LAB 14 - Create a 40-scale plan sheet

The CDOT default scale for plan sheets is 100. This lab illustrates how to create a special 40-scale plan sheet for the intersection.

Chapter Objectives:

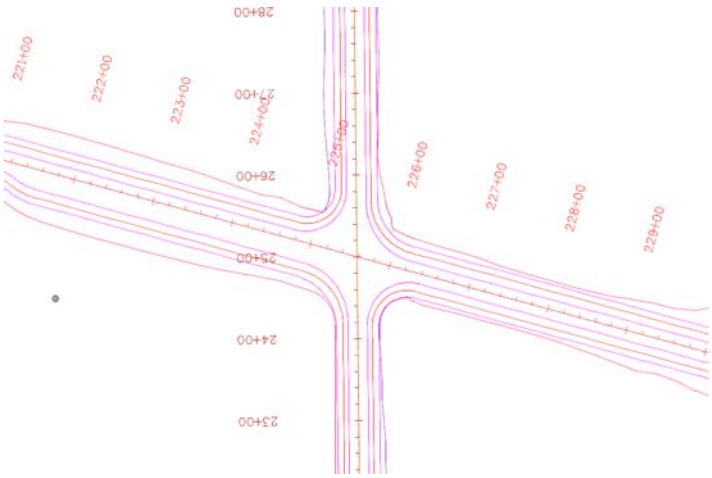
After completing this exercise you will know how to:

- Create a Plan sheet
- Scale the border for a 40-scale drawing
- Set the **Annotation Scale** to match the border and plot scale.

Lab 14.1 - Open the Model File

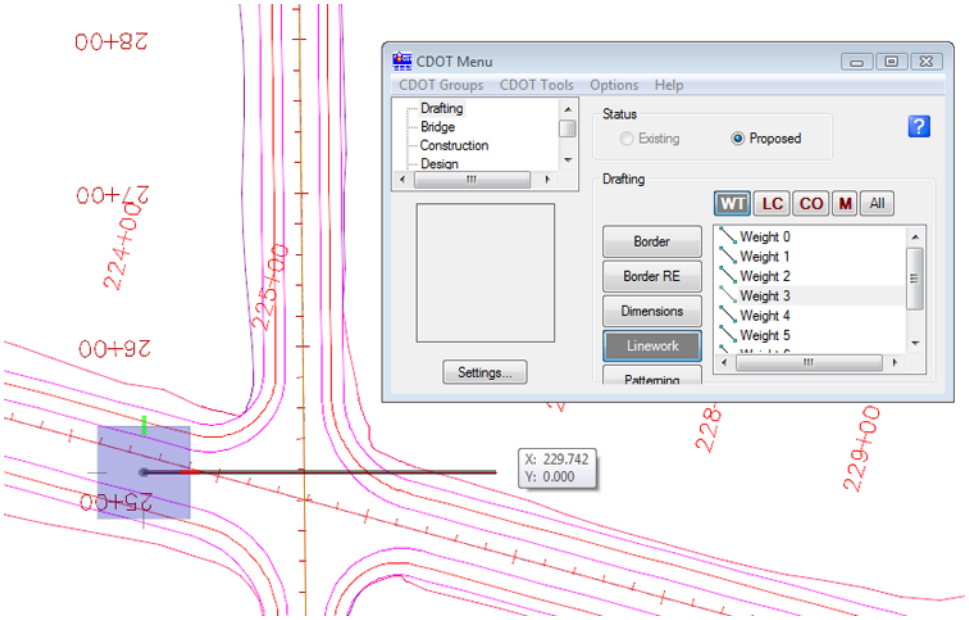
1. Start MicroStation and open **12345DES_Model.dgn** form the project's **\Design\Drawings\Reference_Files** folder.
2. Select **File > Raster Manager** and turn off the display of the raster files.
3. **Fit** the view.

4. Window around the intersection as shown.

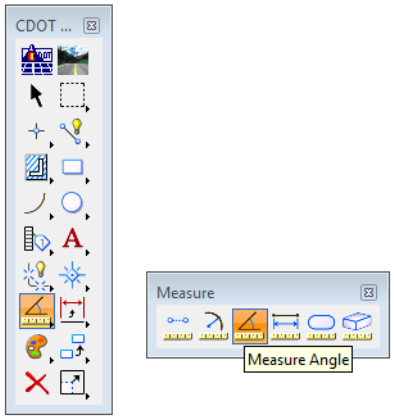


Lab 14.2 - Determine the rotation angle for the sheet

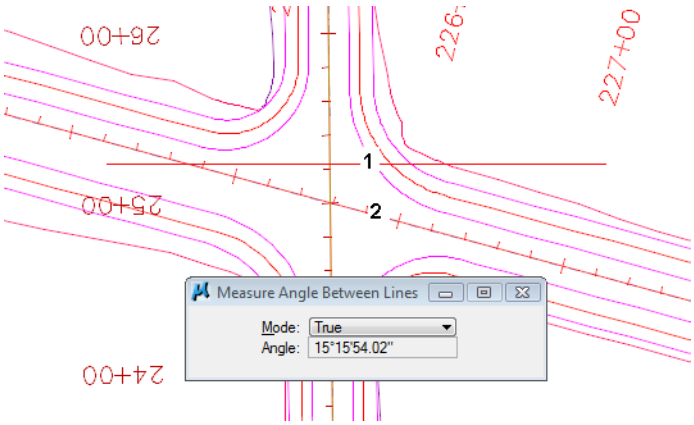
1. On the **CDOT Drafting Menu**, set **Line Weight** to **3**.
2. Using **AccuDraw**, draw temporary horizontal line in the approximate location shown.



3. Select the **Measure Angle** command from the **Measure** toolbar.



4. **<D>** on the horizontal line, then **<D>** on the SH86 proposed centerline.

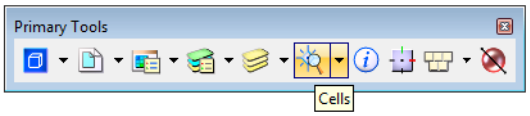


MicroStation displays the result as approximately 15 degrees. This is the rotation angle needed to rotate the view to horizontal at the intersection in a counter-clockwise direction.

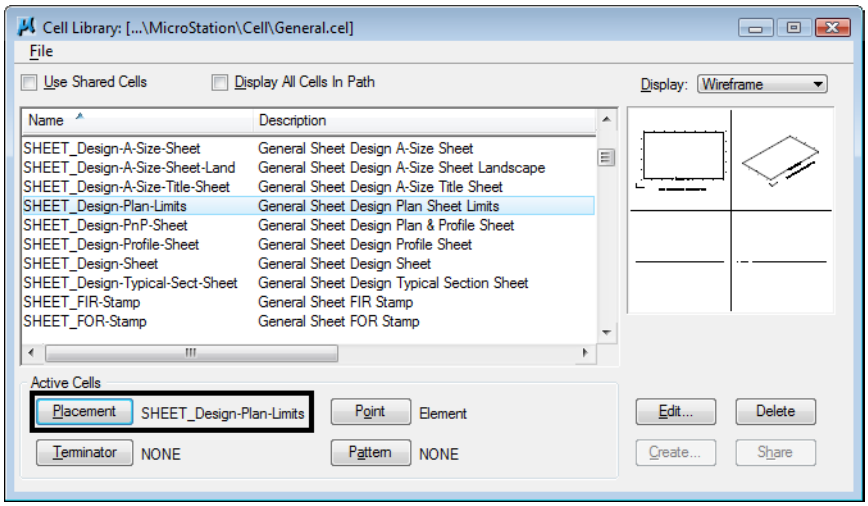
5. **Delete** the temporary measurement line.

Lab 14.3 - Placing the Plan Limits Cell

1. Select **Cells** form the **Primary** toolbar to open the cell library.

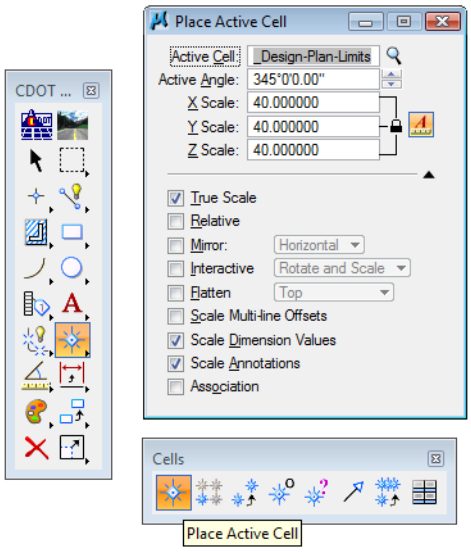


2. Toggle on **Display All Cells in Path** and select the **SHEET_Design-Plan-Limits** cell and make it the active placement cell.



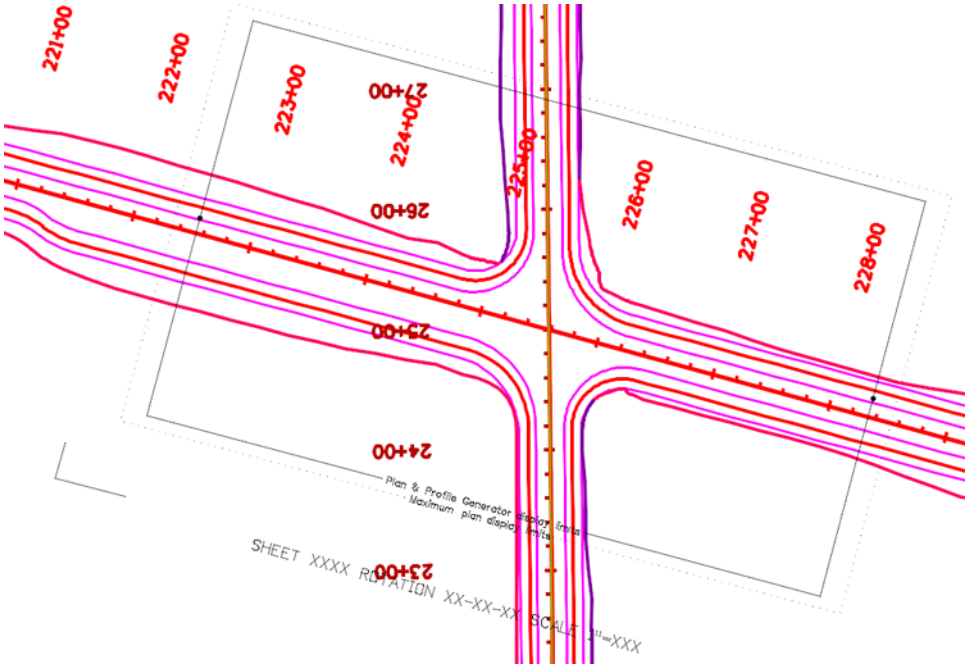
Note: This cell helps to define the plan sheet limits in the model file before placing the border in the sheet file. It contains text characters that can be edited to indicate sheet name, rotation, & scale. The outer line-work depicts the maximum display limits for graphics as it relates to the border sheet. The inside shape reflects ½ inch inside this maximum limit and is the clipping boundary. All graphical information for this cell is on to the MicroStation level, **DRAFT_INFO_No-Plot**.

3. **Close** the **Cell Library** dialog box.
4. Turn on the level **DRAFT_INFO_No-Plot** if it is not currently on.
5. Select the **Place Active Cell** command and set the **Active Angle** to ***-15*** and the **Scale** to ***40***.

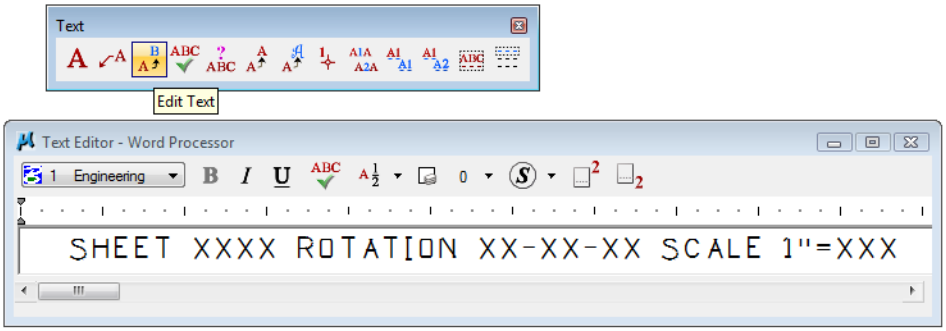


Note: The scale should be set to the plot scale of the sheet. Since the positive angles are measured counterclockwise in MicroStation, enter the 15 degree angle as ***negative***. MicroStation converts this to a positive 345 degree angle.

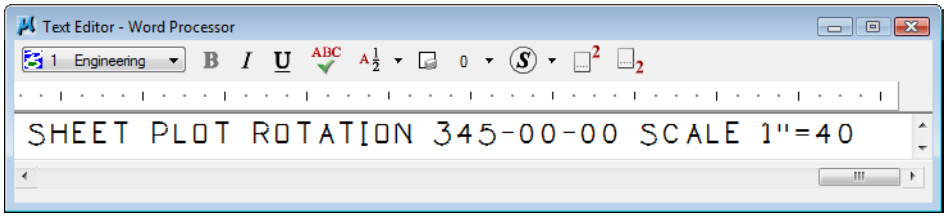
6. Place plan limit cell in the approximate location shown.



7. Select the **Edit Text** command and **<D>** on the text at the bottom of the cell.



8. In the **Text Editor**, make the edits as shown.



9. **<D>** anywhere in the view to accept.

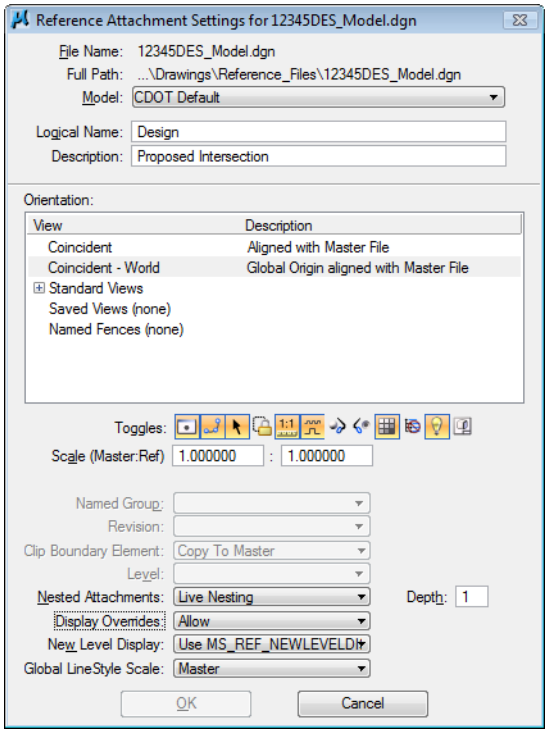
Lab 14.4 - Create the Drawing File

1. From the MicroStation menu bar, select **File > New**.
2. Set the directory to **C:\Projects\12345\Design\Drawings**.
3. Verify the **Seed File** is set to **3D-Seed_CDOT.dgn**, if not then select it as the seed file.
4. In the **Name** field, key in a drawing file name **12345DES_Plan21.dgn**
5. In the **New** dialog box, select **Open**. The Open button is used to accept the new file name and open the drawing at the same time.
6. The file you created will be highlighted. Select **Open** to open that file.

Lab 14.5 - Attach the Model File

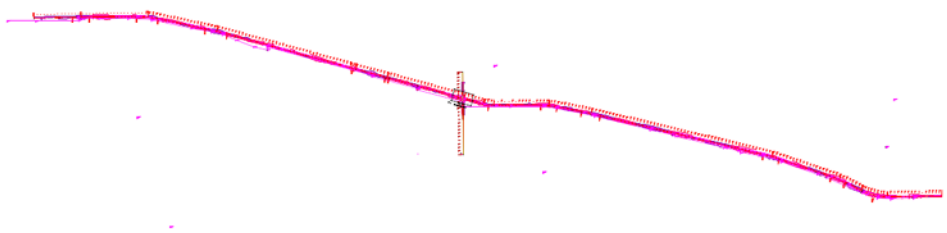
1. Attach the **12345DES_Model.dgn** reference from the **C:\Projects\12345\Design\Drawings\Reference_Files** folder (use the Directory pull-down to quickly find the folder).
2. Verify the **Attachment Method** is set to **Interactive**. Select **Open**.
3. In the **Reference Attachment Settings** box:

- Key in a **logical name** of ***Design*** and ***Proposed Intersection*** for a **Description**.
- Verify that **Orientation** is set to **Coincident-World** and the Scale is set at ***1:1***
- Set **Nested Attachment** to **Live Nesting** and set **Depth** to ***1***.

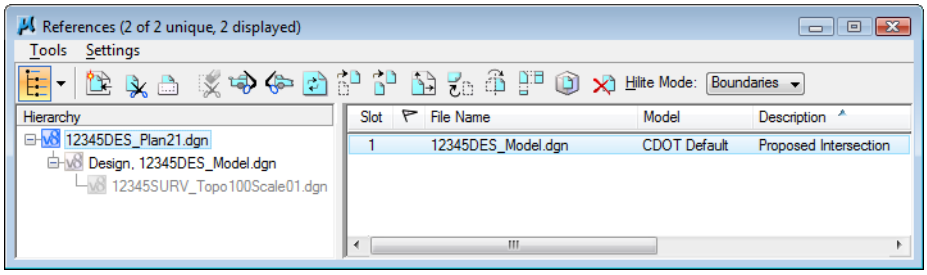


4. Select **OK**.

5. Fit the view.



6. Turn on the **Show Hierarchy** and expand the hierarchy list.

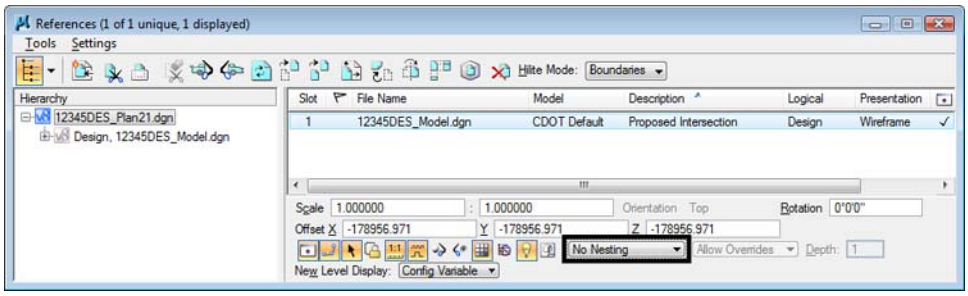


Note that with nested references, the **Survey/Topo** reference is nested below the Design model file.

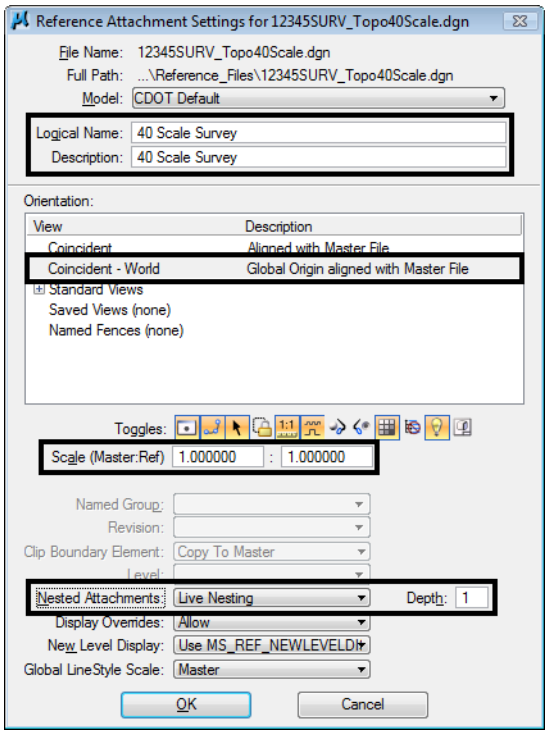
The **Survey/Topo file** that is attached nested to the Model file is for a 100 scale plot. However, you're creating an intersection sheet at a 40 scale. Therefore, you need to attach the correct scale Survey/Topo reference.

Note: Coordinate with the Region Surveyor when you are creating sheets that are not at a 1:100 scale. They will provide you with the topography and survey MicroStation files at a different scale. Otherwise, the line work and cells will not be the correct size for the print scale.

7. Select the Design model reference and change the nesting to **No Nesting** to remove the 100 scale **Survey/Topo** reference.



8. Attach the **12345SURV_Topo40.dgn** file from the project's **\ROW_Survey_Drawings\Reference_Files** folder with the options shown.

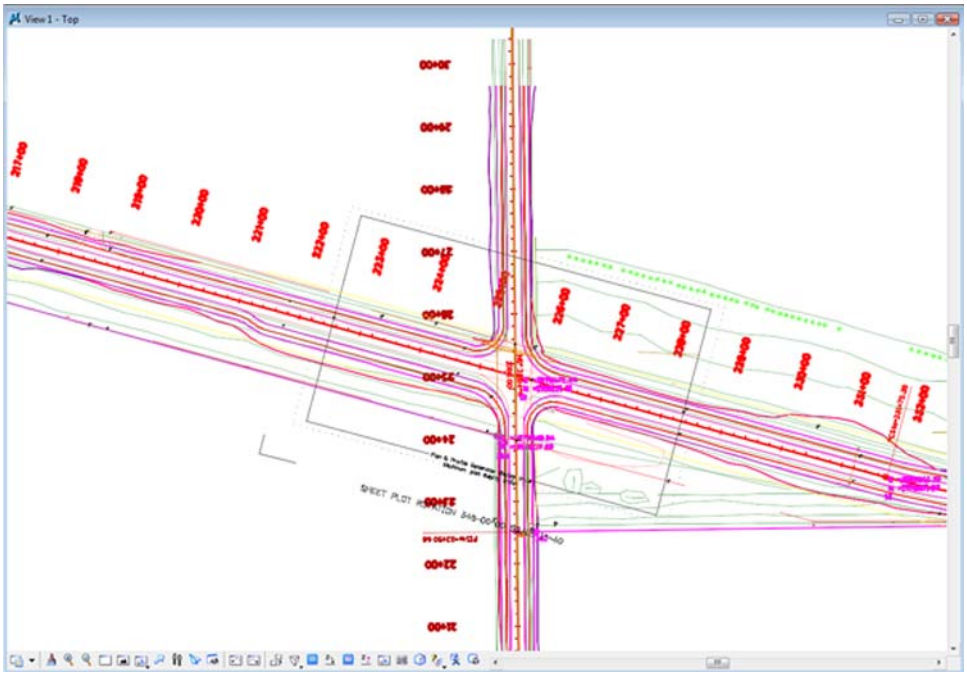


9. **Fit** the view.

Lab 14.6 - Rotate the View

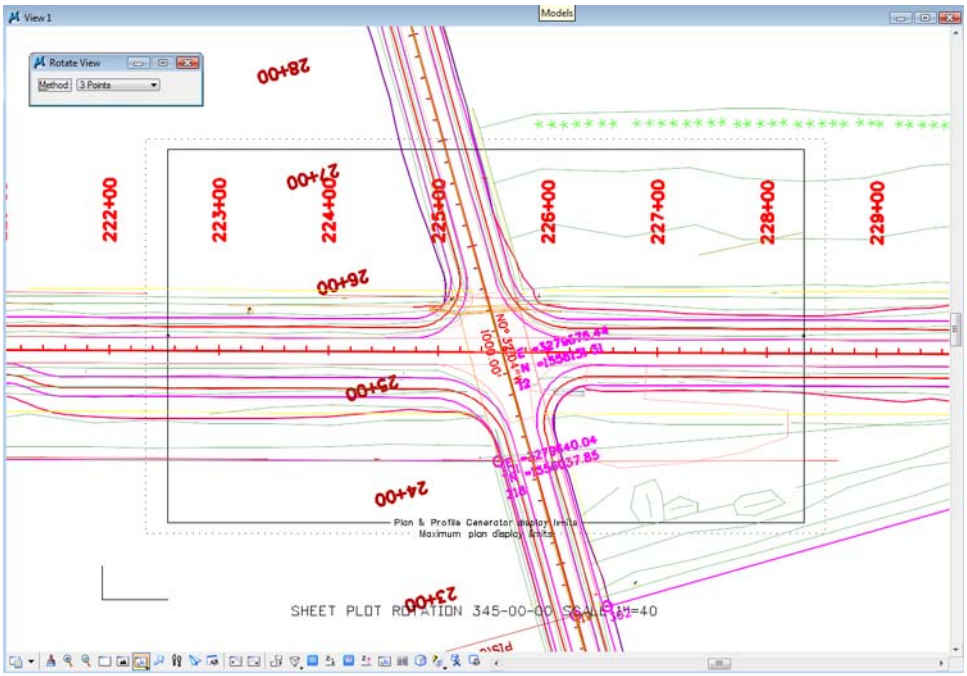
Rotate the view so that the portion of the mainline alignment through the intersection appears horizontal in the view.

1. **Window** around the intersection as shown.



2. Use the **Rotate View**, **3-Point** method to rotate the view so that the plan limits cell is horizontal to the view

Note: You can also use the keyin ***rv=,,15*** since you know the rotation angle from the plan limits cell. The commas are used as placeholders since you are not rotating about X and Y axis. You are only rotating about the Z axis – the perpendicular axis to the Top View.

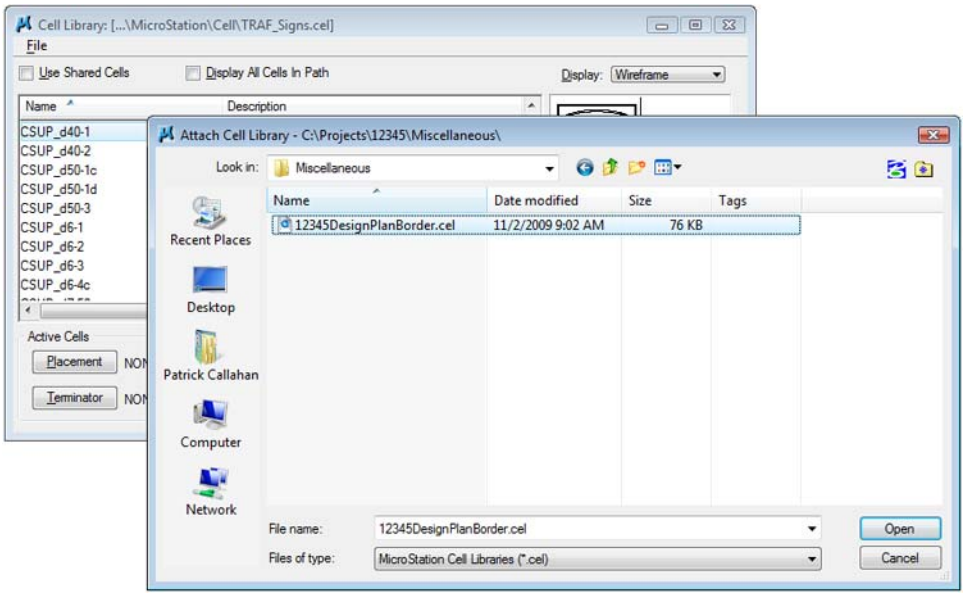


The view is rotated so that the alignment appears horizontal.

Note: Remember that you are rotating the view, not the graphics. The graphics maintain their original coordinate position in the sheet file.

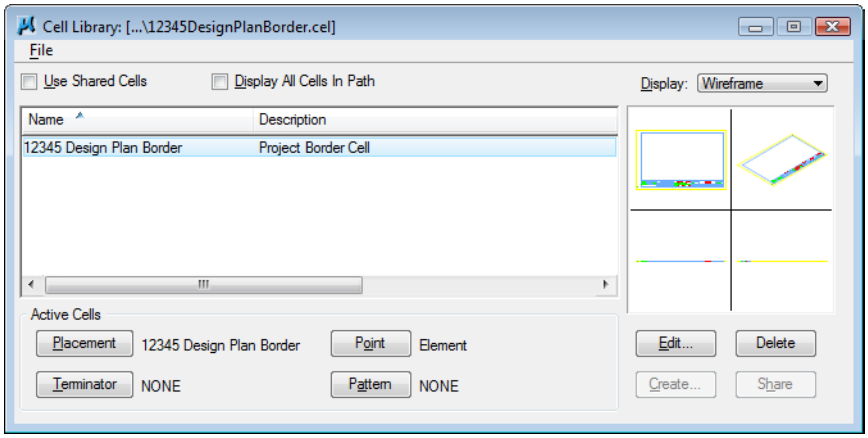
Lab 14.7 - Attach the Border Cell

1. Select **Cells** from the **Primary** toolbar.
2. In the **Cell Library** dialog box, select **File > Attach** and navigate to the **C:\Projects\12345\Miscellaneous** folder.
3. Select the **12345DesignPlanBorder.cel** file.



This is the project-specific border created earlier.

4. Select **Open** to attach the cell library.



The cell library only has one cell (model) – the **12345 Design Plan Border** that you previously created.

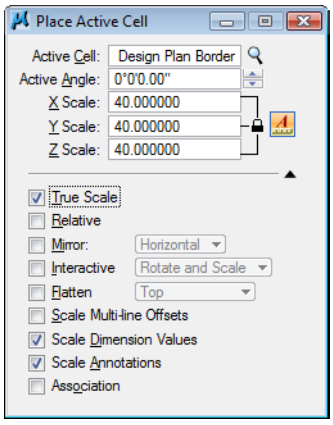
5. Select **Placement** to make the border the active placement cell.

6. Close the **Cell Library** dialog box.

Lab 14.8 - Place the Border

1. Select **Place Active Cell** from the **Cells** toolbar.

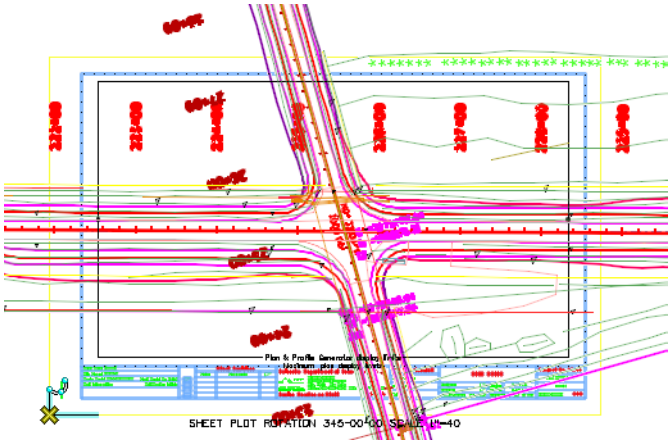
2. In the **Tool Settings** box, set **Active Angle** to ***0*** and the **Active Scale** to ***40*** for X, Y and Z.



Note: The **Active Angle** is view independent and not associated with view rotation. Therefore, the x-axis is always horizontal regardless of the view rotation. You will not need to set this for correct placement of the North Arrow or other cells.

Note: The **Active Scale** scales the border up 40 times around the full-sized graphics to match the plot scale.

3. AccuSnap on the lower left corner of the plan limits cell as shown to place the border.

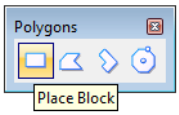


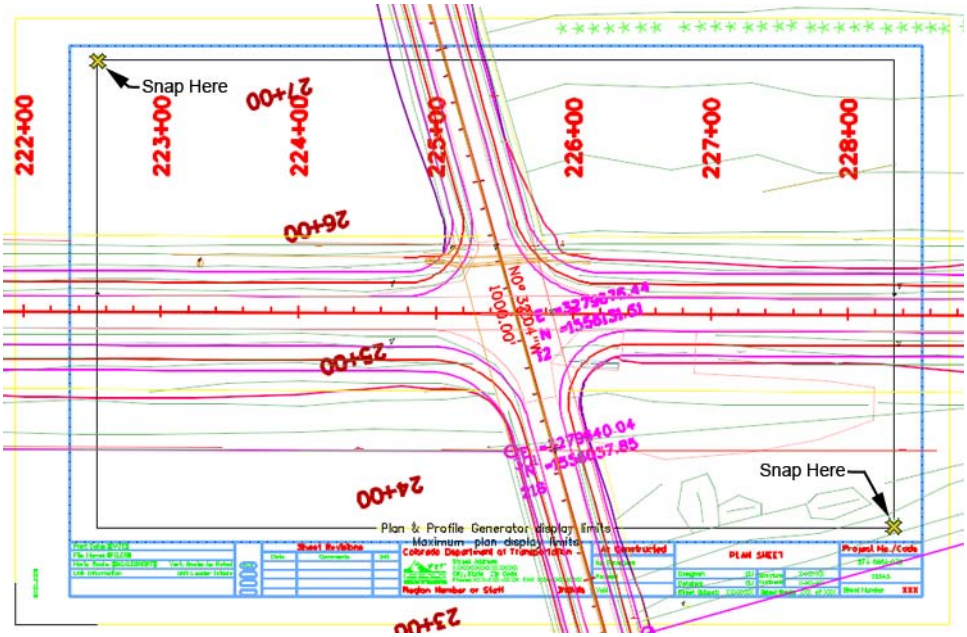
4. **<D>** to place the cell.
5. **<R>** to exit the command.

Lab 14.9 - Place the Clip Boundary

1. From the CDOT Menu Explorer select **Drafting**.
2. Set the Category to **Border**.
3. Select the Item **Clip Boundary** .

4. Select the **Place Block** icon from the **Main** toolbar and draw the clipping boundary by snapping on the opposite corners of the plan limits cell as shown (interior most line).

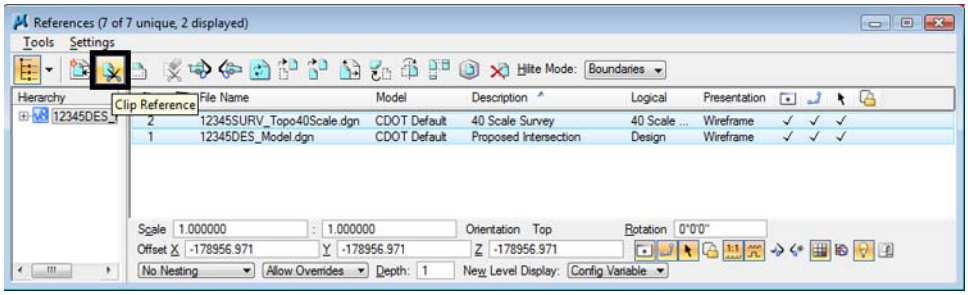




Lab 14.10 - Clip the Reference File

1. In the **References** dialog box, highlight both the **Design** and **Survey/Topo** references for clipping.

2. Select the **Clip Reference** icon.

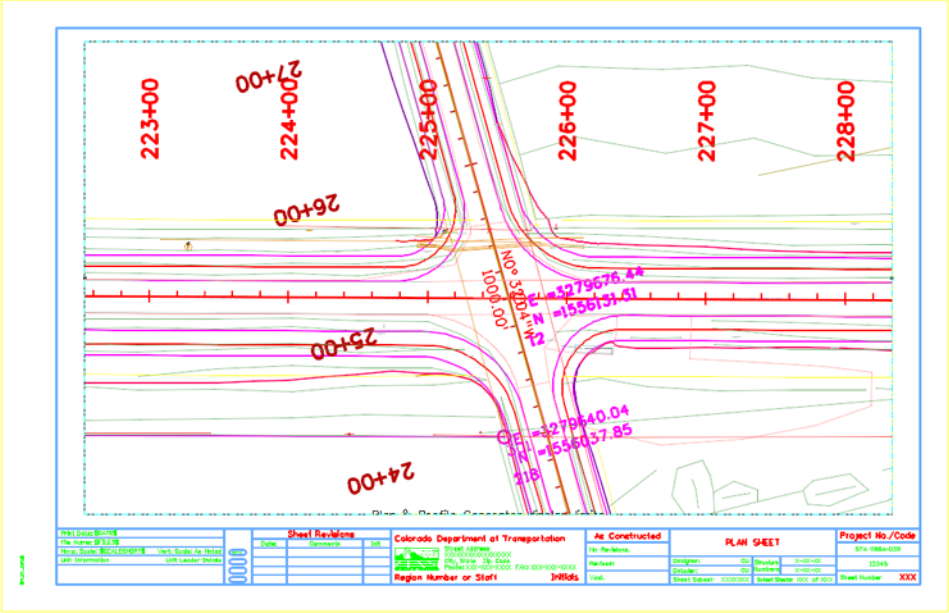


3. In the **Tool Settings** box, verify **Method** is set to **Element**.

4. When prompted to **Identify Clipping Element**, select the rectangular clipping boundary you just placed.

5. **<D>** to accept.

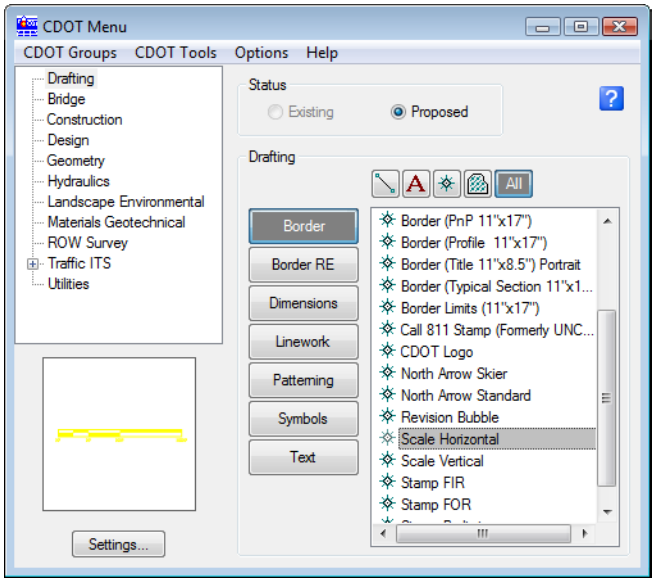
6. **Fit** the MicroStation view and **Save Settings** after clipping the reference files.



Note: Once the clipping boundary is placed, do not delete it. The clipping region of the reference file will be lost if the boundary is deleted.

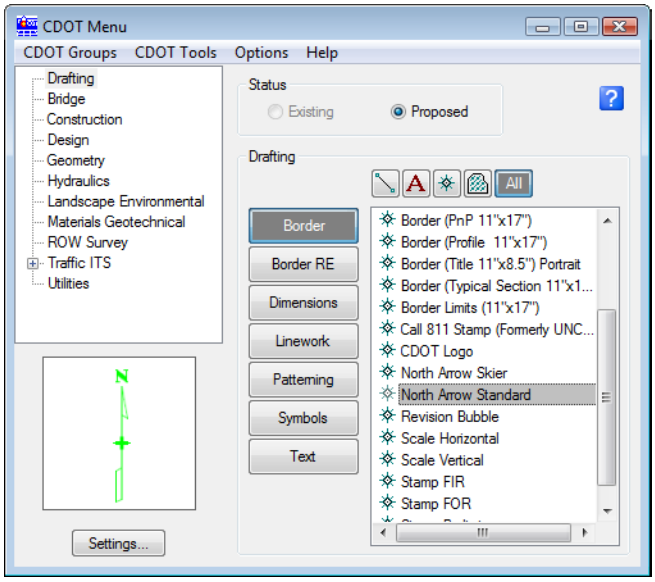
Lab 14.11 - Place the Bar Scale and North Arrow

1. From the CDOT Menu Explorer, select **Drafting**.
2. Set the Category to **Border**.
3. Select the Item **Scale Horizontal**.

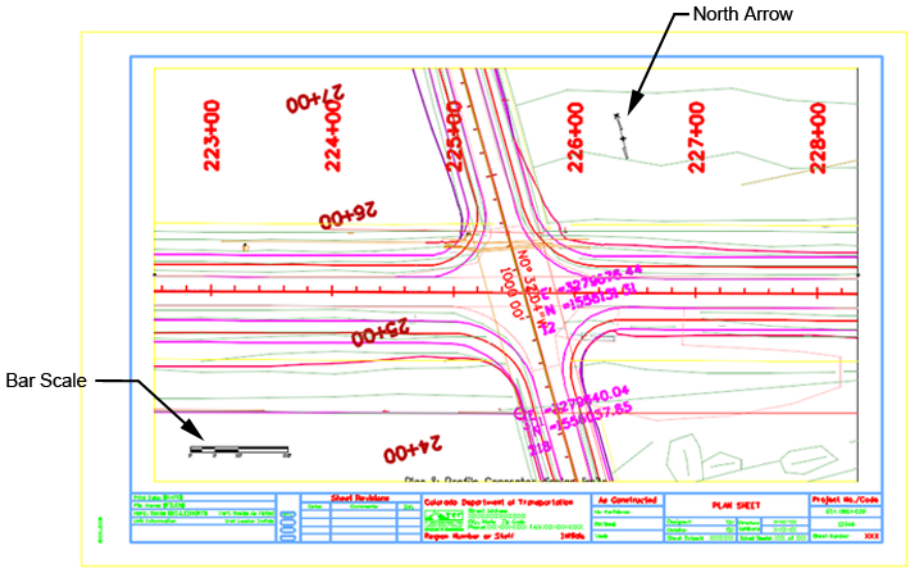


4. When prompted to locate the origin of the **Bar Scale**, **<D>** inside the sheet border as shown below.

5. Select the Item **North Arrow Standard**.



6. When prompted to locate the **North Arrow**, **<D>** inside the sheet border as shown.



Lab 14.12 - Set the Text Scale Factor

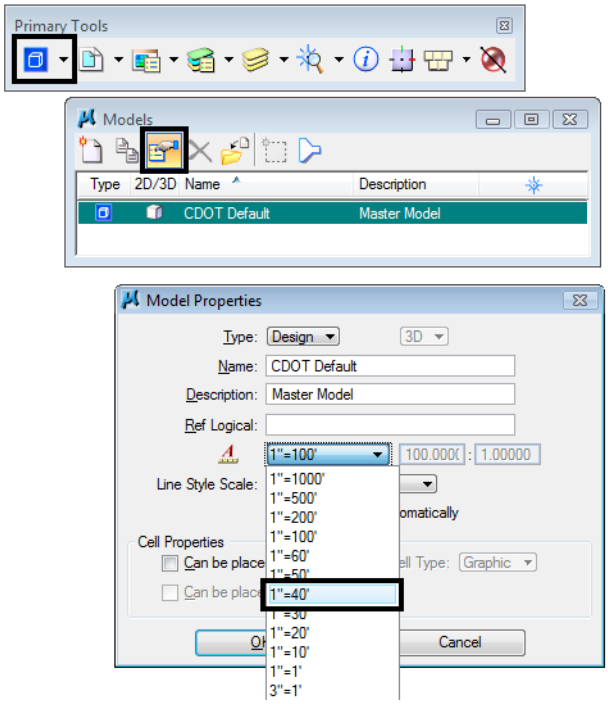
Set the **Text Scale Factor** to match the border and plot scale factors.

1. Select **Models** from the **Primary** toolbar.

2. In the **Models** box, select **Model Properties**.

Note the **Annotation Scale** is set to **1:100** – the CDOT default.

3. Change the **Annotation Scale** to ***1:40***.



4. Select **OK**.

5. At the **Alert** message, select **Yes** to propagate the changes.

6. **Close** the **Models** box.

   The **Annotation Scale** for the file now matches the border and plot scales. Later, when text and dimensions are placed in this file, they will be the correct size.

Lab 14.13 - Edit the Bar Scale

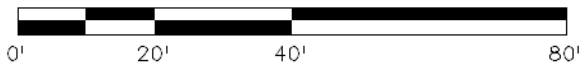
1. Window in to the bar scale cell.

2. Select the Edit Text command from the Text toolbar.

3. **<D>** on the **X'** text on the bar scale.

4. Change the text to 20' and **<D>** to accept.

5. Make the other edits as shown.



6. **Fit** the view.
7. **Save Settings**.
8. **Exit** MicroStation.