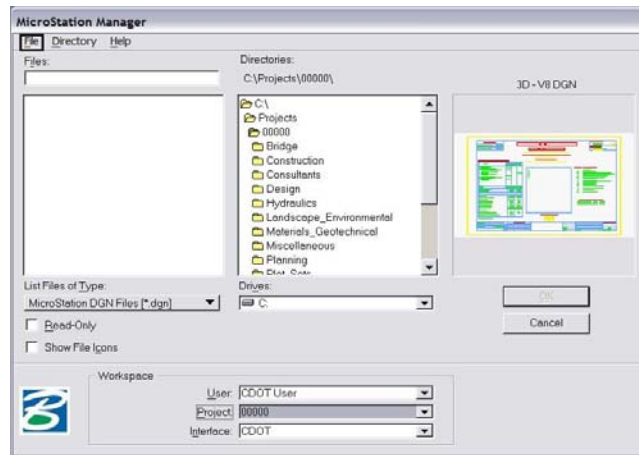# CDOT Sheet File Creation – Multiple Scales

This document guides you through creating a sheet file with multiple scales. First, we will be going over placing the sheet border around coordinate based model graphics. Then, we will go over attaching and scaling additional model files. Lastly, placing text and dimensions in the sheet file will be covered. For setting up plan sheets see the CDOT Sheet File Creation document.

Note: This example uses details from the Bridge discipline. This procedure applies to any sheet file with multiple scales. If you are in another specialty, please substitute with your specialty group's information.
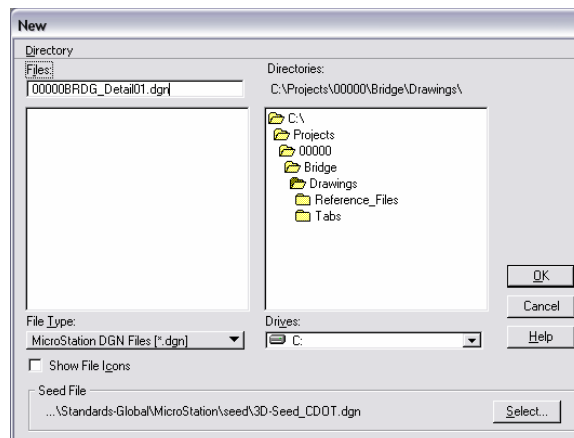
Setting up the Sheet File with Multiple Scales:

Beginning a New Drawing File
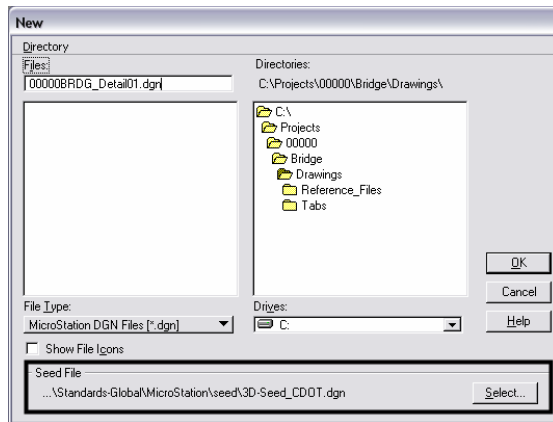
1. From the **MicroStation Manager**, select File > New.

2. Enter a drawing file name that corresponds to the next consecutive sheet number and place it in the appropriate folder located under C:\Projects\.......
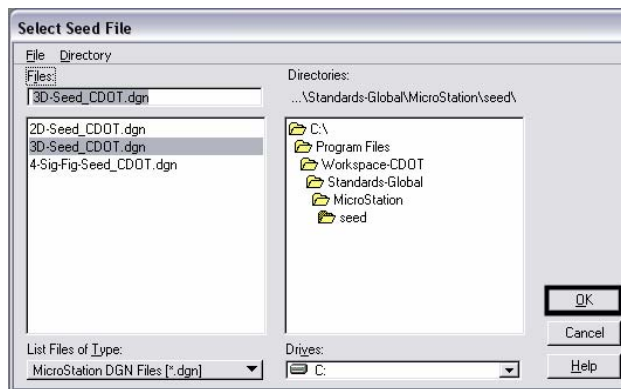
3. Verify that the correct *Seed File* is selected. If it is not, **<D> Select** and Navigate to **C:\Program Files\Workspace_CDOT\Standards-Global\MicroStation\Seed**.
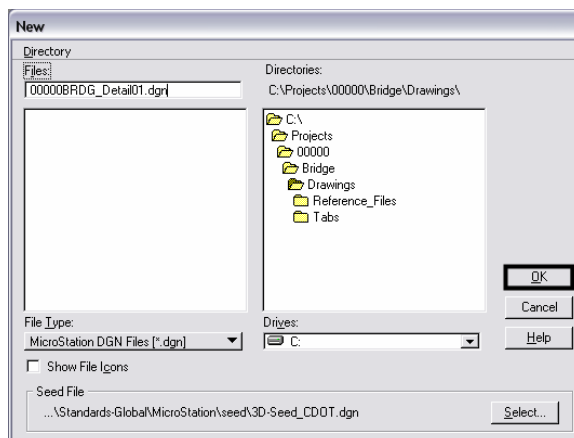

4. Highlight the desired seed file from the **Files** list box (for this example: 3D-Seed_CDOT.dgn) and **<D> OK**.
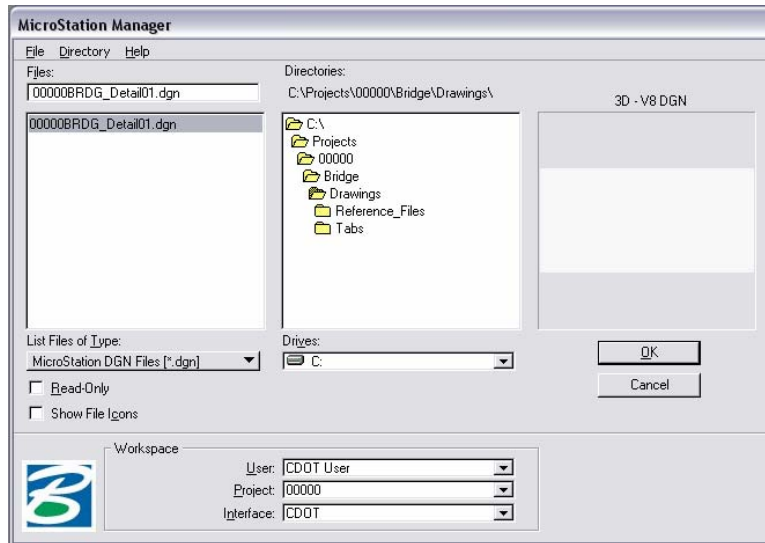

> **Note:** All disciplines use the 2D-Seed_CDOT.dgn and the 3D-Seed_CDOT.dgn. The 4-Sig-Fig-Seed_CDOT.dgn is a special bridge file.

5. In the **New** dialog box, **<D> OK**.

6. The file you created will be highlighted. **<D> OK** to open the file.

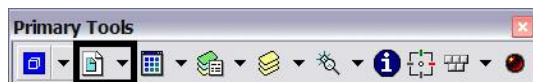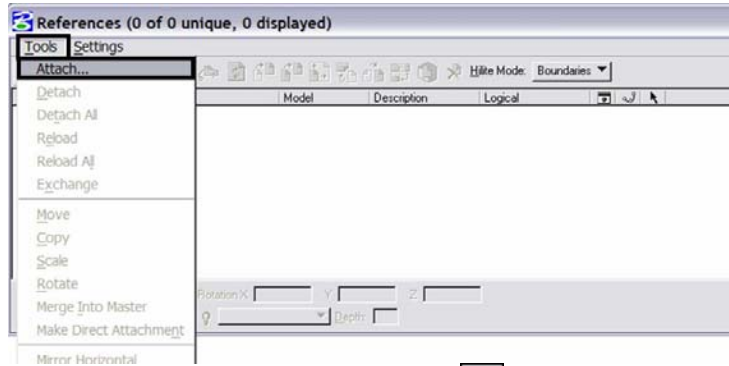## Attaching Model Files to the Sheet File

7. Select **File > Reference**.

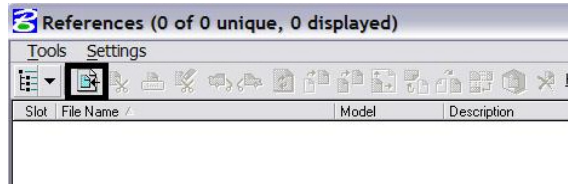Or choose the **Reference** icon from the **Primary Tools** toolbar.

8. From the **Reference Manager** tool bar select **Tools > Attach**


Or choose the **Attach Reference** icon .

9. The first model file you reference should be the one containing coordinate based information. Search for that model file and verify the **Attachment Method** is set to *Interactive*. <D> **OK**. If you are creating a sheet file containing details only, with no coordinate based information, bring in the detail with the largest scale factor first and scale the border to this detail. Once the detail with the largest scale factor has been referenced, attach the remaining details into the sheet file following the procedure outlined below.
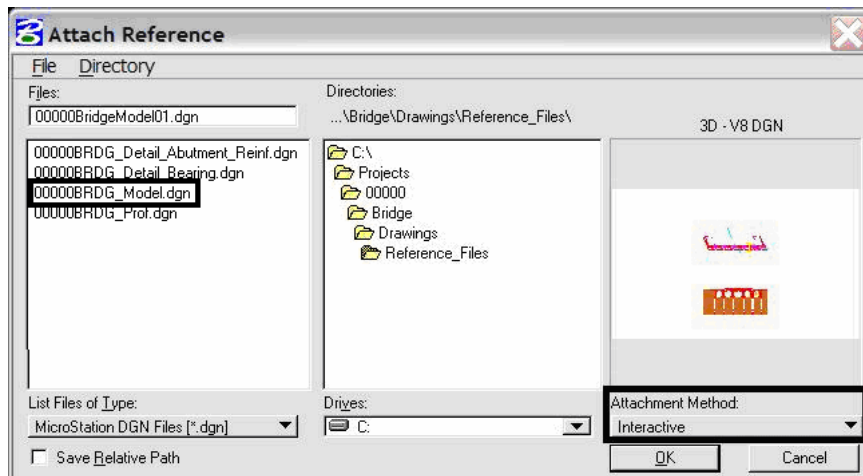
10. In the Reference Attachment Settings dialog box, key in a logical name and a description. For instance, the logical name might be *Plan View* for the BridgeModel drawing. The other settings should not have to be edited. *Coincident-World* is selected by default. Verify the Scale is to set to *1:1* and True Scale is checked **ON**. **<D> OK.**
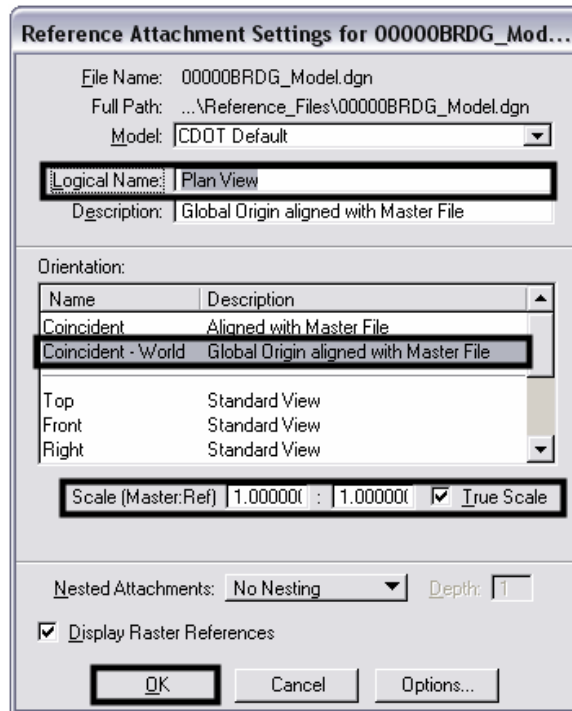
Note: When *Coincident World* under *Orientation* is selected and a Scale factor of *1:1* is entered, plan graphics are being referenced to the sheet file with the true coordinate information. All other attachment methods will not maintain the true coordinate values.
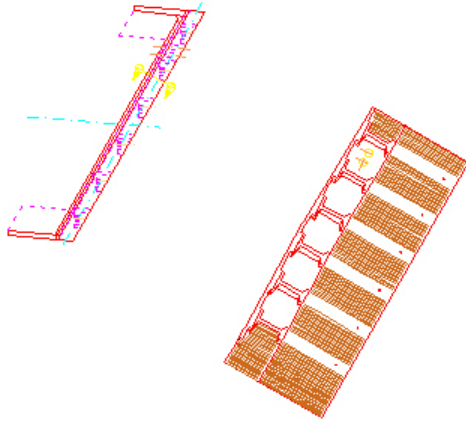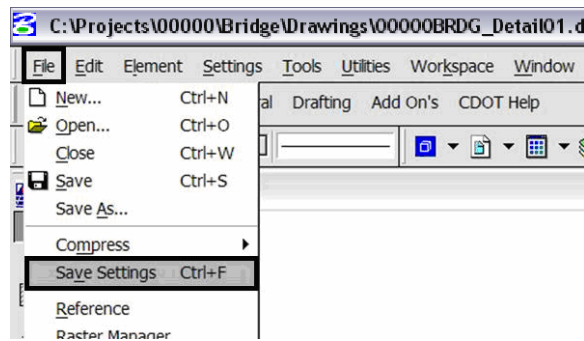
11. The file will be shown in the References dialog box.
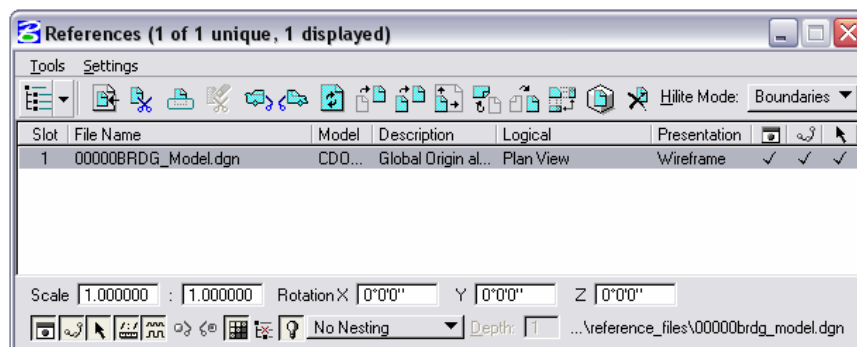
Note: Whenever you make graphical model file changes, your sheet file will automatically update.

12. **Fit View** using the icon so the graphics for the first model file are displayed.
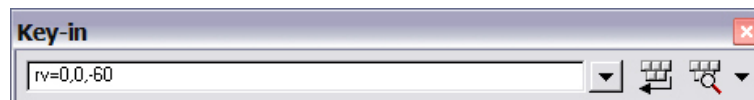

13. Select **File** > **Save Settings** from the **Primary** toolbar.


Rotating the View

14. After the references are attached, you may need to rotate the view depending on the layout of the sheet. **Note:** You are not rotating the reference file(s). You are only rotating the view. The coordinate system will not change.

15. One option to rotate the view is to Key-in **rv = x,y,z** and press **<Enter>** or **<Tab>**.

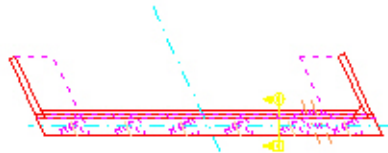> **<u>Note:</u>** x = 0, y = 0, and z = Rotation Angle. You are rotating the view about the z-axis. This is the axis perpendicular to the view. Otherwise, if you are working in a 2D file the key-in would be ***rv = value of rotation***.
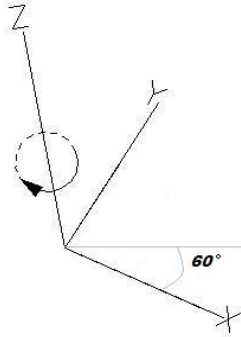
16. You will be prompted to select the view you would like to rotate in. **<D>** in the active view window.

Rotate View (Relative) > Select view
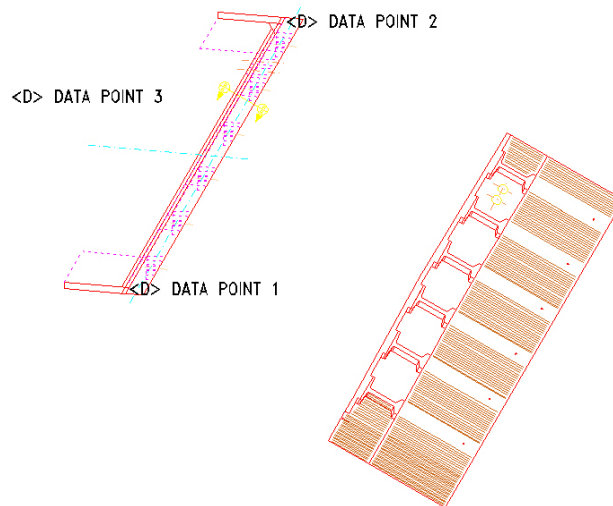
The view will be rotated.

17. Or you can rotate graphics using **3 Points**. Select Rotate View.

Change the Method to *3 Points*.

Note: Make sure you are picking a data point near the 3D element. Do not snap to 3D elements because you will be rotating along the z axis instead of just the x and y plane. Turn Accusnap off or you can hold down the <**Ctrl**> and <**Enter**> keys down at the same time to temporarily disable Accusnap while you are locating the data points.
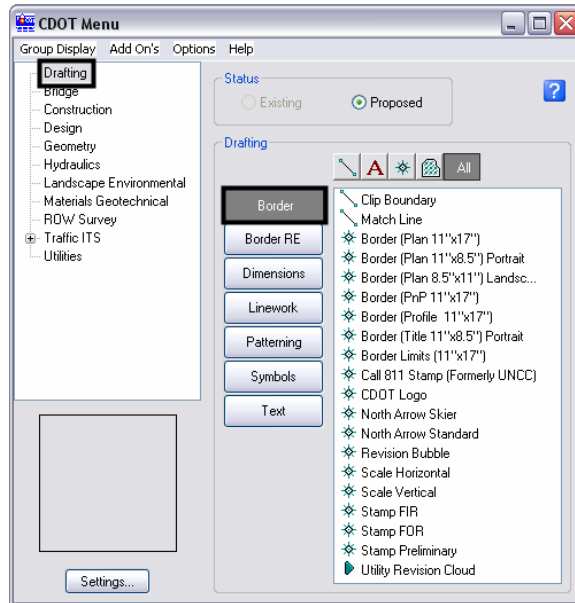
The view will be rotated.
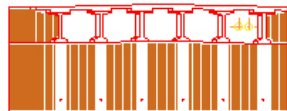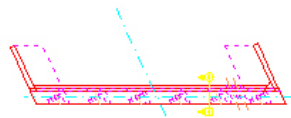
CDOT Sheet File Creation – Multiple Scales

## Attaching the Border and Resident Engineer Cell

18. From the CDOT Menu, select **Drafting** > **Borders.**

19. **<D> Settings** if the desired sheet scale is something other than 1" = 100'.   In the **Active Settings** dialog box you can change the **Active Scale** and the **Active Angle**. In this example, the standard 11x17 sheet border is too large for the plot area when the **Active Scale** is set at *1" = 100'*.
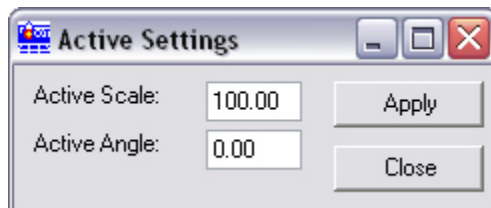

20. Prior to placing the border and border information, set the **Active Scale**. This should be set to the largest proposed scale factor you plan to have on your sheet. For example, if you have a plan view that should be plotted at 1" = 40' and a detail that should be plotted at 1" = 5', the largest scale detail would be 1" = 40'. Choose a scale factor in even increments such as 10, 20, 30, 40, 50, 60, 100, etc. **<D> Apply**.
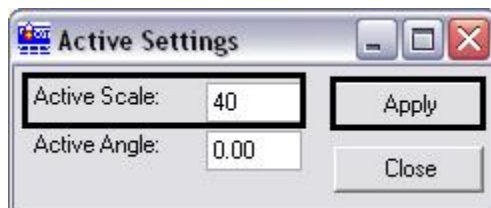
> **Note:** The Active Angle is view independent and not associated with view rotation. Therefore, the x-axis is always horizontal regardless of the view rotation. You will not need to set this for correct placement of the North Arrow or other cells.
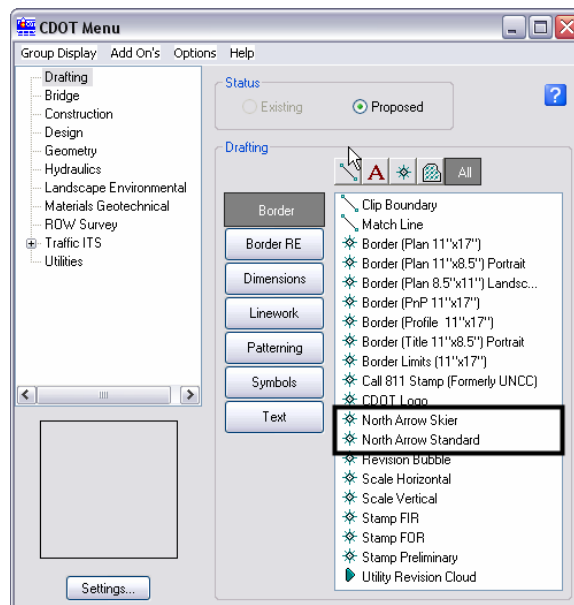
21. Select the desired sheet border cell from the list.
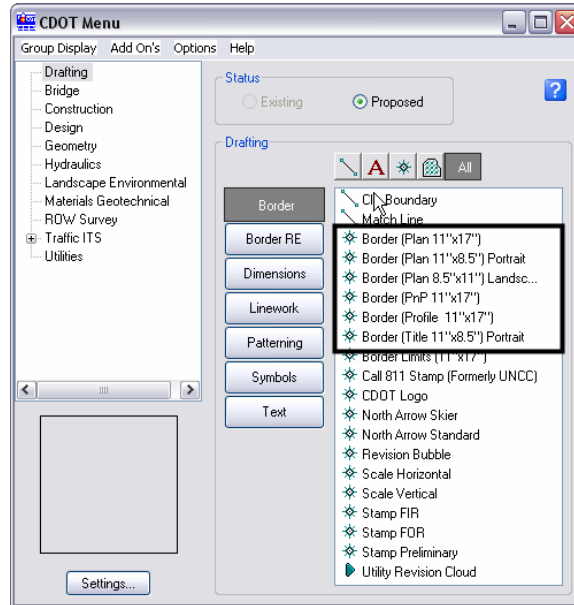
22. You will then be prompted to locate the lower left hand corner of the sheet border (the cell's origin). Move the cell to the desired location and <D>.
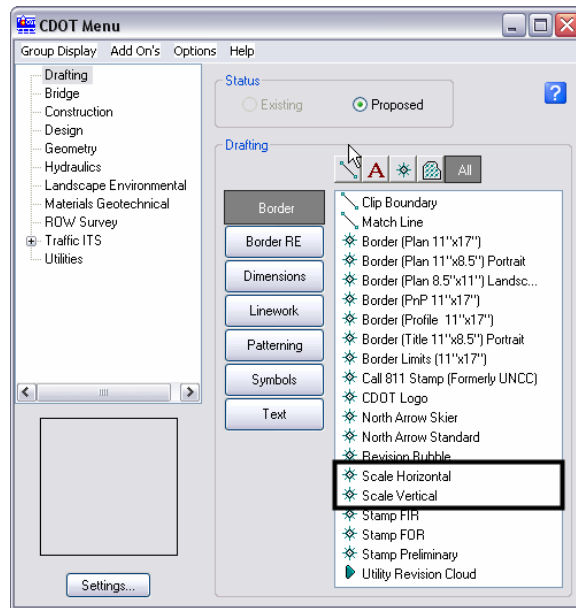

Place Active Cell > Enter cell origin

23. Select the desired **North Arrow**. Move the cell to the desired location and **<D>**.
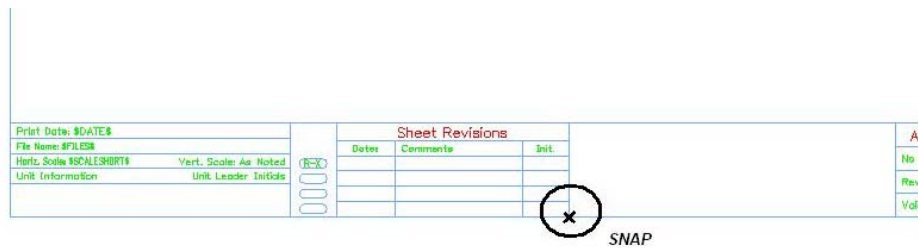
24. Select a Bar Scale if desired. Move the cell to the desired location and **<D>**.


25. Lastly, select the Border RE button, then select the desired Region Engineer cell.
<T> to the location shown in the illustration below and **<D>** to accept placement.

Note: Contact the CADD Manager if any edits need to be made to a Region Engineer cell. Remember, you **can** edit the cell with the Edit Text command until the changes are available in the next configuration.

26. Double click on any of the text fields in the border to add sheet specific information.
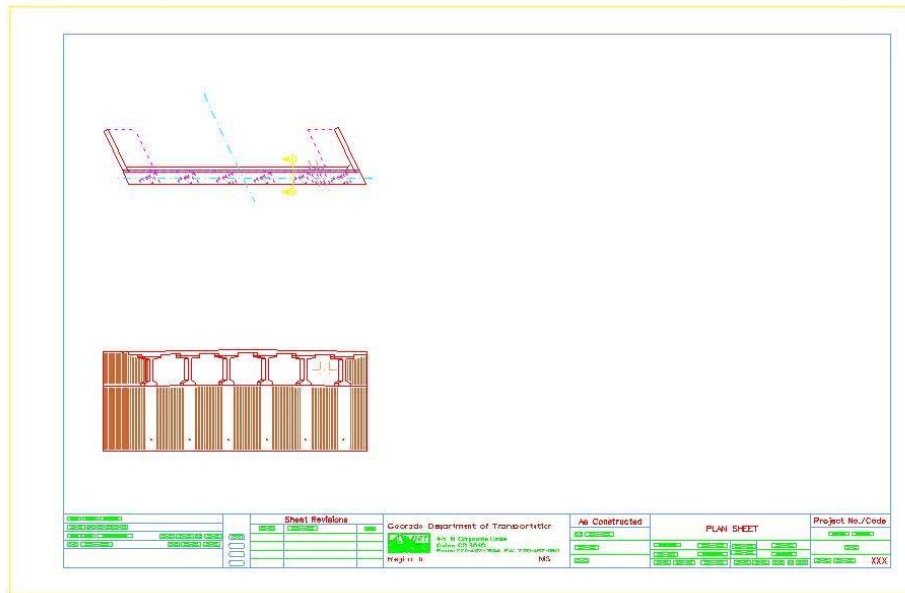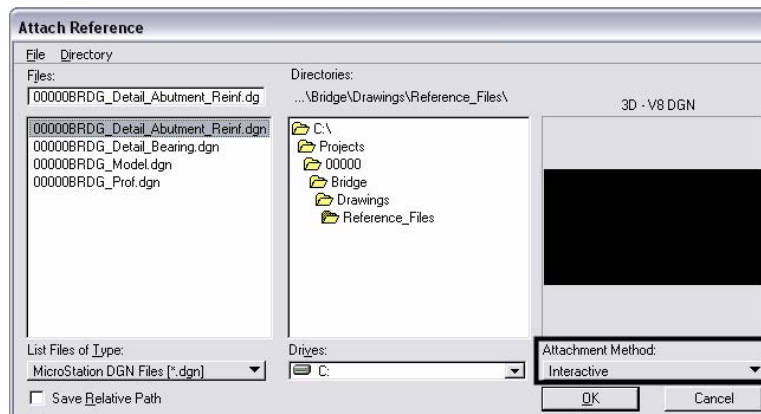

Adding Additional Model Files to the Sheet File

27. Once you have referenced the model file with coordinate based information and added the border, you can begin referencing additional files with various scales.

    Select the Attach Reference icon [icon] located on the reference file dialog box. Locate the file you want to attach. **<D> OK**.

28. In the **Reference Attachment Settings** dialog box, key in a logical name and a description. Set the **Orientation** to *Top* and set the **Scale**. When you set the **Scale**, key-in the scale factor of the border sheet into the first field. In this example it is *40*. In the second field, key-in the scale factor you want the detail to be plotted at. In this example *5* represents 1"=5'. The overall scale factor for the detail is 40/5 = 8. MicroStation will calculate this for you.
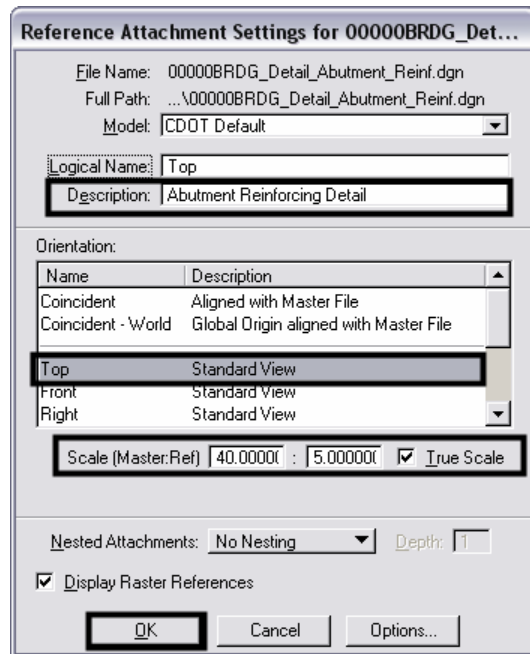
Formula:
Border Scale: scale the border cell was inserted

Detail Plot Scale: scale for specific detail to be plotted (See Step 22)

Scale Factor: model file insertion value

Scale Factor = Border Scale / Detail Plot Scale

Alternatively, you could key-in 8 into the first field and 1 in the second field. This means the new detail is 8 times larger than the first detail

With the *Orientation* set to **Top**, the model file is anchored to your cursor and you can place it interactively.
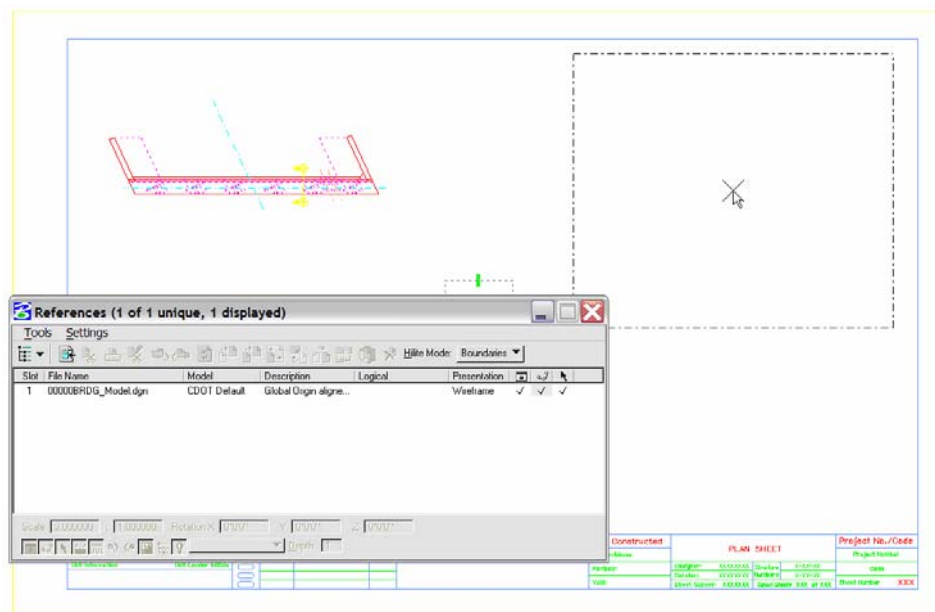
29. After the model file is positioned in the area you would like, **<D>** to accept the placement of the additional model in the sheet file. The model file is placed relative to your active Z. Verify the active Z by snapping somewhere in the view, prior to placing the new detail. If the Z is not correct, you can interactively key-in **AZ=0**, select the view, hit reset and continue with the reference attachment.
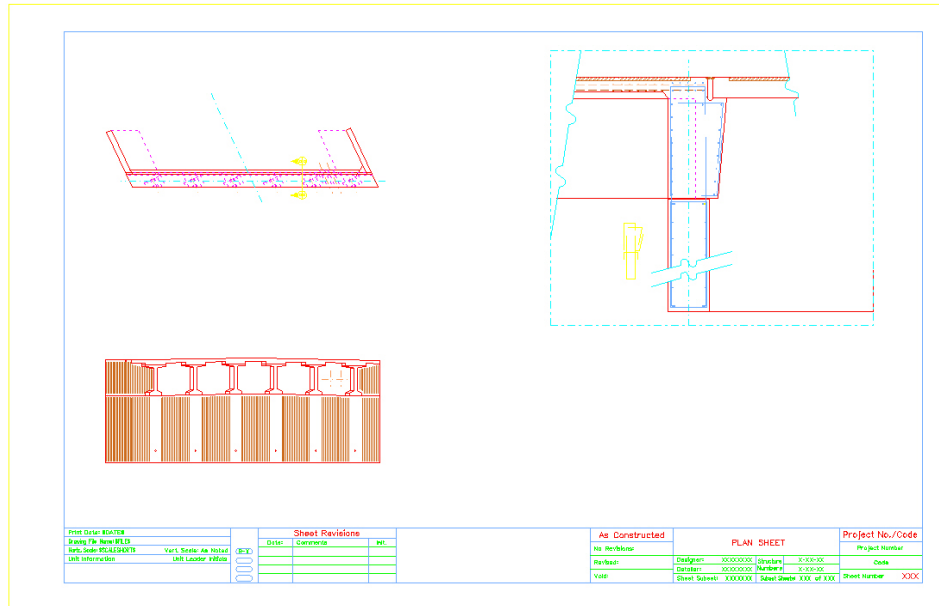
30. Attach additional model files you would like to add to the sheet file.
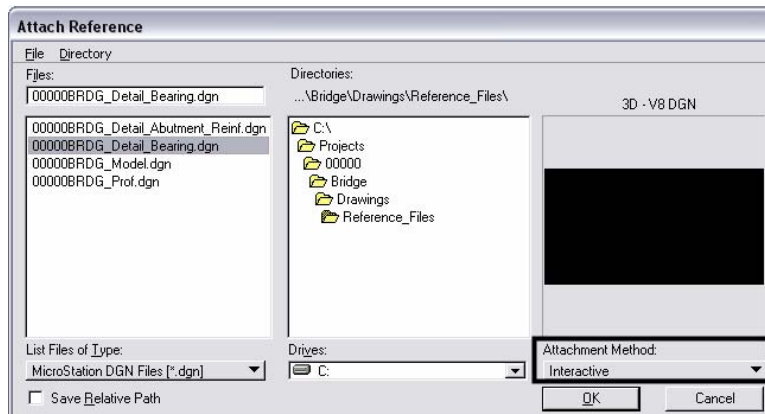
31. In the **Reference Attachment Settings** dialog box, key in a logical name and a description. Set the *Orientation* to **Top** and set the ꜱᴄᴀʟᴇ. In this example the border cell was inserted at 40 (see Step 22 above), If you want the last detail to be plotted at a 1"=10' scale, leave **40** in the first field and key-in **10** to the second field. The overall scale factor for the detail is 40/10 = 4. MicroStation will calculate this for you.

Formula:
Border Scale: scale the border cell was inserted

Detail Plot Scale: scale for specific detail to be plotted (See Step 22)

Scale Factor: model file insertion value

Scale Factor = Border Scale / Detail Plot Scale

Alternatively, you could key-in 4 into the first field and 1 in the second field. This means the new detail is 4 times larger than the first detail

32. Place the model file interactively and <D> to accept placement in the sheet file.

Additional Sheet File Information

Setting up Text and Dimension Scale in the Sheet File

33. You must change the Annotation Scale Factor if the border cell was scaled to a factor other than 1:100. Otherwise, the text size in the sheet file will not correspond to the scale factor chosen when placing the border cell.
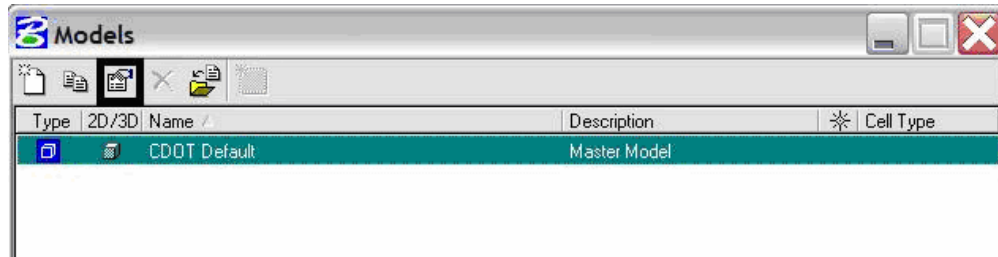
Select File > Models from the **Primary** toolbar.
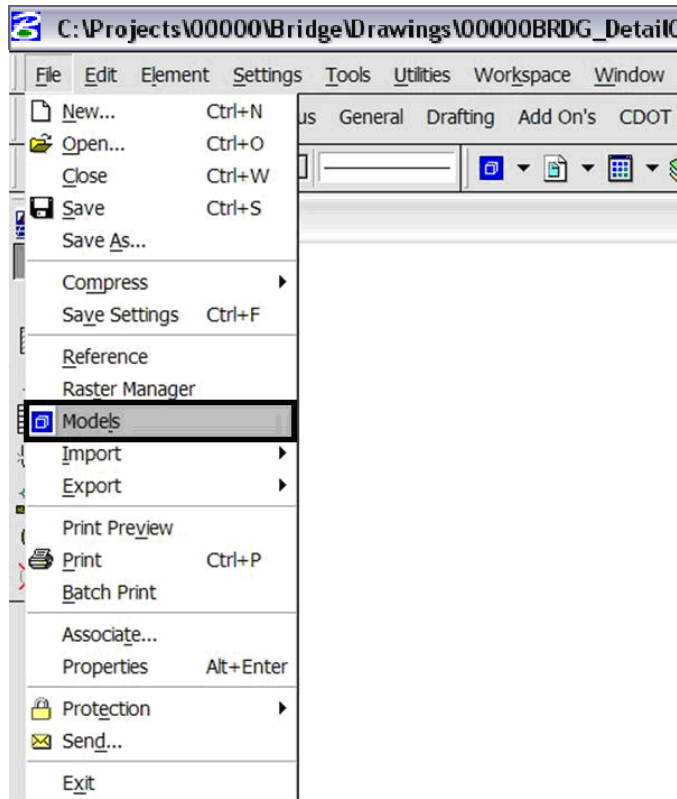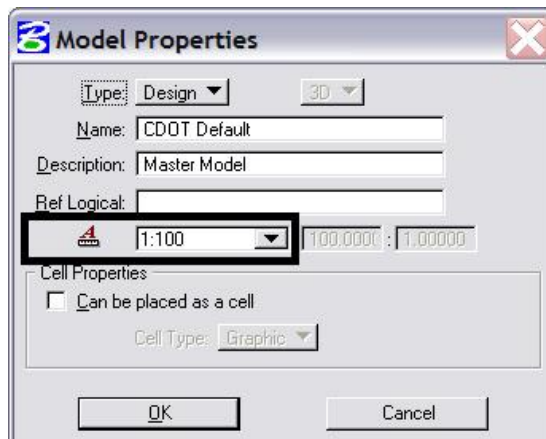

Or select **Models** icon from **Primary Tools**.

34. Select the **Edit Model Properties** icon

35. The **Annotation Scale** factor defaults to *1:100*. Select the arrow to change the scale factor. If you try to place text before setting this, it will be too large since the drawing plot scale is at a 1:40.
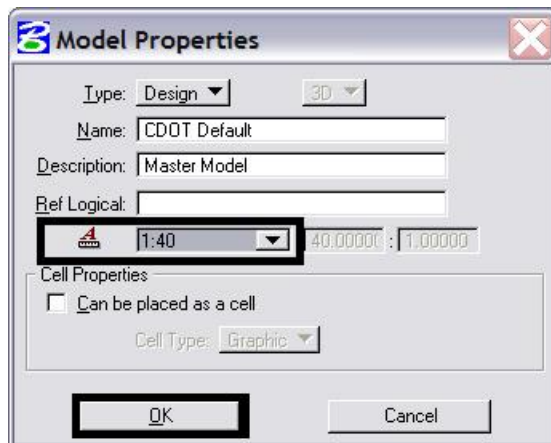

36. From the pull down, select the *Annotation Scale* factor to match the scale factor used when placing the border cell.
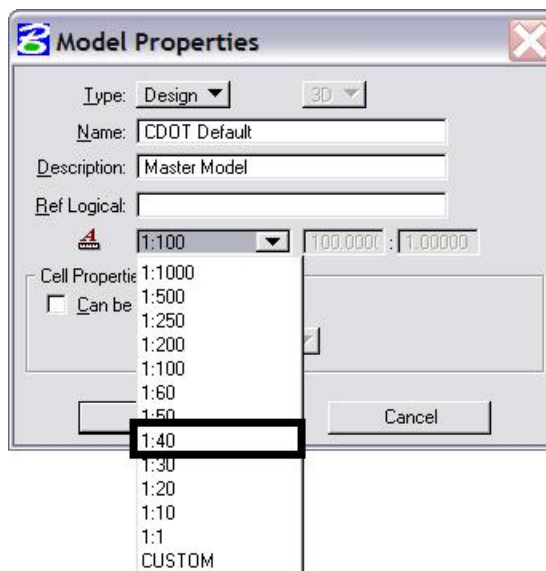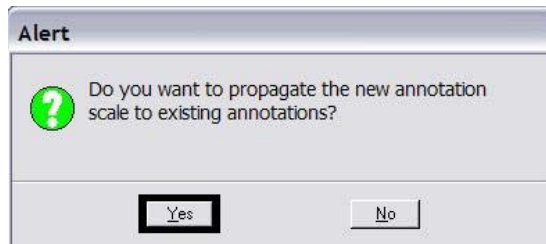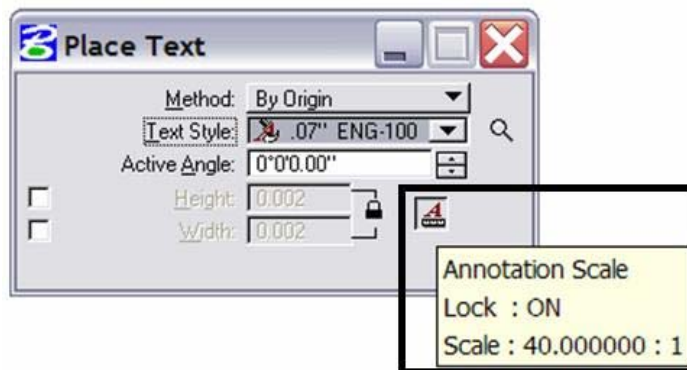
37. In this example, an annotation scale factor of **1:40** should display. **<D>** *OK* to accept.

38. The following **Alert** dialog box will be displayed. **<D> Yes**. The result will be the updated of any text previously placed in your sheet file.


39. Now, you can add text to the new sheet file. It will be scaled to the correct height based on the plot scale or in this case 1:40.

Note: Annotation Scale Lock must be turned **ON** when placing text or dimensions for the scale factor to take affect. Verify it is **ON** by hovering with your cursor over the ⓐ icon.

40. You can dimension the model files in the new sheet file. The dimensions will be scaled to the correct size based on the plot scale or in this case 1:40.
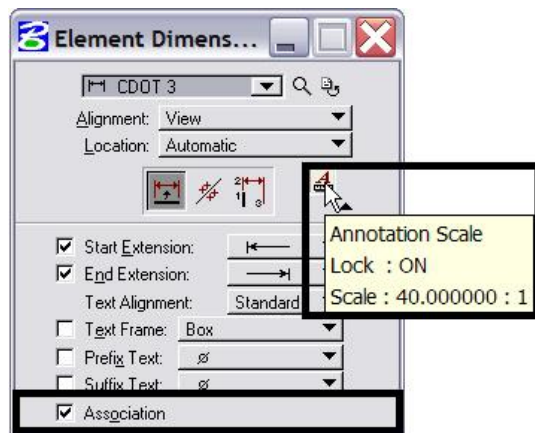
Note: Annotation Scale Lock must be turned **ON** when placing text or dimensions for the scale factor to take affect. Verify 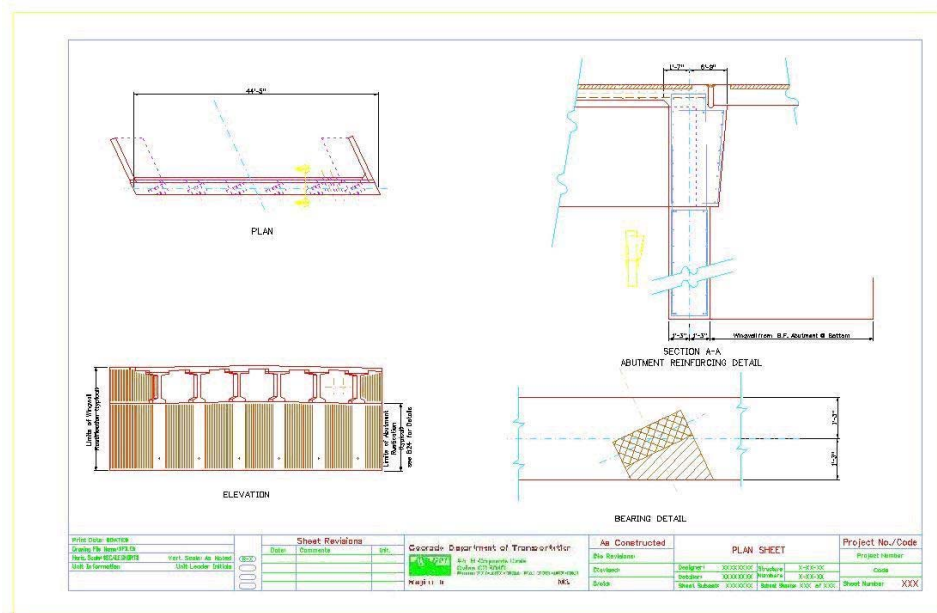it is **ON** by hovering with your cursor over the ![icon] icon. Also, verify the **Association** is **ON** so the dimensions will dynamically update when model changes are made. This setting is turned on by default.

41. The Sheet file now includes text and dimensions for multiple scaled details.

42. Select File > Save Settings before you exit MicroStation.