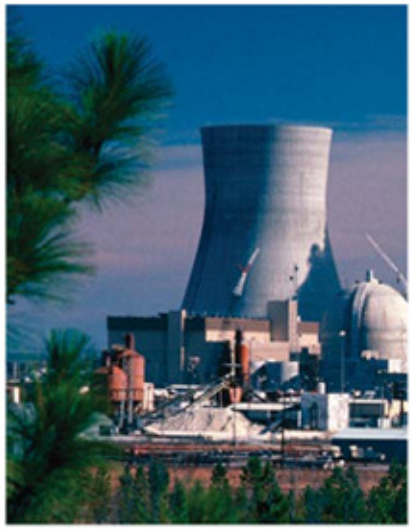
SmartPlant 3D

Drawing Configuration Practice Labs

Process, Power & Marine


INTERGRAPH

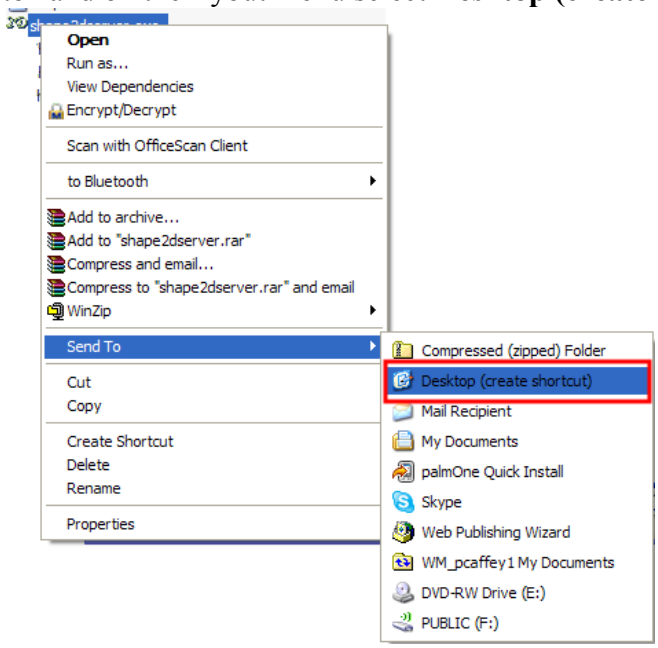
Version 2009 February 2009 PPM-08-551

Contents

Lab 1 : New Drawing Template

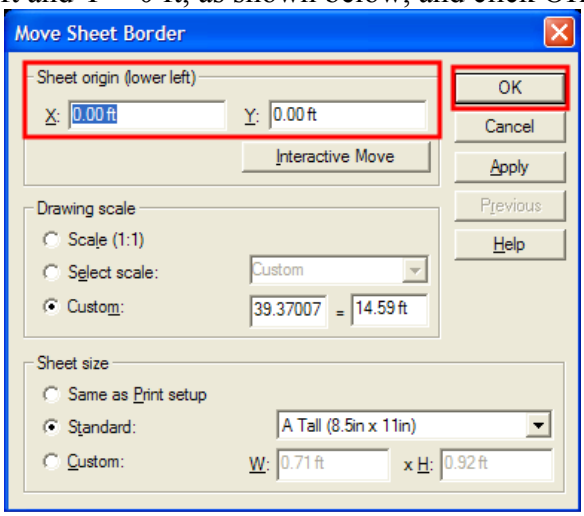
Using a DGN template to seed a Drawing template

1. This procedure shows you how to import a file so you can edit it in the **Drawings and Reports** task to become a SmartPlant3D border template. The drawing editor used with SmartPlant3D is called the **2D Drawing Editor** and will accept a DGN or DWG as a seed file to create a border template. The following lab instructs how to import a DGN which can be used as a SP3D drawing template.
2. Open Windows Explorer and navigate to [Installation Dir]\\Common2D\Shape2D\Bin. Right click on shape2dserver.exe and select "Send to" and on the flyout menu select **Desktop (create shortcut)**, as shown below:

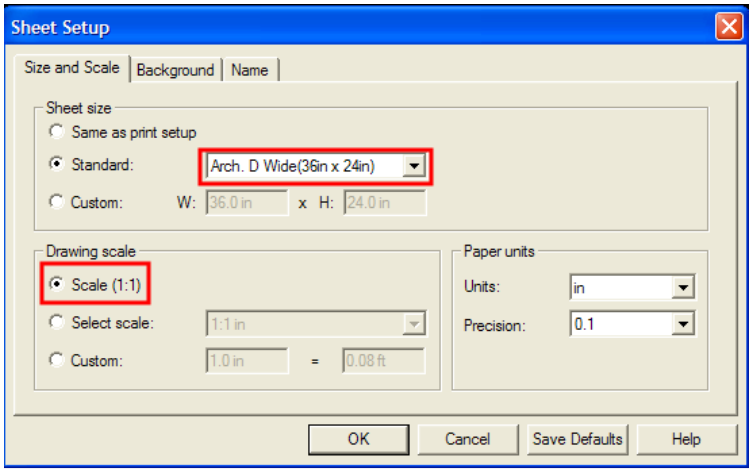


3. Open **2D Drawing Editor** using desktop shortcut.
4. Select File – Open from the main menu to open the DGN provided by the instructor, the file contents are automatically converted to SHA format.
5. After the DGN file is open in the **2D Drawing Editor** application, select File – Move Sheet Border. Change the X and Y values for the **Sheet origin (lower left)** to X = 0

ft and Y = 0 ft, as shown below, and click OK

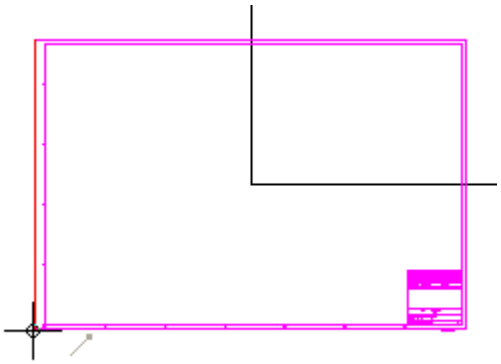


6. From the main menu, select File – Sheet Properties. On the **Size and Scale** tab change the **Sheet Size** to "Arch. D Wide (36in x 24in)" from the drop down select list. Select the radio button **Scale (1:1)** for the **Drawing scale** and click OK, as shown below:



7. Start PinPoint using menu Tools → PinPoint and press the select command to dismiss the reposition target.
8. Use the keystroke combination **Ctrl + A** to select all graphical objects.
9. Start the Move command from the Change toolbar.

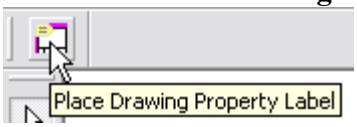
10. Click on the bottom left corner of the border graphics.



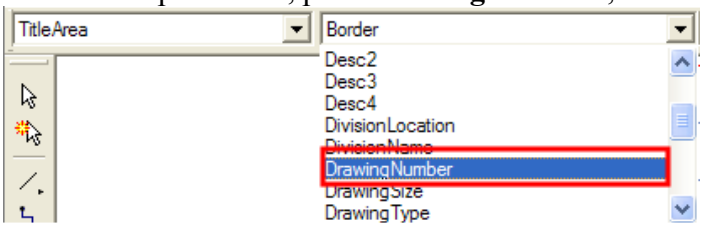
11. Move mouse to X=0, Y = 0 and click to finish the move.
12. From the main menu, select File – Save As and navigate to the symbol share for the catalog to the following location: \\[Symbol Share]\Drawings\Catalog\templates\Imperial. Save the templates as ArchDWide.sha.
13. Close Drawing Editor.

Adding Drawing Property Labels and Drawing Area

14. Change the Tasks to **Drawings and Reports** task and select **Tools – Edit Border Template** from the main menu.
15. Select "ArchDWide.sha" from the **Imperial** folder and OK the form.
16. Select the **Place Drawing Property Label** command

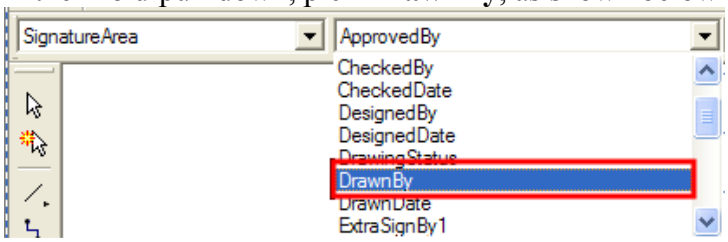


17. In the **Label Set** pull down, pick **Title Area**
18. In the **Field** pull down, pick **Drawing Number**, as shown below:

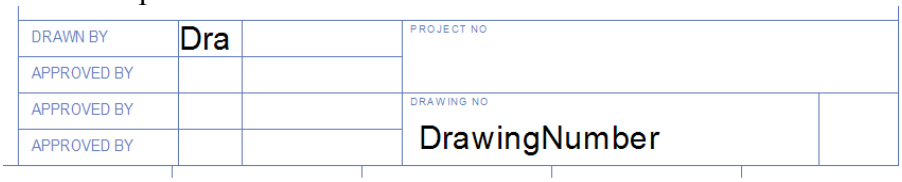


19. Click close to the bottom right corner of the sheet to place the label. If the label does not appear on the document, select the **Display Label Names**  located at the far right of the current **Place Drawing Property Label** ribbon bar.
20. Click the Drawing Number label and drag the label to the cell provided in the Title area of the border labels "DRAWING NO.". Resize the label to the desired width using the handles on the label.
21. With the **Place Drawing Property Label** ribbon bar still active, select **SignatureArea** from the **Label Set** pull down.

22. In the **Field** pull down, pick **DrawnBy**, as shown below



23. Click close to the bottom right corner of the sheet to place the label. Position the label in the cell provided in the Title area of the document labeled "DRAWN BY". Resize the label to fit the cell provided.
24. The labels placed should look as follows:

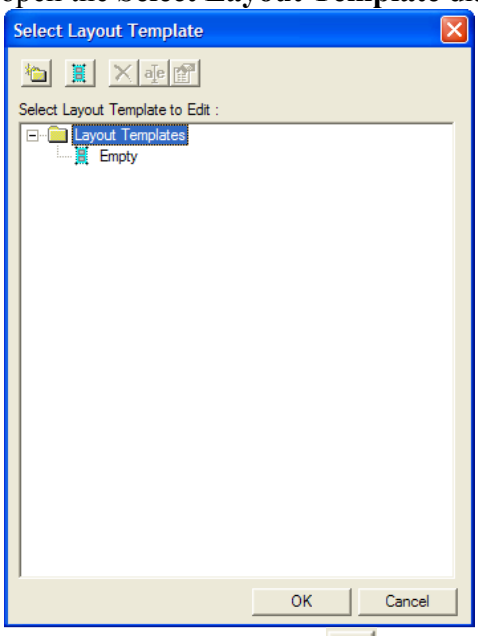


25. Next, place a **Drawing Area** in the document by selecting the **Place Drawing Area** button  located in the top left of the document. This will enable us to use **Layout Templates** with this border.
26. With this command active, left click once on the top corner of the document where the ruler starts. Drag your mouse to the bottom corner of the document just above the **Title Area** designation and left click again to finish the command.

27. Close the document and select "Yes" when prompted to save the changes made to the border template.

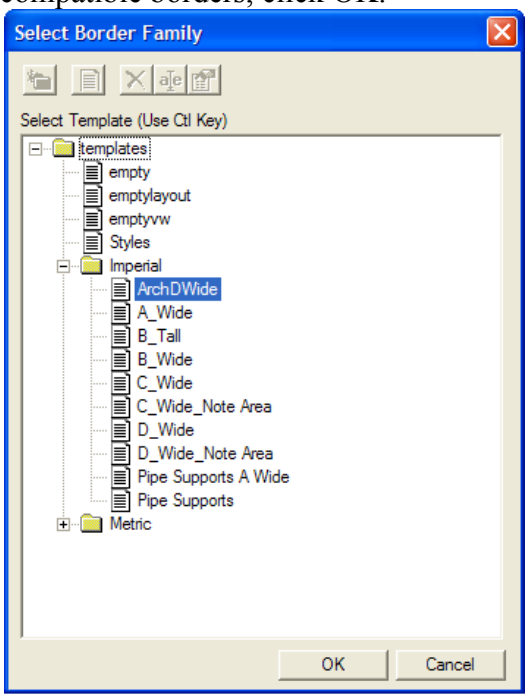
Lab 2 : Defining Layout Template

1. In the **Drawings and Reports** task, select Tools – Edit Layout Template… This will open the **Select Layout Template** dialog as shown below:



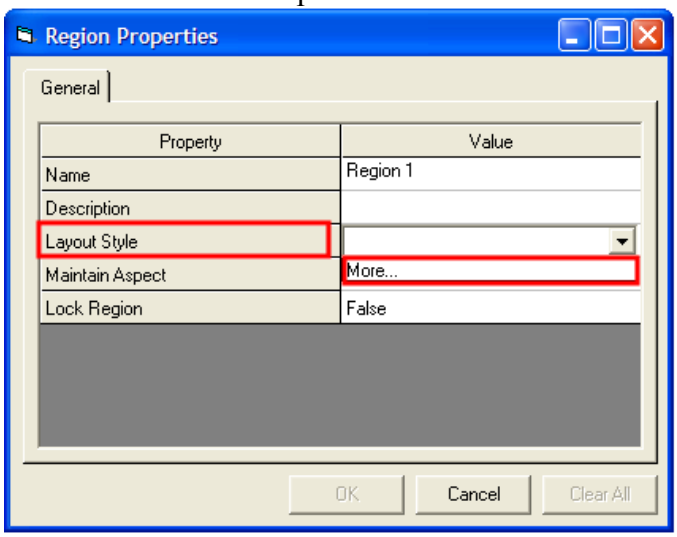
2. Click on the **New** button  which will create a new layout called "New Layout". With this layout selected, change the name of it by selecting the **Rename** button  and type in "Piping Plan 0.25 in = 1 ft".
3. With the new layout highlighted, click OK. This will open the layout template in the **2D Drawing Editor**.
4. When the document opens you will be prompted with a dialog labeled **Select Border Family**. Expand the **Imperial** folder and select the templates "ArchDWide" and "D_Wide" using the **Ctrl** key while selecting. When you are finished selecting the

compatible borders, click OK.

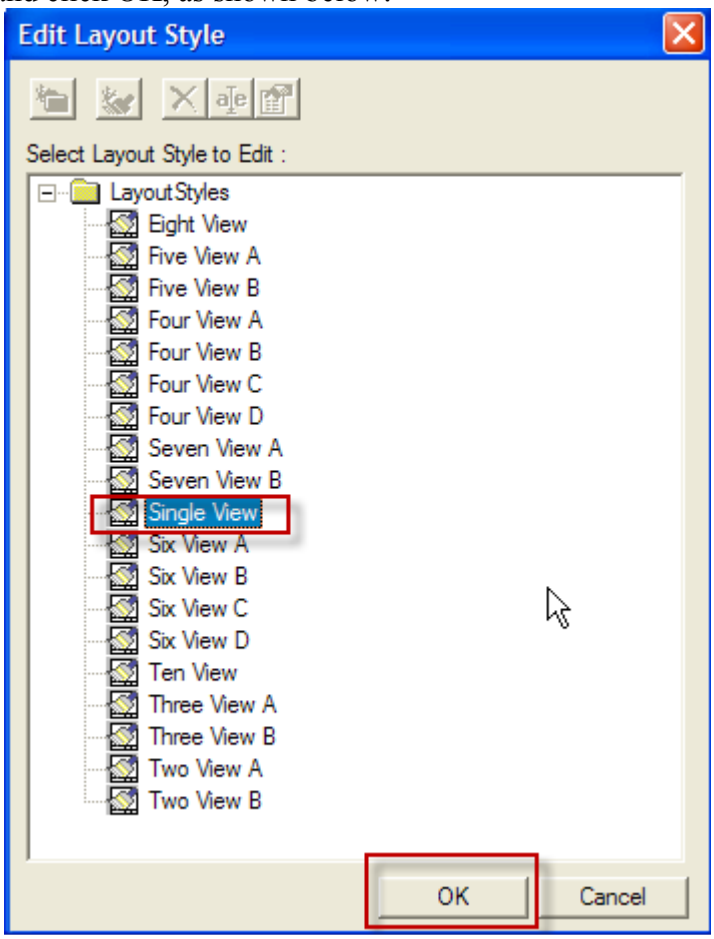


5. On the horizontal toolbar, select the **Place Region** button  and left click once on the top left corner of the magenta view and drag your mouse to the bottom right corner of the magenta view. Left click again to place the region. After this mouse click you will be presented with the **Region Properties** dialog.

6. On the **General** tab of the dialog, click in the **Layout Style** value field and select "More…" from the drop down list.



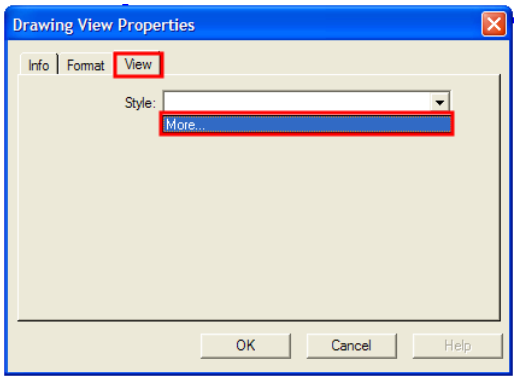
7. This will open the **Edit Layout Style** dialog where you will select “Single View”, and click OK, as shown below:



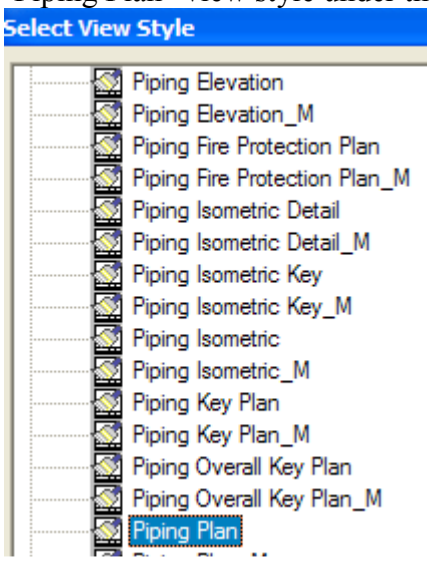
8. Click OK on the **Region Properties** dialog.

9. Select the **Place View** button  , on the horizontal ribbon bar, and left click once in the magenta view. Drag your mouse to create a small square and left click again. This will place a drawing view in the region placed in the previous steps. You will now be presented with the **Drawing View Properties** dialog.

10. On the **View** tab of the dialog, drop down the select list for the **Style** and select “More …”



11. This will present you with the **Select View Style** dialog where you will select the "Piping Plan" view style under the **Orthographic** list.

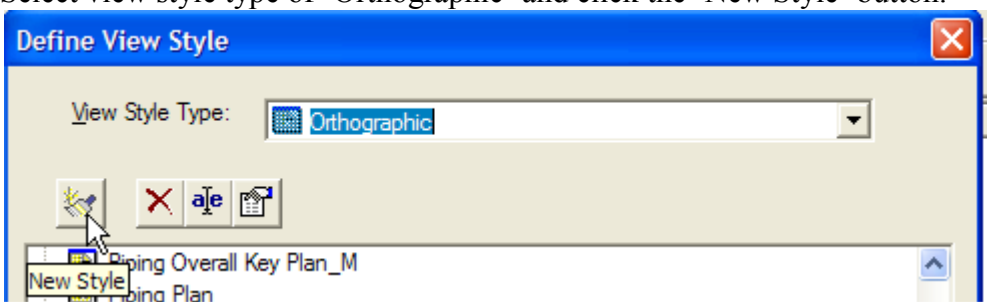


12. After the style is selected, the dialog box will present more view properties that can be filled in. Fill in the properties as follows, omitting fields in the dialog that are not mentioned below, and click OK:
    Name = Piping Plan
    Scale Family = Architectural Scales
    User Selected Scale = ¼ in = 1 ft
    Look Direction = Looking Plan
    Margin Top = 4.0 in
    Margin Bottom = 4.0 in
    Margin Left = 4.0 in
    Margin Right = 4.0 in
13. Once you click OK on the dialog, notice how the view will automatically reposition itself in the region.
14. Exit the **2D Drawing Editor** when you have completed the view placement and save the changes made to this document by select "Yes" when prompted.

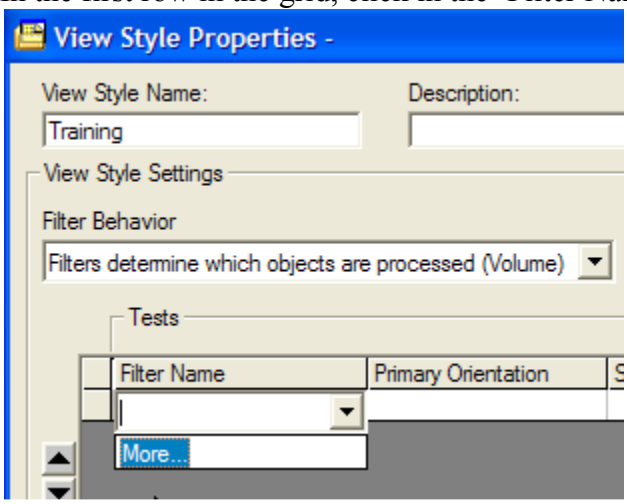
Lab 3 : New View Style and Filter Behavior

Create New View Style

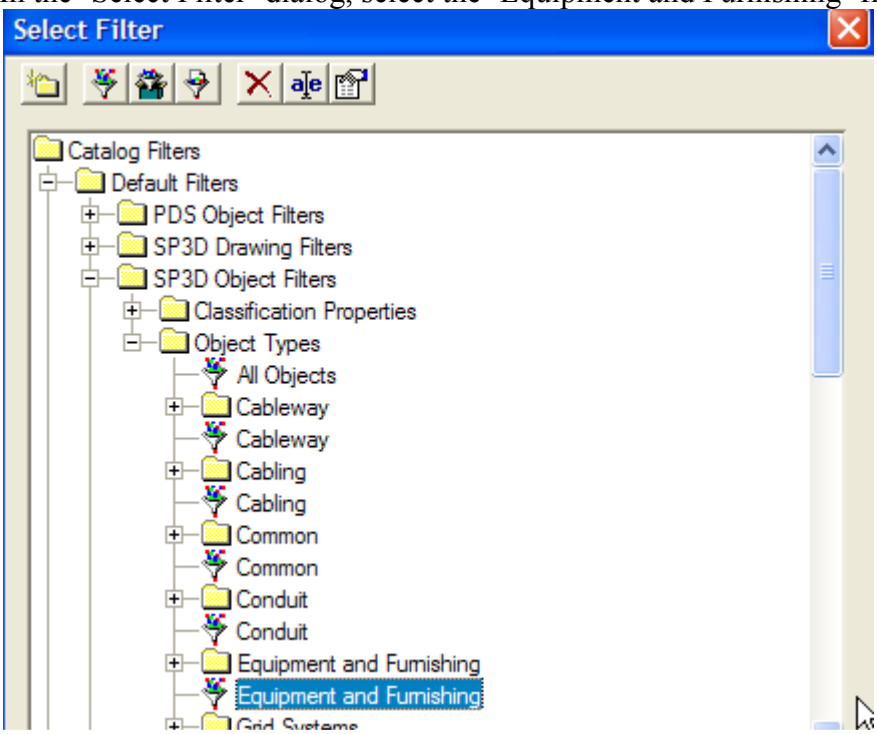
1. Switch to Drawings and Reports task using Tasks → Drawings and Reports
2. Select menu Tools → Define View Style
3. Select view style type of 'Orthographic' and click the 'New Style' button.



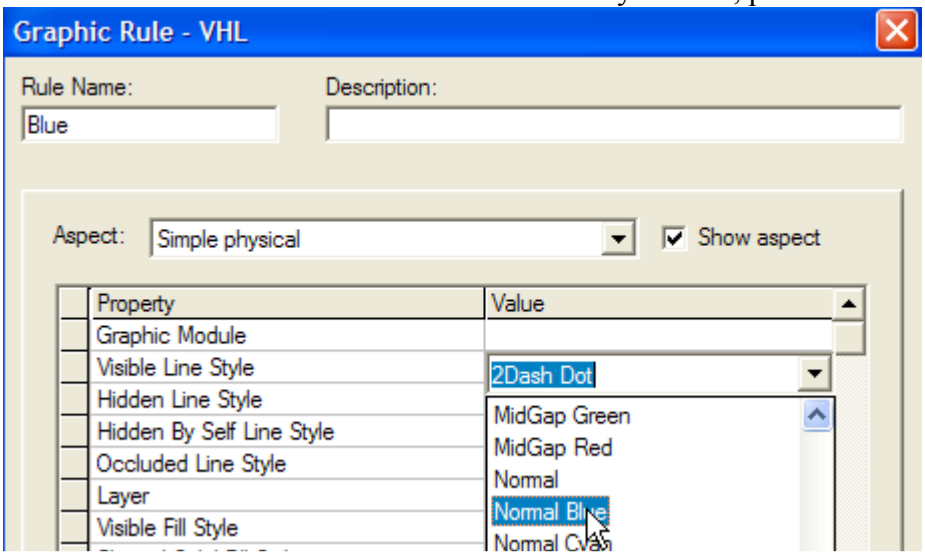
4. Name the newly created style 'Training' and click the Properties button.
5. In the first row in the grid, click in the 'Filter Name' column and select More…



6. In the ‘Select Filter’ dialog, select the ‘Equipment and Furnishing’ filter



7. Click in the ‘Graphic Rule’ column and select More…
8. In the ‘Select Graphic Rule’ dialog, click the ‘New…’ button
9. Name the rule ‘Blue’ and in the ‘Visible Line Style’ field, pick ‘Normal Blue’



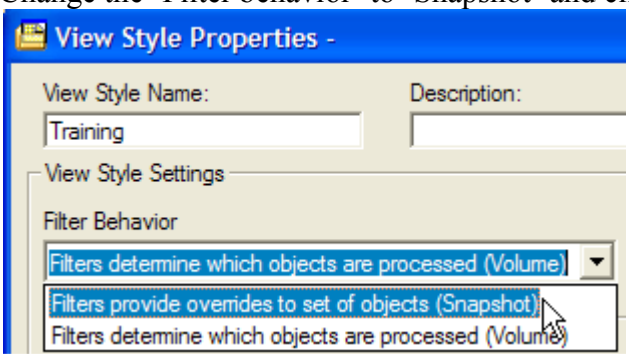
10. Click OK to define the graphic rule.
11. Click OK to select the graphic rule.
12. Click OK to define the view style.
13. Click Close to close the view style form

Apply View Style

14. Edit the drawing ‘Piping Plan 1’
15. Select the view, right-mouse click and open properties.
16. In the drawing view properties form, select the ‘Training’ view style and click OK.
17. Right-mouse click the view and update view.
18. Review the output (notice that only equipment is shown in blue) but do not close Drawing Editor.

Change Filter Behavior

19. Select menu Tools → Define View Style
20. Select the view style ‘Training’ and click Properties button.
21. Change the ‘Filter behavior’ to ‘Snapshot’ and click OK.



22. Switch to Drawing Editor, and update the view. Notice that equipment continues to be shown in blue but other objects are shown in black color.

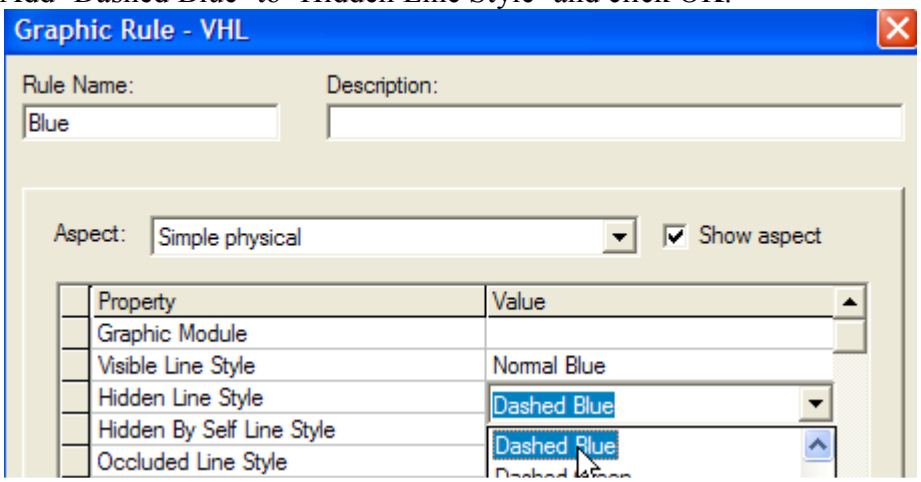
Add Row to View Style

23. Select the view style ‘Training’ and click Properties button.
24. Add a row with filter ‘Piping’ and graphic rule ‘Red’ with visible line style ‘Normal Red’ and click OK
25. Switch to drawing editor and update view.

Add Hidden Lines to Graphic Rule ‘Blue’

26. Select the view style ‘Training’ and click Properties button.
27. Click in the Graphic Rule field in the first row and select More…
28. Select the graphic rule ‘Blue’ and edit properties

29. Add ‘Dashed Blue’ to ‘Hidden Line Style’ and click OK.



30. Switch to drawing editor and update view. Notice how lines of equipment hidden under other objects are shown dashed.

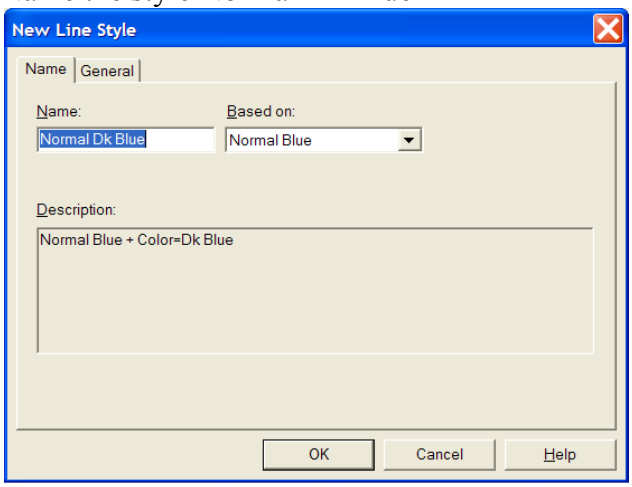
Add Centerline to Pipes

31. Select the view style ‘Training’ and click Properties button.
32. Click in the Graphic Rule field in the second row and select More…
33. Select the graphic rule ‘Red’ and edit properties
34. Set ‘Show Centerline’ to ‘Yes’
35. In the ‘Centerline Visible Line Style’ filed select ‘Chain Red’.
36. Click OK to finish graphic rule modification.
37. Switch to drawing editor and update view. Notice how center lines of pipes are shown as chain
38. Close the drawing editor and close and save the SP3D session.

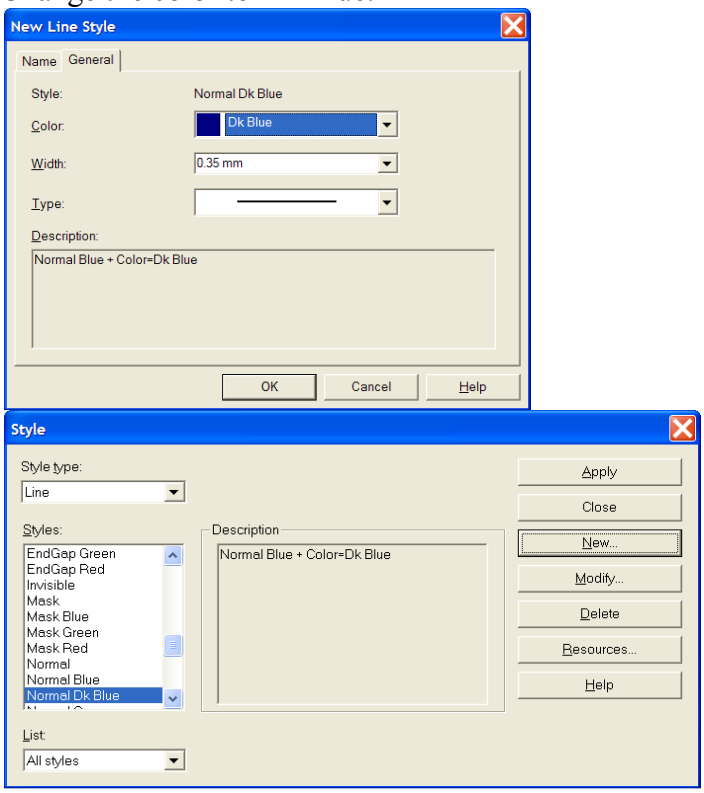
Lab 4 : Creating New Line Styles

Defining Line Styles

1. Open the file Styles.sha in the [Symbol Share]\Drawings\Catalog\Templates folder
2. Format – Style and pick the Line option and click New
3. Name the style Normal Dk Blue



4. Change the color to Dk Blue.



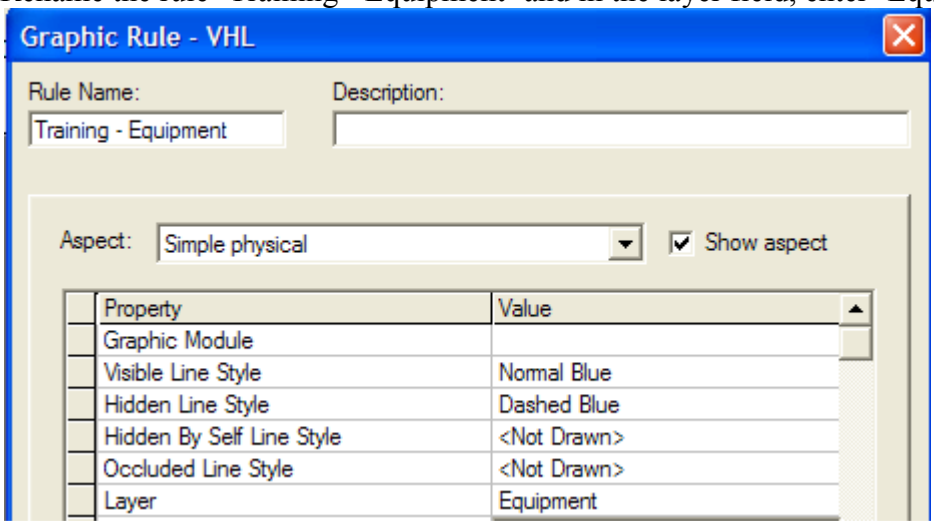
5. Similarly create line styles for ‘Nomal Cyan’ and ‘Normal Magenta’
6. Close and Save and Exit the Styles.sha file.

Using Line Styles

7. Open the SP3D session and Edit the drawing ‘Piping Plan 1’
8. Tools → Define View Style and edit properties of the ‘Training’ style
9. Add a row with filter ‘Structure’ and graphic rule ‘Magenta’ with visible line style ‘Normal Magenta’
10. Add a row with filter ‘Cableway’ and graphic rule ‘Cyan’ with visible line style ‘Normal Cyan’
11. Cick OK to save the view style.
12. Switch to drawing editor and update view.

Lab 5 : Using Layers

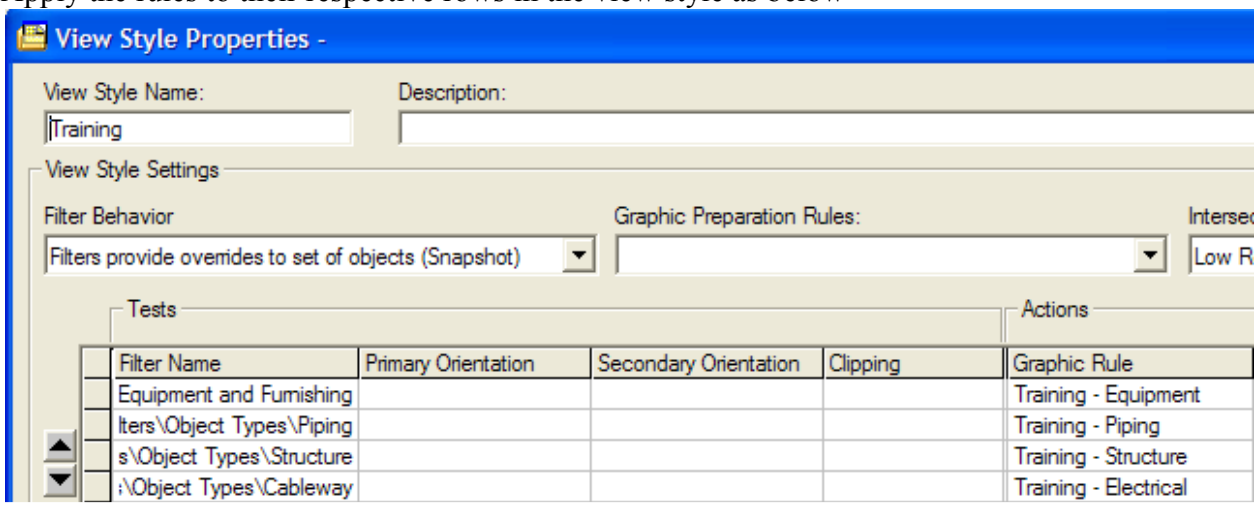
1. Edit the properties of the ‘Training’ view style.
2. Click in the Graphic Rule field in the first row and select More…
3. Select the graphic rule ‘Blue’ and edit properties
4. Rename the rule ‘Training - Equipment’ and in the layer field, enter ‘Equipment’



5. Click OK and answer ‘Yes’ to the prompt to create a new rule.
6. Similarly edit the other three graphic rules and create new rules as below

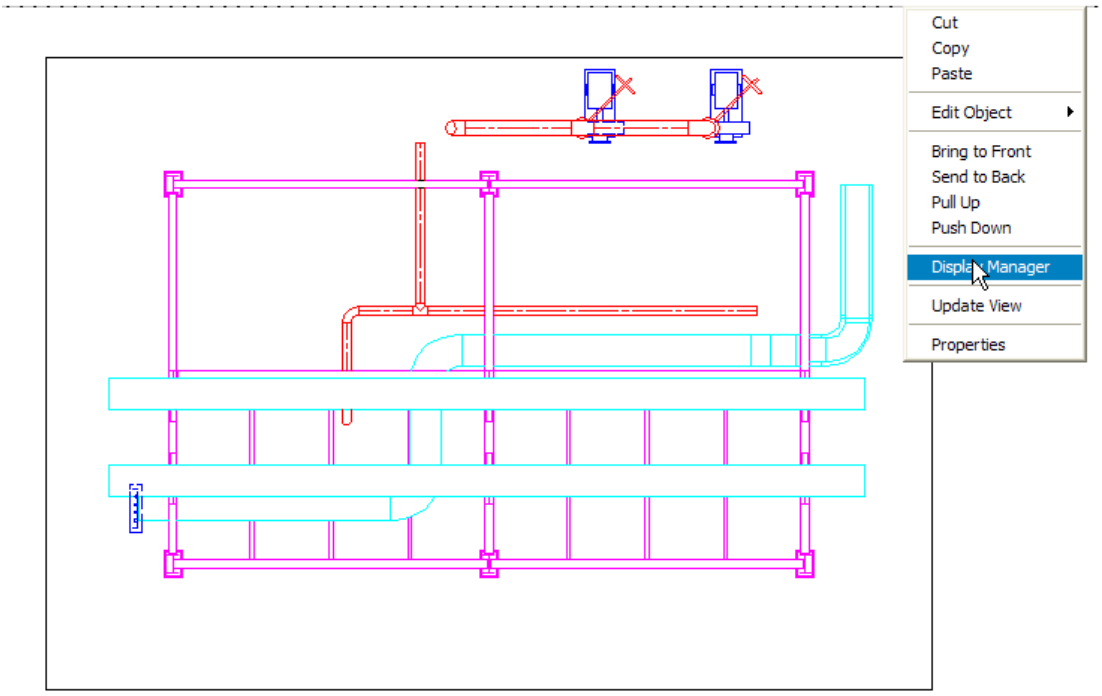
Old Rule Name	**New Rule Name**	**Layer**
Red	Training – Piping	Piping
Magenta	Training – Structure	Structure
Cyan	Training – Electrical	Electrical

7. Apply the rules to their respective rows in the view style as below

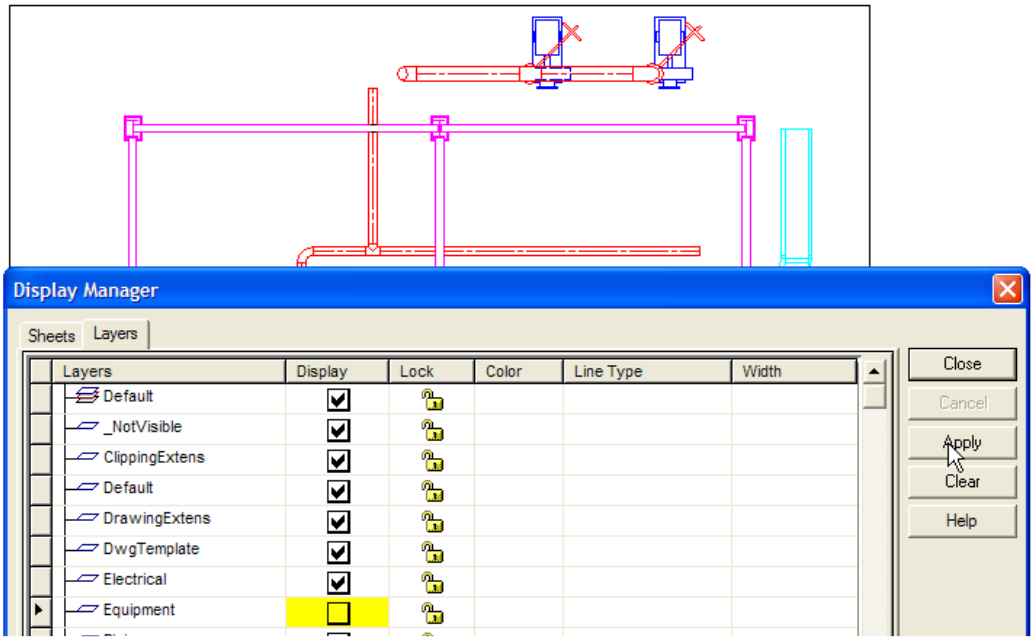


8. Switch to the drawing editor and update the view. Notice that there is no visible graphical impact.

9. Right mouse click on the view and select ‘Display Manager’



10. Switch to the ‘Layers’ tab to notice additional layers. Uncheck the box next to the ‘Equipment’ layer and click Apply. The equipment is no longer displayed.

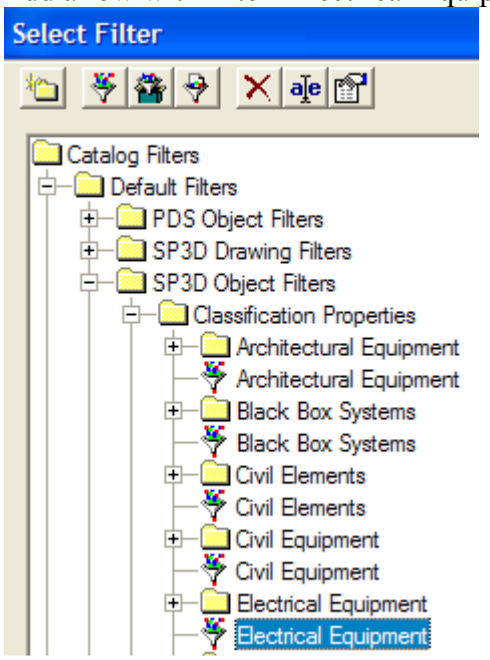


11. Remember to turn on the layers before exiting the drawing since this setting is remembered when you close and reopen the drawing editor.

Lab 6 : Refining view style with additional filters

Using Classification Filters

1. Edit the properties of the ‘Training’ view style.
2. Add a row with filter ‘Electrical Equipment’ and use graphic rule ‘Training – Electrical’

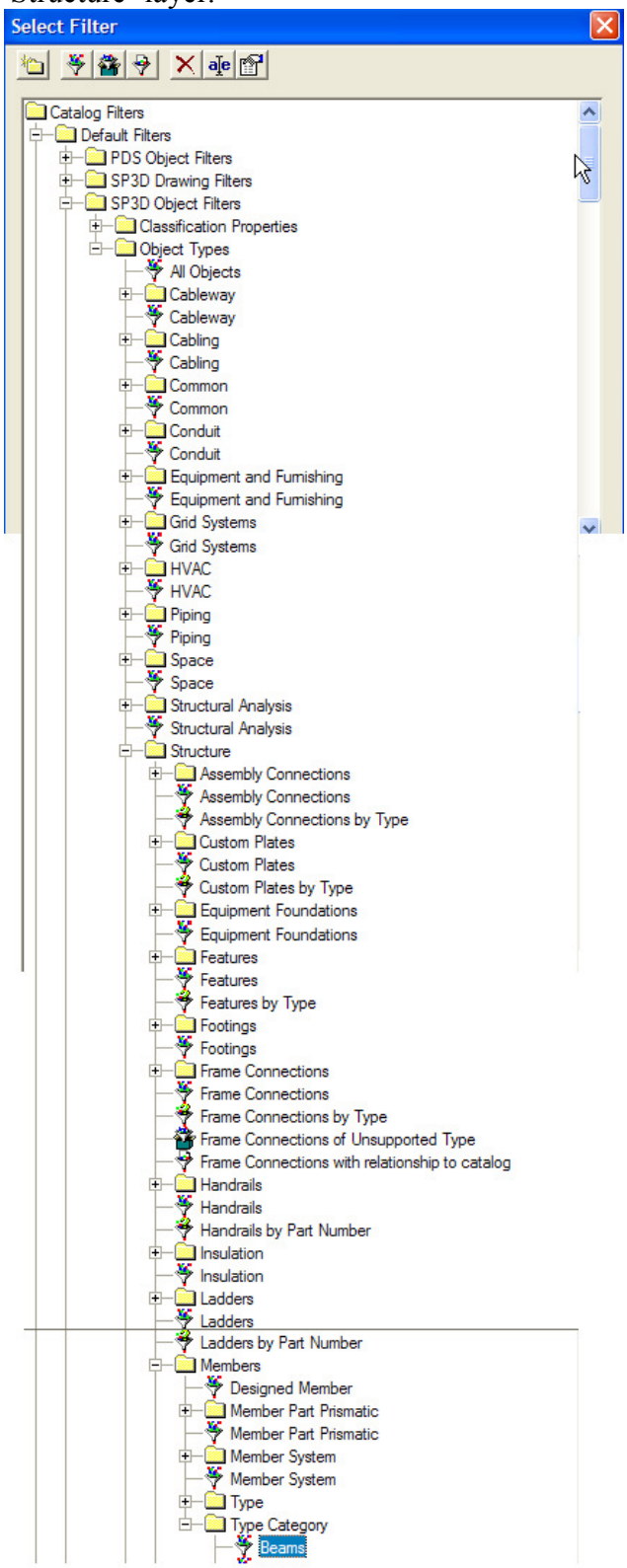


3. Click OK to save the view style.
4. Switch to Drawing Editor and update the view. Notice that the new filter overrides the ‘Equipment and Furnishing’ filter in the first row and the electrical device is shown in Cyan.

Using Object Type Filters

5. Edit the properties of the ‘Training’ view style.
6. Add a row with the filter ‘Beams’ and create a new graphic rule named ‘Training – Beams’ that uses the ‘Normal Dk Blue’ line style created earlier. Continue to use the

'Structure' layer.

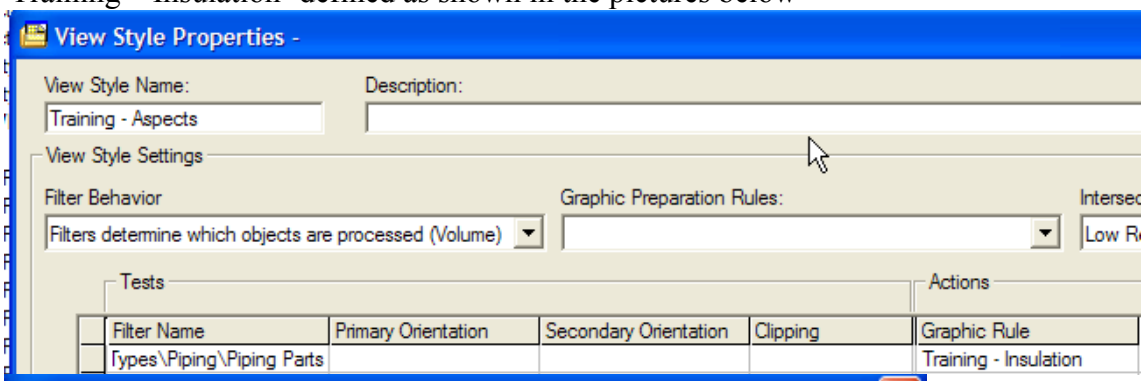


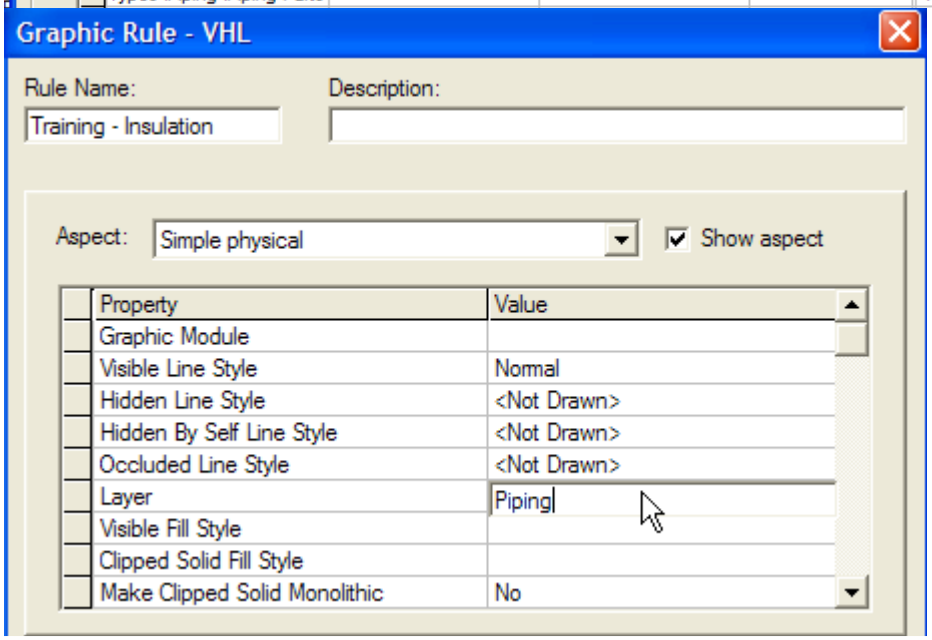
7. Save the view style.
8. Switch to Drawing Editor and update the view.

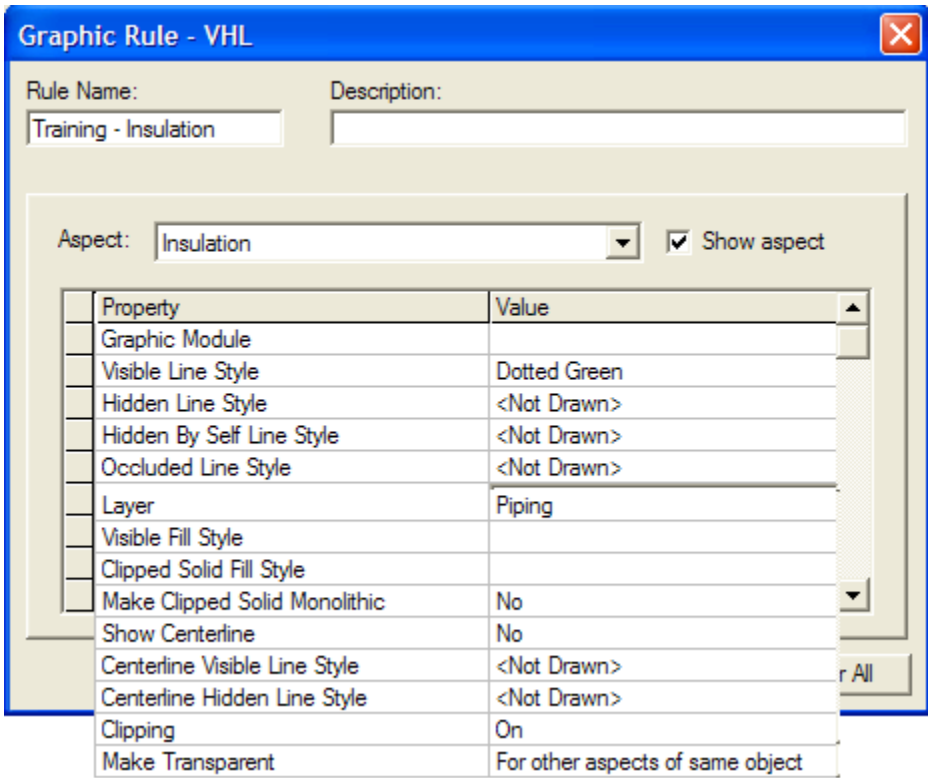
Lab 7 : Aspects

Defining View Style

1. Create a new view style named ‘Training - Aspects’
2. Define the view style to include a row for piping parts and a graphic rule named ‘Training – Insulation’ defined as shown in the pictures below



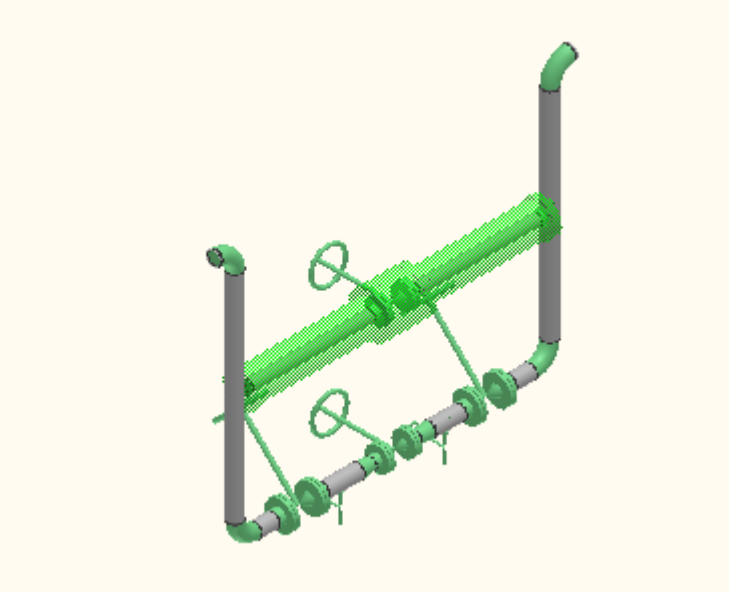




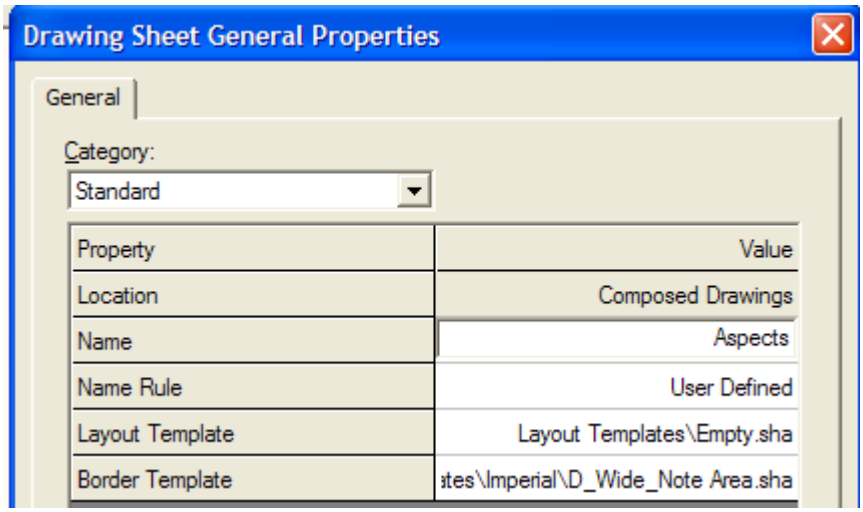
Create New Drawing

3. Switch to Space Management task.
4. Define workspace using filter Plant Filters – Training Filter – U04
5. Format – View and turn on insulation aspect
6. Format – Surface Style Rules and add the Piping Insulation – Delivered rule to the workspace

7. Zoom and clip into pipeline 402-P roughly as shown by drawing a fence around the piping and clipping the view.

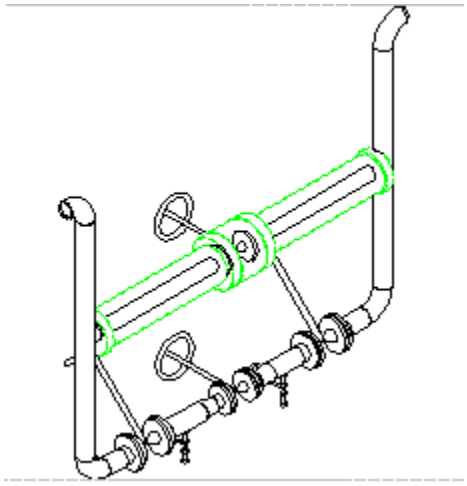


8. Use Tools → Snapshot View to snapshot the screen. Put it in the 'Composed Drawings' folder of your choice, and use the 'Training – Aspects' view style.
9. Create a new drawing named 'Aspects' in the 'Composed Drawings' folder



10. Place the snapshot view on the sheet.

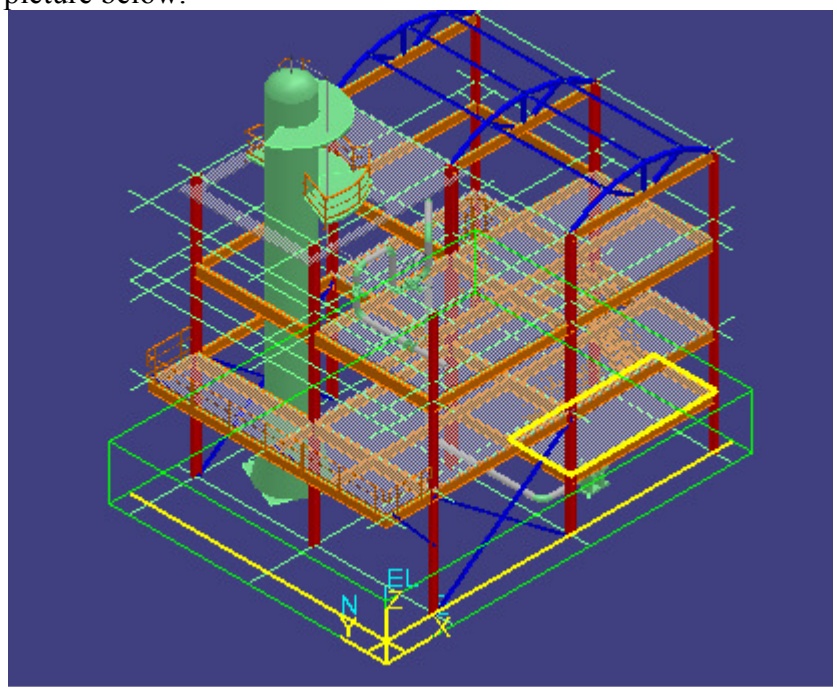
11. Update the view, see the results as below.



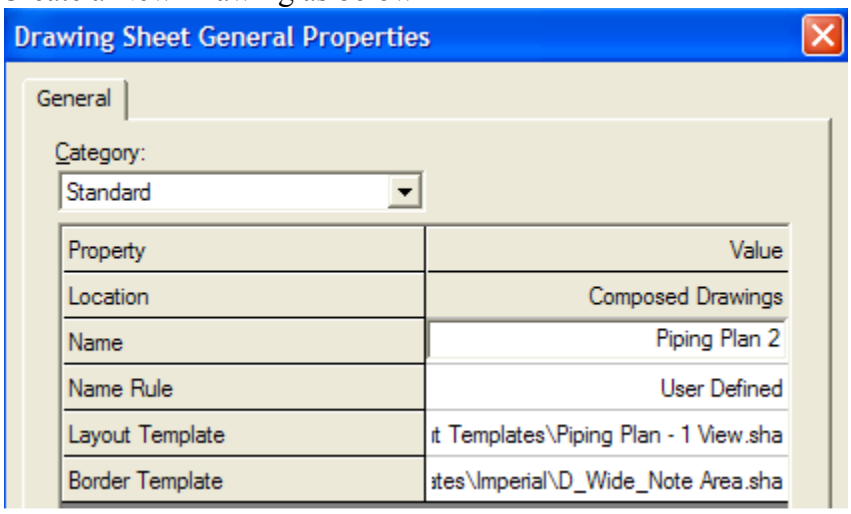
Lab 8 : Make Transparent and Fill Styles

Create New Drawing

1. Switch to the Space Management task
2. Define Workspace using the filter Plant Filters – Training Filters – U03
3. Define a volume by selection set and select the gridlines and the slab as shown in the picture below.



4. Name the volume ‘U03 Ground Floor’
5. Create a New Drawing as below

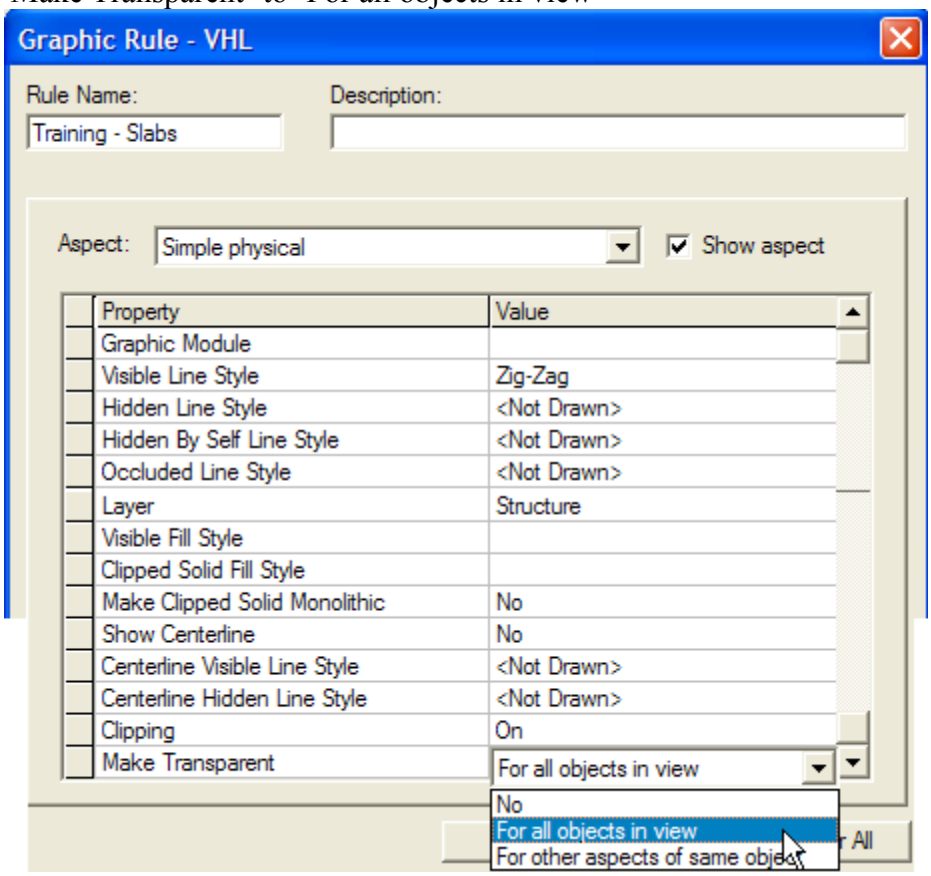


6. Associate the view in the drawing to the newly placed volume and the U03 filter.
7. Edit properties on the view and use the ‘Training’ view style.
8. Update the view.

9. Close the drawing.

Make Slabs Transparent

10. Switch to the ‘Drawings and Reports’ task.
11. Edit the view style ‘Training’ and add a row that selects the ‘Slabs’ filter.
12. Add a new graphic rule ‘Training – Slabs’ that uses the ‘Zig-Zag’ line style and set ‘Make Transparent’ to ‘For all objects in view’

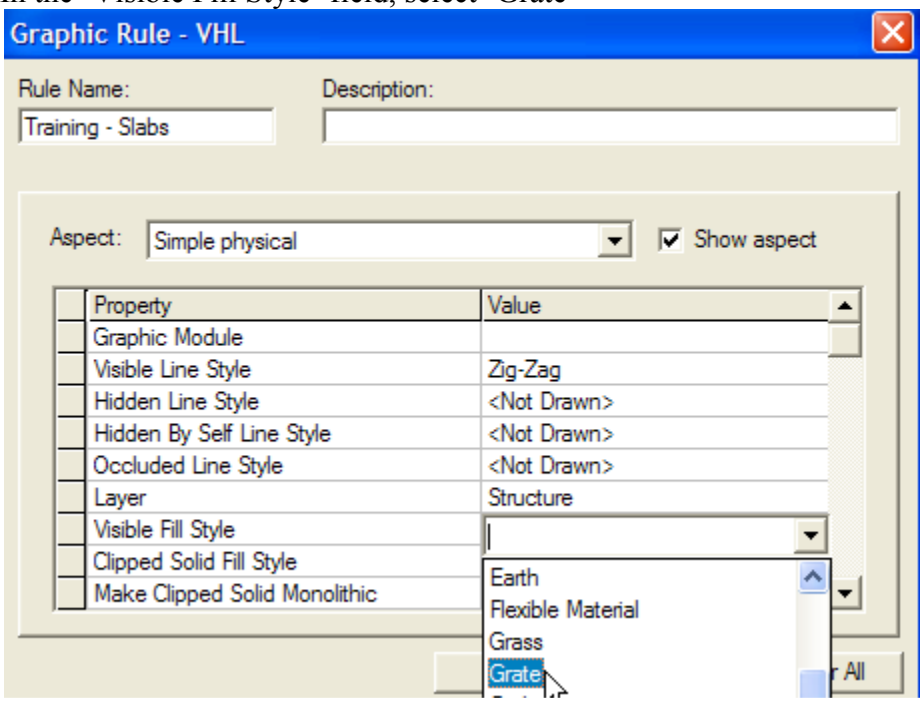


13. Save and close the view style.
14. Edit the drawing ‘Piping Plan 2’ and update the view. Notice that the pump under the slab is no longer shown hidden.

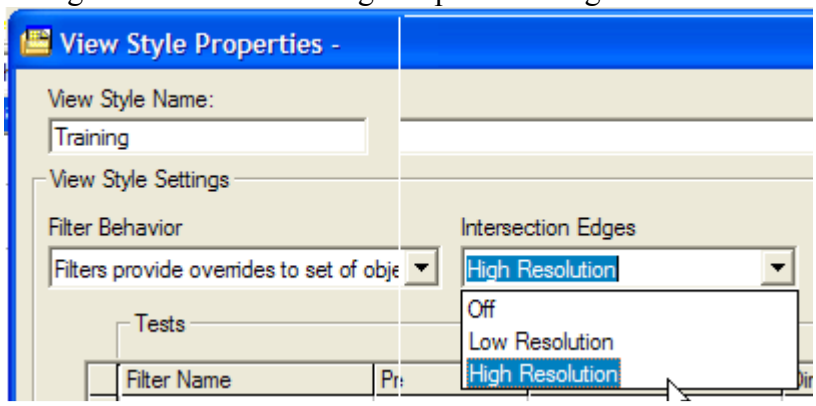
Add a fill style

15. Edit the view style ‘Training’ and edit the graphic rule ‘Training – Slabs’

16. In the ‘Visible Fill Style’ field, select ‘Grate’



17. Click OK to save the graphic rule.
18. Click OK to accept the graphic rule.
19. Change the ‘Intersection Edges’ option to ‘High Resolution’

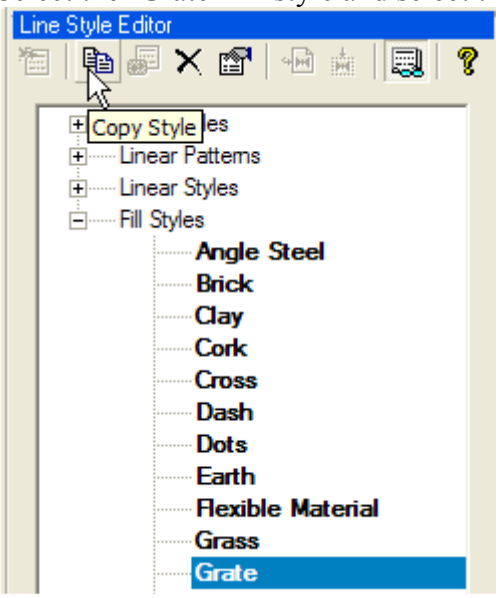


20. Click OK to save the view style.
21. Switch to Drawing Editor and update the view.
22. Close the drawing and exit the SP3D session.

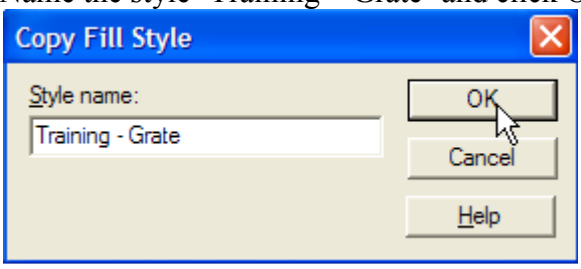
Create New Fill Style

23. Open the file Styles.sha in the [Symbol Share]\Drawings\Catalog\Templates folder
24. Select menu Tools → Line Style Editor

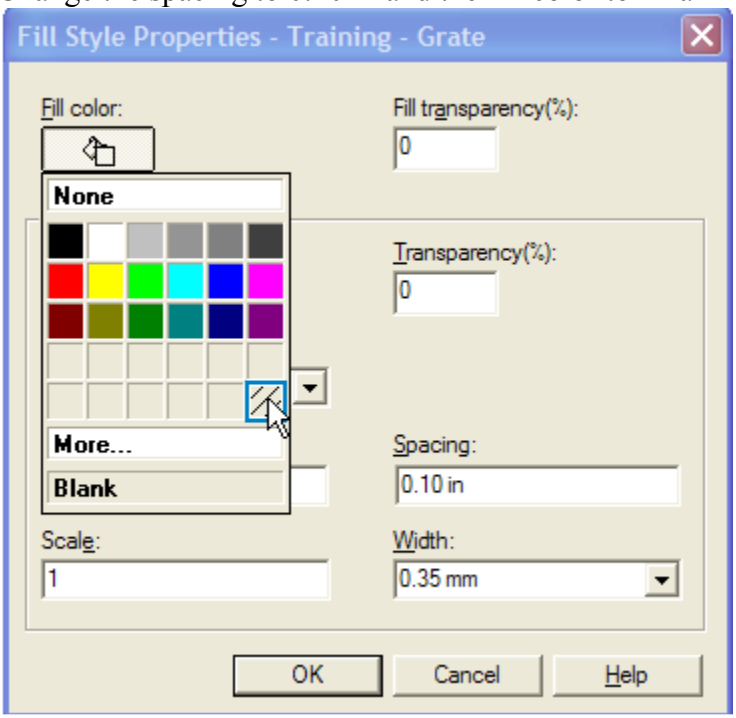
25. Select the ‘Grate’ fill style and select the ‘Copy Style’ button.



26. Name the style ‘Training – Grate’ and click OK.



27. Change the spacing to 0.10 in and the fill color to ‘Blank’ and click OK.



28. Save and exit the styles.sha file.

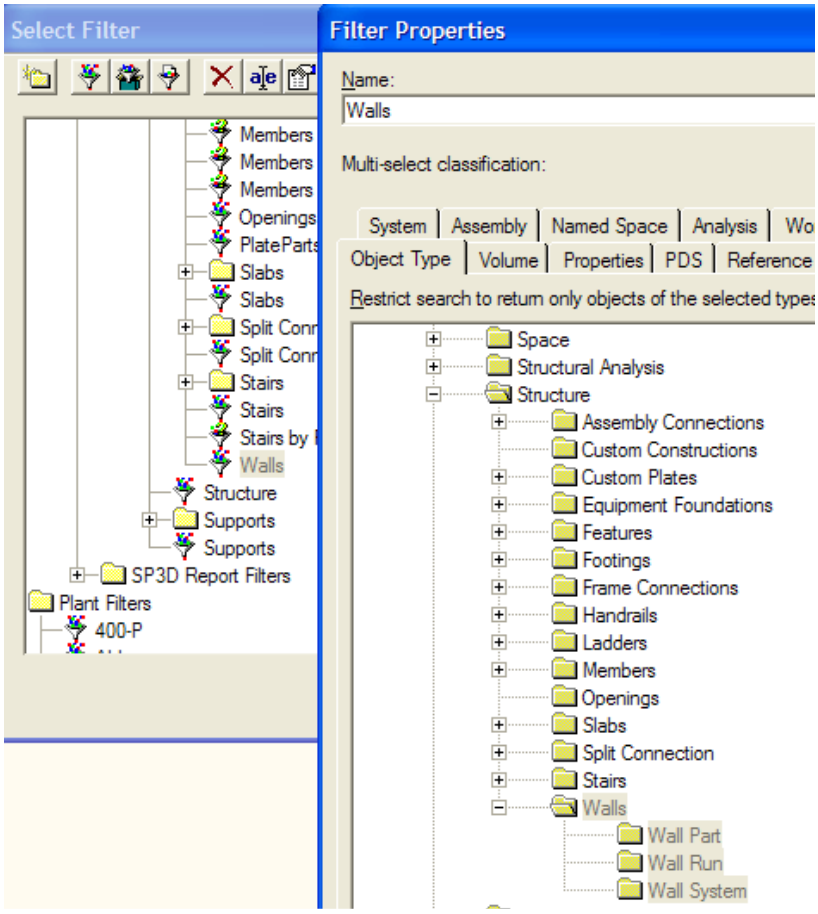
Apply New Fill Style

29. Open SP3D session and edit the properties of the ‘Training’ view style and ‘Training – Slabs’ graphic rule.
30. Select the new fill style ‘Training – Grate’ and save the graphic rule and the view style.
31. Edit ‘Piping Plan 2’ and update the view.

Lab 9 : Clipped Solid Fill

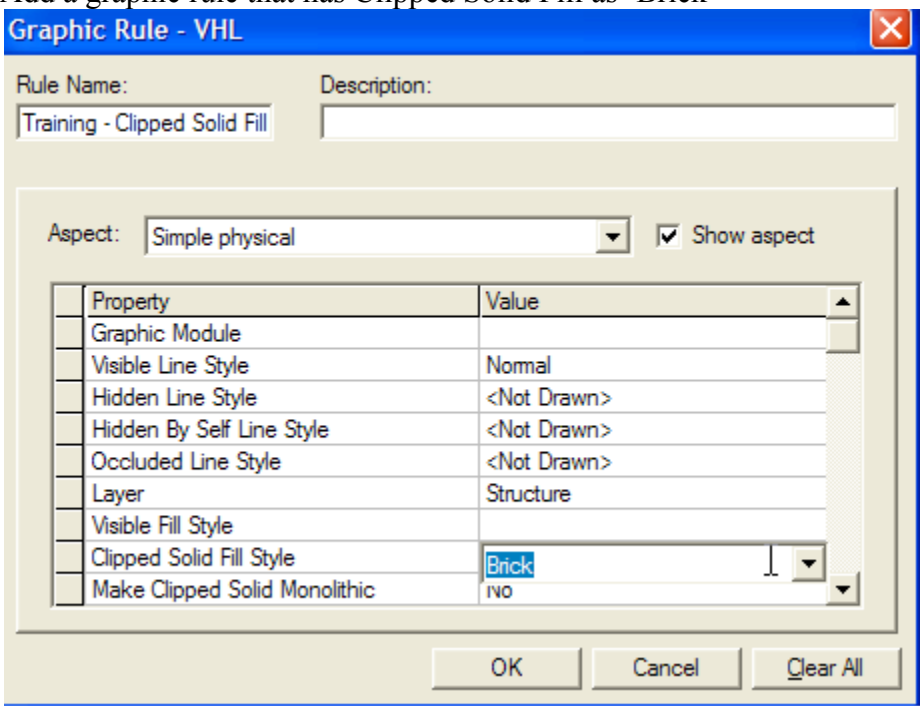
View Style

1. Define a filter named Walls under Structure node as shown

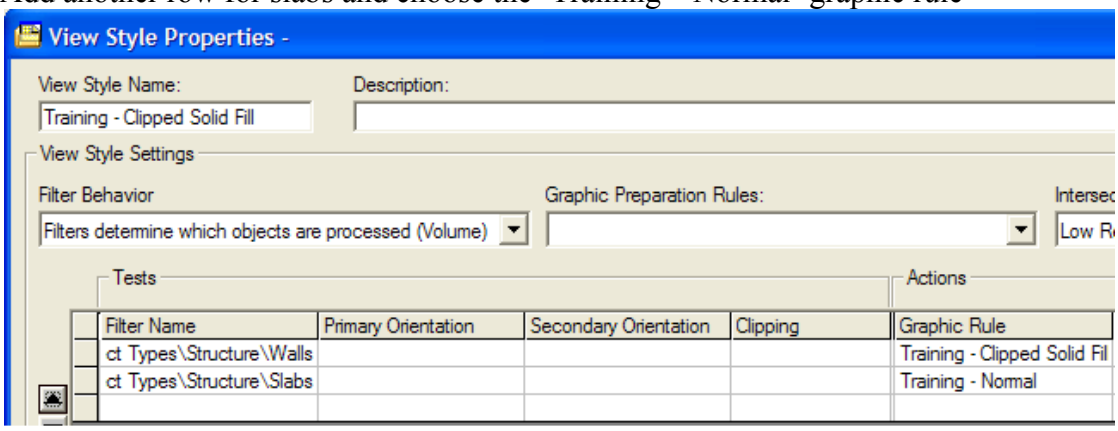


2. Define a view style named ‘Training - Clipped Solid Fill’
3. Add a row and choose the Walls filter

4. Add a graphic rule that has Clipped Solid Fill as ‘Brick’



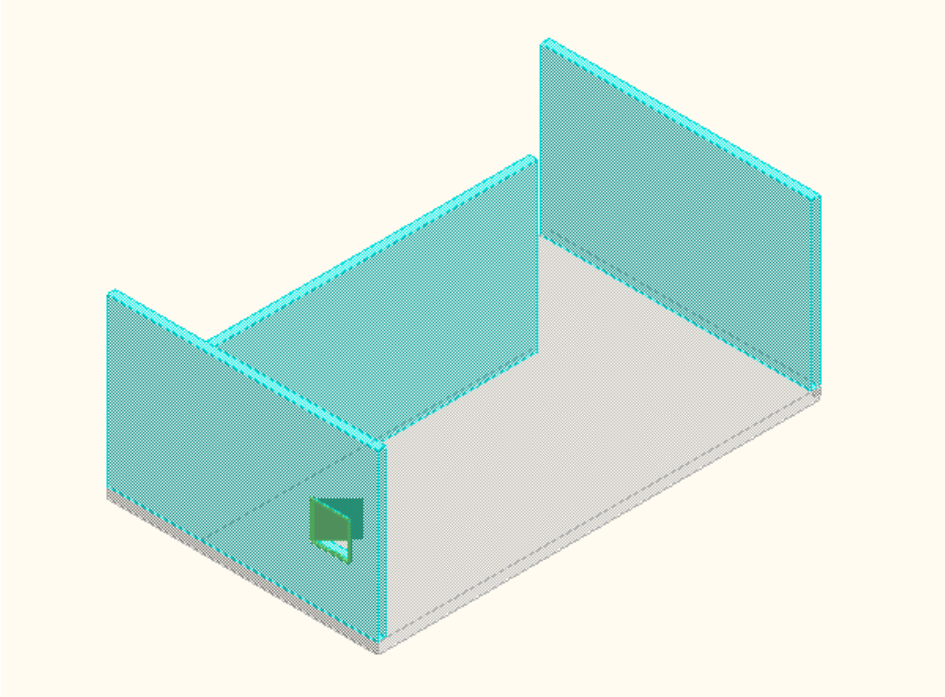
5. Add another row for slabs and choose the ‘Training – Normal’ graphic rule



Test View Style

6. Switch to Space Management task
7. Define a workspace using Plant Filters – Training Filters– U05
8. Format – View and choose mode shaded with enhanced edges
9. Define volume by 2 points from (-35, -105, 0) to (5, -85, 16)

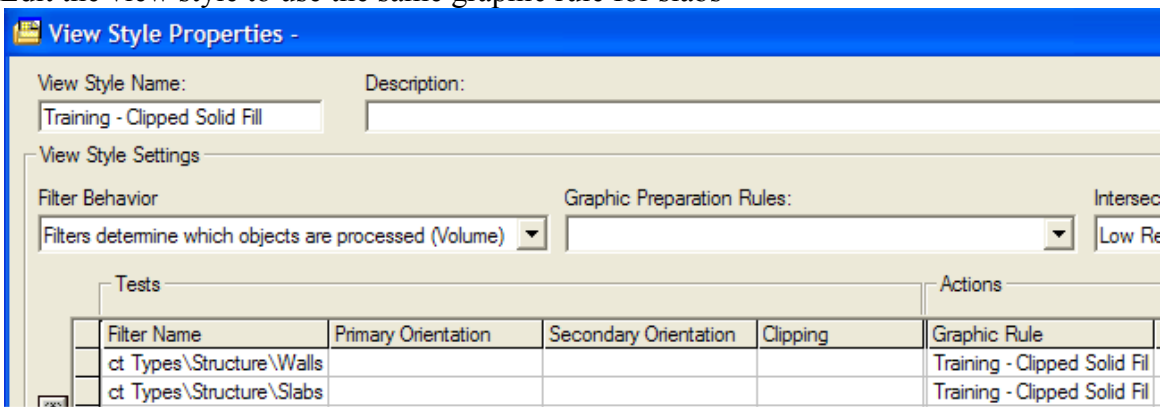
10. Clip by object using the volume defined and hide the volume



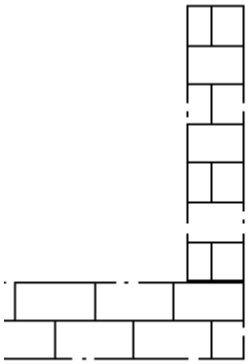
11. Set view to north and snapshot a view using the Clipped Solid Fill view style defined above
12. Place the view on a drawing and update the view to see a result like shown in the picture

Update View Style

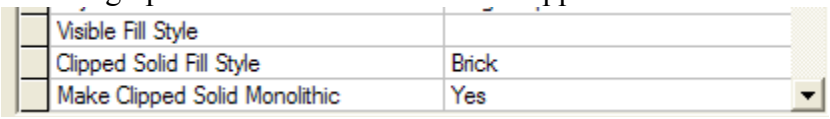
13. Edit the view style to use the same graphic rule for slabs



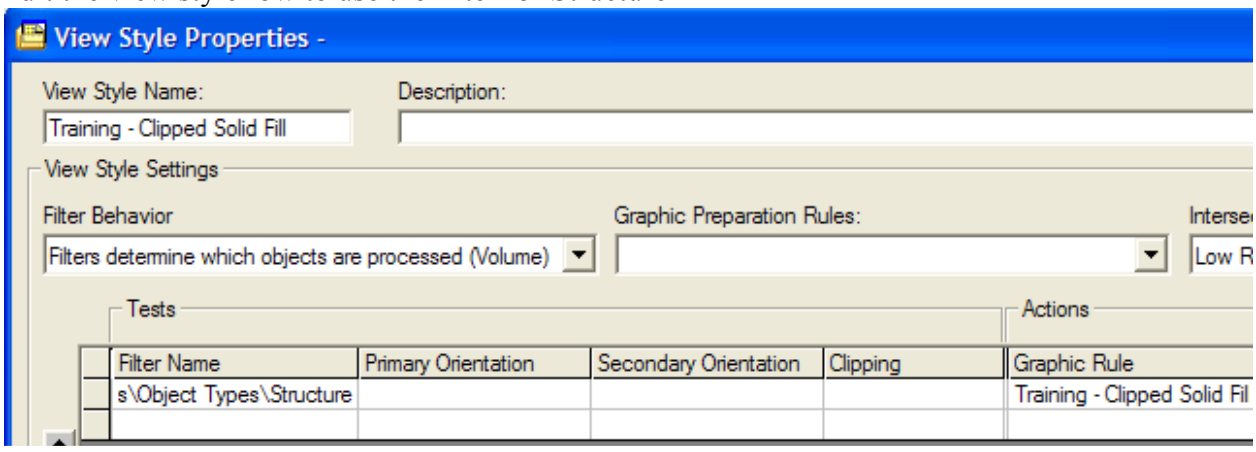
14. Update the view and notice the result showing a thick solid line at the boundary of the wall and the slab



15. Edit the graphic rule and set the 'Make Clipped Solid Monolithic' option to Yes.

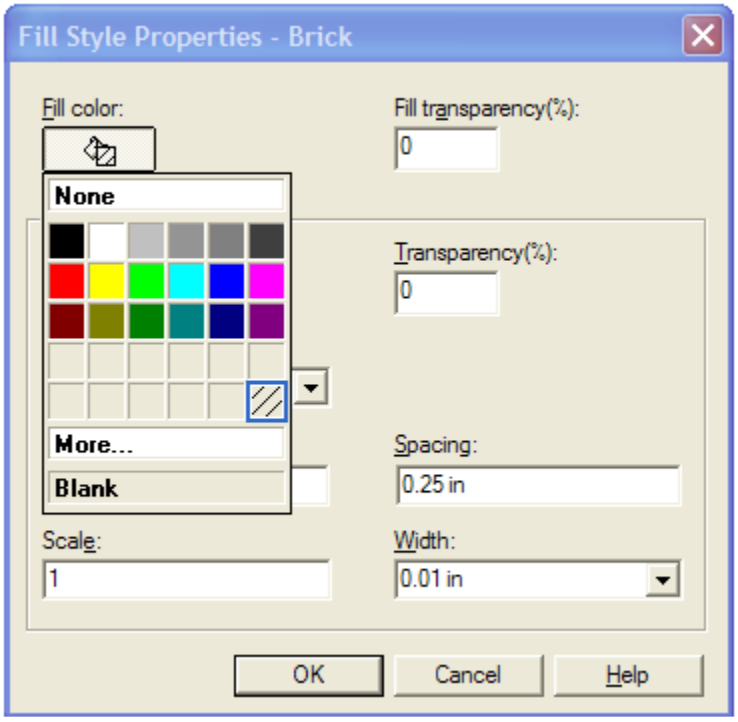


16. Edit the view style row to use the filter for Structure

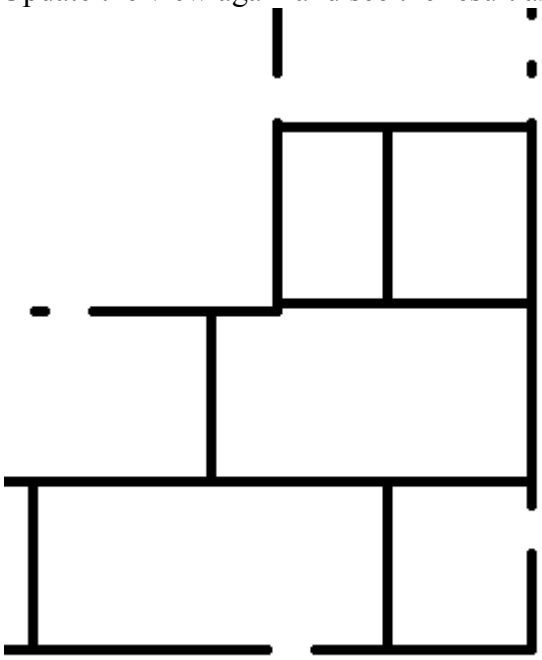


17. Open the Styles.sha and start the Line Style Editor
18. Select the Brick fill style and edit properties

19. Set the fill color to Blank as shown



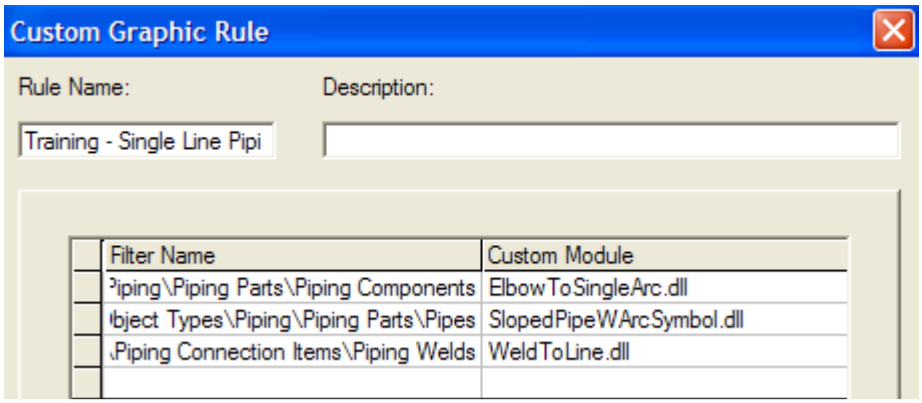
20. Update the view again and see the result as below – the line is gone



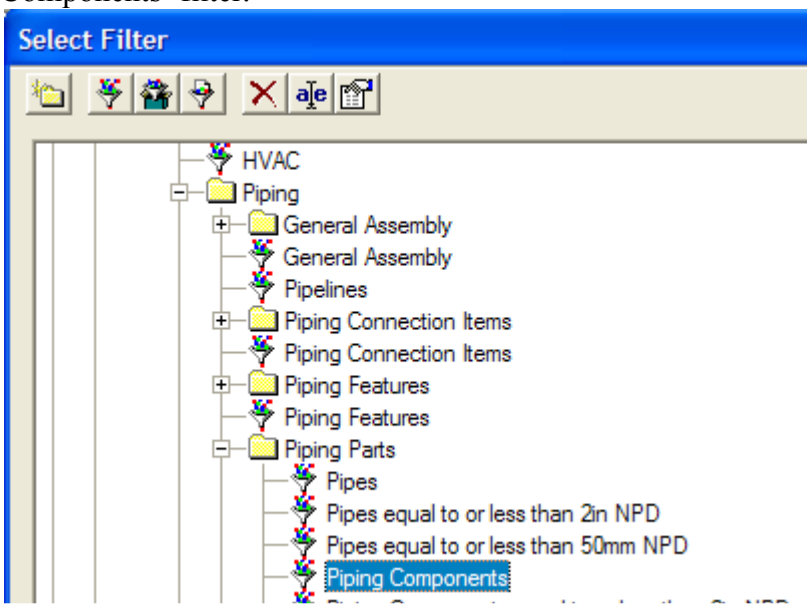
Lab 10 : Single Line Piping

Define View Style

1. Switch to the 'Drawings and Reports' task
2. Select menu Tools → Define View Style
3. Create 'New Style'
4. Name the style 'Training – Single Line Piping' and edit Properties.
5. In the 'Graphic Preparation Rule' field, select More…
6. Click 'New …' to create a new custom graphic rule.
7. Select filters and custom modules as shown below

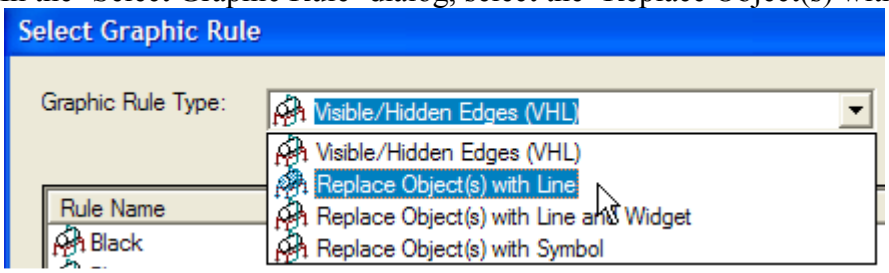


8. Click OK to define the rule.
9. Click OK to select the rule.
10. In the first row click in the 'Filter Name' field, select More… and then select the 'Piping Components' filter.

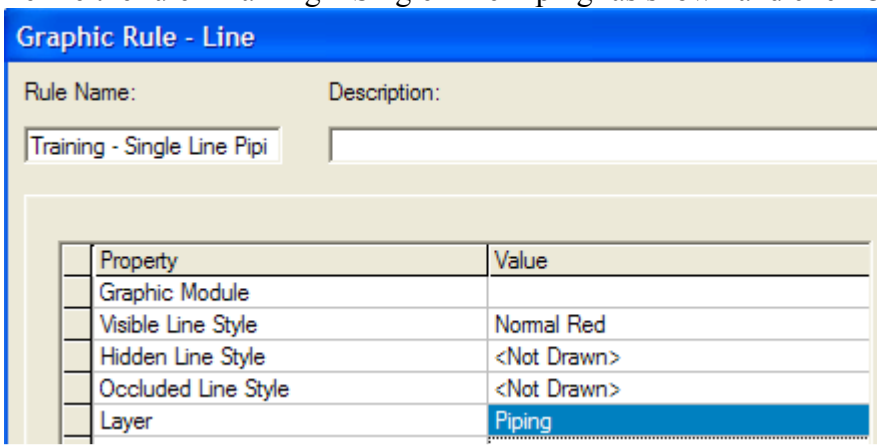


11. Click in the graphic rule field, select 'More…', select the 'Training – Piping' graphic rule and click OK.
12. Click in the 'Filter Name' field in the second row and add the 'Pipes' filter

13. Click in the graphic rule field, select ‘More…’
14. In the ‘Select Graphic Rule’ dialog, select the ‘Replace Object(s) with Line’ option.



15. Click ‘New…’ to create a new rule
16. Define the rule ‘Training – Single Line Piping’ as shown and click OK.



17. Click OK to select the rule.

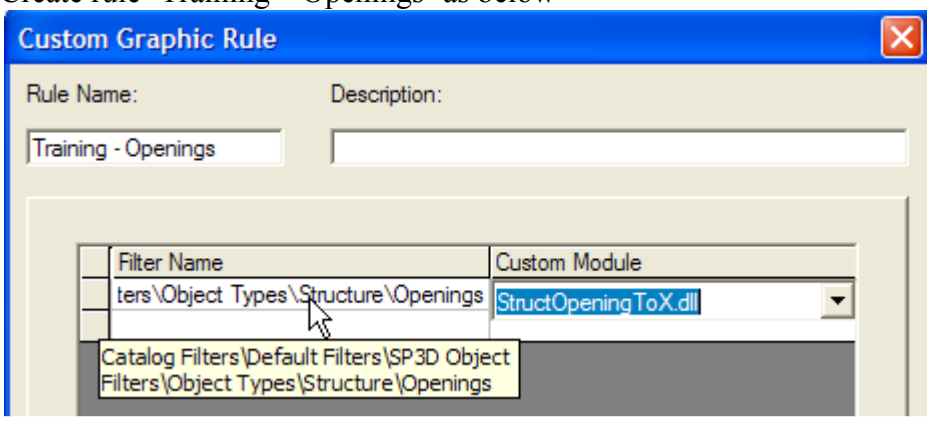
Test View Style

18. Edit the ‘Piping Plan 1’ drawing
19. Select the view and right mouse click, the select Properties
20. Select the ‘Training – Single Line Piping’ view style and click OK
21. Update the view to see that all pipes and elbows are now single line.

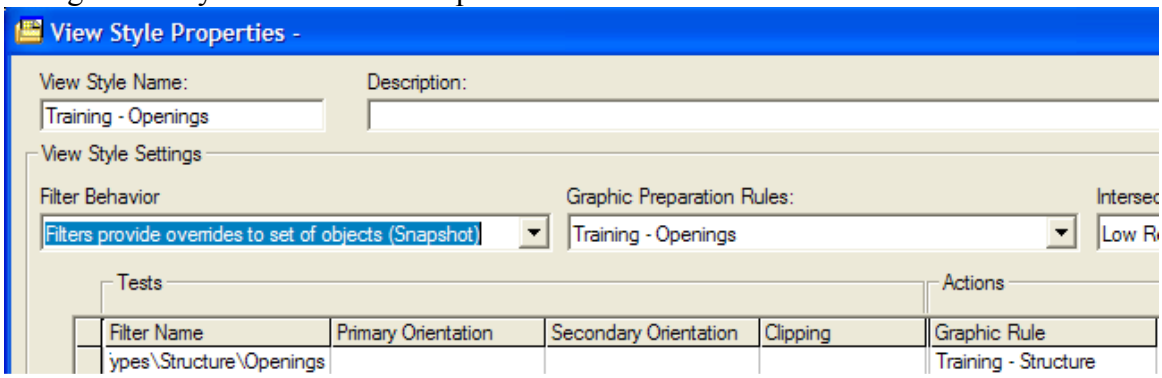
Lab 11 : Resymbolizing Structure Openings

Define View Style

1. Select Tools → Define View Style
2. Create a new style named ‘Training – Openings’
3. Edit the new style properties
4. Click in the ‘Graphic preparation rule’ field and select ‘More…’
5. Click ‘New…’
6. Create rule ‘Training – Openings’ as below



7. Click in the ‘Filter Name’ field in the first row in the view style and pick the Openings filter selected above.
8. Pick the ‘Training – Structure’ graphic rule.
9. Change view style behavior to ‘Snapshot’

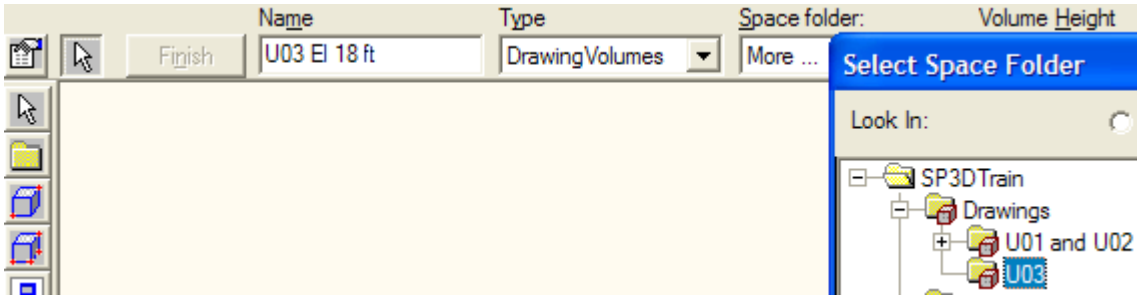


10. Click Ok to save view style.

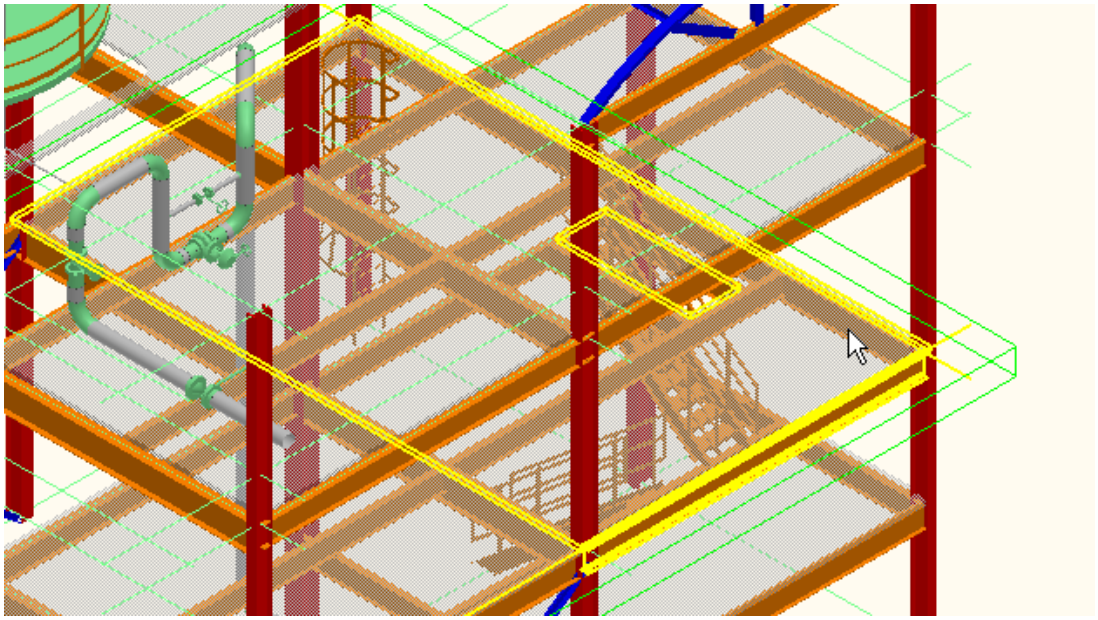
Test View Style

11. Switch to Space Management task
12. Define a workspace using Plant Filters – Training Filters – U03
13. Start ‘Place Volume by Selection’ command

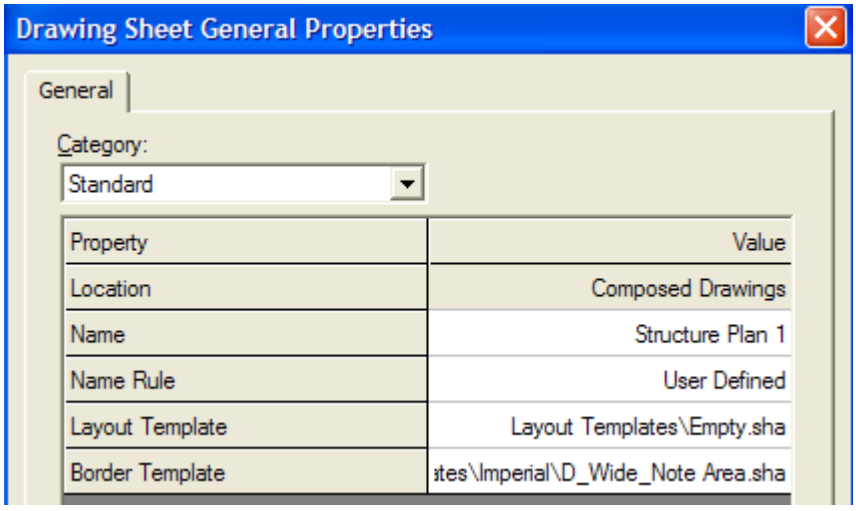
14. Name the volume ‘U03 El 18 ft’ and put it in the space folder ‘U03’



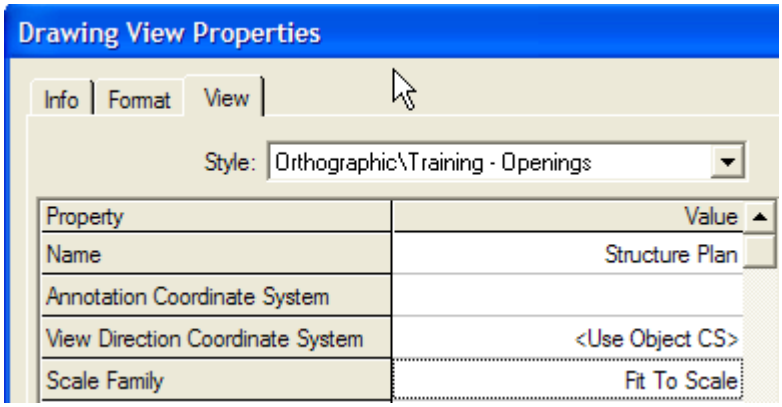
15. Select the beam at the south side and two neighboring gridlines and the slab as shown and click ‘Finish’ to place the volume.



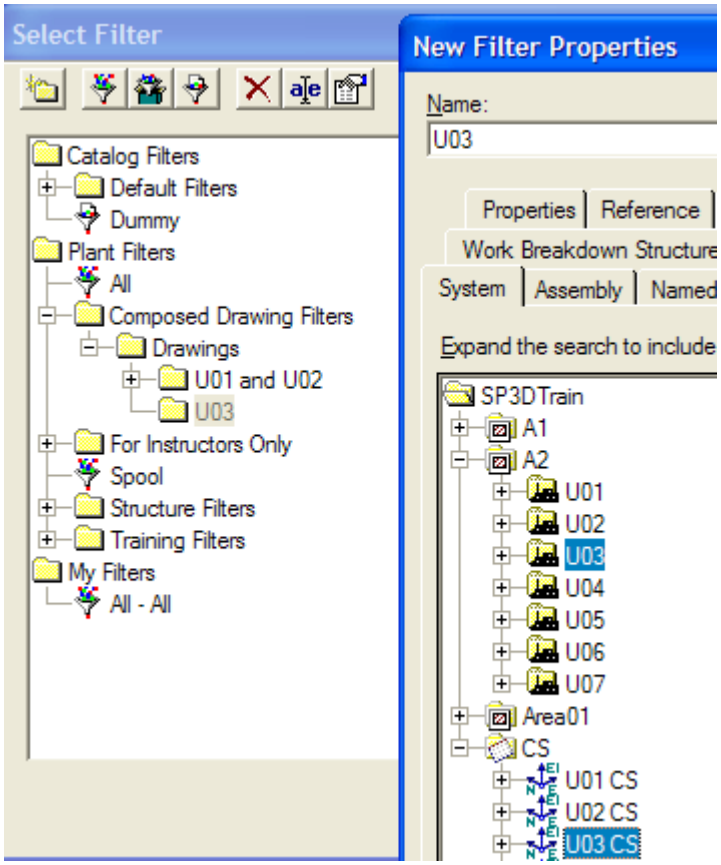
16. Create a new drawing in the ‘Composed Drawings’ folder as shown



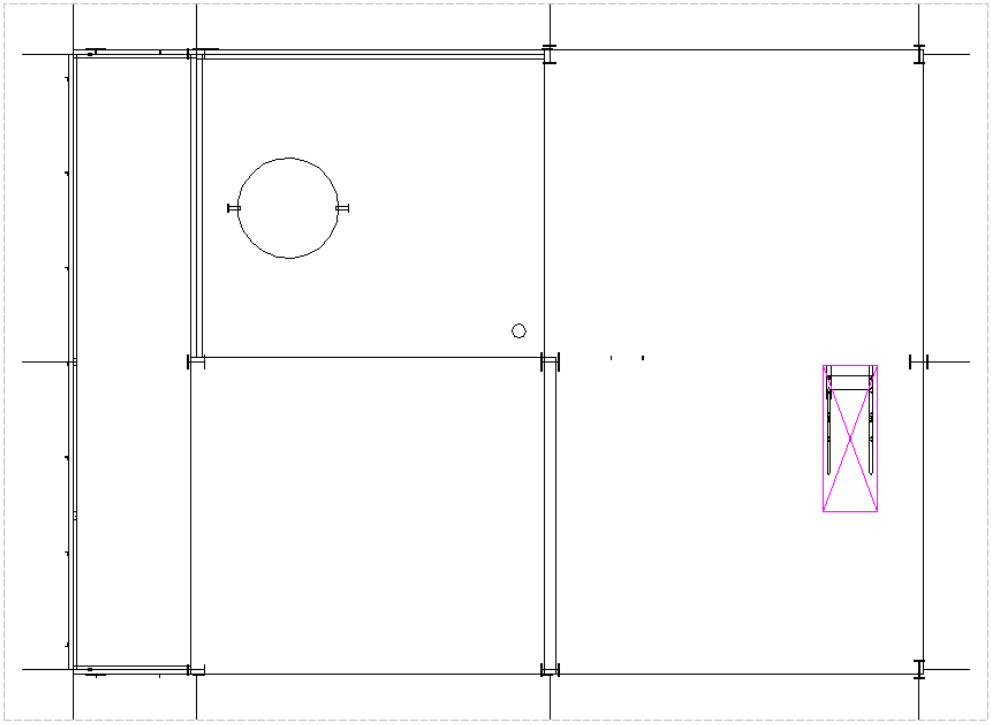
17. Place a graphic view that uses the ‘Training – Openings’ view style, fit to scale, looking plan.



18. Associate view to volume ‘U03 El 18 ft’ and define a new filter ‘Plant Filters – Composed Drawing Filters – U03 – U03’



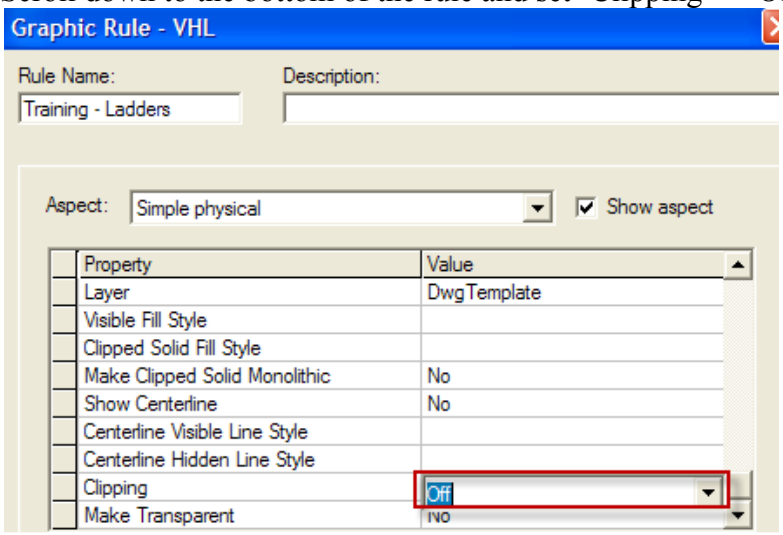
19. Update view and see results as below.



Lab 12 : Turning ‘Clipping’ Off

Define View Style

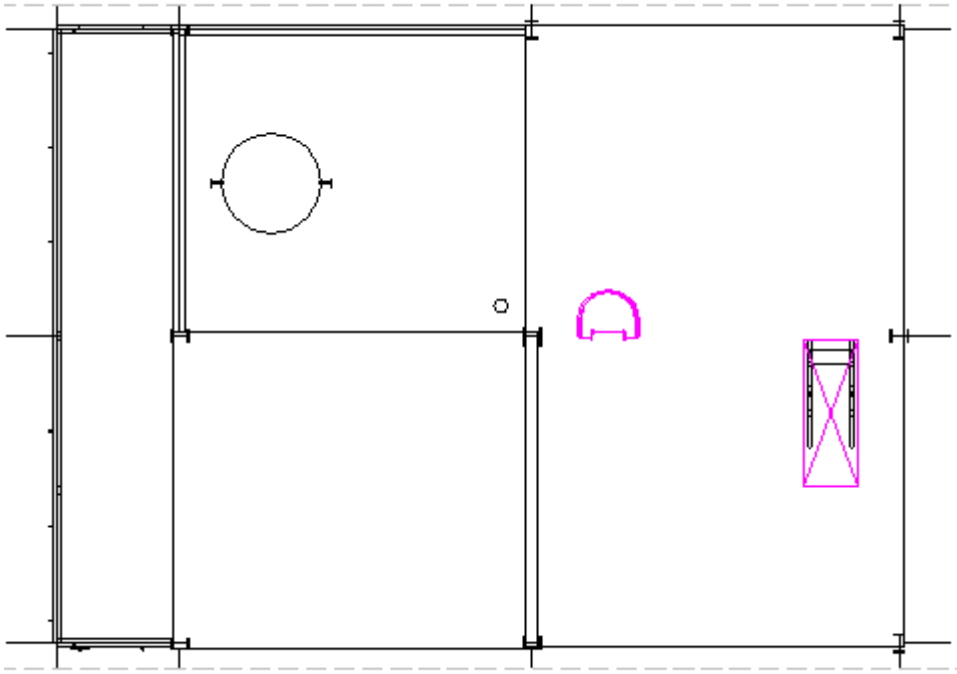
1. Switch to ‘Drawings and Reports’ task.
2. Select Tools → Define View Style
3. Edit properties for the style named ‘Training – Openings’
4. Click in the ‘Filter’ field in the first row and select More… and select the ‘Catalog Filters\Default Filters\SP3D Object Types\Structure\Ladders’ filter
5. Click in the ‘Graphic Rule’ field and select More…
6. Select the ‘Training – Structure’ graphic rule and click Properties.
7. Change the name of the rule to be ‘Training – Ladders’
8. Scroll down to the bottom of the rule and set ‘Clipping’ = ‘Off’



9. Click ‘OK’ to save the rule, click ‘Yes’ to create a new rule.
10. Click ‘OK’ to apply the new graphic rule to the style.
11. Click ‘OK’ to save the view style.

Test View Style

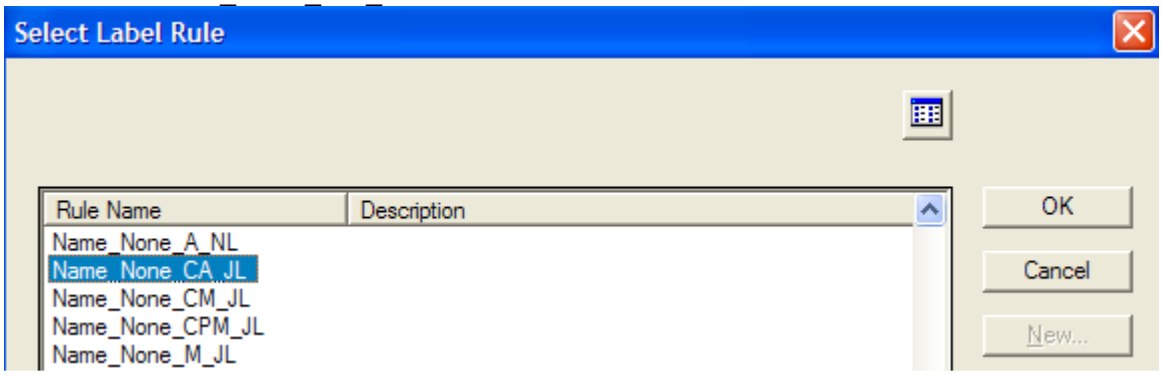
12. Edit the ‘Structure Plan’ drawing and update the view.
13. Notice that the ladder is now shown in full even though only part of it was in the original view.



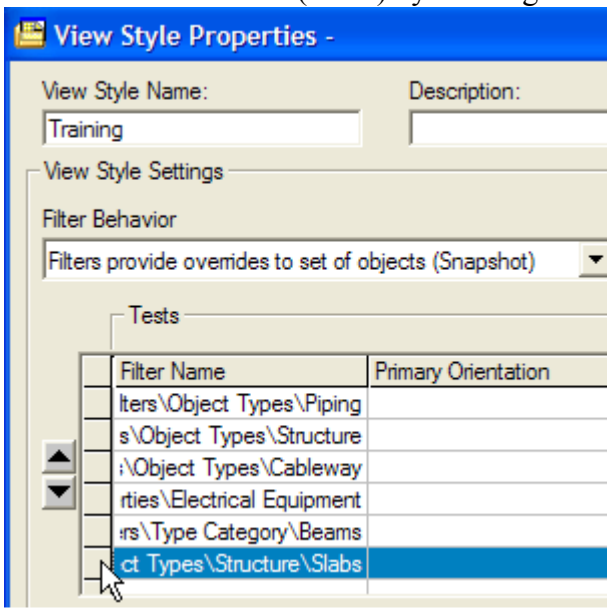
Lab 13 : Using Label Rules

Add Label Rule to View Style

1. Select Tools → Define View Style
2. Select the 'Training' view style and edit properties
3. In the first row (Equipment), click in the 'Label Rule' field and select 'More…'
4. Select the 'Name_None_CA_JL' rule and click OK.



5. Select the seventh row (Slabs) by clicking the square to the left of the row.



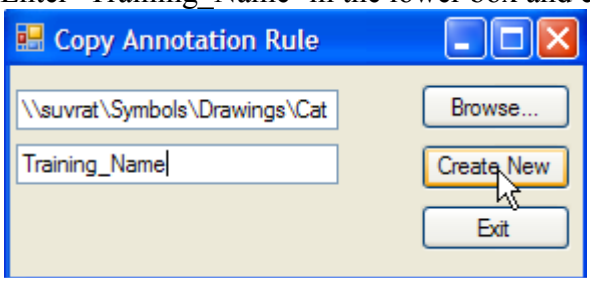
6. Press the 'Delete' key on the keyboard to delete the row.(to avoid slabs getting a fill).
7. Click OK to save the view style.

Test the View Style

8. Switch to Drawing Editor
9. Select the view and right mouse click, the select Properties
10. Select the 'Training' view style and click OK
11. Update the view.

Copy Label Rule

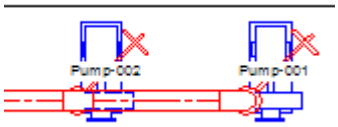
12. Run the ‘Copy Annotation Rule’ application using the shortcut on the desktop.
13. Click the Browse.. button and browse to the [Symbols Share]\Drawings\Catalog\Rules\LabelRules folder
14. Select the ‘Name_None_A_NL’ rule and click ‘Open’
15. Enter ‘Training_Name’ in the lower box and click ‘Create New’



16. Click ‘OK’ on any prompts shown.
17. Click ‘Exit’ to exit the copy rule application

Use new label rule

18. Tools → Define View Style and edit the ‘Training’ view style.
19. Replace the ‘Name_None_CA_JL’ label rule by the ‘Training_Name’ label rule and click OK.
20. Switch to Drawing Editor.
21. Update View to see labels positioned right on top of the equipment.



Edit label rule

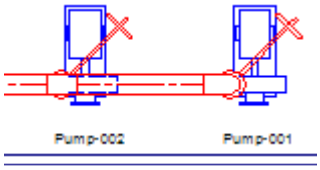
22. Open Windows Explorer and browse to [Symbols Share]\Drawing\Catalog\Labels\Templates folder
23. Locate the ‘Training_Name.xml’ file and open it using a text editor.
24. Locate the <connectpoint> tag using a search function or by scrolling through the file.

```
<connectPoint>4</connectPoint>
<!--Determine the X and Y offsets for the label relative an objects
        key point or control point.-->
<posModules>
  <posModule value="DrawingAbsolute">
    <hOffset>0</hOffset>
    <vOffset>0</vOffset>
  </posModule>
</posModules>
```

25. Change the connectpoint to 7 (BottomMiddle) and the voffset to -0.01 (1 cm below)

```
<connectPoint>7</connectPoint>
<!--Determine the X and Y offsets for the label relative an objects
        key point or control point.-->
<posModules>
  <posModule value="DrawingAbsolute">
    <hOffset>0</hOffset>
    <vOffset>-0.01</vOffset>
  </posModule>
</posModules>
```

26. Switch to Drawing Editor.
27. Update View to see labels positioned 1 cm below the equipment.

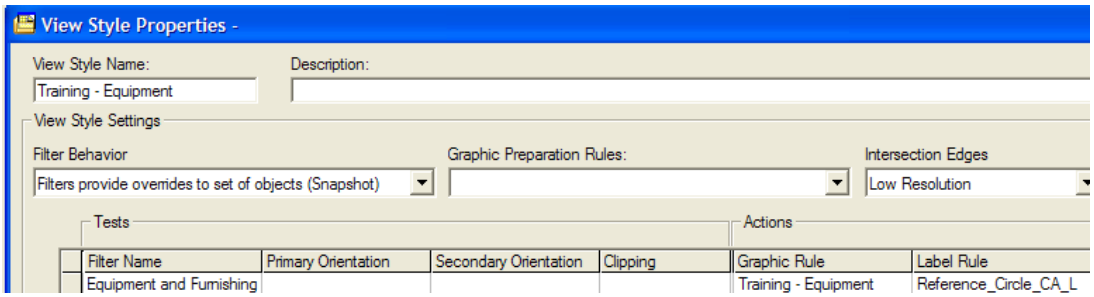


28. Close the drawing and exit drawing editor.

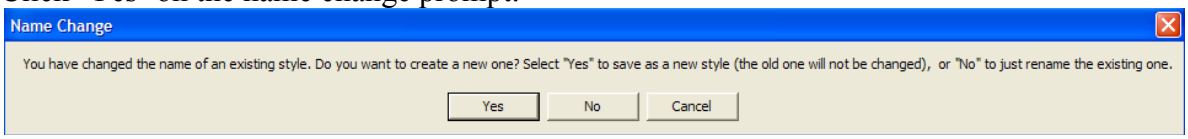
Lab 14 : Reference Labels

Define View Style

1. Tools → Define View Style
2. Select the view style ‘Training’ and edit properties.
3. Rename the style ‘Training – Equipment’
4. Select the label rule ‘Reference_Circle_CA_L’ instead of the currently selected label rule.

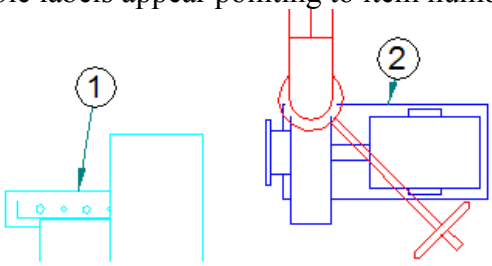


5. Click OK to save the view style.
6. Click ‘Yes’ on the name change prompt.



Test View Style

7. Edit the ‘Equipment Plan 1’ drawing.
8. Select the view, edit properties and select the ‘Training - Equipment’ view style and click OK.
9. Save the drawing and exit drawing editor.
10. Right mouse click the drawing ‘Equipment Plan 1’ and update now.
11. Edit the drawing to view. Notice that instead of the labels appearing on the drawing, now bubble labels appear pointing to item numbers in the associated report.



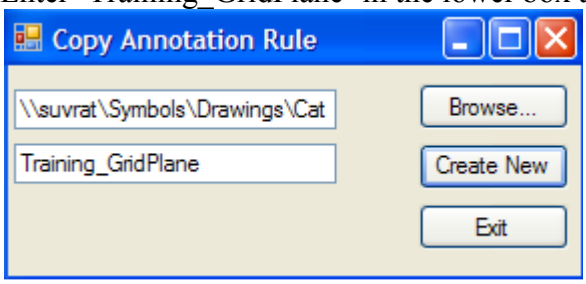
Item Number	Qty	Part Number
1	1	BA106E 42369-1-E
2	2	PUMP 001A-E

12. Close drawing and exit drawing editor.

Lab 15 : Grid Labels for Elevation Views

Copy Label Rule

1. Run the 'Copy Annotation Rule' application using the shortcut on the desktop.
2. Click the Browse.. button and browse to the [Symbols Share]\Drawings\Catalog\Rules\LabelRules folder
3. Select the 'Name_Circle_CA_L' rule and click 'Open'
4. Enter 'Training_GridPlane' in the lower box and click 'Create New'

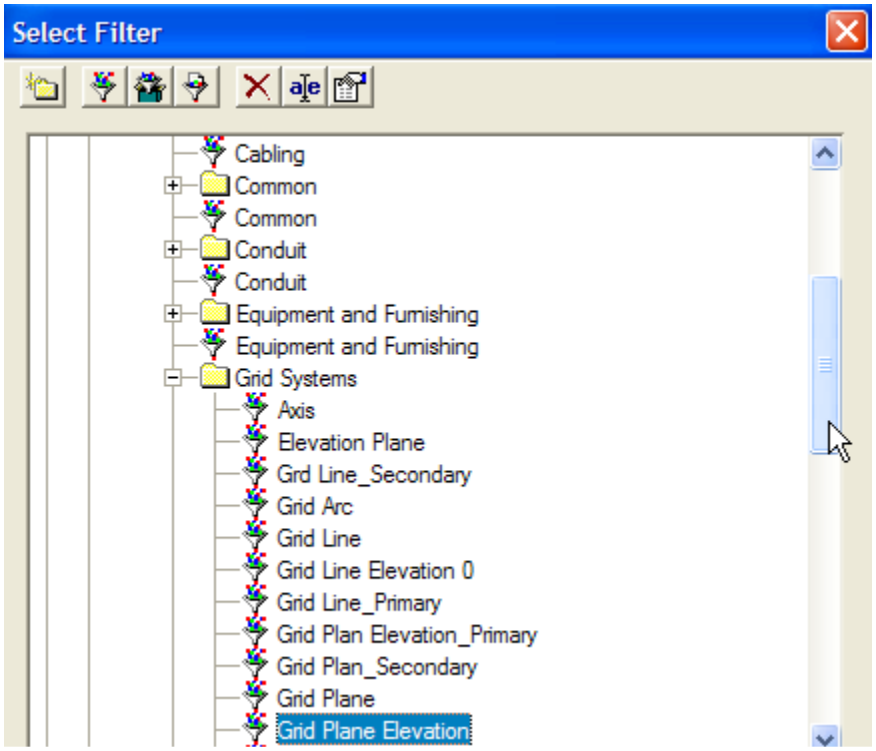


5. Click 'OK' on any prompts shown.
6. Click 'Exit' to exit the copy rule application

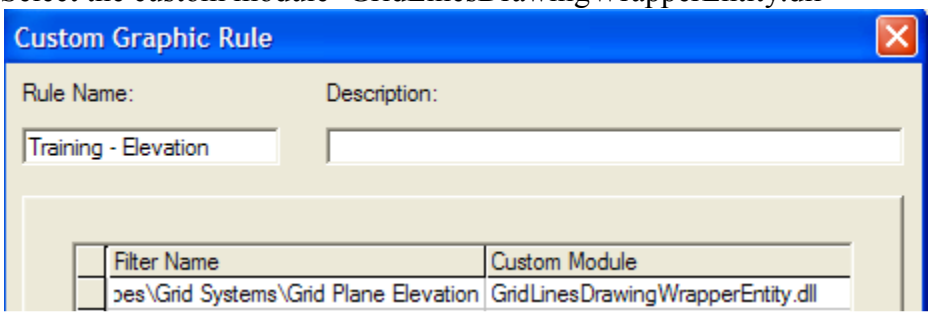
Define View Style

7. Select Tools → Define View Style
8. Select the 'Training' view style and edit properties
9. Rename the style 'Training – Elevation'
10. In the 'Graphic Preparation Rule' field, select More…
11. Click 'New …' to create a new custom graphic rule.

12. Click in the ‘Filter Name’ field in the first row and select the ‘Grid Plane Elevation’ filter as shown below

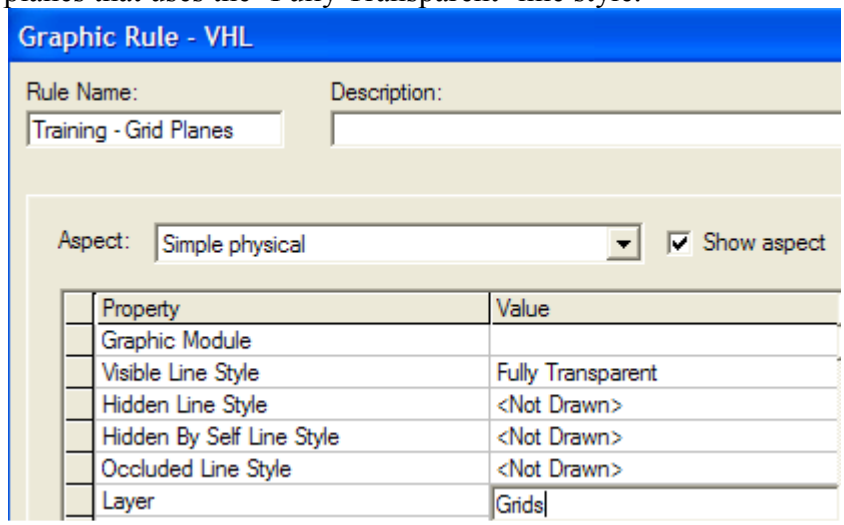


13. Select the custom module ‘GridLinesDrawingWrapperEntity.dll’



14. Click OK to define the rule.
15. Click OK to select the rule.
16. In the last row in the view style, add the ‘Grid Plane Elevation’ filter.

17. Click in the graphic rule field, select ‘More…’ and define a new graphic rule for grid planes that uses the ‘Fully Transparent’ line style.



18. Click OK to select the rule.
19. Click in the label rule field, select ‘More…’ and select the ‘Training_GridPlane’ label rule.

Edit Label Rule

20. Open Windows Explorer and browse to [Symbols Share]\Drawing\Catalog\Labels\Templates folder
21. Locate the ‘Training_GridPlane.xml’ file and open it using a text editor.
22. Locate the <connectpoint> tag using a search function or by scrolling through the file.

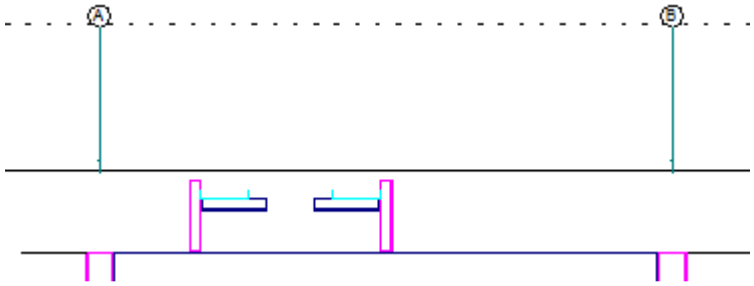
```
<connectPoint>4</connectPoint>
<!--Position of the search quadrant relative to an objects range.-->
<positioningPoint>4</positioningPoint>
<!--Placement priority preferences for label positioning.  Quadrant one
        is in the upper right and others are clockwise. Rules are executed in the
        order they are listed.-->
<posModules>
  <posModule value="DrawingQuadOne" />
  <posModule value="DrawingQuadTwo" />
  <posModule value="DrawingQuadThree" />
  <posModule value="DrawingQuadFour" />
  <posModule value="DrawingAbsolute">
    <!--Determine the X and Y offsets for the label relative an objects
            key point or control point.-->
    <hOffset>.02</hOffset>
    <vOffset>.02</vOffset>
  </posModule>
</posModules>
```

23. Change connectpoint to 1, positioningpoint to 1, delete the rows with DrawingQuadxxx posmodules, and change hoffset to 0 and voffset to 0.04

```
<connectPoint>1</connectPoint>
<!--Position of the search quadrant relative to an objects range.-->
<positioningPoint>1</positioningPoint>
<!--Placement priority preferences for label positioning.  Quadrant one
        is in the upper right and others are clockwise. Rules are executed in the
        order they are listed.-->
<posModules>
  <posModule value="DrawingAbsolute">
    <!--Determine the X and Y offsets for the label relative an objects
            key point or control point.-->
    <hOffset>0</hOffset>
    <vOffset>.04</vOffset>
  </posModule>
</posModules>
```

Test View Style

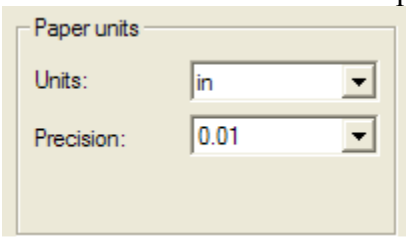
24. Edit the 'Piping Plan 1' drawing
25. Select the view and edit properties.
26. Change the view style to 'Training – Elevation' and the 'Look Direction' to 'Looking West'
27. Update the view. Notice the grid bubbles are above the view



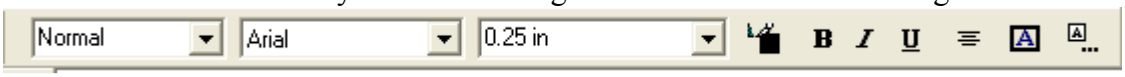
28. Close the drawing and exit drawing editor.

Edit label symbol

29. In Windows Explorer, double-click the Training_GridPlane.sym file to open it.
30. Select menu File → Sheet Setup and change paper units precision to 0.01

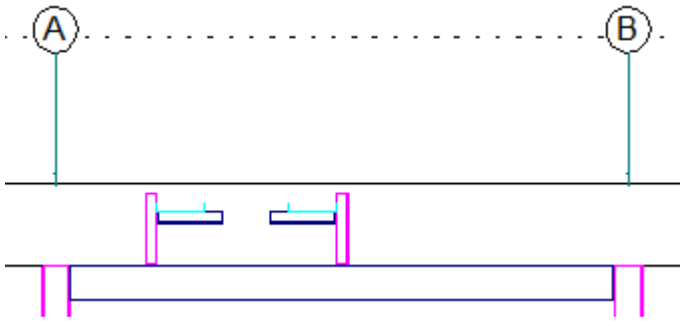


31. Select the text box in the sym file and change the text size to 0.25 in using the ribbon bar.



32. Save the sym file and exit drawing editor.
33. Edit the 'Piping Plan 1' drawing and update view.

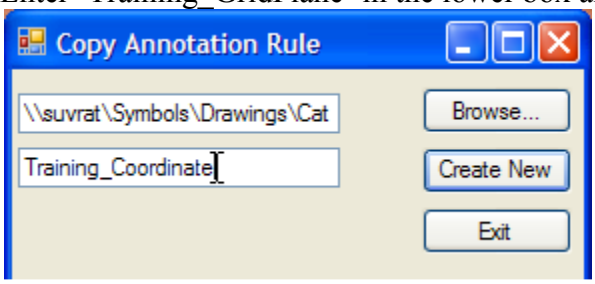
34. Notice that grid bubbles now reflect the new size.



Lab 16 : Control Point Coordinate Labels

Copy Label Rule

1. Run the 'Copy Annotation Rule' application using the shortcut on the desktop.
2. Click the Browse.. button and browse to the [Symbols Share]\Drawings\Catalog\Rules\LabelRules folder
3. Select the 'SP3DCoordinate_CA_JL' rule and click 'Open'
4. Enter 'Training_GridPlane' in the lower box and click 'Create New'



5. Click 'OK' on any prompts shown.
6. Click 'Exit' to exit the copy rule application

Edit Label Rule

7. Open Windows Explorer and browse to [Symbols Share]\Drawing\Catalog\Labels\Templates folder
8. Locate the 'Training_Coordinate.xml' file and open it using a text editor.
9. Locate the line <pgmodule>DrawingPGPipeSegments</pgmodule> and comment it out.

```
<pgModule>DrawingPGPipeSegments</pgModule>
<!--This module will place a label point on an obje
<!--If there is no control point then no point will
<!--<pgModule>DrawingPGCPThenNone</pgModule>-->
<!--This module will place a label point on an obje
<!--If there is no control point then the objects o
<!--there is no origin its center of range is used.
<!--<pgModule>DrawingPGControlPoint</pgModule>-->
```

10. Uncomment the line <!--<pgmodule>DrawingPGControlPoint</pgmodule>→

```
<!--<pgModule>DrawingPGPipeSegments</pgModule>-->
<!--This module will place a label point on an obj
<!--If there is no control point then no point wil
<!--<pgModule>DrawingPGCPThenNone</pgModule>-->
<!--This module will place a label point on an obj
<!--If there is no control point then the objects
<!--there is no origin its center of range is usec
<pgModule>DrawingPGControlPoint</pgModule>
```

11. Uncomment the line

```
<!--<gaModule>DefaultLabelGeometricAnalyzer</gaModule>-->
```

12. Comment out the lines

```
<gaModule>DrawingGALongestSegment</gaModule>
<equivalenceLabel>SP3DCoordinate.rtp</equivelenceLabel>
```

13. Uncomment the (tagged) lines as shown

```
<!--<posModule value="DrawingAbsolute">-->
<!--<hOffset>0.02</hOffset>-->
<!--<vOffset>0.02</vOffset>-->
<!--The angle value is in radians.-->
<!--<angle>0</angle>-->
<!--</posModule>-->
```

```
<posModule value="DrawingAbsolute">
<hOffset>0.02</hOffset>
<vOffset>0.02</vOffset>
<!--The angle value is in radians.-->
<angle>0</angle>
</posModule>
```

14. Comment out the line

```
<posModule value="DrawingCenterThenAbove"></posModule>
```

15. Comment out the lines

```
<posModule value="DwgLinearAbsPos">
  <percentageOffset>0.50</percentageOffset>
  <offsetFromMember>0.01</offsetFromMember>
</posModule>
```

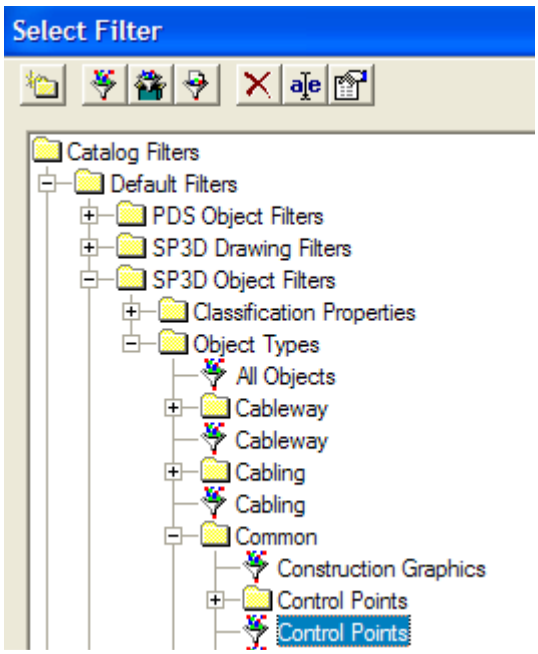
16. Edit <breakline> to be -1

```
<breakline>-1</breakline>
```

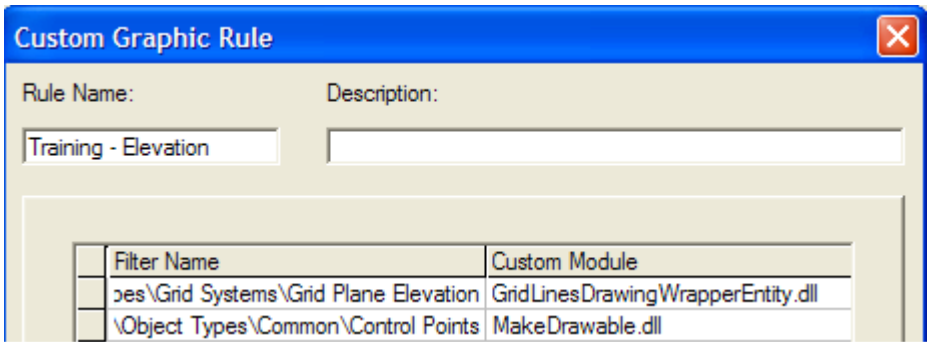
17. Save the XML file.

Edit View Style

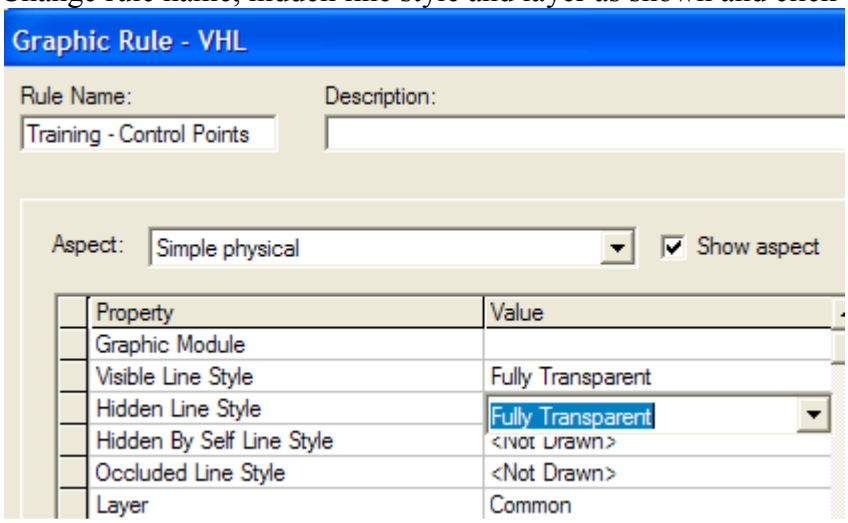
18. Tools → Define View Style
19. Edit the 'Training – Elevation' view style
20. Edit the 'Training – Elevation' graphic preparation rule.
21. Add the 'Control Points' filter



22. Select the ‘MakeDrawable.dll’ custom module.

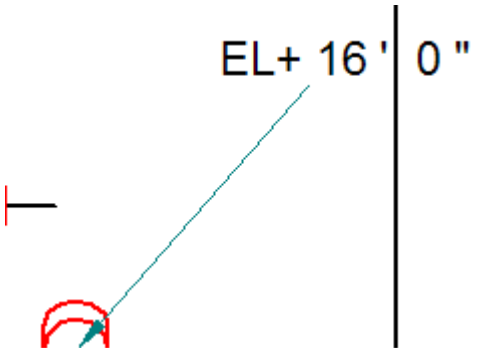


23. Click OK to save the rule.
24. Click OK to select the rule.
25. In the last row in the view style add the ‘Control Points’ filter.
26. Select the graphic rule field, click ‘More…’
27. Select the ‘Training – Grid Planes’ graphic rule and edit properties.
28. Change rule name, hidden line style and layer as shown and click OK.



29. Click ‘Yes’ to create a new rule.
30. Click OK to select the rule.
31. In the ‘Label Rule’ field, click ‘More..’
32. Select the ‘Training_Coordinate’ label rule and click OK.
33. Click OK to save the view style.
34. Test View Style
35. Edit the ‘Piping Plan 1’ drawing
36. Update the view.

37. Notice that elevation is shown for control point.

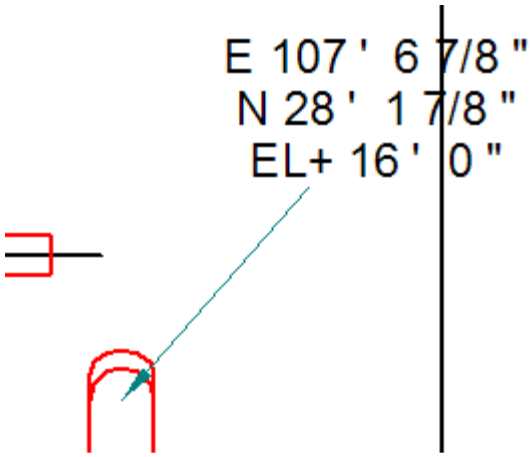


Edit label content

38. Locate the ‘Training_Coordinate.rfm’ file and open it using a text editor.
39. Change the Visible=”No” to Visible=”Yes” on the following lines.

```
<POSITION Axis="X" Point="BopLocation" Visible="Yes" />
<TEXT Value=" \par " ToParse="no" Visible="Yes" />
<POSITION Axis="Y" Point="BopLocation" Visible="Yes" />
<TEXT Value=" \par " ToParse="no" Visible="Yes" />
```

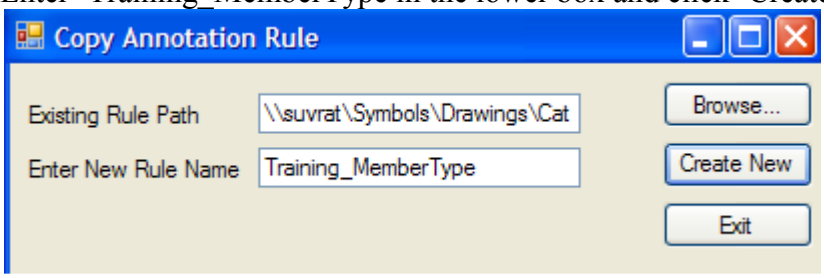
40. Save the rfm file.
41. Switch to drawing editor and update the view. Notice that all three coordinates are now shown.



Lab 17 : Creating New Label

Copy Label Rule

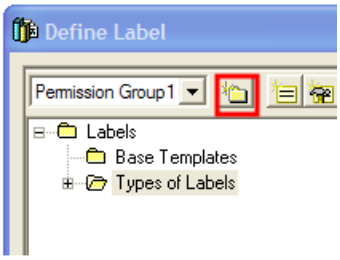
1. Run the 'Copy Annotation Rule' application using the shortcut on the desktop.
2. Click the Browse.. button and browse to the [Symbols Share]\Drawings\Catalog\Rules\LabelRules folder
3. Select the 'SectionSize_None_APO_NL' rule and click 'Open'
4. Enter 'Training_MemberType in the lower box and click 'Create New'



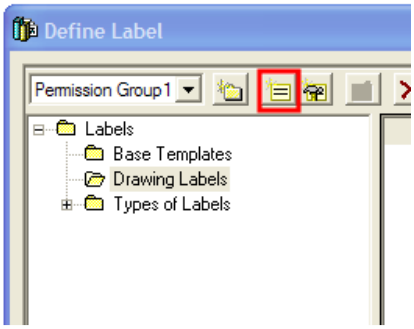
5. Click 'OK' on any prompts shown.
6. Click 'Exit' to exit the copy rule application

Label Template

7. Switch to the Catalog task
8. Select Tools – Define Label from the main menu
9. Select the Labels folder and create a new folder named 'Drawing Labels'

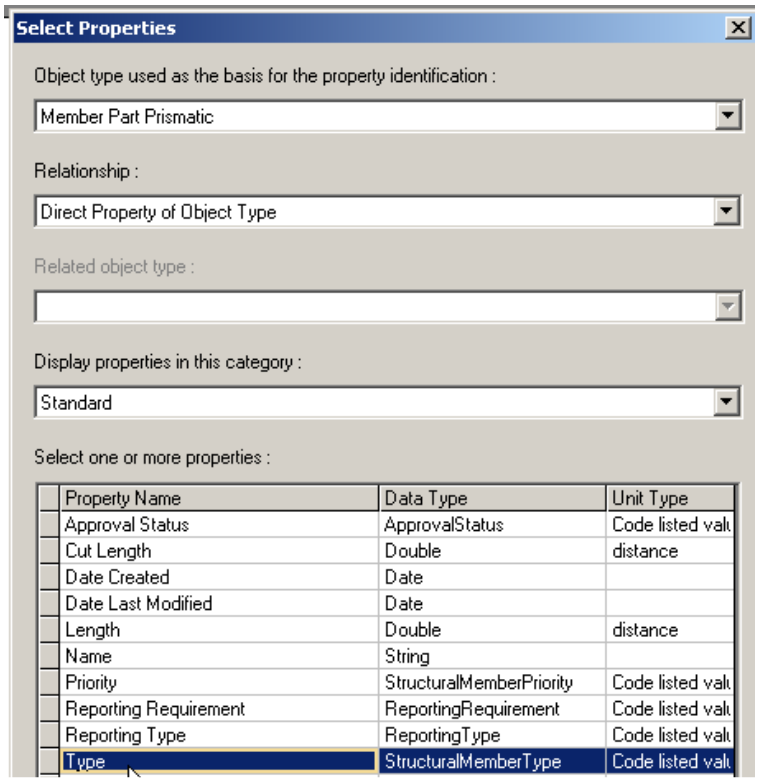


10. Select the Drawing Labels folder and pick the "New COM Label" button

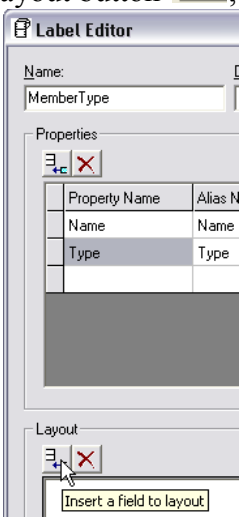


11. This will open the Label Editor dialog. Name the label "Training_MemberType" by typing in the name in the Name field.
12. In the Properties section of the dialog, click on the Add button  to add an attribute to the selection. This will open the Select Properties dialog.

13. Add a property ‘Type’ to the label from the Member Part Prismatic in Catalog Filters, and click OK to close the dialog, as shown below:



14. Select the “Type” property and insert it to the layout by selecting the Insert a field to layout button  , as shown below:



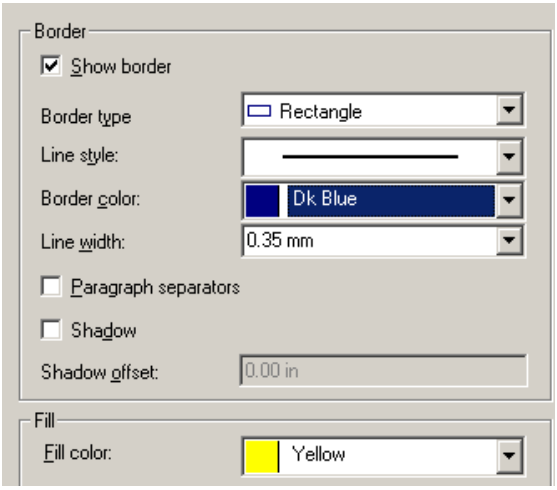
15. With the blinking cursor in the Layout text box, strike the RETURN/ENTER key to go to the next line. Similar to inserting the “Type” property to the layout, insert the “Name” property.
16. Click OK on the Label Editor dialog to save the label.
17. Using Windows Explorer, browse to [Symbols Share]\Labels\Drawing Labels\Training_MemberType and copy all the files.

18. Browse to [Symbols Share]\Drawings\Catalog\Labels\Templates and paste the files.

Label Symbol File

19. Using Windows Explorer, navigate to the [Symbols Share]\Drawings\Catalog\Labels\Templates folder.
20. Paste the files copied in earlier step
21. Double-click "MemberType.sym" to open it
22. Double-click the word "SectionSize" until it highlights with a yellow background and then type word "Training_MemberType". (This is for your information only, software does not care what text you put here.)
23. Right-click the word "MemberType" and select **Properties,** as shown below:

24. You can change the **Border and Fill** attributes as desired, e.g. choose **Border** color as Dk Blue and **Fill** color as Yellow.



25. Click OK and then save the symbol and exit.

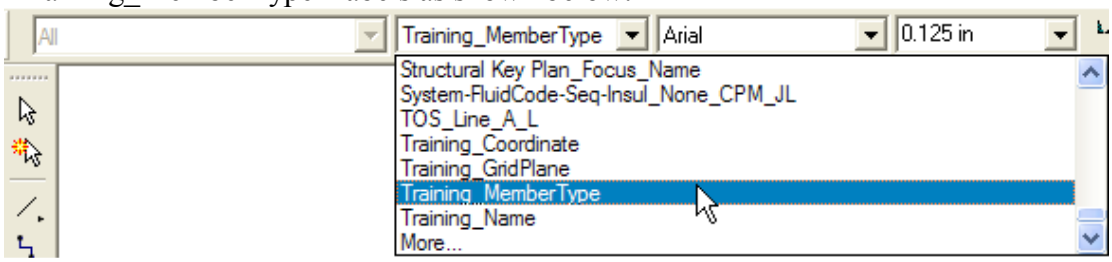
Label XML File

26. Open the "MemberType.xml" using NotePad, CookTop or other text editor.

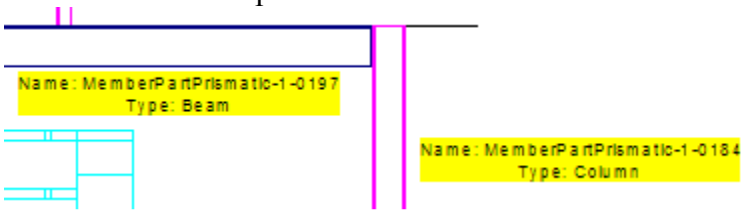
27. Search for the tag <content>, note that the proper rtp file for the report label is already being referred.

```
<content>
  <contentModule value="DrawingLabelHelper" />
  <!--This value is linked by a custom attribute on the text box in a s
      the same name as this rule.-->
  <ID attributeName="Training_MemberType">Training_MemberType.rtp</ID>
</content>
```

28. In SmartPlant3D, in the Drawings and Reports task, edit the drawing 'Piping Plan 1'
29. In the Drawing Editor, click on the 'Place a Label' button  located on the horizontal toolbar.
30. On the horizontal ribbon bar, drop down the select list and select the "Training_MemberType" labels as shown below:



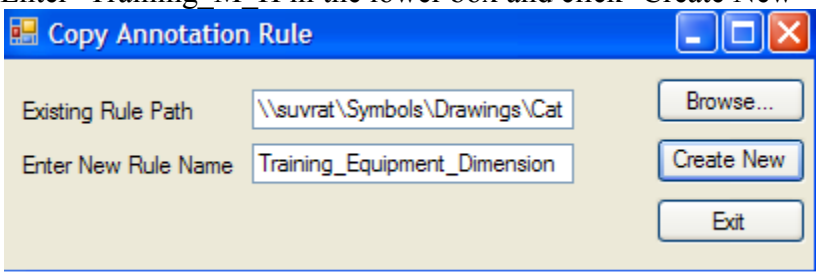
31. With the mouse pointer, select a structural member.
32. Left mouse click to place the label where desired.



Lab 18 : Using Dimension Rule

Copy Dimension Rule

1. Run the 'Copy Annotation Rule' application using the shortcut on the desktop.
2. Click the Browse.. button and browse to the [Symbols Share]\Drawings\Catalog\Rules\DimensionRules folder
3. Select the 'Linear_M_HV' rule and click 'Open'
4. Enter 'Training_M_H in the lower box and click 'Create New'



5. Click 'OK' on any prompts shown.
6. Enter 'Training_M_V' in the lower box and click 'Create New'
7. Click 'OK' on any prompts shown.
8. Click 'Exit' to exit the copy rule application

Edit Dimension Rule

9. Open Windows Explorer and browse to [Symbols Share]\Drawing\Catalog\Dimensions\Templates folder
10. Locate the 'Training_M_H.xml' file and open it using a text editor.
11. Locate the <vert> tag and set it to 0

```
<horiz>-1</horiz>
<vert>0</vert>
```

12. Save the file.
13. Locate the 'Training_M_H.xml' file and open it using a text editor.
14. Locate the <horiz> tag and set it to 0

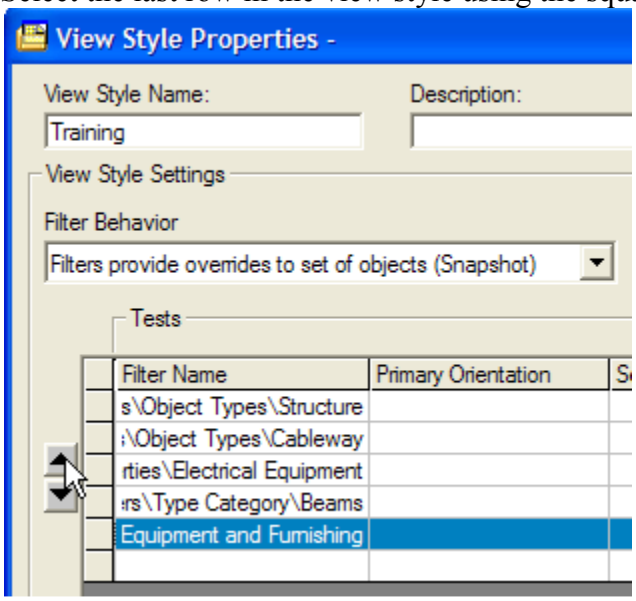
```
<horiz>0</horiz>
<vert>-1</vert>
```

15. Save the file.

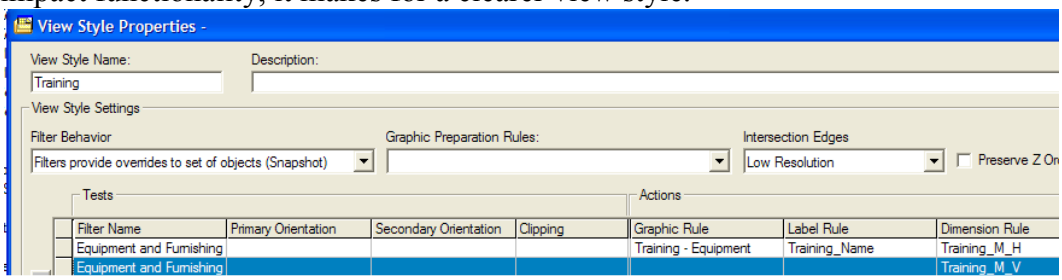
Edit view style

16. Tools → Define View Style
17. Edit the 'Training' view style
18. In the first row, click in the 'Dimension Rule' field, click 'More…'
19. Select the 'Training_M_H' dimension rule and click OK.
20. Add a row below the last row.
21. Click in the 'Filter Name' field and add the Equipment filter (hint: you can copy and paste the filter name from the first row)
22. In the first row, click in the 'Dimension Rule' field, click 'More…'

23. Select the ‘Training_M_V’ dimension rule and click OK.
24. Select the last row in the view style using the square to the left.



25. Repeatedly click the upwards triangle till it is just below the first row. While this does not impact functionality, it makes for a clearer view style.



26. Click OK to save the view style.

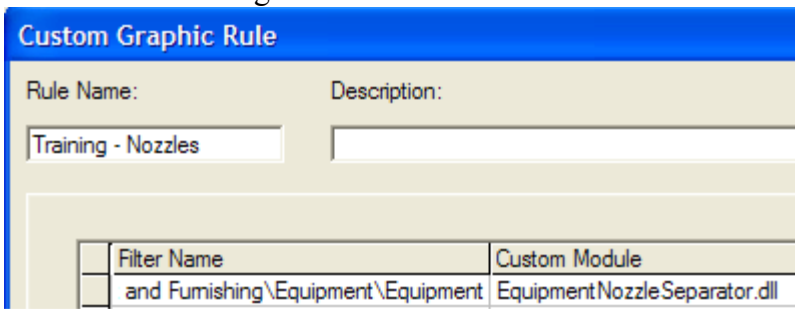
Test View Style

27. Edit the ‘Piping Plan 1’ drawing.
28. Select view and edit properties.
29. Change to use view style ‘Training’ and Look Direction ‘Looking Plan’ and click OK.
30. Update View

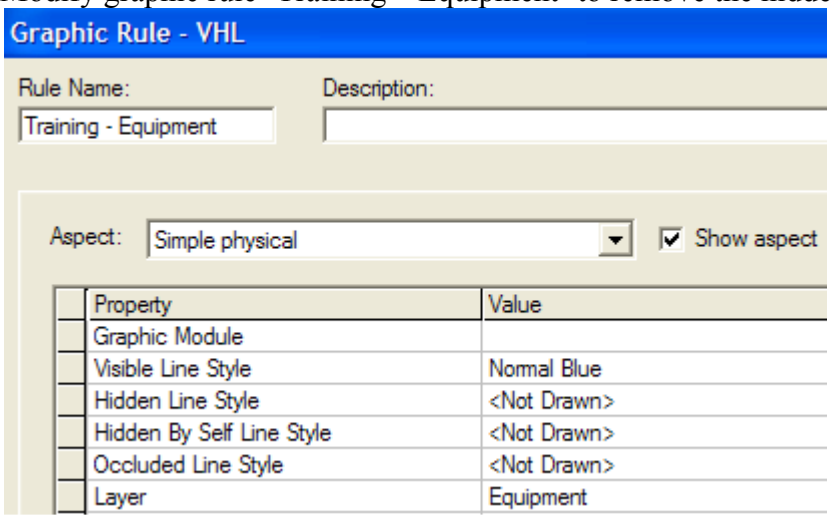
Lab 19 : Equipment Drawing by Query Package

Define View Style

1. Tools → Define View Style
2. Create New Style named 'Training – Nozzles'
3. Select style and Edit Properties
4. Click in the 'Graphic preparation rule' field and select 'More…'
5. Click 'New…'
6. Create rule 'Training – Nozzles' as below

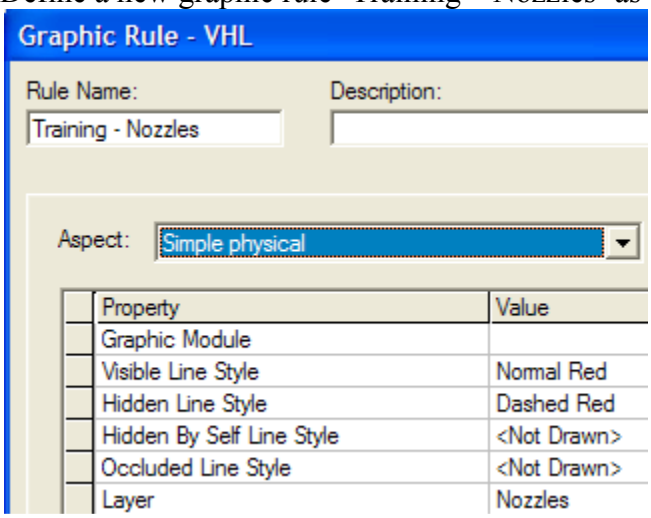


7. Click in the 'Filter Name' field in the first row in the view style and pick the Equipment filter selected above.
8. Press 'End' key to move to the end of the field.
9. Type **::Body**
10. Click in 'Graphic Rule' field and select 'More..'
11. Modify graphic rule 'Training – Equipment' to remove the hidden line style.

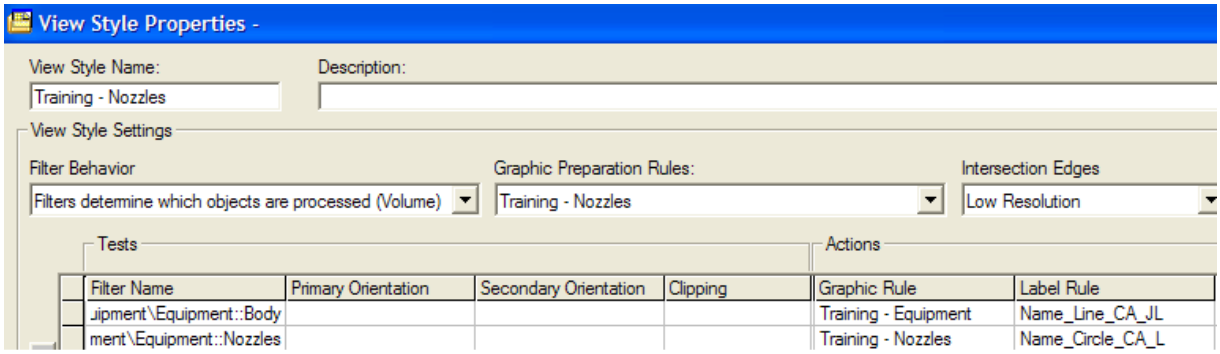


12. Click OK to select graphic rule.
13. Click in the 'Filter Name' field in the second row and again pick the Equipment filter as above (hint: you can copy and paste from the first row).
14. Edit the filter name to be **::Nozzles**
15. Click in 'Graphic Rule' field and select 'More..'

16. Define a new graphic rule ‘Training – Nozzles’ as below.



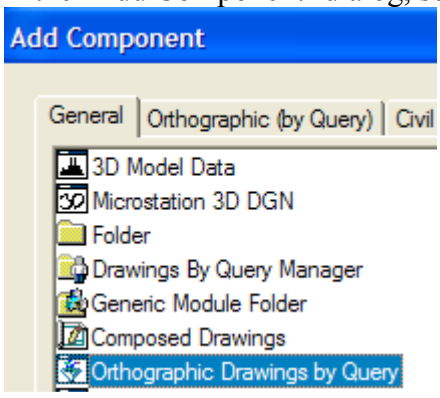
17. Select the label rule ‘Name_Line_CA_JL’ for the first row and ‘Name_Circle_CA_L’ for the second row as shown below



18. Click OK to save the view style.

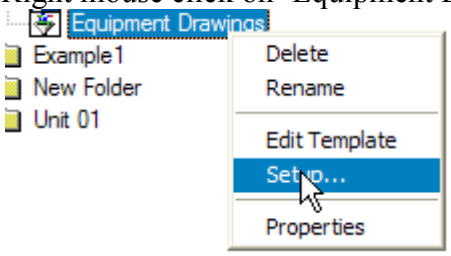
Define Template

19. In the Management Console select the ‘Drawings’ folder, right mouse click and select ‘New…’
20. In the ‘Add Component’ dialog, select ‘Orthographic Drawings by Query’ and click OK.

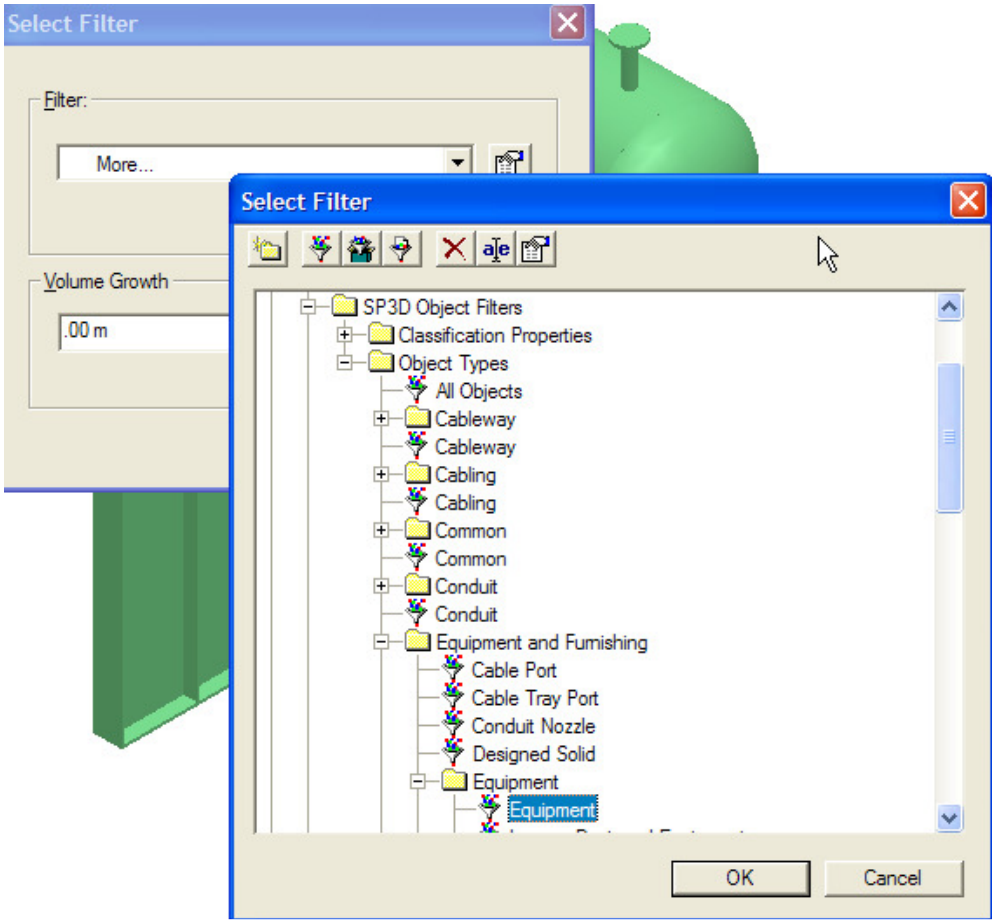


21. Select ‘Orthographic Drawings’ and rename to ‘Equipment Drawings’

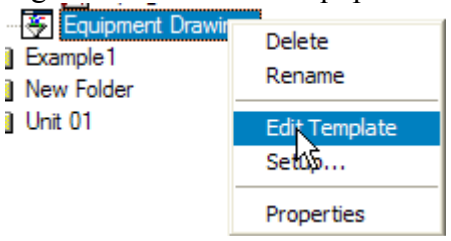
22. Right mouse click on ‘Equipment Drawings’ and click ‘Setup…’



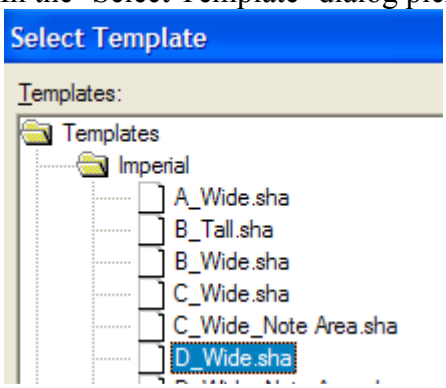
23. In the ‘Select Filter’ dialog, click ‘More..’ in the ‘Filter’ field and select the ‘Equipment’ filter.



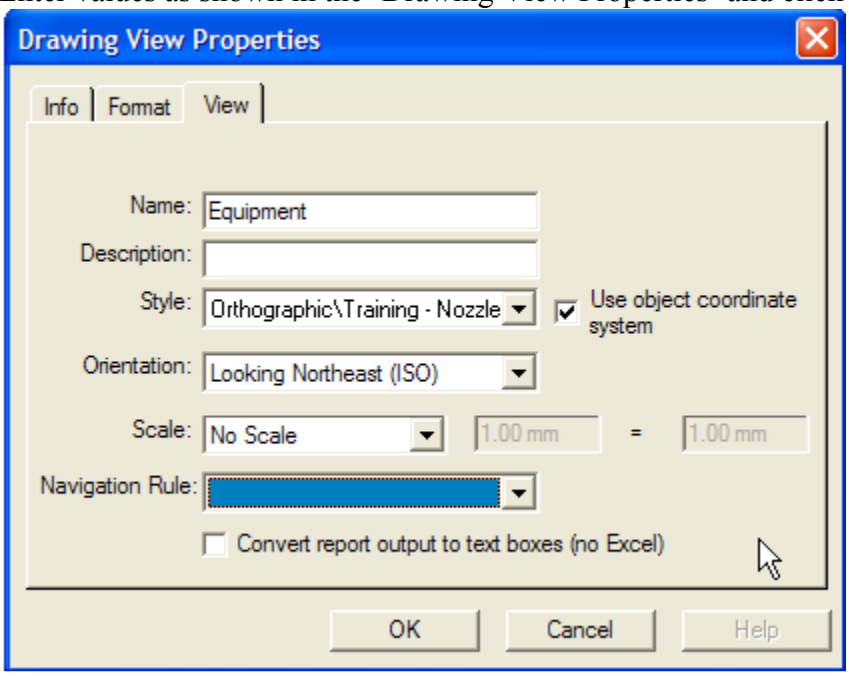
24. Click ‘OK’.
25. Right mouse click on ‘Equipment Drawings’ and click ‘Edit Template’



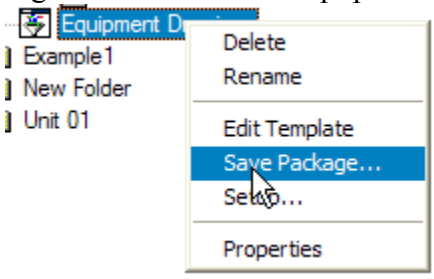
26. In the ‘Select Template’ dialog pick the ‘D_Wide’ template and click OK.



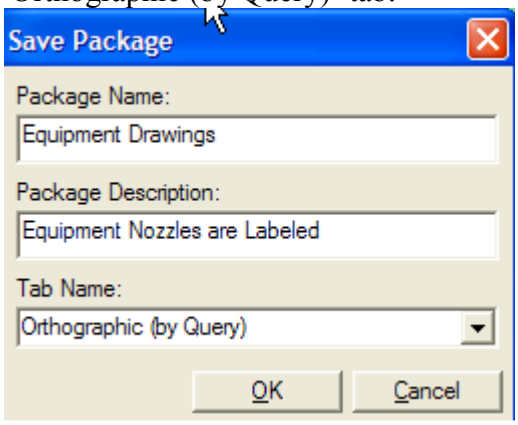
27. Place a drawing view from X = 0’ 5”, Y = 1’7” to X = 2’ 6”, Y = 0’ 5”
28. Enter values as shown in the ‘Drawing View Properties’ and click OK.



29. Close drawing editor and say ‘Yes’ when prompted.
30. Right mouse click on ‘Equipment Drawings’ and click ‘Save Package…’



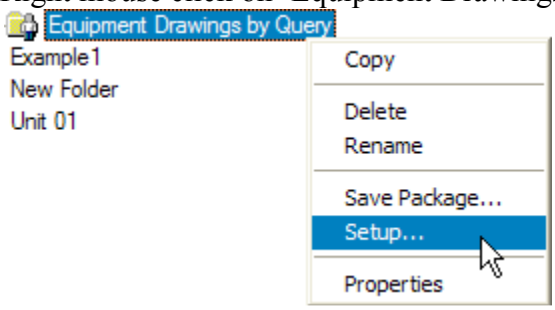
31. In the ‘Save Package’ dialog, enter name and description as shown and select the ‘Orthographic (by Query)’ tab.



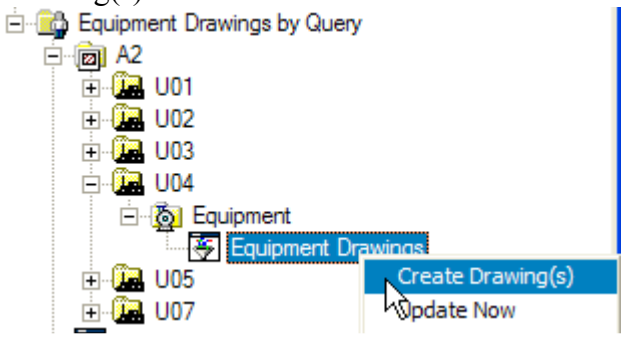
32. Click OK to save package.

Test Package

33. Right mouse click on the ‘Drawings’ folder and click ‘New…’
34. In the ‘Add Component’ dialog, select ‘Drawings By Query Manager’ and click OK.
35. Rename the newly created component to ‘Equipment Drawings by Query’
36. Right mouse click on ‘Equipment Drawings by Query’ and click ‘Setup…’



37. In the ‘Filter’ field, select the ‘Plant Filters – All’ filter.
38. In the ‘Package’ field, select the ‘Equipment Drawings’ package.
39. Click OK.
40. Right mouse click on ‘Equipment Drawings by Query’ and click ‘Run Query’
41. Expand hierarchy ‘A2 – U04 – Equipment – Equipment Drawings’ and click ‘Create Drawing(s)’

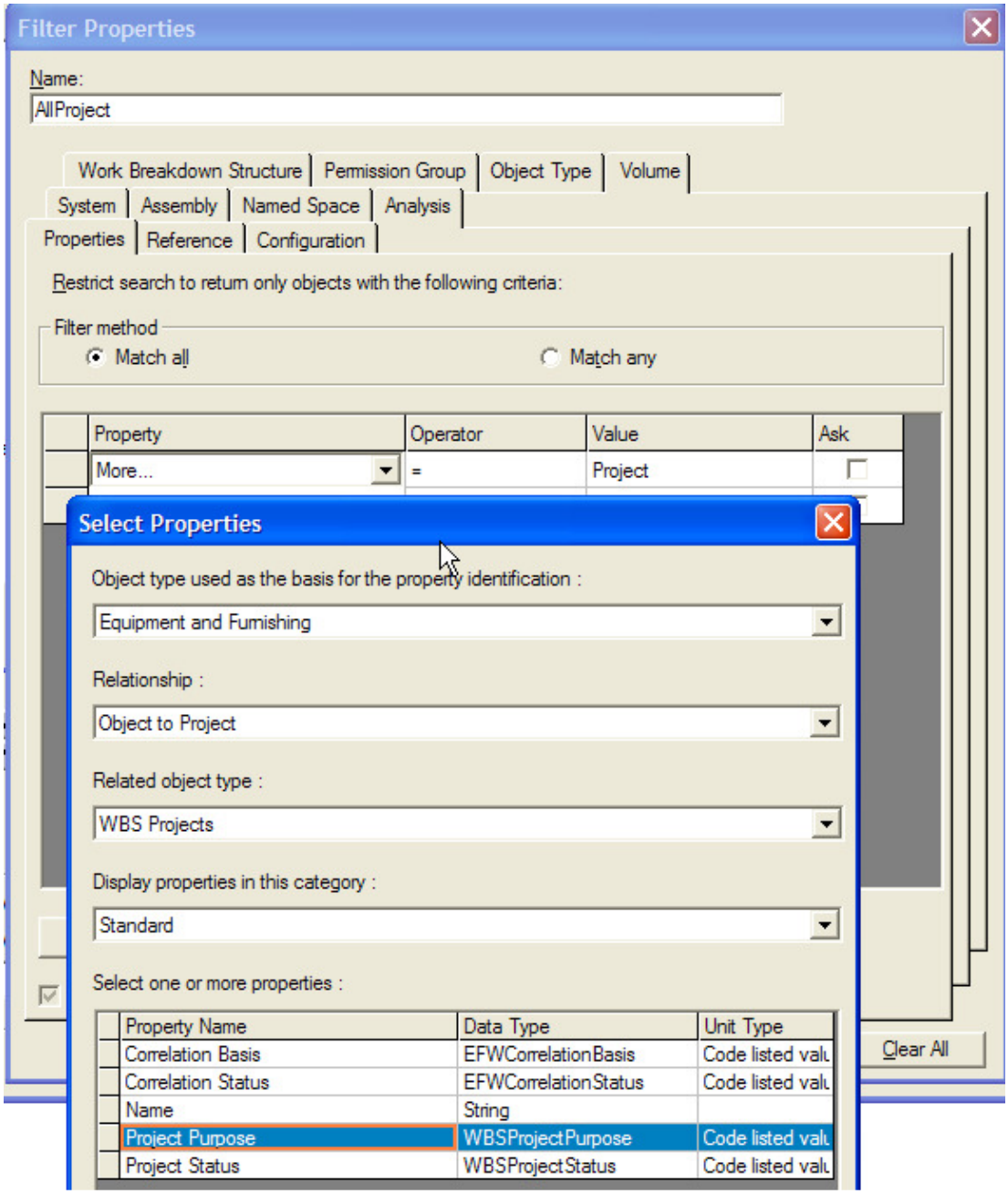


42. Right mouse click ‘40E-101A’ and select ‘Update Now’

Lab 20 : WBS Project based View Style

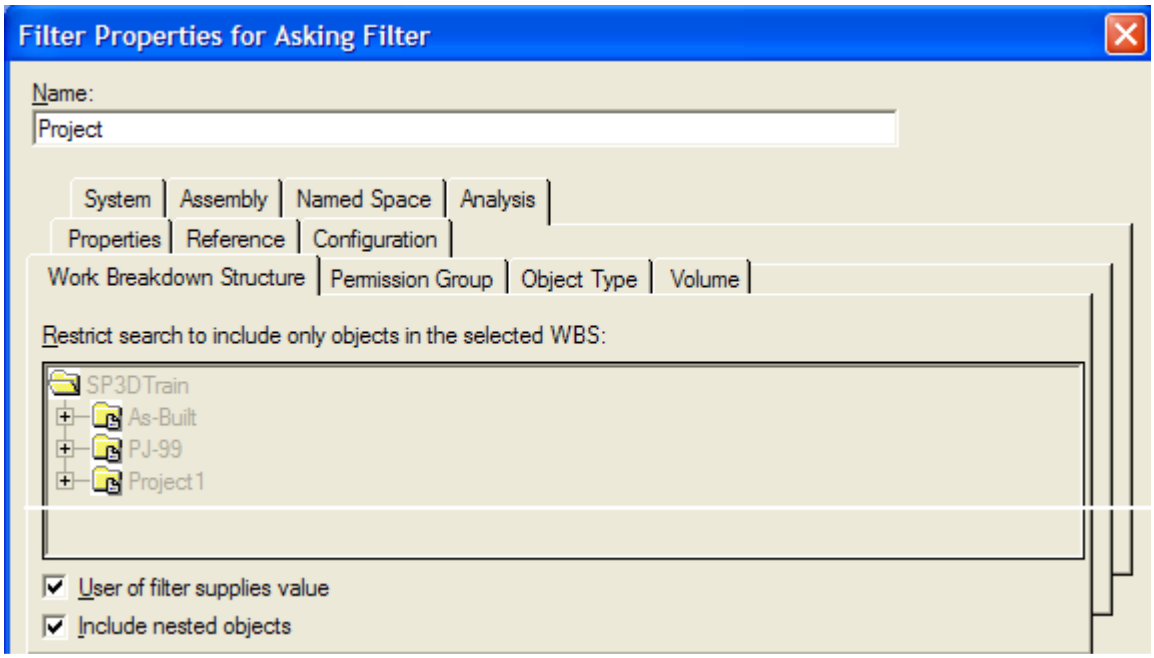
Define View Style

1. Select Tools → Define View Style
2. Create a new style named 'Training – WBS Project'
3. Add a filter in the first row named 'AllProject' (based on Project Purpose = Project) defined as follows

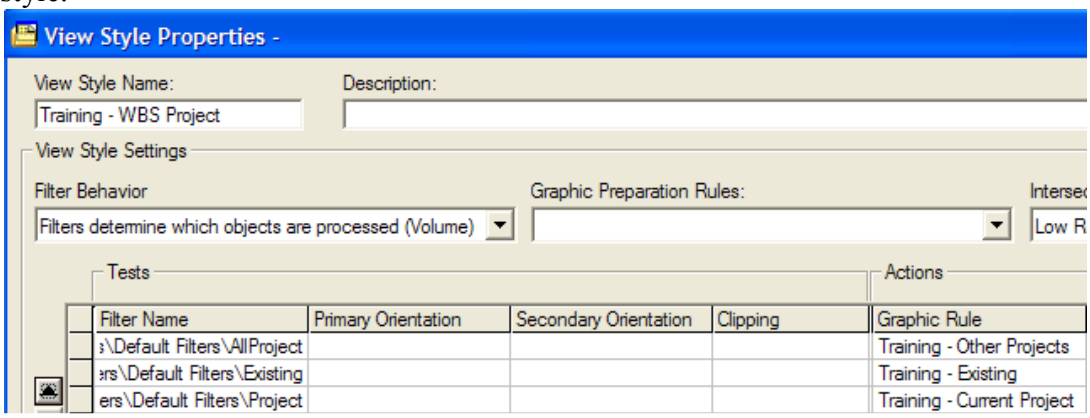


4. Use a graphic rule named 'Training – Other Projects' that uses the 'Normal Green' line style.

5. Add a filter in the second row named ‘Existing’ (based on Project Purpose = As-Built) similar to the filter above.
6. Use a graphic rule named ‘Training – Existing’ that uses ‘Normal Lt Gray’ as the line style.
7. Add a filter in the third row named ‘Project’ defined by selecting ‘User of filter supplies value’ check box on the ‘Work Breakdown Structure’ tab of the filter.



8. Use a graphic rule named ‘Training – Current Project’ that uses ‘Normal Blue’ as the line style.



9. Note that the order of the lines in the view style is important and that current project must appear in the view style after the other projects.

Test View Style

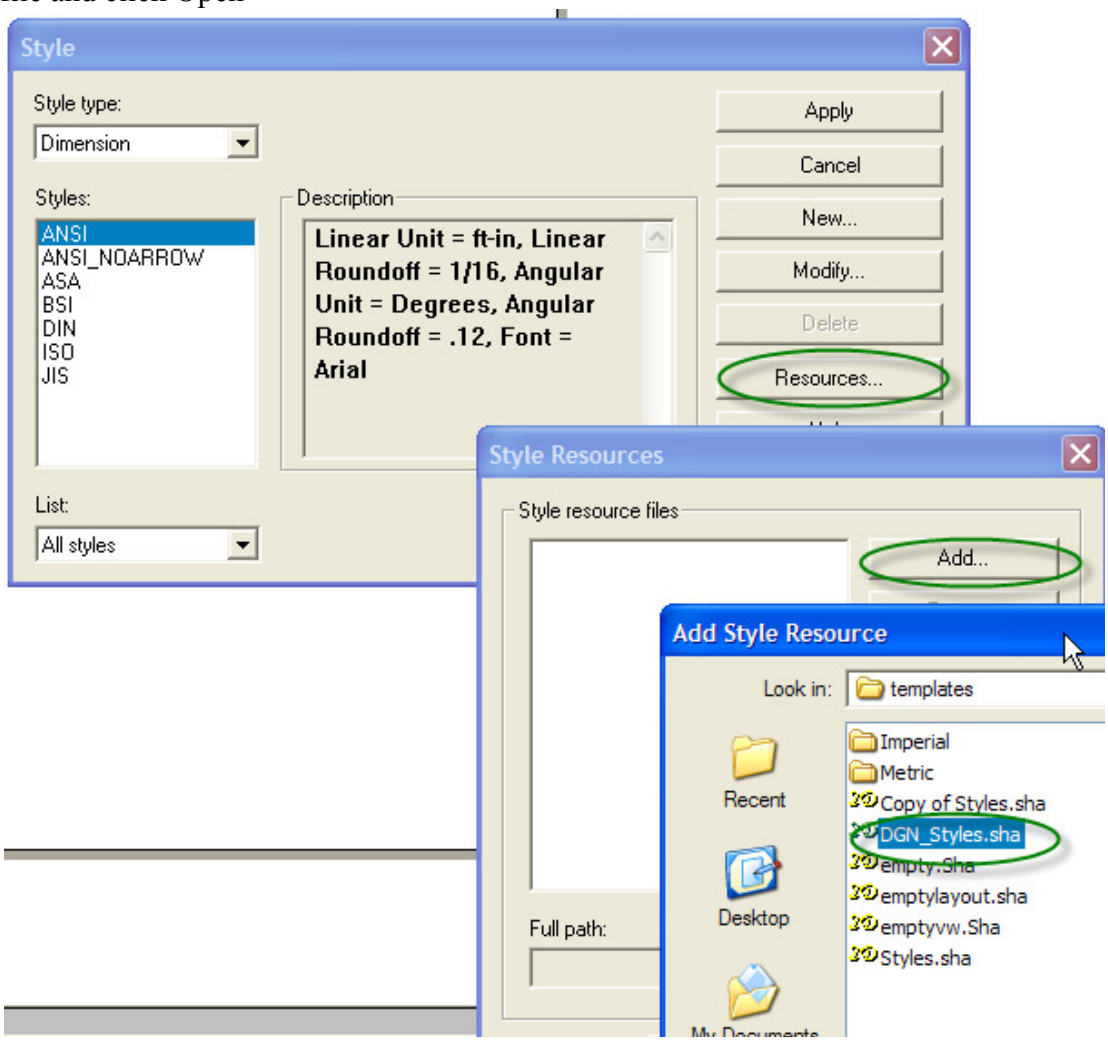
10. Switch to ‘Space Management’ task.
11. Define workspace using Plant Filters – Training Filters – U03
12. Define a volume that includes all objects from U03 and name it ‘U03 Volume’
13. Switch to ‘Structure’ task.
14. Set locate filter to ‘Member Parts’

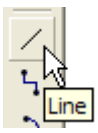
15. Select all beams on the first floor.
16. Set ‘Active Project’ to ‘Project1’
17. Select menu Project → Claim
18. Select all beams on the second floor.
19. Set ‘Active Project’ to ‘PJ-99’
20. Select menu Project → Claim
21. Select all objects in workspace.
22. Set ‘Active Project’ to ‘As-Built’
23. Select menu Project → Claim
24. A warning is shown, OK the warning.
25. Create a new drawing named ‘WBS Test’
26. Place a view in the drawing that uses the ‘Training – WBS Projects’ view style, scale family ‘Fit to Scale’ and look direction ‘Looking Northeast (Down)’
27. Associate view to volume ‘U03 Volume’ and filter ‘U03’
28. Close drawing editor.
29. Open drawing console.
30. Right mouse click on ‘WBS Test’, switch to Style tab, in the WBS Project field, pick ‘Project1’ and click OK.
31. Right mouse click on ‘WBS Test’ and ‘Update Now’
32. Review the drawing. Note that object in Project1 are blue while those in PJ-99 are green.
33. Right mouse click on ‘WBS Test’, switch to Style tab, in the WBS Project field, pick ‘PJ-99’ and click OK.
34. Right mouse click on ‘WBS Test’ and ‘Update Now’
35. Review the drawing. Note that object in Project1 are green while those in PJ-99 are blue.

Lab 21 : MicroStation 3D DGN Output

Define Style

1. Unzip the file DGN_ViewStyle.zip into your Symbols share
2. Open the file Styles.sha in the [Symbol Share]\Drawings\Catalog\Templates folder
3. Select menu Format → Style
4. Click the 'Resources' button
5. Click the 'Add' button
6. Navigate to [Symbol Share]\Drawings\Catalog\Templates and pick the DGN_Styles.sha file and click Open



7. Click OK
8. Click Close.
9. Start the 'Line' command from vertical toolbar 

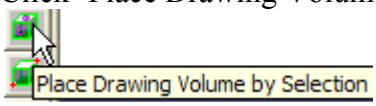
10. Pick the ‘Normal Cyan’ style and place a line.

11. Similarly pick each of the colors shown in the picture below and place a line. As you place each line, the line style that uses the line is copied into your active Styles.sha file.

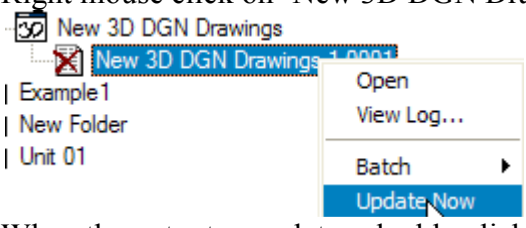
12. Select all lines and delete them.
13. Save file and exit.

Create DGN Output

14. Switch to ‘Space Management’ task
15. Define workspace using Plant Filters – All
16. Select menu Tools → Drawing Console
17. Right mouse click on ‘Drawings’ and click ‘New..’
18. From the ‘Add Component’ dialog, select ‘MicroStation 3D DGN’ and click OK.
19. Right mouse click on ‘New 3D DGN Drawings’ and click ‘Setup…’
20. Select the ‘DGN_Export’ view style and click OK.
21. Click OK again to finish Setup.
22. Select all objects in the plant using fence select.
23. Click ‘Place Drawing Volume by Selection’ command.



24. Select the ‘New 3D DGN Drawings’ as ‘Drawing Type’ and ‘SP3DTrain’ as the ‘Space Folder’ and click ‘Finish’
25. Select menu Tools → Drawing Console
26. Right mouse click on ‘New 3D DGN Drawings’ and click ‘Create Drawing(s)’
27. Right mouse click on ‘New 3D DGN Drawings-1-0001’ and click ‘Update Now’



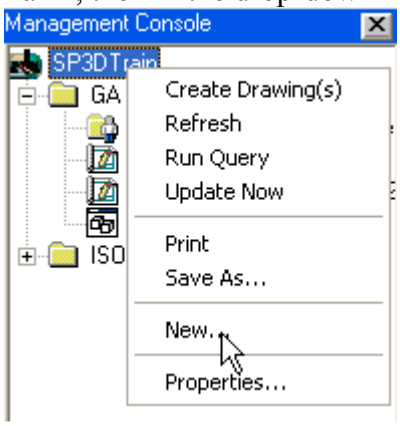
28. When the output completes, double-click to open the DGN.

Lab 22 : Search Folder

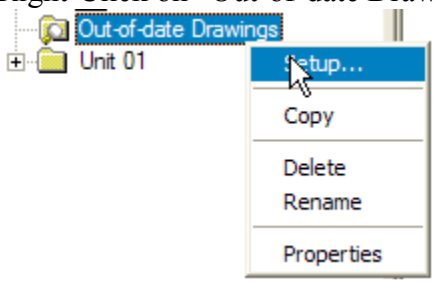
The “Search Folder” component allows you to search for documents based on common properties such as out-of-date status, approval, or documents that have been published to a certain contract in integrated environments. You can create a Search Folder component in any folder in the Management Console. After running the query defined for a Search Folder, you can perform such tasks as Update or Publish as if you were working from the actual owning component location for the documents.

In this lab, we will create a Search Folder that will return all drawings that are out-of-date.

1. While in the Drawings and Reports Task, Right-Click on the root component “SP3D Train”, then in the drop-down list Select “New”.

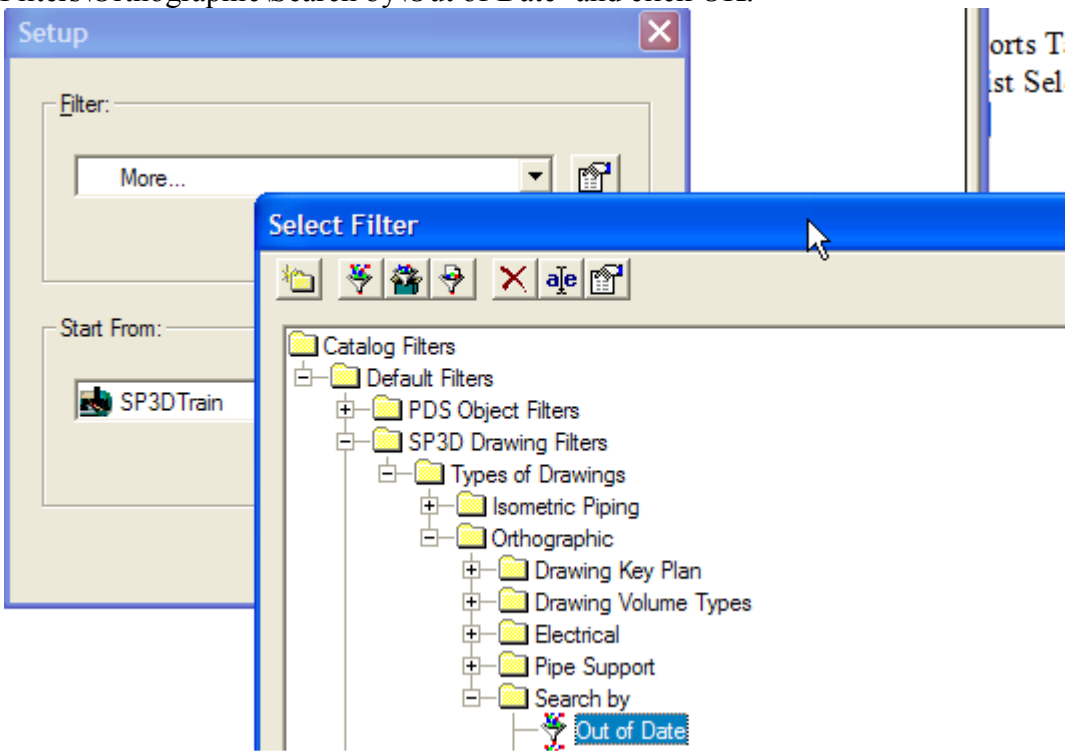


2. From the “Add Component” dialog, on the General Tab, Select “Search Folder”, and Click OK.
3. This will add a component called “New Search Folder” into the Drawings and Reports hierarchy.
4. Rename ‘New Search Folder’ to ‘Out-of-date Drawings’
5. Right-Click on “Out-of-date Drawings” and Select “Setup”.

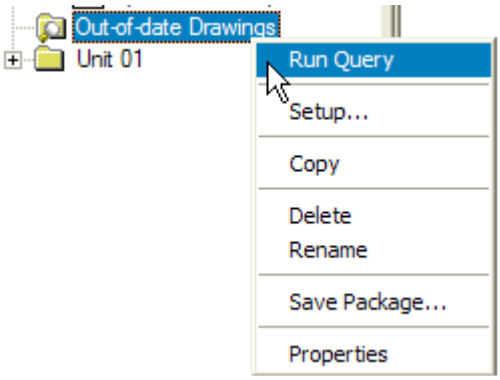


6. In the Setup dialog, for the “Filter” property, drop down the select list and choose “More”.

7. Pick the filter ‘Catalog Filters\Default Filters\SP3D Drawing Filters\Orthographic\Search by\Out of Date’ and click OK.



8. On the Setup dialog, set the “Start From:” property to “SP3DTrain”. Click OK to save and exit this dialog.
9. In the Management Console, right click on the “Out-of-date Drawings” and select “Run Query”. This will return the drawings that meet the criteria in the filter definition.



10. Select one of the drawings with a red X and click ‘Update Now’. The drawing updates with a green check mark.
11. Run query again on the ‘Out-of-date Drawings’ folder, notice that the updated drawing falls off the list.