LAB 26 - Reference Files for Plan Sheets

Chapter Objectives:

- Create plan sheets referencing in files
- Clipping reference files
- Rotate reference files

Two approaches can be used to assemble plan sheets. In the first part of this chapter the 'manual' method of attaching reference files will be used. This is followed by using the InRoads sheet generation command known as the Plan and Profile Generator.

The contents of the reference files are not important to this process and may not accurately reflect the contents and layout of a final plan sheet.

This lab will relocate the border sheet to align with the design graphics.

### Moving border sheets to align with design information

In a previous exercise graphics (locator map) were moved to align with the title sheet. This may suffice for information that is not coordinate dependent but is not an acceptable practice in the generation of engineering drawings. The following workflow will result in a product that conforms to CDOT standards.
This first lab uses the 'manual' method for designing a plan set layout and assembling the plan sheets. A following lab will use the InRoads Plan and Profile generator command to 'automate' the process.

The process for this lab is:

- Define the plan sheet limits, rotation, and size(s)
- Create a sheet file containing a border for each plan sheet
- Attach the appropriate reference files
- Rotate sheets normal to the MicroStation view for ease of use
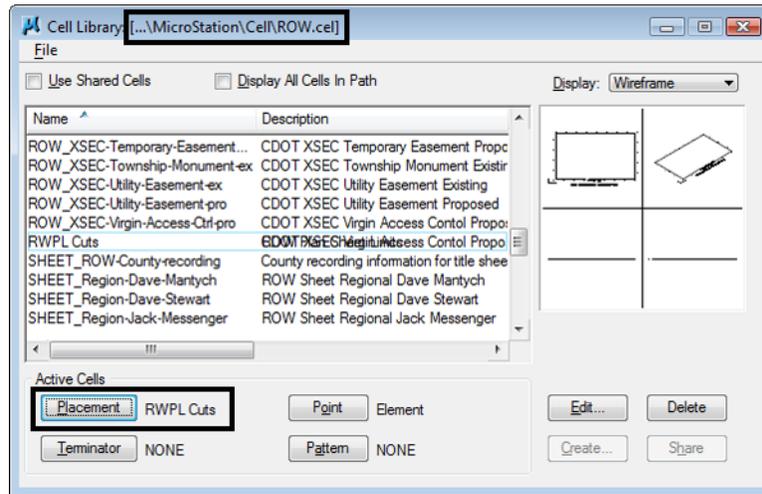- Define reference file clip boundaries

1. ***Open*** the MicroStation file **12345ROW_Model.dgn**
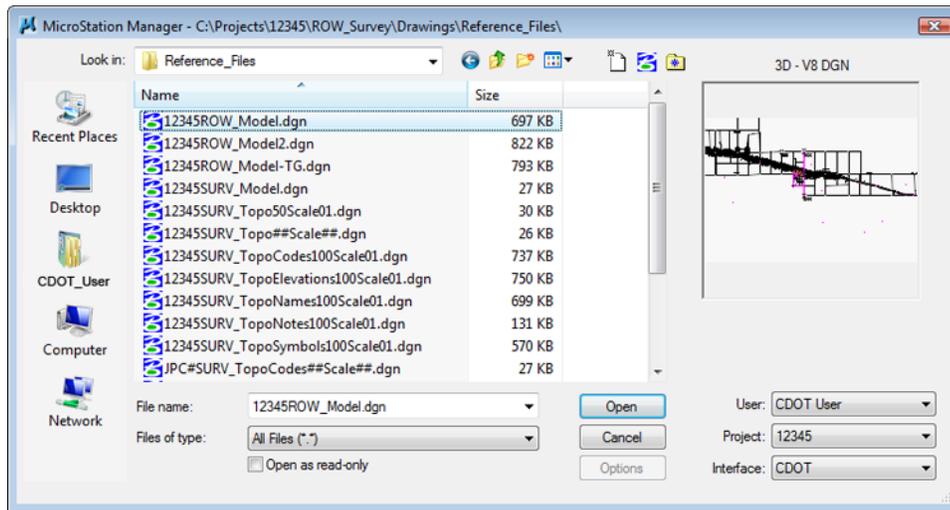
2. Select the MicroStation **Fit** command to expand the view to show all graphics.
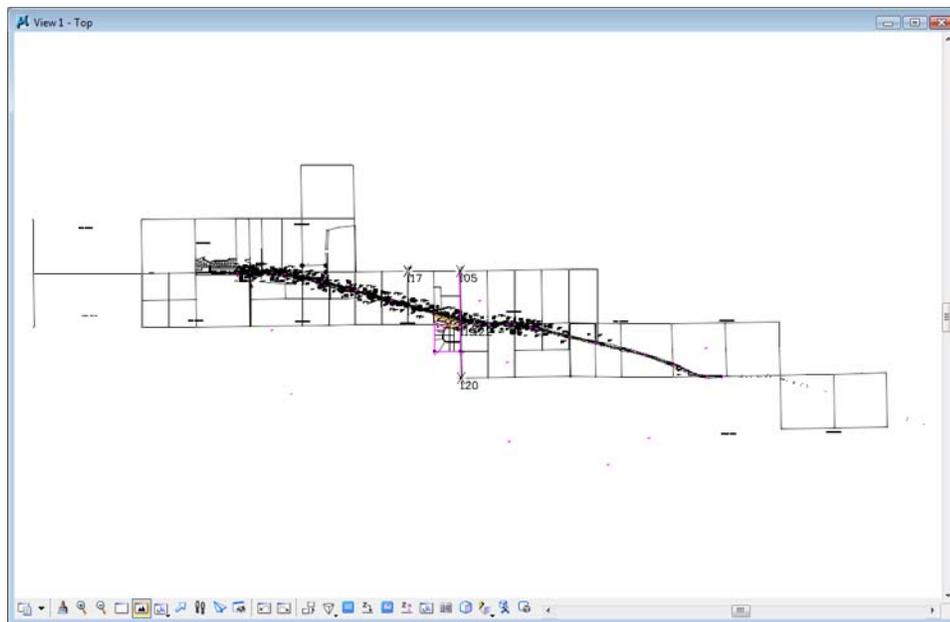
3. Select **Element > Cells** to verify the ***ROW*** cell library is attached.
    If not, select **File > Attach** from the **Cell Library** dialog and attach **ROW.cel** from the cell library list.

4. **<D><D>** rapidly on the cell name ***RWPL Cuts*** to identify this as the 'Placement' cell and activate the place cell command.

5. In the **Place Active Cell** dialog, set the **X** and **Y** scale to ***300***, and **Active Angle** to ***0***. A **Z** scale of ***1.0*** should be used. An X and Y scale of 300 is used because this reflects the scale the survey control diagram sheets will be developed at.
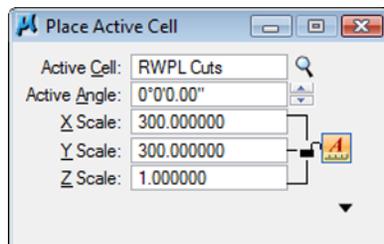
About this cell:

This cell was created to facilitate the planning of eventual sheets. 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. It also reflects the maximum limits that would be displayed if the sheet was created with the Plan and Profile generator command within InRoads. The 'dots' in the vertical lines represent ½ of the sheet height and assist in centering planimetrics information on the sheet. All information is written to the MicroStation level *DRAFT_INFO_No-Plot*.

6. **<D>** to place the cell in the MicroStation file, move as necessary. These graphics will define the limits for the plan sheet when referenced back to the border.
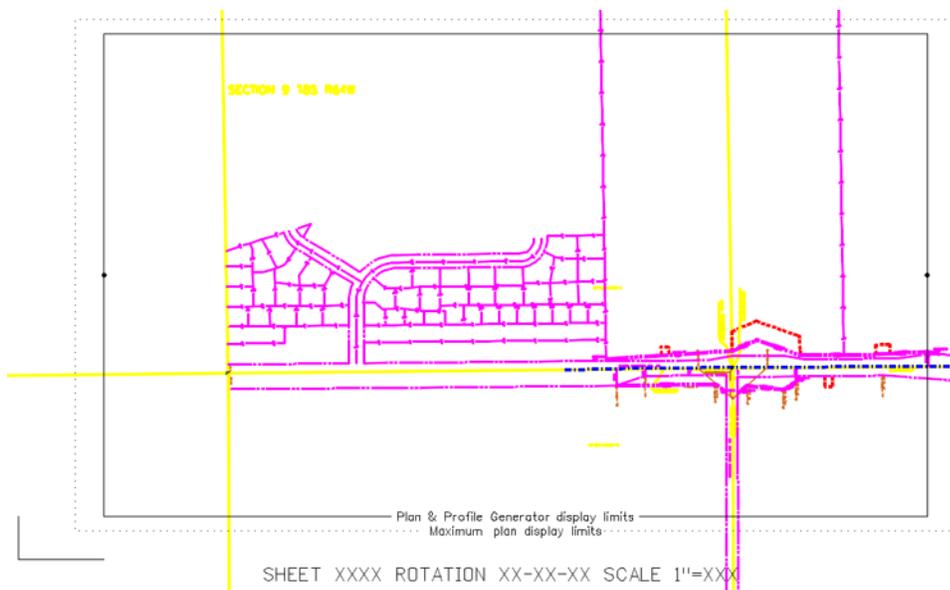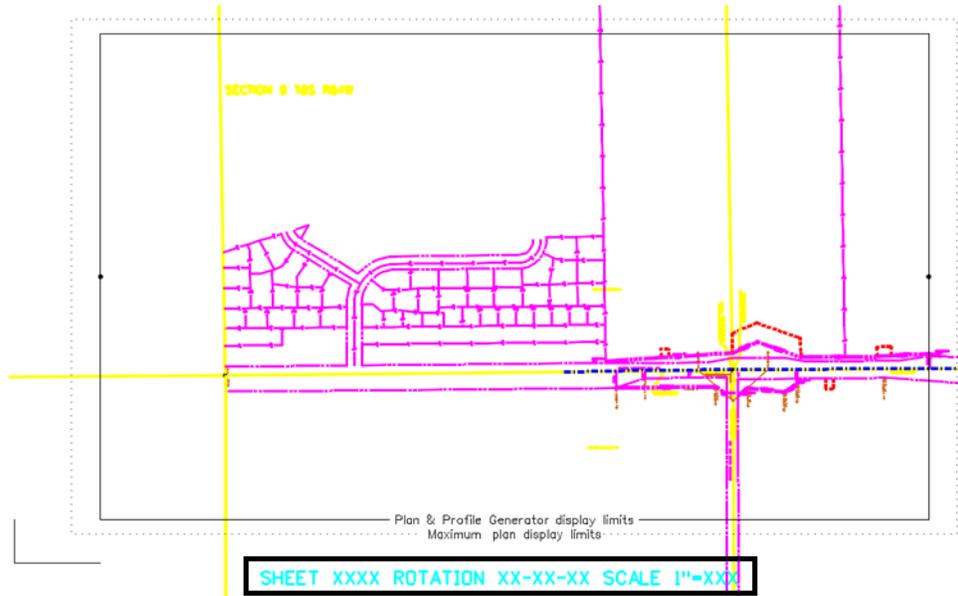

The above graphics approximately represent the required limits for the first sheet. Position the sheet limit cell as you see fit.
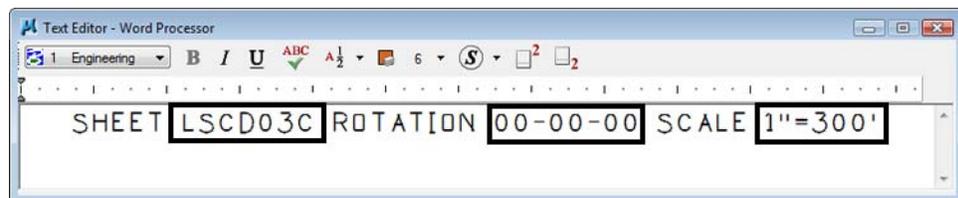
7. Use the **Edit Text** command to complete the text at the bottom of the sheet. This will assist in managing the sheets as reference files.
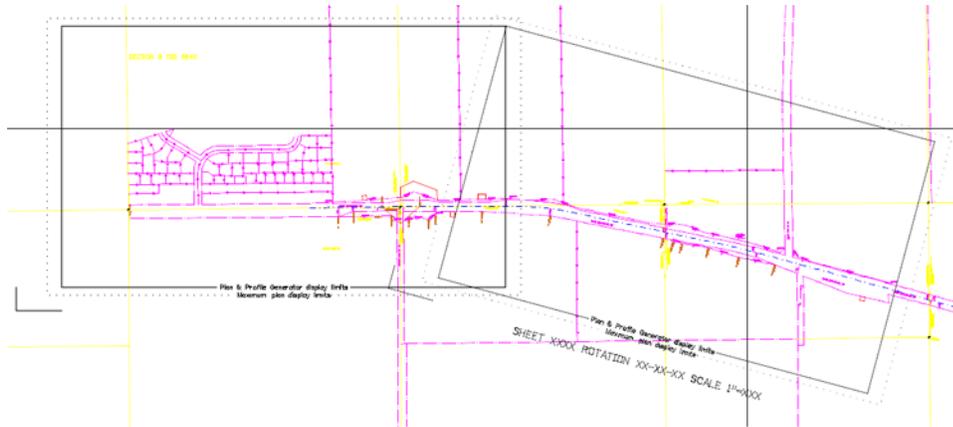
8. **<D>** on the text at the bottom of the layout sheet.

9. **Replace** the appropriate sheet information in the *Text Editor* as follows:
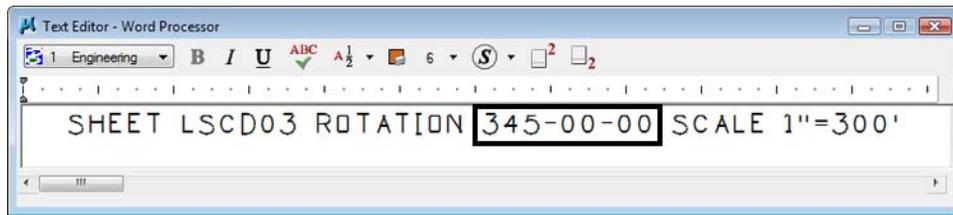   **LSCD03C**
    00-00-00
    1″=300′

10. **<D>** anywhere to accept the change.

11. Use the MicroStation **Copy** command to duplicate the graphics for the second sheet.

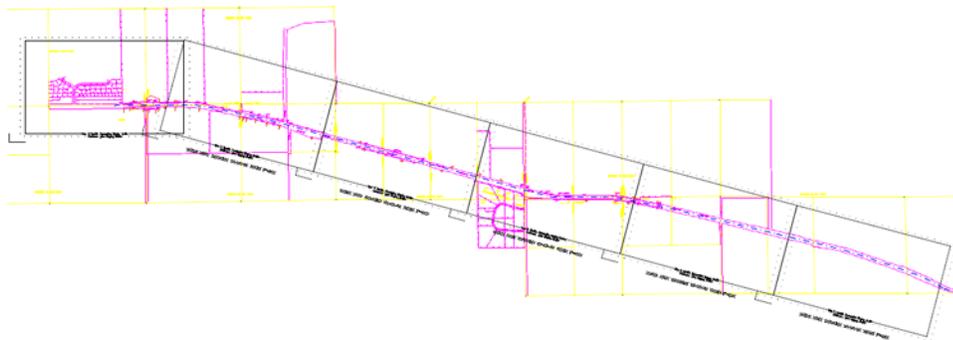12. Use the MicroStation **Rotate** command to align the graphics for the second sheet (345 degrees, -15 also works).

Replace the appropriate sheet information at the bottom of the copied sheet.

13. In the Text Editor enter:
    345-00-00

14. Continue planning the sheet layout for the remainder of the project.

Complete a few sheets to understand the concept. It is not the intention of this lab to complete the layout for the entire project.

> ***Note:*** Sheets at other scales could also be laid-out at this time. For instance, monumentation or right of way plan sheets at a scale of 1"=100'
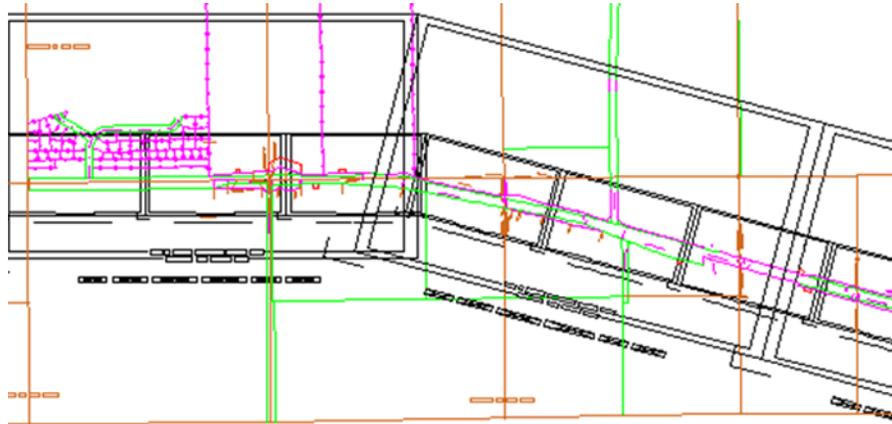

A major benefit of this workflow is that the eventual limits and orientation of sheets are determined early in the process. These sheet limits can be used to identify proper positioning, size, and rotation of text and tables. This is in addition to acting as a guide for attaching the planimetrics to the border sheets.

Assembling the plan sheets

15. ***Open*** the MicroStation file ….**ROW_Survey\Drawings\ 12345SURV_PlanLSCD##.dgn**
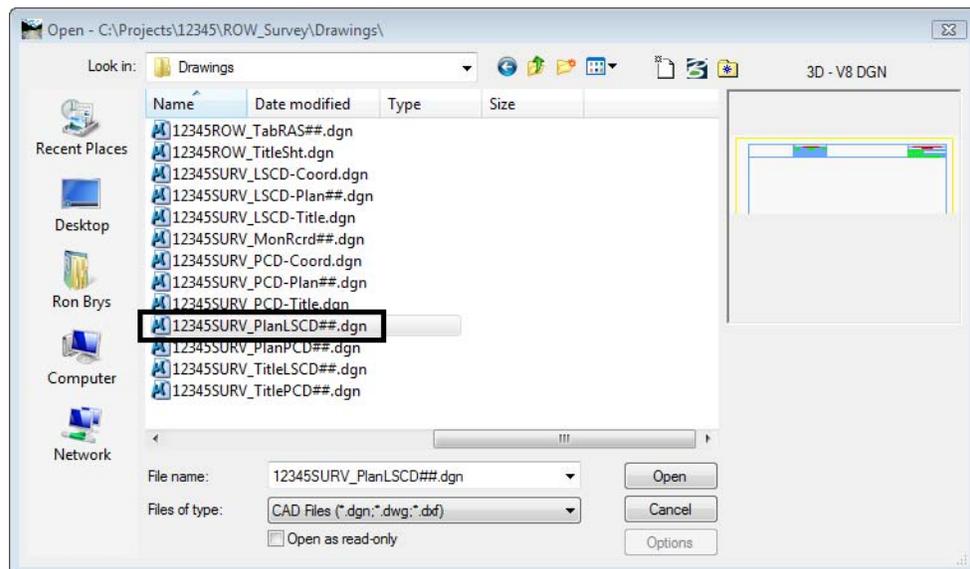
16. **File > Save** the MicroStation file as ….**ROW_Survey\Drawings\ 12345SURV_PlanLSCD3B.dgn** the new file is written to disk and opened.
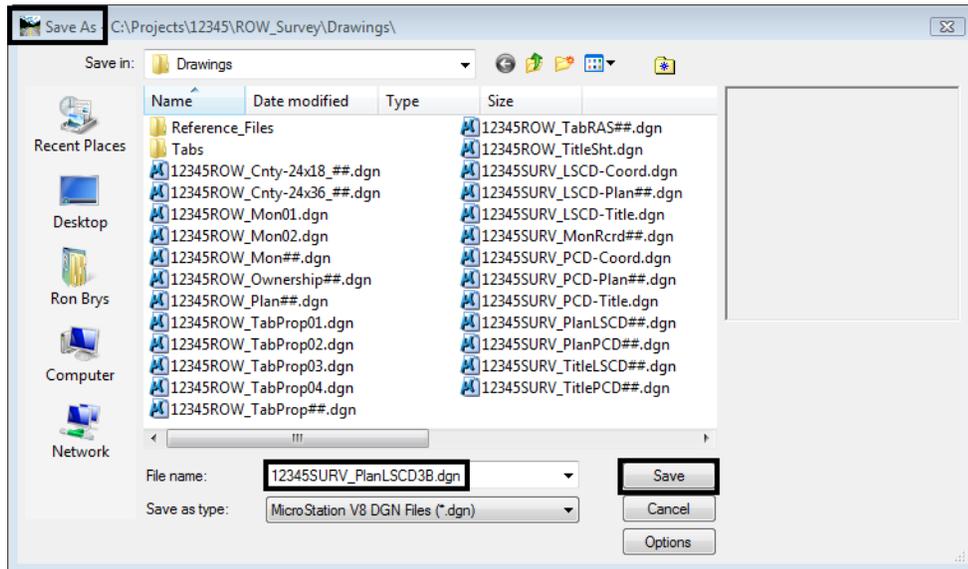
This file will be used to assemble drawing 4 of the plan subset. This will be accomplished by aligning a cell representing the border with the planimetrics. The current graphics will not be used.
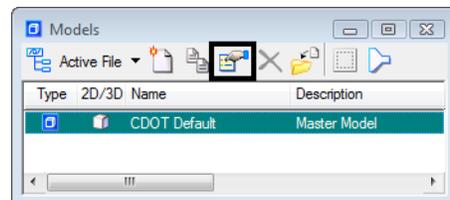
17. ***Delete*** the border sheet graphics contained in the MicroStation file.

This sheet will be developed at a scale of 1:300. The MicroStation model properties require modification so that the annotation scale matches the plot scale.
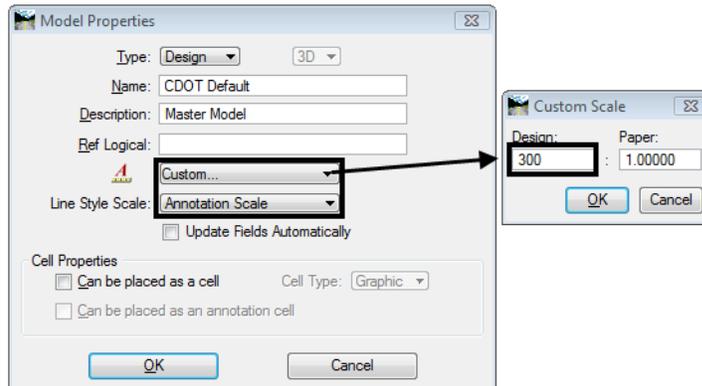
18. Open the Models dialog.

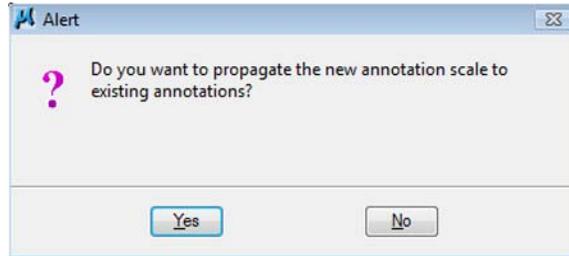19. **<D>** the **Edit Model Properties** icon.

20. **<D>** the drop-down list and select ***CUSTOM***, then input ***300:1***

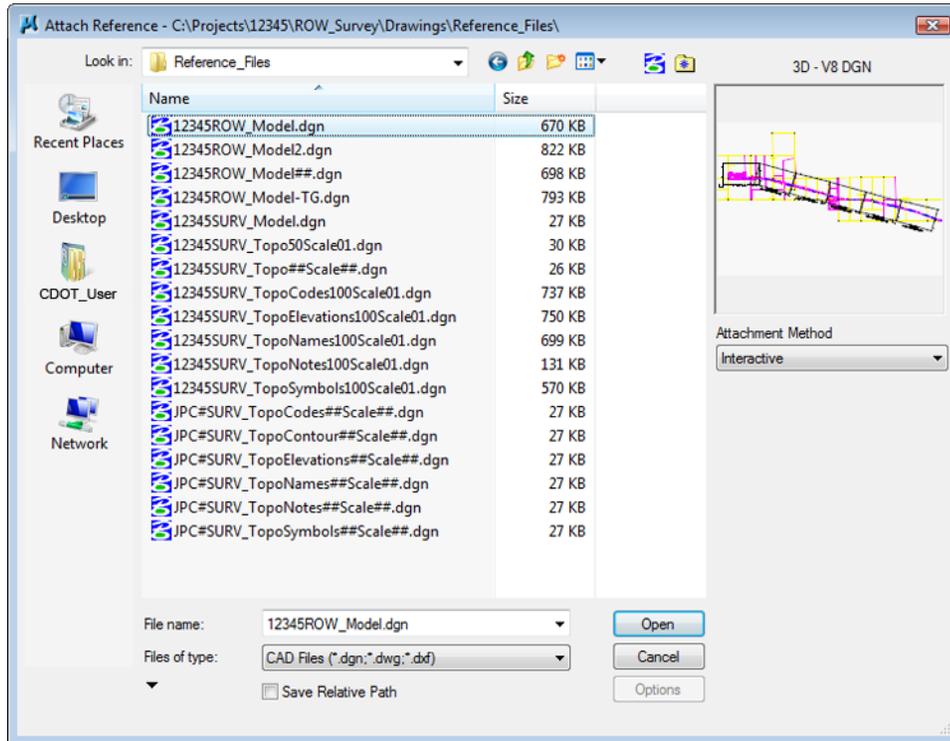21. Set the *Line Style Scale* to **Annotation Scale**.

22. **<D> OK**

23. Attach the file used in the geometry training portion of this course from the …**\ROW_Survey\Drawings\Reference_Files** folder;

    ♦ 12345ROW_Model.dgn
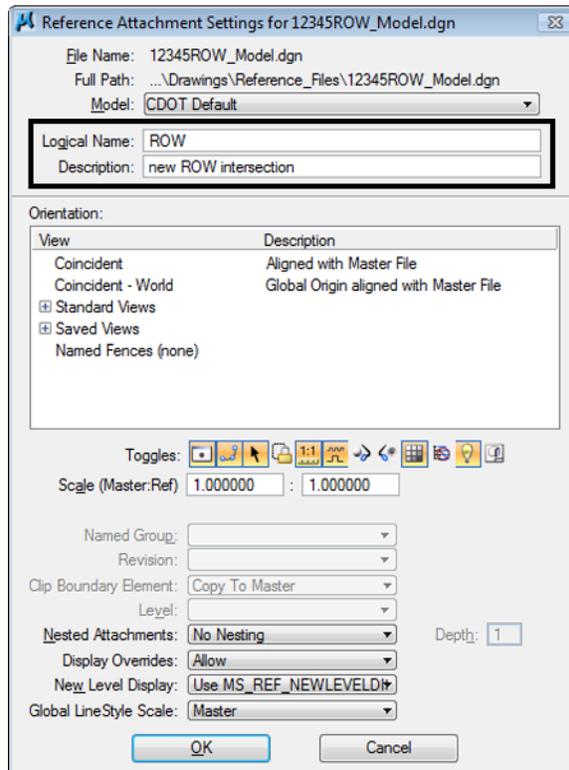
24. Select **File > References**

25. From the **References** menu select **Tools > Attach**

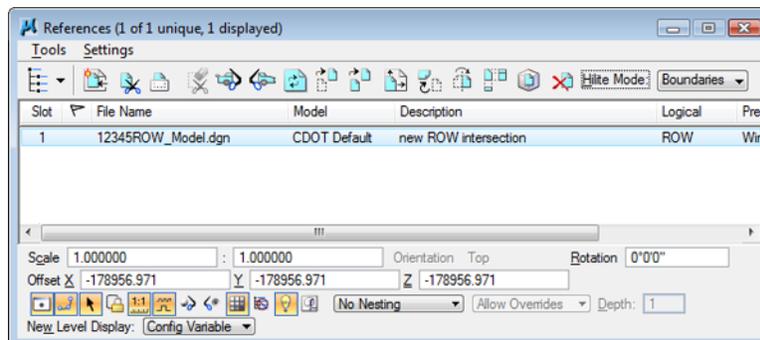26. Highlight the file *12345ROW_Model.dgn* and **<D> Open**.

The **Reference Attachment Settings** dialog appears for the **12345ROW_Model.dgn** file.

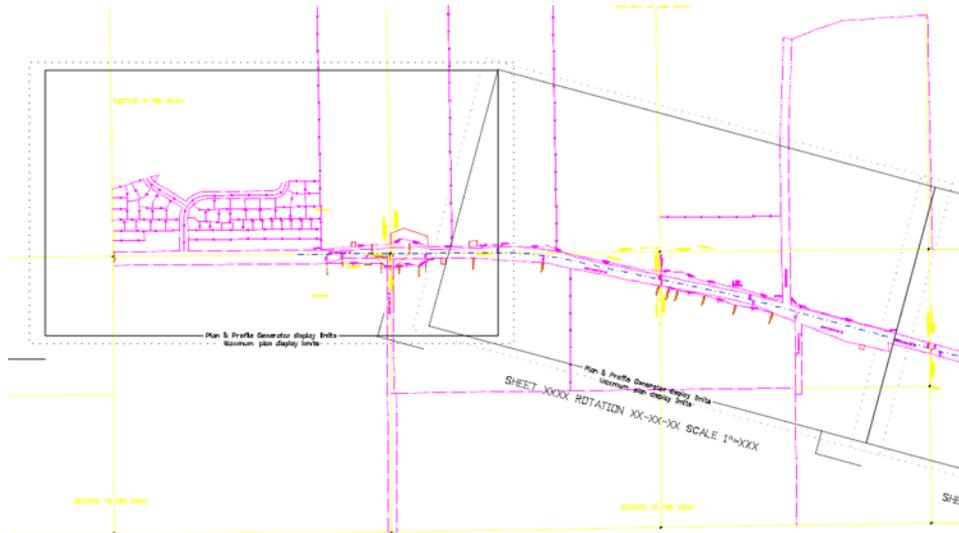27. Enter a **Logical Name** and **Description** as shown.

28. **<D> OK**

The file is now attached.

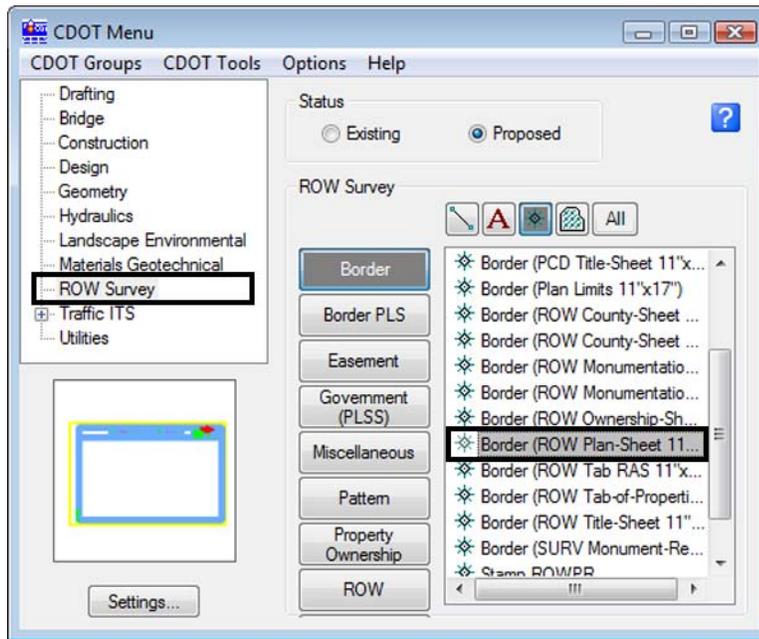

29. *Close* the **References** dialog.

30. Select the MicroStation **Fit** command.

31. **Window** or **Zoom** into the beginning of the project.
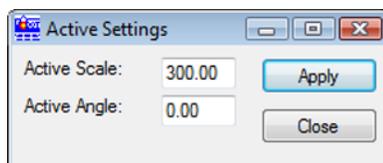

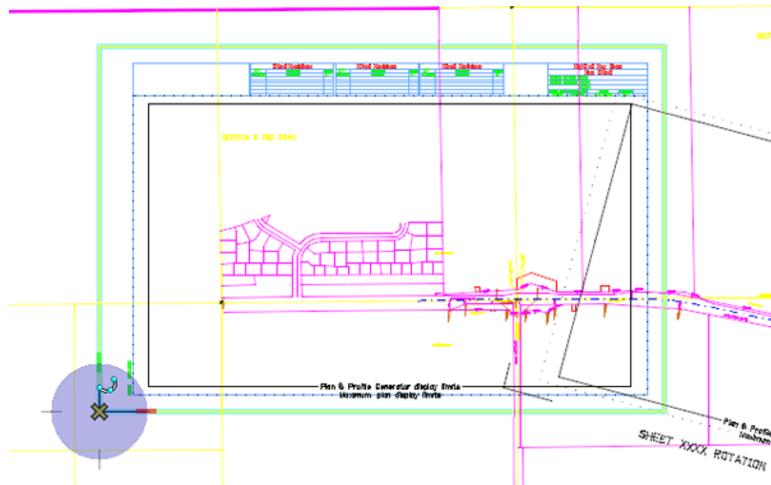Note the graphics placed previously to indicate sheet limits.

32. Place the *cell* called ROW Plan border **sheet** from the CDOT Menu.
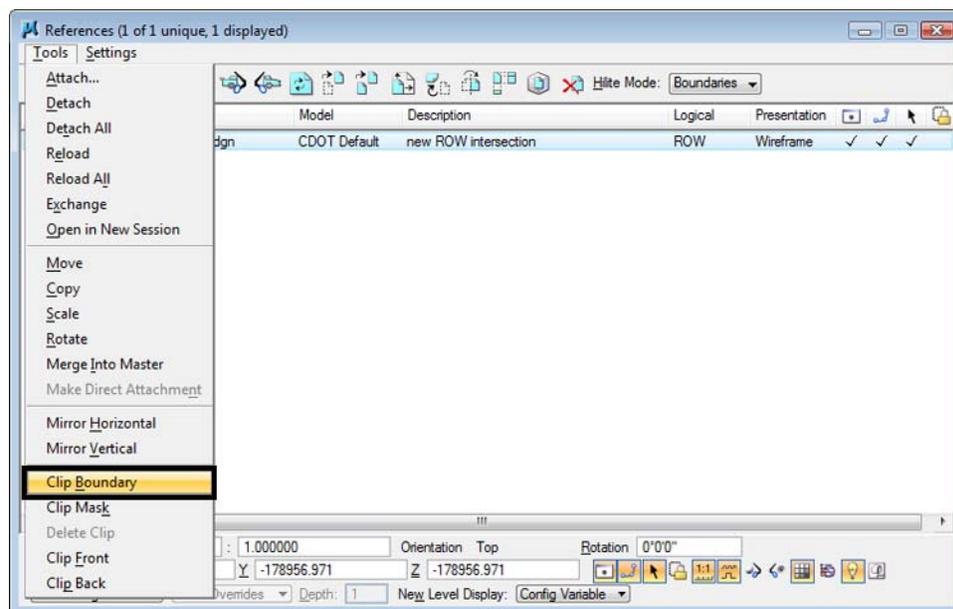

33. **<D>** Settings to and change the **Active Scale** to *300* and **<D> Apply**
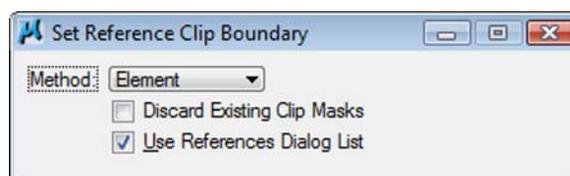
34. Place the sheet border cell so the lower-left corner coincides with the corner indicated on the sheet limits cell placed previously.

35. In the Reference dialog, identify the reference file and select **Tools > Clip Boundary**

36. In the **Set Reference Clip Boundary** dialog, select the *Element* Method.
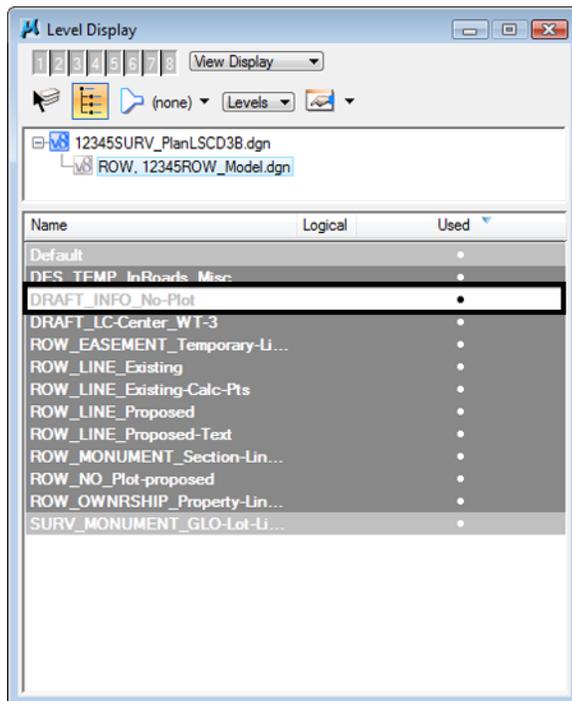
37. **<D>** on the shape inset ½ inch from the border.

38. **<D>** anywhere to accept the clip.

The plan sheet display limits are now constrained to a desirable limit.

39. *Turn off* level **DRAFT_INFO_No-Plot** in the reference file *12345ROW_Model.dgn* to turn off the sheet lay-outs (Select **Settings > Level Display**).

Make appropriate edits to the title block and add any sheet specific information necessary.
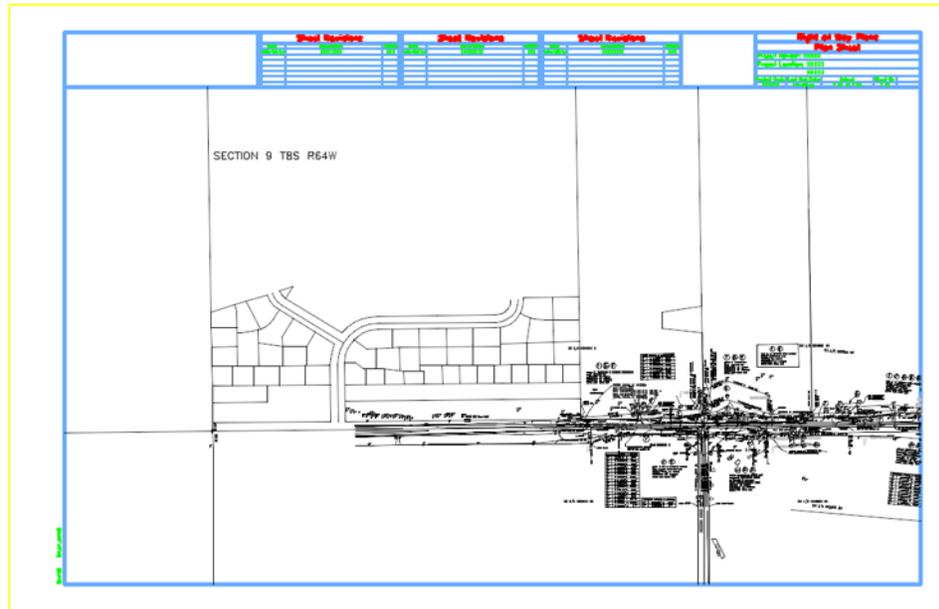
Using the tentative (snap) button <T> to query coordinate values that correctly reflect project coordinates. Additionally an InRoads command, such as tracking, will verify the graphics are coordinately correct.

Once the first sheet is complete subsequent sheets are much easier. The reason being is the sheet file can be duplicated with the reference files already attached. Moving the border sheet and redefining the clipping boundaries will define subsequent sheets.
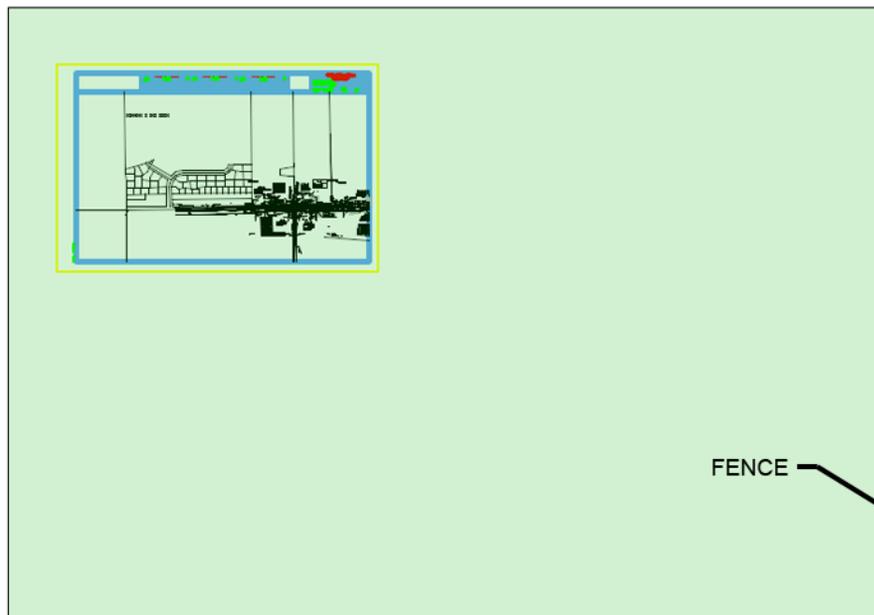
40. Select **File > Save** as, input name ***12345ROWSURVPLIanSheetLSCD3D.dgn***
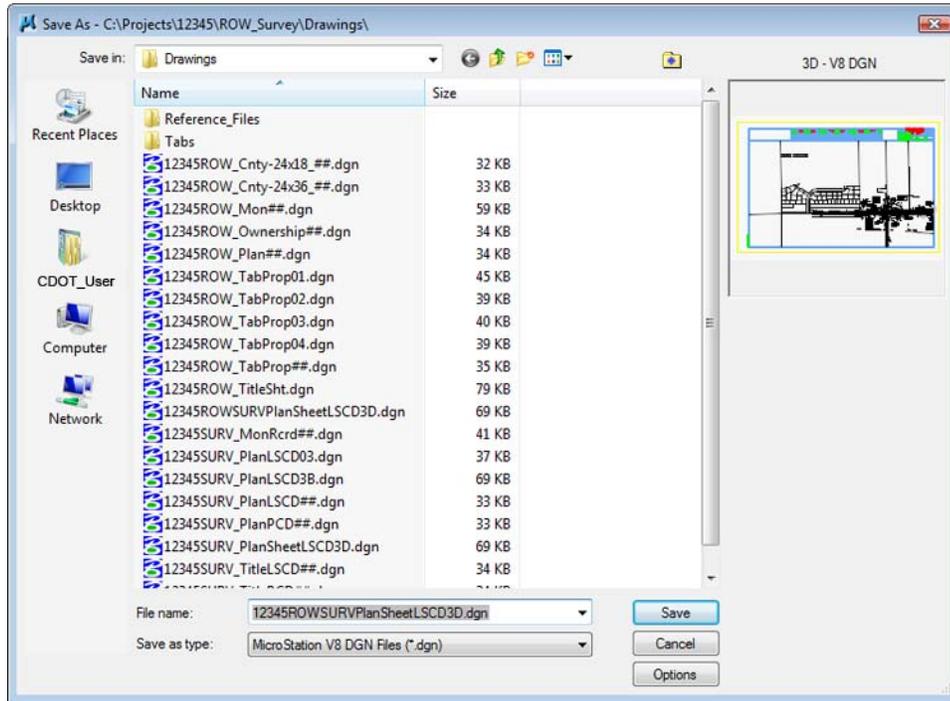
41. **<D> Save**.

> *Note:* The Save As command will automatically save the current drawing to the hard drive, then copy and rename to the specified file name and open the new drawing.
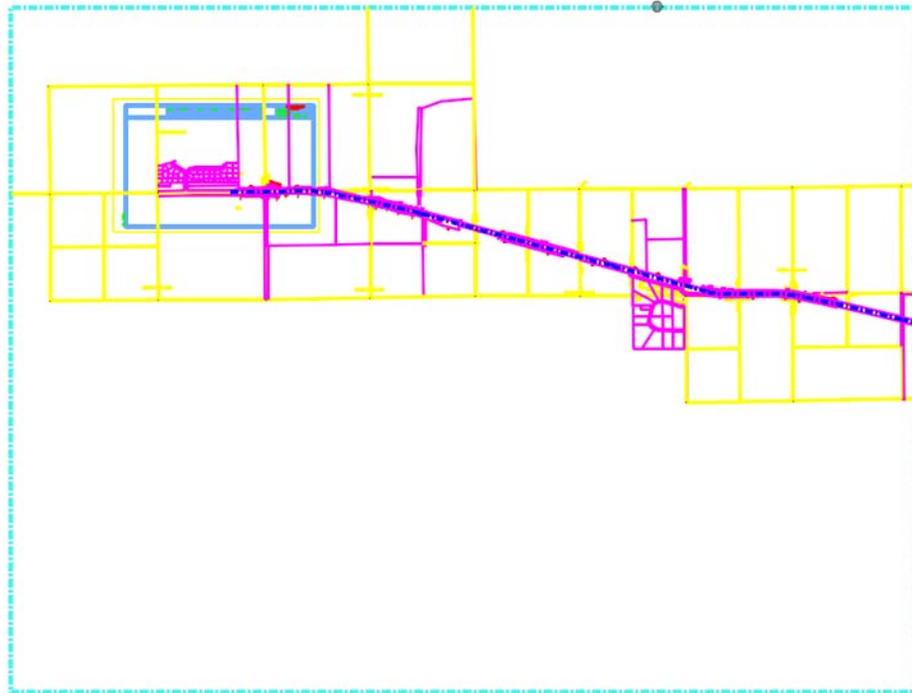
42. Place a MicroStation *fence* over an area that would encompass the next sheet in the set.

43. In the **References** dialog, identify the **12345ROW_Model.dgn** file and Select **Tools > Clip Boundary**

44. In the **Set Reference Clip Boundary** dialog, select the *Fence* Method.
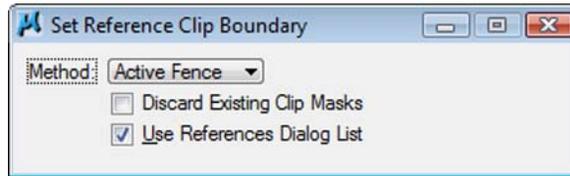
45. **<D>** on the MicroStation screen to accept the new clip boundary.

46. Turn On the level *DRAFT_INFO_No-Plot* in the reference file *12345ROW_Model.dgn* to turn the sheet lay-outs back on.

47. Use the MicroStation **Move** command to relocate the border sheet. Also **Rotate** the border sheet to align with the predefined sheet limits.
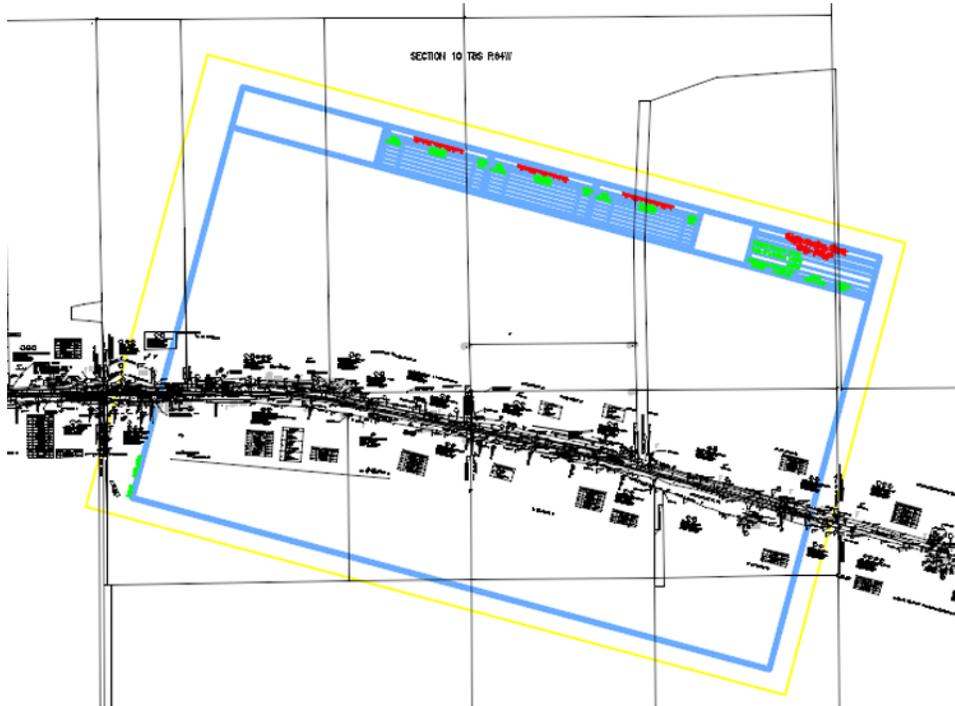
*Rotate* the MicroStation view so that the sheet is normal to the view.

48. Key-in **rv=0,0,15** (rotate view = X,Y, Z) for this **3D** file
     rv=15 if in a *2D* file.

49. **<D>** on the MicroStation screen to initialize the rotation.

> ***Note:***   The above key-ins vary based on the dimension of the MicroStation file, 2D or 3D. When working in a 3D file, the key-in is: rv=0,0,15 (rotate view=x-value, y-value, z-value). Rotation is specified in relative to the Z axis as that is the axis perpendicular to the view. Also, rotating a MicroStation view simply rotates the viewing of the graphics. The coordinate system is still relative to the graphics and any coordinate or alignment information extracted will be correct.
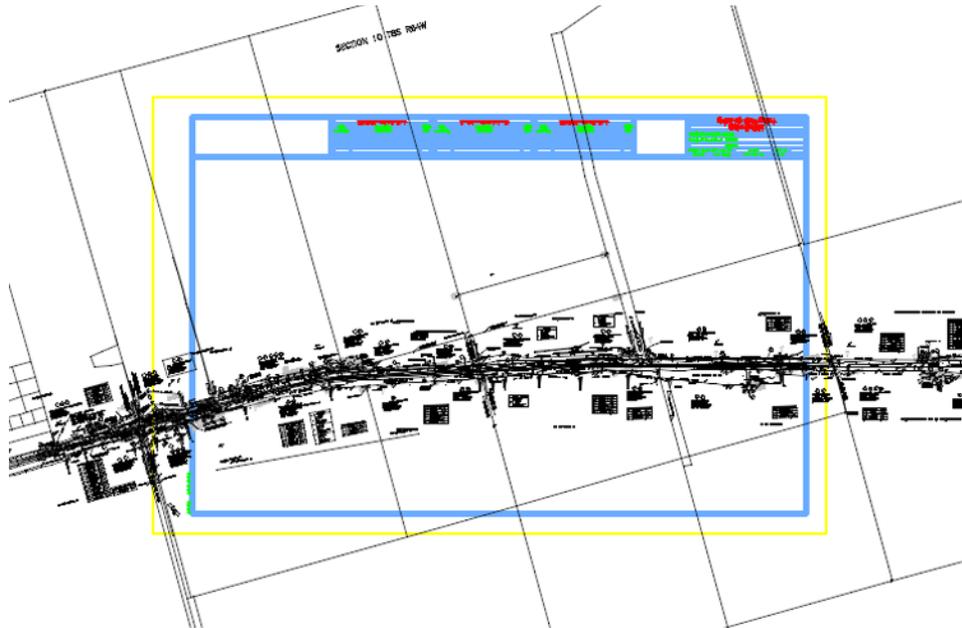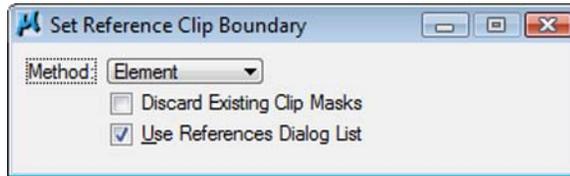

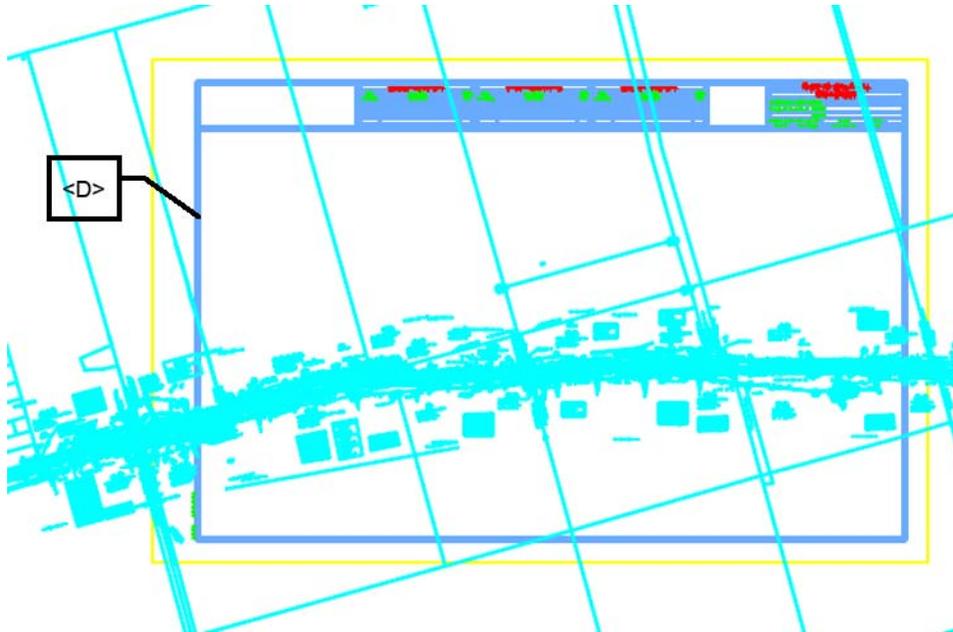Define a reference clip boundary, as you did earlier.

50. In the Reference dialog, identify the reference file and select
    Tools > Clip Boundary
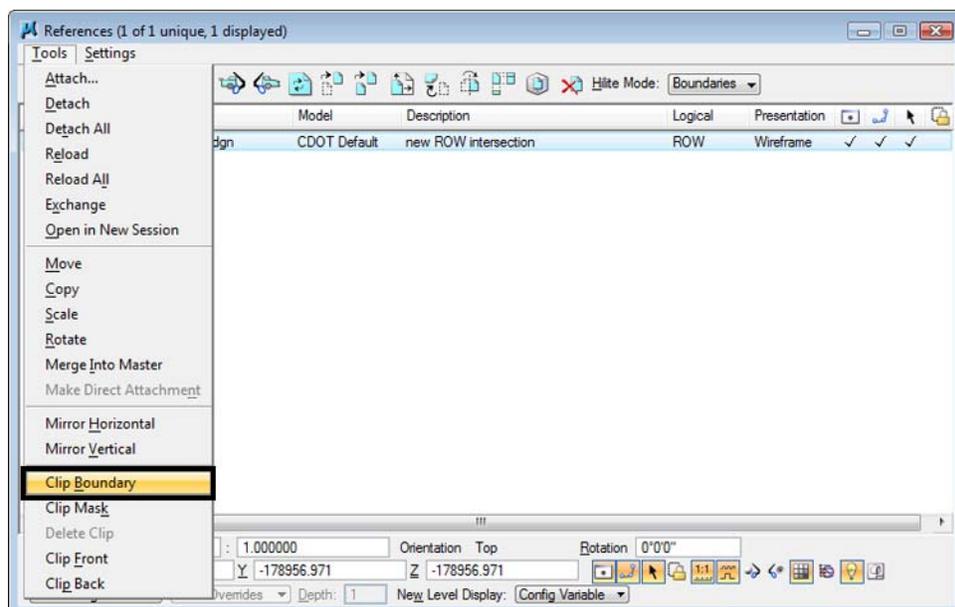
51. In the **Set Reference Clip Boundary** dialog, select the *Element* Method.

52. **<D>** on the shape inset ½ inch from the border.

53. **<D>** anywhere to accept the clip.

54. *Update* information in the title block of the sheet as necessary.

55. Select **File > Save Settings**

This same procedure can be repeated to complete the remainder of the sheets.