

LAB 9 - Horizontal Alignments from Cogo Points

This lab will expand on previous training to create alignments by chaining Cogo points together. This methodology, commonly referred to as the “PI Method” and will utilize the *Geometry > Horizontal Curve Set* tools.

Chapter Objectives:

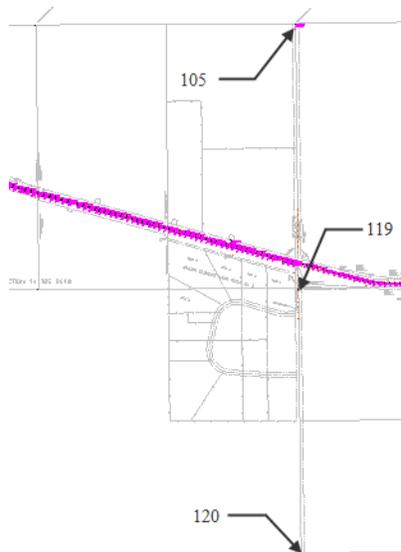
- Become more familiar with the Geometry Point Snap Lock
- Create an alignment using Cogo points

Lab 9.1 - Generate Alignment using Cogo points

1. **Open** the MicroStation design file
C:\Projects\12345\ROW_Survey\Drawings\Reference_Files\12345ROW_Model.dgn
2. **Open** the Geometry Project
C:\Projects\12345\ROW_Survey\InRoads\Geometry\12345_ROW.alg that was created in the earlier lab.
3. From the Geometry Workspace pane <R> on the Geometry Project name *12345_ROW* and select **Set Active** from the fly-out menu.

Connect the 3 Cogo points 120, 119, and 105 established along the west line of Section 13 to form an alignment that represents the center line of County Road 303. Once established, this alignment can be used for establishing the right of way limits for said road.

4. Set the MicroStation View to show the subject area.



5. <D> **Geometry Point Snap Lock ON.**

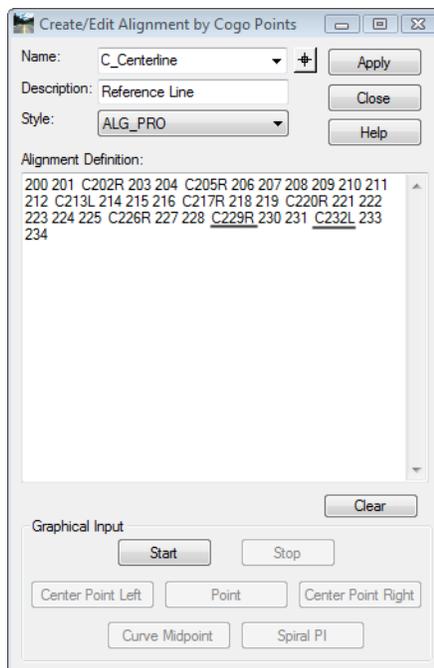
6. From the pull down menu select **Geometry > Utilities > Create/Edit Alignment by Cogo Points**. A warning message may appear which indicates that the active alignment may have illegal (unassigned) point names.



Recall that the alignment C_Centerline was created with unnamed geometry points (you can verify this with Geometry > Review Horizontal). In a previous exercise the alignment points were written to the Cogo buffer. Doing so created Cogo points for the alignment vertices but did not associate the created Cogo points back to the alignment. You are presented with two options:

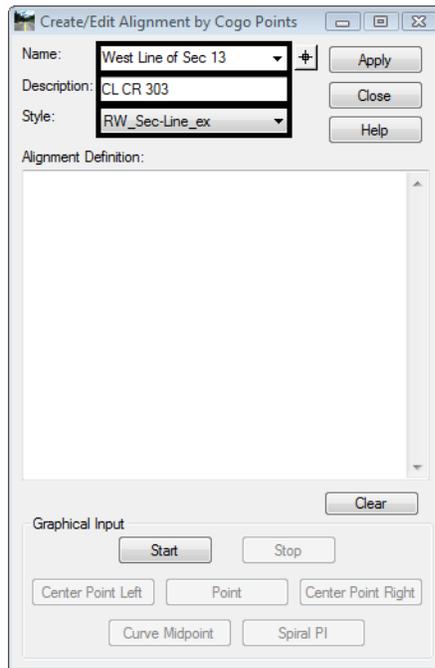
- ◆ Selecting **No**: The identified alignment continues to exist using unnamed geometry points, which is OK and the Create/Edit Alignment by Cogo Points dialog will open.
- ◆ Selecting **Yes**: InRoads will associate the Cogo points created back to the alignment vertices. Either solution is OK, ultimately it is at your discretion which to choose.

7. <D> the **Yes** button. The **Create/Edit Alignment by Cogo Points** dialog will open.



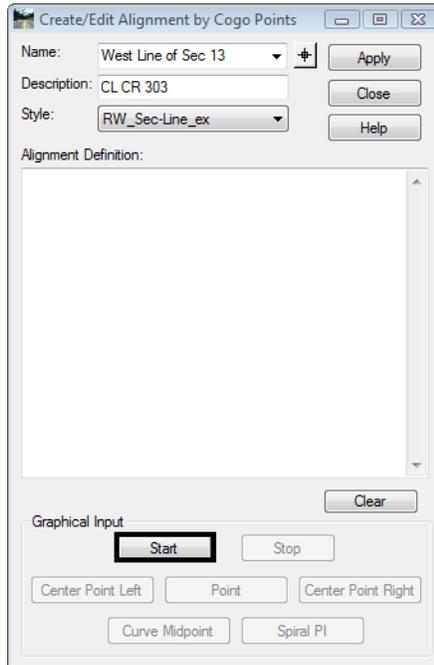
Note: The alignment C_Centerline is defined as having Cogo point numbers assigned at its vertices. The letter C indicates the Cogo point identified is the Center of a curve. The letters R or L indicate the curve direction (Right or Left).

8. In the Name field key-in **West Line of Sec 13** and then the <Tab> key. The dialog will clear and allow the creation of a new alignment
9. In the Description field key-in CL CR 303 and then the Tab key.
10. From the Style drop down list select RW_Sec-Line_ex



Note: In this instance CL CR stands for Center Line of County Road 303. Do not confuse the L and R used in the description with the L and R used to indicate the curve direction, as described on the previous page.

11. <D> the **Start** button the dialog will collapse and you are prompted to Identify Point.



12. <D> near the points on the screen starting on the south end. Continue to graphically select points to define the alignment. Graphics will display showing the alignment location. By default, the alignment will pass through the existing geometry points nearest the data point because the geometry point snap is enabled.
13. <R> when finished selecting points graphically, the *Create/Edit Alignment by Cogo Points* dialog will redisplay.

14. <D> Stop button the *Create/Edit Alignment by Cogo Points* dialog will show the selected points in the Alignment Definition.

The screenshot shows the 'Create/Edit Alignment by Cogo Points' dialog box. The 'Name' field is set to 'West Line of Sec 13', the 'Description' is 'CL CR 303', and the 'Style' is 'RW_Sec-Line_ex'. The 'Alignment Definition' text area contains the text '120 1855 105'. Below this, there is a 'Clear' button. The 'Graphical Input' section contains several buttons: 'Start', 'Stop', 'Center Point Left', 'Point', 'Center Point Right', 'Curve Midpoint', and 'Spiral PI'.

Note: Cogo points can be deleted, inserted, cleared, or edited directly in the Alignment definition section of the Create/Edit Alignment by Cogo Points dialog. If desired, the entire definition can be input through the use of the keyboard. If any points were selected by mistake, they can be edited. Using the cursor and keyboard, simply replace the accidental input(s).

15. In the *Alignment Definition* area key-in **119** for the second point.

The screenshot shows the 'Create/Edit Alignment by Cogo Points' dialog box. The 'Name' field is set to 'West Line of Sec 13', the 'Description' is 'CL CR 303', and the 'Style' is 'RW_Sec-Line_ex'. The 'Alignment Definition' text area contains the text '120 119 105', with '119' highlighted. Below this, there is a 'Clear' button. The 'Graphical Input' section contains several buttons: 'Start', 'Stop', 'Center Point Left', 'Point', 'Center Point Right', 'Curve Midpoint', and 'Spiral PI'.

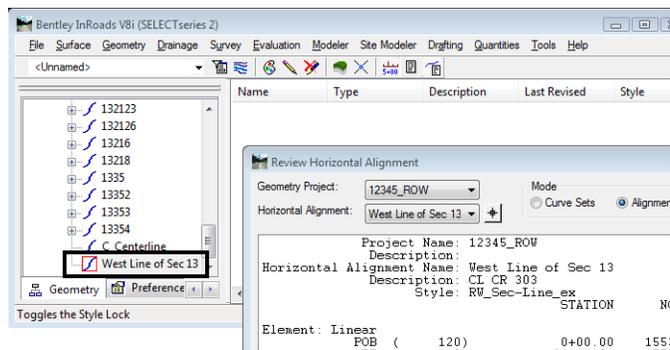
16. <D> **Apply** the horizontal alignment is created and displayed.

Note:

- ◆ Alignments are direction based. If the above workflow was followed, the created alignment runs South to North. This becomes important when offsetting the alignment to either the left or right (left is input as a negative number)
- ◆ Alignment direction can be ascertained by: reviewing the alignment, by tracking, or by displaying stationing
- ◆ Alignment direction can be 'reversed' by using the Geometry > Transpose command
- ◆ Alignments created by chaining Cogo points can be edited using the Geometry > Horizontal Curve Set tools

17. In the InRoads explorer pane, verify the alignment was created

18. <R> the alignment name *West Line of Sec 13* from the pop up menu <D> Review



19. <R> the Geometry Project name **12345_ROW** from the pop up menu <D> Save