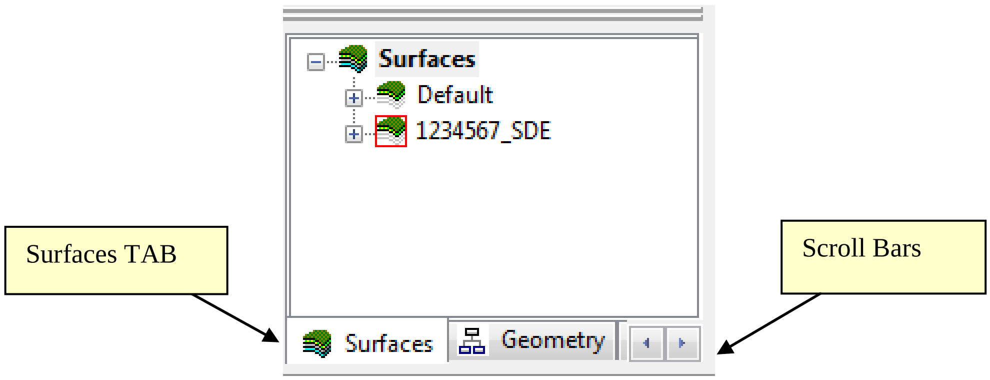


Figure L3-17 MicroStation View of Geometry Cogo Points

47. **<u>Steps to view the Surface Data:</u>**

Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Surfaces Tab**.



Then click on the **1234567_SDE** Surface Project. Note that the **1234567_SDE** Surface Project has a "Red Rectangle" around the icon. This denotes that this is the "Active" Surface Project. Any surface and viewing commands will be initiated and performed on the current "Active" Surface.

Opens the InRoads <u>Surfaces Tab</u> and displays the 1234567_SDE Surface information in the InRoads Explorer Interface.

48. **<u>Important Step!</u>**

In order to view ALL of the Surface Feature Data, the **Feature Filter Lock** will need to be turned ***<u>OFF</u>***.

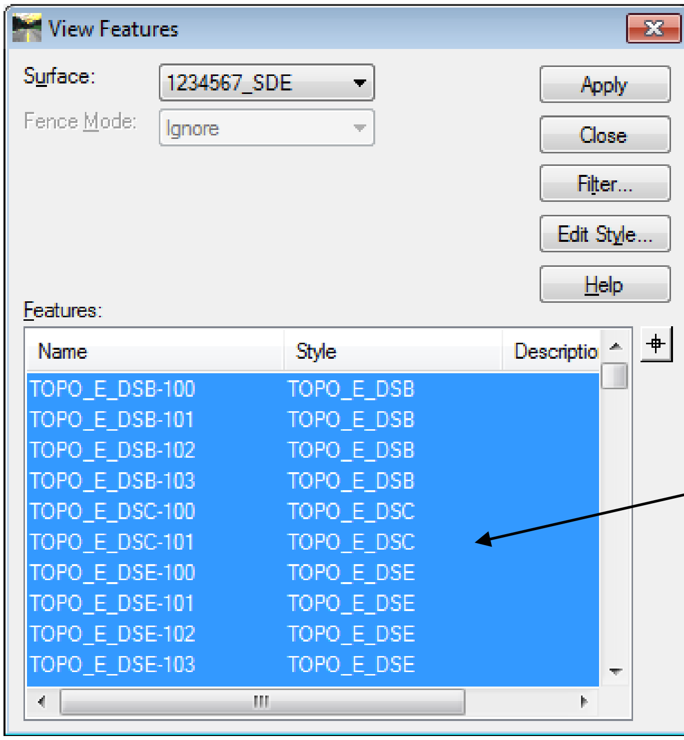
Click **Tools**▶**Locks** from the InRoads pull-down menu. Ensure that the **Feature Filter Lock** is turned ***<u>OFF</u>***. There should <u>NOT</u> be a check mark next to the **Feature Filter Lock**.

This is an important step! This Lock must be turned ***<u>OFF</u>*** in order to view all of the Surface Features.

<u>Note:</u>
If you had only wanted to view selected Features – you would have left the Feature Filter turned On - but in order to view ALL Features – the Filter should be turned off.

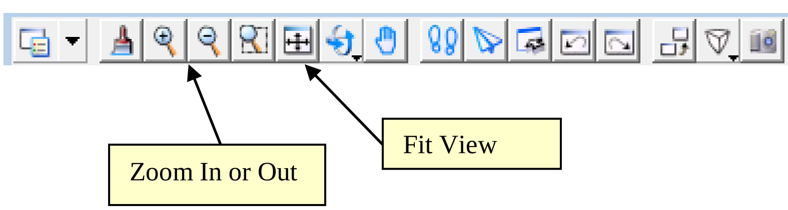
Ensures that the <u>Feature Filter Lock</u> is turned OFF.

49.	Click **Tools ►Locks** from the InRoads pull-down menu. Ensure that the **Feature Highlight lock** is turned OFF. There should not be a check mark next to the **Feature Highlight Lock**. When this lock is turned off … The viewing of features is much faster. *Ensures that the Feature Highlight Lock is turned off.*
50.	Click **Tools►Locks** from the InRoads pull-down menu. Ensure that the **Style Lock** is turned off. There should not be a check mark next to the **Style Lock**. *Ensures that the Style Lock is turned off.*
51.	**For Information Only:** Do not perform the following information contained in Step 51. This information will be performed in later Labs. The **View Features** command contains a **Feature Filter** which can be utilized to view specific Features instead of All Features. (To use this command the Feature Filter Lock must be turned on). For example a Filter can be created to view just random points or breaklines, etc. The use of the **Feature Filter** will be described in later Labs. For this Lab – you will view ALL of the Features. *Information regarding the use of Feature Filters.*
52.	**View the Surface Features** In the **InRoads Software** - select **Surface►View Surface►Features** and the **View Features** dialog box will appear: • In the **Surface:** Pulldown – select ***1234567_SDE*** When the dialog is first opened – all of the Features in the **Features:** list will be highlighted in blue (Leave all of the features “highlighted blue). This will ensure that all Features are graphically viewed. The Features which you wish to view MUST be highlighted Blue. Features can be highlighted by selecting them with the mouse and a combination of the **Ctrl key** or **Shift key** on the keyboard. **Leave all other entries as default.** The inputs in the **View Features** dialog box should now correspond to the screen capture depicted in *Figure L3-18* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the View Features dialog box.*



IMPORTANT:
Ensure that the Features you wish to view are highlighted in blue. Features can be highlighted by selecting them with the mouse and a combination of the **Ctrl key** or **Shift key** on the keyboard.

Figure L3-18 View Features

53.	Click **Apply** and then click **Close** and the **View Features** dialog box will close. *Closes the View Features dialog box.*
54.	**View** the selected Surface Features in the [MicroStation Software] by using the following command located under the MicroStation View 1 Window: In the [MicroStation Software] – Select the “Zoom In or Zoom Out” or “Fit View” Icons as appropriate to view the Features.  Verify that the MicroStation view window matches that shown in *Figure L3-19*. *The Surface Features are displayed and the view is fit to the MicroStation screen.*

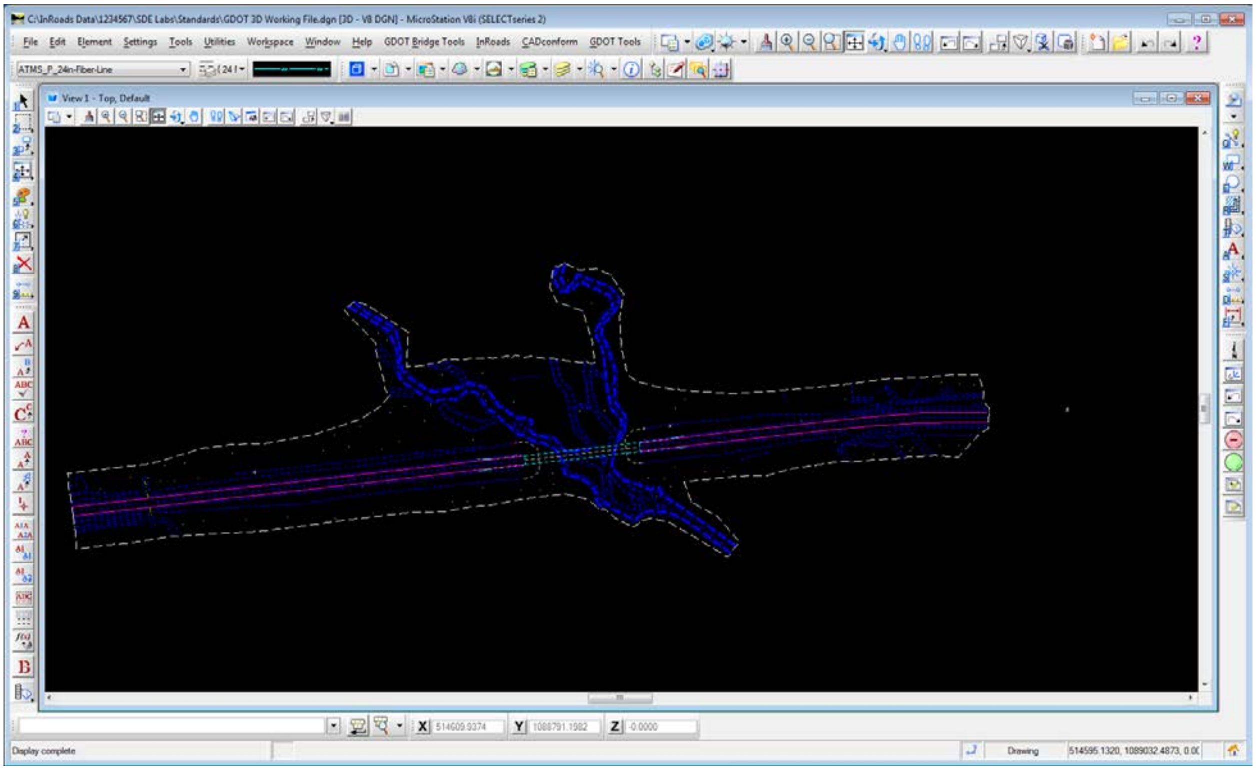


Figure L3-19 MicroStation View of Surface Features

55.	**For Information Only:** The Geometry Data and Surface Data have been imported from the ***1234567_A.fwd*** Survey Field Book into the respective Geometry/Surface databases and a "Preliminary" DTM has been triangulated. The data contained in the MicroStation View is "graphical" only. The actual data is contained in the InRoads database(s). Any data deleted in MicroStation can be re-viewed using InRoads and MicroStation commands. *Information regarding the deleting of graphical MicroStation data.*
56.	<u>**Very IMPORTANT Step !!**</u> In the [MicroStation Software] – Select **Edit ►Select All** Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***.
57.	 This concludes Lab 3. Do not proceed until the Instructor directs you to do so.

Lab 4
Resolving Crossing Segments

Objective

In the previous Lab(s) a Geometry Project and a Surface Project were created from the data contained in the Survey Field Book. The next step for the processing of the Geometry Project includes the establishment of Existing Centerline data, Existing Right of Way data and Property data. The process for inputting in the Geometry Project data will be discussed in Section 3 – beginning with Lab 10.

The following Lab(s) will detail the procedures for processing the Field Survey Data for a Surface Project (.DTM).

During the processing of the survey data, situations can occur where breaklines may overlap or breaklines may cross at mismatched elevations. If these segment crossings are not resolved, erroneous point and breakline data may affect the triangulation and accuracy of the DTM (Digital Terrain Model). These crossings need to be addressed and resolved prior to the final creation of the DTM Surface to ensure that an accurate Surface Model is generated.

A Surface must first be triangulated in order to resolve crossing segments. This is a preliminary triangulation only – the final creation and processing of the Existing DTM Surface will be discussed in later Labs. InRoads contains a **View Crossing Segments** command which not only views the crossing and/or overlaps but also generates a Crossing Segments report. InRoads also contains a **Resolve Crossing Segments** command which is an automated tool which can assist in the repairing of crossing and overlapping segments that have small differences in elevation.

There are several tools and methods in InRoads to resolve crossing segments and mismatched elevations. The following Lab depicts one method of resolving this issue.

The objective of Lab 4 is to:

- Create a “Preliminary” triangulated Surface to check for crossing segments.
- Utilize the **View Crossing Segments** command to determine the location of crossing segments.
- Utilize the **Resolve Crossing Segments** command to assist in the resolution of crossing segments.

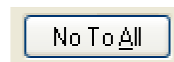
Lab4A Create a “Preliminary” Triangulated Surface

In this section of the lab you will be creating a “Preliminary” triangulated surface which will be utilized in resolving crossing breaklines. A triangulated surface must first exist in order to use the Crossing Segments commands.

1. **Starting Clean**

In order to ensure that you are working with a “clean” database – you will close MicroStation and InRoads if they are still running from a previous Lab:

To CLOSE MicroStation and InRoads -

Select **File▶Exit** from the [MicroStation Menu].
If any messages appear regarding the saving of projects – Select 

This closes BOTH the MicroStation and InRoads Software(s).

2. From the desktop, double-click on the **MicroStation** icon labeled **GDOT MicroStation V8i SS2 (x86)**.

Double click on the icon labeled **GDOT MicroStation V8i SS2 (x86)**.

- When the **MicroStation Manager** dialog box opens – navigate to the **C:\InRoads Data\1234567\SDE Labs\Standards** folder and select the “**GDOT 3D Working File.dgn**”. Click **Open**.
- Now open InRoads from within MicroStation by selecting: **InRoads ▶ InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu].

The MicroStation and InRoads Software(s) will open.

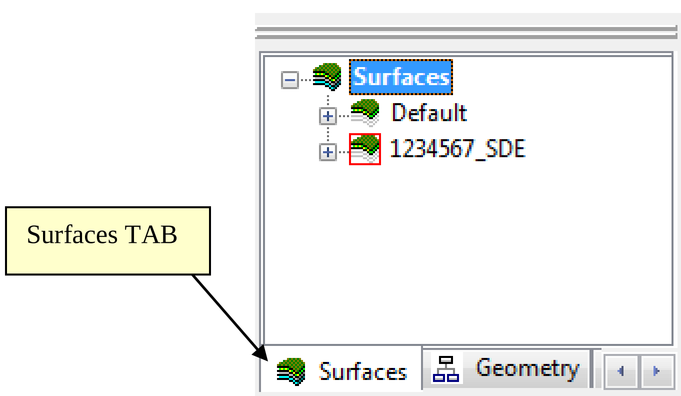
3. **Load the InRoads Survey, Geometry and Surface File(s)**

Select **File▶Open** from the **InRoads Menu**.

The Project Defaults (which were set up in **Lab 1C**) are set to the following Path: **C:\InRoads Data\1234567\SDE Labs**.

Browse to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 4**

Selects the path to open the Survey, Geometry and Surface File(s).

4.	After navigating to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 4** Select the file named: **1234567_A.fwd –** then click **Open**. Select the file named: **1234567_SDE.alg –** then click **Open**. Select the file named: **1234567_SDE.dtm –** then click **Open** Then click **Cancel**. *The 1234567_A.fwd, 1234567_SDE.alg and 1234567_SDE.dtm file(s) will open.*
5.	**This is an important step**. **Turn off the Planimetric Survey Data:** The Planimetric View can be turned on/off in InRoads by the following steps: Select **Survey ▶ View Survey Data ▶ Planimetrics** from the **InRoads Menu**. Remove the check mark by **Planimetrics** to turn the planimetric viewing data OFF. *Steps to turn the Planimetric Survey Data OFF in InRoads/MicroStation.*
6.	Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). Note that the "Red Rectangle" denotes that the **1234567_SDE** project is the active Surface.  *Opens the "Surfaces Tab" in the InRoads Workspace Bar.*

7.	The "Preliminary" Surface will now be triangulated for use in the resolution of crossing segments. Select **Surface▶Triangulate Surface**. The **Triangulate Surface** dialog box will open. • In the **Surface:** Pulldown – select ***1234567_SDE*** • In the **Maximum Length:** field enter – ***300.000*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L4-1* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the Triangulate Surface dialog box.*

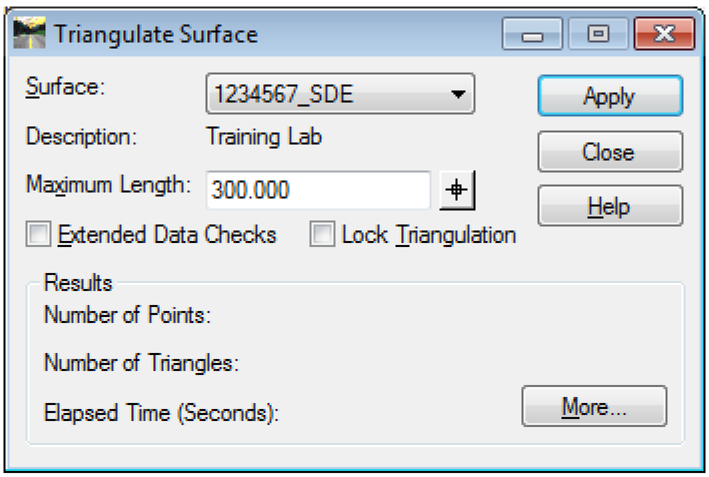


Figure L4-1 Triangulate Surface

8.	Click **Apply.** **Please be Patient!** **It may take a while for the Surface to triangulate depending on the size of the file!** The InRoads Status Bar (Located at the bottom – left hand side of the InRoads Interface) usually will depict the completion percentage of the triangulation on larger projects. (See screen capture below):  *The "Preliminary" DTM Surface is triangulated.*
9.	After the triangulation is completed – click **Close** to close out of the **<u>Triangulate Surface</u>** dialog box. *Closes the <u>Triangulate Surface</u> dialog box.*

Lab4B View Crossing Segments

In the following Labs, the **View Crossing Segments** and the **Resolve Crossing Segments** commands will be used to eliminate certain segment crossings. (NOTE: Not all segment crossings will be resolved in this Lab.)

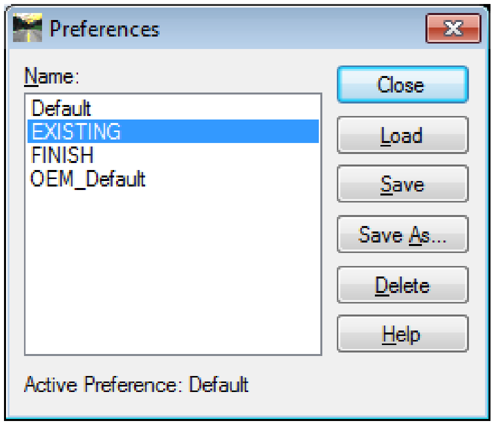
The **View Crossing Segments** command requires a surface to be triangulated before using this utility. This utility can be used -- not only for the viewing of the crossing segments -- but also to generate a Report detailing information of the crossing segments. When using the **View Crossing Segments** command -- crossing segment points are represented by a **Yellow X**. Mismatched elevations are represented by a **Red O**. Basically there are two main types of crossing segments: overlaps and mismatched elevations.

Overlaps: InRoads has a basic rule that the longest segment of two overlaps is dominant. Based on this rule InRoads automatically "ignores" the shorter segment during the triangulation process and triangulates according to the dominant breakline. The resolution of these overlaps is determined during the triangulation process. The Segment Crossings which have been resolved during the triangulation are represented by (a Yellow X). These segment crossings with (a Yellow X) can be ignored.

Mismatched Elevations: Mismatched elevations occur when crossing breaklines have the same XY Coordinate but different elevations (Z). Minimal elevation differences (any elevation difference less than 0.020) can be repaired using the InRoads **Resolve Crossing Segments** command (***Automatic Option***). Any elevation differences that are greater than 0.020 must be manually repaired by using the InRoads **Resolve Crossing Segments** (***Interactive Option***). If a specific elevation needs to be modified to correct the crossing segment – the Surface Edit Feature Points command may be used. The Mismatched Elevations are represented by (a Red O). These must be resolved to ensure an accurate surface.

The **View Crossing Segments** command is used to assist in determining the location of segment crossing points – both visually and in Report format.

10.	Click **Tools▶Locks** from the InRoads pull-down menu. Ensure that the **Style Lock** is turned off. There should not be a check mark next to the Style Lock. *Ensures that the Style Lock is turned off.*
11.	Click **Surface ▶View Surface▶View Crossing Segments** and the **View Crossing Segments** dialog box will appear: • In the **Surface:** Pulldown – select ***1234567_SDE*** • In this dialog box – click on the **Preferences**… button and the following dialog box will appear:



- In the dialog box – select the Preference of **EXISTING**. Then click **Load** and then click **Close** and the **Preferences** dialog box will close.

Leave all other entries as default.

The inputs should now correspond to the screen capture depicted in *Figure L4-2* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the View Crossing Segments dialog box

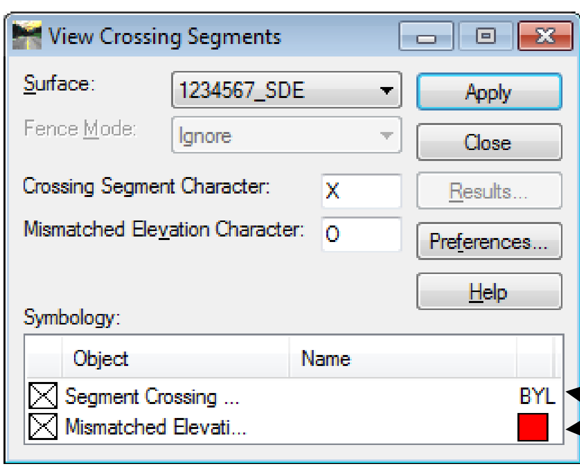


Figure L4-2 View Crossing Segments

***FYI**: Segment Crossing Points and Mismatched elevations are both placed in MicroStation on the named level 'ECON_E_Crossing-Breakline-Cell'. Segment Crossing Points are viewed with a yellow X and are controlled through 'ByLevel'. Since ByLevel can only control one symbol at a time, the Mismatched elevations are not set up as ByLevel. Mismatched elevations will view as a red O and are manually set in the InRoads Text Symbology dialog which can be accessed by double clicking the Mismatched Elevation text under the Object heading. This information is provided to explain why one object says BYLEVEL and the other object has a red square in the View Crossing Segments dialog.

12. Click **Apply.** Then click **Results**.

A Results Report will appear which details the overlaps and/or mismatched elevations. ***(Ignored)*** will be listed by the *segment* for each point coordinate that was ignored for calculations.

Review the Report.

If desired -- the Report can also be printed or saved to disk by selecting the **Print** or **Save As** command on the Report interface.

Following is a partial screen capture of the Results Report. See *Figure L4-3* (as shown below).

The Results Report from the View Crossing Segments command is generated.

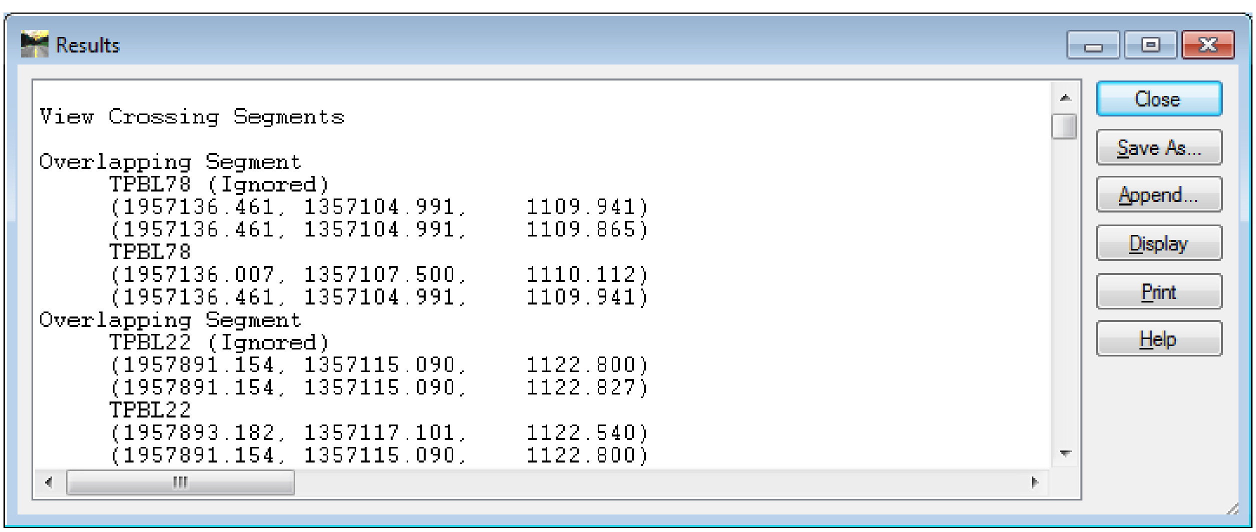
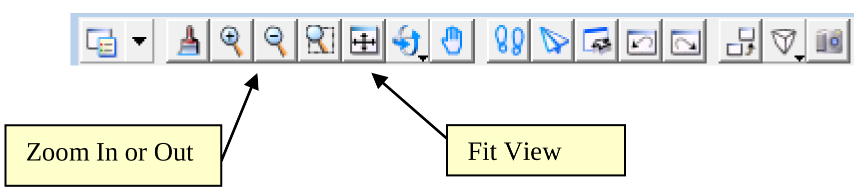


Figure L4-3 Results Report (View Crossing Segments)

13.	In the "Results Report" – click **Close.** The **<u>View Crossing Segments</u>** dialog box should still be active. *The <u>View Crossing Segments</u> Results Report is closed.*
14.	Click **Close** to close out of the **<u>View Crossing Segments</u>** dialog box**.** The next Lab will detail how to resolve the mismatched elevations. *Closes the View Crossing Segments dialog box.*
15.	There are still some mismatched elevations present in the database. These crossings can be viewed in MicroStation and are depicted by the following: Segment Crossings (a Yellow X) ----- Mismatched Elevations (a Red O). **View** some of the crossings in [MicroStation] by using the following commands located under the MicroStation <u>View 1</u> Window: In the [MicroStation Software] – Select the "Fit View" Icon:  Select the "Zoom In or Zoom Out" Icon as appropriate to view the X's and O's.   **<u>Please Note:</u>** DO NOT Delete the MicroStation DGN Graphics at this time – these graphics containing the X's and O's will be used later in **Lab 4C** and **Lab 4D**. *Views the Segment Crossings and Mismatched Elevations in MicroStation*

Lab4C Resolve Crossing Segments – Automatic Mode

In the following Lab, the **Resolve Crossing Segments** command will be used to eliminate mismatched elevations.

<u>(NOTE: Not all mismatched elevations will be resolved in this Lab.)</u>

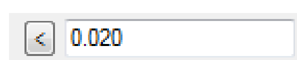
The **Resolve Crossing Segments** command requires a surface to be triangulated before using this utility. The ***Automatic*** Mode Option resolves all crossing segments with mismatched elevations that have a Delta Tolerance of <u>0.020</u> or less. This is considered the standard GDOT default tolerance. Any mismatched elevations with a 0.020 tolerance or less are considered to be of minimum significance. Any mismatched elevations greater than a Delta Tolerance of 0.020 should be <u>manually</u> evaluated and <u>resolved</u> by using the **Resolve Crossing Segments** command or the **Edit Surface** Tools. The **Resolve Crossing Segments** command uses a **Match Elevation** of **Median** (point elevation) to resolve the mismatched elevations with a 0.020 tolerance or less.

After utilizing the **Resolve Crossing Segments** command the <u>first time</u> in a dataset – all mismatched elevations of tolerance 0.020 or less will be resolved and a Results Report will list these items which have been resolved. The Unresolved mismatched elevations are **<u>Not</u>** listed in the Results Report. These mismatched elevations are listed by using the ***Interactive*** Mode Option in the **Resolve Crossing Segments** command.

<u>Please Note:</u>
After using this command and resolving the mismatched elevations – the surface must be re-triangulated in order to view the Surface Data.

The **Resolve Crossing Segments** command is used to assist in resolving mismatched elevations (Points which contain the same XY Coordinate but different Z elevations).

16. Click **Surface ▶Utilities▶Resolve Crossing Segments** and the **<u>Resolve Crossing Segments</u>** dialog box will appear:

- In the **Surface:** Pulldown – select ***1234567_SDE***
- In the **Mode:** field – select ***Automatic***
- In the **Delta Tolerance:** field – select < ***0.020*** 

<u>(Ensure the Less Than Sign is selected)</u>
- In the **Match Elevation:** entry – select ***Median***

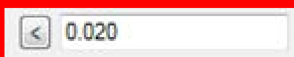
Leave all other entries as default.

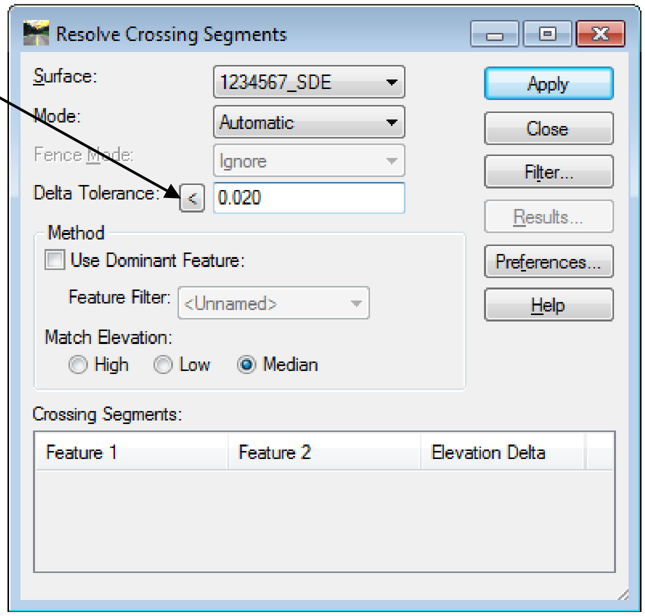
The inputs should now correspond to the screen capture depicted in *Figure L4-4* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the <u>Resolve Crossing Segments</u> dialog box

****WARNING****

Ensure the Delta Tolerance of **< 0.020** is selected.





****Information****

When using the ***Automatic*** Mode the Delta Tolerance should be set to < 0.020. When using the ***Interactive*** Mode the Delta Tolerance should be set to > 0.020.

Figure L4-4 Resolve Crossing Segments - Automatic

17.	Click **Apply**. Then click **Results**. A Report will appear which details the Crossing Segments and Mismatched Elevations. Any Mismatched Elevations LESS THAN 0.020 were automatically resolved. **Review the Report**. As shown in the Report – the Resolved Items were **42** `Resolve Crossing Segments` `Resolved Items: 42` Items greater than the 0.020 **Delta Tolerance** will need to be manually edited to correct the mismatched elevations. If desired -- the Report can also be printed or saved to disk by selecting the **Print** or **Save As** command on the Report interface.  Following is a partial screen capture of the Results Report. See *Figure L4-5* (as shown below).

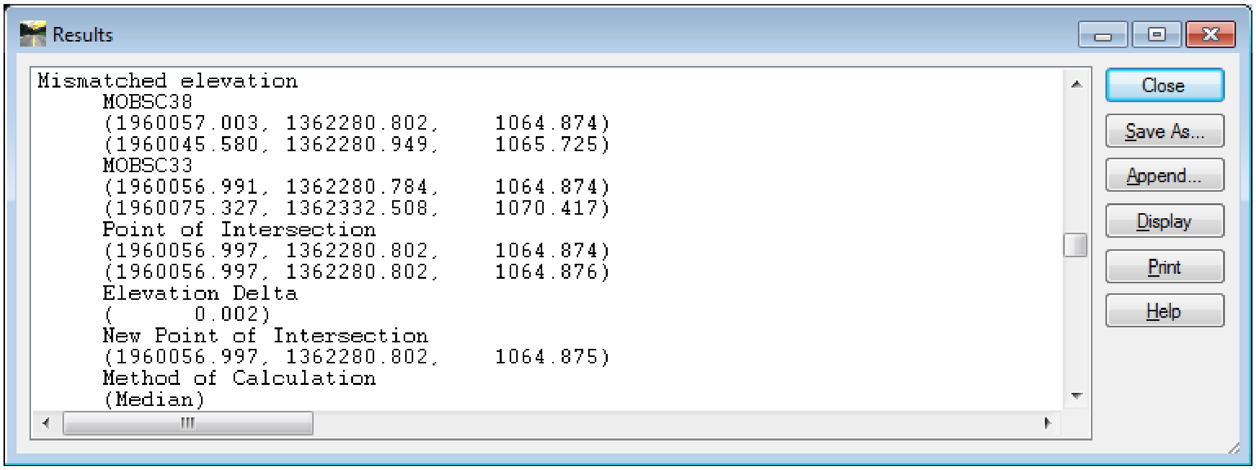


Figure L4-5 Results Report (Resolve Crossing Segments)

18.	In the “Results Report” – click **Close.** The <u>**Resolve Crossing Segments**</u> dialog box should still be active. <u>Do not close</u> the <u>**Resolve Crossing Segments**</u> dialog box. It will be used in the next Lab to demonstrate how to interactively resolve the mismatched elevations. *The <u>Resolve Crossing Segments</u> Results Report is closed.*
19.	<u>**Please Note:**</u> DO NOT Delete the MicroStation DGN Graphics at this time – these graphics containing the X’s and O’s will be used later in **Lab 4D**. *Views the Segment Crossings and Mismatched Elevations in MicroStation*

Lab4D Resolve Crossing Segments – Interactive Mode

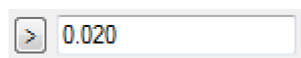
As mentioned in the previous Lab, the **Resolve Crossing Segments** command ***Automatic*** Mode Option resolves all crossing segments with mismatched elevations that have a Delta Tolerance of <u>0.020</u> or less. Any mismatched elevations greater than a Delta Tolerance of 0.020 will be <u>manually</u> evaluated and <u>resolved</u> by using the **Resolve Crossing Segments *Interactive*** Mode Option or the **Edit Surface** Tools commands. The following Lab demonstrates the use of the ***Interactive*** Mode Option.

<u>Please note</u>: There are also several **Edit Surface** commands which may be used to eliminate mismatched elevations.

In the following Lab, the **Resolve Crossing Segments *Interactive*** Mode Option will be used to eliminate certain segment crossings of mismatched elevations. <u>(NOTE: Not all mismatched elevations will be resolved in this Lab).</u>

20. The **<u>Resolve Crossing Segments</u>** dialog box should still be open from the previous **Lab 4C**.

- In the **Surface:** Pulldown – select ***1234567_SDE***
- In the **Mode:** field – select ***Interactive***
- In the **Delta Tolerance:** field – select > ***0.020*** <u>(Ensure the Greater Than Sign is selected)</u>



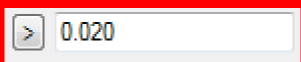
- In the **Match Elevation:** entry – select  ***Median***

Leave all other entries as default.

The inputs should now correspond to the screen capture depicted in *Figure L4-6* (as shown below). Verify to ensure that your input matches the screen capture.

****WARNING****

Ensure the Delta Tolerance of > **0.020** is selected.



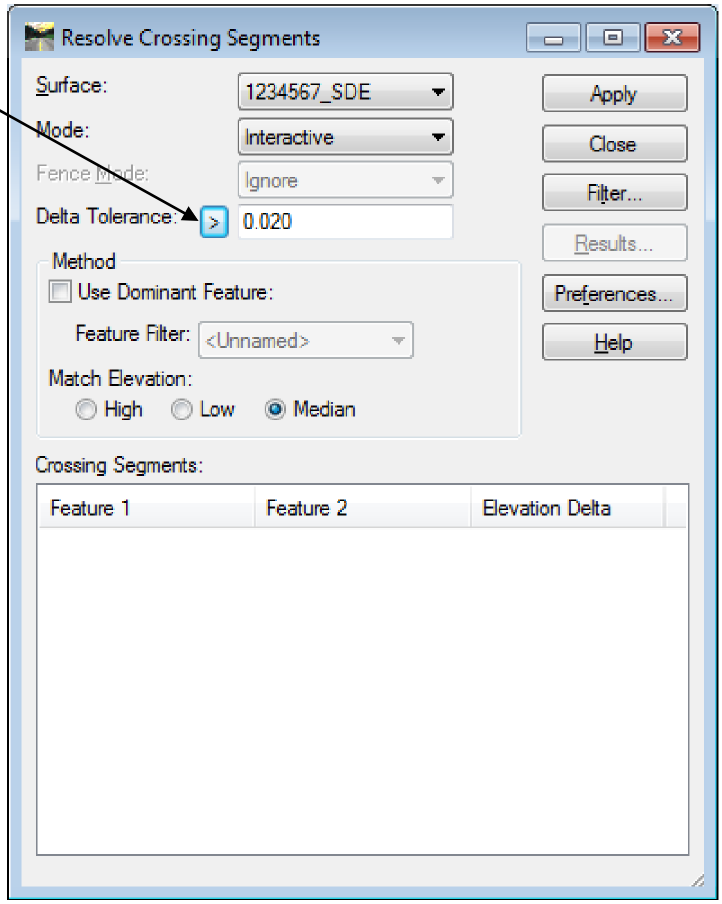


Figure L4-6 Resolve Crossing Segments - Interactive

****Information****

When using the ***Automatic*** Mode the Delta Tolerance should be set to < 0.020. When using the ***Interactive*** Mode the Delta Tolerance should be set to > 0.020.

21.	Click **Apply**. A List of Crossing Segments (highlighted in red) will appear in the list field of the dialog box. There are 19 Crossing Segments that will need to be manually resolved. The **Feature 1**, **Feature 2** and the **Elevation Delta** of the mismatched elevation crossings are also depicted. The **<u>Resolve Crossing Segments</u>** dialog should now correspond to the screen capture depicted in *Figure L4-7* (as shown below). Verify to ensure that your input matches the screen capture.

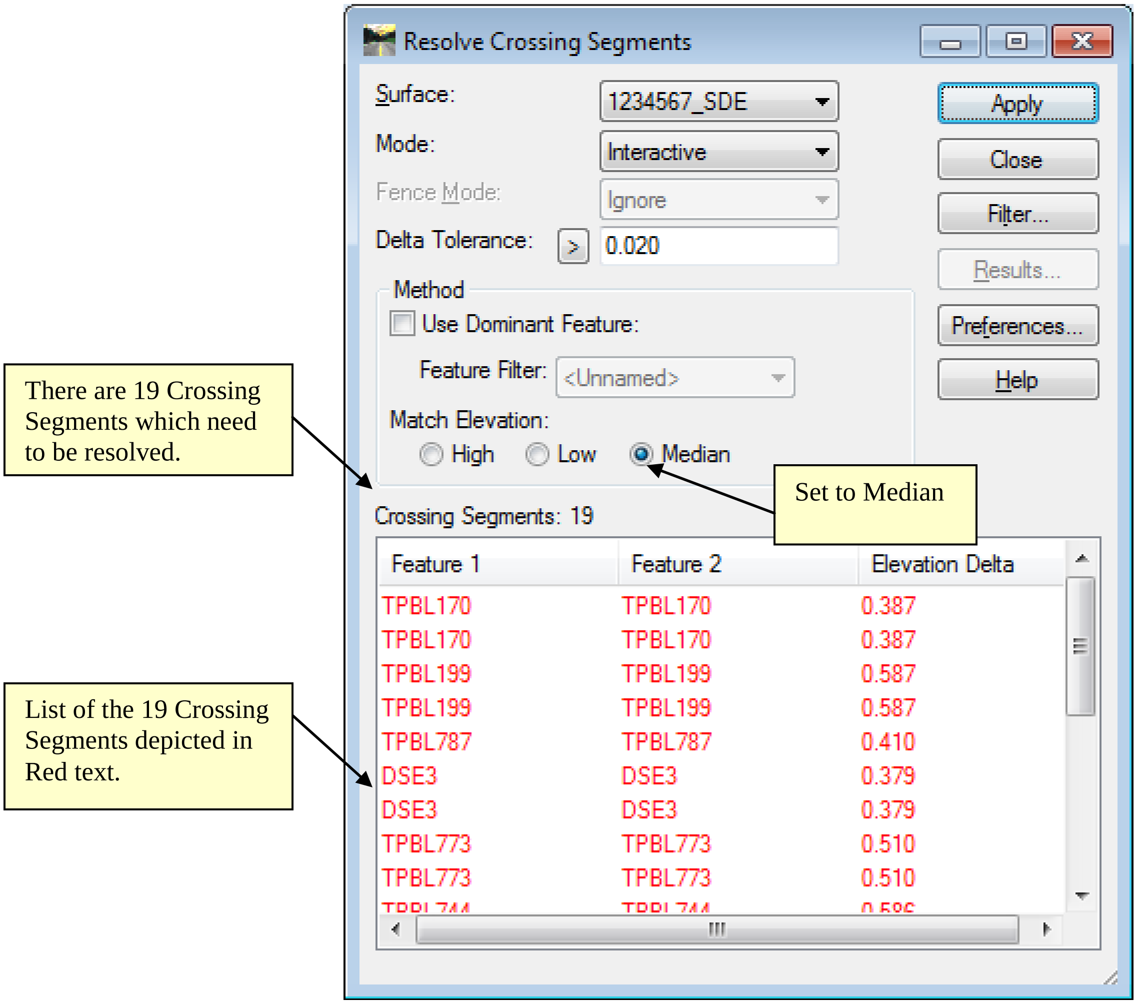
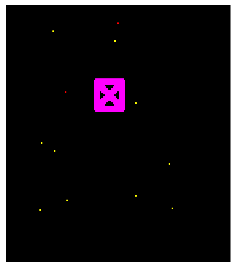


Figure L4-7 Resolve Crossing Segments - Interactive

22.	**For Information Only** In **InRoads Select Series 2**, the method for manually resolving crossing segments/mismatched elevations has changed. The crossing can now be interactively resolving using the **<u>Resolve Crossing Segments</u>** dialog. There are three methods to choose in order to resolve the crossings: **High**, **Low** and **Median**. The method for the option to utilize will be up to the Survey Data Engineer. The method selected depends on the situation and will need to be manually evaluated by the SDE before resolving the crossing. Once the **High**, **Low** or **Median** option is selected, any modifications or resolutions will reflect the current Match Elevation setting that is selected. In the following Steps, we will utilize the Match Elevation **Median** option. 

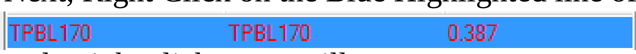
23. The easiest method to resolve the Mismatched Elevations (depicted by a Red O) is to view the **Feature 1** and **Feature 2** Features.

- Left click on the **Feature1/Feature2** of ***TPBL170/TPBL170*** and the line will highlight in Blue.
- Notice that a Purple X denotes the location of the mismatched crossing in the MicroStation view.

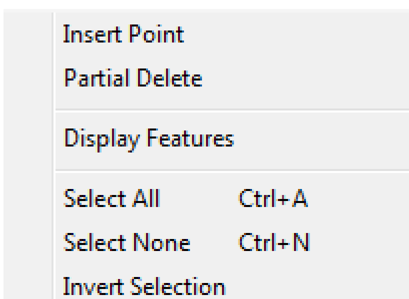


24.

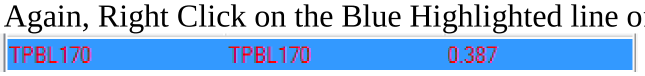
- Next, Right Click on the Blue Highlighted line of



and a right click menu will appear:



- Select the **Display Features** command and the **TPBL170** feature will appear in the MicroStation view. This allows you to see the crossing intersection of the Feature (s).
- Again, Right Click on the Blue Highlighted line of



and the right click menu will appear.

- Select the **Insert Point** command. A MEDIAN point will automatically be inserted. The Elevation Delta will then change to Zero and the Features will no longer have Red text but will change to a Black Text.

The **<u>Resolve Crossing Segments</u>** dialog should now correspond to the screen capture depicted in *Figure L4-8* (as shown below). Verify to ensure that your input matches the screen capture.

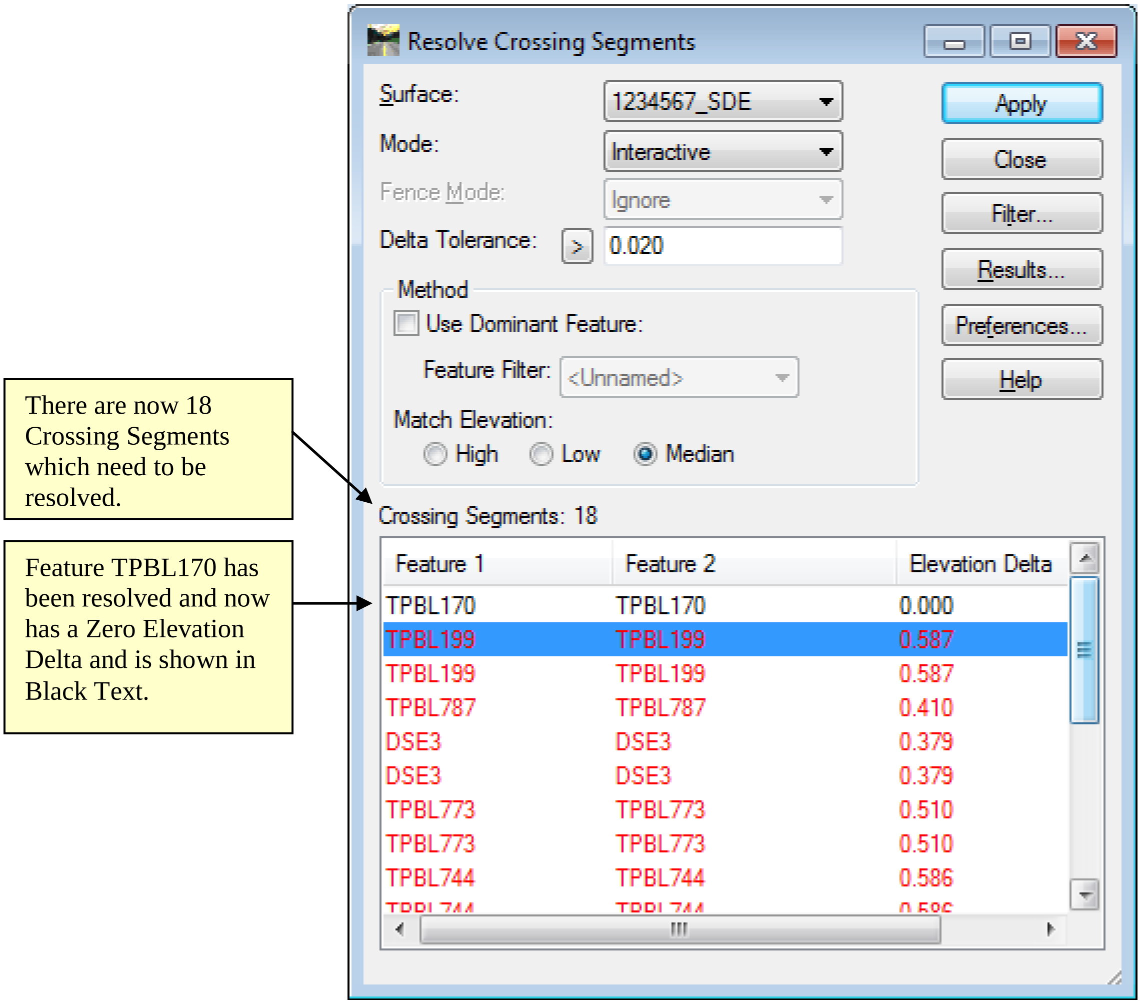


Figure L4-8 Resolve Crossing Segments - Interactive

25.	The other 18 Crossings will not be resolved in this Lab. • Click **Apply** and then click **Close** to exit the **<u>Resolve Crossing Segments</u>** dialog.
26.	Whenever the **<u>Resolve Crossing Segments</u>** command is used, the Features will need to be re-triangulated for the changes to be represented in the DTM. <u>This should only be done after all of the Crossings have been resolved.</u> Select **Surface►Triangulate Surface**. The **<u>Triangulate Surface</u>** dialog box will open. • In the **Surface:** Pulldown – select ***1234567_SDE*** • In the **Maximum Length:** field enter – ***300.000*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L4-9* (as shown below).

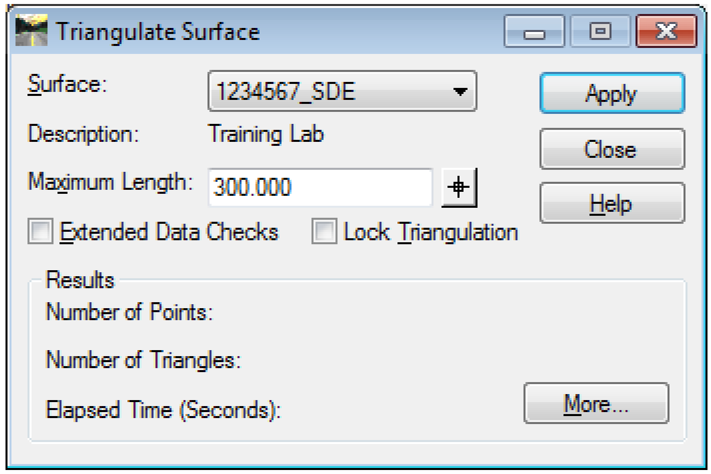


Figure L4-9 Triangulate Surface

<table>
<tr><td>27.</td><td>Click Apply.

Please be Patient!

It may take a while for the Surface to triangulate depending on the size of the file!

The InRoads Status Bar (Located at the bottom – left hand side of the InRoads Interface) usually will depict the completion percentage of the triangulation on larger projects. (See screen capture below):

The DTM Surface is triangulated.</td></tr>
<tr><td>28.</td><td>After the triangulation is completed – click Close to close out of the <u>Triangulate Surface</u> dialog box.

Closes the <u>Triangulate Surface</u> dialog box.</td></tr>
</table>

29.	**Save the InRoads Surface File** Even though several of the Segment crossings have been resolved – the data has not yet been saved. As mentioned previously, InRoads retains the data in <u>temporary</u> memory but does not <u>save</u> the data on the fly. Whenever a change has been made to an InRoads Surface Project – <u>Save</u> the project and its associated modifications or changes. Select **File**▶**Save**▶ **Surface** from the **InRoads Menu**. <u>Please Note:</u> (The "Save As" dialog box may not appear because the Surface has already been saved initially). The Surface Project (***1234567_SDE.dtm***) will be saved to **Lab 4** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 4** Note that the **<u>InRoads</u>** and **<u>MicroStation Status Bar</u>** (Located at the bottom of both the InRoads and MicroStation Interface) will depict a message when the Surface Project has been saved. *The **1234567_SDE** Surface Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 4***
30.	**<u>VERY Important Step:</u>** In order to Start with a CLEAN DGN file for the next Lab: In the [MicroStation Software] – Select **Edit** ▶**Select All** Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn file to ensure a clean DGN file for the next Lab.*
31.	 This concludes Lab 4. Do not proceed until the Instructor directs you to do so.

Lab 5
Create/Import an Exterior Boundary

Objective

After the Segment Crossings have been resolved – an Exterior Boundary (a Limit Line with Feature Style of **TOPO_E_TLIML**) will be created to represent the bounds of the field data. This Exterior Boundary is also used in the trimming of extraneous triangles from the DTM Surface. During the creation of a DTM Surface, extraneous triangles (erroneous triangle data) will be generated which does not represent actual Surface data. A common situation where this occurs is at "T Intersections". In order to remove these triangles (which represent inaccurate data) an Exterior Boundary is required.

Although there are several methods to create an Exterior Boundary – the method depicted in the following Lab represents a common practice which will work for most situations. Due to the current InRoads Software functionality, InRoads requires that the Exterior Boundary be composed of existing surface data located inside or on the outer-most Feature Points (TLIML points) represented in the DTM Project. In order to create the Exterior Boundary a complex shape (one continuous entity) must be created so that the DTM triangulation will honor the limits of the Exterior Boundary.

***Please Note the following InRoads Requirements:**

- InRoads has a requirement that only **ONE Exterior Boundary** may be present in a DTM Project.
- The Exterior Boundary must be one continuous complex shape.
- The Existing Feature Points on the exterior Boundary must be located on the Existing Surface in order for the Boundary to trim triangles correctly.
- If there are Obscured Areas on the outside of the Surface data – the Exterior Boundary must not include these areas inside of the Exterior Boundary.
- Interior Obscured Areas can be included inside the Exterior Boundary.

The objective of Lab 5 is to:

- Create an Exterior Boundary in MicroStation
- Import the Exterior Boundary into InRoads

Lab5A Create an Exterior Boundary

In this Lab you will be creating an Exterior Boundary which will represent the extents of the Field Data. This Exterior Boundary will be used in a later Lab to trim extraneous triangles from the Existing Surface Model.

The majority of the Lab work for the generation of the Exterior Boundary will be performed in the [MicroStation Software]. The user will need to become familiar with MicroStation commands in order to successfully perform the steps to generate the Exterior Boundary.

<table>
<tr><td>1.</td><td>Starting Clean

In order to ensure that you are working with a “clean” database – you will close MicroStation and InRoads if they are still running from a previous Lab:

To CLOSE MicroStation and InRoads -

Select File▶Exit from the [MicroStation Menu].
If any messages appear regarding the saving of projects – Select 

This closes BOTH the MicroStation and InRoads Software(s).</td></tr>
<tr><td>2.</td><td>From the desktop, double-click on the MicroStation icon labeled GDOT MicroStation V8i SS2 (x86).

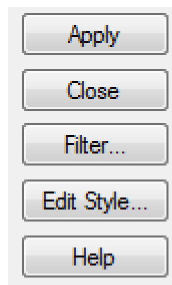

Double click on the icon labeled GDOT MicroStation V8i SS2 (x86).
When the MicroStation Manager dialog box opens – navigate to the C:\InRoads Data\1234567\SDE Labs\Standards folder and select the “GDOT 3D Working File.dgn”. Click Open.
Now open InRoads from within MicroStation by selecting:
InRoads ▶ InRoads Suite (SELECTseries 2) V8i 08.11.07.566 from the [MicroStation Menu].
The MicroStation and InRoads Software(s) will open.</td></tr>
<tr><td>3.</td><td>Load the InRoads Survey, Geometry and Surface File(s)

Select File▶Open from the InRoads Menu.

The Project Defaults (which were set up in Lab 1C) are set to the following Path: C:\InRoads Data\1234567\SDE Labs.

Browse to the following path: C:\InRoads Data\1234567\SDE Labs\Lab 5</td></tr>
</table>

4.	After navigating to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 5** Select the file named: **1234567_A.fwd –** then click **Open**. Select the file named: **1234567_SDE.alg –** then click **Open**. Select the file named: **1234567_SDE.dtm –** then click **Open** Then click **Cancel**. *The 1234567_A.fwd, 1234567_SDE.alg and 1234567_SDE.dtm file(s) will open.*
5.	**This is an important step**. **Turn off the Planimetric Survey Data:** The Planimetric View can be turned on/off in InRoads by the following steps: Select **Survey ▶ View Survey Data ▶ Planimetrics** from the **InRoads Menu**. Remove the check mark by Planimetrics to turn the planimetric viewing data OFF. *Steps to turn the Planimetric Survey Data OFF in InRoads/MicroStation.*
6.	**This is an important step**. Click **Tools ▶ Locks** from the InRoads pull-down menu. Ensure that the following Lock is set as indicated below: **Feature Filter**  **(**There **SHOULD** be a Check Mark next to Feature Filter) *Ensures that the Feature Filter Lock is turned ON.*
7.	Click **Tools ▶ Locks** from the InRoads pull-down menu. Ensure that the following Locks are turned **OFF**. There should **not** be a check mark next to the following: **Feature Highlight** **Style** **Delete Ink** **Element Snap** **Station** *Ensures that the appropriate Locks are turned OFF.*

8.	Click **Tools▶Locks** from the InRoads pull-down menu. Ensure that the following Locks are set as indicated below: **Pencil Lock** is set to Pencil **Locate Lock** is set to Features **Point Snap Lock** is checked **Report Lock** is checked **Toolbar Lock** is checked *Ensures that the appropriate Locks are turned ON.*
9.	View the **TOPO_E_TLIML** Surface Features. Click **Surface▶View Surface▶Features** from the InRoads pull-down menu and the **<u>View Features</u>** dialog box will appear. • In the **Surface:** Pulldown – select ***1234567_SDE*** Click on the **Filter** button.  *Opens the <u>View Features</u> dialog box*
10.	**View the selected Features:** **** <u>WARNING</u> ** – During this step take care not to roll the scroll button on your mouse.** The **<u>Feature Selection Filter</u>** dialog box will open. In the **<u>Feature Selection Filter</u>** dialog box --- input the following: • In the **Filter Name:** pulldown – select **TLIML BREAKLINE** This will filter the view to include the following Surface Feature codes: TLIML Leave all other entries as default! The inputs should now correspond to the screen capture depicted in *Figure L5-1* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the <u>Feature Selection Filter</u> dialog box.*

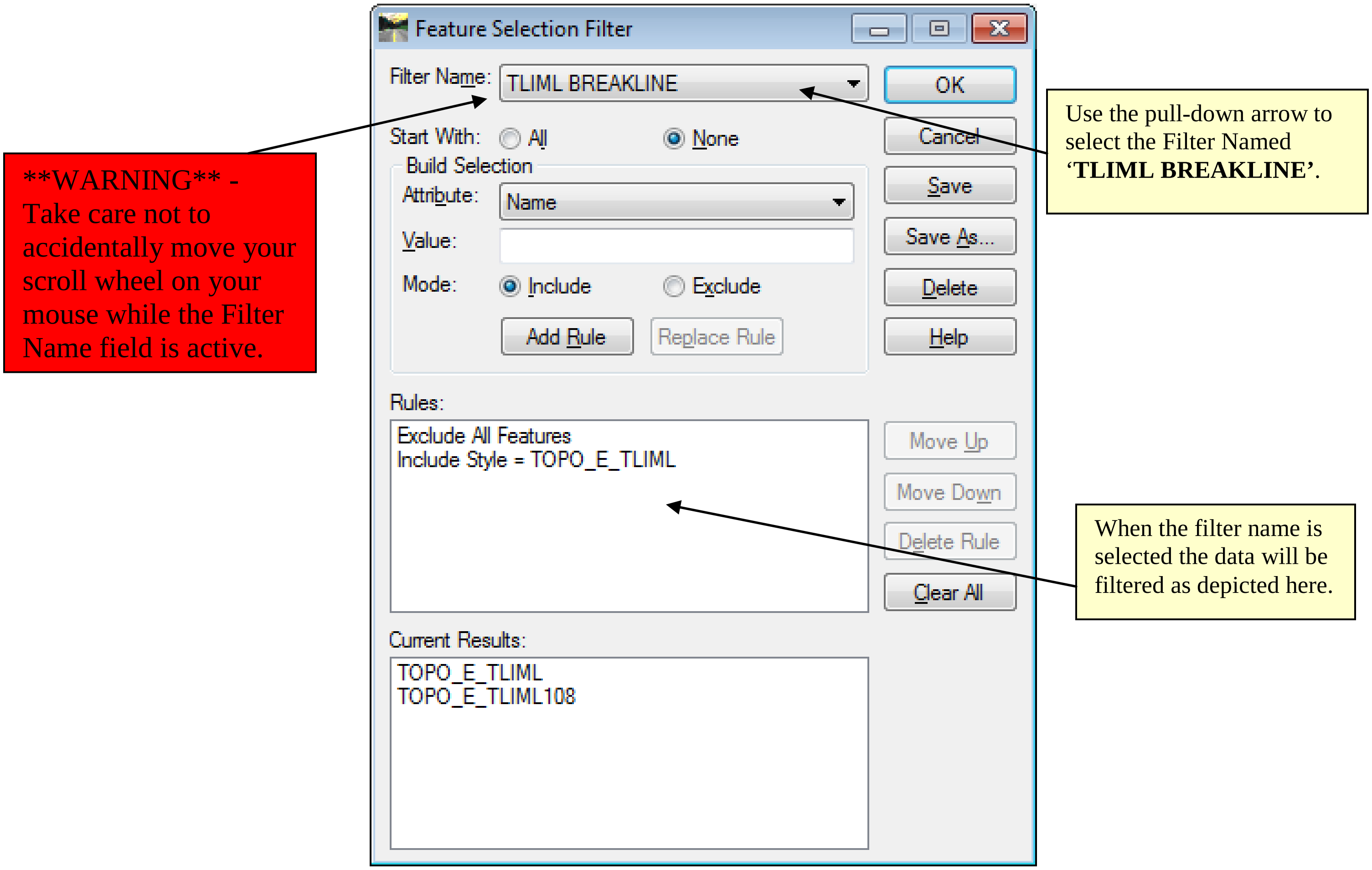


Figure L5-1 Feature Selection Filter

11.	Click **OK** and the **<u>Feature Selection Filter</u>** dialog box will **Close**. The **<u>View Features</u>** dialog box should still be open from the previous steps. The inputs in the **<u>View Features</u>** dialog box should now correspond to the screen capture depicted in *Figure L5-2* (as shown below). Verify to ensure that your input matches the screen capture. *Closes the <u>Feature Selection Filter</u> dialog box.*

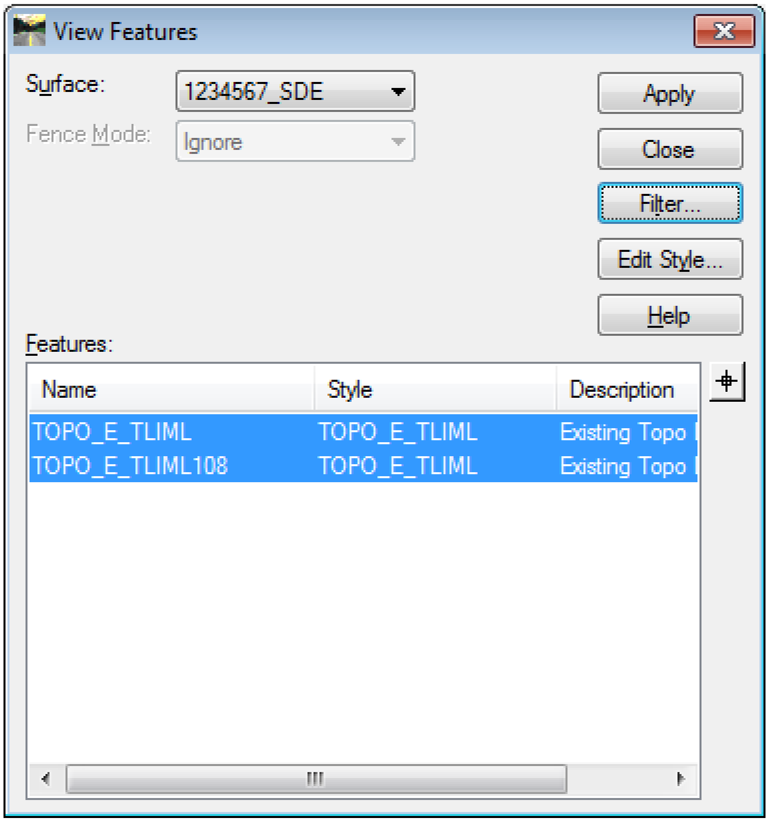


Figure L5-2 View Features

12.	Click **Apply**. *Views the 1234567_SDE (TLIML Features) in MicroStation*
13.	Click **Close** to close out of the **<u>View Features</u>** dialog box. *Closes the <u>View Features</u> dialog box.*
14.	In order to create the Exterior Boundary – the user must become familiar with the appropriate settings and commands to utilize in MicroStation. A good resource for this information is the "MicroStation Help Files" which is located in the [MicroStation Menu] under **Help►Contents**. Please refer to this resource for additional information. *Refers to the location for the MicroStation "Help Files".*

<table>
<tr><td>15.</td><td>

For Information Only:

The following MicroStation options will assist the user in creating the Exterior Boundary. These may be turned on/off based on the situation and the user's preference.

<u>**Note:**</u>
The user will be provided the steps to turn these options on/off later in this Lab.

A. **AccuDraw** should be turned off. (When turned on – the point is harder to select.)
B. **AccuSnap** should be turned off (unless selecting a point).
C. When selecting a point (if AccuSnap is turned on) - a "yellow  will appear to denote the point location.
D. The Default Snap must be set to "Keypoint".
E. When selecting the point – do not use the tentative snap button to pick the point --- select the point by <u>LEFT</u> clicking on the point!

Initiates the appropriate MicroStation settings.

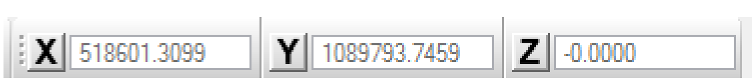
</td></tr>
<tr><td>16.</td><td>

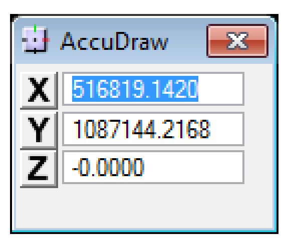
To turn MicroStation **AccuDraw** on/off –

Click the **AccuDraw** icon in the **Primary Tools** tool box:

AccuDraw is <u>off</u> when the XYZ Coordinate Window (See screen capture below) is <u>not depicted</u>: Ensure **AccuDraw** is turned <u>Off.</u>

AccuDraw Docked View **AccuDraw Undocked View**





Depicts AccuDraw settings and turns AccuDraw Off.

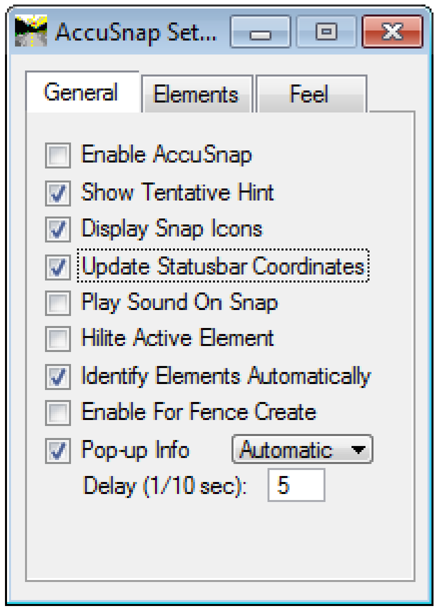
</td></tr>
</table>

17. To turn **AccuSnap** on/off –

In the [MicroStation Menu] -- Select **Settings**▶**Snaps**▶**AccuSnap**.

Under the **General Tab** – remove the checkmark next to the option "**Enable AccuSnap**" to turn off **AccuSnap**. Add the checkmark to turn on **AccuSnap**. (See dialog box shown below.)

Ensure **AccuSnap** is turned Off.

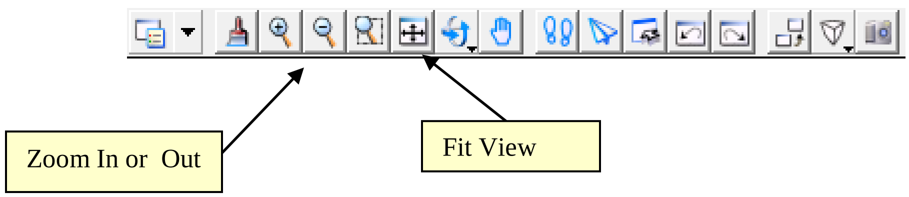
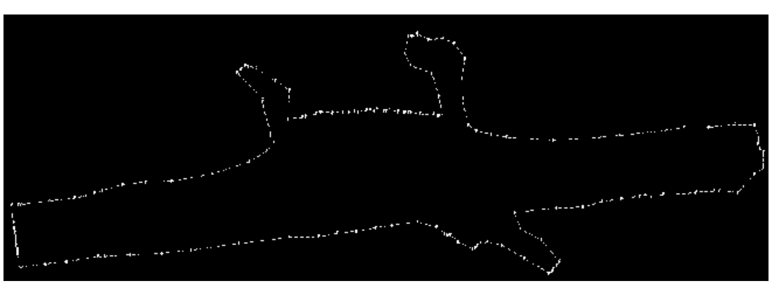
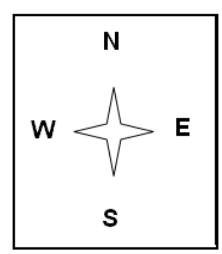


Initiates the AccuSnap command and turns AccuSnap off.

18. To turn **"Keypoint"** Snap on –

Hold down the **<SHIFT>** key and **Tentative Snap** in the MicroStation Window. A list box will appear – select the **Keypoint** Snap option from the list. A Black Dot next to the **Keypoint** Snap represents the currently active Snap.

Initiates the Keypoint Tentative Snap.

19.	**For Information Only** Since this is a "**Working DGN File**" and the Exterior Boundary is a temporary graphic – it does not matter what color, level, linestyle, etc. you select to create the Exterior Boundary. After importation of the boundary into InRoads – the temporary graphics will be deleted. The actual Exterior Boundary (after it is imported into InRoads) will automatically depict the correct Feature Style attributes - color, weight, level, etc. *Sets the Element Attributes to use for the Exterior Boundary.*
20.	**View** the selected Features in the [MicroStation Software] by using the following commands located under the MicroStation <u>View 1</u> Window: In the [MicroStation Software] – Select the "Zoom In or Zoom Out" or "Fit View" Icons as appropriate to view the Features.  *Views the Features in MicroStation.*
21.	In the [MicroStation Software] – Select "**Fit View**" and all of the TOPO_E_TLIML Features will be depicted in the MicroStation View Window. See screen capture depicted below.   *Views the extents of the Features in MicroStation.*

22. **For Information Only**

An Exterior Boundary must be one continuous complex shape. Although sometimes the TOPO_E_TLIML (Topo Limit Line) Feature is collected as one continuous alignment/segment - in many cases – the TOPO_E_TLIML may consist of several independent alignments/segments. In order for InRoads to utilize the Exterior Boundary for trimming extraneous triangles, one continuous concatenated Feature must be created. To accomplish this task - the “segments” will need to be joined into a Complex Shape.

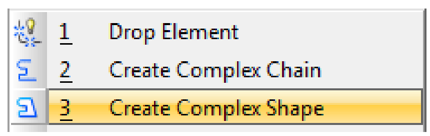
The following steps depict the process of creating a complex shape.

Details information regarding a complex shape.

23. To Create a Complex Shape:

In the [MicroStation Software] –

Select “**Create Complex Shape**”
From [MicroStation Main Toolbar]

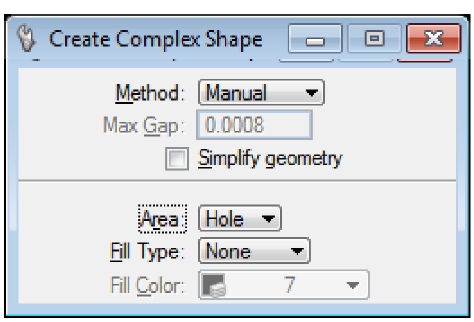


The **Create Complex Shape** dialog box will open. In the **Create Complex Shape** dialog box --- input the following:

- In the **Method** Pulldown – select ***Manual***
- In the **Area** Pulldown – select ***Hole***

Leave all other entries as default!

The inputs should now correspond to the screen capture depicted below. Verify to ensure that your input matches the screen capture.



Opens the Create Complex Shape dialog box in MicroStation.

24.	Next - ***Left click*** on Feature **TOPO_E_TLIML108** and then ***Left click*** on Feature **TOPO_E_TLIML**. Each segment will highlight in purple when selected. ***Left click*** at a random location in the MicroStation window to “accept” the input. The Complex Shape will now form one continuous entity. ***Right click*** at a random location in the MicroStation window to exit the command. The MicroStation view should now correspond to the screen capture depicted in *Figure L5-3* (as shown below). Verify to ensure that your input matches the screen capture. *Depicts steps to create a Complex Shape in MicroStation.*

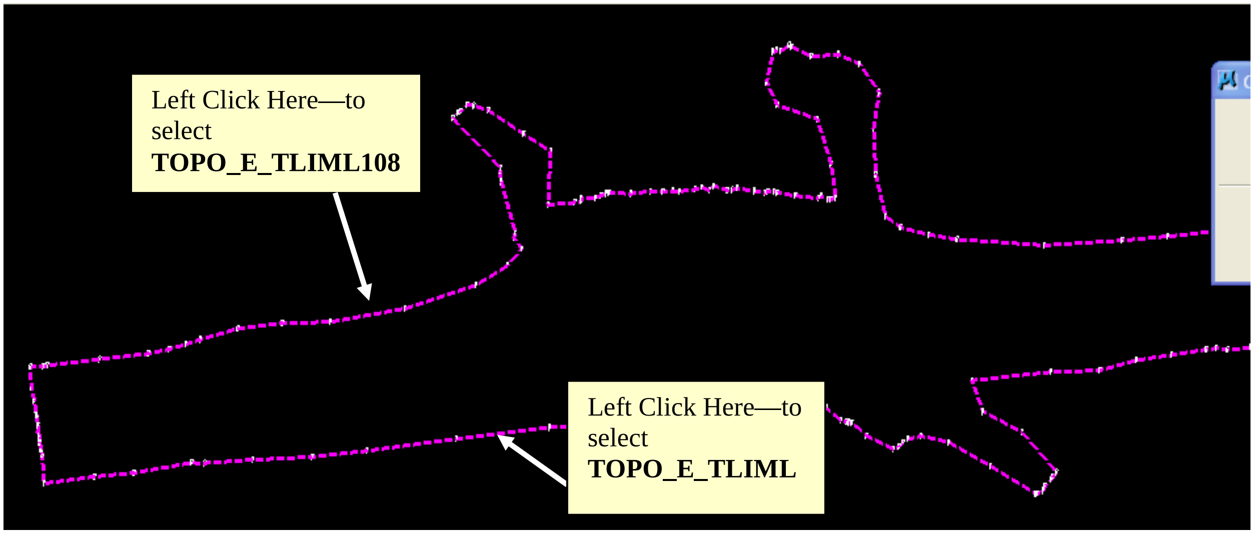


Figure L5-3 Steps to create a Complex Shape

25.	**For Information Only:** The **TOPO_E_TLIML** Surface Features have now been concatenated into one continuous entity (Complex Shape). The next Lab (**Lab 5B**) will depict the process of importing the **TOPO_E_TLIML** Surface into the InRoads ***1234567_SDE.dtm*** Surface Project. *Depicts steps to create a Complex Shape in MicroStation.*

Lab5B Create a "Preliminary" Triangulated Surface

In this section of the lab you will be creating a "Preliminary" triangulated surface which will be used later in (**Lab 5C**) to "drape" the Exterior Boundary on in order to obtain point elevations (Delta Z).

26.	**<u>This is an important step</u>**. Click **Tools**▶**Locks** from the InRoads pull-down menu. Ensure that the following Locks are turned **OFF**. There should **<u>not</u>** be a check mark next to the following: **Feature Filter** **Feature Highlight** **Style** **Delete Ink** **Element Snap** **Station** *Ensures that the appropriate Locks are turned OFF.*
27.	Click **Tools**▶**Locks** from the InRoads pull-down menu. Ensure that the following Locks are set as indicated below: **Pencil Lock** is set to Pencil **Locate Lock** is set to Features **Point Snap Lock** is checked **Report Lock** is checked **Toolbar Lock** is checked *Ensures that the appropriate Locks are turned ON.*
28.	The "Preliminary" Surface will now be triangulated for use in draping the Exterior Boundary. Select **Surface**▶**Triangulate Surface**. The **<u>Triangulate Surface</u>** dialog box will open. • In the **Surface:** Pulldown – select ***1234567_SDE*** • In the **Maximum Length:** field enter – ***300.000*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L5-4* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the <u>Triangulate Surface</u> dialog box.*

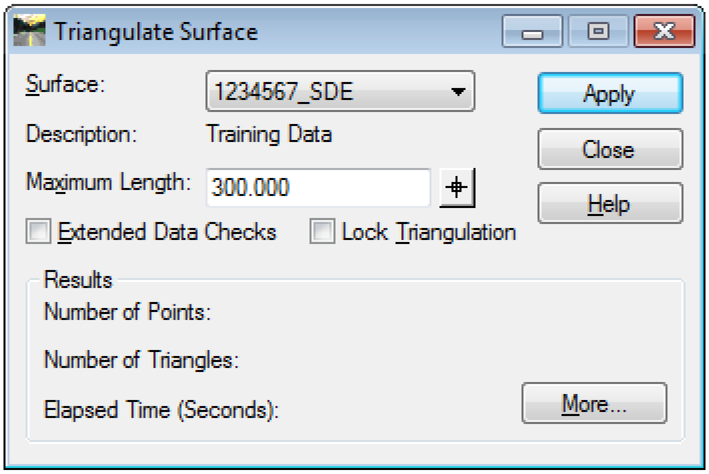


Figure L5-4 Triangulate Surface

29.	Click **Apply.** *The "Preliminary" DTM Surface is triangulated.*
30.	After the triangulation is completed – click **Close** to close out of the **<u>Triangulate Surface</u>** dialog box. *Closes the <u>Triangulate Surface</u> dialog box.*

Lab5C Import the Exterior Boundary (TOPO_E_TLIML) into InRoads

After the Exterior Boundary has been created in MicroStation, the graphic complex shape will be imported into the InRoads Existing Surface Model. The Exterior Boundary will be given a Feature Style of **TOPO_E_TLIML** and will be tagged as Point Type of **Exterior**. This Exterior Boundary will be used to trim out extraneous triangles from the Field DTM Surface.

The following requirements must be met for the Exterior Boundary to import correctly.

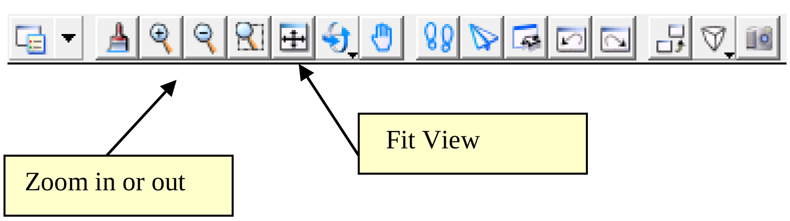
InRoads Requirements for Exterior Boundary Importation:

- InRoads has a requirement that only **ONE Exterior Boundary** may be present in a DTM Project.
- The Exterior Boundary must be one continuous complex shape.
- The Existing Feature Points on the exterior Boundary must be located on the Existing Surface in order for the Boundary to trim triangles correctly. The Exterior Boundary will therefore use 'element elevations' from the field surveyed TOPO_E_TLIML features as opposed to draping the surface as is done on photogrammetric mapping projects.

In this section of the lab you will be importing the Exterior Boundary (the complex shape created in MicroStation) into the **1234567_SDE.dtm** Surface Project. The Exterior Boundary will then be available for trimming of the extraneous triangles from the DTM Surface.

On a side note: If there were any Interior Boundaries (Interior "Obscured Areas") – TOPO_E_DOBSC Feature Style ---- these Obscured Areas are tagged internally by InRoads to automatically be obscured. There is no extra step in the obscuring of interior areas of the DTM – these interiors triangles will already be trimmed.

31. In the [MicroStation Software] –



Select the "Zoom In or Zoom Out" or "Fit View" Icons as appropriate to view the Exterior Boundary.

Zoom in or out to view the Exterior Boundary in MicroStation.

32. **Import the Exterior Boundary into InRoads**

In the **<u>InRoads Software</u>**:

Select **File▶Import▶Surface** from the **InRoads Menu**. The **<u>Import Surface</u>** dialog box will open. Select the “**From Graphics” Tab**.

- In the **Surface:** Pulldown – select ***1234567_SDE***
- In the **Load From:** Pulldown – select ***Single Element***
- In the **Elevations:** Pulldown – select ***Use Element elevations***
  <u>NOTE</u>:** The Drape Surface option is used during photogrammetric mapping projects. Full Field mapping projects use element elevations from the Topo limit lines (TOPO_E_TLIML) picked up in the field which are not available during photogrammetric mapping projects.

In the Features Area of the dialog box:

- In the **Seed Name:** field – **<u>type</u>** the word ***XBOUNDARY*** (all <u>upper case</u> letters -- it is case sensitive)
- In the **Feature Style:** Pulldown – select ***TOPO_E_TLIML***
- In the **Point Type:** Pulldown – select ***Exterior***
- In the **Duplicate Names:** radio button – select ***Rename***
- In the **Exclude from Triangulation:** check box – 

  (Make sure there is <u>NO</u> Check Mark)

<u>Leave all other entries as default.</u>

The inputs should now correspond to the screen capture depicted in *Figure L5-5* (as shown below). Verify to ensure that your input matches the screen capture <u>exactly</u>.

Opens the <u>Import Surface</u> dialog box allowing you to import an Exterior Boundary.

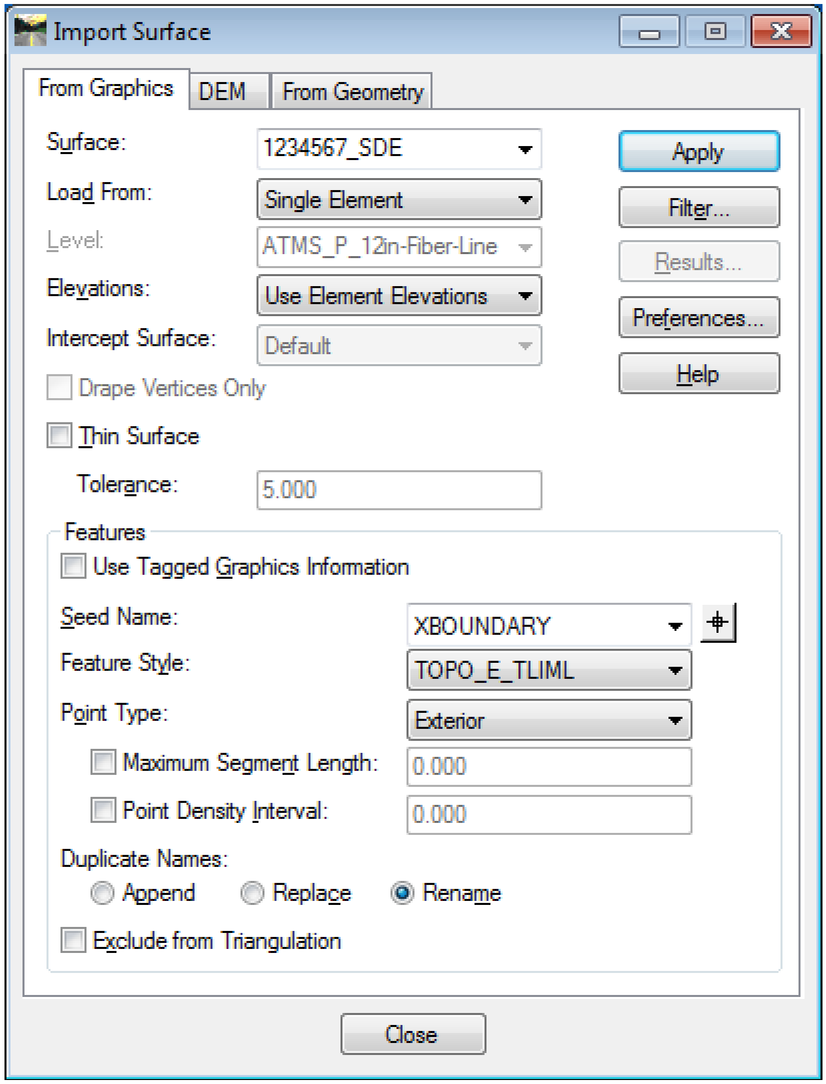
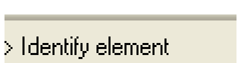
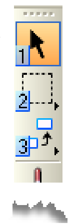


Figure L5-5 Import Surface (From Graphics) Tab

33.	Click **Apply**. You will then be prompted in the [MicroStation Software] to … Identify element… (See the prompt information at the bottom – left corner of the MicroStation View Window).  **Left Click** on the Exterior Boundary in MicroStation to <u>select</u> the Boundary. **Left Click** again on the Exterior Boundary in MicroStation to <u>accept</u> the Boundary. The Boundary has now been imported to the **1234567_SDE.dtm** project. (Do <u>NOT</u> click **Apply** again in the <u>**Import Surface**</u> dialog box – the Boundary was imported once it was selected in MicroStation). *Selects the Exterior Boundary.*

34.	After the importation is completed – click **Close** to close out of the **Import surface** dialog box. *Closes the Import Surface dialog box.*
35.	The Exterior Boundary should still be highlighted in purple. To remove the highlight – In the [MicroStation Software] – Left Click "Element Selection"  in the MicroStation "Main Toolbar" →  Once the "Element Selection" is clicked – the Boundary will un-highlight. *Removes the highlight from the Boundary.*
36.	The DTM Surface will now need to be re-triangulated in order to include the Exterior Boundary in the DTM Surface. Select **Surface ▶ Triangulate Surface**. The **Triangulate Surface** dialog box will open. • In the **Surface**: Pulldown – select ***1234567_SDE*** • In the **Maximum Length**: field enter – ***300.000*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L5-6* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the Triangulate Surface dialog box.*

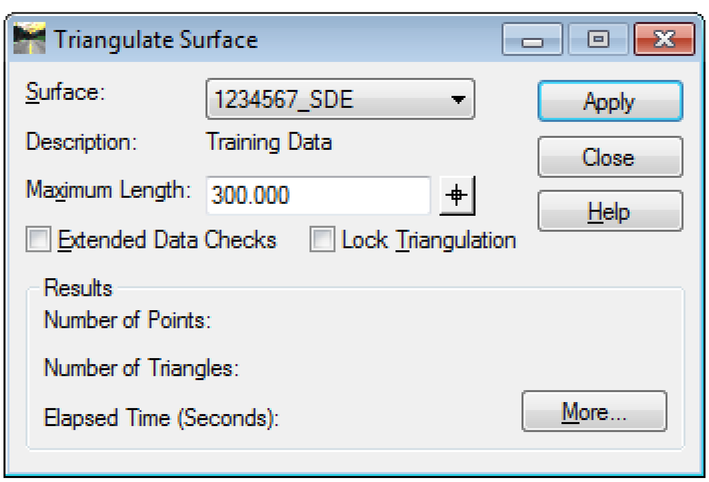
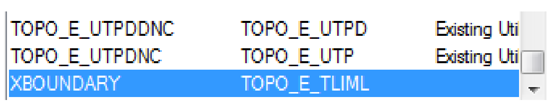
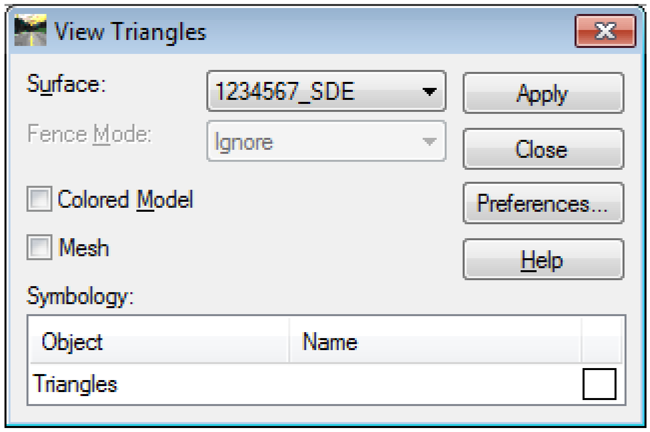


Figure L5-6 Triangulate Surface

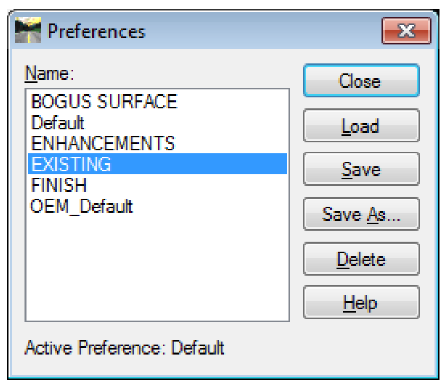
37.	Click **Apply.** *The DTM Surface is triangulated.*
38.	After the triangulation is completed – click **Close** to close out of the **Triangulate Surface** dialog box. *Closes the Triangulate Surface dialog box.*
39.	**Important**: In order to start with a CLEAN DGN file for the next steps: In the [MicroStation Software] – Select **Edit ▶Select All** Then select the <**DELETE**> key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn file to ensure a clean DGN file.*
40.	The "**XBOUNDARY**" that was imported will now be viewed. Click **Surface ▶View Surface▶Features** and the **View Features** dialog box will appear: • In the **Surface:** Pulldown – select ***1234567_SDE*** When the dialog is first opened – all of the Features in the **Features:** list will be highlighted in blue. **Left Click** anywhere in the Features List box to "un-highlight" the Features. **Left Click** on the Feature: XBOUNDARY  Click **Apply** and then click **Close** and the **View Features** dialog box will close. *Opens the View Features dialog box and selects the XBOUNDARY to view.*

41. The “Trimmed Triangles” will now be viewed.

Click **Surface ▶View Surface▶Triangles** and the **View Triangles** dialog box will appear:



- In the **Surface:** Pulldown – select ***1234567_SDE***
- In this dialog box – click on the **Preferences**… button and the following dialog box will appear:



- In the dialog box – select the Preference of **EXISTING**. Then click **Load** and then click **Close** and the **Preferences** dialog box will close.

Click **Apply**.

Click **Close** and the **View Triangles** dialog box will close.

Opens the View Triangles dialog box and selects the triangles to view.

42.	In the [MicroStation Software] – Select the "Zoom In or Zoom Out" or "Fit View" commands as appropriate to view the **XBOUNDARY** and the triangles. *Views the XBOUNDARY and triangles.*
43.	**Save the InRoads Surface File** Even though the Exterior Boundary has been imported into InRoads – the data has not yet been saved. As mentioned previously, InRoads retains the data in temporary memory but does not save the data on the fly. Whenever a change has been made to an InRoads Surface Project – Save the project and its associated modifications or changes. Select **File**▶**Save**▶ **Surface** from the **InRoads Menu**. Please Note: (The "Save As" dialog box may not appear because the Surface has already been saved initially). The Surface Project (***1234567_SDE.dtm***) will be saved to **Lab 5** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab5** *The **1234567_SDE** Surface Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab5***
44.	**Important Step:** In order to Start with a CLEAN DGN file for the next Lab (**Lab 6**): In the [MicroStation Software] – Select **Edit** ▶**Select All** Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn file to ensure a clean DGN file for the next Lab.*
45.	 This concludes Lab 5. Do not proceed until the Instructor directs you to do so.

Lab 6
Resolve DTM Errors

Objective

After the Exterior Boundary has been incorporated into the DTM – the final processing of the DTM Surface can begin. The Exterior and/or Interior Boundaries have already been included into the DTM to ensure that all of the appropriate extraneous triangles and obscured areas are trimmed and/or obscured. The Crossing Segments have also been resolved.

The next step in the process is to review the DTM Surface to ensure that there are no erroneous or "bad" data included in the DTM. This review will determine if there are any elevations that are incorrect or bad shots that were picked up. The DTM will be reviewed in a 3D environment as a "shaded model" to assist in the resolutions of any "spikes" or erroneous data. This Lab will examine the process of resolving any "spikes" or bad data in the DTM Surface and review/resolve any crossing segments which may have been introduced when the Exterior Boundary was incorporated, etc.

The objective of Lab 6 is to:

- Review the DTM Surface as a shaded 3D model and check for any erroneous or "bad" data.
- Resolve any "spikes" or incorrect Field Data
- Review to ensure that no segment crossings have been introduced in the Surface

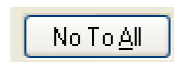
Lab6A Review the DTM Surface

In this section of the lab you will be reviewing the **1234567_SDE.dtm** Surface to check for any erroneous data, busts in elevations, spikes, etc. The DTM will be viewed as a 3D shaded model to assist in the location of invalid data.

1. **Starting Clean**

In order to ensure that you are working with a “clean” database – you will close MicroStation and InRoads if they are still running from a previous Lab:

To CLOSE MicroStation and InRoads -

Select **File▶Exit** from the [MicroStation Menu].
If any messages appear regarding the saving of projects – Select 

This closes BOTH the MicroStation and InRoads Software(s).

2. From the desktop, double-click on the **MicroStation** icon labeled **GDOT MicroStation V8i SS2 (x86)**.

Double click on the icon labeled **GDOT MicroStation V8i SS2 (x86)**.

- When the **MicroStation Manager** dialog box opens – navigate to the **C:\InRoads Data\1234567\SDE Labs\Standards** folder and select the “**GDOT 3D Working File.dgn**”. Click **Open**.
- Now open InRoads from within MicroStation by selecting: **InRoads ▶ InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu].

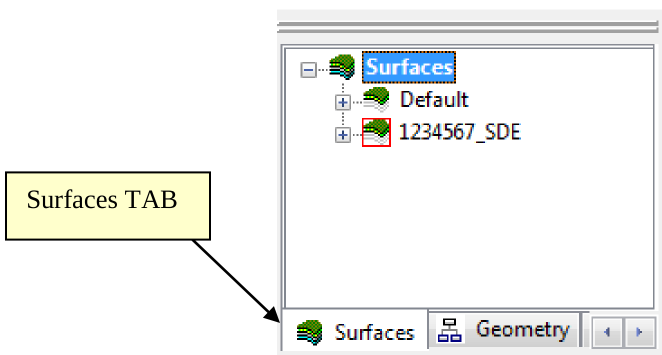
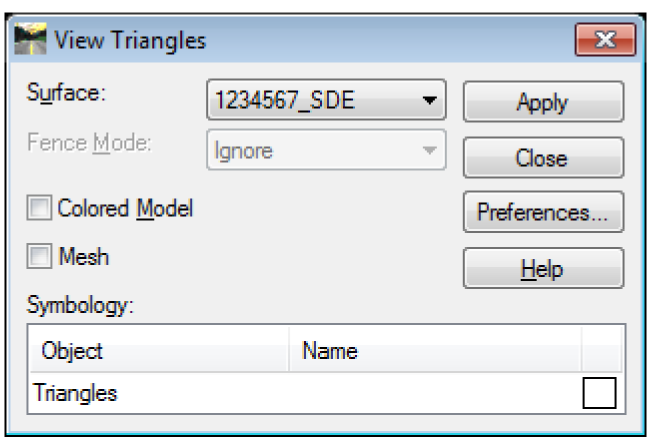
The MicroStation and InRoads Software(s) will open.

3. **Load the InRoads Survey, Geometry and Surface File(s)**

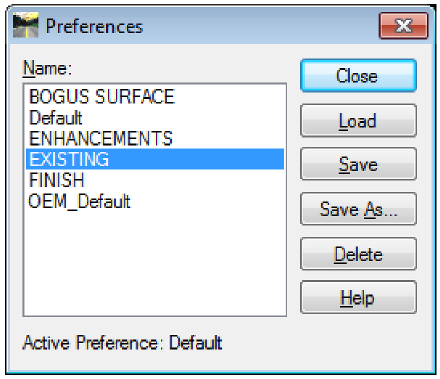
Select **File▶Open** from the **InRoads Menu**.

The Project Defaults (which were set up in Lab 1C) are set to the following Path: **C:\InRoads Data\1234567\SDE Labs**.

Browse to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 6**

4.	After navigating to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 6** Select the file named: **1234567_A.fwd –** then click **Open**. Select the file named: **1234567_SDE.alg –** then click **Open**. Select the file named: **1234567_SDE.dtm –** then click **Open** Then click **Cancel**. *The 1234567_A.fwd, 1234567_SDE.alg and 1234567_SDE.dtm file(s) will open.*
5.	Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). Note that the “Red Rectangle” denotes that the **1234567_SDE** project is the active Surface.  *Opens the “Surfaces Tab” in the InRoads Workspace Bar.*
6.	The DTM Triangles will now be reviewed. Click **Surface ►View Surface►Triangles** and the **<u>View Triangles</u>** dialog box will appear: 

- In the **Surface:** Pulldown – select ***1234567_SDE***
- In this dialog box – click on the **Preferences**… button and the following dialog box will appear:



- In the dialog box – select the Preference of **EXISTING**. Then click **Load** and then click **Close** and the **Preferences** dialog box will close.

Click **Apply**.

(See the Example screen capture depicted below in *Figure L6-1*).

Opens the <u>View Triangles</u> dialog box and selects the triangles to view.

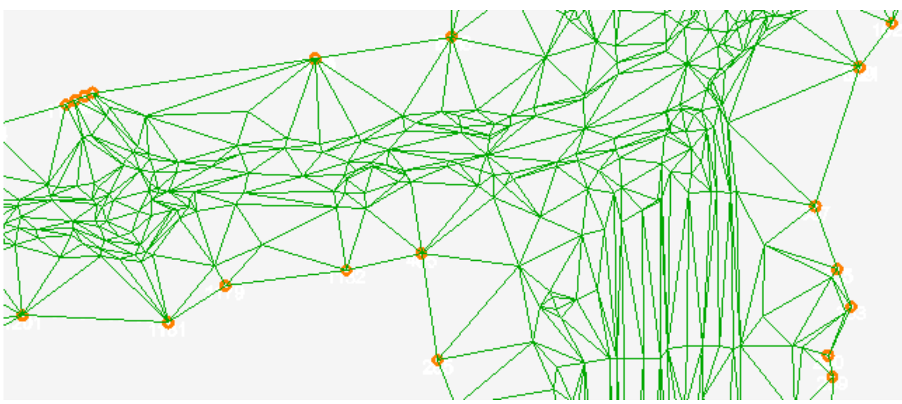


Figure L6-1 Wireframe Triangles

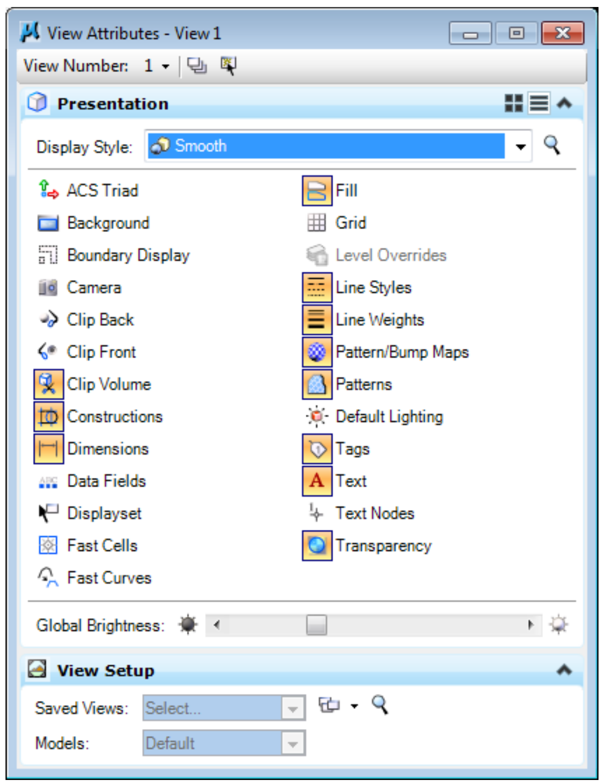
<table>
<tr><td>7.</td><td>Click Close and the <u>View Triangles</u> dialog box will close.

Closes the <u>View Triangles</u> dialog box.</td></tr>
<tr><td>8.</td><td>In order to review the DTM Surface – the user must become familiar with the appropriate settings and commands to utilize in MicroStation. A good resource for this information is the “MicroStation Help Files” which is located in the [MicroStation Menu] under Help▶Contents. Please refer to this resource for additional information.

Refers to the location for the MicroStation “Help Files”.</td></tr>
<tr><td>9.</td><td>In order to view the DTM Surface triangles as <u>shaded or smooth</u> and to obtain a clearer representation of the Surface and triangles –

In the [MicroStation Software] –

Click Settings▶View Attributes and the following <u>View Attributes</u> dialog box will appear.



In the Presentation Section– Display Style area – select the style of Smooth
Please be patient – it may take a second for the display to change from wireframe to smooth
Click the Red  in the <u>View Attributes</u> dialog to close the dialog box.

(See the Example screen capture depicted below in Figure L6-2).

Views the triangles as a shaded/smooth surface.</td></tr>
</table>

Figure L6-2 Shaded Triangles

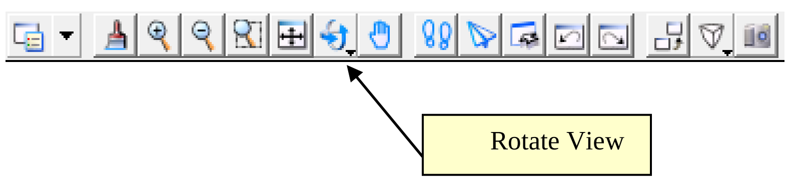
10. In order to rotate the DTM Surface and view in 3D -

In the [MicroStation Software] –

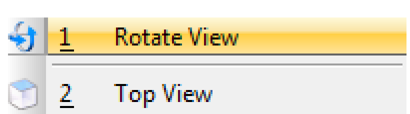
Select -- the "Rotate View icon".  (Your icon may appear differently).

(**Left Click** and hold down the Left Mouse Button).

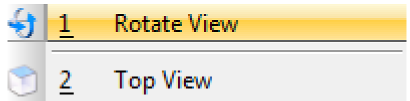
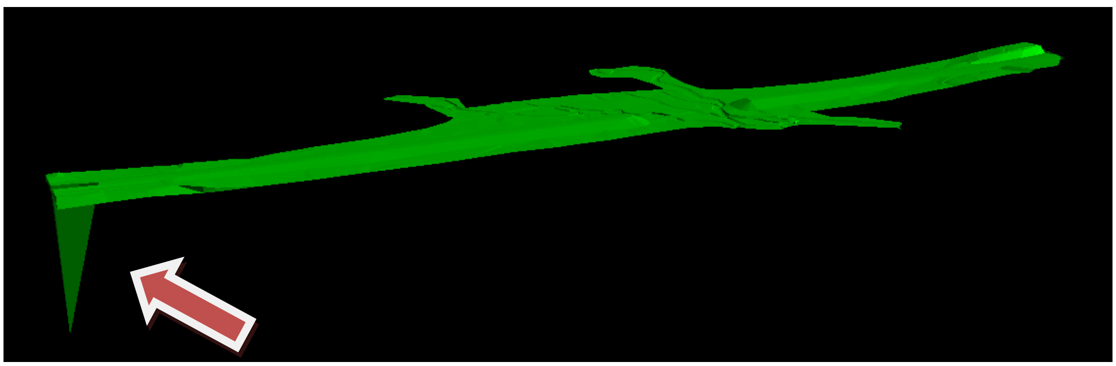
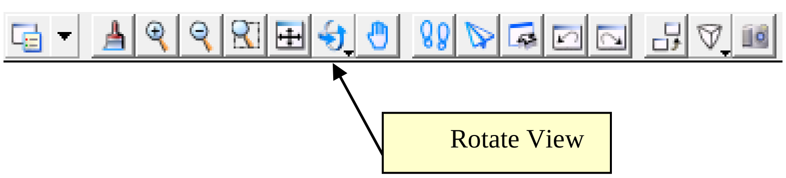
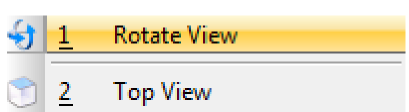
This command is located under the "View 1" window in MicroStation. See the screen capture below:



Select – "**Rotate View**" →



Rotates the view of the DTM Surface.

11.	**Left Click** in the MicroStation Window and rotate the DTM accordingly by left clicking and panning in the view. Review the DTM surface by "zooming in/out", "panning" - Look underneath the DTM to determine if there are spikes, bad elevations, areas of the DTM that look incorrect, etc. Whenever you need to return to a TOP View: Select – "**Top View**" →  *Review the DTM Surface for errors.*
12.	During the review of the DTM – notice that there is a "spike" located in the West Quadrant of the DTM.  *Review the West Quadrant of the Surface.*
13.	The next Lab (**Lab 6B)** will include steps for determining the cause of the spike(s) and the methods to resolve the erroneous elevation data to correct the DTM. In the [MicroStation Software] – Select -- the "Rotate View icon".  Select – "**Top View**" →  *Returns the view to a "Top View".*

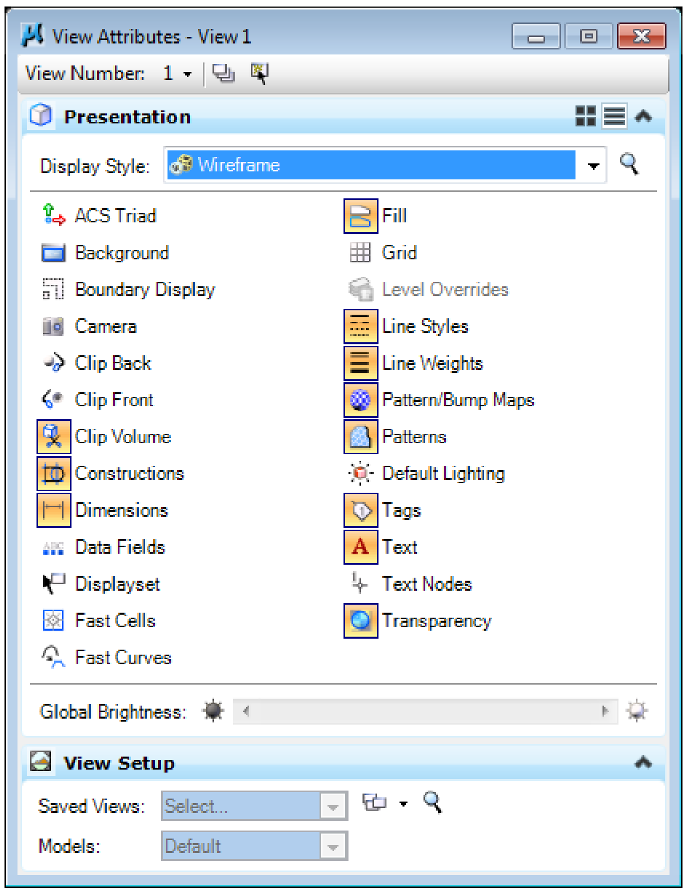
Lab6B Resolve the "spikes" in the Mapping Data

The following Lab will detail the methods to resolve spikes and erroneous DTM data. ***Please note that for this tutorial – all of the erroneous data <u>will not</u> be resolved.***

14. In order to resolve the "spike" – it is easier to review the point data in a wireframe mode.

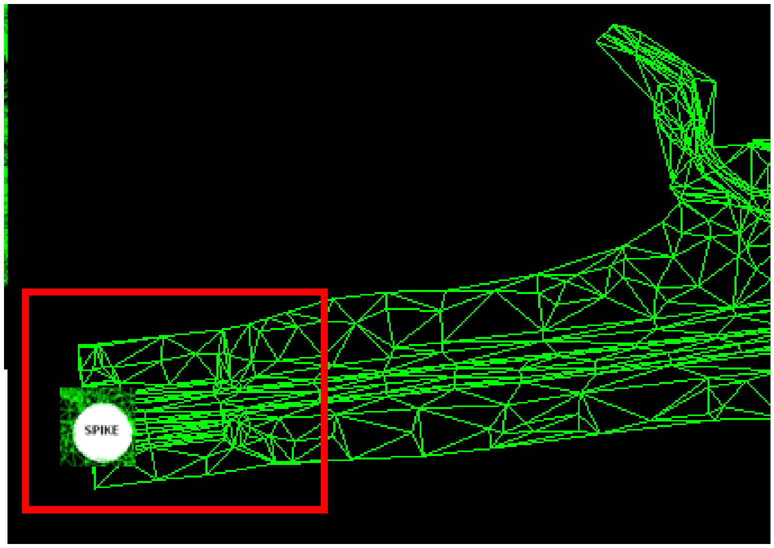
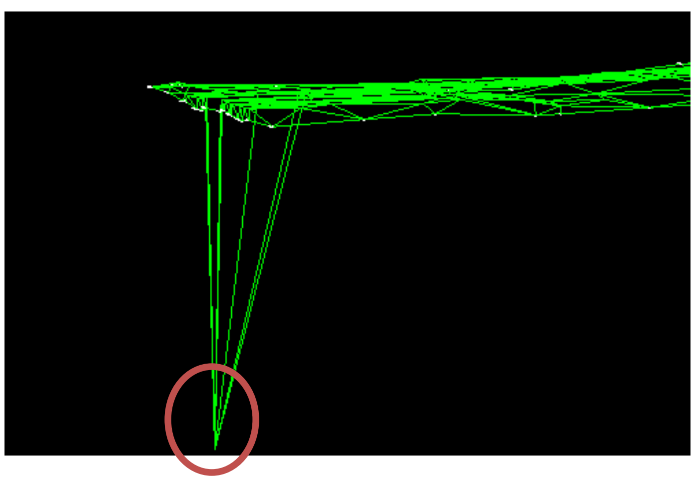
In the [MicroStation Software] –

Click **Settings ▶ View Attributes** and the following **<u>View Attributes</u>** dialog box will appear.



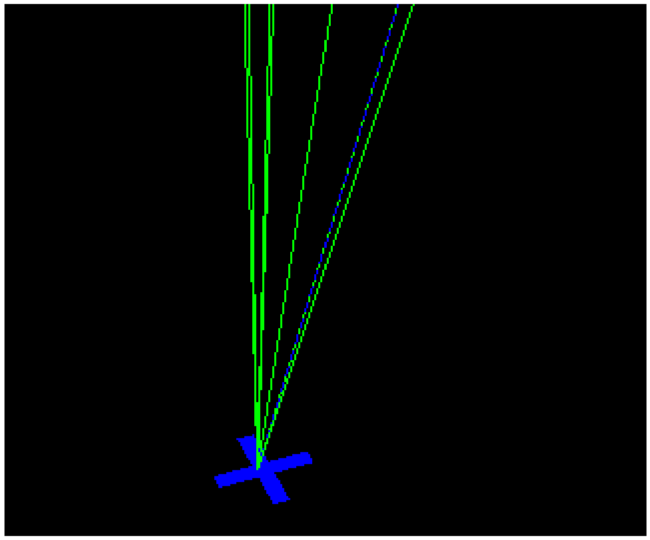
- In the **Presentation Section– Display Style** area – select the style of ***Wireframe***
- Please be patient – it may take a second for the display to change from smooth back to Wireframe.
- Click the Red  in the **<u>View Attributes</u>** dialog to close the dialog box.

Views the triangles as a wireframe surface.

15.	The spike which we will resolve is located in the area depicted by the “rectangle” shown below:  *Depicts the area of the spike.*
16.	Zoom into the area depicted by the “rectangle”. *Zooms to the area of the spike.*
17.	Rotate the view in MicroStation to the spike location and zoom close into the area where the base of the spike originates. (For rotate instructions – see previous **Lab 6A – Steps 10-11**).  *Zoom to the base of the spike.*

18. **The following Step --- (Step 18) for Information Only:**

For this particular spike – there is one erroneous point with a zero (0.00) elevation which is creating this spike. See the screen capture shown below:



In a "Real World" project - To determine which Feature is causing the spike – a user would view <u>all</u> Features to see which Feature is the source of the erroneous point. When all Features are viewed – it should be obvious which Feature contains the bust in elevation.

Information regarding "spikes".

19. The easiest method to resolve the spike issue is to view the Feature so that the Feature Points are readily available for editing. For this tutorial – we will view only the one Feature which is the source of this particular spike:

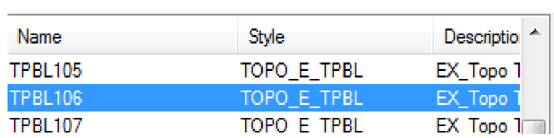
In the InRoads Software:

Click **Surface ▶View Surface▶Features** and the <u>**View Features**</u> dialog box will appear:

- In the **Surface:** Pulldown – select ***1234567_SDE***

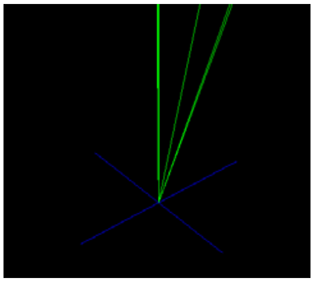
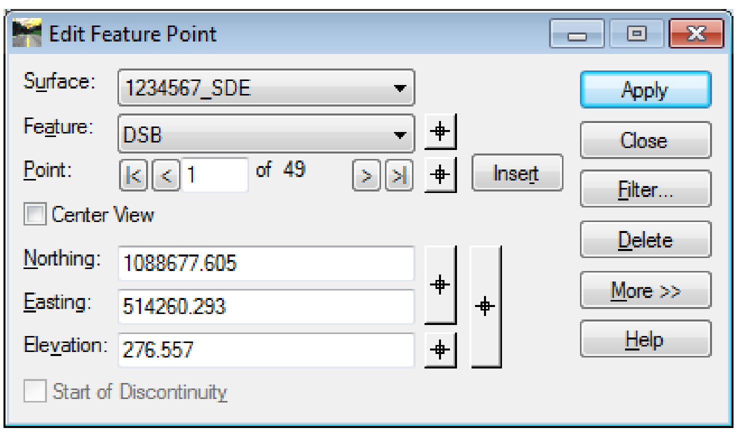
When the dialog is first opened – all of the Features in the **Features:** list will be highlighted in blue. **Left Click** anywhere in the Features List box to "un-highlight" the Features.

Left Click on the Feature: TPBL106



Click **Apply** and then click **Close** and the <u>**View Features**</u> dialog box will close.

Opens the <u>View Features</u> dialog box and selects the TPBL106 breakline to view.

20.	After viewing the **TPBL106** breakline – we can see that there is one point that has a bust in the elevation of 0.00. (This is the result of the spike): Zoom into MicroStation as needed to review the point:  *Views the TPBL106 breakline with erroneous point.*
21.	As determined in the previous steps – the spike problem is caused by breakline **TPBL106**. This breakline has an erroneous elevation at point **Number 1** – the bust in elevation is approximately 300 ft +/-. To resolve the spike – perform the following steps: In the InRoads Software: Click **Surface ▶Edit Surface▶Edit Feature Point** and the **<u>Edit Feature Point</u>** dialog box will appear:  *Opens the <u>Edit Feature Point</u> dialog box.*

22. In the InRoads Software **Edit Feature Point** dialog box – enter the following:

- In the **Surface:** Pulldown – select ***1234567_SDE***
- In the **Feature:** Pulldown – select ***TPBL106***
- In the Point Scroll box – scroll to Point **1**
- Place a ***Check Mark*** in the **Center View** box
- Retain the Northing of – **1088136.671**
- Retain the Easting of – **513531.084**
- Enter an Elevation of – **295.350**

Leave all other entries as default.

The inputs should now correspond to the screen capture depicted in *Figure L6-3* (as shown below). Verify to ensure that your input matches the screen capture.

Sets entries in the Edit Feature Point Dialog Box.

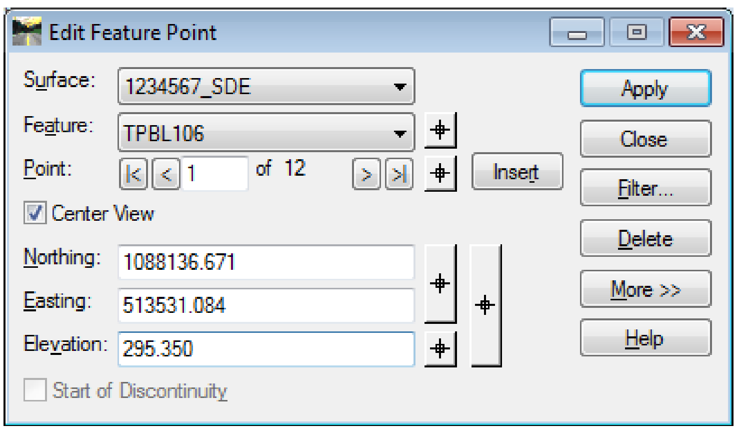
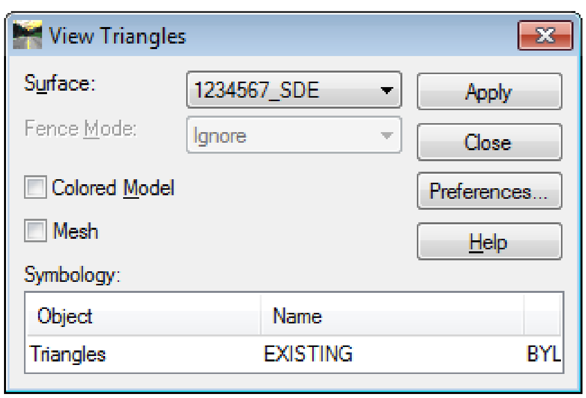
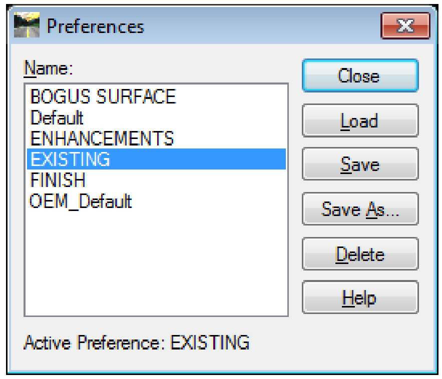


Figure L6-3 Edit Feature Point

23.	Click **Apply** and then click **Close** to close out of the **<u>Edit Feature Point</u>** dialog box. *Closes the <u>Edit Feature Point</u> dialog box.*
24.	Even though the point which was causing the spike has been corrected. The DTM will not reflect this change until the Surface has been re-triangulated. **Re-triangulate the DTM** In the InRoads Software – Select **Surface**▶**Triangulate Surface**. The **<u>Triangulate Surface</u>** dialog box will open. • In the **Surface:** Pulldown – select ***1234567_SDE*** • In the **Maximum Length:** field enter – enter ***300.000*** Leave all other entries as default. *Opens the <u>Triangulate Surface</u> dialog box.*
25.	Click **Apply.** The InRoads Status Bar (Located at the bottom – left hand side of the InRoads Interface) will depict the completion percentage of the triangulation. *The DTM Surface is triangulated.*
26.	After the triangulation is completed – click **Close** to close out of the **<u>Triangulate Surface</u>** dialog box. *Closes the <u>Triangulate Surface</u> dialog box.*
27.	The DTM Surface will now be viewed to ensure that the spike has been corrected. Click **Surface** ▶**View Surface**▶**View Triangles** and the **<u>View Triangles</u>** dialog box will appear: 

- In the **Surface:** Pulldown – select ***1234567_SDE***
- In this dialog box – click on the **Preferences**… button and the following dialog box will appear:



- In the dialog box – select the Preference of **EXISTING**. Then click **Load** and then click **Close** and the **Preferences** dialog box will close.
- Click **Apply**.

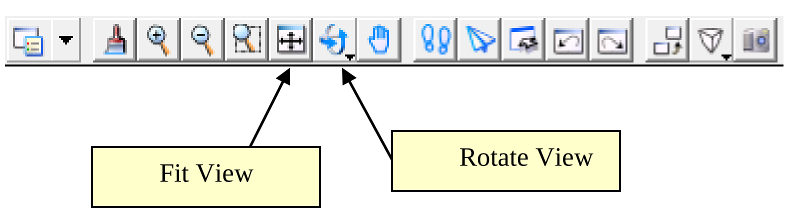
Opens the View Triangles dialog box and selects the triangles to view.

28. Click **Close** and the **View Triangles** dialog box will close.

Closes the View Triangles dialog box.

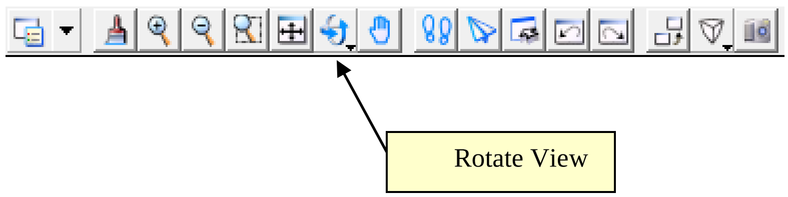
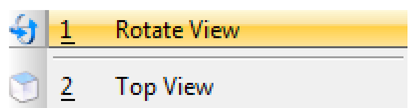
29. In the [MicroStation Software] –

Select -- the “Fit View icon” and “Rotate View icon” to view the DTM in 3D.



Rotate the view as needed to ensure that the spike has been corrected.

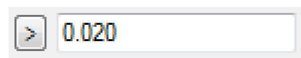
Reviews the DTM Surface.

30.	**Important Step:** In the [MicroStation Software] – To return the view back to the correct settings for the next Lab --- Select the “Rotate View icon” and then select the **“Top View”**.  **Select – “Top View”** →  *Returns the view to a “Top View”.*
31.	**Important Step:** In the [MicroStation Software] – Select **Edit ▶Select All** Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn file to ensure a clean DGN file for the next Lab.*

Lab6C Review --- the Resolve Crossing Segments

Before the final processing of the DTM Surface -- the **Resolve Crossing Segments** command ***Interactive*** Mode Option will be used to ensure that no new segment crossings were inadvertently introduced when the Exterior Boundary was incorporated and when the spikes were corrected, etc.

The **Resolve Crossing Segments** command requires a surface to be triangulated before using this utility. This step has already been completed in **Lab 6B**.

32.	Click **Surface ▶Utilities▶Resolve Crossing Segments** and the **<u>Resolve Crossing Segments</u>** dialog box will appear: • In the **Surface:** Pulldown – select ***1234567_SDE*** • In the **Mode:** field – select ***Interactive*** • In the **Delta Tolerance:** field – select > ***0.020***  <u>(Ensure the Greater Than Sign is selected)</u> • In the **Match Elevation:** entry – select  ***Median*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L6-4* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the <u>Resolve Crossing Segments</u> dialog box*

****WARNING****

Ensure the Delta Tolerance of > **0.020** is selected.

> 0.020

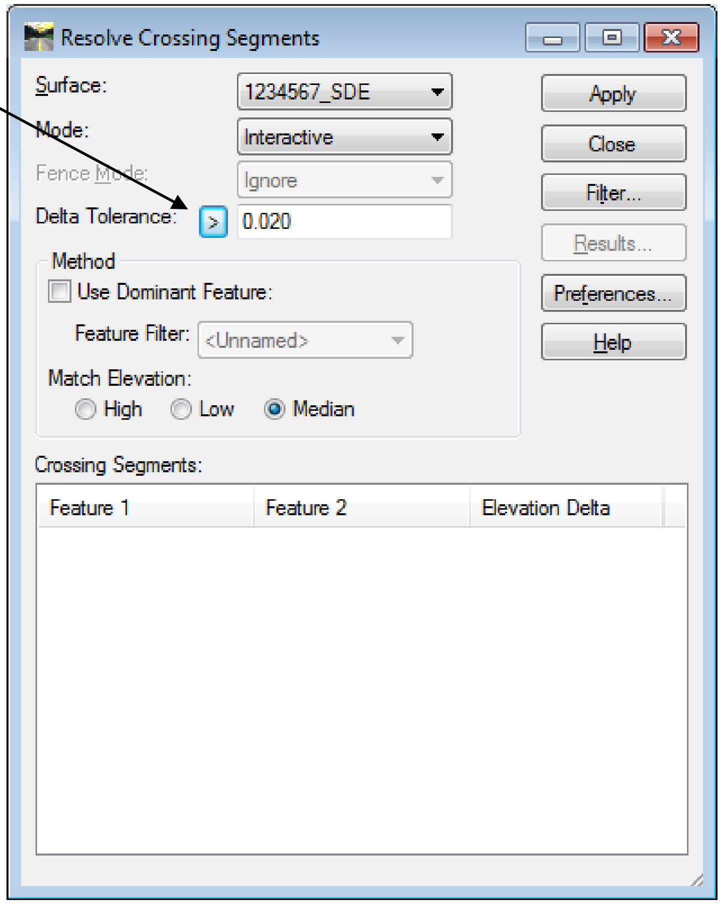


Figure L6-4 Resolve Crossing Segments

****Information****

When using the ***Automatic*** Mode the Delta Tolerance should be set to < 0.020. When using the ***Interactive*** Mode the Delta Tolerance should be set to > 0.020.

33.	Click **Apply**. If there are any Crossing Segments, these will be depicted (highlighted in Red) in the list field of the dialog box. In this case, all of the crossings have been resolved and the list box is empty. The Resolve Crossing Segments dialog should now correspond to the screen capture depicted in *Figure L6-5*(as shown below). Verify to ensure that your input matches the screen capture.

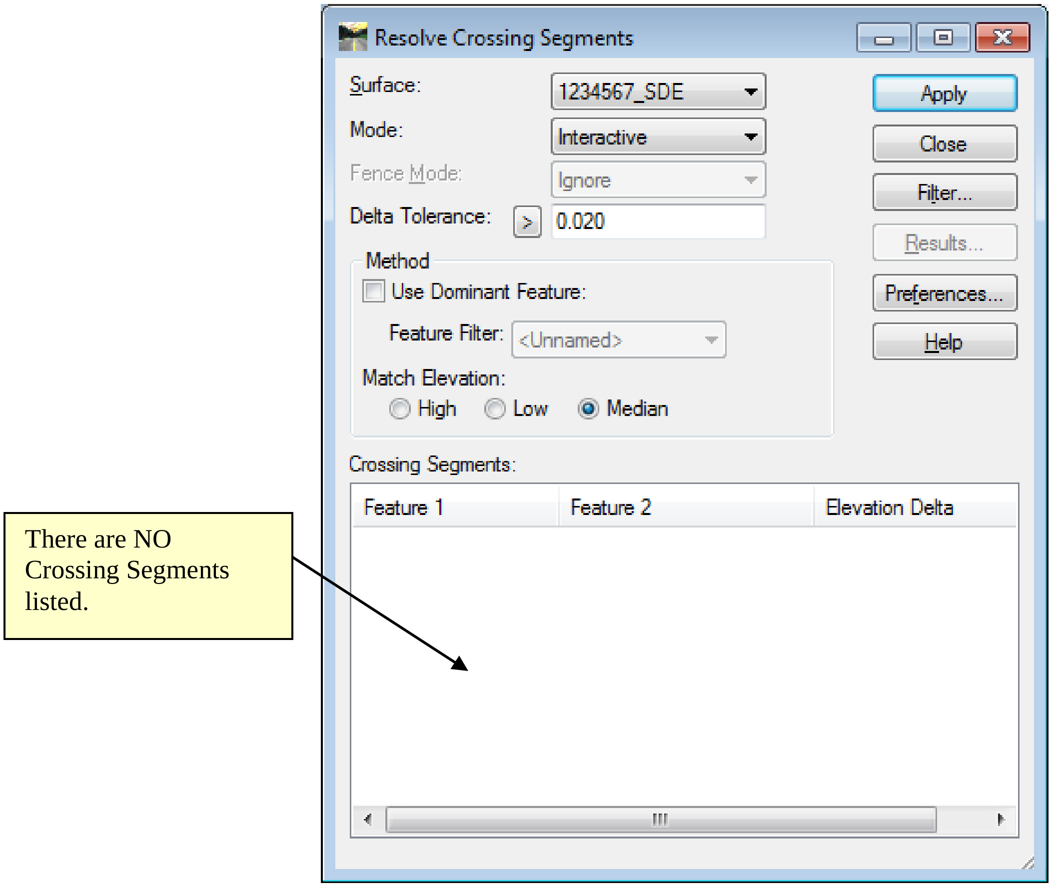
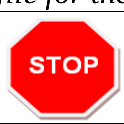


Figure L6-5 Resolve Crossing Segments

34.	Click **Close** to close out of the **<u>Resolve Crossing Segments</u>** dialog box**.** *Closes the <u>Resolve Crossing Segments</u> dialog box.*

35.	In a "Real World" project - if Crossing Segments had been introduced – the user could refer back to **Lab 4** for additional information regarding Resolving Crossing Segments and then proceed with the steps accordingly before final processing of the DTM. **Save the InRoads Surface File** Even though the "spikes" and errors have been corrected – the data has not yet been saved. InRoads retains the data in <u>temporary</u> memory but does not <u>save</u> the data on the fly. When a change has been made to an InRoads Surface Project – <u>Save</u> the project. Select **File**►**Save**► **Surface** from the **InRoads Menu**. <u>Please Note:</u> (The "Save As" dialog box may not appear because the Surface has already been saved initially). The Surface Project (***1234567_SDE.dtm***) will be saved to **Lab 6** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab6** Note that the <u>**InRoads**</u> and <u>**MicroStation Status Bar**</u> (Located at the bottom of both the InRoads and MicroStation Interface) will depict a message when the Surface Project has been saved. *The **1234567_SDE** Surface Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 6***
36.	**Important Step:** In order to Start with a CLEAN DGN file for the next Lab (**Lab 7**): In the [MicroStation Software] – Select **Edit** ►**Select All** Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn file to ensure a clean DGN file for the next Lab.*
37.	 This concludes Lab 6. Do not proceed until the Instructor directs you to do so.

Lab 7
Final Processing of the Field Surface

Objective

The DTM Surface data has been verified and all erroneous data corrected in the previous Lab. The next step is the completion of the final processing of the Full Field DTM Surface. The DTM Surface will be re-triangulated and compressed (which will release memory slots that contain deleted data). This Lab will depict the procedures for the final DTM processing. **Lab 17** will depict the process to create topographical and utility DGN file(s) of the final deliverables for submission to the Design Engineers.

The DTM Deliverable will include the following:

- A processed DTM Surface file (PI#_SDE.dtm)

The objective of Lab 7 is to:

- Process a completed DTM Surface File

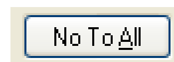
Lab7A Process the DTM Surface for Final Submission

In this section of the lab you will be re-triangulating the DTM Surface and compressing the DTM for final submission to the Design Engineers.

1. **Starting Clean**

In order to ensure that you are working with a “clean” database – you will close MicroStation and InRoads if they are still running from a previous Lab:

To CLOSE MicroStation and InRoads -

Select **File▶Exit** from the [MicroStation Menu].
If any messages appear regarding the saving of projects – Select 

This closes BOTH the MicroStation and InRoads Software(s).

2. From the desktop, double-click on the **MicroStation** icon labeled **GDOT MicroStation V8i SS2 (x86)**.

Double click on the icon labeled **GDOT MicroStation V8i SS2 (x86)**.

- When the **MicroStation Manager** dialog box opens – navigate to the **C:\InRoads Data\1234567\SDE Labs\Standards** folder and select the “**GDOT 3D Working File.dgn**”. Click **Open**.

- Now open InRoads from within MicroStation by selecting: **InRoads ▶ InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu].

The MicroStation and InRoads Software(s) will open.

3. **Load the InRoads Geometry and Surface File(s)**

Select **File▶Open** from the **InRoads Menu**.

The Project Defaults (which were set up in **Lab 1C**) are set to the following Path: **C:\InRoads Data\1234567\SDE Labs**.

Browse to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 7**

Selects the path to open the Surface and Geometry File(s).

4. After navigating to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 7**

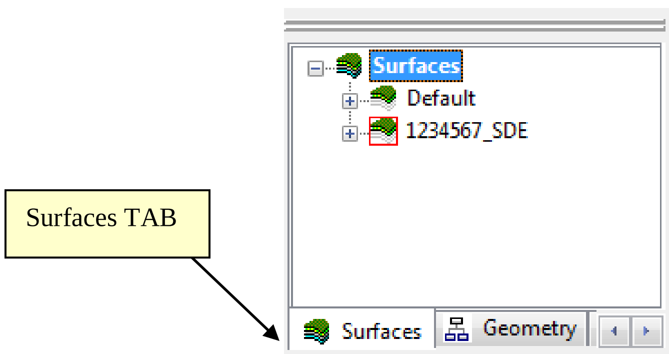
Select the file named:
1234567_SDE.alg – then click **Open**.

Select the file named:
1234567_SDE.dtm – then click **Open**

Then click **Cancel**.

The 1234567_SDE.alg and 1234567_SDE.dtm file(s) will open.

5. Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). Note that the "Red Rectangle" denotes that the **1234567_SDE** project is the active Surface.



Opens the "Surfaces Tab" in the InRoads Workspace Bar.

6. The "Completed" Surface will now be triangulated for final submission.

Select **Surface ▶ Triangulate Surface**. The **<u>Triangulate Surface</u>** dialog box will open.

- In the **Surface:** Pulldown – select ***1234567_SDE***
- In the **Maximum Length:** field enter – enter ***300.000***

Leave all other entries as default.

The inputs should now correspond to the screen capture depicted in *Figure L7-1* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the <u>Triangulate Surface</u> dialog box.

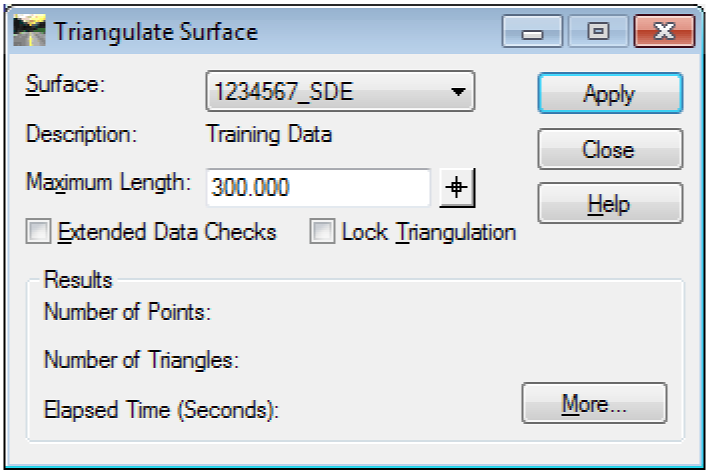


Figure L7-1 Triangulate Surface

7.	Click **Apply.** *The DTM Surface is triangulated.*
8.	After the triangulation is completed – click **Close** to close out of the **<u>Triangulate Surface</u>** dialog box. *Closes the <u>Triangulate Surface</u> dialog box.*
9.	The “Completed” Surface will now be compressed (deleted data will be removed from memory) which will reduce the size of the DTM file. Select **Surface▶Utilities▶Compress Surface** and the **<u>Compress Surface</u>** dialog box will open. • In the **Surface:** Pulldown – select ***1234567_SDE*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L7-2* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the <u>Compress Surface</u> dialog box.*

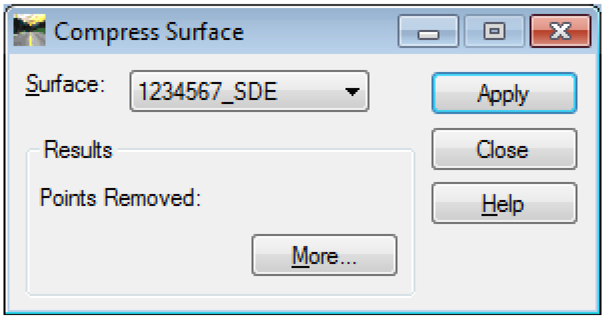


Figure L7-2 Compress Surface

10.	Click **Apply**. A dialog box will appear that warns that the Surface will be re-triangulated. (See *Figure L7-3* as shown below). *Generates a re-triangulate warning box.*

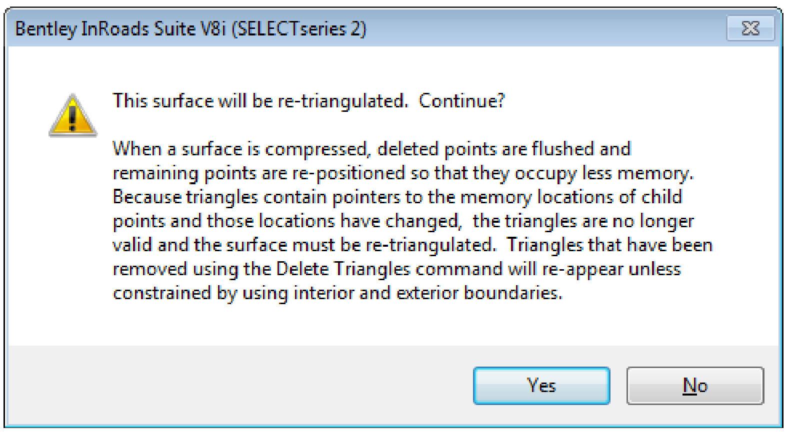


Figure L7-3 Re-Triangulate Message Box

11.	Click **Yes**. The DTM Surface will be re-triangulated. *Re-triangulates the Surface.*
12.	After the re-triangulation is completed – click **Close** to close out of the **<u>Compress Surface</u>** dialog box. *Closes the <u>Compress Surface</u> dialog box.*

13.	Select **File**▶**Save**▶ **Surface** from the **InRoads Menu**. Please Note: (The "Save As" dialog box may not appear because the Surface has already been saved initially). The Surface Project (***1234567_SDE.dtm***) will be saved to **Lab 7** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab7** *The **1234567_SDE** Surface Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 7***
14.	**For Information Only:** The ***1234567_SDE.dtm** is a "working surface" for the use of Survey Data Engineers. After submission to the Designer(s) – the Designer will re-name the surface to **1234567_Exist.dtm**. The procedure of re-naming the Surface will be the responsibility of the Designer and will be described in the Design Guidelines and Tutorials. *(The reason the SDE does not work in a **1234567_Exist.dtm** will be described in more detail in later Labs. The main reason is for enhanced data. During the addition of enhancements – the SDE will be working in several DTM files. Therefore it is advantageous to have a "working DTM" to input in all of the compiled enhanced data. The final compiled DTM data will be submitted to the Designer(s) as **PI#_SDE.dtm** file for tracking purposes). The Designer will then re-name the file to **1234567_Exist.dtm**. *Depicts Surface Information.*
15.	**For Information Only:** The ***1234567_A.fwd*** file is NOT to be submitted to Design. The Designer will have all of the information which is contained in the field book in the **1234567_SDE.dtm**, the **1234567_SDE.alg** file and the associated DGN File deliverables. *Depicts FWD File Information.*
16.	**VERY Important Step:** In order to Start with a CLEAN DGN file for the next Lab: In the [MicroStation Software] – Select **Edit** ▶**Select All** Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn to ensure a clean DGN file for the next Lab.*
17.	In the [MicroStation Software] – Select **File** ▶**Compress**▶**Design** to reduce the DGN File Size. *Compresses the DGN File Size.*

18.	To **CLOSE** MicroStation and InRoads – Select **File ▶ Exit** from the [MicroStation Menu]. If any messages appear regarding the saving of projects – Select  *This closes BOTH the MicroStation and InRoads Software(s).*
End	 This concludes Lab 7. Do not proceed until the Instructor directs you to do so.

2

Processing of Mapping and Field Survey Enhancements
Training Guide – Section 2

Lab 8
Create Survey Enhancement Project(s) and Import CSV Enhancement Data

Objective

Labs 1-7 depict the processes for generating data on Full Field Survey Projects. The following **Labs 8-9** describe the process for adding enhancements to Photogrammetry (Mapping) Projects. This process can also be utilized for adding any additional enhancements which may be required for Full Field Survey Projects.

The SDE will receive a Mapping Project (**PI#_Map.dtm**) along with the associated Topography DGN file, roll-plots, etc. from Photogrammetry at the Office of Design Policy and Support/Location Bureau. This Mapping Project will be enhanced with Field Survey Data which includes: property data, drainage data, enhancement of obscured areas, new construction data, etc. The SDE will process and then merge the applicable field survey data into the Mapping Data. A new DTM for the enhancements will be created as well as a Geometry Project (ALG) file. The ALG file will be created which will contain the Property, Existing Alignment and Existing R/W Data. The ALG file will be discussed in more detail in **Section 3 (Labs 10-15).**

Several of the file and importation steps for Mapping Enhancements are similar to a Full Field Survey Project (as it pertains to the creation of an FWD database and import of CSV files). Basically several DTM's will be created which contain the enhancement data. The DTM's can be considered comparable to the CAiCE SRV files process and the naming conventions similar to the CAiCE Segment Naming process. The process for adding additional enhancements will utilize the same procedures (except for the file naming conventions which adds different alpha character(s) for enhancement tracking purposes).

InRoads contains a **GDOT Trimble CSV to InRoads Translator** which converts the CSV file into a format that is usable for InRoads. The translator converts the .CSV file based on a format of **Point Number**, **Northing**, **Easting**, **Elevation**, **Alpha Feature Code** and **Attribute Name** and **Attribute Value** if applicable. After the CSV file is translated and imported into the Field Book, the data can then be imported into a Surface Project and/or Geometry Project.

The objective of Lab 8 is to:

- Open a Mapping File obtained from Photogrammetry and Create a "Working DTM Surface" to merge Photogrammetry and Field Data
- Create a Survey Data Field Book and Translate/Import the CSV File(s)
- Create a Surface Database and a Geometry Database for Field Enhancements

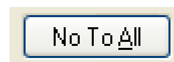
Lab8A Set Survey Defaults and Create a "Working DTM Surface"

In the following Lab – the Survey Data Processing Default Settings will be initiated. Also a Mapping Surface obtained from Photogrammetry will be utilized to create a "Working DTM Surface" (1234567_SDE). This Surface will be used to merge the Mapping and Enhancement data into one surface.

1. **Starting Clean**

In order to ensure that you are working with a "clean" database – you will close MicroStation and InRoads if they are still running from a previous Lab:

To CLOSE MicroStation and InRoads -

Select **File►Exit** from the [MicroStation Menu].
If any messages appear regarding the saving of projects – Select 

This closes BOTH the MicroStation and InRoads Software(s).

2. From the desktop, double-click on the **MicroStation** icon labeled **GDOT MicroStation V8i SS2 (x86)**.

Double click on the icon labeled **GDOT MicroStation V8i SS2 (x86)**.

- When the **MicroStation Manager** dialog box opens – navigate to the **C:\InRoads Data\1234567\SDE Labs\Standards** folder and select the "**GDOT 3D Working File.dgn**". Click **Open**.

- Now open InRoads from within MicroStation by selecting: **InRoads ► InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu].

The MicroStation and InRoads Software(s) will open.

3. **Verify Project Defaults**

- In InRoads -- select **File ►Project Defaults**
- Use the pull down next to ***Configuration Name:*** to select **1234567_SDE** which you created in Lab 1.
- Verify Settings match those shown in *Figure L8-1*.
- Click **Apply** & **Close.**

*Sets the SDE Project Defaults. This folder location will also be the default folder when **File ►Save** and **File ►Close** are used.*

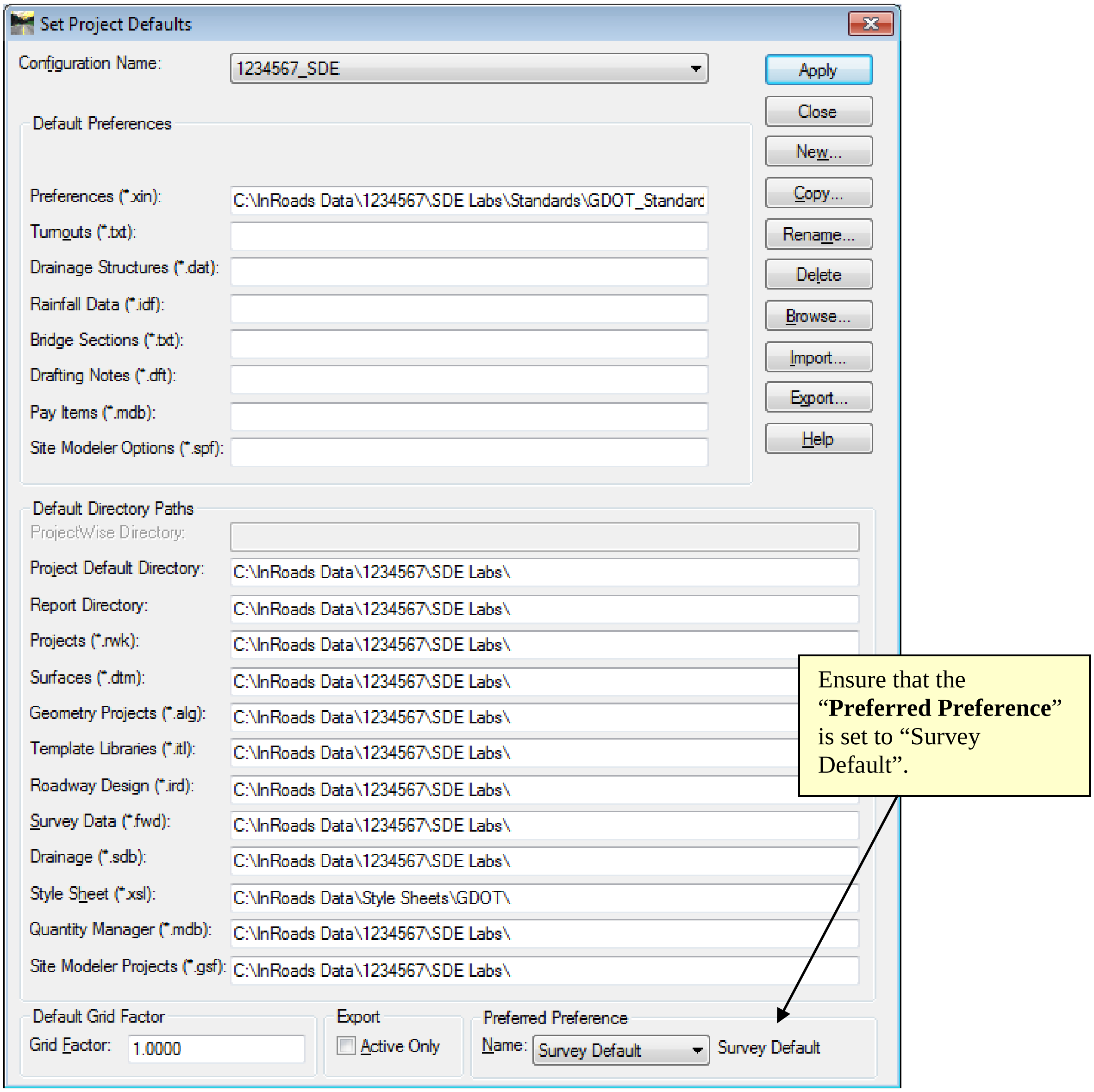
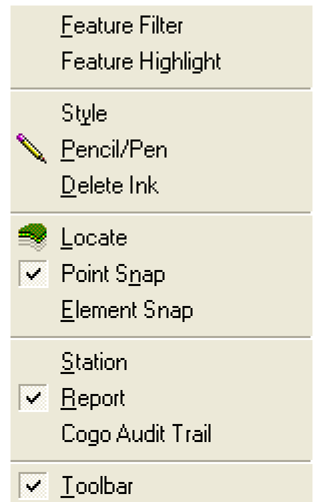


Figure L8-1 Set Project Defaults

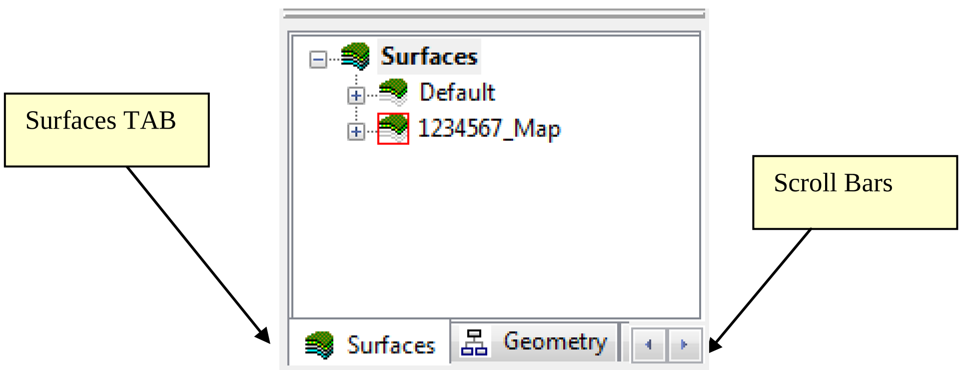
4.	**Set Survey Default Preferences** • In InRoads - Select **File ▶ Project Options**. • In the **<u>Project Options</u>** dialog box select the **General** Tab. • Click the **Preferences** button at the bottom of the dialog box. • Choose ***Survey Default***. Click **Load** and **Close**. • In the **<u>Project Options</u>** dialog box - Click **Apply** and **Close**. *Sets the Survey Defaults Preference.*

5.	***Set InRoads "Locks"** *It is very important to ensure that the "Locks" are set according to the steps and instructions for each Lab when indicated. Click **Tools▶Locks** from the InRoads pull-down menu. Ensure that the following locks are selected/unselected as appropriate: Feature Filter _____ Unchecked Feature Highlight __ Unchecked Style _____________ Unchecked Pencil/Pen ________ Set to Pencil Delete Ink ________ Unchecked Locate ___________Set to Features Point Snap ________ Checked Element Snap ______Unchecked Station ___________ Unchecked Report ___________ Checked Cogo Audit Trail ____ Unchecked Toolbar ________ Checked  *The InRoads "Locks" are set accordingly.*
6.	**Open/Load the Mapping (Photogrammetry) DTM Surface received from the Location Bureau: (1234567_Map.dtm)** Select **File▶Open** from the **InRoads Menu**. Browse to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 8\Photogrammetry** Select the file named: **1234567_Map.dtm** Click **Open** and then click **Cancel**. *The 1234567_Map.dtm Surface file will open.*

DTM Information:

The **1234567_Map.dtm** is the Original Mapping Surface file received from the Location Bureau. This DTM contains all of the Surface Features such as points, breaklines, obscured areas, triangulated data, etc. This file is similar to the CAiCE SRV file -- the main difference is that this file already contains the triangulated DTM data along with the associated Features in a Surface format.

In order to ensure that the SDE has a backup of this **1234567_Map.dtm** file (for repository purposes) – the SDE will copy all of the data from the **1234567_Map.dtm** file into a working DTM file named **1234567_SDE.dtm**. The SDE will then “close” the **1234567_Map.dtm** and work from the **1234567_SDE.dtm**.

7.	Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Surfaces Tab**.  The **1234567_Map** file should be listed under the surfaces. Ensure that in the InRoads Explorer Interface Workspace Bar that the **1234567_Map** Surface Project has a “Red Rectangle” around the icon. This denotes that this is the “Active” Surface Project. Any Surface commands will be initiated and performed on the current “Active” Surface Project. *Opens the Surface Tab in the InRoads Explorer Interface.*

8. **Copy the data from the 1234567_Map.dtm to the 1234567_SDE.dtm**

Select **Surface**▶**Copy Surface** from the **InRoads Menu** and the **Copy Surface** dialog box will appear.

Listed will be a **From** frame and a **To** frame for inputs.

In the **From** frame:

- In the **Name:** Pull-down – select **1234567_Map**

In the **To** frame:

- In the **Name:** Field – enter **1234567_SDE**
- In the **Description:** Field – enter **Training Data**
- In the **Preference:** Pull-down – select **EXISTING**

The inputs should now correspond to the screen capture depicted in *Figure L8-2* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the Copy Surface dialog box.

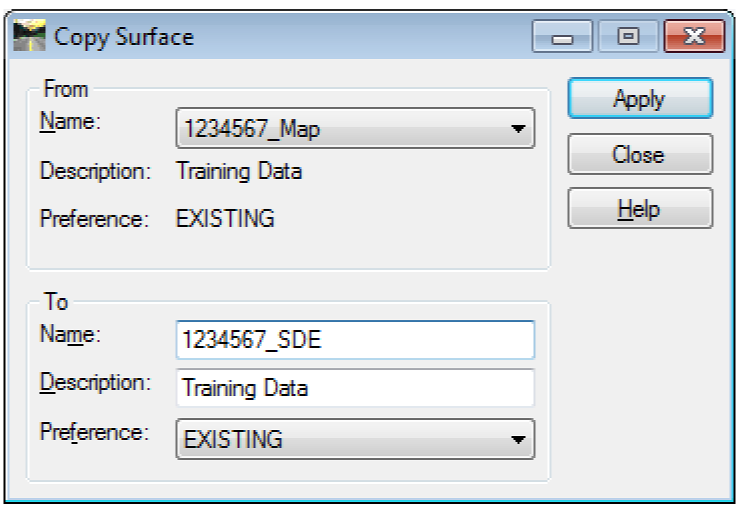


Figure L8-2 Copy Surface

9. Click **Apply** and then click **Close** to create the **1234567_SDE** Surface.

The 1234567_SDE Surface is created and the Copy Surface dialog box closes.

10. Even though the **1234567_SDE** Surface Project was created – it has not yet been saved.

Select **File ▶ Save ▶ Surface** from the **InRoads Menu**.

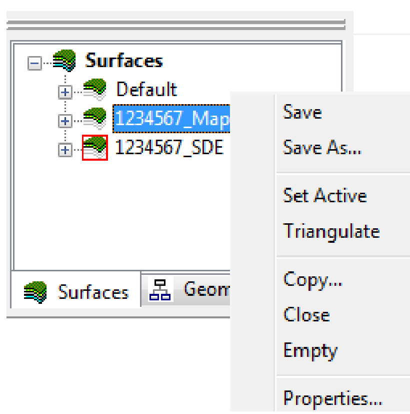
- Navigate to **C:\InRoads Data\1234567\SDE Labs\Lab 8**
- Enter the **File name:** as ***1234567_SDE***
- Enter the **Save as type:** as ***Surfaces (*.dtm)***
- Click **Save** and then click **Cancel.**

*The **1234567_SDE** Surface Project has now been saved to the following path:*
C:\InRoads Data\1234567\SDE Labs\Lab 8

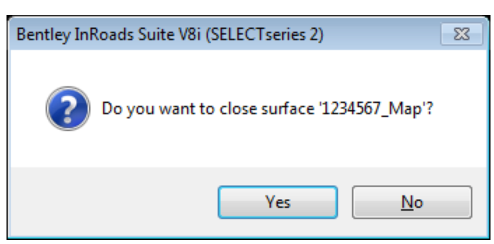
11. The **1234567_Map** and the **1234567_SDE** Surface should now both be listed in the Surfaces Tab. The Data for both surfaces are identical.

As mentioned previously we will be adding enhancements to the "working" surface of the **1234567_SDE** Surface – therefore the **1234567_Map** Surface can now be closed.

- Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface).
- Select the **1234567_Map** surface (by Left clicking) and the Name will highlight in blue.
- Then (Right click) over the surface and a pop-up dialog will appear.



- Click **Close** and a dialog will open asking if you want to **Close** the ***1234567_Map*** Surface ---- select **Yes**.



The 1234567_Map Surface is Closed.

Lab8B Survey Enhancement --- Field Book 1234567_XO (.FWD)

In the following Labs – a Survey Field Book (FWD), Surface Database (DTM) and Geometry Database (ALG) will be created to import in the field enhancement data. The process depicted in this Lab is for the Original Enhancements but similar processes can also be used to add additional enhancements during the life of the Project.

Please Note:

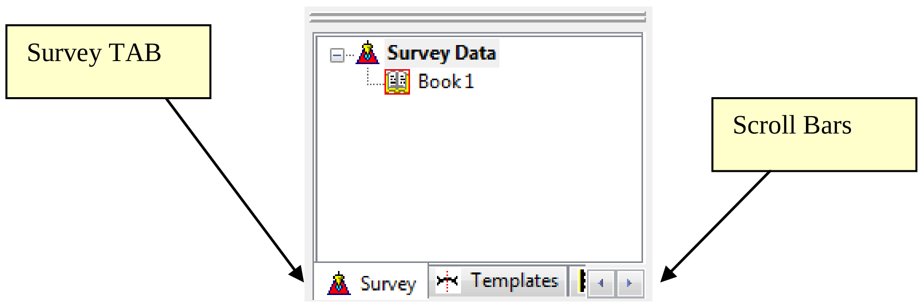
- Future Enhancements for Mapping DTM Databases will remain the same (except for the Naming Convention of the Enhancement – Example: 1234567_XA, 1234567_XB, 1234567_XC, etc).
- Future Geometry Enhancements (Additional Field Collected Property) – will differ in the import process. Since a Geometry Database will already exist – the additional property data will be imported into the original Geometry Database. It will be critical for the Field Surveyor's to be given a range of points in order to collect any future enhancements so that data will not be overwritten.

For these Labs:

- A **1234567_XO.fwd ---**
  Survey Book (FWD file) will be created to import in the Original Enhancement Field Survey Data.
- A **1234567_XO.dtm ---**
  Surface Database (DTM) will be created to import in the Original Enhancement DTM data.
- A **1234567_SDE.alg ---**
  Geometry Database (ALG) will be created to import in the Original Field Collected Property and Existing Alignment Data.

All of the Original Enhancement Data is imported into the Survey Field Book. This Field Book is utilized to transfer the data from the CSV file to the database(s) in InRoads. After the Data is imported into the Field Book – the applicable data (depending on whether it is DTM Data or Geometry Data) – will then be selected by a pre-defined filter and imported into the appropriate database.

An InRoads Survey Data Field Book (.FWD File) must be created and must be made active in order to import and translate the CSV Data from Survey. In this tutorial, Project 1234567_XO.fwd (Survey Data Field Book File) will be created. This active field book database will be used to import, generate and translate the CSV data from Survey.

12.	If **MicroStation** and **InRoads** are not already open -- follow <u>**Step 2 in Lab 8A**</u> to open MicroStation and InRoads *Starts the MicroStation and InRoads Software Products.*
13.	Click on the **Survey Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Survey Tab**.  *Opens the <u>Survey Tab</u> in the InRoads Explorer Interface.*
14.	Create the ***1234567_XO.fwd*** Survey Data Project by selecting **File►New** from the **InRoads Menu**. The <u>**New**</u> dialog box will open. Select the **Survey Data Tab**. • In the **Name:** Field – enter ***1234567_XO*** The inputs should now correspond to the screen capture depicted in *Figure L8-3* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the <u>New</u> dialog box allowing you to create a Survey Data Project.*

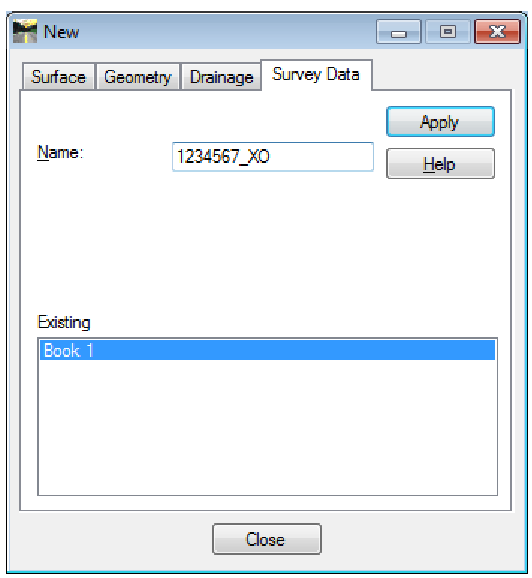


Figure L8-3 "New" Survey Data Project

15. Click **Apply** and then click **Close** to create the **Survey Data Project**.

The Survey Data Project is created and the New dialog box closes.

16. Even though the **1234567_XO** Field Book was created – it has not yet been saved. InRoads retains the data in temporary memory but does not save the data on the fly. It is highly recommended to Save the project periodically after any major modifications or changes to the data.

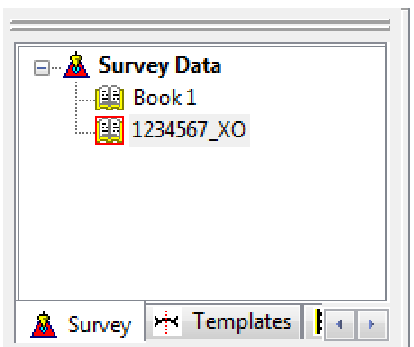
Select **File ▶ Save ▶ Survey Data** from the **InRoads Menu**.

- Navigate to **C:\InRoads Data\1234567\SDE Labs\Lab 8**
- Enter the **File name:** as ***1234567_XO***
- Enter the **Save as type:** as ***Survey Data (*.fwd)***
- Click **Save** and then click **Cancel.**

*The **1234567_XO** Survey Data Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 8***

17. In the screen capture depicted below –

Note that in the InRoads Explorer Interface Workspace Bar that the **1234567_XO** Survey project has a “Red Rectangle” around the icon.



This denotes that this is the “Active” Survey Project. Any survey commands will be initiated and performed on the current “Active” Survey Project.

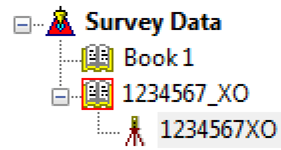
Also note that there will always be a Default “Book 1” Project listed. InRoads includes this Default “Book 1” for internal InRoads functionality --- **Remember to never save data to this Default Survey Data Book.**

Displays a red rectangle around the 1234567_XO Survey icon to reflect that this is the Active Survey Project upon which commands will be performed.

18.	**For Information Only:** **Figure B: (Screen Capture from WordPad)** **PT # –Northing–Easting–Elevation–Feature Code–Attribute Name–Attribute Value** `203,1263914.015,2244692.182,922.143,SDCD,ATTRNAME,CD203` `204,1264915.721,2244406.908,929.411,SDCD,ATTRNAME,CD204` `205,1265779.781,2244196.015,945.983,SDCD,ATTRNAME,CD205` `206,1266807.164,2243938.752,948.854,SDCD,ATTRNAME,CD206` `207,1268577.467,2243523.159,941.923,SDCD,ATTRNAME,CD207` `208,1269722.906,2243229.502,932.556,SDCD,ATTRNAME,CD208` `209,1271707.277,2242672.591,941.302,SDCD,ATTRNAME,CD209` `531,1278246.098,2237121.145,863.166,DSBST61,,` `532,1278247.861,2237119.81,862.491,DSEST62,,` `533,1278248.867,2237117.916,861.555,DSCST63,,` `534,1278229.978,2237105.246,864.358,DSB61,,` `535,1278230.896,2237101.55,862.359,DSE62,,` *Depicts "Example" format of standard GDOT CSV File.*
19.	The GDOT Trimble "CSV" File will be translated and imported: (**1234567XO.csv)** Select **File▶Import▶ Survey Data** from the **InRoads Menu**. The **Import** dialog box will open. Select the CSV file by browsing to the file in the "**Look in**" drop down box. Navigate to the CSV file which is located in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 8\1234567XO CSV File** Select the **1234567XO.csv** file --- by left-clicking on the file. • In the **File name:** Pulldown – ensure ***1234567XO.csv*** is listed • In the **Files of type:** Pulldown – ensure **GDOT Trimble Format(*.csv)** is listed • The **Template:** Pulldown – should be blank • The **Linear Units:** Selection - should be **US Feet** • The **Angular Units:** Selection – should be **Degrees** *Opens the Import dialog box allowing you to import a CSV File.*
20.	Click **Import.** (This command selects the data to be imported.) Click **Close**. (The Survey Data is actually imported when the **Close** command is selected.) **It may take a while for the CSV data to import depending on the size of the file!** Once the data is imported – the **Import** dialog box will close automatically. *The CSV File data is translated and imported into the 1234567_XO Survey Project.*

21. The CSV File data is now imported into the **1234567_XO** Survey Project. Click on the **Survey Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface) and then *double-click* on the **1234567_XO** Survey Project.

A **1234567XO** folder will appear. *Double-click* on the **1234567XO** folder.



Review the InRoads Explorer data frame and note that the Survey Project now contains point data and coordinate information.

Opens the InRoads Survey Tab and displays the 1234567_XO Survey Data information in the InRoads Explorer Interface.

22. Even though the CSV data has been imported into the InRoads Survey Project (**1234567_XO.fwd**) – the data has not yet been saved. Whenever a change has been made to an InRoads Survey Project – it is advisable to Save the project and its associated modifications or changes.

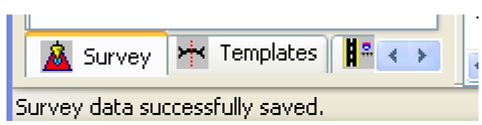
Select **File▶Save▶ Survey Data** from the **InRoads Menu**.

Please Note: (The "Save As" dialog box may not appear because the Survey Project has already been saved initially).

The Survey Project (***1234567_XO.fwd***) will be saved to **Lab 8** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 8**

Note that the **InRoads Status Bar** (Located at the bottom of the InRoads Interface) will depict a message when the Survey Project has been saved. (See screen capture below):

Survey Project Saved



*The **1234567_XO** Survey Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 8***

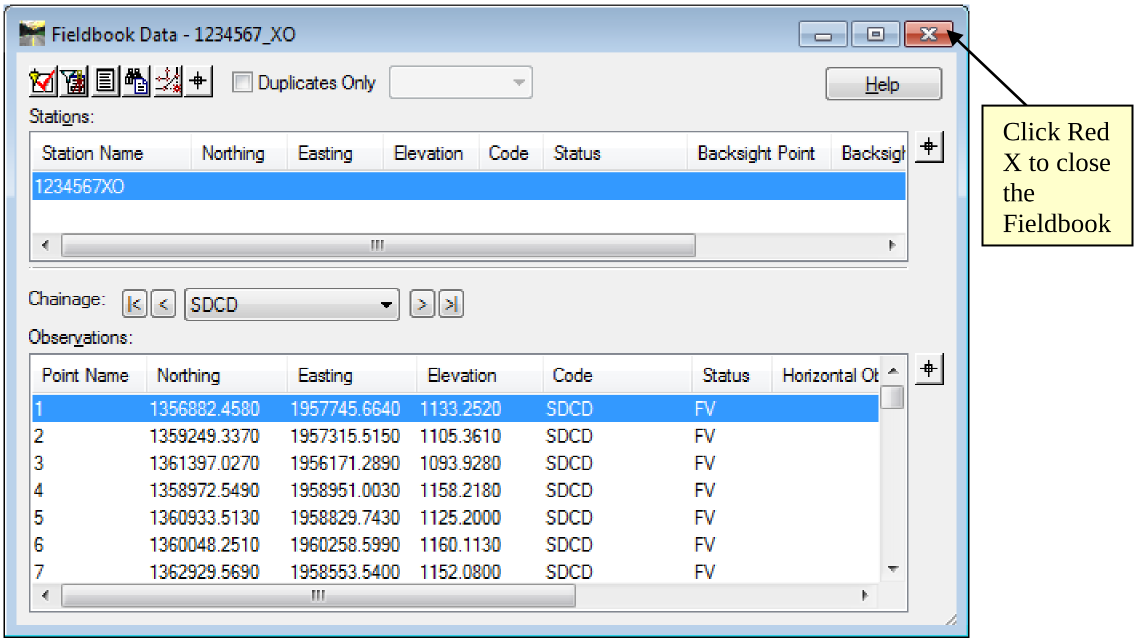
23. Select **Survey▶Fieldbook Data▶** from the **InRoads Menu** and the ***1234567_XO*** Survey Field Book will open.

Information Only: Review the field book data information for potential errors/problems. For additional detailed information regarding the reviewing/correction of field book errors – please refer back to **Lab 2C.**

Opens the Fieldbook dialog box for review.

24. **Close the Fieldbook Data dialog box.**

Left click on the Red X in the upper right corner of the Fieldbook Data dialog box as shown here.



Closes the Fieldbook Data dialog box.

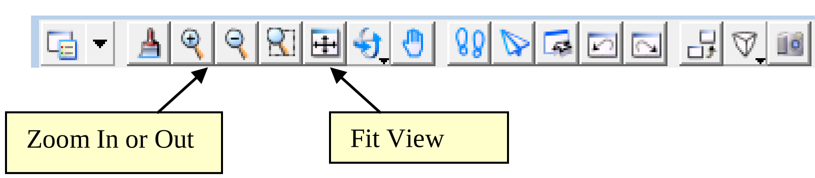
25. **View the Planimetric Survey Data (Enhancement Data):**

The Planimetric data (Enhancement Data) depicted will be merged into the associated DTM and ALG databases.

Take a minute to view the selected Features in the [MicroStation Software] by using the following commands located under the MicroStation View 1 Window:

In the [MicroStation Software] –

Select the "Zoom In or Zoom Out" or "Fit View" Icons as appropriate to view the Features.

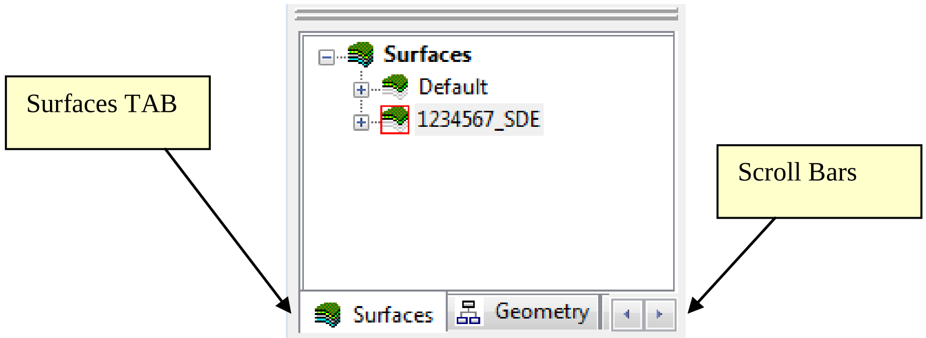


Views the Features in MicroStation.

26.	**Information Only:** At this time - the data can be viewed only. This data is not actually written as Graphics to the DGN file. The user may zoom in or out in MicroStation but actual manipulations to the data cannot be initiated because it has not yet been imported into a Surface or Geometry database. The steps to write the survey data to the Surface and Geometry InRoads modules will be detailed in the following Labs. *Planimetric Survey Data in InRoads/MicroStation.*
27.	**To turn Planimetric Survey Data on/off:** The Planimetric View can be turned on/off in InRoads by the following steps: Select **Survey▶View Survey Data▶ Planimetrics** from the **InRoads Menu**. A check mark by **Planimetrics** – turns the planimetric data on for viewing. Removing the check mark by **Planimetrics** – turns the planimetric viewing data off. • For this Lab – remove the check mark in order to turn the **Planimetrics** off. *Steps to turn off the Planimetric Survey Data in InRoads/MicroStation.*

Lab8C Survey Enhancement --- Surface 1234567_XO (.DTM)

In this section of the lab you will be creating a Surface Database Enhancement Project. This database will be used to import the Surface information contained in the Survey Field Book (.FWD) into the Surface Database Project (.DTM) by using a pre-defined Filter.

28.	Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Surfaces Tab**.  *Opens the Surface Tab in the InRoads Explorer Interface.*
29.	Create the ***1234567_XO.dtm*** Surface Project by selecting **File▶New** from the **InRoads Menu**. The **New** dialog box will open. Select the **Surface Tab**. • In the **Type:** Pulldown – select ***Existing*** • In the **Name:** Field – enter ***1234567_XO*** • In the **Description:** Field – enter ***Original Enhancement*** • In the **Maximum Length:** Field – enter ***300.000*** • In the **Preference:** pulldown – select ***EXISTING*** The inputs should now correspond to the screen capture depicted in *Figure L8-4* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the New dialog box allowing you to create a Surface Project.*

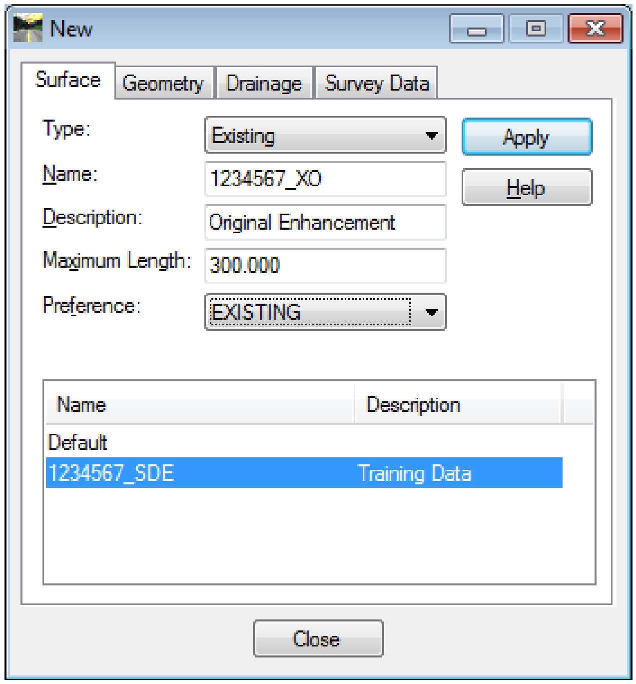
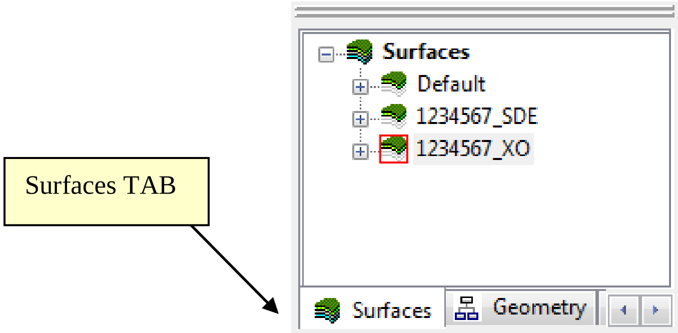


Figure L8-4 “New” Surface Data Project

30.	Click **Apply** and then click **Close** to create the **Surface Project**. *The Surface Project (1234567_XO) is created and the New dialog box closes.*
31.	Even though the InRoads Surface Project was created – it has not yet been saved. Select **File**▶**Save**▶ **Surface** from the **InRoads Menu**. • Navigate to **C:\InRoads Data\1234567\SDE Labs\Lab 8** • Enter the **File name:** as ***1234567_XO*** • Enter the **Save as type:** as ***Surfaces (*.dtm)*** • Click **Save** and then click **Cancel.** *The **1234567_XO** Surface Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 8***

32. Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface).



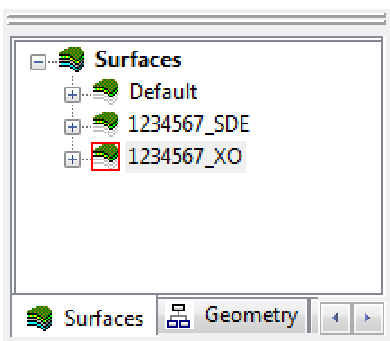
Notice that there are Two Surfaces shown:

- **1234567_SDE** (the Mapping Data Surface)
- **1234567_XO (**the Original Enhancement Surface)

The **1234567_SDE** Surface contains the Mapping Data. At this point the **1234567_XO** Surface is <u>empty and contains no data</u> – this is denoted by the ***0's*** depicted in the ***Data Types*** in the InRoads Explorer.

Opens the InRoads <u>Surface Tab</u> and displays the 1234567_SDE and the 1234567_XO Surface information in the InRoads Explorer Interface.

33. In the screen capture depicted below –



Note that in the InRoads Explorer Interface Workspace Bar that the **1234567_XO** Surface Project has a "Red Rectangle" around the icon.

This denotes that this is the "Active" Surface Project. Any Surface commands will be initiated and performed on the current "Active" Surface Project.

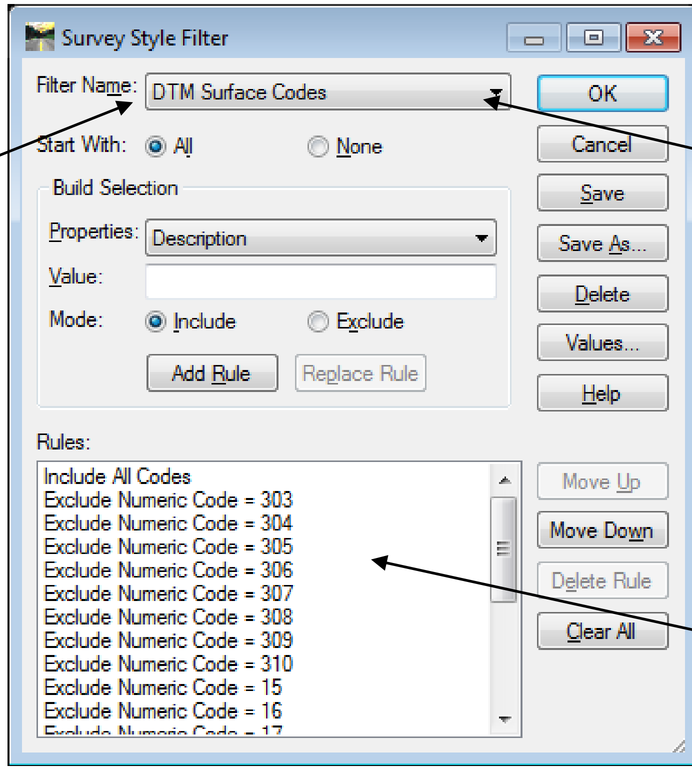
Also note that there will <u>always</u> be a Default Project listed. InRoads includes this Default Project for internal InRoads functionality --- <u>**Remember to never save data to this Default Project.**</u>

<u>**IMPORTANT!!**</u> In the following Labs – it is critical to remember which Surface is the Active Surface (depicted by the Red Rectangle). You will be switching from one Surface to another periodically to perform commands and it is very important to make sure the correct surface is the active one.

Displays a red rectangle around the Active Surface.

34.	**<u>Information Only:</u>** In this section of the lab you will be importing in the Enhancement Data contained in the Survey Field Book (.FWD) into the **1234567_XO** Surface Database Project (.DTM). *Information regarding importing the Enhancement Data to the Surface Database Project.*
35.	**Important Step---!!!** Ensure that the **1234567_XO** database is the <u>Active Project</u> (has a red rectangle) next to the **1234567_XO** name. *Ensures that the correct DTM --- (1234567_XO) is active.*
36.	**Important Step---!!!** Click **Tools**▶**Locks** from the InRoads pull-down menu. Ensure that the **Feature Filter Lock** is turned **<u>ON</u>**. There should be a **<u>check mark</u>** next to the Feature Filter Lock. *Ensures that the <u>Feature Filter Lock</u> is turned ON.*
37.	**Select the DTM Surface Codes** ** **<u>WARNING</u>** ** – During this step take care not to roll the scroll button on your mouse. Click **Survey** ▶**Survey Style Filter** and the **<u>Survey Style Filter</u>** dialog box will appear: In the **<u>Survey Style Filter</u>** dialog box --- input the following: • In the **Filter Name:** Pulldown – select ***DTM Surface Codes*** • Then Left Mouse Click in the **Rules:** section frame to ensure that the **Numeric Code** is accepted. Leave all other entries as default!! The inputs should now correspond to the screen capture depicted in *Figure L8-5* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the <u>Survey Style Filter</u> dialog box.*

WARNING - Take care not to accidentally move your scroll wheel on your mouse while the Filter Name field is active.



Use the pull-down arrow to select the Filter named '**DTM Surface Codes**'.

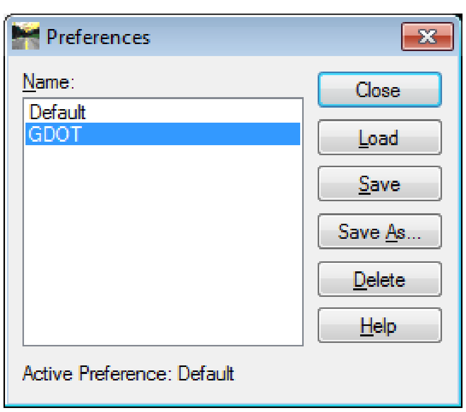
When the filter name is selected the data will be filtered as depicted here.

Figure L8-5 Survey Style Filter

<table>
<tr><td>38.</td><td>Click OK and the <u>Survey Style Filter</u> dialog box will Close and the Filter will be made active.

Closes the <u>Survey Style Filter</u> dialog box.</td></tr>
<tr><td>39.</td><td>From the InRoads Menu - click Survey ▶Survey Data to Surface and the <u>Survey Data to Surface</u> dialog box will appear:

• In the Surface Name: Pulldown field– select 1234567_XO
• In this dialog box – click on the Preferences… button and the following dialog box will appear:

</td></tr>
</table>

- In the dialog box – select the Preference of **GDOT**. Then click **Load** and then click **Close** and the **Preferences** dialog box will close.

The following entries will automatically be set after selecting the Preference named **GDOT**:

- In the **Parent Name:** Field – (Blank)
- In the **Description:** Pulldown –***Use Attributes***
- In the **Tolerance:** Field – ***0.0000***
- In the **Maximum Segment Length**: Field – ***300.0000***
- In the **Curve Stroking:** Pulldown – ***Horizontal and Vertical***
- In the **Triangulate Surface**: Check Box – ***Checked***
- In the **Duplicate Names:** Radio Button – ***Rename***

The inputs should now correspond to the screen capture depicted in *Figure L8-6* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the Survey Data to Surface dialog box.

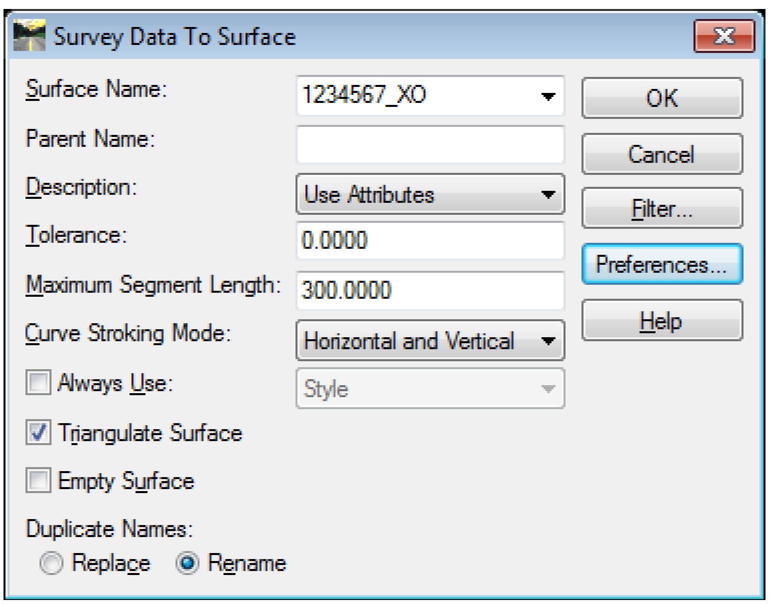


Figure L8-6 Survey Data to Surface

40. Click **OK** and the Survey Data will be imported into the ***1234567_XO*** Surface Project and the **Survey Data to Surface** dialog box will close.

The **Triangulate Surface** dialog box will then appear in order to create a Triangulated Surface.

The Survey Data is imported and the Survey Data to Surface dialog box closes.

41. In the **Triangulate Surface** dialog box:

- In the **Surface:** Pulldown – select ***1234567_XO***
- In the **Maximum Length:** field enter – enter ***300.000***

Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L8-7* (as shown below).

Opens the Triangulate Surface dialog box.

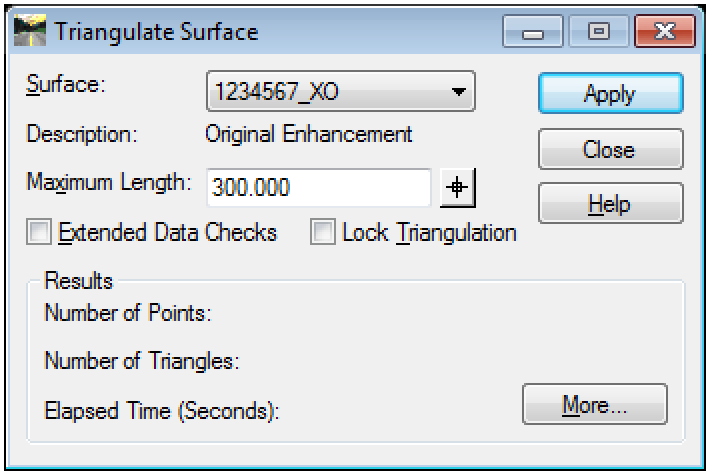


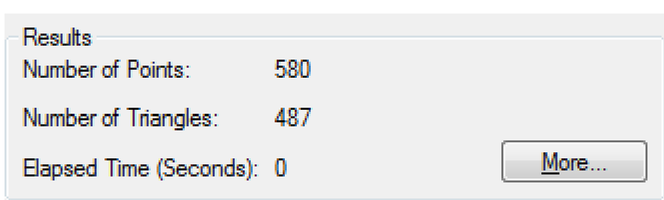
Figure L8-7 Survey Data to Surface

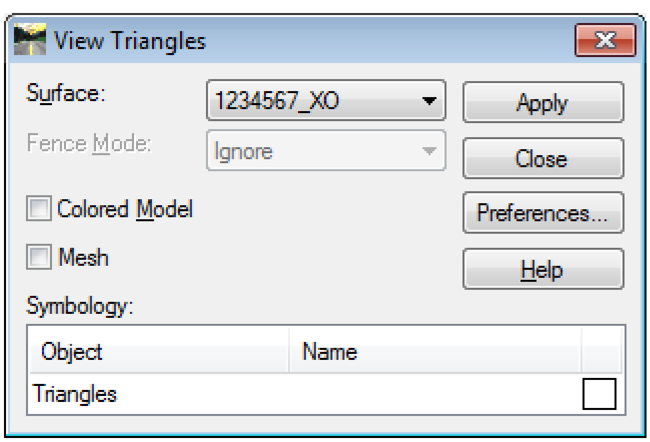
42. Click **Apply.**

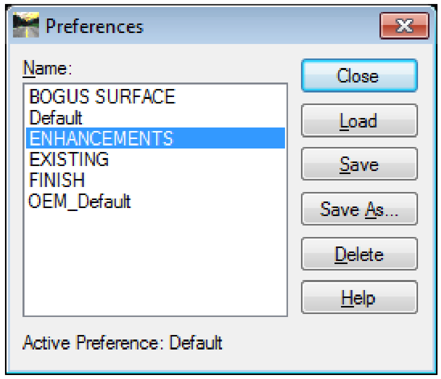
For Information Only:

Depending on the size of the project – (on most Field Survey Enhancement Projects which are smaller in size) – the triangulation of surfaces is usually ***very fast***.

On these types of projects a **Results** Box will appear which lists the number of Points/Triangles/Elapsed Time. (See screen capture below). When these **Results** appear – the surface has completed triangulating.



43.	After the triangulation is completed – click **Close** to close out of the **<u>Triangulate Surface</u>** dialog box. *Closes the <u>Triangulate Surface</u> dialog box.*
44.	**View the Surface Features** In the **<u>InRoads Software</u>** - select **Surface**▶**View Surface**▶**Features** and the **<u>View Features</u>** dialog box will appear: • In the **Surface:** Pulldown – select ***1234567_XO*** When the dialog is first opened – all of the Features in the **Features:** list will be highlighted in blue (<u>Leave all of the features</u> “highlighted blue). This will ensure that all Features are graphically viewed. The Features which you wish to view MUST be highlighted Blue. Features can be highlighted by selecting them with the mouse and a combination of the **Ctrl key** or **Shift key** on the keyboard. **Leave all other entries as default.** *Opens the <u>View Features</u> dialog box.*
45.	Click **Apply** and then click **Close** and the **<u>View Features</u>** dialog box will close. *Closes the <u>View Features</u> dialog box.*
46.	**View the Surface Triangles:** • Select **Surface**▶**View Surface**▶ **Triangles** from the **InRoads Menu**. The following dialog box will appear:  • In the **Surface:** pulldown – select **1234567_XO** • In this dialog box – click on the **Preferences**… button and the following dialog box will appear:



- In the dialog box – select the Preference of ***ENHANCEMENTS**. Then click **Load** and then click **Close** and the **Preferences** dialog box will close.

***NOTE:**
This **1234567_XO** Surface is utilizing a Preference named "**ENHANCEMENTS**" and utilizes a different color scheme in order to differentiate between the **1234567_SDE.dtm** Existing Surface. The **1234567_XO.dtm** surface is an enhancement surface and will eventually be merged into the Existing **1234567_SDE.dtm**. So basically this is a temporary surface and the color is different in order to help the user distinguish between the surfaces during the processing phase before the final merging of the DTM's.

Sets the Preference for the viewing of the 1234567_XO.dtm Surface.

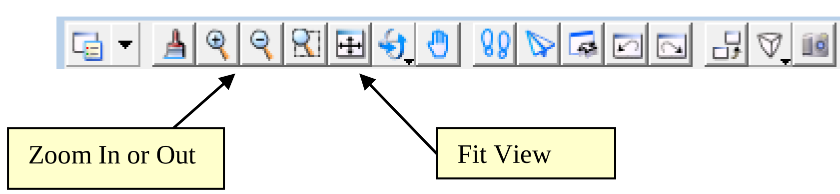
47. In the **View Triangles** dialog box – click **Apply** and then click **Close** and the **1234567_XO** Enhancement Surface will view and the **View Triangles** dialog box will close.

View the 1234567_XO Enhancement data triangles.

48. **View** the selected Surface Features/Triangles in the [MicroStation Software] by using the following command located under the MicroStation View 1 Window:

In the [MicroStation Software] –

Select the "Zoom In or Zoom Out" or "Fit View" Icons as appropriate to view the Features.



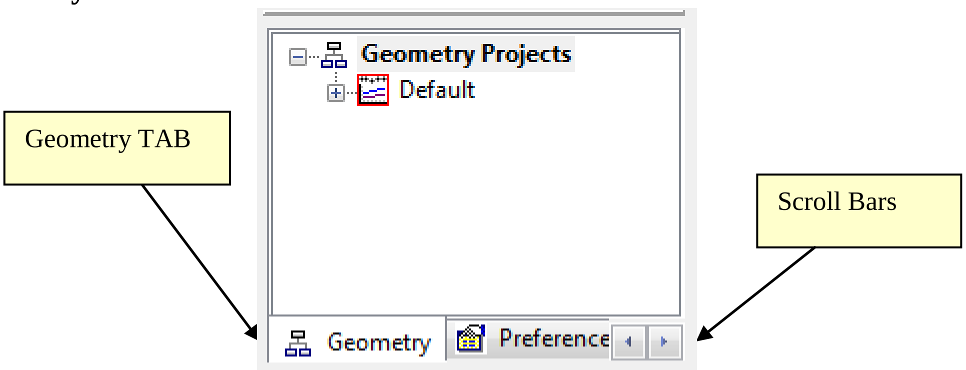
The Surface Features/Triangles are displayed on the MicroStation screen.

49.	**<u>Important Note:</u>** In a "real world" Project – any obvious errors, segment crossings, etc. would be reviewed in the **1234567_XO** Surface and would be resolved at this point. Please see **Lab 4** in the **Full Field Survey Section** for steps in resolving crossing segments. *For this Lab – the **1234567_XO** Surface has been reviewed and all crossing segments eliminated.*
50.	The Survey Data is now imported into the **1234567_XO** Surface Project. **Save the InRoads Surface Project:** Select **File**▶**Save**▶ **Surface** from the **InRoads Menu**. <u>Please Note:</u> (The "Save As" dialog box may not appear because the Surface Project has already been saved initially). The Surface Project (***1234567_XO.dtm***) will be saved to **Lab 8** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 8** Note that the **<u>InRoads Status Bar</u>** (Located at the bottom of the InRoads Interface) will depict a message when the Surface Project has been saved. *The **1234567_XO** Surface Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 8***

Lab8D Survey Enhancement --- Geometry 1234567_SDE (.ALG)

In this section of the lab you will be creating a Geometry Database Enhancement Project. This database will be used to import the Geometry information contained in the Survey Field Book (.FWD) into the Geometry Database Project (.ALG) by using a pre-defined Filter.

51. Click on the **Geometry Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Geometry Tab**.



Opens the *Geometry Tab* *in the InRoads Explorer Interface.*

52. Create the ***1234567_SDE.alg*** Geometry Project by selecting **File▶New** from the **InRoads Menu**. The **New** dialog box will open. Select the **Geometry Tab**.

- In the **Type:** Pulldown – select ***Geometry Project***
- In the **Name:** Field – enter ***1234567_SDE***
- In the **Description:** Field – enter ***Training Data***
- In the **Style:** Field – (Leave Blank)
- In the **Curve Definition:** Field – (Leave Blank)

The inputs should now correspond to the screen capture depicted in *Figure L8-8* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the *New* *dialog box allowing you to create a Geometry Project.*

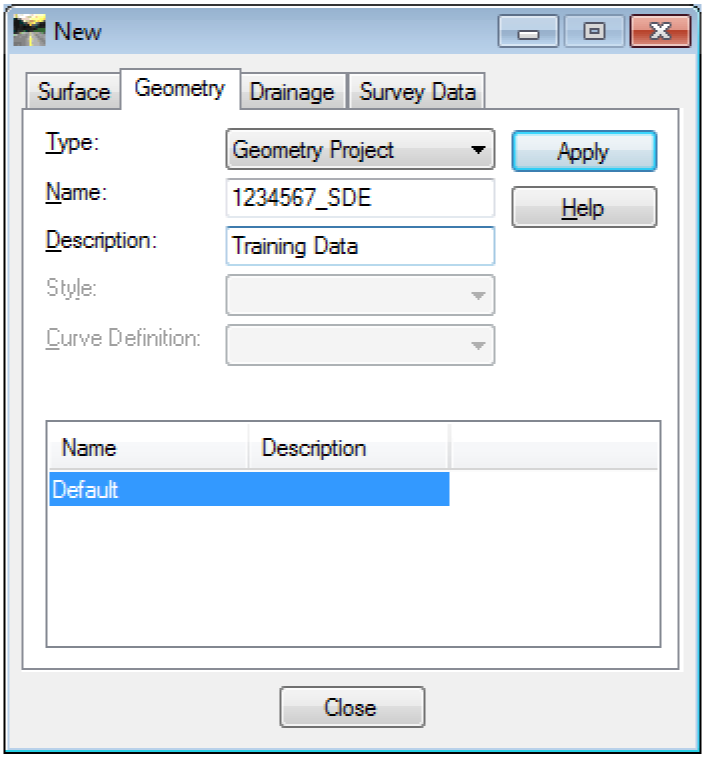
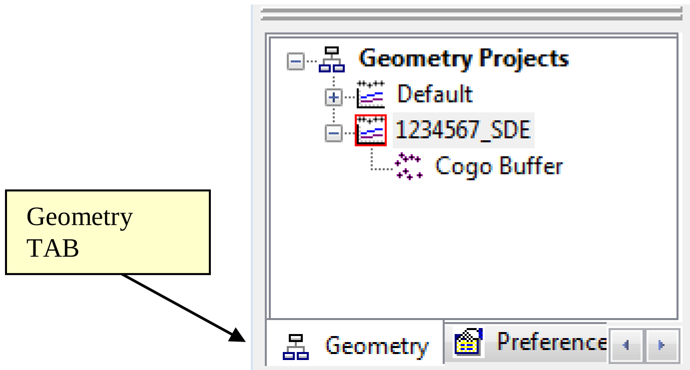


Figure L8-8 “New” Geometry Project

53.	Click **Apply** and then click **Close** to create the **Geometry Project**. *The Geometry Project is created and the <u>New</u> dialog box closes.*
54.	Even though the InRoads Geometry Project was created – it has not yet been saved. It is highly recommended to <u>Save</u> the project periodically after any major modifications or changes to the data. Select **File**►**Save**► **Geometry Project** from the **InRoads Menu**. • Navigate to **C:\InRoads Data\1234567\SDE Labs\Lab 8** • Enter the **File name:** as ***1234567_ SDE*** • Enter the **Save as type:** as ***Geometry Projects (*.alg)*** • Click **Save** and then click **Cancel.** *The **1234567_SDE** Geometry Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 8***

55. Click on the **Geometry Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Geometry Tab**.

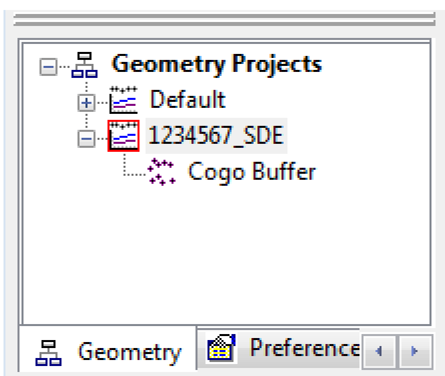


Then *double-click* on the **1234567_SDE** Geometry Project. Note that the Geometry Project has been created but is currently empty and contains no data – this is denoted by the “blank” point/coordinate data in the InRoads Explorer Interface.

Opens the InRoads Geometry Tab and displays the 1234567_SDE Geometry information.

56. In the screen capture depicted below –

Note that in the InRoads Explorer Interface Workspace Bar that the **1234567_SDE** Geometry project has a “Red Rectangle” around the icon.



This denotes that this is the “Active” Geometry Project. Any Geometry commands will be initiated and performed on the current “Active” Geometry Project.

Also note that there will always be a Default Project listed. InRoads includes this Default Project for internal InRoads functionality --- **Remember to never save data to this Default Project.**

Displays a red rectangle around the 1234567_SDE Geometry icon to reflect that this is the Active Geometry Project upon which commands will be performed.

57. **Information Only:**
In this section of the lab you will be importing in the Enhancement Data contained in the Survey Field Book (.FWD) into the **1234567_SDE** Geometry Database Project (.ALG).

Information regarding importing the Enhancement Data to the Geometry Database Project.

58.	Ensure that the **1234567_SDE** database is the Active Project (has a red rectangle) next to the **1234567_SDE** name. *Ensures that the correct ALG--- (1234567_SDE) is active.*
59.	**Important Step---!!!** Click **Tools**▶**Locks** from the InRoads pull-down menu. Ensure that the **Feature Filter Lock** is turned **ON**. There should be a **check mark** next to the Feature Filter Lock.
60.	**Information Only:** **Important Step---!!!** The Survey Style Filter named ***Property and Alignment Codes*** has been created in order to filter out just the Geometry Data from the Field Book. The following Codes will be imported into the **1234567_SDE** Geometry Database:

Property and Alignment Codes Survey Style Filter	
PROP_E_RWM	Right-of-Way Marker Found
PROP_E_RWC	Right-of-Way Point Computed
PROP_E_RWU	Right-of-Way Utility Company
PROP_E_RWE	Right-of-Way Prescription Pt
PROP_E_POEL	Point on Easement Line
PROP_E_PCF	Property Corner Found
PROP_E_PPOL	Property Point on Line
PROP_E_PPC	Property Point Computed
PROP_E_APOT	Point in Tangent, Existing
PROP_E_APC	Point of Curvature, Existing
PROP_E_APOC	Point on Curve, Existing
PROP_E_APT	Point of Tangency, Existing
PROP_E_API	Point of Intersection
PROP_E_ACL	Alignment Centerline
PROP_E_BCOL	County Line
PROP_E_BCTL	City Limit Line
PROP_E_BLDL	Land District Line
PROP_E_BLLL	Land Lot Line
PROP_E_BSL	State Line
TOPO_E_SNGSCM	NGS Control Monument
TOPO_E_SLCM	Location Control Monument
TOPO_E_SLCD	Location Control Delta
TOPO_E_SDCD	District Control Delta
TOPO_E_SBNCHMK	Benchmark

These codes are imported into the Geometry Project (.ALG File). All Codes which are not listed in the above table – will be imported into the Surface Project (.DTM File).

61.	**Select the Property and Alignment Codes** **** <u>WARNING</u> ** – During this step take care not to roll the scroll button on your mouse.** Click **Survey ▶Survey Style Filter** and the **<u>Survey Style Filter</u>** dialog box will appear: In the **<u>Survey Style Filter</u>** dialog box --- input the following: • In the **Filter Name:** Pulldown – select ***Property and Alignment Codes*** • Then Left Mouse Click in the **Rules:** section frame to ensure that the **Numeric Code** is accepted. Leave all other entries as default!! The inputs should now correspond to the screen capture depicted in *Figure L8-9* (as shown below). *Opens the <u>Survey Style Filter</u> dialog box.*

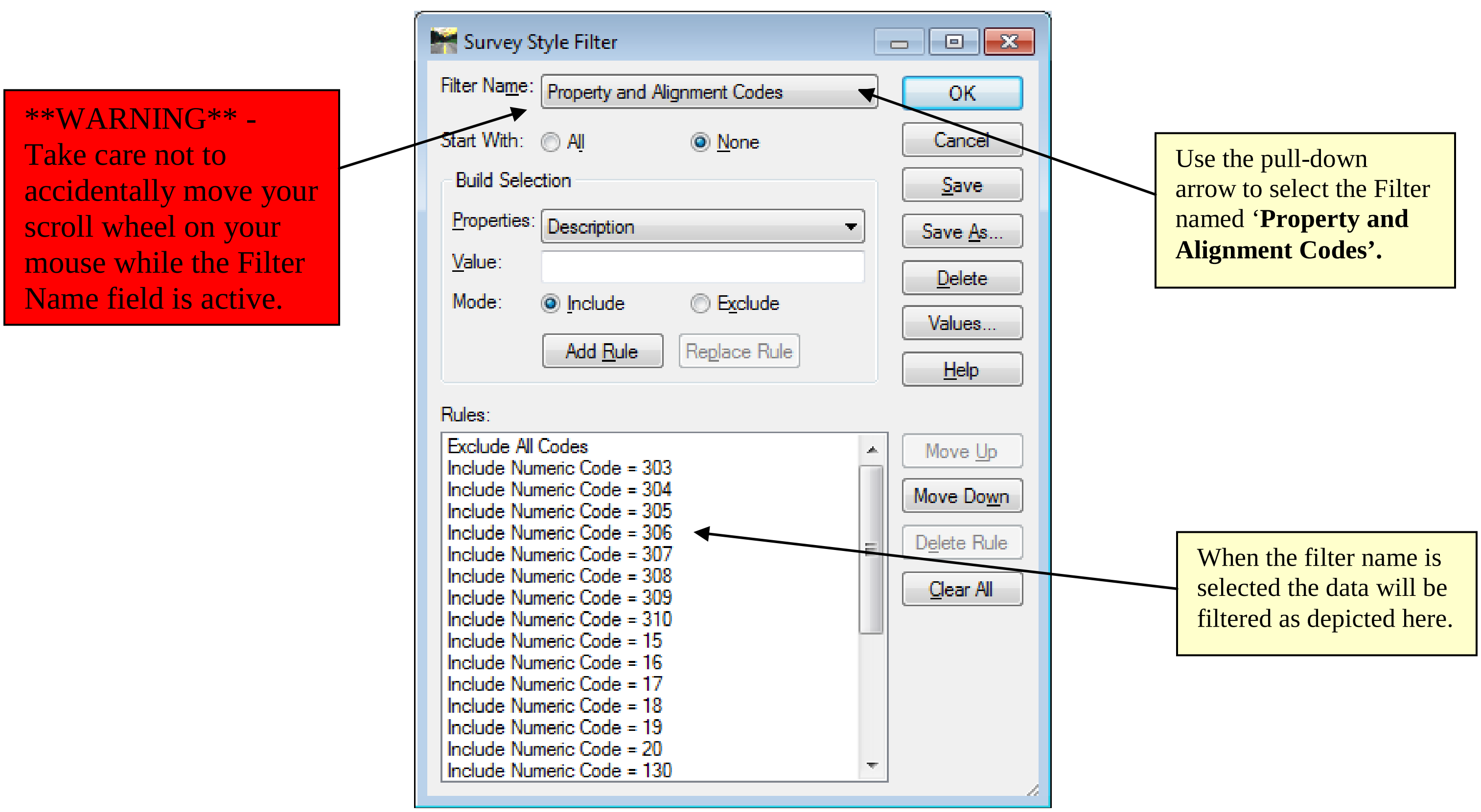


Figure L8-9 Survey Style Filter

62.	Click **OK** and the **<u>Survey Style Filter</u>** dialog box will **Close** and the Filter will be made active. *Closes the <u>Survey Style Filter</u> dialog box.*
63.	From the **InRoads Menu** - click **Survey ▶Survey Data to Geometry** and the **<u>Survey Data to Geometry</u>** dialog box will appear: • In the **Project Name:** Pulldown – select ***1234567_SDE*** • In the **Description:** Pulldown – select the default ***Use Style Description*** • In the **Curve Stroking:** Pulldown – select the default ***Horizontal and Vertical*** • In the **Duplicate Names:** radio button – select default of ***Rename*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L8-10* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the <u>Survey Data to Geometry</u> dialog box.*

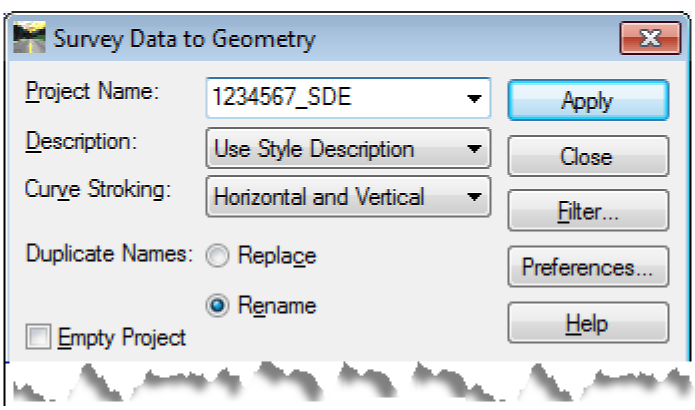


Figure L8-10 Survey Data to Geometry

64.	Click **Apply** and then click **Close**. The Survey Data will be imported into the ***1234567_SDE*** Geometry Project and the **Survey Data to Geometry** dialog box will close. *The Survey Data is imported and the <u>Survey Data to Geometry</u> dialog box closes.*

65.	The Survey Data is now imported into the **1234567_SDE** Geometry Project. **Save the InRoads Geometry Project:** Select **File▶Save▶ Geometry Project** from the **InRoads Menu**. <u>Please Note:</u> (The "Save As" dialog box may not appear because the Geometry Project has already been saved initially). The Geometry Project (***1234567_SDE.alg***) will be saved to **Lab 8** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 8** Note that the **<u>InRoads Status Bar</u>** (Located at the bottom of the ***InRoads Interface***) will depict a message when the Geometry Project has been saved. *The **1234567_SDE** Geometry Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 8***
66.	**Information Only:** Procedures regarding the <u>viewing</u> of the graphical geometry data will be depicted in upcoming Labs. Detailed information regarding the adding of Field Enhancement Data to the Mapping DTM and the process to enhance obscured areas will be described in **Lab 9**. Detailed information regarding the processing of the Geometry Data and the input of Property Data will be described in **Labs 10-15**. **Information Only:** ***Lab 8 Review***: -- The Original Enhancement Database(s) have been created and the associated Original Enhancement Data has been added to the appropriate Databases. The following data has been created/added in **Lab 8**: • **1234567_SDE.dtm –** (The "Working" Mapping DTM) • **1234567_XO.fwd** --- (The Original Enhancement Field Book) • **1234567_XO.dtm** --- (The Original Enhancement Surface) • **1234567_SDE.alg** --- (The Original Enhancement Geometry) The next **Lab 9** will detail the process of the steps required to enhance the obscured areas, enhance "partially" obscured areas as well as the steps to clip out "Old" data which will be replaced by New Construction Data. The process will also include merging the Original Enhancement Data into the Mapping Database. *Information and Review of Labs 8 and 9.*

67.	**VERY Important Step:** In order to Start with a CLEAN DGN file for the next Lab: In the [MicroStation Software] – Select **Edit** ▶**Select All** Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn file to ensure a clean DGN file for the next Lab.*
68.	 This concludes Lab 8. Do not proceed until the Instructor directs you to do so.

Lab 9
Process the Mapping Obscured Areas and Merge Field Enhancements into the Mapping Surface

Objective

In the previous **Lab 8 –** the SDE created a "Working DTM Surface" **– 1234567_SDE** which contained the Mapping DTM Surface data. The Field Enhancements were imported into the appropriate **1234567_XO** Surface file for DTM data and into the **1234567_SDE** Geometry file for the Geometry data.

Labs 10-15 depicts the process of utilizing the **1234567_SDE** Geometry file to input in the COGO Property (Parcel Data), Existing Alignment and Existing Right of Way data. **Lab 9 –** depicts the DTM enhancement process only.

In **Lab 9 –** the SDE will process the original field enhancement data and merge this data into the Mapping "Working DTM Surface". **Lab 9** depicts the merging of DTM data and the processing of obscured areas with the new enhancement information. The steps will be demonstrated which depict adding the enhancement data for new construction areas, obscured/partially obscured areas and new data outside of the exterior boundary. In this Lab -- all obscured area situations will <u>not</u> be represented. In a "real world" project – other situations regarding obscured areas may be present – the same tools used in this Lab can also be used in these other situations.

<u>***Please Note the following for these Labs:**</u>

- Not all obscured areas will be addressed or enhanced. This in turn will result in crossing segments – which would normally not be present if the appropriate obscured areas that are located within the footprint of the project are addressed.
- Also – when enhancements are added in areas of existing data – crossing segments may occur if not resolved. These will need to be addressed before submittal of the project to a Designer.
- This Lab will not address the process of resolving crossing segments – please refer back to **Lab 4** in the **Full Field Survey Section** for steps in resolving crossing segments.

The objective of Lab 9 is to:

- Depict the process of adding enhancements to new construction areas, obscured/partially obscured areas and data located outside of the current existing exterior boundary.
- Depict the process of merging the enhancement data from the **1234567_XO** DTM to the **1234567_SDE** DTM.

Lab9A Clip Areas for Enhancements to "New Construction" Areas

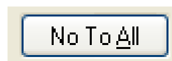
NOTE: *Please read each step carefully before performing each process.*

In the following Labs – the process for adding Enhancement Data to New Construction Areas of a DTM will be depicted. The first step will be to clip out the data in the **1234567_SDE** Surface so that in later ***Labs*** the data from the **1234567_XO** Surface can be added/merged.

<table>
<tr><td>1.</td><td>Starting Clean

In order to ensure that you are working with a "clean" database – you will close MicroStation and InRoads if they are still running from a previous Lab:

To CLOSE MicroStation and InRoads -

Select File►Exit from the [MicroStation Menu].
If any messages appear regarding the saving of projects – Select 

This closes BOTH the MicroStation and InRoads Software(s).</td></tr>
<tr><td>2.</td><td>From the desktop, double-click on the MicroStation icon labeled GDOT MicroStation V8i SS2 (x86).


Double click on the icon labeled GDOT MicroStation V8i SS2 (x86).

• When the MicroStation Manager dialog box opens – navigate to the C:\InRoads Data\1234567\SDE Labs\Standards folder and select the "GDOT 3D Working File.dgn". Click Open.

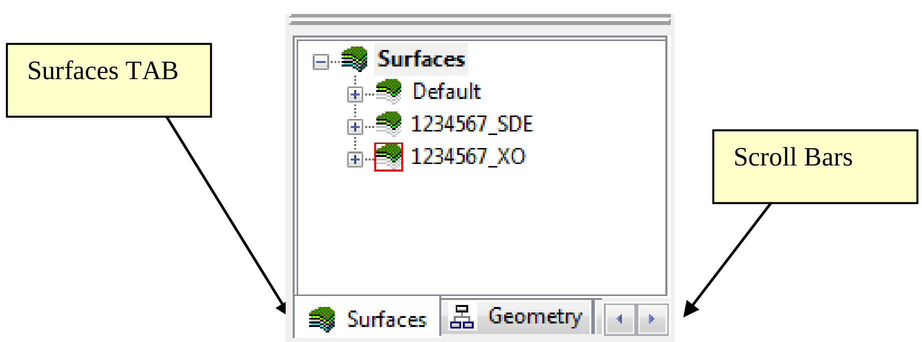
• Now open InRoads from within MicroStation by selecting:
InRoads ► InRoads Suite (SELECTseries 2) V8i 08.11.07.566 from the [MicroStation Menu].

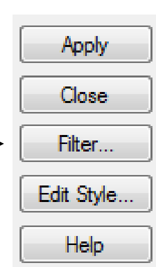
The MicroStation and InRoads Software(s) will open.</td></tr>
<tr><td>3.</td><td>Load the InRoads "Working" Surface, "Enhancement" Surface, Geometry and Survey File(s)

Select File►Open from the InRoads Menu.

Browse to the following path: C:\InRoads Data\1234567\SDE Labs\Lab 9

Selects the path to open the Surface(s), Geometry and Survey File(s).</td></tr>
</table>

4.	After navigating to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 9** Select the file named: **1234567_SDE.alg –** then click **Open**. Select the file named: **1234567_SDE.dtm –** then click **Open** Select the file named: **1234567_XO.dtm –** then click **Open**. Select the file named: **1234567_XO.fwd –** then click **Open** Then click **Cancel**. *The 1234567_SDE.alg, 1234567_SDE.dtm, 1234567_XO.dtm, and 1234567_XO.fwd file(s) will open.*
5.	**To turn Planimetric Survey Data Off:** The **Planimetric Survey Data View** will be turned on by default. This is the Original Enhancement Data (**1234567_XO.fwd**) which will eventually be merged into the **1234567_SDE** Surface. In order to clear this view -- You will need to turn <u>off</u> the Planimetric Data. This can be turned <u>off</u> in InRoads by the following steps: Select **Survey ▶ View Survey Data ▶ Planimetrics** from the **InRoads Menu**. Remove the check mark by **Planimetrics** – to turn the planimetric viewing data off. *Steps to turn off the Planimetric Survey Data in InRoads/MicroStation.*
6.	Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Surfaces Tab**.  *Opens the <u>Surface Tab</u> in the InRoads Explorer Interface.*

7.	**<u>IMPORTANT!!</u>** In the following Labs – it is critical to remember which Surface is the Active Surface -depicted by the Red Rectangle . You will be switching from one Surface to another periodically to perform commands and it is very important to make sure the correct surface is the active one. **Important Step---!!!** Ensure that the **1234567_XO** database is the <u>Active Surface</u> (has a red rectangle) next to the **1234567_XO** name. *Ensures that the correct DTM --- (1234567_XO) is active.*
8.	***Set InRoads “Locks”** During the course of these Labs – the “Locks” will be turned on/off as the situation dictates. *<u>It is very important to ensure that the “Locks” are set according to the steps and instructions for each Lab when indicated</u>. **Important Step---!!!** Click **Tools**▶**Locks** from the InRoads pull-down menu. Ensure that the **Feature Filter Lock** is turned **<u>ON</u>**. There should be a **<u>check mark</u>** next to the Feature Filter Lock. *Ensures that the <u>Feature Filter Lock</u> is turned ON.*
9.	***View the TOPO_E_TLIML Features in the 1234567_XO Surface:** ***Note:** The **TOPO_E_TLIML** Features will be viewed in order to depict the areas of new survey data which will be merged into the **1234567_SDE.dtm**. Please note that not all areas will be processed in this Lab. Click **Surface**▶**View Surface**▶**Features** from the InRoads pull-down menu and the **<u>View Features</u>** dialog box will appear. • In the **Surface:** Pulldown – select ***1234567_XO*** Click on the **Filter** button.  *Opens the <u>View Features</u> dialog box*

10. **View the selected Features:**

**** WARNING ** – During this step take care not to roll the scroll button on your mouse.**

The **Feature Selection Filter** dialog box will open. In the **Feature Selection Filter** dialog box --- input the following:

- In the **Filter Name:** pulldown – select **TLIML BREAKLINE**

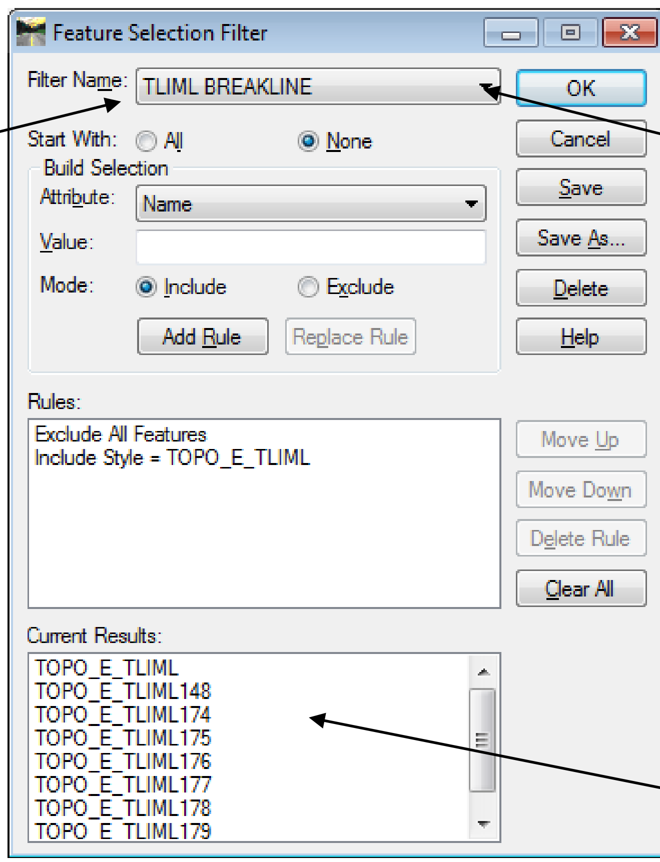
This will filter the view to include the following Surface Feature codes: **TOPO_E_TLIML**

Leave all other entries as default!

The inputs should now correspond to the screen capture depicted in *Figure L9-1* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the Feature Selection Filter dialog box.

WARNING - Take care not to accidentally move your scroll wheel on your mouse while the Filter Name field is active.



Use the pull-down arrow to select the Filter Named '**TLIML BREAKLINE**'.

When the filter name is selected the data will be filtered as depicted here.

Figure L9-1 Feature Selection Filter

11.	Click **OK** and the **Feature Selection Filter** dialog box will **Close**. The **View Features** dialog box should still be open from the previous steps. The inputs in the **View Features** dialog box should now correspond to the screen capture depicted in *Figure L9-2* (as shown below). Verify to ensure that your input matches the screen capture. *Closes the Feature Selection Filter dialog box.*

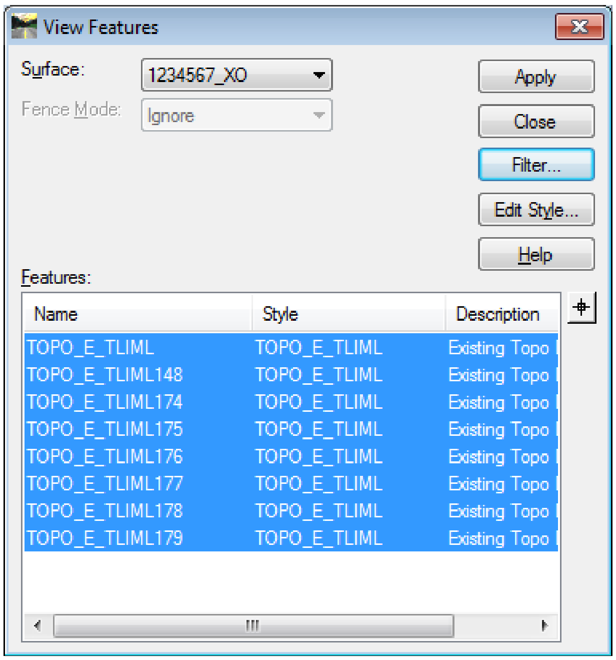


Figure L9-2 View Features

12.	Click **Apply**. *Views the 1234567_XO (TOPO_E_TLIML Features) in MicroStation*
13.	Click **Close** to close out of the **View Features** dialog box. *Closes the View Features dialog box.*
14.	In order to add Enhancements to a DTM Surface – the user must become familiar with the appropriate settings and commands to utilize in MicroStation. A good resource for this information is the "MicroStation Help Files" which is located in the [MicroStation Menu] under **Help**▶**Contents**. Please refer to this resource for additional information. *Refers to the location for the MicroStation "Help Files".*

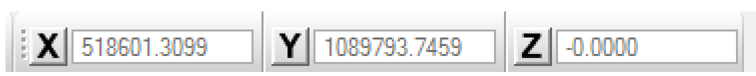
15. The following MicroStation options will assist the user in adding Enhancement Data. These may be turned on/off based on the situation and the user's preference.

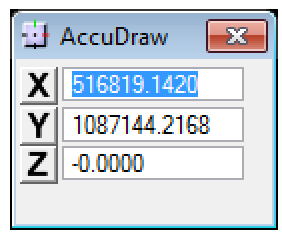
(It is advisable to turn the MicroStation **AccuDraw** **OFF** for the following Labs).

To toggle MicroStation **AccuDraw** on/off –
Click the **AccuDraw** icon in the **Primary Tools** tool box:

AccuDraw is off when the XYZ Coordinate Window (See screen capture below) is not depicted:

AccuDraw Docked View **AccuDraw Undocked View**



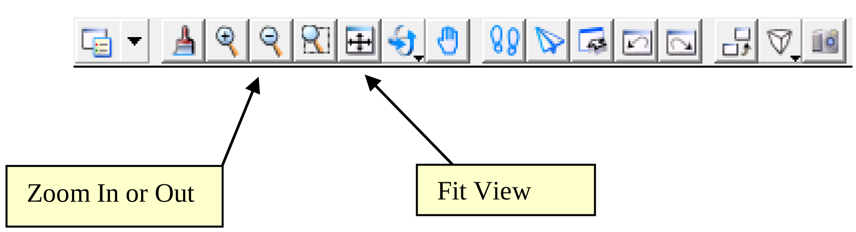


Depicts AccuDraw settings.

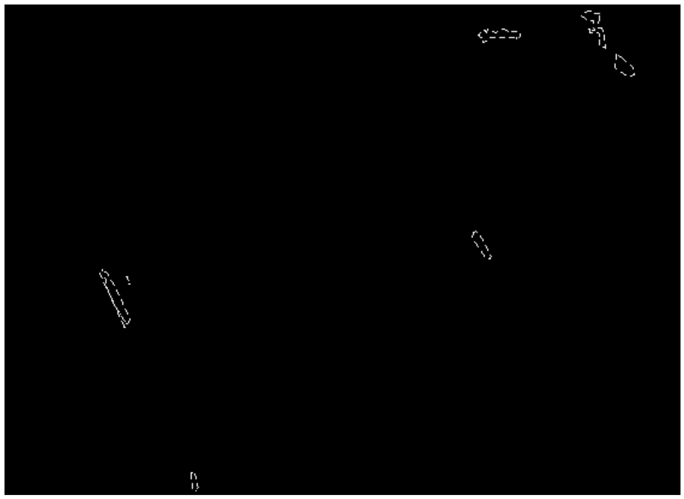
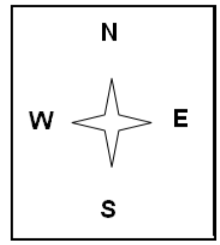
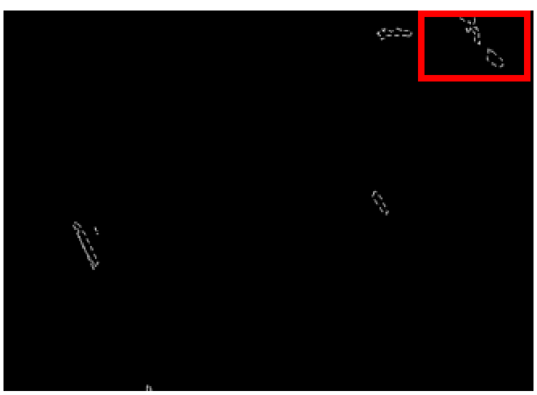
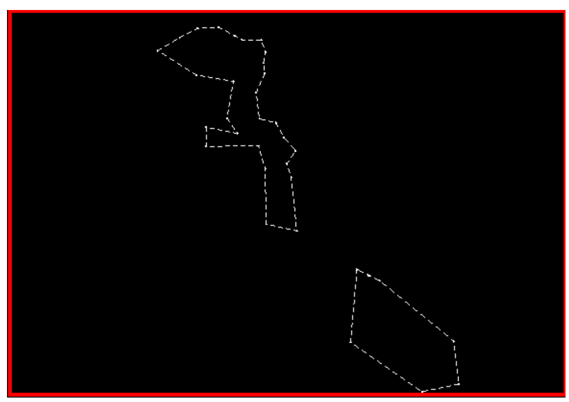
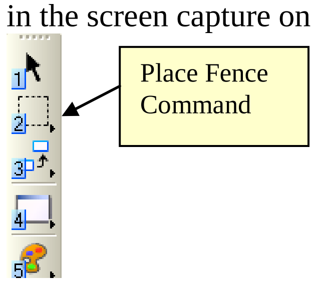
16. **View** the selected **TOPO_E_TLIML** Features in the [MicroStation Software] by using the following commands located under the MicroStation View 1 Window:

In the [MicroStation Software] –

Select the "Zoom In or Zoom Out" or "Fit View" Icons as appropriate to view the Features.

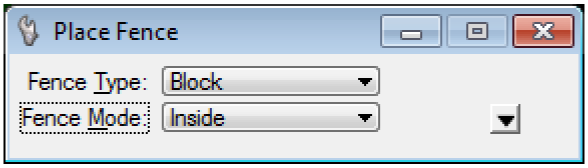


Views the Features in MicroStation.

17.	In the [MicroStation Software] – • Select “**Fit View**” and all of the **TOPO_E_TLIML** Features will be depicted in the MicroStation View Window. See screen capture depicted below.   *Views the extents of the Features in MicroStation.*
18.	In the [MicroStation Software] – • Zoom (window in) to the top NE Corner of the MicroStation View so that the screen appears as the following:   *Zooms into the area depicted on the right.*
19.	In the [MicroStation Software] – • Place a Fence (Block Fence) around the area as depicted in the screen capture on the above right by selecting the following command:  *Selects the Place Fence Command.*

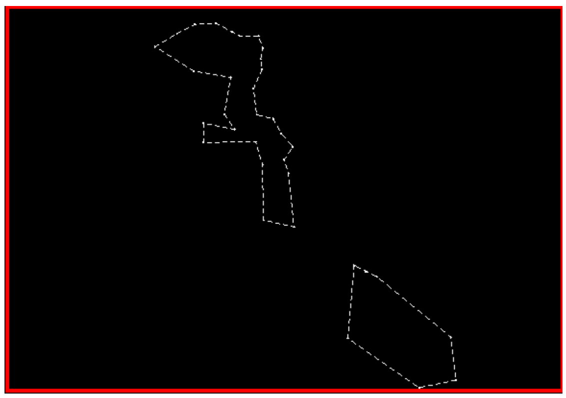
20. In the [MicroStation Software] –

- When the Place Fence command is selected – the following dialog box will appear in MicroStation:



- Select ***Fence Type*** = **Block**
- Select ***Fence Mode*** = **Inside**

- Next place the fence (Block Fence) around the area depicted below:



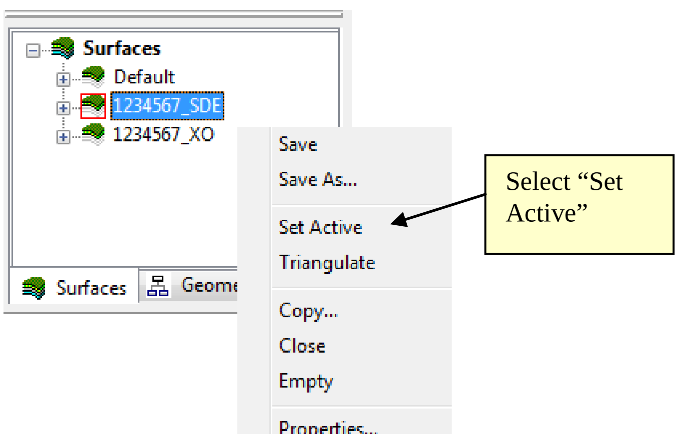
Places a fence around the area shown above.

21. **Information Only:**

In the next Lab steps – we will be adding "***New Construction Data***" to the **1234567_SDE** Surface. First - this will entail removing the "old" data from the Mapping DTM (**1234567_SDE**) by basically creating a "hole" which is delineated by the **TOPO_E_TLIML** lines depicted in the screen captures in the previous steps. This will be accomplished by clipping out the points and breaklines so that the new enhancement data can be added. (The New Enhancement Data will be added in later Labs).

In the following Labs – the **1234567_SDE** Surface will need to be the "***Active Surface***" because the old data must be removed from the **1234567_SDE** surface before new data can be added.

Information regarding the "Active Surface" of 1234567_SDE.dtm.

22.	In the [InRoads Software] – **Important Step---!!!** We will now Change the **Active Surface** to the **1234567_SDE** surface. Ensure that the **1234567_SDE** database is the Active Surface (has a red rectangle) next to the **1234567_SDE** name by performing the following steps: • Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). • Select the **1234567_SDE** surface (by Left clicking) and the Name will highlight in blue. • Then (Right click) over the surface and a pop-up dialog will appear.  • Click **Set Active** and a red rectangle will appear beside the **1234567_SDE** Surface Name. *Sets the "Active Surface" of 1234567_SDE.dtm.*
23.	In the [InRoads Software] – **Important Step---!!!** Click **Tools▶Locks** from the InRoads pull-down menu. Ensure that the **Feature Filter Lock** is turned **OFF**. There should ***NOT*** be a **check mark** next to the Feature Filter Lock. *Ensures that the Feature Filter Lock is turned OFF.*

24.	Click **Surface ▶ View Surface ▶ Features** from the InRoads pull-down menu and the **<u>View Features</u>** dialog box will appear. • In the **Surface:** Pulldown – select ***1234567_SDE*** • In the **Fence Mode:** Pulldown – select **Inside** The inputs should now correspond to the screen capture depicted in *Figure L9-3* (as shown below). Verify to ensure that your input matches the screen capture. *Closes the <u>Feature Selection Filter</u> dialog box.*

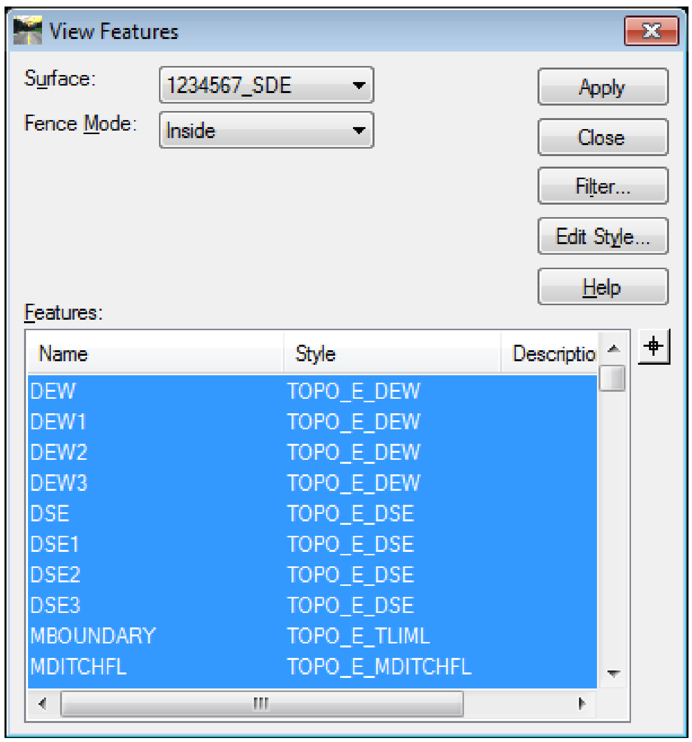


Figure L9-3 View Features

25.	Click **Apply**. *Views the 1234567_SDE (Features) in a MicroStation Fenced Area.*
26.	Click **Close** to close out of the **<u>View Features</u>** dialog box. *Closes the <u>View Features</u> dialog box.*

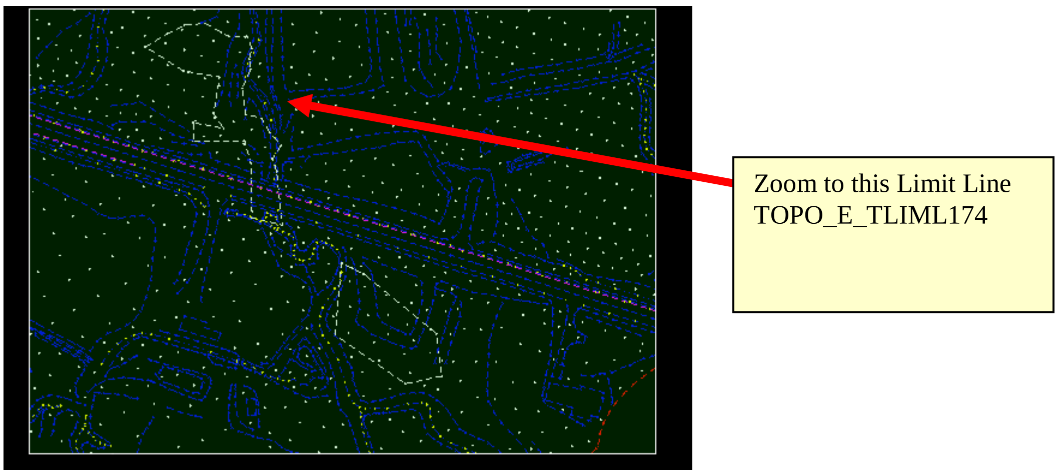
27. **Information Only:**

For these Labs - the reason we are viewing the **1234567_SDE** Features within a fenced area is to speed up the viewing/processing time and to assist the user in finding the areas to enhance. Due to the amount of data in the 1234567_SDE database – it is much faster to work in sections than in the entire database. The user – may of course - view the entire surface features – but it appears to be much easier to work in just the sections that require processing.

Viewing Information.

28. In the [MicroStation Software] –

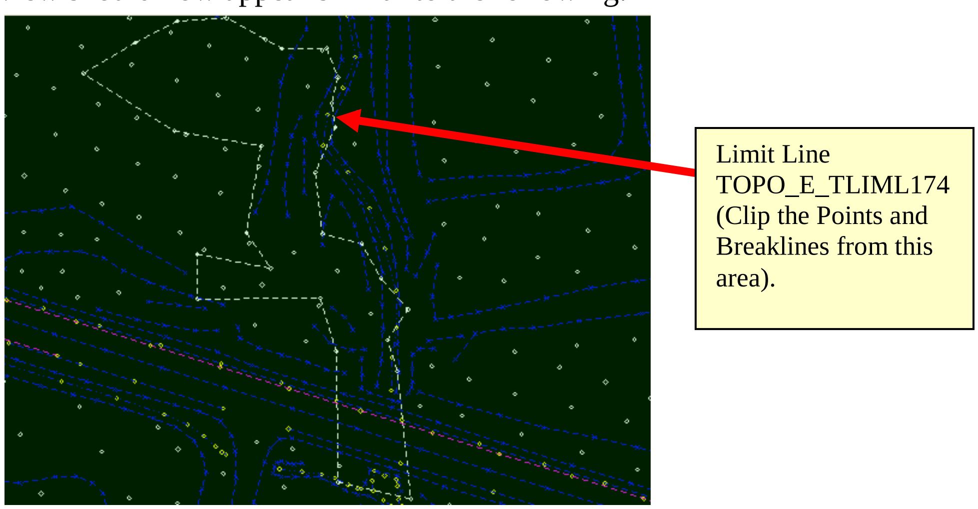
- Your view should now appear similar to the following:
- Zoom into the area depicted by the red arrow ---



Zooms to the area depicted by the red arrow.

29. In the [MicroStation Software] –

- Your view should now appear similar to the following:



Zooms to the area of the TOPO_E_TLIML174 Limit Line.

30. **Information Only:**

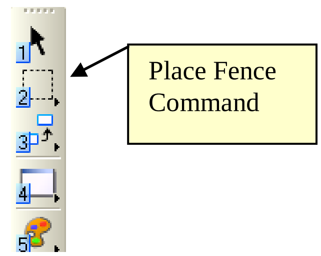
The Points and Breaklines will need to be clipped (deleted) from this area so that "New Construction" data can be merged into this Limit Line area for later labs.

Please Note:
Several different Limit Line Areas are represented in this dataset which should be clipped out. For this Lab – we will only process one area for demonstration purposes.

Clipping Information.

31. In the [MicroStation Software] –

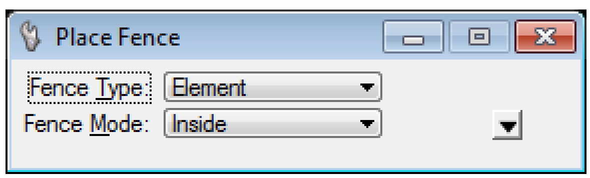
- Select the Place Fence Command:



Selects the Place Fence Command.

32. In the [MicroStation Software] –

- When the Place Fence command is selected – the following dialog box will appear in MicroStation:



- Select ***Fence Type*** = **Element**
- Select ***Fence Mode*** = **Inside**
- Place the Fence on the element (**TOPO_E_TLIML174**) by *left-clicking* twice to select the element.
- When the Fence is placed -- a white boundary will appear around the **TOPO_E_TLIML174.**

Places the Fence by Element.

33. **Information Only:**

The following steps depict the procedure of clipping out and deleting **Random Points** by using a Fence in MicroStation.

Point Clipping Information.

34.	In the [InRoads Software] – The following **points** will be clipped out and deleted by fence. Click **Surface▶Edit Surface ▶Delete Feature Points** and the **Delete Feature Points** dialog box will appear. • In the **Surface:** Pulldown – Select ***1234567_SDE*** • In the **Fence Mode:** Pulldown – Select ***Inside*** • In the **Random Features:** Section o Select both ***TRP*** and ***TRP1*** (By holding down the "Control Button" on the keyboard and left clicking ***TRP*** and ***TRP1*** in the dialog box. After selection – the ***TRP*** and ***TRP1*** should be highlighted in blue). • In the Range to Keep field: o In the **Low:** field -- Enter ***0.000*** o In the **High:** field – Enter ***1.000*** The inputs should now correspond to the screen capture depicted in *Figure L9-4* (as shown below). Verify to ensure that your input matches the screen capture. *Selects the Points to Delete.*

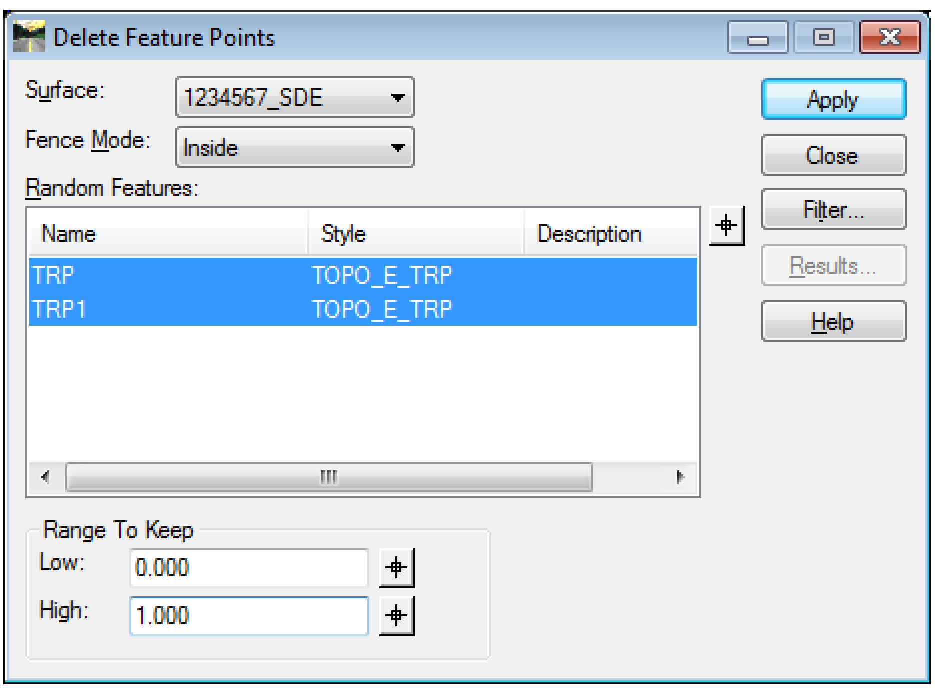
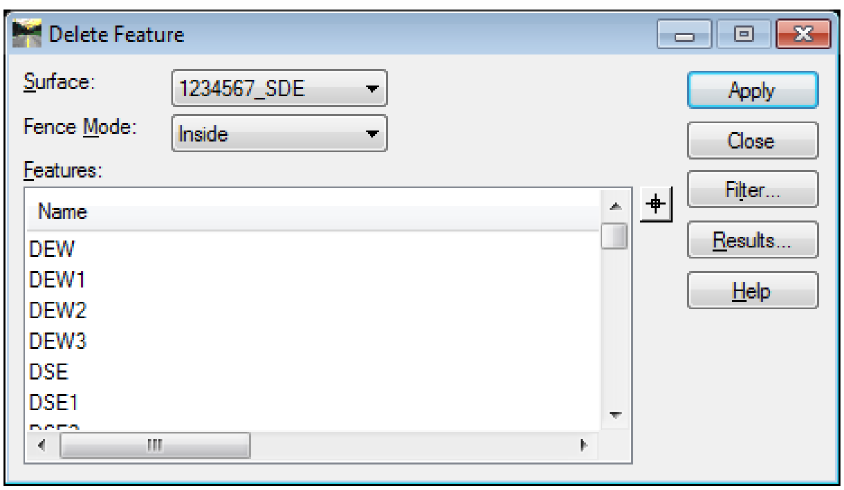
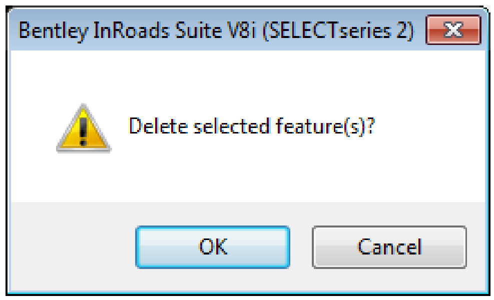


Figure L9-4 Delete Feature Points

35.	Click **Apply** and then click **Close** and the Random Points will be deleted. *Deletes the Random Points inside of the TOPO_E_TLIML174 Limit Line.*
36.	**Information Only:** The following steps depict the procedure of clipping out and deleting **Breaklines**. The **Breaklines** will be clipped out manually by selecting each **Breakline** individually. This is a much quicker method than clipping out by Fence. When using the Fence Method – it can take a **considerable amount of time** to process the breaklines and delete them. **Please Note:** Although the steps depict the process of deleting all of the breaklines from within the Limit Line Boundary – the user may inadvertently not delete all of the breaklines in this Lab. This will not cause a problem because the user will be provided a processed dataset for later Labs so that all users' data will be identical. *Breakline Clipping Information.*
37.	In the [InRoads Software] – The **Breaklines** inside of the **TOPO_E_TLIML174** Limit Line will be clipped out and deleted. Click **Surface ▶Edit Surface ▶Delete Feature** and the **Delete Feature** dialog box will appear.  • In the **Surface:** Pulldown – Select ***1234567_SDE*** • In the **Fence Mode:** Pulldown – Select ***Inside*** • Click the **Locate Button**  and then hold down the **Control Key** on the Keyboard and the **Delete Feature** dialog box will disappear.

- Next (continue to hold down the **Control Key**… and left quick **twice** on each Breakline inside of the **TOPO_E_TLIML174** in ***MicroStation***. One left click ***selects*** the Breakline and the other ***accepts*** it).

- Continue selecting/accepting each Breakline until all of the Breaklines within the Limit Line are highlighted in purple.
- After all are selected – release the **Control Key** and *Right Mouse Click*. This will bring back the **Delete Feature** dialog box.
- Then click the **Apply** button.
- A dialog box will appear:

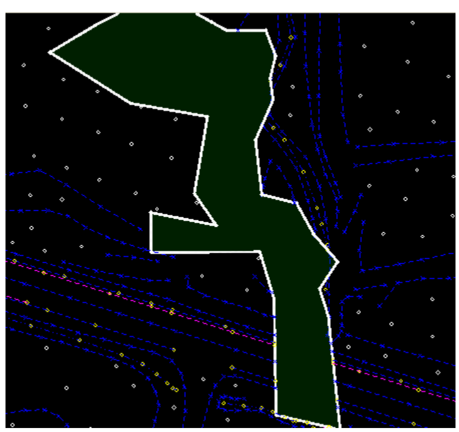


- Select **OK**. Please be Patient!! It will take a short while – but when the **Delete Feature** dialog re-appears – the Breaklines should be deleted.

- Click **Close** to Close out of the **Delete Feature** dialog box.

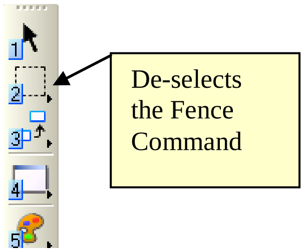
Deletes the Breaklines inside of the TOPO_E_TLIML174 Limit Line.

38. Once the ***Breaklines*** and ***Random Points*** are deleted – your **MicroStation View** should appear as shown below:



If your view does not match exactly – it will not be a problem because a processed dataset will be provided in later Labs.

Basically the "old" data from the **1234567_SDE** dataset has been clipped and deleted and will be replaced with the "New Construction Data" in later Labs.

39.	In the [MicroStation Software] – • De-select the MicroStation **Place Fence Command** by clicking on the Fence Icon (see below).  *De-Selects the Place Fence Command.*
40.	You will need to save your work periodically whenever changes have been made to the dataset. **Save the InRoads Surface Project:** Select **File ▶ Save ▶ Surface** from the **InRoads Menu**. <u>Please Note:</u> (The "Save As" dialog box may not appear because the Surface Project has already been saved initially). The Surface Project (***1234567_SDE.dtm***) will be saved to **Lab 9** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 9** Note that the <u>**InRoads Status Bar**</u> (Located at the bottom of the InRoads Interface) will depict a message when the Surface Project has been saved. *The **1234567_SDE** Surface Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 9***
41.	<u>**VERY Important Step:**</u> <u>**DO NOT DELETE**</u> --- the Data in the DGN file (***GDOT 3D Working File.dgn)***. These DGN Graphics will be used in the next **Lab 9B**. *Informs the User to <u>NOT DELETE</u> the Graphics from the GDOT 3D Working File.dgn for the next Lab.*

Lab9B Process Enhancements for Partially Obscured Areas

In the following Labs – the process for modifying partially obscured areas will be described. During the enhancement process – there are sometimes situations where only partial new enhancement data for an obscured area will be collected. The rest of the obscured area will remain obscured because it may be outside of the bounds of the footprint of the Project. The first step will be to modify the obscured areas in the **1234567_SDE** Surface so that in later ***Labs*** the data from the **1234567_XO** Surface data can be added/merged to the area that is partially obscured. Please note that all obscured areas will not be addressed in this Lab.

42.	If **MicroStation** and **InRoads** are not already open – refer back to **Steps 1 – 5 in Lab 9A** to open MicroStation and InRoads and the associated database files. *Starts the MicroStation and InRoads Software Products (if they were closed previously).*
43.	**IMPORTANT!!** In the following Labs – it is critical to remember which Surface is the Active Surface -depicted by the Red Rectangle. You will be switching from one Surface to another periodically to perform commands and it is very important to make sure the correct surface is the active one. **Important Step---!!!** ***Ensure*** that the **1234567_SDE** database is the Active Surface (has a red rectangle) next to the **1234567_SDE** name. If this is Not the Active Surface – Please see **Lab 9A Step 22** to set the Active Surface. *Ensures that the correct DTM --- (1234567_SDE) is active.*
44.	***Set InRoads "Locks"** During the course of these Labs – the "Locks" will be turned on/off as the situation dictates. *It is very important to ensure that the "Locks" are set according to the steps and instructions for each Lab when indicated. **Important Step---!!!** Click **Tools**▶**Locks** from the InRoads pull-down menu. Ensure that the **Feature Filter Lock** is turned **ON**. There should be a **check mark** next to the Feature Filter Lock. *Ensures that the Feature Filter Lock is turned ON.*

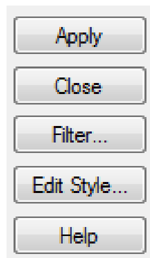
45. ***View the TOPO_E_MOBSC (Obscured Area) Features in the 1234567_SDE DTM**

***Note:** The **TOPO_E_MOBSC** Features will be viewed in order to depict the obscured areas in which new survey data will be merged into the **1234567_SDE.dtm**. Please note that not all obscured areas will be processed in this Lab.

Click **Surface▶View Surface▶Features** from the InRoads pull-down menu and the **<u>View Features</u>** dialog box will appear.

- In the **Surface:** Pulldown – select ***1234567_SDE***

Click on the **Filter** button.



Opens the <u>View Features</u> dialog box

46. **View the selected Features:**

**** <u>WARNING</u> ** – During this step take care not to roll the scroll button on your mouse.**

The **<u>Feature Selection Filter</u>** dialog box will open. In the **<u>Feature Selection Filter</u>** dialog box --- input the following:

- In the **Filter Name:** pulldown – select **OBSCURED- MOBSC, DOBSC, TCBA**

This will filter the view to include the following Surface Feature codes:
TOPO_E_MOBSC
TOPO_E_DOBSC
TOPO_E_TCBA

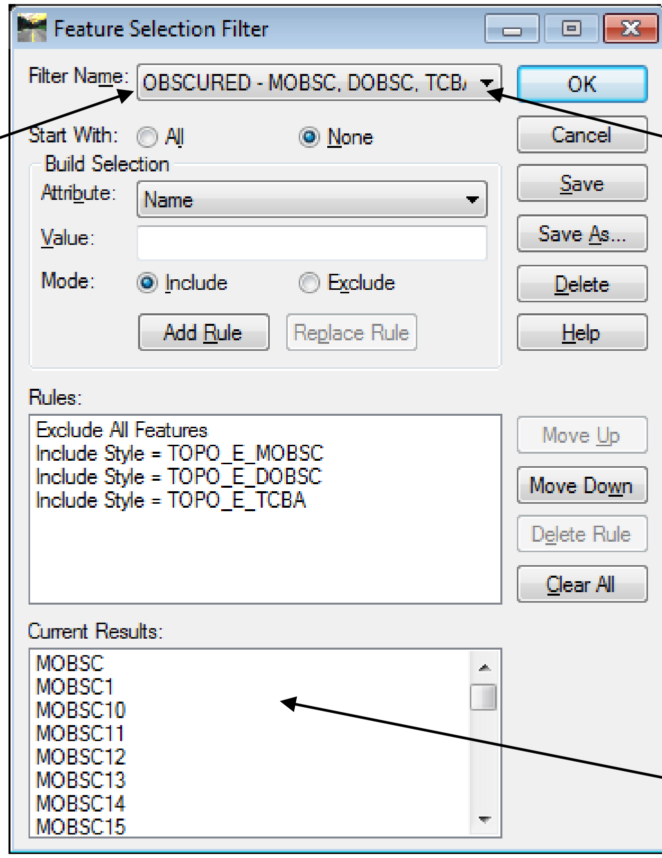
<u>Note:</u>
The **TOPO_E_MOBSC** is a Photogrammetry Obscured Area. The **TOPO_E_DOBSC** is a Field Survey Obscured Area and the **TOPO_E_TCBA** Construction Boundary feature is used for both Mapping and Field.

Leave all other entries as default!

The inputs should now correspond to the screen capture depicted in *Figure L9-5* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the <u>Feature Selection Filter</u> dialog box.

WARNING - Take care not to accidentally move your scroll wheel on your mouse while the Filter Name field is active.



Use the pull-down arrow to select the Filter Named ‘**OBSCURED - MOBSC, DOBSC, TCBA**”

When the filter name is selected the data will be filtered as depicted here.

Figure L9-5 Feature Selection Filter

47.	Click **OK** and the **<u>Feature Selection Filter</u>** dialog box will **Close**. The **<u>View Features</u>** dialog box should still be open from the previous steps. The inputs in the **<u>View Features</u>** dialog box should now correspond to the screen capture depicted in *Figure L9-6* (as shown below). Verify to ensure that your input matches the screen capture. *Closes the <u>Feature Selection Filter</u> dialog box.*

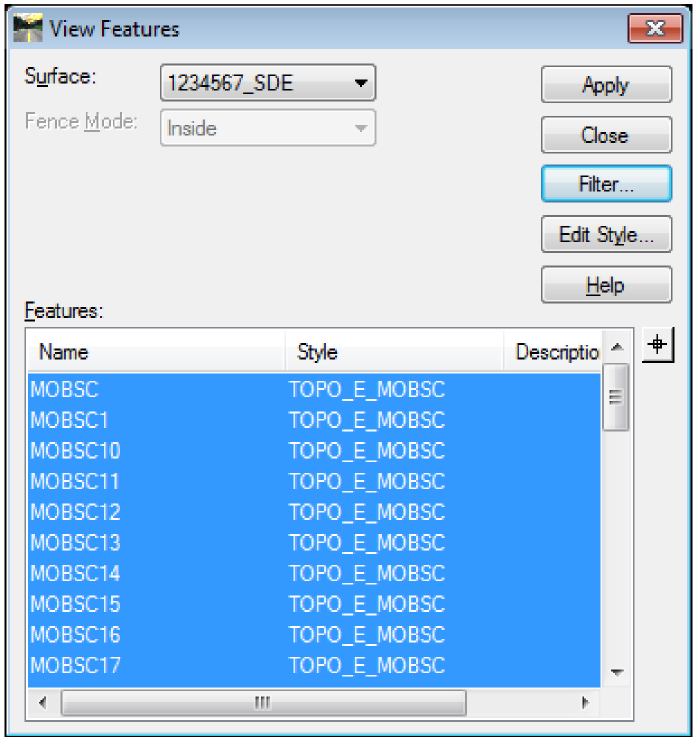
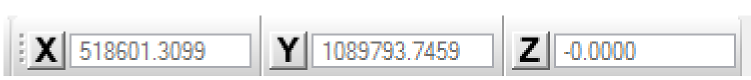
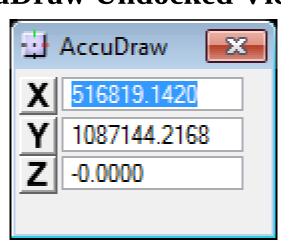
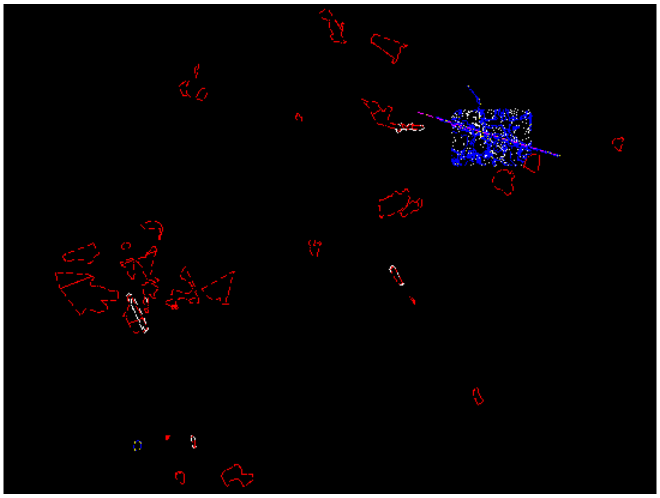


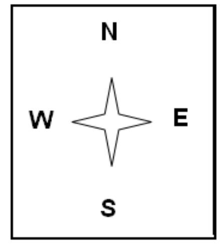
Figure L9-6 View Features

48.	Click **Apply**. *Views the 1234567_SDE (TOPO_E_MOBSC Features) in MicroStation*
49.	Click **Close** to close out of the **<u>View Features</u>** dialog box. *Closes the <u>View Features</u> dialog box.*
50.	**<u>Important Step!</u>** In the [MicroStation Software] – Turn **AccuDraw** off for the following Lab. Toggle the MicroStation **AccuDraw** off – Click the **AccuDraw** icon in the **Primary Tools** tool box: AccuDraw Icon  **AccuDraw Docked View** **AccuDraw Undocked View**   *Depicts AccuDraw settings.*

51. In the [MicroStation Software] –

- Select "**Fit View**" and all of the **TOPO_E_MOBSC** Features (Red Obscured Areas) will be depicted in the MicroStation View Window. See screen capture depicted below.

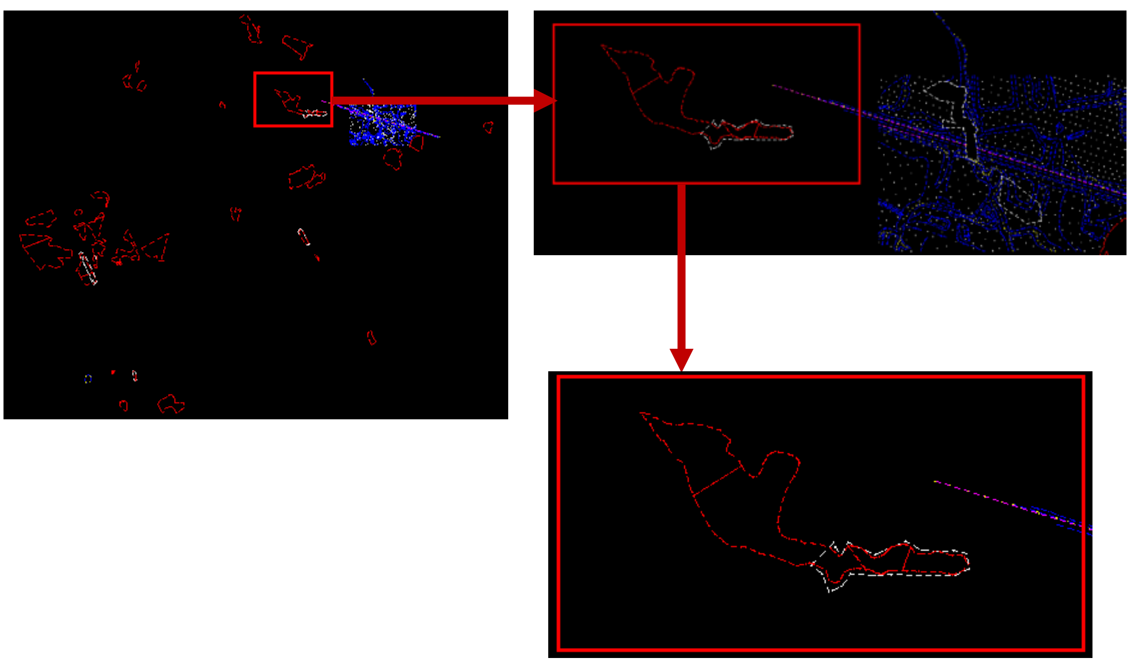




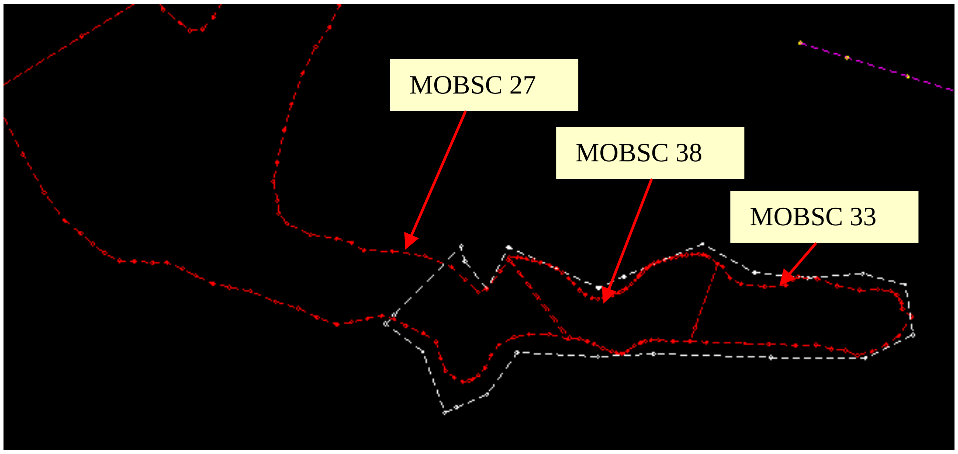
Views the extents of the Features in MicroStation.

52. In the [MicroStation Software] –

- Zoom (window in) to the top mid-NE Area of the MicroStation View so that the screen appears as the following:



Zooms into the area depicted on the right.

53.	In the [MicroStation Software] – • Zoom (window in) more so that the screen appears similar to the following:  *Zooms into the obscured area depicted above.*
54.	**Information Only:** In the next Lab steps – we will be modifying an obscured area so that new enhancement data can be incorporated into this area. The obscured area is basically three separate obscured limit lines. **MOBSC33** **MOBSC38** **MOBSC27** Two of the obscured areas (**MOBSC33** and **MOBSC38**) can be removed/deleted but in the third area (**MOBSC27**) only a “partial” area will be removed. The rest of this obscured area will remain as obscured. This will entail using the partial delete command in InRoads. Once these obscured areas have been deleted the new enhancement data will be added to these areas in later Labs. *Obscured Areas – Partial Delete Information.*

55. In the [InRoads and MicroStation Software(s)] –

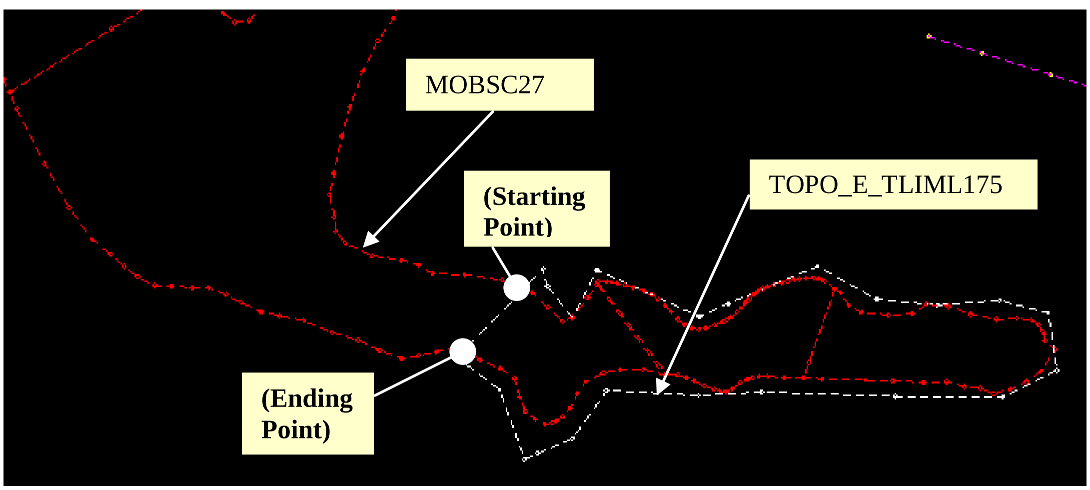
The obscured area (**MOBSC27**) will be partially deleted where it intersects the **TOPO_E_TLIML175** Limit Line. All of the obscured area within the boundaries of the TLIML will be deleted. The rest of the **MOBSC27** will remain obscured.

Click **Surface**▶**Edit Surface** ▶**Partial Delete**

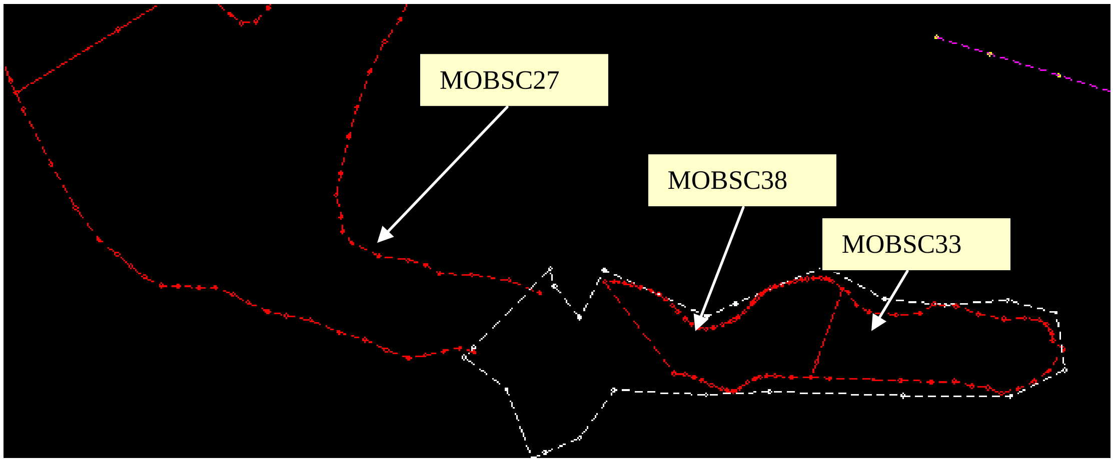
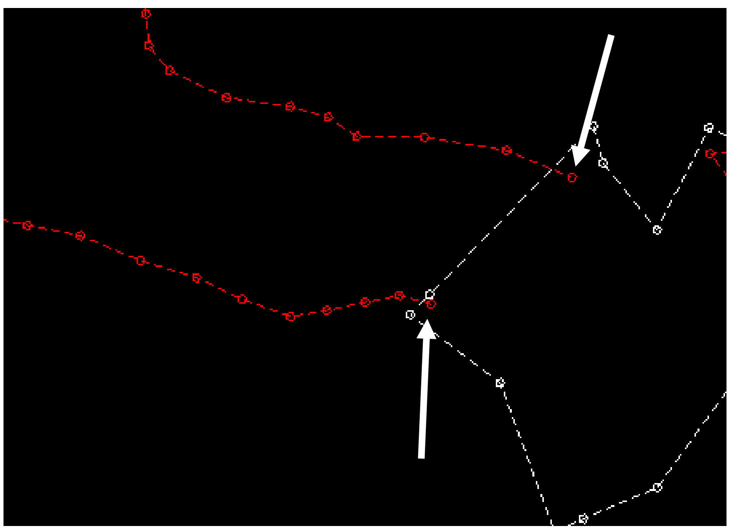
****Please Note:**

- A Dialog Box will not appear for this command. A prompt in **MicroStation** is initiated instead of a dialog box. Look in the bottom left-hand corner of **MicroStation** for the following prompt: 

- To **Identify Feature** – left-click on the **MOBSC27** Obscured line.
- Left-Click again to accept it.
- A prompt will appear to "**Identify Starting Point**" – Left click (at the ***Starting Point***) on the area depicted in the screen capture below:
- A prompt will then appear to "**Identify Ending Point**" - Left click (at the ***Ending Point***) on the area depicted in the screen capture below:



The MOBSC27 Obscured Area is partially deleted.

56.	The Partially Obscured Area for ***MOBSC27*** should now look similar to the following screen capture:  *Depicts the MOBSC27 Obscured Feature after the partial deletion.*
57.	Although the **MOBSC27** Obscured area was partially deleted – if you <u>zoom in close</u> – you will see that there is still a slight overlap of the obscured alignment in the TLIML area.  *Depicts the overlap into the TLIML Area.*

58.	In the [InRoads Software] To resolve the overlap – follow these steps in **InRoads**. Click **Surface▶Edit Surface ▶Edit Feature Point** and the **Edit Feature Point** dialog will appear. *Opens the Edit Feature Point dialog box.*
59.	In the **Edit Feature Point** dialog box – enter the following: • In the **Surface:** Pulldown – select ***1234567_SDE*** • In the **Feature:** Pulldown – select ***MOBSC27*** • In the Point Scroll box – enter the number **39** and click the **tab** key • Place a ***Check Mark*** in the **Center View** box • Enter a Northing of – **`1362332.985`** • Enter an Easting of – **`1959893.517`** • Retain the Elevation of – **`1071.228`** • Uncheck the **Start of Discontinuity** check box. This recloses MOBSC27 so it will be a closed shape. If it is not closed, triangulation will occur across it. The Interior Boundary designation is only recognized on closed shapes. Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L9-7* (as shown below). Verify to ensure that your input matches the screen capture. *Sets entries in the Edit Feature Point Dialog Box.*

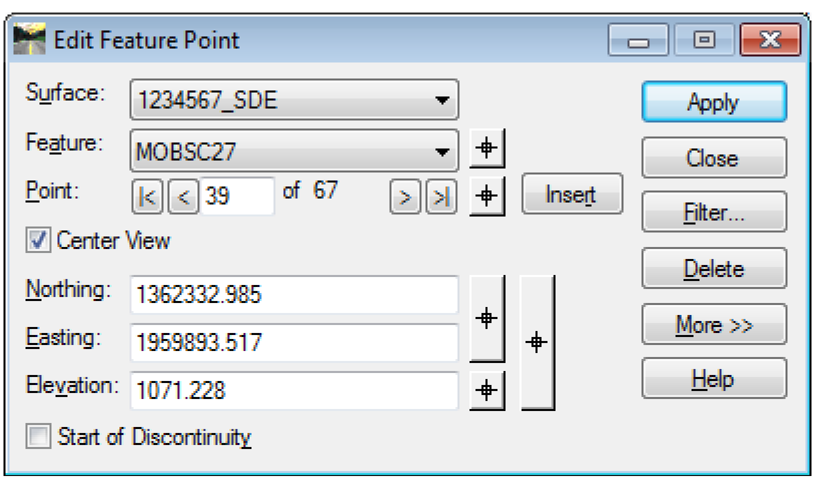


Figure L9-7 Edit Feature Point 39

60. Click **Apply** --- but DO NOT close out of the **Edit Feature Point** dialog box.

Resolves the overlap for Point 39 in the MOBSC27 Feature by using the Edit Feature Point dialog box.

61. In the **Edit Feature Point** dialog box – enter the following:

- In the **Surface:** Pulldown – select ***1234567_SDE***
- In the **Feature:** Pulldown – select ***MOBSC27***
- In the Point Scroll box – enter the number **40** and click the **tab** key
- Place a ***Check Mark*** in the **Center View** box
- Enter a Northing of – **`1362295.997`**
- Enter an Easting of – **`1959857.605`**
- Retain an Elevation of – **`1074.459`**

Leave all other entries as default.

The inputs should now correspond to the screen capture depicted in *Figure L9-8* (as shown below). Verify to ensure that your input matches the screen capture.

Sets entries in the Edit Feature Point Dialog Box.

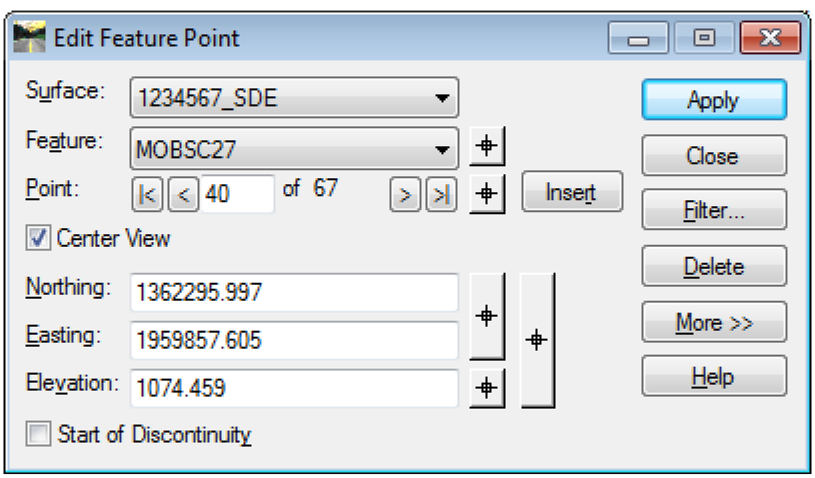


Figure L9-8 Edit Feature Point 40

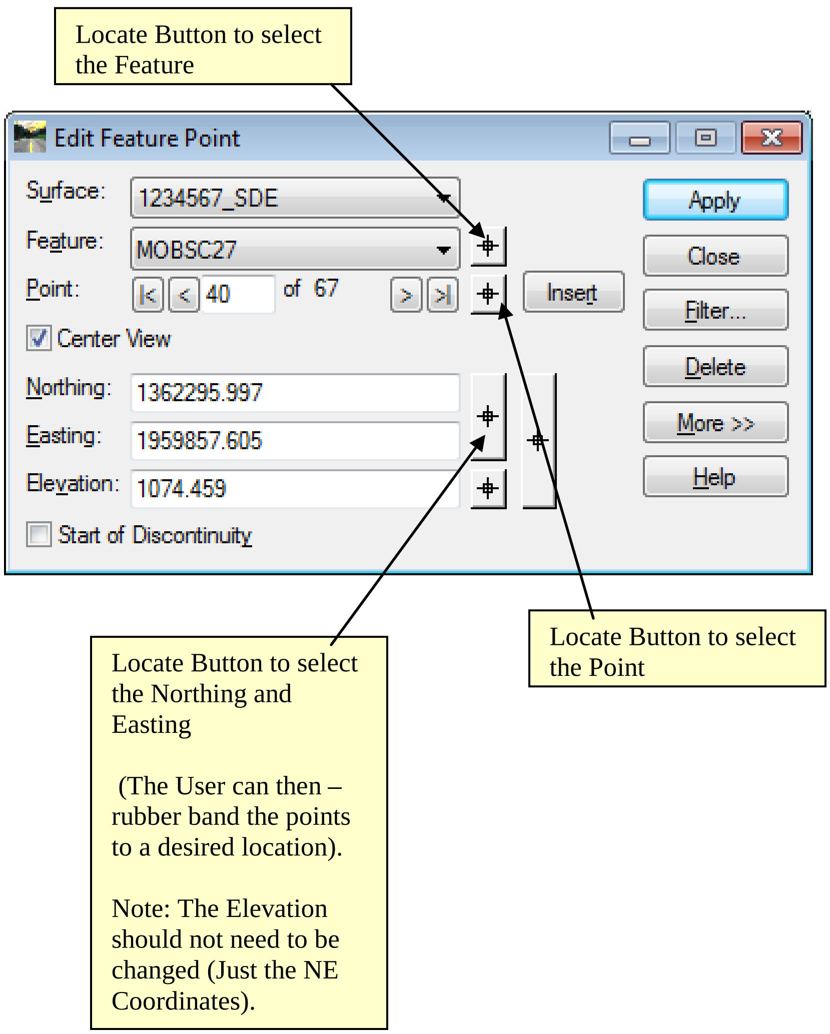
62. Click **Apply** and then click **Close** to close out of the **Edit Feature Point** dialog box.

Resolves the overlap for Point 40 in the MOBSC27 Feature by using the Edit Feature Point dialog box.

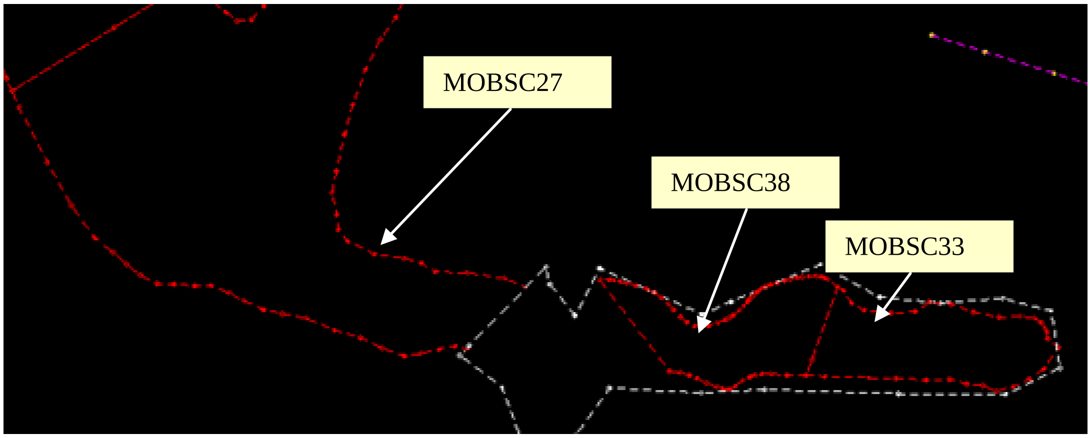
63. **Information Only!!**

In order to maintain consistency in the Labs – the above steps used a hard coded entry so that the Lab Data would correspond. In a “real world” project – the User could utilize the Locate Buttons and **graphically** resolve the overlaps. Also - the overlaps do not need to be resolved so that the points exactly correspond with the TLIML area. There can be a slight gap or overlap – just ensure that the points are close in order for the triangulation to be accurate.

Another method to resolve the gap or overlap for a ***Partially Deleted Area*** is to click the following ***Locate Buttons*** and graphically resolve the areas.



Additional Information regarding the Edit Feature Point Command.

64.	**Information Only!!** The **MOBSC27** Feature has been partially deleted. The next step is to change the **MOBSC33** and the **MOBSC38** Feature from an ***Interior Boundary*** to a ****Breakline*** so that these Features can be deleted from inside the "**TOPO_E_TLIML175**" Limit Line. **The Feature MUST be a ***Breakline*** in order to be deleted.  *Information regarding the processing of the MOBSC38 and MOBSC33 Features.*
65.	In the [InRoads Software] To change the ***MOBSC38*** and ***MOBSC33*** Features from *Interior Boundaries* to *Breaklines* – follow these steps in **InRoads**. Click **Surface**▶**Feature** ▶**Feature Properties** and the **Feature Properties** dialog will appear. *Opens the Feature Properties dialog box.*
66.	In the **Feature Properties** dialog box perform the following steps: • In the **Surface:** Pulldown ensure that **1234567_SDE** is the selected *Surface*. • In the **Feature:** List box: Scroll down the list – and Highlight the Name of ***MOBSC33*** and ***MOBSC38*** by holding down the Control Key on the keyboard and left-clicking the ***MOBSC33*** and ***MOBSC38*** Features. o These should now be highlighted in blue. • In the Triangulation Field next to **Feature Type:** – change the type from ***Interior*** to ***Breakline***. The inputs should now correspond to the screen capture depicted in *Figure L9-9* (as shown below). Verify to ensure that your input matches the screen capture. *Sets entries in the Feature Properties Dialog Box.*

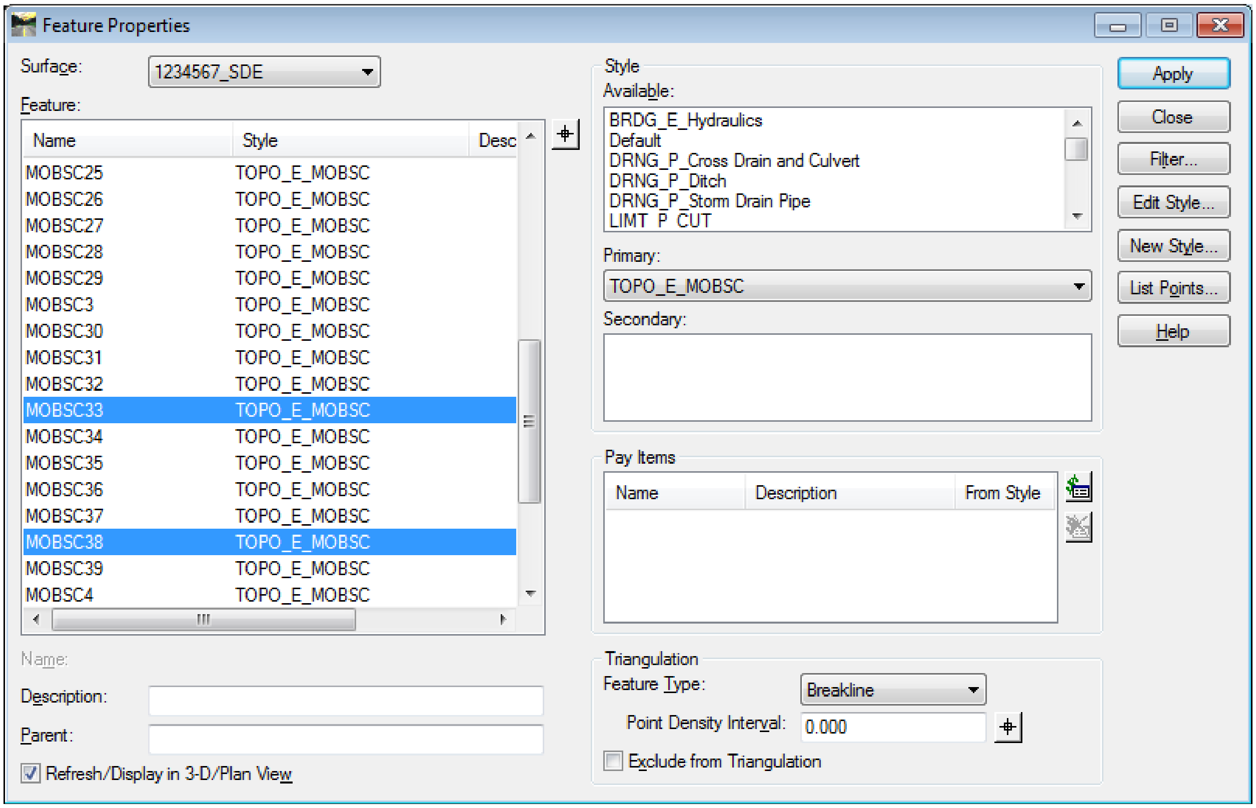


Figure L9-9 Feature Properties

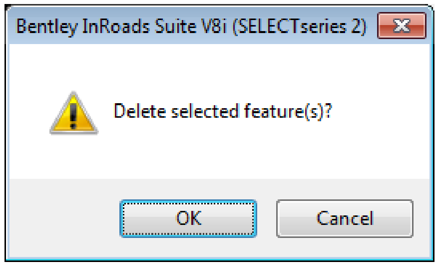
67. Click **Apply** and then click **Close** to close out of the **Feature Properties** dialog box.

Changes the MOBSC33 and MOBSC38 Features from Interior to Breaklines.

68. To Delete the ***MOBSC33*** and ***MOBSC38*** Features:

Click **Surface▶Edit Surface ▶Delete Feature** and the **Delete Feature** dialog box will open.

- In the **Surface:** Pulldown – ensure that ***1234567_SDE*** is selected.
- In the **Feature:** List box:
  Scroll down the list – and Highlight the Name of ***MOBSC33*** and ***MOBSC38*** by holding down the Control Key on the keyboard and left-clicking the ***MOBSC33*** and ***MOBSC38*** Features.
  - These should now be highlighted in blue.
- Click **Apply** and the following Dialog Box will appear:



- Select **OK** and the **MOBSC33** and **MOBSC38** breaklines will be deleted.
- Click **Close** to close out of the **Delete Feature** dialog box.

Deletes the MOBSC33 and MOBSC38 Features.

69. **Information Only!!**

The **MOBSC33** and the **MOBSC38** Features must be changed to a *Feature Type* of ***Breakline*** before removing (deleting) the features. If the *Feature Type* is left as an ***Interior*** – the points of the feature are deleted but not the alignment. In order to ensure that all obscured area boundaries (points and alignments) are removed so that there is no overlapping of data -- the ***Breakline*** Feature Type is used.

Information regarding the deleting of obscured area boundaries.

70. You will need to save your work periodically whenever changes have been made to the dataset.

Save the InRoads Surface Project:

Select **File**▶**Save**▶ **Surface** from the **InRoads Menu**.

Please Note: (The “Save As” dialog box may not appear because the Surface Project has already been saved initially).

The Surface Project (***1234567_SDE.dtm***) will be saved to **Lab 9** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 9**

Note that the **InRoads Status Bar** (Located at the bottom of the InRoads Interface) will depict a message when the Surface Project has been saved.

*The **1234567_SDE** Surface Project has now been saved to the following path:*
C:\InRoads Data\1234567\SDE Labs\Lab 9

71. **VERY Important Step:**

DO NOT DELETE --- the Data in the DGN file (***GDOT 3D Working File.dgn)***. These DGN Graphics will be used in the next **Lab 9C**.

Informs the User to NOT DELETE the Graphics from the GDOT 3D Working File.dgn for the next Lab.

Lab9C Process Enhancements Outside of the Exterior Boundary

In the following Lab – the process of modifying the Exterior Boundary will be depicted. There may be situations where enhancement data for an obscured area will be collected outside of the current existing Exterior Boundary. This will result in the Exterior Boundary being extended outward in order to encompass the new enhancement data. The first step will be to modify the Exterior Boundary in the **1234567_SDE** Surface so that in later ***Labs*** the data from the **1234567_XO** Surface data can be added/merged to the obscured area.

72.	If **MicroStation** and **InRoads** are not already open – refer back to **Steps 1 – 5 in Lab 9A** to open MicroStation and InRoads and the associated database files. *Starts the MicroStation and InRoads Software Products (if they were closed previously).*
73.	**IMPORTANT!!** In the following Labs – it is critical to remember which Surface is the Active Surface -depicted by the Red Rectangle. You will be switching from one Surface to another periodically to perform commands and it is very important to make sure the correct surface is the active one. **Important Step---!!!** ***Ensure*** that the **1234567_SDE** database is the Active Surface (has a red rectangle) next to the **1234567_SDE** name. If this is Not the Active Surface – Please see **Lab 9A Step 22** to set the Active Surface. *Ensures that the correct DTM --- (1234567_SDE) is active.*
74.	***Set InRoads "Locks"** During the course of these Labs – the "Locks" will be turned on/off as the situation dictates. *It is very important to ensure that the "Locks" are set according to the steps and instructions for each Lab when indicated. **Important Step---!!!** Click **Tools▶Locks** from the InRoads pull-down menu. Ensure that the **Feature Filter Lock** is turned **ON**. There should be a **check mark** next to the Feature Filter Lock. *Ensures that the Feature Filter Lock is turned ON.*

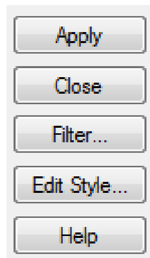
75. ***View the TOPO_E_MOBSC (Obscured Area) Features in the 1234567_SDE DTM**

***Note:** The **TOPO_E_MOBSC** Features will be viewed in order to depict the obscured areas in which new survey data will be merged into the **1234567_SDE.dtm**. Please note that not all obscured areas will be processed in this Lab.

Click **Surface**▶**View Surface**▶**Features** from the InRoads pull-down menu and the **View Features** dialog box will appear.

- In the **Surface:** Pulldown – select ***1234567_SDE***

Click on the **Filter** button.



Opens the View Features dialog box

76. **View the selected Features:**

**** WARNING ** – During this step take care not to roll the scroll button on your mouse.**

The **Feature Selection Filter** dialog box will open. In the **Feature Selection Filter** dialog box --- input the following:

- In the **Filter Name:** pulldown – select **OBSCURED- MOBSC, DOBSC, TCBA**

This will filter the view to include the following Surface Feature codes:
TOPO_E_MOBSC
TOPO_E_DOBSC
TOPO_E_TCBA

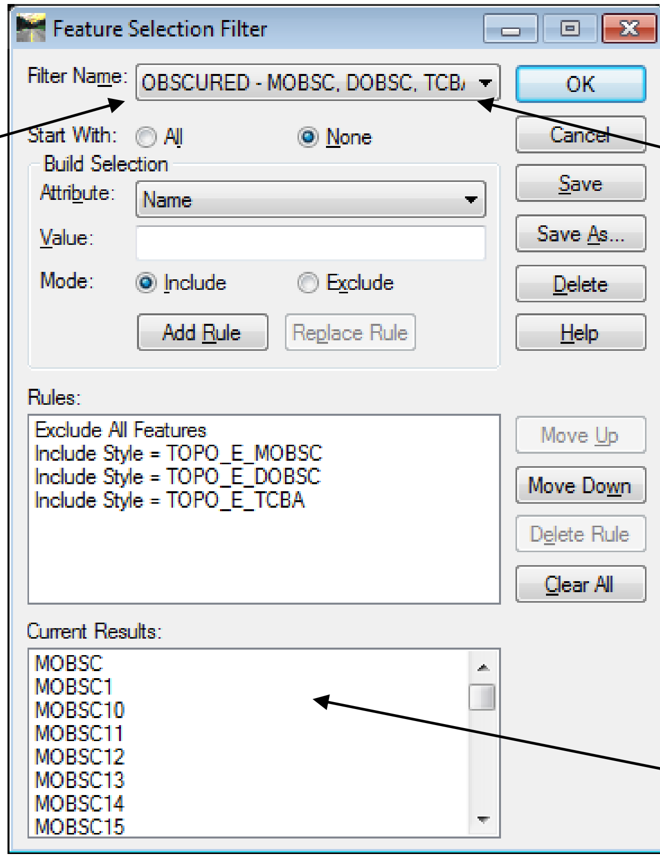
Note:
The **TOPO_E_MOBSC** is a Photogrammetry Obscured Area. The **TOPO_E_DOBSC** is a Field Survey Obscured Area and the **TOPO_E_TCBA** Construction Boundary feature is used for both Mapping and Field.

Leave all other entries as default!

The inputs should now correspond to the screen capture depicted in *Figure L9-10* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the Feature Selection Filter dialog box.

WARNING - Take care not to accidentally move your scroll wheel on your mouse while the Filter Name field is active.



Use the pull-down arrow to select the Filter Named **‘OBSCURED - MOBSC, DOBSC, TCBA”**

When the filter name is selected the data will be filtered as depicted here.

Figure L9-10 Feature Selection Filter

77.	Click **OK** and the **<u>Feature Selection Filter</u>** dialog box will **Close**. The **<u>View Features</u>** dialog box should still be open from the previous steps. The inputs in the **<u>View Features</u>** dialog box should now correspond to the screen capture depicted in *Figure L9-11* (as shown below). Verify to ensure that your input matches the screen capture. *Closes the <u>Feature Selection Filter</u> dialog box.*

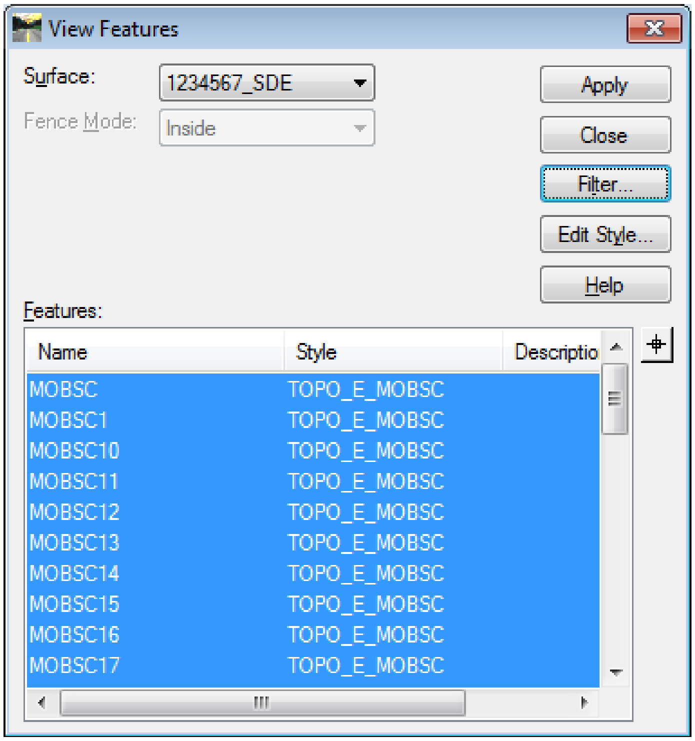
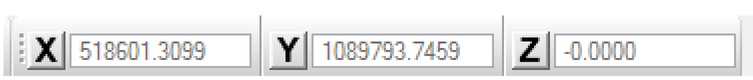
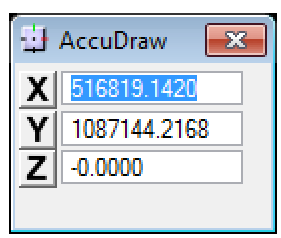
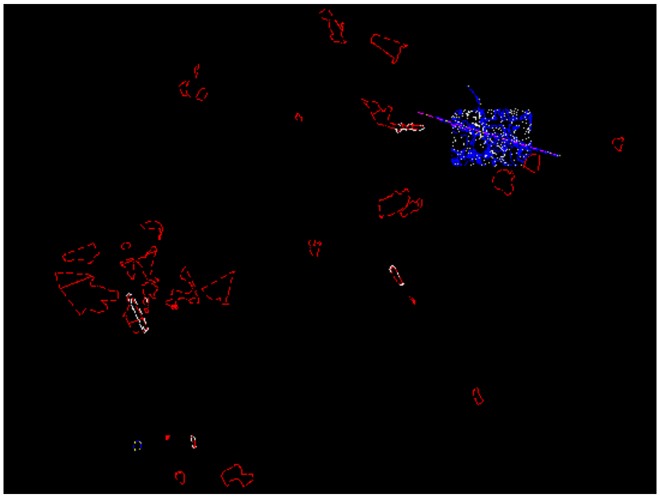
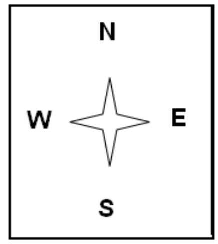
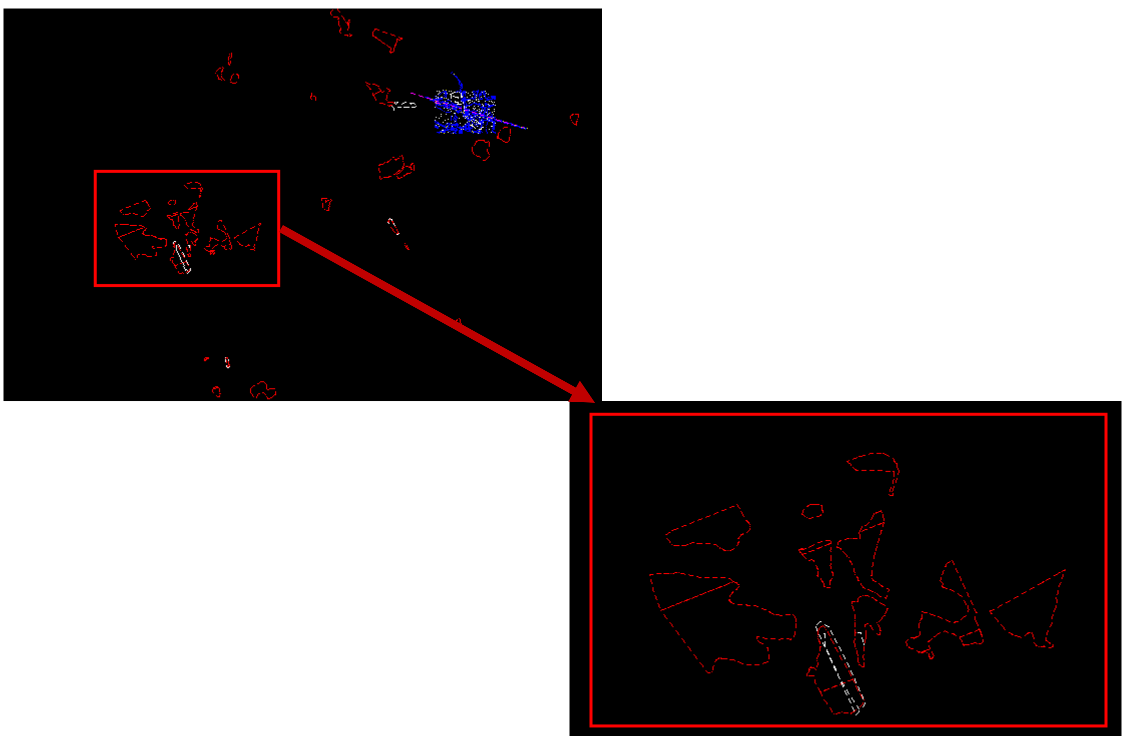
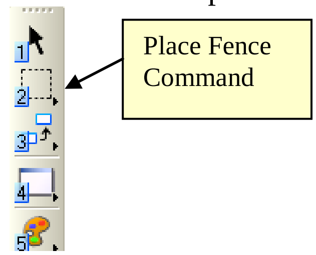
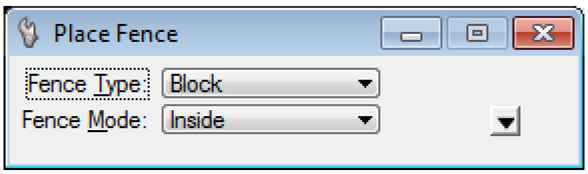
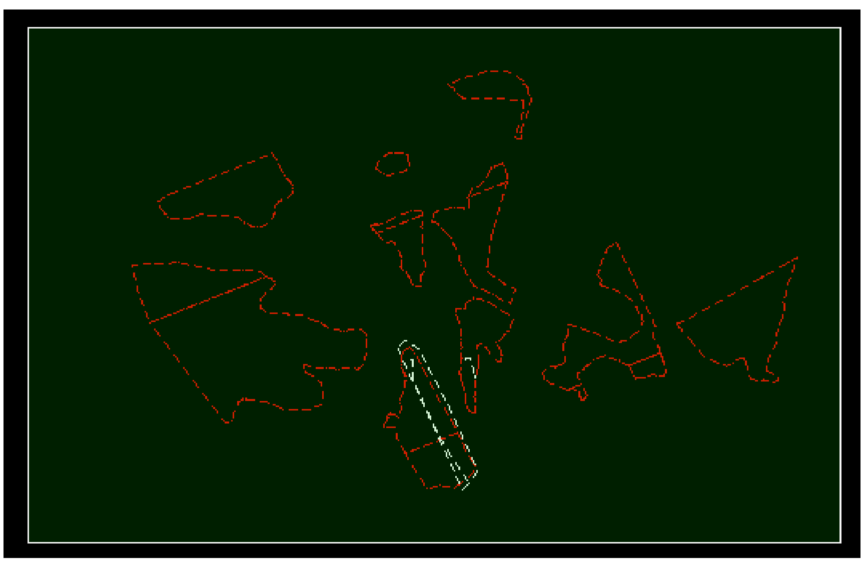


Figure L9-11 View Features

78.	Click **Apply**. *Views the 1234567_SDE (TOPO_E_MOBSC Features) in MicroStation*
79.	Click **Close** to close out of the **<u>View Features</u>** dialog box. *Closes the <u>View Features</u> dialog box.*
80.	**<u>Important Step!</u>** In the [MicroStation Software] – Turn **AccuDraw** off for the following Lab. Toggle the MicroStation **AccuDraw** off – Click the **AccuDraw** icon in the **Primary Tools** tool box: AccuDraw Icon  **AccuDraw Docked View** **AccuDraw Undocked View**  

81.	In the [MicroStation Software] – • Select "**Fit View**" and all of the **TOPO_E_MOBSC** Features (Red Obscured Areas) will be depicted in the MicroStation View Window. See screen capture depicted below.   *Views the extents of the Features in MicroStation.*
82.	In the [MicroStation Software] – • Zoom (window in) to the mid-West Area of the MicroStation View so that the screen appears as the following:  *Zooms into the area depicted on the right.*

83.	In the [MicroStation Software] – • Place a Fence (Block Fence) around the area as depicted in the screen capture above by selecting the following command:  *Selects the Place Fence Command.*
84.	In the [MicroStation Software] – • When the Place Fence command is selected – the following dialog box will appear in MicroStation:  • Select ***Fence Type*** = **Block** • Select ***Fence Mode*** = **Inside** • Next place the fence (Block Fence) around the area depicted below:  *Places a fence around the area shown above.*

85.	***Set InRoads "Locks"** During the course of these Labs – the "Locks" will be turned on/off as the situation dictates. *It is very important to ensure that the "Locks" are set according to the steps and instructions for each Lab when indicated. **Important Step---!!!** Click **Tools▶Locks** from the InRoads pull-down menu. Ensure that the **Feature Filter Lock** is turned **OFF**. There should ***NOT*** be a **check mark** next to the Feature Filter Lock. *Ensures that the Feature Filter Lock is turned OFF.*
86.	Click **Surface▶View Surface▶Features** from the InRoads pull-down menu and the **View Features** dialog box will appear. • In the **Surface:** Pulldown – select ***1234567_SDE*** • In the **Fence Mode:** Pulldown – select **Inside** The inputs should now correspond to the screen capture depicted in *Figure L9-12* (as shown below). Verify to ensure that your input matches the screen capture. *Closes the Feature Selection Filter dialog box.*

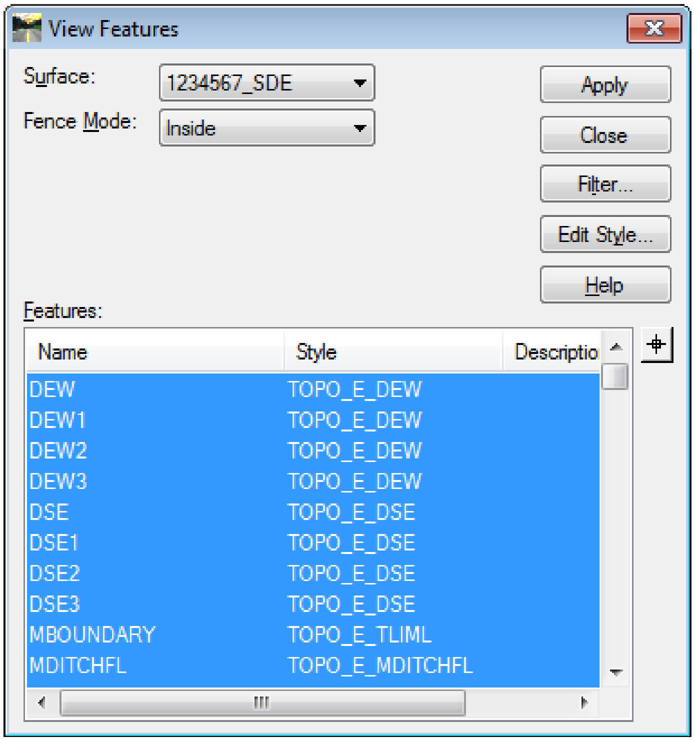
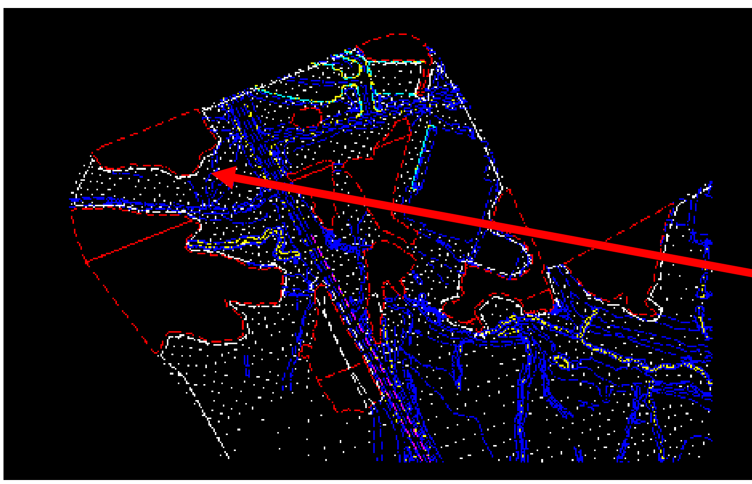
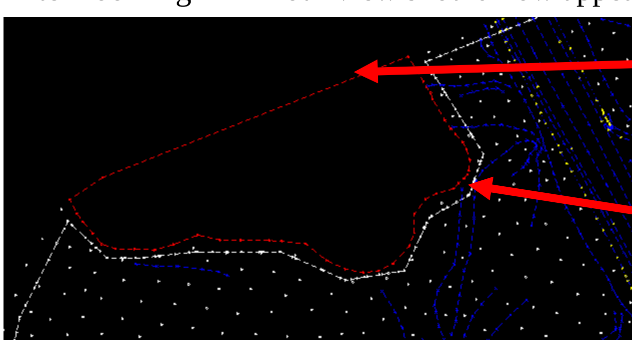


Figure L9-12 View Features

87.	Click **Apply**. *Views the 1234567_SDE (Features) in a MicroStation Fenced Area.*
88.	Click **Close** to close out of the **View Features** dialog box. *Closes the View Features dialog box.*
89.	**Information Only:** As mentioned previously -- the reason we are viewing the **1234567_SDE** Features within a fenced area is to speed up the viewing/processing time and to assist the user in finding the areas to enhance. Due to the amount of data in the **1234567_SDE** database – it is much faster to work in sections than in the entire database. The user – may of course - view the entire surface features – but it appears to be much easier to work in just the sections that require processing. *Viewing Information.*

90.	In the [MicroStation Software] – • De-select the MicroStation **Place Fence Command** by clicking on the Fence Icon (see below).  De-selects the Fence Command *De-Selects the Place Fence Command.*
91.	In the [MicroStation Software] – • Your view should now appear similar to the following: • Zoom into the area depicted by the red arrow ---  Zoom to this Limit Line TOPO_E_TLIML Exterior Boundary named MBOUNDARY (the white dashed line). *Zooms to the area depicted by the red arrow.*
92.	In the [MicroStation Software] – • After zooming in -- Your view should now appear similar to the following:  Obscured Area: **MOBSC14** Exterior Boundary: **MBOUNDARY** *Zooms to the area of the MBOUNDARY.*

93.	**Information Only:** In the next Lab steps – we will be modifying the MBOUNDARY so that it will be extended to encompass the obscured area of MOBSC14 so that new enhancement data can be incorporated into this area. This will entail using the "***Edit Feature Point***" command in InRoads. Once the Exterior Boundary of **(MBOUNDARY**) has been extended around the obscured area (**MOBSC14**) the new enhancement data will be added to these areas in later Labs. *Extending the Exterior Boundary Information.*
94.	In the [InRoads Software] To extend the MBOUNDARY – follow these steps in **InRoads**. Click **Surface**▶**Edit Surface** ▶**Edit Feature Point** and the **<u>Edit Feature Point</u>** dialog will appear. *Opens the <u>Edit Feature Point</u> dialog box.*
95.	In the **<u>Edit Feature Point</u>** dialog box – enter the following: (***Make Sure you retain the same coordinate information for Point 1022***). • In the **Surface:** Pulldown – select ***1234567_SDE*** • In the **Feature:** Pulldown – select ***MBOUNDARY*** • In the Point Scroll box – enter the number **1022** and click the **tab** key • Place a ***Check Mark*** ☑ in the **Center View** box • <u>Retain</u> the Northing of – **`1360922.489`** • <u>Retain</u> the Easting of – **`1956318.783`** • <u>Retain</u> the Elevation of – **`1084.665`** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L9-13* (as shown below). Verify to ensure that your input matches the screen capture. *Sets entries in the <u>Edit Feature Point</u> Dialog Box.*

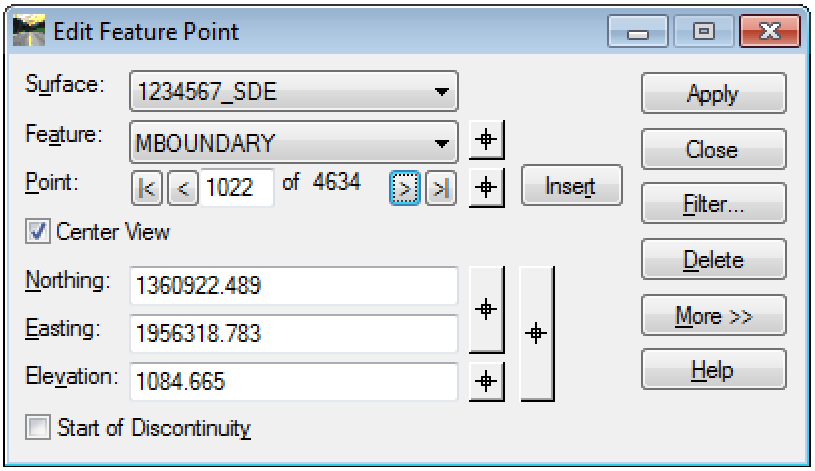
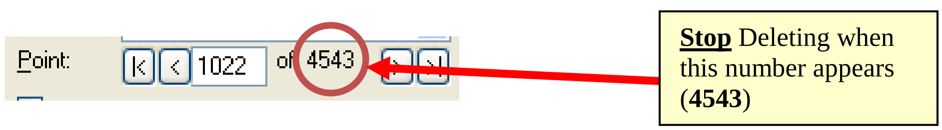


Figure L9-13 Edit Feature Point 1022

96.	**Information Only:** The **Point 1022** coordinates on MBOUNDARY will not be edited. This point and succeeding points will be **deleted** from the MBOUNDARY in order to encompass the obscured area. *Information regarding the deleting of points from MBOUNDARY.*
97.	**Important Step!!** In the **Edit Feature Point** dialog box – perform the following steps: • Click the **Delete** key in the dialog box until the Current Point Number in the **Edit Feature Point** dialog box depicts the following: ***Point 1022 of 4543***.  • You will be able to see the selected points being deleted by the depiction of a purple box which traces each point as it is being deleted. • When Point Number **4543** appears ----- Stop and do not close out of the dialog box!! *Selects the points to be deleted from the MBOUNDARY.*
98.	Although the Points on the **MBOUNDARY** have been selected to be deleted – they will not be removed until the **Apply** button is clicked. • Click **Apply** --- but DO NOT Close out of the **Edit Feature Point** dialog box. The MBOUNDARY should now correspond to the screen capture depicted in *Figure L9-14* as shown below. *Deletes the selected points from the MBOUNDARY.*

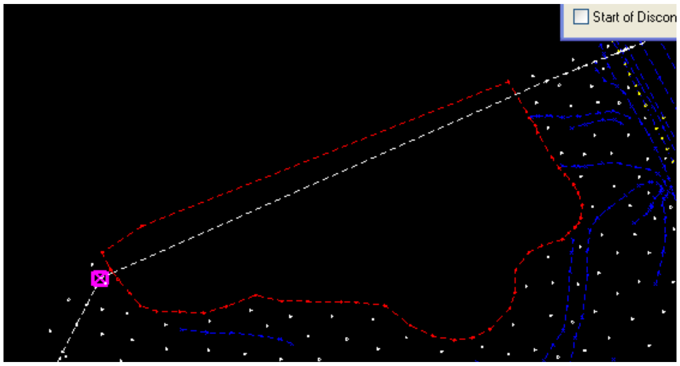


Figure L9-14 Edited MBOUNDARY

99.	The **Edit Feature Point** dialog box should now correspond to the screen capture depicted in *Figure L9-15* as shown below. *Depicts the* **Edit Feature Point** *dialog box current settings.*

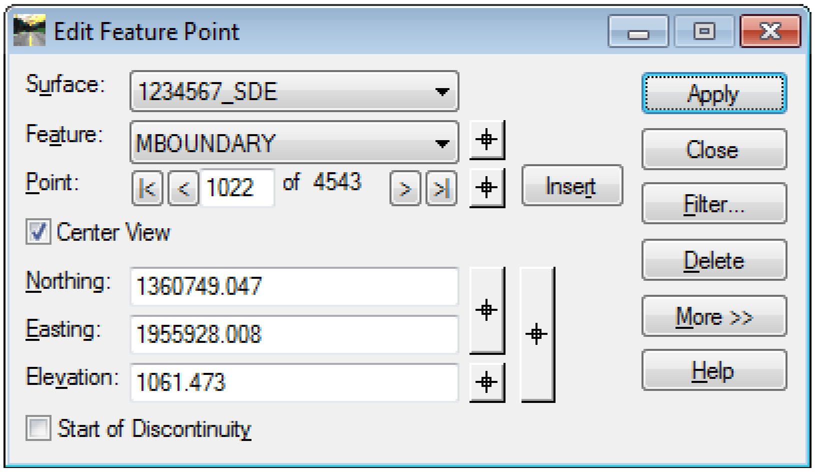


Figure L9-15 Edit Feature Point 1022

100.	**Information Only:** The original **MBOUNDARY** contained **4634** points. After deleting approximately **91** points – the total number of points in the **MBOUNDARY** now contains **4543**. InRoads removes this “empty” numbers gap and continues numbering with **1022** so that there are no empty number place holders. Basically the points are renumbered to remove this gap. *Information regarding the deleting of points from MBOUNDARY.*

101. The next step is to modify Point **1022** in the **MBOUNDARY** to ensure that the **MBOUNDARY** will encompass the obscured area of **MOBSC14**.

In the **Edit Feature Point** dialog box – enter the following:

- In the **Surface:** Pulldown – select ***1234567_SDE***
- In the **Feature:** Pulldown – select ***MBOUNDARY***
- In the Point Scroll box – enter the number **1022** and click the **tab** key
- Place a ***Check Mark*** in the **Center View** box
- Enter a Northing of – **`1360772.985`**
- Enter an Easting of – **`1955932.969`**
- Retain an Elevation of – **`1061.473`**

Leave all other entries as default.

The inputs should now correspond to the screen capture depicted in *Figure L9-16* (as shown below). Verify to ensure that your input matches the screen capture.

Sets entries in the Edit Feature Point Dialog Box.

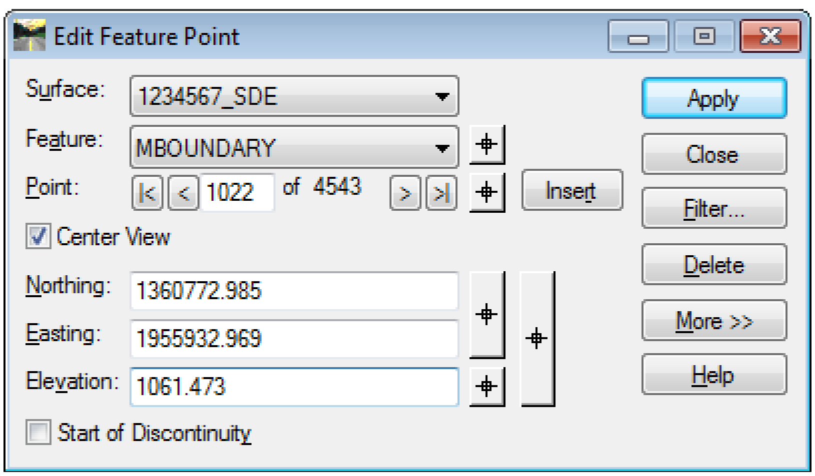


Figure L9-16 Edit Feature Point 1022

102. Click **Apply** but DO NOT Close out of the **Edit Feature Point** dialog box.

Please be patient. It may take a moment for the point to modify graphically in MicroStation.

*Modifies Point Number **1022** so that it will encompass the obscured area of **MOBSC14**.*

103. The next step is to modify Point **1021** in the **MBOUNDARY** to ensure that the **MBOUNDARY** will encompass the obscured area of **MOBSC14**.

In the **Edit Feature Point** dialog box – enter the following:

- In the **Surface:** Pulldown – select ***1234567_SDE***
- In the **Feature:** Pulldown – select ***MBOUNDARY***
- In the Point Scroll box – enter the number **1021** and click the **tab** key
- Place a ***Check Mark*** in the **Center View** box
- Enter a Northing of – **`1360927.456`**
- Enter an Easting of – **`1956304.564`**
- Retain an Elevation of – **`1085.498`**

Leave all other entries as default.

The inputs should now correspond to the screen capture depicted in *Figure L9-17* (as shown below). Verify to ensure that your input matches the screen capture.

Sets entries in the Edit Feature Point Dialog Box.

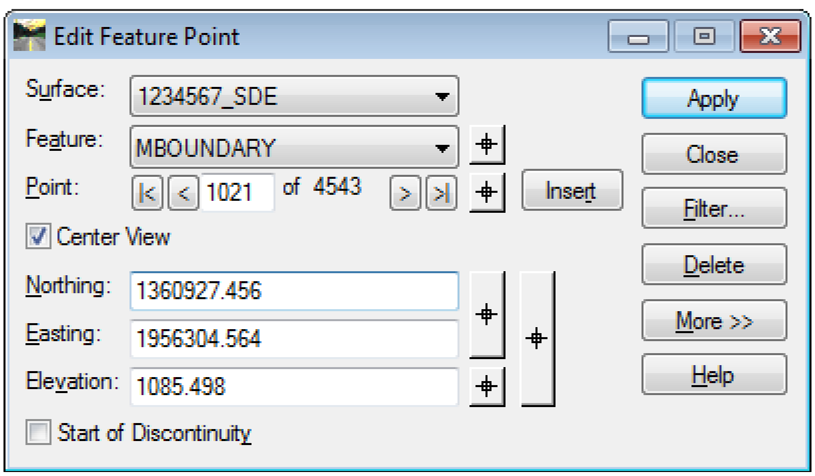


Figure L9-17 Edit Feature Point 1021

104. Click **Apply**.

Please be patient. It may take a moment for the point to modify graphically in MicroStation.

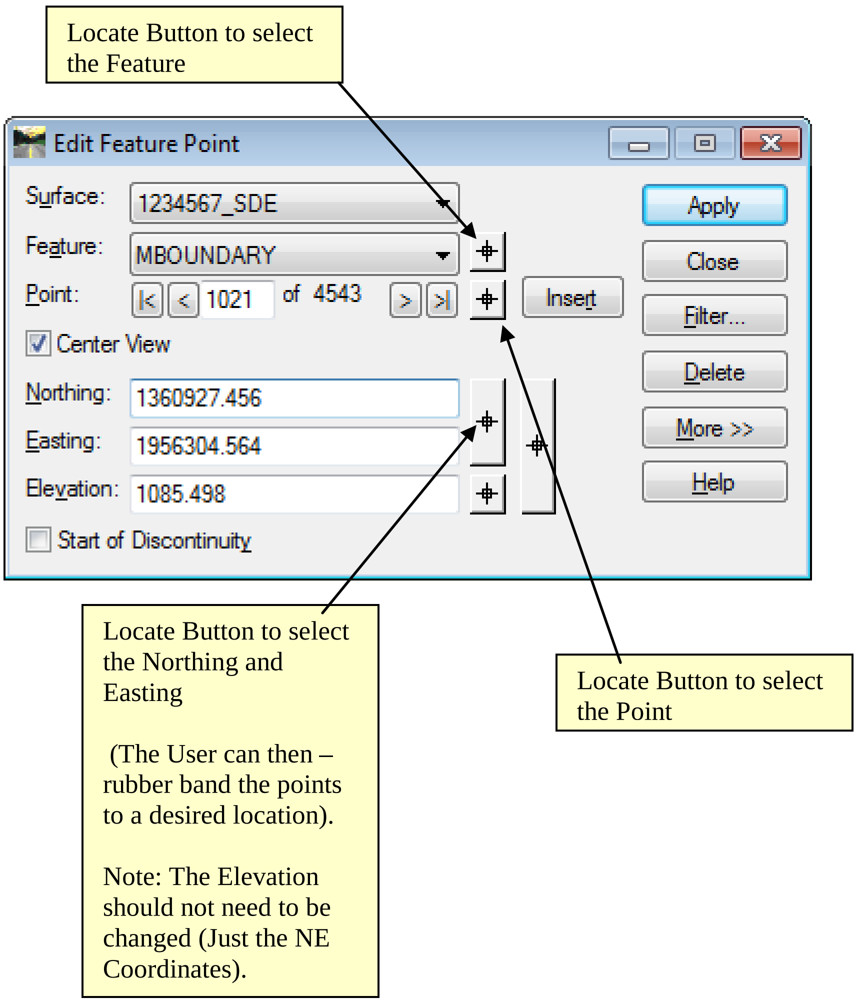
Now click **Close** to close out of the **Edit Feature Point** dialog box

*Modifies Point Number **1021** so that it will encompass the obscured area of **MOBSC14**.*

105. **Information Only!!**

In order to maintain consistency in the Labs – the above steps used a hard coded entry so that the Lab Data would correspond. In a "real world" project – the User could utilize the Locate Buttons and **graphically** modify the MBOUNDARY so that it encompasses the obscured area. The boundary does not need to be modified so that the points exactly correspond with the MOBSC area. There can be a slight gap or overlap – just ensure that the points are close in order for the triangulation to be accurate.

Another method to modify the ***MBOUNDARY*** is to click the following ***Locate Buttons*** and graphically modify the Exterior Boundary.



Additional Information regarding the Edit Feature Point Command.

106.	**Information Only!!** The **MBOUNDARY** Feature has been modified to encompass the **MOBSC14** Obscured Area. The next step is to change the **MOBSC14** Feature from an ***Interior Boundary*** to a ****Breakline*** so that the Feature can be deleted. **The Feature MUST be a ***Breakline*** in order to be deleted. *Information regarding the processing of the MOBSC14 Feature.*
107.	In the [InRoads Software] To change the ***MOBSC14*** Feature from an *Interior* Boundary to a *Breakline* – follow these steps in **InRoads**. Click **Surface►Feature ►Feature Properties** and the **<u>Feature Properties</u>** dialog will appear. *Opens the <u>Feature Properties</u> dialog box.*
108.	In the **<u>Feature Properties</u>** dialog box perform the following steps: • In the **Surface:** Pulldown ensure that **1234567_SDE** is the selected *Surface*. • In the **Feature:** List box: Scroll down the list – and Highlight the Name of ***MOBSC14*** by left-clicking the ***MOBSC14*** Feature. o The Feature should now be highlighted in blue. • In the Triangulation Field next to **Feature Type:** – change the type from ***Interior*** to ***Breakline***. The inputs should now correspond to the screen capture depicted in *Figure L9-18* (as shown below). Verify to ensure that your input matches the screen capture. *Sets entries in the <u>Feature Properties</u> Dialog Box.*

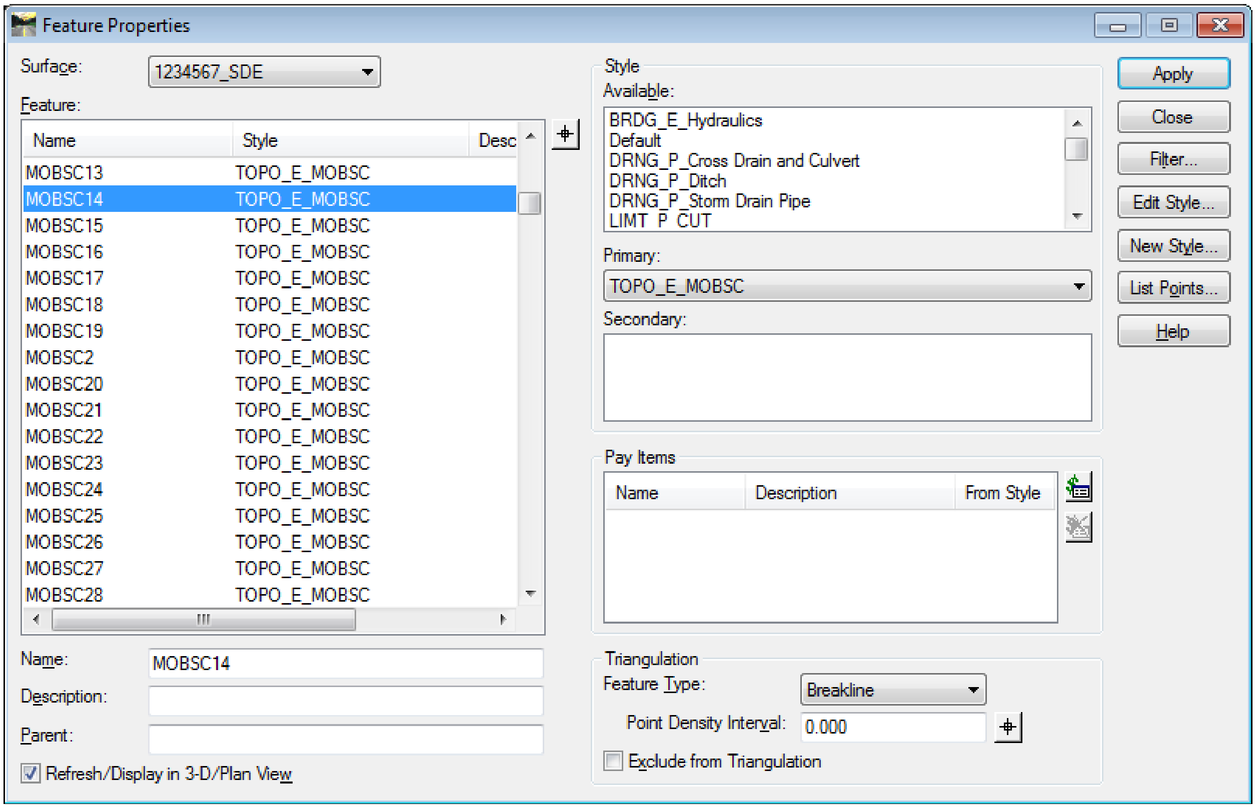
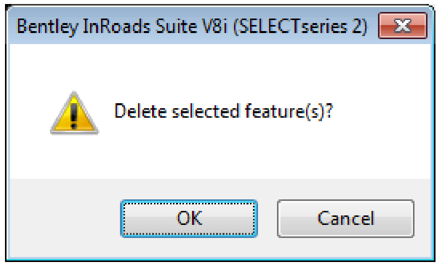


Figure L9-18 Feature Properties

109.	Click **Apply** and then click **Close** to close out of the **<u>Feature Properties</u>** dialog box. *Changes the MOBSC14 Feature from Interior to Breaklines.*
110.	To Delete the ***MOBSC14*** Feature: Click **Surface►Edit Surface ►Delete Feature and the <u>Delete Feature</u>** dialog box will open. • In the **Surface:** Pulldown – ensure that ***1234567_SDE*** is selected. • In the **Feature:** List box: Scroll down the list – and Highlight the Name of ***MOBSC14*** by left-clicking the ***MOBSC14*** Feature. o The Feature should now be highlighted in blue. • Click **Apply** and the following Dialog Box will appear:



- Select **OK** and the **MOBSC14** breakline will be deleted.
- Click **Close** to close out of the **Delete Feature** dialog box.

Deletes the MOBSC14 Feature.

111. **Information Only!!**

The **MOBSC14** Feature must be changed to a *Feature Type* of ***Breakline*** before removing (deleting) the features. If the *Feature Type* is left as an ***Interior*** – the points of the feature are deleted but <u>not</u> the alignment. In order to ensure that <u>all</u> obscured area boundaries (points and alignments) are removed so that there is no overlapping of data -- the ***Breakline*** Feature Type is used.

Information regarding the deleting of obscured area boundaries.

112. You will need to save your work periodically whenever changes have been made to the dataset.

Save the InRoads Surface Project:

Select **File**▶**Save**▶ **Surface** from the **InRoads Menu**.

<u>Please Note:</u> (The "Save As" dialog box may not appear because the Surface Project has already been saved initially).

The Surface Project (***1234567_SDE.dtm***) will be saved to **Lab 9** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 9**

Note that the **<u>InRoads Status Bar</u>** (Located at the bottom of the InRoads Interface) will depict a message when the Surface Project has been saved.

*The **1234567_SDE** Surface Project has now been saved to the following path:*
C:\InRoads Data\1234567\SDE Labs\Lab 9

113.	**VERY Important Step:** In order to Start with a CLEAN DGN file for the next Lab: In the [MicroStation Software] – Select **Edit ▶Select All** Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn file to ensure a clean DGN file for the next Lab.*

Lab9D Merge Original Field Enhancements into Mapping Surface

In the previous Labs (**Lab 9A- Lab 9C**) – the process for preparing areas of the Mapping Surface for different enhancement situations were depicted. The process of adding enhancements to new construction areas, obscured/partially obscured areas and data located outside of the current existing exterior boundary were demonstrated. The next step is to merge/add these enhancements from the **1234567_XO** Original Field Enhancements Surface to the **1234567_SDE** Mapping Surface.

Please Note: When this data is merged there will be segment crossings due to the fact that for these Labs not all crossings were resolved -- especially in the obscured areas. In a "Real World" Project it is important to correct these areas in order to ensure correct triangulation of the surface data. For additional information regarding the resolution of Segment Crossings – please refer to **Lab 4** in these Tutorials.

Please Note: When the data from the Original Enhancements are added to the Mapping Surface – your data may not exactly match the screen captures or triangulation calculations depicted in this tutorial due to the fact that some selections and inputs in previous Labs may have differed slightly. This should not be a concern. As long as the steps were followed in the previous Labs – the calculations should not differ greatly.

114.	If **MicroStation** and **InRoads** are not already open – refer back to **Steps 1 – 5 in Lab 9A** to open MicroStation and InRoads and the associated database files. *Starts the MicroStation and InRoads Software Products (if they were closed previously).*
115.	***Set InRoads "Locks"** During the course of these Labs – the "Locks" will be turned on/off as the situation dictates. *It is very important to ensure that the "Locks" are set according to the steps and instructions for each Lab when indicated. **Important Step---!!!** Click **Tools▶Locks** from the InRoads pull-down menu. Ensure that the **Feature Filter Lock** is turned **OFF**. There should ***NOT*** be a **check mark** next to the Feature Filter Lock. *Ensures that the Feature Filter Lock is turned OFF.*

116. To Merge/Add the Original Enhancement Data to the Mapping Surface:

Click **Surface▶Edit Surface ▶Copy Portion of Surface** and the **Copy Portion of Surface** dialog box will open. (The following steps are critical!).

- In the **Source Surface:** Pulldown – ensure that ***1234567_XO*** is selected.
- In the **Destination Surface:** Pulldown – ensure that ***1234567_SDE*** is selected.
- In the **Clip By:** Pulldown – ensure that ***Fence*** is selected.
- In the **Duplicate Names:** Radio Buttons – ensure that ***Rename*** is selected.

Leave all other entries as Default.

The inputs should now correspond to the screen capture depicted in *Figure L9-19* (as shown below). Verify to ensure that your input matches the screen capture.

Sets entries in the Copy Portion of Surface Dialog Box.

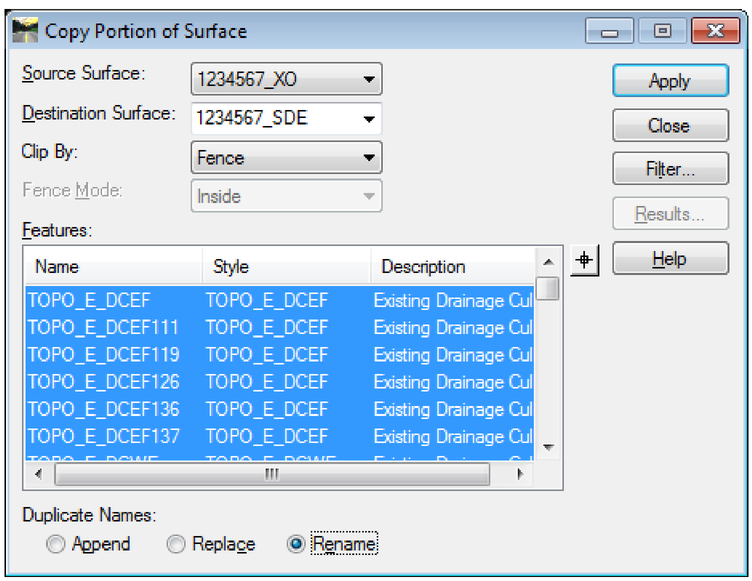


Figure L9-19 Copy Portion of Surface

117. Click **Apply** and then click **Close** to close out of the **Copy Portion of Surface** dialog box

*Merges the data from the **1234567_XO** Surface to the **1234567_SDE** Surface.*

118.	**Information Only:** The Original Field Survey Enhancements from Surface **1234567_XO** have been merged into the Mapping Surface of **1234567_SDE**. The data will now be triangulated in the **1234567_SDE** Surface. *Information regarding the merging of original enhancement data to Mapping Surface.*
119.	**IMPORTANT!!** In the following Labs – it is critical to remember which Surface is the Active Surface - depicted by the Red Rectangle . (In the previous command ---- the **1234567_XO** Surface became active – so make sure that you **change** the active surface back to **1234567_SDE**!!) **Important Step---!!!** ***Ensure*** that the **1234567_SDE** database is the Active Surface (has a red rectangle) next to the **1234567_SDE** name. • Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). • Select the **1234567_SDE** surface (by Left clicking) and the Name will highlight in blue. • Then (Right click) over the surface and a pop-up dialog will appear. • Click **Set Active** and a red rectangle will appear beside the **1234567_SDE** Surface Name. *Ensures that the correct DTM --- (1234567_SDE) is active.*
120.	The **1234567_SDE** Surface will now be triangulated in order to incorporate the merging of the **1234567_XO** Enhancement Data. Select **Surface ▶ Triangulate Surface**. The **Triangulate Surface** dialog box will open. • In the **Surface:** Pulldown – select ***1234567_SDE*** • In the **Maximum Length:** field enter – ***300.000*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L9-20* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the Triangulate Surface dialog box.*

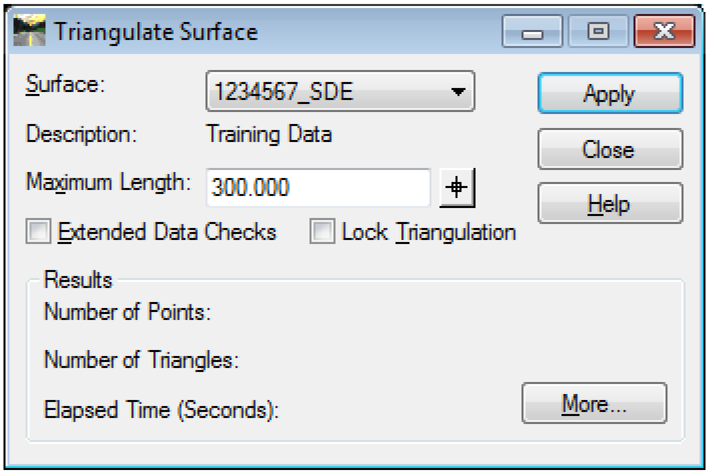
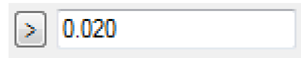


Figure L9-20 Triangulate Surface

121.	Click **Apply.** Please be Patient! It may take a while for the Surface to triangulate depending on the size of the file! The InRoads Status Bar (Located at the bottom – left hand side of the InRoads Interface) usually will depict the completion percentage of the triangulation on larger projects. *The **1234567_SDE** DTM Surface is triangulated.*
122.	A dialog box may appear informing you that **16** TRP1 points have been deleted successfully. If this dialog box does not appear – the reason is the user may have the **Report Lock** turned off. • Click the **Close** button in this dialog box to close the message. **Note:** These points were the MBOUNDARY points that were deleted in **Lab 9C**. *Depicts a message informing the user that points were deleted from the DTM successfully.*
123.	After the triangulation is completed – click **Close** to close out of the **<u>Triangulate Surface</u>** dialog box. *Closes the <u>Triangulate Surface</u> dialog box*
124.	**Information Only:** The next step is to determine if any crossing segments were introduced during the merging of data. (**Please Note** – there will be crossing segments in this Lab due to the fact that not all obscured areas were addressed and processed). In a “real world” project these errors will need to be corrected in order to ensure an accurate DTM surface. *Information regarding crossing segments.*

125. Click **Surface ▶Utilities▶Resolve Crossing Segments** and the **<u>Resolve Crossing Segments</u>** dialog box will appear:

- In the **Surface:** Pulldown – select ***1234567_SDE***
- In the **Mode:** field – select ***Interactive***
- In the **Delta Tolerance:** field – select > ***0.020*** 

<u>(Ensure the Greater Than Sign is selected)</u>
- In the **Match Elevation:** entry – select ***Median***

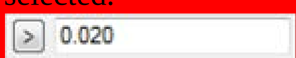
Leave all other entries as default.

The inputs should now correspond to the screen capture depicted in *Figure L9-21* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the <u>Resolve Crossing Segments</u> dialog box

<u>WARNING**</u>**

Ensure the Delta Tolerance of > **0.020** is selected.



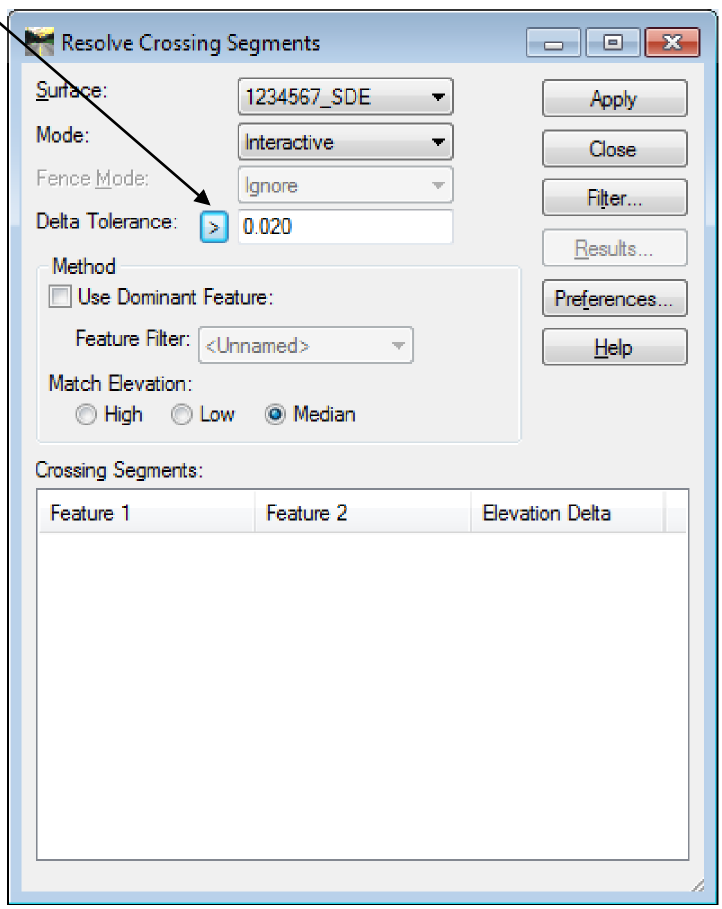


Figure L9-21 Resolve Crossing Segments

<u>Information**</u>**

When using the ***Automatic*** Mode the Delta Tolerance should be set to < 0.020. When using the ***Interactive*** Mode the Delta Tolerance should be set to > 0.020.

126.	Click **Apply**. If there are any Crossing Segments, these will be depicted (highlighted in Red) in the list field of the dialog box. In this case, there are **6 Crossing Segments** listed in the list field. These **6 Crossing Segments** will need to be manually resolved. The **Feature 1**, **Feature 2** and the **Elevation Delta** of the mismatched elevation crossings are also depicted. The <u>**Resolve Crossing Segments**</u> dialog should now correspond to the screen capture depicted in *Figure L9-22* (as shown below). Verify to ensure that your input matches the screen capture.

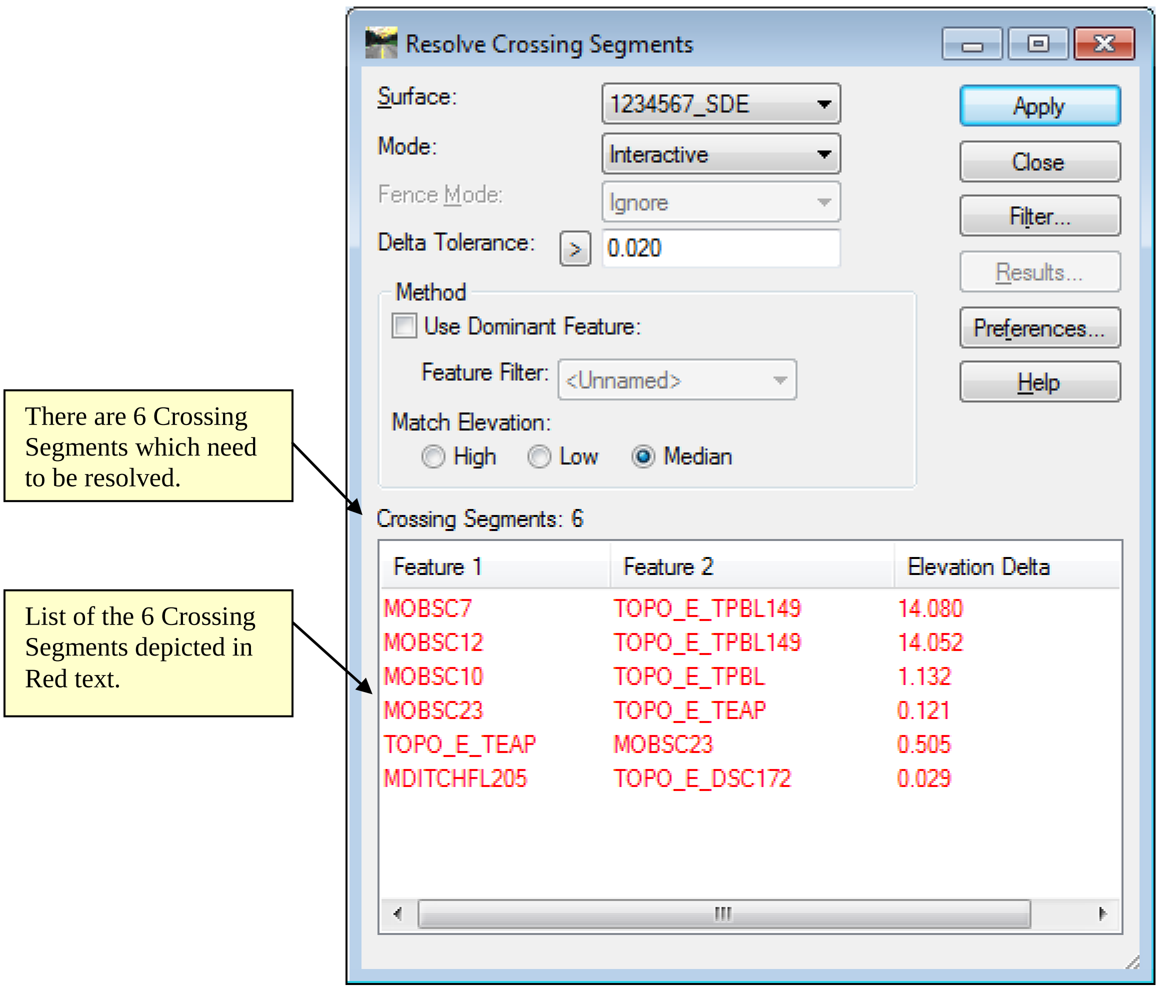


Figure L9-22 Resolve Crossing Segments

127.	**Information Only:** As mentioned previously – this **Lab** will not depict the process of resolving the crossing segments. The upcoming Labs will provide a dataset which has already been processed and all crossing segments resolved. For additional information – please refer back to ***Lab 4*** for the procedures for resolving crossing segments.

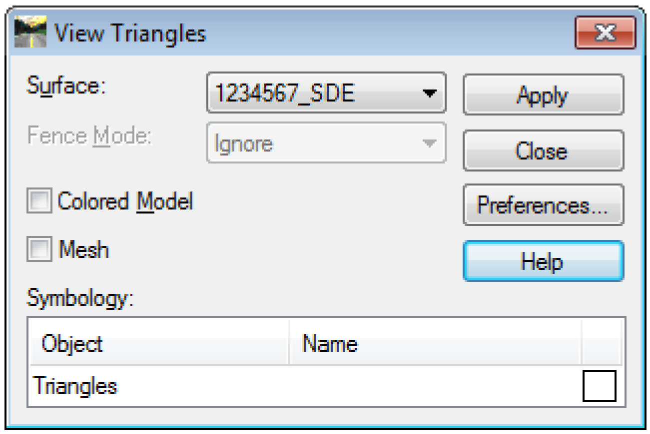
128. Click **Close** to exit the **Resolve Crossing Segments** dialog box**.**

Closes the Resolve Crossing Segments dialog box.

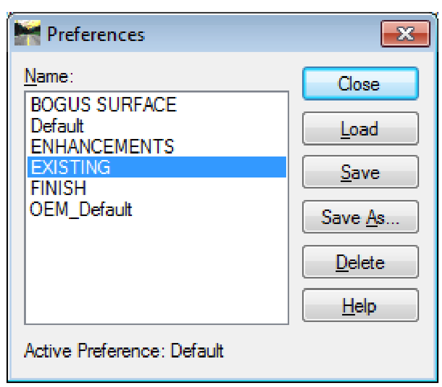
129. View the **DTM** Triangles and **MBOUNDARY** to ensure that the extraneous triangles are deleted and to ensure that no spikes or erroneous data were introduced.

View the Surface Triangles:

- Select **Surface▶View Surface▶ Triangles** from the **InRoads Menu**. The following dialog box will appear:



- In the **Surface:** pulldown – select **1234567_SDE**
- In this dialog box – click on the **Preferences**… button and the following dialog box will appear:

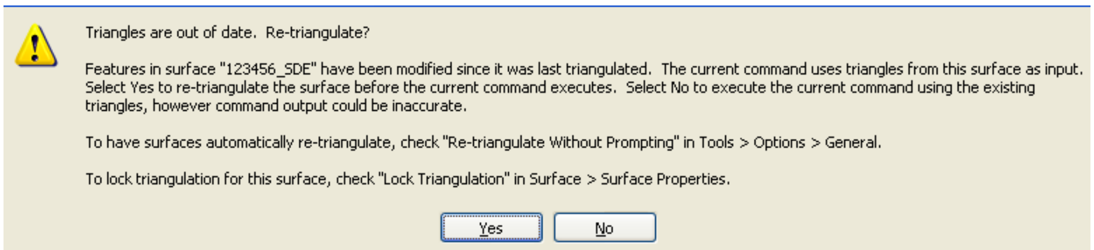


- In this dialog box – select the Preference of **EXISTING**. Then click **Load** and then click **Close** and the **Preferences** dialog box will close.

Sets the Preference for the viewing of the 1234567_SDE.dtm Surface.

130. In the **View Triangles** dialog box – click **Apply**.

Please Note:
At this point you may encounter a dialog box which says that the **“Triangles are out of Date. Re-triangulate?”**



- If you receive this dialog box – select **Yes**.

The reason that this box appears --- is because whenever the **Resolve Crossing Segments** Command is utilized the DTM must be re-triangulated in order to ensure that all triangles are up to date.

View the 1234567_SDE Enhancement data triangles

131. Please be patient – it may take a while to view the triangles depending on the size of the DTM.

- In the **View Triangles** dialog box – click **Close** to close out of the dialog box.

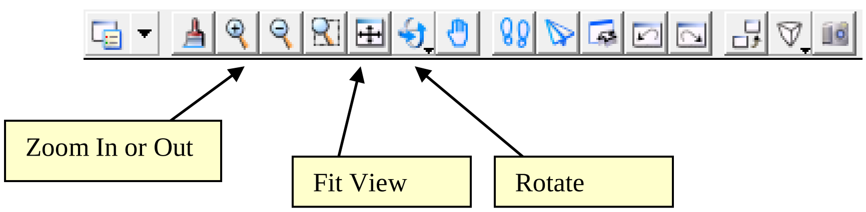
Closes the ***View Triangles*** *dialog box and views the triangles.*

132. **View the MBOUNDARY Feature:**

Select **Surface**▶**View Surface**▶**Features** and the **View Features** dialog box will open.

- In the **Surface:** Pulldown – select **1234567_SDE**
- When the dialog box is opened – all of the Features in the **Features:** list will be highlighted in Blue.
- Left click on **MBOUNDARY** so that it is the only Feature highlighted in Blue.
- Click **Apply**. (It may take a moment for the Feature to View).
- Then click **Close** to close out of the dialog box.

Selects the MBOUNDARY Feature to view.

133.	**View** the selected Surface Features/Triangles in the [MicroStation Software] by using the following command located under the MicroStation View 1 Window: In the [MicroStation Software] – Select the “Zoom In or Zoom Out” or “Fit View” Icons as appropriate to view the Features.  *The Surface Features/Triangles are displayed on the MicroStation screen.*
134.	**Important Note:** In a “real world” Project – any obvious errors, segment crossings, etc. would be reviewed in the **1234567_SDE** Surface and would be resolved at this point. Please see **Lab 4** and **Lab 6** in the **Full Field Survey Section** for steps in resolving crossing segments and/or spikes in the DTM. *Review the 1234567_SDE data.*
135.	The “Merged” Surface will now be compressed (deleted data will be removed from memory) which will reduce the size of the DTM file. Select **Surface ▶ Utilities ▶ Compress Surface** and the **Compress Surface** dialog box will open. • In the **Surface:** Pulldown – select ***1234567_SDE*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L9-23* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the Compress Surface dialog box.*

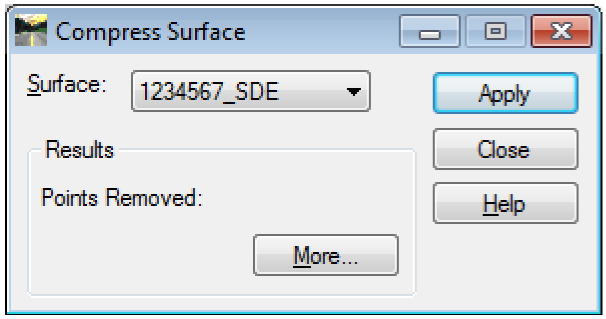


Figure L9-23 Compress Surface

136.	Click **Apply**. A dialog box will appear that warns that the Surface will be re-triangulated. (See *Figure L9-24* as shown below). *Generates a re-triangulate warning box.*

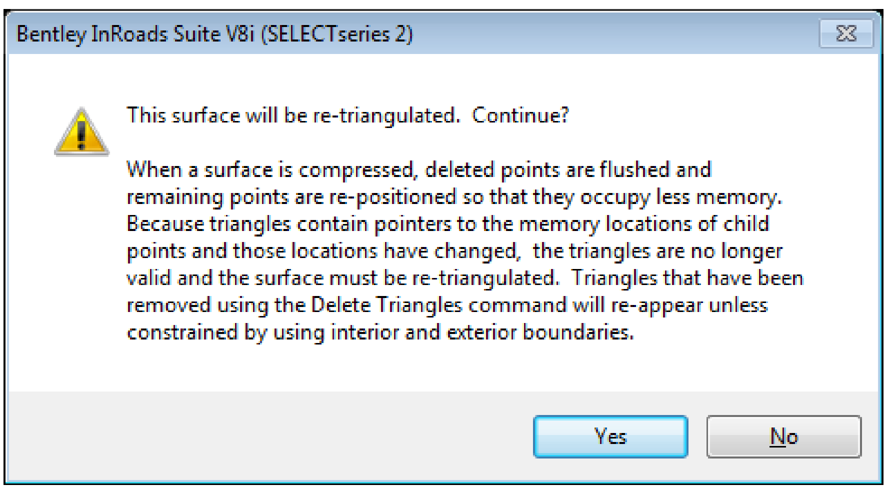
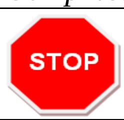


Figure L9-24 Re-Triangulate Message Dialog box.

137.	Click **Yes**. The **1234567_SDE** DTM Surface will be re-triangulated. *Re-triangulates the Surface.*
138.	After the re-triangulation is completed – click **Close** to close out of the <u>**Compress Surface**</u> dialog box. *Closes the <u>Compress Surface</u> dialog box.*

139.	**<u>Information Only:</u>** The *__1234567_SDE.dtm__ is a “working surface” for the use of Survey Data Engineers. After submission to the Designer(s) – the Designer will re-name the surface to **1234567_Exist.dtm**. The procedure of re-naming the Surface will be the responsibility of the Designer and will be described in the Design Guidelines and Tutorials. ** During the addition of enhancements – the SDE will be working in <u>several</u> DTM files. Therefore it is advantageous to have a “working DTM” to input in all of the compiled enhanced data. The final compiled DTM data will be submitted to the Designer(s) as **PI#_SDE.dtm** file for tracking purposes. The Designer will then re-name the file to **1234567_Exist.dtm**. *Depicts Surface Information.*
140.	**<u>Information Only:</u>** The majority of the different types of Obscured Area situations have been depicted (as shown in **Labs 9A-9C**). The Original Field Enhancement Data (**1234567_XO**) has been merged into the Mapping Project (**1234567_SDE**) and the DTM has been reviewed for errors and compressed to reduce the size of the database. **Lab 17** will depict the procedures for preparing the associated DGN files for TOPO and UTLE files. **Labs 10-15** will depict the COGO aspect of inputting in Existing Alignments, Existing Right of Way and Property. The ***1234567_XO.fwd*** file is NOT to be submitted to Design. The Designer will have all of the information which is contained in the field book in the **1234567_SDE.dtm**, the **1234567_SDE.alg** file and the associated DGN File deliverables. *Information regarding upcoming Labs.*
141.	**<u>Information Only:</u>** • In a “Real World” Project -- when viewing the DTM triangles and the MBOUNDARY (the Topo Limit Line) at the same time – please be aware that if you use this combination and view the DTM as “Smooth” instead of “WireFrame” --- the Triangles will be intermixed with the color of white and green and will appear as a mottled color. • If you view the DTM triangles in the “Smooth” mode – it is best <u>NOT</u> to view the MBOUNDARY at the same time. This will allow the triangles to view as the Existing Green color. *Information regarding the viewing of DTM Triangles.*

142.	**Save the InRoads Surface Project:** Select **File ▶ Save ▶ Surface** from the **InRoads Menu**. Please Note: (The “Save As” dialog box may not appear because the Surface Project has already been saved initially). The Surface Project (***1234567_SDE.dtm***) will be saved to **Lab 9** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 9** Note that the **InRoads Status Bar** (Located at the bottom of the InRoads Interface) will depict a message when the Surface Project has been saved. *The **1234567_SDE** Surface Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 9***
143.	**VERY Important Step:** In order to Start with a CLEAN DGN file for the next Lab: In the [MicroStation Software] – Select **Edit ▶ Select All** Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn to ensure a clean DGN file for the next Lab.*
144.	In the [MicroStation Software] – Select **File ▶ Compress ▶ Design** to reduce the DGN File Size. *Compresses the DGN File Size.*
145.	 This concludes Lab 9. Do not proceed until the Instructor directs you to do so.

3

Generate and Input Existing Alignment, Existing R/W and Property Data Training Guide – Section 3

Lab 10
Create & Store the Existing Centerline (ACL) from Field Surveyed Points

Objective

The Existing Centerline Alignment (Feature Style **PROP_E_ACL**) is established by utilizing tangent and curve points collected from Field Survey. The degrees of curves are computed by using field points which are then compared to existing plans. An appropriate degree is then assigned to the curve. The Existing Centerline Alignment is used as the basis for setting the Existing Right-of-Way for the project.

The objective of Lab 10 is to:

- Set forth the workflow required to create and store existing roadway centerlines to GDOT standards from mapping and field survey information.

Workflow

- View the centerline Cogo points with the feature styles PROP_E_APOT, PROP_E_APOC, PROP_E_APC, PROP_E_APT and PROP_E_API.
- Determine the tangent and curve locations and use tangent points to define bearings and to store PI's of curves.
- Store the Existing Centerline Alignments.
- Evaluate and define curves in the alignments.

Lab10A Start InRoads and Set Survey Defaults

In this section of the lab you will be opening the **MicroStation V8i Select Series 2 GDOT-User Workspace** and **InRoads Suite V8i Select Series 2.** You will also open a “Working” DGN file. This “Working” DGN file is used to display the temporary and/or permanent graphics in **InRoads**. **MicroStation** is opened first. **InRoads** is then opened from within **MicroStation**.

1. **Starting Clean**

In order to ensure that you are working with a “clean” database – you will close MicroStation and InRoads if they are still running from a previous Lab:

To CLOSE MicroStation and InRoads -

Select **File**▶**Exit** from the [MicroStation Menu].
If any messages appear regarding the saving of projects – Select 

This closes BOTH the MicroStation and InRoads Software(s).

2. From the desktop, double-click on the **MicroStation** icon labeled **GDOT MicroStation V8i SS2 (x86)**.

Double click on the icon labeled **GDOT MicroStation V8i SS2 (x86)**.

- When the **MicroStation Manager** dialog box opens – navigate to the **C:\InRoads Data\1234567\SDE Labs\Standards** folder and select the “**GDOT 3D Working File.dgn**”. Click **Open**.

- Now open InRoads from within MicroStation by selecting: **InRoads ▶ InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu].

The MicroStation and InRoads Software(s) will open.

3. **Verify Project Defaults**

- In InRoads -- select **File ▶Project Defaults**
- Use the pull down next to *Configuration Name:* to select **1234567_SDE** which you created in Lab 1.
- Verify Settings match those shown in *Figure L10-1*.
- Click **Apply** & **Close.**

Sets the SDE Project Defaults. This folder location will also be the default folder when ***File ▶Save*** *and* ***File ▶Close*** *are used.*

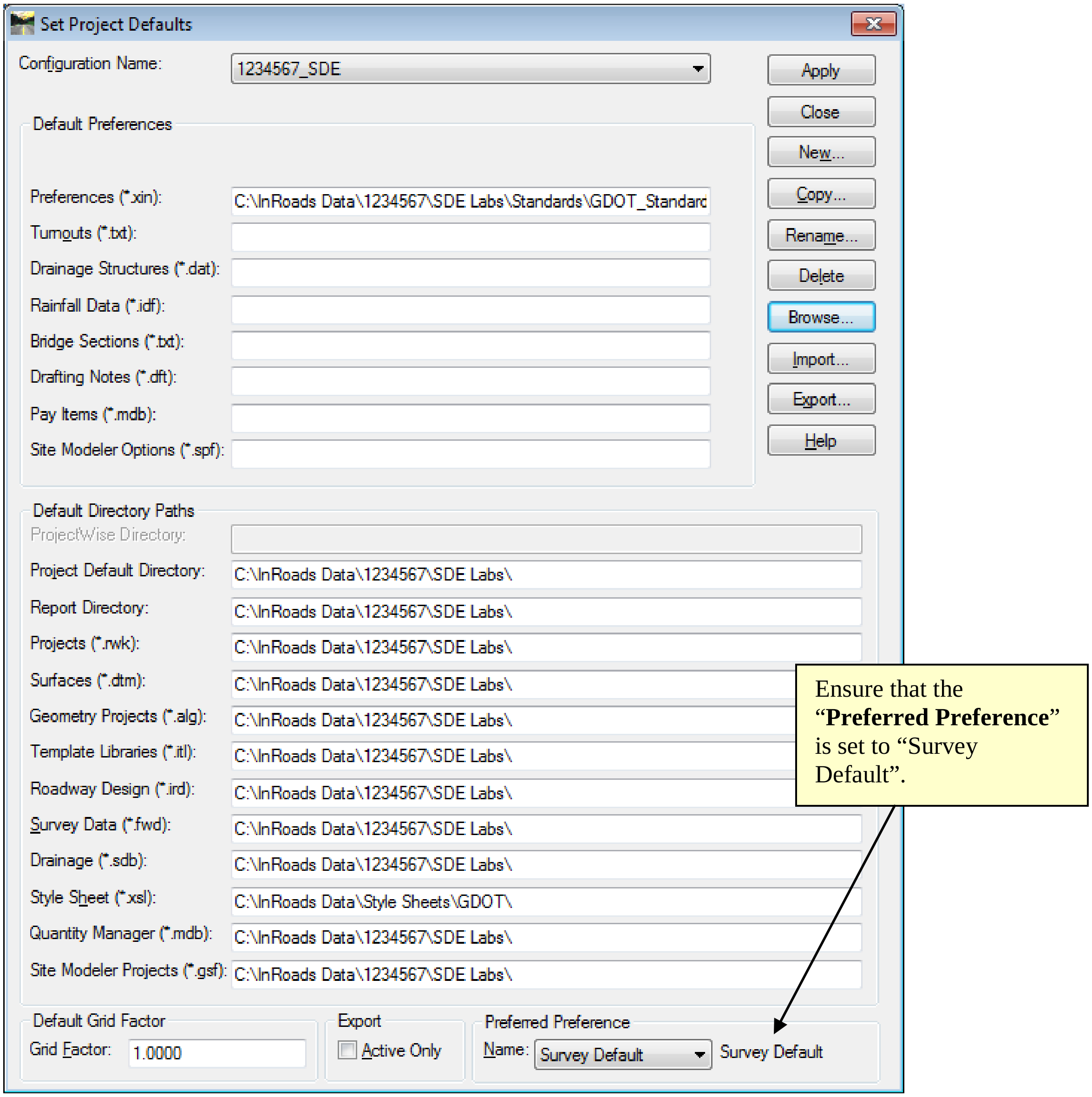


Figure L10-1 Set Project Defaults

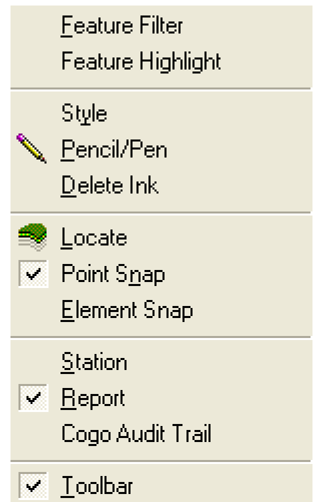
4.	**Set Survey Default Preferences** • In InRoads - Select **File ▶ Project Options**. • In the **<u>Project Options</u>** dialog box select the **General** Tab. • Click the **Preferences** button at the bottom of the dialog box. • Choose ***Survey Default***. Click **Load** and **Close**. • In the **<u>Project Options</u>** dialog box - Click **Apply** and **Close**. *Sets the Survey Defaults Preference.*

5.

***Set InRoads “Locks”**
*It is very important to ensure that the “Locks” are set according to the steps and instructions for each Lab when indicated.

Click **Tools ▶ Locks** from the InRoads pull-down menu.

Ensure that the following locks are selected/unselected as appropriate:



Feature Filter _____ Unchecked

Feature Highlight __ Unchecked

Style ____________ Unchecked

Pencil/Pen ________ Set to Pencil

Delete Ink ________ Unchecked

Locate ___________Set to Features

Point Snap ________ Checked

Element Snap ______Unchecked

Station ___________ Unchecked

Report __________ Checked

Cogo Audit Trail ____ Unchecked

Toolbar ________ Checked

The InRoads “Locks” are set accordingly.

Lab10B Load Surface (.dtm) and Geometry (.alg) Files

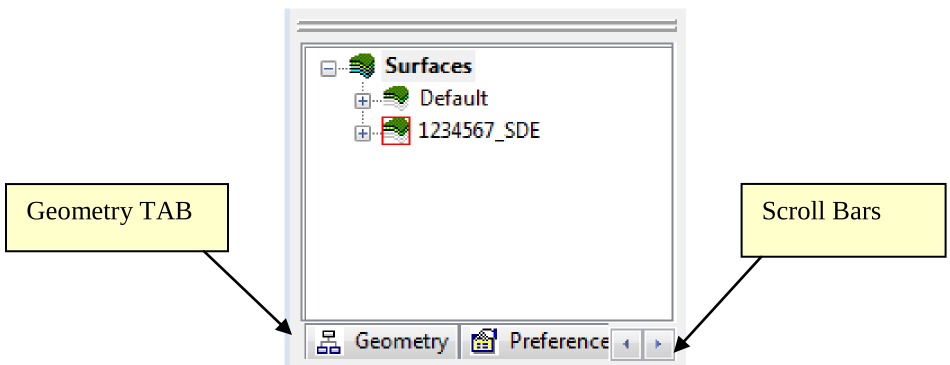
In this section of the Lab you will load the Surface file **1234567_SDE.dtm** and the Geometry file **1234567_SDE.alg**. These files will be used to create the Existing Centerline Alignment (ACL).

6.	**Load the InRoads Surface File** Select **File▶Open** from the **InRoads Menu**. The Project Defaults (which were set up in **Lab 10A**) are set to the following Path: **C:\InRoads Data\1234567\SDE Labs**. Browse to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab10** Select the file named: **1234567_SDE.dtm** Click **Open** and then click **Cancel**. *The 1234567_SDE.dtm Surface file will open.*
7.	**Load the InRoads Geometry File** Select **File▶Open** from the InRoads Menu. The Project Defaults (which were set up in **Lab 10A**) are set to the following Path: **C:\InRoads Data\1234567\SDE Labs.** Browse to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab10** Select the file named: **1234567_SDE.alg** Click **Open** and then click **Cancel**. *The 1234567_SDE.alg Geometry file will open.*

Lab10C View Geometry and Surface Information

In the first section of **Lab 10C** - you will view the alignment points collected in the field. These points have Feature Styles of **PROP_E_APOT, PROP_E_APOC, PROP_E_APT, PROP_E_APC** and **PROP_E_API** and are contained in the **1234567_SDE.alg** project. In the second section of **Lab 10C** – you will view the Existing Roadway Feature Styles contained in the **1234567_SDE.dtm** file. These Feature Styles will assist in the creation of the Existing Centerline Alignment.

8. Click on the **Geometry Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Geometry Tab**.



Then click on the **1234567_SDE** Geometry Project. Note that the **1234567_SDE** Geometry Project has a "Red Rectangle" around the icon. This denotes that this is the "Active" Geometry Project. Any Cogo commands will be initiated and performed on the current "Active" Geometry.

Opens the InRoads Geometry Tab and displays the 1234567_SDE Geometry information in the InRoads Explorer Interface.

9. **View the Horizontal Annotation**

In the **InRoads Software**:

Select **Geometry ▶ View Geometry ▶ Horizontal Annotation** from the **InRoads Menu**.

The **View Horizontal Annotation** dialog box will open. Select the **"Main"** Tab.

The View Horizontal Annotation dialog box opens.

10.	In the **View Horizontal Annotation "Main"** Tab: • Click the **Preferences** button and highlight ***NO BEARING & DISTANCE***. • Click **Load** & **Close**. • The inputs should now correspond to the screen capture depicted in *Figure L10-2* (as shown below). Verify to ensure that your input matches the screen capture. *Sets the Viewing Options for the View Horizontal Annotation dialog box.*

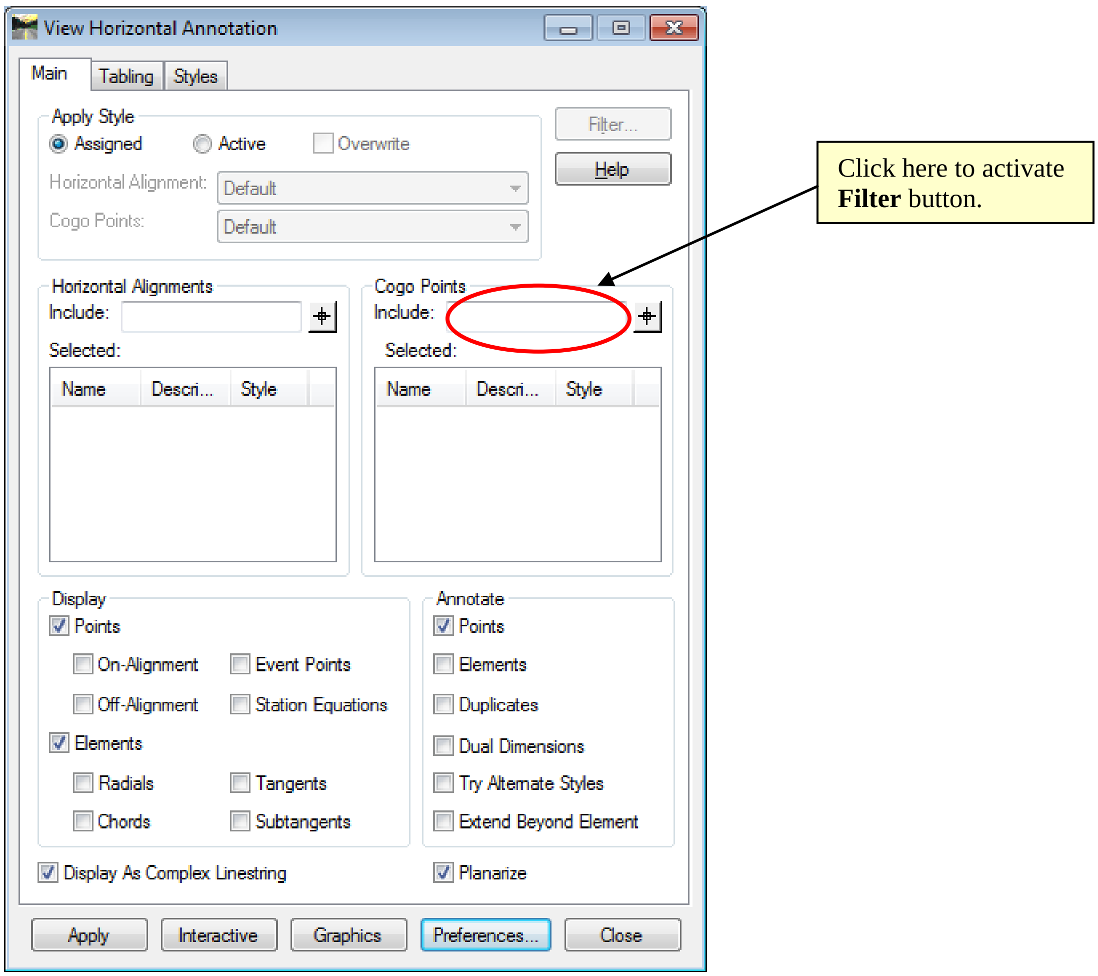


Figure L10-2 View Horizontal Annotation

11.	The **Filter** button on the dialog box will be grayed out. Place the cursor in the **Cogo Points** **Include:** field to activate the **Filter** button. (See Screen Capture depicted above). Click the **Filter** button to open the **Geometry Selection Filter** dialog box. See *Figure L10-3* (as shown below). *Activates the Filter button and opens the Geometry Selection Filter* dialog box.

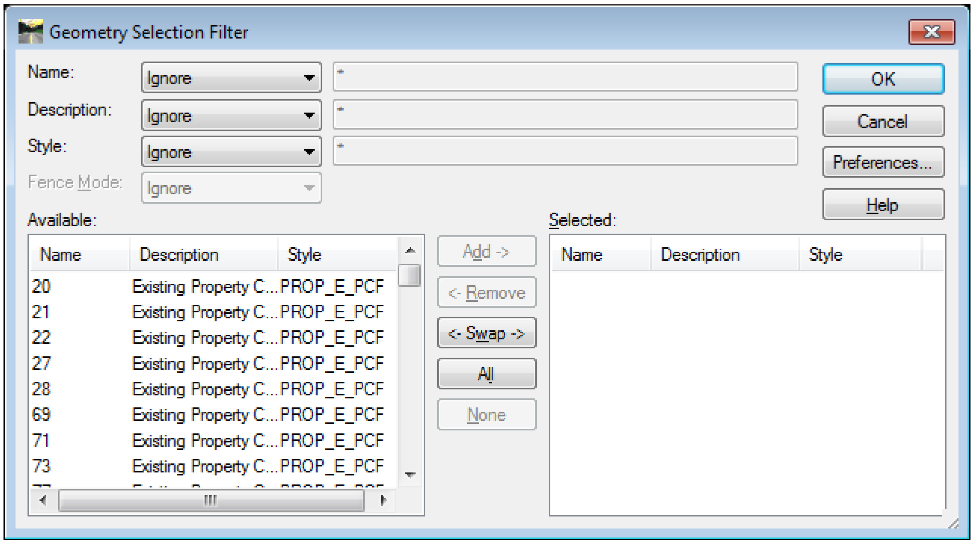


Figure L10-3 Geometry Selection Filter

12. The **<u>Geometry Selection Filter</u>** will be utilized to view the Alignment Feature Styles of **PROP_E_APOT, PROP_E_APOC, PROP_E_APT, PROP_E_APC** and **PROP_E_API.**

- In the **Style:** pull-down – Select ***Included***
- Click the **Preferences** button and highlight the ***ACL Cogo Point Feature Styles*** Preference.
- Click **Load** & **Close.** This loads the Feature Styles of **PROP_E_APOT, PROP_E_APOC, PROP_E_APT, PROP_E_APC** and **PROP_E_API** into the ***Style*** text entry field.
- Verify to ensure that your input matches the screen capture depicted in *Figure L10-4.*

Selects the Feature Styles in the <u>Geometry Selection Filter</u>.

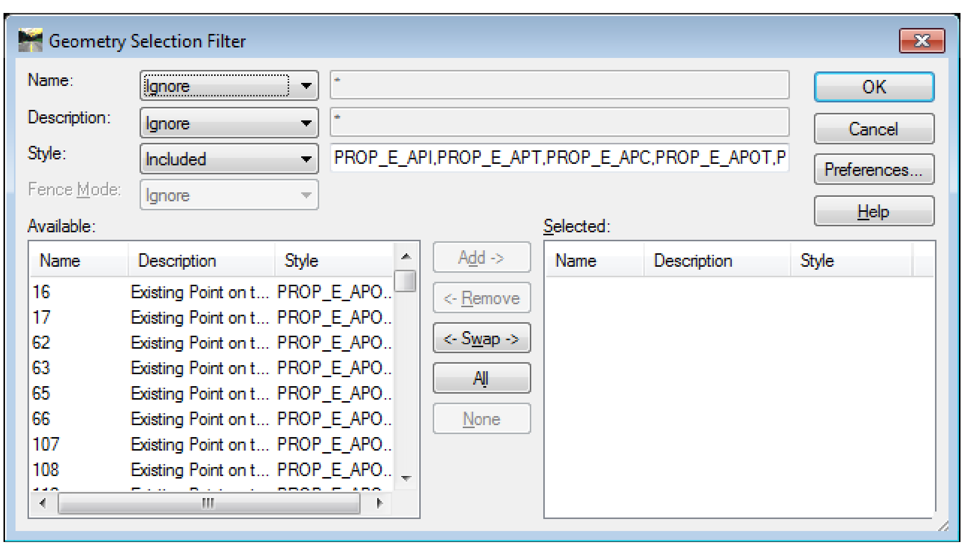


Figure L10-4 Geometry Selection Filter

13.	Once the data has been filtered – it needs to be moved from the **Available:** field to the **Selected:** field. • Click the **ALL** button. The data will be moved and then displayed in the **Selected:** field. The inputs should now correspond to the screen capture depicted in *Figure L10-5* (as shown below). Verify to ensure that your input matches the screen capture. *The filtered data is moved from the Available field to the Selected field.*

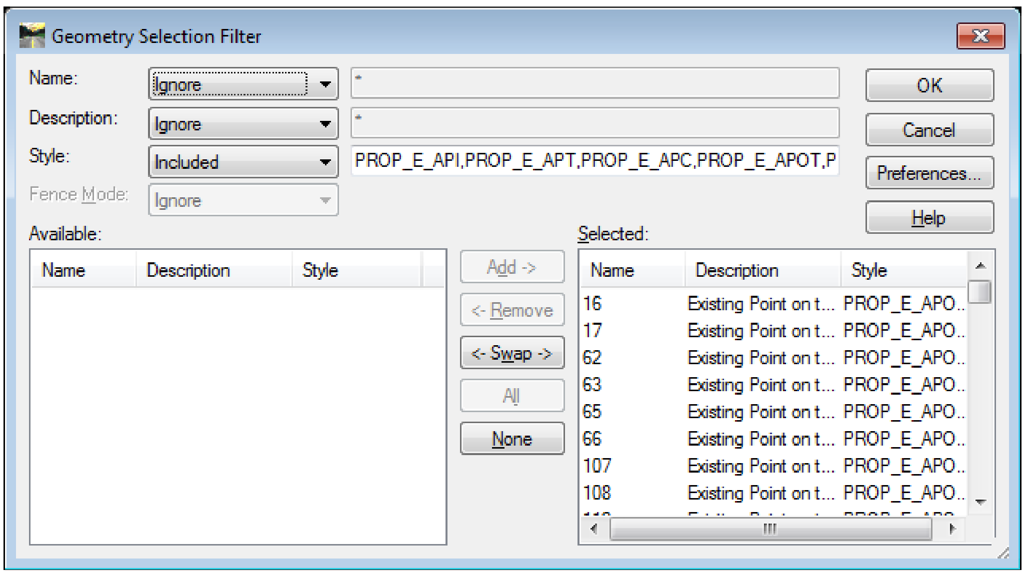


Figure L10-5 Geometry Selection Filter

14.	Click **OK** to close out of the **<u>Geometry Selection Filter</u>** dialog box and load data into the View Horizontal Annotation field. *Closes the <u>Geometry Selection Filter</u> dialog box.*
15.	**View Filtered Points** The Alignment Feature Style points have been filtered and are available for viewing. The **<u>View Horizontal Annotation</u>** dialog box should still be active from the previous steps. This dialog box depicts the filtered points in the **Cogo Points** Area as **Selected:** points. The inputs should now correspond to the screen capture depicted in *Figure L10-6* (as shown below). Verify to ensure that your input matches the screen capture. *The filtered point data is available for viewing.*

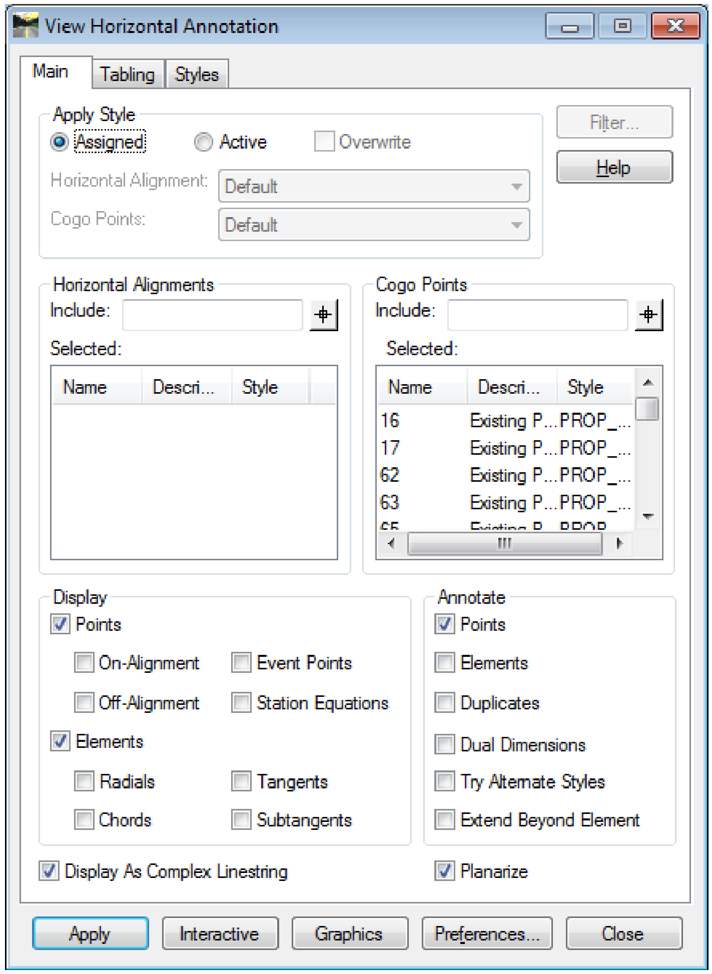


Figure L10-6 View Horizontal Annotation

16.	Click **Apply** and then click **Close** to close out of the **<u>View Horizontal Annotation</u>** dialog box. *The <u>View Horizontal Annotation</u> dialog box closes and the filtered Points are viewed in MicroStation.*
17.	**View** the selected Points in the [MicroStation Software] by using the following command located under the MicroStation <u>View 1</u> Window. In the [MicroStation Software] – • Select the "Fit View" Icon to view the Points.  Verify that the MicroStation view window matches that shown in *Figure L10-7*. *The points are displayed and the view is fit to the MicroStation screen.*

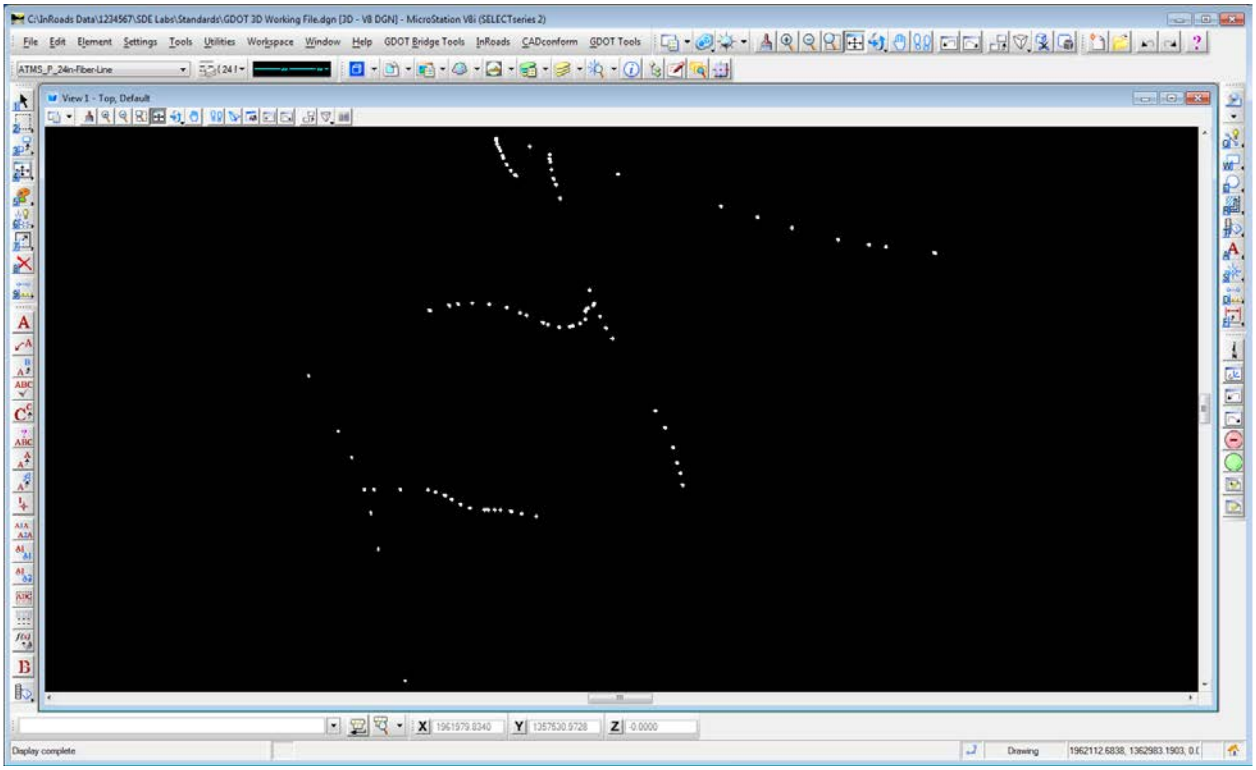
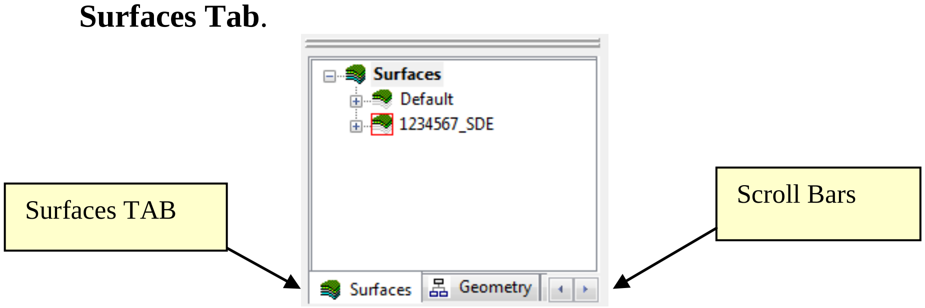


Figure L10-7 MicroStation View depicting **PROP_E_APOT, PROP_E_APOC, PROP_E_APT, PROP_E_APC** and **PROP_E_API** Points.

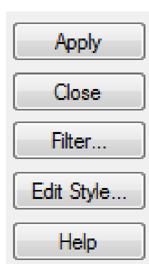
18. In screen capture *L10-7* (depicted above) - the locations of the different alignments can be determined from the Cogo points. In order to assist in identifying the alignments -- the following **Surface Feature** data --- such as edge of pavements and other similar identifying features will be viewed.

- Click on the **Surfaces Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Surfaces Tab**.



- Next click on the **1234567_SDE** Surface Project. Note that the **1234567_SDE** Surface Project has a "Red Rectangle" around the icon. This denotes that this is the "Active" Surface Project. Any surface commands will be initiated and performed on the current "Active" Surface.

Opens the InRoads *__Surfaces Tab__* *and displays the 1234567_SDE Surface information in the InRoads Explorer Interface.*

19.	Click **Tools▶Locks** from the InRoads pull-down menu. Ensure that the **Feature Filter Lock** is turned ON. There should be a check mark next to the **Feature Filter Lock**. **This is an important step!** This Lock must be turned **<u>ON</u>** in order to view the Features. *Ensures that the <u>Feature Filter Lock</u> is turned ON.*
20.	Click **Tools ▶Locks** from the InRoads pull-down menu. Ensure that the **Feature Highlight lock** is turned OFF. There should <u>not</u> be a check mark next to the **Feature Highlight Lock**. When this lock is turned off … The viewing of features is much faster. *Ensures that the <u>Feature Highlight Lock</u> is turned off.*
21.	Click **Tools▶Locks** from the InRoads pull-down menu. Ensure that the **Report Lock** is turned ON. There should be a check mark next to the **Report Lock**. *Ensures that the <u>Report Lock</u> is turned ON.*
22.	Click **Tools▶Locks** from the InRoads pull-down menu. Ensure that the **Style Lock** is turned off. There should <u>not</u> be a check mark next to the **Style Lock**. *Ensures that the <u>Style Lock</u> is turned off.*
23.	**View the Surface Features:** In the **<u>InRoads Software</u>**: Select **Surface▶View Surface▶Features** and the **<u>View Features</u>** dialog box will appear: • In the **Surface:** Pulldown – select ***1234567_SDE*** Click on the **Filter** button.  *Opens the <u>View Features</u> dialog box.*
24.	**View the selected Features:** The **<u>Feature Selection Filter</u>** dialog box will open. In the **<u>Feature Selection Filter</u>** dialog box --- input the following: • In the **Filter Name:** pulldown – select **EXIST_RDWY- ACL+ EOP +RR**

This will filter the view to include the following Surface Feature codes:

TOPO_E_TAC	TOPO_E_TEST	TOPO_E_ TBCL
TOPO_E_TEDR	TOPO_E_THC	TOPO_E_ TRCL
TOPO_E_TEAD	TOPO_E_TCGT	TOPO_E_ TRCRE
TOPO_E_TECD	TOPO_E_TCGF	TOPO_E_ TEDD
TOPO_E_TEAP	TOPO_E_TVG	TOPO_E_ TDR
TOPO_E_TEAS	TOPO_E_TBAS	TOPO_E_ TDD
TOPO_E_TECP	TOPO_E_ TBGL	TOPO_E_ TRCR
		TOPO_E_ TETL

Leave all other entries as default!

The inputs should now correspond to the screen capture depicted in *Figure L10-8* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the Feature Selection Filter dialog box.

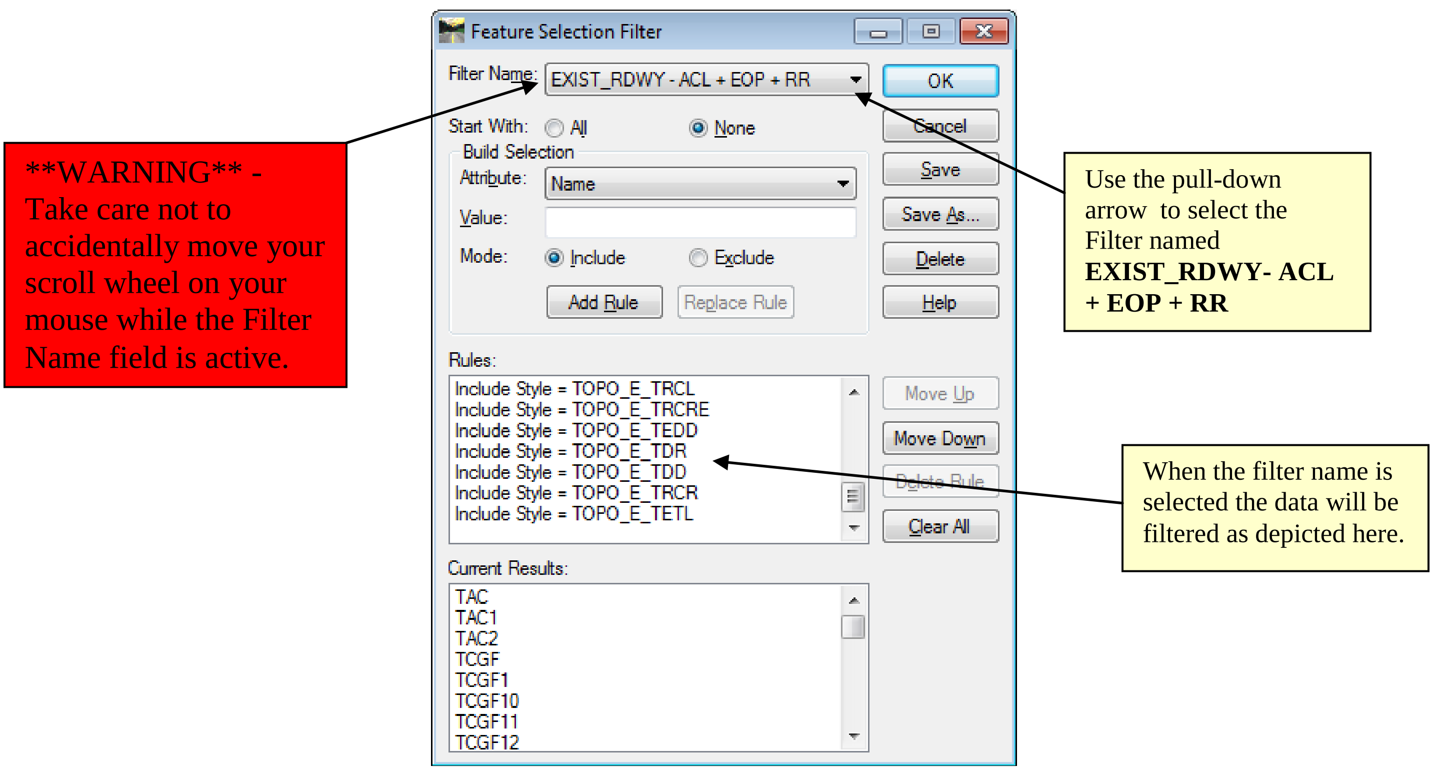


Figure L10-8 Feature Selection Filter

25. Click **OK** and the **Feature Selection Filter** dialog box will **Close**. The **View Features** dialog box should still be open from the previous steps.

The inputs in the **View Features** dialog box should now correspond to the screen capture depicted in *Figure L10-9* (as shown below).

Closes the Feature Selection Filter dialog box.

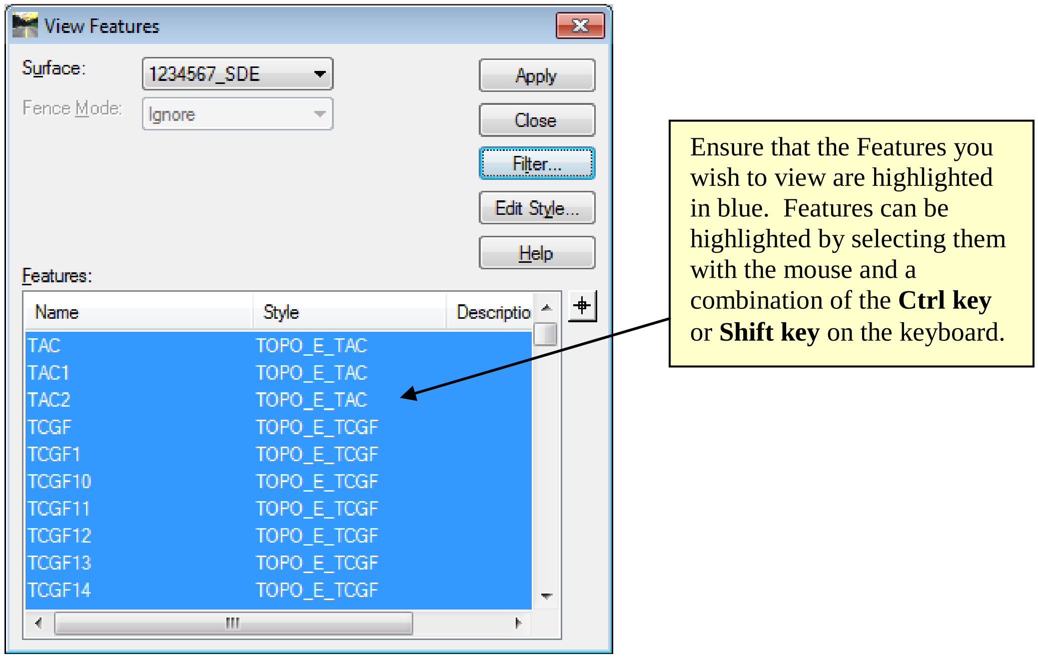
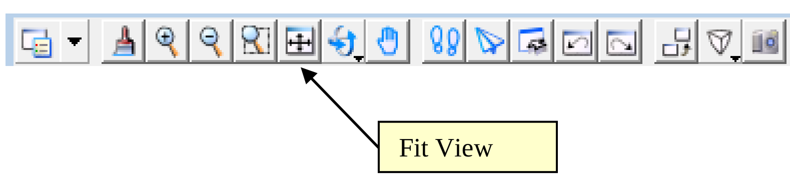


Figure L10-9 View Features

26.	Click **Apply** and then click **Close** and the **<u>View Features</u>** dialog box will close. *Closes the <u>View Features</u> dialog box.*
27.	**View** the selected Surface Features in the [MicroStation Software] by using the following command located under the MicroStation <u>View 1</u> Window: In the [MicroStation Software] – Select the "**Fit View**" Icon to view the Surface Features.  Verify that the MicroStation view window matches that shown in *Figure L10-10*. *The Surface Features are displayed and the view is fit to the MicroStation screen.*

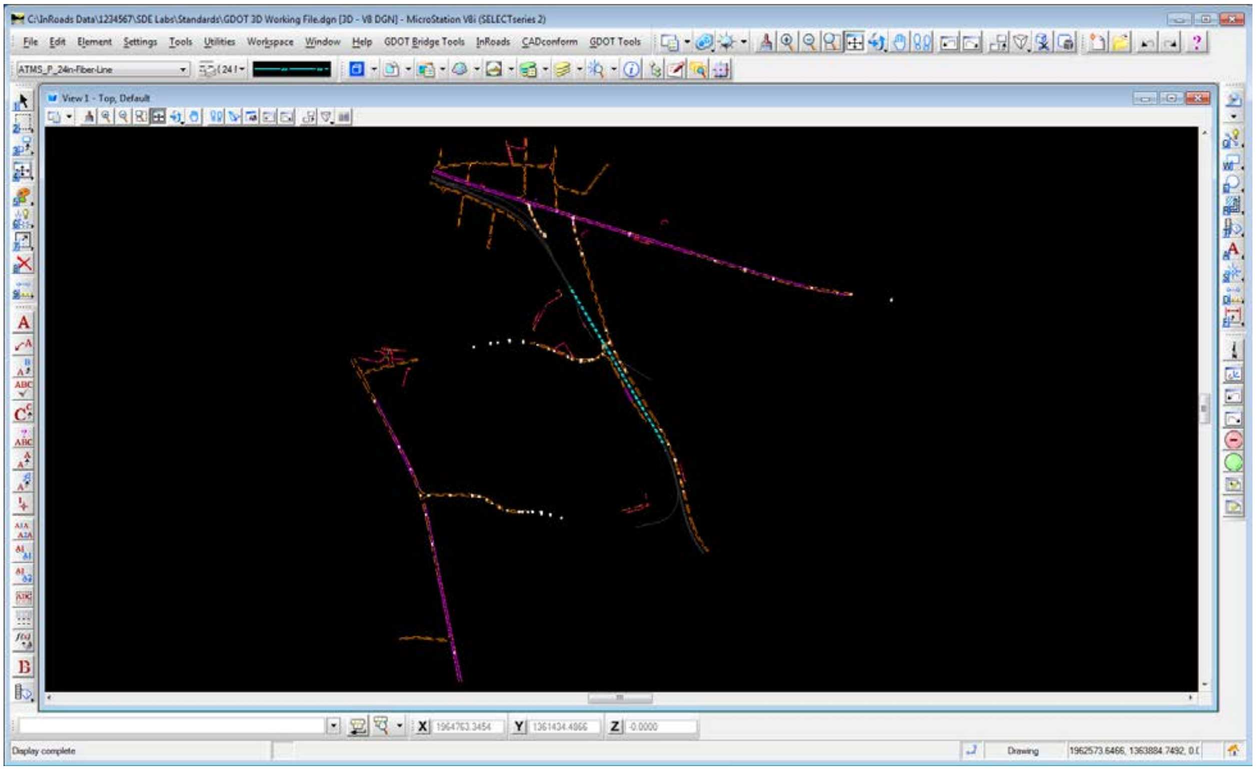


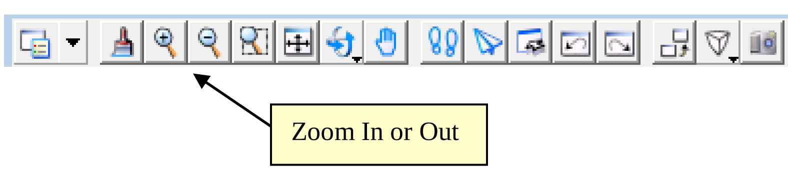
Figure L10-10 MicroStation View depicting the Surface Features

28. The Horizontal Alignment which will be created and stored is the **US 78 Alignment**. The alignment location is depicted and labeled in *Figure L10-11* (as shown below).

View the **US 78 Alignment** area in the [MicroStation Software] by using the following commands located under the MicroStation View 1 Window:

In the [MicroStation Software] –

Select the "Zoom In or Zoom Out" Icons as appropriate to zoom closer to the **US 78 Alignment**.



Verify that the MicroStation view window matches that shown in *Figure L10-11*.

View the area depicting the US 78 Alignment points and features.

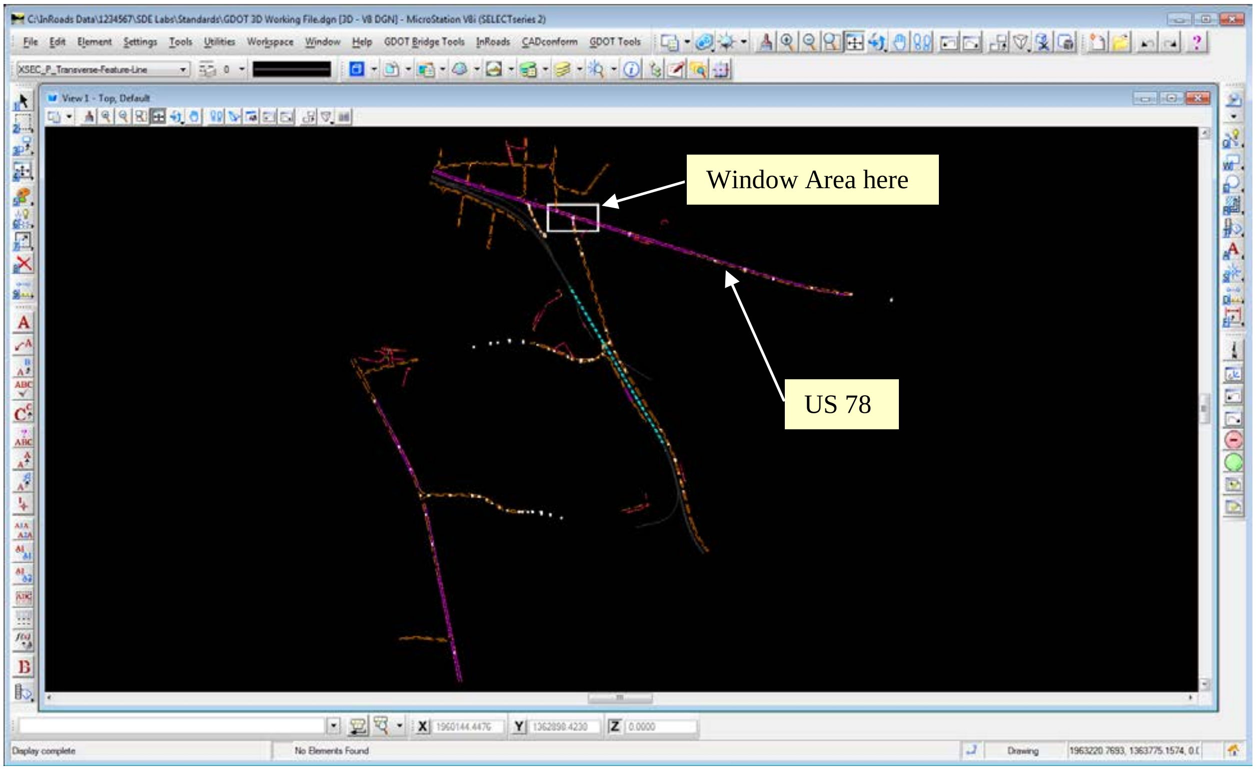
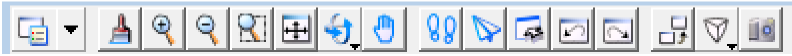


Figure L10-11 MicroStation View Window

29.	Window into the area depicted by the "rectangle" as shown above in *Figure L10-11*. In the [MicroStation Software] – Select the "**Window Area**" Icon.  **NOTE:** If this Icon is not depicted in your MicroStation window – perform the following step: (Right click on any of the icons depicted in the screen capture above – a list box will then appear. Ensure a check mark is placed next to the **Window Area** option). After windowing in and zooming into this area – your MicroStation view should appear similar to that depicted in *Figure L10-12* (as shown below). *Zoom into the area depicted by the rectangle.*

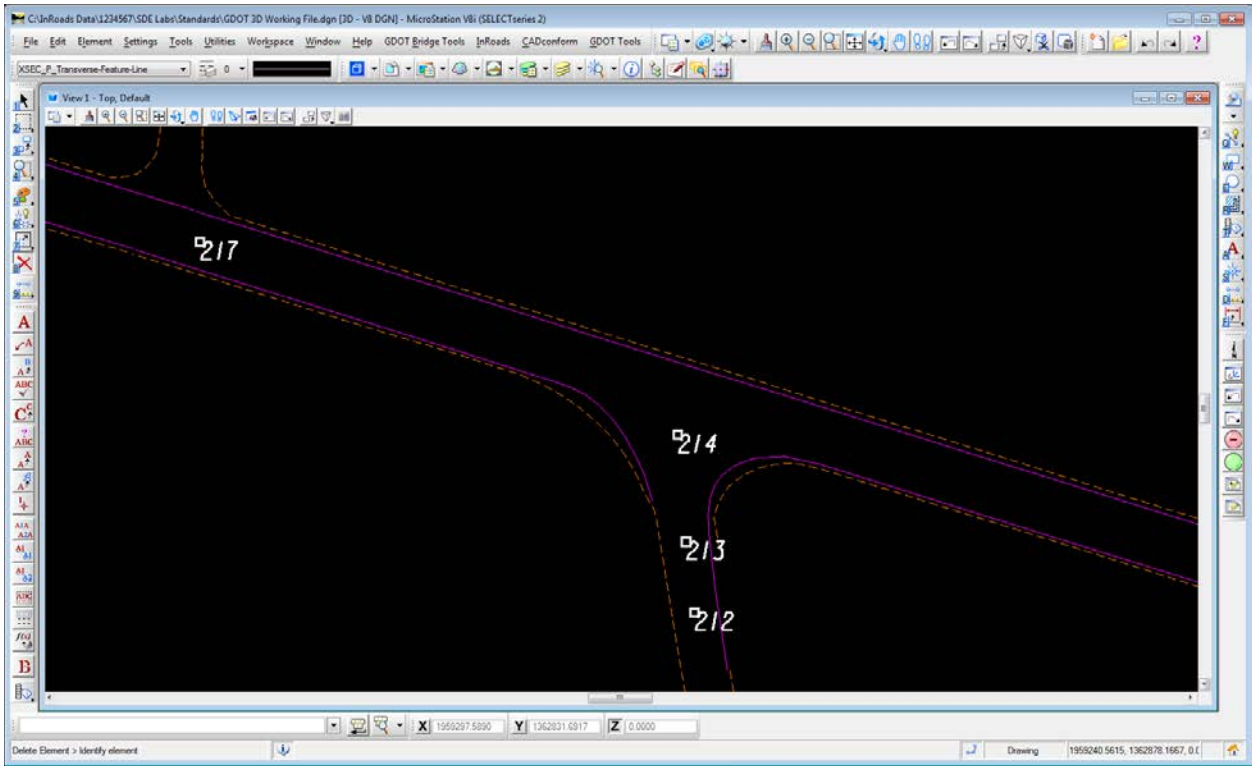


Figure L10-12 MicroStation View Window

30.	Pan along **US 78** to review the **PROP_E_APOT** and **PROP_E_APOC** points 217, 244, 286, 287, 295, 299, 300, 301, & 302 and also edge of pavements. These are the centerline points that were field surveyed to assist in storing the **US 78 Alignment**. *** Hint:** *Remember from previous MicroStation Training that in order to “pan” a view -- use a combination of the shift key on the keyboard and the left mouse key.* When you have completed reviewing the above listed points – return to the view shown in *Figure L10-12* (as depicted above). *Pan to view the US 78 Alignment points and features.*

Lab10D Store the Existing Centerline Alignment

The following Lab (**Lab 10D**) depicts the steps to store an Existing Centerline Alignment with a Feature Style of **PROP_E_ACL**. Point numbers **217** and **287** will be used to determine the back tangent and points **301** and **302** will be used to determine the ahead tangent. These tangents will be intersected in order to store a PI and a 01°00’00” degree curve. See *Figure L10-13* shown below.

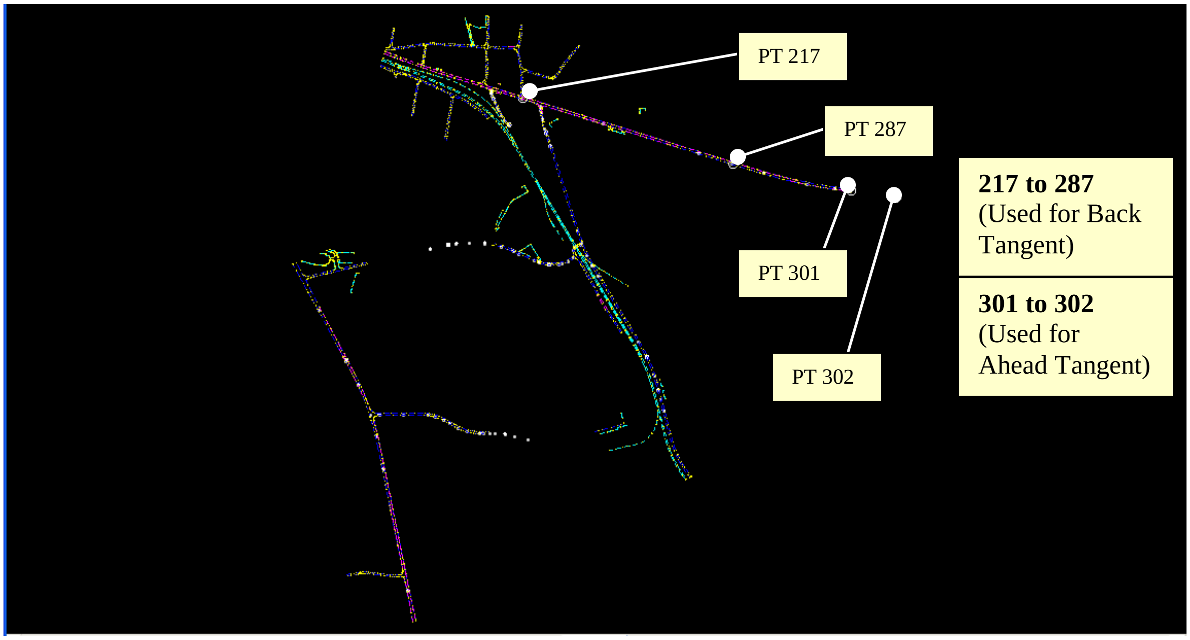
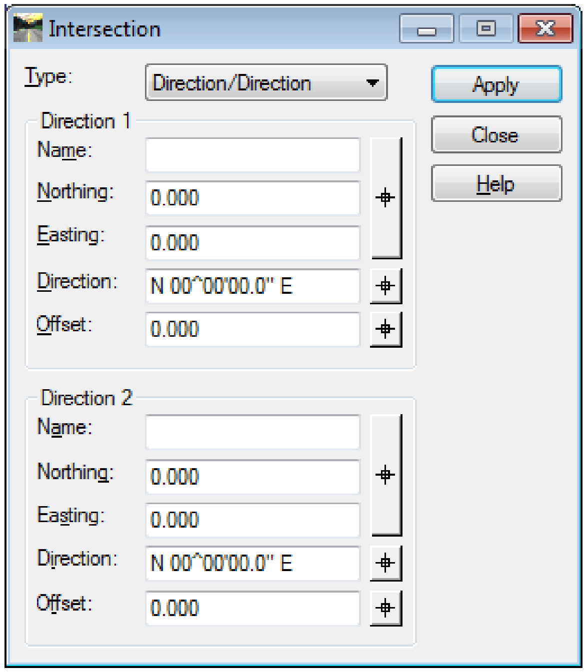


Figure L10-13 MicroStation View Window (Back and Ahead Tangents)

31.	Verify that the **Locate Features Lock** & **Point Snap Lock** are set before continuing. These two settings must be set correctly in order to use the Locate Button. Click **Tools**▶**Locks** from the InRoads pull-down menu. Ensure that the **Point Snap Lock** has a check mark  next to it. Click **Tools**▶**Locks** from the InRoads pull-down menu. Ensure that the **Locate Lock** depicts a Green Symbol next to it.  ←The **Locate Lock** should have this green symbol next to it which indicates it is set to <u>Features</u> rather than Graphics. *Turns on the Point Snap Lock & Locate Features Lock.*

32. Store the PI of the curve. Points **217** and **287** will be used to determine the direction of the back tangent and points **302** and **301** will be used to determine the direction of the ahead tangent. The intersection of these two tangents will result in the location of the PI.

Select **Geometry►Locate►Intersection**. The **Intersection** dialog box opens.



Opens the Intersection dialog box.

33. In the **Intersection** dialog box - use the **Locate** buttons as shown in *Figure L10-14* (depicted below) to select the points in MicroStation and define the tangent directions.

For the **Type:** - select ***Direction/Direction***

> *** HINT:** *When you click the Locate buttons, look in the lower left corner of the MicroStation window for prompts. MicroStation will prompt you to pick a point. When you select a point, the MicroStation Status bar informs you which point you have picked and prompts you to accept it. To accept, click in a blank portion of the MicroStation window.*

The inputs should correspond to the screen capture depicted in *Figure L10-14* (as shown below). Verify to ensure that your input matches the screen capture.

Sets the inputs in the Intersection dialog box.

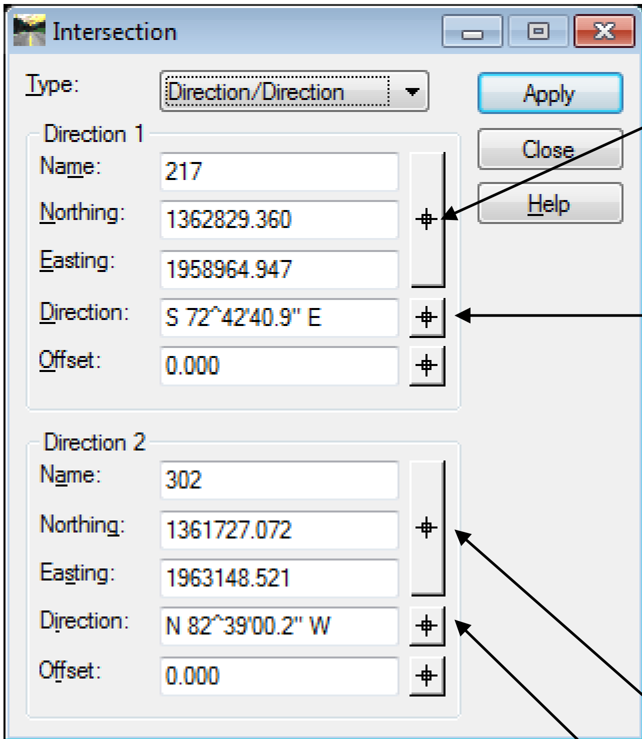
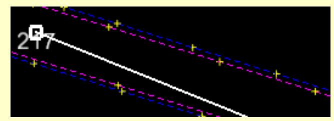


Figure L10-14 Intersection dialog box

Locate Button to select point **217**.
HINT: When you click point **217 in MicroStation you will see a purple X.*

Locate Button to define direction from **217** to **287**.
HINT: When you click the first point **217, you will notice <u>no</u> purple X as before. When you move your mouse near a point you will see a direction line snap to the nearest point. Pan to **287** and click it when the direction line snaps to it.*



Locate Button to select point **302**.

Locate Button to define direction from point **302** to point **301**.

34.	Click **Apply** - in the <u>**Intersection**</u> dialog box. The <u>**Locate Results**</u> dialog box will then appear. See *Figure L10-15* as shown below. **NOTE:** (Also – in **MicroStation** - the two tangent bearings are tentatively extended to the PI and highlighted in a purple color as shown in *Figure L10-16*). Take a moment to pan up and down **US 78** to review the tentative location of the PI. In the <u>**Locate Results**</u> dialog box – enter the following: • In the **Style:** Pulldown – select **PROP_E_API** Leave all other entries as Default. The inputs should now correspond to the screen capture depicted in *Figure L10-15* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the <u>Locate Results</u> dialog box.*

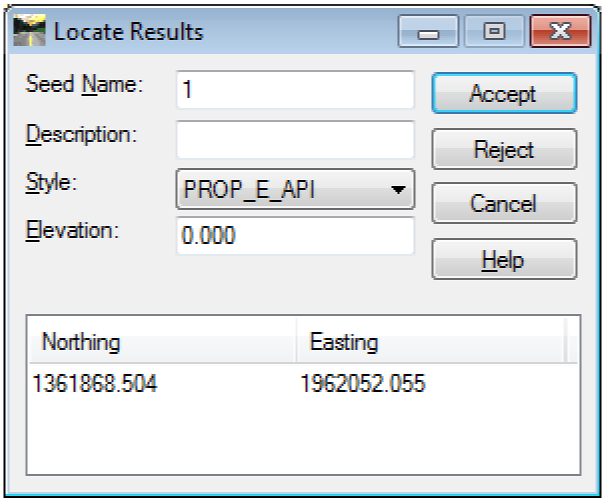


Figure L10-15 Locate Results dialog box

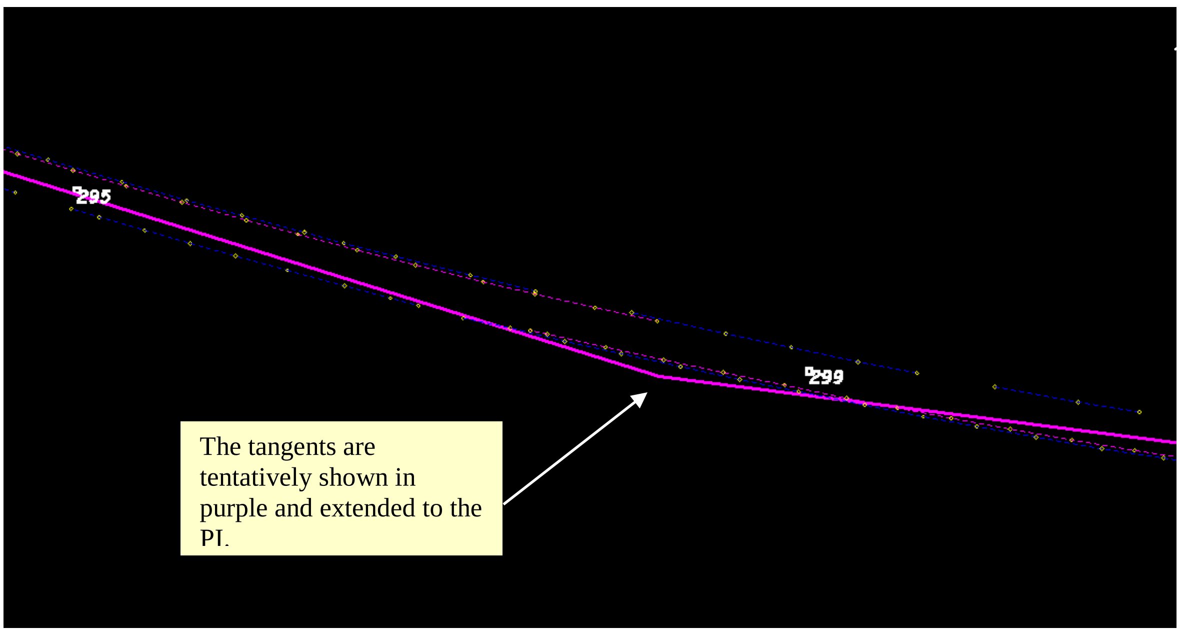
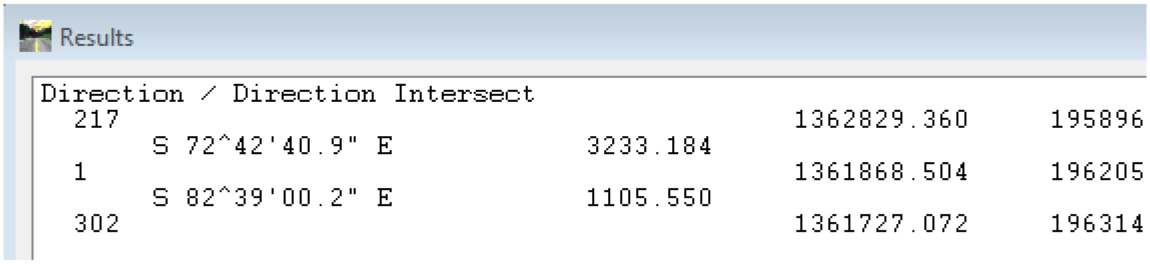


Figure L10-16 MicroStation View Window (PI Location)

35.	Click **Accept** - in the **<u>Locate Results</u>** dialog box. If the **Report Lock** is turned on, a "Results Report" will appear depicting the coordinates of the PI intersection:  Results `Direction / Direction Intersect` `217                                    1362829.360    195896` `S 72^42'40.9" E          3233.184` `1                                      1361868.504    196205` `S 82^39'00.2" E          1105.550` `302                                    1361727.072    196314` Click **Close** to close out of the **<u>Results Report</u>** dialog box. Click **Close** to close out of the **<u>Intersection</u>** dialog box. The PI has been stored as a Cogo point and given the **Point Number of 1** as shown in *Figure L10-17.* ****Note:** No point prefixes shall be used by the surveyor/SDE when storing points and the surveyor/SDE shall work in the point range of 1-9999. This is to eliminate problems with enhancements during the life of the project. If points beyond 9999 are needed the SDE shall contact the designer and request a range of points be set aside for the SDE to work in that the designer will not use. This is for the same reason as stated earlier.* *Stores the point at the PI of the tangents and closes the <u>Intersection</u> dialog box.*

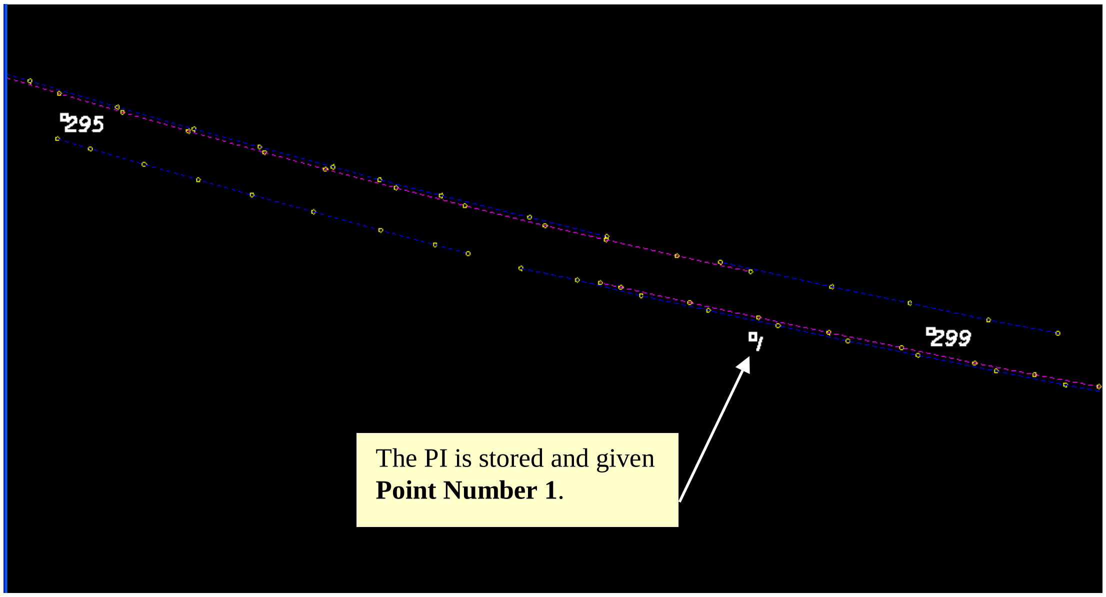


Figure L10-17 MicroStation View Window (Stored PI Point 1)

36. Create a Horizontal Alignment and name it **SV4** and give it the description **EXIST C/L US 78**.

Create the **SV4** Horizontal Alignment by selecting **File▶New** from the **InRoads Menu**. The **<u>New</u>** dialog box will open. Select the **Geometry Tab**.

- In the **Type:** Pulldown – select ***Horizontal Alignment***
- In the **Name:** Field – enter ***SV4***
  ***Note**: Surveyors/SDE's are instructed to use the prefix **SV** for all alignments including roadway, property, etc. InRoads is case sensitive. Use only CAPITAL letters. InRoads accepts either lower or uppercase letters. 'SV4' would be a completely different alignment than 'sv4'. Failure to use the proper prefix will result in survey enhancement delivery problems to the designer. Please keep this in mind as you store alignments.
- In the **Description:** Field – enter ***EXIST C/L US 78***
- In the **Style:** Field – enter ***PROP_E_ACL***
- In the **Curve Definition:** Pulldown – select ***Arc***

The inputs should now correspond to the screen capture depicted in *Figure L10-18* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the <u>New</u> dialog box allowing you to create an empty Horizontal Alignment.

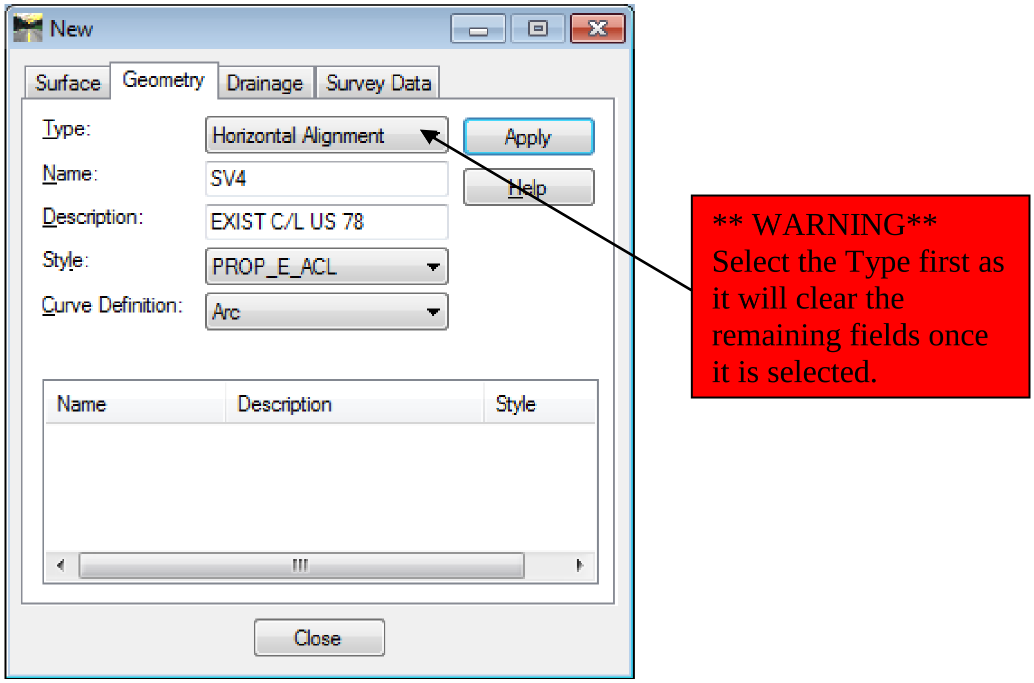


Figure L10-18 “New” Horizontal Alignment

37.	Click **Apply** and then click **Close** to create the **Horizontal Alignment**. *An Empty Horizontal Alignment named SV4 is created.*
38.	At this point you have an empty alignment named **SV4 (**this is the current <u>Active Alignment)</u>. The next step is to add points to alignment **SV4**. The beginning point will be **217**, the PI will be **1** (the same PI that was stored in the previous steps), and the ending point will be **302**. Select **Geometry►Utilities►Create/Edit Alignment by Cogo Points** and the **<u>Create/Edit Alignment by Cogo Points</u>** dialog box will open. Ensure that the following information is depicted in the dialog box: • **Name:** = ***SV4*** • **Description:** = ***EXIST C/L US 78*** • **Style:** = ***PROP_E_ACL*** • In the **Alignment Definition:** field ---- key-in the following points: **217 1 302** (Theses points should be entered and separated by spaces) The inputs should now correspond to the screen capture depicted in *Figure L10-19* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the <u>Create/Edit Alignment by Cogo Points</u> dialog box.*

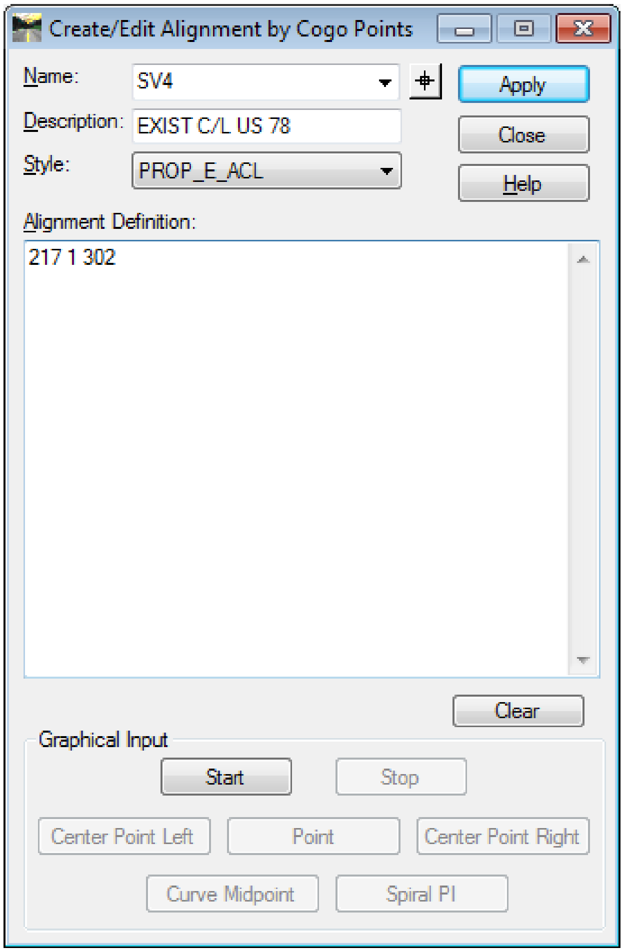
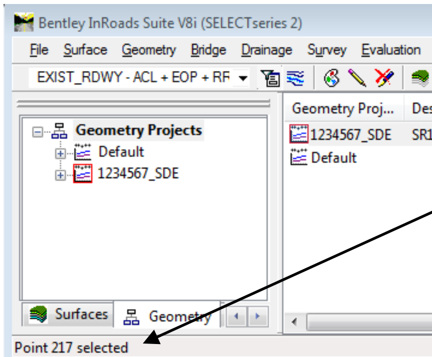


Figure L10-19 Create/Edit Alignment by Cogo Points

39.	Click **Apply** and then click **Close** to close out of the dialog box. *Points are added to Horizontal Alignment SV4.*
40.	**For Information Only -** **(**An alternative method for selecting the points to include in the Alignment). **<u>Note:</u>** The points **217**, **1** and **302** may also be selected with the mouse by clicking the **Start** button (see *Figure L10-19* above) and clicking the points in MicroStation. When you click a point in MicroStation, the point you select is shown in the lower left corner of the InRoads Status Bar (as shown in *Figure L10-20* depicted below). If this is the correct point, you may move on to the next point to select. If an incorrect point is selected, then you may right mouse click to select the next closest point. When you have selected all the points - click the **Stop** button and you will be returned to the **<u>Create/Edit Alignment by Cogo Points</u>** dialog box. The points will be entered in the **Alignment Definition:** Field. *Alternative method of adding Points to Alignment SV4.*



The selected points are shown in the lower left corner of the InRoads window. At this time - the selected point is tentative and you may right mouse click to select a different point that may be in the immediate vicinity.

Figure L10-20 InRoads Status Bar

41. **For Information Only –**

Currently you have a Horizontal Alignment named **SV4** which contains a beginning point (**217**), a PI point (**1**) and an ending point (**302**). The next step is to add a curve to the alignment. In InRoads - the concept of storing a curve and adding it to an alignment consists of the following steps:

- Create an Empty Alignment
- Add points and PI's to the Alignment
- Define the Curve information for the PI's
- Store the Curve

Information for adding a curve to an alignment

42. In the following steps - a **01°00'00" degree curve** will be defined for the PI of point **1** in Horizontal Alignment **SV4**.

Select **Geometry►Horizontal Curve Set►Define Curve…** and the **Define Horizontal Curve Set** dialog box will open.

- In the **Point Name:** field – enter a ***1***

***IMPORTANT**: In most situations it is best to use the '**Next**' and '**Previous**' buttons located at the bottom of the **Define Horizontal Curve Set** dialog to identify the PI and ensure the ahead and back tangents are highlighted in MicroStation.

Leave all entries as Default at this time!

The current inputs should correspond to the screen capture depicted in *Figure L10-21* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the Define Horizontal Curve Set dialog box.

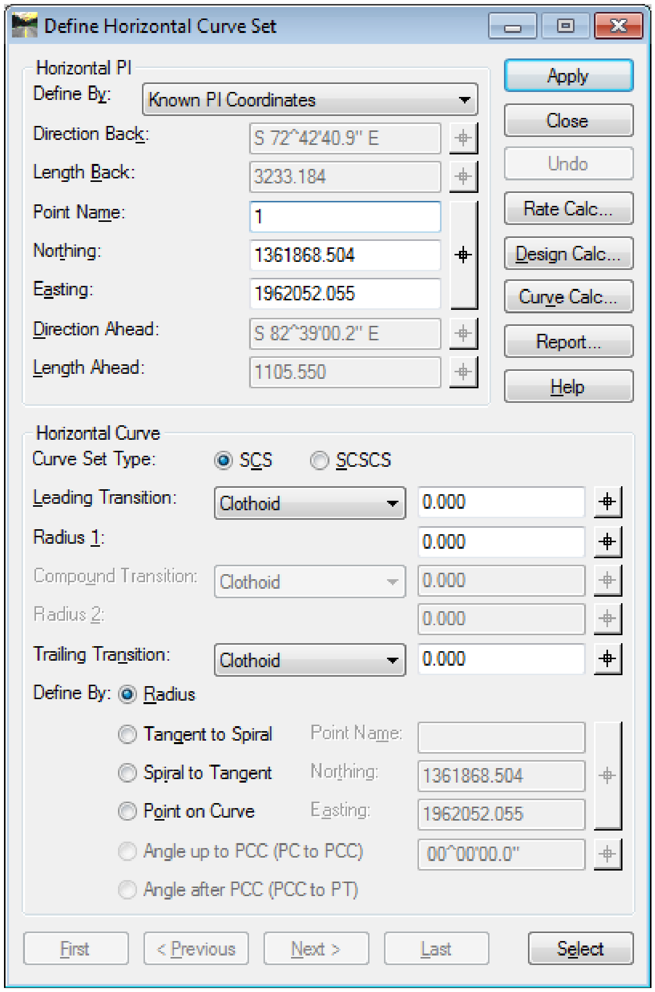
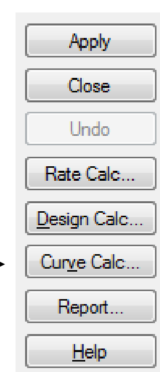


Figure L10-21 Define Horizontal Curve Set

43.	**Point 1** is the PI in the current **SV4** Active Alignment. (See *Figure L10-21* depicted above). In order to define the curve – Click the **Curve Calc…** button This will open the **Curve Calculator** dialog box.  *Opens the <u>Curve Calculator</u> dialog box.*

44. In order to calculate a curve in InRoads - two known curve parameters are required.

To define the curve - input the **Deflection Angle** and the **Degree of Curve.**

Ensure that a Check Mark and data is placed as inputs into the entry fields shown below:

- **DOC:** = ***01 00 00.0***
- **Angle** = ***09 56 19.3***

Ensure that the **Compute:** Pull-down is set to ***Simple Curve***
Leave all other fields as default.

Click the **Compute** button.

(InRoads will automatically compute the remaining curve data).

The current inputs should correspond to the screen capture depicted in *Figure L10-22* (as shown below). Verify to ensure that your input matches the screen capture.

Sets the entries in the Curve Calculator dialog box.

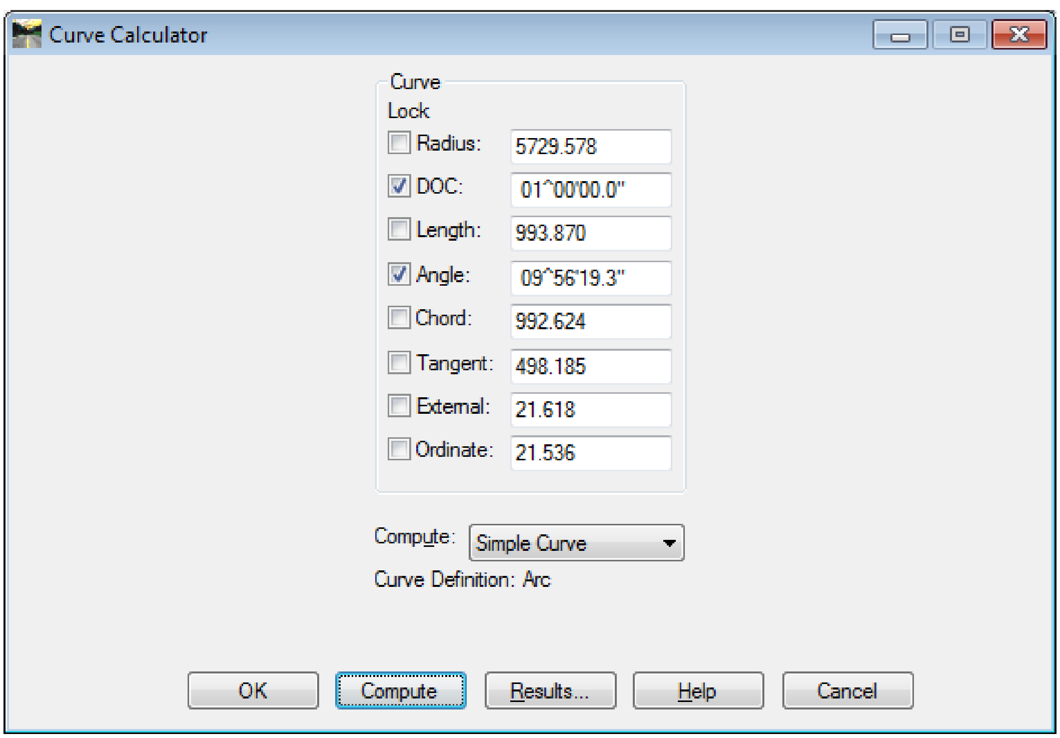


Figure L10-22 Curve Calculator

45.	Click **OK** to accept the entries and to close out of the **Curve Calculator** dialog box. *Accepts the entries in the Curve Calculator dialog box.*
46.	Click **Apply** and **Close** to close out of the **Define Horizontal Curve Set** dialog box. Horizontal Alignment **SV4** now contains a 01°00’00” degree curve and should appear as depicted in *Figure L10-23*. *Stores the curve for Alignment SV4 and closes out of the Define Horizontal Curve Set dialog box.*

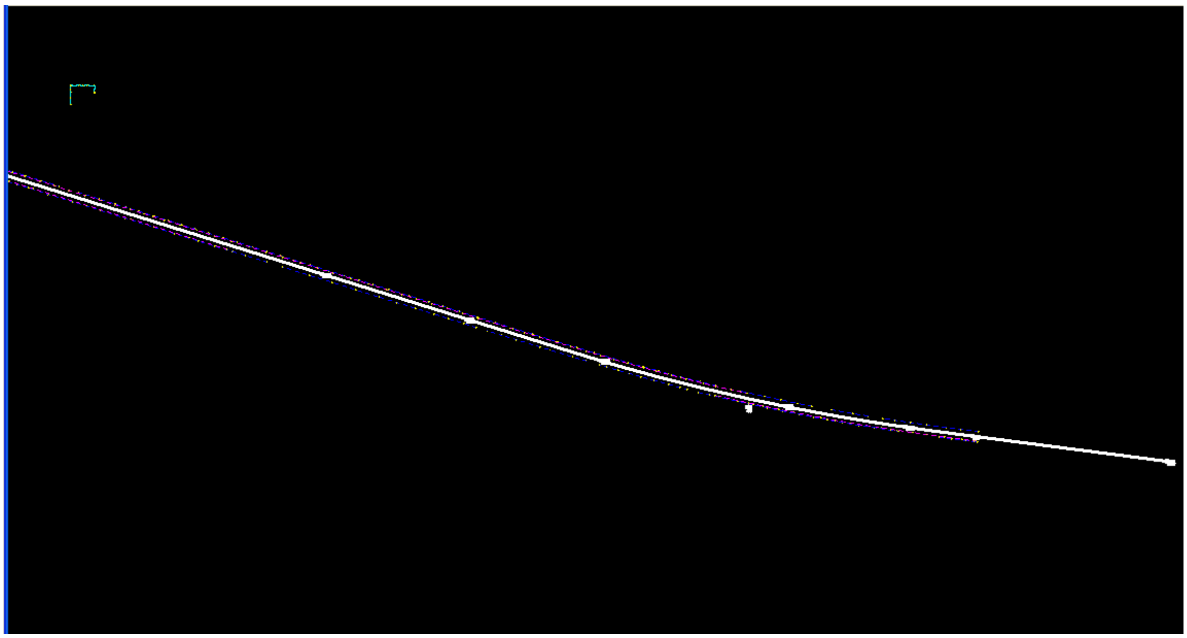
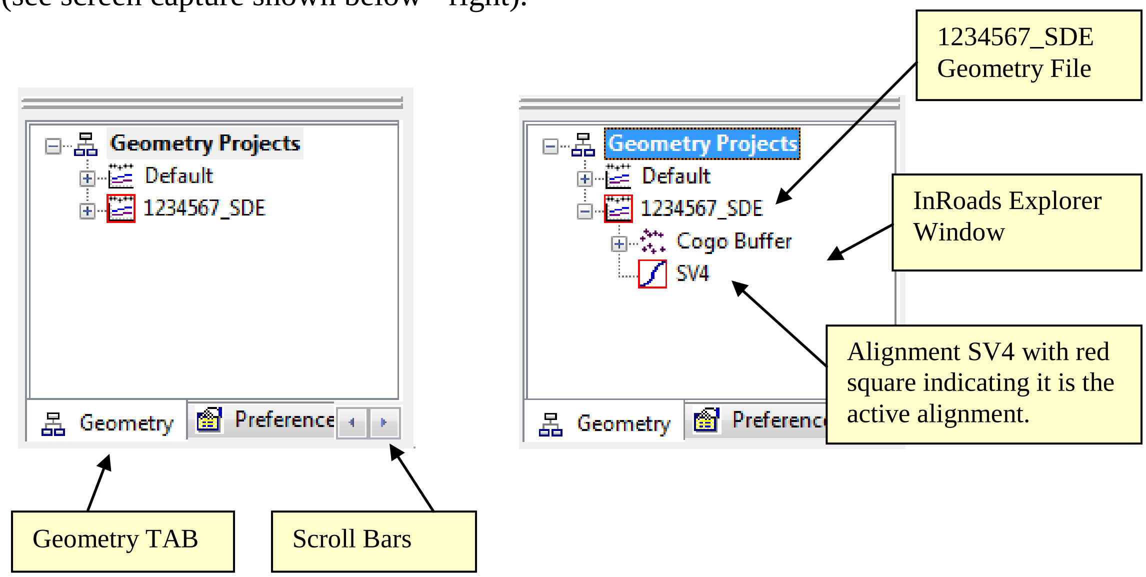


Figure L10-23 MicroStation Window depicting Curve

47. The next step is to review Horizontal Alignment **SV4**.

Click on the **Geometry Tab** (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the **Geometry Tab** (see screen capture shown below - left).

Then double click on the Geometry Project named **1234567_SDE** (ONLY if it is not already open in InRoads Explorer). This will allow you to view all of the project data (see screen capture shown below - right).



In the InRoads Explorer Interface -- Right mouse click on alignment **SV4**.
In the list that appears – select **Review.**

Take a moment to review alignment **SV4** in the **<u>Review Horizontal Alignment</u>** window as depicted below in *Figure L10-24*.

Opens the <u>Review Horizontal Alignment</u> window.

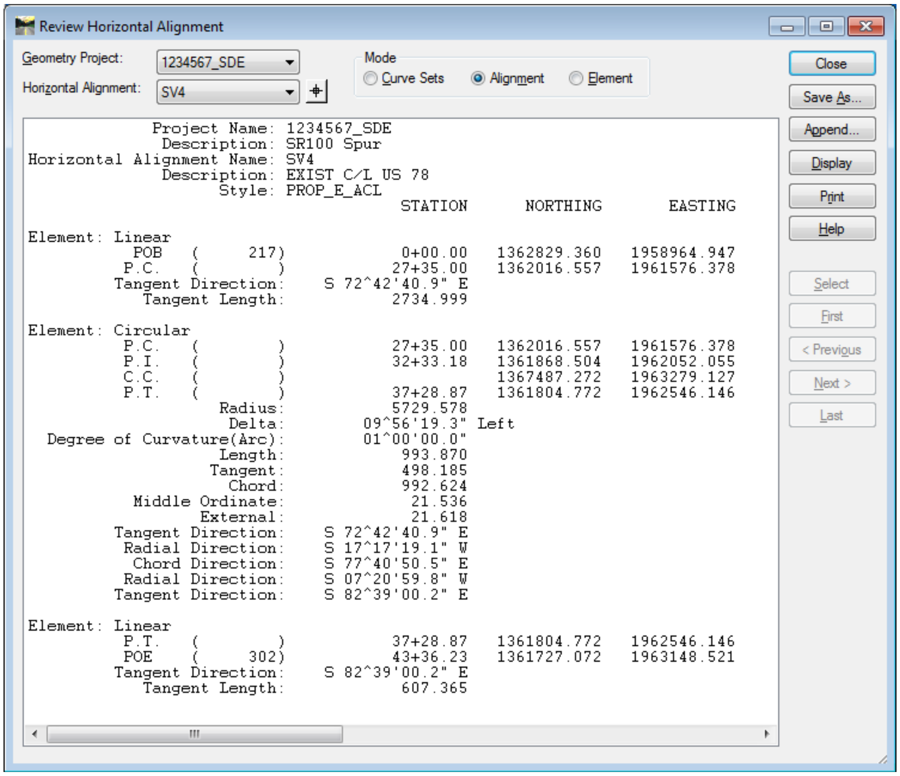


Figure L10-24 Review Horizontal Alignment window.

48.	During the review - notice that the PC, PT, and CC do **NOT** have point numbers associated with them at this time. **<u>***IMPORTANT DISCUSSION***</u>** *It is very important at this time to discuss some differences between InRoads and what you are familiar with in CAiCE. InRoads has different kinds of points. <u>Alignment points</u> and <u>COGO points</u> are two types of points to be aware of when working with alignments--- (whether it is a centerline alignment, a R/W alignment or a property alignment). <u>Alignment points</u> are nothing more than names assigned to coordinates in an alignment and do not exist in the COGO points buffer. In order to satisfy GDOT plan presentation requirements and prepare R/W tables and properly deliver enhanced survey data to the designer -- Surveyors and Designers alike must ensure that all alignments have a corresponding COGO point stored. At some point this may cause you problems as you branch out and experiment with other InRoads commands because not all InRoads commands store COGO points. Some only assign Alignment Point names and must be converted to COGO points. Some don't assign alignment point names or store COGO points and must be assigned Alignment point names and then be converted to COGO points. As such we recommend that you adhere closely to the methods presented in the tutorials concerning centerlines, R/W and property.* Click **Close** to close the **<u>Review Horizontal Alignment</u>** window. *Review Alignment SV4.*

49. As noted during the review of Horizontal Alignment **SV4** – the PC, PT and CC do **NOT** have point numbers associated with them. The next steps depict the process to assign names to the unnamed points in Horizontal Alignment **SV4**.

Click **Geometry ▶ Utilities ▶ Assign Names** and the **Assign Names** dialog box will appear.

Ensure that the following information is depicted in the dialog box:

- In the **Include:** option - select ***Alignments***
- In the **Name:** field – type ***SV4***
- Place a Check Mark by ***On-Alignment Points***
- Place a Check Mark by ***Off-Alignment Points***
- In the **Method:** option – select ***Assign***
- Leave the **Seed Name:** field ________ (leave blank – see example below)

- Place a Check Mark by ***Check for Coincident Points***

Leave all other entries as default.

Then Left Click in the **Selected Field** (so that this field will be populated with the Alignment entry).

The inputs should now correspond to the screen capture depicted in *Figure L10-25* (as shown below). Verify to ensure that your input matches the screen capture.

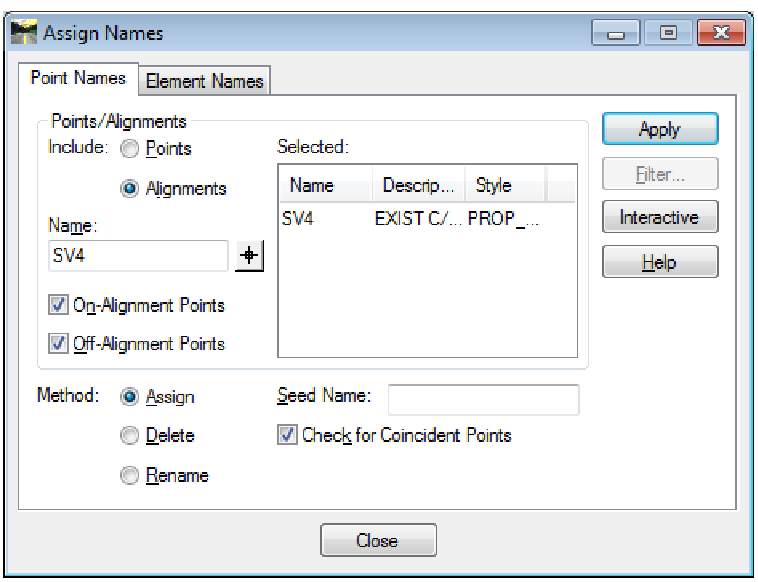


Figure L10-25 Assign Names

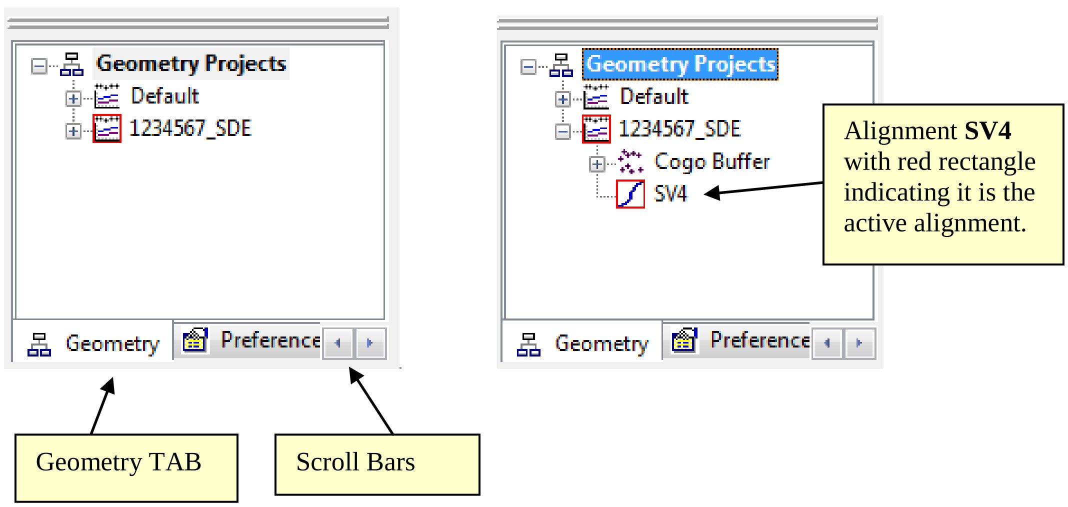
50. Click **Apply** and then click **Close** to close out of the dialog box.

*Assigns names to points in Alignment **SV4** and closes the Assign Names dialog box.*

51. **Review Horizontal Alignment SV4 a second time.**

Since SV4 is currently the only alignment in the **1234567_SDE project** – it should already be active (as depicted by the red rectangle).

Double click on the Geometry Project named **1234567_SDE** (ONLY if it is not already open in InRoads Explorer). This will allow you to view all of the project data (see screen capture shown below - right).



In the InRoads Explorer Interface -- Right mouse click on alignment **SV4**.
In the list that appears – select **Review.**

Take a moment to review alignment **SV4** in the **Review Horizontal Alignment** window as depicted below in *Figure L10-26.*

Notice that the PC and PT now have point numbers associated with the point coordinates.

Please Note:
The **PI** coordinate will not have a point name associated with it.

Opens the Review Horizontal Alignment window.

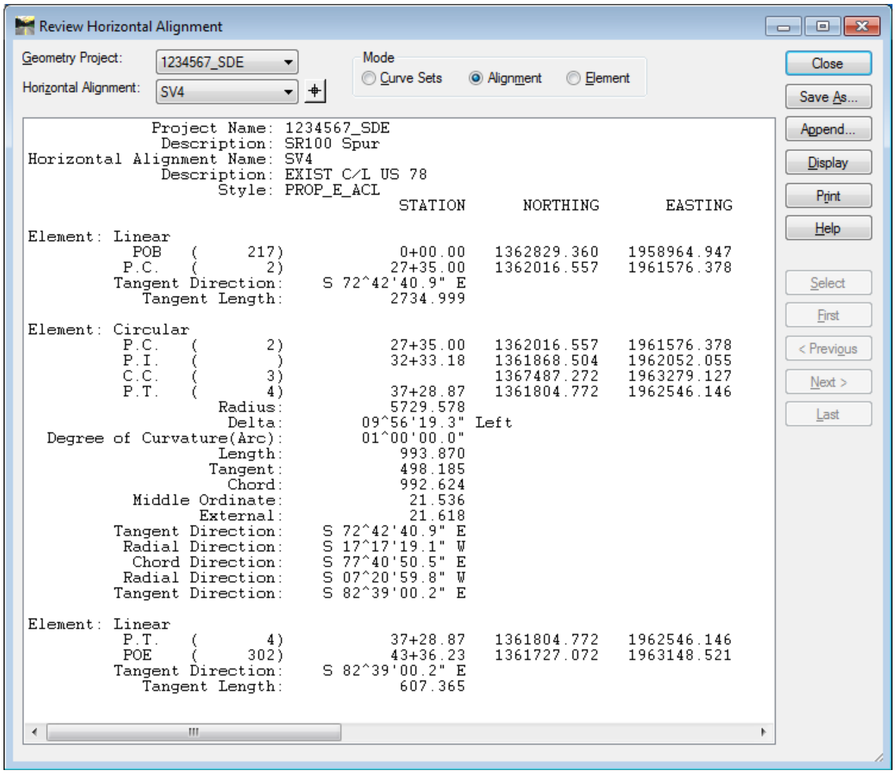


Figure L10-26 Review Horizontal Alignment

52.	Click **Close** to close the **Review Horizontal Alignment** window. *Closes the Review Horizontal Alignment.*
53.	Although alignment SV4 now has point numbers associated with the coordinates as shown in the report in *Figure L10-26* the points don't exist as COGO points in the COGO buffer. These alignment points must now be converted to COGO points. Select **Geometry►Horizontal Curve Set►Events** In the **Horizontal Events** dialog: • Check the **Alignment Point to Cogo** radio button. • Set the style to **PROP_E_ACL-PC-PT** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L10-27* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the Horizontal Events dialog.*

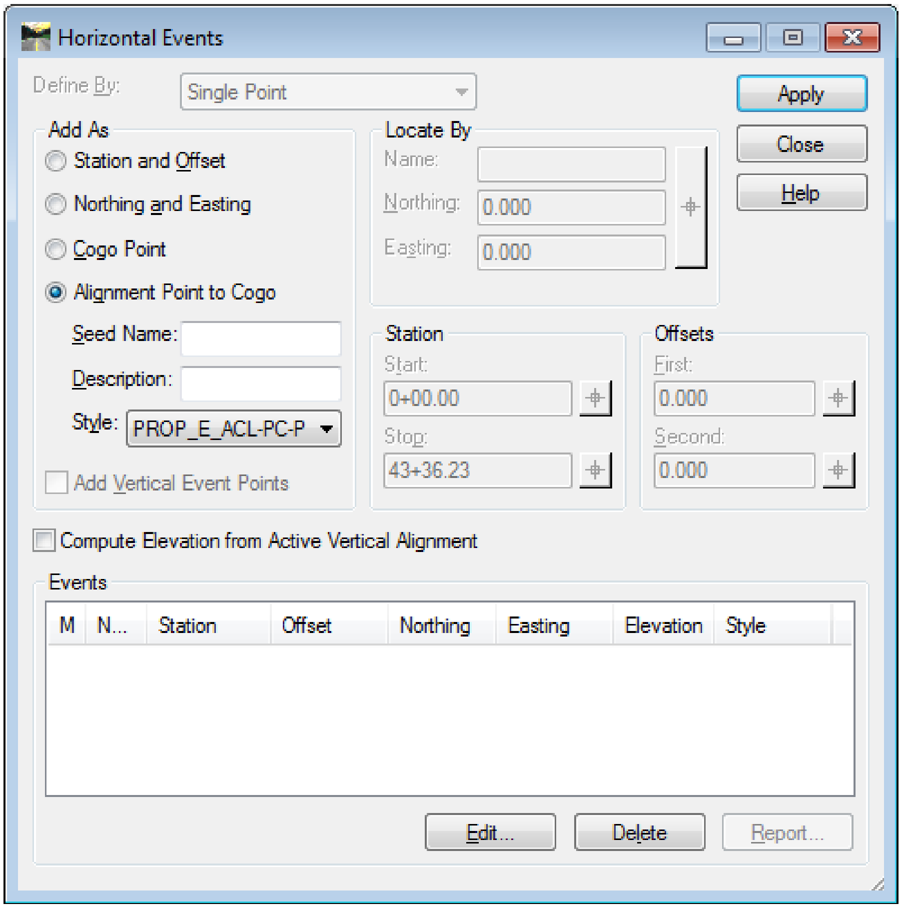


Figure L10-27 Horizontal Events Dialog

54.	• Click **Apply.** A results report opens showing all points that are now COGO points. • Click **Close** to close the results box. • Click **Close** to close the Horizontal Events Dialog. *** Note:** Cogo Points are only assigned to Alignment Points for the active alignment. The process must be repeated for each alignment. *Converts the Alignment points stored earlier to COGO points.*

55.	**Save the InRoads Geometry File** Even though the **SV4** Horizontal Alignment has been stored – the data has not yet been saved. InRoads retains the data in temporary memory but does not save the data on the fly. Whenever a change has been made to an InRoads Geometry Project – Save the project and its associated modifications or changes. Select **File▶Save▶ Geometry Project** from the **InRoads Menu**. Please Note: (The "Save As" dialog box may not appear because the Geometry Project has already been saved initially). The Geometry Project (***1234567_SDE.alg***) will be saved to **Lab 10** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab10** Note that the **InRoads** and **MicroStation Status Bar** (Located at the bottom of both the InRoads and MicroStation Interface) will depict a message when the Geometry Project has been saved. *The **1234567_SDE** Geometry Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab10***
56.	**Important Step:** In order to Start with a CLEAN DGN file for the next Lab (**Lab 11**): In the [MicroStation Software] – Select **Edit ▶Select All** Then select the <**DELETE**> key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn to ensure a clean DGN file for the next Lab.*
57.	 This concludes Lab 10. Do not proceed until the Instructor directs you to do so.

Lab 11
Modifying Centerline Alignments

Objective

Establishing the Existing Centerline Alignment requires editing the curve data, stationing and extending the tangent sections in order to match the conditions on the ground.

The objective of Lab 11 is to:

- Learn techniques to extend alignments and change curve data in alignments as well as station the alignment.

Lab 11A Getting Started

1. **Starting Clean**

In order to ensure that you are working with a "clean" database – you will close MicroStation and InRoads if they are still running from a previous Lab:

To CLOSE MicroStation and InRoads -

Select **File▶Exit** from the [MicroStation Menu].
If any messages appear regarding the saving of projects – Select 

This closes BOTH the MicroStation and InRoads Software(s).

2. From the desktop, double-click on the **MicroStation** icon labeled **GDOT MicroStation V8i SS2 (x86)**.

Double click on the icon labeled **GDOT MicroStation V8i SS2 (x86)**.

- When the **MicroStation Manager** dialog box opens – navigate to the **C:\InRoads Data\1234567\SDE Labs\Standards** folder and select the "**GDOT 3D Working File.dgn**". Click **Open**.

- Now open InRoads from within MicroStation by selecting: **InRoads ▶ InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu].

The MicroStation and InRoads Software(s) will open.

3. **Load the InRoads Geometry File (1234567_SDE.alg)**

Select **File▶Open** from the **InRoads Menu**.

Browse to the following path:
C:\InRoads Data\1234567\SDE Labs\Lab11

Select the file named: **1234567_SDE.alg**

Click **Open** and then click **Cancel**.

Hint: You may also right mouse click over '**Geometry Projects**' in the Workspace Bar and select open.

The 1234567_SDE.alg Geometry file will open.

4. **Load the InRoads Surface File (1234567_SDE.dtm)**

Select **File**▶**Open** from the **InRoads Menu**.

Browse to the following path:
C:\InRoads Data\1234567\SDE Labs\Lab11

Select the file named: **1234567_SDE.dtm**

Click **Open** and then click **Cancel**.

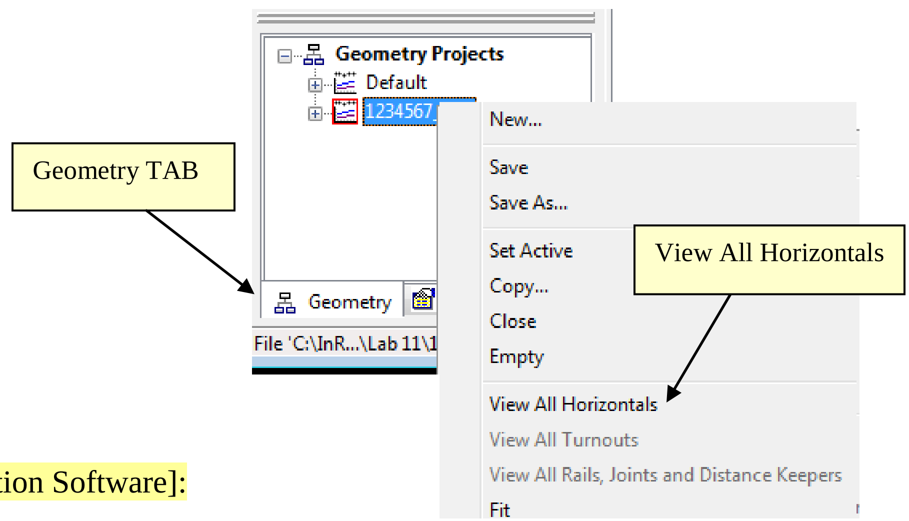
The 1234567_SDE.dtm Surface file will open.

Hint: You may also right mouse click over '**Surfaces**' in the Workspace Bar and select open.

5. **View all Horizontal Alignments**

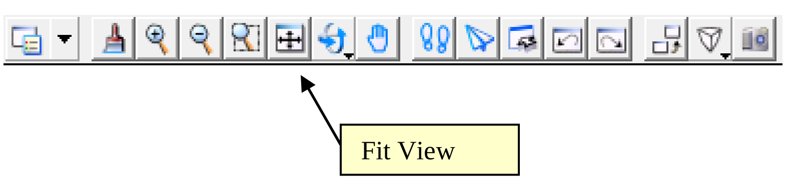
In the [InRoads Software]:

- In the Workspace Bar area - ensure that **Geometry** is the active tab.
- Right mouse click over the project ***1234567_SDE***.
- A pop-up menu appears. In this menu - Select **View All Horizontals**.



In the [MicroStation Software]:

- Select the "**Fit View**" Icon to view the Horizontal Alignments.



- Verify that the MicroStation view window matches that shown in *Figure L11-1*.

Views all Horizontal Alignments in the Geometry Project 1234567_SDE.

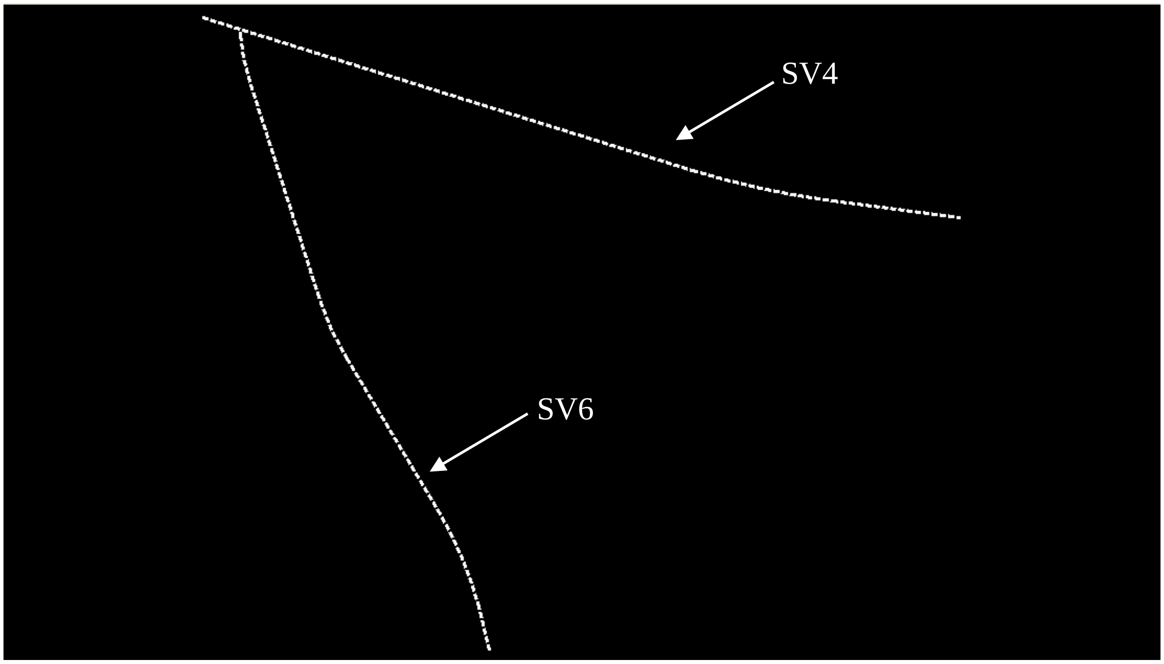
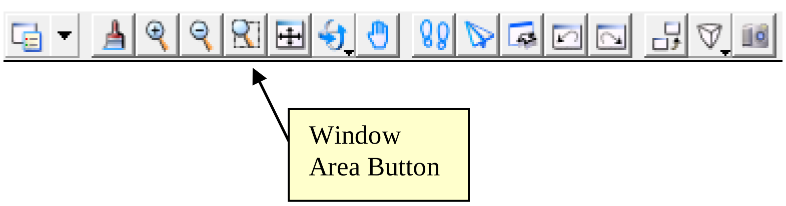


Figure L11-1 MicroStation Window

6.	**Window Area to the intersection of Alignments SV4 & SV6** • In MicroStation select the **Window Area** button.  • **Window Area** the intersection of **SV4 & SV6** as shown below in *Figure L11-2*. • Notice that **SV6** does not extend to **SV4** as shown below in *Figure L11-3*. *Zooms into the intersection of alignment SV4 & SV6.*

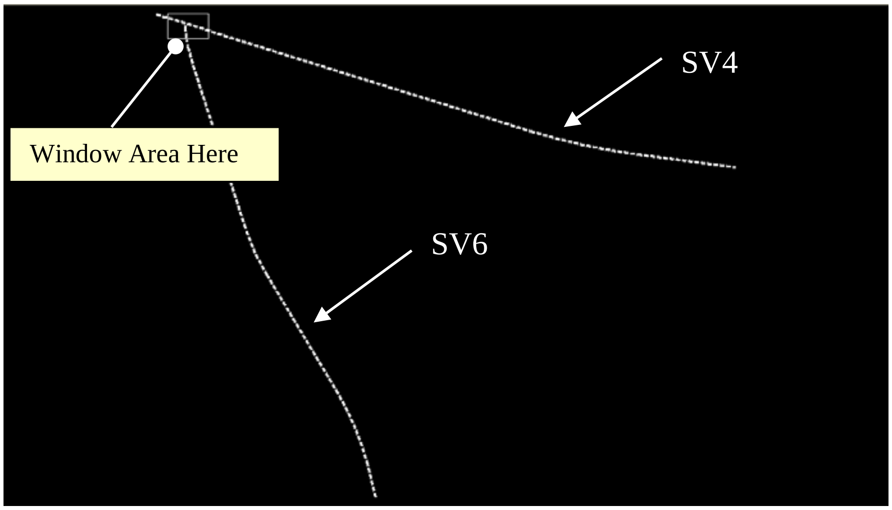


Figure L11-2 MicroStation Window

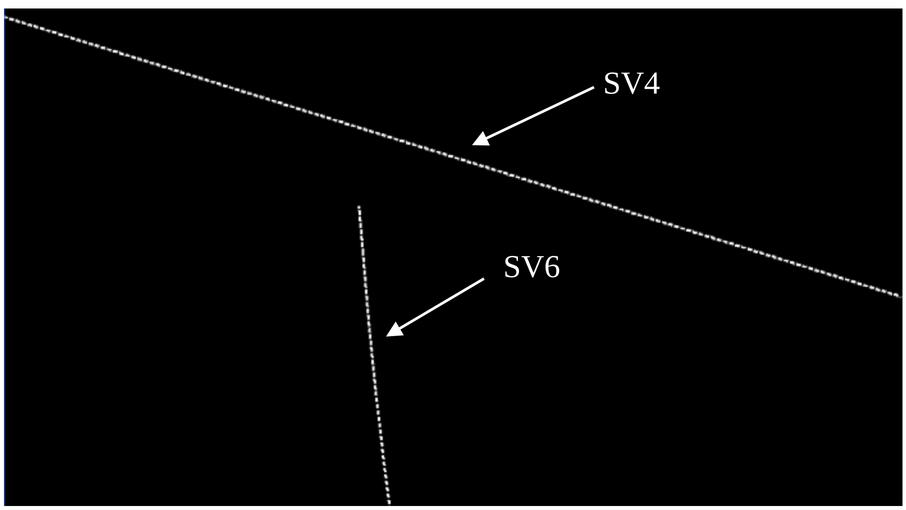


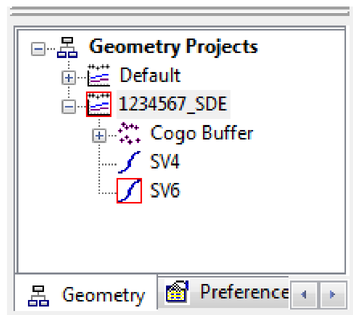
Figure L11-3 MicroStation Window (Intersection View)

Lab 11B Extend Alignment to Intersection

In the previous Lab, the Horizontal Alignments of **SV6** and **SV4** were viewed. These alignments did not actually intersect. In this lab we will extend alignment **SV6** to intersect with alignment **SV4**.

7. **Set Alignment SV6 to be the Active Alignment.**

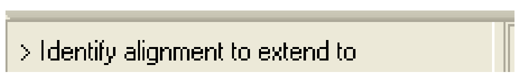
- In the **InRoads Workspace Bar** (shown on the right) expand the project by double-clicking on ***1234567_SDE*** as shown.
- Ensure that **SV6** has a Red Box around it. This indicates that alignment **SV6** is the active alignment.
- If it <u>does not</u> have a Red Box - highlight alignment **SV6**, right mouse click over it and select **Set Active**.



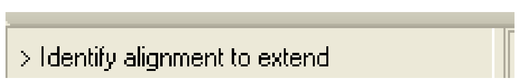
Sets alignment SV6 as the active alignment.

8. **Extend Alignment SV6 to SV4.**

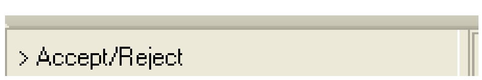
- Select **Geometry ► Utilities ► Extend Alignment**
- Notice in the bottom left corner of the MicroStation Window the message that says **'> *Identify alignment to extend to*'** as shown here:



- **Left Click** on alignment **SV4**. (Alignment **SV4** highlights in purple).
- Notice in the bottom left corner of the MicroStation Window the message that says **'> *Identify alignment to extend*'** as shown here:



- **Left Click** on alignment **SV6**. (Alignment **SV6** extends tentatively to **SV4).**
- Notice in the bottom left corner of the MicroStation Window the message that says **'> *Accept/Reject*'** as shown here.



- **Left Click** somewhere in the MicroStation Window to accept the action. (To reject the action, Right Mouse click).
- Verify that your MicroStation window matches that shown in *Figure L11-4*.

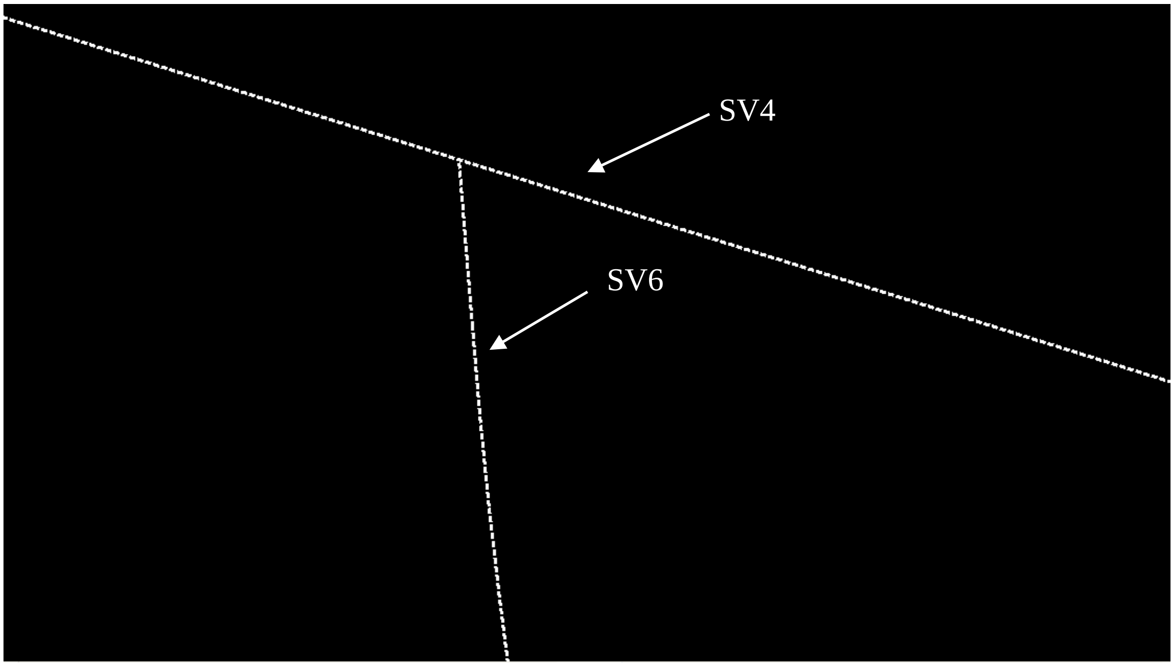
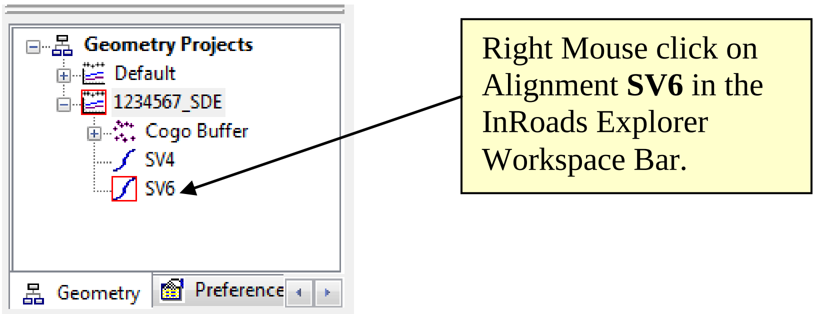


Figure L11-4 MicroStation Window

9.	**Review Alignment SV6** • In the InRoads Explorer Workspace Bar -- **Right mouse click** on Alignment **SV6**.  • Click **Review**. (The **<u>Review Horizontal Alignment</u>** report window opens). *Opens the <u>Review Horizontal Alignment</u> report window.*

10. **For Information Only:**

Notice that several **PC's** and **PT's** have no number associated with them as shown here.

```
Element: Linear
           POB    (      187)             0+00.00   1359336.617   1960547.454
          P.C.    (         )             2+44.13   1359573.261   1960487.456
        Tangent Direction:        N 14^13'36.7" W
           Tangent Length:                 244.13

Element: Circular
          P.C.    (         )             2+44.13   1359573.261   1960487.456
          P.I.    (         )             5+25.41   1359845.917   1960418.327
          C.C.    (         )                       1359103.891   1958636.171
          P.T.    (         )             8+02.68   1360087.065   1960273.526
                     Radius:              1909.86
```

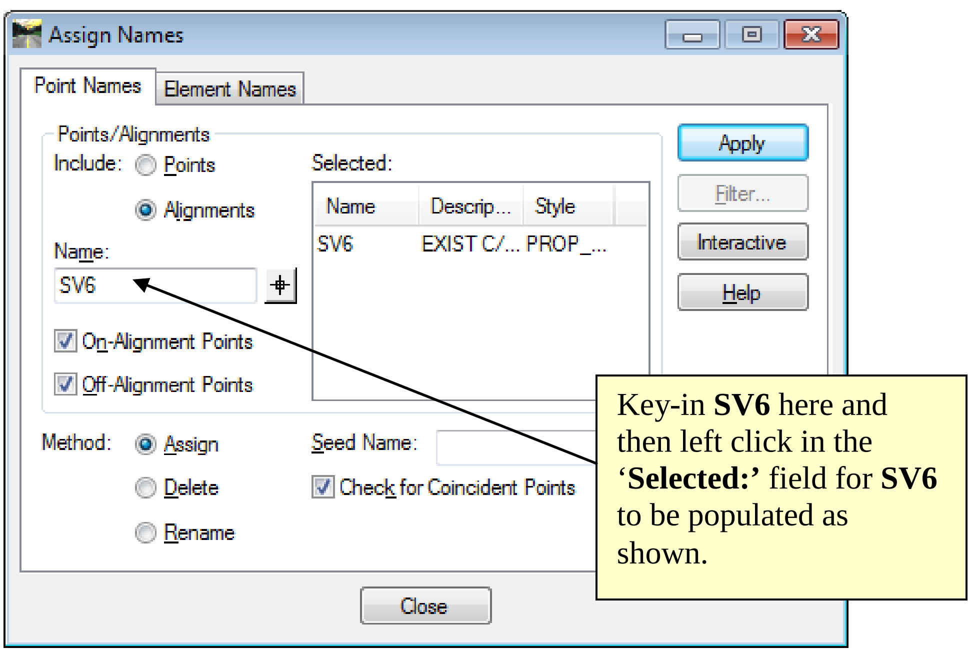
- Click **Close** to close the report window.

The Report Window for SV6 is closed.

11. **Assign names to the PC's and PT's**

Click **Geometry ►Utilities ► Assign Names and the <u>Assign Names</u>** dialog box will appear.

- Fill in the **<u>Assign Names</u>** dialog box as depicted here.
- Ensure that your dialog box entries correspond to the entries shown below.

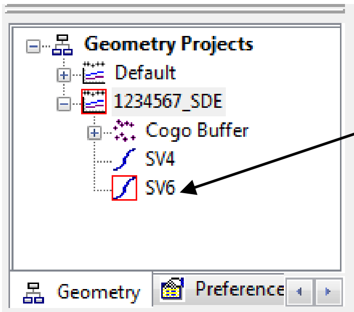


- Click **Apply** and **Close**.

Assigns names to unnamed points in alignment SV6.

12. **Review Alignment SV6**

- In the InRoads Explorer Workspace Bar– **Right mouse click** on Alignment **SV6**.



Right mouse click on Alignment **SV6** in the InRoads Explorer Workspace Bar.

- Click **Review**. (The **Review Horizontal Alignment** report window opens).
- Notice that the **PC's** and **PT's** now have numbers associated with them as shown here.

```
Element: Linear
           POB    (      187)            0+00.00   1359336.617   1960547.454
           P.C.   (        8)            2+44.13   1359573.261   1960487.456
          Tangent Direction:      N 14^13'36.7" W
             Tangent Length:             244.132

Element: Circular
           P.C.   (        8)            2+44.13   1359573.261   1960487.456
           P.I.   (         )            5+25.41   1359845.917   1960418.327
           C.C.   (        9)                      1359103.891   1958636.171
           P.T.   (       10)            8+02.68   1360087.065   1960273.526
                    Radius:             1909.859
```

- Click **Close** to close the report window.

A report window for SV6 is opened.

13. **Information Only:**

* **IMPORTANT**: Although point names (Alignment Points) now exist in alignment **SV6** for the **PC's** and **PT's --** the points don't actually exist as COGO Points in the COGO Buffer. In order to properly display the points in MicroStation and for the proper delivery of enhancements during the life of the project -- the points must be converted to COGO Points and assigned the proper feature style.

Information regarding the converting of Alignment Points.

14.	**Create COGO Points for all Alignment Points.** Select **Geometry ► Horizontal Curve Set ► Events**… and the **Horizontal Events** dialog box will appear. In the **Horizontal Events** dialog box: In the **Add As** Section: o Check the ***Alignment Point to Cogo*** radio button. o Set the **Style** to ***PROP_E_ACL-PC-PT*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L11-5* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the Horizontal Events dialog.*

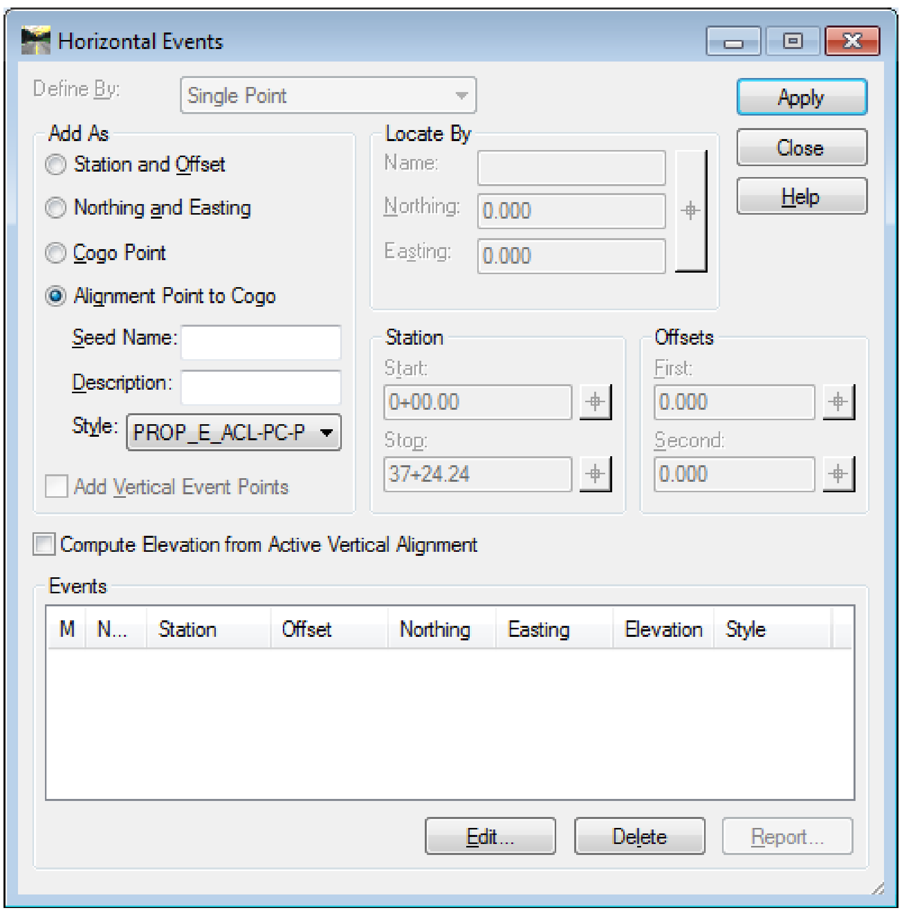
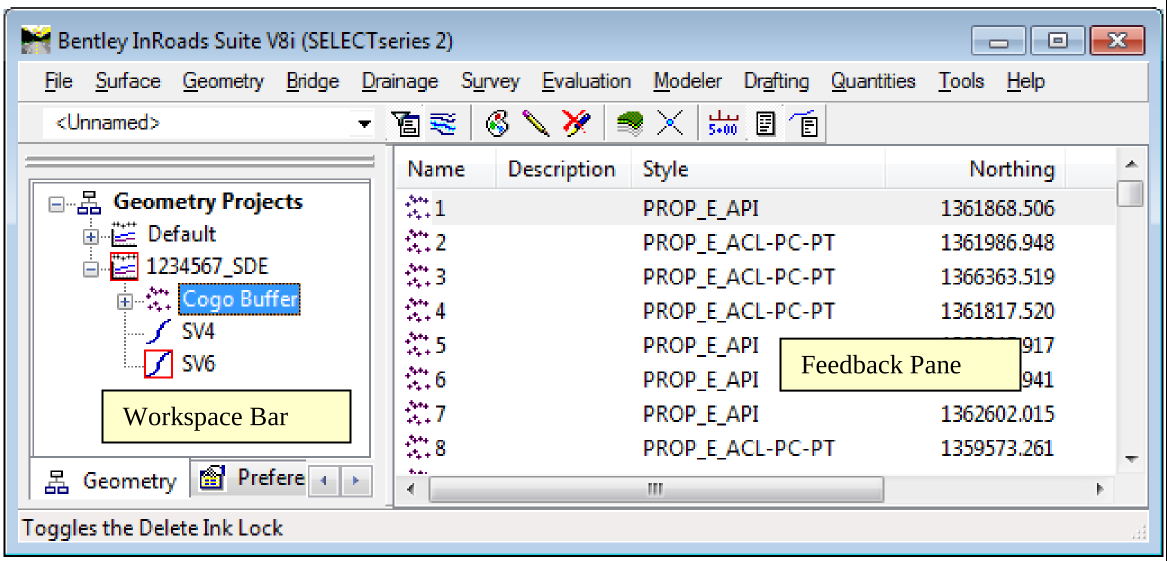


Figure L11-5 Horizontal Events

15.	**<u>Horizontal Events</u>:** • Click **Apply.** A results report will open listing all points that are now **COGO** points. • Click **Close** to close the Results Box. • Click **Close** to close the **<u>Horizontal Events</u>** dialog**.** *** Note:** Cogo Points are only assigned to Alignment Points for the <u>Active Alignment</u>. The process must be repeated for each alignment. *Converts the Alignment points stored earlier to COGO points and Assigns the Feature Style PROP_E_ACL-PC-PT*
16.	**Review the COGO Buffer for the newly created COGO Points.** • In order to review the alignment-- **Right Click** in the *Workspace Bar* over the **SV6** alignment and select **Review**. The **<u>Review Horizontal Alignment</u>** report will open. • In the *InRoads Explorer Interface Workspace Bar* -- **Left Click** on the Cogo Buffer (Highlighted in **Blue** below).  • In the *InRoads Explorer Interface Feedback Pane* use the scroll bar to look for all the points in the **SV6** alignment. • Verify that the proper Feature Style has been applied. In this exercise ***PROP_E_ACL-PC-PT*** was used. • Click **Close** to close out of the **<u>Review Horizontal Alignment</u>** report window. *Review of Cogo Buffer.*

Lab 11C Re-Station Alignment

In this lab we will re-station Alignment **SV6** to begin at Station **10+00.00** instead of **0+00.00**.

17. **Open the <u>Stationing</u> dialog box.**

- Set alignment **SV6** to be the active alignment if it is not already the active alignment. (The active alignment will have a red box around it).
- Select **Geometry ►Horizontal Curve Sets ►Stationing**
- The **<u>Stationing</u>** dialog box opens with the settings depicted as shown in *Figure L11-6.*

Opens the <u>Stationing</u> dialog box

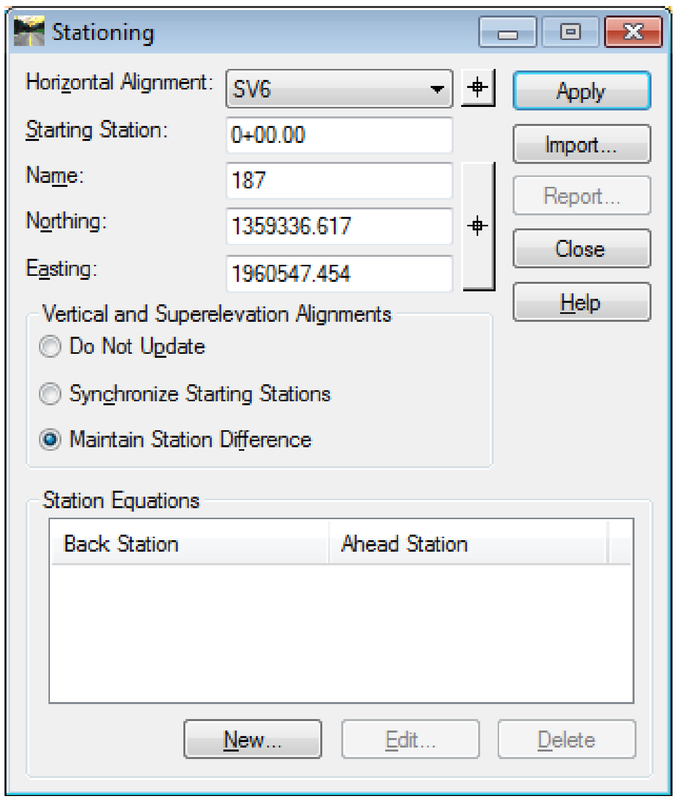


Figure L11-6 Stationing Dialog Box

18. **Re-Station Alignment SV6 to begin at Station 10+00.00**

- In the **<u>Stationing</u>** dialog box, key-in **10+00.00** in the ***Starting Station*** field.
- Leave all other entries as default.
- Verify all entries match those shown in *Figure L11-7.*

Re-Station Alignment SV6.

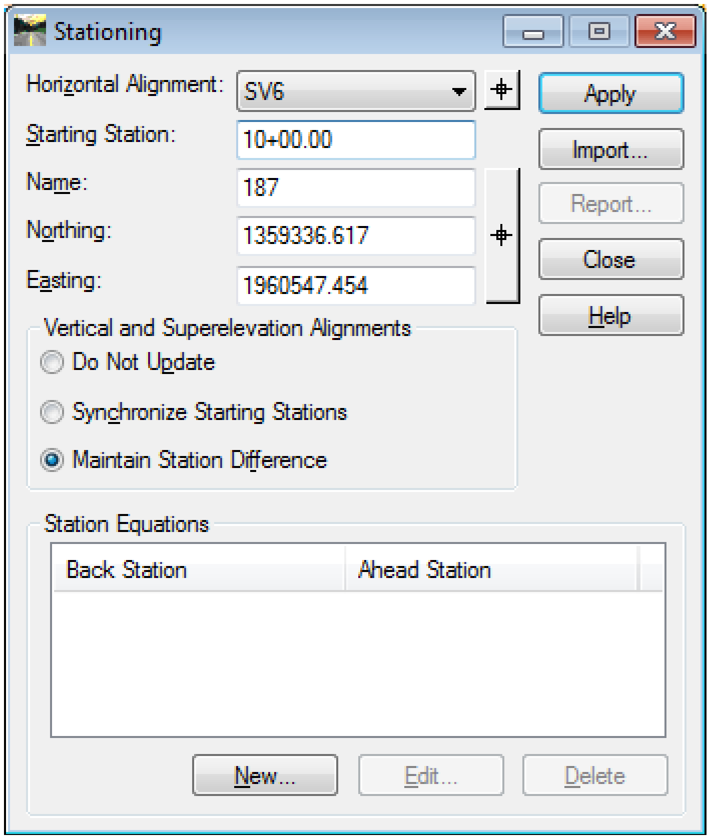


Figure L11-7 Stationing Dialog Box

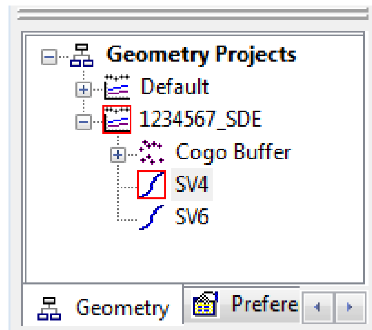
19.	Click **Apply** and then click **Close**. *Alignment SV6 is Re-stationed.*
20.	**Review Alignment SV6** • Select **Geometry ►Review Horizontal** • The **<u>Review Horizontal Alignment</u>** report window opens. • Verify that the beginning station is now **10+00.00.** • Click **Close** to close out of the **<u>Review Horizontal Alignment</u>** report window. *Alignment SV6 is Re-Stationed.*

Lab 11D Edit Curve Data

In this lab we will edit the Curve in **Alignment SV4** from 1°15’00” to 1°00’00”

21. **Set Alignment SV4 to be the Active Alignment.**

- In the **InRoads Workspace Bar** (shown on the right) expand the project by double-clicking on ***1234567_SDE*** as shown.
- Ensure that **SV4** has a Red Box around it. This indicates that alignment **SV4** is the active alignment.
- If it **<u>does not</u>** have a Red Box - highlight alignment **SV4**, right mouse click over it and select **Set Active**.



Sets alignment SV4 as the active alignment.

22. **Open the <u>Define Horizontal Curve Set</u> dialog box.**

- Select **Geometry ► Horizontal Curve Set ► Define Curve**
- The **<u>Define Horizontal Curve Set</u>** dialog box opens as shown in *Figure L11-8*.

Opens the <u>Define Horizontal Curve Set</u> dialog box.

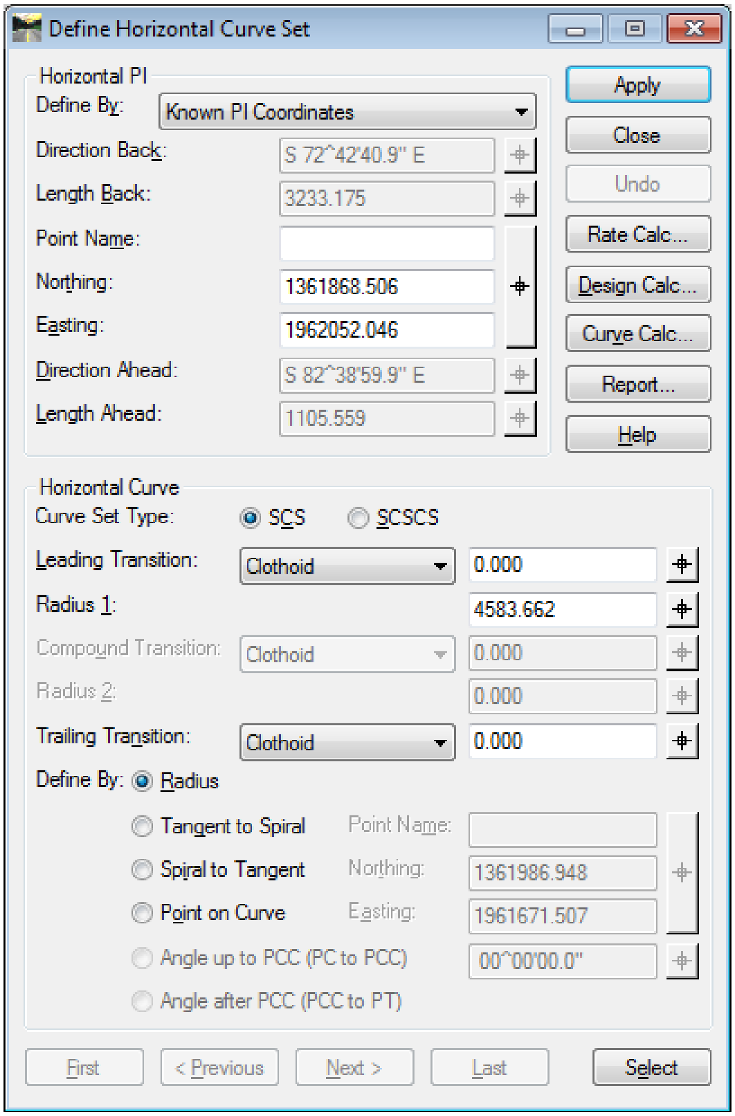
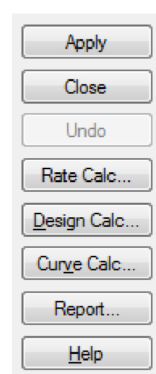


Figure L11-8 Define Horizontal Curve Set Dialog Box

23.	**Use the Curve Calculator to Enter & Compute all information required for a 1 degree curve.** In order to define the curve – Click the **Curve Calc…** button This will open the **Curve Calculator** dialog box.  *Opens the <u>Curve Calculator</u> dialog box.*

24.	To define the curve - input the **Deflection Angle** and the **Degree of Curve.** Ensure that a Check Mark ☑ and data is placed as inputs into the entry fields shown below: • ☑ **DOC:** = ***01 00 00.0*** • ☑ **Angle** = ***09 56 19.1*** Ensure that the **Compute:** Pull-down is set to ***Simple Curve*** Leave all other fields as default. Click the **Compute** button. The current inputs should correspond to the screen capture depicted in *Figure L11-9* (as shown below). Verify to ensure that your input matches the screen capture. *Sets the entries in the Curve Calculator dialog box.*

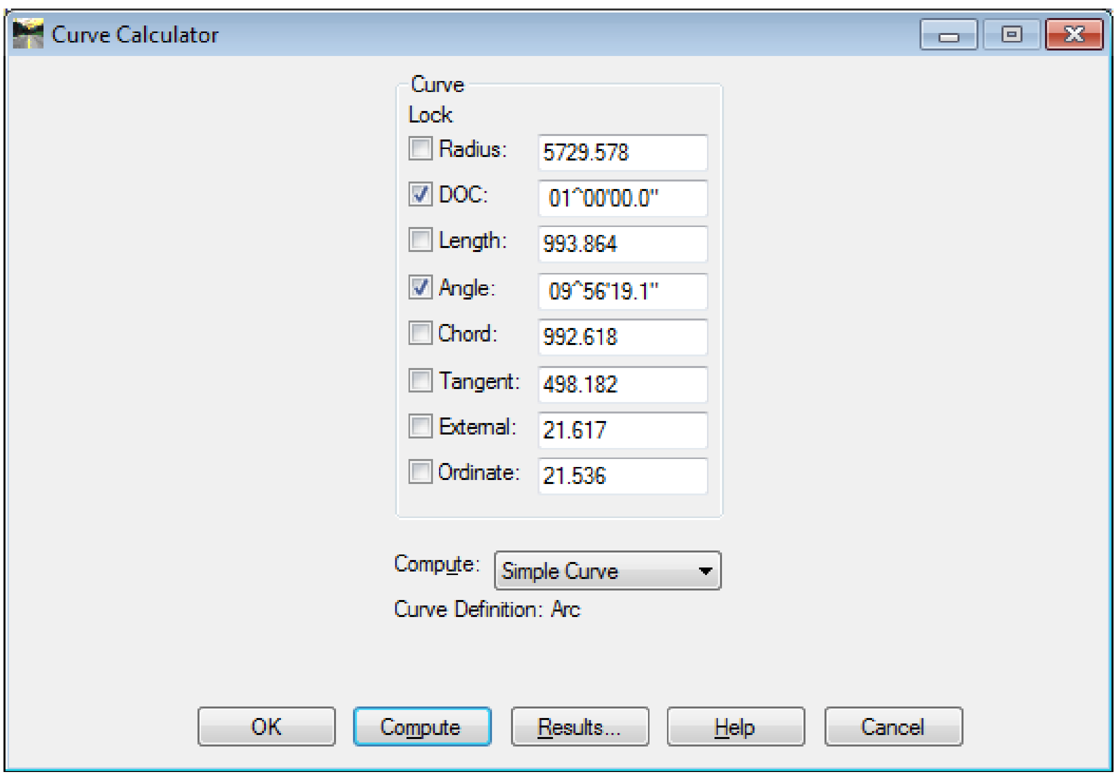
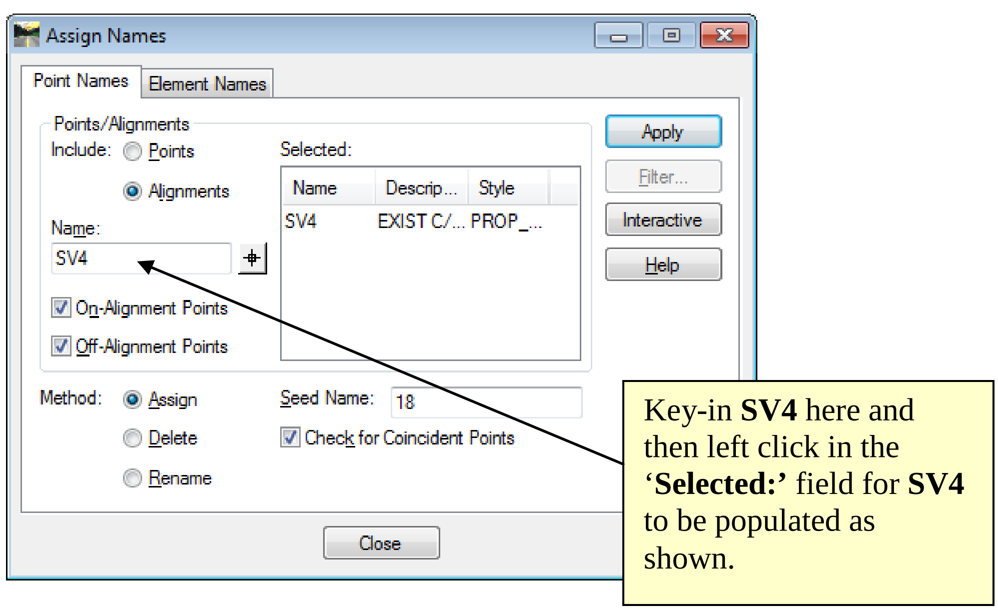


Figure L11-9 Curve Calculator

25.	Click **OK** to accept the entries and to close out of the **Curve Calculator** dialog box. *Accepts the entries in the Curve Calculator dialog box.*
26.	Click **Apply** and **Close** to close out of the **Define Horizontal Curve Set** dialog box. Horizontal Alignment **SV4** now contains a 01°00’00” degree curve. *The Curve will be changed from 1°15’00” to 1°00’00”.*
27.	**Review Alignment SV4 and Assign Point Names.** • Right Mouse click over alignment **SV4** in the InRoads Explorer interface and select **Review**. • Verify that the Curve in **SV4** is **1°00’00”**. • Notice also that there are now no point names associated with the PC & PT. • Click **Close** to close out of the **Review Horizontal Alignment** report window. *Alignment SV4 is reviewed.*
28.	**Assign names to the PC’s and PT’s** Click **Geometry ►Utilities ► Assign Names and the Assign Names** dialog box will appear. • Fill in the **Assign Names** dialog box as depicted here. • Ensure that your dialog box entries correspond to the entries shown below.  • Click **Apply** and **Close**. *Assigns names to unnamed points in alignment SV4.*

29.	**Create COGO Points of all Alignment Points.** * **IMPORTANT**: As stated previously, although point names (Alignment Points) now exist for the **PC's** and **PT's** in alignment **SV4 -** the points don't actually exist as COGO Points in the COGO Buffer. In order to properly display the points in MicroStation and for the proper delivery of enhancements during the life of the project, the points must be converted to COGO Points and assigned the proper feature style. Select **Geometry ► Horizontal Curve Set ► Events**… and the **<u>Horizontal Events</u>** dialog box will appear. In the **<u>Horizontal Events</u>** dialog box: In the **Add As** Section: o Check the ***Alignment Point to Cogo*** radio button. o Set the **Style** to ***PROP_E_ACL-PC-PT*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L11-10* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the <u>Horizontal Events</u> dialog.*

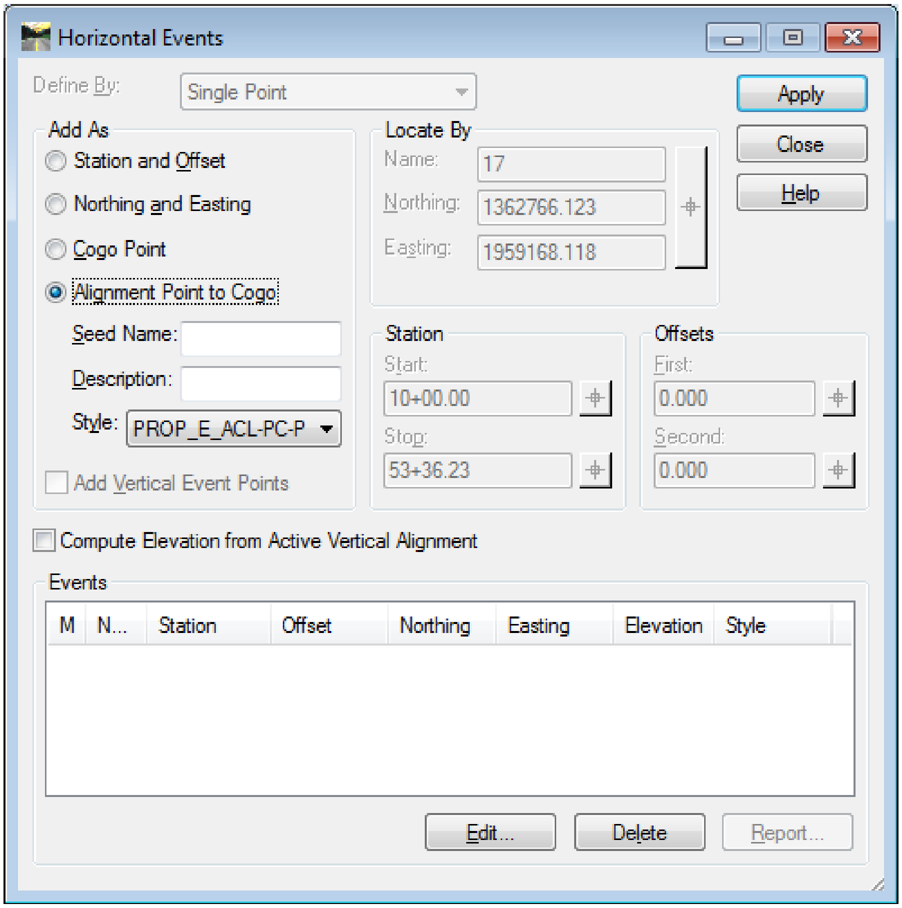


Figure L11-10 Horizontal Events

30. **<u>Horizontal Events</u>:**

- Click **Apply.** A results report will open listing all points that are now **COGO** points.
- Click **Close** to close the Results Box.
- Click **Close** to close the **<u>Horizontal Events</u>** dialog**.**

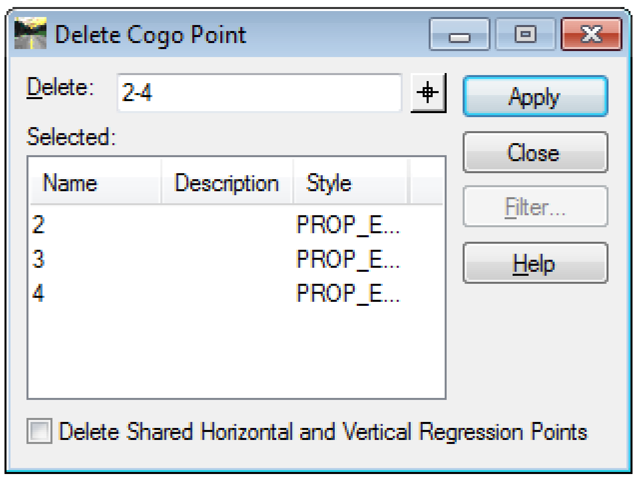
*** Note:** Cogo Points are only assigned to Alignment Points for the <u>Active Alignment</u>. The process must be repeated for each alignment.

Converts the Alignment points stored earlier to COGO points and Assigns the Feature Style PROP_E_ACL-PC-PT

31. **Clean up the COGO Buffer**

Now that alignment **SV4** has a new curve with new COGO Points defining the **PC's** and **PT's**, the SDE should delete the COGO Points that are no longer being used in the curve. These are points **2**, **3** & **4**.

- Select **Geometry ► Cogo Points ► Delete…** and the **<u>Delete Cogo Point</u>** dialog box will appear.
- In the ***Delete:*** field Key-in **2-4**
- **Left click** in the '***Selected:***' field for the points to be deleted.
- Your inputs should correspond to the screen capture depicted below:



- Click **Apply**.
- Click **Yes** to the prompt asking '***Do you want to delete the selected data?***'
- **Close** the *Results Report.*
- **Close** the **<u>Delete Cogo Point</u>** dialog.
- **View** the Cogo Buffer to verify that points **2**, **3** & **4** are no longer there.

The Cogo Buffer is cleaned up.

32.	**Save the InRoads Geometry File** Even though changes to the geometry file have been made – the data has not yet been saved. InRoads retains the data in temporary memory but does not save the data on the fly. Whenever a change has been made to an InRoads Geometry Project – Save the project and its associated modifications or changes. Select **File**▶**Save**▶ **Geometry Project** from the **InRoads Menu**. Please Note: (The "Save As" dialog box may not appear because the Geometry Project has already been saved initially). The Geometry Project (***1234567_SDE.alg***) will be saved to **Lab 11** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab11** Note that the **InRoads** and **MicroStation Status Bar** (Located at the bottom of both the InRoads and MicroStation Interface) will depict a message when the Geometry Project has been saved. *The **1234567_SDE** Geometry Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab11***

Lab 11E Extend Alignment by Distance and Bearing

In this lab you will learn to extend an alignment by a certain distance and bearing.

33. **Begin by Deleting all elements in the MicroStation View window.**

In the [MicroStation Software] –

Select **Edit ►Select All**

Then select the <**DELETE**> key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***.

Deletes all elements in the MicroStation View Window.

34. **View all Horizontal Alignments**

- In the *InRoads Explorer Interface Workspace Bar*, **Right Click** over ***1234567_SDE*** and select **View All Horizontals**.
- In [MicroStation], click the **Fit View** button. 

Views all Horizontal Alignments.

35. **View Cogo Points with the '*ACL Cogo Point Feature Styles*' Preference**

In the [InRoads Software]

Select **Geometry►View Geometry►Horizontal Annotation** from the **InRoads Menu**.

The **View Horizontal Annotation** dialog box will open. Select the **"Main"** Tab.

The View Horizontal Annotation dialog box opens.

36. In the **View Horizontal Annotation** **"Main"** Tab:

- Click the **Preferences** button and highlight ***NO BEARING & DISTANCE***.
- Click **Load** & **Close**.
- The inputs should now correspond to the screen capture depicted in *Figure L11-11* (as shown below). Verify to ensure that your input matches the screen capture.

Sets the Viewing Options for the View Horizontal Annotation dialog box.

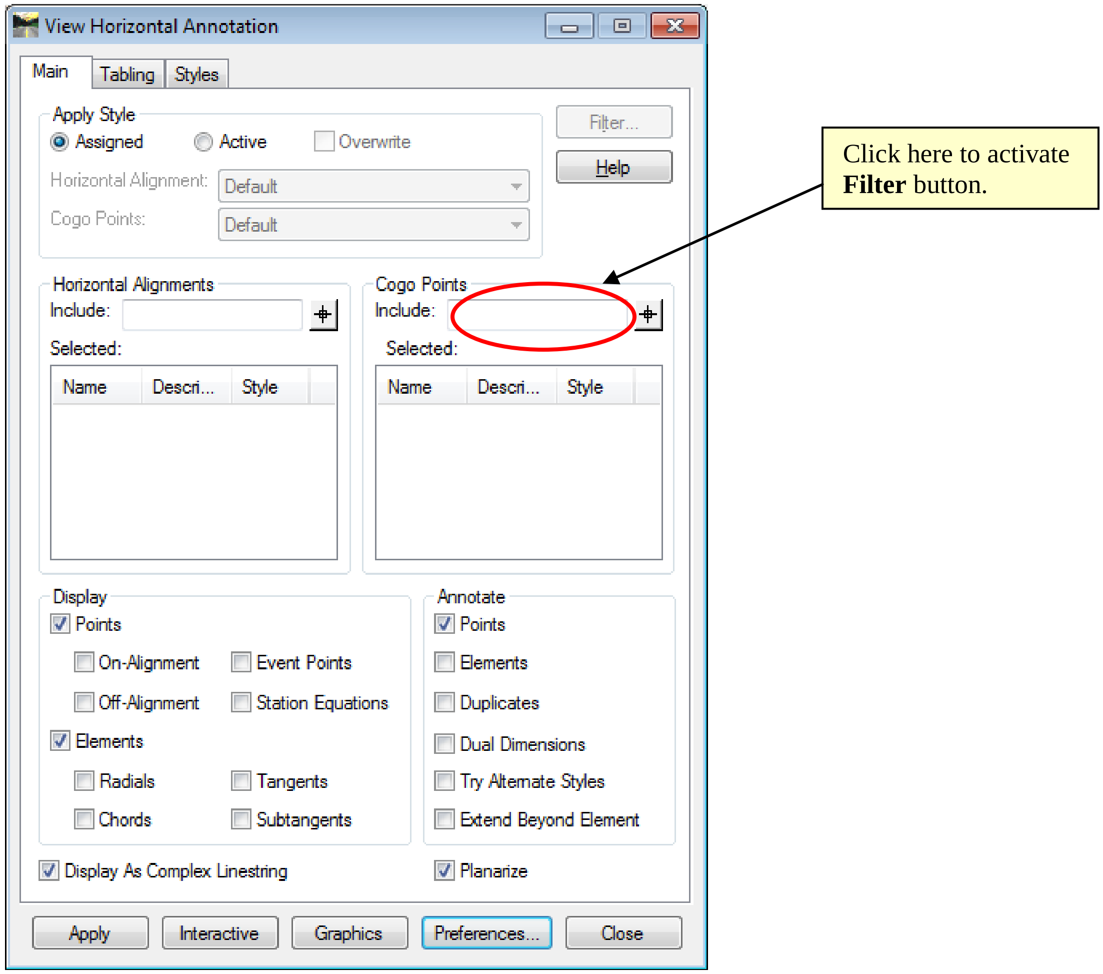


Figure L11-11 View Horizontal Annotation

37.	The **Filter** button on the dialog box will be grayed out. Place the cursor in the **Cogo Points** **Include:** field to activate the **Filter** button. (See Screen Capture depicted above). Click the **Filter** button to open the <u>**Geometry Selection Filter**</u> dialog box. See *Figure L11-12* (as shown below). *Activates the Filter button and opens the <u>Geometry Selection Filter</u>* dialog box.

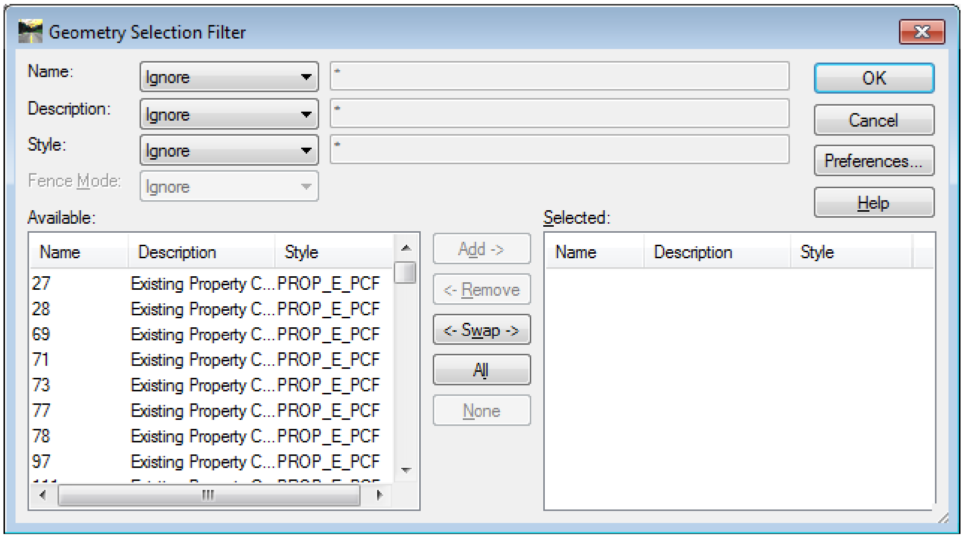


Figure L11-12 Geometry Selection Filter

38. **View Cogo Points with the '*ACL Cogo Point Feature Styles*' Preference**

The **Geometry Selection Filter** will be utilized to view the Alignment Feature Styles of **PROP_E_APOT, PROP_E_APOC, PROP_E_APT, PROP_E_APC** and **PROP_E_API.**

- In the **Style:** pull-down – Select ***Included***
- Click the **Preferences** button and highlight the ***ACL Cogo Point Feature Styles*** Preference.
- Click **Load** & **Close.** This loads the Feature Styles of **PROP_E_APOT, PROP_E_APOC, PROP_E_APT, PROP_E_APC** and **PROP_E_API** into the ***Style*** text entry field.
- Verify to ensure that your input matches the screen capture depicted in *Figure L11-13.*

Selects the Feature Styles in the Geometry Selection Filter.

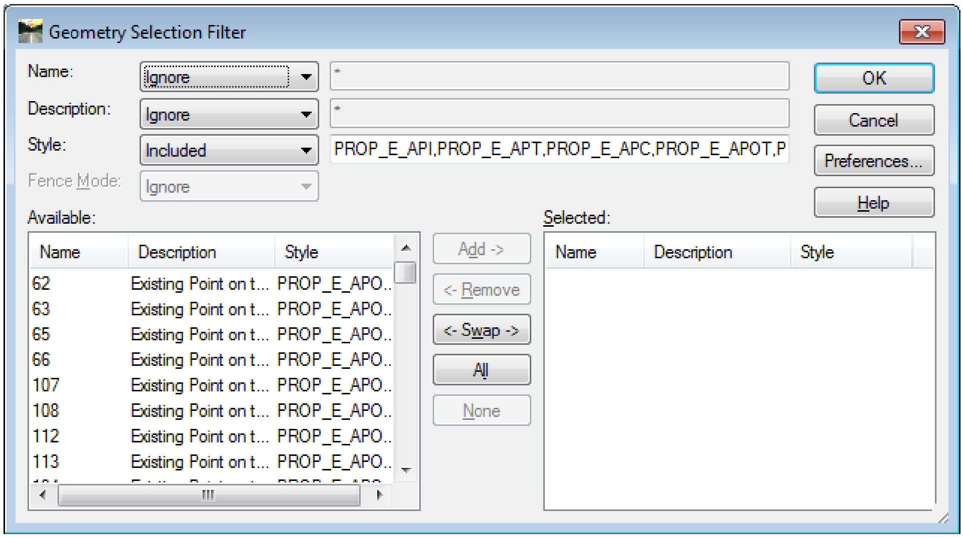


Figure L11-13 Geometry Selection Filter

39.	Once the data has been filtered – it needs to be moved from the **Available:** field to the **Selected:** field. • Click the **ALL** button. The data will be moved and then displayed in the **Selected:** field. The inputs should now correspond to the screen capture depicted in *Figure L11-14* (as shown below). Verify to ensure that your input matches the screen capture. *The filtered data is moved from the Available field to the Selected field.*

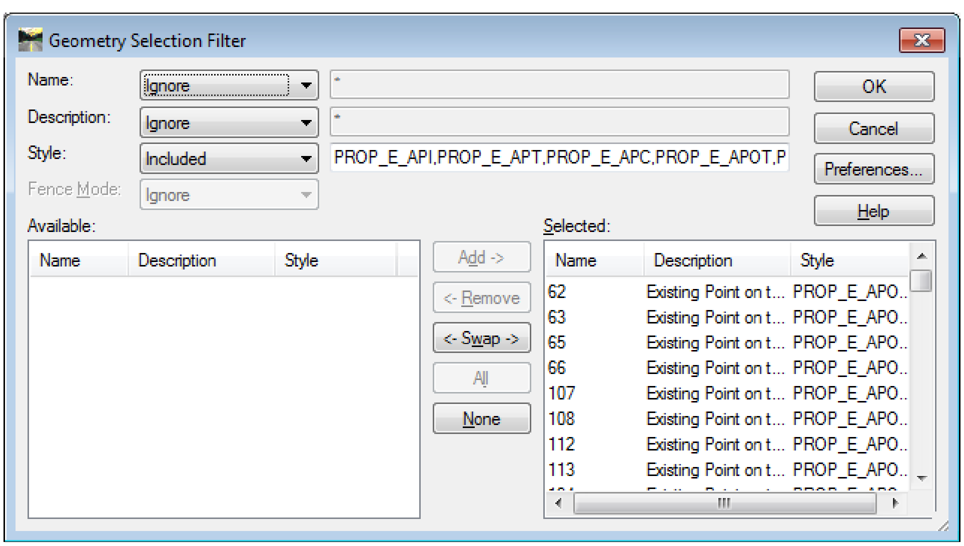


Figure L11-14 Geometry Selection Filter

40.	Click **OK** to close out of the **Geometry Selection Filter** dialog box and load data into the View Horizontal Annotation field. *Closes the Geometry Selection Filter dialog box.*
41.	**View Filtered Points** The Alignment Feature Style points have been filtered and are available for viewing. The **View Horizontal Annotation** dialog box should still be active from the previous steps. This dialog box depicts the filtered points in the **Cogo Points** Area as **Selected:** points. The inputs should now correspond to the screen capture depicted in *Figure L11-15* (as shown below). Verify to ensure that your input matches the screen capture. *The filtered point data is available for viewing.*

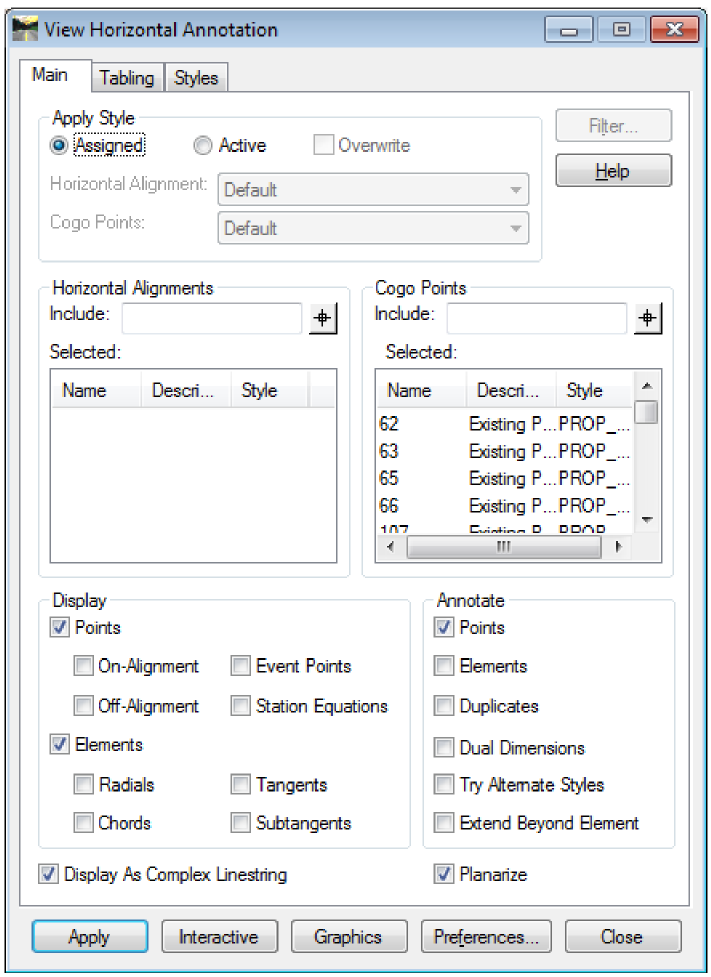
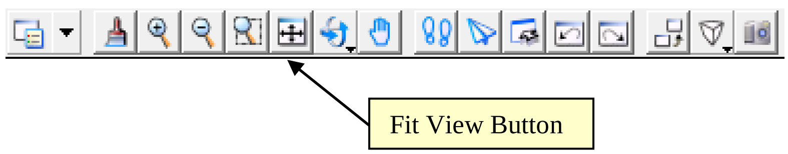


Figure L11-15 Geometry Selection Filter

42.	Click **Apply** and then click **Close** to close out of the **View Horizontal Annotation** dialog box. *The View Horizontal Annotation dialog box closes and the filtered Points are viewed in MicroStation.*
43.	**View** the selected Points in the [MicroStation Software] by using the following command located under the MicroStation View 1 Window. In the [MicroStation Software] – • Select the "Fit View" Icon to view the Points.  Verify that the MicroStation view window matches that shown in *Figure L11-16*. *The points are displayed and the view is fit to the MicroStation screen.*

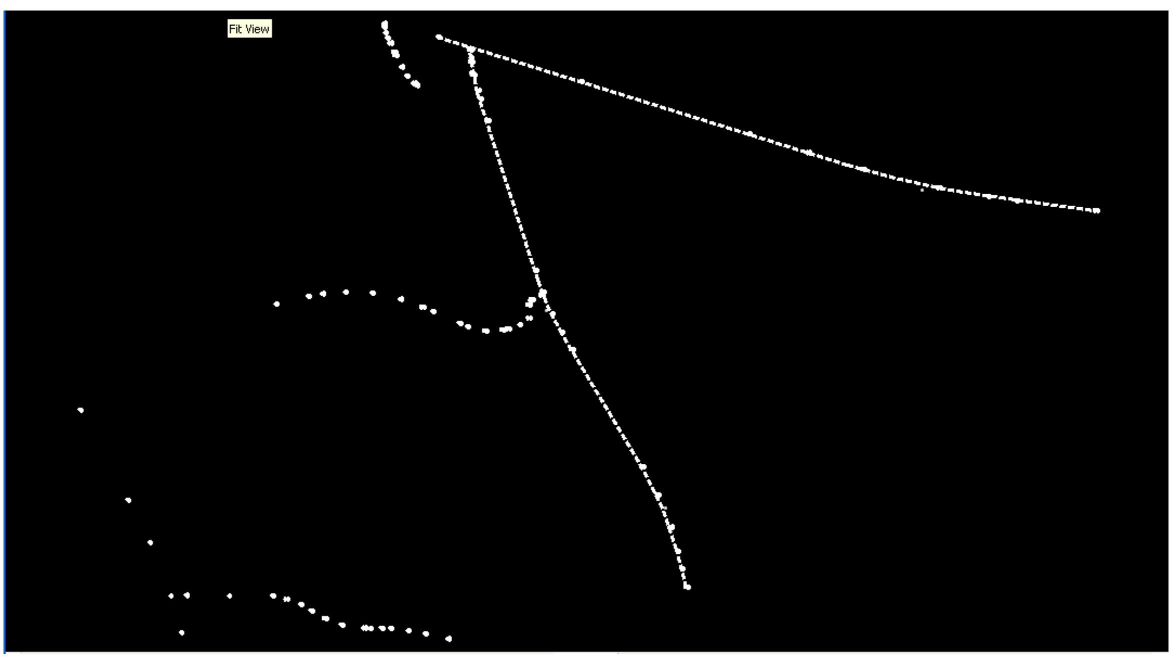
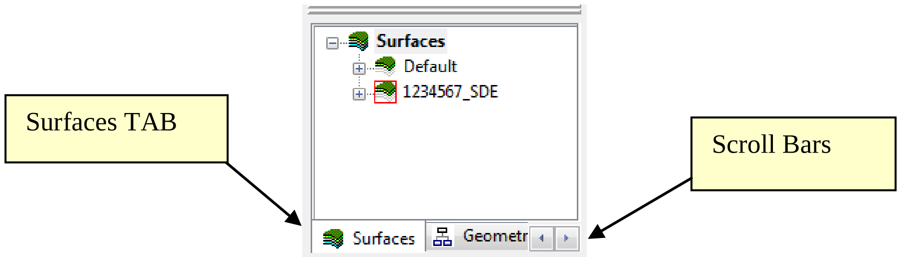


Figure L11-16 MicroStation View depicting **PROP_E_APOT, PROP_E_APOC, PROP_E_APT, PROP_E_APC** and **PROP_E_API** Points.

<table>
<tr><td>44.</td><td>
Click on the Surfaces Tab (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the Surfaces Tab.



Next click on the 1234567_SDE Surface Project. Note that the 1234567_SDE Surface Project has a “Red Rectangle” around the icon. This denotes that this is the “Active” Surface Project. Any surface commands will be initiated and performed on the current “Active” Surface.

Opens the InRoads <u>Surfaces Tab</u> and displays the 1234567_SDE Surface information in the InRoads Explorer Interface.
</td></tr>
<tr><td>45.</td><td>
<u>IMPORTANT STEP!</u> Set Proper Locks in InRoads

Verify that the Feature Filter lock is set to <u>on</u> (checked). Checking this lock enables InRoads to recognize filters.
Verify that the Feature Highlight lock is set to <u>off</u> (unchecked). Unchecking this lock will allow the <u>View Surface Features</u> dialog box to open quicker in the next step.

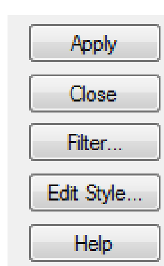
Sets the Proper Locks for the next step.
</td></tr>
<tr><td>46.</td><td>
View the Surface Features:

In the <u>InRoads Software</u>:

Select Surface▶View Surface▶Features and the <u>View Features</u> dialog box will appear:

In the Surface: Pulldown – select 1234567_SDE

Click on the Filter button.



Opens the <u>View Features</u> dialog box.
</td></tr>
</table>

47. **View Surface Features using the 'EXIST_RDWY- ACL+ EOP +RR' Filter.**

The **Feature Selection Filter** dialog box will open. In the **Feature Selection Filter** dialog box --- input the following:

- In the **Filter Name:** pulldown – select **EXIST_RDWY- ACL+ EOP +RR**

This will filter the view to include the following Surface Feature codes:

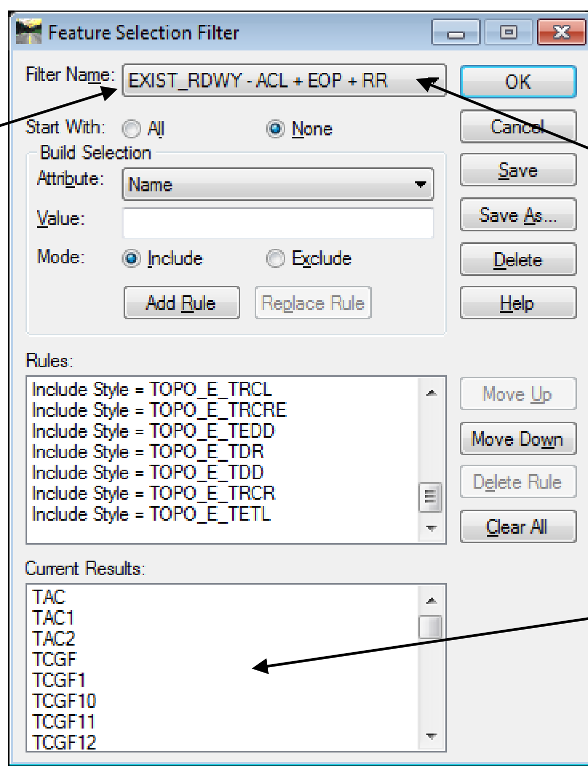
TOPO_E_TAC	TOPO_E_TEST	TOPO_E_ TBCL
TOPO_E_TEDR	TOPO_E_THC	TOPO_E_ TRCL
TOPO_E_TEAD	TOPO_E_TCGT	TOPO_E_ TRCRE
TOPO_E_TECD	TOPO_E_TCGF	TOPO_E_ TEDD
TOPO_E_TEAP	TOPO_E_TVG	TOPO_E_ TDR
TOPO_E_TEAS	TOPO_E_TBAS	TOPO_E_ TDD
TOPO_E_TECP	TOPO_E_ TBGL	TOPO_E_ TRCR
		TOPO_E_ TETL

Leave all other entries as default!

The inputs should now correspond to the screen capture depicted in *Figure L11-17* (as shown below). Verify to ensure that your input matches the screen capture.

Opens the Feature Selection Filter dialog box.

WARNING - Take care not to accidentally move your scroll wheel on your mouse while the Filter Name field is active.



Use the pull-down arrow to select the Filter named **EXIST_RDWY- ACL + EOP + RR**

When the filter name is selected the data will be filtered as depicted here.

Figure L11-17 Feature Selection Filter

48.	Click **OK** and the **Feature Selection Filter** dialog box will **Close**. The **View Features** dialog box should still be open from the previous steps. The inputs in the **View Features** dialog box should now correspond to the screen capture depicted in *Figure L11-18* (as shown below). *Closes the Feature Selection Filter dialog box.*

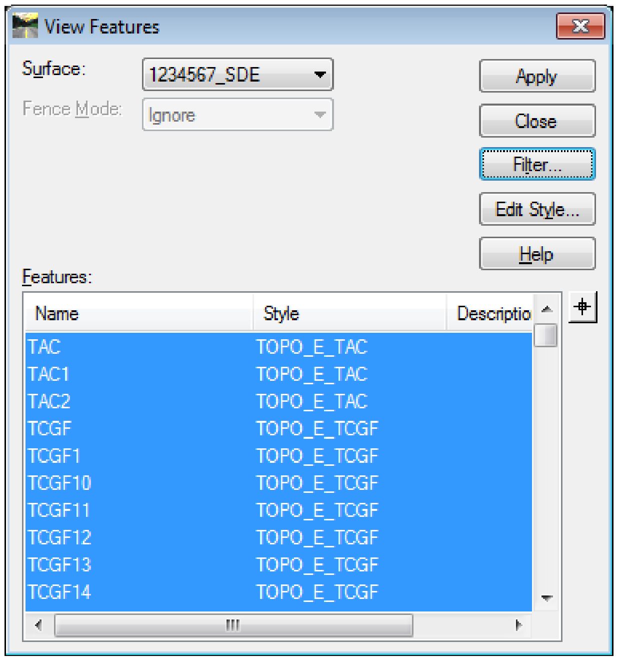
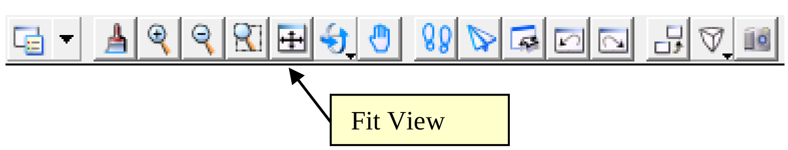


Figure L11-18 View Features

49.	Click **Apply** and then click **Close** and the **View Features** dialog box will close. *Closes the View Features dialog box.*
50.	**View** the selected Surface Features in the [MicroStation Software] by using the following command located under the MicroStation View 1 Window: In the [MicroStation Software] – Select the "**Fit View**" Icon to view the Surface Features.  Verify that the MicroStation view window matches that shown in *Figure L11-19*. *The Surface Features are displayed and the view is fit to the MicroStation screen.*

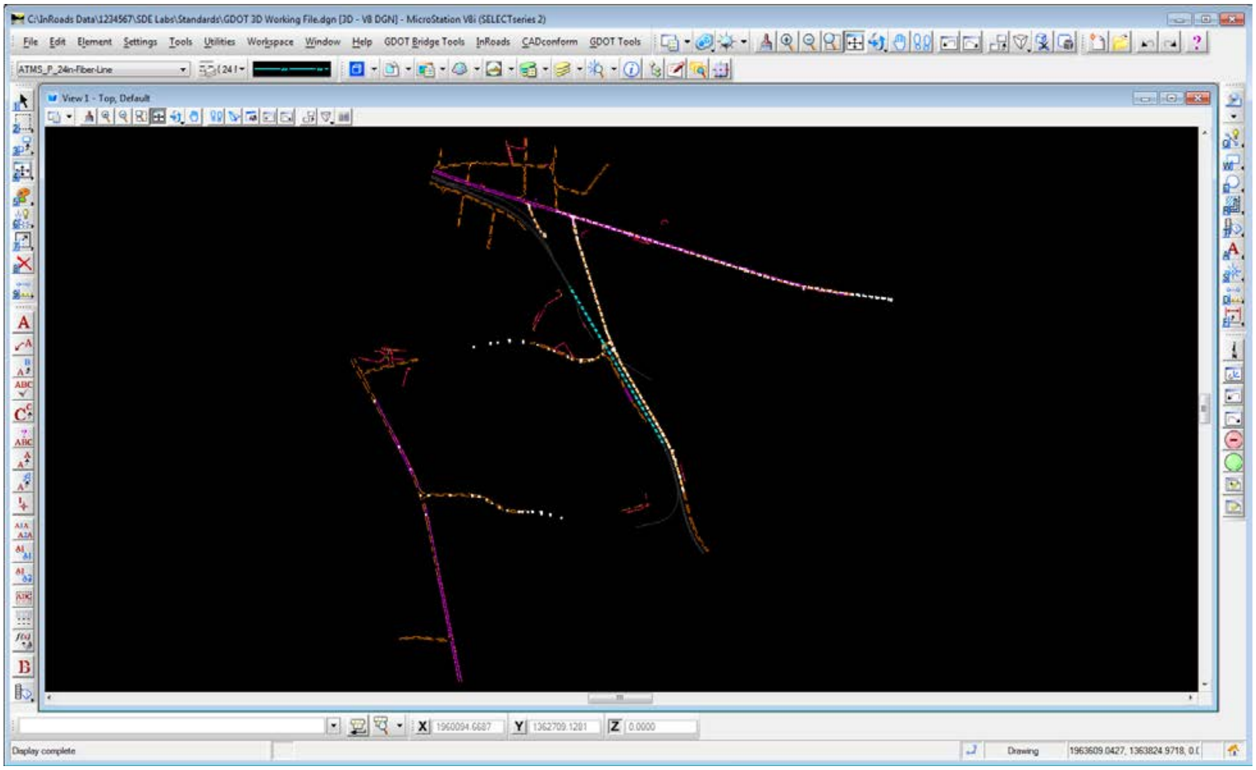
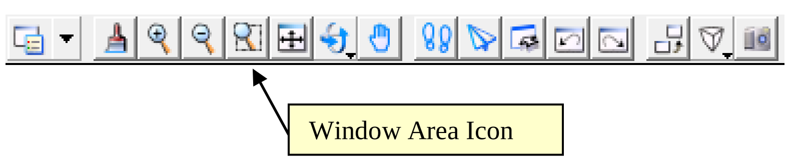


Figure L11-19 MicroStation View depicting Surface Features and Alignments

51.	**Window Area** Window into the area depicted by the “rectangle” as shown below in *Figure L11-20.* In the [MicroStation Software] – Select the “**Window Area**” Icon.  *Zoom into the area depicted by the rectangle.*

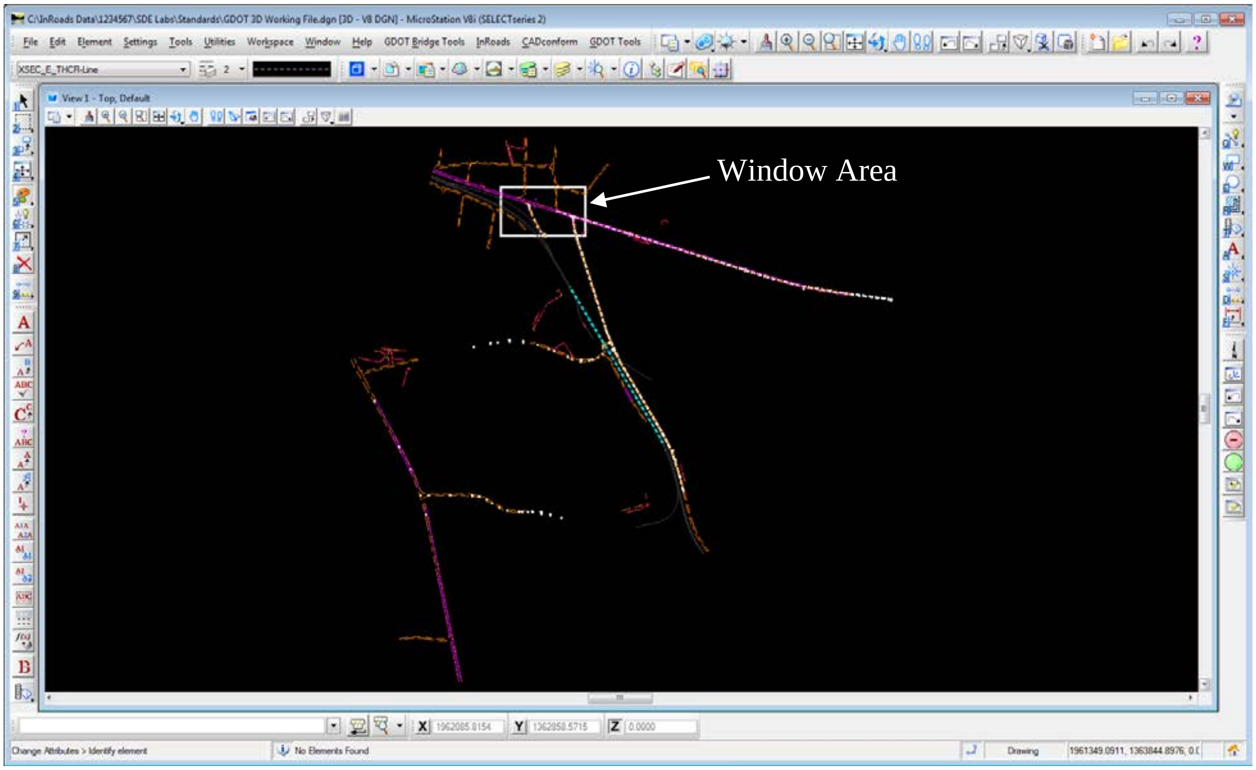


Figure L11-20 MicroStation View

52.	**Zoom to the <u>Beginning</u> of Alignment SV4** Zoom (window in) to the beginning of the **SV4** alignment as shown below in *Figure L11-21*. The beginning of the alignment will be around Point **217**. Verify that your view in ***MicroStation*** resembles that shown in *Figure L11-21* *Zoom to the beginning of Alignment SV4.*

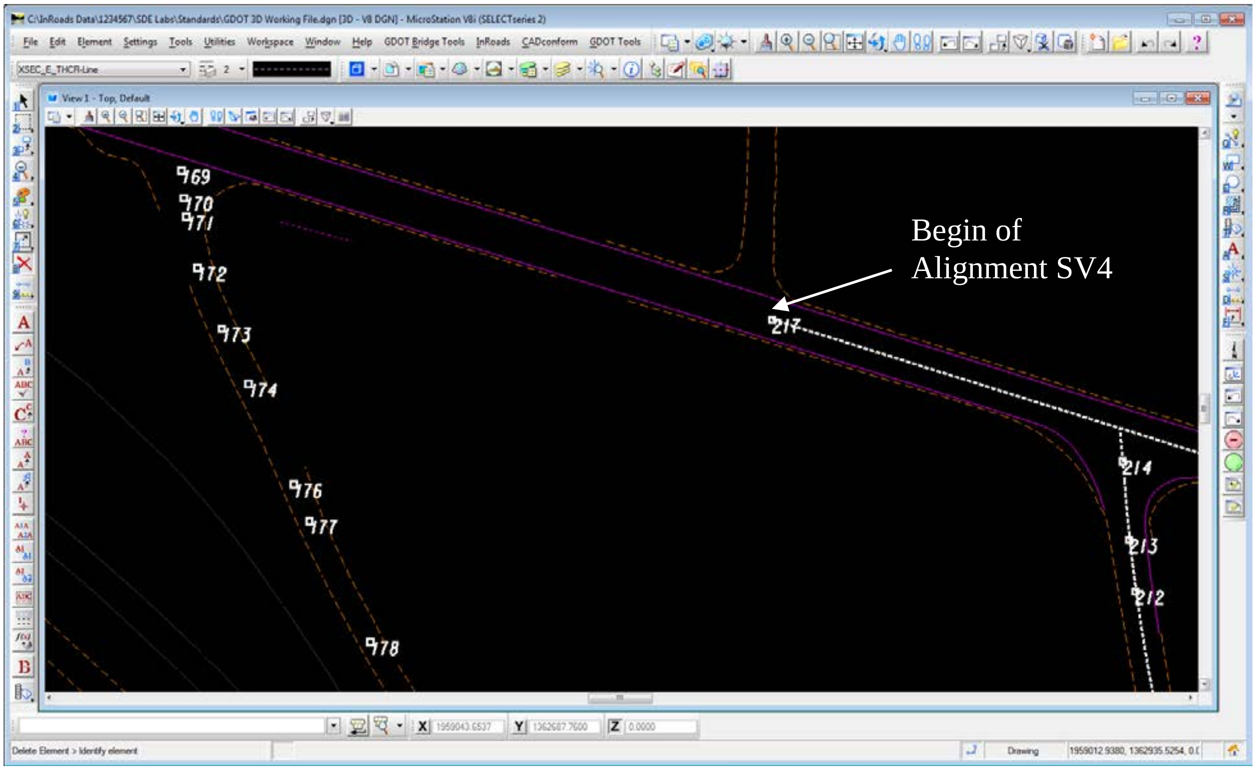


Figure L11-21 MicroStation View

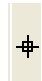
<table>
<tr><td>53.</td><td>Make SV4 the Active Alignment

In the InRoads Explorer interface, right mouse click over SV4 and select ‘Set Active’.
A Red Box around the alignment name will reflect that SV4 is the Active Alignment.
* Hint: Make the Geometry tab the active tab if necessary.

Sets SV4 to be the active alignment.</td></tr>
<tr><td>54.</td><td>Set InRoads Locks:
Select Tools ► Locks and verify that a <u>Check Mark</u> is next to Point Snap.
Select Tools ► Locks and verify that <u>Locate Features</u> is active. This symbol should be depicted. </td></tr>
</table>

55. **Extend alignment SV4 at 600 FT prior to station 10+00.00**

In the **<u>InRoads Software</u>**:

- Select **Geometry ► Traverse…** and the **<u>Traverse</u>** dialog box will appear.
- For ***Method*** select the **Direction** radio button.
- For the ***Insert Point Mode*** select the **Before Alignment** radio button.
- In the ***Occupied Point*** field - click the ***Locate Button***  (located in the ***Occupied Point*** frame) and left click on **Point 217** to select the point. Left click again to accept the **Point 217**.
- In the ***Foresight Point*** field set the Style to **PROP_E_API**.
- In the ***Course*** field: Enter the following:
    - In the Pulldown – select ***Direction*** – then enter direction **N 72 42 40.9 W**
    - In the Pulldown – select ***Horizontal Distance*** – then enter **600.000**

Leave all other entries as Default:

Verify the settings match those shown in *Figure L11-22*.

Steps to extend Alignment SV4 600'.

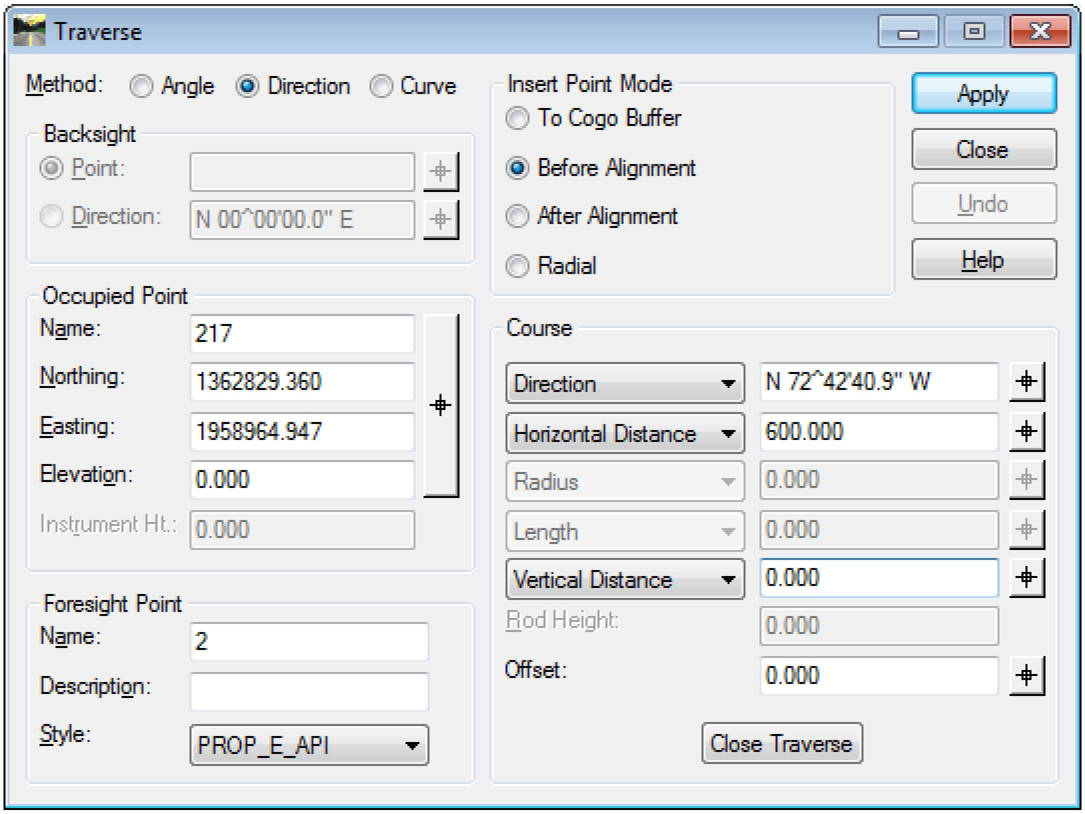


Figure L11-22 Traverse Dialog Box

56.	• Click **Apply**. • A **Results** dialog box opens informing you that **Point 2** is stored from **Point 217** a distance of **600**' on a bearing of **N 72^42'40.9" W**. • Click **Close** to close out of the **Results** dialog box. • Click **Close** to close out of the **<u>Traverse</u>** dialog box. *Alignment SV4 is extended 600'.*
57.	**Review Alignment SV4** • In the *InRoads Explorer* interface **Right mouse click** over **SV4** and select **Review** and the **<u>Review Horizontal Alignment</u>** dialog box will appear. • Notice that **Point 2** is now the Beginning Point of the alignment **SV4**. This is only an Alignment Point and must be <u>converted </u>to a Cogo Point. • Click **Close** to close the **<u>Review Horizontal Alignment</u>** window. *Alignment SV4 is reviewed.*

58.	**Create COGO Point from Alignment Point 2** * **IMPORTANT**: As stated previously, **Point 2** is an Alignment Point and must be converted to a COGO Point. In order to properly display the points in MicroStation and for the proper delivery of enhancements during the life of the project, the point must be converted to a COGO Point and assigned the proper feature style. Select **Geometry ► Horizontal Curve Set ► Events**… and the **<u>Horizontal Events</u>** dialog box will appear. In the **<u>Horizontal Events</u>** dialog box: In the **Add As** Section: o Check the ***Alignment Point to Cogo*** radio button. o Set the **Style** to ***PROP_E_API*** Leave all other entries as default. The inputs should now correspond to the screen capture depicted in *Figure L11-23* (as shown below). Verify to ensure that your input matches the screen capture. *Opens the <u>Horizontal Events</u> dialog.*

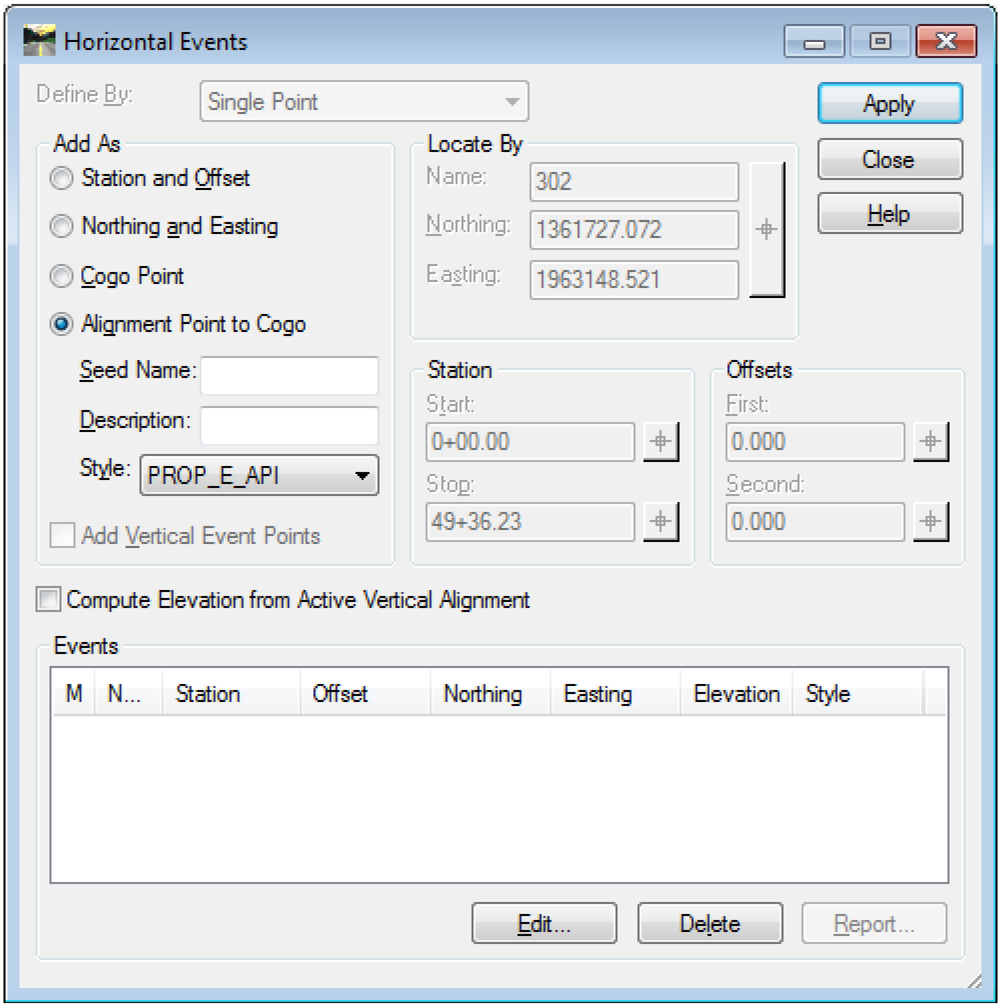


Figure L11-23 Horizontal Events Dialog Box

59. **<u>Horizontal Events</u>:**

- Click **Apply.** A results report will open listing all points in the Alignment that are **COGO** points. **Point 2** is now a COGO Point.
- Click **Close** to close the Results Box.
- Click **Close** to close the **<u>Horizontal Events</u>** dialog**.**

*** Note:** Cogo Points are only assigned to Alignment Points for the <u>Active Alignment</u>.

Converts Alignment Point 2 stored earlier to a COGO point and Assigns the Feature Style PROP_E_API.

60.	**Re-station SV4 to begin at Station 10+00.00** • Select **Geometry ► Horizontal Curve Set ► Stationing…** and the **<u>Stationing</u>** dialog box will appear. • Select **SV4** from the ***Horizontal Alignment*** Pull down. • In the ***Starting Station*** field key-in **10+00.00**. Leave all other entries as Default. • Verify all entries match those shown in *Figure L11-24*. *Re-station Alignment SV4 to begin at Station 10+00.00*

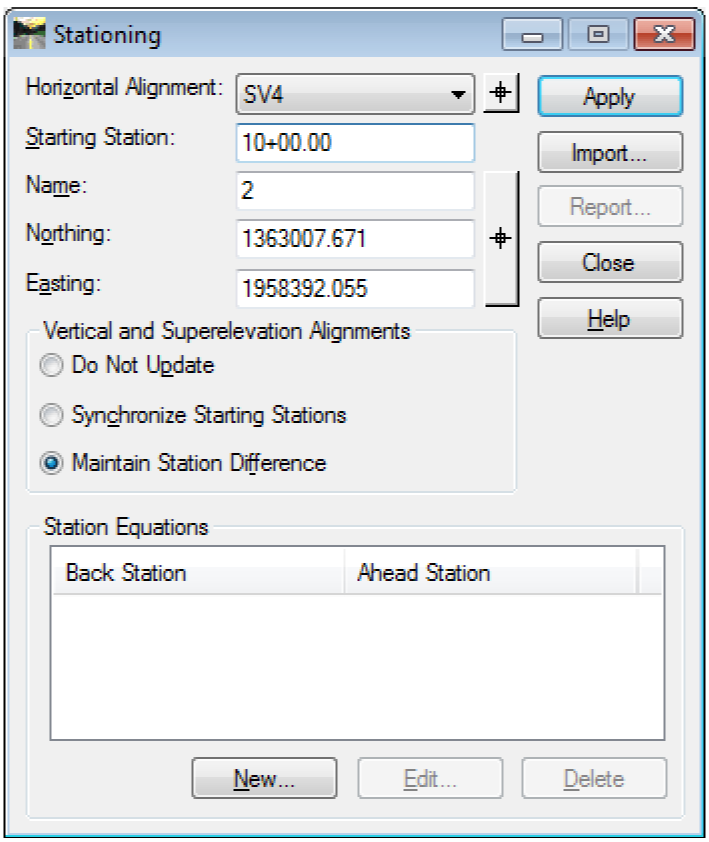


Figure L11-24 Stationing Dialog Box

61.	Click **Apply** and then click **Close**. *Alignment SV4 is Re-stationed.*

<table>
<tr><td>62.</td><td>Review Alignment SV4

Select Geometry ►Review Horizontal
The <u>Review Horizontal Alignment</u> report window opens.
Verify that the beginning station is now 10+00.00.
Click Close to close out of the <u>Review Horizontal Alignment</u> report window.

Alignment SV4 is re-stationed to begin at station 10+00.00.</td></tr>
<tr><td>63.</td><td>Save the InRoads Geometry File

Even though the Horizontal Alignments have been stored – the data has not yet been saved. InRoads retains the data in <u>temporary</u> memory but does not <u>save</u> the data on the fly. Whenever a change has been made to an InRoads Geometry Project – <u>Save</u> the project and its associated modifications or changes.

Select File►Save► Geometry Project from the InRoads Menu.

<u>Please Note:</u> (The “Save As” dialog box may not appear because the Geometry Project has already been saved initially).

The Geometry Project (1234567_SDE.alg) will be saved to Lab 11 in the following path:
C:\InRoads Data\1234567\SDE Labs\Lab11

Note that the <u>InRoads</u> and <u>MicroStation Status Bar</u> (Located at the bottom of both the InRoads and MicroStation Interface) will depict a message when the Geometry Project has been saved.

The 1234567_SDE Geometry Project has now been saved to the following path:
C:\InRoads Data\1234567\SDE Labs\Lab11</td></tr>
<tr><td>64.</td><td><u>VERY Important Step:</u> In order to Start with a CLEAN DGN file for the next Lab:

In the [MicroStation Software] –

Select Edit ►Select All

Then select the <DELETE> key on the computer keyboard. All of the DGN Graphics will then be deleted from the GDOT 3D Working File.dgn.

Deletes the Graphics from the GDOT 3D Working File.dgn to ensure a clean DGN file for the next Lab.</td></tr>
<tr><td>65.</td><td>

This concludes Lab 11. Do not proceed until the Instructor directs you to do so.</td></tr>
</table>

Lab 12
Store Existing R/W

Objective

Once the existing centerlines of all roadways have been established, the Existing R/W for each road must be stored.

The objective of Lab 12 is to:

- Learn techniques to create and store the Existing R/W.

Lab 12A Getting Started

1.	**Starting Clean** In order to ensure that you are working with a "clean" database – you will close MicroStation and InRoads if they are still running from a previous Lab: To CLOSE MicroStation and InRoads - Select **File ▶Exit** from the [MicroStation Menu]. If any messages appear regarding the saving of projects – Select  *This closes BOTH the MicroStation and InRoads Software(s).*
2.	From the desktop, double-click on the **MicroStation** icon labeled **GDOT MicroStation V8i SS2 (x86)**.  Double click on the icon labeled **GDOT MicroStation V8i SS2 (x86)**. • When the **MicroStation Manager** dialog box opens – navigate to the **C:\InRoads Data\1234567\SDE Labs\Standards** folder and select the "**GDOT 3D Working File.dgn**". Click **Open**. • Now open InRoads from within MicroStation by selecting: **InRoads ▶ InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu]. *The MicroStation and InRoads Software(s) will open.*
3.	**Clear the MicroStation Graphics (***This step may be ignored if your MicroStation Window is already clear of graphics***).** • Select **Edit ▶Select All** from the [MicroStation Menu]. • Then select the **<DELETE>** key on the computer keyboard. *The MicroStation Window is now clear of all graphics from the previous lab and ready for this lab.*
4.	**Verify Project Defaults** • In InRoads select **File ▶Project Defaults** • Use the pull down next to *Configuration Name:* to select **1234567_SDE** which you created in **Lab 1**. • Verify Settings match those shown in *Figure L12-1*. • Click **Apply** & **Close.**

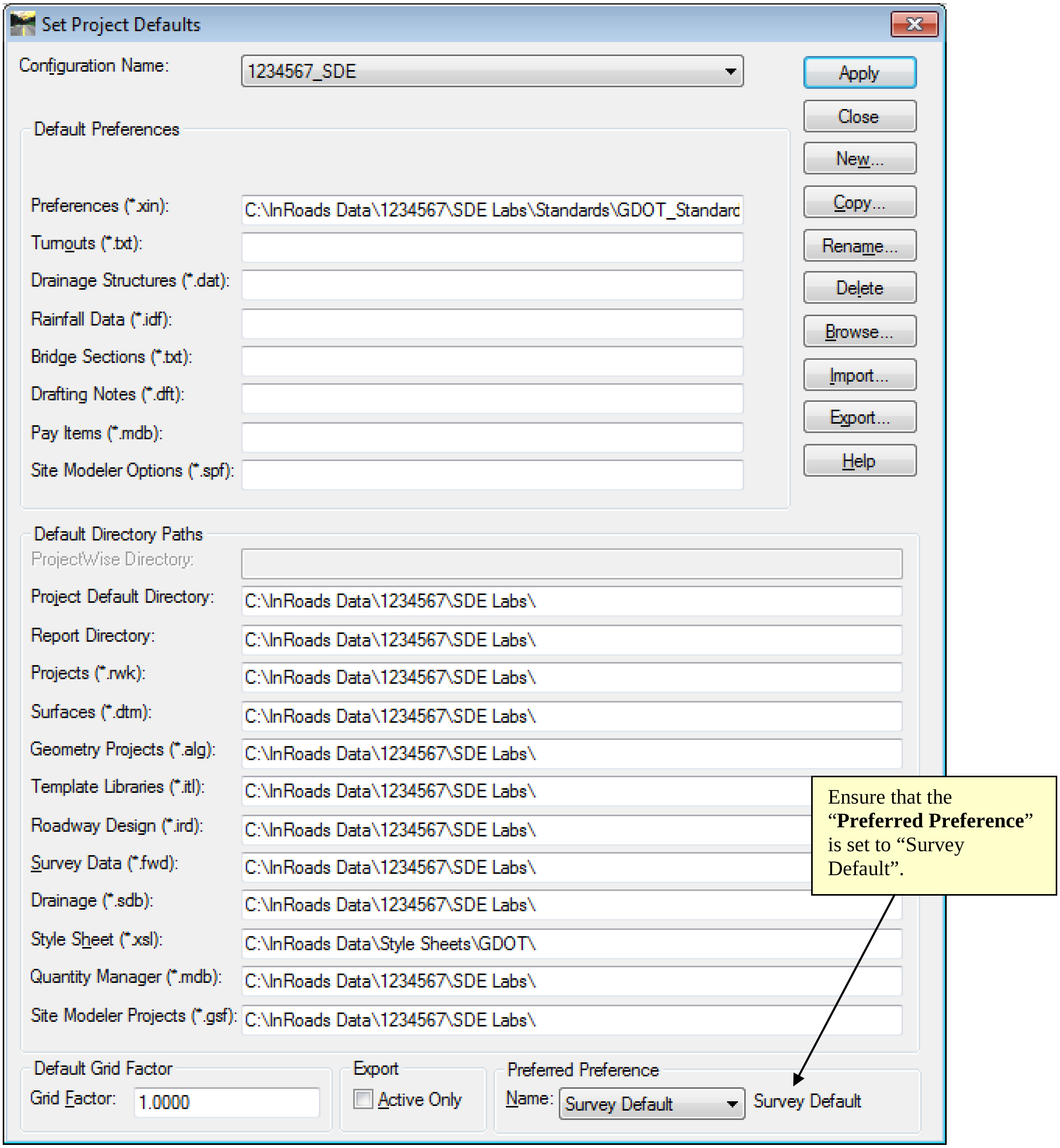
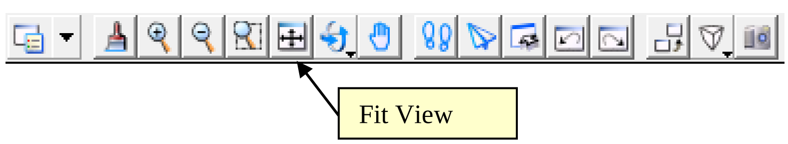


Figure L12-1 Project Defaults

5.	**Open the .ALG file** • Select **File ► Open**. • Navigate and open the Folder **Lab12**. • Highlight the file **1234567_SDE.alg**. • Click **Open** & **Cancel**. Hint: You may also right mouse click over 'Geometry Projects' in the Workspace Bar and select open. *Opens the 1234567_SDE.alg file*
6.	**Set Survey Default Preferences** • In InRoads - Select **File ► Project Options**. • In the **Project Options** dialog box select the **General** Tab. • Click the **Preferences** button at the bottom of the dialog box. • Choose ***Survey Default***. Click **Load** and **Close**. • In the **Project Options** dialog box - Click **Apply** and **Close**. *Sets the Survey Defaults Preference.*
7.	**View all Horizontal Alignments** • In the *Workspace Bar* ensure that **Geometry** is the active tab. • Right mouse click over the project **1234567_SDE**. • Select **View All Horizontals**. • In MicroStation click the **Fit View** button.  • Ensure that your view in MicroStation matches that shown in *Figure L12-2*. *Views all Horizontal Alignments in the geometry project 1234567_SDE.*

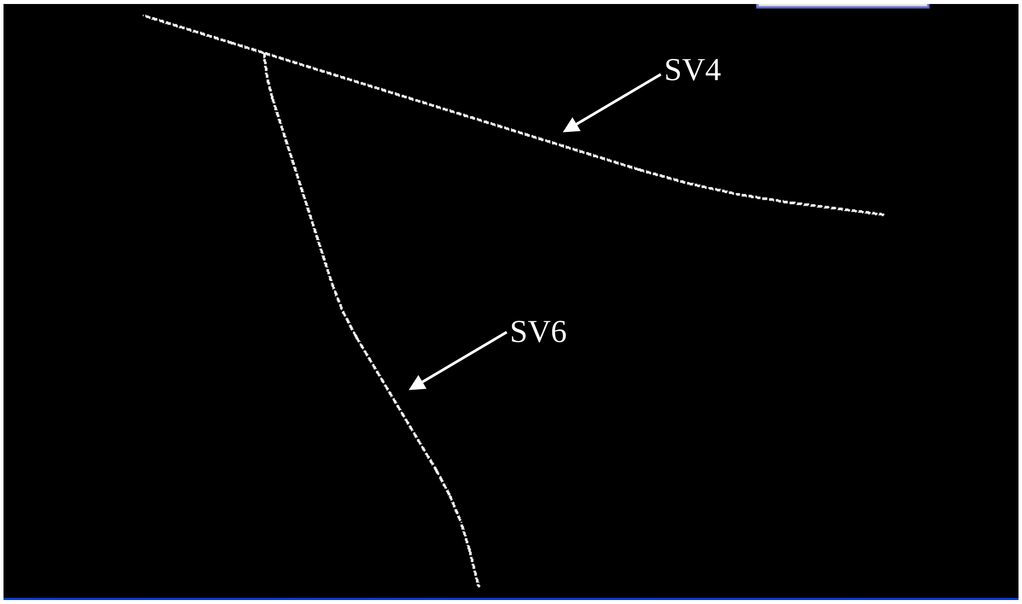
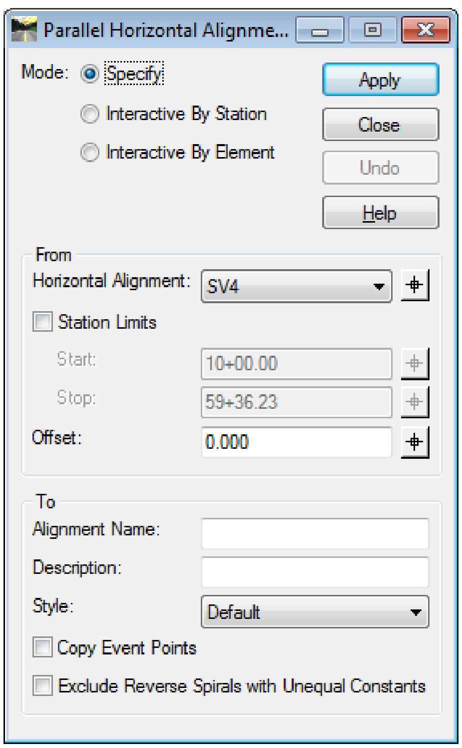
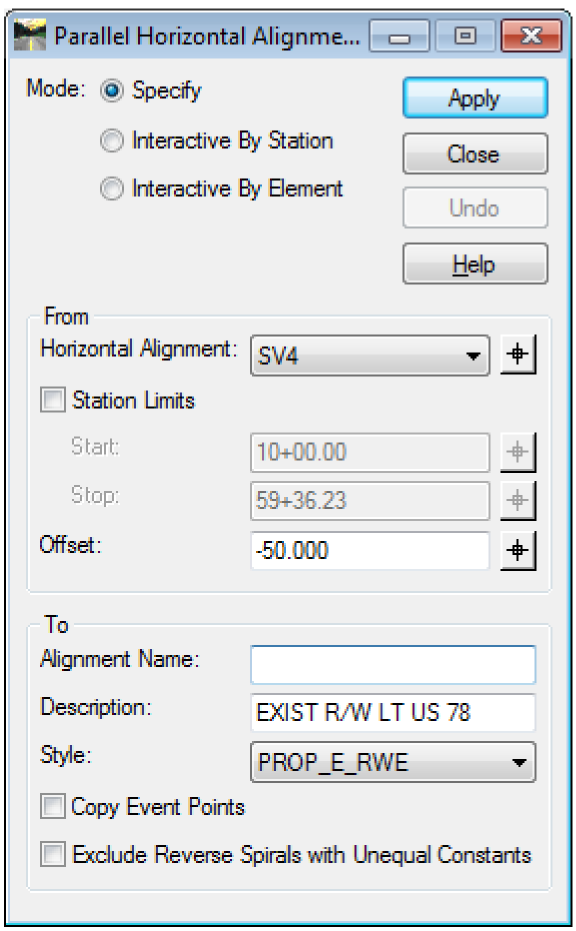


Figure L12-2 MicroStation Window

8.	Open the **Parallel Horizontal Alignment** dialog box. • Select **Geometry ► Utilities ► Parallel Horizontal Alignment…** The **Parallel Horizontal Alignment** dialog box opens.  *Opens the Parallel Horizontal Alignment dialog box.*

9. Use the **Parallel Horizontal Alignment** command to store an alignment offset **50’** left of **SV4.**

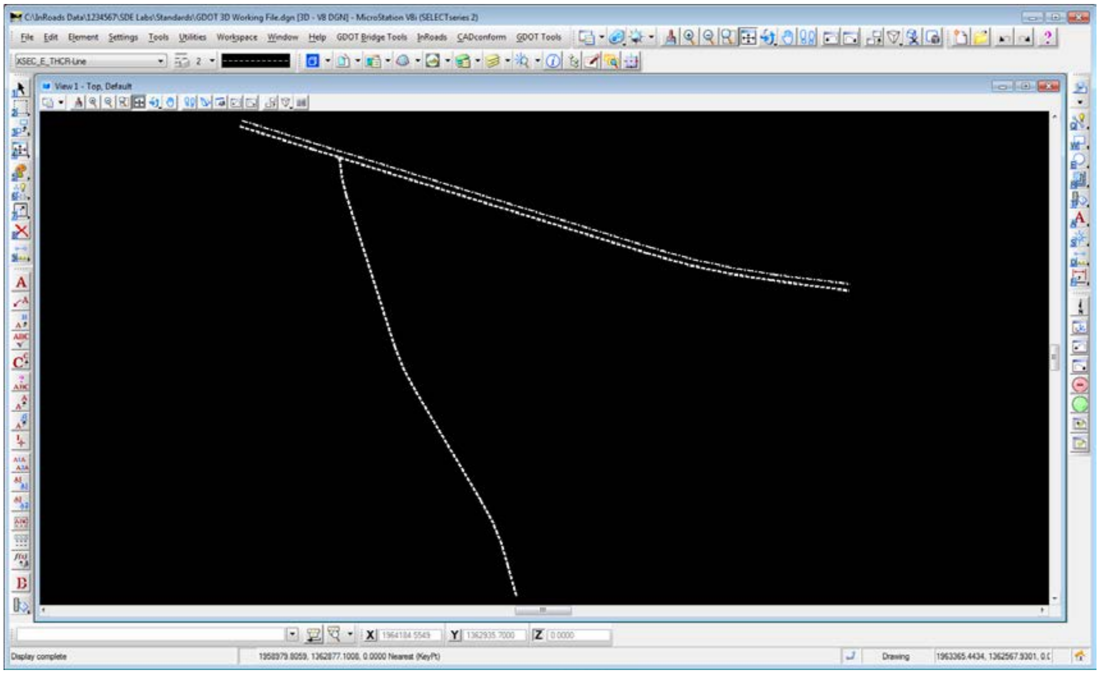
- For the ***Mode*** **–** select **Specify.**
- In the **From** frame – for ***Horizontal Alignment*** use the **Locate button (** **)** to select Alignment **SV4**.
- In the ***Offset*** field key-in **-50**.
  ***NOTE**: *A negative value in the Offset field stores an alignment to the left and a positive value stores an alignment to the right.*
- In the **To** frame - leave the ***Alignment Name*** key-in field empty. (When you set the ***Survey Default*** preferences in **Step 6** - it automatically stores the alignment with an **SV** prefix and assigns it the next available number).
- In the ***Description*** field Key-in: **EXIST R/W LT US 78**. It is recommended that the SDE provide descriptions in this format in order to easily identify alignments in the ALG file for future viewing.
- In the ***Style*** pulldown select the **Style** to be **PROP_E_RWE**.
- Verify that your input matches the screen capture below.



Store a Parallel Horizontal Alignment to the Left.

10.

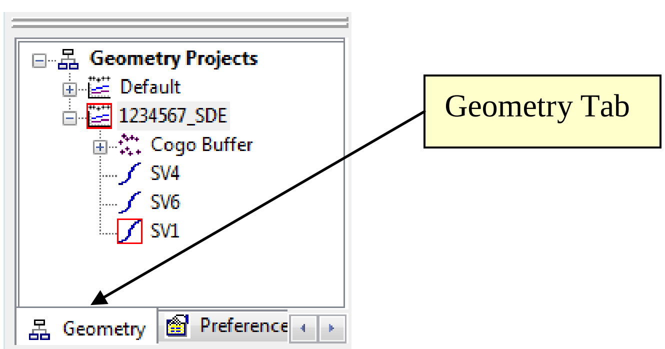
- Click **Apply** & **Close**. Alignment **SV1** is stored.
  ***Note**: *If an alignment name is not Keyed in, InRoads assigns the next available alignment name. In this case SV1.*
- Your view in MicroStation should match that shown below.



Stores an alignment 50’ to the left of SV4 and assigns it a feature style of PROP_E_RWE.

11. **Review** Alignment **SV1**.

- In the ***InRoads Explorer Interface*** make sure the **Geometry** tab is selected and expand the **1234567_SDE** geometry project. Your ***InRoads Explorer Interface*** should look similar to this screen capture shown below.



- Right mouse click over Alignment **SV1** and select **Review…**
- The **<u>Review Horizontal Alignment</u>** window opens as shown in *Figure L12-3*.
- Notice there are no Point Numbers associated with the coordinates in Alignment **SV1**.
- Click **Close** to close the Report dialog when finished reviewing.

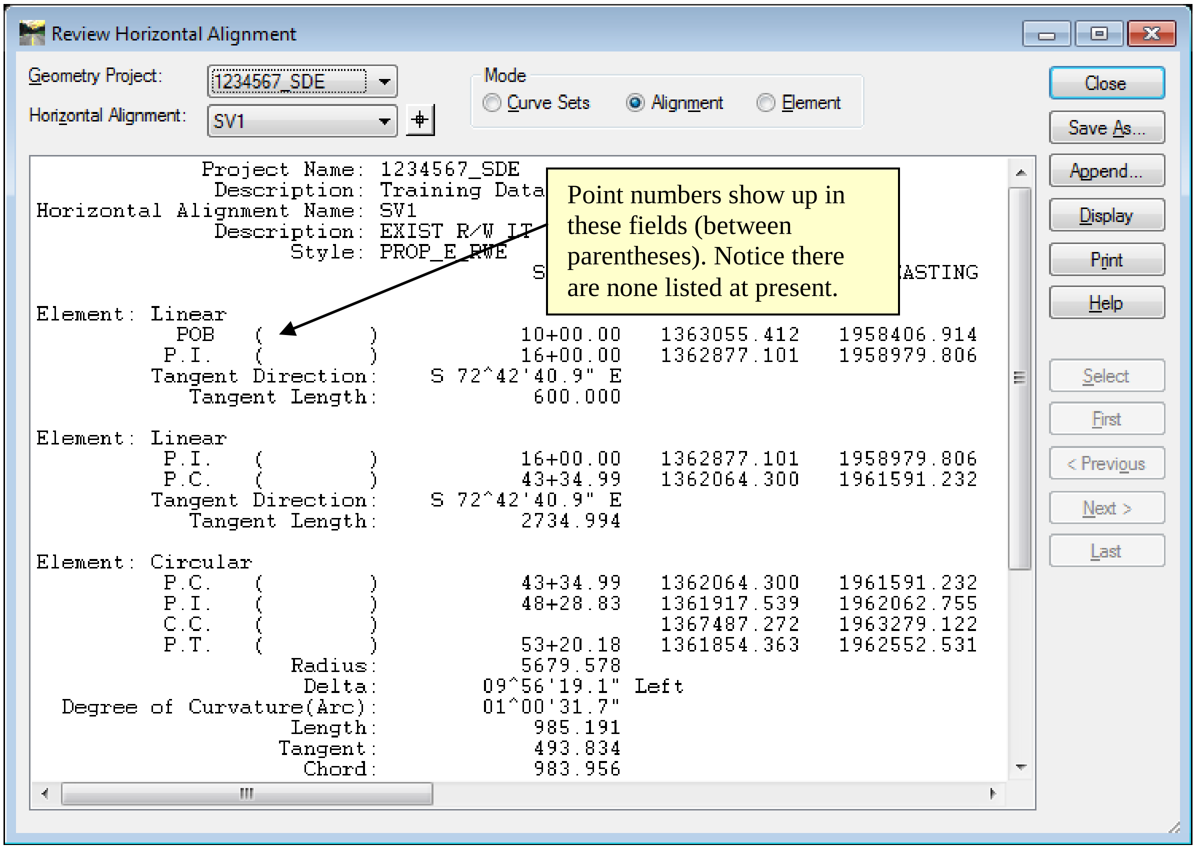


Figure L12-3 Review Horizontal Alignment window.

12. As noted during the review of Horizontal Alignment **SV1** – point numbers have not been associated with it. The next steps depict the process to assign names to the unnamed coordinates in Horizontal Alignment **SV1**.

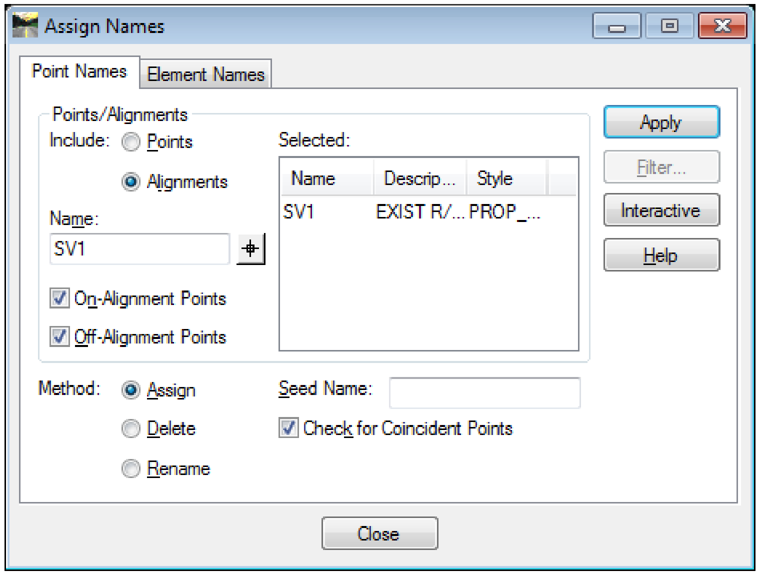
- Click **Geometry ► Utilities ► Assign Names** and the <u>**Assign Names**</u> dialog box will appear.

Ensure that the following information is depicted in the dialog box:

- In the **Include:** option - select ◉ ***Alignments***
- In the **Name:** field – type ***SV1***
- Place a Check Mark ☑ by ***On-Alignment Points***
- Place a Check Mark ☑ by ***Off-Alignment Points***
- In the **Method:** option – select ◉ ***Assign***
- Leave the **Seed Name:** field ________ (leave blank) Seed Name:
- Place a Check Mark ☑ by ***Check for Coincident Points***
- Leave all other entries as default.
- Then Left Click in the **Selected Field** (so that this field will be populated with the Alignment entry).

13. The inputs should now correspond to the screen capture depicted below:

Verify to ensure that your input matches the screen capture.



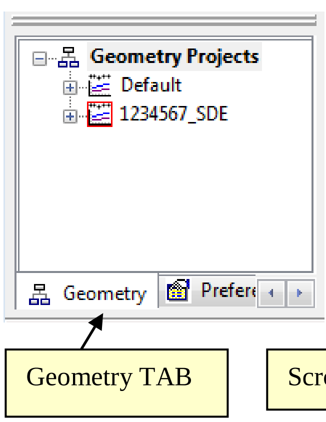
- Click **Apply** & **Close**.

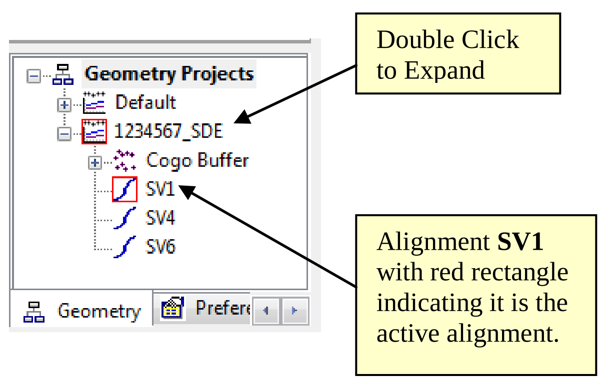
Assigns names to points in Alignment ***SV1*** *and closes the* *<u>Assign Names</u>* *dialog box.*

14. **Review Horizontal Alignment SV1 a second time.**

Double click on the Geometry Project named **1234567_SDE** (ONLY if it is not already open in ***InRoads Explorer***). This will allow you to view all of the project data (see screen capture shown below - right).

- Set **SV1** to be the active alignment by right mouse clicking and selecting '**Set Active'** to place the red block around it.





Opens the *<u>Review Horizontal Alignment</u>* *window.*

15. **Review Horizontal Alignment SV1**

- In the ***InRoads Explorer Interface*** -- Right mouse click on alignment **SV1**. In the list that appears – select **Review.**
- Notice the alignment now has point numbers associated with the coordinates.
- Take a moment to review alignment **SV1** in the **Review Horizontal Alignment** window as depicted below in *Figure L12-4*.
- **Close** the Report Dialog box when done reviewing.

Opens the Review Horizontal Alignment window.

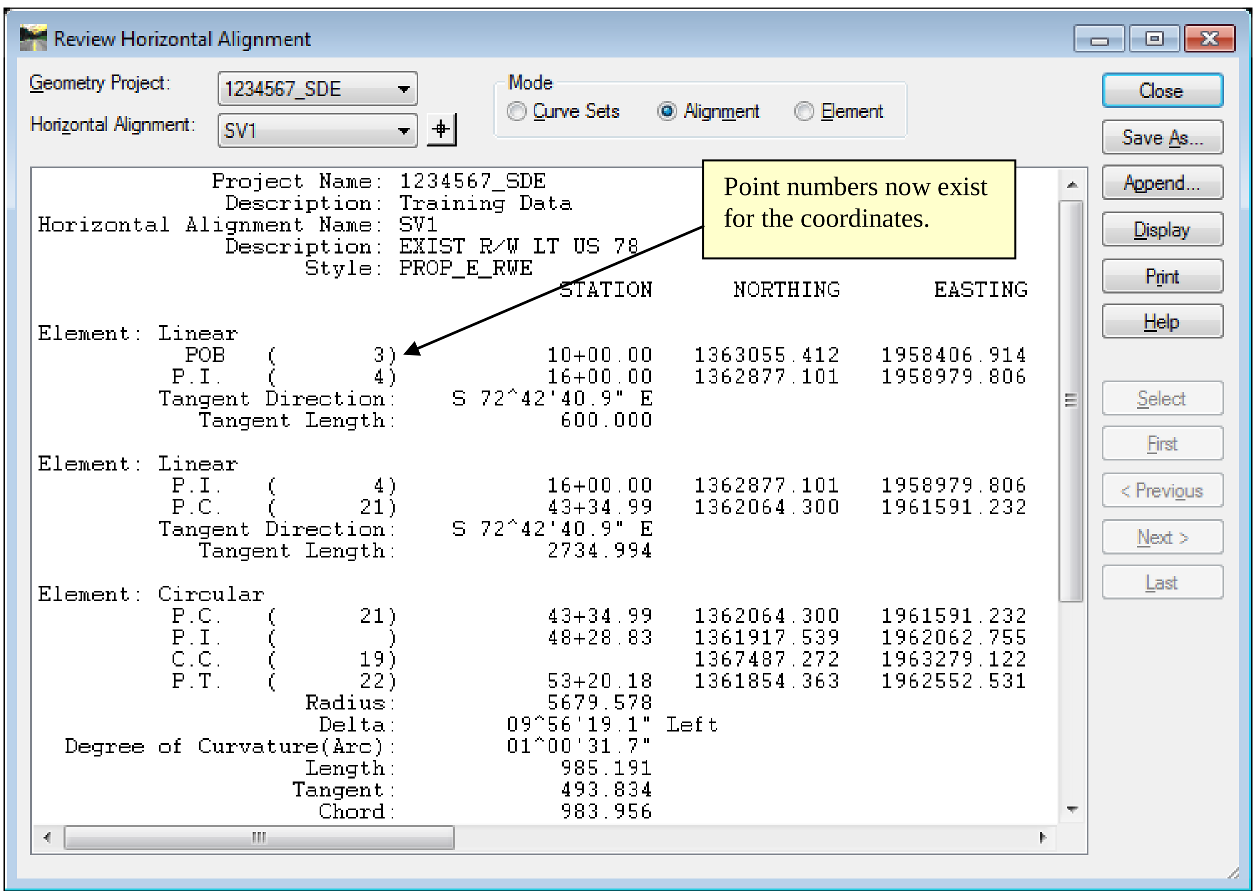


Figure L12-4 Review Horizontal Alignment window.

16. **Create COGO Points of all Alignment Points.**

* **IMPORTANT**: Although point names (Alignment Points) now exist in alignment **SV1** -- points don't actually exist as COGO Points in the COGO Buffer. In order to properly display the points in MicroStation and for the proper delivery of enhancements during the life of the project the points must be converted to COGO Points.

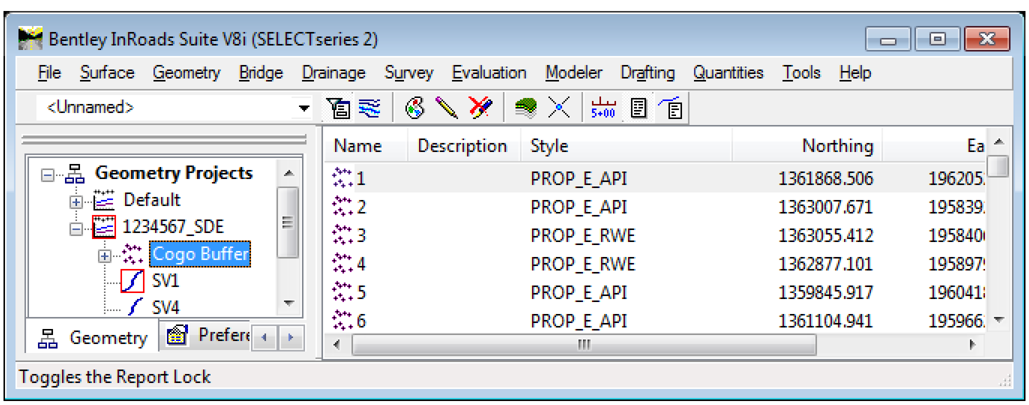
- Ensure **SV1** is the active alignment. A red square must be around **SV1**. If it <u>does not</u> have a Red Square - highlight alignment **SV1**, right mouse click over it and select **Set Active**.
- Select **Geometry ► Horizontal Curve Set ► Events**…
- In the **<u>Horizontal Events</u>** dialog box:
  - o Check the ***Alignment Point to Cogo*** radio button.
  - o Set the style to **PROP_E_RWE**
  - o Accept all other defaults.
- Click **Apply.** A results report opens showing all points that are converted to COGO points.
- Click **Close** to close the results box.
- Click **Close** to close the **<u>Horizontal Events</u>** Dialog**.**

*** NOTE:** Cogo Points are only assigned to Alignment Points for the active alignment only. The process must be repeated for each alignment.

Converts the Alignment points stored earlier to COGO points.

17. **Review the COGO Buffer for the newly created COGO Points.**

- In the *InRoads Explorer Interface* Workspace Bar -- Left Click on the Cogo Buffer (Highlighted in blue below).



- Use the scroll bar to look for all the points in the **SV1** alignment. Review Alignment **SV1** to help.
- Verify that the Feature Style has been applied. In this exercise **PROP_E_RWE** was used.

Review of Cogo Buffer.

18. **Save the InRoads Geometry File**

Even though the **SV1** Horizontal Alignment has been stored – the data has not yet been saved. InRoads retains the data in temporary memory but does not save the data on the fly. Whenever a change has been made to an InRoads Geometry Project – Save the project and its associated modifications or changes.

- Select **File ▶ Save ▶ Geometry Project** from the **InRoads Menu**.

Please Note: (The "Save As" dialog box may not appear because the Geometry Project has already been saved initially).

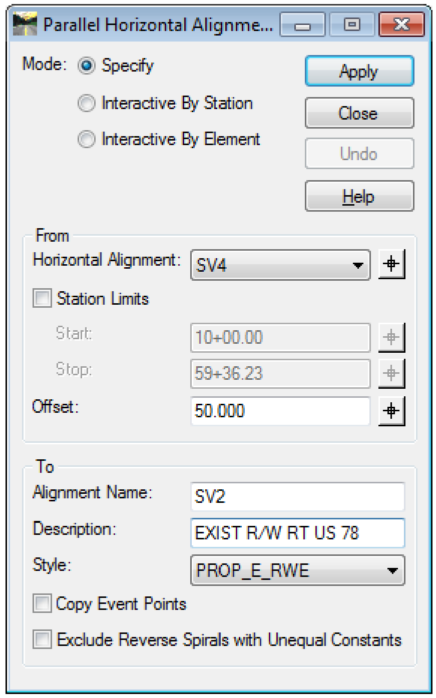
The Geometry Project (***1234567_SDE.alg***) will be saved to **Lab 12** in the following path:
C:\InRoads Data\1234567\SDE Labs\Lab12

Note that the **InRoads** and **MicroStation Status Bar** (Located at the bottom of both the InRoads and MicroStation Interface) will depict a message when the Geometry Project has been saved.

*The **1234567_SDE** Geometry Project has now been saved to the following path:*
C:\InRoads Data\1234567\SDE Labs\Lab12

19. Use the **Parallel Horizontal Alignment** command to store an alignment offset **50'** right of **SV4.**

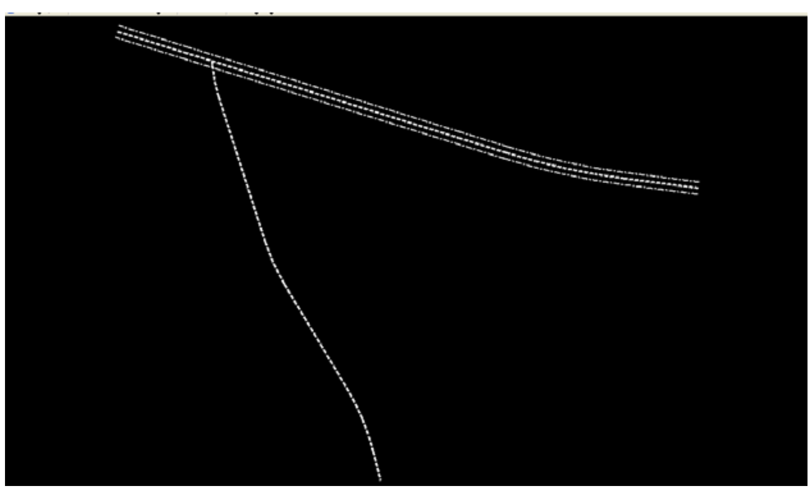
- Select **Geometry ▶ Utilities ▶ Parallel Horizontal Alignment…**
- For the **Mode –** select **Specify.**
- In the **From** frame use the **Locate button ( )** to select alignment **SV4**.
- In the **Offset** field key-in **50**.
  ***NOTE**: *A negative value in the Offset field stores an alignment to the left and a positive value store an alignment to the right.*
- In the **To** frame ensure the **Alignment Name** field is set to **SV2**. (**Please Note:** This field can be left blank and the next available alignment number will be stored. For this Lab -- input in **SV2** in order for the labs to be consistent).
- In the ***Description*** field key-in: **EXIST R/W RT US 78**. It is recommended that the SDE provide descriptions in this format in order to easily identify alignments in the ALG file for future viewing.
- In the ***Style*** pulldown select the **Style** to be **PROP_E_RWE**.
- Verify that your input matches the screen capture below.



Store a Parallel Horizontal Alignment to the Right.

20.

- Click **Apply** & **Close**. Alignment **SV2** is stored.
- Your view in MicroStation should match that shown below.



Stores an alignment 50' to the Right of SV4 and assigns it a feature style of PROP_E_RWE.

21. As mentioned previously - point numbers have not been associated with the newly created Alignment **SV2**. The next steps depict the process to assign names to the unnamed coordinates in Horizontal Alignment **SV2**.

- Click **Geometry ► Utilities ► Assign Names** and the **Assign Names** dialog box will appear.

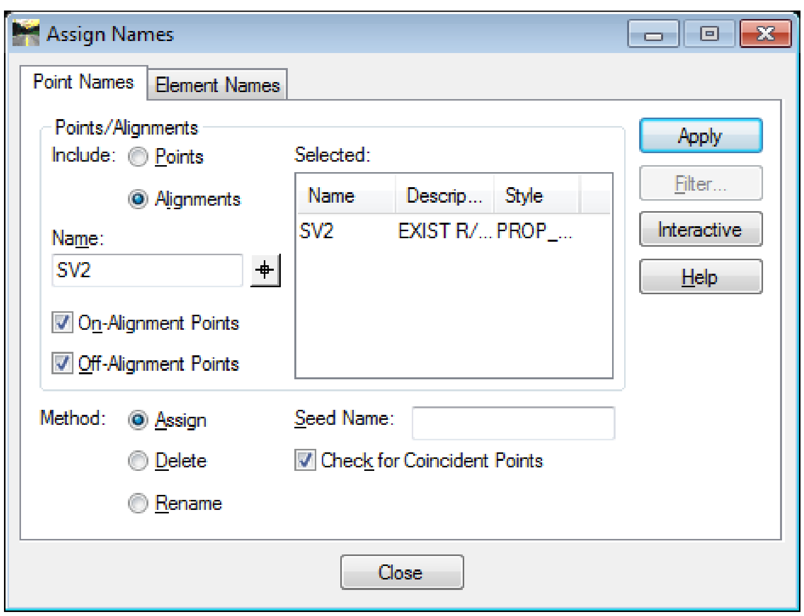
Ensure that the following information is depicted in the dialog box:

- In the **Include:** option - select ◉ ***Alignments***
- In the **Name:** field – type ***SV2***
- Place a Check Mark ☑ by ***On-Alignment Points***
- Place a Check Mark ☑ by ***Off-Alignment Points***
- In the **Method:** option – select ◉ ***Assign***
- Leave the **Seed Name:** field _________ (leave blank) Seed Name:
- Place a Check Mark ☑ by ***Check for Coincident Points***
- Leave all other entries as default.
- Then Left Click in the **Selected Field** (so that this field will be populated with the Alignment entry).

Opens the Assign Names dialog box.

22. The inputs should now correspond to the screen capture depicted below:

Verify to ensure that your input matches the screen capture.



- Click **Apply** & **Close**.

*Assigns names to points in Alignment **SV2** and closes the Assign Names dialog box.*

23. **Create COGO Points of all Alignment Points.**

* **IMPORTANT**: Although point names (Alignment Points) now exist in alignment **SV2** -- the points don't actually exist as COGO Points in the COGO Buffer. In order to properly display the points in MicroStation and for the proper delivery of enhancements during the life of the project the points must be converted to COGO Points and assigned the proper feature style.

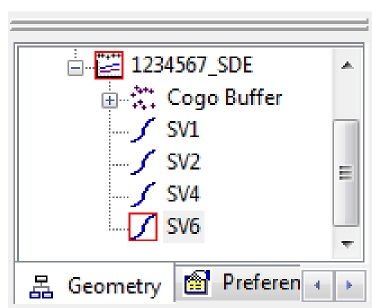
- Ensure **SV2** is the active alignment. A red square must be around **SV2**. If it <u>does not</u> have a Red Square - highlight alignment **SV2**, right mouse click over it and select **Set Active**.
- Select **Geometry ► Horizontal Curve Set ► Events**…
- In the **<u>Horizontal Events</u>** dialog box:
  - Check the ***Alignment Point to Cogo*** radio button.
  - Set the style to **PROP_E_RWE**
  - Accept all other defaults.
- Click **Apply.** A results report opens showing all points that are converted to COGO points.
- Click **Close** to close the results box.
- Click **Close** to close the **<u>Horizontal Events</u>** Dialog**.**

*** NOTE:** Cogo Points are only assigned to Alignment Points for the active alignment only. The process must be repeated for each alignment.

Opens the <u>Horizontal Events</u> dialog. Converts the Alignment points stored earlier to COGO points and Assigns the Feature Style PROP_E_RWE

24. **Set Alignment SV6 to be the Active Alignment.**

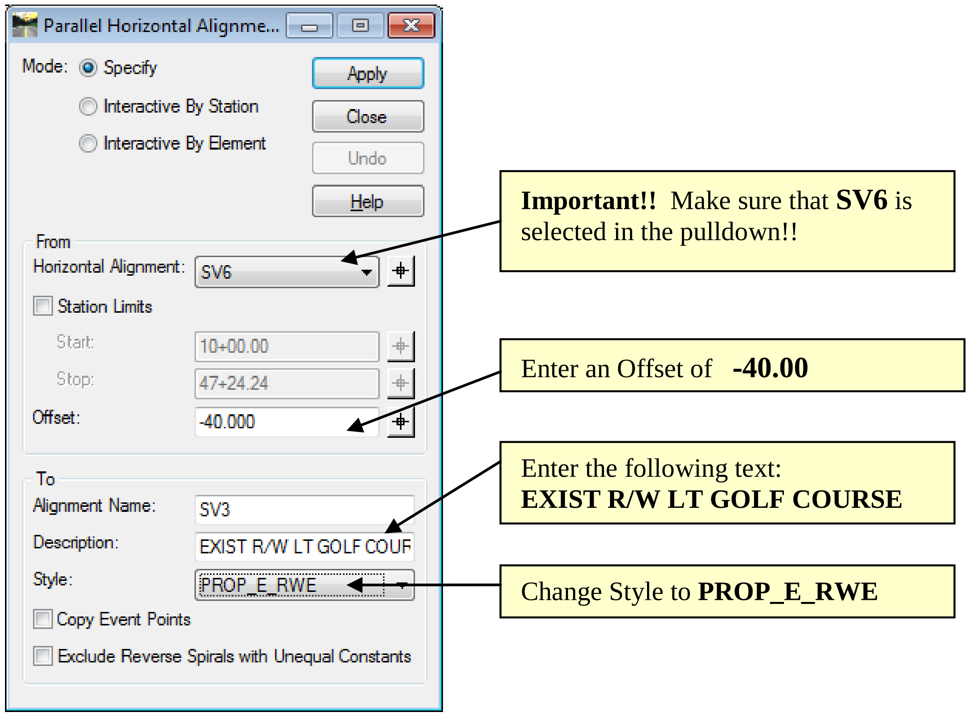
- In the **InRoads Workspace Bar** (shown on the right) expand the project by double-clicking on ***1234567_SDE*** as shown.
- Ensure that **SV6** has a Red Box around it. This indicates that alignment **SV6** is the active alignment.
- If it <u>does not</u> have a Red Box - highlight alignment **SV6**, right mouse click over it and select **Set Active**.



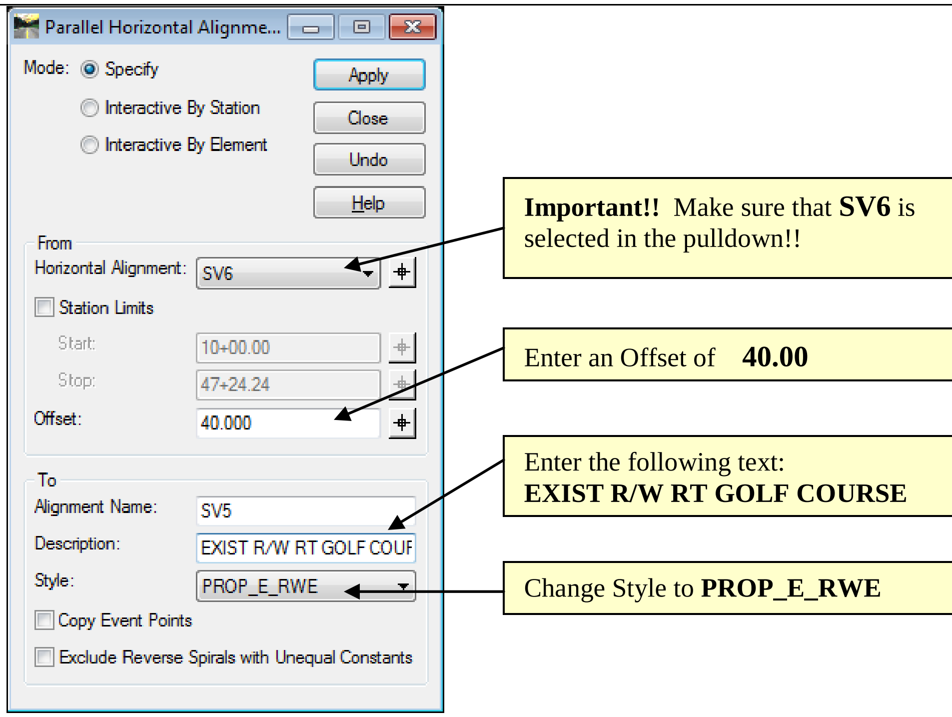
Sets Alignment SV6 as the Active Alignment.

25. **Store** an Alignment **40'** left and an Alignment **40'** right of Alignment **SV6** with the features style **PROP_E_RWE**.

- Select **Geometry ► Utilities ► Parallel Horizontal Alignment**…
- Verify and match the following settings:



- Click **Apply** only!!
- Change the settings in the **Parallel Horizontal Alignment** dialog box to match the settings below:



26.

- Click **Apply** & **Close**. Alignment **SV3** and **SV5** are stored.

Existing R/W alignments SV3 and SV5 are stored and given the feature code PROP_E_RWE.

27.

As mentioned previously - point numbers have not been associated with the newly created Alignment **SV3**. The next steps depict the process to assign names to the unnamed coordinates in Horizontal Alignment **SV3**.

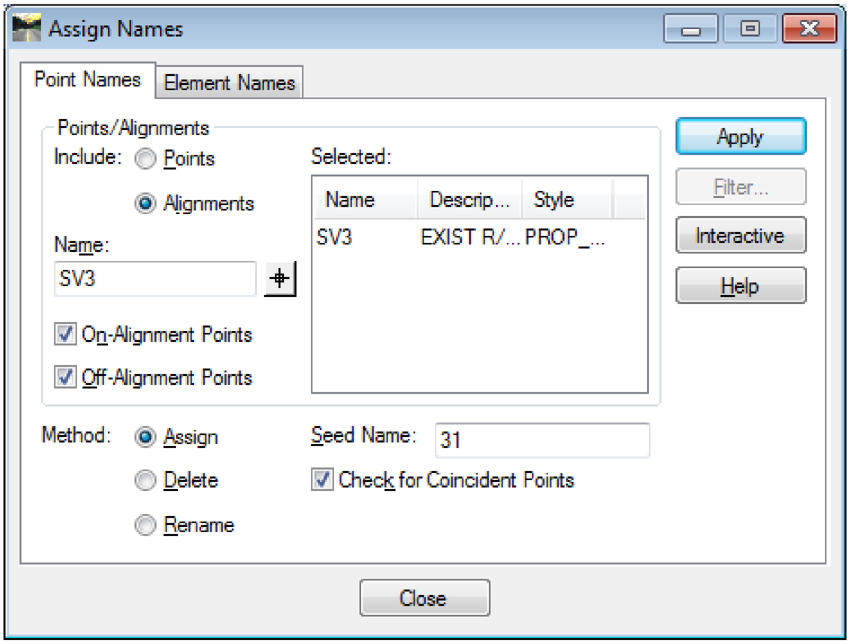
- Click **Geometry ► Utilities ► Assign Names** and the **<u>Assign Names</u>** dialog box will appear.

Ensure that the following information is depicted in the dialog box:

- In the **Include:** option - select ***Alignments***
- In the **Name:** field – type ***SV3***
- Place a Check Mark by ***On-Alignment Points***
- Place a Check Mark by ***Off-Alignment Points***
- In the **Method:** option – select ***Assign***
- Leave the **Seed Name:** field ________ (leave blank) Seed Name:
- Place a Check Mark by ***Check for Coincident Points***
- Leave all other entries as default.
- Then Left Click in the **Selected Field** (so that this field will be populated with the Alignment entry).

Opens the <u>Assign Names</u> dialog box.

28. The inputs should now correspond to the screen capture depicted below: Verify to ensure that your input matches the screen capture.



- Click **Apply** & **Close**.

*Assigns names to points in Alignment **SV3** and closes the Assign Names dialog box.*

29. **Create COGO Points of all Alignment Points.**

* **IMPORTANT**: Although point names (Alignment Points) now exist in alignment **SV3** -- the points don't actually exist as COGO Points in the COGO Buffer. Following are the steps to convert the points to COGO Points and assign the proper feature style.

- Ensure **SV3** is the active alignment. A red square must be around **SV3**. If it does not have a Red Square - highlight alignment **SV3**, right mouse click over it and select **Set Active**.
- Select **Geometry ► Horizontal Curve Set ► Events**…
- In the **Horizontal Events** dialog box:
  - Check the ***Alignment Point to Cogo*** radio button.
  - Set the style to **PROP_E_RWE**
  - Accept all other defaults.
- Click **Apply.** A results report opens showing all points that are converted to COGO points.
- Click **Close** to close the results box.
- Click **Close** to close the **Horizontal Events** Dialog**.**

*** NOTE:** Cogo Points are only assigned to Alignment Points for the active alignment only. The process must be repeated for each alignment.

30. As mentioned previously - point numbers have not been associated with the newly created Alignment **SV5**. The next steps depict the process to assign names to the unnamed coordinates in Horizontal Alignment **SV5**.

- Click **Geometry ► Utilities ► Assign Names** and the **Assign Names** dialog box will appear.

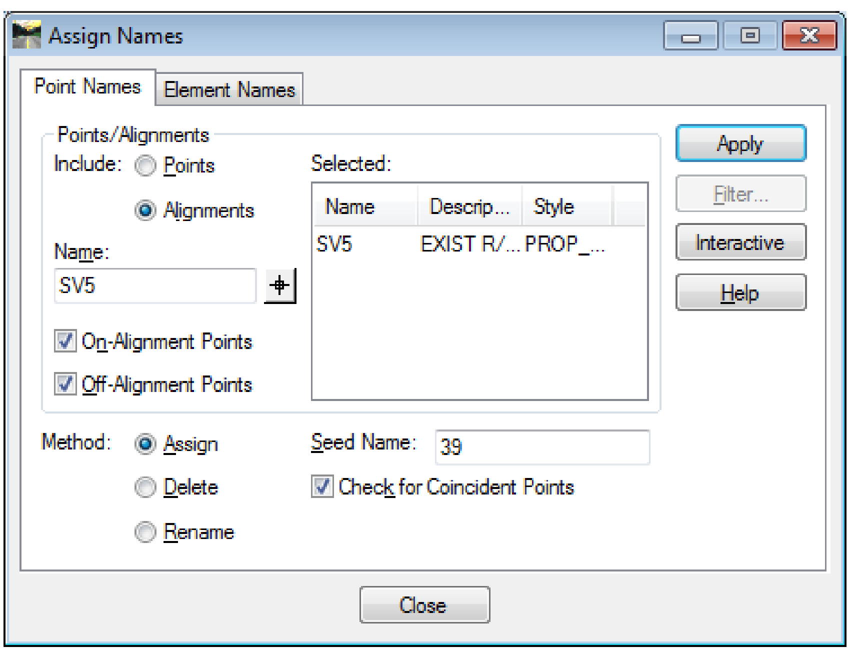
Ensure that the following information is depicted in the dialog box:

- In the **Include:** option - select ***Alignments***
- In the **Name:** field – type ***SV5***
- Place a Check Mark by ***On-Alignment Points***
- Place a Check Mark by ***Off-Alignment Points***
- In the **Method:** option – select ***Assign***
- Leave the **Seed Name:** field ________ (leave blank) 

- Place a Check Mark by ***Check for Coincident Points***
- Leave all other entries as default.
- Then Left Click in the **Selected Field** (so that this field will be populated with the Alignment entry).

Opens the Assign Names dialog box.

31. The inputs should now correspond to the screen capture depicted below:
Verify to ensure that your input matches the screen capture.



- Click **Apply** & **Close**.

*Assigns names to points in Alignment **SV5** and closes the Assign Names dialog box.*

<table>
<tr><td>32.</td><td>
Create COGO Points of all Alignment Points.

* IMPORTANT: Although point names (Alignment Points) now exist in alignment SV5 -- the points don’t actually exist as COGO Points in the COGO Buffer. Following are the steps to convert the points to COGO Points and assign the proper feature style.

Ensure SV5 is the active alignment. A <u>red square</u> <u>must be</u> around SV5. If it <u>does not</u> have a Red Square - highlight alignment SV5, right mouse click over it and select Set Active.
Select Geometry ► Horizontal Curve Set ► Events…
In the <u>Horizontal Events</u> dialog box:

Check the Alignment Point to Cogo radio button.
Set the style to PROP_E_RWE
Accept all other defaults.

Click Apply. A results report opens showing all points that are converted to COGO points.
Click Close to close the results box.
Click Close to close the <u>Horizontal Events</u> Dialog.

* NOTE: Cogo Points are only assigned to Alignment Points for the <u>active alignment</u> only. The process must be repeated for each alignment.

Opens the <u>Horizontal Events</u> dialog. Converts the Alignment points stored earlier to COGO points and Assigns the Feature Style PROP_E_RWE
</td></tr>
<tr><td>33.</td><td>
Save the InRoads Geometry File

Even though the Horizontal Alignments have been stored – the data has not yet been saved. InRoads retains the data in <u>temporary</u> memory but does not <u>save</u> the data on the fly. Whenever a change has been made to an InRoads Geometry Project – <u>Save</u> the project and its associated modifications or changes.

Select File►Save► Geometry Project from the InRoads Menu.

<u>Please Note:</u> (The “Save As” dialog box may not appear because the Geometry Project has already been saved initially).

The Geometry Project (1234567_SDE.alg) will be saved to Lab 12 in the following path:
C:\InRoads Data\1234567\SDE Labs\Lab12

Note that the <u>InRoads</u> and <u>MicroStation Status Bar</u> (Located at the bottom of both the InRoads and MicroStation Interface) will depict a message when the Geometry Project has been saved.

The 1234567_SDE Geometry Project has now been saved to the following path:
C:\InRoads Data\1234567\SDE Labs\Lab12
</td></tr>
</table>

34.	In MicroStation, **window area** the intersection of **SV4** and **SV6.** • In MicroStation, Window area as shown in *Figure L12-5*. • In MicroStation, Your view should look like that shown in *Figure L12-6* (but without the yellow highlighted area and the listed alignment names. These have been added for user reference only). *Zooms into the intersection of SV4 and SV6.*

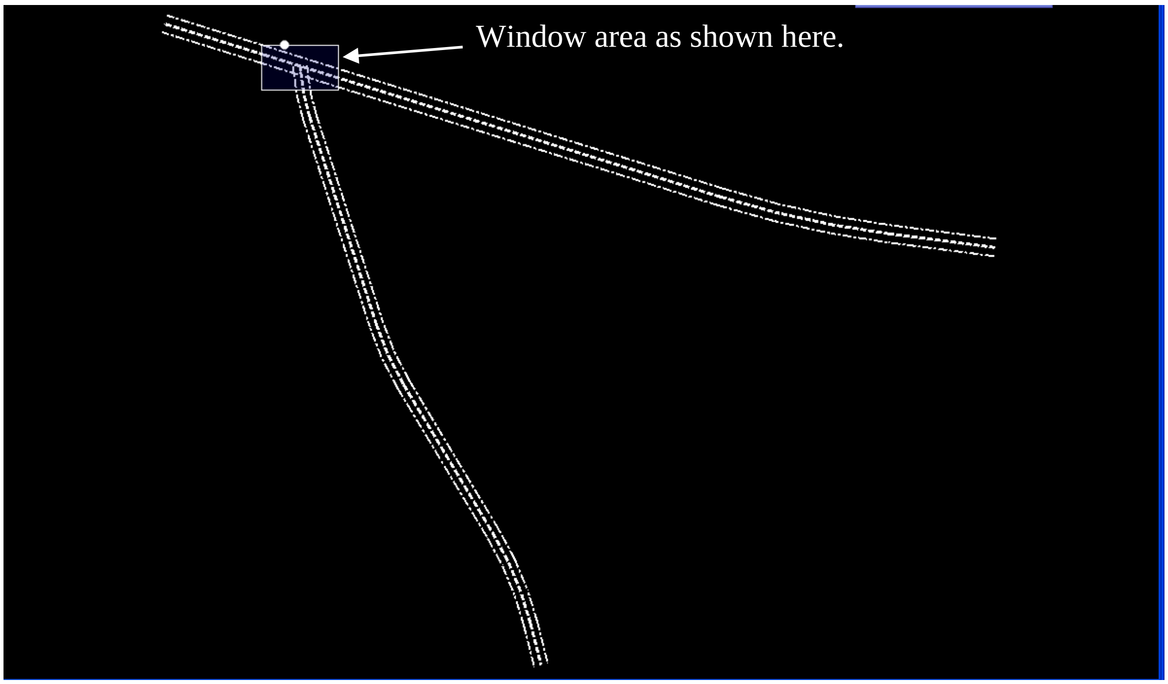


Figure L12-5 MicroStation View

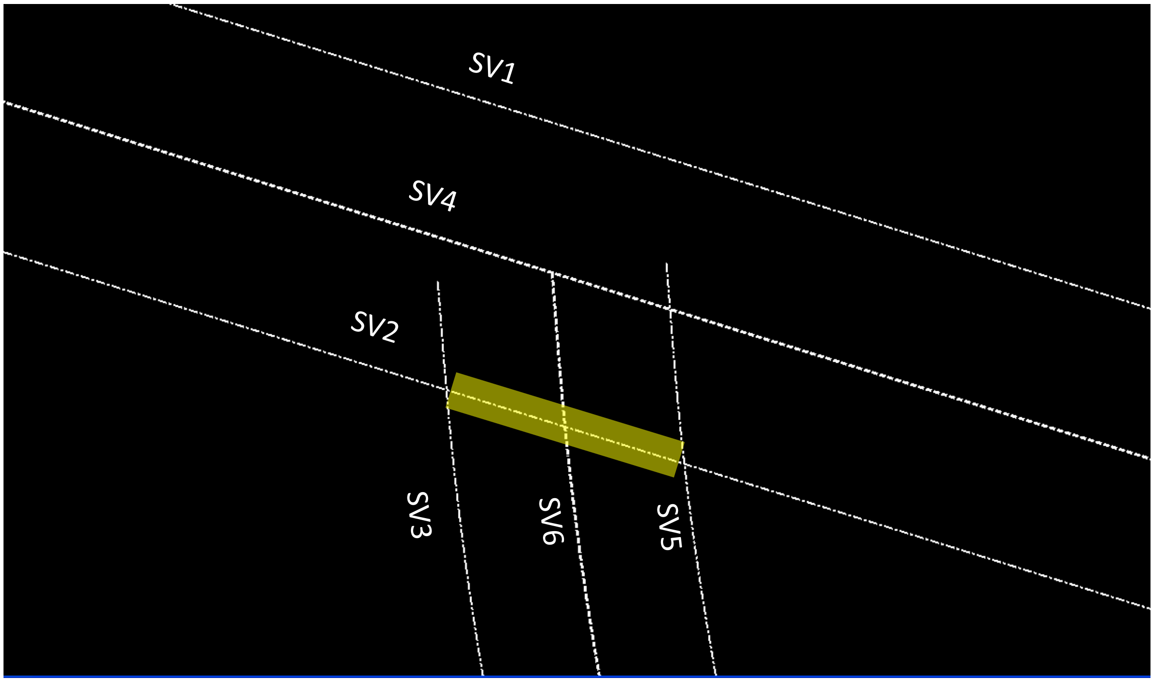


Figure L12-6 MicroStation View

35.	The **<u>Partial Delete Alignment</u>** command will be used to partially delete alignment **SV2** between **SV5** and **SV3** as shown highlighted in yellow in *Figure L12-6*. Before using this command however it is necessary to properly set the locks in InRoads. The following steps guide you through the use of the **Partial Delete Command**. • In InRoads, Select **Tools ► Locks** • Ensure **Point Snap** and **Element Snap** are **unchecked**. This places InRoads in a state to recognize the MicroStation snaps.
36.	Use the Geometry Utility **<u>Partial Delete Alignment</u>** to partially delete alignment **SV2** between **SV3** and **SV5** as shown highlighted in yellow in *Figure L12-6*. • Select **Geometry ► Utilities ►Partial Delete Alignment…** • **Notice** in the lower left corner of the MicroStation window you are prompted to '> ***Identify alignment*** ' > Identify alignment . • **Left Click** once anywhere on **SV2**. You'll notice a dynamic line attached to **SV2** that moves with your cursor as shown in *Figure L12-7*. • Continue to **Step 37**.

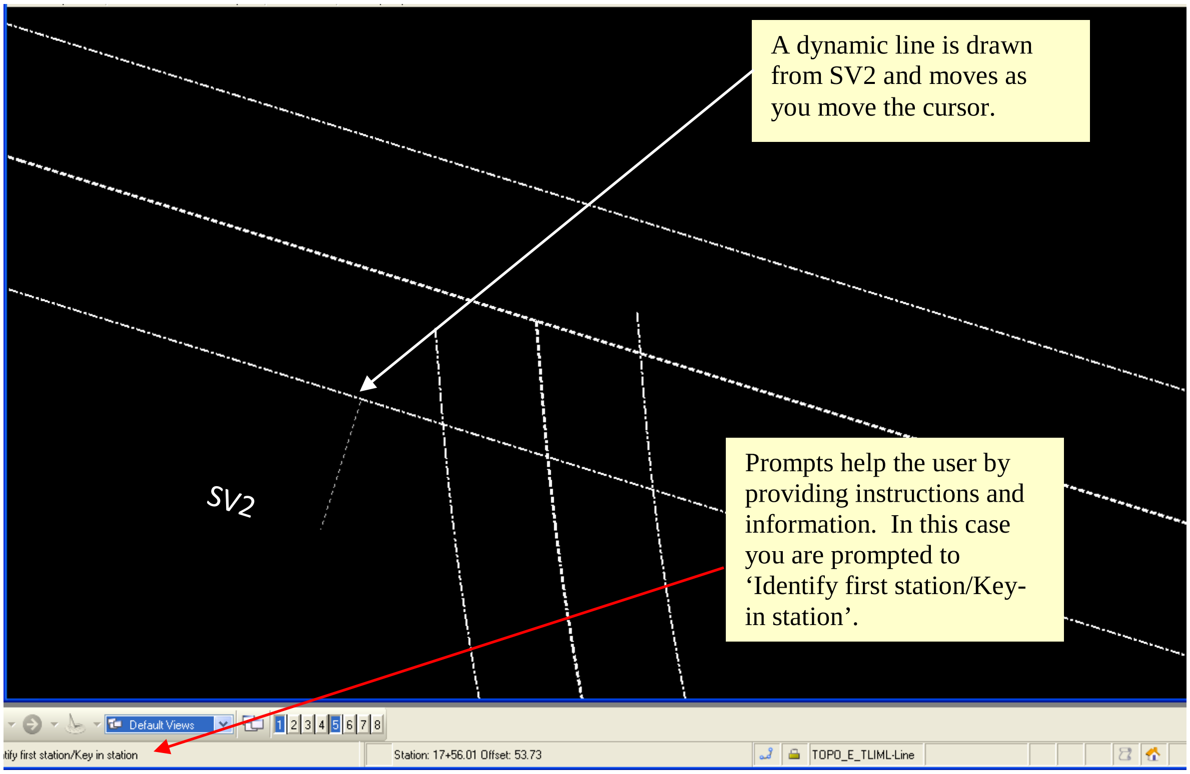
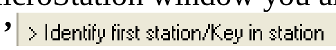
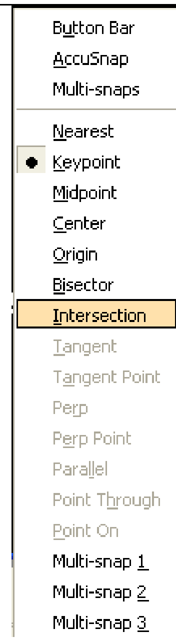


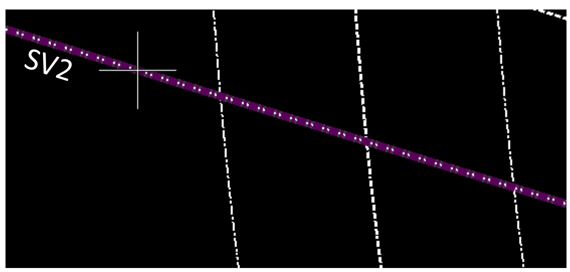
Figure L12-7 MicroStation Window

37.	Identify the first partial delete location. • **Notice**, in the lower left corner of the MicroStation window you are prompted to '> ***Identify first station/Key in station*** '  . See *Figure L12-7*. • With the dynamic line from the previous step still active, use the MicroStation Intersection snap procedure described here to snap to the intersection identified as '***First Intersection Station'*** in *Figure L12-8*. **<u>MicroStation Intersection Snap Procedure</u>** 1. At the bottom of the MicroStation window left click on the **Active Snap Mode** button.  Active Snap Mode button. 2. Select **Intersection** from the popup menu shown below.

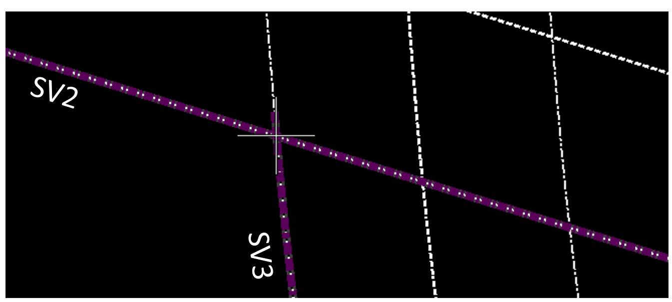


NOTE: The intersection snap procedure requires two consecutive tentative snaps. One on the first alignment forming the intersection and one on the second alignment forming the intersection.

3. Tentative snap anywhere on **SV2** near the location identified as '**A**' in *Figure L12-8*. Alignment **SV2** will turn purple as shown here.



4. Tentative snap anywhere on **SV3** near the location identified as '**B**' in *Figure L12-8*. Alignment **SV2** will remain purple, alignment **SV3** will turn purple and the intersection point will be tentatively identified as shown here.



5. **Left Click** to accept the intersection location. The dynamic line returns. Continue to **Step 38**.

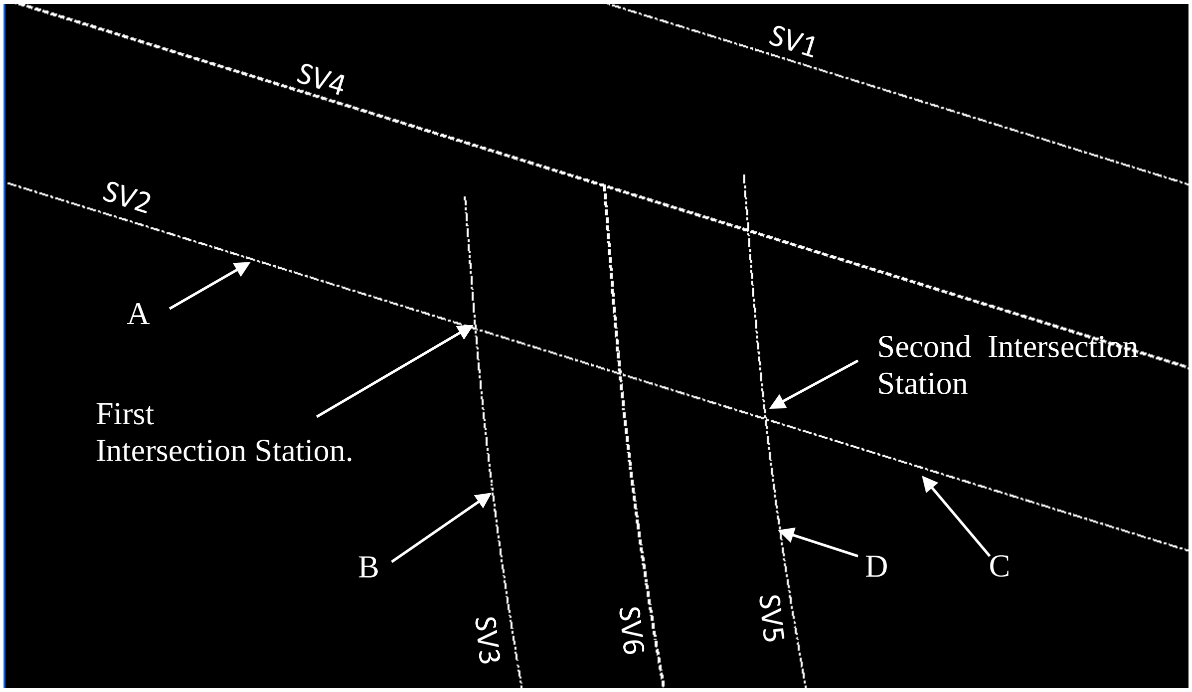


Figure L12-8 MicroStation View

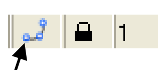
38. Identify the second partial delete location.

- **Notice**, in the lower left corner of the MicroStation window you are prompted to '> ***Identify second station/Key in station'*** 

.
- With the dynamic line from the previous step still active, use the MicroStation Intersection snap procedure to snap to the intersection identified as '***Second Intersection Station***' in *Figure L12-8.*

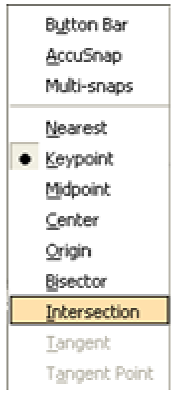
<u>MicroStation Intersection Snap Procedure</u>

1. At the bottom of the MicroStation window left click on the **Active Snap Mode** button.



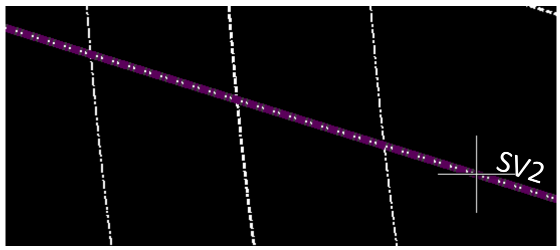
Active Snap Mode button.

2. Select **Intersection** from the popup menu shown here.

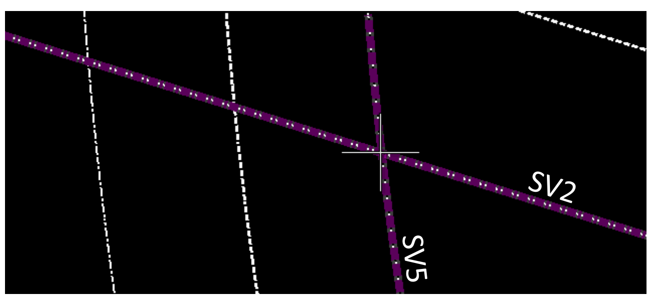


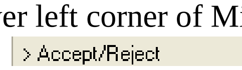
NOTE: The intersection snap procedure requires two consecutive tentative snaps. One on the first alignment forming the intersection and one on the second alignment forming the intersection.

3. Tentative snap anywhere on **SV2** near the location identified as '**C**' in *Figure L12-8*. Alignment **SV2** will turn purple as shown here.



4. Tentative snap anywhere on **SV5** near the location identified as '**D**' in *Figure L12-8*. Alignment **SV2** will remain purple, alignment **SV5** will turn purple and the intersection point will be tentatively identified as shown here.
5. Left click to accept the intersection location.



6. **Notice** in the lower left corner of MicroStation you are prompted to '**Accept/Reject'**  the operation.

7. Left click again to Accept or Right click to reject and try again. Alignment **SV2** is partially deleted between alignment **SV3** and **SV5** as shown in *Figure L12-9.*
8. Right mouse click to exit the partial delete alignment command.

Alignment SV2 is partially deleted between alignments SV3 and SV5.

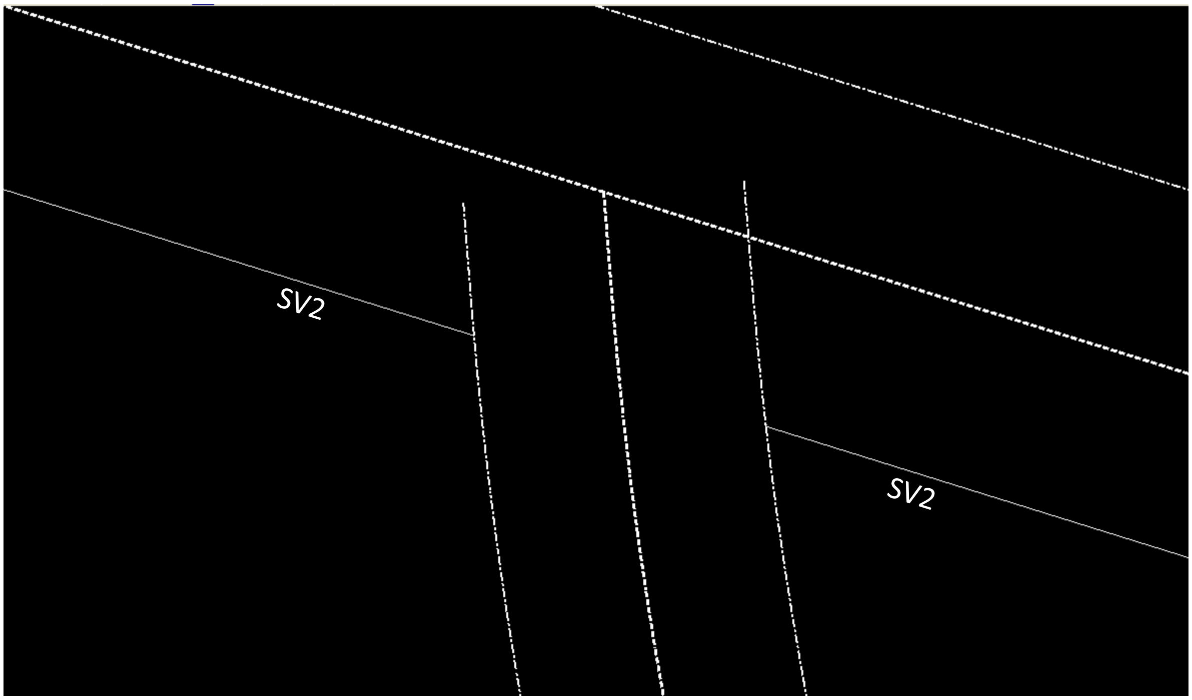
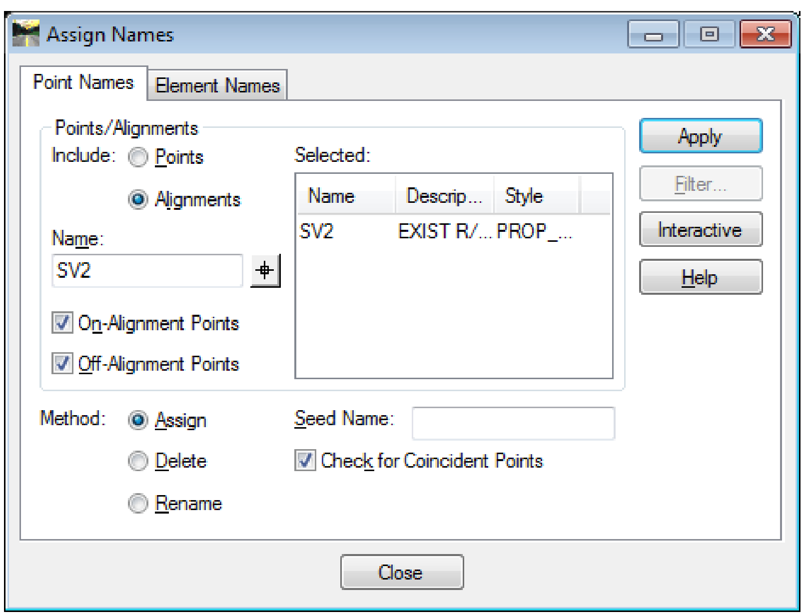


Figure L12-9 MicroStation View.

39.	Once Alignment **SV2** is partially deleted as shown in *Figure L12*-9, unnamed coordinates are created at the breakage points. Alignment Points must now be created at these locations and converted to Cogo Points. • Ensure **SV2** is the active alignment. A <u>red square</u> <u>must be</u> around **SV2**. If it <u>does not</u> have a Red Square - highlight alignment **SV2**, right mouse click over it and select **Set Active**. *Sets SV2 as the Active Alignment.*

40.	As mentioned previously - point numbers have not been associated with the breakage points for Alignment **SV2**. The next steps depict the process to assign names to the unnamed coordinates in Horizontal Alignment **SV2**. • Click **Geometry ► Utilities ► Assign Names** and the **<u>Assign Names</u>** dialog box will appear. Ensure that the following information is depicted in the dialog box: • In the **Include:** option - select ***Alignments*** • In the **Name:** field – type ***SV2*** • Place a Check Mark by ***On-Alignment Points*** • Place a Check Mark by ***Off-Alignment Points*** • In the **Method:** option – select ***Assign*** • Leave the **Seed Name:** field ________ (leave blank) Seed Name: • Place a Check Mark by ***Check for Coincident Points*** • Leave all other entries as default. • Then Left Click in the **Selected Field** (so that this field will be populated with the Alignment entry). *Opens the <u>Assign Names</u> dialog box.*
41.	The inputs should now correspond to the screen capture depicted below: Verify to ensure that your input matches the screen capture.  • Click **Apply** & **Close**. *Assigns names to points in Alignment **SV2** and closes the <u>Assign Names</u> dialog box.*

42.	**Create COGO Points of all Alignment Points.** * **IMPORTANT**: Although point names (Alignment Points) now exist in alignment **SV2 --** the points don't actually exist as COGO Points in the COGO Buffer. Following are the steps to convert the points to COGO Points and assign the proper feature style. • Ensure **SV2** is the active alignment. A red square must be around **SV2**. If it does not have a Red Square - highlight alignment **SV2**, right mouse click over it and select **Set Active**. • Select **Geometry ► Horizontal Curve Set ► Events**… • In the **Horizontal Events** dialog box: o Check the ***Alignment Point to Cogo*** radio button. o Set the style to **PROP_E_RWE** o Accept all other defaults. • Click **Apply.** A results report opens showing all points that are converted to COGO points. • Click **Close** to close the results box. • Click **Close** to close the **Horizontal Events** Dialog**.** *** NOTE:** Cogo Points are only assigned to Alignment Points for the active alignment only. The process must be repeated for each alignment. *Opens the Horizontal Events dialog. Converts the Alignment points.*
43.	**View all Cogo Points** • In InRoads, Select **Geometry ► View Geometry ► Horizontal Annotation** • In the **View Horizontal Annotation** dialog box, place your cursor in the **Cogo Points** entry field to activate the **Filter** button. • Click the **Filter** button and a **Geometry Selection Filter** dialog box will appear. • Click the **All** Button to move all points from the ***Available*** field to the ***Selected*** field. • Click **OK** in the **Geometry Selection Filter** dialog and populate the **View Horizontal Annotation** dialog with the points. • Click **Apply** and **Close** in the **View Horizontal Annotation** dialog. • Verify your view is similar to that shown in *Figure L12-10*.

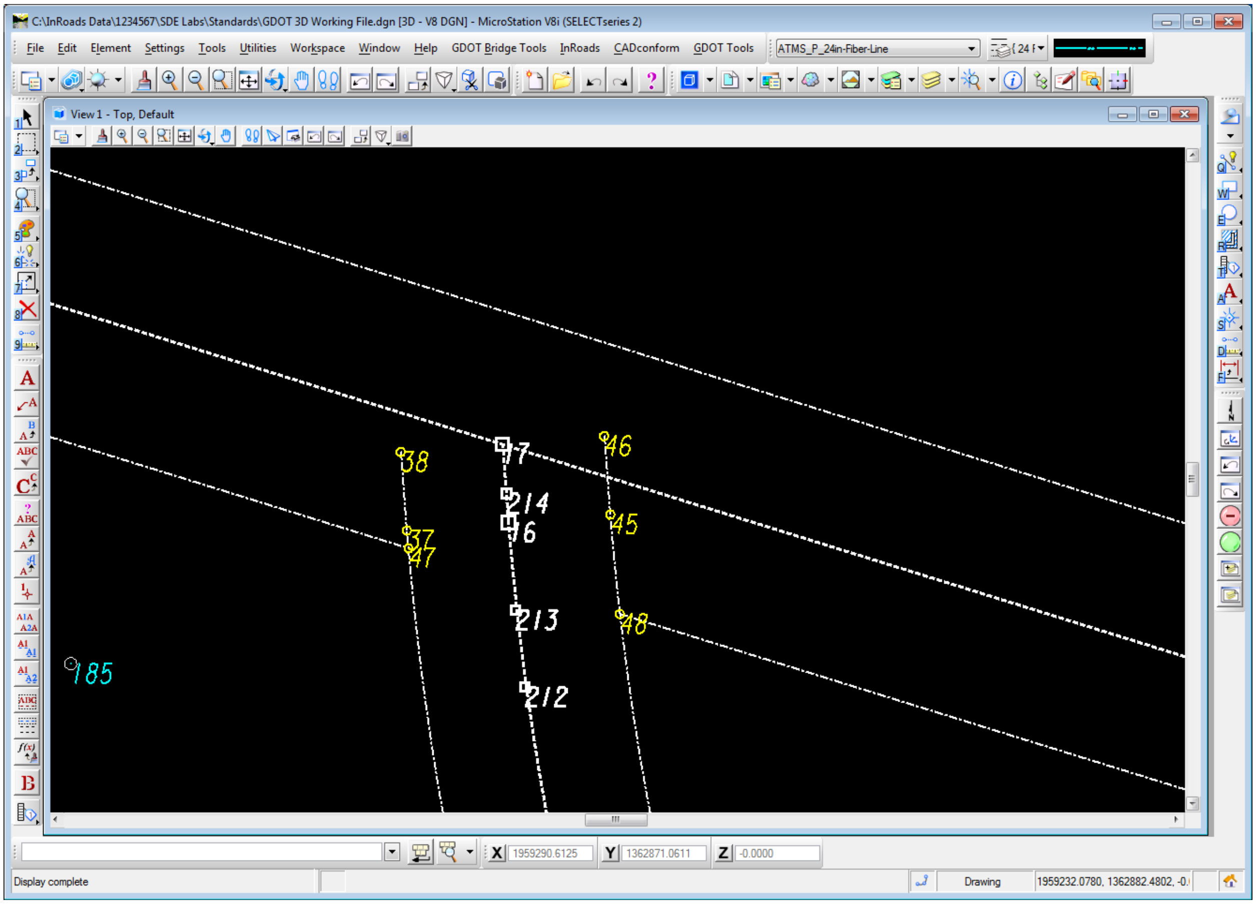


Figure L12-10 MicroStation Window

44. Trim Alignment **SV3** at **SV2**. Refer to *Figure L12-11*.

- Select **Geometry ► Utilities ► Trim Alignment**.
- In the lower left corner of the MicroStation Window you are prompted to > ***Identify first clipping alignment***. 

- Click anywhere on Alignment **SV2**. It will turn purple.
- In the lower left corner of the MicroStation Window you are prompted to > ***Identify second clipping alignment***. 

- Click anywhere on Alignment **SV3**. It will turn purple.
- In the lower left corner of the MicroStation Window you are prompted to > ***Identify portion to clip***. 

- Click on the portion of **SV3** that you want to clip. See *Figure L12-11*.
- In the lower left corner of the MicroStation Window you are prompted to > ***Accept or reject***. 

- Left click somewhere in the MicroStation screen to accept the Trim.
- Repeat the above steps to Trim Alignment **SV5** as shown in *Figure L12-11*.
- Right mouse click when finished to deactivate the **Trim Alignment** command.
- Verify that your view looks like that shown in *Figure L12-12*.
- Right mouse click to exit the **Trim Alignment** command.

Alignment SV3 and SV5 are trimmed.

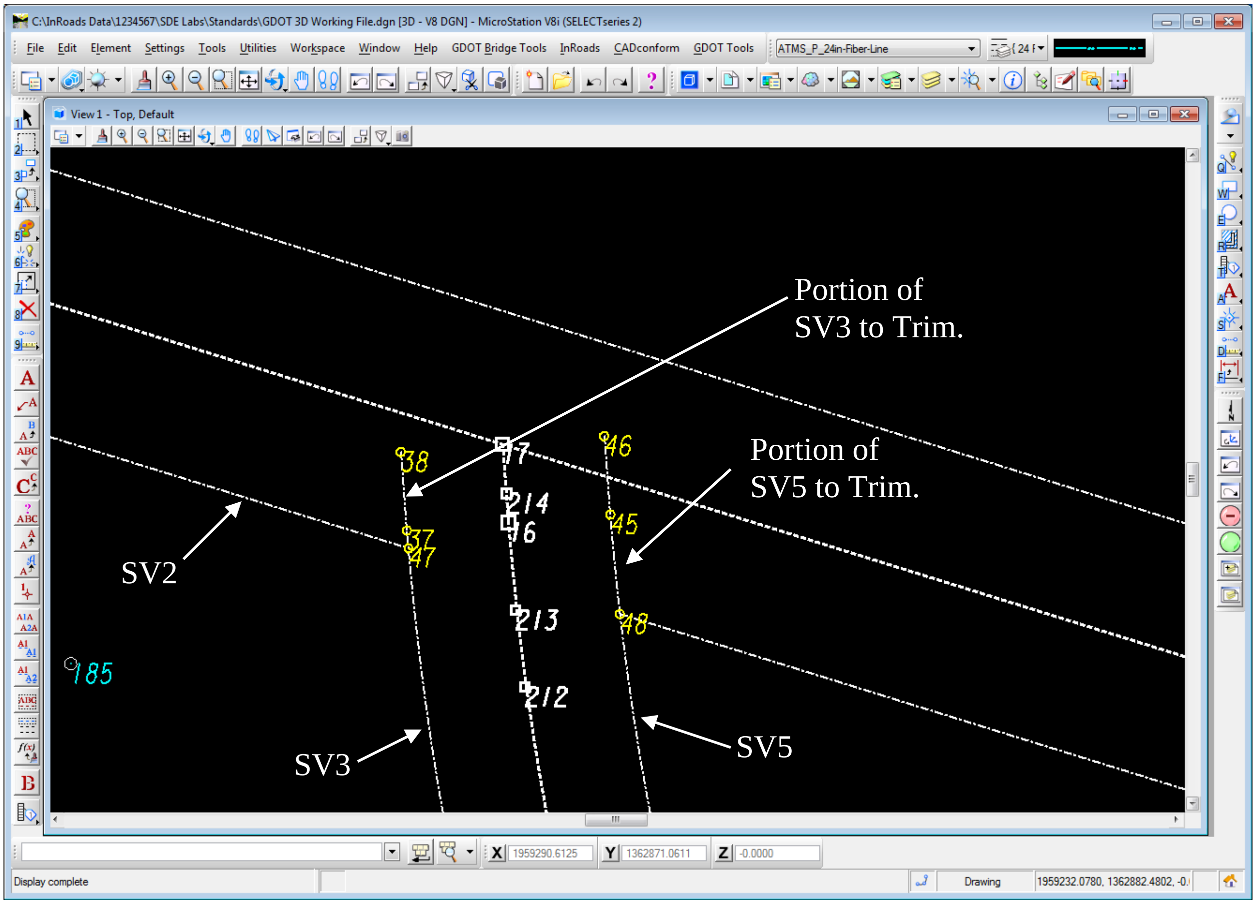


Figure L12-11 MicroStation View.

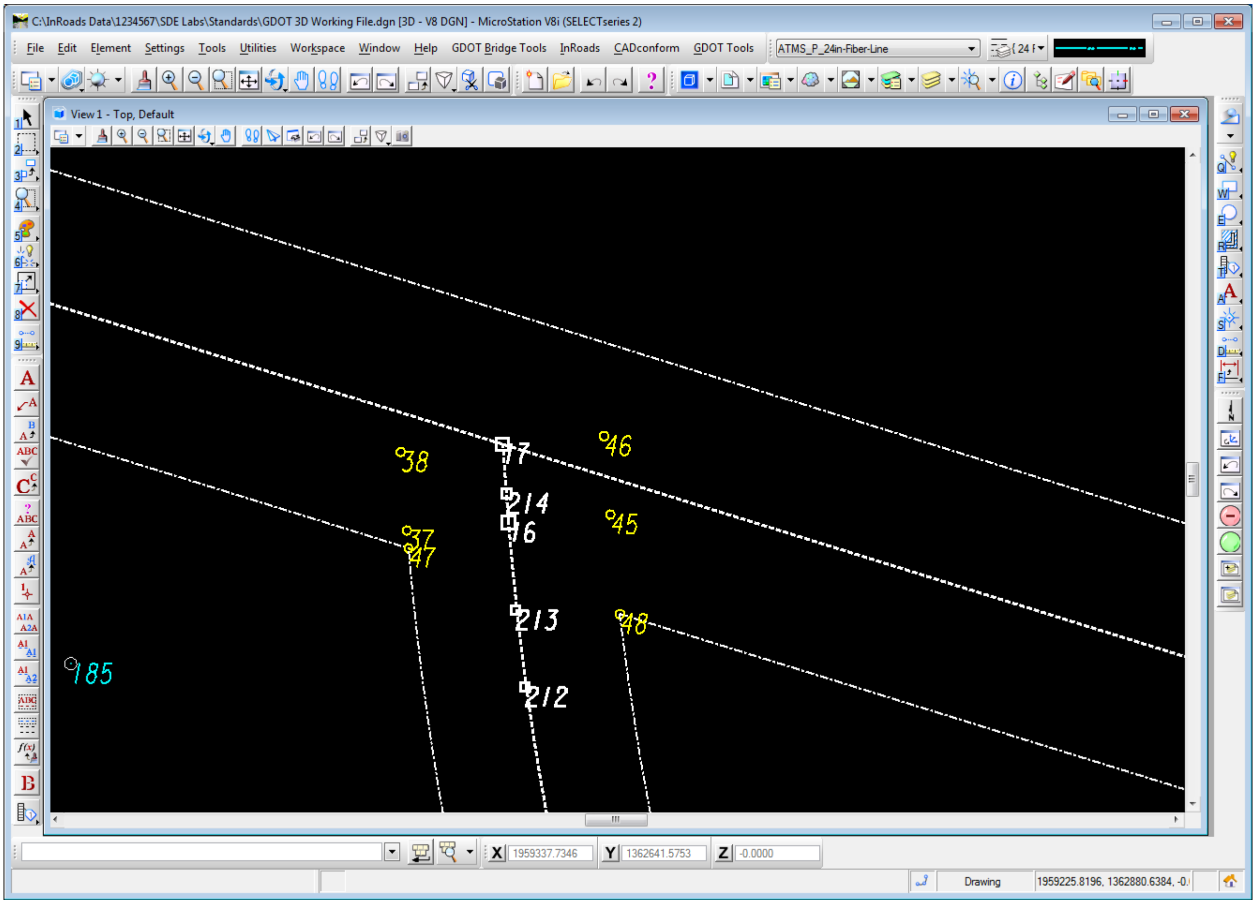


Figure L12-12 MicroStation View.

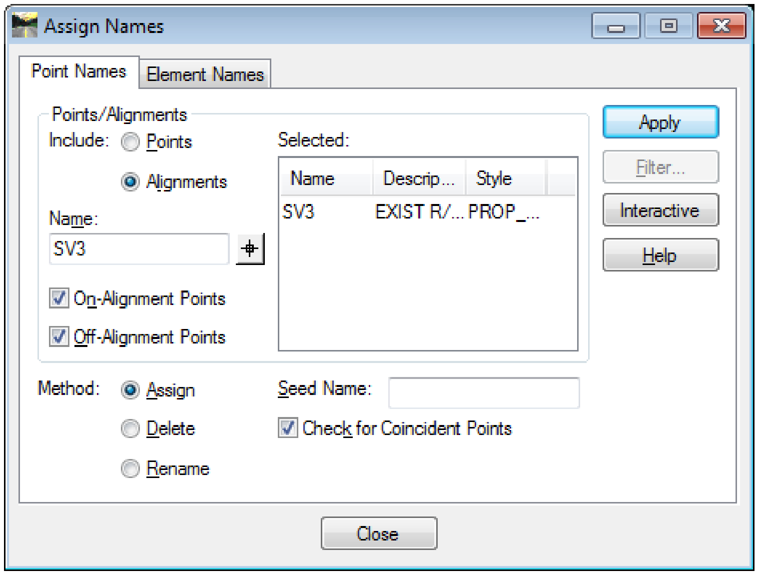
45. **When alignments SV3 and SV5 were trimmed new coordinates were added to each alignment at the trim location. These coordinates must now have names assigned to them and will need to be converted to Cogo Points.**

- Click **Geometry ► Utilities ► Assign Names** and the **Assign Names** dialog box will appear.

Ensure that the following information is depicted in the dialog box:

- In the **Include:** option - select ***Alignments***
- In the **Name:** field – type ***SV3***
- Place a Check Mark by ***On-Alignment Points***
- Place a Check Mark by ***Off-Alignment Points***
- In the **Method:** option – select ***Assign***
- Leave the **Seed Name:** field ________ (leave blank) 

- Place a Check Mark by ***Check for Coincident Points***
- Leave all other entries as default.
- Then Left Click in the **Selected Field** (so that this field will be populated with the Alignment entry).

46.	The inputs should now correspond to the screen capture depicted below: Verify to ensure that your input matches the screen capture.  • Click **Apply** & **Close**.
47.	**Create COGO Points of all Alignment Points.** * **IMPORTANT**: Although point names (Alignment Points) now exist in alignment **SV3** -- the points don't actually exist as COGO Points in the COGO Buffer. Following are the steps to convert the points to COGO Points and assign the proper feature style. • Ensure **SV3** is the active alignment. A $\boxed{\text{red square}}$ must be around **SV3**. If it does not have a Red Square - highlight alignment **SV3**, right mouse click over it and select **Set Active**. • Select **Geometry ► Horizontal Curve Set ► Events**… • In the **Horizontal Events** dialog box: o Check the ***Alignment Point to Cogo*** radio button. o Set the style to **PROP_E_RWE** o Accept all other defaults. • Click **Apply.** A results report opens showing all points that are converted to COGO points. • Click **Close** to close the results box. • Click **Close** to close the **Horizontal Events** Dialog. * **NOTE:** Cogo Points are only assigned to Alignment Points for the active alignment only. The process must be repeated for each alignment. *Opens the Horizontal Events dialog. Converts the Alignment points stored earlier to COGO points and Assigns the Feature Style PROP_E_RWE*

48. As mentioned previously - point numbers have not been associated with the newly created Alignment **SV5**. The next steps depict the process to assign names to the unnamed coordinates in Horizontal Alignment **SV5**.

- Click **Geometry ► Utilities ► Assign Names** and the **<u>Assign Names</u>** dialog box will appear.

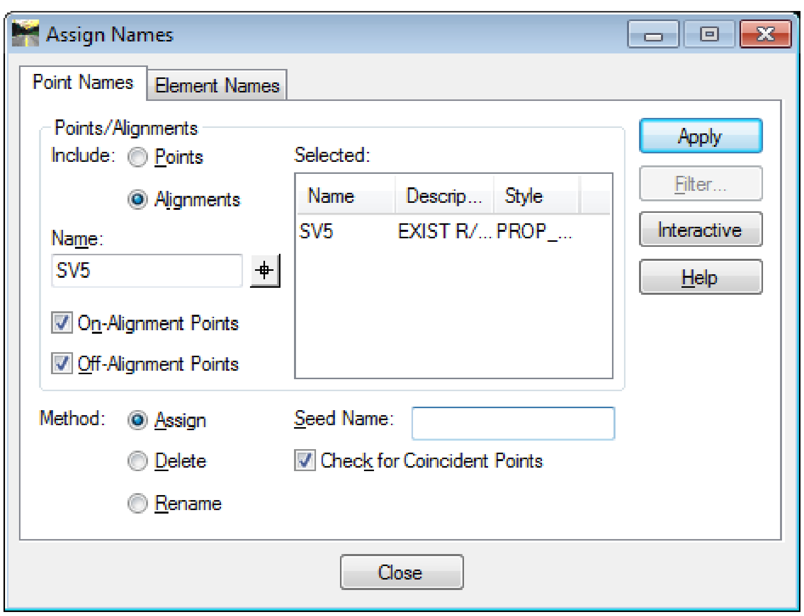
Ensure that the following information is depicted in the dialog box:

- In the **Include:** option - select ***Alignments***
- In the **Name:** field – type ***SV5***
- Place a Check Mark by ***On-Alignment Points***
- Place a Check Mark by ***Off-Alignment Points***
- In the **Method:** option – select ***Assign***
- Leave the **Seed Name:** field ________ (leave blank) 

- Place a Check Mark by ***Check for Coincident Points***
- Leave all other entries as default.
- Then Left Click in the **Selected Field** (so that this field will be populated with the Alignment entry).

Opens the <u>Assign Names</u> dialog box.

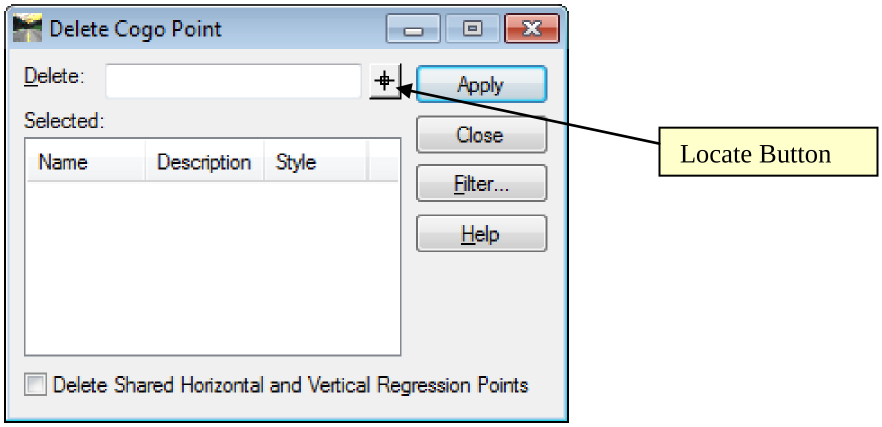
49. The inputs should now correspond to the screen capture depicted below:
Verify to ensure that your input matches the screen capture.



- Click **Apply** & **Close**.

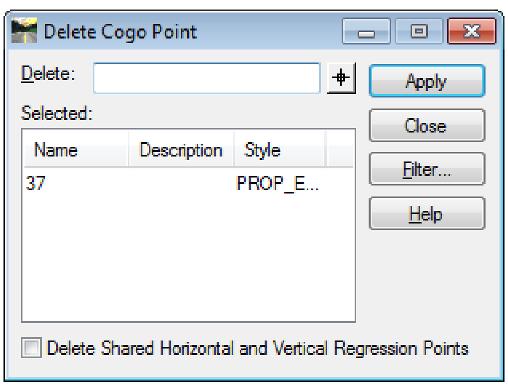
*Assigns names to points in Alignment **SV5** and closes the <u>Assign Names</u> dialog box.*

50.	**Create COGO Points of all Alignment Points.** * **IMPORTANT**: Although point names (Alignment Points) now exist in alignment **SV5** -- the points don't actually exist as COGO Points in the COGO Buffer. Following are the steps to convert the points to COGO Points and assign the proper feature style. • Ensure **SV5** is the active alignment. A red square must be around **SV5**. If it does not have a Red Square - highlight alignment **SV5**, right mouse click over it and select **Set Active**. • Select **Geometry ► Horizontal Curve Set ► Events**… • In the **Horizontal Events** dialog box: o Check the ***Alignment Point to Cogo*** radio button. o Set the style to **PROP_E_RWE** o Accept all other defaults. • Click **Apply.** A results report opens showing all points that are converted to COGO points. • Click **Close** to close the results box. • Click **Close** to close the **Horizontal Events** Dialog**.** *** NOTE:** Cogo Points are only assigned to Alignment Points for the active alignment only. The process must be repeated for each alignment. *Opens the Horizontal Events dialog. Converts the Alignment points stored earlier to COGO points and Assigns the Feature Style PROP_E_RWE*
51.	**Once we trimmed alignments SV3 and SV5 we no longer need points 37, 38, 45 and 46 which were part of the alignment as seen in *Figure L12-12*.** **In order to keep the project database clean it is a good idea to delete these Cogo Points from the database.** • Select **Tools ► Locks** and enable ***Point Snap*** by ensuring that a check mark exists next to ***Point Snap***. • Select **Geometry ► Cogo Points ► Delete.** The following dialog opens.



- Use the Locate button to select **Point 37**.
- In MicroStation, left Click on **Point 37**.
- Notice that a Purple Hour glass identifies the point you selected.

- Notice in the Bottom middle of the MicroStation window the text 'Selected Point 37' is displayed. Selected point '37'
- Notice in the Bottom left of the MicroStation window the text '>**Accept/Reject'**.
  > Accept/Reject
- Left click anywhere on a blank part of the MicroStation window to accept **Point 37**.
- The **<u>Delete Cogo Point</u>** dialog reopens with **Point 37** in the ***Selected*** field as shown here.



- Click **Apply** and **Yes** to delete Point **37**.
- **Repeat** the above steps for Points **38**, **45** & **46**.
- **Close** the **<u>Delete Cogo Point</u>** dialog when finished.

***NOTE**: Multiple points may be keyed in rather than using the Locate button if desired. Individual points are separated by a comma (i.e. **37,38,45,46**.). Ranges of points are connected by a dash (i.e. **20-25**).

The Cogo point 37, 38, 45 & 46 have been deleted from the project.

52.	**Save the InRoads Geometry File** Even though the Horizontal Alignments have been stored – the data has not yet been saved. InRoads retains the data in temporary memory but does not save the data on the fly. Whenever a change has been made to an InRoads Geometry Project – Save the project and its associated modifications or changes. • Select **File ▶ Save ▶ Geometry Project** from the **InRoads Menu**. Please Note: (The "Save As" dialog box may not appear because the Geometry Project has already been saved initially). The Geometry Project (***1234567_SDE.alg***) will be saved to **Lab 12** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab12** Note that the **InRoads** and **MicroStation Status Bar** (Located at the bottom of both the InRoads and MicroStation Interface) will depict a message when the Geometry Project has been saved. *The **1234567_SDE** Geometry Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab12***
53.	**VERY Important Step:** In order to Start with a CLEAN DGN file for the next Lab: In the [MicroStation Software] – Select **Edit ▶Select All** Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn to ensure a clean DGN file for the next Lab.*
54.	 This concludes Lab 12. Do not proceed until the Instructor directs you to do so.

Lab 13
Store Property by Bearing/Distance and Create/Edit Alignment by Cogo Points

Objective

Storing property from Deeds.

The objective of Lab 13 is to:

- Learn techniques to store property information from deeds into InRoads.
- The following deed description will be used to create Property Alignment **SV64A**.

  Beginning at point 218; running thence S 16°50'06.7" E a distance of 188.41 feet to; thence S 72°58'15.5" W a distance of 212.41 feet; thence N 17°49'15.9" W a distance of 105.74 feet; thence northwesterly 217.702 feet along the arc of a curve (said curve having a radius of 1105.916 feet and a chord distance of 217.351 feet on a bearing of N 12°10'54.1" W); thence S 72°42'40.9" E a distance of 237.49 feet back to the point of beginning. Containing 1.255 acres more or less.

Lab 13A Getting Started

1. **Starting Clean**

In order to ensure that you are working with a “clean” database – you will close MicroStation and InRoads if they are still running from a previous Lab:

To CLOSE MicroStation and InRoads -

Select **File ►Exit** from the [MicroStation Menu].
If any messages appear regarding the saving of projects – Select 

This closes BOTH the MicroStation and InRoads Software(s).

2. From the desktop, double-click on the **MicroStation** icon labeled **GDOT MicroStation V8i SS2 (x86)**.

Double click on the icon labeled **GDOT MicroStation V8i SS2 (x86)**.

- When the **MicroStation Manager** dialog box opens – navigate to the **C:\InRoads Data\1234567\SDE Labs\Standards** folder and select the “**GDOT 3D Working File.dgn**”. Click **Open**.

- Now open InRoads from within MicroStation by selecting: **InRoads ► InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu].

The MicroStation and InRoads Software(s) will open.

3. **Clear the MicroStation Graphics (***This step may be ignored if your MicroStation Window is already clear of graphics***)**

- Select **Edit ►Select All** from the [MicroStation Menu].
- Then select the **<DELETE>** key on the computer keyboard.

The MicroStation Window is now clear of all graphics from the previous lab and ready for this lab.

4. **Verify Project Defaults**

- In InRoads select **File ►Project Defaults**
- Use the pull down next to *Configuration Name:* to select **1234567_SDE** which you created in **Lab 1**.
- Verify Settings match those shown in *Figure L13-1*.
- Click **Apply** & **Close.**

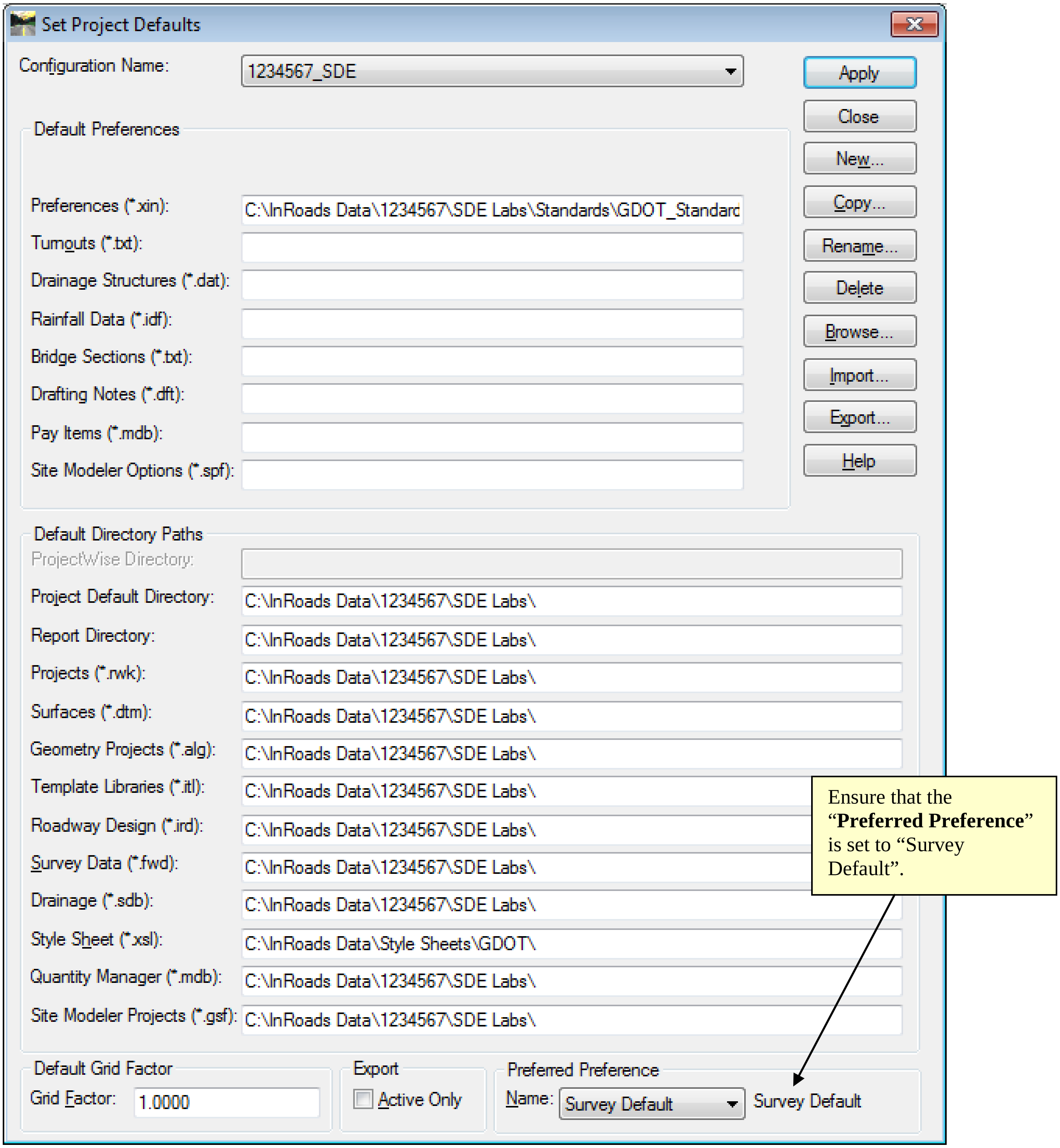


Figure L13-1 Project Defaults

5.	**Open .ALG file** • Select **File ► Open**. • Navigate and open the Folder **Lab13**. • Highlight the file **1234567_SDE.alg**. • Click **Open** & **Cancel**. Hint: You may also right mouse click over 'Geometry Projects' in the Workspace Bar and select open. *Opens .alg file*
6.	**Set Survey Default Preferences** • In InRoads - Select **File► Project Options**. • In the **Project Options** dialog box select the **General** Tab. • Click the **Preferences** button at the bottom of the dialog box. • Choose ***Survey Default***. Click **Load** and **Close**. • In the **Project Options** dialog box - Click **Apply** and **Close**. *Sets the Survey Defaults Preference.*
7.	**View all Horizontal Alignments and Cogo Points.** • Select **Geometry ► View Geometry ► Horizontal Annotation…** • The **View Horizontal Annotation** dialog box will open. Select the **"Main"** Tab. • The Dialog box shown in *Figure L13-2* opens. *The View Horizontal Annotation dialog box opens.*

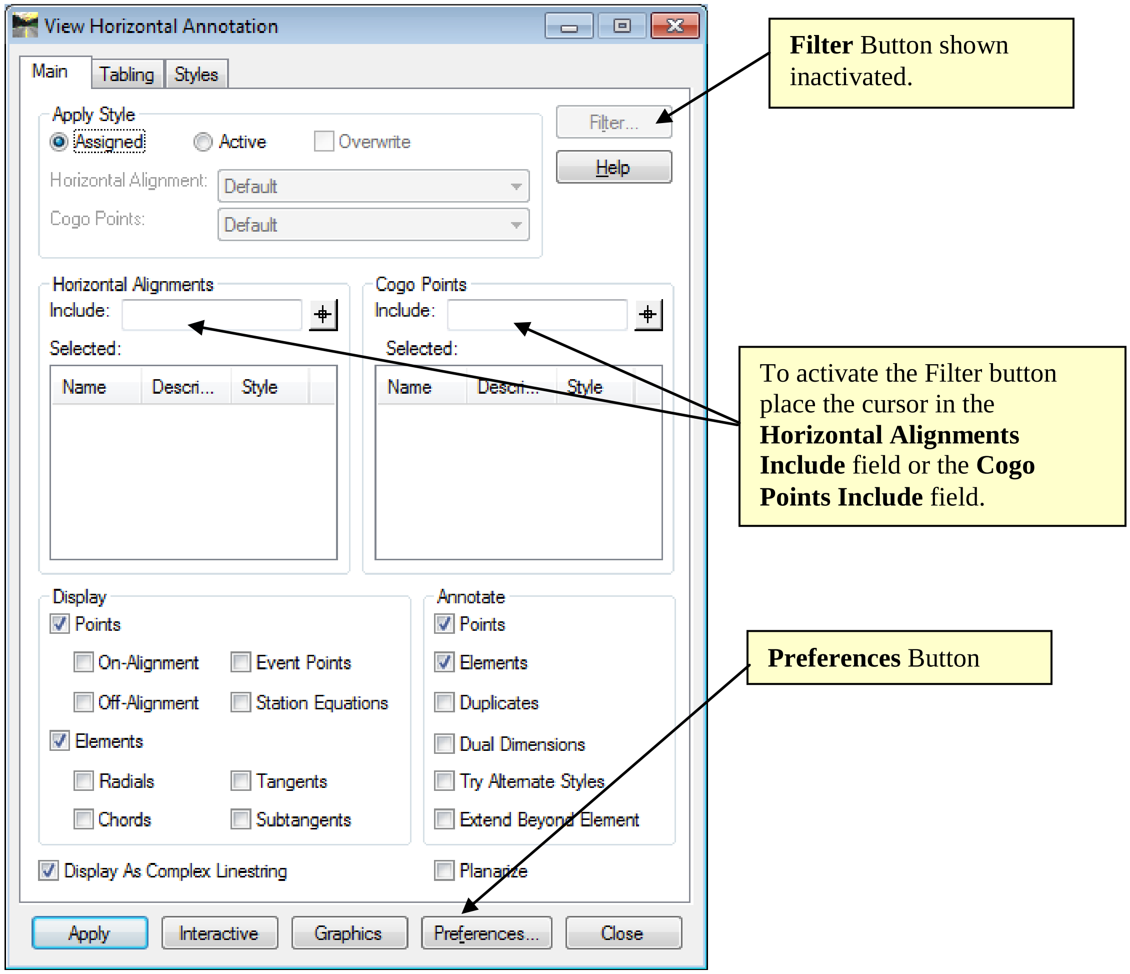


Figure L13-2 Preferences

8.	• Click the **Preferences** button. • The Dialog box Shown in *Figure L13-3 opens*.

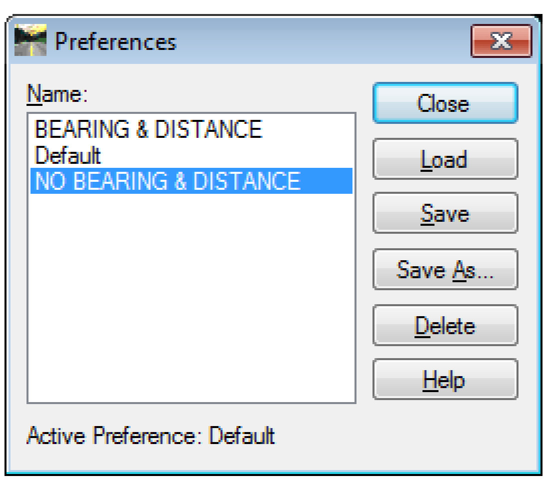


Figure L13-3 Preferences

9.	In the **Preferences** Dialog Box: • Highlight ***NO BEARING & DISTANCE***. This preference sets the proper settings for viewing of Alignments and Cogo points. • Click **Load** & **Close**. *Sets the Viewing Preferences for the View Horizontal Annotation dialog box.*
10.	**View the Horizontal Alignments:** In the **View Horizontal Annotation** dialog box place your cursor in the **Horizontal Alignments** ***Include*** field to activate the **Filter** button and then click the **Filter** button. • The Dialog box shown in *Figure L13-4 opens*. *Opens the Geometry Selection Filter Dialog Box.*

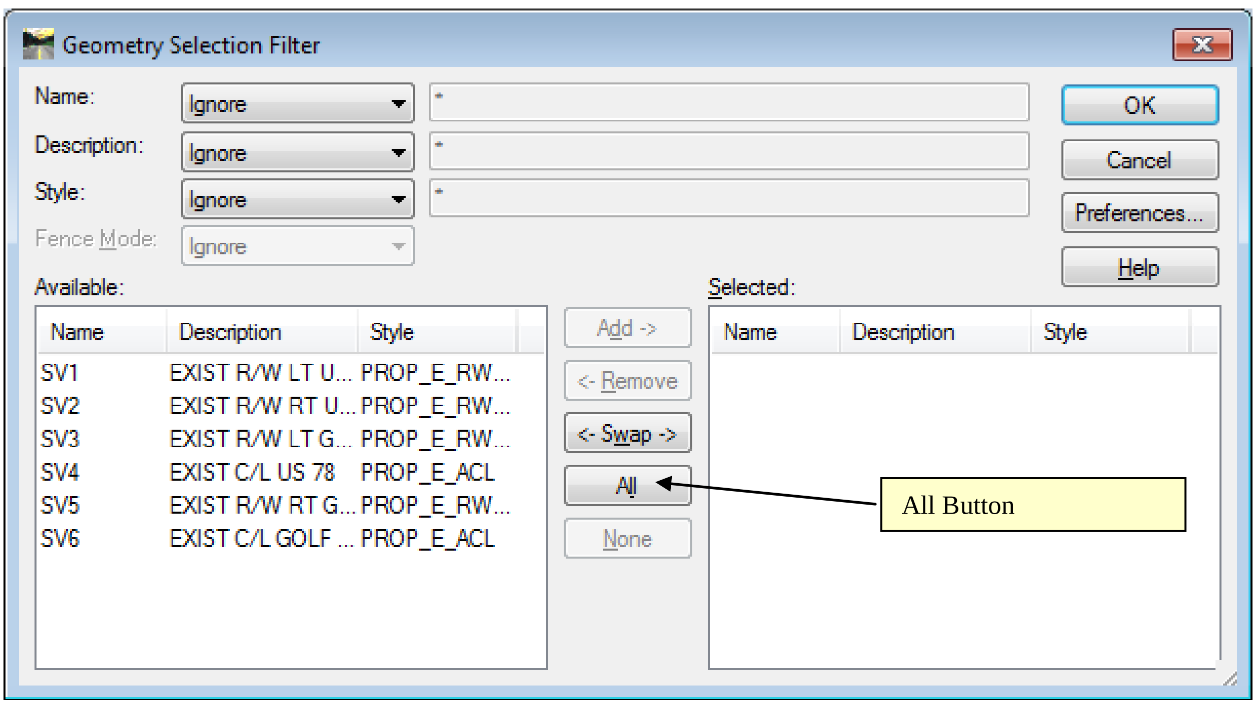


Figure L13-4 Geometry Selection Filter

11.	• In the **Geometry Selection Filter** dialog box click the **All** button and then click **OK**. *Selects the Horizontal Alignments to View.*

12.	**View the Cogo Points:** • In the **View Horizontal Annotation** dialog box place your cursor in the **Cogo Points** ***Include*** field to activate the **Filter** button and then click the **Filter** button and the **Geometry Selection Filter** dialog box will appear. • In the **Geometry Selection Filter** dialog box click the **All** button and **OK**. *Selects the Cogo Points to View.*
13.	• Verify that your settings match those shown in *Figure L13-5*. • Then click **Apply** and **Close.** *Selects the Horizontal Alignments and Cogo Points to view*

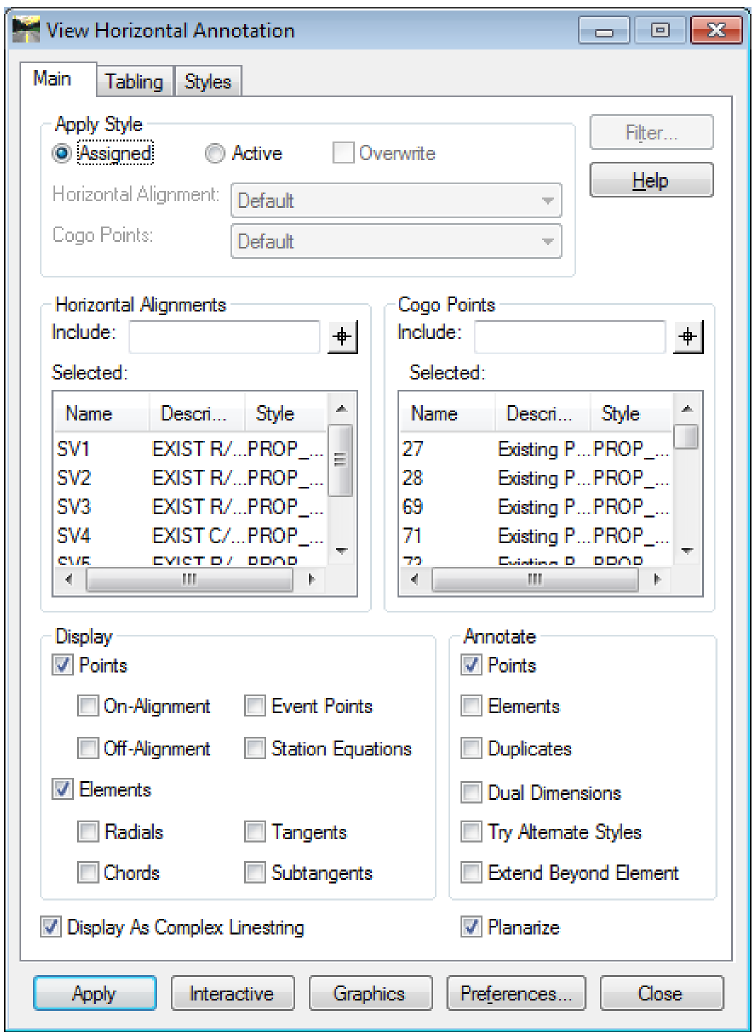
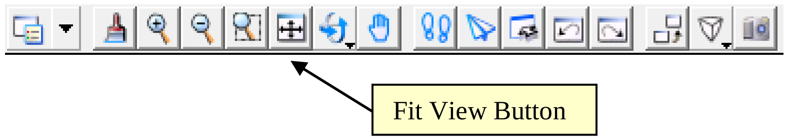


Figure L13-5 View Horizontal Annotation

14. **View** the selected Horizontal Alignments and Points in the [MicroStation Software] by using the following command located under the MicroStation View 1 Window. In the [MicroStation Software] –

- Select the “Fit View” Icon to view the Points.



- Verify that the MicroStation view window matches that shown in *Figure L13-6*.

Views all Horizontal Alignments and Points in the Geometry Project 1234567_SDE.

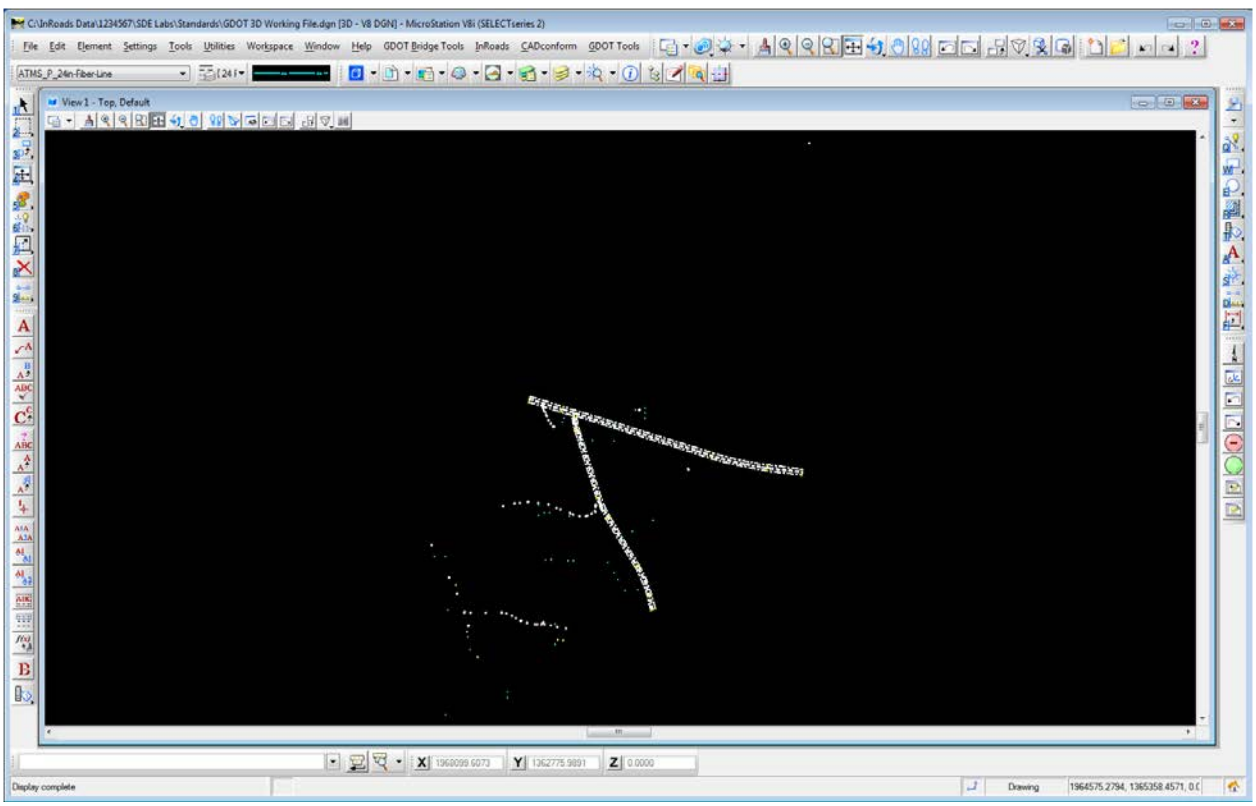


Figure L13-6 MicroStation Window

15.	**Window area the intersection of SV4 and SV6** • In MicroStation, use the **Window Area** icon to window into the area shown in *Figure L13-7*. • Your MicroStation view should look similar to that shown in *Figure L13-8*. *The intersection of SV4 and SV6 is zoomed into.*

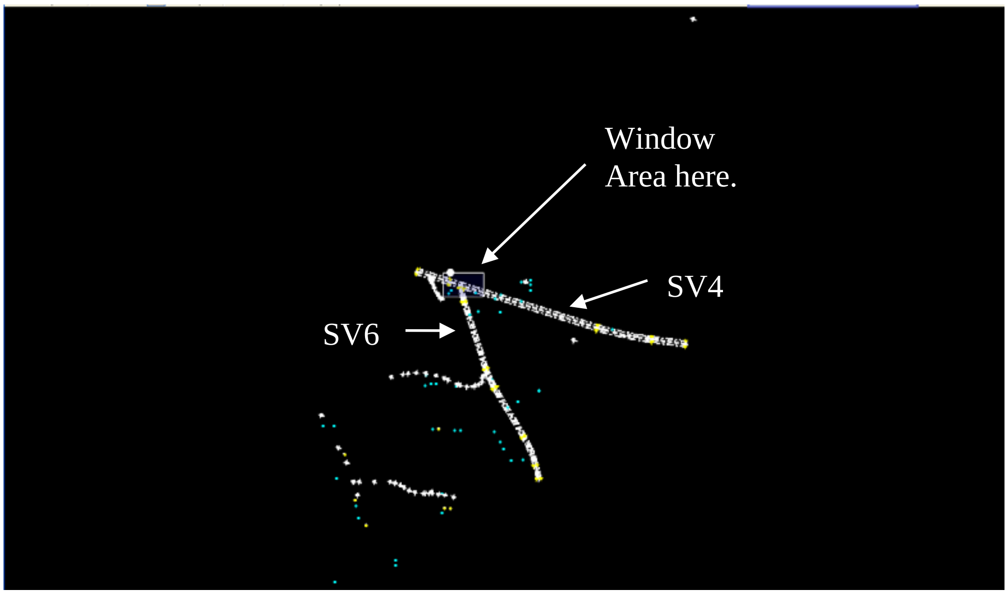


Figure L13-7 MicroStation Window

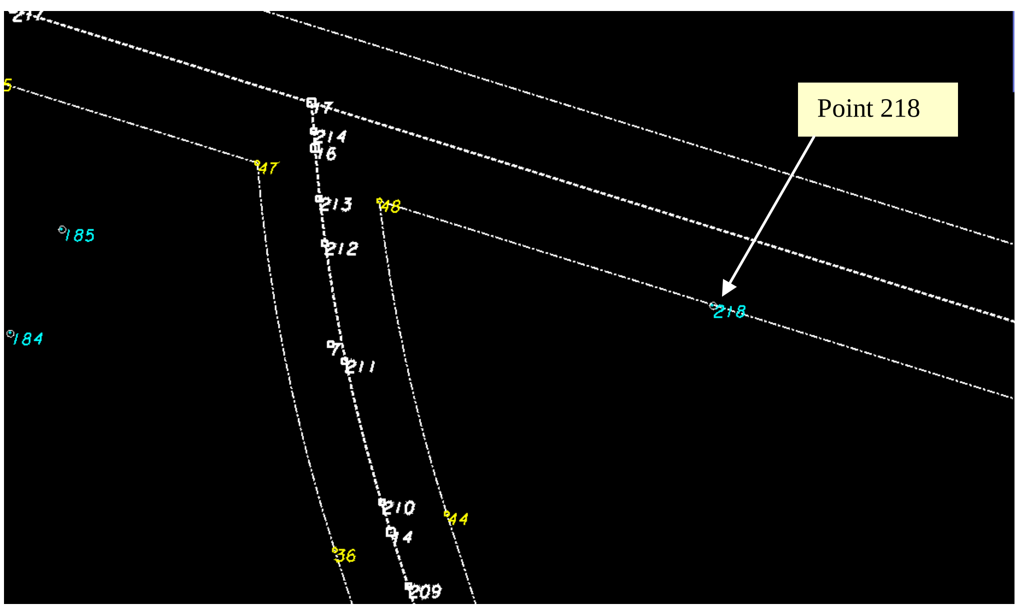


Figure L13-8 MicroStation Window

16.	**Create alignment SV64A.** • In InRoads, Select **File ► New**. • In the **New** dialog box that opens, select the **Geometry** tab. • Enter the following information into the dialog box: o ***Type:*** Horizontal Alignment o ***Name*:** SV64A o ***Description*:** PAR 64A TM#49 GABLE o ***Style*:** PROP_E_PAR o ***Curve Definition*:** Arc • Verify that your settings match those shown in *Figure L13-9*. • Click **Apply** & **Close**. *Alignment SV64A is created.*

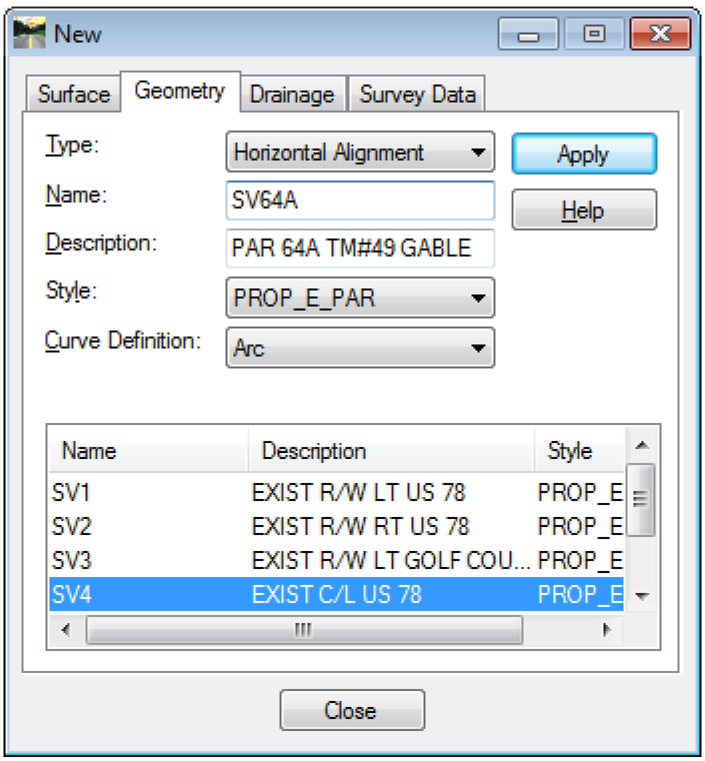
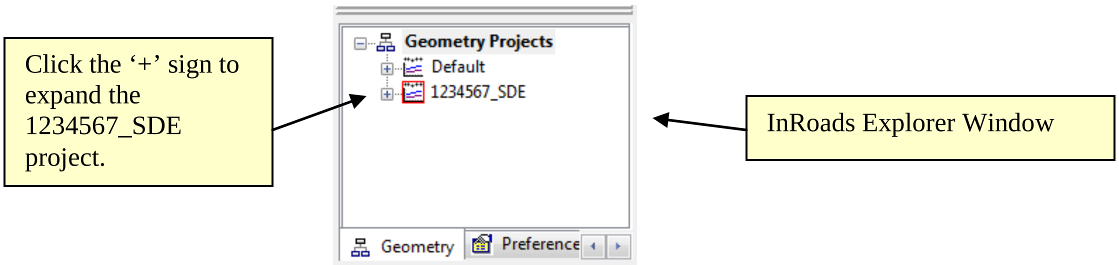
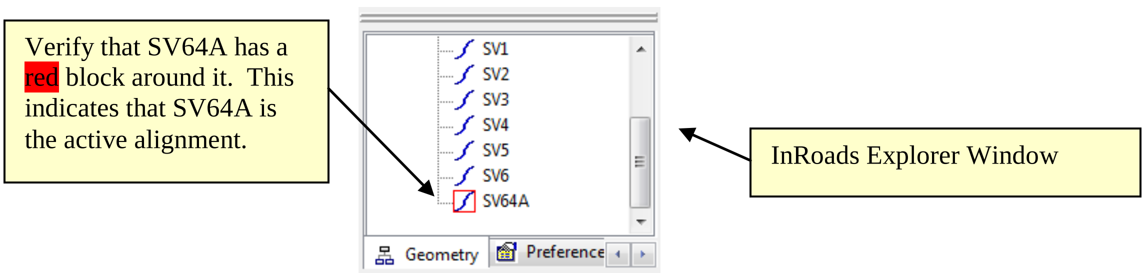


Figure L13-9

<table>
<tr>
<td>17.</td>
<td>
Make alignment SV64A the active alignment

In the InRoads Explorer click the + sign next to the project 1234567_SDE to expand the project. See the first image below.
Verify alignment SV64A has a red block around it. See the second image below. This indicates which alignment is the active alignment.
If alignment SV64A is not the active alignment, make it the active alignment - highlight alignment SV64A, right mouse click over it and select Set Active.

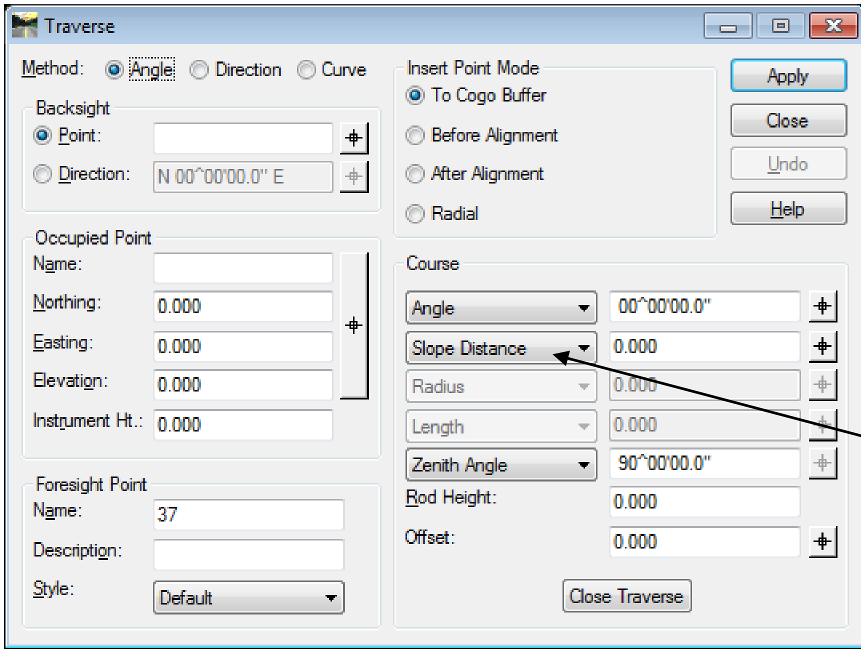




Alignment SV64A is set to be the active alignment.
</td>
</tr>
<tr>
<td>18.</td>
<td>
Open the Traverse command.

Select Geometry ► Traverse…
The <u>Traverse</u> dialog box opens as shown in Figure L13-10.

The Traverse command is opened.
</td>
</tr>
</table>



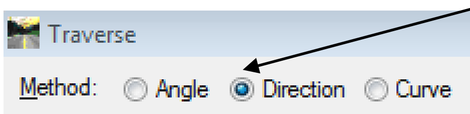
***IMPORANT**: Notice ‘**Slope Distance’** and ‘**Horizontal Distance’** are both possible selections. Ensure the correct selection is made before clicking **Apply**.

Figure L13-10 Traverse command

19. **Set method in Traverse command to Direction.**

- Click the ***Direction*** radio button as shown here.

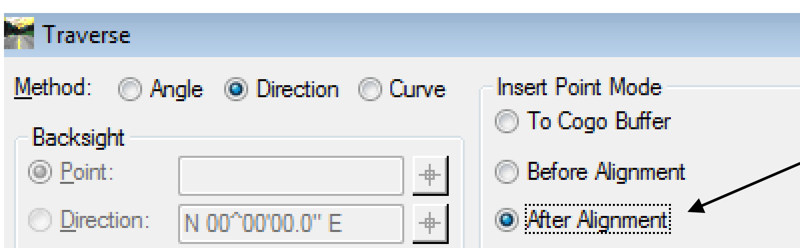
Direction Button



The Traverse command method is set.

20. **Set the Insert Point Mode in the Traverse command to After Alignment.**

- Click the ***After Alignment*** radio button as shown here.

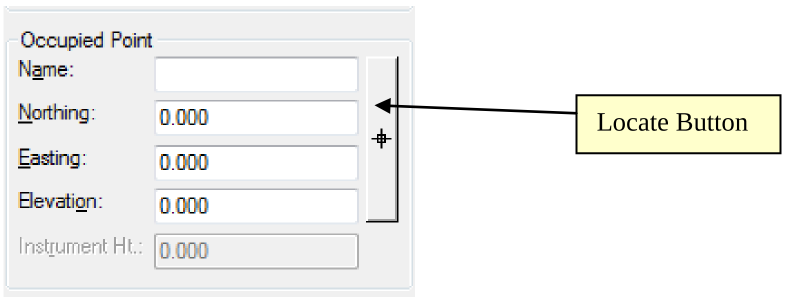


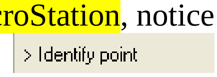
After Alignment Button

The Traverse Insert Point Mode method is set.

21. **Select Occupied Point in the Traverse Command.**

- From the InRoads Menu -- Select **Tools** ► **Locks** and verify that **Point Snap** has a check mark next to it. This lock allows you to Snap to points that are contained in InRoads.
- Click the **Locate** button in the **Traverse** command **Occupied Point** frame.

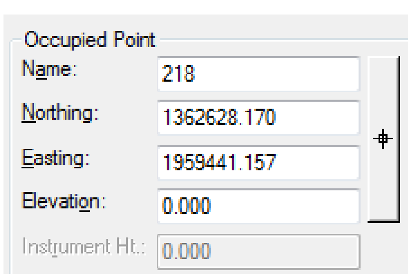


- In MicroStation, notice in the bottom left corner you are prompted to > ***Identify point.*** 

- Single left click on **Point 218**. See previous screen capture in *Figure L13-8* for Location of **Point 218**.
- Notice that **Point 218** is highlighted with a purple hour glass as shown here:  and that in the InRoads status bar the text '***Select point '218'*** confirms which text was selected. 

- Also notice, in MicroStation, in the bottom left corner you are prompted to > Accept/Reject. 

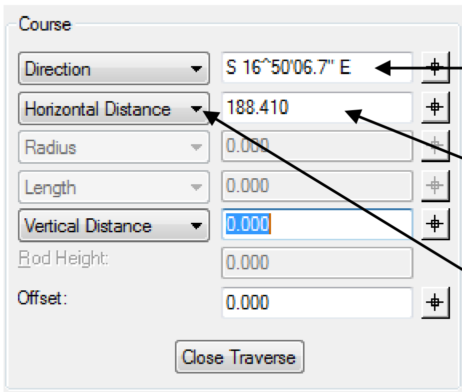
- In MicroStation, left click on a blank portion of the screen to accept.
- The **Traverse** command dialog reopens with Point **218** in the **Occupied Point** field.
- Verify that yours settings match those shown below.



The Occupied Point is selected.

22. **Define Course in the Traverse Command.**

- In the **Course** frame of the **Traverse** command dialog box enter the bearing and horizontal distance from the deed description on the first page, as shown here.



***NOTE**: Key-in the bearing as follows:
S space **16** space **50** space **6.7** space **E**

***NOTE**: Key-in the Horizontal Distance as follows:
188.41

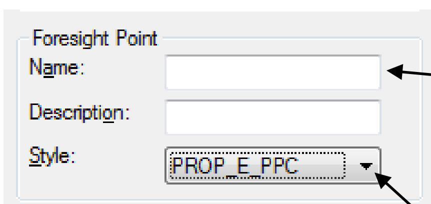
***NOTE**: Ensure '**Horizontal Distance'** is selected from the pull down and not Slope Distance.

The course is entered.

23. **Set the Style in the Foresight Point field.**

- In the **Foresight Point** frame of the **Traverse** command dialog enter the following settings.

***NOTE:** If the name field is left blank the alignment will store coordinates without a point name. If a point name is entered the alignment coordinates will store with that point name or the next available point name. Either way is acceptable. You will be adding point names in a later step and converting to Cogo points as shown previously.



***NOTE**: Key in the Style as follows:
PROP_E_PPC

The Foresight Point field is set.

24. **Verify the settings in the Traverse command.**

- Refer to *Figure L13-11* depicted below and verify your settings match those shown.
- Click **Apply** but **do not** close the **Traverse** command.
- In the **Results** box that opens take a moment to review it and then **Close** the **Results** box only. Leave the **Traverse** dialog box open.
- In MicroStation, you should see the first leg of the property alignment as shown in *Figure L13-12*.

The first leg of Parcel SV64A is stored.

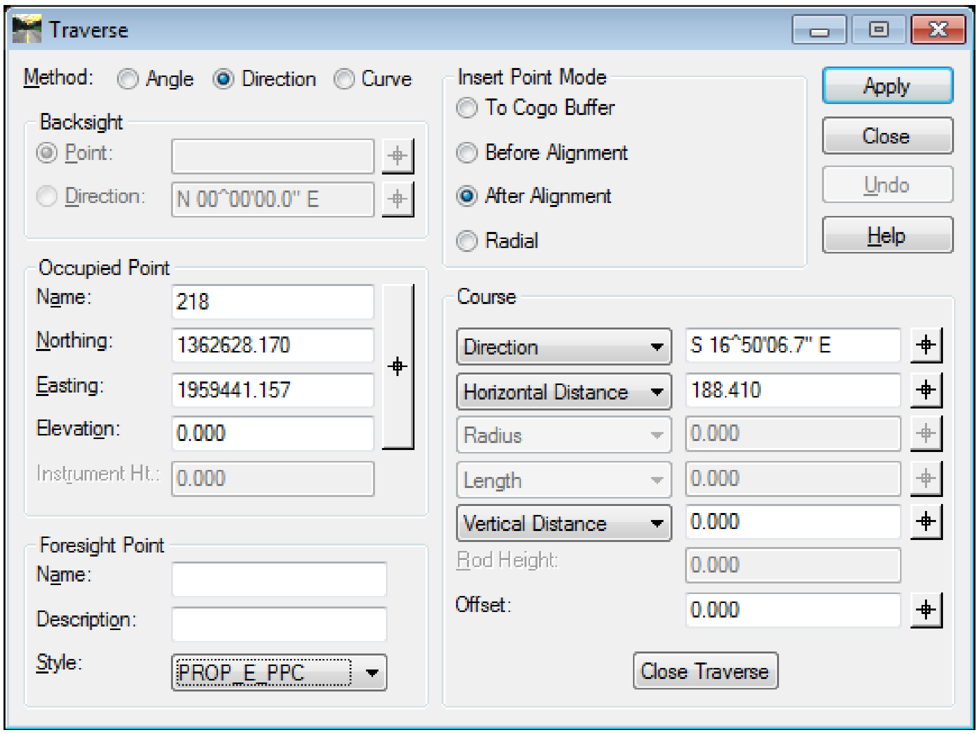


Figure L13-11 Traverse Command

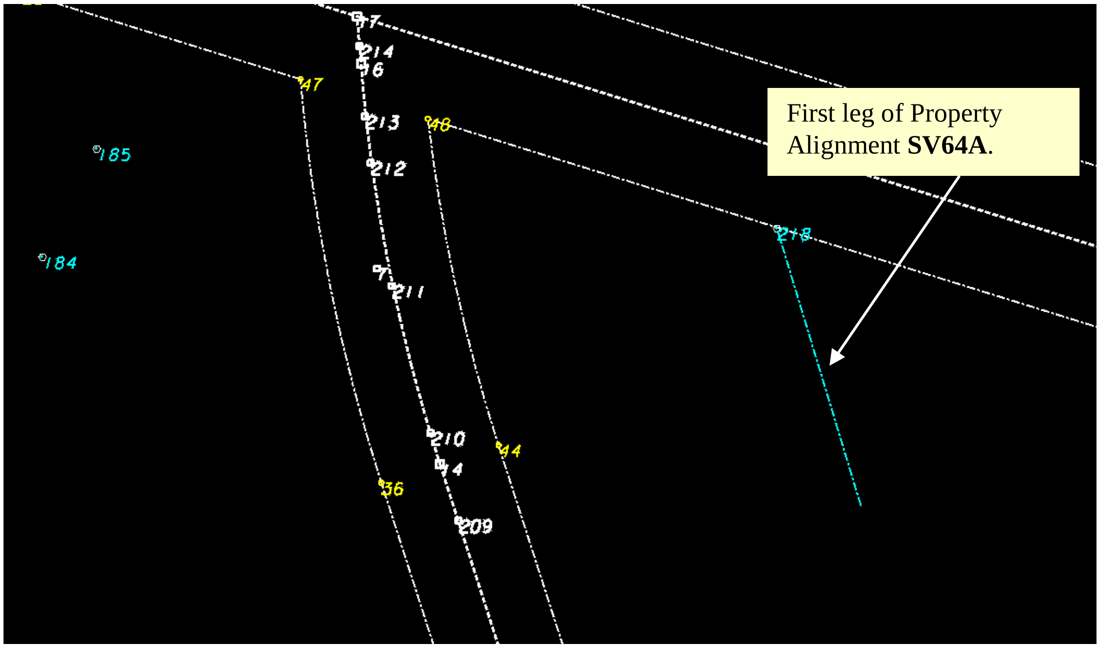
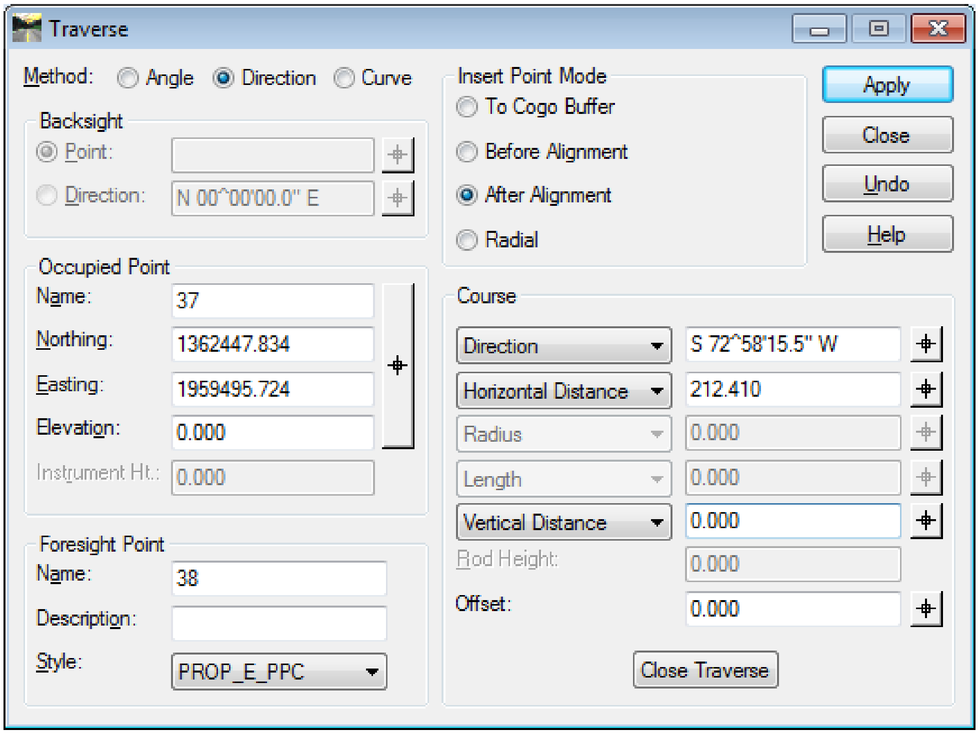


Figure L13-12 MicroStation Window

25.	**Store the second leg of the Property Alignment SV64A on a bearing of S 72 58 15.5 W a distance of 212.41 feet.** • In the **Traverse** command dialog, enter a **Course** ***Direction*** of **S 72 58 15.5 W** and a Horizontal Distance **212.41** feet. • Verify your entries match those shown below. (***NOTE**: The occupied point is now the end of the first leg which was stored in the previous steps. It is ok if your traverse dialog does not contain a point name as long as the coordinates match. A point name will be assigned later and converted to a cogo point later as was done in previous labs.)



- Click **Apply**.
- **Close** the **Results** dialog box.
- Click **Close** to exit the **Traverse** command dialog box.
- If done correctly your view should look like that shown in *Figure L13-13*.

The second leg of the property alignement is stored.

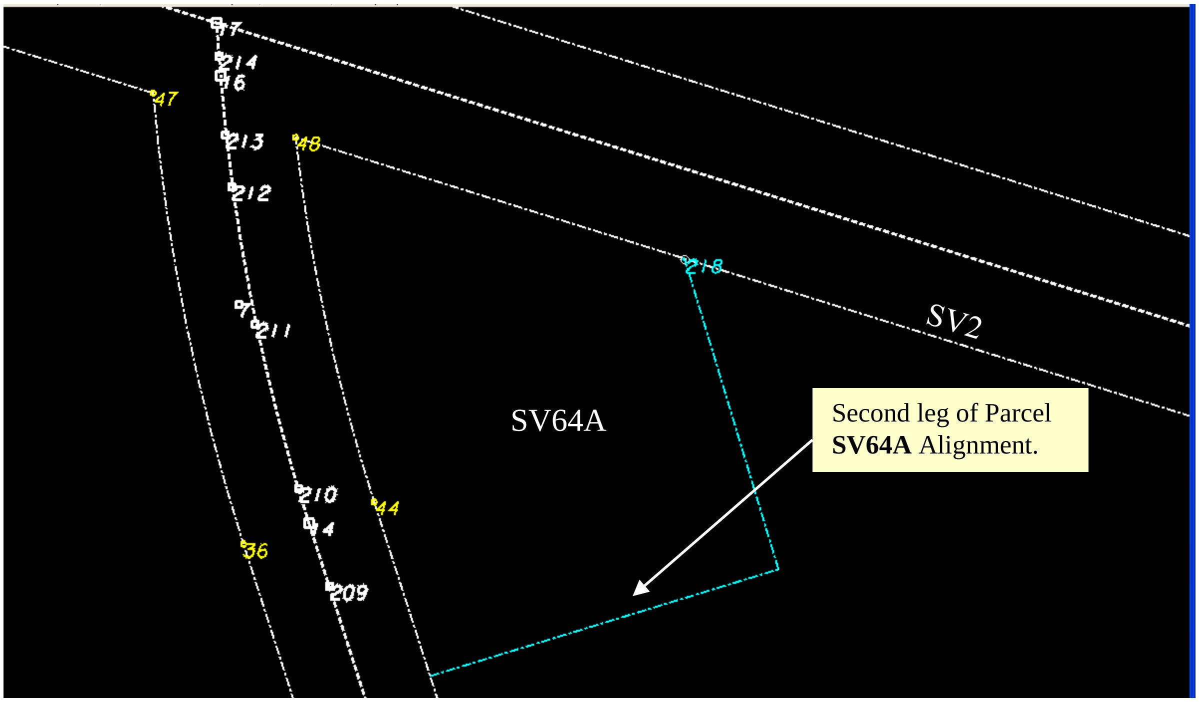


Figure L13-13 MicroStation Window

26.	**Examine the intersection of the Existing R/W Alignment SV2 with Property Alignment SV64A to verify Intersection.** • In MicroStation, turn Fill OFF by selecting **Settings ► View Attributes** and then click the Fill icon to turn Fill off. • Window Area closely to **Point 218**. See *Figure L13-14*. • Observe that the first leg you stored of Alignment **SV64A** does not contact the existing R/W Alignment **SV2**. See *Figure L13-15*. *The Intersection of Property Alignment SV64A and the Existing R/W Alignment SV2 is determined not to intersect as it should.*

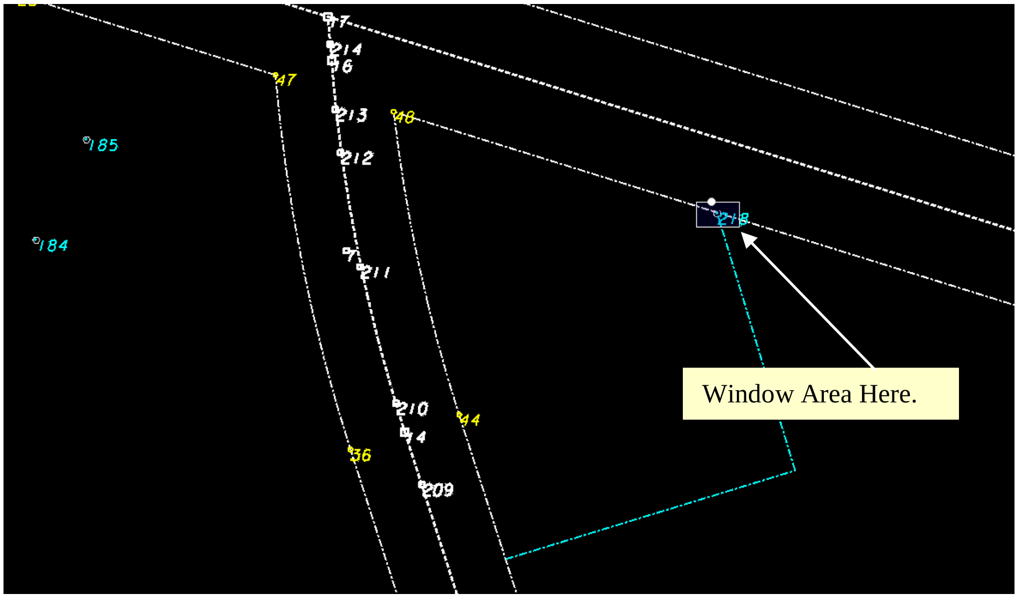


Figure L13-14 MicroStation Window

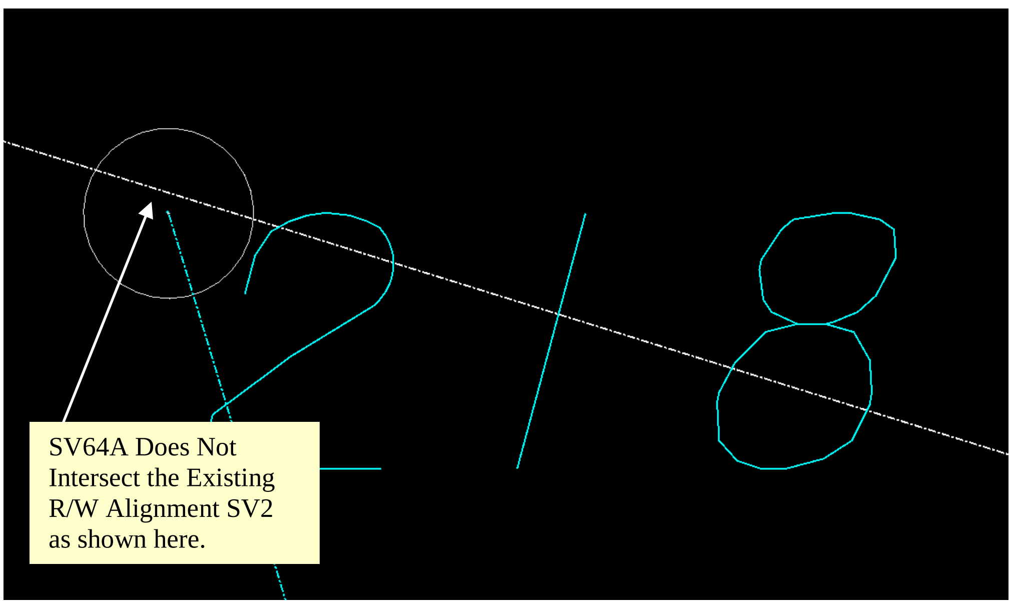


Figure L13-15 MicroStation Window

27. **Reconcile Property corner of SV64A with Existing R/W of SV2**

- Select **Geometry ► Utilities ► Extend Alignment**.
- In the lower left corner of MicroStation you are prompted to > ***Identify alignment to extend to***. > Identify alignment to extend to . **Select** the alignment (**SV2**) shown in *Figure L13-16* by left clicking on it.
- In the lower left corner of MicroStation you are now prompted to > ***Identify alignment to extend***. > Identify alignment to extend . **Select** the alignment shown in *Figure L13-16* by left clicking on it.
- In the lower left corner of MicroStation you are now prompted to > ***Accept/Reject*** > Accept/Reject the operation. Left click somewhere in a blank part of the MicroStation screen to **Accept**.
- Right mouse click twice over the MicroStation window to deactivate the **<u>Extend Alignment</u>** command. Notice the text in the lower left corner of the MicroStation window as you do this.

The property corner has been reconciled to the Existing R/W.

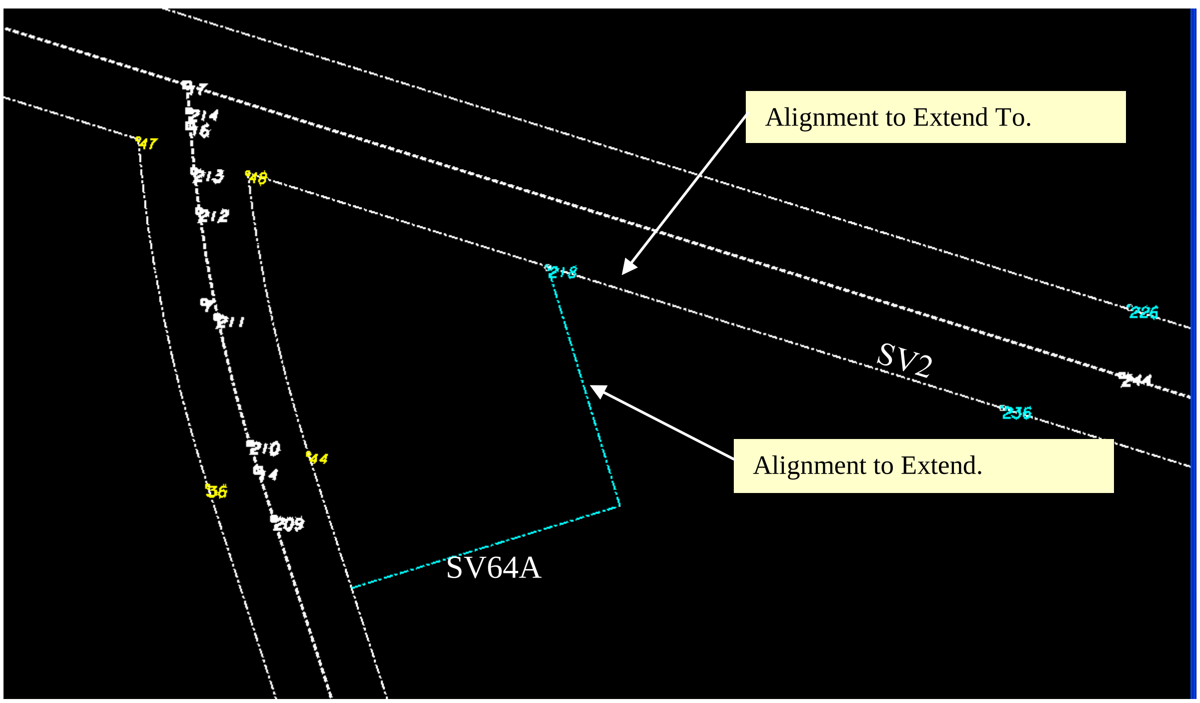


Figure L13-16 MicroStation Window

28.	**Examine the intersection of the Existing R/W Alignment SV5 with Property Alignment SV64A to verify Intersection.** • In MicroStation, select to **Fit View**. • In MicroStation, Window Area alignment **SV64A** as shown in *Figure L13-17*. • Verify your view resembles that shown in *Figure L13-18*. • In MicroStation, **Zoom** closely into the intersection of Existing R/W Alignment **SV5** with the second leg of Property Alignment **SV64A**. See *Figure L13-19*. You will notice it extends beyond the existing R/W. ***Note**: You must Zoom in very close to see that **SV64A** extends beyond **SV5**. *The Intersection of Property Alignment SV64A and the Existing R/W Alignment SV5 is determined not to intersect as it should.*

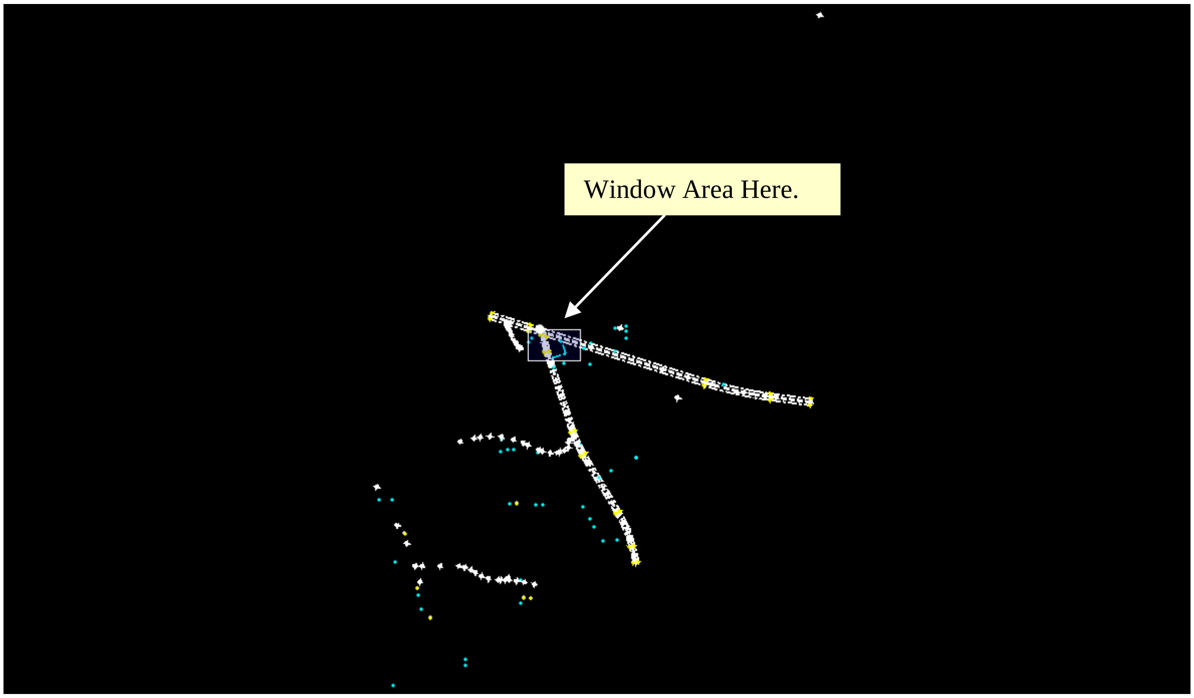


Figure L13-17 MicroStation Window.

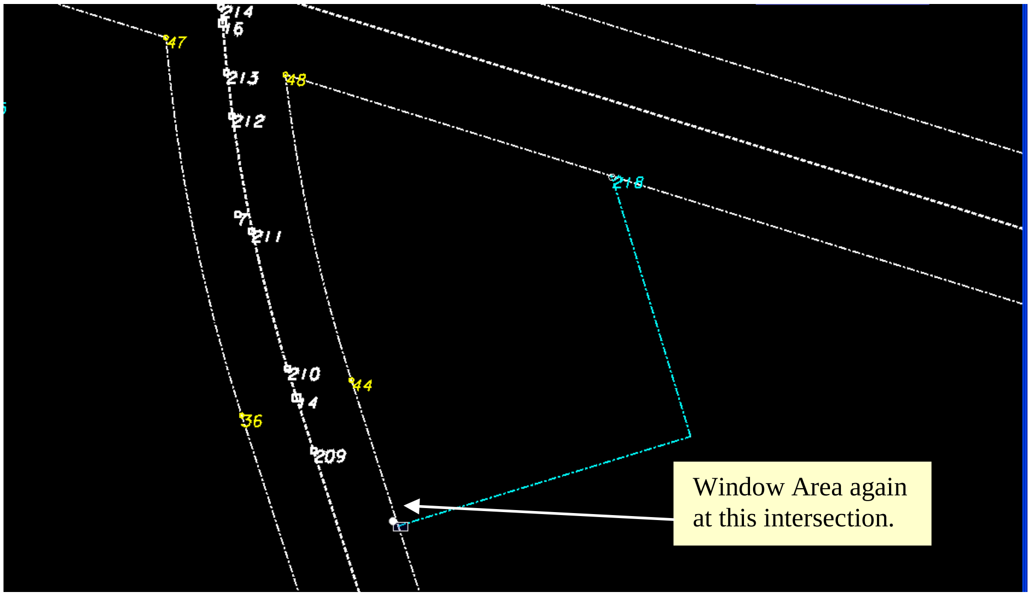


Figure L13-18 MicroStation Window.

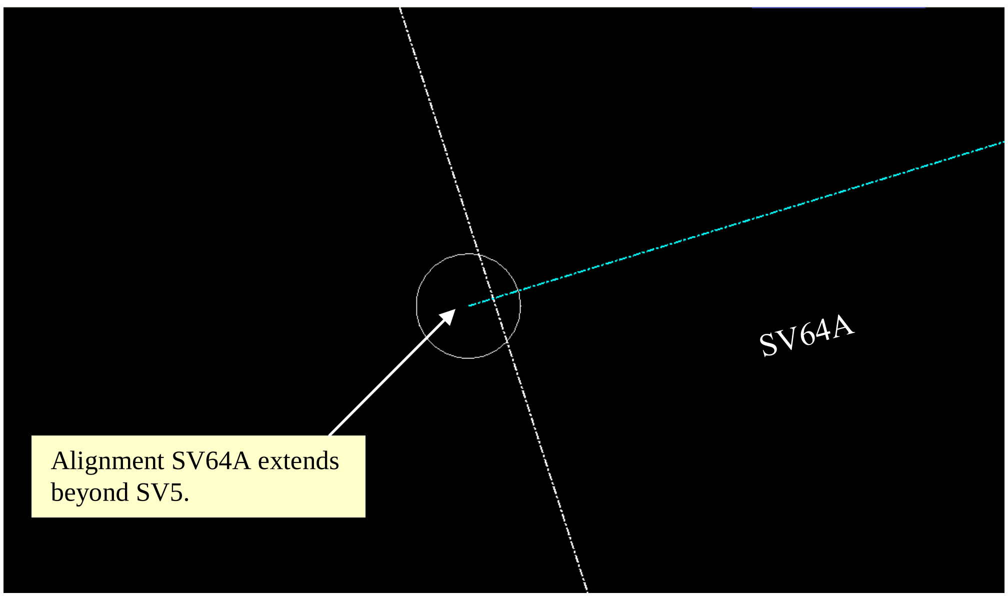
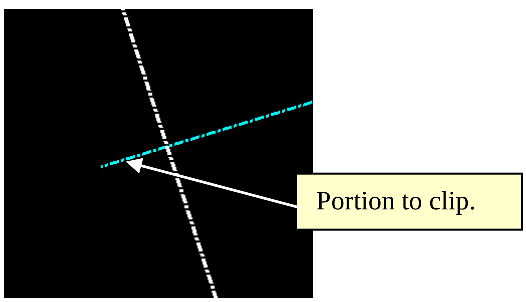


Figure L13-19 MicroStation Window.

29. **Reconcile Property corner of Property Alignment SV64A with Existing R/W Alignment SV5.**

- Select **Geometry ► Utilities ► Trim Alignment.**
- In the lower left corner of MicroStation you are prompted to > ***Identify first clipping alignment.*** > Identify first clipping alignment . **Select** the alignment identified as '***First Clipping Alignment'*** as shown in *Figure L13-20* by left clicking on it. It will turn purple.
  ***Note**: The order the alignments are selected is not important when using the Trim command. The alignment identified as first clipping alignment could easily have been the second clipping alignment.
- In the lower left corner of MicroStation you are now prompted to > ***Identify second clipping alignment.*** > Identify second clipping alignment . **Select** the alignment identified as '***Second Clipping Alignment'*** as shown in *Figure L13-20* by left clicking on it. It will turn purple.
- In the lower left corner of MicroStation you are now prompted to > ***Identify portion to clip.*** > Identify portion to clip . Left click somewhere on the portion of **SV64A** that extends beyond **SV5** as shown here.



- In the lower left corner of MicroStation you are now prompted to > ***Accept/Reject.*** > Accept/Reject . Left click somewhere in a blank part of the MicroStation screen to Accept.
- Right mouse click over the MicroStation window to deactivate the **Trim Alignment** command. Notice the text in the lower left corner of the MicroStation window as you do this.

The property corner has been reconciled to the Existing R/W.

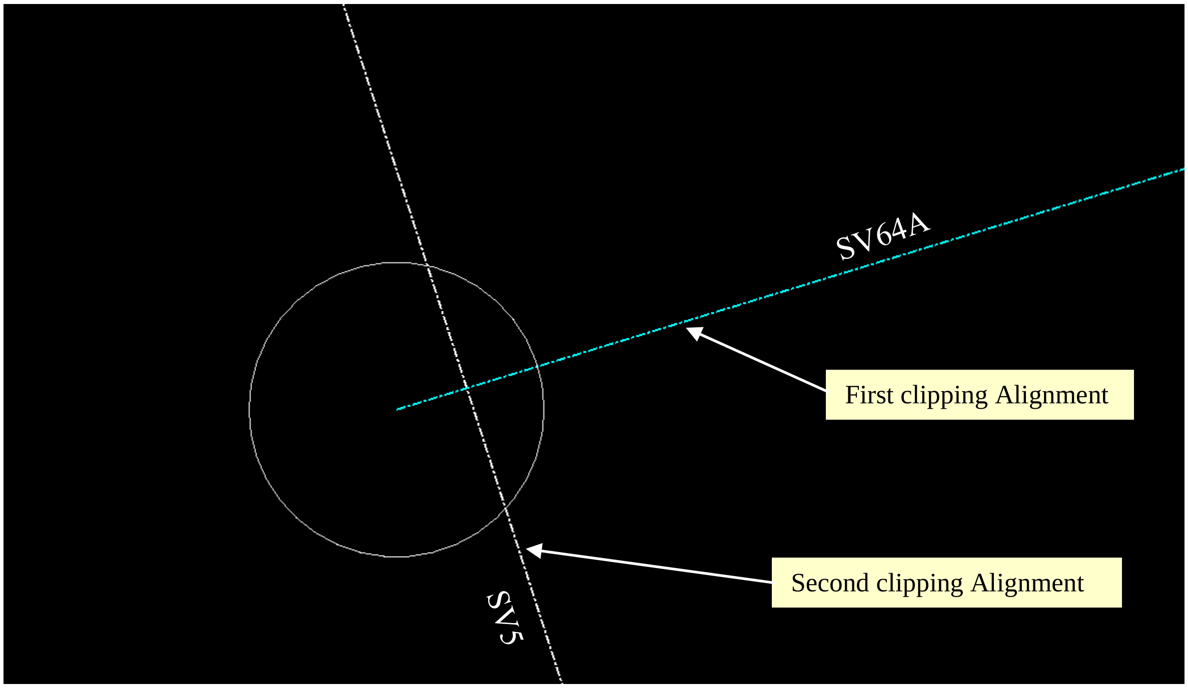
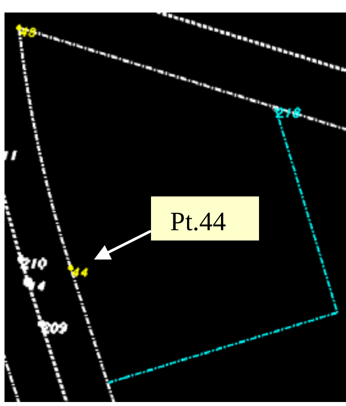


Figure L13-20 MicroStation Window

30.	**At this time you are ready to add Leg 3 to Property Alignment SV64A. For this leg you do not need to create a new point. Instead you want to make use of the points that already exist along Existing R/W Alignment SV5. In this case Pt. 44.**

- In MicroStation, Zoom to the extents shown below.

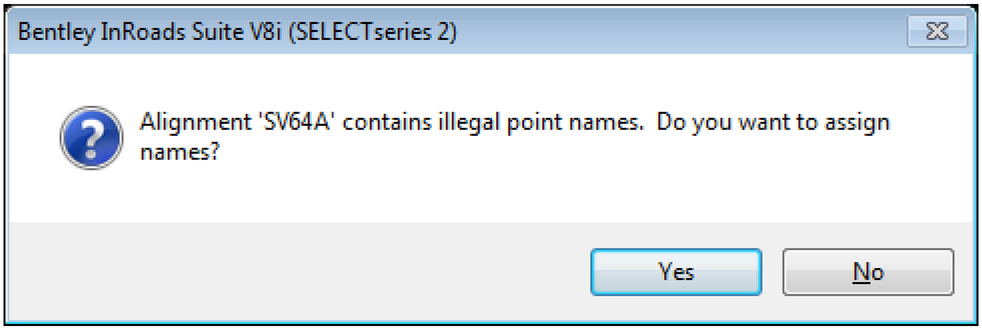


Zoom to the extents shown here.

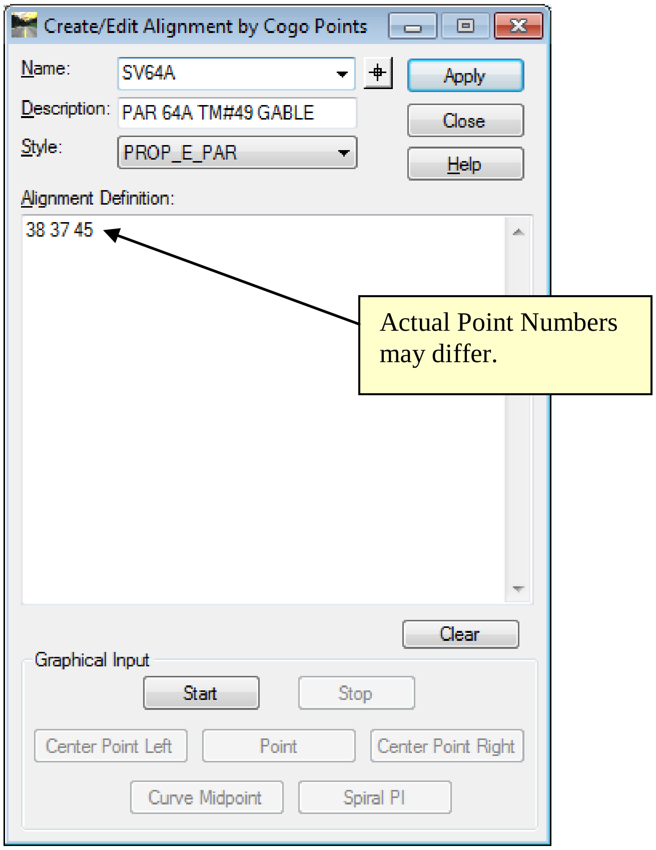
In the following steps -- when selected -- the point will highlight in purple with an hourglass shaped figure. If the purple hourglass does not show it is because the Point Snap lock is not engaged.

- Select **Geometry ► Utilities ► Create/Edit Alignment by Cogo Points**.

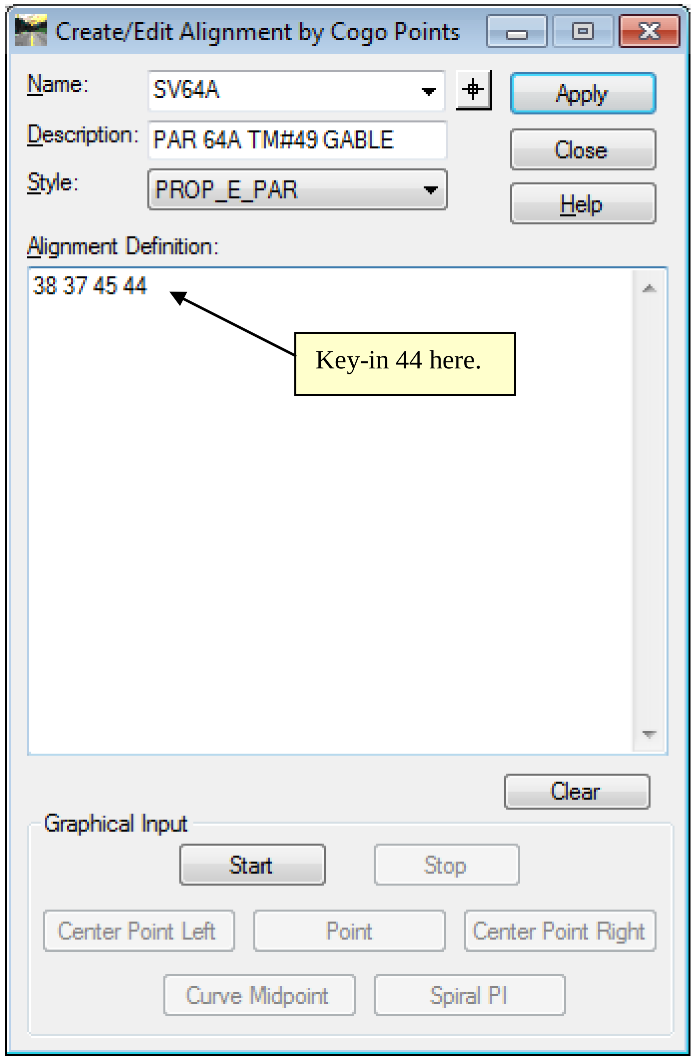
  ***NOTE**: If the error message below appears, Click **Yes**. This assigns names to the coordinates in the alignment that do not contain names in the same manner that using the **Assign Name** command does which we have used in previous lessons. This command requires Point Names to be associated with the coordinates before it will work. We will convert these alignment points to cogo points in a later step.



- The **Create/Edit Alignment by Cogo Points** dialog box opens as shown here.



- Key-in **44** in the '**Alignment Definition'** field as shown below.

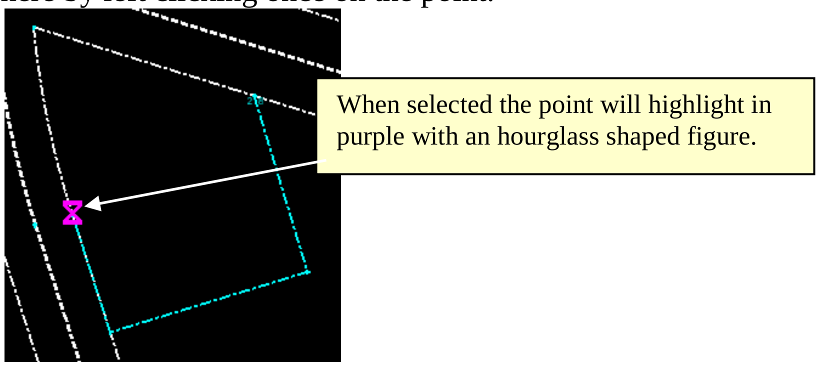


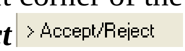
- Click **Apply** and **Close**.
- **Leg 3** has been added to Property alignment **SV64A**.

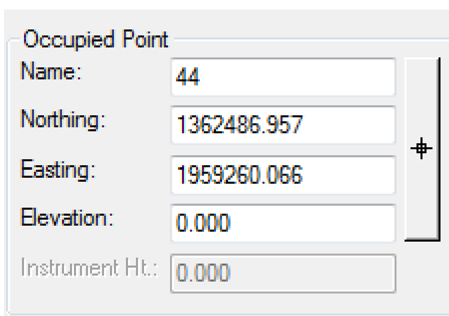
The third leg of Property Alignment SV64A is stored.

31. **Define the next leg in the Property Alignment SV64A which is an arc.**

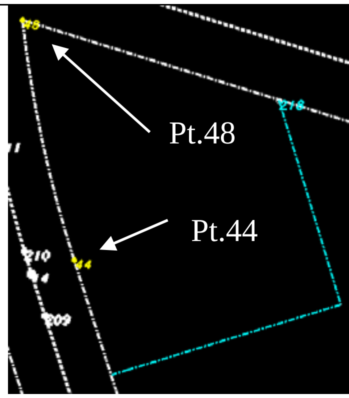
- In InRoads, Select **Geometry ► Traverse**
- In the **Traverse** command dialog box set the **Method** to ***Curve*** and the **Insert Point Mode** to ***After Alignment***.
- Use the **Locate** button in the **Occupied Point** frame to select Point **44** as shown here by left clicking once on the point.



- In the lower left corner of the MicroStation view window you will be prompted to > ***Accept/Reject***  the point. Left click to Accept the point. The **Traverse** command dialog will reopen and the **Occupied Point** frame will be populated as shown below.



- In the **Course** frame use the pulldown arrow to set the first selection to **Chord**. (This field will be for the bearing of the chord).
- Use the **Locate** button () to define the ***Chord*** bearing by left clicking once on the Point **44** and then Point **48** as shown here.

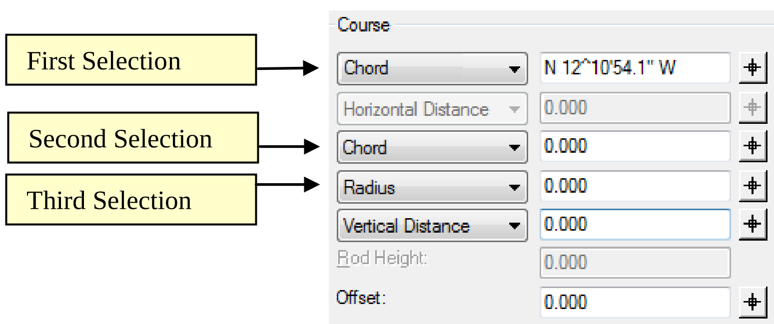


*NOTE: When using the left click button to select the points to define the distance the points do not highlight with the purple hour glass shape as when using the locate button to left click for the Occupied point. You can tell that a point has been selected by moving your mouse around after clicking the first point. When doing this you will see a line defining the distance. Also, look in the MicroStation status bar for information.

- Verify that the **Chord** bearing is **N 12^10'54.1" W**.

  ***NOTE**: Do not manually key-in the bearing or the computed coordinates of the PT. These may not sufficiently match the coordinates of **Point 48**. This will result in a separate point being stored for the PT. Always use the locate button to define bearings, distances, radius's, etc. when matching existing data.

- In the **Course** frame use the pull down arrow to set the second selection to **Chord** also. This field will define the length of the Chord.



- Use the **Locate** button to define the **Chord** Length in the same manner as above (by using the **Locate** button to select points **44** and **48**).
- Verify that the **Chord** Length entry field is populated with the value **217.351**.
- In the **Course** frame use the pull down arrow to set the third selection to **Radius**.
- Before continuing we must change the ***Snap Lock*** from **Point Snap** to **Element Snap.**
    - Select **Tools ► Locks** and make sure that **Element Snap** has a check mark next to it.
- Now click the **Locate** button next to the **Radius** entry field.
- In MicroStation, left click on the Curve between points **44** and **48**.
- The **Traverse** command should re-emerge with the **Radius** value entered. Verify the value showing is **1105.916**.
  ***NOTE**: Do not manually key-in the value for the same reason as stated above. If the value does not match, continue using the **Locate** button until the value is correct.
- Verify that the **Radius** entry field is populated with the value **1105.916**.
- In the **Foresight Point** frame set the ***Style*** to **PROP_E_RWE**. We are using **PROP_E_RWE** rather than **PROP_E_PPC** because **Point 48** already exists and we want to eventually use that point rather then creating a new point for the same location.
- In the **Foresight Point** frame clear out (remove) the **Name** and leave the **Name** field empty.

  IMPORTANT:** The reason for the above step is to ensure we make use of **Point 48** and not create a new Point at the same location. Leaving the **Name** field blank will store coordinates without assigning a name. This will allow us to make use of the 'Check for Coincedent Point'*** option when we use the **Assign Names** command in a later step. This is an important concept to remember.

- Verify that all settings in the **Traverse** command dialog match those shown in *Figure L13-21*.
- In the **Traverse** command dialog, Click **Apply** but **DO NOT CLOSE** the **Traverse** command.
- If a **Results** dialog box appears – review the data and then click **Close** to close out of the **Results** dialog box.
- **DO NOT CLOSE** out of the **Traverse** command.
- Verify that the arc highlighted in Yellow in *Figure L13-22* was drawn in MicroStation.

The arc is added to Property Alignment SV64A.

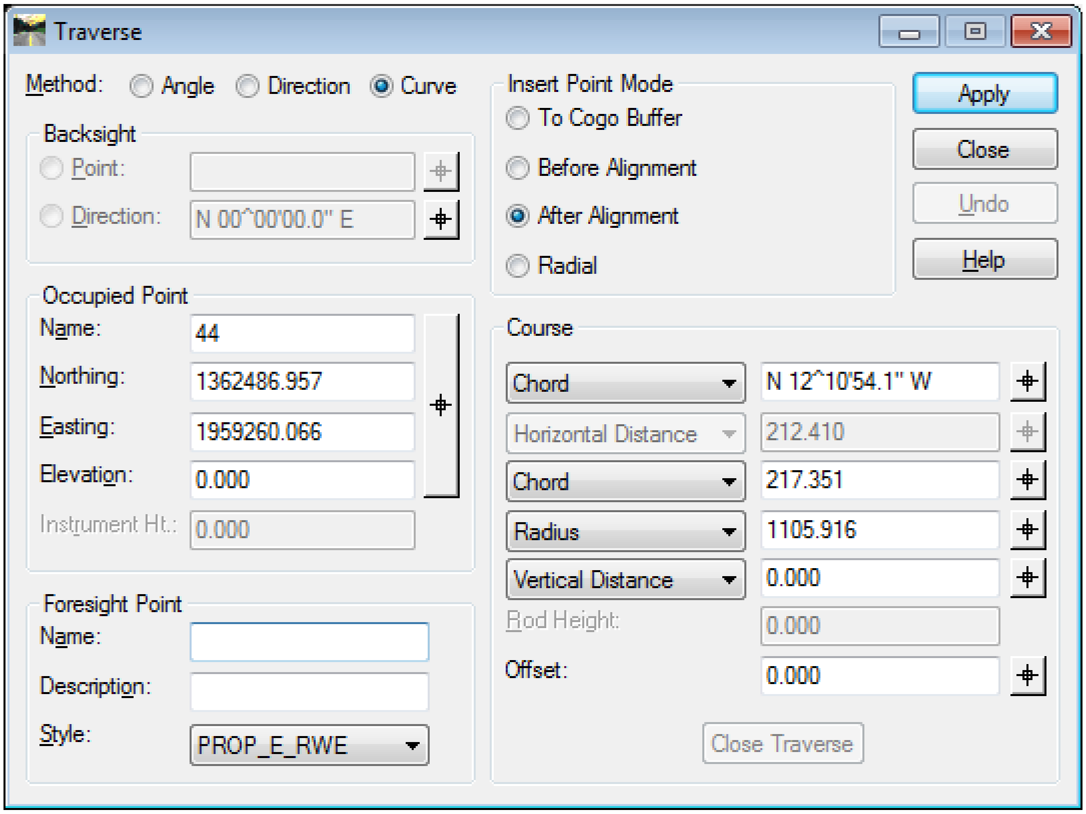


Figure L13-21 Traverse Command Dialog box

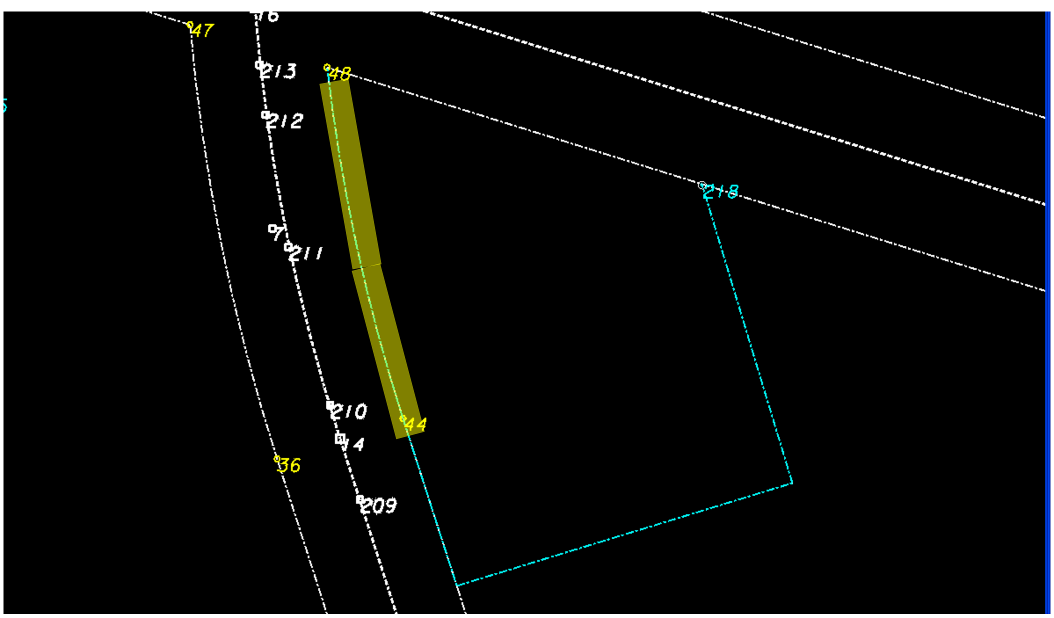


Figure L13-22 MicroStation Window

32. **Close the Property Alignment SV64A.**

- In the **Traverse** command window change the ‘***Method***’ to **Direction** .
  

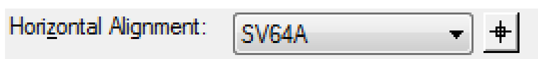
- Click the **Close Traverse** 

  button in the bottom right hand corner of the dialog box.
- If a **Results Report** appears – review the data and then **Close** the **Results** window that opens.
- **Close** the **Traverse** command.

Closes the property Alignment SV64A.

33. **Review Alignment SV64A**

- Select **Geometry ► Review Horizontal**… The **Review Horizontal Alignment** results window opens as shown in *Figure L13-23.*
- Verify that **SV64A** is shown in the ‘**Horizontal Alignment’** field.



- Notice that a point name may be missing from the PT of one of the curves. If yours does that is OK. Perform the next steps anyway. In InRoads we need to have point names assigned for each of the PC’s and PT’s and also for the stand alone PI’s (meaning PI’s not in curves. PI’s in curves do not need names) and POB’s (Point of Beginning) and POE’s (Point of Ending).
- Click **Close** to close out of the **Review Horizontal Alignment** Report.

Alignment SV64A is Reviewed

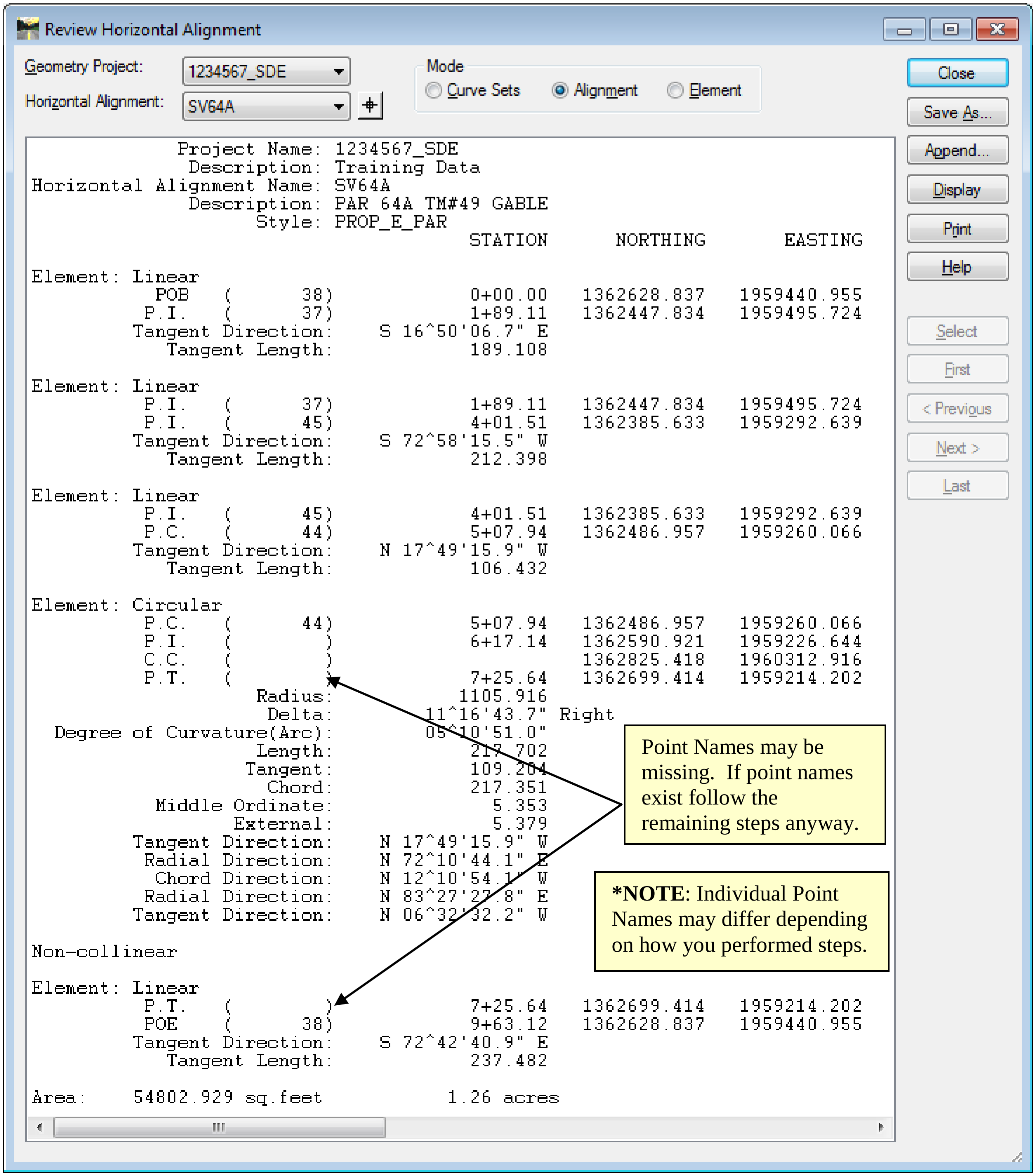
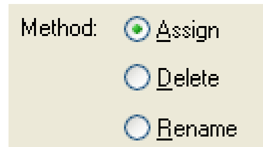


Figure L13-23 Review Horizontal Alignment

34. **Assign Names to Points in SV64A**

- Select **Geometry ▶ Utilities ▶ Assign Names**…
- In the **Assign Names** dialog box that opens set the '***Include***' option to **Alignments**'.

Check **Assign** as the '***Method***'.



Place a Check Mark next to the **Check for Coincident Points**.

- **Key-in SV64A** in the Name entry field and then Left Click in the **Selected** field . You may also use the **Locate** button to populate the field.
- Leave all other settings as Default and verify the rest of your settings match those shown in *Figure L13-24*.
- Click **Apply** & **Close**.

All coordinates in SV64A are assigned names.

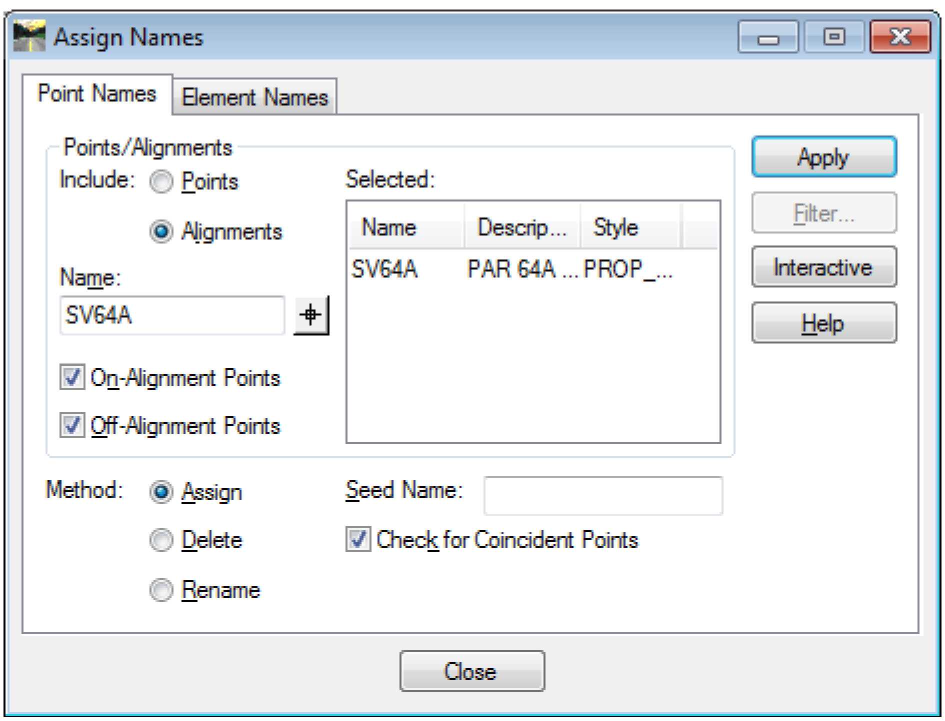
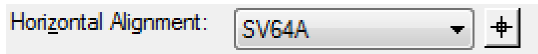


Figure L13-24 Assign Names

35. Review Alignment SV64A

- Select **Geometry ► Review Horizontal**… The **Review Horizontal Alignment** results window opens as shown in *Figure L13-25*.
- Verify that **SV64A** is shown in the ***Horizontal Alignment*** field.



- Notice that all the points now have names associated with them.
- Notice also that the beginning point and ending point have the same point name. This confirms that the alignment is a closed alignment.
- You should also see points **44** and **48** in the alignment. This confirms that points from **SV5** were reused rather than new points stored to represent the same location.
- Click **Close** to close out of the **Review Horizontal Alignment** Report.

Alignment SV64A is Reviewed

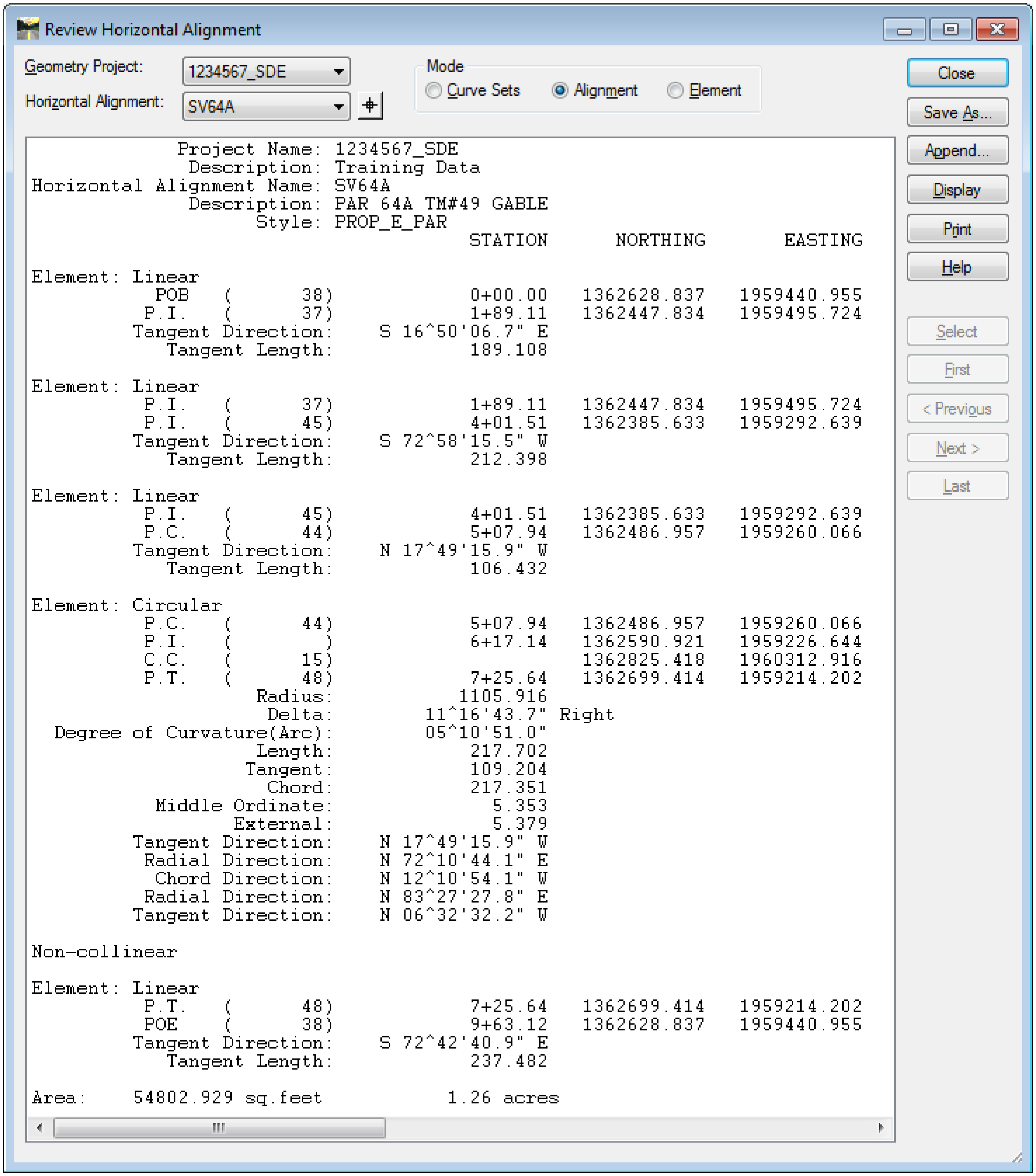


Figure L13-25 Review Horizontal Alignment

<table>
<tr><td>36.</td><td>
Create COGO Points of all Alignment Points.

* IMPORTANT: Although point names (Alignment Points) and some COGO points now exist in alignment SV64A for the PI's, PC's and PT's the Alignment points don't actually exist as COGO Points in the COGO Buffer. In order to properly display the points in MicroStation and for the proper delivery of enhancements during the life of the project the Alignment points must be converted to COGO Points and assigned the proper feature style.

Verify that SV64A is the Active alignment. A red square must be around SV64A. If it <u>does not</u> have a Red Square - highlight Alignment SV64A, right mouse click over it and select Set Active.
Select Geometry ► Horizontal Curve Set ► Events…
In the <u>Horizontal Events</u> dialog:

Check the Alignment Point to Cogo radio button.
Set the style to PROP_E_PPC
Accept all other defaults.

Click Apply. A results report opens showing all points that are now COGO points.
Click Close to close the results box.
Click Close to close the <u>Horizontal Events</u> Dialog.

* NOTE: Cogo Points are only assigned to Alignment Points for the active alignment. The process must be repeated for each alignment.
</td></tr>
<tr><td>37.</td><td>
Save the InRoads Geometry File

Even though the Alignment has been stored – the data has not yet been saved. <u>Save</u> the project and its associated modifications or changes.

Select File►Save► Geometry Project from the InRoads Menu.

<u>Please Note:</u> (The "Save As" dialog box may not appear because the Geometry Project has already been saved initially).

The Geometry Project (1234567_SDE.alg) will be saved to Lab 13 in the following path:
C:\InRoads Data\1234567\SDE Labs\Lab13

Note that the <u>InRoads</u> and <u>MicroStation Status Bar</u> (Located at the bottom of both the InRoads and MicroStation Interface) will depict a message when the Geometry Project has been saved.

The 1234567_SDE Geometry Project has now been saved to the following path:
C:\InRoads Data\1234567\SDE Labs\Lab13
</td></tr>
</table>

38.	**<u>VERY Important Step:</u>** In order to Start with a CLEAN DGN file for the next Lab: In the [MicroStation Software] – Select **Edit** ►**Select All** Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn to ensure a clean DGN file for the next Lab.*
39.	 This concludes Lab 13. Do not proceed until the Instructor directs you to do so.

Lab 14
Store Property by Angle and Create/Edit Alignment by Cogo Points

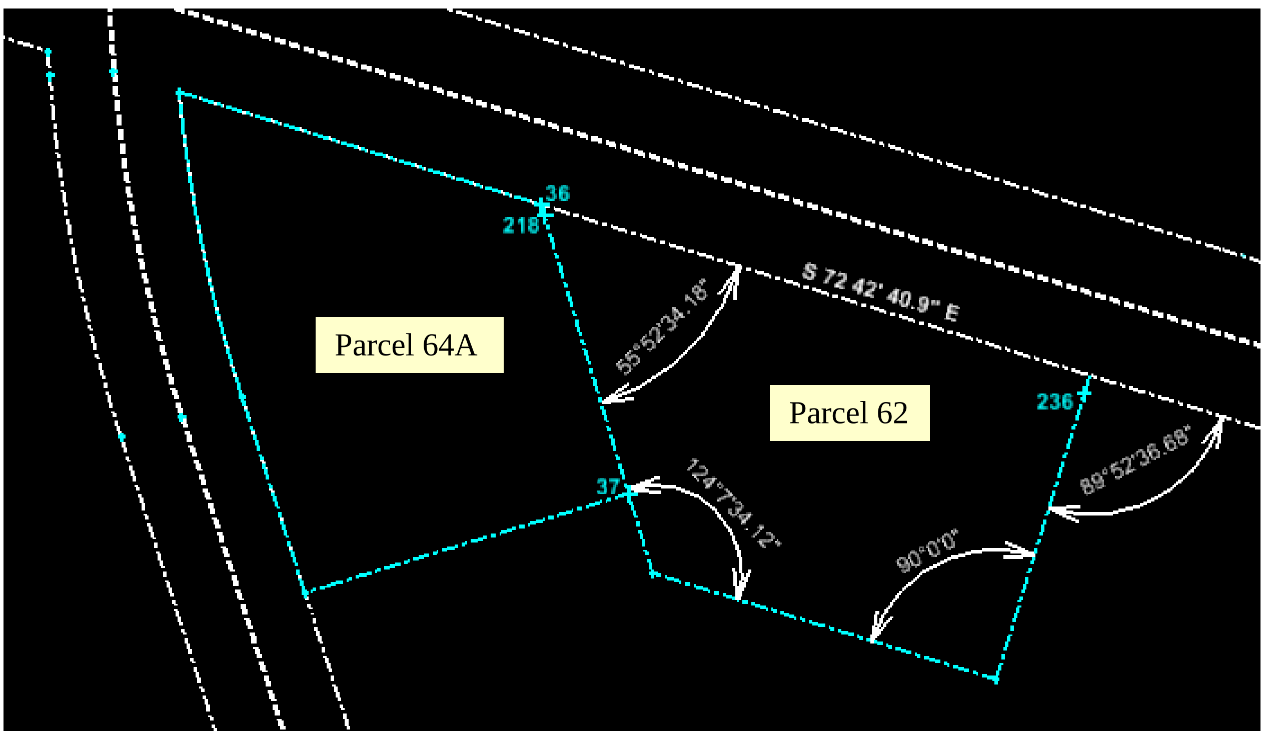
Objective

Storing property from Deeds.

The objective of Lab 14 is to:

- Learn techniques to store property information from deeds into InRoads using the Traverse by Angles command and the Create/Edit Alignment by Cogo Points command.
- The following deed and information will be used.

Beginning at point 236; running thence S 17°09'55.8" W a distance of 199.80 feet; thence N 72°50'04.2" W a distance of 225.00 feet; thence N 16°50'09.9" W a distance of 53.53 feet; thence N 16°50'06.7" W a distance of 188.41 feet; thence S 72°42'40.9" E a distance of 360.30 feet back to the point of beginning. Containing 1.344 acres more or less.



Lab 14A Getting Started

1.	**Starting Clean** In order to ensure that you are working with a “clean” database – you will close MicroStation and InRoads if they are still running from a previous Lab: To CLOSE MicroStation and InRoads - Select **File►Exit** from the [MicroStation Menu]. If any messages appear regarding the saving of projects – Select  *This closes BOTH the MicroStation and InRoads Software(s).*
2.	From the desktop, double-click on the **MicroStation** icon labeled **GDOT MicroStation V8i SS2 (x86)**.  Double click on the icon labeled **GDOT MicroStation V8i SS2 (x86)**. • When the **MicroStation Manager** dialog box opens – navigate to the **C:\InRoads Data\1234567\SDE Labs\Standards** folder and select the “**GDOT 3D Working File.dgn**”. Click **Open**. • Now open InRoads from within MicroStation by selecting: **InRoads ► InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu]. *The MicroStation and InRoads Software(s) will open.*
3.	**Clear the MicroStation Graphics (***This step may be ignored if your MicroStation Window is already clear of graphics***)** • Select **Edit ►Select All** from the [MicroStation Menu]. • Then select the **<DELETE>** key on the computer keyboard. *The MicroStation Window is now clear of all graphics from the previous lab and ready for this lab.*
4.	**Verify Project Defaults** • In InRoads select **File ►Project Defaults** • Use the pull down next to *Configuration Name:* to select **1234567_SDE** which you created in Lab 1. • Verify Settings match those shown in *Figure L14-1*. • Click **Apply** & **Close.**

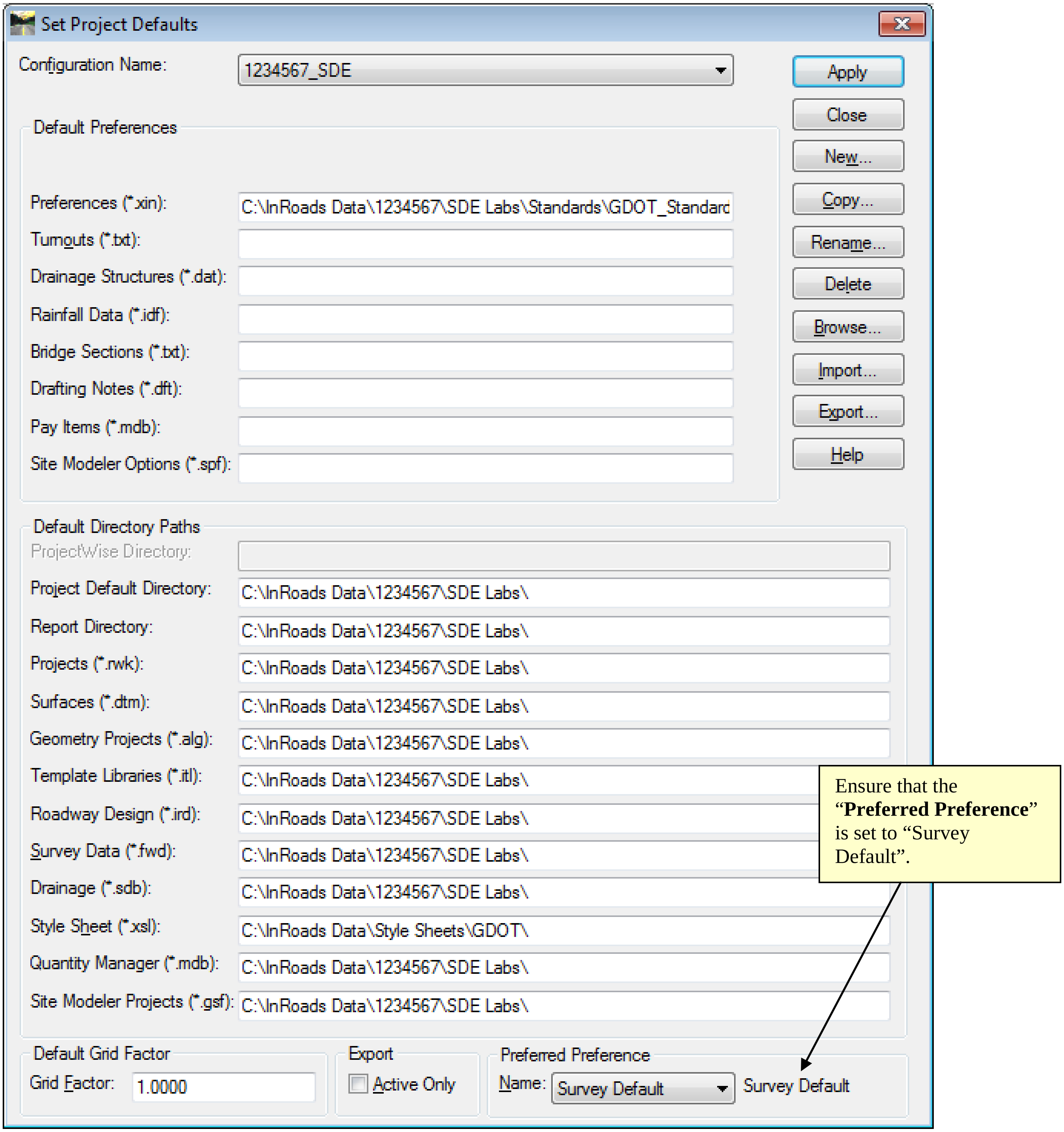


Figure L14-1 Project Defaults

5.	**Load the InRoads Geometry file (1234567_SDE.alg file)** • Select **File ► Open** from the **InRoads Menu**. Hint: You may also right mouse click over 'Geometry Projects' in the Workspace Bar and select open. • Browse to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab14** Select the file named: **1234567_SDE.alg** • Click **Open** and then click **Cancel**. *Opens the 1234567_SDE.alg file*
6.	**Set Survey Default Preferences** • In InRoads - Select **File► Project Options**. • In the **Project Options** dialog box select the **General** Tab. • Click the **Preferences** button at the bottom of the dialog box. • Choose ***Survey Default***. Click **Load** and **Close**. • In the **Project Options** dialog box - Click **Apply** and **Close**. *Sets the Survey Defaults Preference.*
7.	**Set the View Horizontal Annotation and Cogo Points view settings.** • Select **Geometry ► View Geometry ► Horizontal Annotation.** The **View Horizontal Annotation** dialog opens as shown in *Figure L14-2*. • Click the **Preferences** Button. The **Preferences** dialog opens as shown in *Figure L14-3*. • In the **Preferences** dialog highlight **NO BEARING & DISTANCE**. • Click **Load** and **Close**. This loads the viewing preference settings into the **View Horizontal Annotation** dialog box. • The inputs should now correspond to the screen capture depicted in *Figure L14-4*. *The settings in the View Horizontal Annotation are set. This will ensure that the proper symbology is applied to the Cogo points and alignments in MicroStation.*

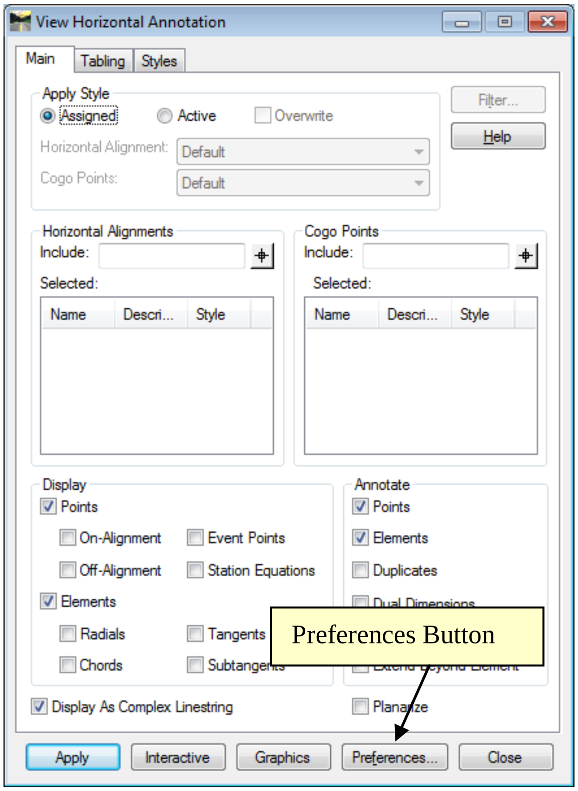


Figure L14-2 View Horizontal Alignments

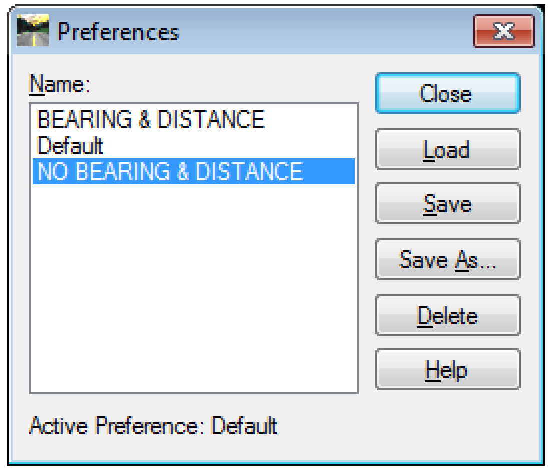


Figure L14-3 Preferences

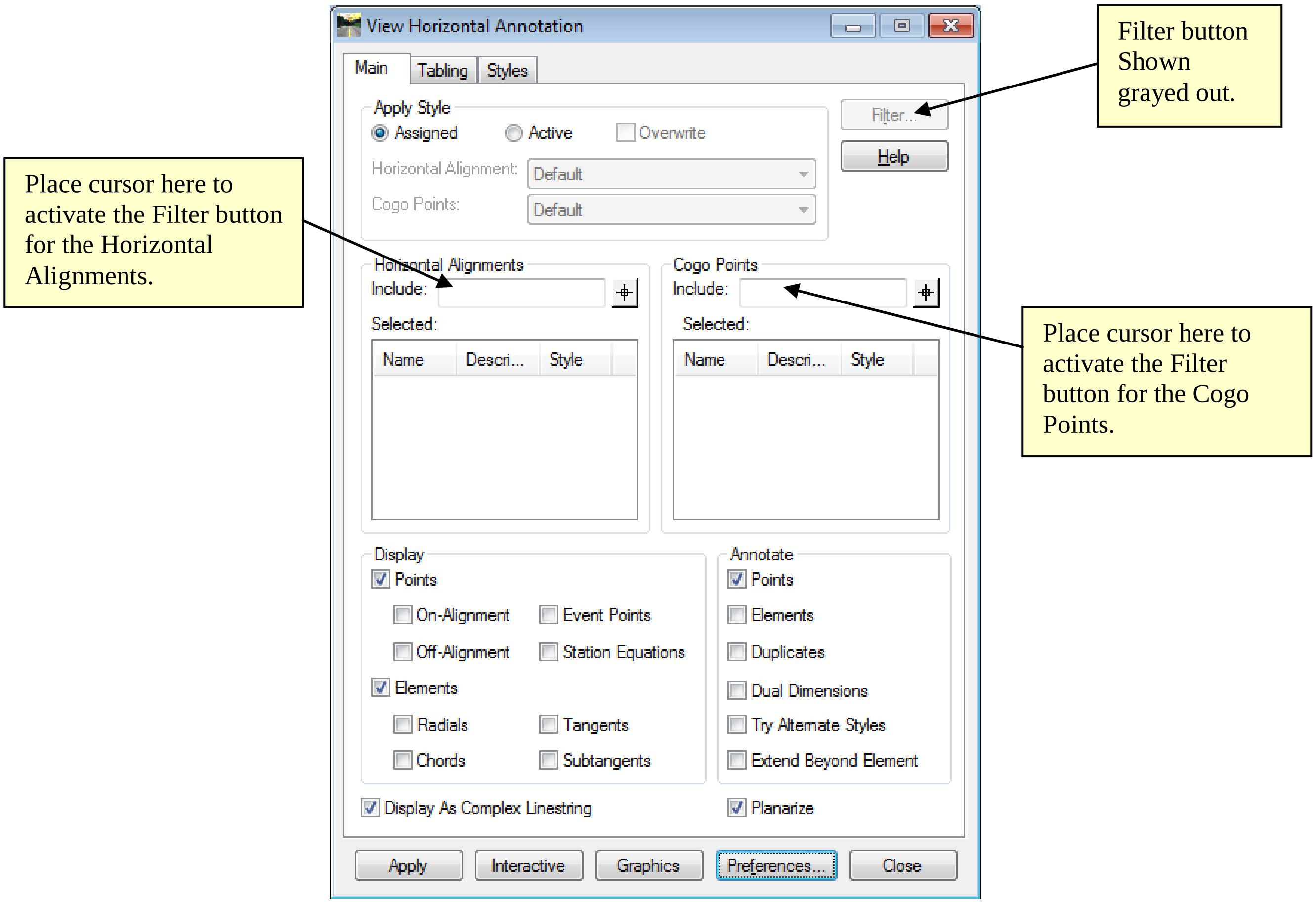
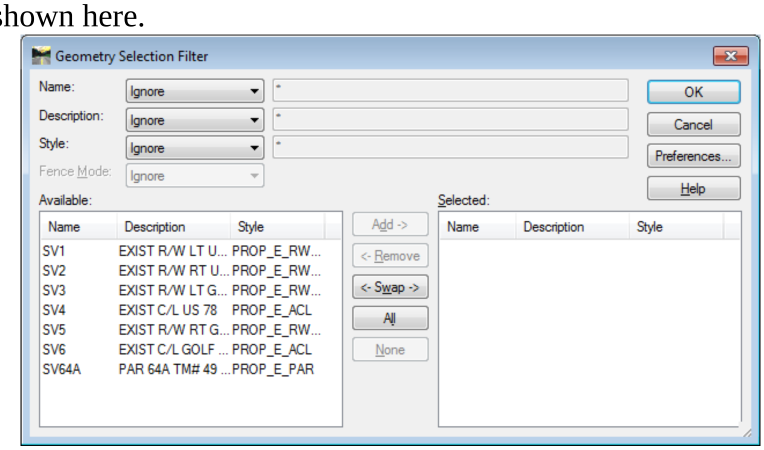
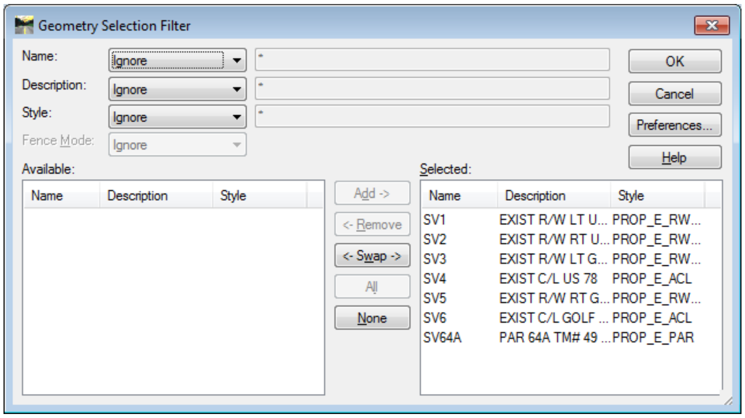


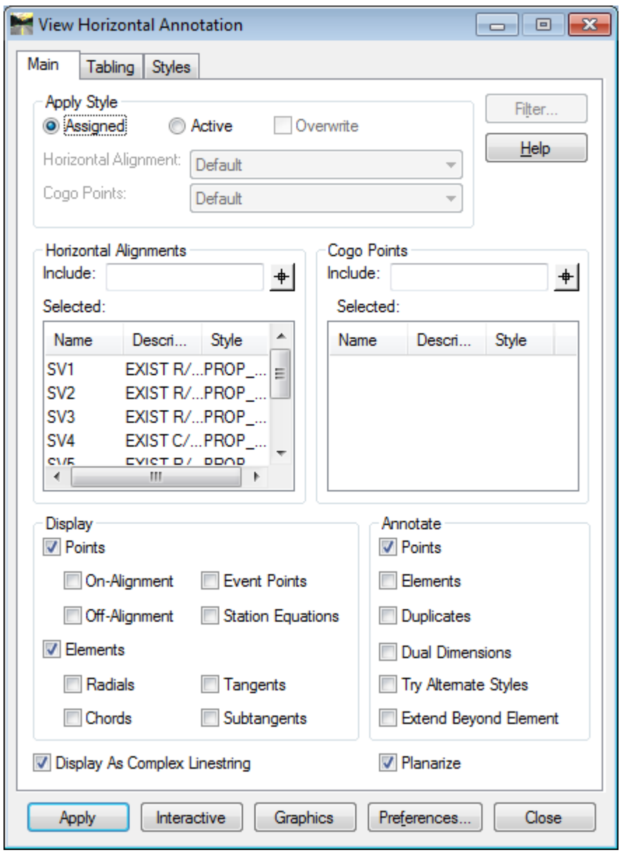
Figure L14-4 View Horizontal Alignments

8.	**Now that we have set the proper view settings in the <u>View Horizontal Annotation</u> dialog we will select the Alignments and Cogo Points to view.** • Notice in the **<u>View Horizontal Annotation</u>** dialog that the **Filter** button is grayed out. • Activate the **Filter** button by placing your cursor in the '***Horizontal Alignments***' "Include" field and click the **Filter** button. The **<u>Geometry Selection Filter</u>** opens as shown here. 

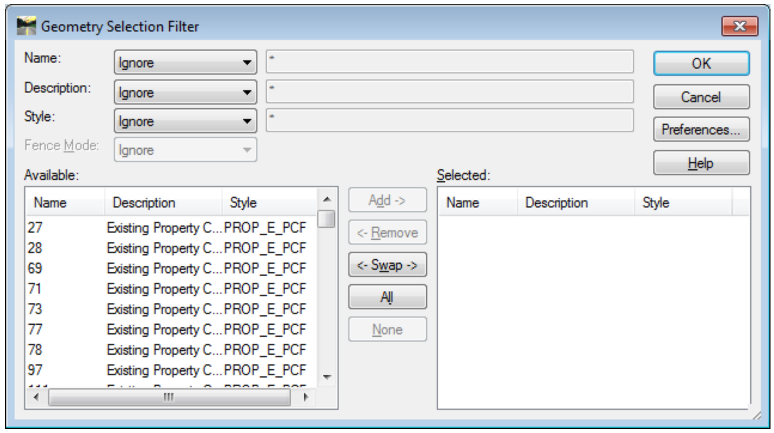
- Click the **All** button in the **Geometry Selection Filter** to move all Alignments from the **Available** field to the **Selected** field as shown here.



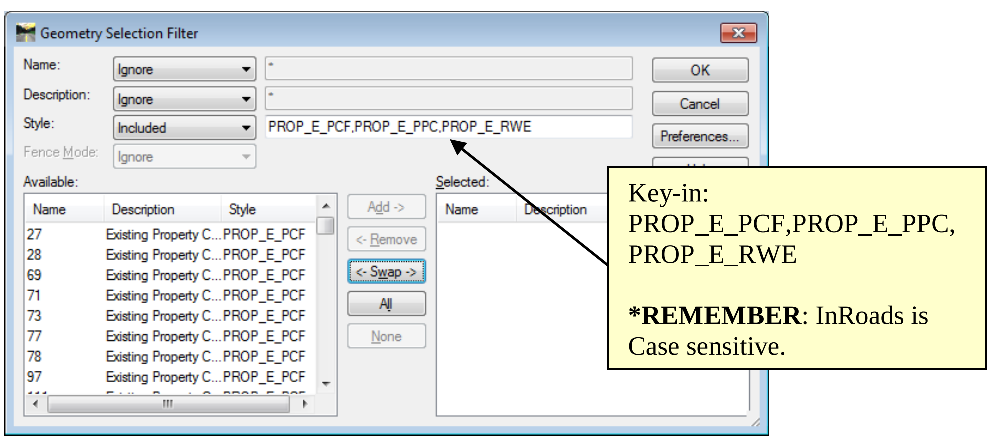
- Click **OK**.
- The Selected Alignments are entered into the **View Horizontal Annotation** dialog as shown here.



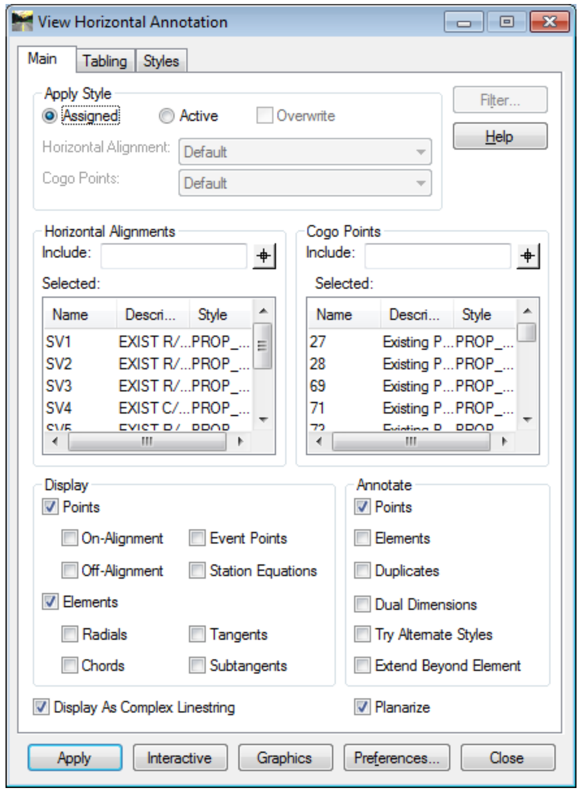
- Place your cursor in the ***Cogo Points*** 'Include' field to activate the **Filter** button for the Cogo points and click the **Filter** button. The **Geometry Selection Filter** dialog opens again. This time with the Cogo Points in the '***Available***' field as shown here.



- For this Lab we are only going to view Cogo Points with the Feature Style **PROP_E_PCF,PROP_E_PPC, & PROP_E_RWE**.
- Set the ***Style*** to **Included** by using the pull down menu. This activates the ***Style*** key-in field.
- In the ***Style*** key-in field enter **PROP_E_PCF, PROP_E_PPC, PROP_E_RWE** and Left click in the '***Available***' field to recognize the entry. (This filters the points in the '***Available***' field to only show those points with the Feature Styles **PROP_E_PCF, PROP_E_PPC** and **PROP_E_RWE**).



- Click the **All** button to move the Filtered points from the '***Available***' field to the '***Selected***' field.
- Take a moment to scroll through the points listed in the '***Selected***' field to verify only those points with either a **PROP_E_PCF,PROP_E_PPC** or **PROP_E_RWE** Feature Style are listed.
- Click **OK**. The Filtered points are entered in the **<u>View Horizontal Annotation</u>** dialog **Cogo Points** 'Include' field as shown below.



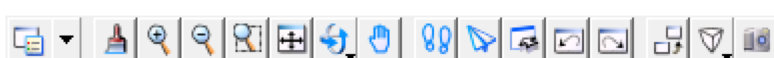
- Click **Apply** and **Close** in the **View Horizontal Annotation** dialog. Please be patient while the alignments and points are viewed.
- In MicroStation, click the **Fit View** Icon.

Fit View Icon

- Ensure that your view in MicroStation resembles that shown in *Figure L14-5*.

9. **Zoom into Parcel Alignment SV64A and the general area where the next Parcel Alignment, SV62, will be stored.**

- In MicroStation, select the **Window Area** Icon and zoom into the area shown in *Figure L14-5* by using the **Window Area** Icon.



Window Area Icon

- Verify that your view resembles that shown in *Figure L14-6*. (*NOTE: **Pt.236** is identified for use in a future step.)

Zooms into the MicroStation Window.

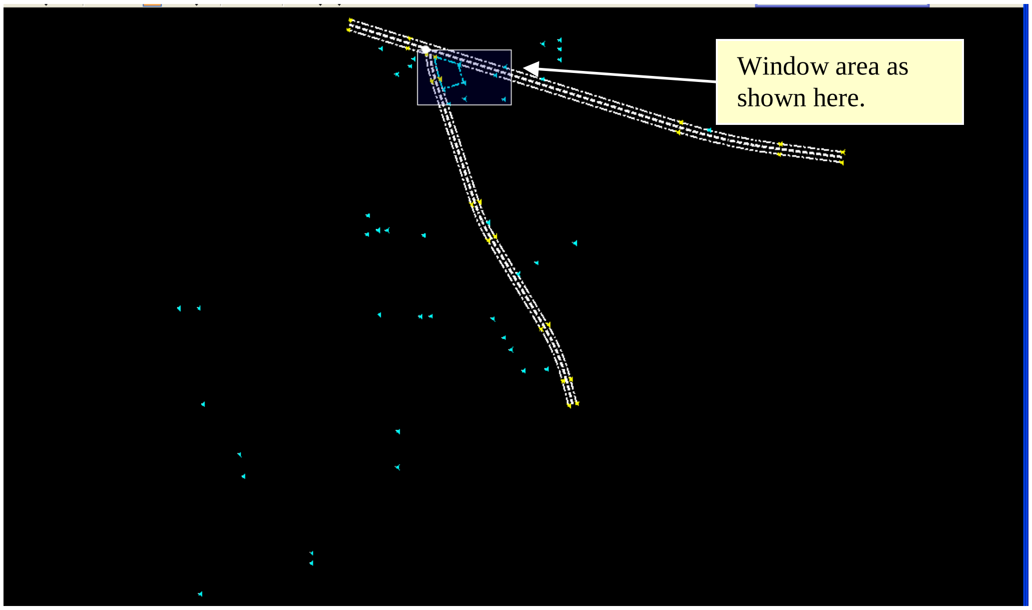


Figure L14-5 MicroStation View Window

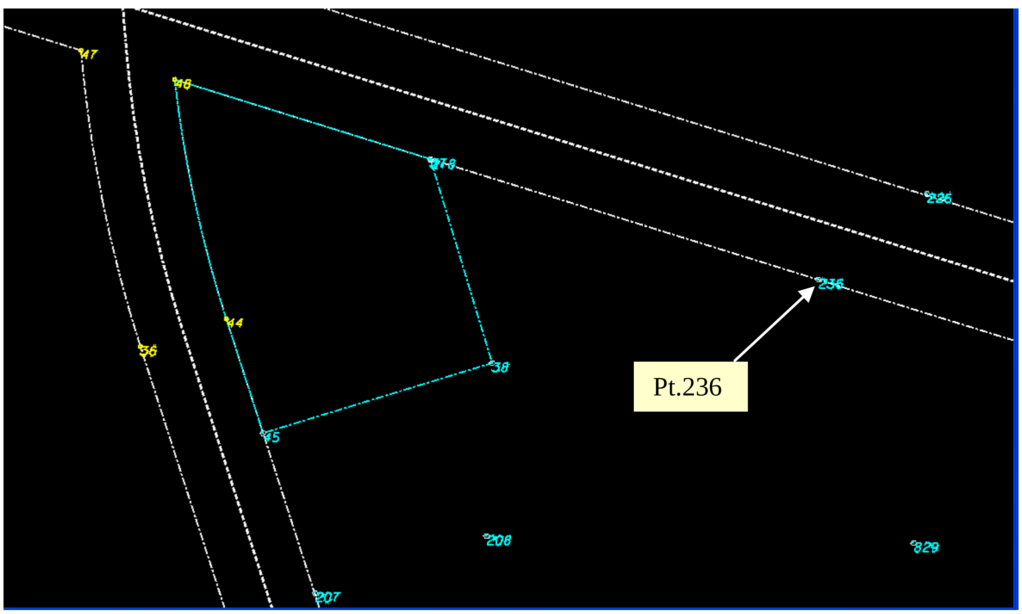
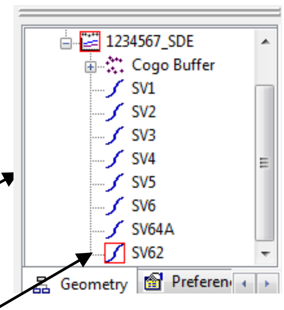


Figure L14-6 MicroStation View Window

10. **Create Parcel Alignment SV62.**

- Select **File ▶ New**. (The **New** dialog box opens.)
- Select the **Geometry** tab.
- In the **New** dialog, enter:
  - Type: **Horizontal Alignment**
  - Name: **SV62 (*REMEMBER:** All alignments stored by the Surveyor or SDE shall begin with the prefix **SV** as opposed to COGO Points which shall not be given a prefix.)
  - Description: **PAR 62 TM #49 PARTRIDGE**
  - Style: **PROP_E_PAR**
  - Curve Definition: **Arc**
- Click **Apply** and **Close**.
- Parcel **SV62** is added to the *InRoads Explorer* window and made the Active Alignment as shown here.

InRoads Explorer Window

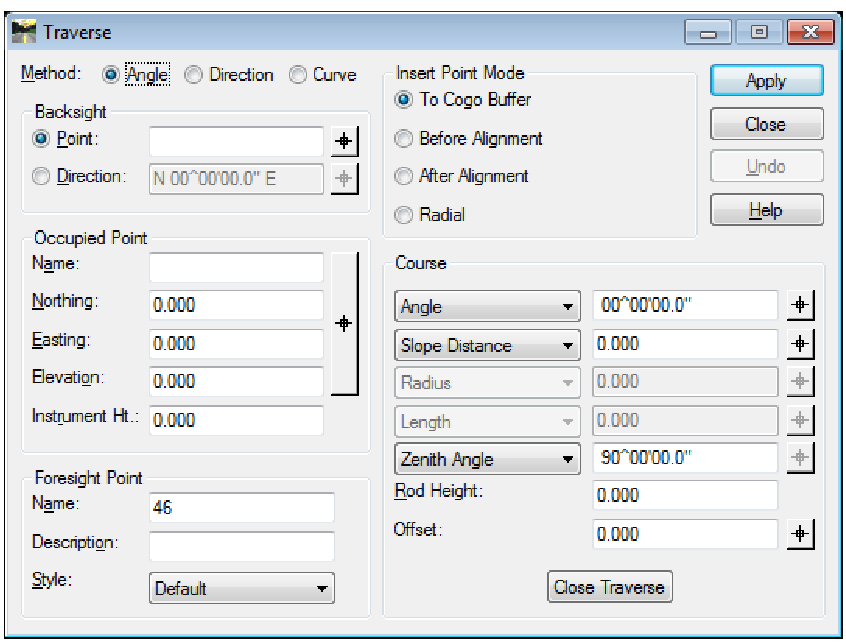


Alignment SV62 shown as the active alignment. (i.e. with a red box around it.)

Alignment SV62 is created and made the Active Alignment.

11. **Open the Traverse command.**

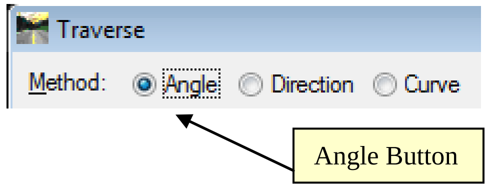
- Select **Geometry ▶ Traverse**… (The **Traverse** dialog box opens).



The Traverse command dialog box opens.

12. **Set the Method in the <u>Traverse</u> command to Angle.**

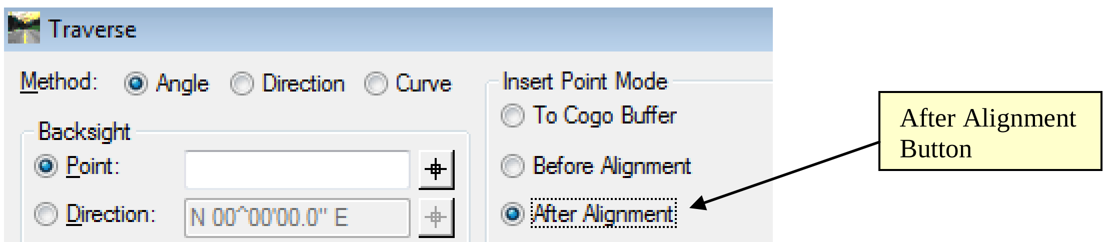
- Click the ***Angle*** radio button as shown here.



The Traverse command Method is set to 'Angle'.

13. **Set the Insert Point Mode in the <u>Traverse</u> command to After Alignment.**

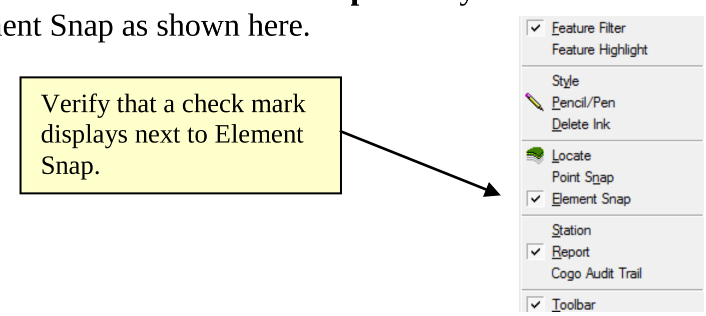
- Click the ***After Alignment*** radio button as shown here.

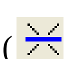


The Traverse command Insert Point Mode is set to 'After Alignment'.

14. **Change Lock to Element Snap.**

- Before continuing, we must change the ***Lock*** setting to **Element Snap**. This will allow the user to use the **Locate** button to determine the direction/bearing by clicking on the element.
- Select **Tools ► Locks ► Element Snap**. Verify that a check mark now displays next to Element Snap as shown here.



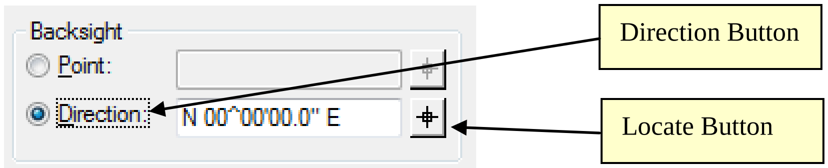
- You should also see this icon () in the InRoads Toolbar indicating that **Element Snap** is the active InRoads snap setting.

InRoads Toolbar

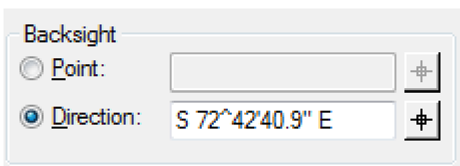
The Lock setting is changed to Element Snap.

15. **Set the Backsight mode to Direction and define the Backsight Direction to be the direction of the existing R/W.**

- Click the ***Direction*** radio button as shown here.



- Now Left Click the **Locate** button next to the '***Direction'*** field. (The **<u>Traverse</u>** command will disappear.)
- You are now prompted in the lower left corner of the MicroStation Window to '> ***Identify element'*** > Identify element. Look for the prompt in MicroStation.
- Left **Click** on the line shown in *Figure L14-7*.
- The **<u>Traverse</u>** command will reappear with the bearing entered into the 'Direction' Field. Verify your bearing matches that shown here.



The required Backsight information is entered.

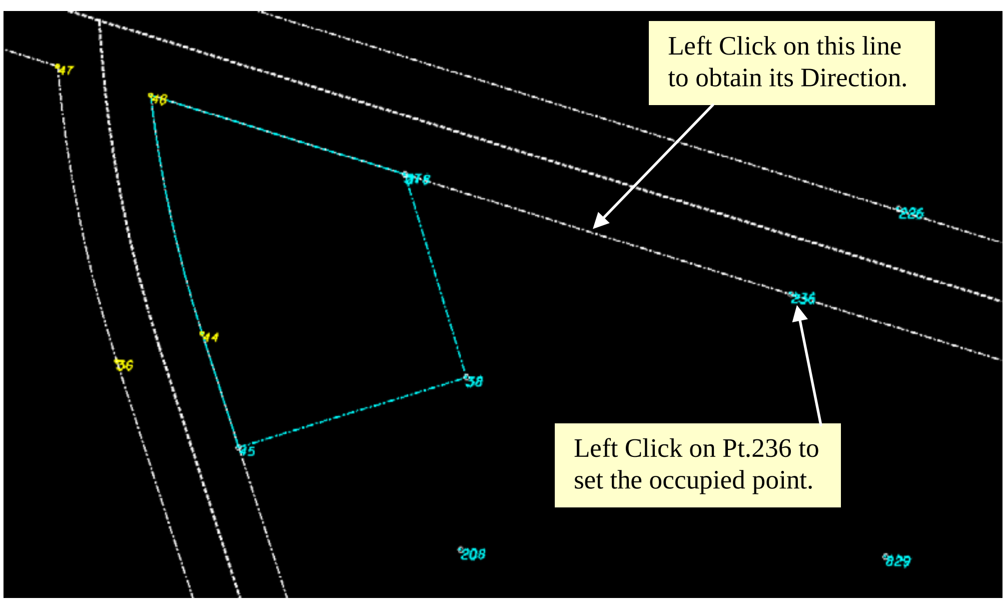
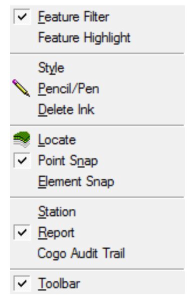


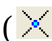
Figure L14-7 MicroStation Window.

16. **Select the Occupied Point to be Point 236.**

- Before continuing, the InRoads ***Lock*** setting must be changed to **Point Snap**. This will allow the user to use the **Locate** button to graphically select InRoads points viewed in the MicroStation window.
- Select **Tools ► Locks ► Point Snap.** Verify that a Check mark now displays next to Point Snap as shown here.

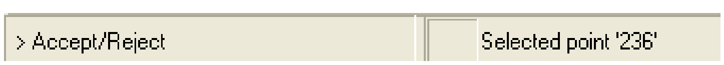
Verify that a check mark displays next to Point Snap.



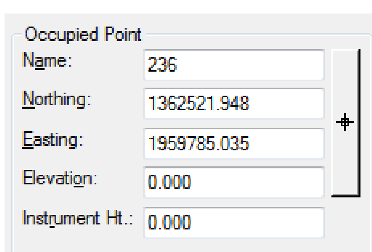
You should also see this symbol () in the InRoads Toolbar indicating that Point Snap is the active InRoads snap setting.

InRoads Toolbar

- Click the **Locate** button in the '**Occupied Point'** frame and left click on Point **236**. The point highlights with a purple hourglass as shown here. 
- Notice in the Bottom Left corner of the MicroStation window that when you click on a point, the point name is shown and you are prompted to accept or reject as shown below. If the point shown is not the point you want, right mouse click and the next closest point will be selected or you will be prompted to identify another point if there is no other point in the vicinity.



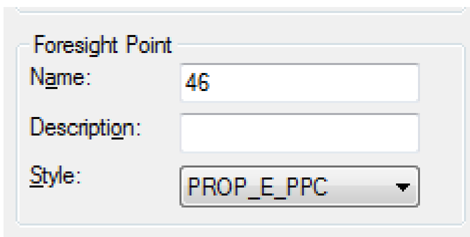
- Left click anywhere on a blank part of the MicroStation view when Point **236** is selected to accept the entry.
- The **Traverse** command dialog box reopens.
- Verify the settings in the '**Occupied Point'** frame of the dialog box match those shown here.



The required Occupied Point information is entered.

17. **Set the style in the Foresight Point to be PROP_E_PPC (Property Point Computed).**

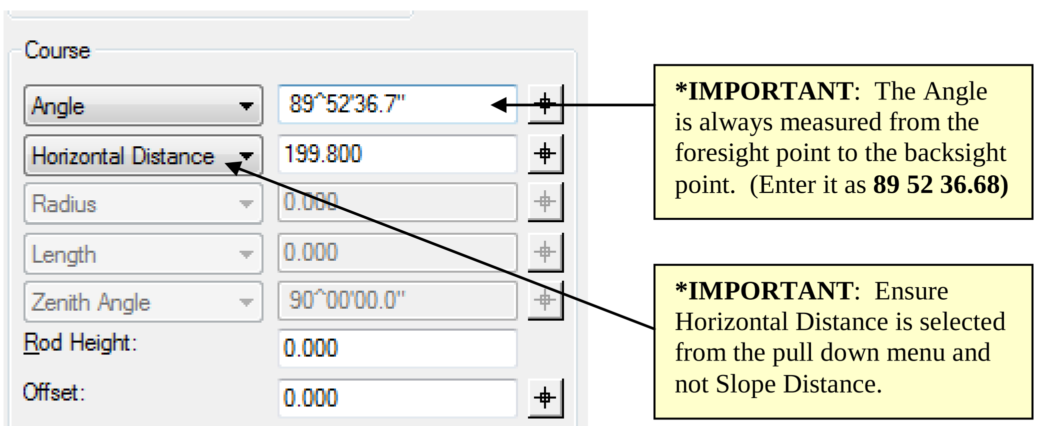
- In the '**Foresight Point'** frame (this is the point that will be stored) notice that a **Point Name** is entered for you. You may either accept this entry or leave the field blank.
- In the '**Style**' field use the Pulldown arrow to select **PROP_E_PPC** as the style.
- Verify your settings match those shown here. (Your point name may not be the same. This is OK.)



The Foresight Point style is set.

18. **Enter Course information**

- In the '**Course**' frame enter the information as shown here. This information comes from the deed and drawing on the 1st page of this Lab.



You have entered the Course information from the deed and drawing depicted on pg.14-1

19. **Click Apply in the Traverse command.**

- Click **Apply**.
- Take a moment to review the data in the **Results** box that opens and then **Close** it.
- Verify that the first leg of Alignment **SV62** was drawn in MicroStation as shown in *Figure L14-8*.
- Click **Close** to exit the **Traverse** command.

You have added the first leg of the Parcel to Alignment SV62.

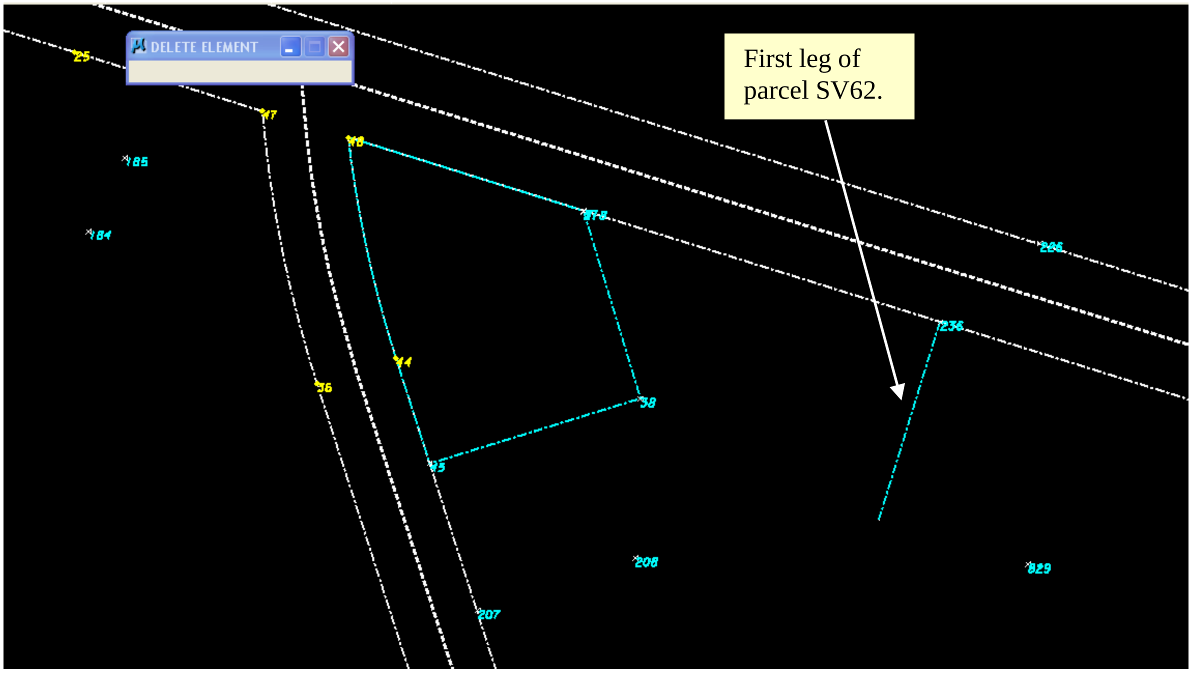


Figure L14-8 MicroStation Window.

20.	**Review Alignment SV62**

20. **Review Alignment SV62**

- Select **Geometry ► Review Horizontal**… The **Review Horizontal Alignment** results window opens as shown here.

```
                                        STATION      NORTHING       EASTING

Element: Linear
           POB    (      236)           0+00.00    1362521.948    1959785.035
          POE     (       46)           1+99.80    1362331.048    1959726.067
         Tangent Direction:      S 17^09'55.8" W
            Tangent Length:             199.800
```

- Notice that the Alignment at this point contains two points -- **236** and **46**. Point **236** is a Cogo point picked up during field survey and Point **46** is an alignment point that will have to be converted to a Cogo point in a later step.
- Click **Close** to close the **Review Horizontal Alignment** Report.

Review Alignment SV62.

21. **Even though the first leg of the parcel you just added to the alignment appears to intersect with the Existing R/W line it does not. If you were to zoom in very close you would find that they don't actually intersect. This must be reconciled by extending or triming to the Existing R/W.**

- In MicroStation, turn Fill OFF by selecting **Settings ► View Attributes** and then click the Fill icon to turn Fill off.
- In MicroStation, Zoom in closely to **Point 236** and you will see that the first leg you stored of alignment **SV62** extends beyond the existing R/W as shown in *Figure L14-9*. We will trim this alignment.
- Select **Geometry ► Utilities ► Trim Alignment**.
- In the lower left corner of MicroStation you are prompted to > ***Identify first clipping alignment***. > Identify first clipping alignment . **Select** the alignment shown in *Figure L14-9* by left clicking on it. It will turn purple.
- In the lower left corner of MicroStation you are now prompted to > ***Identify second clipping alignment.*** > Identify second clipping alignment . **Select** the alignment shown in *Figure L14-9* by left clicking on it. It will turn purple.
- In the lower left corner of MicroStation you are now prompted to > ***Identify portion to clip.*** > Identify portion to clip . Left click on the portion to clip identified in *Figure L14-9*.
- In the lower left corner of MicroStation you are now prompted to > ***Accept/Reject***. > Accept/Reject . Left click in a blank portion of the MicroStation Window to accept the operation.
- Right mouse click once over the MicroStation window to deactivate the **Trim Alignment** command.

Alignment SV62 has been extended or trimmed at the existing R/W.

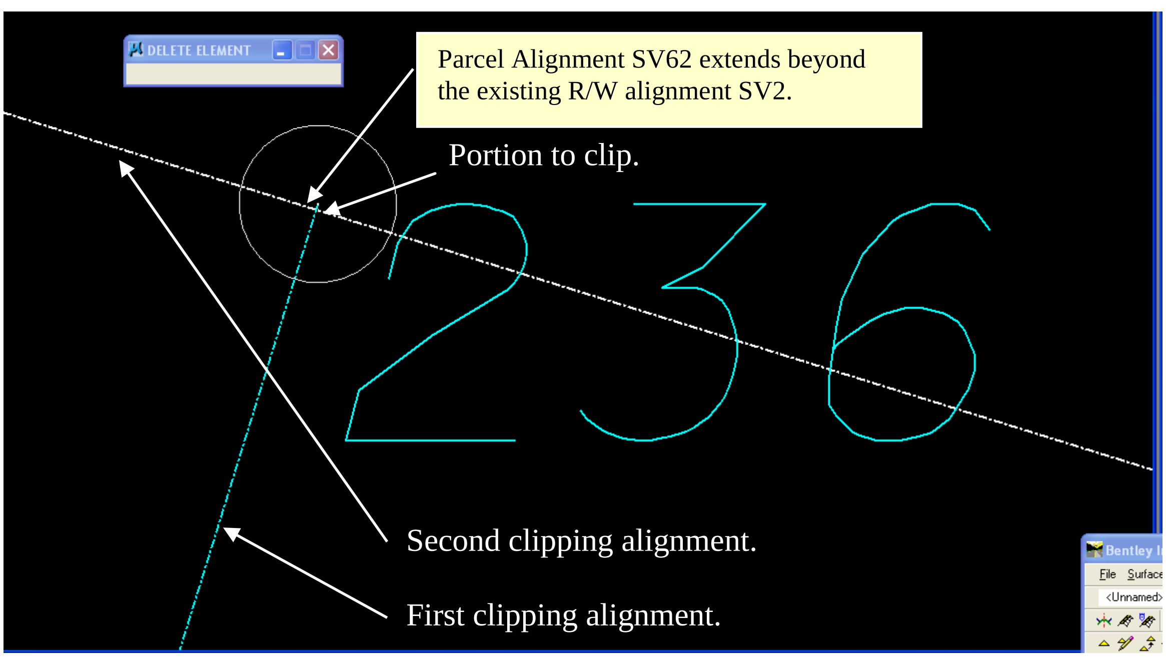
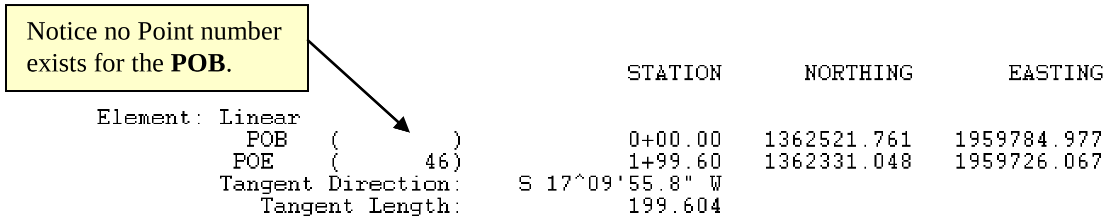


Figure L14-9 MicroStation Window

22. **Review Alignment SV62 Again.**

- Select **Geometry ► Review Horizontal**… The **Review Horizontal Alignment** results window opens as shown here.



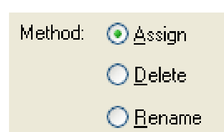
- Notice that the alignment no longer begins with **Point 236** and that it now has a **POB** with coordinates but no Point Number. This is because the Alignment has been trimmed.
- Click **Close** to close the **Review Horizontal Alignment** Report.

Review Alignment SV62.

23. **Assign Names to Alignment SV62.**

- Select **Geometry ► Utilities ► Assign Names**…
- In the **Assign Names** dialog box that opens set the ***Include*** radio button to '**Alignments**'.

Check the ***Assign*** radio button as the '**Method'**.



Check the option to '**Check for Coincident Points'**.

- Key-in **SV62** in the '**Name**' entry field. You may also use the **Locate** button to populate the field.
- Verify the rest of your settings match those shown in *Figure L14-10.*
- Click **Apply** & **Close**.

Assign Names to to Alignment SV62.

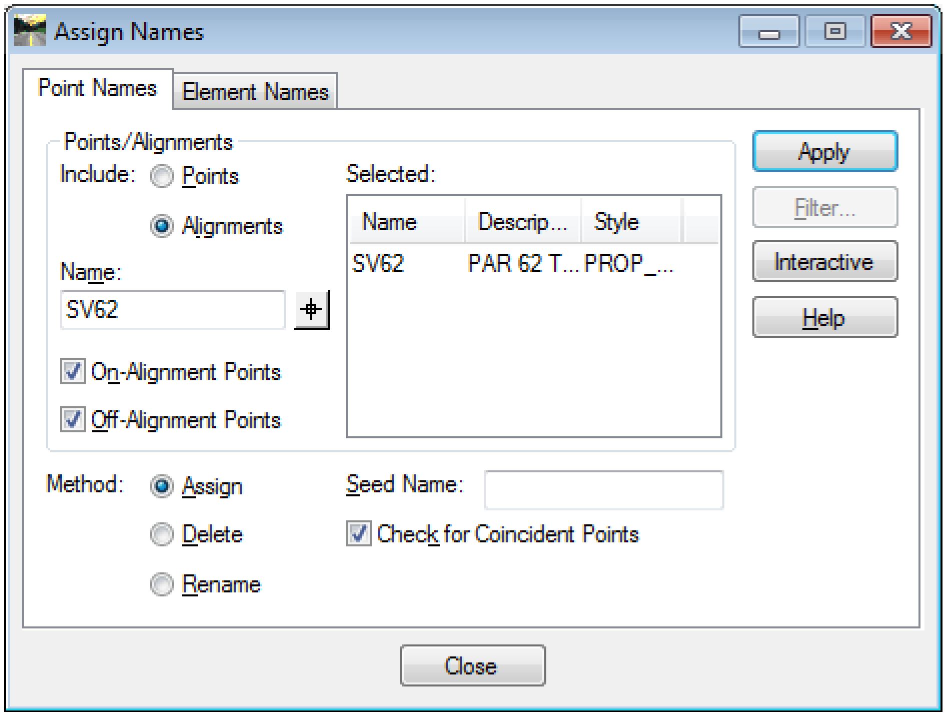


Figure L14-10 Assign Names Dialog

24. **Review Alignment SV62 Again.**

- Select **Geometry ► Review Horizontal**… The **Review Horizontal Alignment** results window opens as shown here.

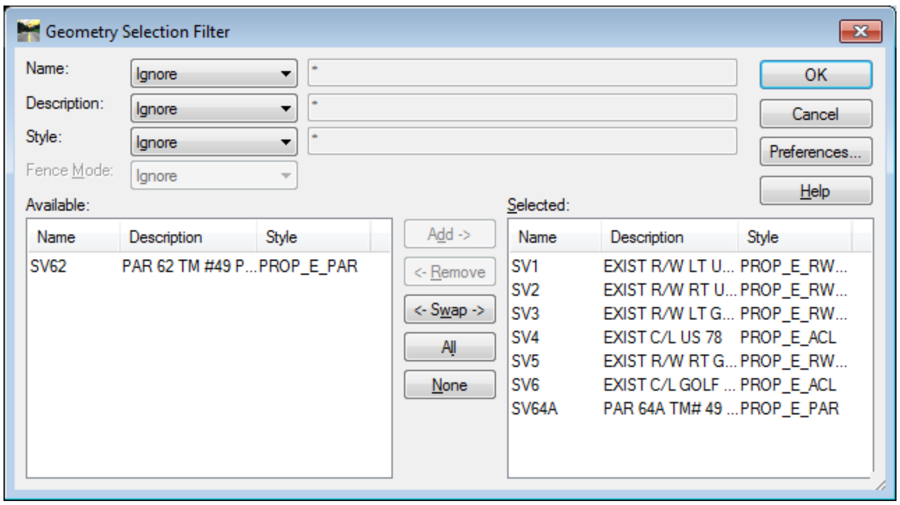
```
                                    STATION      NORTHING       EASTING

Element: Linear
           POB    (       49)         0+00.00   1362521.761   1959784.977
          POE    (       46)         1+99.60   1362331.048   1959726.067
         Tangent Direction:      S 17^09'55.8" W
            Tangent Length:           199.604
```

- Notice that Alignment **SV62** now begins with a Point named **49**.
- Click **Close** to close the **Review Horizontal Alignment** Report.

Review Alignment SV62.

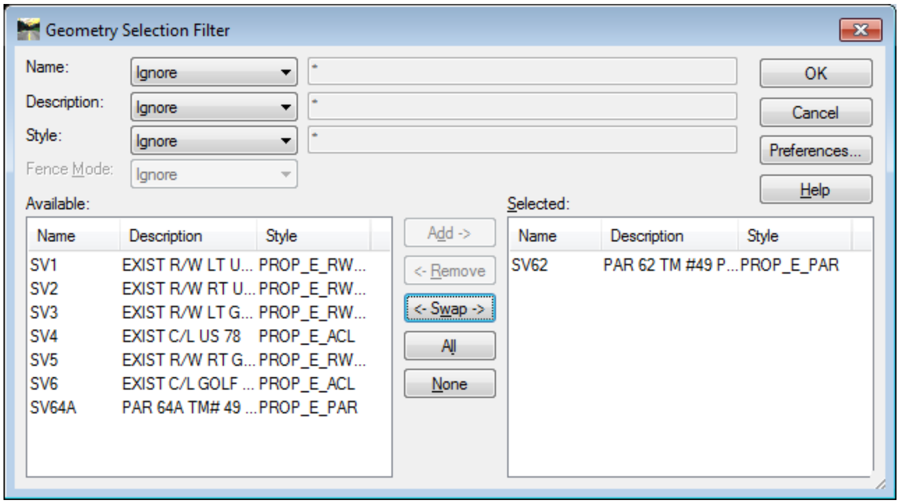
25. **View New Points**

- Select **Geometry ► View Geometry ► Horizontal Annotation…** to open the **View Horizontal Annotation** dialog box.
- Notice in the **View Horizontal Annotation** dialog box that the **Filter** button is grayed out.
- Activate the **Filter** button by placing your cursor in the '***Horizontal Alignments***' "Include" field and click the **Filter** button. The **Geometry Selection Filter** opens as shown here.

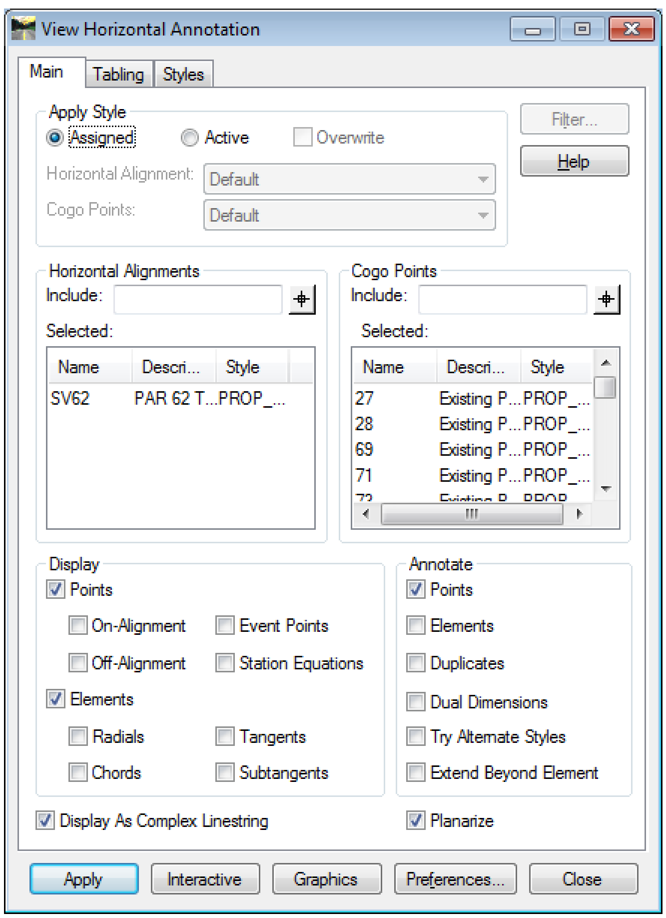


- Click the **Swap** button in the **Geometry Selection Filter** to move all Alignments from the **Selected** field to the **Available** field AND to move the Alignment of **SV62** from the '**Available'** field to the '**Selected**' field as shown below.

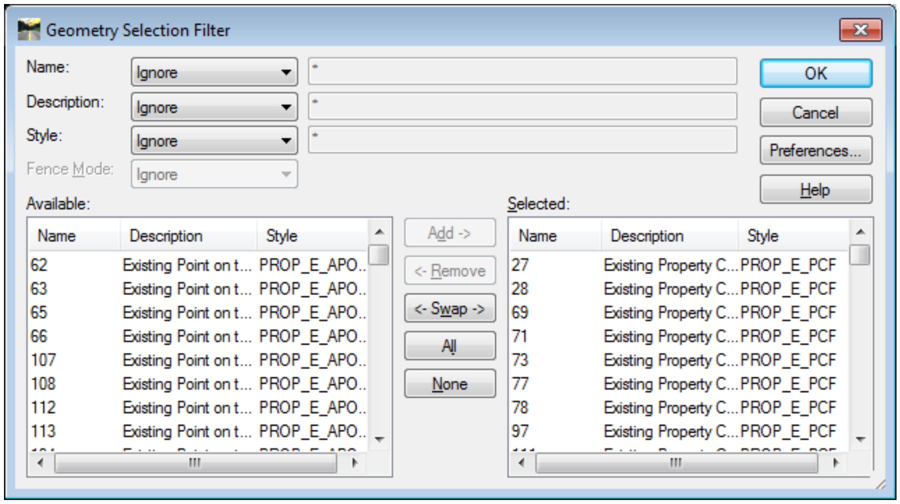
C



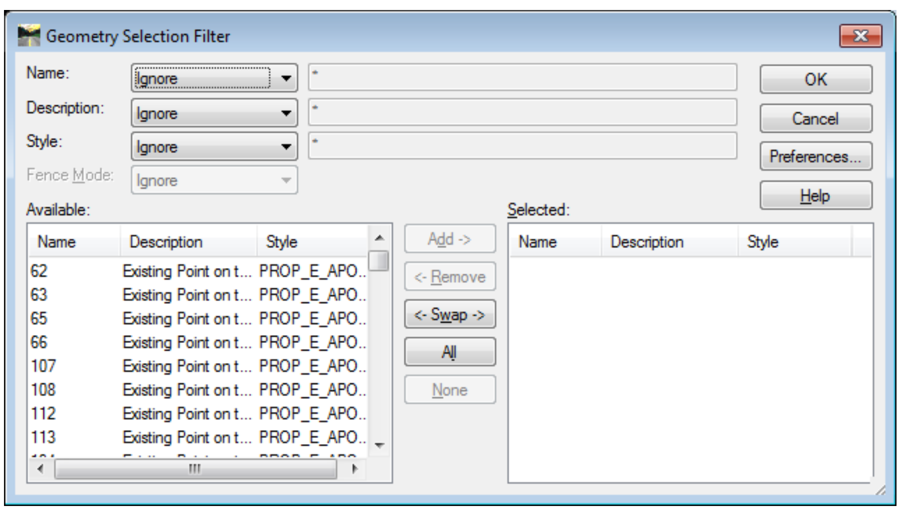
- Click **OK.**
- The Selected Alignment of **SV62** is entered into the **View Horizontal Annotation** dialog as shown here.



- Place your cursor in the ***Cogo Points*** 'Include' field to activate the **Filter** button for the Cogo points and click the **Filter** button. The <u>**Geometry Selection Filter**</u> dialog opens again with the Cogo Points in the '***Available***' and '***Selected***' field as shown here.



- Click the **None** button to move the Filtered points from the '***Selected***' field back to the '***Available***' field as depicted below.



- Click **OK**. The Filtered points are now removed from the <u>**View Horizontal Annotation**</u> dialog **Cogo Points** 'Include' field.

- Important Step – Ensure to place a check mark in the **Display** frame to include **On-Alignment** points
- Verify your dialog matches that shown in *Figure L14-11*.
- Click **Apply** & **Close**.
- Verify your MicroStation View matches that shown in *Figure L14-12*.

***IMPORTANT:** Viewing alignments with the '**On-Alignment'** check button checked views the points in the alignment (**49** & **46** in this case) on the active level in MicroStation and not the points correct symbology (level, font, text size, line weight, line style, color, etc). To view the point's correct symbology the '**On-Alignment**' check button must be unchecked and the Cogo points must be selected and viewed. Since we have not yet converted the Alignment Points to Cogo Points at this stage we cannot do this at this time. This is an adequate method of temporarily viewing the point names during the SDE's input of alignments. During the creation of the final MicroStation DGN file for delivery to the designer the '**On-Alignment**' check button must be unchecked and the Cogo Points must be selected and viewed.

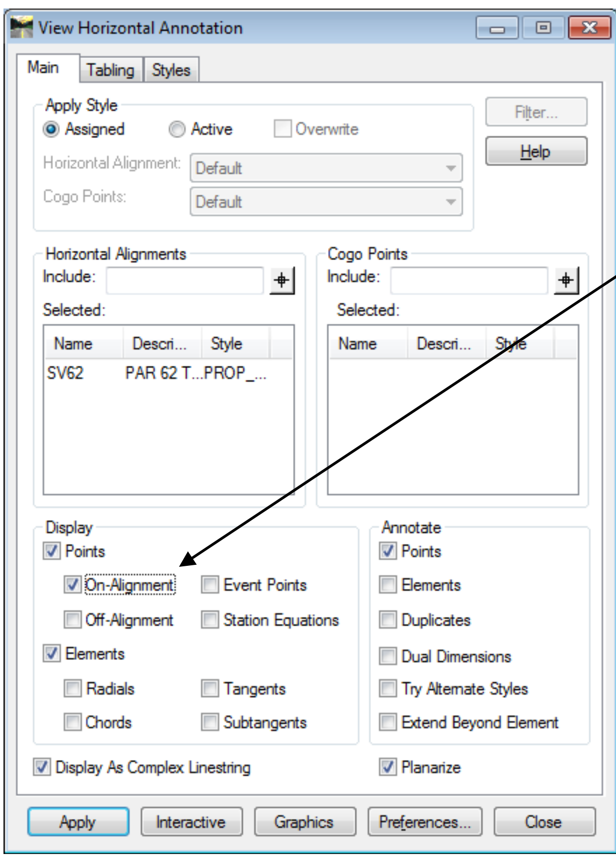


Figure L14-11 View Horizontal Annotation

***IMPORTANT:** Viewing alignments with the 'On-Alignment' check button checked views the points on the active level in MicroStation and not the points correct symbology (level, font, text size, line weight, line style, color, etc). To view the point's correct symbology the 'On-Alignment' check button must be unchecked and the Cogo points must be selected and viewed. Since we have not yet converted the Alignment Points to Cogo Points at this stage we cannot do this at this time. This is an adequate method of temporarily viewing the point names during the SDE's input of alignments. During the creation of the final MicroStation DGN file for delivery to the designer the 'On-Alignment' check button must be unchecked and the Cogo Points must be selected and viewed.

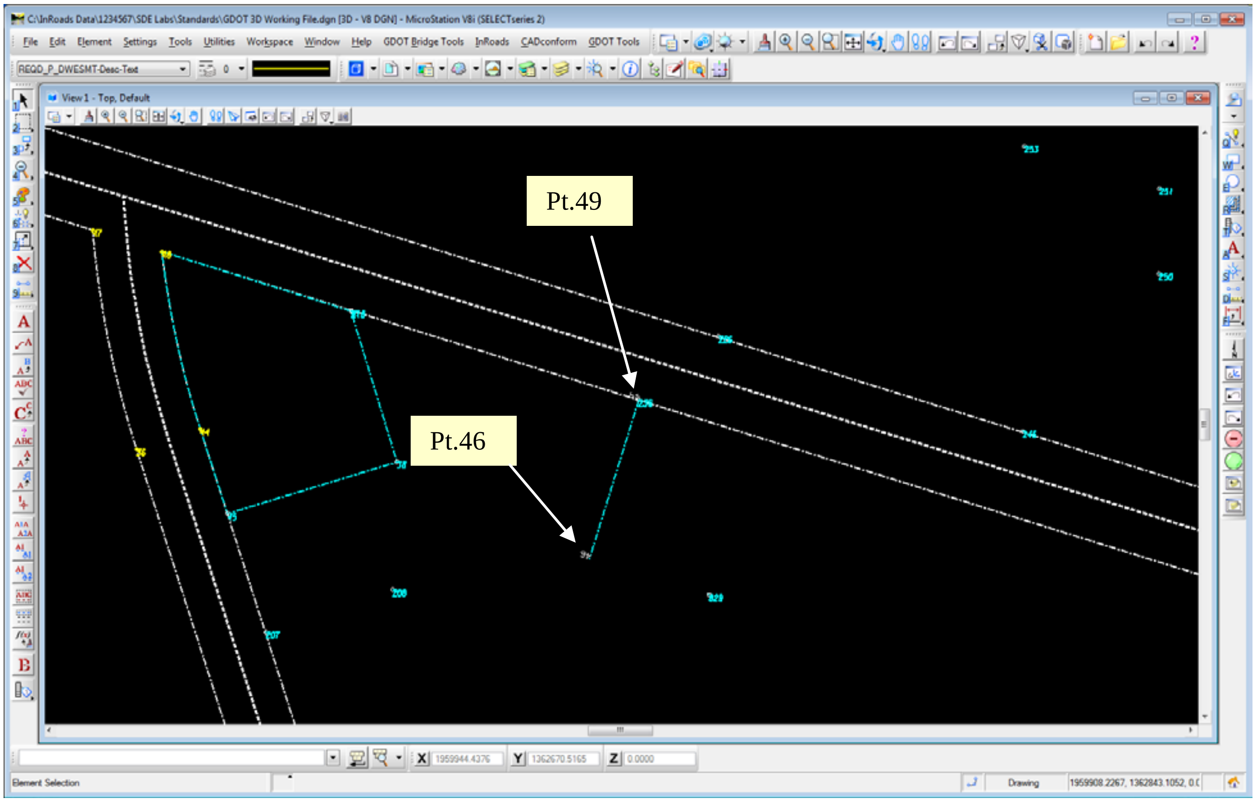
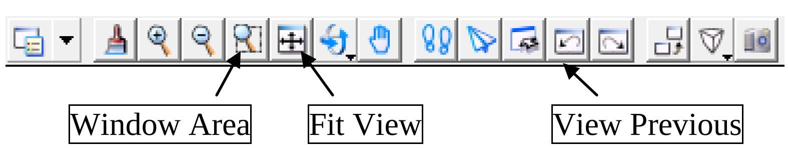


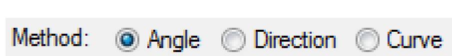
Figure L14-12 MicroStation Window

26. **Continue storing the rest of Parcel SV62.**

- Begin by returning to the MicroStation view shown in *Figure L14-12* (depicted above). This may be accomplished in MicroStation by using the **Fit View** icon and the **Window Area** icon or by using the **View Previous** icon until the view returns.



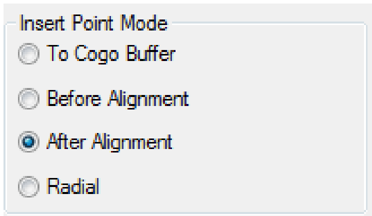
- In InRoads -- Select **Geometry ►Traverse**..
- Check the radio button to set the **Method** to ***Angle***.



The Traverse Method is set.

27. **Set Insert Point Mode.**

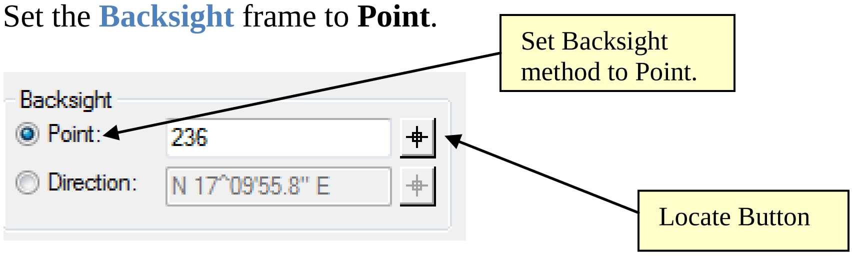
- Check the radio button under **Insert Point Mode** to ***After Alignment***.

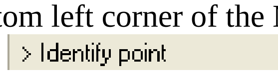


The Traverse Insert Point Mode is set.

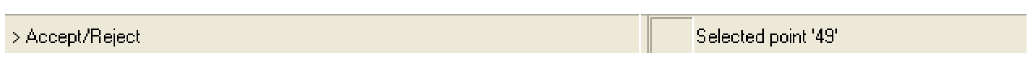
28. **Set the Backsight point**

- Set the **Backsight** frame to **Point**.



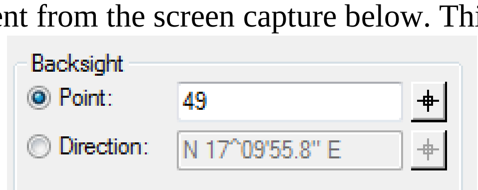
- Set the InRoads Snap funtion to **Point Snap** by selecting **Tools ► Locks** and ensuring a check mark exists next to **Point Snap**.
- Click the **Locate** button next to the **Backsight** entry field.
- Notice in the bottom left corner of the MicroStation window you are prompted to > ***Identify Point***. 

- Left Click on Point **49** located where **SV62** intersects the existing R/W as shown in *Figure L14-13* and identified as Backsight Point = **Pt 49**. It highlights with a purple hour glass. .
- Notice in the bottom left corner of the MicroStation window you are prompted to >**Accept /Reject** Selected Point'49'.



*__DISCUSSION__: If we had not run the __<u>Assign Names</u>__ command in **Step 23** we would not have been able to properly identify Point **49** for this step.

- Left Click on a blank part of the screen to **Accept** the point. The **Backsight** point is set as shown here. (Please Note: Your greyed out **Direction** bearing may be different from the screen capture below. This is OK).



The Backsight Point is set.

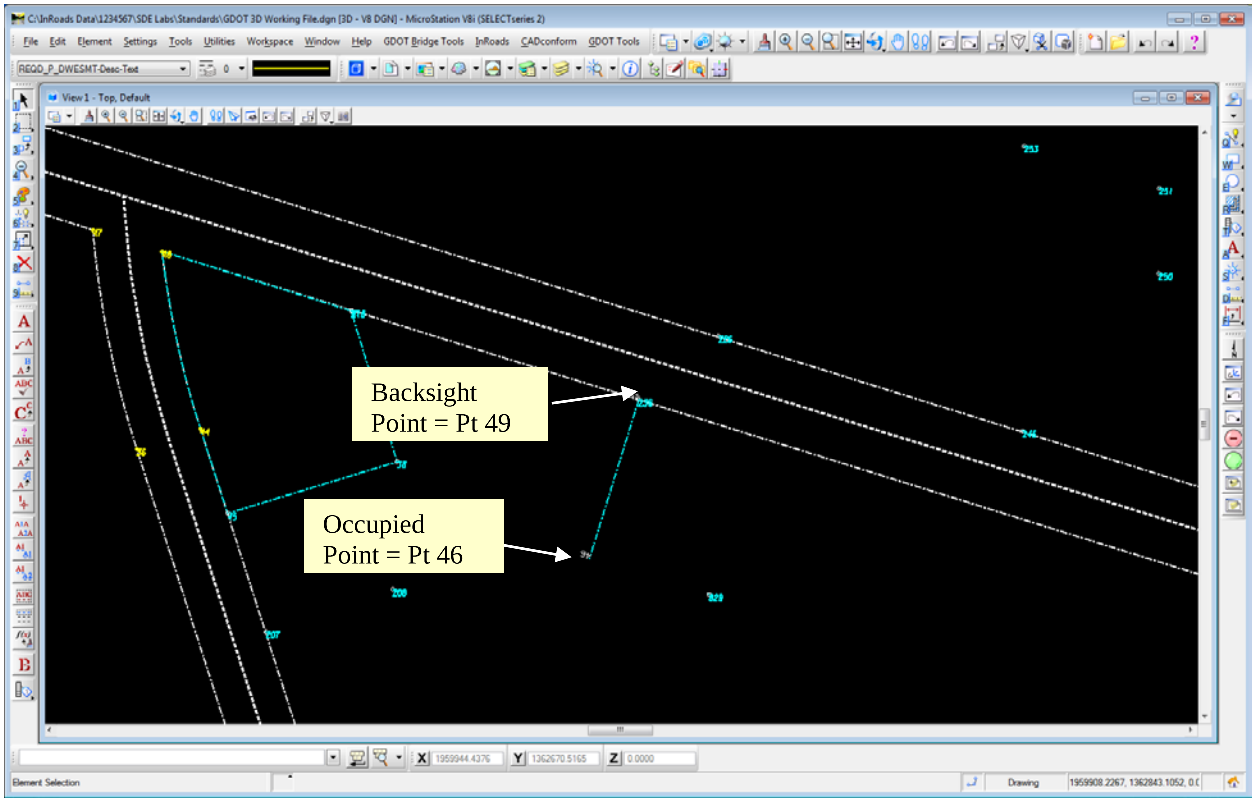
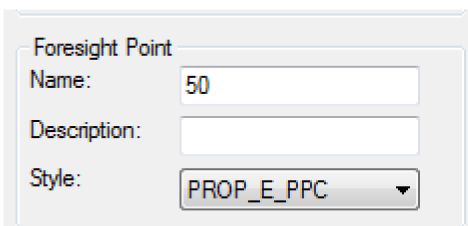
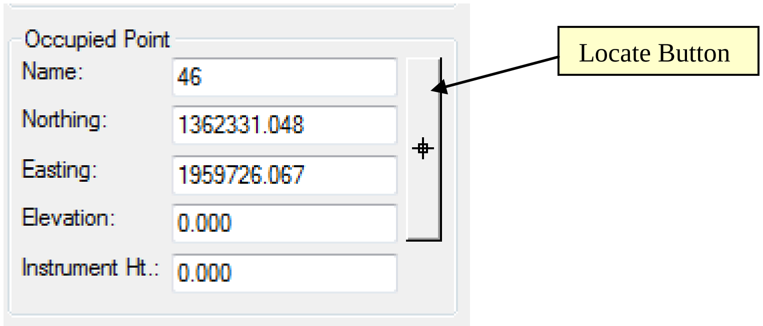


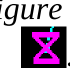
Figure L14-13 MicroStation Window

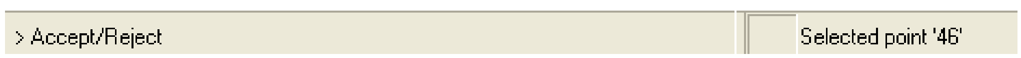
29.	**Set Foresight Point Style.** • In the **Forsight Point** Style frame use the pulldown to select **PROP_E_PPC** as shown here.  ***IMPORTANT:** When the **<u>Traverse</u>** commands '**Insert Point Mode'** is set to '**Before Alignment'**, '**After Alignment'** or '**Radial**', InRoads only adds the required coordinates to the alignment. An Alignment Point name is assigned to the coordinates in the alignment if the '**Foresight Point Name'** field has a number entered. If no number is entered, a name is not assigned to the coordinate and must be added later using the '**<u>Assign Name'</u>** command.

30. **Select the Occupied Point.**

- In the '**Occupied Point'** frame -- left click on the **Locate** button.



- Notice in the bottom left corner of the MicroStation window you are prompted to > ***Identify Point***. 
.
- Left Click on the point identified in *Figure L14-13* as Occupied Point = **Pt 46**. It will highlight with a purple hourglass. .
- Notice in the bottom left corner of the MicroStation window you are prompted to > ***Accept/Reject*** Selected point '46'.

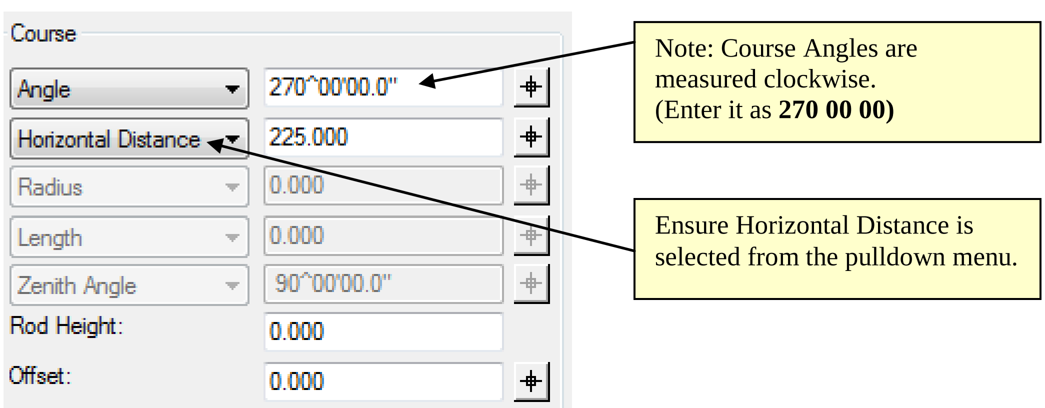


- Left Click on a blank part of the screen to accept the entry.

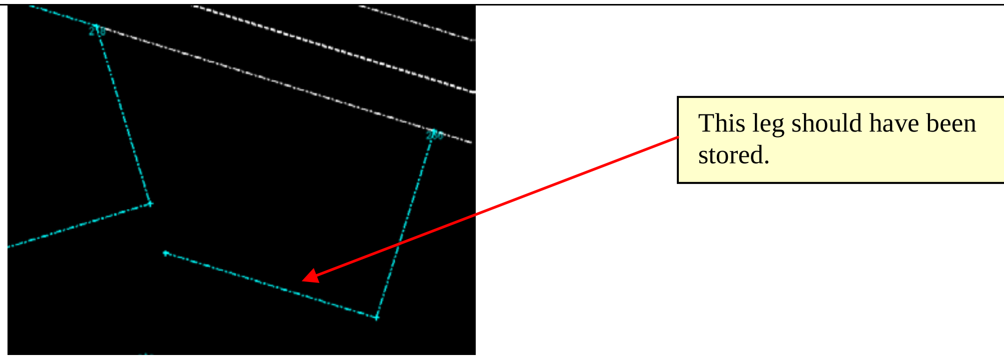
The Occupied Point is set.

31. **Enter the Course Angle and Horizontal Distance**

- In the **Course** frame enter the information as shown here. This information comes from the Deed and Drawing on the 1st page of the Lab.



- Click **Apply** and a **Results** Report will appear. **Close** the **Results** Report.
- Verify the leg you stored matches that shown below.



- **<u>Do not</u>** click the **Close Traverse** button but **<u>do</u>** Click **Close** to close the **<u>Traverse</u>** command. If you inadvertently click the **<u>Close Traverse</u>** button you may click the **Undo** button to undo the action you performed by mistake.

You have added the second leg of the Parcel Alignment.

32. **View New Points**

- Select **Geometry ► View Geometry ► Horizontal Annotation…**
- Type in **SV62** in the '***Horizontal Alignments***' "Include" field and then select the **<TAB>** key on the computer keyboard.
- Match the settings shown in *Figure L14-14*.
- Click **Apply** & **Close**.
- Verify your MicroStation view matches that shown in *Figure L14-15*.

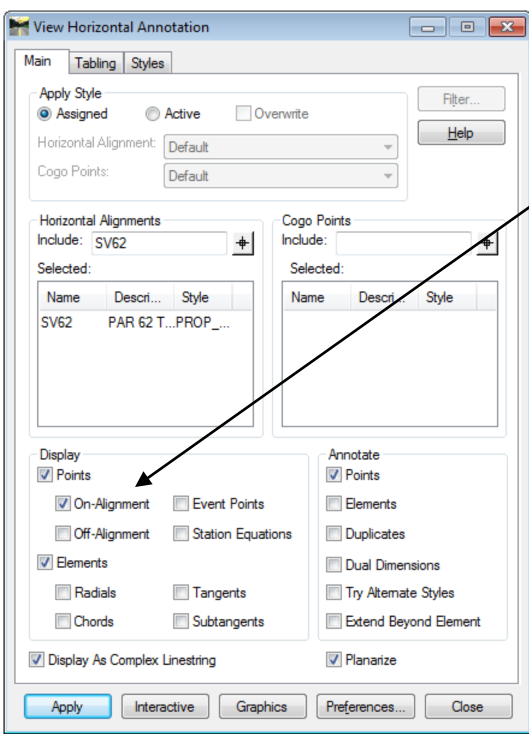


Figure L14-14 View Horizontal Annotation

***IMPORTANT:** As stated earlier…Viewing alignments with the 'On-Alignment' check button checked views the points on the active level in MicroStation and not the points correct symbology (level, font, text size, line weight, line style, color, etc). To view the point's correct symbology the 'On-Alignment' check button must be unchecked and the Cogo points must be selected and viewed. Since we have not yet converted the Alignment Points to Cogo Points at this stage we cannot do this at this time. This is an adequate method of temporarily viewing the point names during the SDE's input of alignments. During the creation of the final MicroStation DGN file for delivery to the designer the 'On-Alignment' check button must be unchecked and the Cogo Points must be selected and viewed.

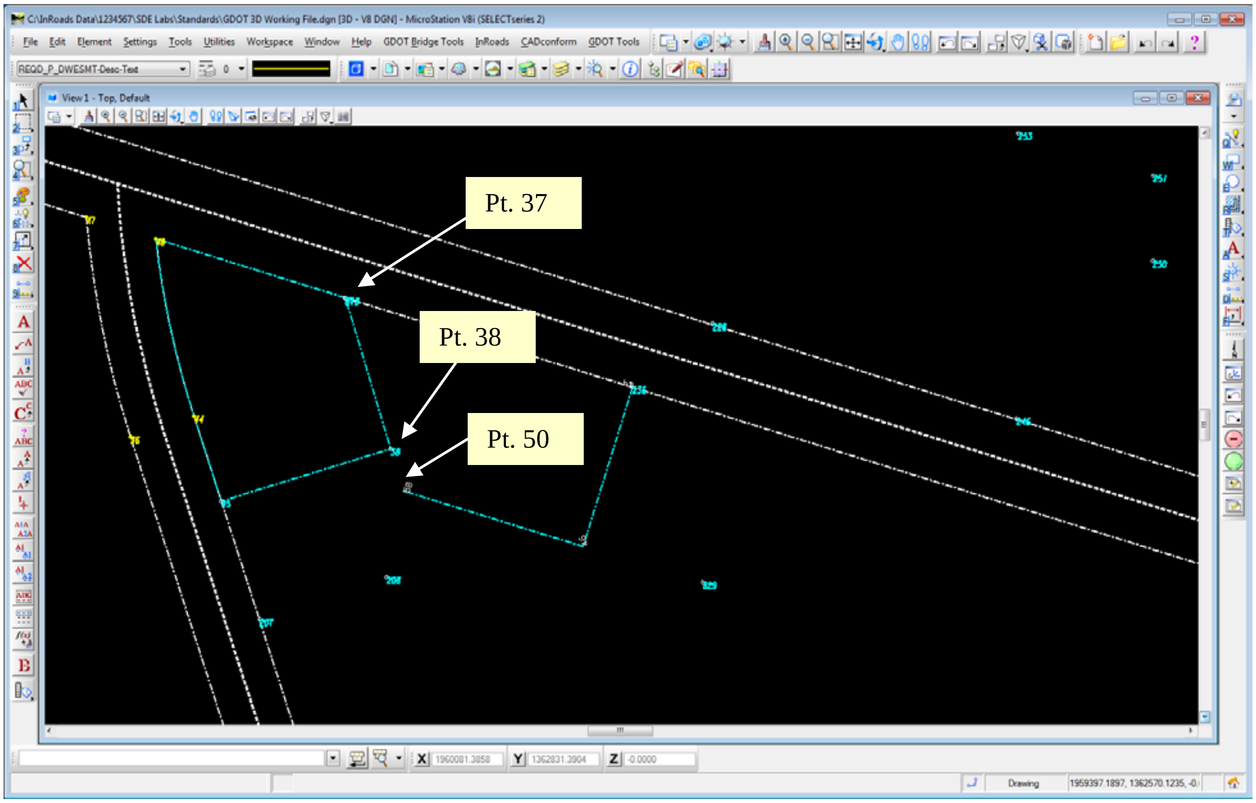
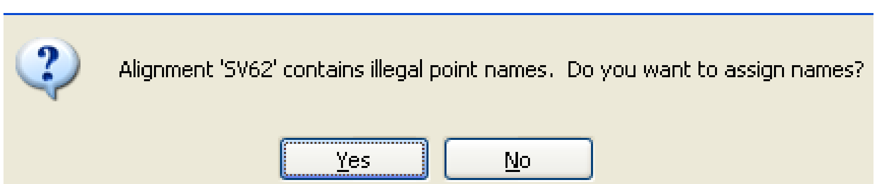


Figure L14-15 MicroStation Window

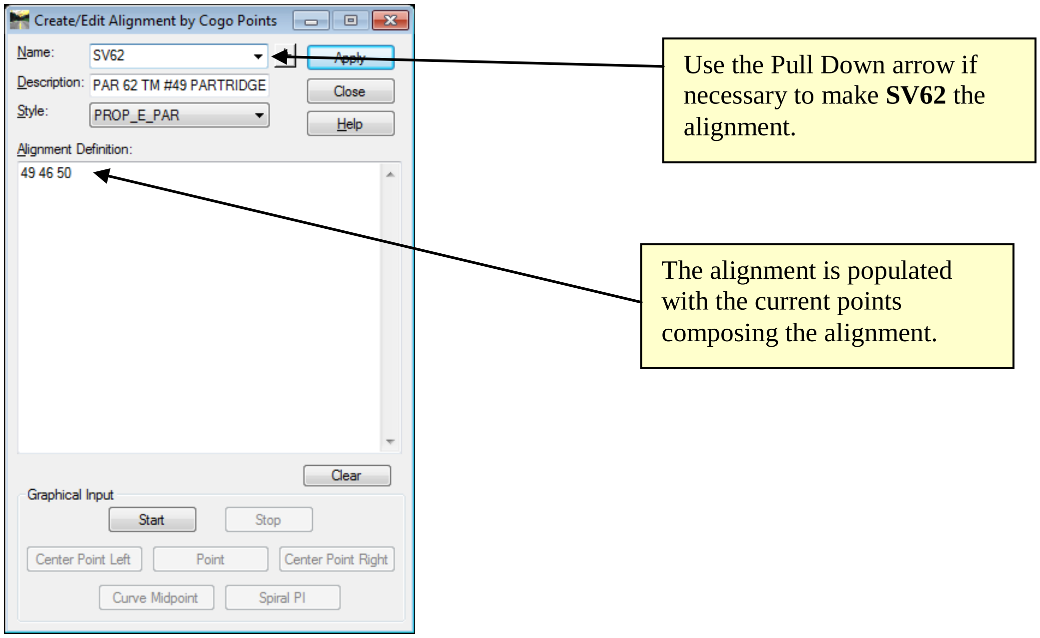
33. **To complete Alignment SV62 we will employ the command <u>Create/Edit Alignment by Cogo Points</u>. Although this command's name implies that it only works for Cogo Points it actually works for Alignment Points as well.**

- Select **Geometry ► Utilities ► Create/Edit Alignment by Cogo Points…** If the message shown here pops up, click **Yes**. If not continue on with **Step 33**.

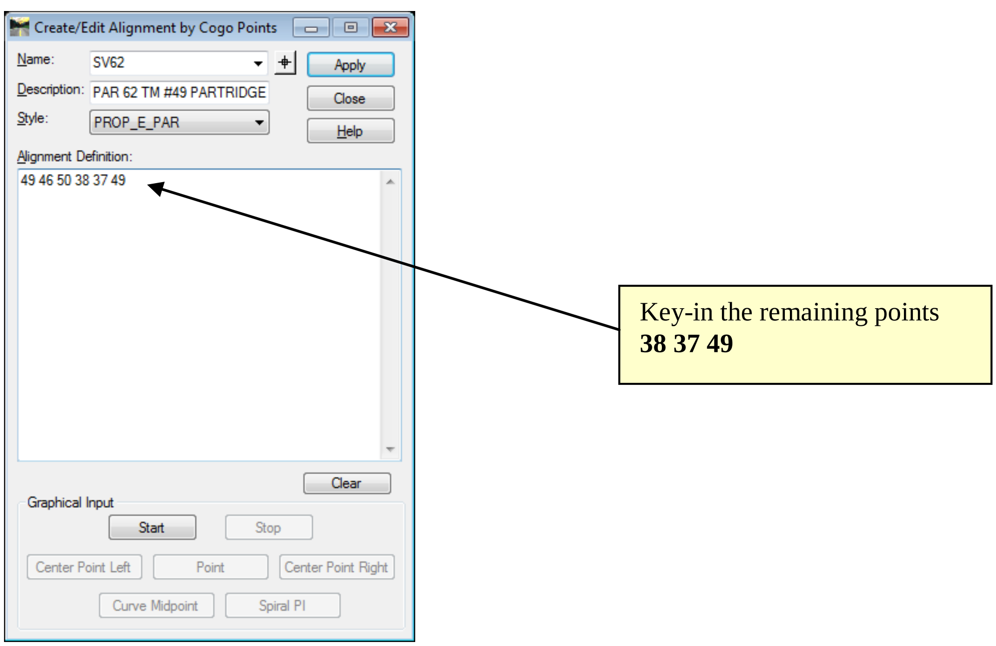


This message <u>may pop up</u> because there is a coordinate in the alignment that does not have a point name associated with it. This message can be avoided by assigning a name to the point prior to running this command using the **Geometry ► Utilities ► Assign Names** command.

- The **<u>Create/Edit Alignment by Cogo Points</u>** dialog box opens as shown here.

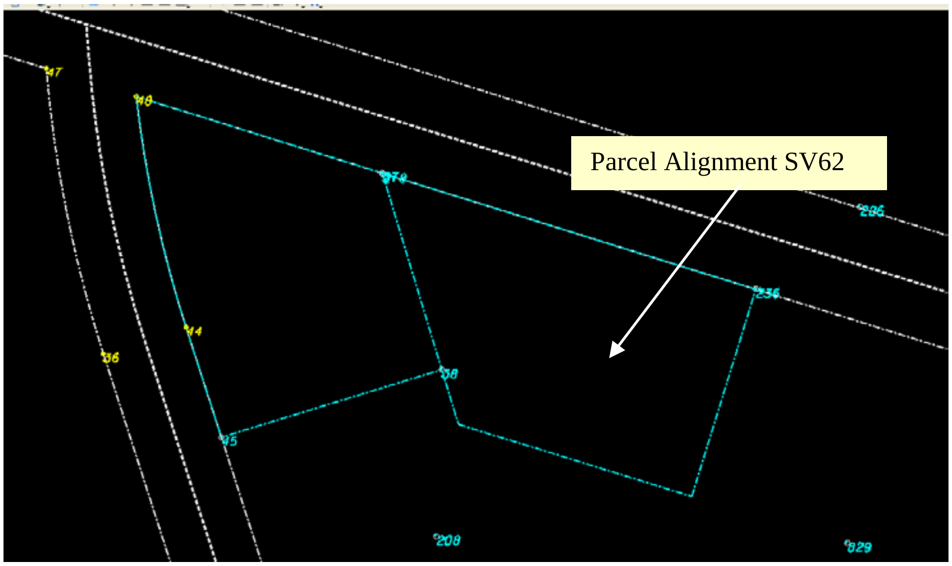


- Verify that Alignment **SV62** is in the **Name:** field.
- In the **Alignment Definition:** field **Key-in** the remaining points **38, 37** and **49** in the correct order to complete the Alignment. Points **37** and **38** were stored in the previous lab when Parcel Alignment **SV64A** was created and point **49** was created earlier in this lab during **Step 23** when we assigned names.
- Verify that your entry matches that shown below.

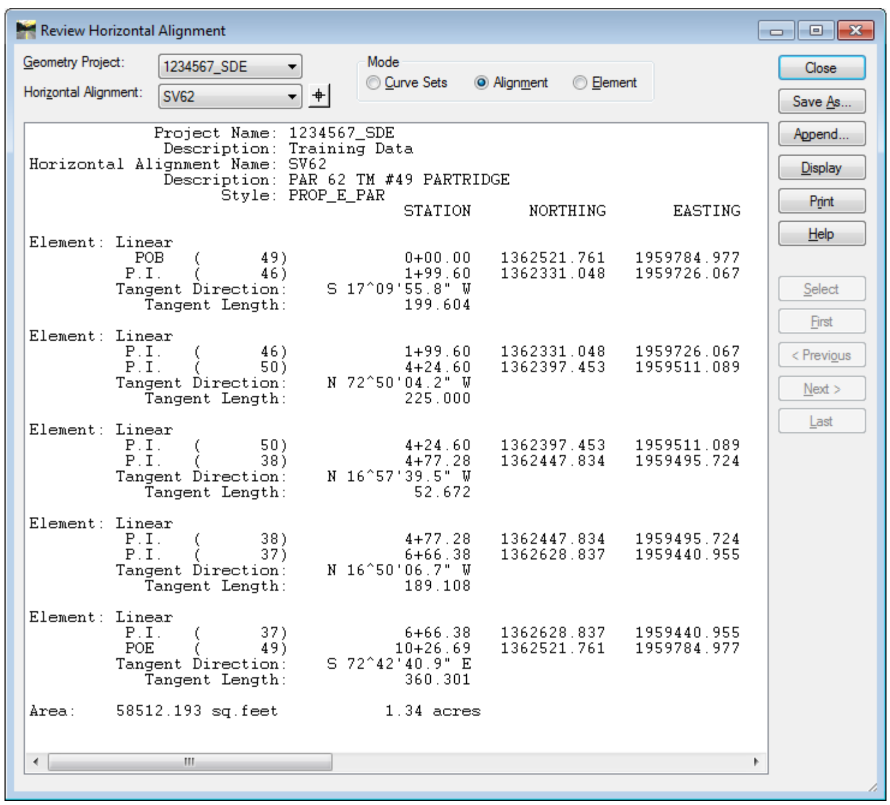


- Click **Apply** and **Close**.

- Verify that your view in MicroStation matches that shown here with the new Alignment **SV62** complete.



- Select **Geometry ► Review Horizontal**. Take a moment to review Alignment **SV62**.




```
                 Project Name: 1234567_SDE
                  Description: Training Data
Horizontal Alignment Name: SV62
                  Description: PAR 62 TM #49 PARTRIDGE
                        Style: PROP_E_PAR
                                          STATION      NORTHING        EASTING

Element: Linear
           POB     (        49)           0+00.00   1362521.761   1959784.977
           P.I.    (        46)           1+99.60   1362331.048   1959726.067
         Tangent Direction:        S 17^09'55.8" W
            Tangent Length:               199.604

Element: Linear
           P.I.    (        46)           1+99.60   1362331.048   1959726.067
           P.I.    (        50)           4+24.60   1362397.453   1959511.089
         Tangent Direction:        N 72^50'04.2" W
            Tangent Length:               225.000

Element: Linear
           P.I.    (        50)           4+24.60   1362397.453   1959511.089
           P.I.    (        38)           4+77.28   1362447.834   1959495.724
         Tangent Direction:        N 16^57'39.5" W
            Tangent Length:                52.672

Element: Linear
           P.I.    (        38)           4+77.28   1362447.834   1959495.724
           P.I.    (        37)           6+66.38   1362628.837   1959440.955
         Tangent Direction:        N 16^50'06.7" W
            Tangent Length:               189.108

Element: Linear
           P.I.    (        37)           6+66.38   1362628.837   1959440.955
           POE     (        49)          10+26.69   1362521.761   1959784.977
         Tangent Direction:        S 72^42'40.9" E
            Tangent Length:               360.301

Area:     58512.193 sq.feet            1.34 acres
```

- Click **Close** to close the report.

You have completed storing Parcel Alignment SV62.

34.	**Create COGO Points of all Alignment Points.** * **IMPORTANT**: Although point names (Alignment Points) and some COGO points now exist in Alignment **SV62** for the PI's POB's and POE's the Alignment points don't actually exist as COGO Points in the COGO Buffer. In order to properly display the points in MicroStation and for the proper delivery of enhancements during the life of the project the Alignment points must be converted to COGO Points and assigned the proper feature style. • **Verify** that **SV62** is the Active Alignment. A red square must be around **SV62**. If it <u>does not</u> have a Red Square - highlight alignment **SV62**, right mouse click over it and select **Set Active**. • Select **Geometry ► Horizontal Curve Set ► Events**… • In the **<u>Horizontal Events</u>** dialog: o Check the ***Alignment Point to Cogo*** radio button. o Set the style to **PROP_E_PPC** o Accept all other defaults. • Click **Apply.** A **Results** Report opens showing all points that are now COGO points. • Click **Close** to close the results box. • Click **Close** to close the **<u>Horizontal Events</u>** Dialog**.** *** Note:** Cogo Points are only assigned to Alignment Points for the active alignment. The process must be repeated for each Alignment. *Opens the Horizontal Events dialog. Converts the Alignment points stored earlier to COGO points and Assigns the Feature Style PROP_E_PPC*
35.	**For Information Only:** The **Geometry ► Horizontal Curve Set ► Events**… command used in **Step 34** applies the same Feature Style to all Alignment Points in the Active Alignment. To selectively assign a Feature Style to an individual Cogo Point -- use the **Geometry ► Cogo Points ► Edit** command. *Information regarding the Feature Style of Cogo Points.*

36.	**Save the InRoads Geometry File** Even though the Alignments have been stored – the data has not yet been saved. InRoads retains the data in temporary memory but does not save the data on the fly. Whenever a change has been made to an InRoads Geometry Project – Save the project and its associated modifications or changes. • Select **File**►**Save**► **Geometry Project** from the **InRoads Menu**. Please Note: (The “Save As” dialog box may not appear because the Geometry Project has already been saved initially). The Geometry Project (***1234567_SDE.alg***) will be saved to **Lab 14** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab14** Note that the **InRoads** and **MicroStation Status Bar** (Located at the bottom of both the InRoads and MicroStation Interface) will depict a message when the Geometry Project has been saved. *The **1234567_SDE** Geometry Project has now been saved to the following path:* *C:\InRoads Data\1234567\SDE Labs\Lab14*
37.	**VERY Important Step:** In order to Start with a CLEAN DGN file for the next Lab: In the [MicroStation Software] – Select **Edit** ►**Select All** Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn to ensure a clean DGN file for the next Lab.*
38.	 This concludes Lab 14. Do not proceed until the Instructor directs you to do so.

Lab 15
Additional Property Alignment Creation and Editing Commands

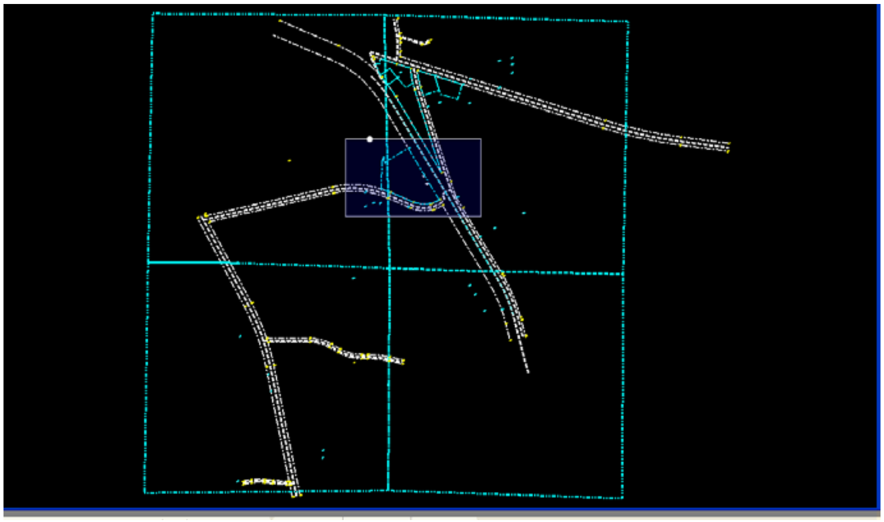
Objective

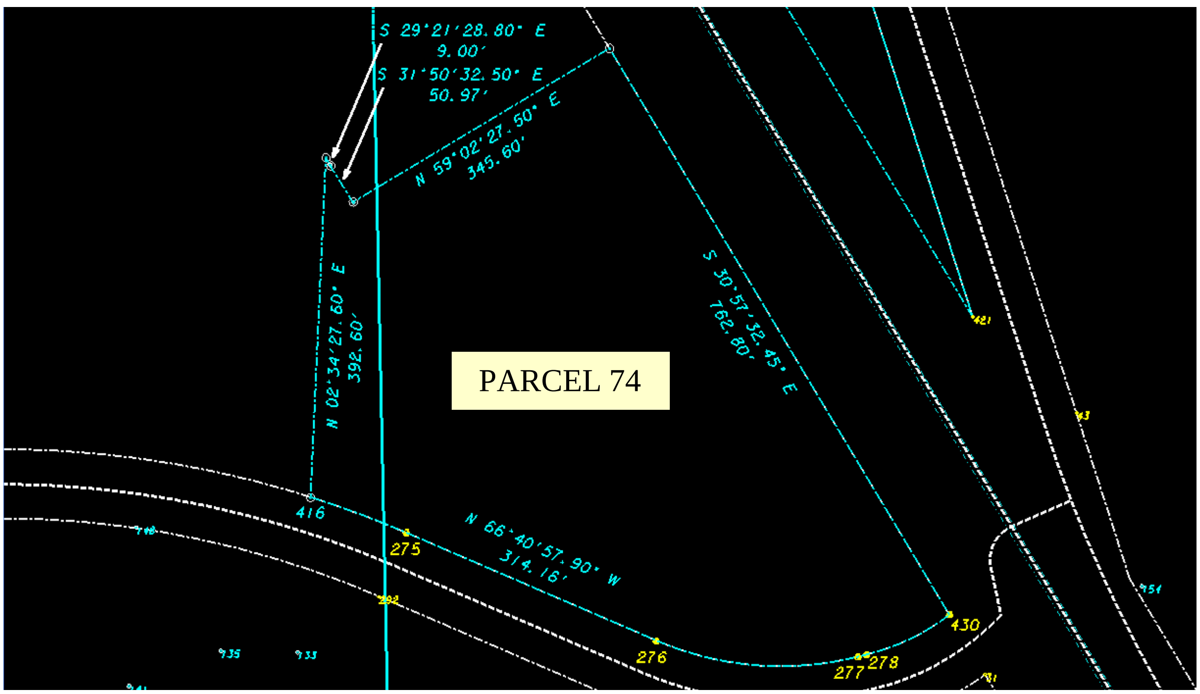
For this lab all of the Existing Centerlines, Existing R/W and Land Lot Lines have been stored and properly named. Additional property information still needs to be added to the database.

The objective of Lab 15 is to:

- Learn techniques to store property information from deeds into InRoads continuing to use the 'Traverse' command and the 'Create/Edit Alignment by Cogo Points' command as well as the 'Traverse Edit' command and 'Check Integrity' command.
- The deed and drawings on the next page will be used.

Beginning at point 430; running thence south" 107.68 feet along the arc of a curve (said curve having a radius of 252.64 feet and a chord distance of 106.87 feet on a bearing of S 64^18'33.3" W) to the point 40.00 feet left of and opposite station 29+91.54 on said construction centerline laid out for Stoffel Rd.; thence S 75^41'12.8 W a distance of 9.65 feet to a point 40.00 feet left of and opposite station 39+82.17 on said construction centerline laid out for Stoffel Rd.; thence north" 237.80 feet along the arc of a curve (said curve having a radius of 362.08 feet and a chord distance of 233.55 feet on a bearing of N 85^29'52.5" W) to the point 40.00 feet left of and opposite station 37+18.09 on said construction centerline laid out for Stoffel Rd.; thence N 66^40'57.90" W a distance of 314.16 feet to a point 40.00 feet left of and opposite station 34+03.93 on said construction centerline laid out for Stoffel Rd.; thence north 118.22 feet along the arc of a curve (said curve having a radius of 1185.92 feet and a chord distance of 118.17 feet on a bearing of N 69^32'18.5" W) to the point 40.00 feet left of and opposite station 32+89.70 on said construction centerline laid out for Stoffel Rd.; thence N 2^34'27.6" E a distance of 392.60 feet to a point 422.48 feet left of and opposite station 32+15.25 on said construction centerline laid out for Stoffel Rd.; thence S 29^21'28.8" E a distance of 9.00 feet to a point 415.93 feet left of and opposite station 32+19.78 on said construction centerline laid out for Stoffel Rd.; thence S 31^50'32.5" E a distance of 50.97 feet to a point 380.94 feet left of and opposite station 32+47.28 on said construction centerline laid out for Stoffel Rd.; thence N 59^02'27.5" E a distance of 345.60 feet to a point 647.27 feet left of and opposite station 33+99.91 on said construction centerline laid out for Stoffel Rd.; thence S 30^57'32.4" E a distance of 762.80 feet back to the point of beginning.
Containing 7.134 acres more or less.




S 29°21'28.80" E
9.00'
S 31°50'32.50" E
50.97'
N 59°02'27.50" E
345.60'
N 02°34'27.60" E
392.60'
S 30°57'32.45" E
762.80'
PARCEL 74
N 66°40'57.90" W
314.16'
416
275
276
277
278
430

Lab 15 Getting Started

1. **Starting Clean**

In order to ensure that you are working with a "clean" database – you will close MicroStation and InRoads if they are still running from a previous Lab:

To CLOSE MicroStation and InRoads -

Select **File ▶Exit** from the [MicroStation Menu].
If any messages appear regarding the saving of projects – Select 

This closes BOTH the MicroStation and InRoads Software(s).

2. From the desktop, double-click on the **MicroStation** icon labeled **GDOT MicroStation V8i SS2 (x86)**.

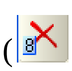
Double click on the icon labeled **GDOT MicroStation V8i SS2 (x86)**.

- When the **MicroStation Manager** dialog box opens – navigate to the **C:\InRoads Data\1234567\SDE Labs\Standards** folder and select the "**GDOT 3D Working File.dgn**". Click **Open**.

- Now open InRoads from within MicroStation by selecting: **InRoads ▶ InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu].

The MicroStation and InRoads Software(s) will open.

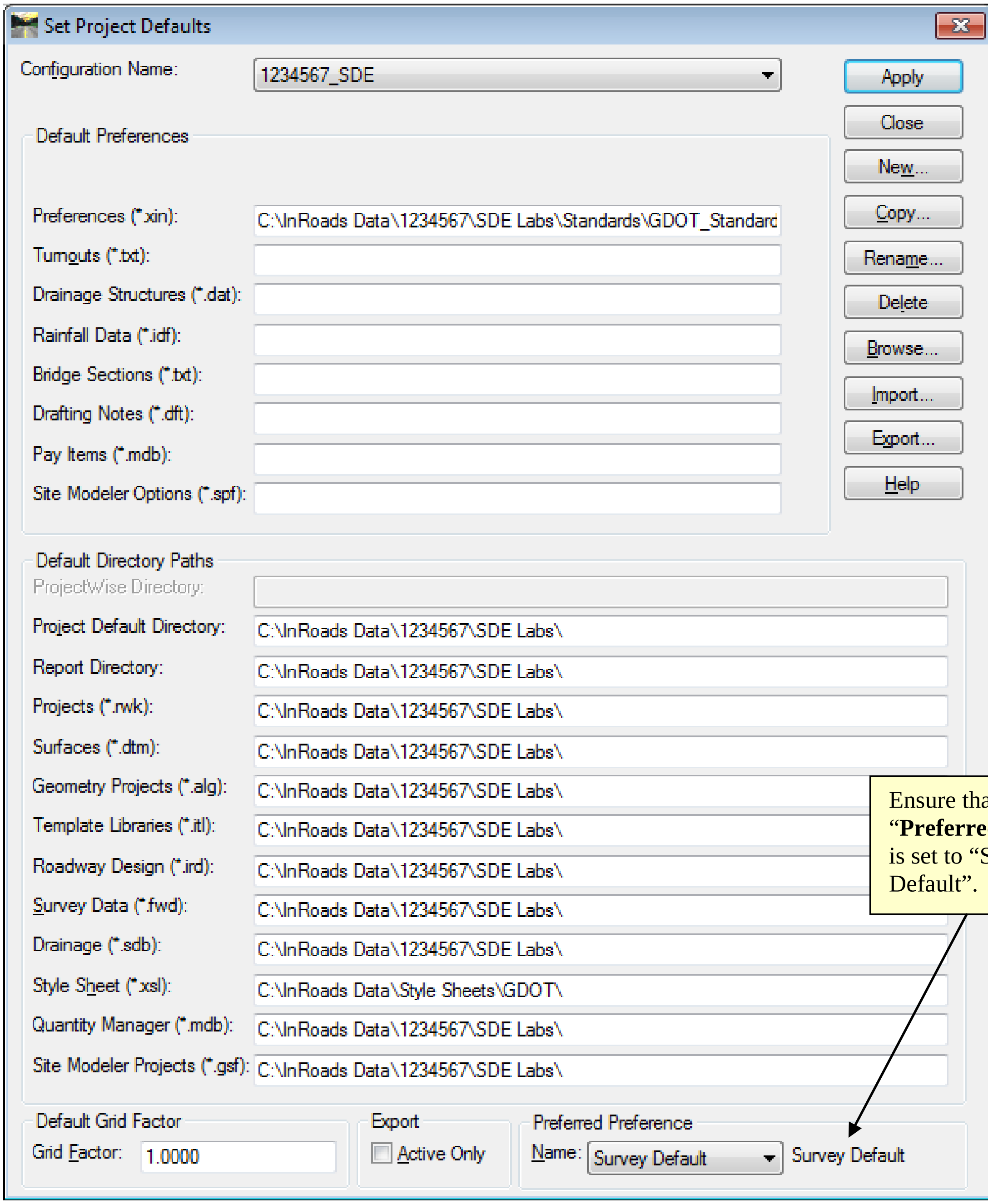
3. **Clear MicroStation Screen**

- In MicroStation, Select **Edit ▶ Select All**. This selects all elements in the MicroStation Window.
- In MicroStation, Click the **Delete** icon ().

The MicroStation Workspace is cleared of all Elements from previous labs.

4. **Verify Project Defaults**

- In InRoads select **File ▶Project Defaults**
- Use the pull down next to ***Configuration Name:*** to select **1234567_SDE** which you created in Lab 1.
- Verify Settings match those shown in *Figure L15-1*.
- Click **Apply** & **Close.**



Ensure that the "**Preferred Preference**" is set to "Survey Default".

Figure L15-1 Project Defaults

5.	**Load the InRoads Geometry file (1234567_SDE.alg file)** • Select **File ► Open** from the **InRoads Menu**. • Browse to the following path: **C:\InRoads Data\1234567\SDE Labs\Lab15** Select the file named: **1234567_SDE.alg** Hint: You may also right mouse click over '**Geometry Projects**' in the Workspace Bar and select open. • Click **Open** and then click **Cancel**.

6. **Set Survey Default Preferences**

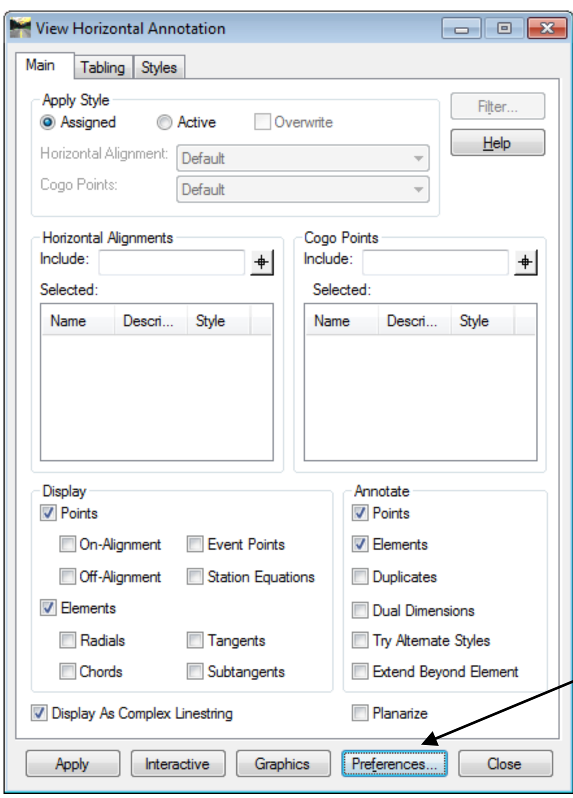
- In InRoads - Select **File ▶ Project Options**.
- In the **Project Options** dialog box select the **General** Tab.
- Click the **Preferences** button at the bottom of the dialog box.
- Choose ***Survey Default***. Click **Load** and **Close**.
- In the **Project Options** dialog box - Click **Apply** and **Close**.

Sets the Survey Defaults Preference.

7. **Set the View Horizontal Alignments and Cogo Points view settings.**

- Select **Geometry ▶ View Geometry ▶ Horizontal Annotation.** The **View Horizontal Annotation** dialog opens as shown in *Figure L15-2*.
- Click the **Preferences** Button. The **Preferences** dialog opens as shown in *Figure L15-3*.
- In the **Preferences** dialog highlight **NO BEARING & DISTANCE**.
- Click **Load** and **Close**. This loads the viewing preference settings into the **View Horizontal Annotation** Dialog.
- Verify your settings match those shown in *Figure L15-4*.

The settings in the 'View Horizontal Annotation' are set. This will ensure that the proper symbology is applied to the Cogo points and alignments in MicroStation.



Preferences Button

Figure L15-2 View Horizontal Annotation

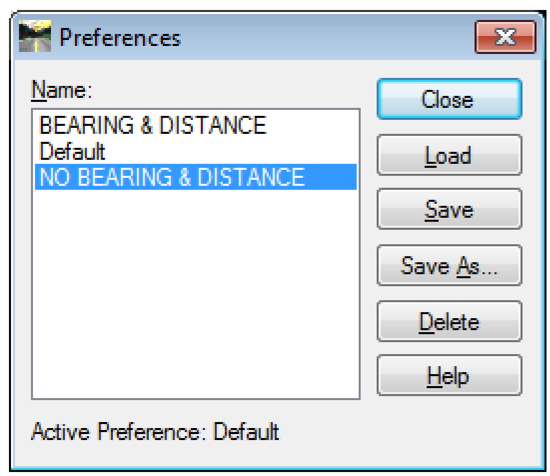


Figure L15-3 Preferences

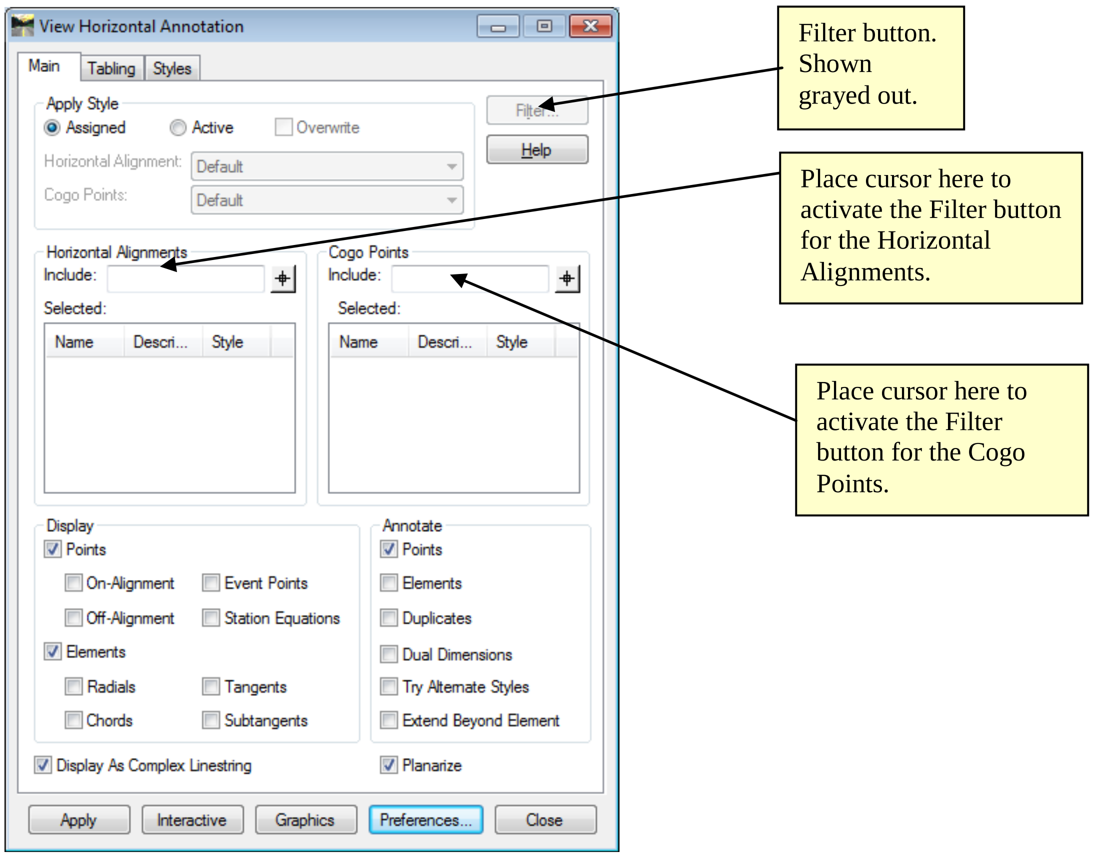
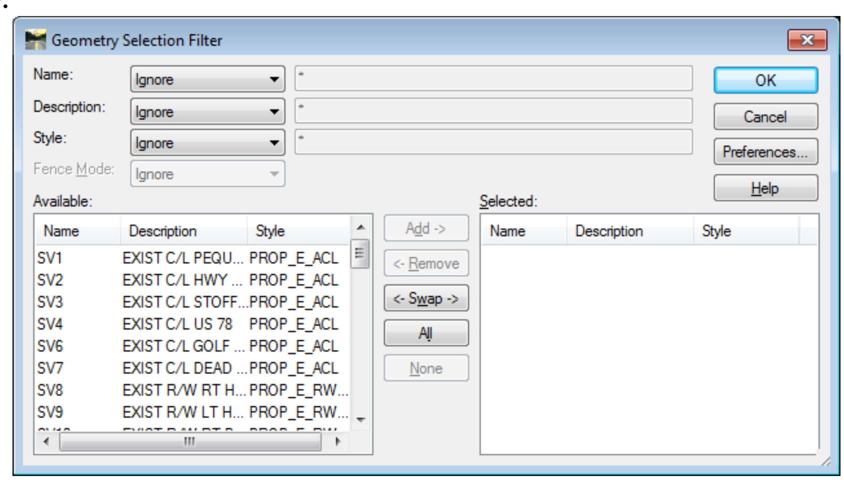


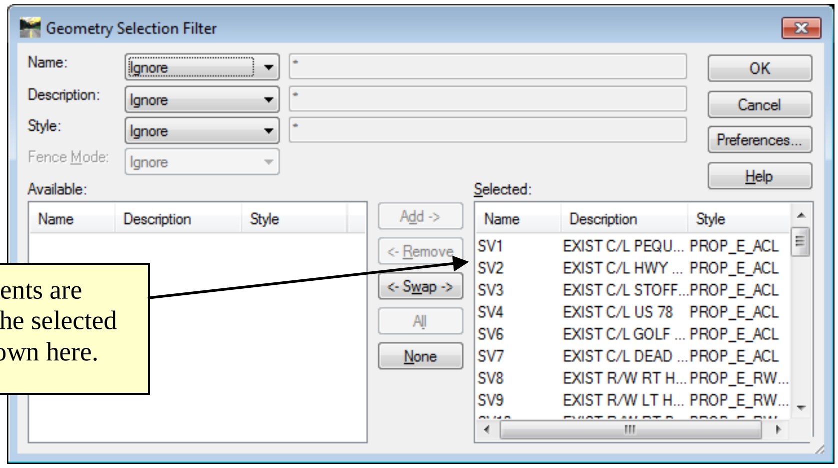
Figure L15-4 View Horizontal Alignments

8. **Select All Horizontal Alignments**

- In the **View Horizontal Annotation** dialog box, left click in the '**Horizontal Alignments**' ***Include*** field to activate the **Filter** button. See *Figure L15-4.*
- Click the **Filter** button. The **Geometry Selection Filter** dialog opens as shown here.



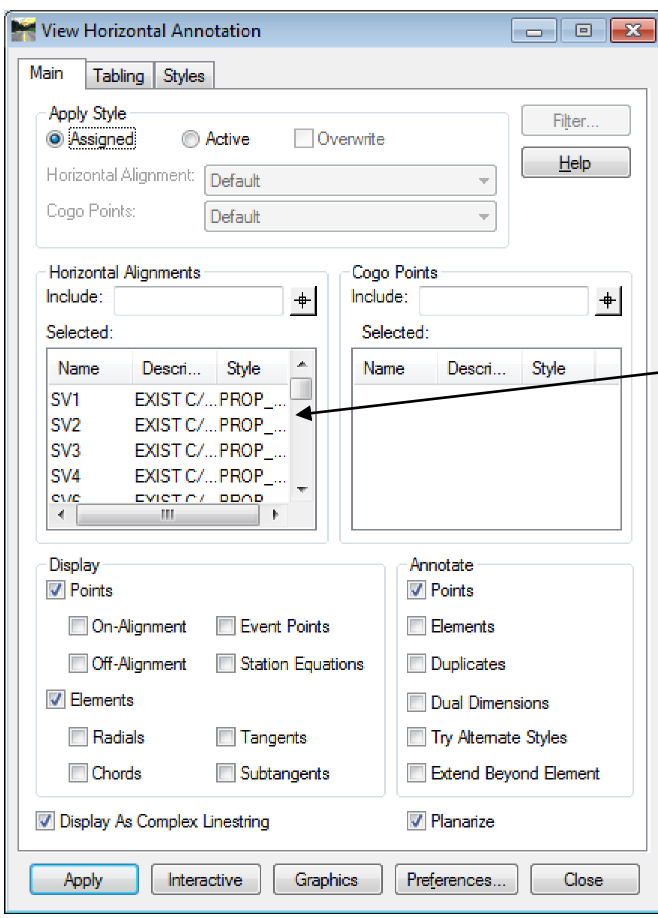
- Click the **All** button to move the ***Available*** alignments to the ***Selected*** field, as shown below.



All alignments are moved to the selected field as shown here.

- Click **OK**. You are returned to the **<u>View Horizontal Annotation</u>** dialog and the selected Alignments are entered in the '**Horizontal Alignments'** ***Selected*** field as shown in *Figure L15-5*.

The Horizontal Alignments are selected and populated in the <u>View Horizontal Alignments</u> dialog.

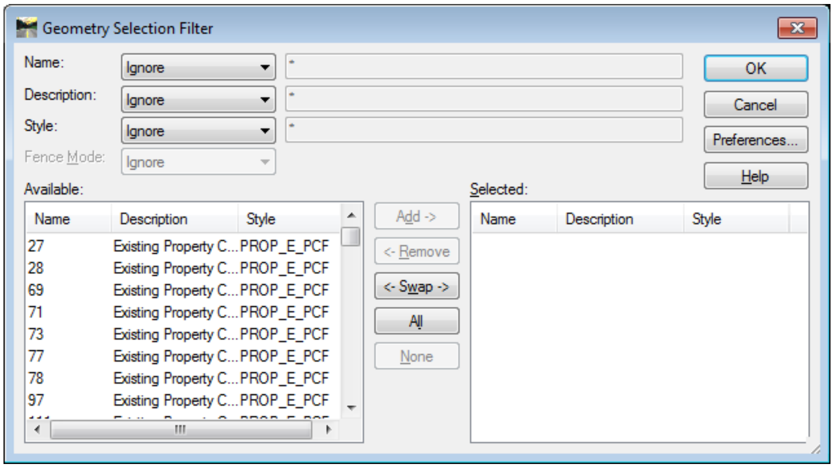


The **<u>View Horizontal Annotation</u>** dialog is populated with the selected Horizontal Alignments.

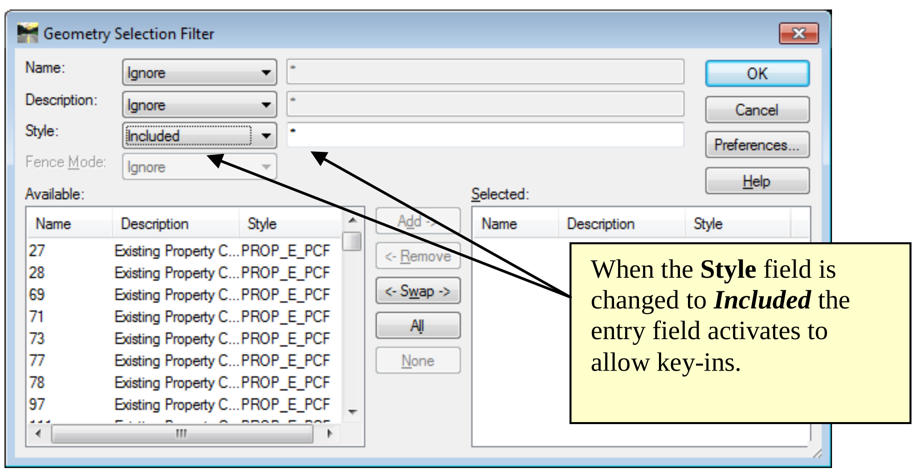
Figure L15-5 View Horizontal Annotation

9. Select all Cogo Points with the Feature Styles PROP_E_PCF and PROP_E_RWE.

- In the **View Horizontal Annotation** dialog, left click in the '**Cogo Points'** ***Include*** field to activate the **Filter** button.
- Click the **Filter** button. The **Geometry Selection Filter** dialog opens as shown here.



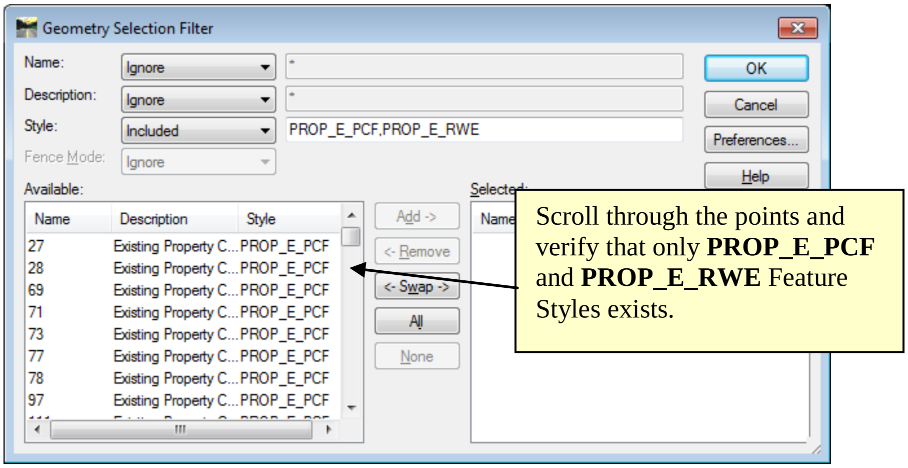
- Using the Pull down arrow, change the **Style** selection from Ignore to **Included**. The **Style** entry field changes from grayed out to active as shown here.



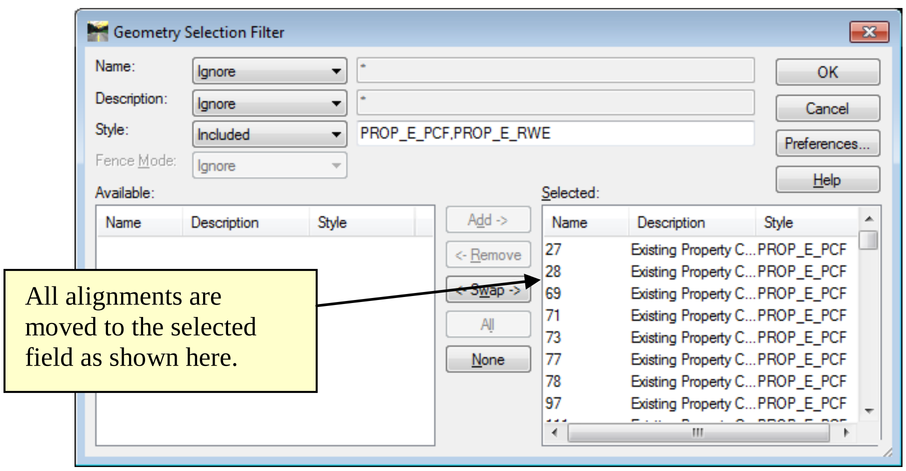
- In the **Style** entry field, Key-in **PROP_E_PCF,PROP_E_RWE**.
***NOTE**: Do not place a space after the comma or InRoads will not recognize the second Feature Style.

  ***REMEMBER**: InRoads is case sensitive.

- Once you **key-in** the above Feature Styles, left click in the ***Available*** field to accept the entry and filter the data.
- Verify your dialog box matches that shown below.



- Click **All** to move the filtered data from the ***Available*** field to the ***Selected*** field as shown here.



- Click **OK**. You are returned to the **View Horizontal Annotation** dialog and the selected Cogo Points are entered in the **Cogo Points** ***Selected*** field as shown in *Figure L15-6*.

The Cogo Points are selected and populated in the View Horizontal Annotation dialog.

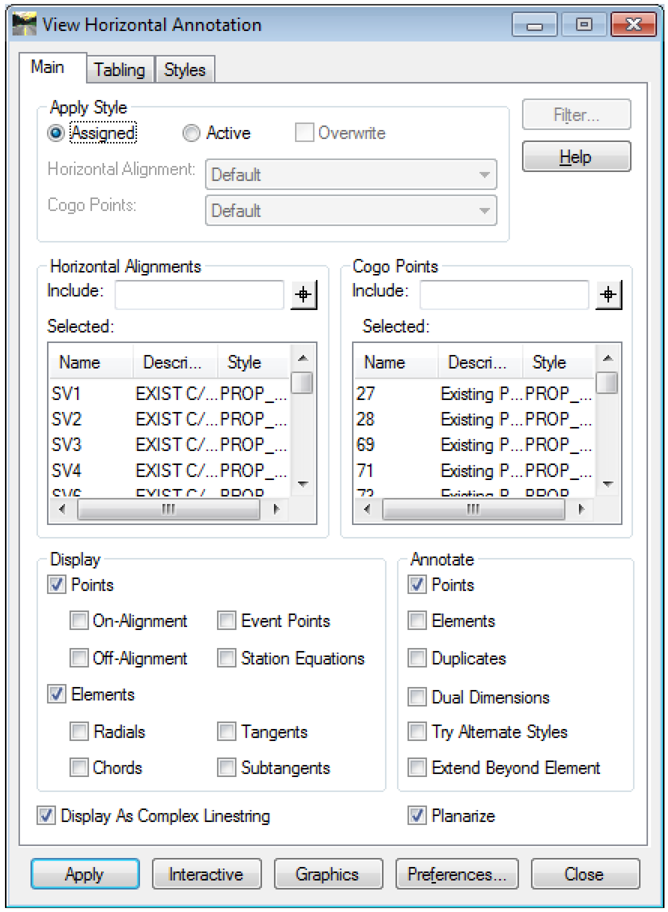


Figure L15-6 View Horizontal Annotation

<table>
<tr><td>10.</td><td>View Horizontal Annotation

• Verify your entries match those shown in Figure L15-6.
• Click Apply & Close. Be patient for the viewing operation to complete.
• In MicroStation, click the Fit View button.
• Verify your MicroStation view matches that shown in Figure L15-7.

The selected Horizontal Alignments and Cogo Points are viewed in MicroStation.</td></tr>
</table>

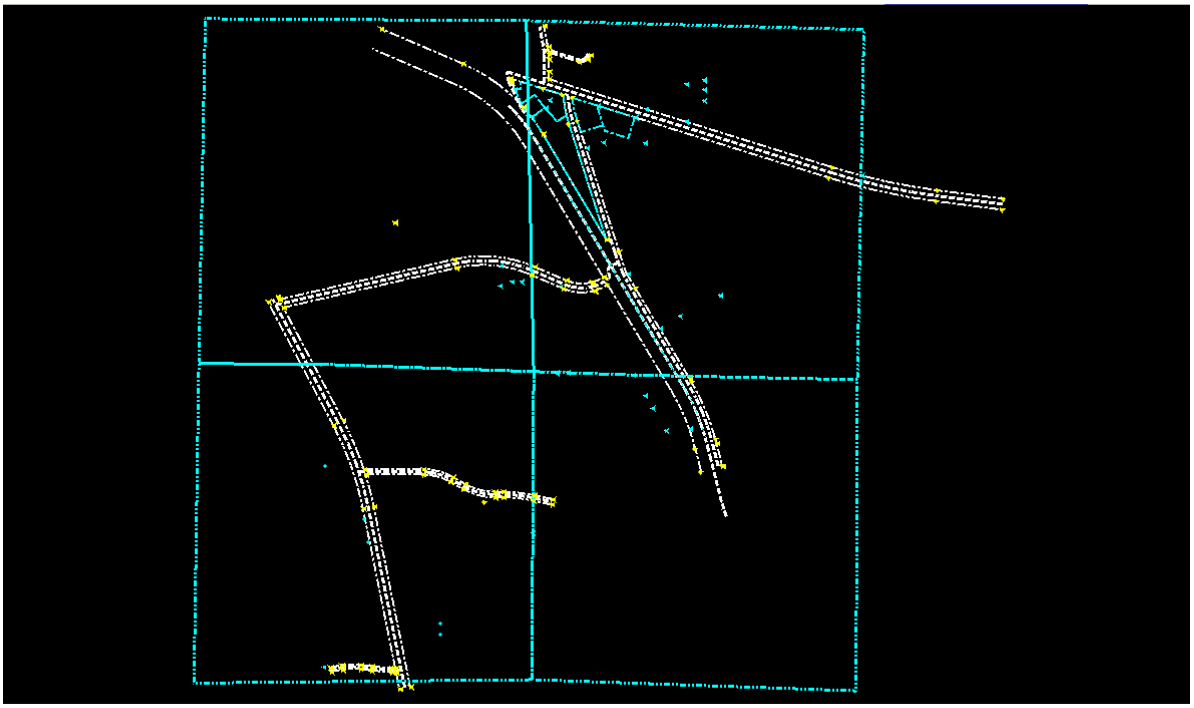


Figure L15-7 MicroStation Window

11.	**Zoom into the area where the Alignment for Parcel 74 will be created.** • **For Information:** InRoads uses the term Alignment to refer to centerlines as well as Parcels and for any other item constructed of points or points and curves. • In MicroStation**,** use the **Window Area** command to zoom into the area shown in *Figure L15-8.* • Verify your view matches that shown in *Figure L15-9*. *Zooms into the area where the Alignment for Parcel 74 will be created.*

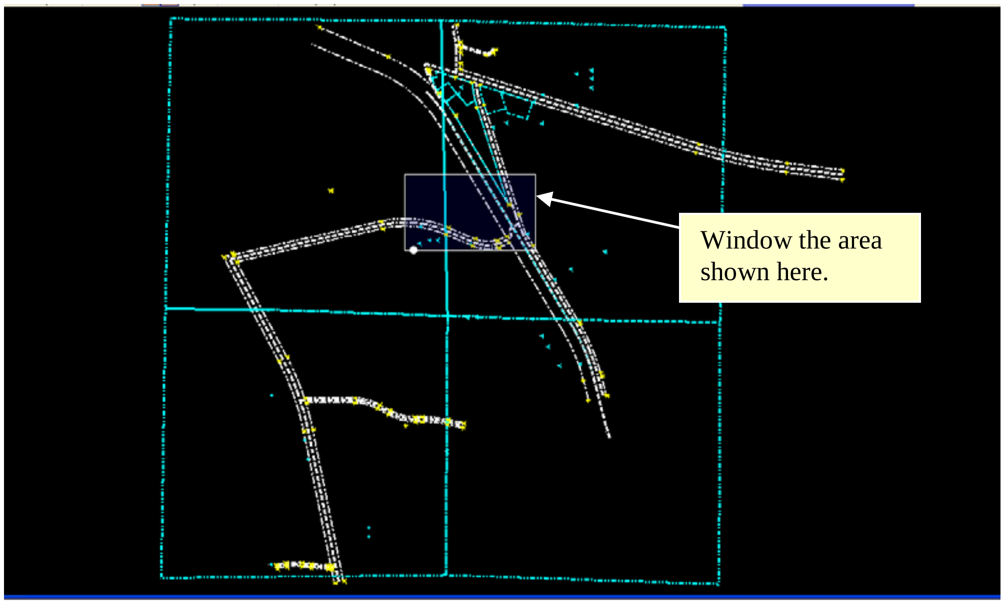


Figure L15-8 MicroStation Window

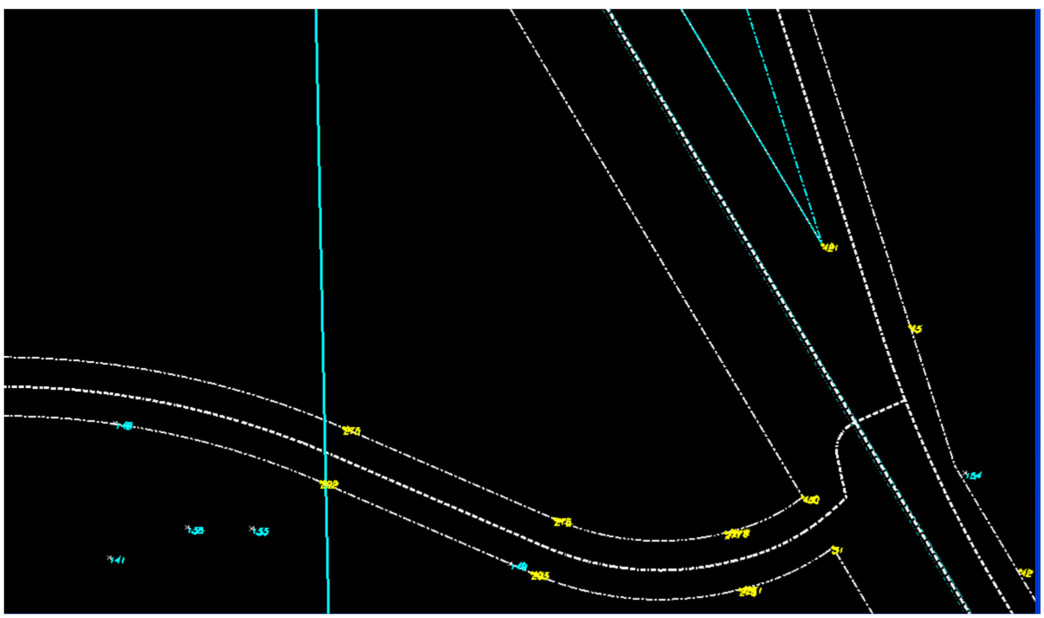
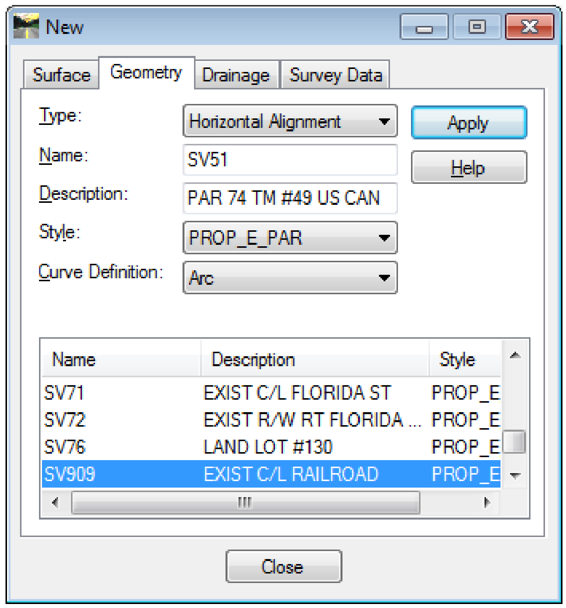


Figure L15-9 MicroStation Window

12. **Create a New Alignment for Parcel 74 and call it SV51.**

- Select **File ► New** and select the **Geometry** tab as the active tab.
- Enter the following information for:
    - Type: **Horizontal Alignment**
    - Name: **SV51**
    - Description: **PAR 74 TM #49 US CAN**
    - Style: **PROP_E_PAR**
- Verify your entries match those shown here.

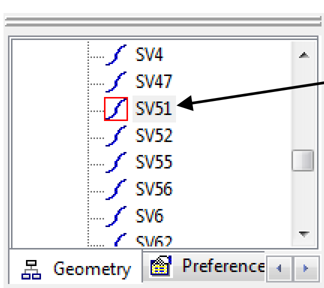


- Click **Apply** and **Close.**

Alignment SV51 is created for Parcel 74.

13. **Important Step! Make Parcel Alignment SV51 the Active Alignment.**

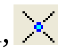
- Right mouse click over **SV51** in the *InRoads Explorer Interface* and click **Set Active**.
- Ensure a Red Box is displayed indicating **SV51** is the Active Alignment.



Ensure a Red Box is displayed next to **SV51** indicating it is the Active Alignment.

*Alignment **SV51** is set as the Active Alignment.*

14. **Set the InRoads Snap Lock to Point Snap.**

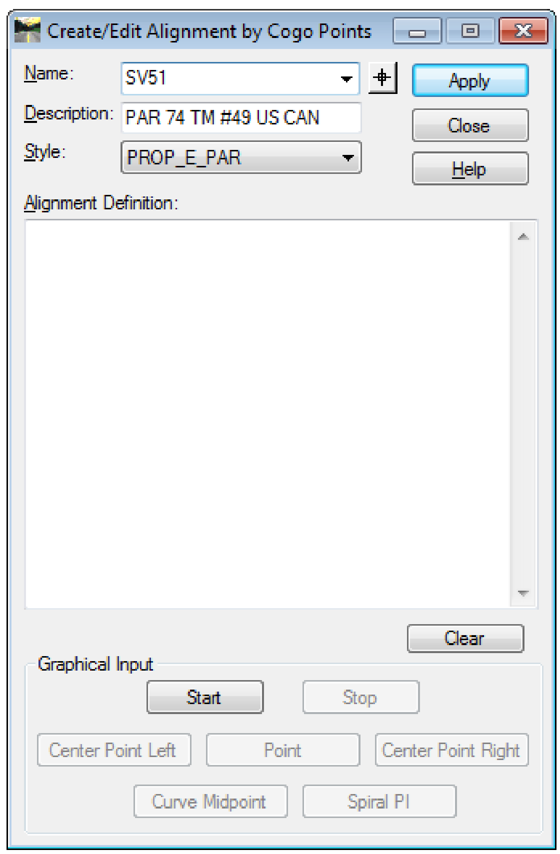
- In InRoads, select **Tools** ► **Locks** and ensure a check mark exists next to **Point Snap**.
- Ensure the **Point Snap** button, , is showing in the ***InRoads Toolbar*** as shown here.

Point Snap Icon

Sets the InRoads Snap Lock to Point Snap.

15. **Open the Create/Edit Alignment by Cogo Points command.**

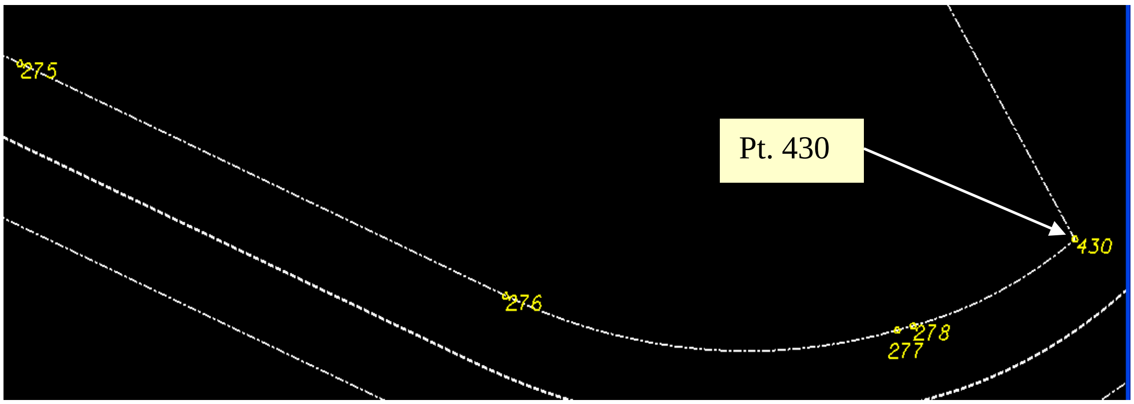
- Select **Geometry** ► **Utilities** ► **Create/Edit Alignment by Cogo Points**…
- The **<u>Create/Edit Alignment by Cogo Points</u>** dialog opens as shown here.



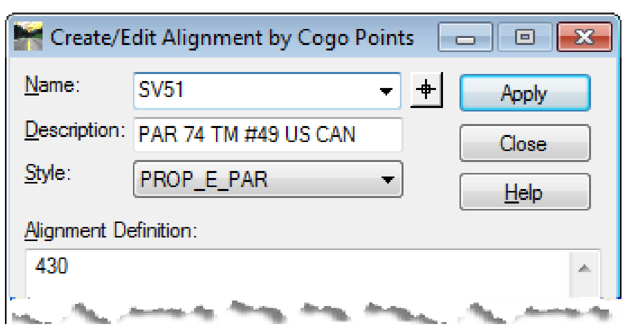
The <u>Create/Edit Alignment by Cogo Points</u> dialog opens.

16. **Add Point 430 to the Create/Edit Alignment by Cogo Points dialog.**

- In the **Create/Edit Alignment by Cogo Points** dialog click the **Start** button.
- Notice in the bottom left corner of the MicroStation window you are prompted to ***Identify Point***, > Identify Point . This allows you to left click on points to add to the alignment definition field.
- Left Click once on Point **430** (shown here).



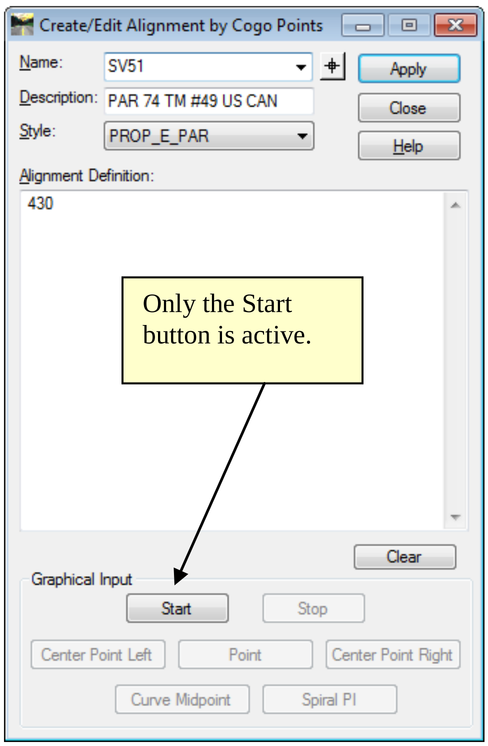
- Notice in the bottom left corner of the InRoads window and also in the bottom middle of the MicroStation window you are told which point was selected as shown here. Point 430 selected
- Notice in the bottom left of the MicroStation window you are told to ***Identify Point***. > Identify Point . We can continue adding points until we have selected all the points we want to add to the **Create/Edit Alignment by Cogo Points** dialog but since we are now at a curve we need to return to the **Create/Edit Alignment by Cogo Points** dialog to select the **Center Point Right** button to add a curve that curves to the right.
- Right mouse click. You are returned to the **Create/Edit Alignment by Cogo Points** dialog.
- Click **Stop**. The **Create/Edit Alignment by Cogo Points** dialog is populated with point **430** as shown below.

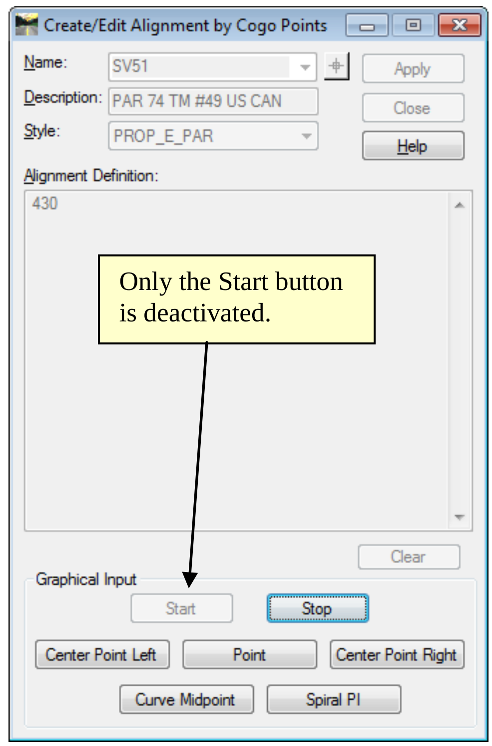


*Point **430** is added to the Create/Edit Alignment by Cogo Points dialog.*

17. Set up the Create/Edit Alignment by Cogo Points Dialog to allow a Curve to be added.

- Read this **Step** through to completion before taking action.
- At this point we want to add a curve to the Parcel Alignment from Point **430** to point **278**. Notice in the **Create/Edit Alignment by Cogo Points** dialog that the **Graphical Input** buttons are grayed out except the **Start** button. As shown here, below left.



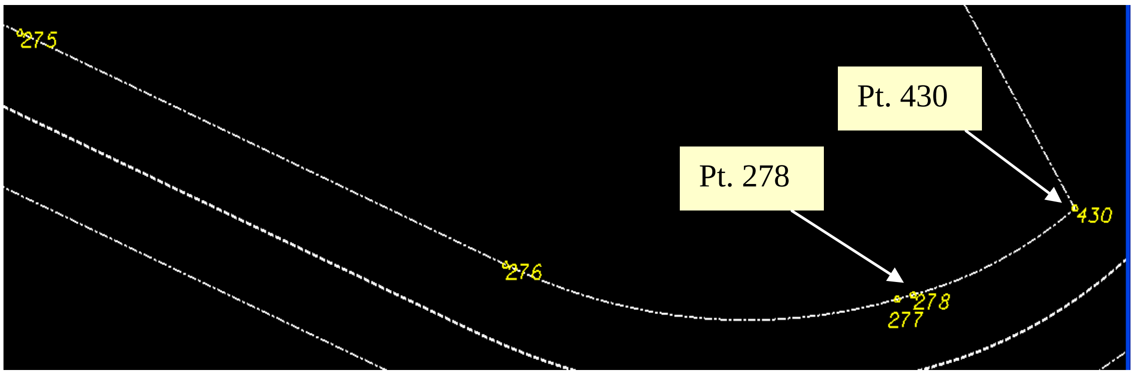


- Click **Start** to continue adding data.
- Immediately **Right mouse click** over the MicroStation window to reopen the **Create/Edit Alignment by Cogo Points** dialog. The **Create/Edit Alignment by Cogo Points** dialog reappears.
- Notice the **Graphical Input** buttons are all active, except the **Start** button, allowing you to select an input option other than **Point**.

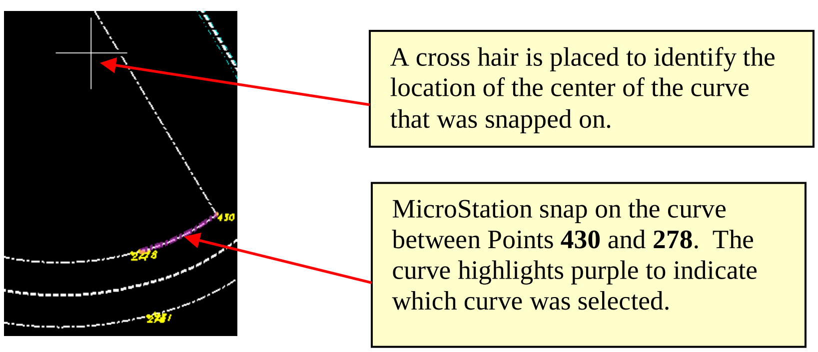
The Create/Edit Alignment by Cogo Points Dialog is now configured to allow curve inputs.

18. **Add the Curve from Point 430 to Point 278 to the Create/Edit Alignment by Cogo Points Dialog.**

- Read this **Step** through to completion before taking action.
- To add the right hand curve between points **430** and **278**, shown below, click the **Center Point Right** button. The **Center Point Right** button is used to select the center point of a curve that curves clockwise to the right. Doing this requires you to change the snap mode in MicroStation from Keypoint to Center.



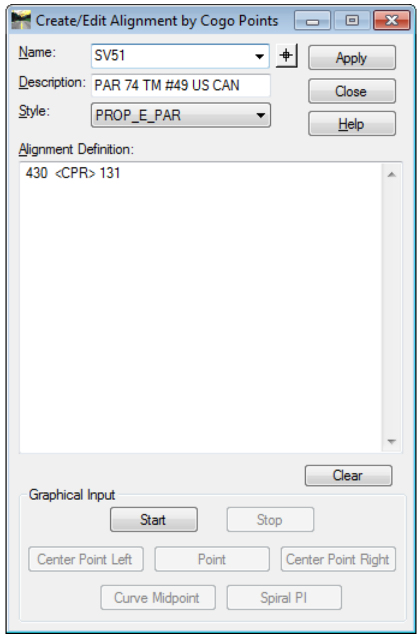
- In MicroStation, click the active snap mode button, , located at the bottom middle of the MicroStation window and select **Center**. The symbol will change to this: .
- Now, use the MicroStation snap process (typically a combination of the left & right mouse keys at the same time) to **tentative snap** on the curve between points **430** and **278** as shown below. Doing this will place a cross hair at the center point of the curve and also highlight the curve in purple as shown here.

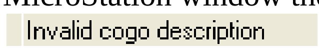


- Now**, left click** to accept the point. Notice in the bottom left of the InRoads window and also in the bottom middle of the MicroStation window you are told which point was selected as shown here. 

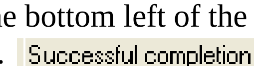
.
- **Right mouse click** over the MicroStation window to return to the **Create/Edit Alignment by Cogo Points** dialog.
- Click **Stop** in the **Create/Edit Alignment by Cogo Points** dialog. It is now populated with the curve.

- Verify your **Create/Edit Alignment by Cogo Points** dialog matches that shown below. If it does not, remove the incorrect data and try again.



- At this point the data is entered in the **Create/Edit Alignment by Cogo Points** dialog but not yet applied to Alignment **SV51**.
- Click **Apply** to save the data to Alignment **SV51.**
- Notice in the bottom left of the InRoads window or the bottom middle of the MicroStation window the message '***Invalid cogo description'*** 

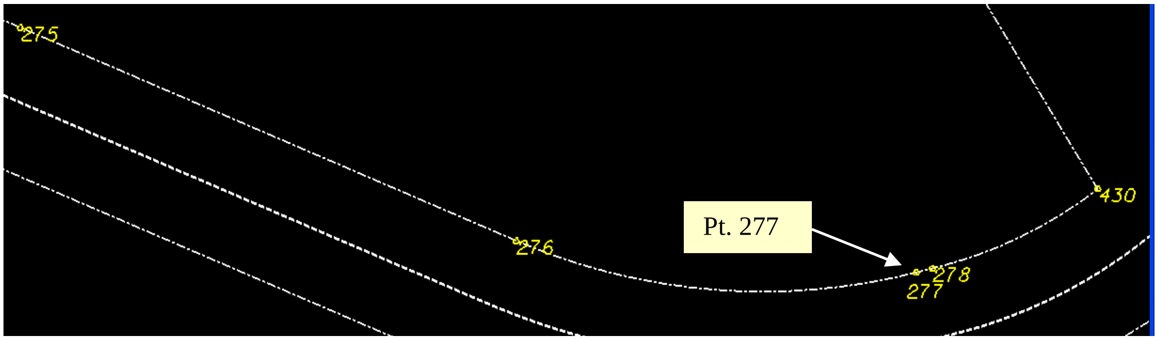
 may appear. If this appears it is because we have not yet defined an ending point.
- Click **Start** in the **Create/Edit Alignment by Cogo Points** dialog.
- Notice in the bottom left of the MicroStation window you are prompted to >***Identify Point***. 

.
- Left click on Point **278** shown on the preceding page.
- Ensure Point **278** is selected by referring to the bottom left of the InRoads window or the bottom middle of the MicroStation window.
- Right mouse click over the MicroStation window to return to the **Create/Edit Alignment by Cogo Points** dialog.
- Click **Stop**. Point **278** is now populated in the **Create/Edit Alignment by Cogo Points** dialog.
- Click **Apply** but do not close out of the **Create/Edit Alignment by Cogo Points** dialog.
- The message, '***Successful completion'***, is displayed in the bottom left of the InRoads window and the bottom middle of MicroStation. 

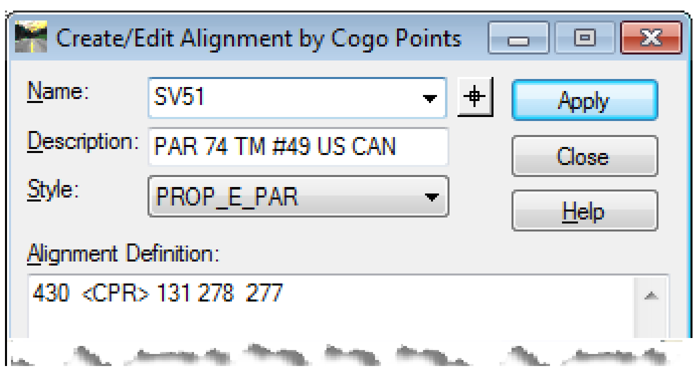
.

*The Curve between points **430** and **278** is now added to the Create/Edit Alignment by Cogo Points dialog.*

19. **Continue using the Create/Edit Alignment by Cogo Points command to add point 277 to alignment SV51.**



- Click **Start** in the **Create/Edit Alignment by Cogo Points** dialog.
- Left click once on point **277**. Be sure and notice the prompt at the bottom of the MicroStation view indicating which point was selected.
- **Right mouse click** over the MicroStation window. The **Create/Edit Alignment by Cogo Points** dialog reopens.
- Click **Stop**. The **Create/Edit Alignment by Cogo Points** dialog is populated with point **277**.
- Verify your **Create/Edit Alignment by Cogo Points** dialog matches that shown below. If it does not, remove the incorrect data and try again.

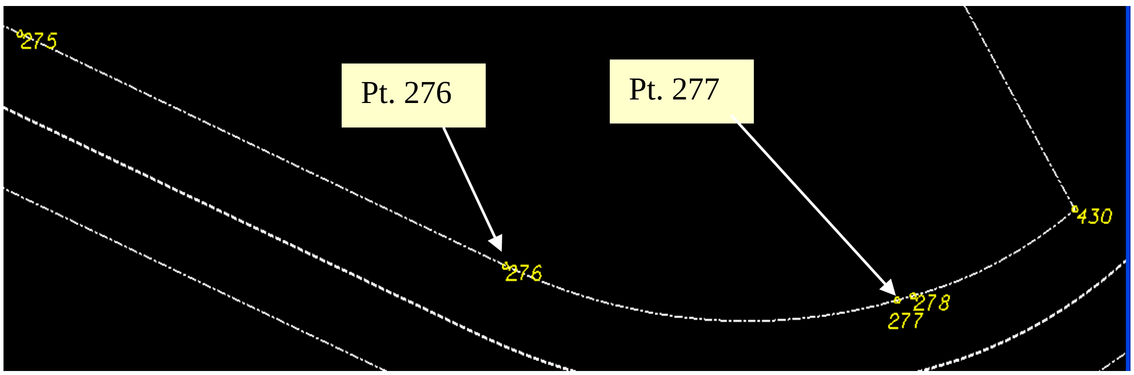


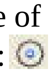
- At this point the data is entered in the **Create/Edit Alignment by Cogo Points** dialog but not yet applied to Alignment **SV51**.
- Click **Apply** to save the data to Alignment **SV51** but do not close out of the **Create/Edit Alignment by Cogo Points** dialog.

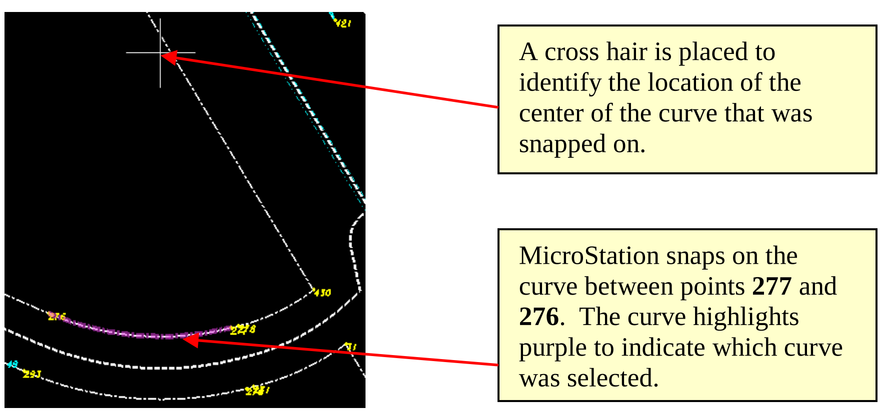
Point 277 is added to alignment SV51.

20.	**Continue using the Create/Edit Alignment by Cogo Points command to add the right hand curve between points 277 and 276 to Alignment SV51.**

- Click **Start** in the **Create/Edit Alignment by Cogo Points** dialog.
- **Right mouse click** over the MicroStation window to return to the **Create/Edit Alignment by Cogo Points** dialog.
- To add the right hand curve between points **277** and **276**, shown below, click the **Center Point Right** button. The **Center Point Right** button is used to select the center point of a curve that curves clockwise to the right. Doing this requires you to change the snap mode in MicroStation from Keypoint to Center.

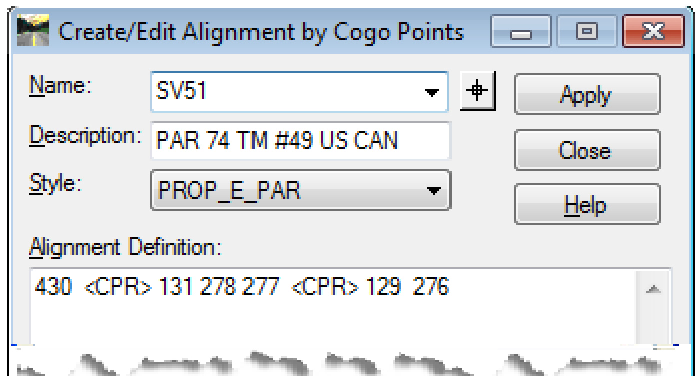


- In MicroStation, click the active snap mode button, , located at the bottom middle of the MicroStation window and select **Center**. The symbol will change to this: .
- Now, use the MicroStation snap process (typically a combination of the left & right mouse keys at the same time) to **tentative snap** on the curve between points **277** and **276** as shown below. Doing this will place a cross hair at the center point of the curve and also highlight the curve in purple as shown here.



- Left click to accept the point. Notice in the bottom left of the InRoads window and also in the bottom middle of the MicroStation window you are told which point was selected. Point 129 selected .
- **Right mouse click** over the MicroStation window to return to the **Create/Edit Alignment by Cogo Points** dialog.

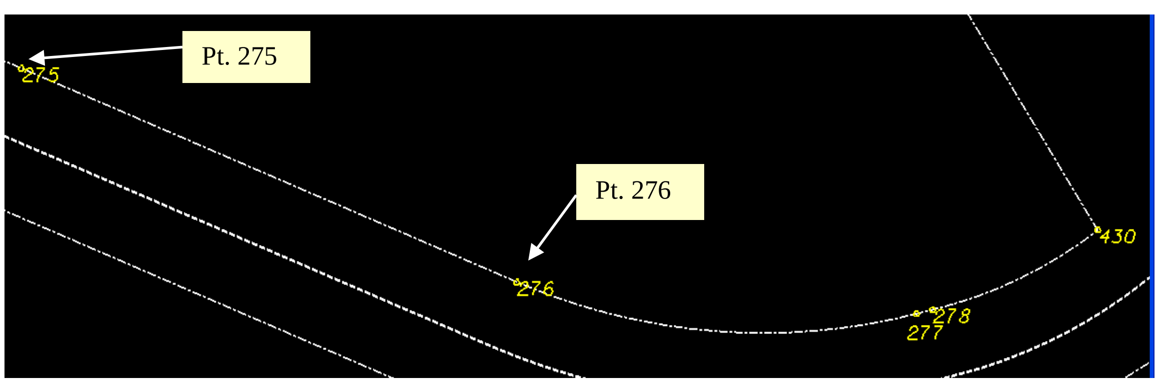
- Click **Stop**. The **Create/Edit Alignment by Cogo Points** dialog is populated with the curve between points **277** and **276**.
- Click **Start** and left click on point **276** which is the end of the curve.
- Right mouse click in the MicroStation window to return to the **Create/Edit Alignment by Cogo Points** dialog.
- Click **Stop**.
- Verify that your **Create/Edit Alignment by Cogo Points** dialog matches that shown below. If it does not, remove the incorrect data and try again.



- At this point the data is entered in the **Create/Edit Alignment by Cogo Points** dialog but not yet applied to Alignment **SV51**.
- Click **Apply** to save the data to Alignment **SV51** but do not close out of the **Create/Edit Alignment by Cogo Points** dialog.

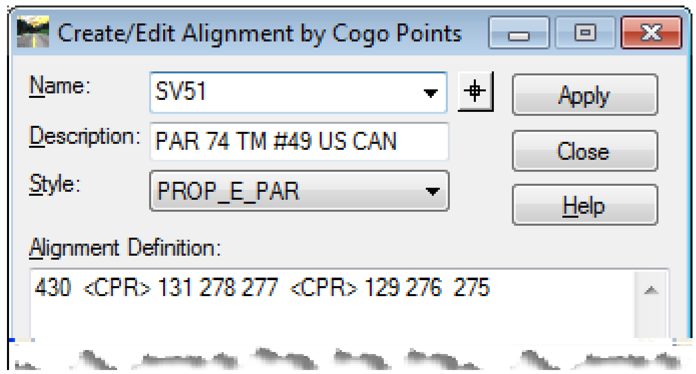
*The Curve between Points **277** and **276** and the Point **276** are now added to the Create/Edit Alignment by Cogo Points dialog.*

21. **Continue using the Create/Edit Alignment by Cogo Points command to add point 275 to Alignment SV51.**



- Click **Start**.
- Left click once on Point **275**. Be sure and notice the prompt at the bottom of the MicroStation view indicating which point was selected.
- **Right mouse click** over the MicroStation window to return to the **Create/Edit Alignment by Cogo Points** dialog.

- Click the **Stop** button. The **<u>Create/Edit Alignment by Cogo Points</u>** dialog is populated with the Point **275**.
- Verify that your **<u>Create/Edit Alignment by Cogo Points</u>** dialog matches that shown below. If it does not, remove the incorrect data and try again.

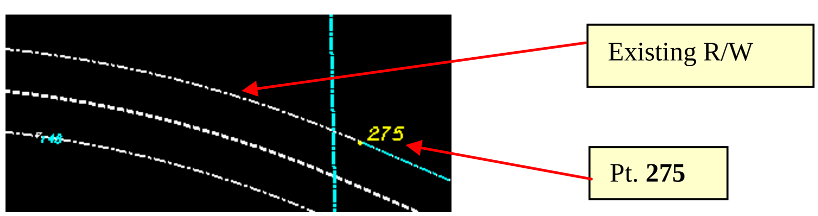


- Click **Apply** and **Close**.

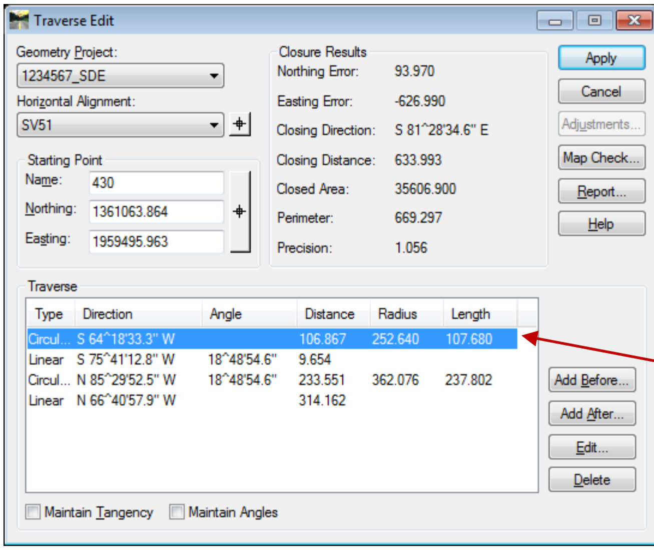
Point 275 is added to Alignment SV51.

22. **Open the Traverse Edit Command.**

- **For Information**: The **<u>Create/Edit Alignment by Cogo Points</u>** is the best tool to use for making use of existing curves. When curves do not yet exist, the **<u>Traverse</u>** or **<u>Traverse Edit</u>** Command must be used.

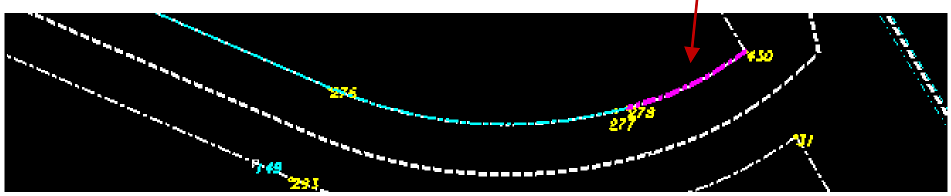


- Select **Geometry ► Utilities ► Traverse Edit…** The **<u>Traverse Edit</u>** dialog opens as shown below.
- Notice Alignment **SV51** contains the Points and Curves that were added using the **<u>Create/Edit Alignment by Cogo Points</u>**.

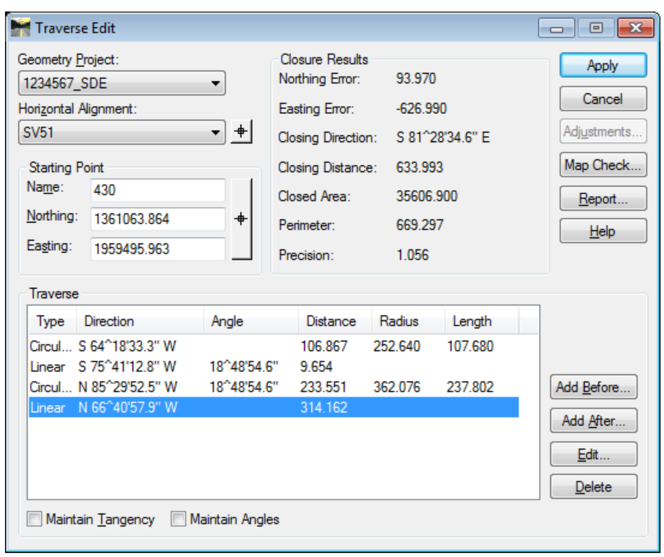


Highlighted element in **Traverse Edit** dialog is also highlighted in MicroStation.

- Notice in MicroStation that the Highlighted element in the **Traverse Edit** dialog is also highlighted in MicroStation as shown here.

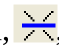


- Left click on the last linear element in the **Traverse Edit** dialog to make it the active element.
- Verify the linear element highlighted in the **Traverse Edit** dialog matches that shown here.



- Do not close the **Traverse Edit** dialog.

23. Before Continuing -- set the InRoads Snap Lock to Element Snap.

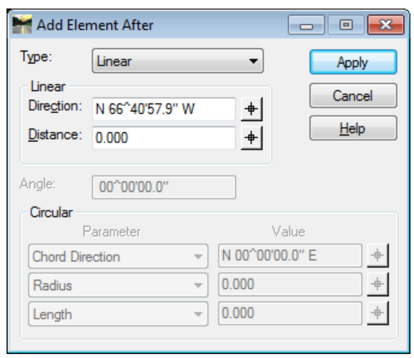
- In InRoads, select **Tools ► Locks** and ensure a check mark exists next to **Element Snap**.
- Ensure the **Element Snap** button, , is showing in the InRoads Toolbar as shown here.

Element Snap Icon

Sets the InRoads Snap Lock to Element Snap.

24. Open the Add Element After Dialog.

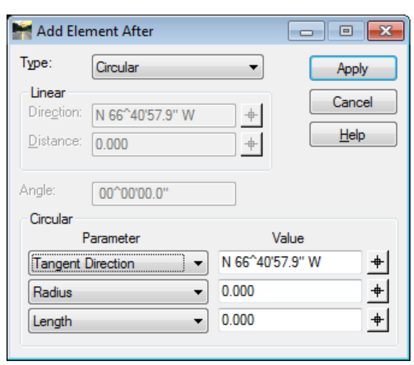
- In the **Traverse Edit** dialog which should still be open from the previous step, click the **Add After**… button. The **Add Element After** dialog opens as shown here.



Opens the Add Element After dialog box.

25. Change the Add Element After Type to Circular.

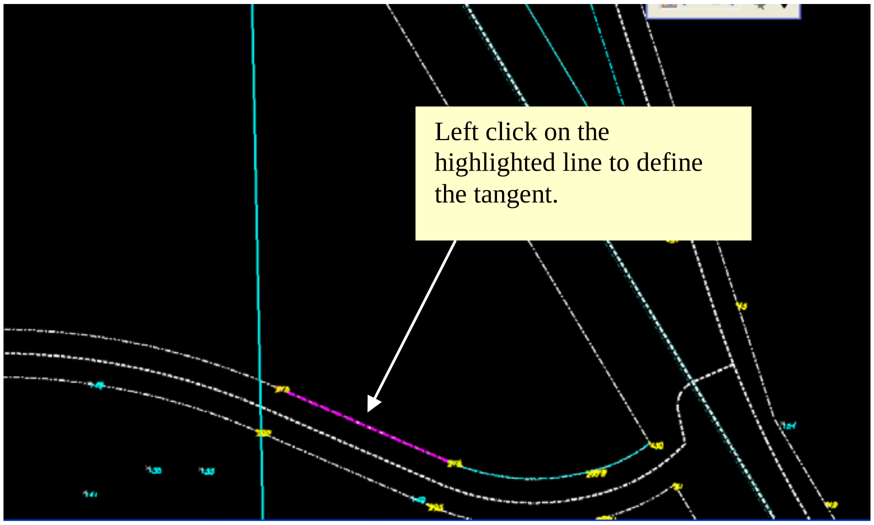
- In the **Add Element After** dialog, change the ***Type*** from **Linear** to **Circular**.
- Use the pull down menu to change the ***Circular*** **Parameter** from **Chord Direction** to **Tangent Direction**.



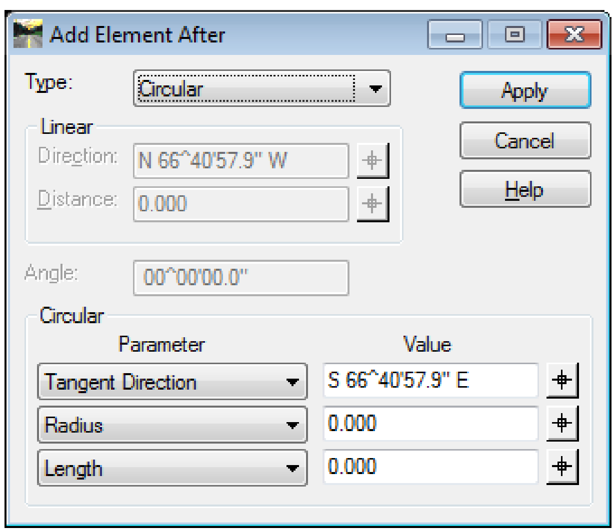
- Do not close the **Add Element After** dialog

26. **Select Tangent direction**

- While still in the **<u>Add Element After</u>** dialog, use the Locate button, , to fill the entry field for the **Tangent Direction**. This is done by left clicking on the Tangent element prior to the curve as shown below.



- Verify the value returned is **S 66^40'57.9" E**.
- Verify your entries at this point match those shown here.

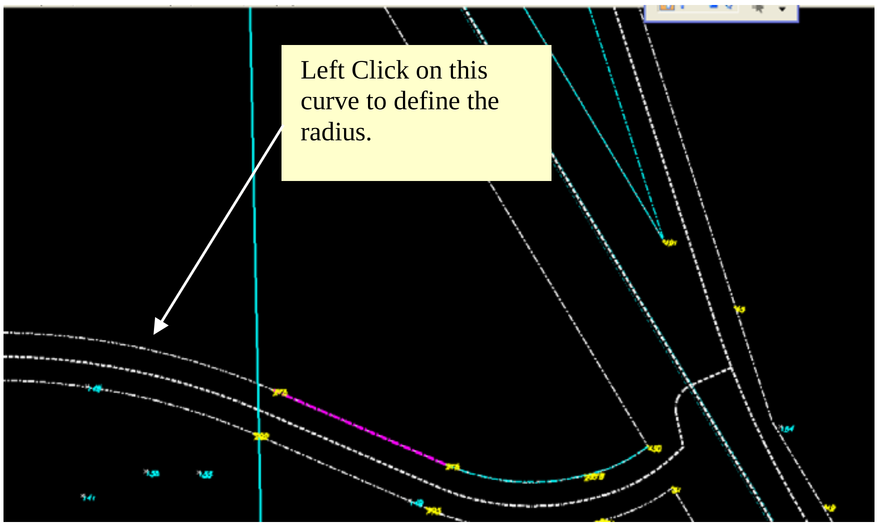


- Do not close the **<u>Add Element After</u>** dialog box.

Selects the Tangent Direction.

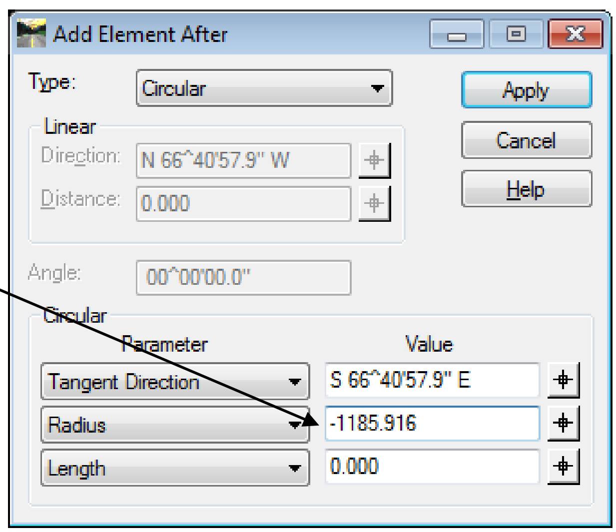
27. **Select Radius**

- While still in the **Add Element After** dialog use the Locate button, , to fill the entry field for the **Radius**. This is done by left clicking on the curve as shown below.
  ****REMEMBER**: Curves to the left are negative while curves to the right are positive. This will require you to manually place a negative sign in front of the radius value.



- Verify your entries match those shown here.

***IMPORTANT**: Don't forget to place a negative sign, -, in front of the radius value to indicate a curve to the left.

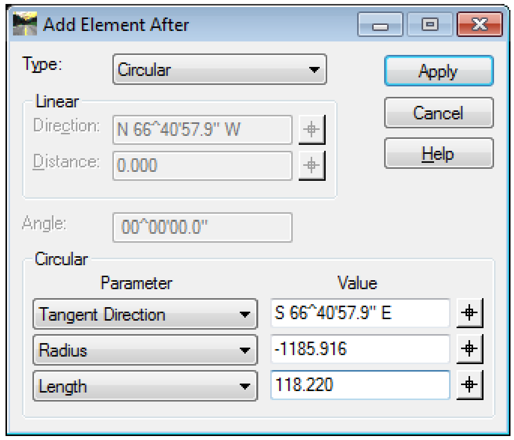


- Do not close the **Add Element After** dialog.

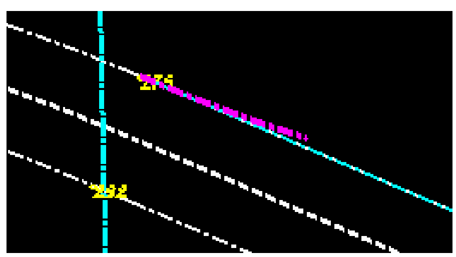
Selects the Radius.

28. **Enter Curve Length**

- Key-in **118.22** for the **Length**.
- Verify your entries match those shown here.



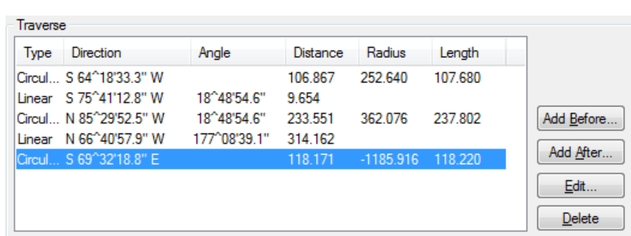
- Click **Apply** & **Cancel**. You are returned to the **Traverse Edit** dialog.
- Do not close the **Traverse Edit** dialog.
- Your view in MicroStation should look like this below which is obviously incorrect. The reason for this is because the existing R/W was stored by copying parallel from the centerline which is stored from west to east or left to right. Currently you are storing a parcel clockwise which for this element is right to left or east to west.



Enters the Curve Length.

29. **Remove Incorrect Data from Traverse Edit Dialog**

- In the **Traverse Edit** dialog, still open from the previous step, highlight the incorrect circular element as shown here.

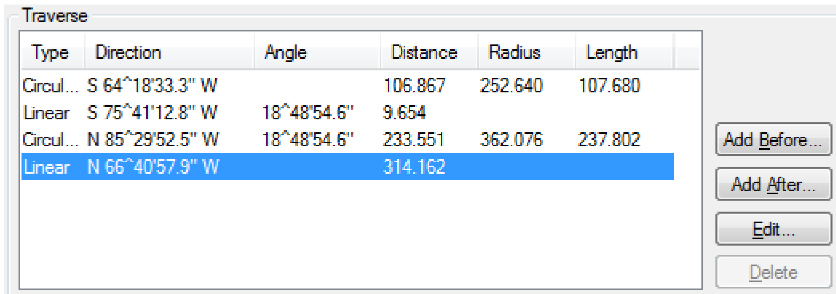


Type	Direction	Angle	Distance	Radius	Length
Circul...	S 64^18'33.3" W		106.867	252.640	107.680
Linear	S 75^41'12.8" W	18^48'54.6"	9.654		
Circul...	N 85^29'52.5" W	18^48'54.6"	233.551	362.076	237.802
Linear	N 66^40'57.9" W	177^08'39.1"	314.162		
Circul...	S 69^32'18.8" E		118.171	-1185.916	118.220

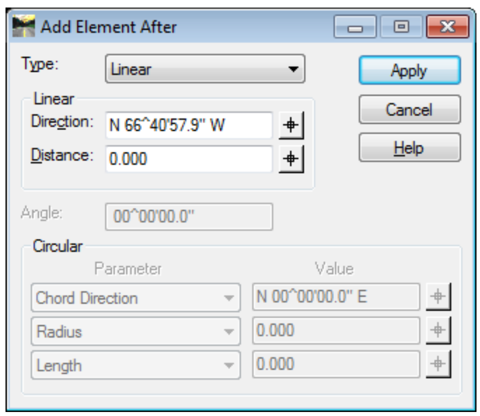
- Click **Delete** and click **Yes** to delete the selected element in the **Alert** dialog.

30. **Open the Add Element After Dialog Again**

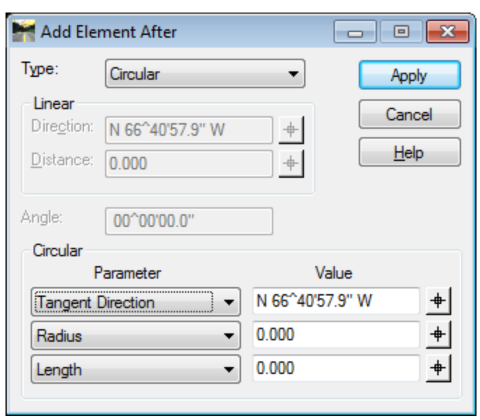
- **Highlight** the last linear element in the **Traverse Edit** dialog as shown here.



- Click the **Add After**… button. The **Add Element After** dialog opens as shown here.



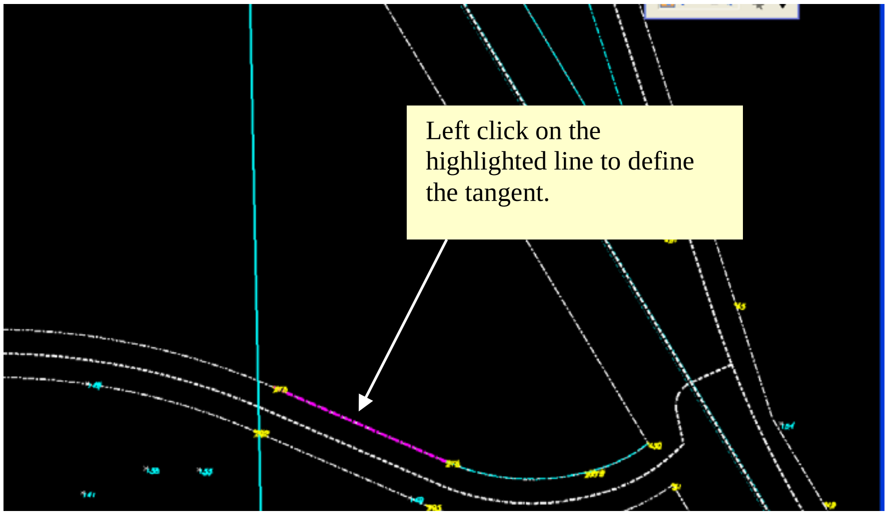
- In the **Add Element After** dialog, change the ***Type*** from Linear to **Circular**.
- Using the pull down menu change the **Circular** **Parameter** from **Chord Direction** to **Tangent Direction**.
- Verify your entries match those shown here.



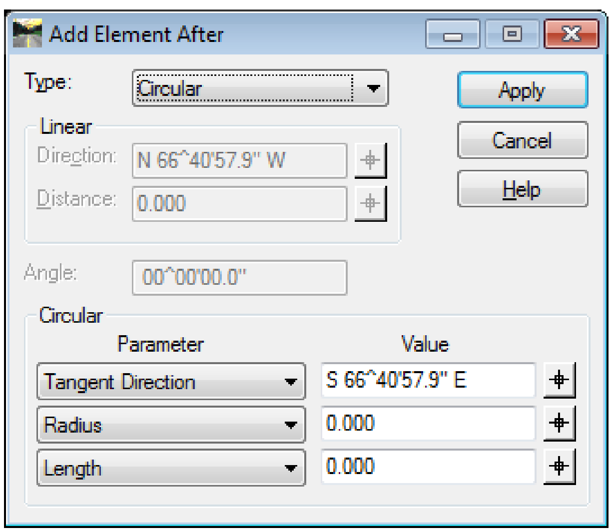
- Do not close the **Add Element After** dialog.

31. **Select Tangent direction**

- While still in the **<u>Add Element After</u>** dialog, use the Locate button, , to fill the entry field for the **Tangent Direction**. This is done by left clicking on the Tangent element prior to the curve as shown below.



- Verify the value returned is **S 66^40'57.9" E**.
- Verify your entries at this point match those shown here.

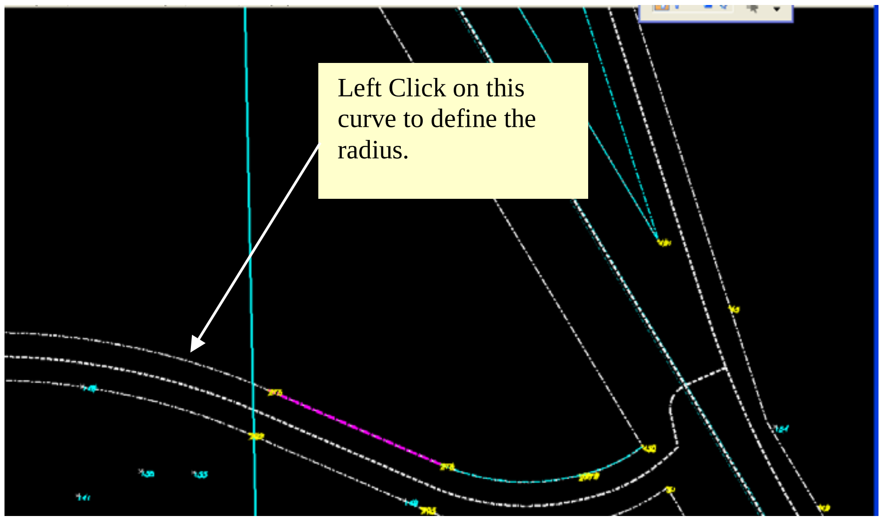


- Do not close the **<u>Add Element After</u>** dialog.

Selects the Tangent Direction.

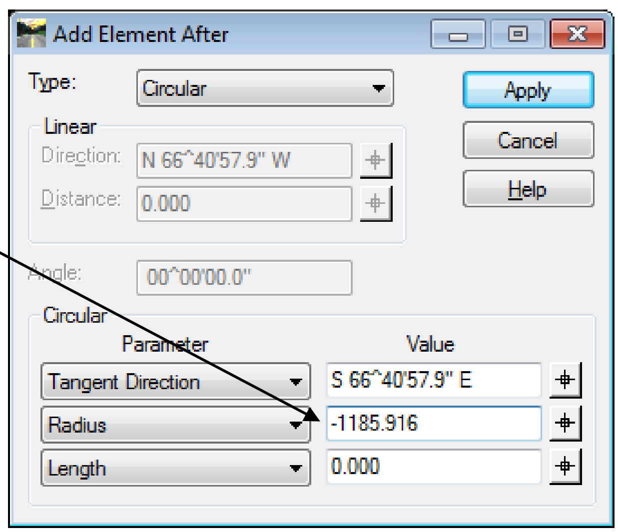
32. **Select Radius**

- While still in the **Add Element After** dialog use the Locate button, ⌖, to fill the entry field for the **Radius**. This is done by left clicking on the curve as shown below.
  REMEMBER: Curves to the left are negative while curves to the right are positive. This will require you to manually place a negative sign in front of the radius value.



- Verify your entries match those shown here.

IMPORTANT: Don't forget to place a negative sign, -, in front of the radius value to indicate a curve to the left.

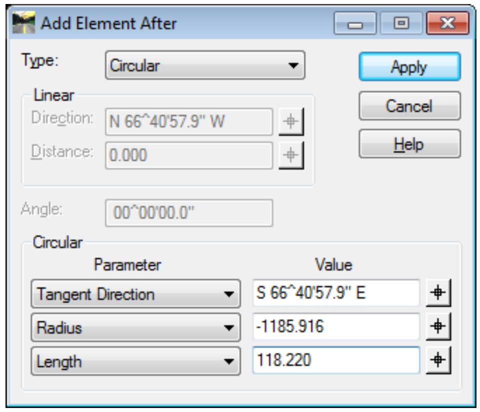


- Do not close the **Add Element After** dialog.

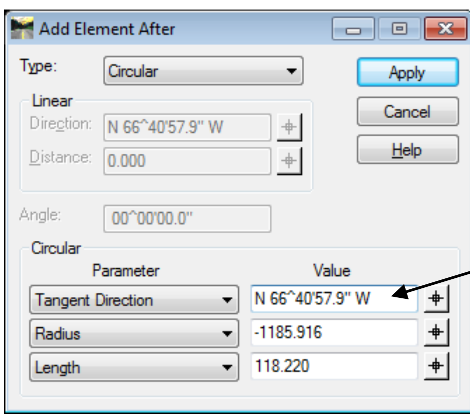
Selects the Radius.

33. **Enter Curve Length**

- Key-in **118.22** for the **Length**.
- Verify your entries match those shown here.

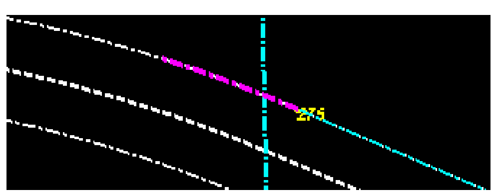


- Do **__Not__** click **Apply**.
- At this point we are back to where we were before we created the error. Since we are storing our parcel in the clockwise or North Westerly direction for this element rather than in the South Easterly direction we can manually make the following edit.
- Change the '**Tangent Direction'** value from **S** to **N** and from **E** to **W** as shown here.



The S was changed to N and the E was changed to W. This is the correct direction of the linear element.

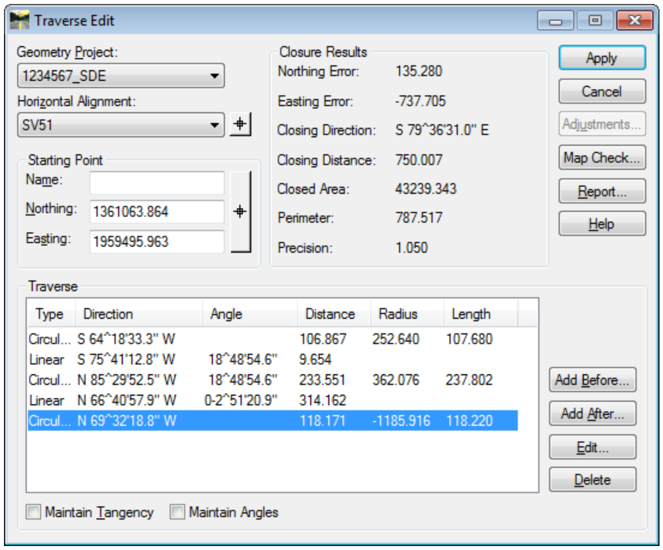
- Click **Apply** and **Cancel**. You are returned to the **__Traverse Edit__** dialog.
- Verify your MicroStation view matches that shown here and that the circular element was drawn.



- Do not close the **__Traverse Edit__** dialog.

34. **Complete the Traverse Edit Command and add the Curve to Alignment SV51**

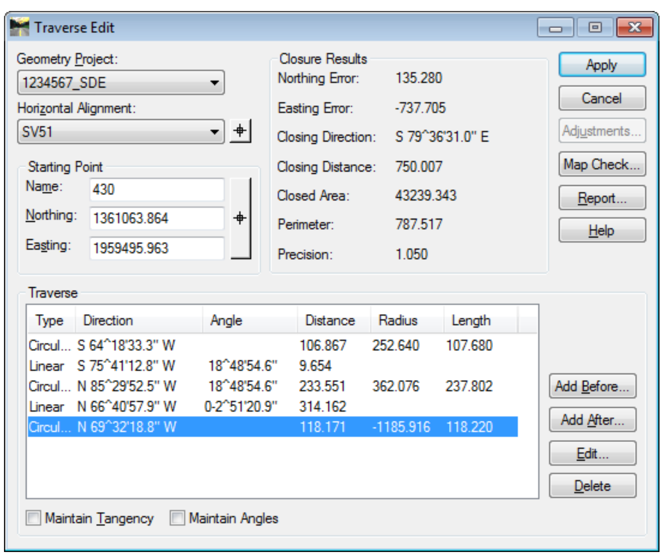
- At this point we have added a circular element to the **Traverse Edit** dialog using the **Add After** button, as shown here.



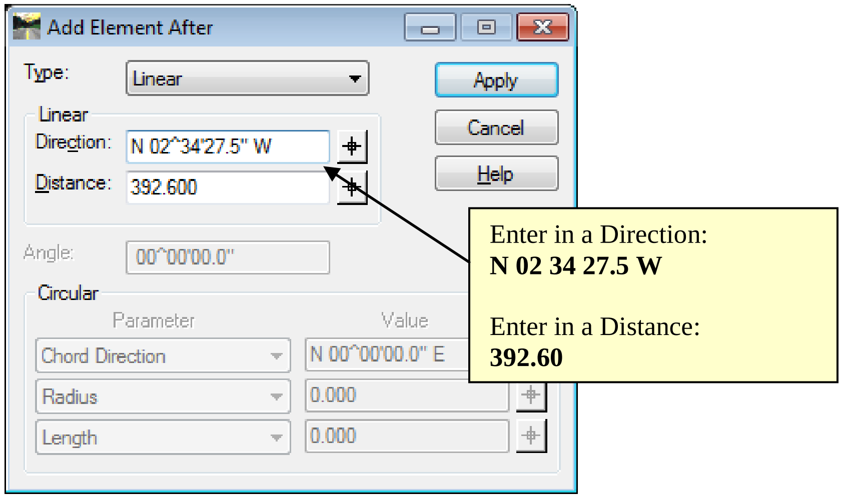
- In the **Traverse Edit** dialog click **Apply** but do **not** click Cancel. The curve is permanently added to Alignment **SV51** and drawn in MicroStation.

35. **Continue using the Traverse Edit command to add a linear element from the PT of the last curve added on a bearing of N 02^34’27.5” W with a distance of 392.60 feet.**

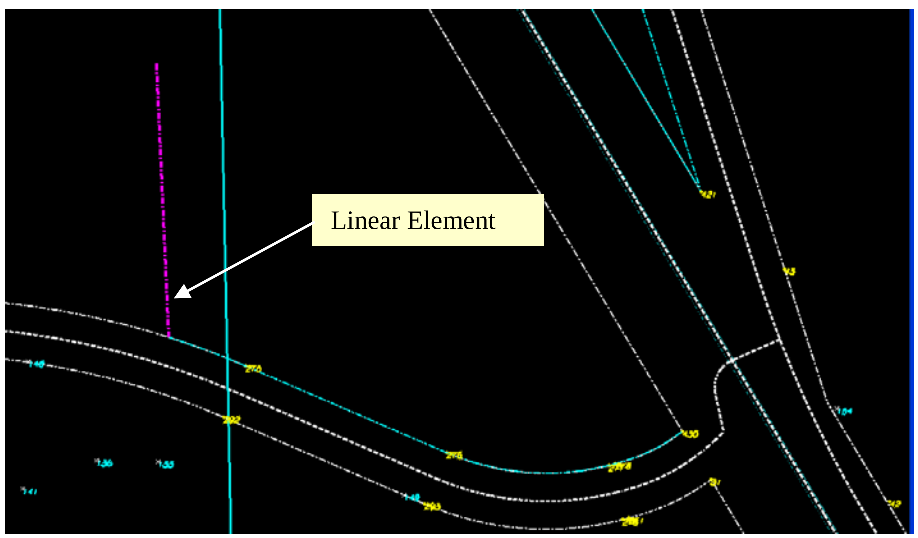
- Make sure the last Circular element in the **Traverse Edit** dialog is highlighted as shown here.



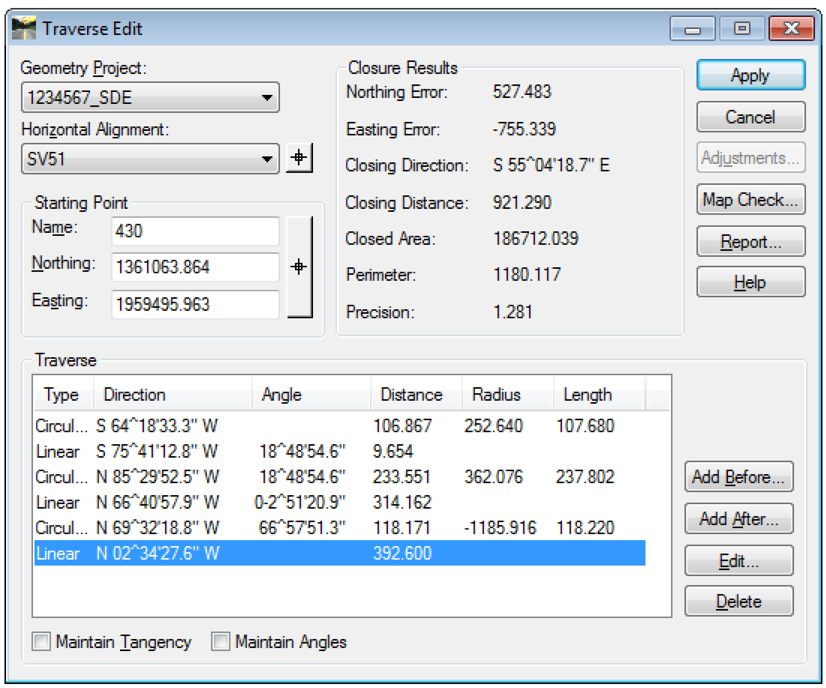
- Click the **Add After**… button.
- Match the entries in the **<u>Add Element After</u>** dialog shown here.

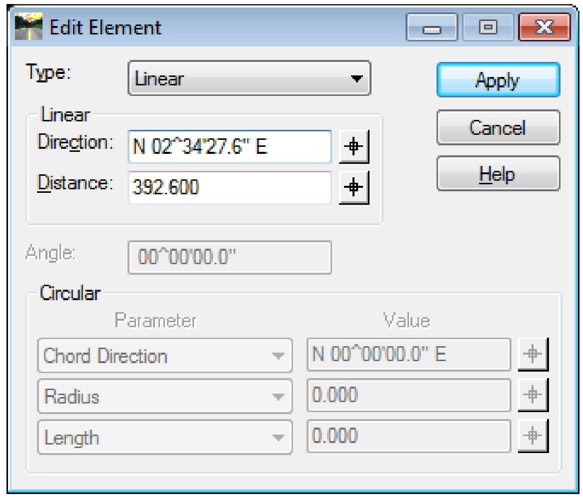


- Click **Apply** and **Cancel**.
- Verify your MicroStation view matches that shown here and contains the new linear element.

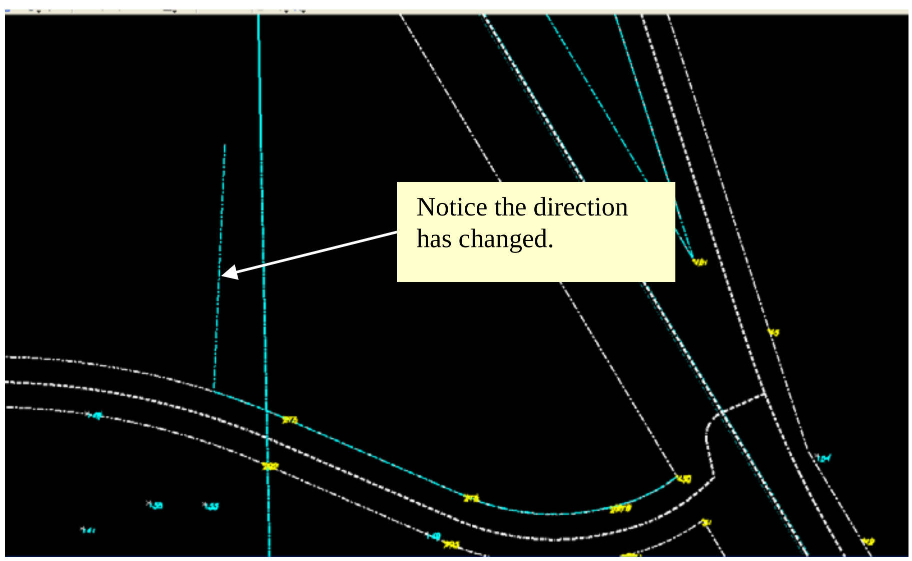


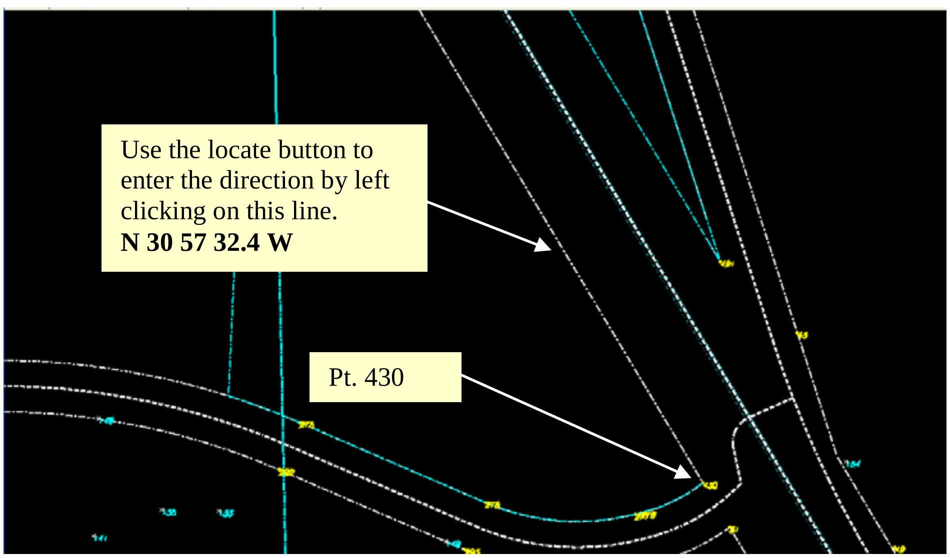
- In the **<u>Traverse Edit</u>** dialog click **Apply** and **Cancel**. This completes the addition of the curve and linear element described in the previous steps to Alignment **SV51** using the **<u>Traverse Edit</u>** command.

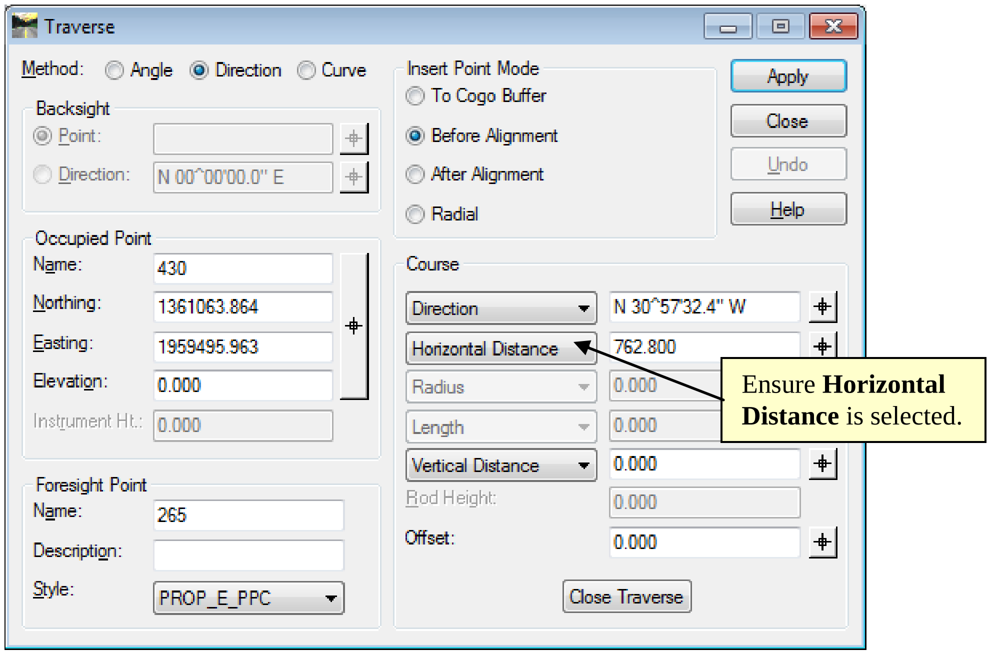
36.	At this point the changes and additions you've made to Alignment **SV51** have only been stored in temporary memory but have not been permanently stored in the InRoads .ALG file. In order not to lose data it is important to periodically save your .ALG geometry file. • In InRoads, Select **File ►Save ► Geometry Project.**
37.	Let's Suppose for a moment… That you've just realized you incorrectly entered the bearing for your last entry and it should have been **N 2^34'27.5"E** and not **N 2^34'27.5"W**. The following steps demonstrate the use of the **Traverse Edit** command to edit the incorrectly stored element. • Select **Geometry ► Utilities ► Traverse Edit**… • In the **Traverse Edit** dialog highlight the incorrectly stored linear element, shown here. Notice in MicroStation that the element is also highlighted in purple.  • Click the **Edit** button. • In the **Edit Element** dialog change the **Direction** from **N 02^34'27.6" W** to **N 02^34'27.6" E**. • Verify your entry matches that shown below.



- Notice the linear element change in MicroStation as you click **Apply** and **Cancel**. Go ahead and click **Apply** and **Cancel** if you haven't already done so.
- In the **Traverse Edit** dialog click **Apply** and **Cancel**.
- Verify your MicroStation view matches that shown here.



38.	At this point the changes and additions you've made to Alignment **SV51** have only been stored in temporary memory but have not been permanently stored in the InRoads .ALG file. In order not to lose data it is important to periodically save your .ALG geometry file. • In InRoads, Select **File ►Save ► Geometry Project.**
39.	**Store the leg from point 430 on a bearing of N 30^57'32.4" W and a distance of 762.80 feet using the <u>Traverse</u> command.** • Select **Geometry ► Traverse** • Set the ***Method*** to **Direction**. • Set the ***Insert Point Mode*** to **Before Alignment**. (**Before Alignment** MUST be selected FIRST before selecting the ***Occupied Point*** in order for the command to function correctly). • Use the locate button in the ***Occupied Point*** frame to select point **430**. *** Hint**: Remember to change the InRoads snap lock to **Point Snap**. • Use the Locate Button under the ***Course*** frame to define the **Direction** identified below. *** Hint**: Change the InRoads snap lock to **Element Snap**.  • Under ***Course***, key-in a horizontal distance of **762.80** feet. ***REMEMBER**: Ensure **Horizontal Distance** is selected. • Select a Style of **PROP_E_PPC** from the Pull down menu in the ***Foresight Point*** frame. • Verify your settings match those shown below.



- Click **Apply** but do not close out of the **<u>Traverse</u>** command.
- If a **<u>Results</u>** dialog box appears – click the **Close** button to close the dialog.
- Verify your view matches that shown in *Figure L15-10* and that the leg was drawn correctly.

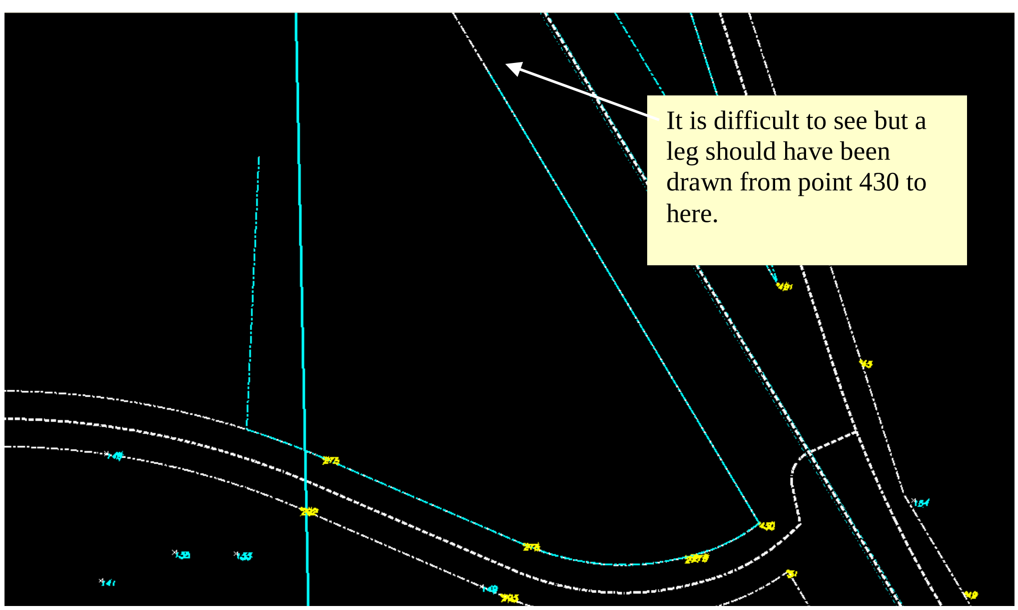
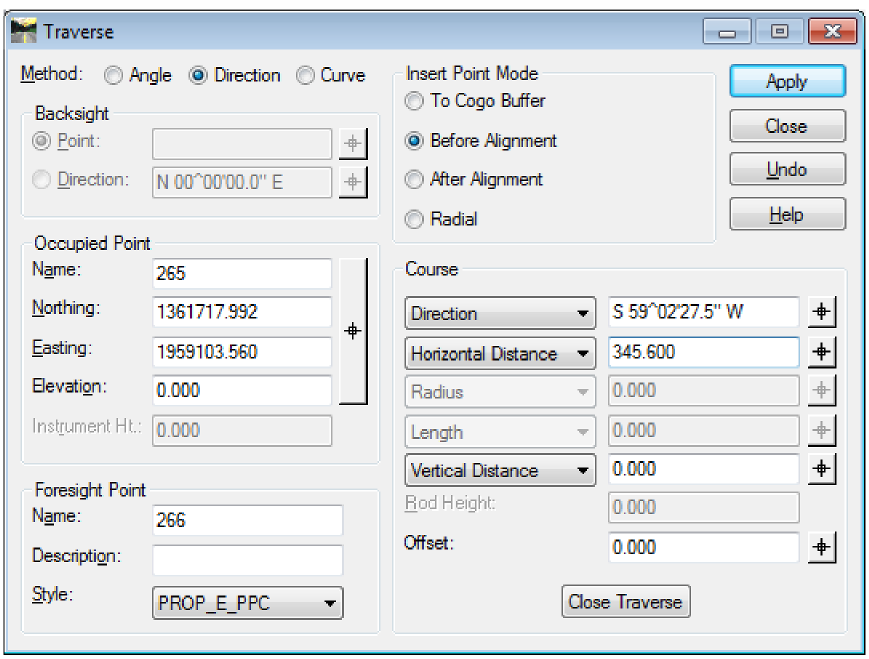


Figure L15-10 MicroStation Window

40. **Continue using the Traverse command from the previous step to store the leg from the last point stored on a bearing of S 59^02’27.5” W and a distance of 345.60 feet.**

- Set the ***Method*** to **Direction**.
- Set the ***Insert Point Mode*** to **Before Alignment**. (**Before Alignment** MUST be selected FIRST before selecting the ***Occupied Point*** in order for the command to function correctly).
- Enter Point **265** in the ***Occupied Point*** frame or snap to it using the **Locate Button**.
  *** Hint**: If Snapping - Remember to change the InRoads snap lock to **Point Snap**.
- Under the ***Course*** frame - enter in a **Direction** of **S 59 02 27.5 W** to define the **Direction** identified below.
- Under ***Course***, key-in a horizontal distance of **345.60** feet.
  ***REMEMBER**: Ensure **Horizontal Distance** is selected.
- Select a Style of **PROP_E_PPC** from the Pull down menu in the ***Foresight Point*** frame.

- Match the settings in the **Traverse** dialog shown here.



- Click **Apply**, but do **not** close out of the **Traverse** command.
- **Review** and **Close** the **Results** dialog that opens.
- Verify your MicroStation view matches that shown in *Figure L15-11*.

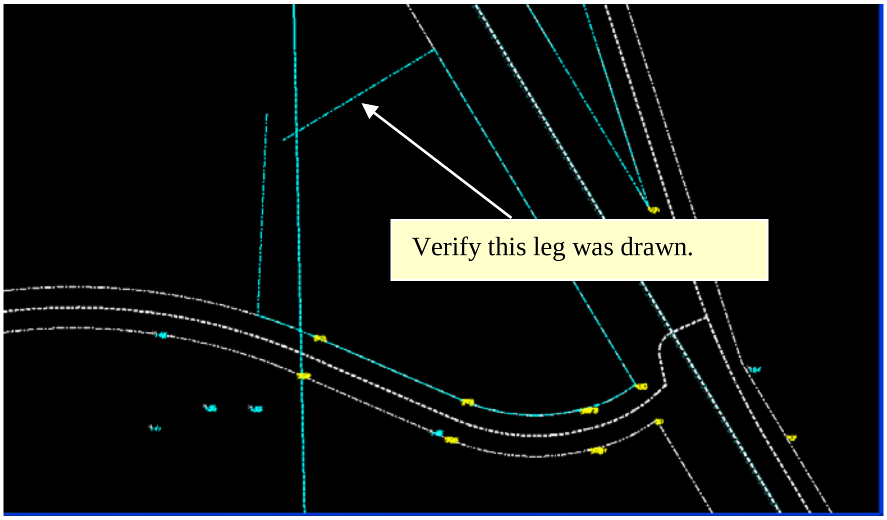
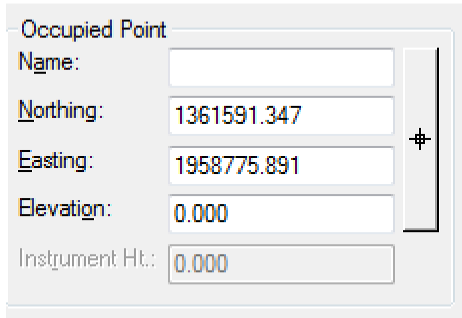


Figure L15-11 MicroStation Window

41.	At this point the changes and additions you've made to Alignment **SV51** have only been stored in temporary memory but have not been permanently stored in the InRoads .ALG file. In order not to lose data it is important to periodically save your .ALG geometry file. • In InRoads, Select **File ►Save ► Geometry Project.**
42.	**Continue using the Traverse command to close the Alignment.** • Click the **Close Traverse** button and a **<u>Results</u>** Report should appear. • Click **Close** to close out of the **<u>Results</u>** Report. • Notice the Alignment was not closed. This is because the occupied point must be the last point in the Alignment for the **Close Traverse** button to work. In the **<u>Traverse</u>** dialog, use the **Locate Button** to select the ***Occupied Point*** identified in *Figure L15-12*. *** Hint**: When Snapping - Remember to change the InRoads snap lock to **Point Snap**. ***NOTE**: Notice when using the locate button to select the occupied point the purple hour glass ID's the point (See *Figure L15-12*) but that no point number is identified in the bottom middle of the MicroStation window as in previous assignments. Only Selected point "is shown (See *Figure L15-12*). This is because the **<u>Assign Names</u>** command has not yet been run. The coordinates, however, are still entered correctly into the ***Occupied Point*** fields as shown here.



- Click the **Close Traverse** button.
- **Close** the **<u>Results</u>** report.
- Verify your view matches that shown in *Figure L15-13*.
- Click **Close** to close the **<u>Traverse</u>** dialog.

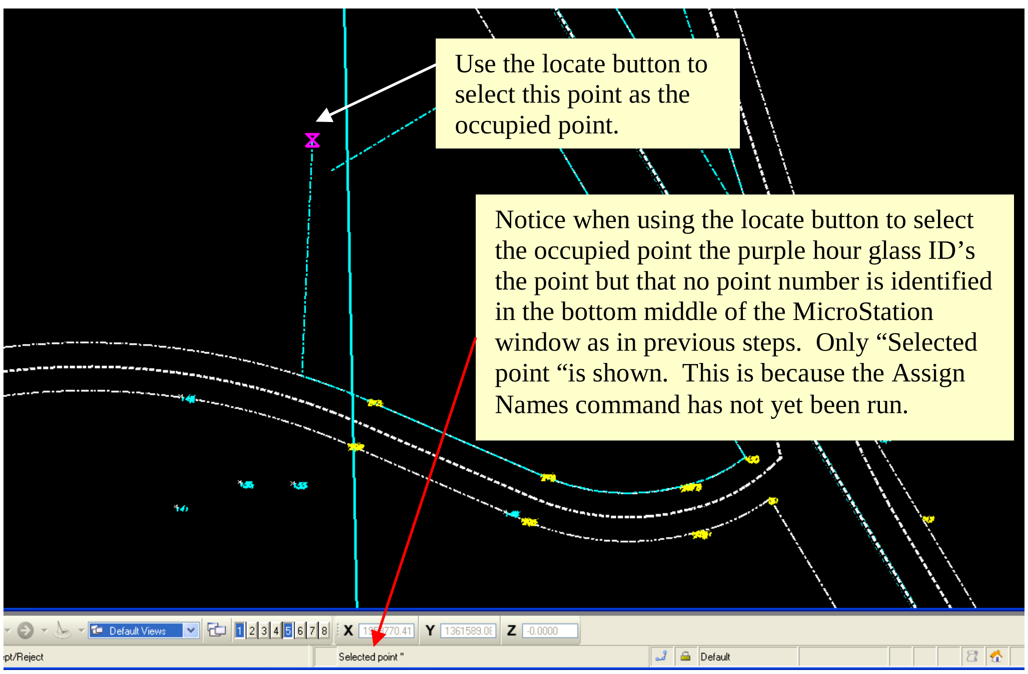


Figure L15-12 MicroStation Window

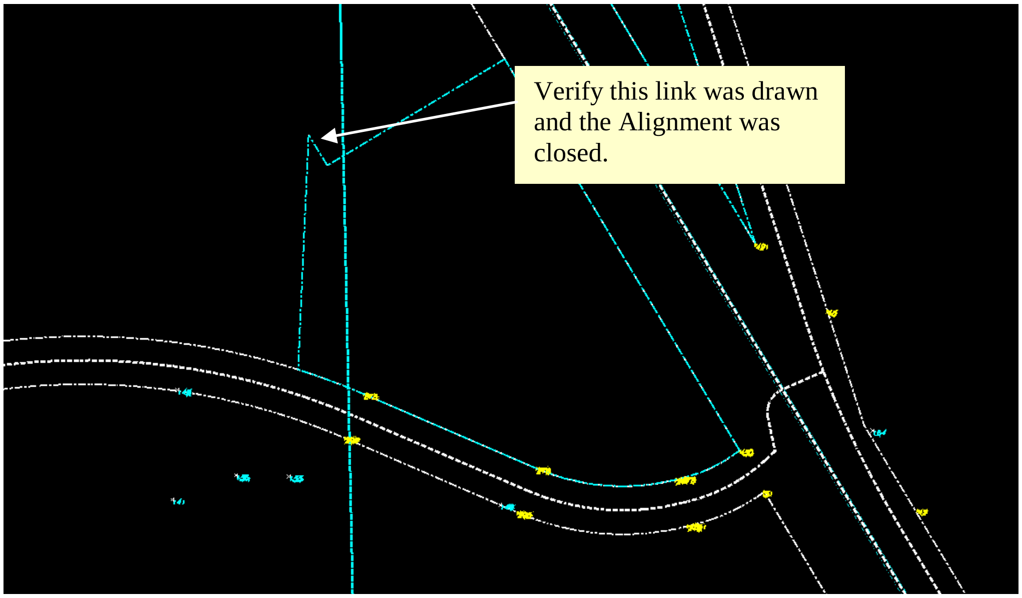
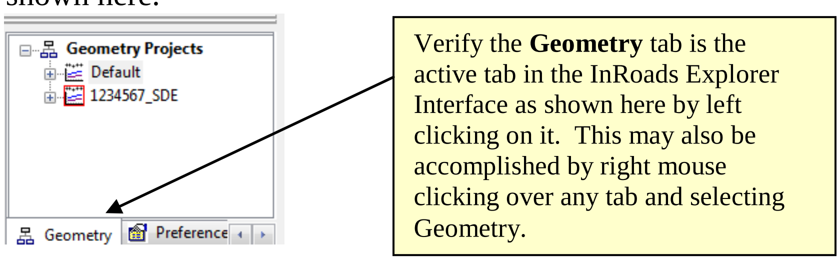


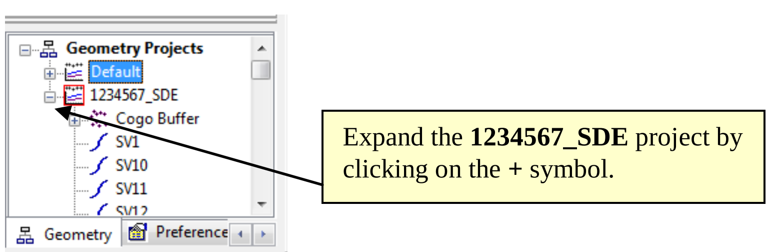
Figure L15-13 MicroStation Window

43. Let’s Suppose for a Moment…That at this point you have realized there was an additional leg that needed to be placed and that you should not have closed the Alignment. The following steps will guide you through the use of the **Check Integrity** command to remove the last leg placed.

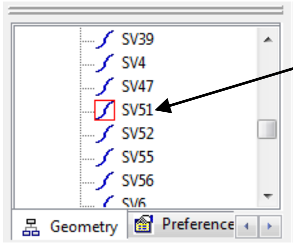
- Make the **Geometry** tab the active tab in the *InRoads Explorer Interface* as shown here.



- Expand the **1234567_SDE** project by left clicking on the **+** symbol as shown here.



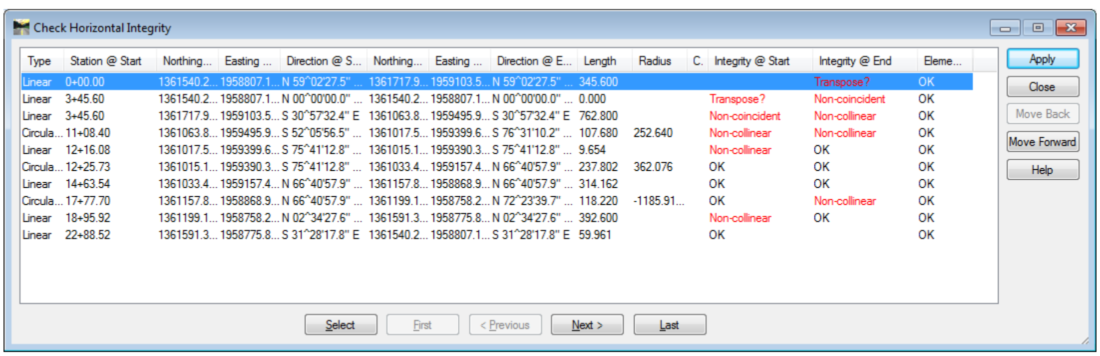
- Scroll to alignment **SV51**. Right mouse click over it and click **Set Active** to ensure it is the Active Alignment. There should be a Red Square around it.



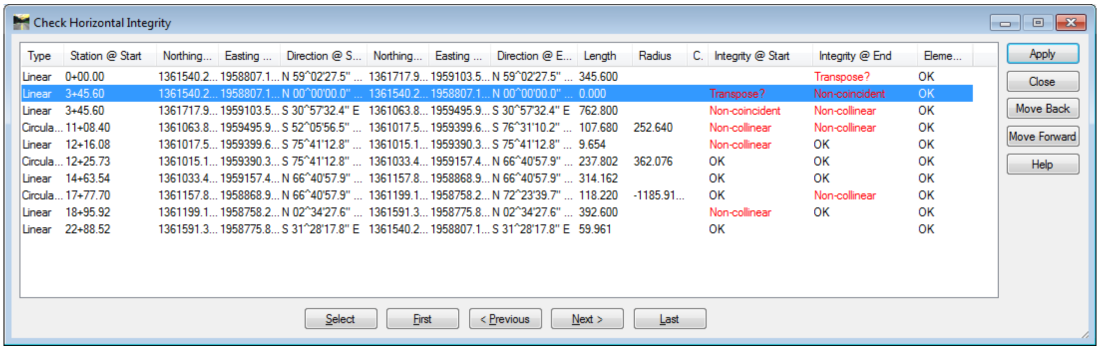
SV51 should have a red square around it as shown here indicating it is the active alignment.

- Right mouse click over **SV51** again and click **Check Integrity**.
- If the following **Alert** box appears, click **OK**.

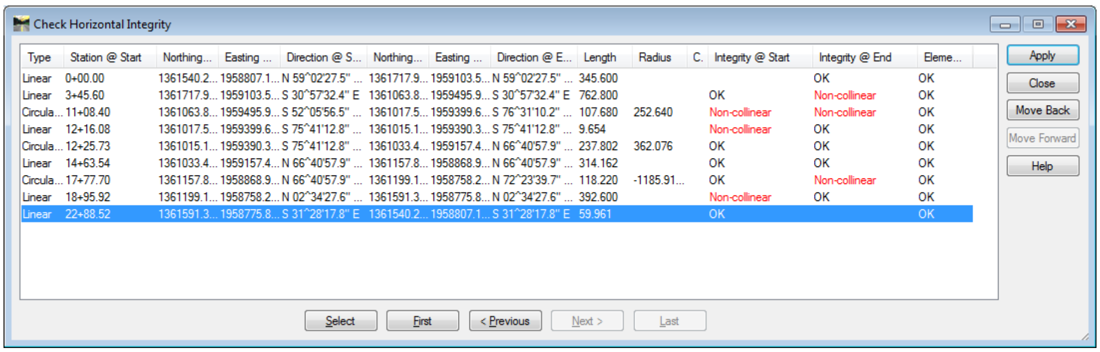
- The **Check Horizontal Integrity** dialog opens as shown below.



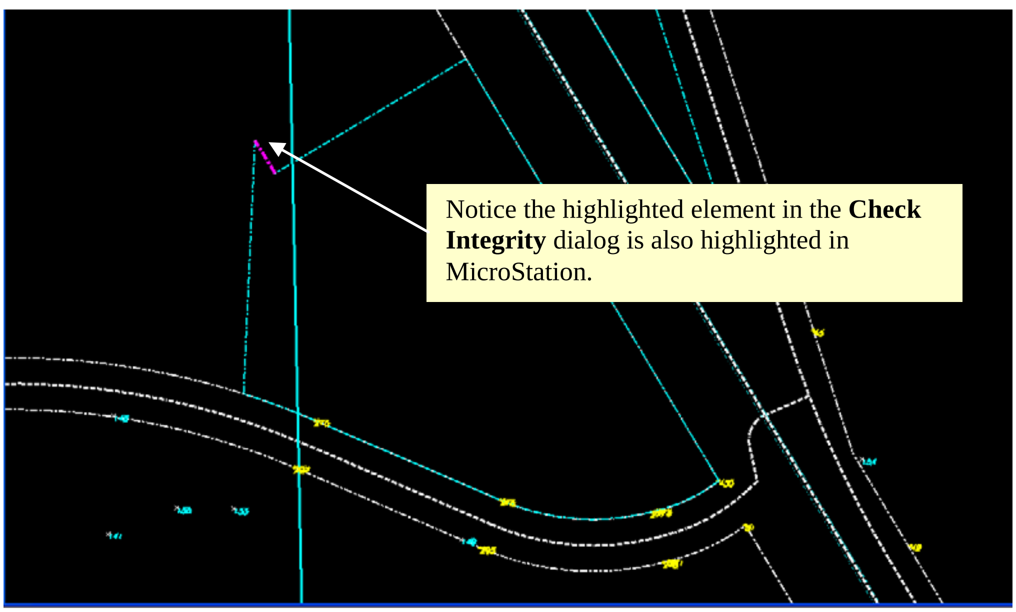
- Notice the Zero Length linear element highlighted in the screen capture below. This element was placed when we attempted to close the element previously in the first part of **Step 42** without success. Let's take a moment to delete this element.
- Highlight the Linear element shown below.
- Next **Right Click** on the Highlighted Linear element and click **Delete**.
- Elements can be edited/deleted at any time using the **Check Integrity** command.

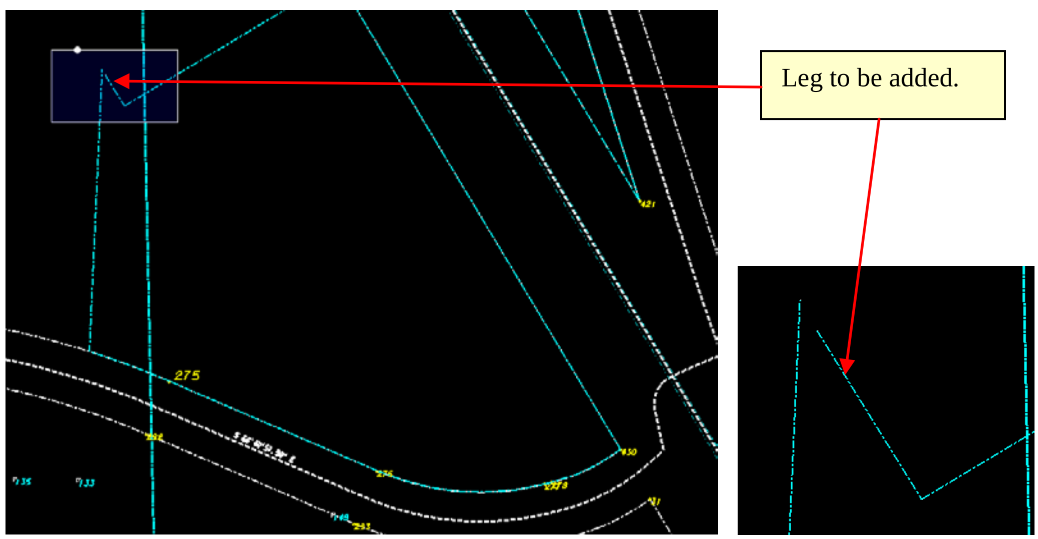


- Highlight the last Linear element in the <u>**Check Horizontal Integrity**</u> dialog as shown below.



- In MicroStation, notice the element is highlighted in purple shown below.



	• In the **Check Horizontal Integrity** dialog, **Right Click** on the Highlighted Linear element and click **Delete**. • Notice the element disappears in both the **Check Horizontal Integrity** dialog and in MicroStation. • Click **Close** to close the **Check Horizontal Integrity** dialog.
44.	At this point the changes and additions you've made to alignment SV51 have only been stored in temporary memory but have not been permanently stored in the InRoads .ALG file. In order not to lose data it is important to periodically save your .ALG geometry file. • In InRoads, Select **File ►Save ► Geometry Project**.
45.	**Use the Traverse command to add the next leg of Parcel Alignment SV51 with a bearing of N 31^ 50' 32.45" W and distance of 50.97 as shown here.**  • Select **Geometry ►Traverse** • Set the ***Method*** to **Direction**. (*See Figure L15-15*). • Set the ***Insert Point Mode*** to **Before Alignment**. • Use the **Locate Button** to select Point **266** to be the occupied point. (See *Figure L15-14*). *** Hint**: When Snapping - Remember to change the InRoads Snap lock to **Point Snap**. • In the *Course* - **Direction** field key-in **N31^50'32.5"W.** • In the *Course* – **Horizontal Distance** field key-in **50.97**. • Verify your settings match those shown in *Figure L15-15*. • Click **Apply** but **Do Not** close the **Traverse** dialog. • The **Results** report may be closed. • In MicroStation, Verify your view matches that shown in *Figure L15-16*.

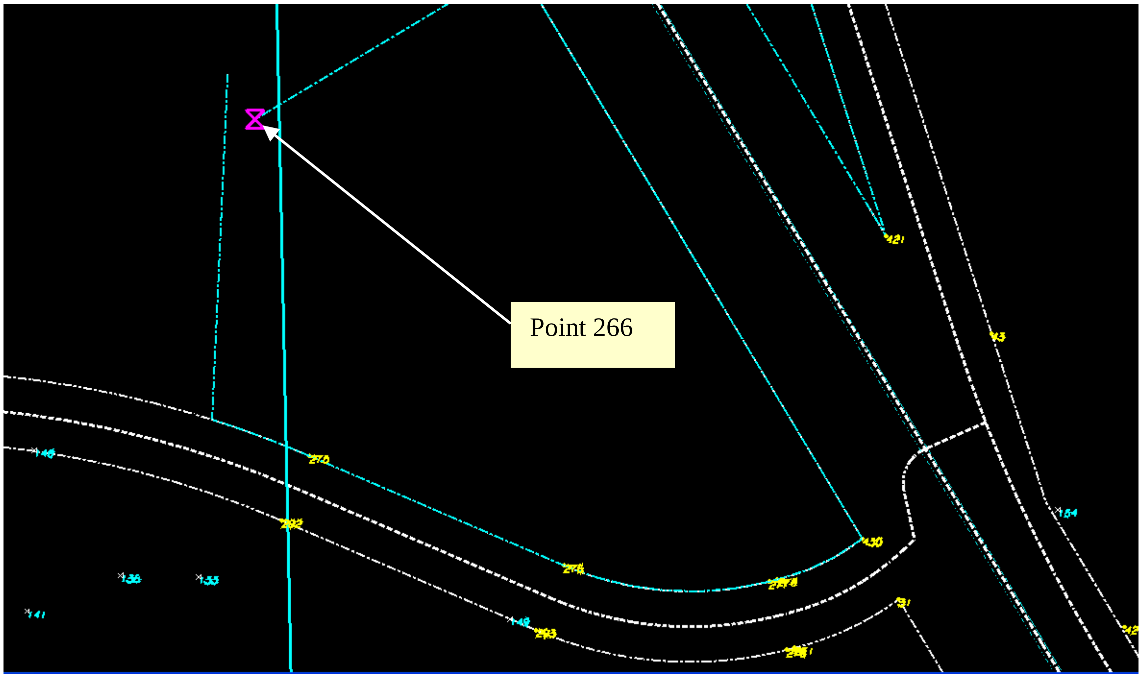


Figure L15-14 MicroStation Window

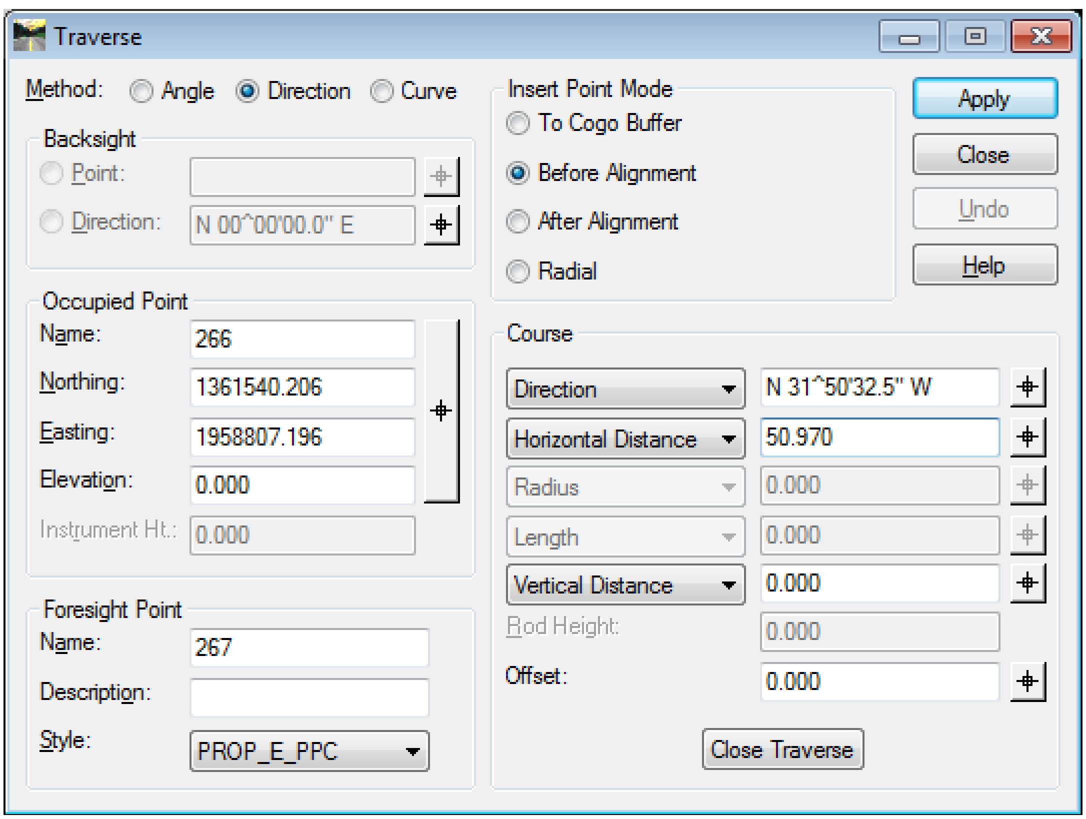


Figure L15-15 Traverse Dialog.

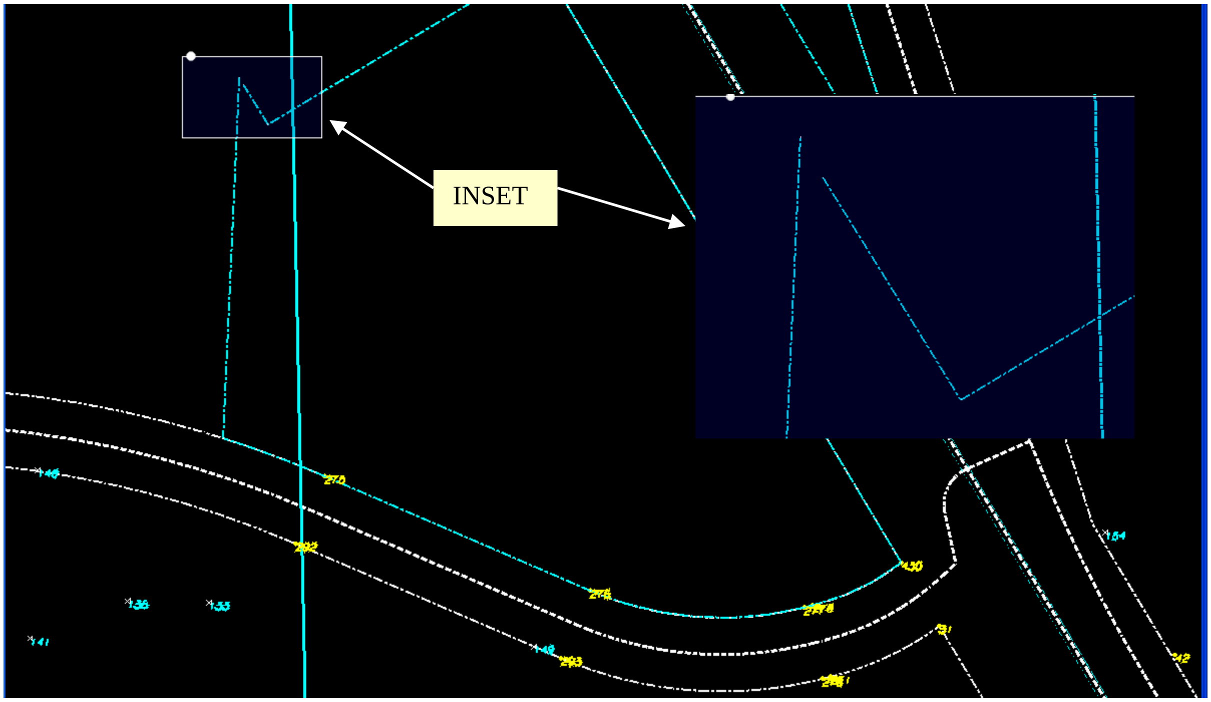
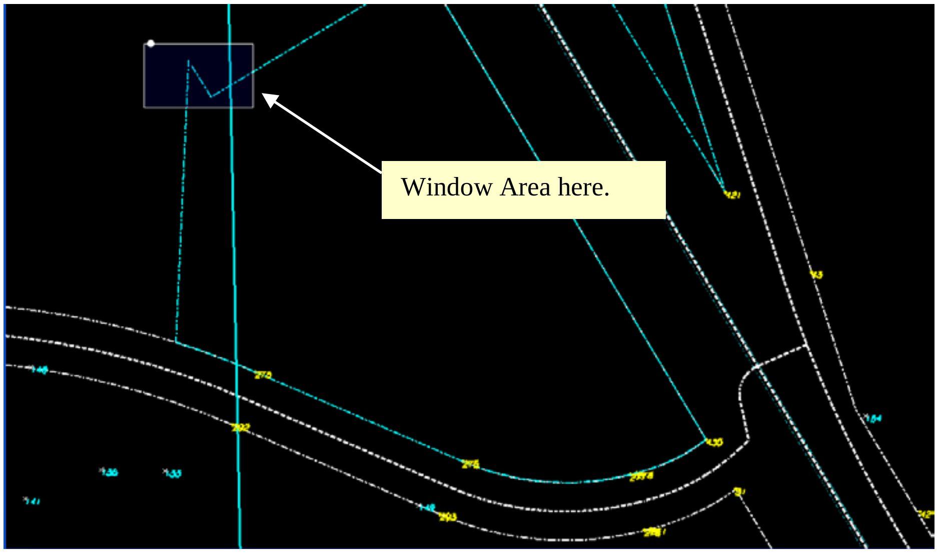
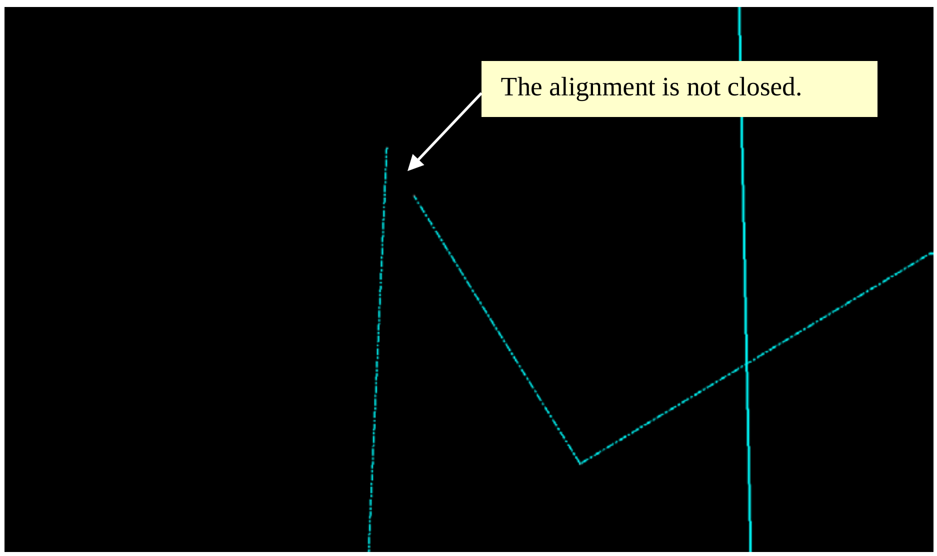


Figure L15-16 MicroStation Window

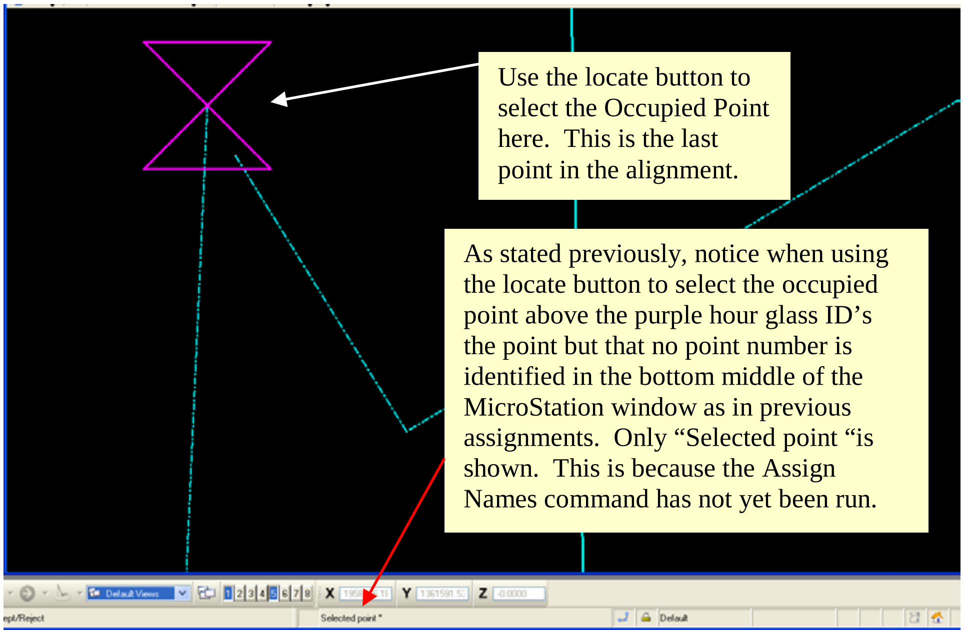
46.	At this point the changes and additions you've made to Alignment **SV51** have only been stored in temporary memory but have not been permanently stored in the InRoads .ALG file. In order not to lose data it is important to periodically save your .ALG geometry file. • In InRoads, Select **File ►Save ► Geometry Project**.
47.	**Close the alignment.** • In MicroStation, Window area as shown below.



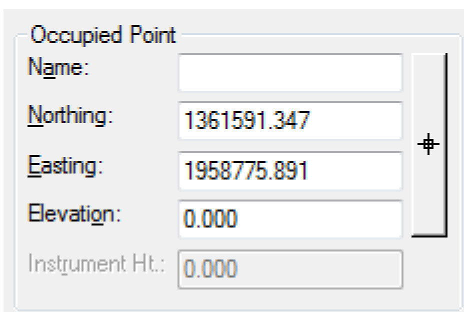
- The Alignment is not yet closed as can be seen here.



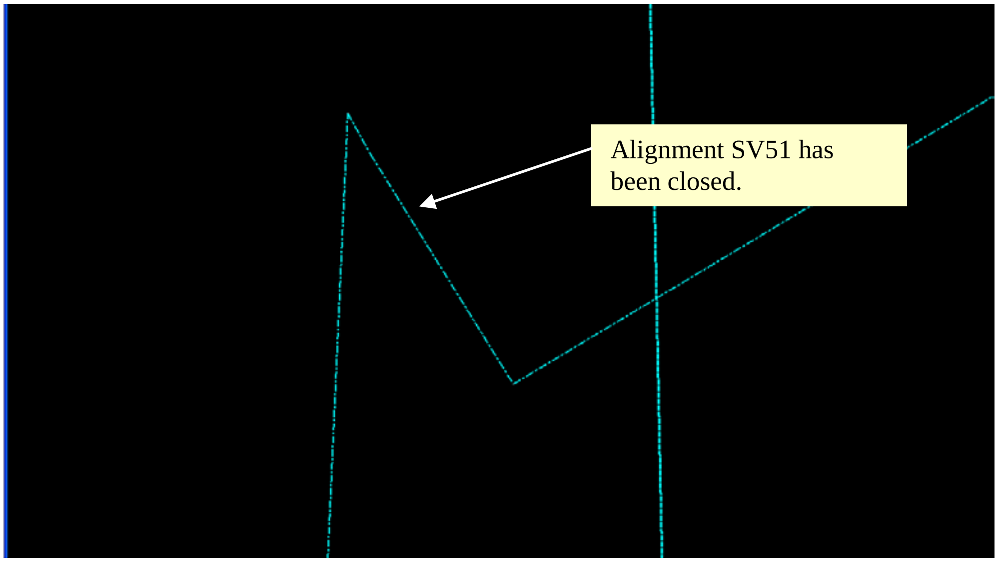
- In the <u>**Traverse**</u> command use the **Locate Button** to select the ***Occupied Point*** as shown below.



- ***NOTE**: As stated previously, notice when using the locate button to select the occupied point the purple hour glass ID's the point but that no point number is identified in the bottom middle of the MicroStation window as in previous assignments. Only "Selected point" is shown. This is because the assign names command has not yet been run. The coordinates will be entered correctly into the ***Occupied Point*** fields as shown here.



- Click the **Close Traverse** button.
- In MicroStation, verify your view matches that shown below.



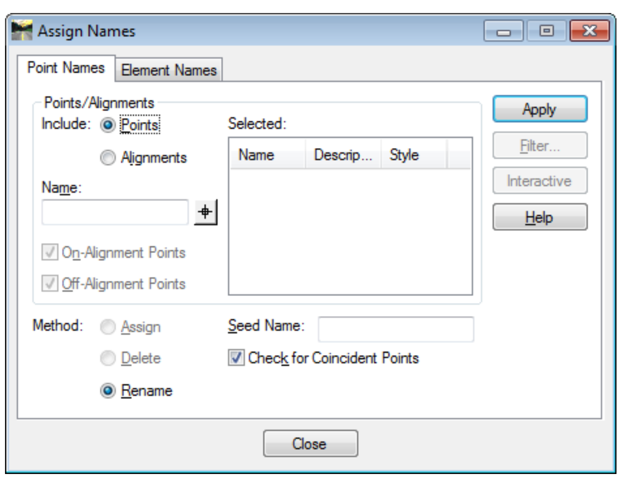
- Click **Close** to close the **Traverse** dialog.
- Click **Close** to close the **Results** report.

48. At this point the changes and additions you've made to Alignment **SV51** have only been stored in temporary memory but have not been permanently stored in the InRoads .ALG file. In order not to lose data it is important to periodically save your .ALG geometry file.

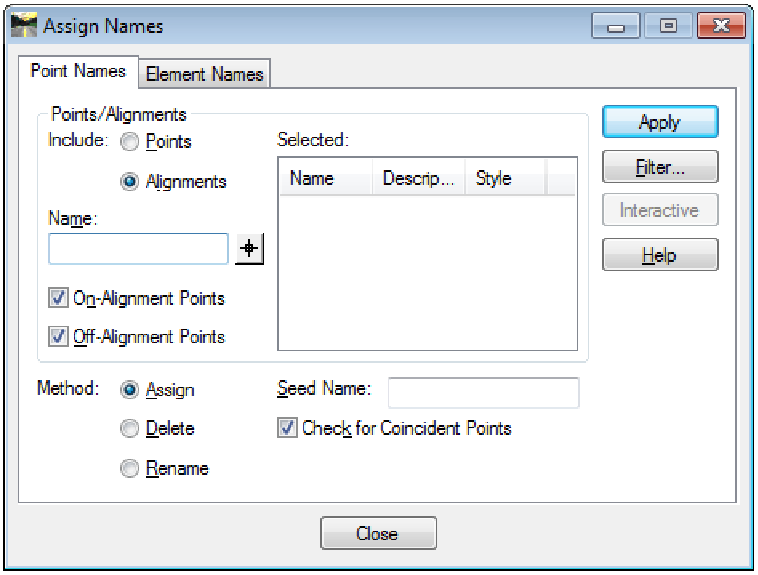
- In InRoads**, Select File ►Save ► Geometry Project.**

49. **As we have done in previous labs we must Assign Names to all the coordinates in the Alignment SV51 that do not have names and we must convert all these named points to Cogo Points.**

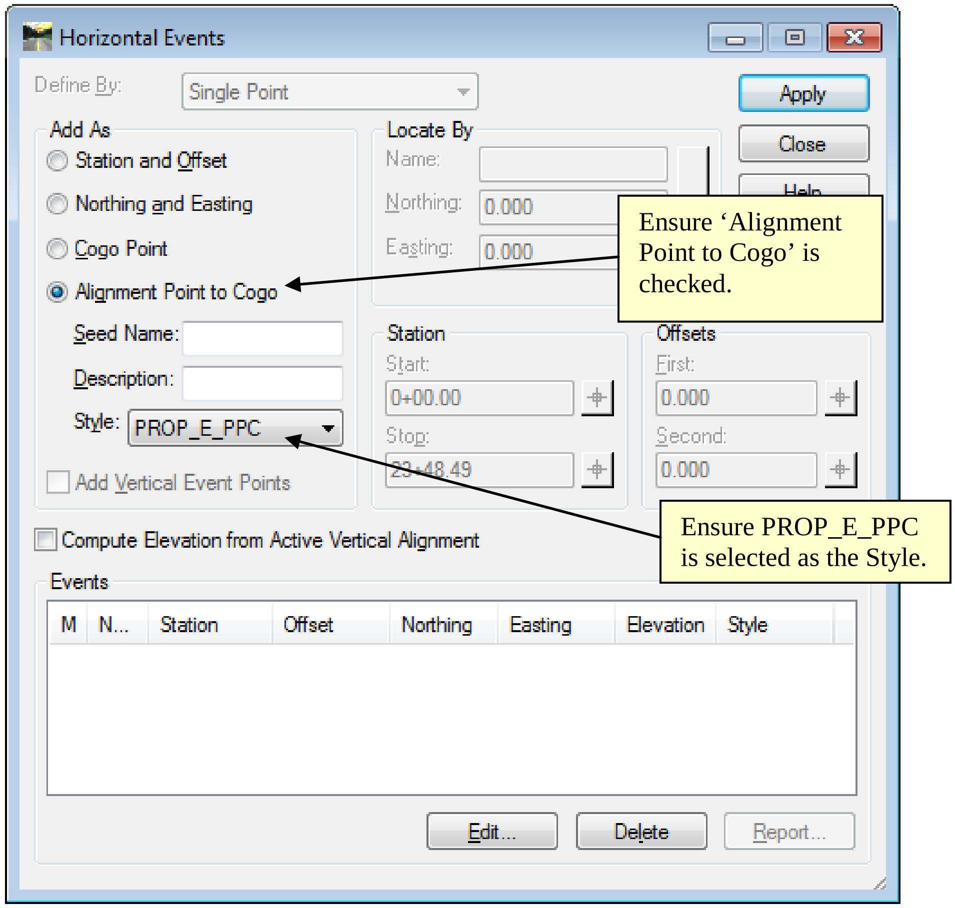
- Select **Geometry ► Utilities ► Assign Names**… The **Assign Names** dialog opens as shown below.



- Check the ***Alignments*** radio button in the **Points/Alignments** frame.
- Check the ***Assign*** radio button in the ***Method*** frame.
- Ensure '**Check for Coincident Points'** is checked.
- Use the **Locate Button** next to the ***Name*** field to select Alignment **SV51**.
- Verify your settings match those shown here.



- Click **Apply** and **Close**. Names are now assigned to all the coordinates in Alignment **SV51**.
- Select **Geometry ► Horizontal Curve Set ► Events**…
- In the **Horizontal Events** dialog that opens match the following settings.



- Click **Apply** and **Close**. All of the Alignment Points created in the previous step have now been converted to Cogo Points.
- **Close** the **<u>Results</u>** dialog.

50. **View all Cogo Points**

- Select **Geometry ►View Geometry ►Horizontal Annotation**…
- In the '***Horizontal Alignments'*** **Include** field. Key in a space and click the tab button. This will clear the Alignment entries.
- Place your cursor in the '***Cogo Points'*** **Include** field to activate the **Filter** button.
- Click the **Filter** button.
- In the **<u>Geometry Selection Filter</u>** dialog click the **All** button to move all the points from the **Available** field to the **Selected** field.
- Click **OK**.
- Click **Apply** & **Close** in the **<u>View Horizontal Annotation</u>** dialog.

51.	**Review Alignment SV51.** • Select **Geometry ► Review Horizontal**. • Take a moment to review your alignment and compare it to that shown in *Figure L15-17* below. • **Close** the **<u>Review Horizontal Alignment</u>** dialog when finished reviewing Alignment **SV51**.

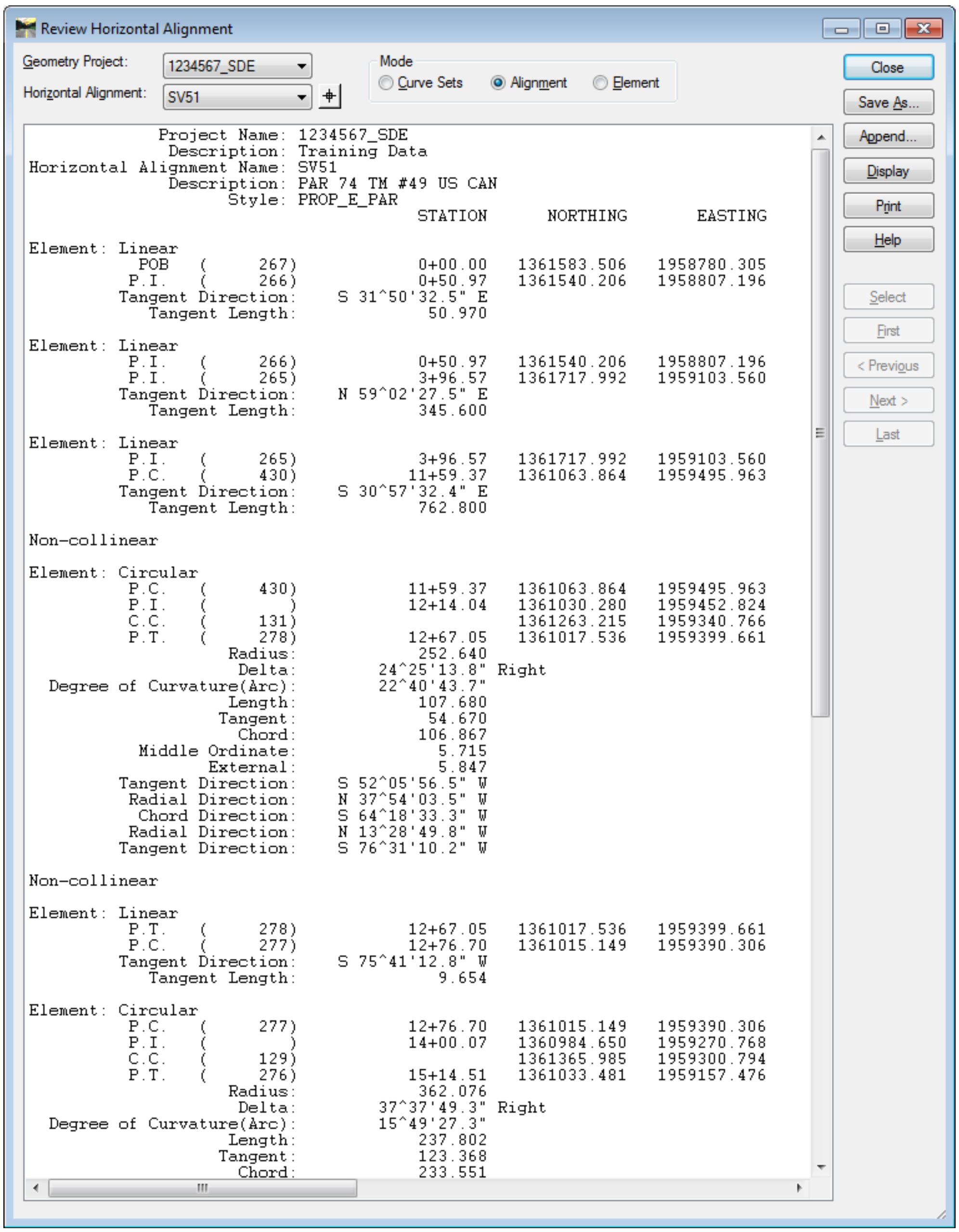


Figure L15-17 Review Horizontal Dialog.

52.	**Save the InRoads Geometry File** Even though the Alignments have been stored – the data has not yet been saved. InRoads retains the data in <u>temporary</u> memory but does not <u>save</u> the data on the fly. Whenever a change has been made to an InRoads Geometry Project – <u>Save</u> the project and its associated modifications or changes. • Select **File**▶**Save**▶ **Geometry Project** from the **InRoads Menu**. <u>Please Note:</u> (The "Save As" dialog box may not appear because the Geometry Project has already been saved initially). The Geometry Project (***1234567_SDE.alg***) will be saved to **Lab 15** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab15** Note that the **<u>InRoads</u>** and **<u>MicroStation Status Bar</u>** (Located at the bottom of both the InRoads and MicroStation Interface) will depict a message when the Geometry Project has been saved. *The **1234567_SDE** Geometry Project has now been saved to the following path:* *C:\InRoads Data\1234567\SDE Labs\Lab15*
53.	**<u>VERY Important Step:</u>** In order to Start with a CLEAN DGN file for the next Lab: In the [MicroStation Software] – Select **Edit** ▶**Select All** Then select the **<DELETE>** key on the computer keyboard. All of the DGN Graphics will then be deleted from the ***GDOT 3D Working File.dgn***. *Deletes the Graphics from the GDOT 3D Working File.dgn to ensure a clean DGN file for the next Lab.*
54.	 This concludes Lab 15. Do not proceed until the Instructor directs you to do so.

4

Depict Procedures for Generating the Required Project Deliverables Training Guide – Section 4

Lab 16
Preparing the 1234567_PROP.dgn for Delivery to the Designer

Objective

The objective of Lab 16 is to:

- Learn the process to follow to create the **1234567_PROP.dgn** file for Delivery to the Designer containing only the Feature Styles listed on this page.

Points

PROP_E_APC
PROP_E_API
PROP_E_APOC
PROP_E_APOT
PROP_E_APT
PROP_E_BCOL
PROP_E_BCTL
PROP_E_BGMD
PROP_E_BLDL
PROP_E_BLLL
PROP_E_BMISC
PROP_E_BSL
PROP_E_PAR
PROP_E_POEL
PROP_E_PPC
PROP_E_PPOL
PROP_E_RWC
PROP_E_RWE
PROP_E_RWM
PROP_E_RWRR
PROP_E_RWU
PROP_E_ACL
PROP_E_ACL-PC-PT
PROP_E_PCF

Alignments

PROP_E_ACL
PROP_E_BCOL
PROP_E_BCTL
PROP_E_BGMD
PROP_E_BLDL
PROP_E_BLLL
PROP_E_BMISC
PROP_E_BSL
PROP_E_PAR
PROP_E_POEL
PROP_E_RWE
PROP_E_RWRR
PROP_E_RWU

Lab 16A Getting Started

1.	**Starting Clean** In order to ensure that you are working with a “clean” database – you will close MicroStation and InRoads if they are still running from a previous Lab: To CLOSE MicroStation and InRoads - Select **File►Exit** from the [MicroStation Menu]. If any messages appear regarding the saving of projects – Select  *This closes BOTH the MicroStation and InRoads Software(s).*
2.	From the desktop, double-click on the **MicroStation** icon labeled **GDOT MicroStation V8i SS2 (x86)**.  Double click on the icon labeled **GDOT MicroStation V8i SS2 (x86)**. • When the **MicroStation Manager** dialog box opens – navigate to the **C:\InRoads Data\1234567\SDE Labs\Standards** folder and select the “**GDOT 3D Working File.dgn**”. Click **Open**. • Now open InRoads from within MicroStation by selecting: **InRoads ► InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu]. *The MicroStation and InRoads Software(s) will open.*
3.	**Verify Project Defaults** • In InRoads select **File ►Project Defaults** • Use the pull down next to ***Configuration Name:*** to select **1234567_SDE** which you created in Lab 1. • Verify Settings match those shown in *Figure L16-1*. • Click **Apply** & **Close.** *Sets project defaults.*

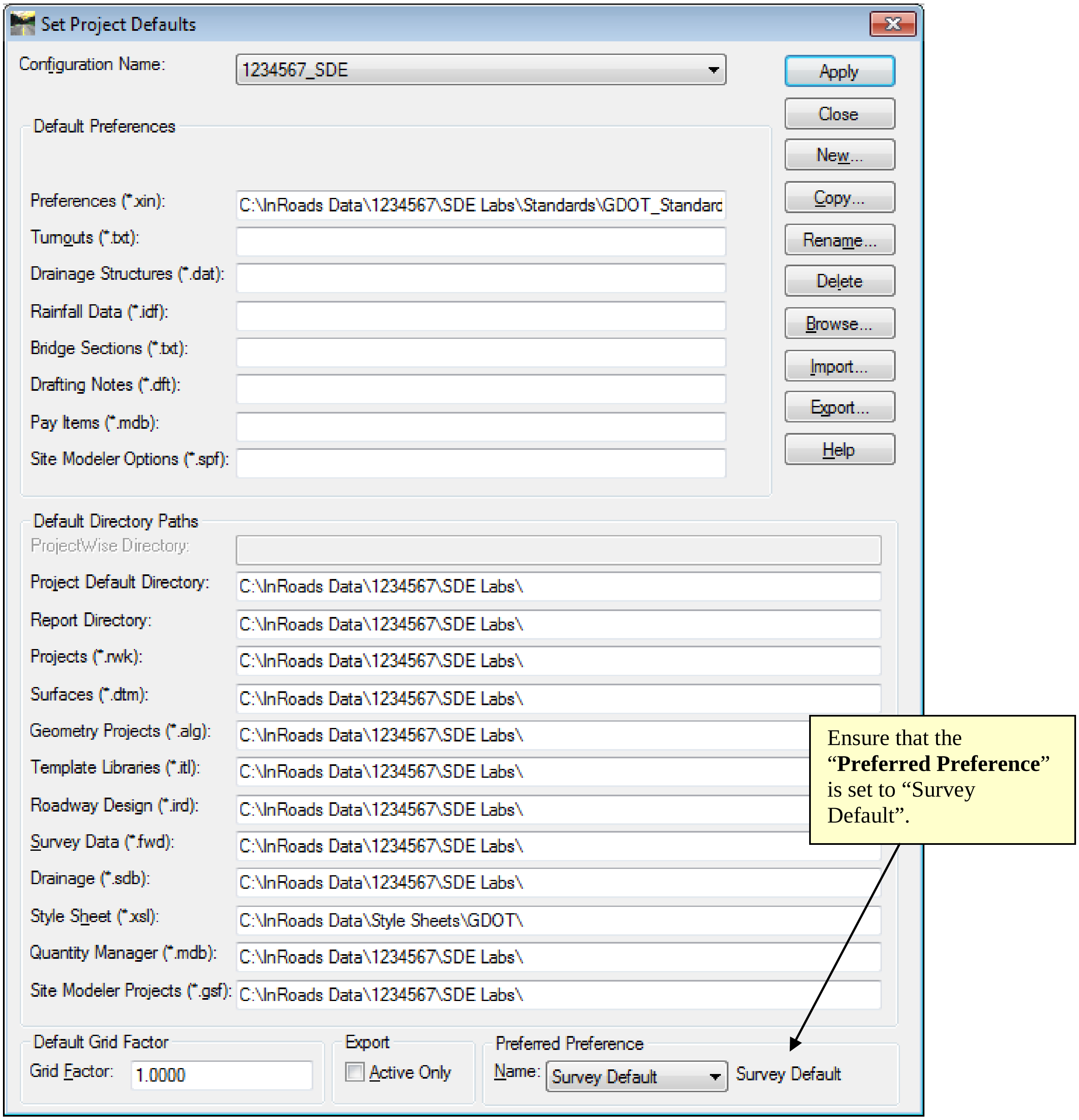


Figure L16-1 Project Defaults

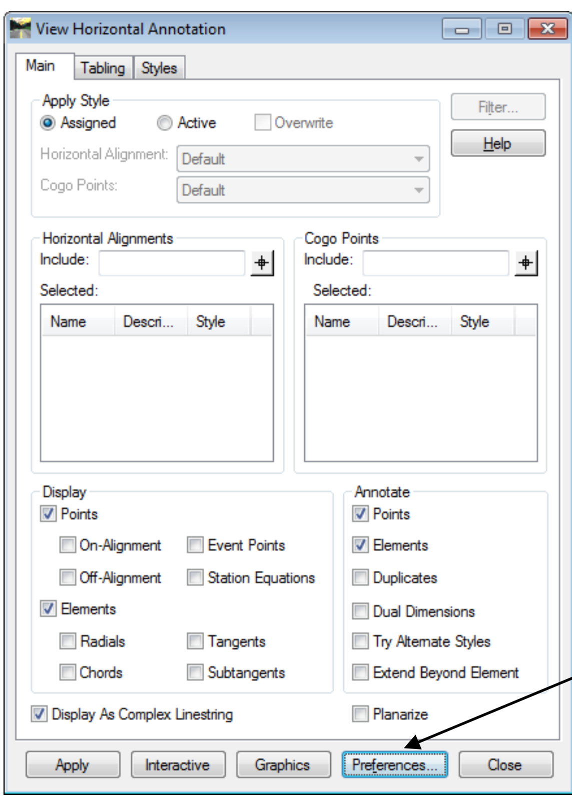
4. **Open the .alg file**

- Select **File ► Open**.
- Navigate and open the Folder **Lab16**.
- Highlight the file **1234567_SDE.alg**.
- Click **Open** & **Cancel**.

Opens the 1234567_SDE .alg file

<u>Hint:</u> You may also right mouse click over ‘Geometry Projects’ in the Workspace Bar and select open.

5.	**Set Survey Default Preferences** • In InRoads - Select **File ▶ Project Options**. • In the **<u>Project Options</u>** dialog box select the **General** Tab. • Click the **Preferences** button at the bottom of the dialog box. • Choose ***Survey Default***. Click **Load** and **Close**. • In the **<u>Project Options</u>** dialog box - Click **Apply** and **Close**. *Sets the Survey Defaults Preference.*
6.	**Set the View Horizontal Alignments and Cogo Points view settings.** • Select **Geometry ▶ View Geometry ▶ Horizontal Annotation.** The **<u>View Horizontal Annotation</u>** dialog opens as shown in *Figure L16-2*. • Click the **Preferences** Button. The **<u>Preferences</u>** dialog opens as shown in *Figure L16-3*. • In the **<u>Preferences</u>** dialog highlight **NO BEARING & DISTANCE**. • Click **Load** and **Close**. This loads the viewing preference settings into the **<u>View Horizontal Annotation</u>** dialog. • Verify your settings match those shown in *Figure L16-4*. *The settings in the <u>View Horizontal Annotation</u> dialog are set. This will ensure that the proper symbology is applied to the Cogo points and alignments in MicroStation.*



Preferences Button

Figure L16-2 View Horizontal Alignments

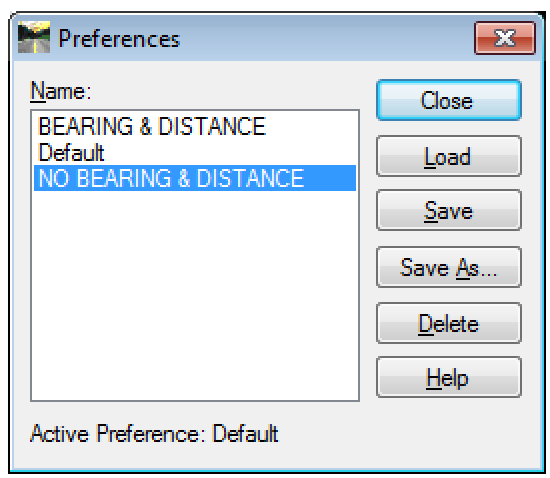


Figure L16-3 Preferences

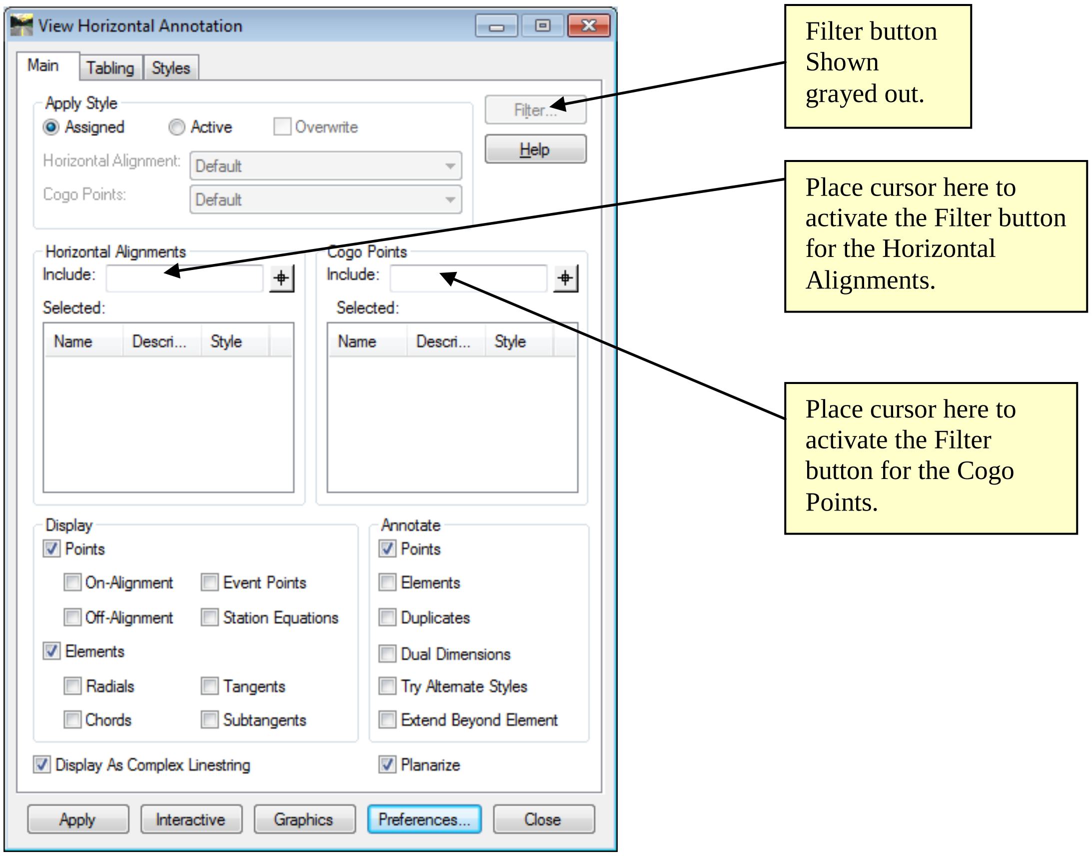
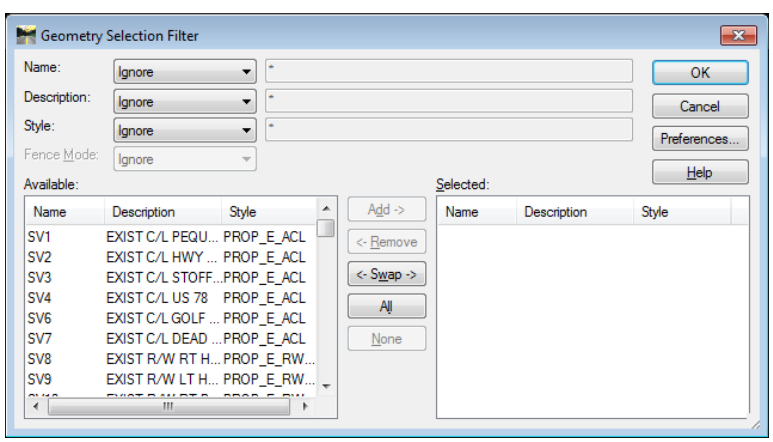


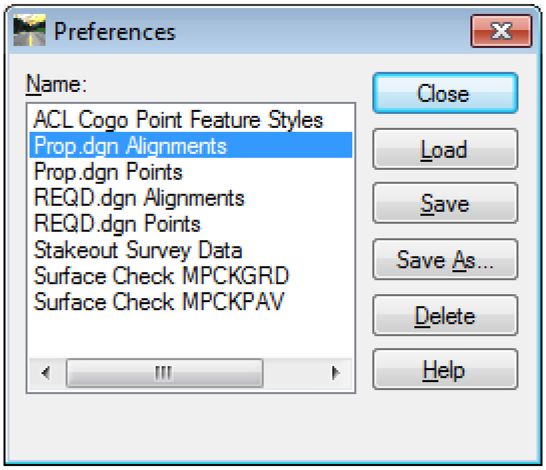
Figure L16-4 View Horizontal Alignments

7. **Apply the Geometry Selection Filter 'PROP.dgn Alignments' Preference to the View Horizontal Alignments dialog.**

- In the **View Horizontal Alignments** dialog in *Figure L16-4* notice that the **Filter** button is grayed out.
- Activate the **Filter** button for the **Horizontal Alignments** by left clicking in the ***Horizontal Alignments*** key-in field.
- Click the **Filter** button. The **Geometry Selection Filter** dialog opens as shown here.



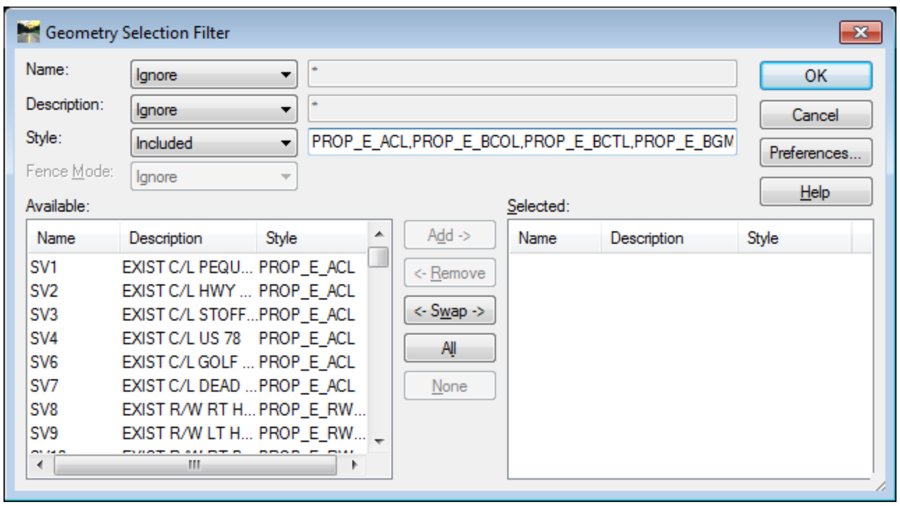
- Click the **Preferences** button. This opens the **Preferences** dialog as shown here.



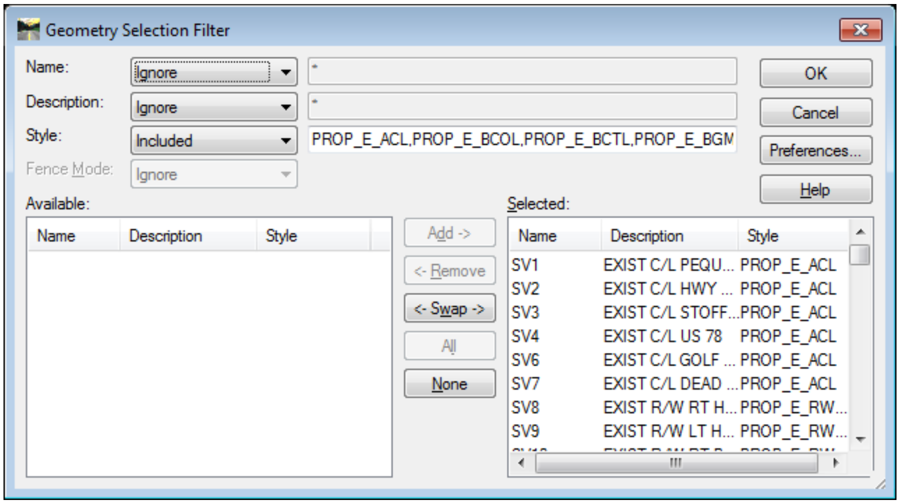
- Highlight the **Prop.dgn Alignments** Preference.
- Click **Load** & **Close**. This filters the Alignments to only include the 13 Feature Styles listed here and returns you to the **Geometry Selection Filter** dialog box.

  PROP_E_ACL, PROP_E_BCOL, PROP_E_BCTL, PROP_E_BGMD, PROP_E_BLDL, PROP_E_BLLL, PROP_E_BMISC, PROP_E_BSL, PROP_E_PAR, PROP_E_POEL, PROP_E_RWE, PROP_E_RWRR, PROP_E_RWU.

- Notice in the **Geometry Selection Filter** dialog below that the ***Style*** has changed from **Ignore** to **Included** and the key-in entry field for the ***Style*** is populated with the correct **Feature Styles** and the **Available** field is populated with the filtered **Feature Styles**.



- Click **All** to move the filtered alignments from the Available field to the Selected field as shown below.



- Click **OK** to return selected data to the **View Horizontal Annotation** dialog.
- The Filtered Alignments have been added to the **View Horizontal Annotation** dialog selected field as shown in *Figure L16-5*.

You have applied the 'Prop.dgn Alignment' Preference to the View Horizontal Annotation dialog and are ready to apply the 'Prop.dgn Points' Preference.

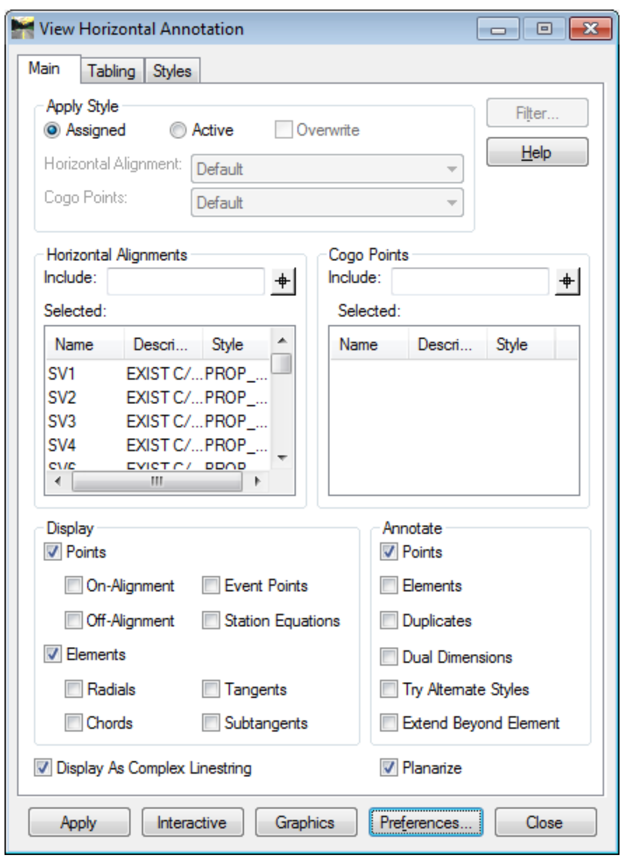
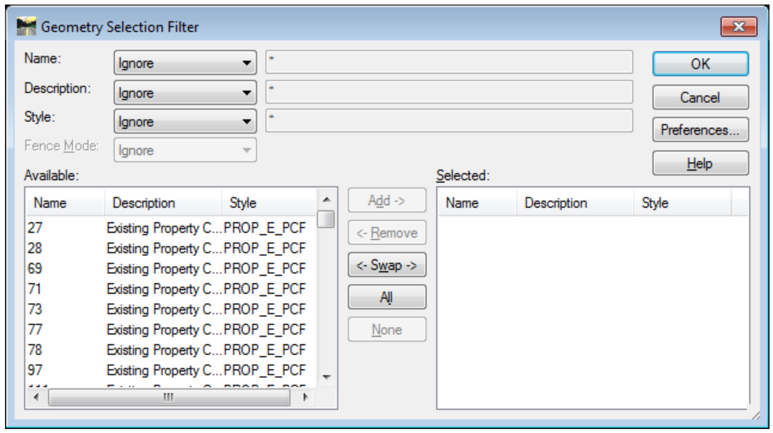


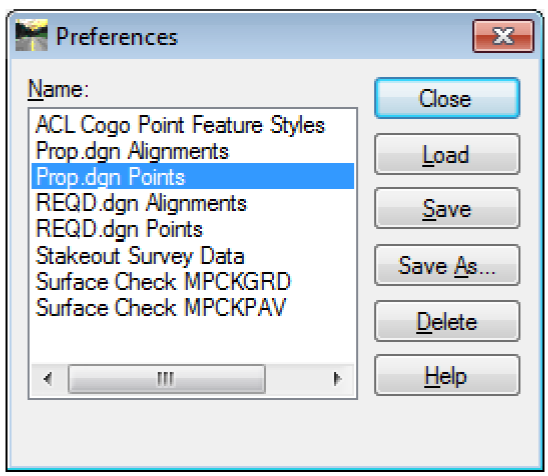
Figure L16-5 View Horizontal Alignments

8. Apply the Geometry Selection Filter **'Prop.dgn Points'** Preference to the **View Horizontal Alignments** dialog.

- In the **View Horizontal Annotation** dialog activate the **Filter** button for the **Cogo Points** by left clicking in the ***Cogo Points*** key-in field.
- Click the **Filter** button. The **Geometry Selection Filter** dialog opens as shown here.



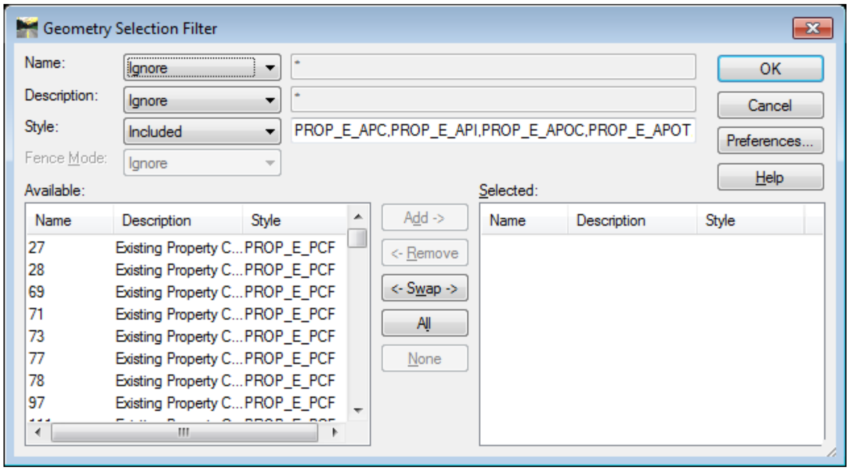
- Click the **Preferences** button. This opens the **Preferences** dialog as shown here.



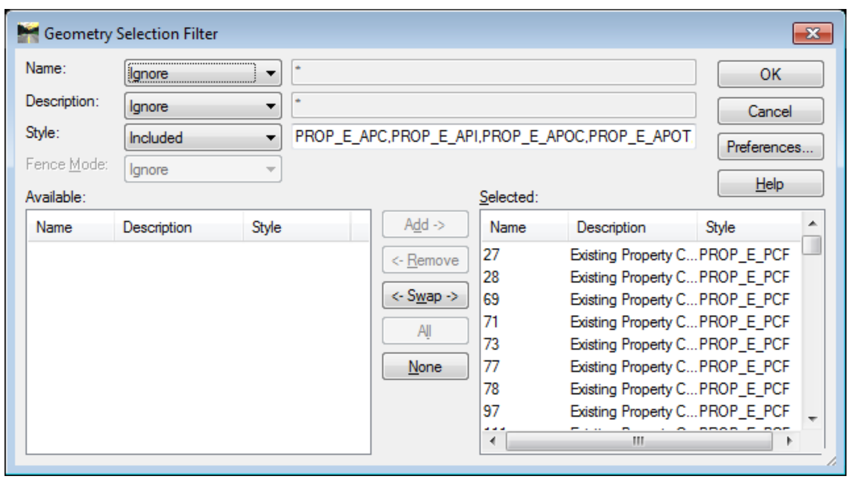
- Highlight the **Prop.dgn Points** preference.
- Click **Load** & **Close**. This filters the Cogo points to include only the 22 **Feature Styles** listed here and returns you to the **Geometry Selection Filter** dialog.

PROP_E_APC, PROP_E_API, PROP_E_APOC, PROP_E_APOT, PROP_E_APT, PROP_E_BCOL, PROP_E_BCTL, PROP_E_BGMD, PROP_E_BLDL, PROP_E_BLLL, PROP_E_BMISC, PROP_E_BSL, PROP_E_PAR, PROP_E_POEL, PROP_E_PPC, PROP_E_PPOL, PROP_E_RWC, PROP_E_RWE, PROP_E_RWM, PROP_E_RWRR, PROP_E_RWU, PROP_E_ACL, PROP_E_ACL-PC-PT, PROP_E_PCF.

- Notice in the **Geometry Selection Filter** dialog below that the ***Style*** has changed from **Ignore** to **Included** and the key-in entry field for the ***Style*** is populated with the correct **Feature Styles** and the **Available** field is populated with the filtered **Feature Styles**.



- Click **All** to move the Filtered Cogo points from the **Available** field to the **Selected** field as shown here.



- Click **OK** to return to the **View Horizontal Annotation** dialog.
- The filtered Cogo points have been added to the **View Horizontal Annotation** dialog selected field as shown in *Figure L16-6*.

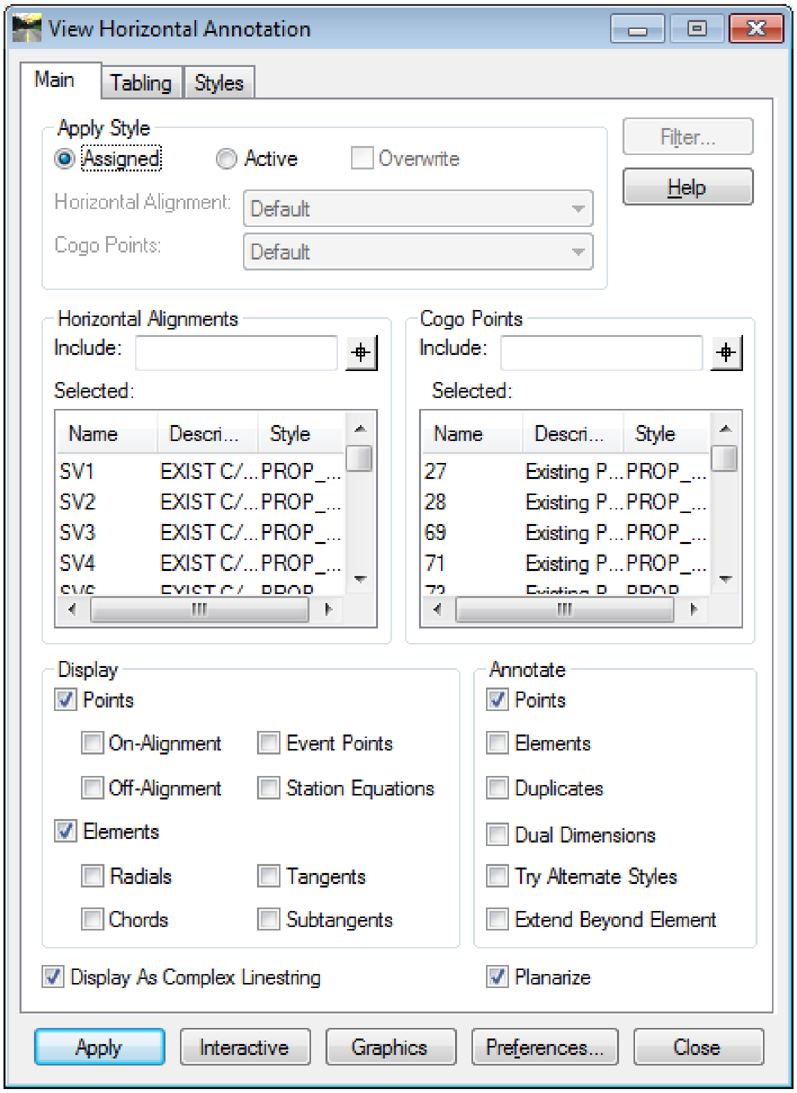


Figure L16-6 View Horizontal Alignments

9. Now that we have the proper settings set and the proper **Horizontal Alignments** and the **Cogo Points** added to the **Selected** field in the **View Horizontal Annotation** dialog its time to view them.

- Click **Apply**. Please be patient this may take a few minutes to complete depending on the size of the file.
- Click **Close** to exit the **View Horizontal Annotation** dialog.
- In Microstation, Click the **Fit View** button.
- Verify that your Microstation View matches that shown in *Figure L16-7* and that the proper symbology has been applied by comparing to the current version of the EDG (Electronic Data Guidelines).

You have viewed the correct information to create the 1234567_PROP.dgn file.

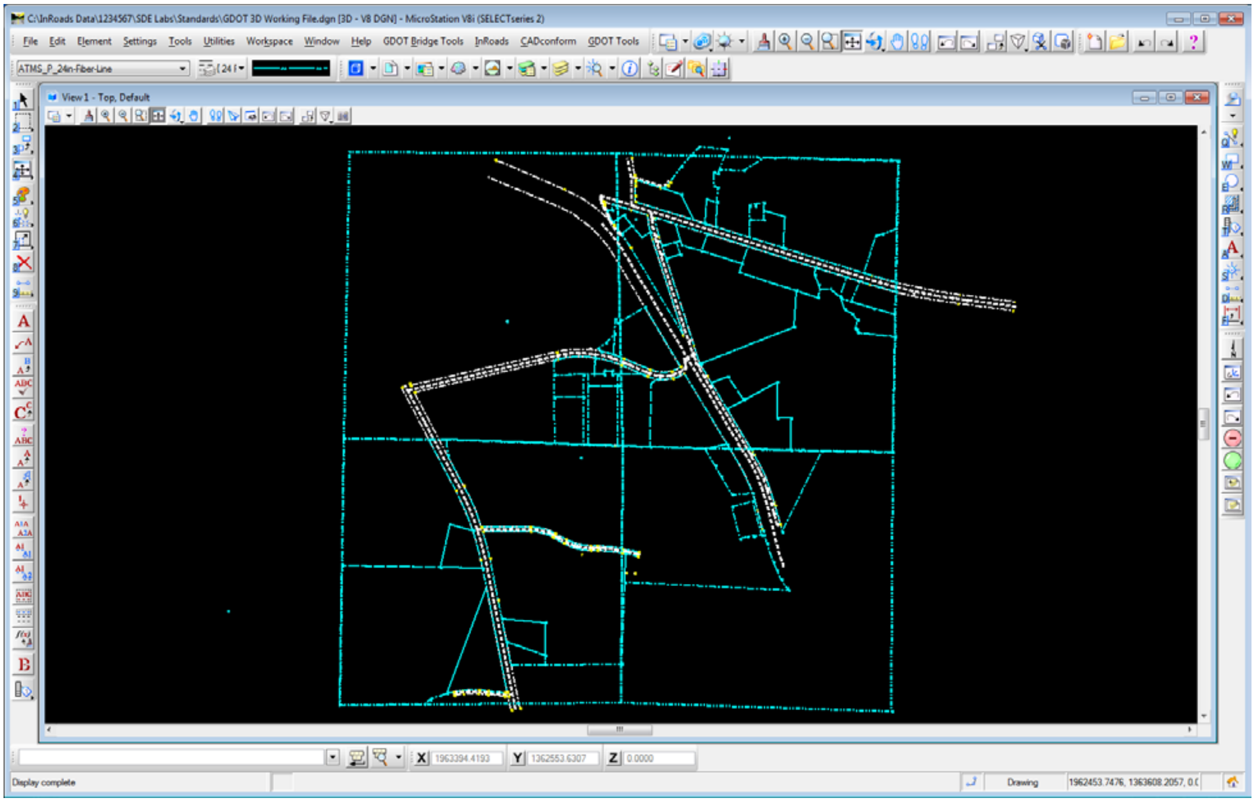


Figure L16-7 MicroStation View Window

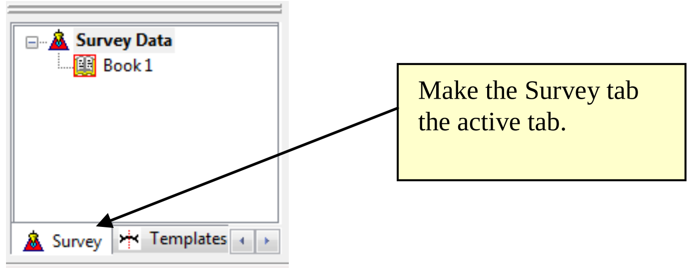
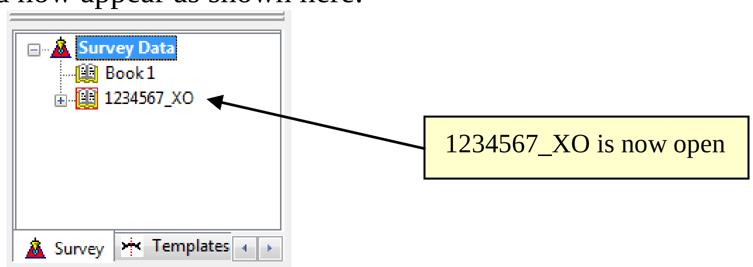
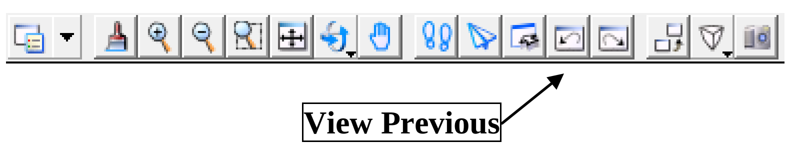
10. **For Information Only**:

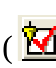
During the field survey collection, the **PROP_E_PCF (Property Corner Found)** Feature Style/Code may be collected with an attribute description.

For Example:
26255,1373204.493,2120519.127,1045.688,PCF,ATTRNAME,3/8 OPEN PIPE

If this attribute has been collected for the PCF, the following steps will provide the process to ensure that this attribute description annotation is represented in the PI#_PROP.dgn file.

Information for the viewing of the annotation description for inclusion in the PI#_PROP.dgn file.

<table>
<tr><td>11.</td><td>In InRoads, Make the Survey Tab located along the bottom of the InRoads Explorer Interface the active tab as shown here:

</td></tr>
<tr><td>12.</td><td>In InRoads, open the file 1234567_XO.fwd which is located in C:\InRoads Data\1234567\SDE Labs\Lab16. Click Open and then click Cancel. The InRoads Explorer Interface should now appear as shown here:

</td></tr>
<tr><td>13.</td><td>In MicroStation, notice the view changed when the .FWD file was opened. The reason for this is that in InRoads the default operation is to automatically view planimetrics whenever a new .FWD file is opened and automatically fits the view. It is good practice to turn off planimetrics.
In InRoads, select Survey ► View Survey Data. Uncheck Planimetrics.
In MicroStation, click the View Previous icon. This returns the view to that shown in Figure L16-7.

</td></tr>
<tr><td>14.</td><td>In InRoads, set the Survey Scale Factor.

*NOTE: This is not the same as the Global Scale Factor set earlier in this lab. The Global Scale Factor controls scaling of elements in the Surface and Geometry modules but not the Survey module.
Select Survey ► Fieldbook Data… The <u>Fieldbook Data</u> dialog opens as shown in Figure L16-8.
In the <u>Fieldbook Data</u> dialog click the Survey Options button () as shown in Figure L16-8. The <u>Survey Options</u> dialog opens as shown in Figure L16-9.</td></tr>
</table>

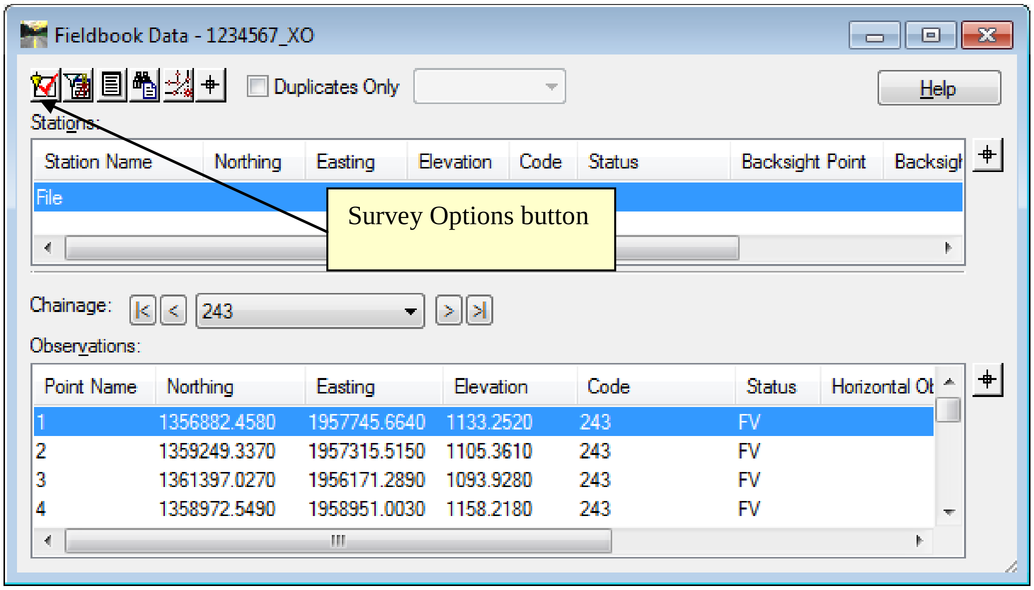


Figure L16-8 Fieldbook Data

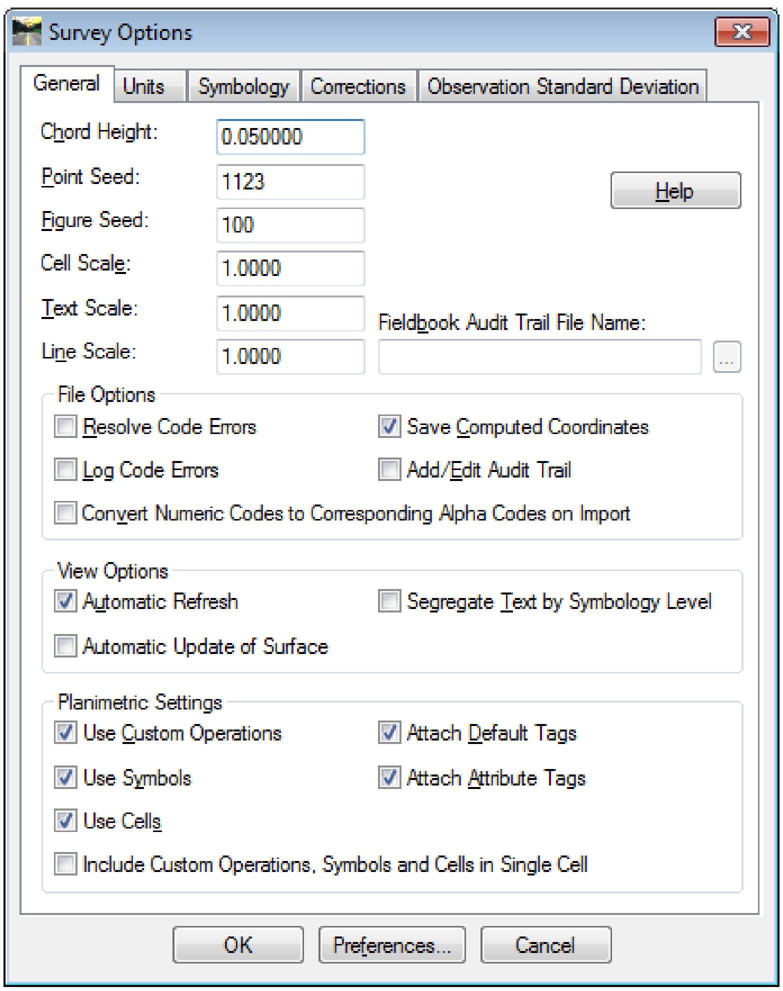
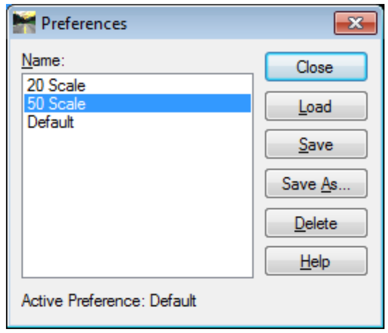


Figure L16-9 Survey Options

15.

- In the **Survey Options** dialog click the **Preferences** button. The **Preferences** dialog opens as shown here.



- Select the **50 Scale** Preference.
- Click **Load** and **Close**.
- Verify your entries match those shown in *Figure L16-10*.
- Click **OK**.

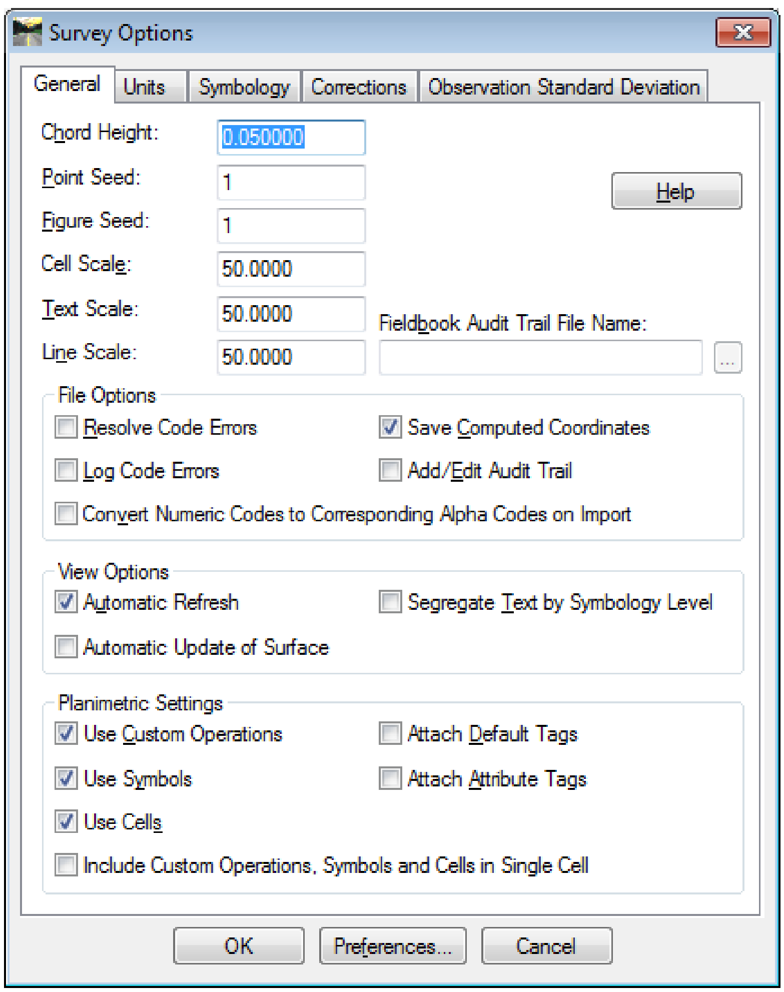
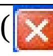


Figure L16-10 Survey Options

16.	• **Close** the **<u>Fieldbook Data</u>** dialog by clicking the red X () in the top right corner.
17.	• Select **Survey** ► **View Survey Data** ► **Write Survey Data to Graphics**. The **<u>Write Survey Data to Graphics</u>** dialog opens.
18.	• In the **<u>Write Survey Data to Graphics</u>** dialog, click the **Filter** button. The **<u>Survey Style Filter</u>** dialog opens. • In the **<u>Survey Style Filter</u>** dialog, select **Prop Annotation** from the ***Filter Name*** pull down. • The **Prop Annotation** filter views the annotation for the following Feature. o **PROP_E_PCF** • Verify the **<u>Survey Style Filter</u>** dialog matches that shown in *Figure L16-11*. • Click **OK** to close the **<u>Survey Style Filter</u>** dialog and return to the **<u>Write Survey Data to Graphics</u>** dialog.

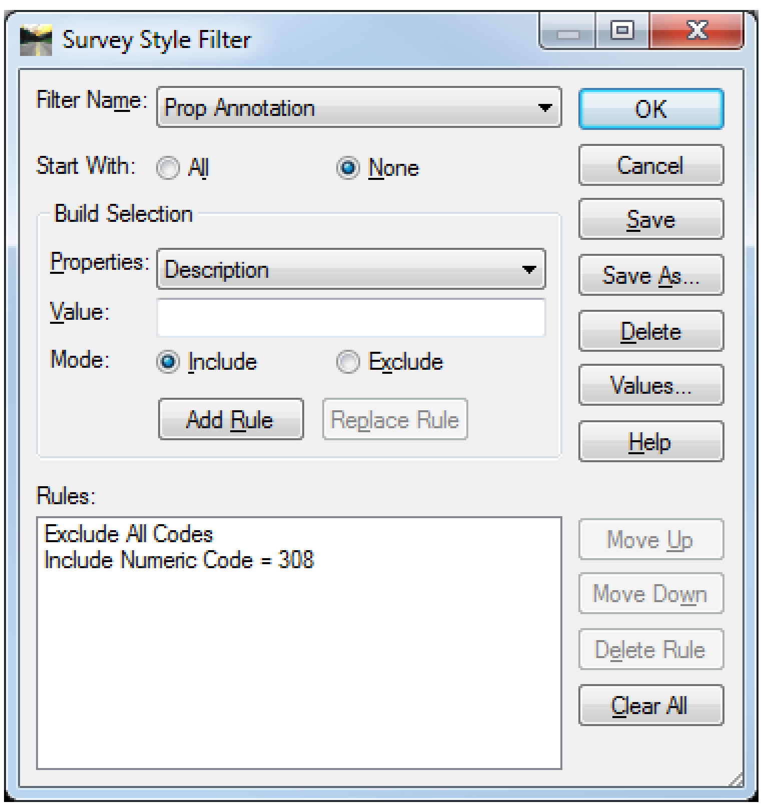


Figure L16-11 Survey Style Filter

19.	• In the **Write Survey Data to Graphics** dialog, place a check mark in the box next to **Planimetrics** as shown in *Figure L16-12*. • Click **Apply** and **Close**.

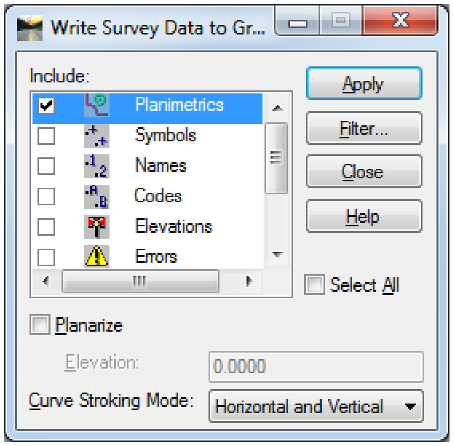


Figure L16-12 Write Survey Data Dialog

20.	• Verify your view in MicroStation matches that shown in *Figure L16-13*.

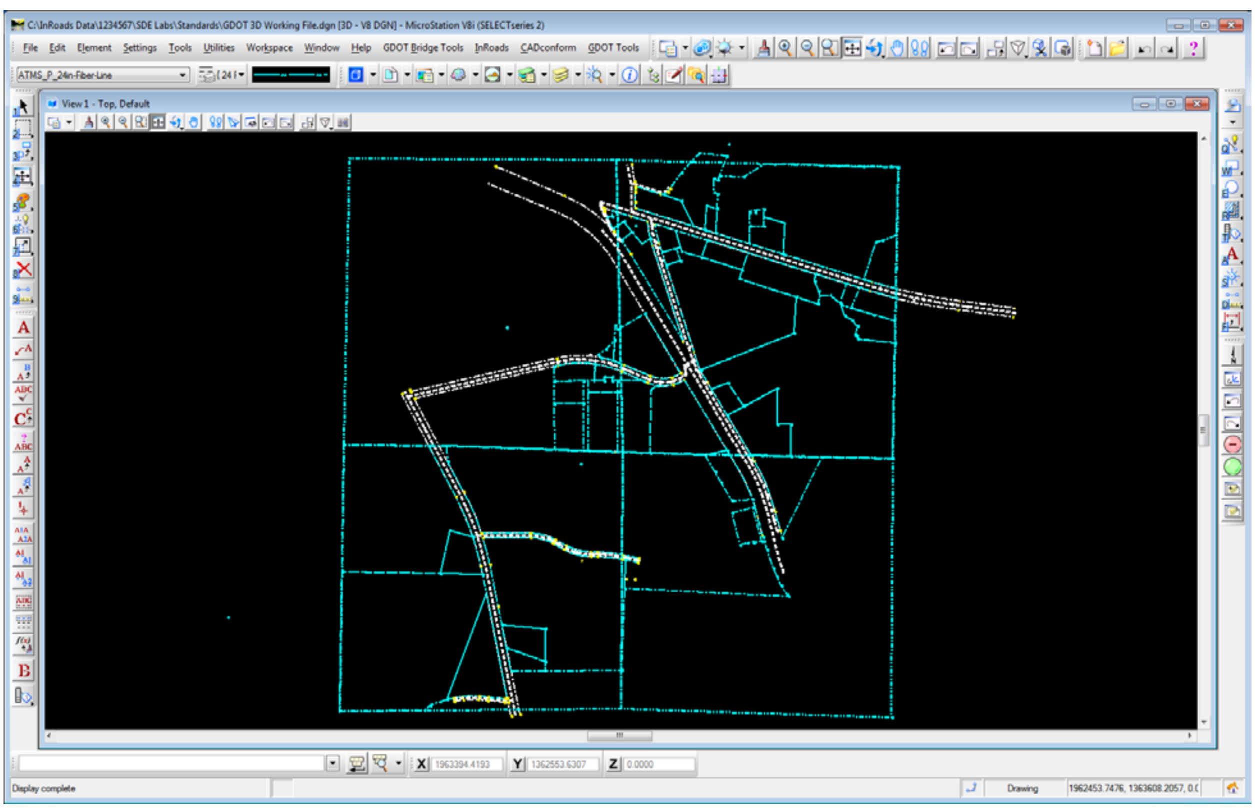
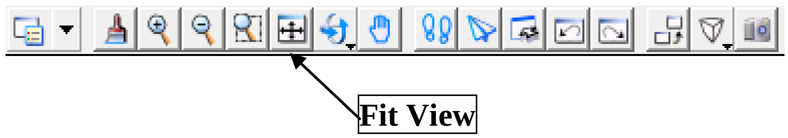


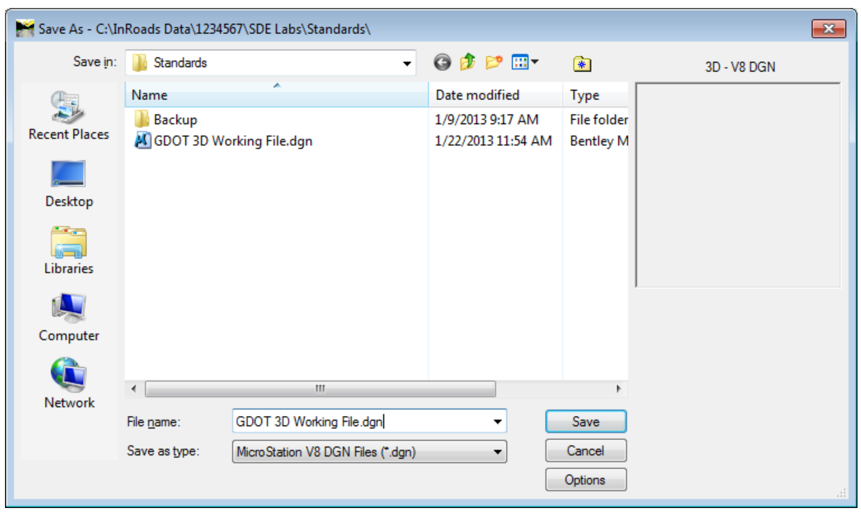
Figure L16-13 MicroStation Window

21.	**Create the 1234567_PROP.dgn file.**

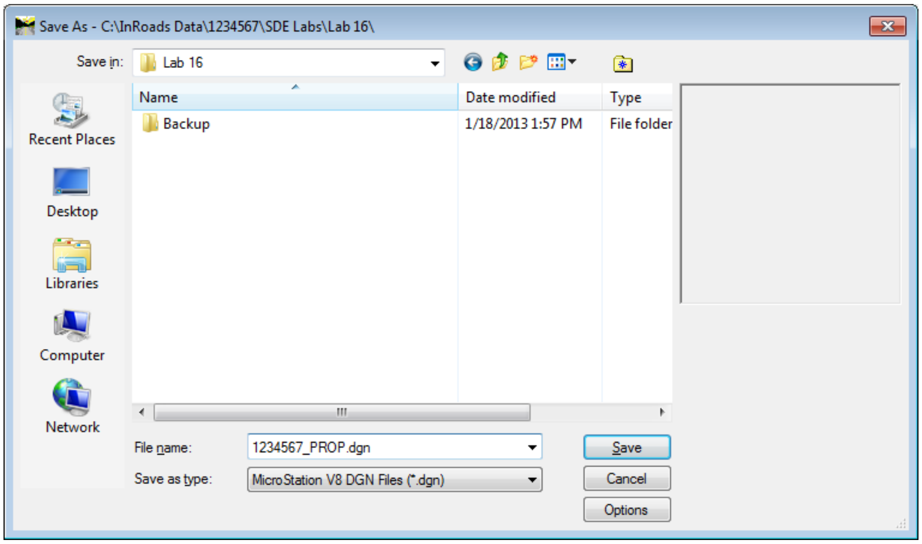
- In MicroStation, click the **Fit View** icon.



- In Microstation, Select **File ► Compress ► Design**. This reduces the file size of the Microstation file.
- In Microstation, Select **File ► Save As.** The **<u>Save As</u>** dialog opens as shown here.



- Navigate to the folder **C:\InRoads Data\1234567\SDE Labs\Lab16**
- For the **File name:** key-in **1234567_PROP.dgn** as shown here.
- In the **Save as type:** pull-down select **MicroStation V8 DGN Files (*.dgn)**



- Click **Save**.

You have now completed creating the 1234567_PROP.dgn file.

22. The **1234567_PROP.dgn** and the **1234567_SDE.alg** are now complete and copies are ready to be provided to the designer. When all files are ready, the **SDE** is instructed to contact the **Engineering Management / Operations Manager** and make copies available on **SDEcommon.** The **Engineering Management / Operations Manager** will keep all orignal copies and inform the designer where they may be acquired. The **SDE** is also instructed to obtain original copies from the **Engineering Management / Operations Manager** whenever enhancements are to be performed during the life of the project.

This concludes Lab 16. Do not proceed until the Instructor directs you to do so.

Lab 17
Preparing the DTM Surface, TOPO and UTLE Files for Initial Delivery

Objective

At this point the DTM Surface data has been verified and any errors have been resolved in the previous Labs. The final processing of the DTM Surface has been completed and the DTM database has been compressed. In this Lab – One final step must be performed to the DTM Surface to prepare it for delivery to the 'Engineering Management / Operations Manager'. In **Lab 16 –** the **1234567_PROP.dgn** file was created which contains all of the Existing Property information. In this Lab - the **1234567_TOPO.dgn** and the **1234567_ UTLE.dgn** files will be created as initial deliverables for submission to the 'Engineering Management / Operations Manager'.

The Initial Deliverables will include the following:

- PI#_SDE.alg (InRoads Geometry file)
- PI#_SDE.dtm (InRoads Digital Terrain Model)
- PI#_TOPO.dgn (Existing Topo features)
- PI#_PROP.dgn (Existing Property Information)
- PI#_UTLE.dgn (Existing Utility features)
- PI#_PSR.xls or .psr or .mdb (Property Statistics Report)
- PI#_Misc.txt (Miscellaneous information SDE deems important. This file may not be included.)

The objective of **Lab 17** is to:

- Create a **1234567_TOPO.dgn** File for delivery
- Create a **1234567_UTLE.dgn** File for delivery

Lab 17A Final Processing of the DTM Surface

In this section of the Lab, you will be setting the **Surface Preferences** in the DTM.

1.	**Starting Clean** In order to ensure that you are working with a "clean" database – you will close MicroStation and InRoads if they are still running from a previous Lab: To **CLOSE** MicroStation and InRoads - Select **File ▶ Exit** from the [MicroStation Menu]. If any messages appear regarding the saving of projects – Select  *This closes BOTH the MicroStation and InRoads Software(s).*
2.	From the desktop, double-click on the **MicroStation** icon labeled **GDOT MicroStation V8i SS2 (x86)**.  Double click on the icon labeled **GDOT MicroStation V8i SS2 (x86)**. • When the **MicroStation Manager** dialog box opens – navigate to the **C:\InRoads Data\1234567\SDE Labs\Standards** folder and select the "**GDOT 3D Working File.dgn**". Click **Open**. • Now open InRoads from within MicroStation by selecting: **InRoads ▶ InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu]. *The MicroStation and InRoads Software(s) will open.*
3.	**Clear MicroStation Screen Graphics** • In MicroStation, Select **Edit ▶ Select All**. • In MicroStation, click the **Delete** icon ().
4.	**Verify Project Defaults** • In InRoads select **File ▶ Project Defaults** • Use the pull down next to *Configuration Name:* to select **1234567_SDE** which you created in **Lab 1**. • Verify Settings match those shown in *Figure L17-1*. • Click **Apply** & **Close.**

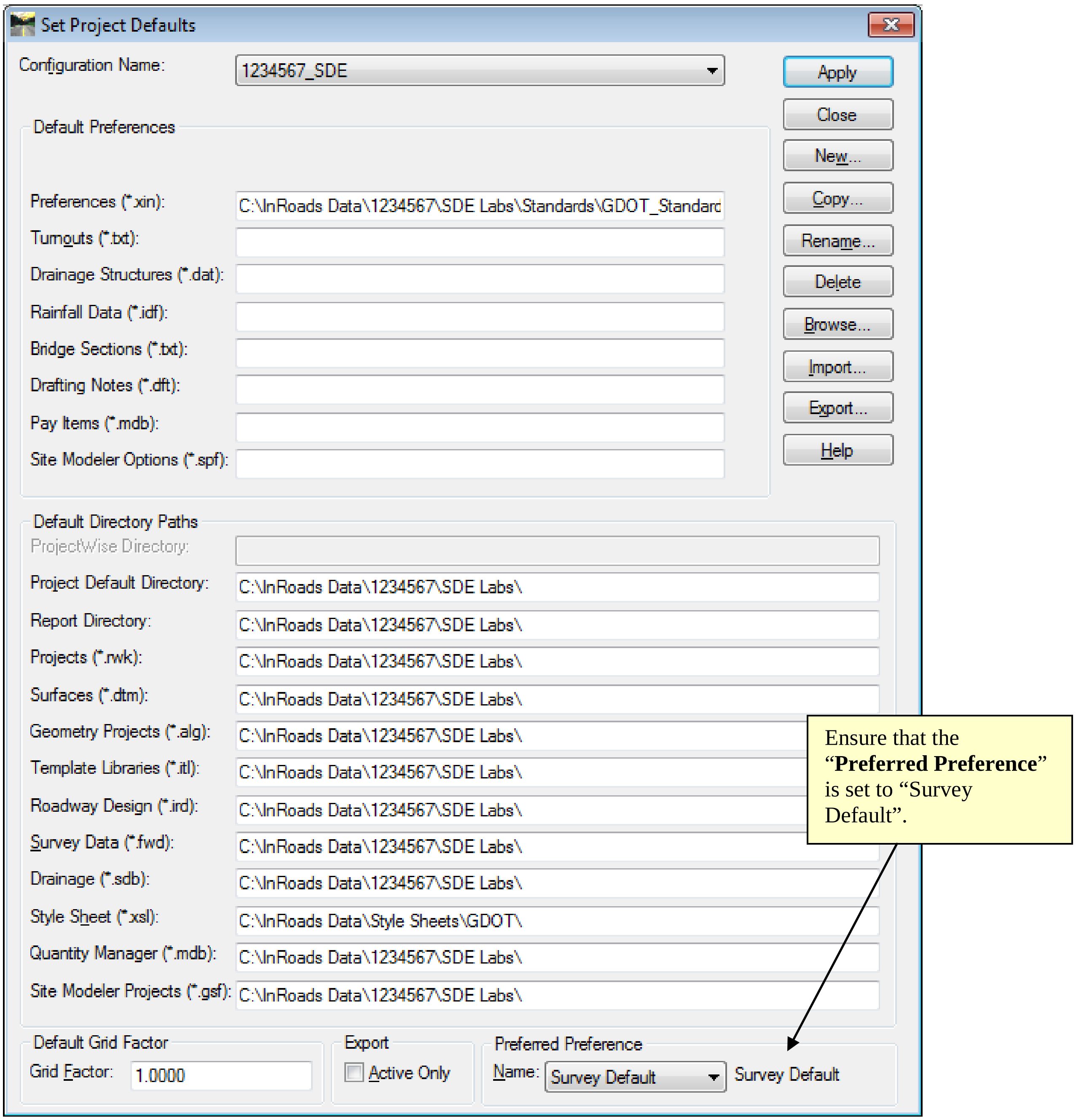


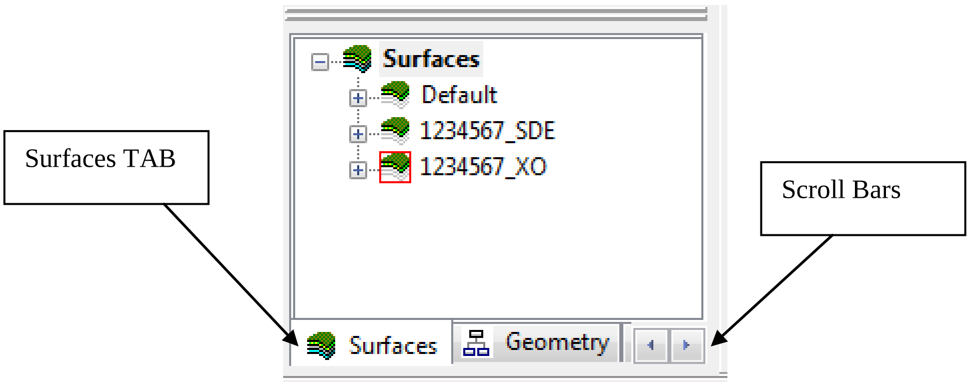
Figure L17-1 Project Defaults

<table>
<tr><td>5.</td><td>Set Survey Default Preferences

In InRoads - Select File ▶ Project Options.
In the <u>Project Options</u> dialog box select the General Tab.
Click the Preferences button at the bottom of the dialog box.
Choose Survey Default. Click Load and Close.
In the <u>Project Options</u> dialog box - Click Apply and Close.

Sets the Survey Defaults Preference.</td></tr>
<tr><td>6.</td><td>Open each of the following files which are located in C:\InRoads Data\1234567\SDE Labs\Lab17.

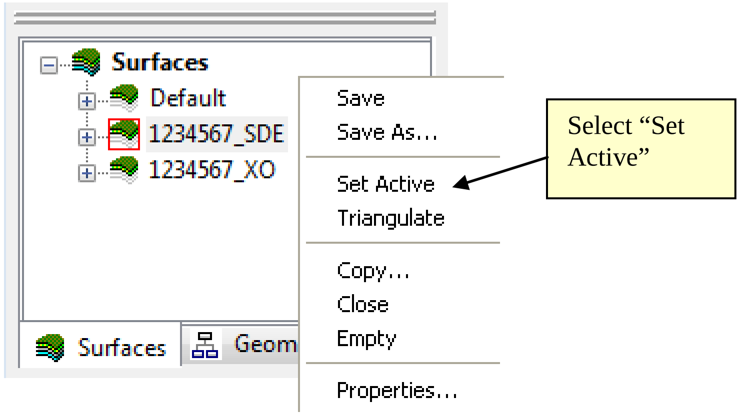
1234567_SDE.alg
1234567_SDE.dtm
1234567_XO.dtm

The 1234567_SDE.alg, 1234567_SDE.dtm, and 1234567_XO.dtm are opened.</td></tr>
<tr><td>7.</td><td>Click on the Surfaces Tab (Located at the bottom – left hand side of the InRoads Explorer Interface). If this tab is not visible – use the scroll bars to scroll to the Surfaces Tab.


Opens the <u>Surface Tab</u> in the InRoads Explorer Interface.</td></tr>
<tr><td>8.</td><td>In the [InRoads Software] –

We will now ensure that the <u>Active Surface</u> is the 1234567_SDE surface (has a red rectangle) next to the 1234567_SDE name by performing the following steps:

Click on the Surfaces Tab (Located at the bottom – left hand side of the InRoads Explorer Interface).
Select the 1234567_SDE surface (by Left clicking) and the Name will highlight in blue.
Then (Right click) over the surface and a pop-up dialog will appear.
</td></tr>
</table>



- Click **Set Active** and a red rectangle will appear beside the **1234567_SDE** Surface Name.

Sets the "Active Surface" of 1234567_SDE.dtm.

9. **Setting the Surface Properties:**

The SDE will need to set the default ***Surface Properties*** before submitting the DTM. The ***Surface Properties*** are settings that determine how the Existing ground will display in the Cross Sections and Profiles.

In InRoads, Select **Surface ▶ Surface Properties** from the **InRoads Menu** and the **Surface Properties** dialog box will appear.

- Click on the **Advanced** Tab (at the top of the **Surface Properties** dialog box.).
- In the **Surface:** Pull-down – Ensure **1234567_SDE** is selected.

In the **Cross Sections** frame:

- In the **Symbology:** Pull-down – select **EXISTING**

In the **Profiles** frame:

- In the **Symbology:** Pull-down – select **EXISTING**

Leave all other entries as Default.

The inputs should now correspond to the screen capture depicted in *Figure L17-2*.

Opens the Surface Properties dialog box.

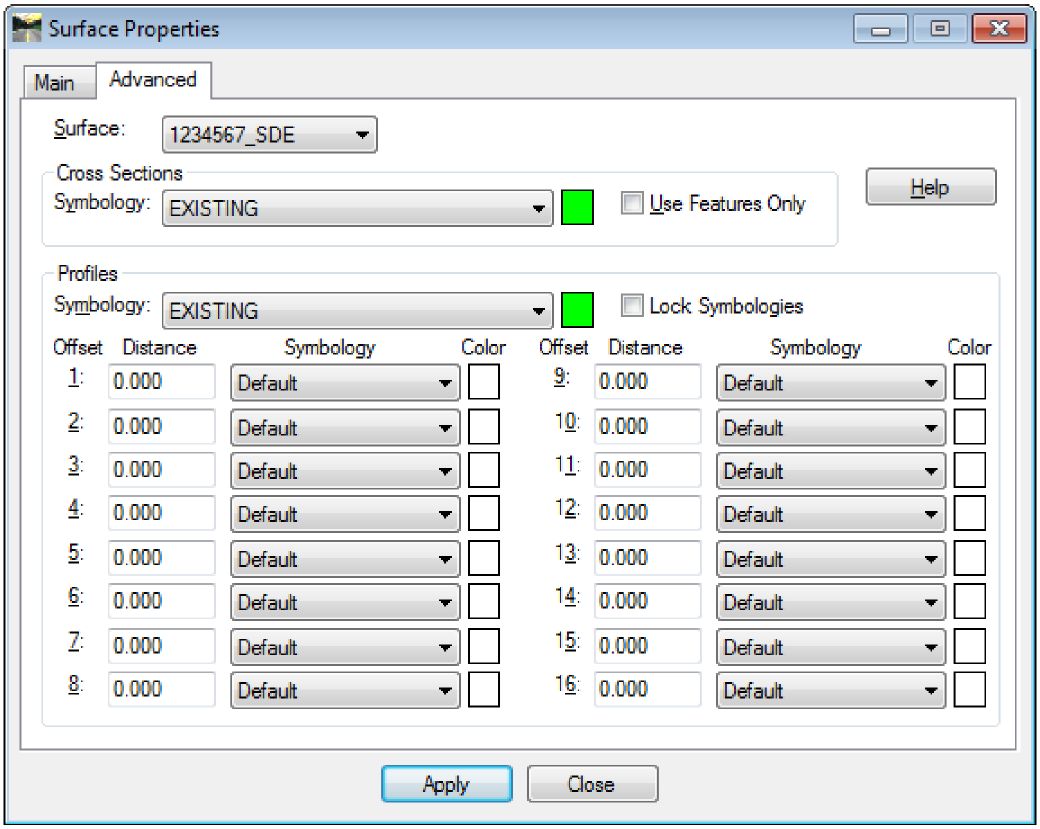


Figure L17-2 Surface Properties

10.	Click **Apply** and then click **Close** to set the ***Surface Properties*** for the **1234567_SDE** Surface. *The 1234567_SDE Surface Properties are set.*
11.	**Save the InRoads Surface Project:** Select **File**▶**Save**▶ **Surface** from the **InRoads Menu**. The Surface Project (***1234567_SDE.dtm***) will be saved to **Lab 17** in the following path: **C:\InRoads Data\1234567\SDE Labs\Lab 17** *The **1234567_SDE** Surface Project has now been saved to the following path:* ***C:\InRoads Data\1234567\SDE Labs\Lab 17***

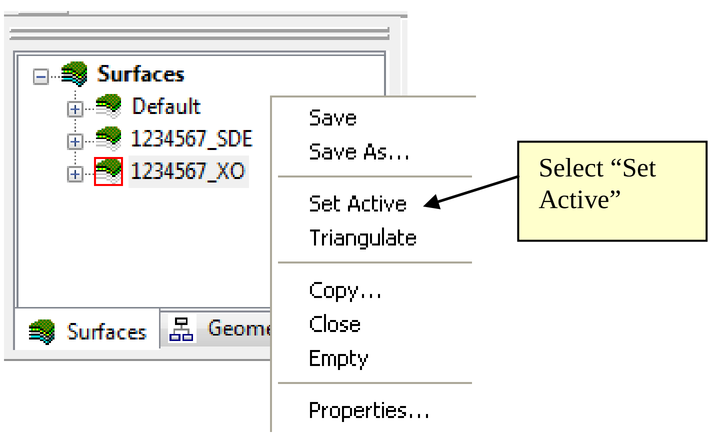
Lab 17B Create 1234567_XO.dgn from the 1234567_XO.dtm and 1234567_XO.fwd

In this section of the lab you will learn how to create individual MicroStation files (1234567_XO.dgn, 1234567_XA.dgn, 1234567_XB.dgn, etc.) from the field enhanced DTM's. You will also learn how to use the 1234567_XO.fwd to annotate Features such as pipe size, material, flow lines, Control Deltas, etc. In later labs, you will be shown how to merge these individual MicroStation files into a 1234567_TOPO.dgn for submission to the 'Engineering Management / Operations Manager'.

12. In the [InRoads Software] –

We will now ensure that the **Active Surface** is the **1234567_XO** surface.

- Click on the **Surfaces Tab** (Located in the bottom – left hand side of the InRoads Explorer Interface).
- Select the **1234567_XO** surface (by Left clicking on it) and the Name will highlight in blue.
- Then (Right click) over the surface **1234567_XO** and a pop-up dialog will appear.



- Click **Set Active** and a red rectangle will appear beside the **1234567_XO** Surface Name.

Sets the "Active Surface" of 1234567_XO.dtm.

13.	Before proceeding, ensure that the **Feature Filter lock** is on. **<u>*HINT</u>:** Go to **Tools** ► **Locks**. Ensure a check mark exists next to **Feature Filter.** ***WARNING**: Failure to engage the **Feature Filter** lock will result in incorrect data being viewed in the **1234567_XO.dgn** file.
14.	• In InRoads, Select **Surface** ► **View Surface** ► **Features**. The **<u>View Features</u>** dialog opens. • Verify that **1234567_XO** is showing in the **Surface:** pull down window as shown in *Figure L17-3*.

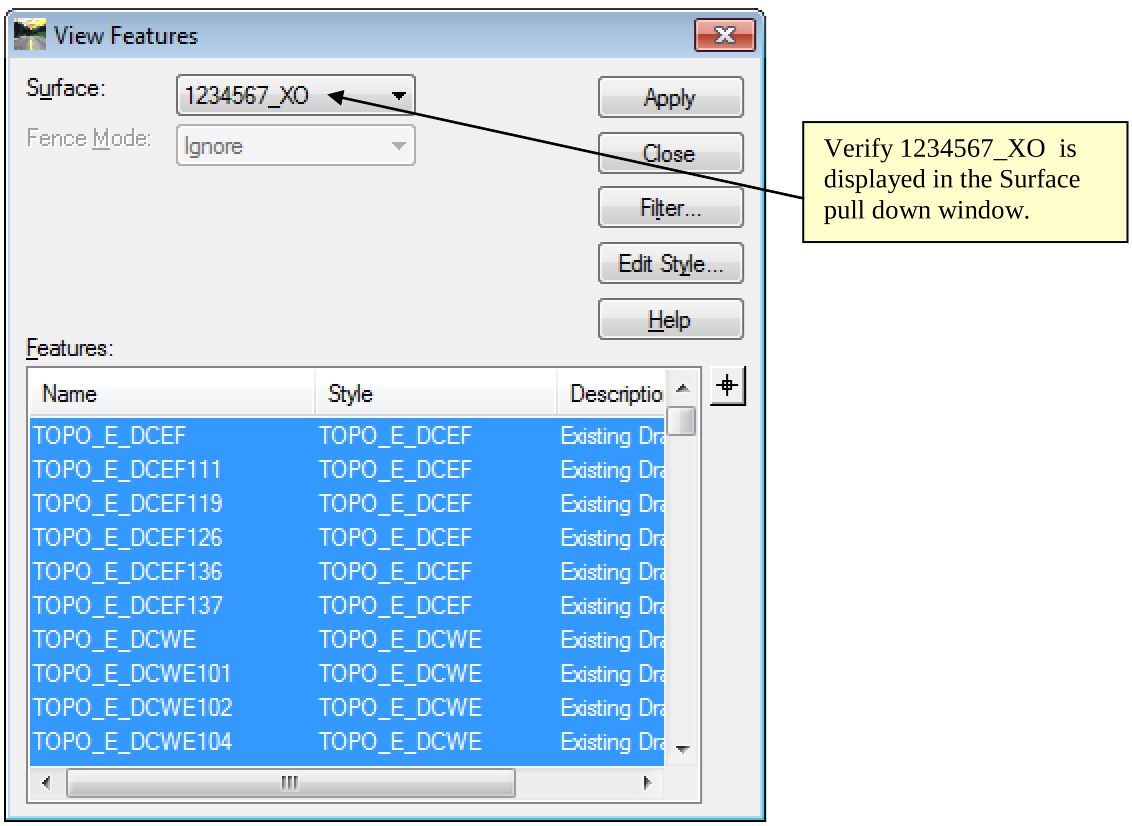


Figure L17-3 View Features

15. Apply the Filter **TOPO.DGN.**

- In the **View Features** dialog, click the **Filter** button. The **Feature Selection Filter** opens.
- In the **Feature Selection Filter** dialog, use the pull down arrow next to ***Filter Name*** to select **TOPO.DGN.**
- Verify your **Feature Selection Filter** dialog matches that shown in *Figure L17-4*.
- Click **OK**. You are returned to the **View Features** dialog.
- Click **Apply** and **Close** in the **View Features** dialog.

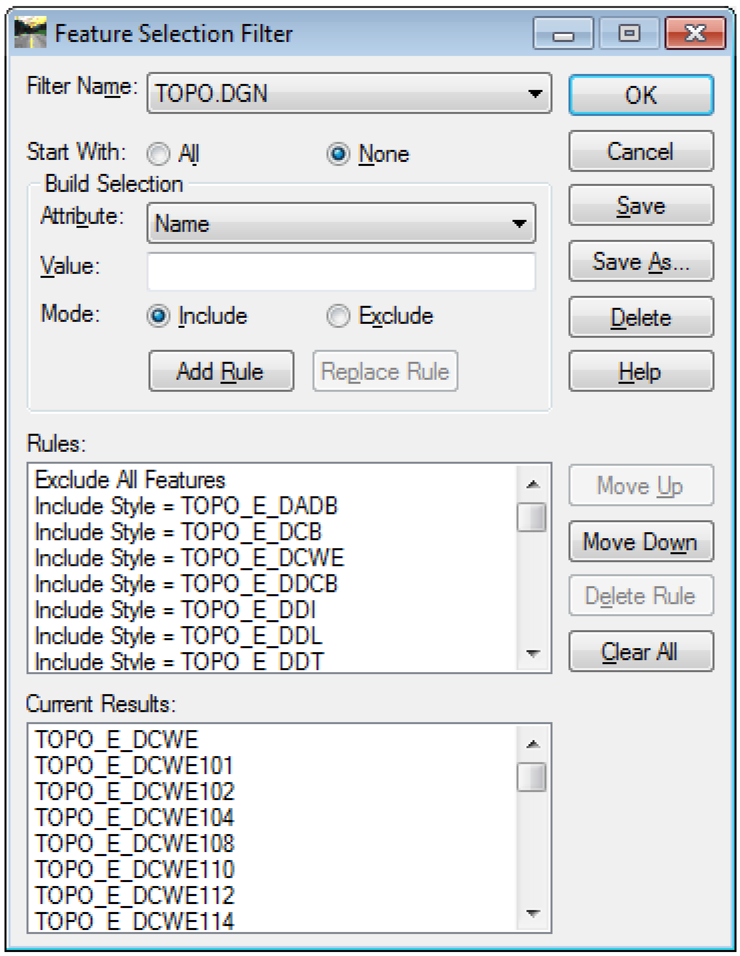


Figure L17-4 Feature Selection Filter

16. **Information Only:**

The Feature Filter named ***TOPO.DGN*** has been created in order to filter out just the required TOPO data for inclusion into 1234567_XO.dgn (or _XA, XB, XC, etc.). The 118 Codes on the following pages will be viewed:

Information regarding the codes which will be viewed in the 1234567_XO.dgn file.

Feature Filter Styles included in the Filter Named TOPO.DGN		
1	**TOPO_E_DADB**	Drainage – Dam Toe
2	**TOPO_E_DCB**	Drainage – Catch Basin
3	**TOPO_E_DCWE**	Drainage – Culvert Wingwall End
4	**TOPO_E_DDCB**	Drainage – Double Catch Basin
5	**TOPO_E_DDI**	Drainage – Drop Inlet Top
6	**TOPO_E_DDL**	Drainage – Drain Lines
7	**TOPO_E_DDT**	Drainage – Dam Top
8	**TOPO_E_DEW**	Drainage – Edge of Water
9	**TOPO_E_DHWE**	Drainage – Headwall End
10	**TOPO_E_DJB**	Drainage – Junction Box Top
11	**TOPO_E_DMISC**	Drainage – Miscellaneous
12	**TOPO_E_DOBSC**	Drainage – Obscured Area (Field)
13	**TOPO_E_DPD**	Drainage – Paved Ditch
14	**TOPO_E_DSB**	Drainage – Stream Bank Top
15	**TOPO_E_DSC**	Drainage – Stream Center F/L
16	**TOPO_E_DSE**	Drainage – Stream Edge of Water
17	**TOPO_E_DSPURDK**	Drainage – Spur Dike
18	**TOPO_E_DSTC**	Drainage – Septic Tank Center
19	**TOPO_E_DSWE**	Drainage – Swamp Edge
20	**TOPO_E_DWB**	Drainage – Wetland Boundary
21	**TOPO_E_MDITCHFL**	Drainage – Ditch Flow Line (Mapping)
22	**TOPO_E_MOBSC**	Drainage – Obscured (Mapping)
23	**TOPO_E_TAC**	Topography – Asphalt Curb
24	**TOPO_E_TBAS**	Topography – Approach Slab
25	**TOPO_E_TBC**	Topography – Brick Column
26	**TOPO_E_TBCL**	Topography – Bridge Centerline
27	**TOPO_E_TBGL**	Topography – Bridge Gutterline
28	**TOPO_E_TBLD**	Topography – Building corner
29	**TOPO_E_TBLDRL**	Topography – Building Roof Line
30	**TOPO_E_TBRDGCEN**	Topography – Bridge End, Center
31	**TOPO_E_TBRDGCOR**	Topography – Bridge End, Corner
32	**TOPO_E_TCAN**	Topography – Canopy
33	**TOPO_E_TCBA**	Topography – Construction Boundary Active
34	**TOPO_E_TCBF**	Topography – Construction Boundary Finished
35	**TOPO_E_TCEM**	Topography – Cemetery
36	**TOPO_E_TCGF**	Topography – Curb & Gutter F/L
37	**TOPO_E_TCGT**	Topography – Curb & Gutter Top
38	**TOPO_E_TCUL**	Topography – Cultivation Line
39	**TOPO_E_TEAD**	Topography – Edge Asphalt Drive
40	**TOPO_E_TEAP**	Topography – Edge Asphalt Pavement
41	**TOPO_E_TEAS**	Topography – Edge Asphalt Shoulder
42	**TOPO_E_TECD**	Topography – Edge Concrete Drive
43	**TOPO_E_TECP**	Topography – Edge Concrete Pavement
44	**TOPO_E_TEDD**	Topography – Edge Dirt Drive

45	**TOPO_E_TEDR**	Topography – Edge Dirt Road
46	**TOPO_E_TENDROLL**	Topography – Bridge Endroll
47	**TOPO_E_TEST**	Topography - Edge Surface Treatment Road
48	**TOPO_E_TETL**	Topography - Existing Topo Edge Travel Lane
49	**TOPO_E_TFBW**	Topography – Fence Barbed Wired
50	**TOPO_E_TFFW**	Topography – Fence Field Wire
51	**TOPO_E_TFP**	Topography – Flag Pole
52	**TOPO_E_TFT**	Topography – Fuel Tank
53	**TOPO_E_TFW**	Topography – Fence Wood
54	**TOPO_E_TG**	Topography – Gate
55	**TOPO_E_TGFV**	Topography – Gas Filler Valve
56	**TOPO_E_TGMW**	Topography – Gasoline Monitoring Well
57	**TOPO_E_TGP**	Topography – Gasoline Pump
58	**TOPO_E_TGPI**	Topography – Gasoline Pump Island
59	**TOPO_E_TGR**	Topography – Guardrail
60	**TOPO_E_TGRV**	Topography – Grave
61	**TOPO_E_TGST**	Topography – Gasoline Storage Tank
62	**TOPO_E_TGVP**	Topography – Gasoline Vent Pipe
63	**TOPO_E_THC**	Topography – Header Curb
64	**TOPO_E_THCR**	Topography – House Corner
65	**TOPO_E_THM**	Topography – Historical Monument
66	**TOPO_E_THRL**	Topography – House Roof Line
67	**TOPO_E_TIRRLMT**	Topography – Irrigation Limits
68	**TOPO_E_TIRRPVTP**	Topography – Irrigation Pump Turning Point
69	**TOPO_E_TMAR**	Topography – Marker
70	**TOPO_E_TMHCR**	Topography – Mobile Home Corner
71	**TOPO_E_TMHRL**	Topography – Mobile Home Roof Line
72	**TOPO_E_TMISC**	Topography – Miscellaneous
73	**TOPO_E_TMPR**	Topography – Mile Post Railroad
74	**TOPO_E_TPBL**	Topography – Point on Break Line
75	**TOPO_E_TRCL**	Topography – Railroad Centerline
76	**TOPO_E_TRCR**	Topography – Railroad Top of Rail
77	**TOPO_E_TRCRE**	Topography – Railroad Top of Rail
78	**TOPO_E_TS**	Topography – Steps
79	**TOPO_E_TSATDSH**	Topography – Satellite Dish
80	**TOPO_E_TSC**	Topography – Sign Center
81	**TOPO_E_TSE**	Topography – Sign End
82	**TOPO_E_TTRE**	Topography – Tree Center
83	**TOPO_E_TUD**	Topography – Uncovered Deck
84	**TOPO_E_TVF**	Topography – Vinyl (PVC) Fence
85	**TOPO_E_TVG**	Topography – Valley Gutter
86	**TOPO_E_TWF**	Topography – Wall Face
87	**TOPO_E_TWFB**	Topography – Wall Face Bottom
88	**TOPO_E_TWFT**	Topography – Wall Face Top
89	**TOPO_E_TWL**	Topography – Woods Line

90	**TOPO_E_XXA**	Surveyor Defined Value
91	**TOPO_E_XXB**	Surveyor Defined Value
92	**TOPO_E_XXC**	Surveyor Defined Value
93	**TOPO_E_XXC**	Surveyor Defined Value
94	**TOPO_E_XXE**	Surveyor Defined Value
95	**TOPO_E_XXF**	Surveyor Defined Value
96	**TOPO_E_XXG**	Surveyor Defined Value
97	**TOPO_E_XXI**	Surveyor Defined Value
98	**TOPO_E_XXH**	Surveyor Defined Value
99	**TOPO_E_XXJ**	Surveyor Defined Value
100	**TOPO_E_XXK**	Surveyor Defined Value
101	**TOPO_E_XXL**	Surveyor Defined Value
102	**TOPO_E_XXM**	Surveyor Defined Value
103	**TOPO_E_XXN**	Surveyor Defined Value
104	**TOPO_E_XXO**	Surveyor Defined Value
105	**TOPO_E_XXP**	Surveyor Defined Value
106	**TOPO_E_XXQ**	Surveyor Defined Value
107	**TOPO_E_XXR**	Surveyor Defined Value
108	**TOPO_E_XXS**	Surveyor Defined Value
109	**TOPO_E_XXT**	Surveyor Defined Value
110	**TOPO_E_XXU**	Surveyor Defined Value
111	**TOPO_E_XXV**	Surveyor Defined Value
112	**TOPO_E_XXW**	Surveyor Defined Value
113	**TOPO_E_XXX**	Surveyor Defined Value
114	**TOPO_E_XXY**	Surveyor Defined Value
115	**TOPO_E_XXZ**	Surveyor Defined Value
116	**TOPO_E_XXZA**	Surveyor Defined Value
117	**TOPO_E_XXZB**	Surveyor Defined Value
118	**TOPO_E_XXZC**	Surveyor Defined Value

17.	In MicroStation, Click the **Fit View** button.
18.	Verify your view, in MicroStation, matches that shown in *Figure L17-5* below.

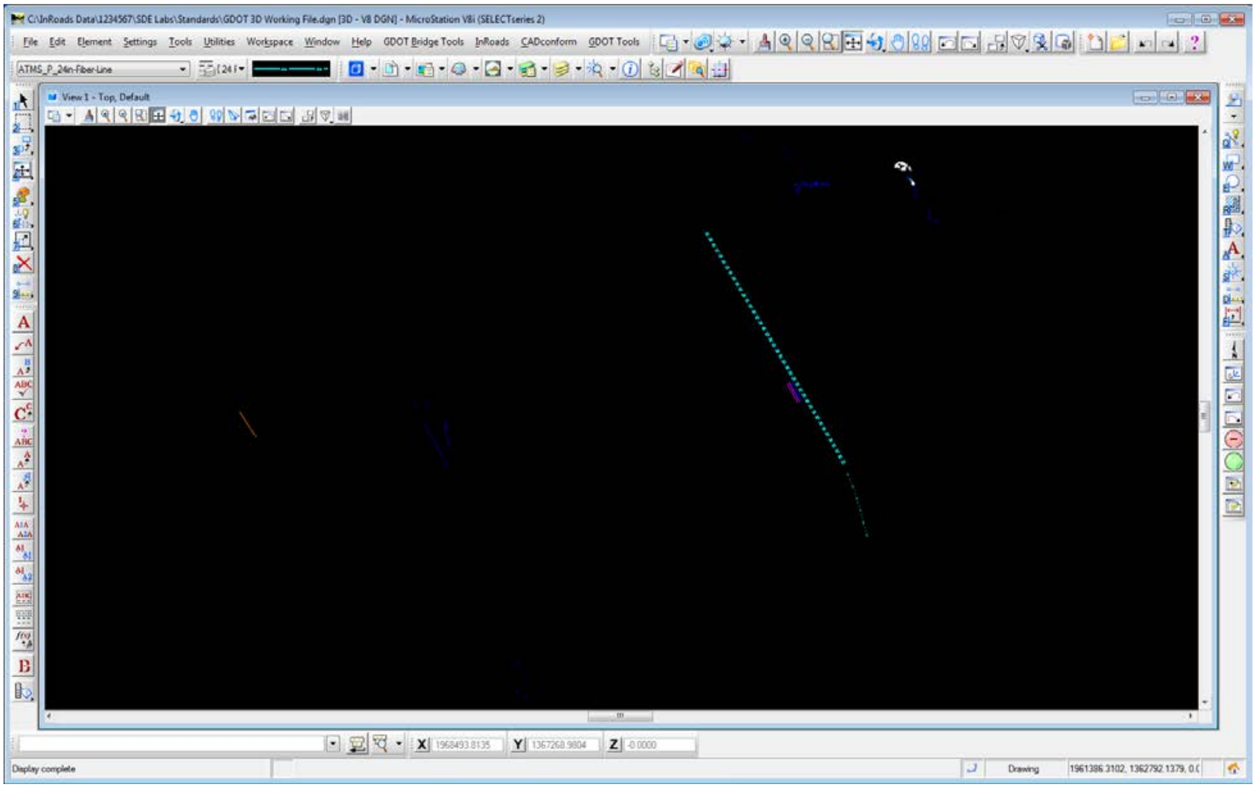
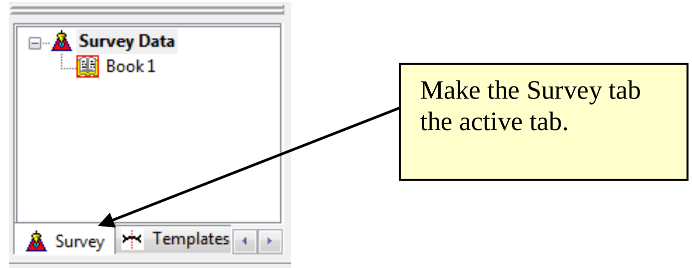


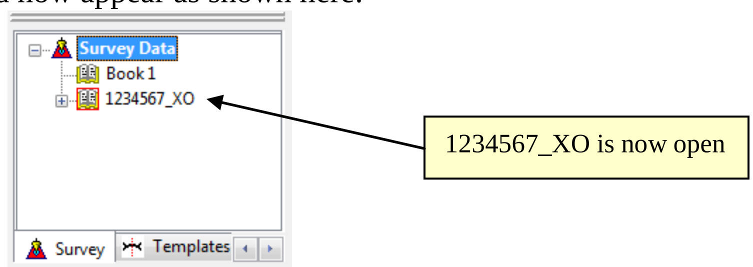
Figure L17-5 MicroStation

19.	**For Information Only**: Surveyors and SDE's may be accustomed to seeing point numbers when viewing points, lines and chains in CAiCE. The designers often used CAiCE to obtain more information by viewing the details of the points and lines such as pipe sizes, materials flow lines, culvert sizes and other information. In InRoads, when data is exported from the Survey Module to the Surface Model this information is lost. Steps 20 through 33 provide instructions for annotating this information in the 1234567_XO.dgn (XA, XB, etc.) file from the 1234567_XO.fwd (XA, XB, etc.) file.

20. In InRoads, Make the **Survey Tab** located along the bottom of the *InRoads Explorer Interface* the active tab as shown here:

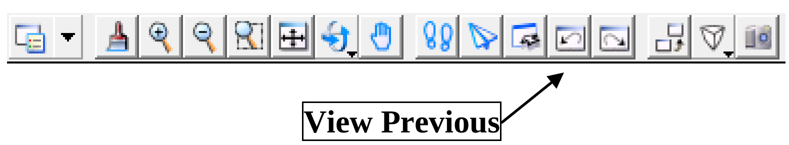


21. In InRoads, open the file **1234567_XO.fwd** which is located in **C:\InRoads Data\1234567\SDE Labs\Lab17**. Click **Open** and then click **Cancel**. The *InRoads Explorer Interface* should now appear as shown here:



22. In MicroStation, notice the view changed when the .FWD file was opened. The reason for this is that in InRoads the default operation is to automatically view planimetrics whenever a new .FWD file is opened and automatically fits the view. It is good practice to turn off planimetrics.

- In InRoads, select **Survey ► View Survey Data**. Uncheck **Planimetrics**.
- In MicroStation, click the **View Previous** icon. This returns the view to that shown in *Figure L17-5*.



23. In InRoads, set the Survey Scale Factor.

***NOTE**: This is not the same as the Global Scale Factor set earlier in this lab. The Global Scale Factor controls scaling of elements in the Surface and Geometry modules but not the Survey module.

- Select **Survey ► Fieldbook Data**… The **Fieldbook Data** dialog opens as shown in *Figure L17-6*.
- In the **Fieldbook Data** dialog click the **Survey Options** button ( ) as shown in *Figure L17-6*. The **Survey Options** dialog opens as shown in *Figure L17-7*.

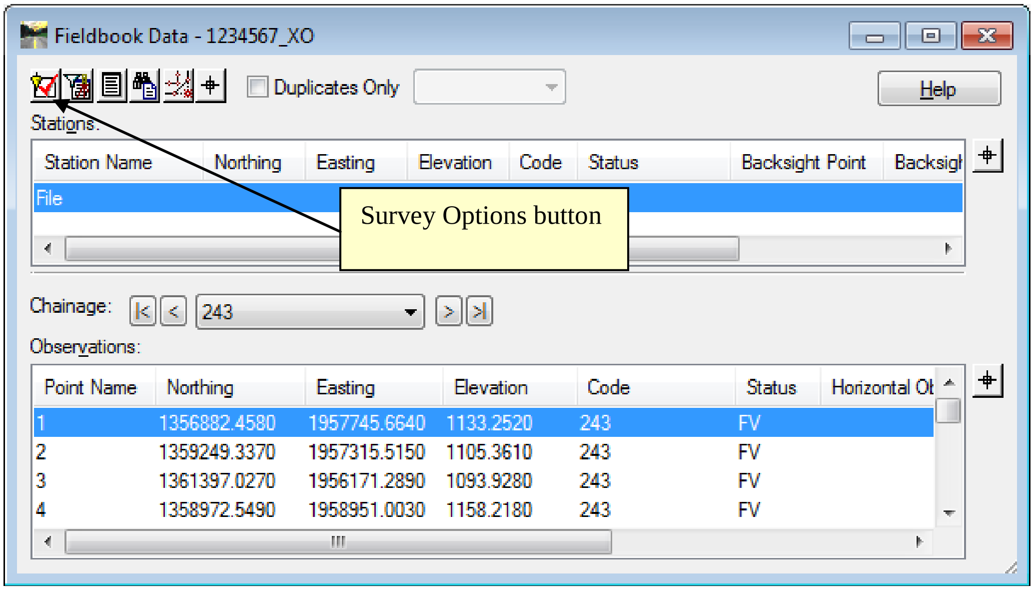


Figure L17-6 Fieldbook Data

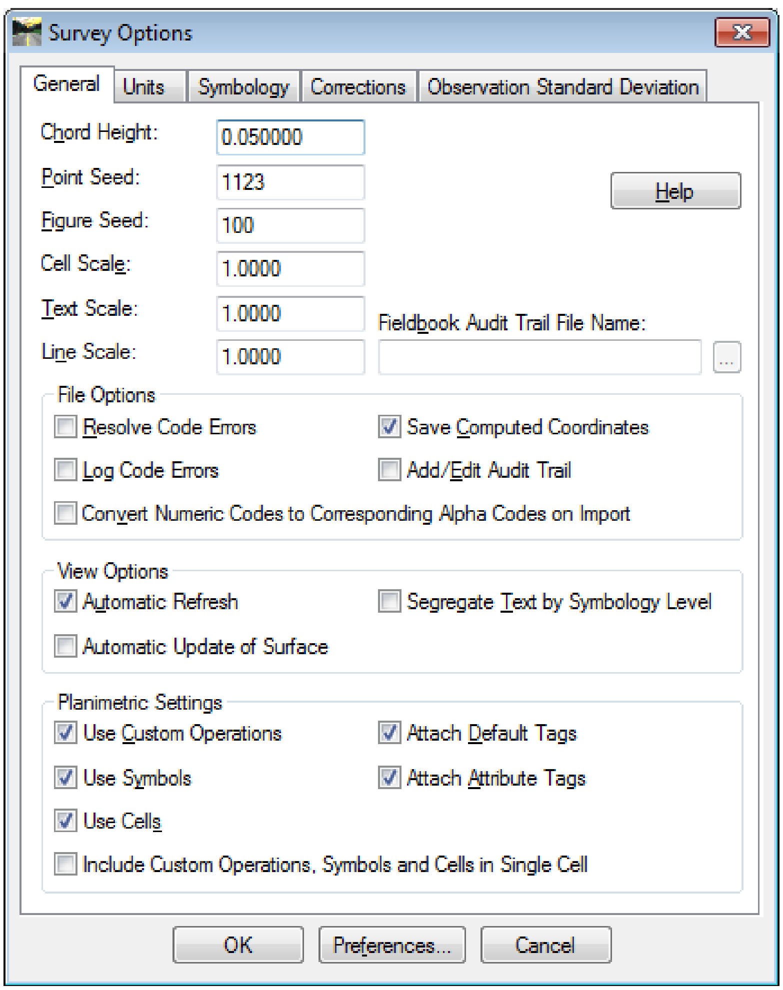
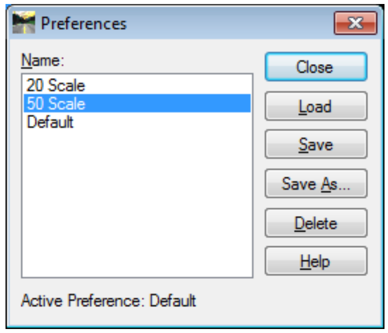


Figure L17-7 Survey Options

24.

- In the **Survey Options** dialog click the **Preferences** button. The **Preferences** dialog opens as shown here.



- Select the **50 Scale** Preference.
- Click **Load** and **Close**.
- Verify your entries match those shown in *Figure L17-8*.
- Click **OK**.

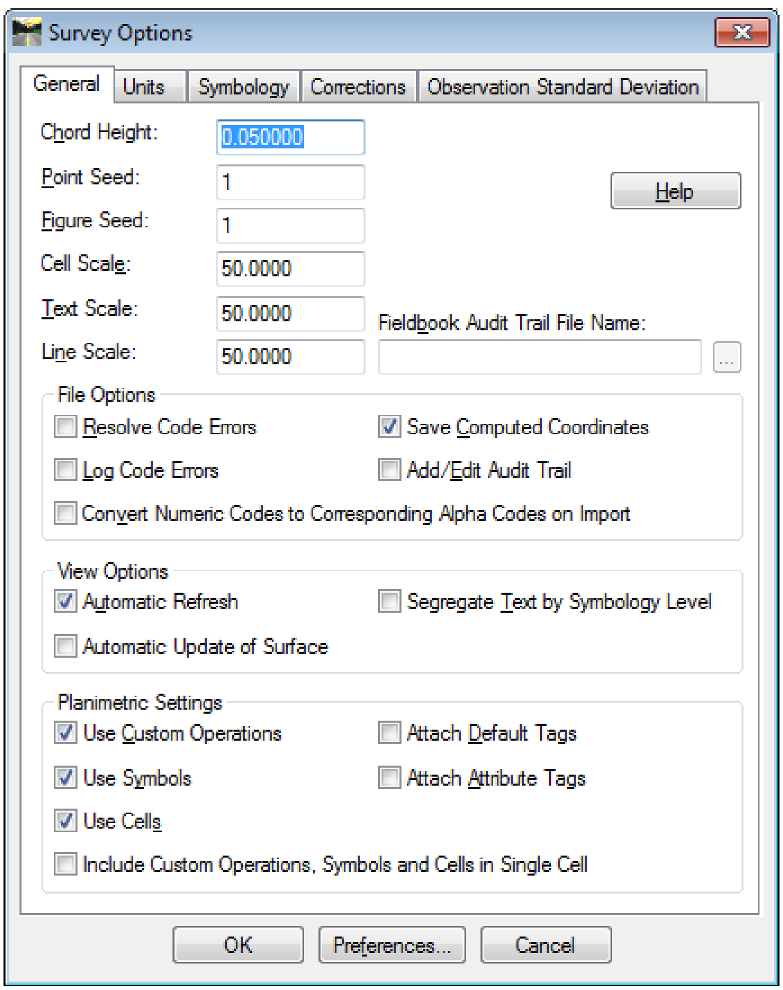


Figure L17-8 Survey Options

25.	• **Close** the **Fieldbook Data** dialog by clicking the red X ( ) in the top right corner.
26.	• Select **Survey ▶ View Survey Data ▶ Write Survey Data to Graphics**. The **Write Survey Data to Graphics** dialog opens.
27.	• In the **Write Survey Data to Graphics** dialog, click the **Filter** button. The **Survey Style Filter** dialog opens. • In the **Survey Style Filter** dialog, select **Topo Annotation** from the ***Filter Name*** pull down. • The **Topo Annotation** filter views the annotation for the following 17 Features. o **TOPO_E_DCEF** o **TOPO_E_DPC** o **TOPO_E_DPM** o **TOPO_E_DPP** o **TOPO_E_SDCD** o **TOPO_E_SLCD** o **TOPO_E_SLCM** o **TOPO_E_SNGSCM** o **TOPO_E_TDD** o **TOPO_E_TDR** o **TOPO_E_TFCL** o **TOPO_E_TKMP** o **TOPO_E_TMPH** o **TOPO_E_TMPR** o **TOPO_E_TSW** o **TOPO_E_TTRE** o **TOPO_E_TWELL** • Verify the **Survey Style Filter** dialog matches that shown in *Figure L17-9*. • Click **OK** to close the **Survey Style Filter** dialog and return to the **Write Survey Data to Graphics** dialog.

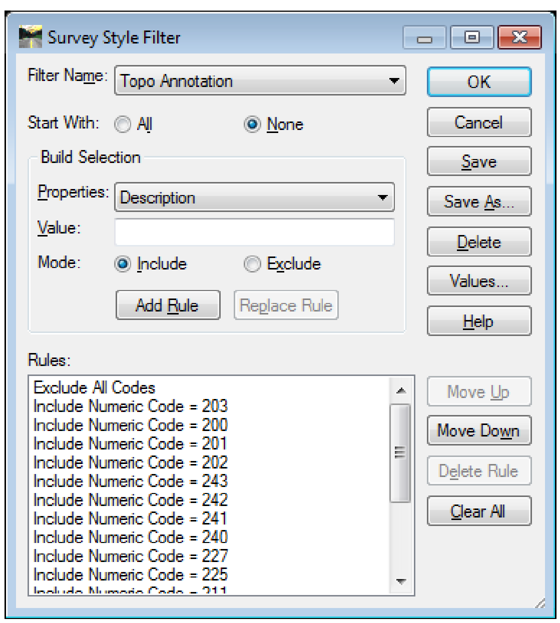


Figure L17-9 Survey Style Filter

28.

- In the **Write Survey Data to Graphics** dialog, place a check mark in the box next to **Planimetrics** as shown in *Figure L17-10*
- Click **Apply** and **Close**.

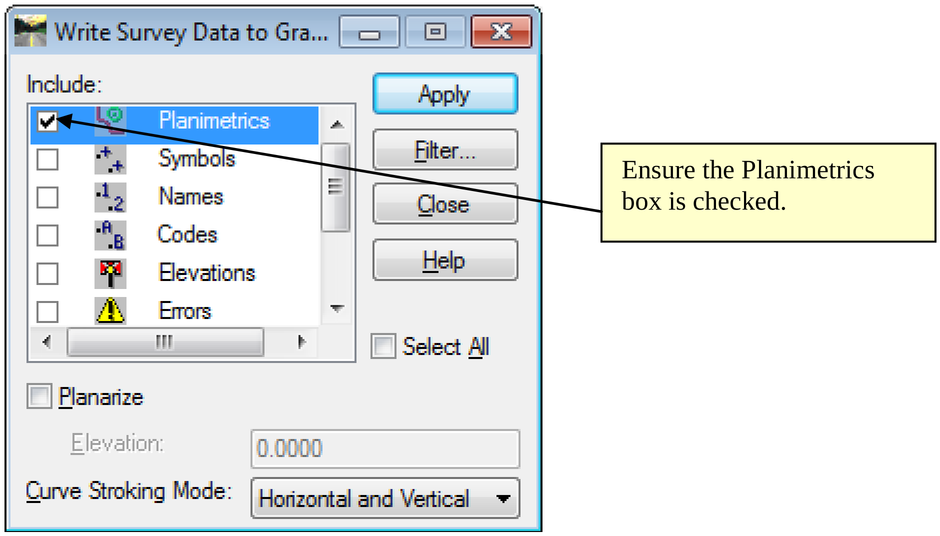


Figure L17-10 Write Survey Data Dialog

29.

- The Features listed in **Step 27** have now been annotated. Verify your view in MicroStation matches that shown in *Figure L17-11*.
- If your view does not match that shown in *Figure L17-11* -- perform the following step:
- In MicroStation, click the **View Previous** icon. This returns the view to that shown in *Figure L17-11*.

View Previous

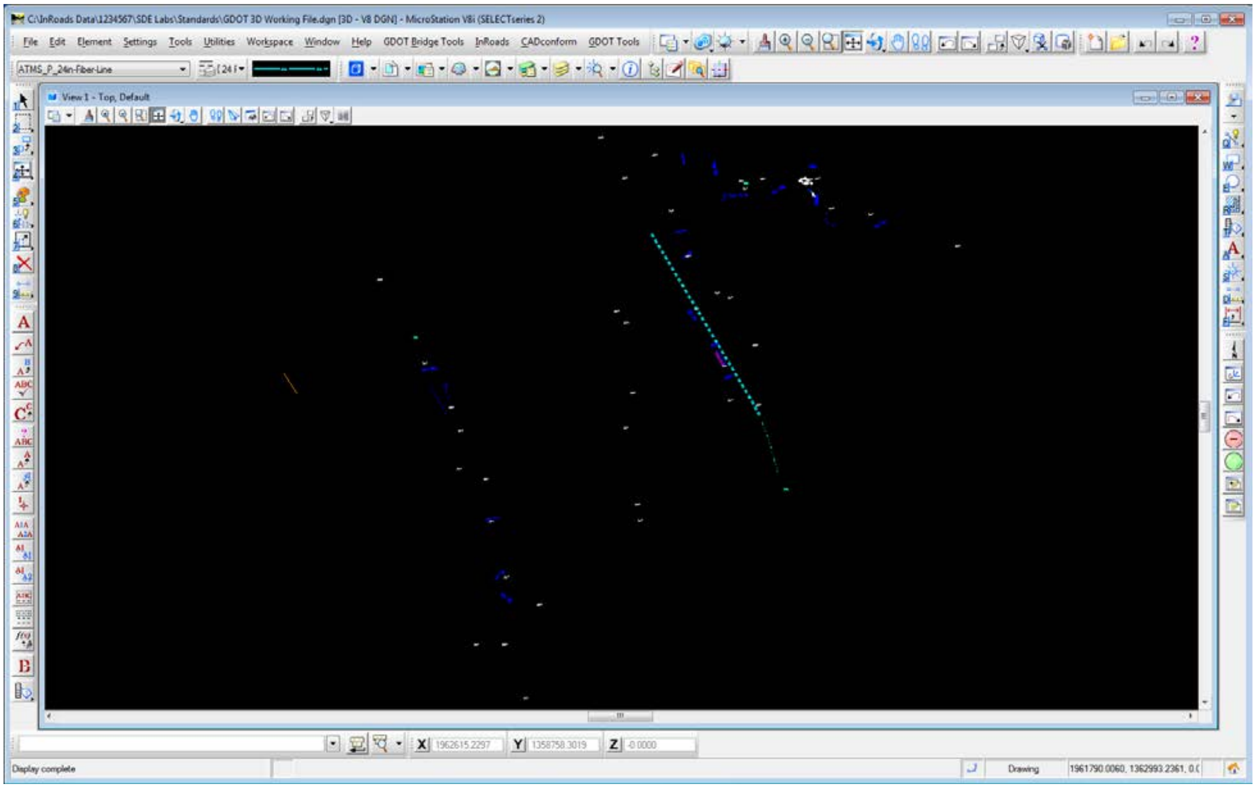
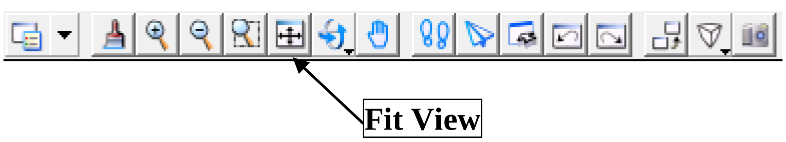


Figure L17-11 MicroStation Window

30.

- In MicroStation, click the **Fit View** icon.



- In MicroStation, select **File ► Compress ► Design**. This reduces the MicroStation file size.
- In MicroStation, Select **File ► Save As.** The **<u>Save As</u>** dialog opens as shown in *Figure L17-12*.

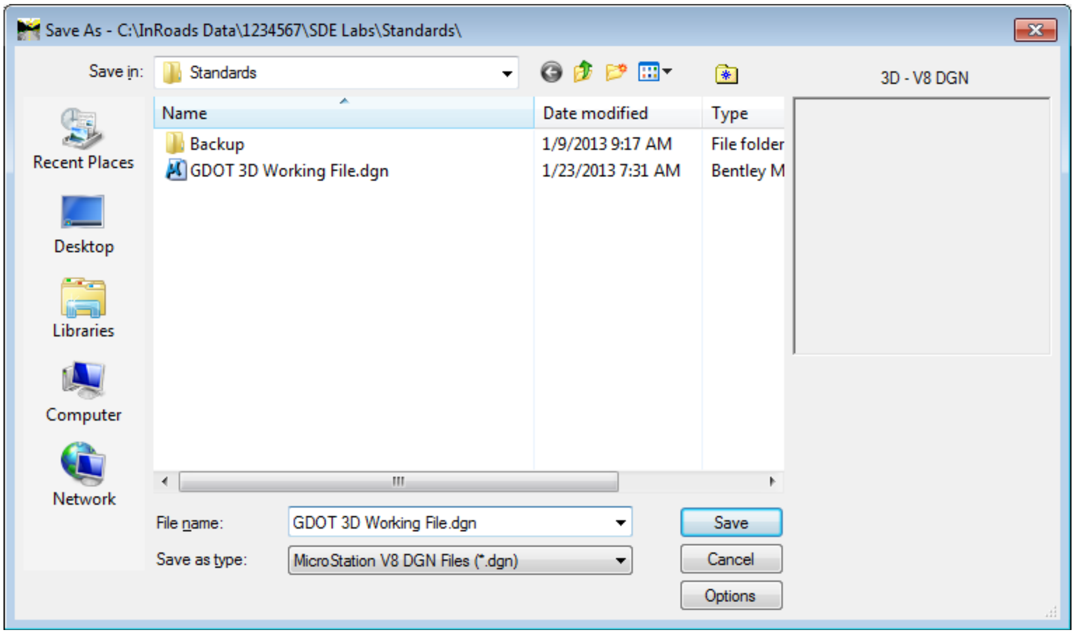


Figure L17-12 Save As Dialog

31.	• In the **<u>Save As</u>** dialog, Navigate to **C:\InRoads Data\1234567\SDE Labs\Lab 17.** • In the **File name:** field key-in **1234567_XO.dgn.** • In the **Save as type:** pull-down select **MicroStation V8 DGN Files (*.dgn)** • Verify your entries match those shown in *Figure L17-13*. • Click **Save**.

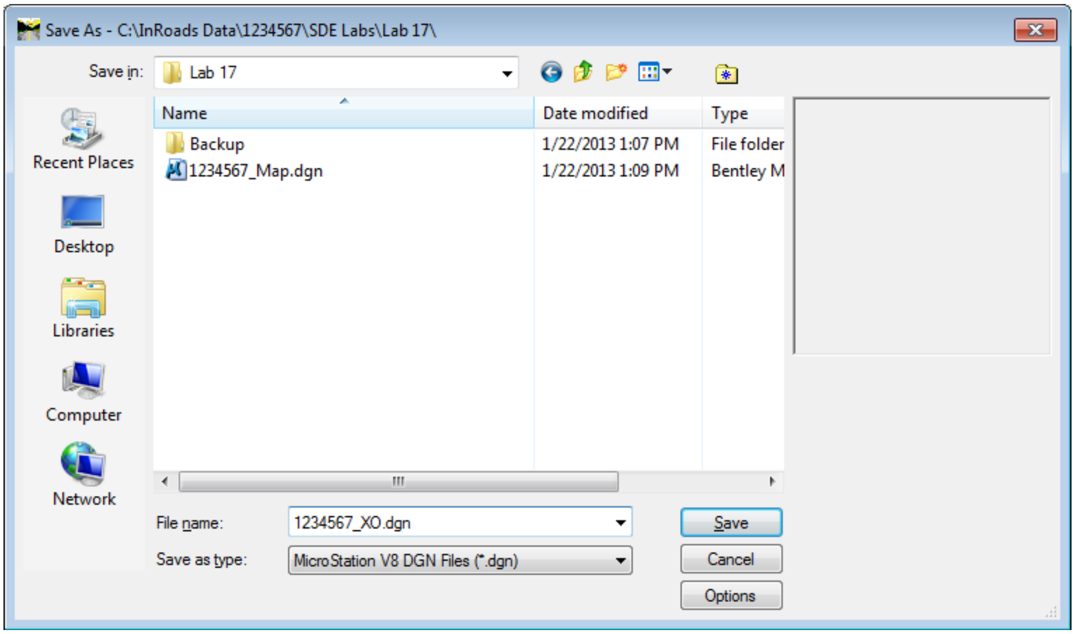
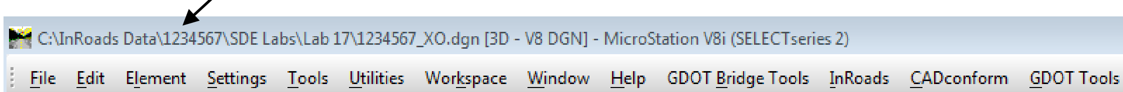


Figure L17-13 Save As Dialog

32.	
	• In MicroStation, Look at the Title bar located at the top of the MicroStation window. It reads **C:\InRoads Data\1234567\SDE Labs\Lab 17\1234567_XO.dgn** as shown here and not **GDOT _3D_Working File.dgn**. It is important to know that when you saved the file, you were automatically exited from your current file and opened into the new file.

MicroStation Title Bar



- We are finished creating the **1234567_XO.dgn** file and do not want to make any changes to it.
- **Close** MicroStation and InRoads.

To **CLOSE** MicroStation and InRoads -

Select **File ▶ Exit** from the [MicroStation Menu].
If any messages appear regarding the saving of projects – Select

33.	**For Information Only**: At this point you have finished creating the **1234567_XO.dgn** which includes the topographical information picked up during the field survey enhancement process and the annotation of certain items. This same process is used to create a 1234567_XA.dgn, 1234567_XB.dgn, etc. In **Lab 17C** you will learn how to merge these .dgn's into the final **1234567_TOPO.dgn** for submission to the 'Engineering Management / Operations Manager'.

Lab 17C Create 1234567_TOPO.dgn for Delivery to the Designer

At this time you now have two MicroStation .dgn files. One called **1234567_XO.dgn**, created in the previous section and one called **1234567_Map.dgn**. In practice the **1234567_Map.dgn** file will be created by the Photogrammetry Office and replaces the TOPO.dgn file the SDE is accustomed to receiving. For this lab - the **1234567_Map.dgn** file has been provided. In this section of the Lab you will be creating the **1234567_TOPO.dgn** file for submission to the 'Engineering Management / Operations Manager'. The following workflow is used to create and prepare the **1234567_TOPO.dgn** file.

1. **Create 1234567_XO.dgn from the 1234567_XO.dtm field enhanced survey.** (Performed in Lab 17B)
2. **Copy and rename 1234567_Map.dgn to 1234567_TOPO.dgn** *(The 1234567_MAP.dgn file is the initial Planimetrics file provided by the Photogrammetry Office)*
3. **Merge the 1234567_XO.dgn file into the 1234567_TOPO.dgn file.**
4. **Apply the MicroStation TOPO filter to 1234567_TOPO.dgn file.**

<table>
<tr><td>34.</td><td><u>Copy the 1234567_Map.dgn---</u>

• From the desktop, double-click on the My Computer icon, shown here.

This will open the <u>My Computer</u> window. This is your computer's file manager. Via this dialog box, you may view the content of your computer's hard drive, CD drive, Network drives and flash drives.</td></tr>
<tr><td>35.</td><td>Navigate to C:\InRoads Data\1234567\SDE Labs\Lab 17. The 1234567_Map.dgn file will be located in this folder.
*NOTE: In a real world project the 1234567_Map.dgn file will be located in the C:\InRoads Data\1234567\Photogrammetry folder.</td></tr>
<tr><td>36.</td><td>Make a Copy of C:\InRoads Data\1234567\SDE Labs\Lab 17\1234567_Map.dgn and Name it 1234567_TOPO.dgn. This may be accomplished by Right Mouse clicking over the file and selecting Copy then Paste then Rename.

Makes a copy of 1234567_Map.dgn and renames it to 1234567_TOPO.dgn</td></tr>
<tr><td>37.</td><td>Verify that you have successfully copied and renamed 1234567_Map.dgn to 1234567_TOPO.dgn. Your Explorer window should now match that shown in Figure 17-14.</td></tr>
</table>

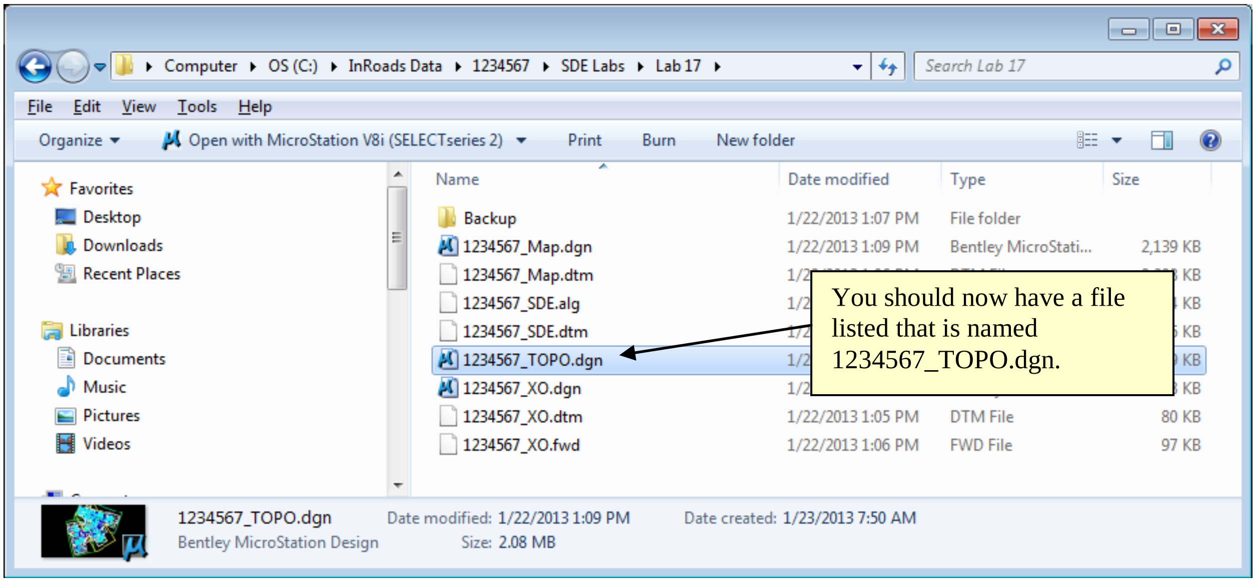


Figure L17-14 My Computer

<table>
<tr><td>38.</td><td>
Close the <u>My Computer</u> window.
</td></tr>
<tr><td>39.</td><td>
Double click the MicroStation Icon to open MicroStation:


Double click on the icon labeled GDOT MicroStation V8i SS2 (x86).

When the MicroStation Manager dialog box appears -- navigate to C:\InRoads Data\1234567\SDE Labs\Lab 17.
Select 1234567_TOPO.dgn and click Open. It is not necessary to enter InRoads for this step.
Click the Fit View button.

Verify your view in MicroStation matches that shown in Figure L17-15.
</td></tr>
</table>

40.	**Information Only**: At this time the **1234567_TOPO.dgn** file currently contains only mapping information in it and is incomplete. It is necessary to merge the **1234567_XO.dgn** into the **1234567_TOPO.dgn** to complete the **1234567_TOPO.dgn**. Steps 41 through 47 describes the process to merge a reference file into an Active Design file.

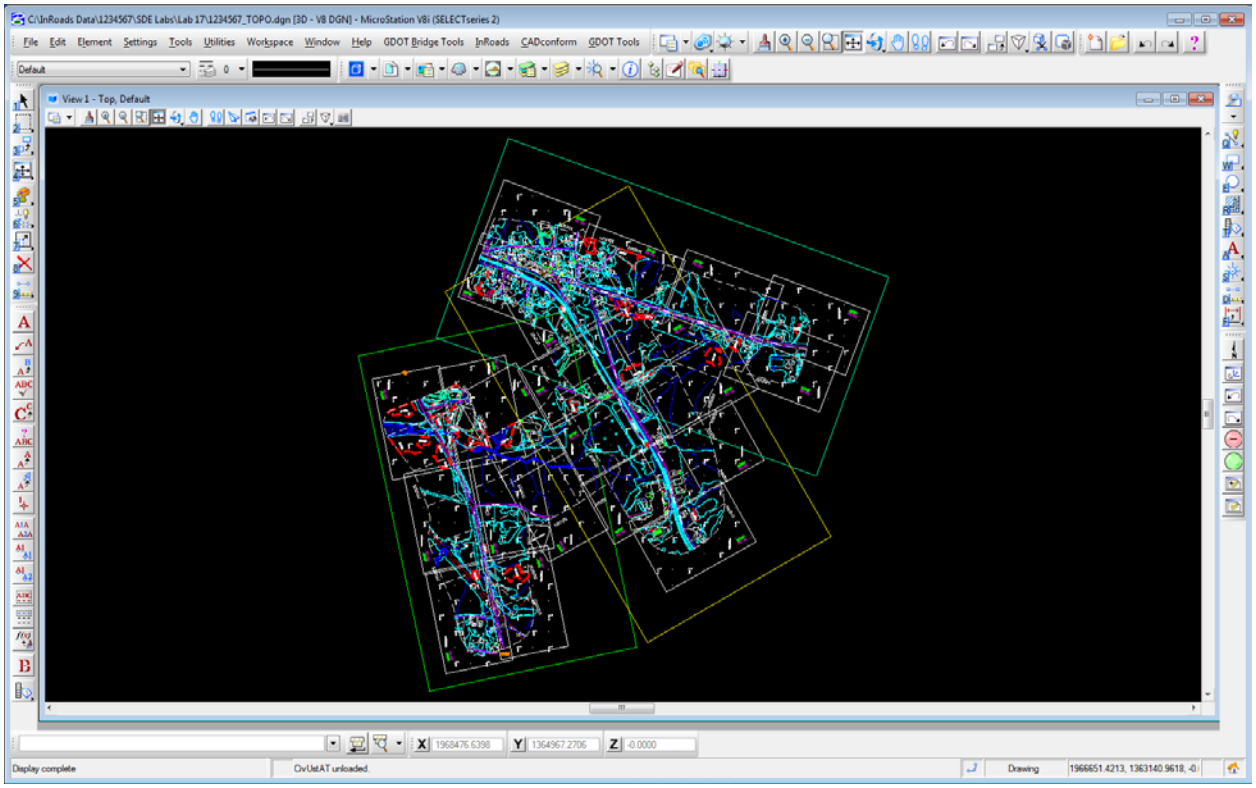


Figure L17-15 MicroStation Window

41.	In MicroStation, select **File ► References**. The <u>**References**</u> dialog box opens as shown in *Figure L17-16*.

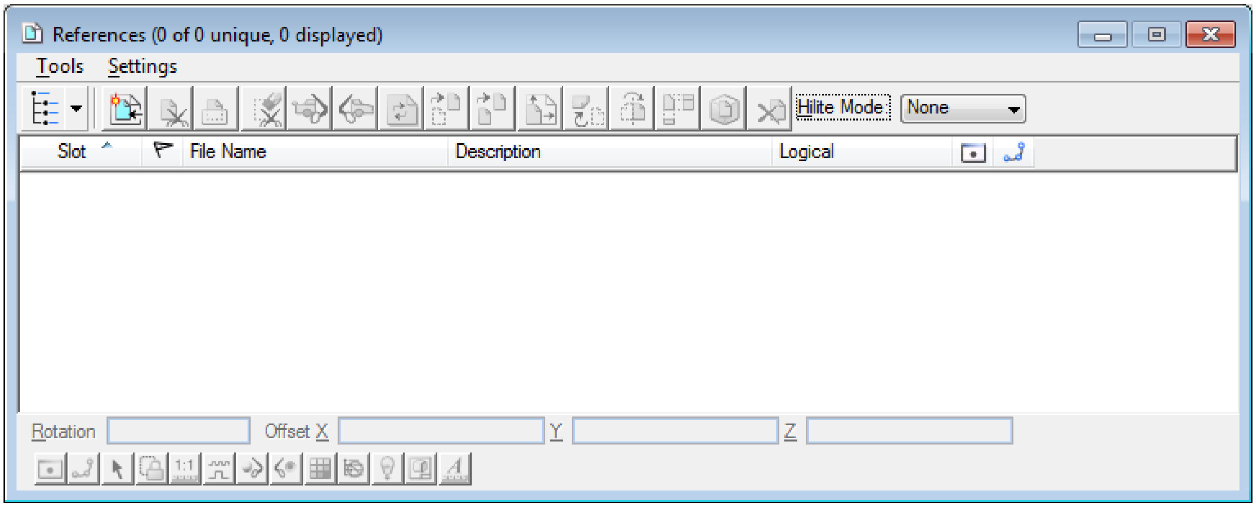


Figure L17-16 References

42.	**For Information Only:** A **Reference File** is defined as a Design File that is attached to and viewed simultaneously with the Active Design File. Once a Design File has been attached as a Reference File to an Active Design File, tools are available that allow the attached Reference File to be <u>merged</u> into the Active Design file. The following steps describe merging a Reference File into an Active Design File.
43.	• In the <u>**References**</u> dialog box, select **Tools ► Attach**. The <u>**Attach Reference**</u> dialog opens. • Navigate to **C:\InRoads Data\1234567\SDE Labs\Lab17** • Change the ***Attachment Method*** (located on the right side of the box) to **Coincident World** by using the pull-down arrow. ***IMPORTANT**: Failure to properly set the attachment mode may result in the Reference File being attached in the wrong coordinate system. • Select **1234567_XO.dgn** • Verify your settings look similar to those shown in *Figure L17-17*. • Click **Open**. You are returned to the <u>**References**</u> dialog box. • Notice in *Figure L17-18* that the file **1234567_XO.dgn** is now listed in the <u>**References**</u> dialog indicating it has been attached as a Reference File.

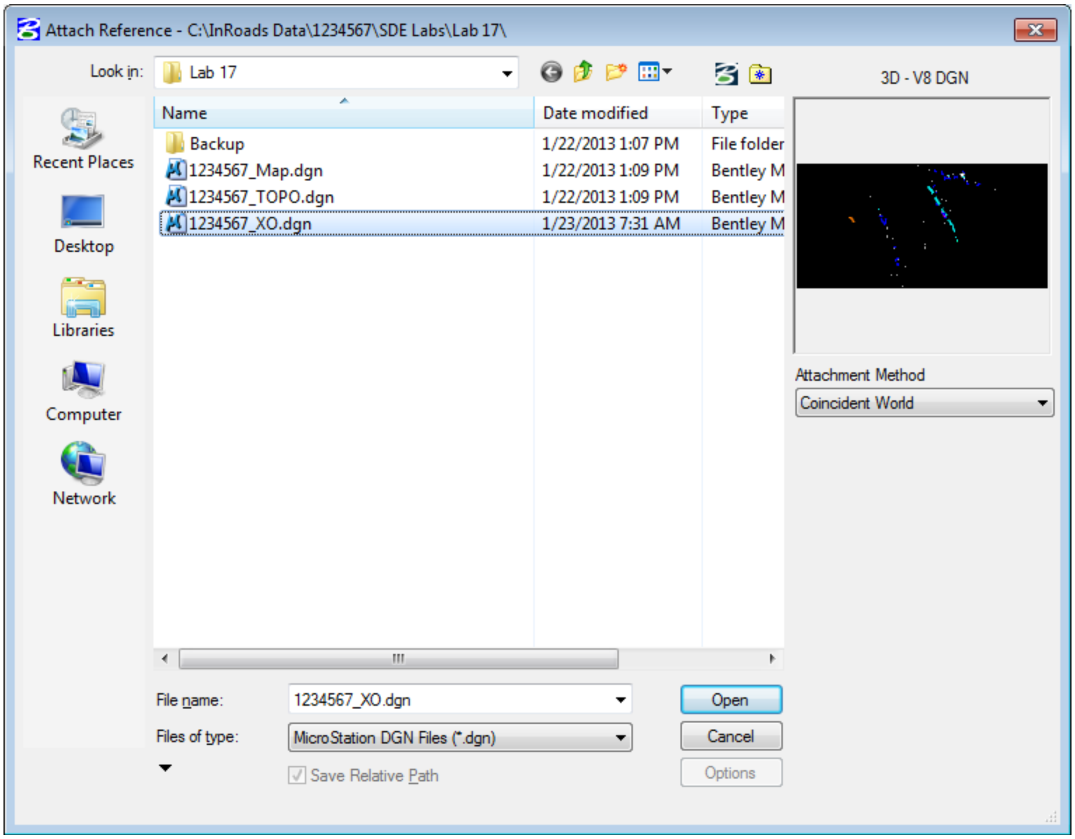


Figure L17-17 Attach Reference

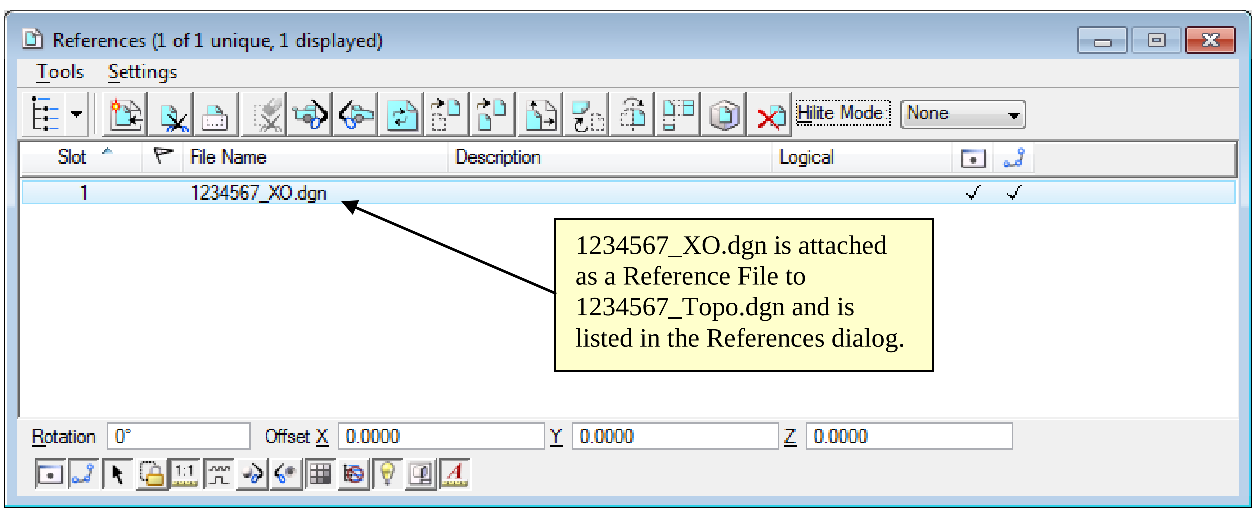


Figure L17-18 References

44.	• In the **References** dialog box left click on **1234567_XO.dgn** to ensure it is highlighted and has the two check marks listed as shown in *Figure L17-18* above. ***NOTE**: If the file is not highlighted, the ***Merge Into Master*** command in the next step will not be available to use.
45.	• In the **References** dialog box select **Tools ► Merge Into Master**. • Notice in the bottom left corner of the MicroStation window you are prompted to: **Merge References < Select View For Merge…** as shown here  • Left Click anywhere in the MicroStation view window. • If an Alert Message appears that reads '***You Have Selected 1 References To Merge Into The Current Design***', Click **OK**. • Notice in the bottom middle of the MicroStation window the message: **1 references merged into active model**.  • **Close** the **References** dialog by clicking the **Red X** in the top Right Corner of the **References** dialog box. • In MicroStation, Select **File ► Compress ► Design**. *The file 1234567_XO.dgn has been successfully merged into 1234567_TOPO.dgn*
46.	**For Information Only:** You have now completed creating the **1234567_TOPO.dgn** file. The **1234567_TOPO.dgn** file at this point is considered the original **1234567_TOPO.dgn** file. Survey enhancements picked up during the life of the project shall be included in this file following the steps described in **Labs 17B** and **17C**.
47.	The **1234567_TOPO.dgn** is now complete and ready to be provided to the designer. When all associated DGN files are ready, the **SDE** is instructed to contact the **Engineering Management / Operations Manager** and make copies available on **SDEcommon.** The **Engineering Management / Operations Manager** will keep all orignal copies and inform the designer where they may be acquired. The **SDE** is also instructed to obtain original copies from the **Engineering Management / Operations Manager** whenever enhancements are to be performed during the life of the project.

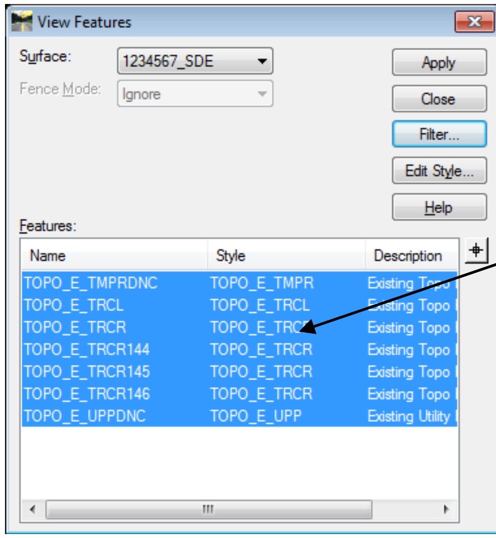
Lab 17D Create 1234567_UTLE.dgn for Delivery to the Designer

In this section of the Lab you will learn how to create the **1234567_UTLE.dgn** file for submission to the Engineering Management / Operations Manager. The **1234567_UTLE.dgn** file replaces the UTIL.dgn file produced in the past by the DGN.CMD program.

48.	• In MicroStation, Select **File ▶ Open**. • Navigate to **C:\InRoads Data\1234567\SDE Labs\Standards** and Open the file **GDOT 3D Working File.dgn**
49.	In MicroStation, • Select **Edit ▶ Select All**. • Click the Delete button as shown here.  *This ensures the MicroStation working file is clear of all elements and is ready to proceed.*
50.	Now open InRoads from within MicroStation by selecting **InRoads ▶ InRoads Suite (SELECTseries 2) V8i 08.11.07.566** from the [MicroStation Menu].
51.	• In InRoads, Click **File ▶ Open** and browse to the Surface File **1234567_SDE.dtm** located in **C:\InRoads Data\1234567\SDE Labs\Lab 17**. • Select the **1234567_SDE.dtm** file and then click **Open** and then click **Cancel**.
52.	In InRoads, Ensure the **Feature Filter** lock is turned on. This may be accomplished by selecting **Tools ▶ Locks** and ensuring a check mark exists next to **Feature Filter**. ***NOTE**: As stated previously, failure to have the correct lock setting will result in incorrect information being viewed.
53.	Select **Surface ▶ View Surface ▶ Features**. The **View Features** dialog box opens.
54.	Click the **Filter** button. The **Feature Selection Filter** dialog opens.
55.	Select the Filter Name **UTLE.DGN** from the pull down arrow and click **OK**.
56.	**Information Only:** The Feature Filter named **UTLE.DGN** has been created in order to filter out just the required existing utility data for inclusion into **1234567_UTLE.dgn**. *Information regarding the codes which will be viewed in the 1234567_UTLE.dgn file.*

Feature Filter Styles included in the Filter Named UTLE.DGN		
1	**TOPO_E_TMPR**	**TOPO – Mile Post Railroad**
2	**TOPO_E_TRCL**	**TOPO – Railroad Centerline**
3	**TOPO_E_TRCR**	**TOPO – Railroad Centerline**
4	**TOPO_E_UELBOX**	**UTILITY – Electrical Box**
5	**TOPO_E_UFH**	**UTILITY – Fire Hydrant center**
6	**TOPO_E_UGM**	**UTILITY – Gas Meter**
7	**TOPO_E_UGP**	**UTILITY – Guy Pole**
8	**TOPO_E_ULP**	**UTILITY – Light Pole**
9	**TOPO_E_UMHE**	**UTILITY – Manhole Electrical**
10	**TOPO_E_UMHSS**	**UTILITY – Manhole Sanitary Sewer Top**
11	**TOPO_E-UMHSSF**	**UTILITY – Manhole Sanitary Sewer Flow line**
12	**TOPO_E_UMHST**	**UTILITY – Storm Sewer**
13	**TOPO_E_UMHSTF**	**UTILITY – Storm Sewer Flow line**
14	**TOPO_E_UMHT**	**UTILITY – Manhole Telephone**
15	**TOPO_E_UNGLM**	**UTILITY – Gas Line Marker**
16	**TOPO_E_UNGV**	**UTILITY – Gas Valve**
17	**TOPO_E_UNGVP**	**UTILITY – Gas Vent Pipe**
18	**TOPO_E_UOEL**	**UTILITY – Overhead Electrical Line**
19	**TOPO_E_UOTL**	**UTILITY – Overhead Telephone Line**
20	**TOPO_E_UPGA**	**UTILITY – Pole Anchor**
21	**TOPO_E_UPP**	**UTILITY – Power Pole center**
22	**TOPO_E_USSL**	**UTILITY – Sanitary Sewer Line center**
23	**TOPO_E_USTRPOL**	**UTILITY – Strain Pole**
24	**TOPO_E_UTCM**	**UTILITY – Cable Marker**
25	**TOPO_E_UTP**	**UTILITY – Telephone Pole center**
26	**TOPO_E_UTPD**	**UTILITY – Telephone Pedestal**
27	**TOPO_E_UWM**	**UTILITY – Water Meter**
28	**TOPO_E_UWV**	**UTILITY – Water Valve**
29	**TOPO_E_UYLE**	**UTILITY – Yard Light Electric**
30	**TOPO_E_UYLG**	**UTILITY – Yard**

57.	**You are returned to the View Features dialog box with only the filtered Features displayed as shown in *Figure L17-19.*** • Notice the **Features** are all highlighted in blue. This indicates they are all selected for viewing. • If the **Features** are not selected for viewing (highlighted in Blue) select them by Right mouse clicking over them and clicking **Select All** in the pop up box. • Click **Apply** and **Close**.



Verify all the Features are highlighted in Blue. This indicates they are selected for viewing.

Figure L17-19 View Features

58.	In MicroStation, click the **Fit View** button.
59.	Verify your view matches that shown in *Figure L17-20*.

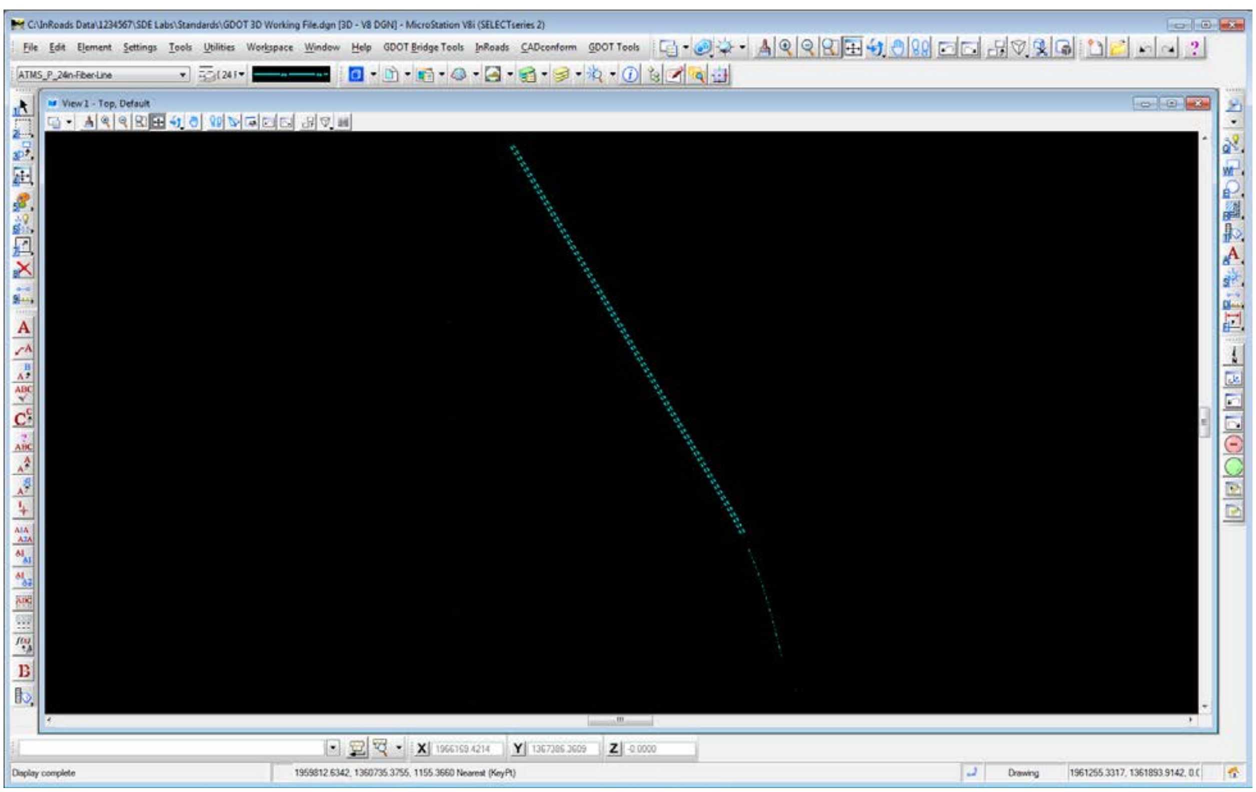


Figure L17-20 MicroStation Window

60.	**Create the 1234567_UTLE.dgn file.** • In Microstation, Select **File ▶ Compress ▶ Design**. This reduces the file size of the Microstation file. • In Microstation, Select **File ▶ Save As.** The **Save As** dialog opens.
61.	In the **Save As** dialog, navigate to **C:\InRoads Data\1234567\SDE Labs\Lab 17**
62.	• In the **File Name:** entry field key in **1234567_UTLE.dgn** • In the **Save as type:** pull-down select **MicroStation V8 DGN Files (*.dgn)**
63.	Verify your entry matches that shown in *Figure L17-21* and click **Save**.

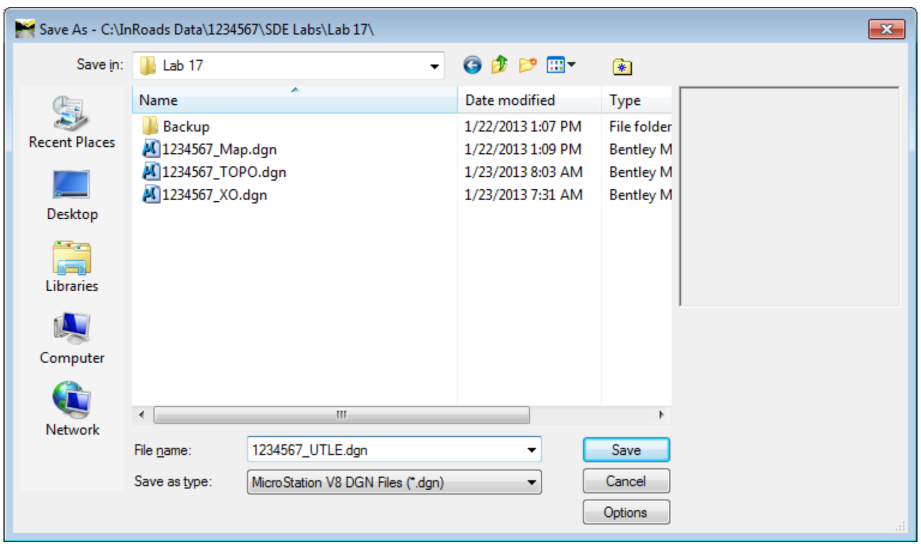


Figure L17-21 Save As

64.	**For Information Only:** When the **Save As** command is used to save the **'GDOT 3D Working File.dgn'** as **1234567_UTLE.dgn** (or any other file name) you are no longer in the 'GDOT 3D Working File.dgn' you are in the **1234567_UTLE.dgn**. It is very important to be aware of this so you don't continue using the file for viewing operations. It is important to reopen the 'GDOT 3D Working File.dgn' workspace to continue working. The user may determine which file is open by looking at the title bar as shown in *Figure L17-22*. The Title Bar is across the top of the MicroStation Window that contains path and file information.

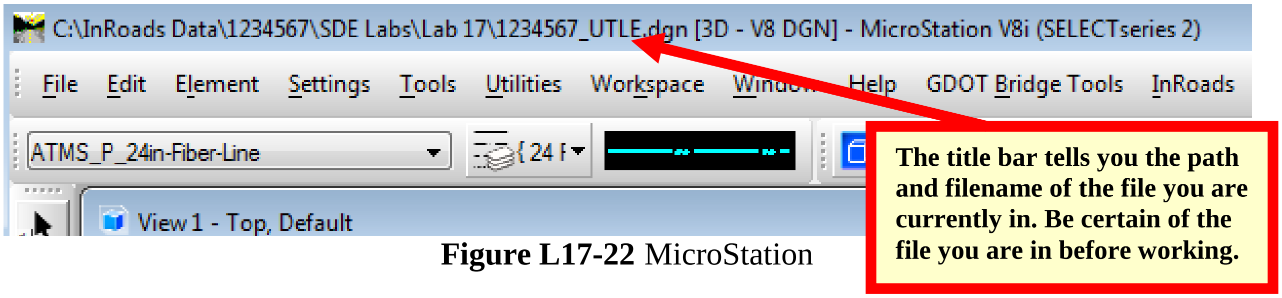
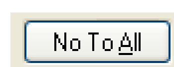


Figure L17-22 MicroStation

65.	**For Information Only:** You have now completed creating the **1234567_UTLE.dgn** file. The **1234567_UTLE.dgn** file at this point is considered the original **1234567_UTLE.dgn** file. Survey enhancements picked up during the life of the project shall be included in this file following the steps described in **Labs 17B** and **17D**.
66.	The **1234567_UTLE.dgn** is now complete and ready to be provided to the designer. When all associated DGN files are ready, the **SDE** is instructed to contact the **Engineering Management / Operations Manager** and make copies available on **SDEcommon.** The **Engineering Management / Operations Manager** will keep all orignal copies and inform the designer where they may be acquired. The **SDE** is also instructed to obtain original copies from the **Engineering Management / Operations Manager** whenever enhancements are to be performed during the life of the project.
67.	You may now **Exit** MicroStation and InRoads. To **CLOSE** MicroStation and InRoads - Select **File**▶**Exit** from the [MicroStation Menu]. If any messages appear regarding the saving of projects – Select  *This closes BOTH the MicroStation and InRoads Software(s).*
68.	 This concludes Lab 17 and the Survey Processing Tutorials.