

LAB 7 - Place Guardrail Lines

In this exercise, you'll place guardrail lines in the design model file and then work with the custom line styles.

Chapter Objectives:

After completing this exercise you will know how to:

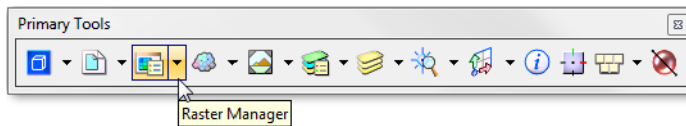
- ◆ Use the CDOT Menu to place custom lines styles
- ◆ Change the direction of a directional line style
- ◆ Change the elevation of an element after placement
- ◆ Change the level on which an element was placed
- ◆ Update graphics to *ByLevel Symbology*

Lab 7.1 - Open the Design Model File

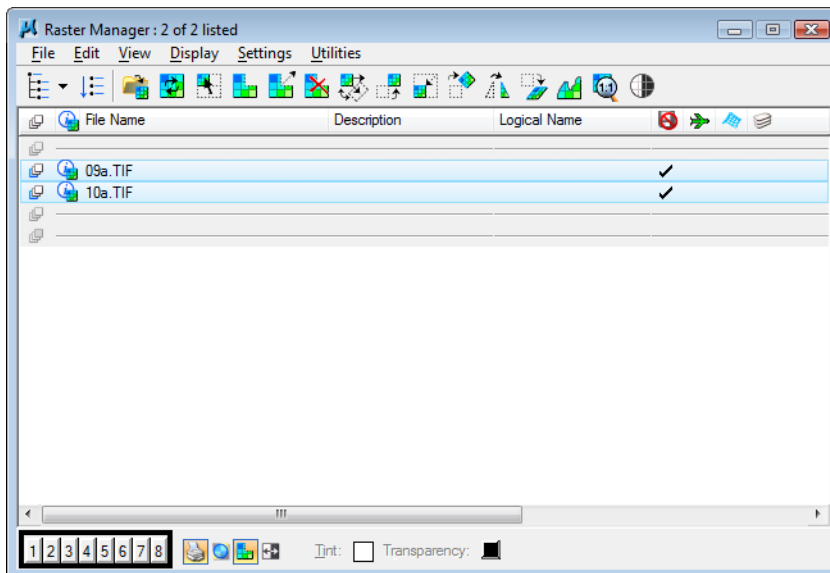
1. From the MicroStation Manager, open the **12345DES_Model.dgn** file from the **\Design\Drawings\Reference_Files** folder

Note that the aerial photo raster images are attached.

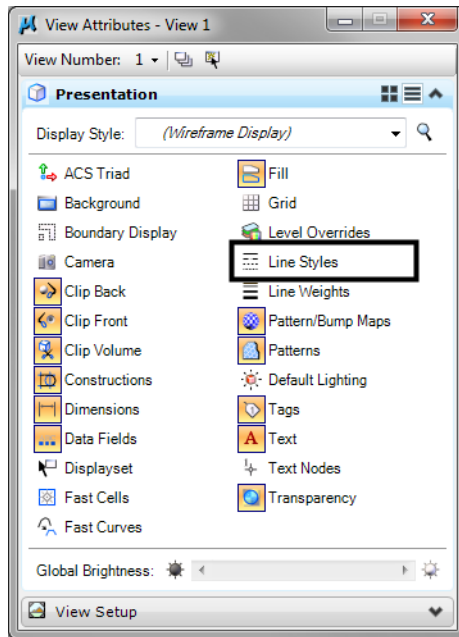
2. Select the **Raster Manager Icon** from the Primary toolbar, or you may select **File > Raster Manager**.



3. Select both raster images, **09a.tif** and **10a.tif**, and turn off their display in View 1.



4. Select the **View Attributes** icon from the view toolbar and toggle **Off Line Styles**



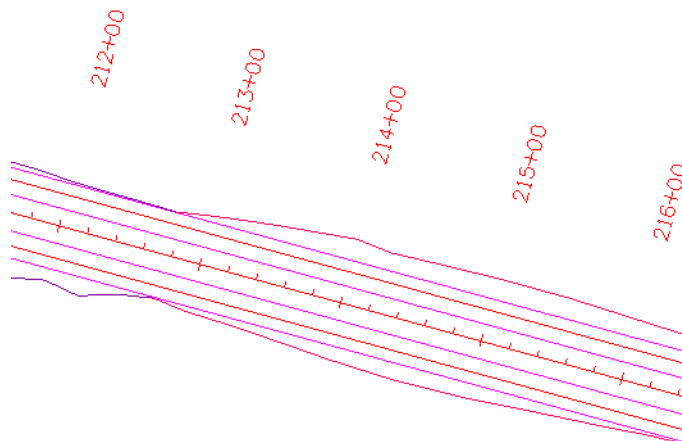
Lab 7.2 - Draw the Guardrail

Next, you'll follow the steps below to place guardrail along the fill area approaching the intersection.

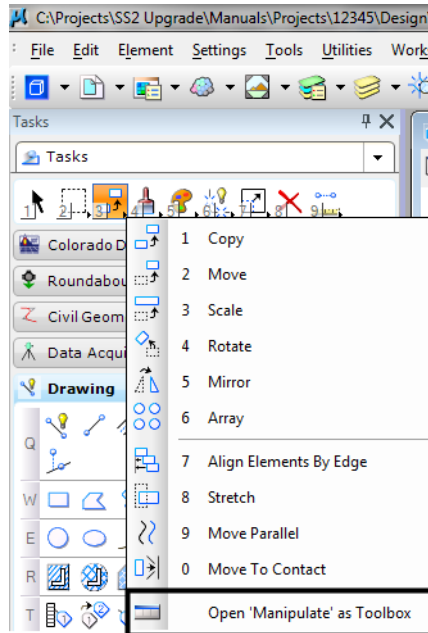
Create the guardrail trace lines

Create temporary lines using the **Move/Copy Parallel** command.

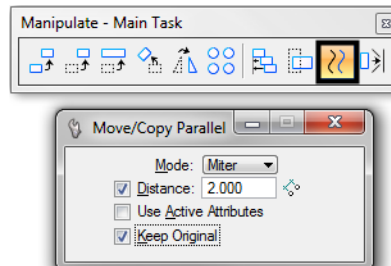
1. **Window** in to the area to the left of the intersection around station range 212+00 – 216+00 as shown.



- From the **Main** task toolbar, open **Manipulate** as a toolbar.

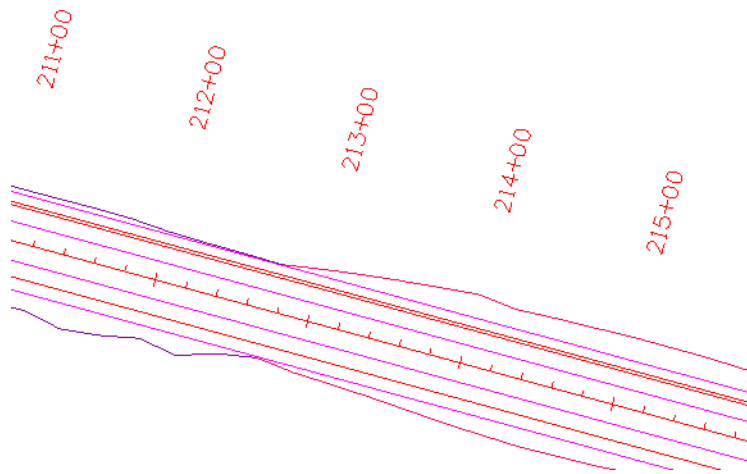


- Select the **Move Parallel** tool from the **Manipulate** toolbar.
- In the **Tool Settings** box:
 - ◆ Toggle on **Distance** and key in **2**.
 - ◆ Toggle on **Keep Original**.

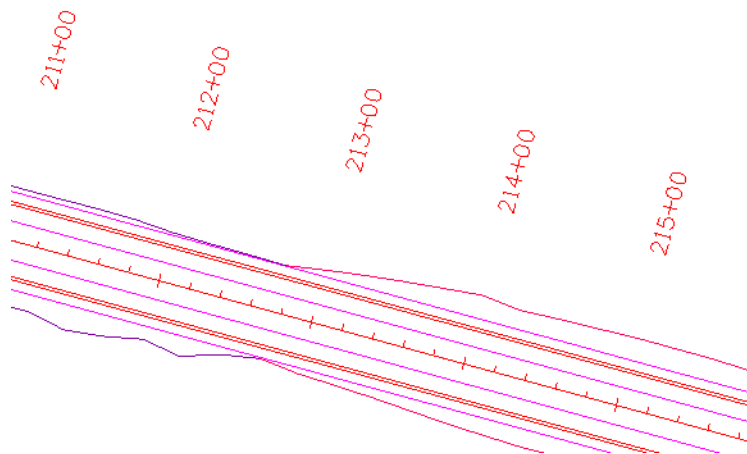


- <D> on the red Edge of Oil line on the upper (North) side of the road.
- Move your cursor up to establish the direction for the parallel copy.

7. <D> to copy the Edge of Oil line.



8. Repeat the above steps to create a guardrail trace line for the lower (South) side of the road. Be sure to parallel copy the Edge of Oil line.

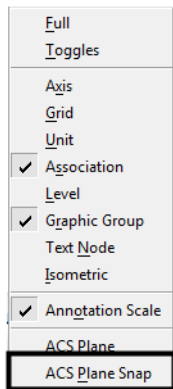


Trim the trace line for the extent of the guardrail

1. On the **CDOT Menu**, select **Drafting > Linework**.
2. Set the **Line Weight** category to 1.

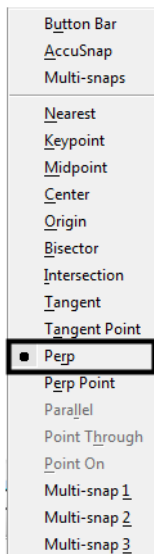
Note: This should automatically select the **Place SmartLine** tool.

3. On the Status bar, turn Off **ACS Depth Snap**.



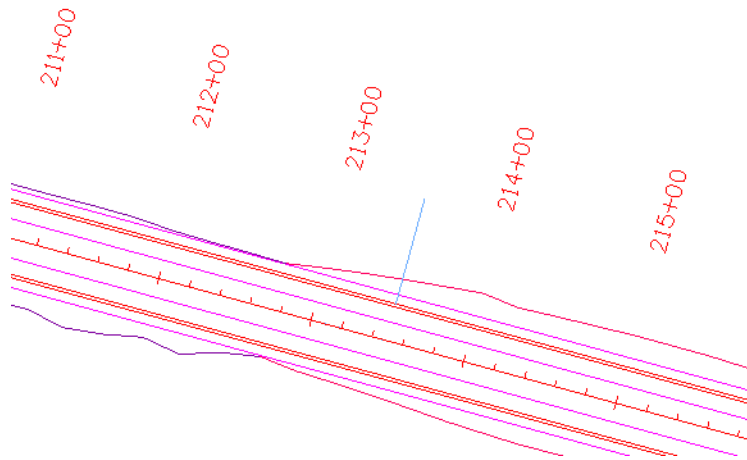
Note: Make sure that **ACS Depth Snap** lock does *not* have a check mark beside of it to ensure that it is off.

4. On the Status bar, set the active snap mode to **Perp**.

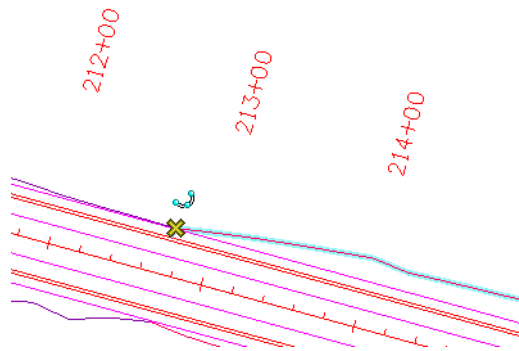


5. <D> on the guardrail trace line you just copied.

As you move your cursor, note how you can only place perpendicular to the trace line.

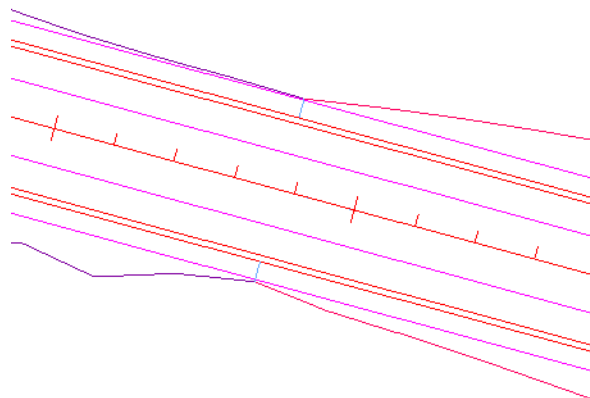


6. **AccuSnap** on the endpoint of the Toe of Fill line as shown to draw the perpendicular line.

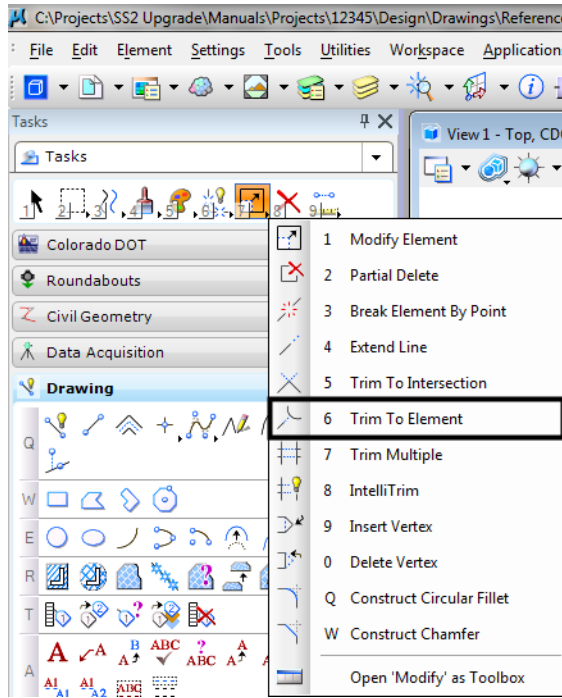


This will serve as the cutting element for the trace line. The guardrail starts at the beginning of the toe of fill line.

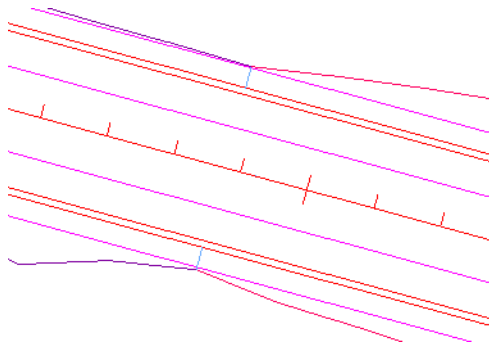
7. <R> when done.
8. Repeat the above steps to create a trim line for the other side of the road and be sure to **AccuSnap** to the end of the toe of fill line.



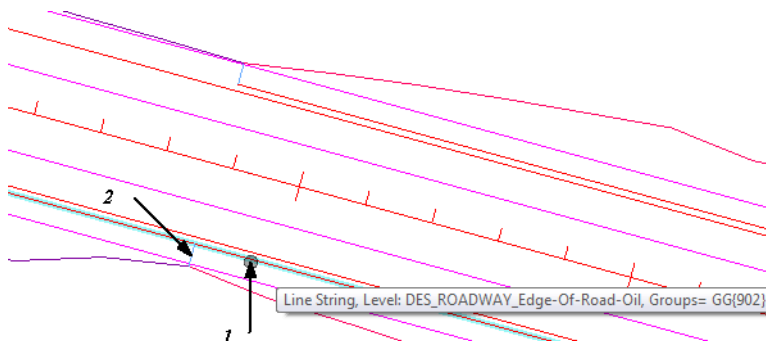
9. Select the **Trim To Element** command.



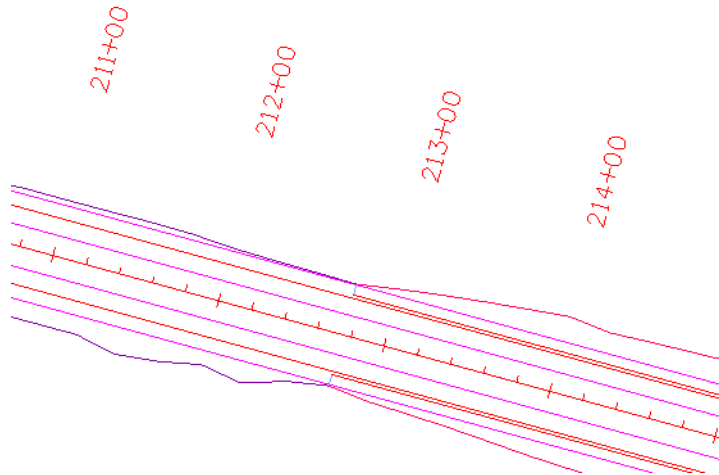
10. <D> on the trace line on the side of the element to keep, to the right of the perpendicular line.
11. <D> on the perpendicular line to trim the trace element to this point.



<D> to accept.



12. **Update** your view, if necessary.
13. Repeat to trim the lower side as shown.



14. Delete the blue perpendicular trim lines.

Check the ACS Plane Snap lock

1. <T> on the left end of the upper trace line.

3278437.039, 1556493.963, 6629.277 Nearest (KeyPt)

Note that the trace lines were copied at the same elevation as the edge of oil lines. When you place the guardrail lines, you want to place them at an elevation of 0.

Note: If you want the guardrail lines to pick up the correct elevations of the roadway surface, you can drape them with InRoads.

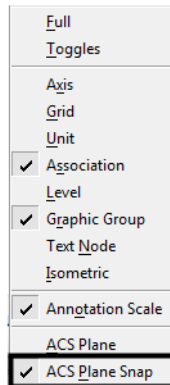
2. Key in **az=0**
3. <D> anywhere in the view to set the active depth.

View 1: Active Depth=0.000

Note: The CDOT default active depth is set to 0.

4. Select the **Locks** button from the **Status** bar.

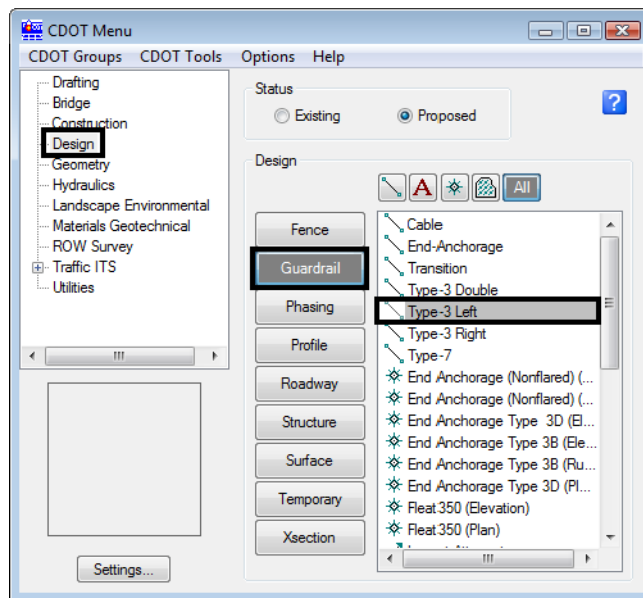
- Turn **ACS Plane Snap** lock On.



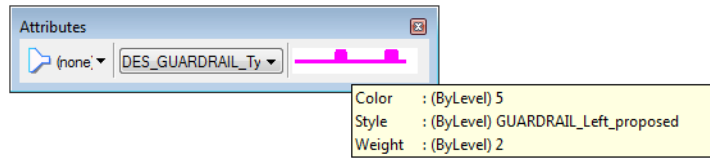
With **ACS Plane Snap** lock turned on, you will place elements at the active depth instead of picking up the elevation of elements you snap on.

Place the guardrail lines

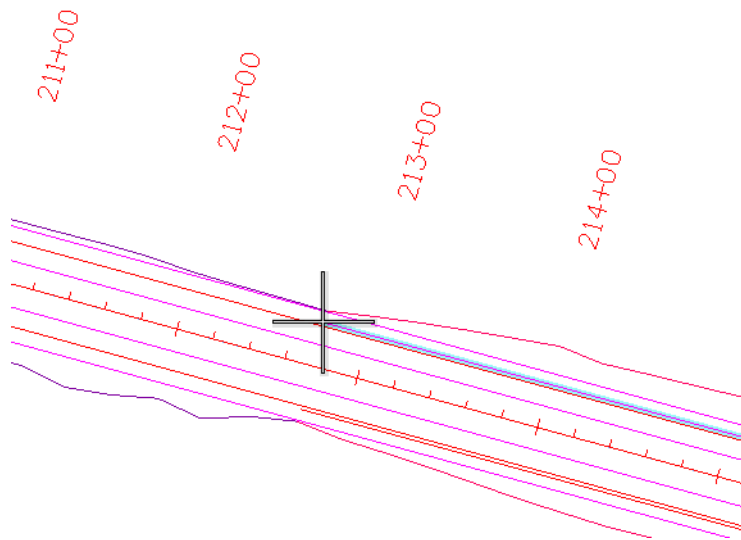
- On the CDOT Menu, select **Design** from the *Explorer Window*.
- Set the **Category** to **Guardrail** and select the item **Type 3 left**.



Note: This *automatically* sets the active level to **DES_GUARDRAIL_Type-3_Left** with all **ByLevel** settings (color, style and weight), and *automatically* selects the **Place SmartLine** command. Note that the ByLevel style is a directional custom line style called GUARDRAIL_Left_Proposed.



3. <T> on the left endpoint of the upper trace line as shown.

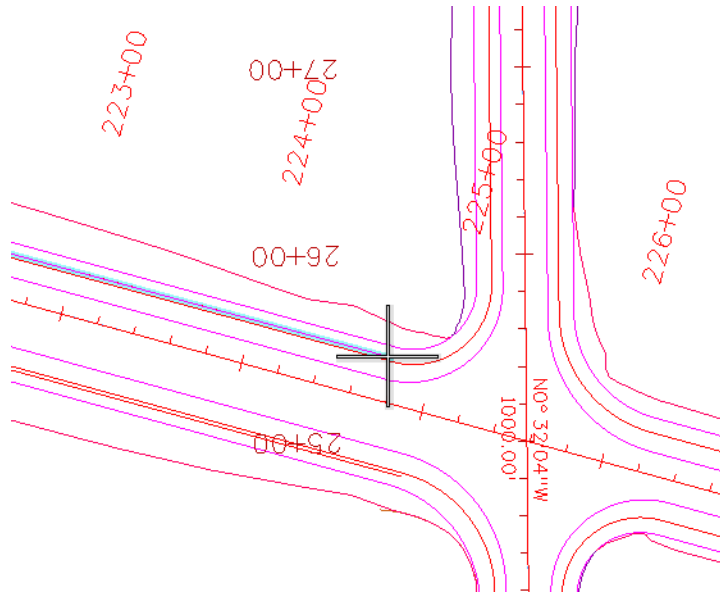


Check the message field. Note that with **ACS Plane Snap** lock on, you're placing the line at a Z value of 0 instead of the elevation of the line's endpoint.

4. <D> to accept.
5. **Pan** or **Zoom** to locate the other endpoint of the trace line near the intersection.

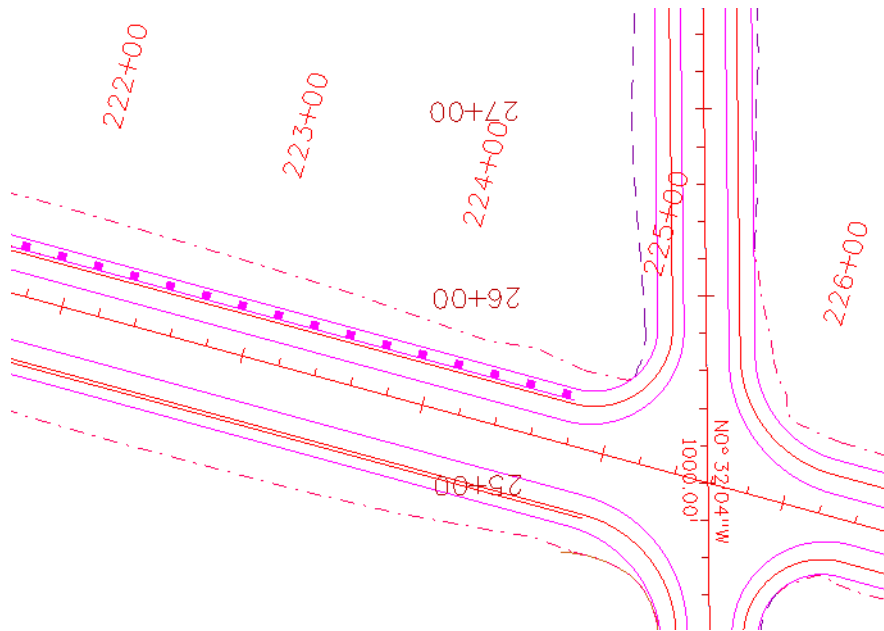
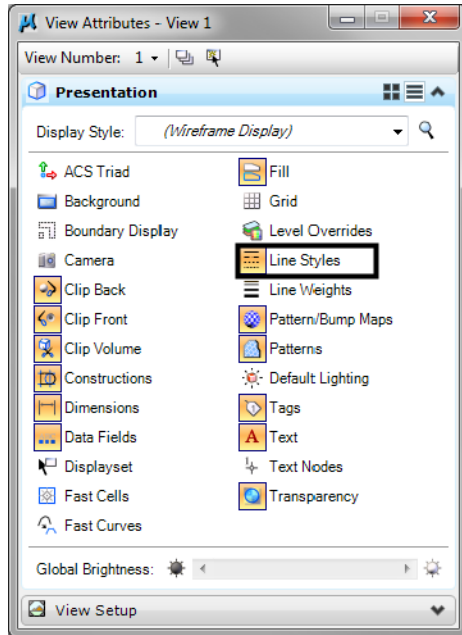
Note: Remember when using View Controls in the middle of a drawing command, reset <R> once to get back to the command.

6. Snap (<T>, then <D>) on the right endpoint as shown.



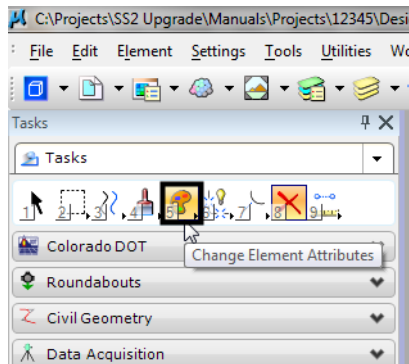
7. <R> when done.

8. Select **Settings > View Attributes** and toggle on **Line Styles**.

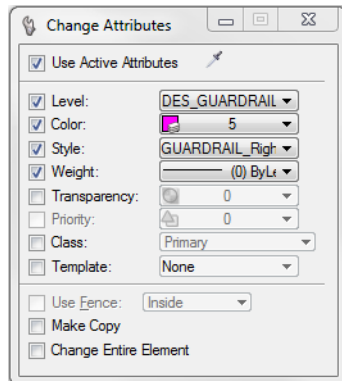


9. On the CDOT Menu select **Guardrail Type-3 Right**.

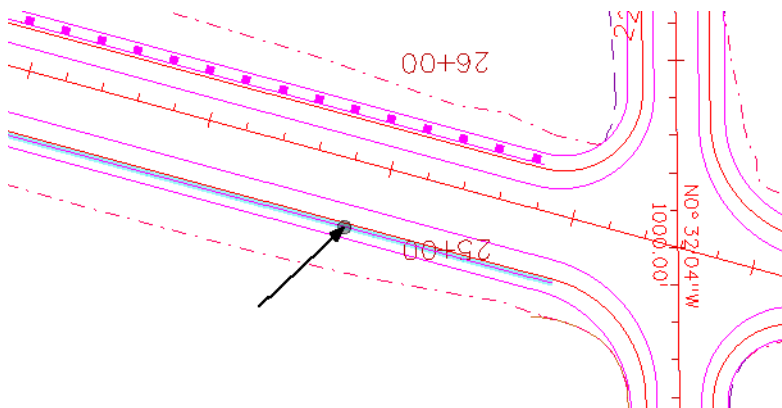
10. For the South side of the road we will use a different method. Select the **Change Element Attributes** from the Main task toolbar.



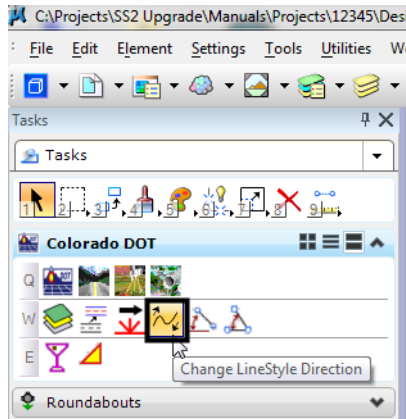
11. From the Tool Settings window toggle on Use Active Attributes, as well as Level, Color, Style, and Weight, this will use the correct guardrail line as selected from the CDOT menu.



12. Select the South guardrail line.

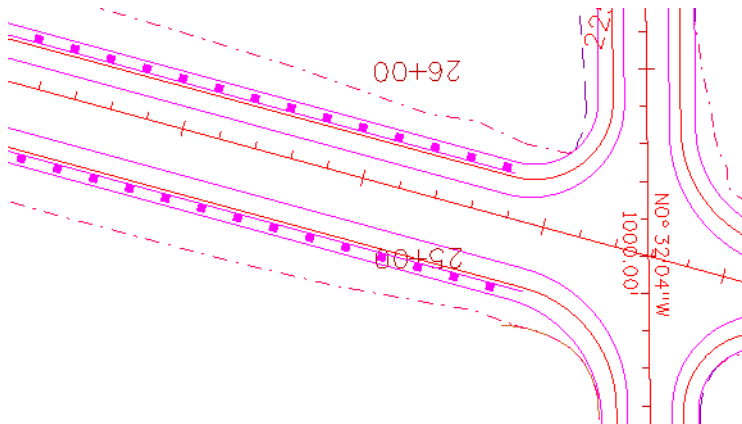


Note: We have changed the attributes of the trace line to be the new guardrail line. Some custom line styles, like these, depend on the direction they are drawn. If the new guardrail line is placed in the wrong direction (the posts should be on the outside), select the **Change Direction** tool from the **Misc. Tools** task toolbar in the Colorado DOT task tab.



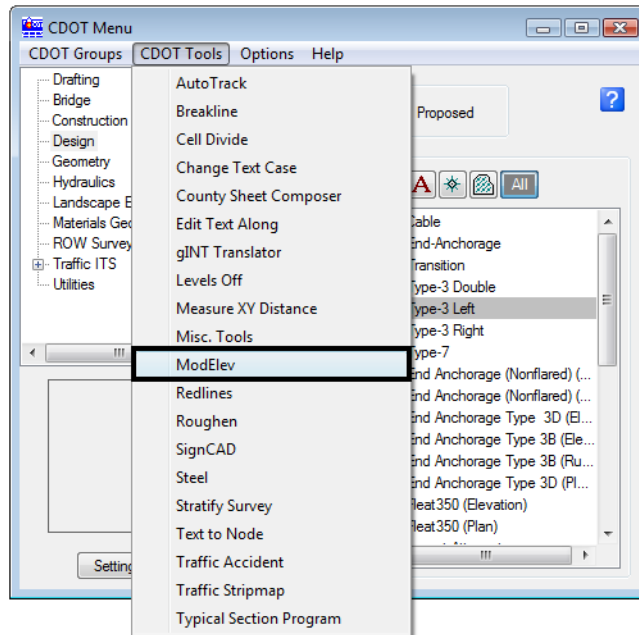
Note: The **Misc. Tools** toolbar was created for CDOT using handy tools from within MicroStation.

13. Select the South guardrail line.

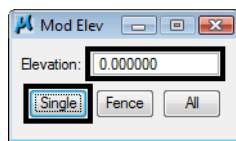


Note: Since we simply changed the attributes of the line we offset, it remains at its original elevation. We must now change the elevation of the new element to 0.

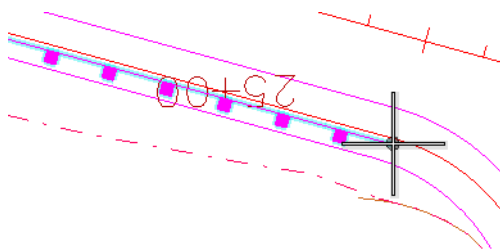
14. From the CDOT Menu, select **CDOT Tools > ModElev**.



15. From the Tool Settings window, type an elevation of **0** and select **Single**.



16. Select **<D>** the new guardrail line.
17. The elevation has been changed to 0. To check, snap **<T>** to the endpoint of the line and notice the elevation in the status bar.



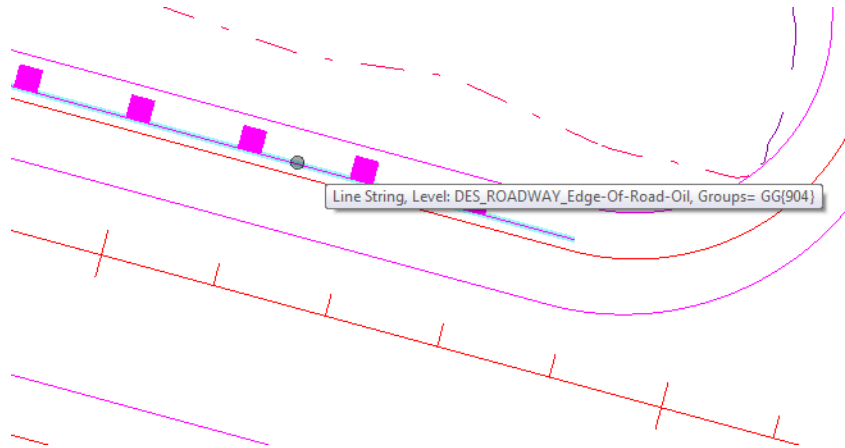
18. 3279601.980, 1556114.29 **0.000 KeyPt**
19. Turn **AccuSnap** back **On**.



Delete the North trace line

1. Select **Delete** from the **Main** task toolbar.
2. Hover over on the trace line with your mouse.

Note: Watch for the trace line (not the guardrail line) to highlight. If you see the guardrail posts highlighted, <R> until the trace line highlights (watch for pop-up information to show the line on level **DES_ROADWAY_Edge-of-Road-Oil**).



When using the **Delete** command, use the reset button to select coincident elements.

3. With the correct line highlighted, <D> to accept.

Lab 7.3 - Use Element Information to Change Levels

1. Select **Element > Information** or select this command from the **Primary** toolbar.



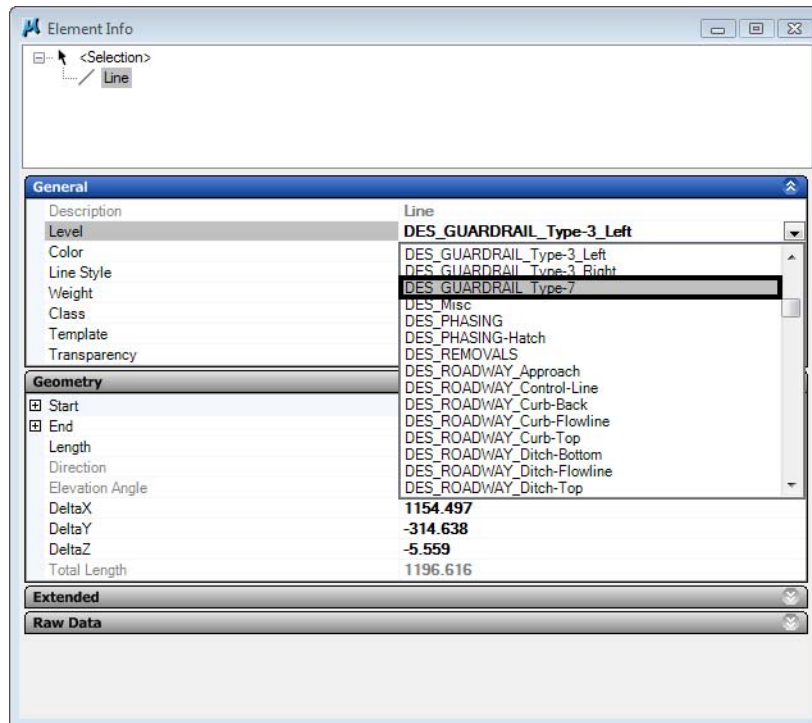
2. <D> on the upper **Type 3** guardrail lines you've just placed.
3. Read the basic element information in the **Message** field.

Line, Level: DES_GUARDRAIL_Type-3_Left

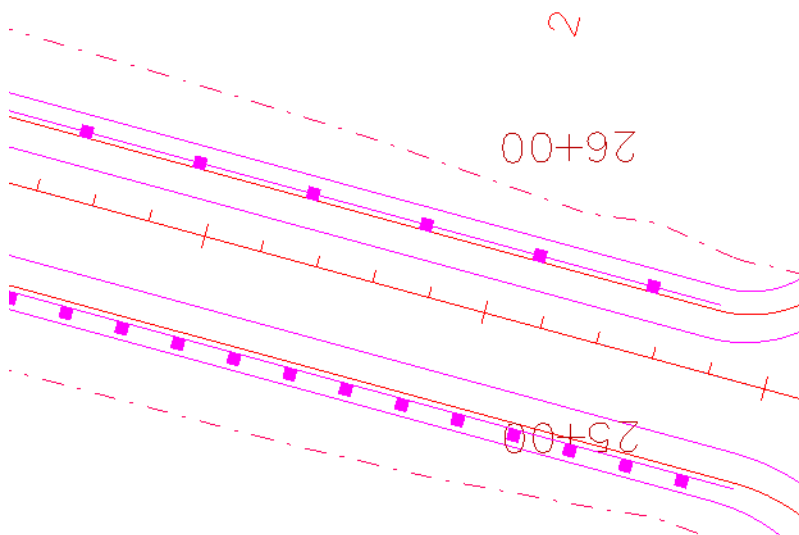
This is the same as the pop-up information provided when you “hover” over an element with your cursor.

4. In the **General** section of the **Element Information** box review the element attributes and properties.

- Set the Level to `DES_GUARDRAIL_Type_7`.



The element is moved to the `DES_GUARDRAIL_Type_7` level and the graphics update.

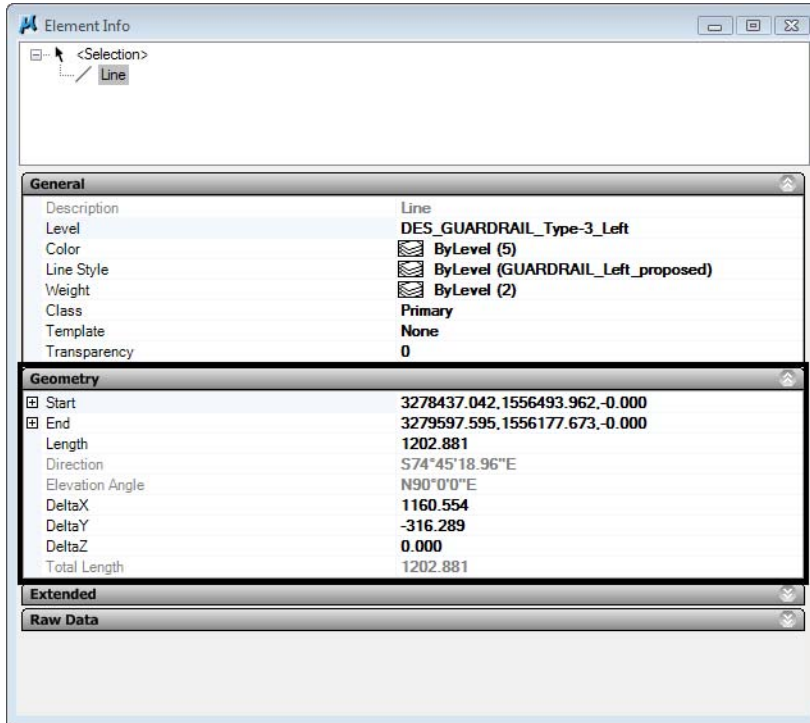


Note: *Element Information* is one way to change element attributes or properties if the element was originally placed incorrectly.

- Select the Element Information command again and change the Level back to `DES_GUARDRAIL_Type-3_Left`.

7. Select the **Geometry** section to review the element geometry.

Start	3278437.042,1556493.962,-0.000
End	3279597.595,1556177.673,-0.000
Length	1202.881
Direction	S74°45'18.96"E



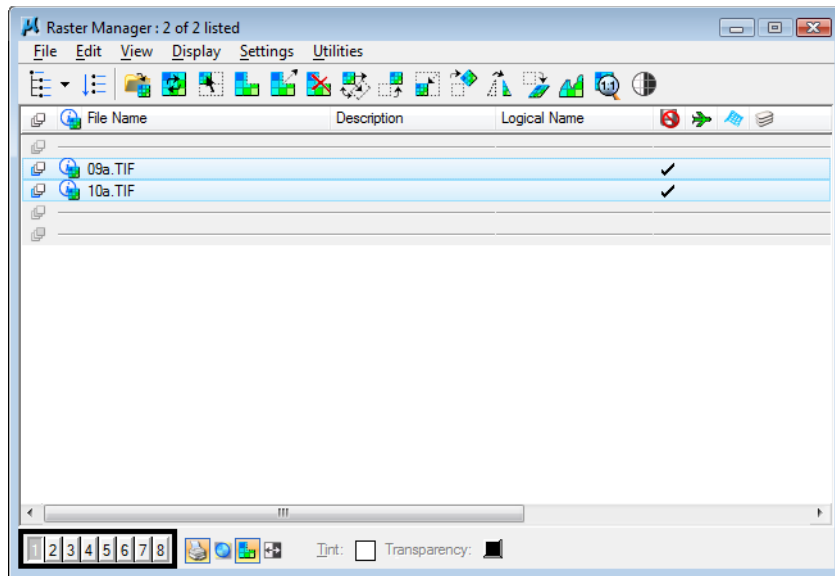
Note: The element was placed at the CDOT default active depth of 0 in the 3D file.

8. Close the Element Information dialog box when done.

Lab 7.4 - Turn Rasters Back On

1. Fit the view.

2. Select the **Raster Manager** icon from the **Primary Toolbar** and turn both raster files back on in View 1.



3. **Fit** your view if you don't see the raster images.
4. Select **File > Save Settings**.

