LAB 18 - Horizontal Regression Analysis

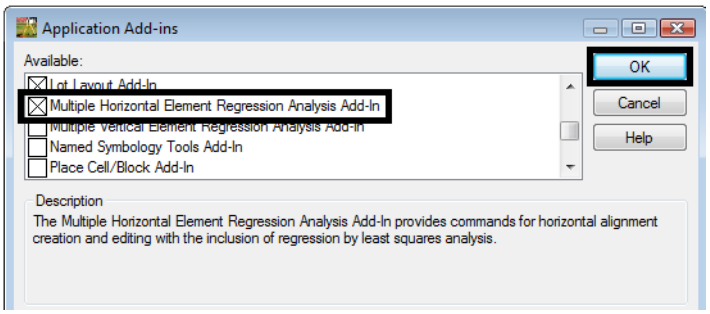
Regression analysis can be used to facilitate the development of horizontal alignments by creating a 'best-fit' alignment through defined points.

Chapter Objectives:

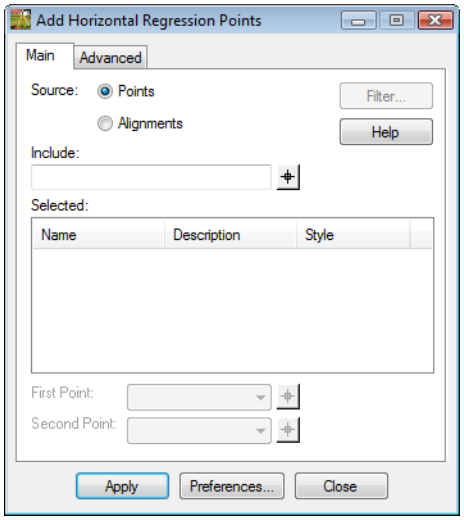
- Setup horizontal regression analysis project parameters

Regression analysis setup.

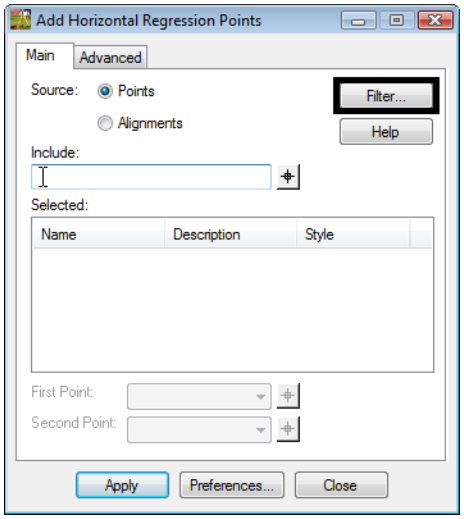
1. Create a horizontal alignment to store the results in.
2. Select **Tools > Application Add-ins** to enable the command.



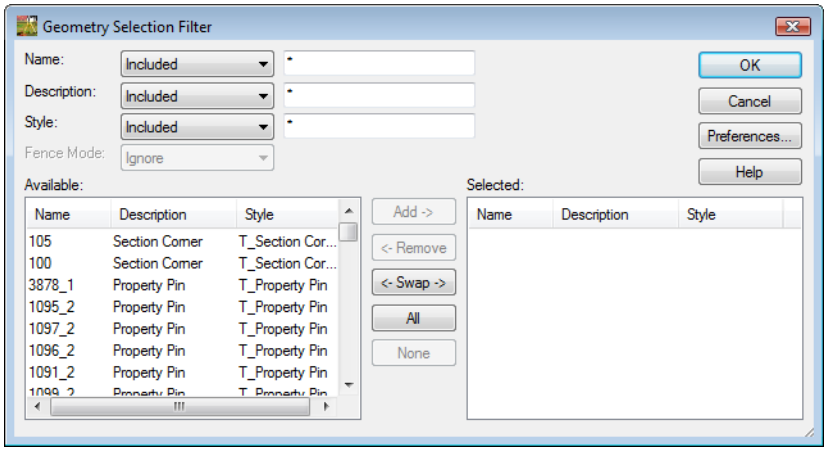
3. Select **Geometry > Horizontal Regression > Add Regression Point** The **Add Horizontal Regression Points** dialog will appear.



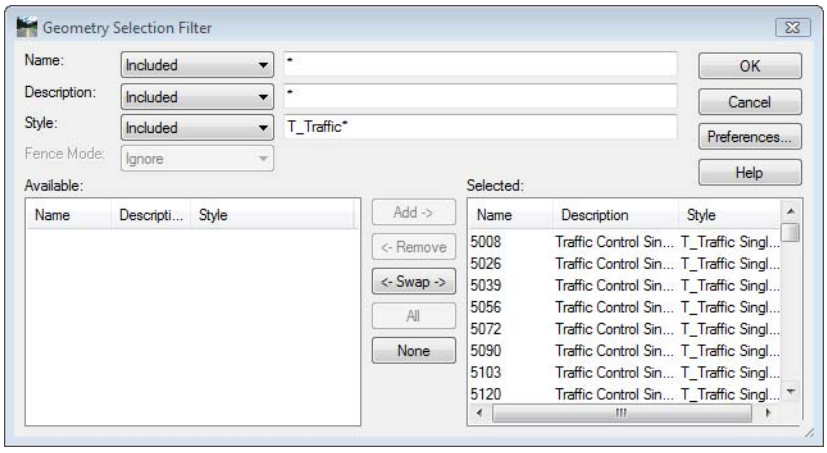
4. **<D>** in the ***Include*** field so the **Filter** button becomes activated.



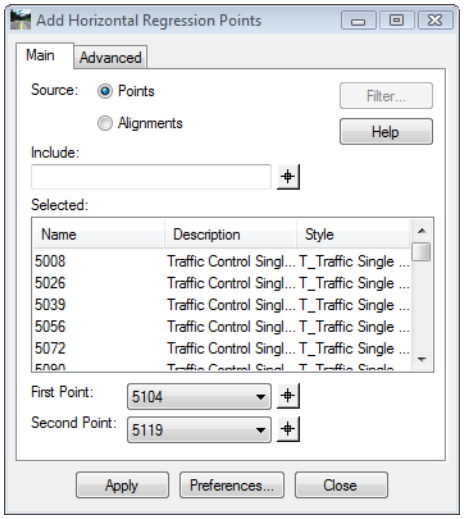
5. **<D>** the **Filter** button. The ***Geometry Selection Filter*** dialog will appear.



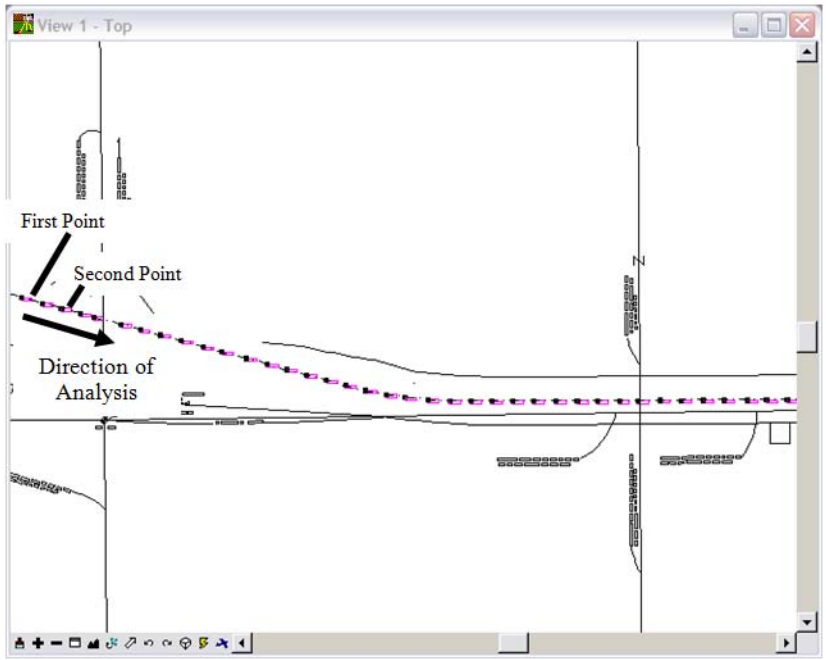
6. Create a selection of centerline points to be used for analysis.



7. **<D>** the **OK** button in the ***Geometry Selection Filter*** dialog.



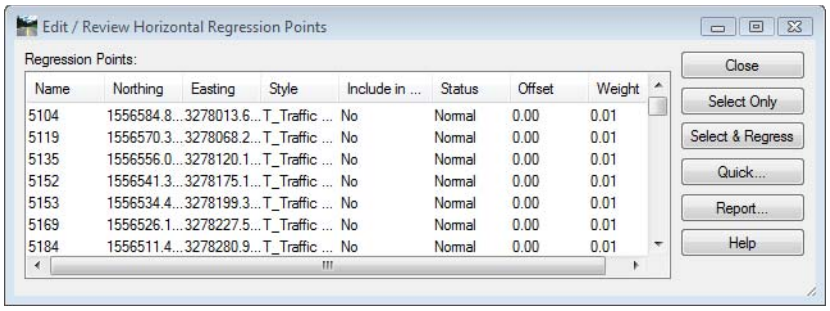
8. **<D>** the **selection** button. Use the combination box or graphically define the first and second points to define initial point and direction for evaluation.



9. **<D>** the first point in the MicroStation view and **<D>** second point in the view to define the ***direction of the analysis***.

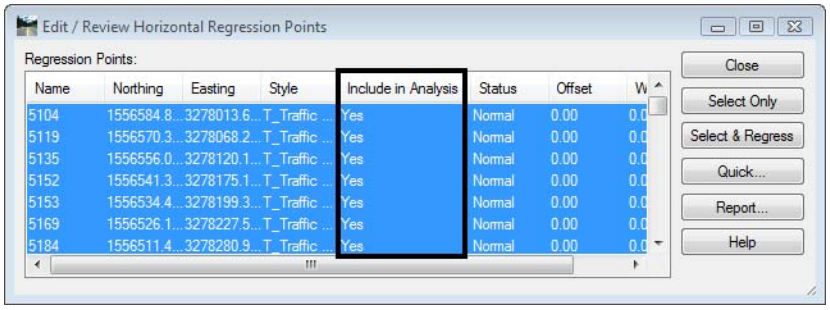
10. **<D>** the **Apply** & **Close** buttons.

11. Select **Geometry > Horizontal Regression > Edit/Review Regression Points**. The **Edit / Review Horizontal Regression Points** dialog will appear.



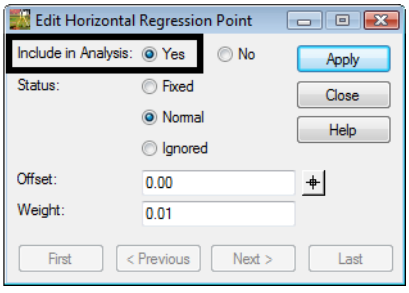
12. Refine the selection of points to be used for analysis by using the Ctrl and Shift keys or using the Select button to define a selection area. Alternatively a fence can be placed around the points to be included in the regression. If a fence is used, a **<Shift> <D>** on the ***Select Only*** button will include fenced points in the regression analysis.

    Note: Additional information can be access by selecting the Help button found in all dialogs.



13. **<R>** on points and select **Edit** from the fly-out menu to edit. The **Edit Horizontal Regression Point** dialog will appear.

14. **<D>** the radio button **Yes** to **Include in Analysis**.

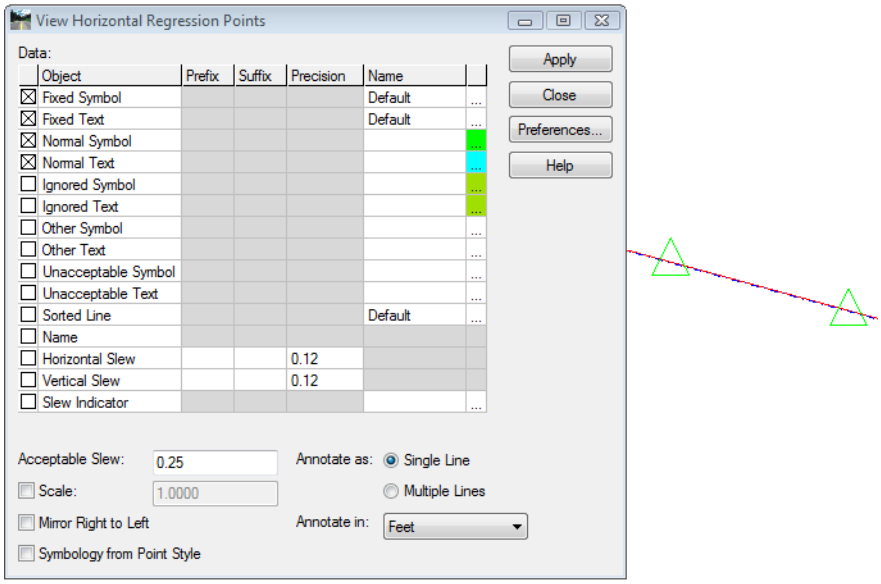


15. **<D> Apply** to effect any changes then **Close**.

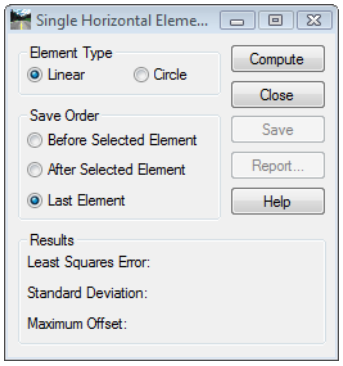
    Note: The Offset value show above regresses through a point at the defined offset from the selected point. To define a regression bandwidth, select the Quick button on the Edit/Review dialog. Tolerance defines only points that are offset less than or equal to the tolerance defined.

16. Select **Geometry > Horizontal Regression > Single Element Regression Analysis** The **Single Horizontal Element** dialog will appear.

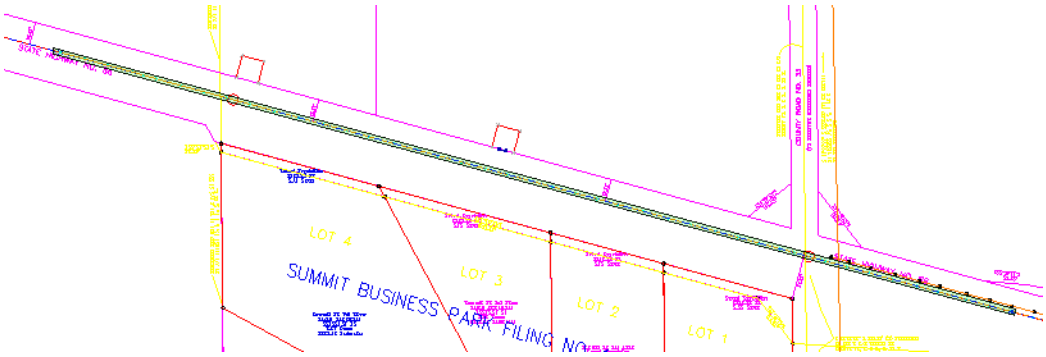
17. Select **Geometry > Horizontal Regression > View Regression Point** to display symbology for the selected points.



18. Select **Element Type:** ***Linear or Circle***

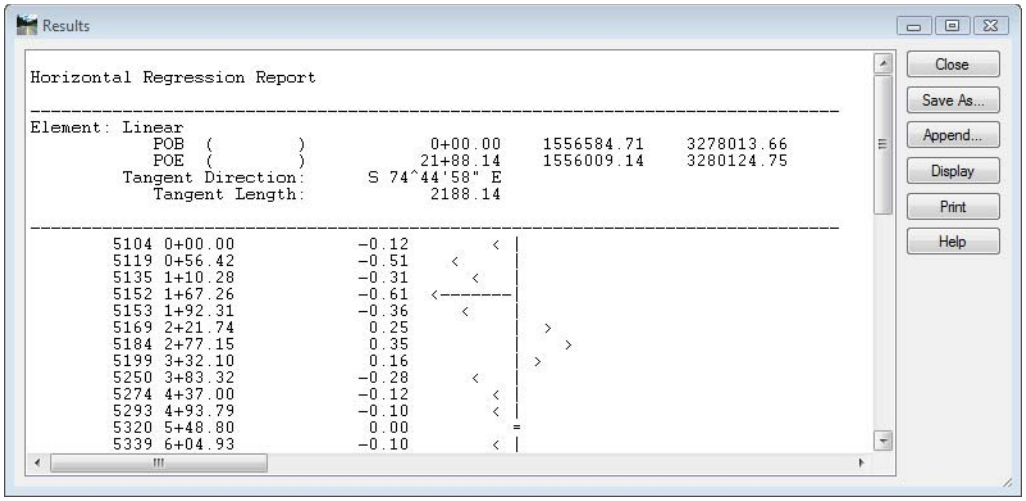


19. **<D> Compute** to view the results in the MicroStation view.

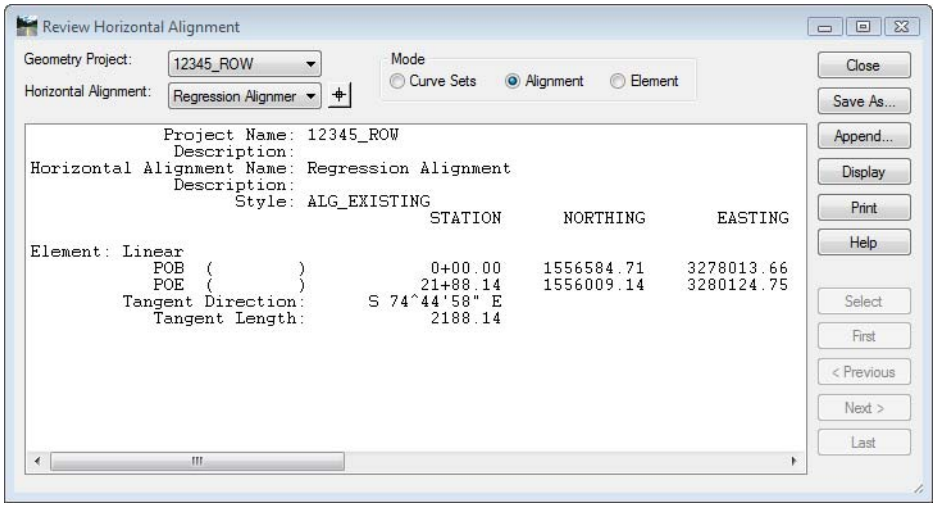


20. **<D> Save** to create the alignment element.

21. **<D>** the **Report** button to view a summary.



22. Review the results.



Note: Additional curves and tangents would have to be regressed to complete the alignment. Once created, regressed elements could be managed using the advanced geometry Horizontal Element commands.