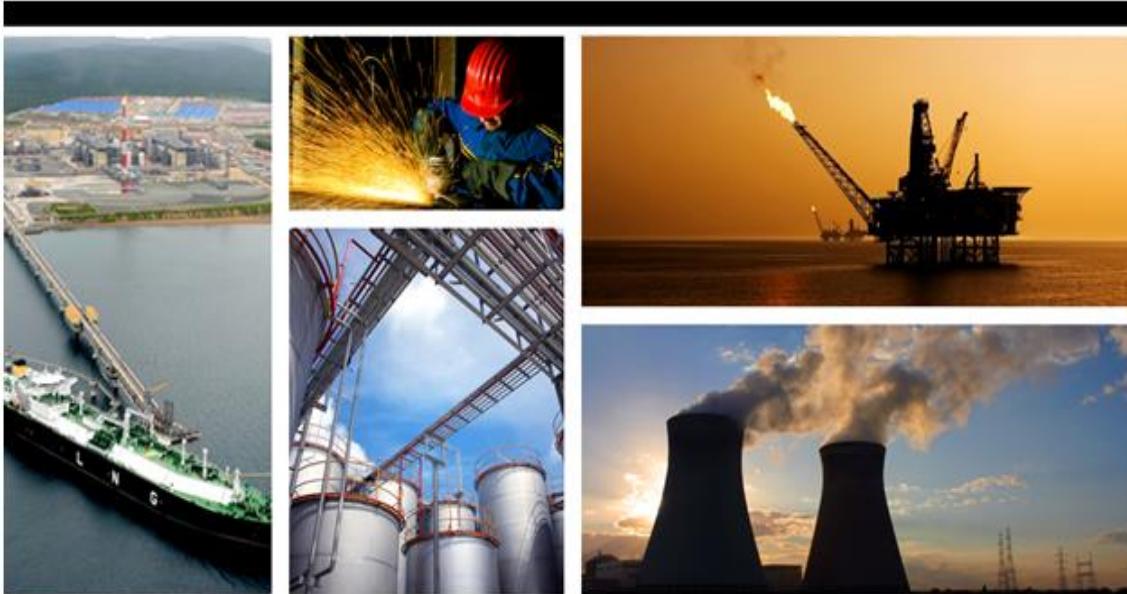


# Smart 3D Drawings Configuration Practice Labs



PROCESS, POWER & MARINE

**Version 2014 R1**

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# Contents

Preliminaries .....	9
<b>Border and Layout Templates .....</b>	<b>11</b>
Make Shared Content Files Modifiable .....	11
Create Border Graphics File .....	12
Import DGN to Create Border Graphics .....	12
Modify Background Color .....	13
Modify Sheet Origin and Size .....	15
Move Border Graphics.....	17
Create Border Template File.....	19
Define Workspace.....	19
Edit the Border Template .....	20
Link Border Graphics into Border Template.....	20
Add Border Labels.....	25
Remove Styles from Border Template .....	26
Modify Paper Units Precision in Border Template .....	30
Modify Units of Measure in Border Template .....	30
Configure Symbol Explorer .....	31
Create Favorites in Symbols Explorer.....	32
Edit the emptyvw.sha File .....	33
Remove Styles from emptyvw.sha .....	33
Modify Paper Units Precision in emptyvw.sha .....	35
Modify Units of Measure in emptyvw.sha.....	36
Map Linked File Paths .....	36
Create Text File with Path Mapping .....	36
Edit the Registry .....	37
Create a Layout Template .....	38
Place First View in Layout Template .....	38
Place Second View in Layout Template.....	41
Place Third View in Layout Template.....	41
Create a Composed Component .....	42
Create a Drawing with New Templates .....	42
Check Settings in Drawing.....	43
<b>View Style Settings and Filters .....</b>	<b>47</b>
Define Workspace.....	47
Create a New View Style Folder .....	48
Show Generic Object Types .....	48
Create View Style with Equipment Object Type Filter.....	48
Create a Composed Drawing .....	53
Place View and Apply View Style.....	53
Associate View to Volume and Update View .....	54
Add Piping Parts Object Type Filter to the View Style .....	55
Update View with Additional Objects.....	56
Show Effects of Filter Behavior .....	57
Change Filter Behavior from Volume to Snapshot.....	57
Update View with Filter Behavior as Snapshot .....	58

## Contents

---

Show Specific Objects .....	59
Add Classification Filters to View Style .....	59
Update View Using Classification Filter.....	60
Add Specific Object Type Filter for Pipe.....	61
Update View Using Specific Object Types Filter .....	62
Show Effects of Orientation Tests.....	63
Add Orientation Test for Pipe .....	63
Update View Using Orientation Test .....	64
Show Effects of Intersection Edges .....	65
Modify the Look Direction of View .....	65
Set Intersection Edge Off in View Style.....	66
Update View Using Intersection Edges Off .....	67
<b>VHL Graphic Rules .....</b>	<b>69</b>
Define Workspace.....	69
Show Visible Edges .....	70
Create View Style with New Graphic Rule .....	70
Create a Composed Drawing .....	72
Place View and Apply View Style .....	72
Associate View to Volume and Update View .....	72
Show Hidden Edges .....	73
Add Hidden Lines to Graphic Rule .....	73
Update View with Hidden Lines.....	73
Show Hidden By Self Edges .....	74
Add Hidden By Self Lines to Graphic Rule.....	74
Update View with Hidden By Self Lines .....	75
Show Piping Centerlines.....	76
Create View Style with Pipe Centerlines .....	77
Apply View Style to Existing View .....	78
Update View with Pipe Centerlines .....	78
Use Graphic Module to Show Piping Part Centerlines.....	79
Update View with Piping Part Centerlines .....	80
Show Equipment Centerlines.....	81
Modify View Style to Show Equipment Centerlines .....	81
Modify View Style to Show Nozzle Centerlines.....	83
Update View with Equipment and Nozzle Centerlines .....	83
Use Layers .....	84
Modify View Style to Assign Piping Layers .....	85
Modify View Style to Assign Equipment Layers .....	85
Update View with Layers for Piping and Equipment .....	86
Use New Line Styles .....	87
Create New Line Style.....	87
Modify Graphic Rule to Use New Line Style .....	88
Update View with New Line Style for Equipment .....	89
Make Insulation Aspect Transparent .....	90
Create View Style Using Make Transparent on Insulation Aspect.....	90
Define Workspace .....	92
Create Snapshot View and Apply View Style.....	95
Place Snapshot View.....	96
Update View with Transparent Insulation.....	96
Make Simple Physical Aspect Transparent .....	98
Initially Create View Style with Non-Transparent Slabs .....	98

Define Workspace .....	99
Create a Volume.....	100
Place View and Apply View Style.....	100
Associate View to Volume.....	100
Update View with Non-Transparent Slabs .....	100
Modify the View Style to Make Slabs Transparent.....	100
Update View with Transparent Slabs .....	101
Add a Fill Style for Transparent Slabs to the Graphic Rule.....	102
Update View with Fill Style for Transparent Slabs .....	103
Use Clipped Solid Fill .....	104
Add a Blank Fill Style to Styles.sha.....	104
Create View Style with Solid Fill for Clipped Walls and Slabs .....	105
Define Workspace .....	107
Create a Volume.....	107
Create Snapshot View and Apply View Style.....	109
Place Snapshot View.....	110
Update View with Monolithic Fill for Slabs and Walls.....	110
<b>Advanced Graphic Rules .....</b>	<b>113</b>
Single Line Piping .....	113
Define Workspace .....	113
Define the View Style .....	113
Apply View Style to Existing View .....	116
Update View with Pipe Centerlines .....	117
Re-symbolize Structure Openings .....	118
Define Workspace .....	118
Create a Volume.....	118
Define the View Style .....	118
Place View and Apply View Style.....	120
Associate View to Volume and Update View .....	120
Turn Clipping Off.....	120
Define the View Style .....	121
Test the View Style.....	122
<b>View, KeyPlan, Matchline and North Arrow Rules .....</b>	<b>123</b>
View Rules .....	123
Define Workspace .....	123
Define the View Style .....	123
Test the View Style.....	124
Key Plan Rules.....	126
Define the View Style .....	126
Test the View Style.....	130
Matchline Rules.....	131
Copy a Matchline Rule .....	131
Copy a Matchline Label .....	131
Modify View Style to use Matchline Label .....	131
Test the View Style.....	131
North Arrow Rule.....	133
Copy the North Arrow Rule .....	133
Copy the North Arrow Label .....	133
Modify View Style to use North Arrow Label .....	135
Test the View Style.....	135

## Contents

---

<b>Label Rules .....</b>	<b>137</b>
Using Label Rules .....	137
Define Workspace .....	137
Add a Label Rule to View Style .....	137
Test the View Style .....	138
Copy the Label Rule .....	139
Edit the Label Rule .....	140
Reference Labels .....	142
Define the View Style .....	142
Test the View Style .....	143
Grid Labels for Elevation Views .....	144
Define the View Style .....	144
Create and Edit Label Rule .....	147
Test the View Style .....	151
Edit the Label Symbol .....	152
Control Point Coordinate Labels .....	154
Insert a Control Point .....	154
Edit the View Style .....	156
Copy and Edit the Label Rule .....	159
Test the View Style .....	161
Edit the Label Content .....	161
Grating Symbol Label .....	162
Bulkload New Control Point Subtypes .....	162
Create the View Style .....	166
Create the Label Rule .....	167
Create a Grating Symbol .....	167
Edit the Label Rule .....	169
Test the View Style .....	169
Creating a New Label for a Structural Member .....	171
Create View Style .....	171
Copy the Label Rule .....	172
Label Template .....	172
Label Symbol File .....	175
Test Label Rule .....	176
<b>Dimension Rules .....</b>	<b>179</b>
Dimension Rule for Equipment .....	179
Copy the Dimension Rule .....	179
Edit the Dimension Rule .....	180
Edit the View Style .....	180
Test the View Style .....	181
Dimension Rule for Piping .....	182
Copy the Dimension Rule .....	183
Edit the View Style to Add Dimension Rules to Parallel Pipe .....	183
Test the View Style .....	184
Edit the View Style to Add Dimension Rules To Normal Pipe .....	185
Test the View Style .....	186
Edit the Dimension Rule to Add the Range Functionality .....	187
Test the View Style .....	188
Edit the Dimension Rule to Eliminate Small Dimensions .....	189
Test the View Style .....	190
Edit the Dimension Rule to Extend Witness Lines .....	190

Test the View Style.....	191
Chained Dimensions .....	192
Apply Shared Dimensions in a View Style .....	193
Test the View Style.....	194
Change Dimension Rules.....	198
Create and Edit Anchor Rules.....	201
Test the View Style.....	204
Add Matchline Anchored Dimensions .....	206
Conditional Behavior of Anchor Rules.....	208
<b>Drawing by Query Package .....</b>	<b>211</b>
Define a View Style.....	211
Define a Template.....	213
Test the Package .....	216
<b>WBS Project based View Style.....</b>	<b>219</b>
Define the View Style .....	219
Test View Style .....	221
<b>MicroStation 3D DGN Output .....</b>	<b>225</b>
Add Styles to Styles.sha .....	225
Create DGN Output .....	227
<b>Search Folder.....</b>	<b>229</b>
Search for a document.....	229
<b>Batch Management.....</b>	<b>231</b>
Update Drawing Using Intergraph Batch Services .....	231
Run Project Management Utility.....	231
Configure Account Mapping .....	235
Run Drawings Utility .....	237
Check Excel Security Settings .....	237
Create Queues .....	238
Set the Default and Available Queues .....	239
Submit a Batch Job .....	241
<b>Index .....</b>	<b>245</b>



# Preliminaries

## Action Definitions

**Click** and **Select** - Interchangeable terms that mean to move the cursor over the specified element and press then release the left mouse button.

**Drag** – Press the left mouse button, move the cursor, then release the left mouse button.

**Ensure** – Verify the specified condition is true; if not then correct it to match what is specified.

**Expand** – Click the icon next to a folder in a tree view to see its children folders.

**Hover** – Hold the cursor over the specified element until the specified condition is met.

**Key in** - Type in the specified characters from the keyboard followed by ENTER.

**Maximize** – Expand a window by selecting the Maximize button in the window's upper right corner.

**Right-click** - Move the cursor over the specified element and press then release the right mouse button.

**Mouse Down** - Move the cursor over the specified element and press the left mouse button.

**Mouse Up** – Release the left mouse button.

**Press** – Hold the specified key(s) down on the keyboard; keys to be selected simultaneously are separated by +, as in CTRL+A.

**Type** – Type in the specified characters from the keyboard.

## Formatting Conventions

**Bold** formatting refers to a control in the user interface or a property value or data provided by the user to the software.

*Italic* formatting refers to a response by the software to an action.

Underline formatting is added to emphasize a point.



## L A B 1

# Border and Layout Templates

### Objective

By the end of this session, you will be able to:

- Create a new drawing border graphics file by importing a MicroStation file.
- Link the border graphics into the border template file.
- Add border (title block) labels.
- Configure client machines to replace linked file paths if they are not accessible to the user.
- Create a layout template containing views.

### Overview

Border and layout templates are files stored in the shared content. They are used for the creation of new drawings. Border templates contain the border graphics and property labels while layout templates contain an optional arrangement and configuration of views.

Smart 3D delivers several border templates that can be used as is or customized to suit your needs. Only one layout template is delivered, `Empty.sha`, and it has no views placed in it.

Since it is not unusual for users to want to reuse their borders from other applications, steps are included in this lab to import a border file and add the property labels, or border labels.

A recommended work process is to link the border graphics into the border template. This is done to simplify the modification of border graphics in existing drawings. Steps are also included to configure client machines to look for the linked file in a local location, a useful process when working in a global workshare configuration.

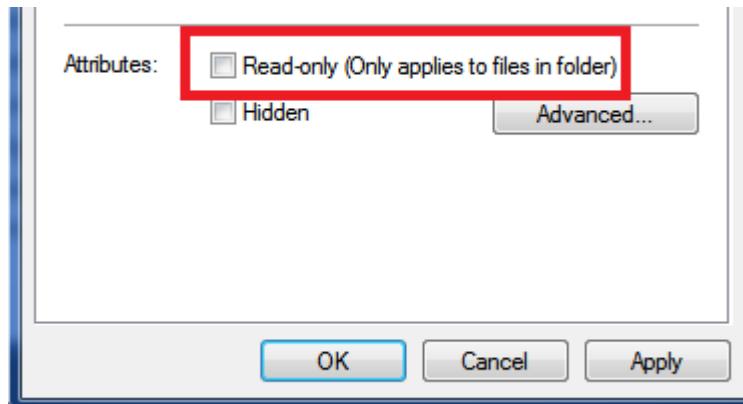
## Make Shared Content Files Modifiable

**Objective:** Use Windows Explorer to add write access to the Drawings files in the shared content.

1. Open **Windows Explorer** window, and then navigate to the `[SharedContent]\Drawings` folder.
2. Right-click the folder, and select **Properties**.

*The **Drawings Properties** dialog box displays.*

3. Clear the **Read-only** check box on the **General** tab.



**NOTE** Click **OK** on any Windows confirmation dialog boxes that may appear.

4. Click **OK** to close the dialog box.

## Create Border Graphics File

**Objective:** Create a file that contains the border graphics for drawings. A later section will link this file to a new border template. It is recommended to link the border graphics into the border templates to make it easier to modify border graphics in existing drawings.

## Import DGN to Create Border Graphics

**Objective:** Import a DGN border file into **SmartSketch Drawing Editor** to create the border graphics file.

1. From the **Windows Start** menu, click **All Programs > Intergraph Smart 3D > SmartSketch Drawing Editor**.  
*The SmartSketch Drawing Editor* opens.
2. Close the **Tip of the Day** dialog if necessary, and click **File > Open**.  
*The Open dialog box* displays.
3. Select **MicroStation (\*.dgn)** from the **File type** list.  
**TIP** The **File type** list is located to the right of the **File name** box.
4. Navigate to **[SharedContent Folder]\Drawings\Catalog\Templates**, and select **DGN\_Border.dgn**.

5. Click **Open** to import, or translate, the selected MicroStation file into **SmartSketch Drawing Editor**.

**NOTES**

- You must use **SmartSketch Drawing Editor** to create the borders used in Smart 3D. Do **not** use the SmartSketch application. Although the software can open borders that you create in SmartSketch, the borders cannot be saved because of incompatible file formats.
  - To use a border that you created using SmartSketch, copy the contents into an empty **SmartSketch Drawing Editor** file.
  - Borders used in orthographic drawings must have their border graphics on the working sheet. If the border is to be used for piping isometric drawings, the border graphics must be on the *background* sheet.
  - Opening a document in **SmartSketch Drawing Editor** outside of Smart 3D requires that a **SmartSketch** license be available.
6. Maximize the drawing window in **SmartSketch Drawing Editor**.
  7. Click **Fit**  on the horizontal toolbar.
  8. Click **File > Save As**.

The **Save As** dialog box displays.

9. Navigate to the **[SharedContent]\Drawings\Catalog\Templates\Imperial** folder.

10. Type **ArchD\_Wide\_Graphics** in the **File name** box, and then click **Save**.

**IMPORTANT** The import of the .dgn file is the only portion of this lab that requires you to use **SmartSketch Drawing Editor** outside of Smart 3D. Running **SmartSketch Drawing Editor** outside of Smart 3D requires a SmartSketch license. Now that the file is saved in the template folder, it can be edited using the **Edit Border Template** command in Smart 3D. The next section will make some more changes while we have the file open.

## Modify Background Color

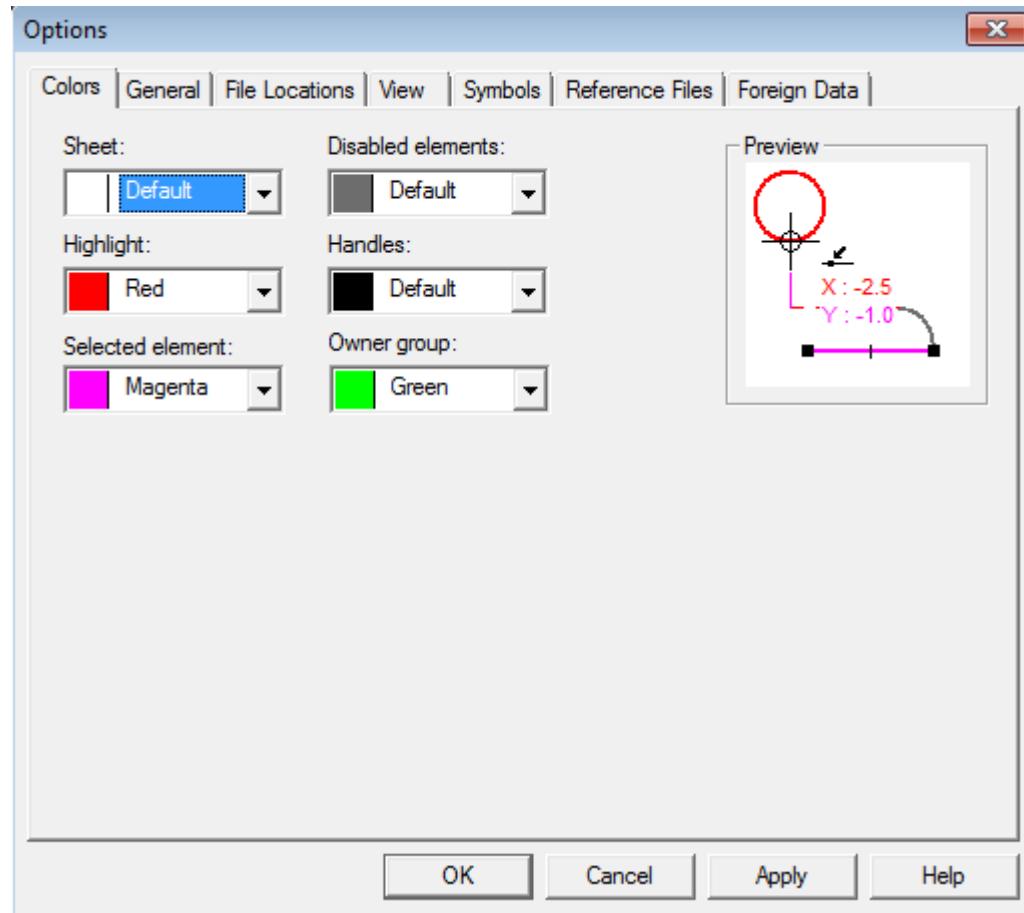
**Objective:** Modify the background color. The setting is saved in the registry, not in the file.

1. Click **Tools > Options**.

## Border and Layout Templates

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The **Options** dialog box displays.

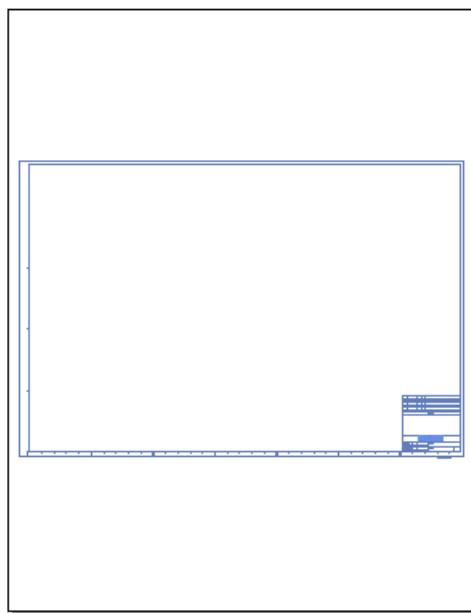


2. Select **White** in the **Sheet** list.

**TIPS**

- The purpose of the **Default** color setting is to access the sheet color saved in the file instead of the value in the machine registry. However, if the color saved in the *outer* document differs from the color saved in the *inner* document (that is, inside the graphic view), the outer sheet color may take on the color of the inner sheet during updates and edits.
- For simplicity, assigning a specific color to a sheet avoids the color changes. Be aware that the system does not save to the registry any changes that you make in the **Options** dialog box until you exit the file.

3. Click **OK**.



## Modify Sheet Origin and Size

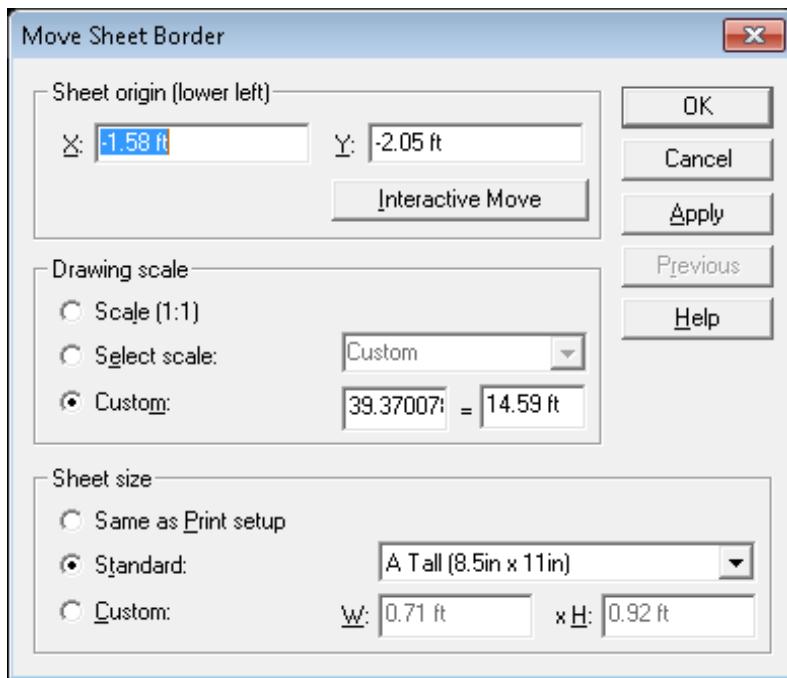
**Objective:** Adjust the position and size of the sheet boundary. The sheet is to be positioned at the origin of the document. The next section moves the border graphics into the new location of the sheet boundary.

1. Click **File > Move Sheet Border**.

## Border and Layout Templates

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The **Move Sheet Border** dialog box displays.



2. Type **0** in the **X** box, and then press TAB.

*The value **0.00 ft** displays in the box.*

3. Type **0** in the **Y** box, and then press TAB.

*The value **0.00 ft** displays in the box.*

4. Select **Scale (1:1)** under **Drawing scale**.

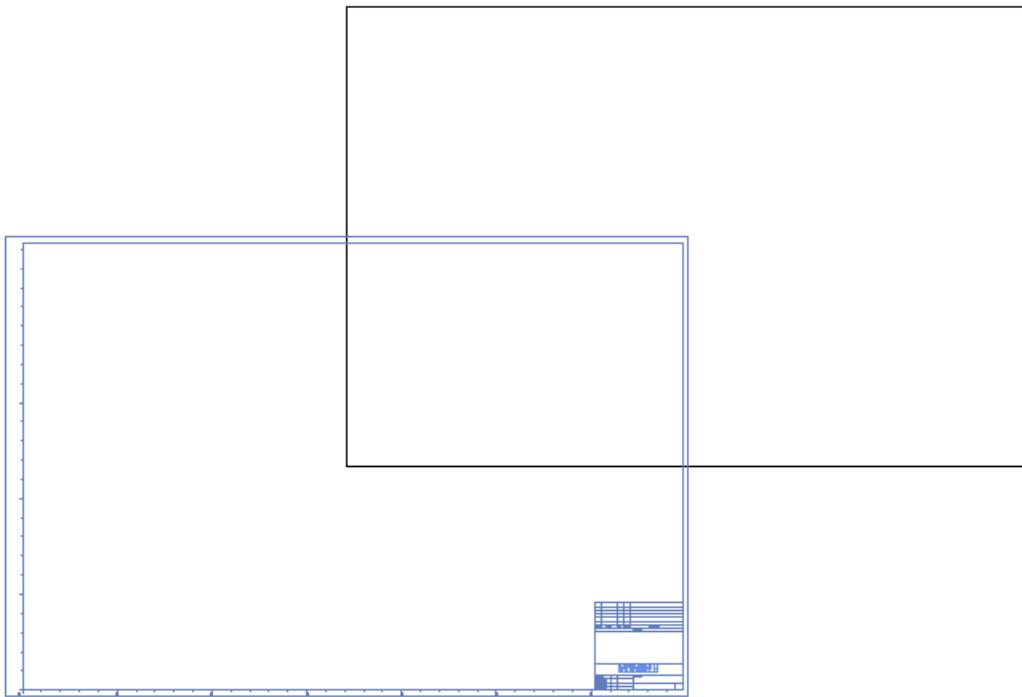
5. Select **Arch. D Wide (36in x 24in)** in the **Size** list under **Sheet size**.

6. Click **OK**.

*The software changes the size of the sheet and the border graphics. The center of range of the border graphics are moved to the **0,0** point on the sheet*

**TIP** The **0, 0**, point is the lower left corner of the sheet.

7. Click **Fit** .



## Move Border Graphics

**Objective:** Move the border graphics into the new location of the sheet boundary.

1. Click **Tools > Pin Point**.

*The **Pin Point** ribbon displays.*

2. Click **Select**  on the vertical toolbar to dismiss the target at the end of the cursor.

3. Click in the drawing sheet.

*The **Pin Point** ribbon activates.*

4. Press CTRL+A to select all elements in the drawing.

5. Click **Fit** .

6. Click **Change**  on the horizontal toolbar to display the **Change** toolbar.



7. Drag the **Change** toolbar to the toolbar area to dock it.

8. Click **Move/Copy**  on the **Change** toolbar to move the selected objects.

*The **Move/Copy** ribbon displays.*

## Border and Layout Templates

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9. Ensure that **Copy** on the **Move/Copy** ribbon is toggled off so that the **Move** command is operational.

*The **Status Bar** displays the message **Select from point**.*

10. Hover the mouse pointer over the bottom left corner of the border graphics until an **End Point** glyph appears.

11. Click once when the **End Point** glyph is present. This defines the *from* point, and the select set now moves with the cursor.

*The **Status Bar** displays the message **Select to point**.*

12. On the **Pin Point** ribbon, type **0** in the **X** box, and then press TAB.

*The **X** box displays **0.00 ft** and is locked.*

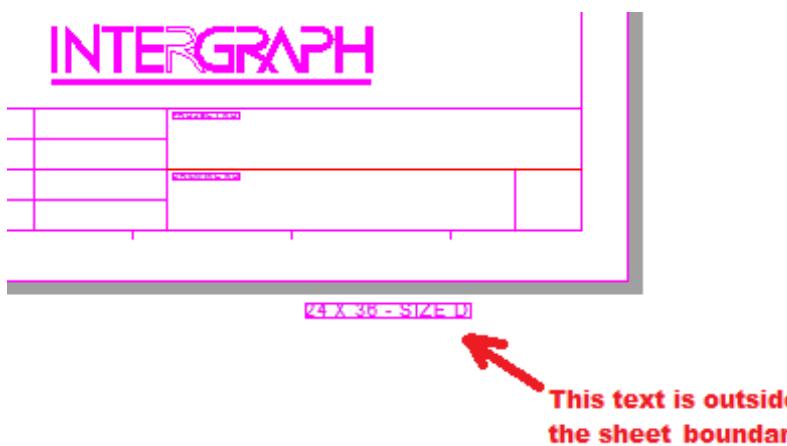
13. On the **Pin Point** ribbon, type **0** in the **Y** box, and then press TAB.

*The **Y** box displays **0.00 ft** and is also locked.*

14. Click anywhere in the graphic window to define the destination point of the select set.

15. Click **Fit** on the horizontal toolbar.

*As shown in the example below, the border fits within the sheet outline except for some text near the bottom right corner of the border. Because this element is outside the range of the sheet, problems will arise if the border is used later to create a drawing.*



16. Click the text outside of the sheet boundary so that it is the only element in the select set.

17. Press DELETE to delete the text box.

18. Click **File > Save**.

19. Click **File > Exit** to exit **SmartSketch Drawing Editor**. Select **No** when prompted to save Document1.

## Create Border Template File

**Objective:** Use Windows Explorer to copy the border graphics file that was previously created. This copy will be used as the border template while the original file will be linked into it to provide the border graphics. The steps to edit the border template and link the border graphics file will be performed within Smart 3D in a later section of this lab.

1. Switch to **Windows Explorer**, and navigate to the `[SharedContent]\Drawings\Catalog\Templates\Imperial` folder.  
*The contents display of the folder containing the newly-created border graphics file.*
2. Right-click the file called **ArchD\_Wide\_Graphics**, and select **Copy**.
3. Press **CTRL+V** to paste a copy of the file.  
*A new file called **ArchD\_Wide\_Graphics – Copy** is created in the folder.*
4. Right-click the file called **ArchD\_Wide\_Graphics - Copy**, and select **Rename**.
5. Key-in **ArchD\_Wide**.  
*The border template file is called **ArchD\_Wide**.*

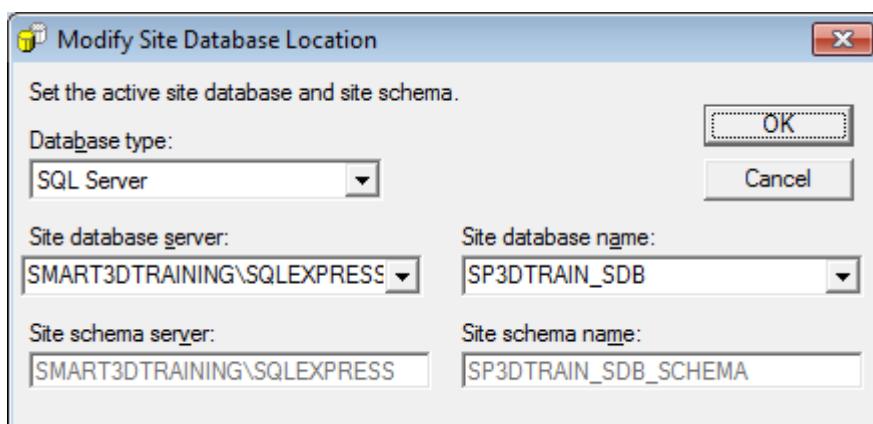
## Define Workspace

**Objective:** Configure the session for this lab.

**NOTE** If you are continuing from the Smart 3D Drawings Creation class, proceed to step 5.

1. From the **Windows Start** menu, click **All Programs > Intergraph Smart 3D > Database Tools > Modify Database and Schema Location**.

*The **Modify Site Database Location** dialog box displays so that you can confirm that you are connected to a site database. If not already populated, your instructor will provide the connection information.*



2. Click **OK** on the **Modify Site Database Location** dialog box.
3. From the **Windows Start** menu, click **All Programs > Intergraph Smart 3D > Smart 3D**.  
*The **New** dialog box displays.*
4. Click **MetricUnits** on the **New** dialog box, and then click **OK**.  
**TIP** The selections are session templates that set the workspace environment. You can create a new session template and save it in the [*Product Folder*]\CommonApp\SessionTemplates\General folder. The system automatically adds the session template to the **New** dialog box.
5. Click **File > Define Workspace**.  
*The **Define Workspace** dialog box displays.*
6. Ensure that **SP3DTrain** is selected from the **Plant** list on the **Define Workspace** dialog box
7. Select **More** from the **Filter** list on the **Define Workspace** dialog box.  
*The **Select Filter** dialog box displays.*
8. In the **Select Filter** dialog, expand **Plant Filters\Drawings Configuration Filters\Border and Layout Templates**.
9. Select the filter **U01 Workspace**, and click **OK** on the **Select Filter** dialog box.
10. Click **OK** on the **Define Workspace** dialog box.  
*The workspace populates with modeled objects.*
11. When the workspace query completes, click **Common Views**  on the **Common** toolbar.  
*The **Common Views** dialog box displays.*
12. On the **Common Views** dialog box, select the face that changes the look direction to **Looking Down**.
13. Click **Fit**  on the **Common** toolbar.  
*All the objects fit into the graphic window.*
14. Select **Orthographic** in the **Active Permission Group** list.

## Edit the Border Template

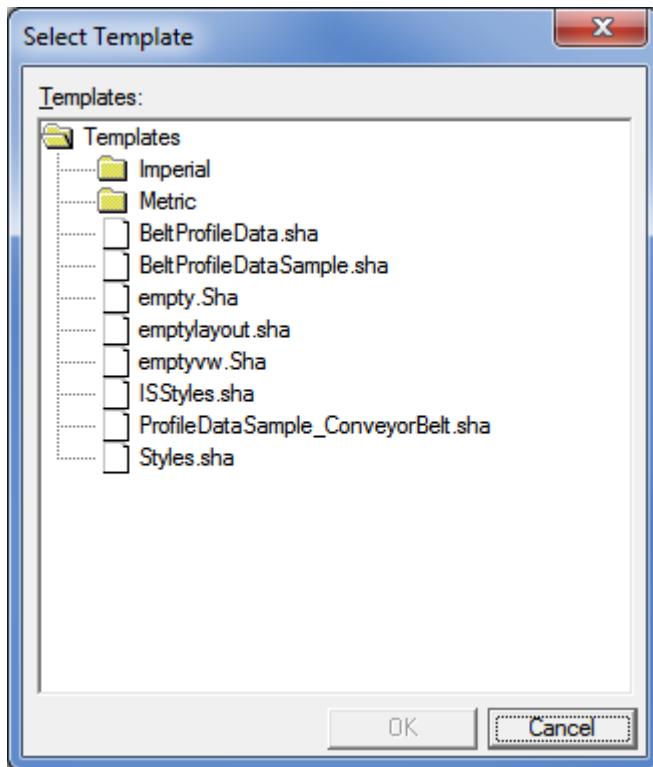
**Objective:** Use the **Edit Border Template** command in Smart 3D to link the border graphics file into the border template file. Other recommended steps to prepare the border template are also performed in this section.

## Link Border Graphics into Border Template

**Objective:** Use the **Edit Border Template** command in Smart 3D to remove the graphics from the border template file and link the border graphic file.

1. Click **Tasks > Drawings and Reports**.
2. Click **Tools > Edit Border Template**.

The **Select Template** dialog box displays.



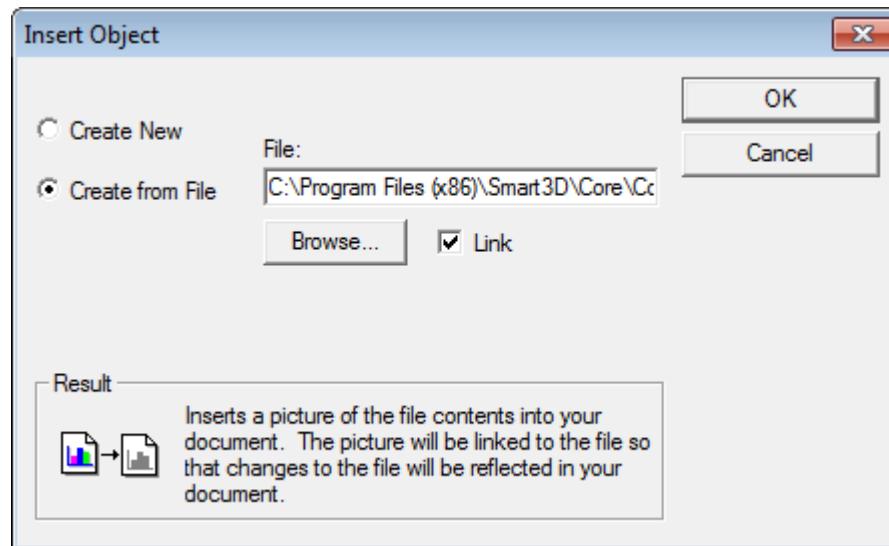
3. Double-click the **Imperial** folder to expand it, and then select **ArchD\_Wide.sha** in the list.
4. Click **OK** on the **Select Template** dialog box.

**SmartSketch Drawing Editor** opens and displays the border in the window.

**TIP** Opening **SmartSketch Drawing Editor** from within Smart 3D does not require an additional license.

5. Maximize the **SmartSketch Drawing Editor** drawing window, if needed.
6. Click **Fit** from the **Main** toolbar in **SmartSketch Drawing Editor**.
7. Press **CTRL+A** to select all elements in the drawing.
8. Press **DELETE** to remove all graphics from the file.
9. Select **Insert > Object**.

The **Insert Object** dialog box displays.

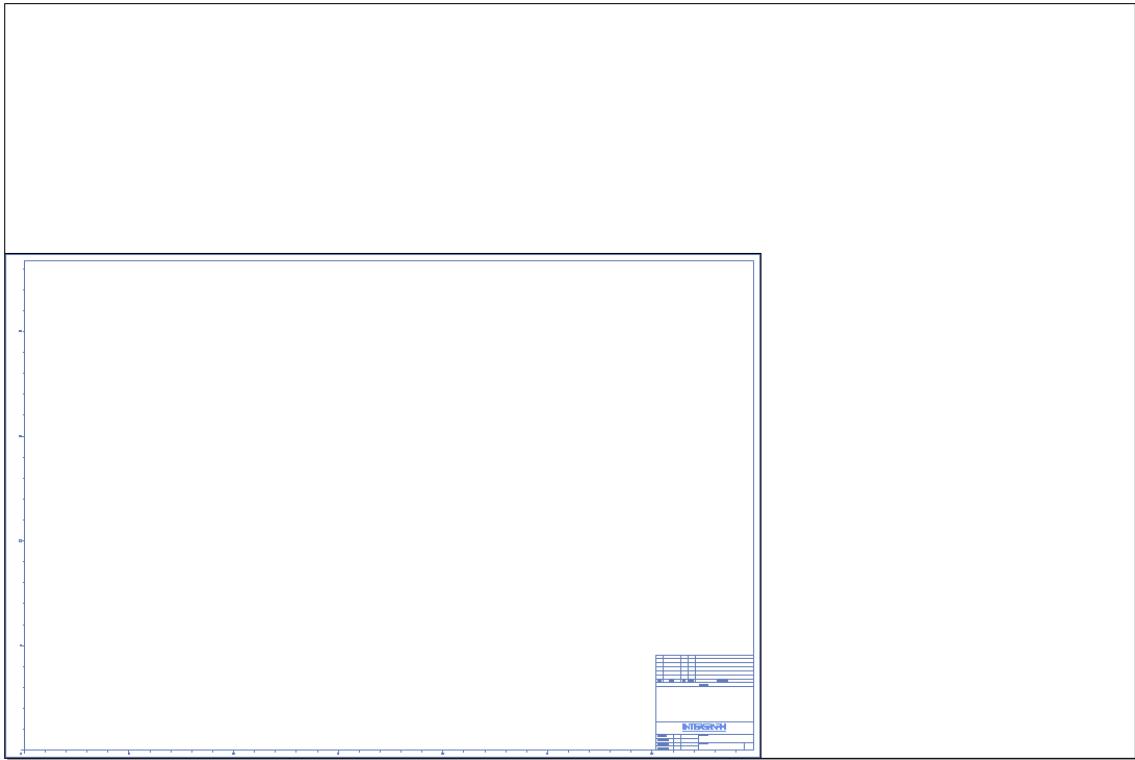


10. Ensure **Create from File** is selected.
11. Ensure **Link** is checked.
12. Select **Browse** on the **Insert Object** dialog box.

*The **Browse** dialog box displays.*

13. In the **Browse** dialog box, navigate to the **[SharedContent]\Drawings\Catalog\Templates\Imperial** folder.
14. Select **ArchD\_Wide\_Graphics.sha**, and select **Open** on the **Browse** dialog.
15. Select **OK** on the **Insert Object** dialog box.

*The border graphic file is linked into the border template and the graphics can be seen inside of a SmartFrame. A rectangle is attached to the cursor and the message in the **Status Bar** is **Click for a point**. The SmartFrame, however, is smaller than the sheet because the SmartFrame is not using a 1:1 scale.*



16. Click in the drawing to place the smartframe.
17. Press ESC.

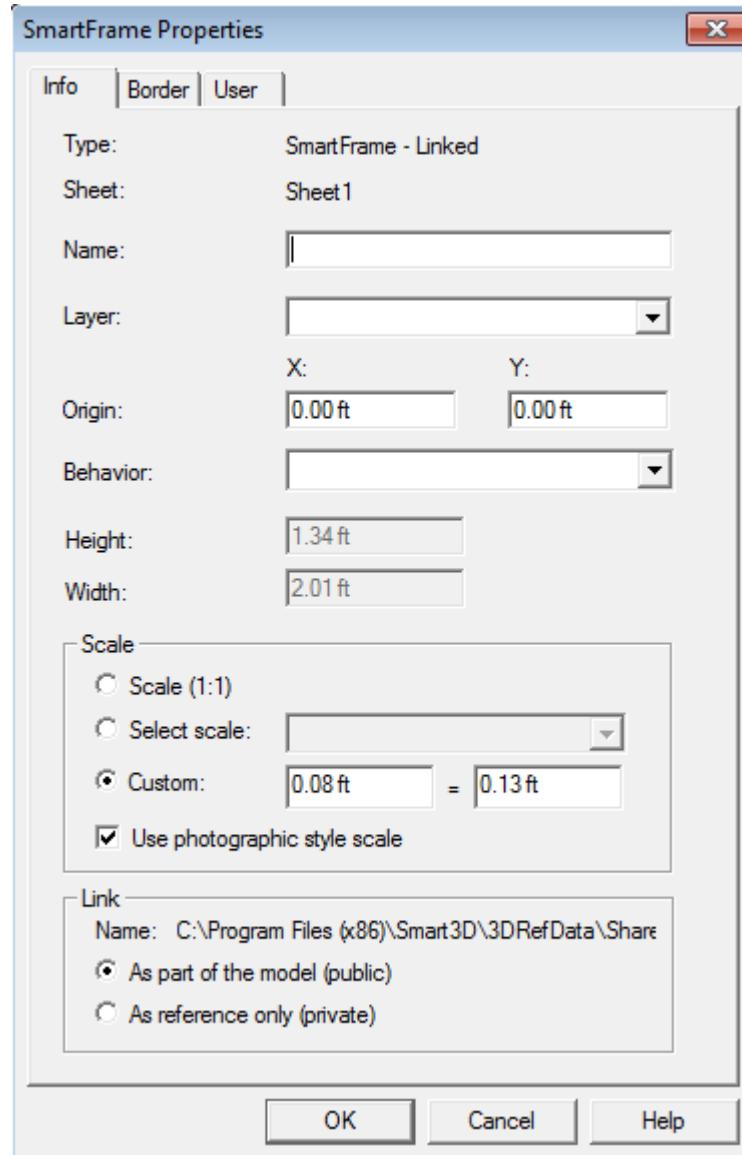
*The **Insert Object** command is exited and the SmartFrame still remains positioned in the lower left corner of the sheet.*

18. Right-click the SmartFrame and select **Properties**.

*The **SmartFrame Properties** dialog box displays.*

## Border and Layout Templates

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19. Within the **Scale** section on the **SmartFrame Properties** dialog box, select **Scale (1:1)**.

20. Select **OK** on the **SmartFrame Properties** dialog box.

*The SmartFrame is now sized correctly but is offset from sheet.*

21. Right-click again on the SmartFrame and select **Properties**.

*The **SmartFrame Properties** dialog box displays.*

22. On the **SmartFrame Properties** dialog box, highlight the contents of the **X** field and type **0** followed by a TAB.

*The field displays **0.00 ft**.*

23. Type **0** In the **Y** field on the **SmartFrame Properties** dialog box and press TAB.

*The field displays **0.00 ft**.*

24. Select **OK** on the **SmartFrame Properties** dialog box.

*The SmartFrame is now sized and positioned correctly within the sheet.*

25. Click **Fit** .

26. Click **File > Save**.

## Add Border Labels

**Objective:** While still in the **Edit Border Template** environment, use the **Place Drawing Property Label** command to place a small sample of border labels.

1. Click **Place Drawing Property Label** .

*The **Place Drawing Property Label** ribbon displays.*



2. Select **TitleArea** from the **Label Set** list (the leftmost list box) on the **Place Drawing Property Label** ribbon.
3. Select **DrawingNumber** from the **Field** list (the second from left list box) on the **Place Drawing Property Label** ribbon.
4. Click **Display Label Names**  to toggle on the display of the border label names so you can see where the labels are placed.

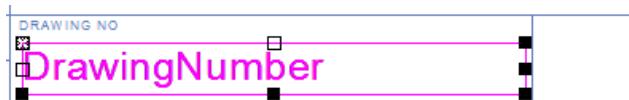


5. Click **Zoom Area** , and draw a rectangle around the bottom right corner of the border.

*The software zooms in so you can get a closer look at the title block.*

6. Right-click to exit the **Zoom Area** command.
7. Click in the rectangle labeled **DRAWING NO** to place the **DrawingNumber** label, and then press **ESC** to exit the **Place Drawing Property Label** command.
8. Click the **DrawingNumber** label.
9. Drag the label to position it as needed.

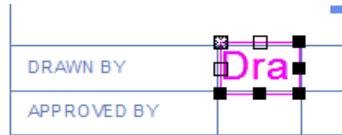
**TIP** Use the grab handles to resize the label so that it appears as shown in the example below:



10. Click **Place Drawing Property Label**  to re-display the **Place Drawing Property Label** ribbon.
11. Select **SignatureArea** from the **Label Set** list.
12. Select **DrawnBy** from the **Field** list.

13. Click in the rectangle to the right of the rectangle labeled DRAWN BY to place the **DrawnBy** label, and then press ESC to exit the **Place Drawing Property Label** command.
14. Click the **DrawnBy** label.
15. Drag the label to position it as needed.

**TIP** Use the grab to resize the label so that it appears as shown in the example below:



16. Press ESC to deselect the label.
17. Click **Fit** .
18. Click **File > Save**.

**NOTES**

- This lab does not use the **Place Border Area**  command that is available in the **Edit Border Template** environment. Border areas are designed to work with regions. Regions manage views but are a feature not currently well-integrated into composed drawings. They are used extensively with the Drawings by Rule workflow in a Marine environment.
- The drawing area also influences the behavior of views when switching borders to a different size sheet using the **Switch Border** command. If both borders involved in the border switching have a drawing area, then the size of the unmanaged view(s) in the drawing is scaled up or down to match the size of the new drawing area.

## Remove Styles from Border Template

**Objective:** Remove or rename styles in the border template. The path to the resource file that is the originating source for the styles will also be added to the border template.

**NOTES**

SmartSketch has three types of styles: dimension, line, and text. A style is a definition that describes how a dimension, line, or text appears when placed in the drawing. The styles that display to you in a SmartSketch file are either saved in the file (also called *local* to the file) or exist in one of the referenced resource files. When you place an element that uses a style that is not local, the software copies the definition from the resource file to the local file. As such, the style definition for every element in a file is local to that file, although it may have originated from another source.

When you edit a drawing, it is important that the displayed styles originate from one source so that uniformity is maintained for all drawings. To accomplish this, the software is hard-coded to read style definitions from the *[SharedContent Folder]\Drawings\Catalog\Templates\Styles.sha* file. However, as with any SmartSketch file, after an element is placed in the drawing, the style definition becomes stored in the drawing. Subsequent uses of that style then use the local definition and not the one in the *Styles.sha* file.

When a drawing is created, the border template is copied and becomes the basis for the *outer* document of the drawing. Any style definitions stored in the border template are copied to the drawing and display to the user during edits. In this way, it may occur that a style local to the drawing will have the same name but a different definition than one in the Styles.sha file.

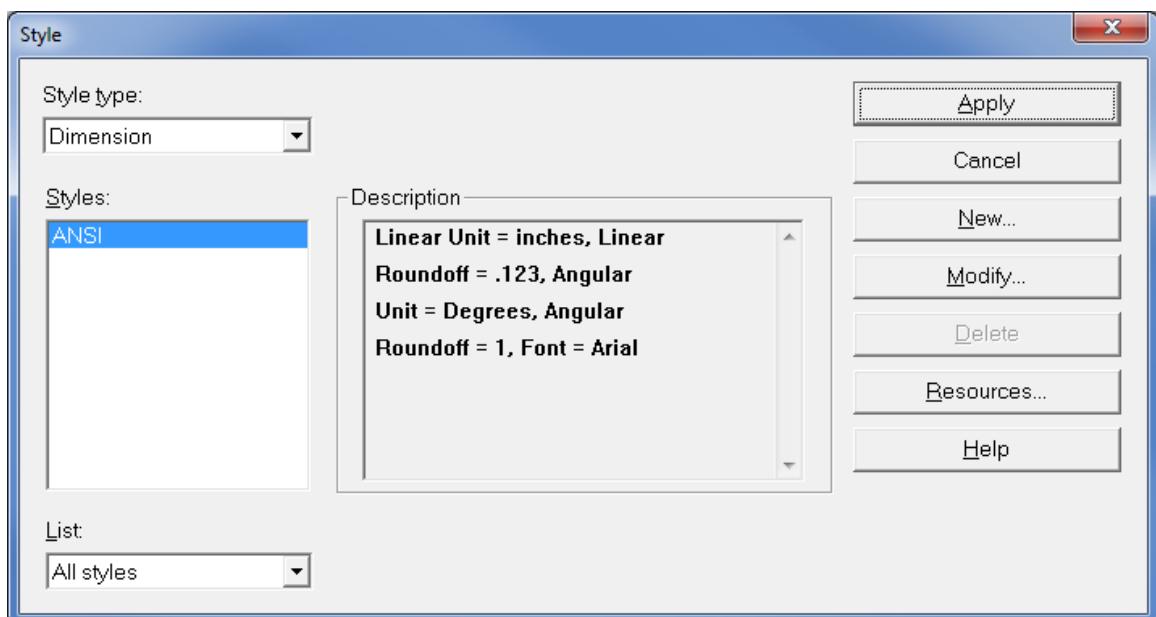
To avoid this conflict, it is recommended that you remove styles from the border templates. Because SmartSketch requires at least one style of each type to exist in a file, the recommendation is to delete all styles but one, and then rename the remaining style using a name that will not be mistakenly used during editing.

Additionally, it is recommended that each border template reference the Styles.sha file in its resource path.

This section goes through the steps you must follow to accomplish this.

1. Click **Format > Style**.

The **Style** dialog box displays.



2. Click **Resources**.

The **Style Resources** dialog box displays.

3. On the **Style Resources** dialog box, click **Remove** to remove the active resource file, and then click **Add**.

The **Add Style Resource** dialog box displays.

4. Navigate to the *[SharedContent]\Drawings\Catalog\Templates\Styles.sha* file, and then click **Open**.

*Control is returned to the **Style Resources** dialog box and the **Full path** field displays the path to the Styles.sha file in shared content.*

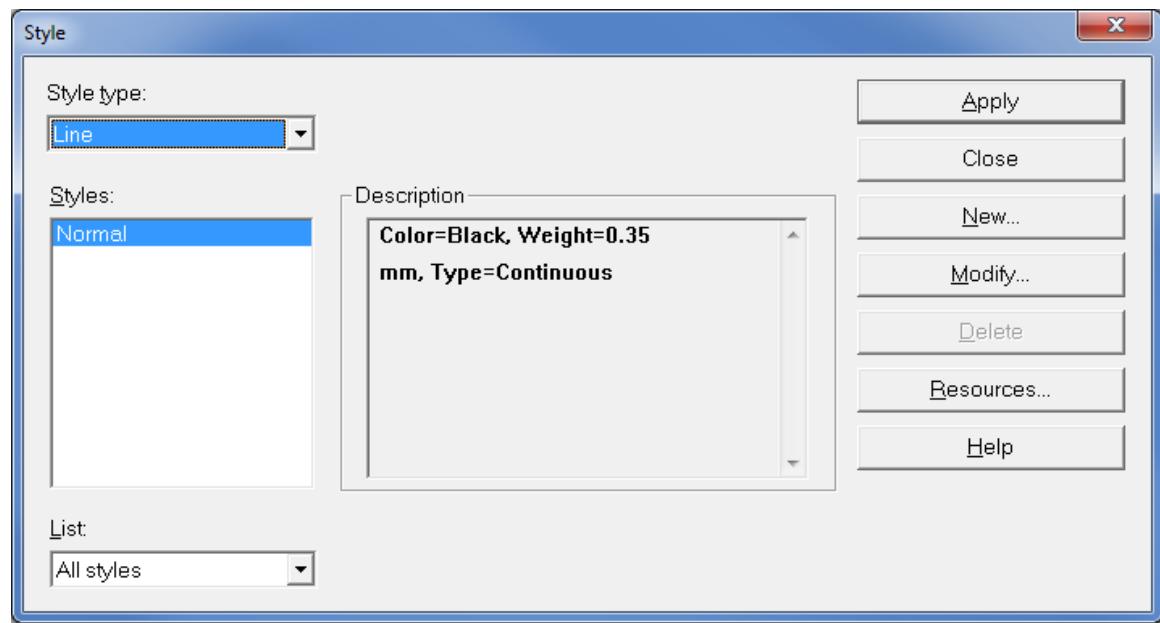
**NOTES**

- It is recommended to use a UNC path to the Styles.sha file so that all client users can resolve the path.

## Border and Layout Templates

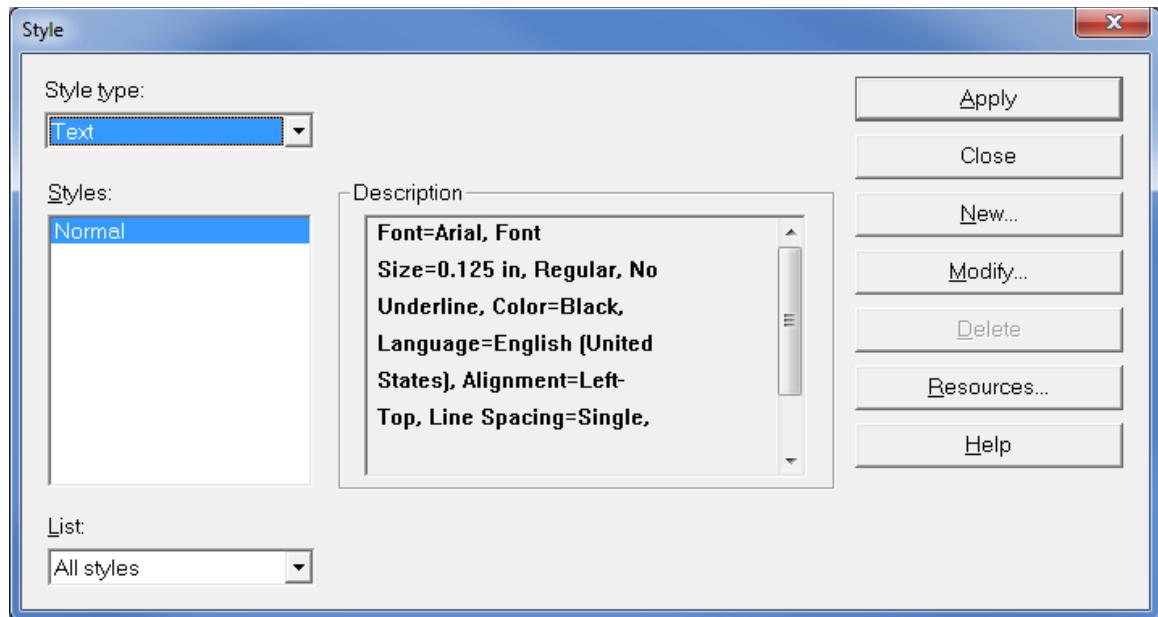
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- When copying border templates to another symbols share location, do not forget to edit this path to point to the local path to the Styles.sha file. This is especially important when working in a global workshare environment.
  - The software does not support the use of environment variables or mapped drives in the resource path.
5. Click **OK** on the **Style Resources** dialog box.
  6. On the **Style** dialog box, ensure that **All styles** displays in the **List** list, and then click **Modify**.  
*The **Modify Dimension Style** dialog box displays for the ANSI dimension style.*
  7. Type **DO NOT USE** in the **Name** box, and then click **OK**.
  8. Select **Line** from the **Style type** list to display the line styles present in the file.



9. Click **Modify**.  
*The **Modify Line Style** dialog box displays for the Normal line style.*
10. Type **DO NOT USE** in the **Name** box, and then click **OK**.

11. Select **Text** in the **Style type** list to display the text styles present in the file.



12. Click **Modify**.

*The **Modify Dimension Style** dialog box displays for the Normal text style.*

13. Type **DO NOT USE** in the **Name** box, and then click **OK**.

14. Click **Apply** on the **Style** dialog box, and then click **Close**.

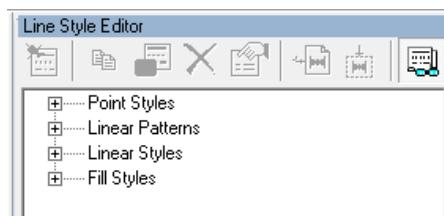
*The **Style** dialog box closes.*

15. Click **File > Save**.

16. Click **Tools > Line Style Editor**.

*The **Line Style Editor** dialog box displays.*

**TIP** You may need to repeat this step a second time before the dialog box displays.



17. Click **Show Styles in Resource Files** to display only the styles saved in the border file.
18. Expand the **Fill Styles** node to display two styles: **Normal** and **Solid**.
19. Right-click the **Solid** fill style, and then select **Delete Style** from the pop-up menu.
20. Right-click the **Normal** fill style, then and select **Rename Style** from the pop-up menu.
21. Type **DO NOT USE**.
22. Click **Tools > Line Style Editor**.

The **Line Style Editor** dialog box no longer displays.

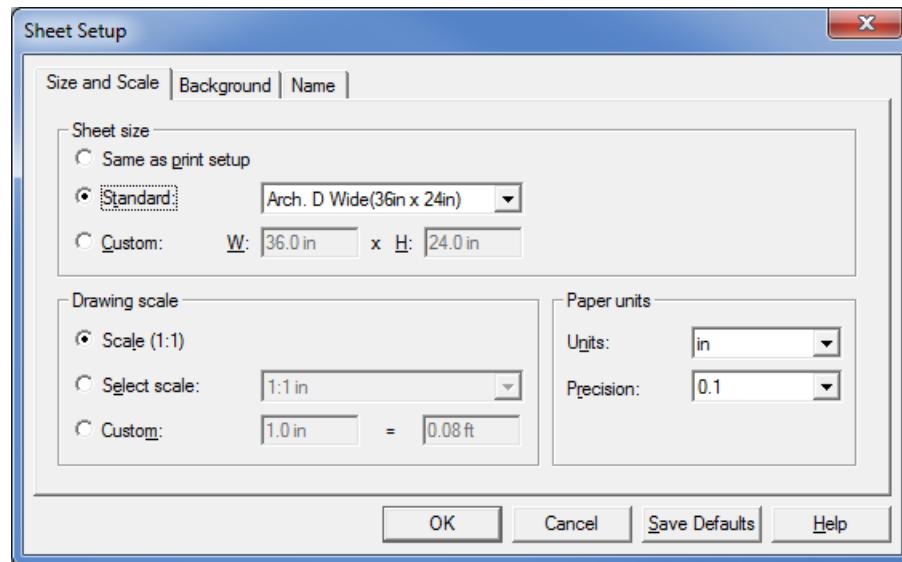
23. Select **File > Save**.

## Modify Paper Units Precision in Border Template

**Objective:** Modify the number of decimal places displayed for paper space values, such as text height and line thicknesses.

1. Click **File > Sheet Setup**.

The **Sheet Setup** dialog box displays.



2. Under **Paper units**, select **0.001** in the **Precision** list.

**TIP** The **Paper units** setting displays paper space values, such as text height and line thicknesses, with three decimal places.

3. Click **OK**.
4. Select **File > Save**.

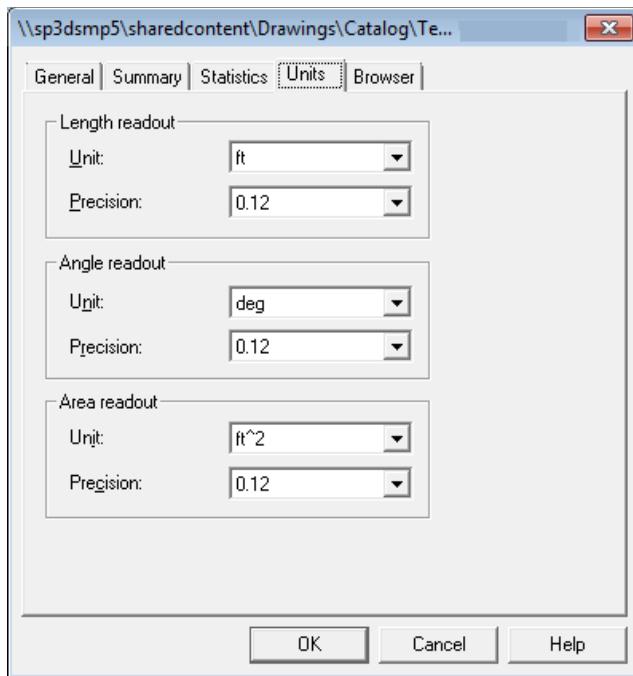
## Modify Units of Measure in Border Template

**Objective:** Modify the units of measure for distances.

1. Click **File > Properties** to display the properties dialog for the border template.

The **Properties** dialog box for the border template displays.

2. Select the **Units** tab to view the units assigned for length, angle, and area.



**NOTE** The values for units are saved in the border template file. When the border template is copied to create drawings, these settings will exist within each drawing.

3. Under **Length readout**, select **ft - in** in the **Unit** list.

## Configure Symbol Explorer

**Objective:** Configure the home address for the **Symbol Explorer**.

1. Select the **Browser** tab to display the home address for the **Symbol Explorer**.

**NOTE** The home address value is saved in the border template file. When the border template is copied to create drawings, this setting will exist within each drawing.

2. Switch to **Windows Explorer**, and then navigate to the shared content folder.
3. Copy the path to the shared content folder from the **Windows Explorer** address.
4. Paste the path to the shared content folder in the **Address** field on the **Browser** tab.
5. Click **OK** on the **Properties** dialog box.

**NOTE** Users should set the home address to a folder location that contains symbols that may need to be placed in drawings. The example in this lab of using the shared content folder as the home address is probably not very realistic.

6. Click **File > Save**.

## Create Favorites in Symbols Explorer

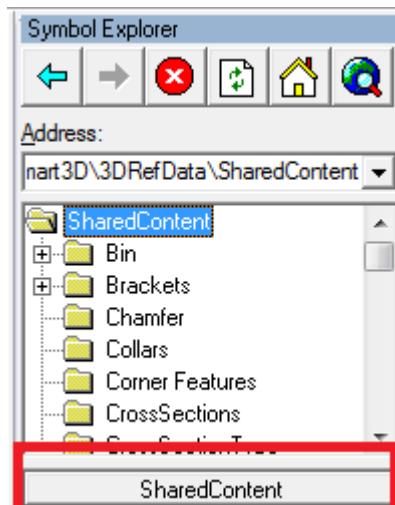
**Objective:** Handle the situation where the **Symbol Explorer** home path in drawings has become inaccessible. The path may become inaccessible if the path is no longer valid. It may also occur in a global workshare configuration if a drawing created at one GWC site is edited at another. The steps below provide a workflow to store one or more **Symbol Explorer** paths in the registry. By following this process, the favorites will always take users to a local location for symbols.

1. In Smartsketch Drawing Editor, select **Symbol Explorer** .

*The **Symbol Explorer** window displays and is docked on the right side of the **SmartSketch Drawing Editor**. The path in the **Address** field is the home path entered in a previous section.*

2. Right-click on the **SharedContent** folder displayed in the tree view of the **Symbol Explorer** and select **Add to Favorites**.

*A button called **SharedContent** is added to the **Symbol Explorer** window.*



### NOTES

- The **Symbol Explorer** favorites are saved in the registry at **HKEY\_CURRENT\_USER\Software\Intergraph\Applications\Shape2DServer.application\Environments\Sketch\ContentExplorer**.
- The registry string value that gets created for the first favorite is called **Favorite\_1**, the second is **Favorite\_2**, etc
- Because the favorites are stored in the **HKEY\_CURRENT\_USER** registry hive, the steps to add favorites will need to be performed for every user that logs into a particular client machine.
- Administrators can use a batch file to set and maintain the favorite values in the registry for every user rather than performing the steps manually.

3. Select **Symbol Explorer** .

*The **Symbol Explorer** window no longer displays.*

4. Click **File > Save**.
5. Click **File > Exit** to exit **SmartSketch Drawing Editor** and the **Edit Border Template** command.

## Edit the emptyvw.sha File

**Objective:** Modify the emptyvw.sha file, the file used to create the graphic views in drawings, in similar ways as the border template.

### Remove Styles from emptyvw.sha

**Objective:** Remove or rename styles in the emptyvw.sha file. The path to the resource file that is the originating source for the styles will also be added to the file.

1. In Smart 3D, click **Tools > Edit Border Template**.

*The **Select Template** dialog box displays.*

2. Select **emptyvw.Sha**, and then click **OK**.

*The file opens in the **SmartSketch Drawing Editor** window.*

**NOTES**

- The software is hard-coded to use the emptyvw.sha file to create graphic views in drawings. Similar to border templates, it is important that the style definitions used in the embedded views originate from the Styles.sha file. For this reason, it is recommended that you remove or rename any styles in the file emptyvw.sha file so that those styles do not conflict with the styles in the Styles.sha file.
- As with border templates, it is also recommended that you modify the emptyvw.sha file to reference the Styles.sha file in its resource path.

3. Click **Format > Style**.

*The **Style** dialog box displays.*

4. Click **Resources**.

*The **Style Resources** dialog box displays.*

5. Click **Remove** to remove the default resource file, and then click **Add**.

*The **Add Style Resource** dialog box displays.*

6. Navigate to the **[SharedContent]\Drawings\Catalog\Templates\Styles.sha** file, and then click **Open**.

7. Click **OK** on the **Style Resources** dialog box

8. On the **Style** dialog box, ensure that **All styles** displays in the **List** list, and then click **Modify**.

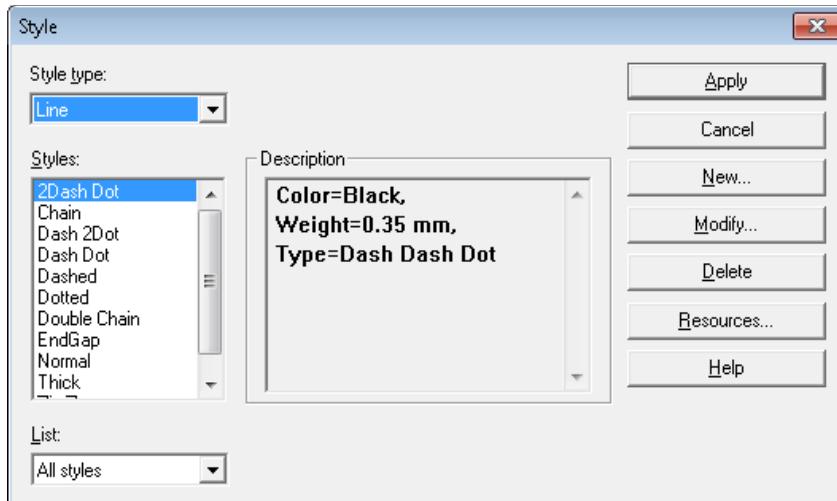
*The **Modify Dimension Style** dialog box displays for the ANSI dimension style.*

9. Type **DO NOT USE** in the **Name** box, and then click **OK**.

## Border and Layout Templates

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10. Select **Line** in the **Style type** list to display the line styles present in the file.



11. Click **Delete** to delete the selected style, and then click **OK** in the confirmation box.
12. Repeat the previous two steps to delete all but the Normal line style.
13. Click **Modify** on the **Style** dialog box.

*The **Modify Line Style** dialog box displays for the Normal line style.*

14. Type **DO NOT USE** in the **Name** box, and then click **OK**.
15. Select **Text** in the **Style type** list to display the text styles present in the file.
16. Click **Modify**.

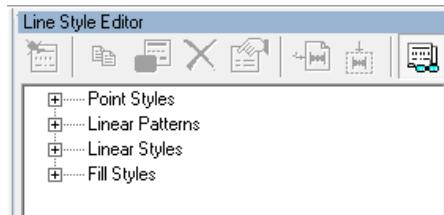
*The **Modify Text Box Style** dialog box displays for the Normal text style.*

17. Type **DO NOT USE** in the **Name** box, and then click **OK**.
18. Click **Apply**, and then click **Close**.
19. Click **File > Save**.

20. Click **Tools > Line Style Editor**.

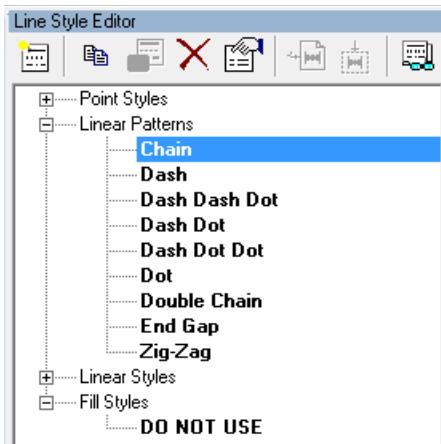
*The **Line Style Editor** dialog box displays.*

**TIP** You may need to repeat this step a second time before the dialog box displays.



21. Click **Show Styles in Resource Files** to display the styles saved in the file.
22. Expand the **Fill Styles** node to display the Normal fill style.
23. Right-click the Normal fill style, select **Rename Style** from the pop-up menu, and then type **DO NOT USE**

24. Expand the **Linear Patterns** node to display several patterns.



25. Right-click each linear pattern in succession, and select **Delete Style** from the pop-up menu.  
 26. Expand the **Point Styles** node to display the **Zig-Zag** point style.  
 27. Right-click **Zig-Zag**, select **Rename Style** from the pop-up menu, and then type **DO NOT USE**.  
 28. Click **File > Save**.  
 29. Click **Tools > Line Style Editor** to close the **Line Styles Editor** dialog box.

## Modify Paper Units Precision in emptyvw.sha

**Objective:** Modify the number of decimal places displayed for paper space values, such as text height and line thicknesses.

1. Double-click the sheet tab.

**TIP** The sheet tab displays as **Sheet1** at the bottom left of the **SmartSketch Drawing Editor** window.

The **Sheet Setup** dialog box displays.

2. Select the **Size and Scale** tab if not already active.  
 3. Under **Paper units**, ensure that **in** is selected in the **Units** list to match the setting in the border template.

**NOTES**

- Setting the paper units in the emptyvw.sha file to match those in the border template file is optional. The only reason to make them match is for consistency of unit display, whether editing outside or inside the view.
  - To clarify, the border template dictates the paper units outside the view while the emptyvw.sha file determines the paper units inside the view.
  - Of course, both of these values can be changed in the drawing after it is created.
4. Under **Paper units**, select **0.001** in the **Precision** list.

5. Click **OK**.

## Modify Units of Measure in emptyvw.sha

**Objective:** Modify the units of measure for distances.

1. Click **File > Properties**.

*The **Properties** dialog box displays for the file.*

2. Select the **Units** tab to display the units assigned for length, angle, and area.

3. Under **Length readout**, select **ft - in** in **Units** list to match the border template setting.

**NOTE** When working in the Smart 3D environment, it is not necessary that the units in the emptyvw.sha file match those in the border template. However, if you intend to translate drawings to another format, such as .dgn or .dwg, setting the units so that they are identical may help avoid problems with mismatched units.

4. Select **OK**.

5. Click **File > Save**.

6. Click **File > Exit** to exit **SmartSketch Drawing Editor** and the **Edit Border Template** command.

## Map Linked File Paths

**Objective:** Handle the situation where the path to linked files, such as the border graphics, in drawings has become inaccessible. The path may become inaccessible if the file has been relocated. It may also occur in a global workshare configuration if a drawing created at one GWC site is edited at another. The steps below provide a workflow to map the location of linked files so that they can be located.

## Create Text File with Path Mapping

**Objective:** Create a text file that maps the current linked path saved in drawings to the substituted path. This text file must eventually exist on every client machine within the site.

1. Switch to **Windows Explorer**, and then navigate to the shared content folder.

2. In **Windows Explorer**, create a text file under the shared content folder called **LinkedFileMapping.txt**.

3. Edit the new text file and key in the following text on the first line:

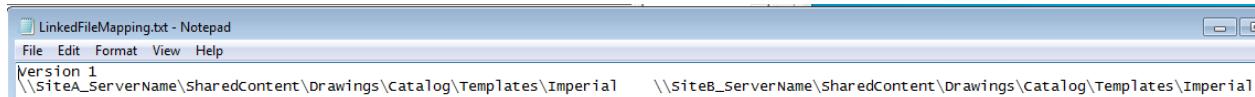
**Version 1**

4. Type the following text on the next line followed by a TAB:

**\SiteA\_ServerName\SharedContent\Drawings\Catalog\Templates\Imperial**

- Type the following text after the TAB:

**\SiteB\_ServerName\SharedContent\Drawings\Catalog\Templates\Imperial**



**NOTE** The example does not show real paths but provides the format of the file. The first line of the text file must be "Version 1". The next lines will have two paths separated by a TAB character. The left path is the linked path found in the drawing and the right path is the substitute path to use when locating the linked file. When the software encounters a linked path in the drawing with the left value, it will use the right value instead.

- Save the text file and exit the text editor.

## Edit the Registry

**Objective:** Edit a particular key in the registry to point to the location and name of the mapping text file.

- From the **Windows Start** menu, key in **regedit.exe**.

*The Registry Editor window displays.*

- In the **Registry Editor**, navigate to **HKEY\_CURRENT\_USER\Software\Intergraph\Applications\Shape2DServer.application**.

- Right-click on **Shape2DServer.application** and select **New > Key**.

*A new key is created and its name is presented in edit mode under Shape2DServer.application.*

- Key in **SubstituteDrives**.

*The new key is now named SubstituteDrives.*

- In the right pane of the **Registry Editor** window, double-click the **(Default)** value.

*The Edit String dialog box displays.*

- In the **Value data** field on the **Edit String** dialog, type the path to the text file, for example, **C:\Program Files (x86)\SmartPlant\3DRefData\SharedContent\LinkedFileMapping.txt**.

- Click **OK** on the **Edit String** dialog.

*The value for **SubstituteDrives** is set to point to the mapping text file.*

- Close the **Registry Editor** window.

**NOTES**

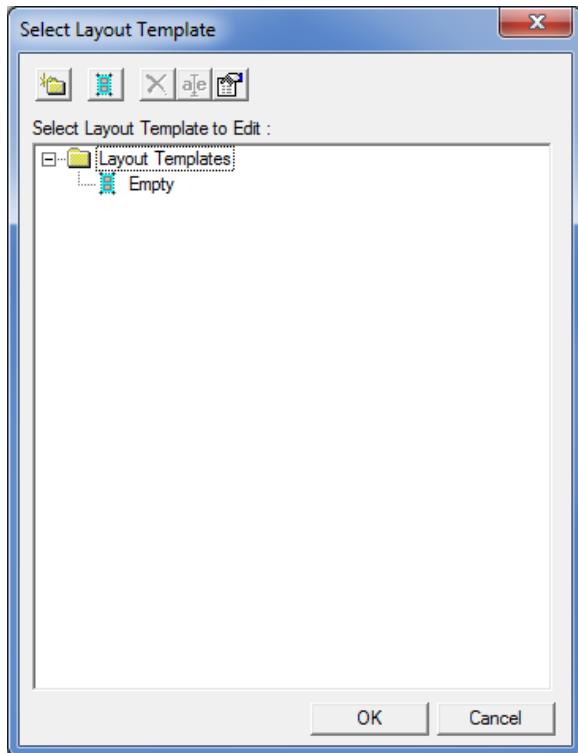
- Because the registry change is made in the HKEY\_CURRENT\_USER registry hive, the steps in this section to modify the registry will need to be performed for every user that logs into a particular client machine.
- Administrators can use a batch file to set and maintain the registry for every user.

## Create a Layout Template

**Objective:** Create a layout template. The layout template will be edited in later sections to add a predefined set of views.

1. Switch to Smart 3D, and click **Tools > Edit Layout Template**.

The **Select Layout Template** dialog box displays.



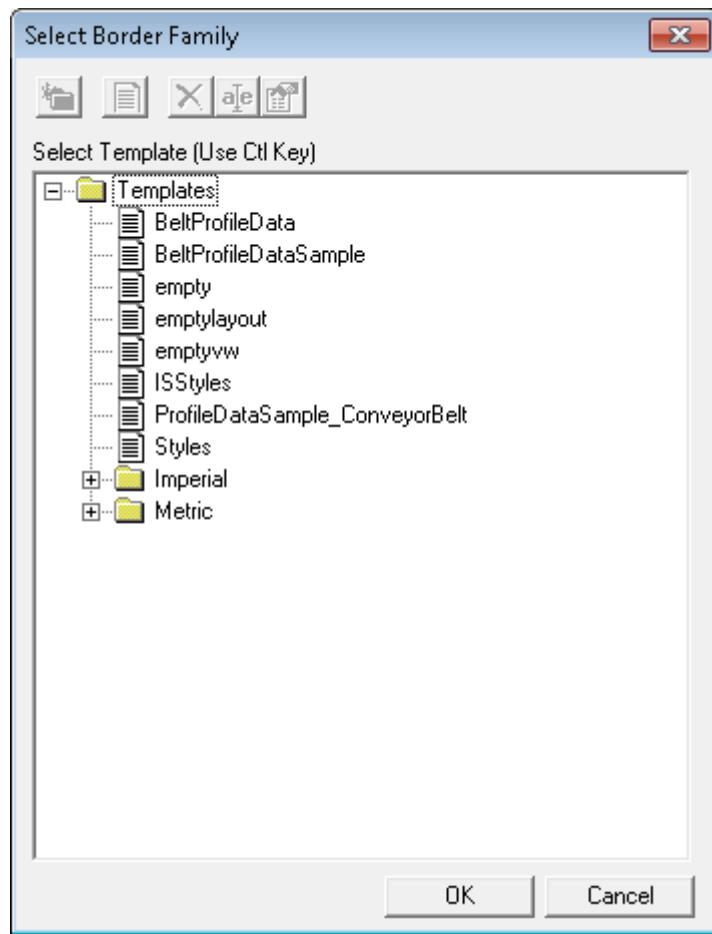
2. Click **New** to add a new layout.
3. Select **New Layout**, and then click **Rename** .
4. Key in **Structure 3 View**.

## Place First View in Layout Template

**Objective:** Place a view in the layout template.

1. With the new layout still selected, click **OK** on the **Select Layout Template** dialog box.

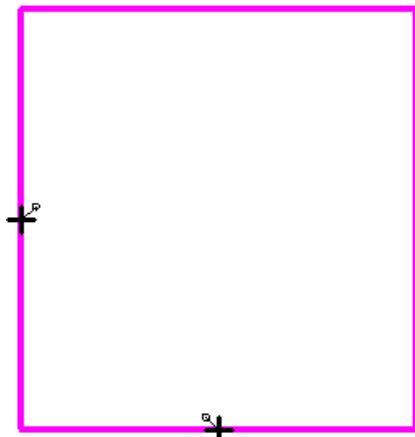
**SmartSketch Drawing Editor** opens, and the **Select Border Family** dialog box displays.



**NOTE** An optional step, selecting a border family allows you to preview the display of the layout in the borders added to the family. The feature is designed to be used with drawing areas and regions. Because regions are not used in this lab, selecting a border family is not required. However, some important points are listed below:

- If a layout template is saved with a border family, the software creates an XML file for each border in the family. The XML file contains a reference to the name of the layout template.
  - Similarly, a XML file is created with the layout template with a reference to every border in the family.
  - For example, if the border family for layout template Structure 3 View contains ArchD\_Wide and D\_Wide, then the files ArchD\_Wide.xml and D\_Wide.xml are created in the same folder as the border files. Likewise, the file Structure 3 View.xml is created in the same folder as the layout template.
2. Click **Cancel** to turn control over to the **SmartSketch Drawing Editor window** where a magenta rectangle appears.

**TIP** The magenta rectangle is a boundary used with regions to scale a layout to the size of the drawing area on the border. Because regions and drawing areas are not used in this lab, the magenta rectangle can be ignored.



3. Maximize the drawing window in **SmartSketch Drawing Editor**.

4. Click **Fit** .

5. Click **Tools > Pin Point**.

*The **Pin Point** ribbon displays*

6. Click **Select Tool**  to dismiss the target at the end of the cursor.

7. Click in the drawing sheet.

*The **Pin Point** ribbon activates.*

8. Click **Place View**  in the **SmartSketch Drawing Editor** window.

9. Type **4** in the **X** box on the **Pin Point** ribbon, then press TAB.

*The value **4.00 in** displays in the box and is locked.*

10. Type **2** in the **Y** box on the **Pin Point** ribbon, and then press TAB.

*The value **2.00 in** displays in the box and is locked.*

11. Click to the right of the target in the graphic window to define the first point of the view.

12. Type **21** in the **X** box on the **Pin Point** ribbon, and then press TAB.

*The value **21.00 in** displays in the box and is locked.*

13. Type **10** in the **Y** box on the **Pin Point** ribbon, and then press TAB.

*The value **10.00 in** displays in the box and is locked.*

14. Click to the right of the target in the graphic window to define the second point of the view.

*The **Drawing View Properties** dialog box displays.*

15. Select **More** in the **Style** list to display the **Select View Style** dialog box.

16. Select **Orthographic\Structural Framing Elevation**, and then click **OK**.

17. Type **Structure Elev View** in the **Name** box.

18. Select **Architectural Scales** from the **Scale Family** list.
19. Select **3/16 in: 1 ft** from the **User Selected Scale** list.
20. Select **Looking North** from the **Look Direction** list.
21. Click **OK** on the **Drawing View Properties** dialog box to complete the view definition.

## Place Second View in Layout Template

**Objective:** Place another view in the layout template.

1. Click **Place View**  in the **SmartSketch Drawing Editor** window.
2. Type **4** in the **X** box on the **Pin Point** ribbon, and then press TAB.  
*The value 4.00 in displays in the box and is locked.*
3. Type **14** in the **Y** box on the **Pin Point** ribbon, and then press TAB.  
*The value 14.00 in displays in the box and is locked.*
4. Click to the right of the target in the graphic window to define the first point of the view.
5. Type **21** in the **X** box on the **Pin Point** ribbon, and then press TAB.  
*The value 21.00 in displays in the box and is locked.*
6. Type **22** in the **Y** box on the **Pin Point** ribbon, and then press TAB.  
*The value 22.00 in displays in the box and is locked.*
7. Click to the right of the target in the graphic window to define the second point of the view.  
*The **Drawing View Properties** dialog box displays.*
8. Select **More** in the **Style** list to display the **Select View Style** dialog box.
9. Select **Orthographic\Structural Framing Plan**, and then click **OK**.
10. Type **Structure Plan View** in the **Name** box.
11. Select **Architectural Scales** from the **Scale Family** list.
12. Select **3/16 in: 1 ft** from the **User Selected Scale** list.
13. Click **OK** on the **Drawing View Properties** dialog box to complete the view definition.

## Place Third View in Layout Template

**Objective:** Place another view in the layout template.

1. Click **Place View**  in the **SmartSketch Drawing Editor** window.
2. Type **25** in the **X** box on the **Pin Point** ribbon, and then press TAB.  
*The value 25.00 in displays in the box*
3. Type **10** in the **Y** box on the **Pin Point** ribbon, and then press TAB.  
*The value 10.00 in displays in the box*

## Border and Layout Templates

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4. Click to the right of the target in the graphic window to define the first point of the view.
5. Type **35** in the **X** box on the **Pin Point** ribbon, and then press TAB.  
*The value **35.00** in displays in the box*
6. Type **23** the **Y** box on the **Pin Point** ribbon, and then press TAB.  
*The value **23.00** in displays in the box*
7. Click to the right of the target in the graphic window to define the second point of the view.  
*The **Drawing View Properties** dialog box displays.*
8. Select **More** in the **Style** list to display the **Select View Style** dialog box.
9. Select **Orthographic\Structural Framing Isometric**, and then click **OK**.
10. Type **Structure Iso View** in the **Name** box.
11. Select **Fit to Scale** from the **Scale Family** list.
12. Select **Looking Northeast (Down)** from the **Look Direction** list.
13. Click **OK** on the **Drawing View Properties** dialog box to complete the view definition.
14. Click **File > Save**.
15. Click **File > Exit** to exit **SmartSketch Drawing Editor** and the **Edit Layout Template** command.

## Create a Composed Component

**Objective:** Create a composed component. This will be the parent component for a drawing using the new templates.

1. Click **Tasks > Space Management**.
2. Click **Tools > Drawing Console**.
3. In the **Drawing Console** window, expand the **Drawings\Configuration Labs** folders.
4. Right-click the **Configuration Labs** folder, and then select **Composed Drawings** from the **New** flyout.  
*A composed component called **New Composed Drawings** is created.*
5. Right-click the **New Composed Drawings** component, and then select **Rename**.
6. Key in **Border and Layout Templates**.

## Create a Drawing with New Templates

**Objective:** Create a composed drawing using the new border and layout templates created earlier in this lab.

1. Right-click the composed component **Border and Layout Templates**, and select **New Drawing**.

The **Drawing Sheet General Properties** dialog box displays.

2. Type **New Templates** in the **Name** field on the **Drawing Sheet General Properties** dialog box.
3. Select **More** from the **Layout Template** list on the **Drawing Sheet General Properties** dialog box.
4. Select **Structure 3 View.sha** on the **Select Template** dialog box.  
**NOTE** This is the layout template created earlier in this lab.
5. Click **OK** on the **Select Template** dialog box.

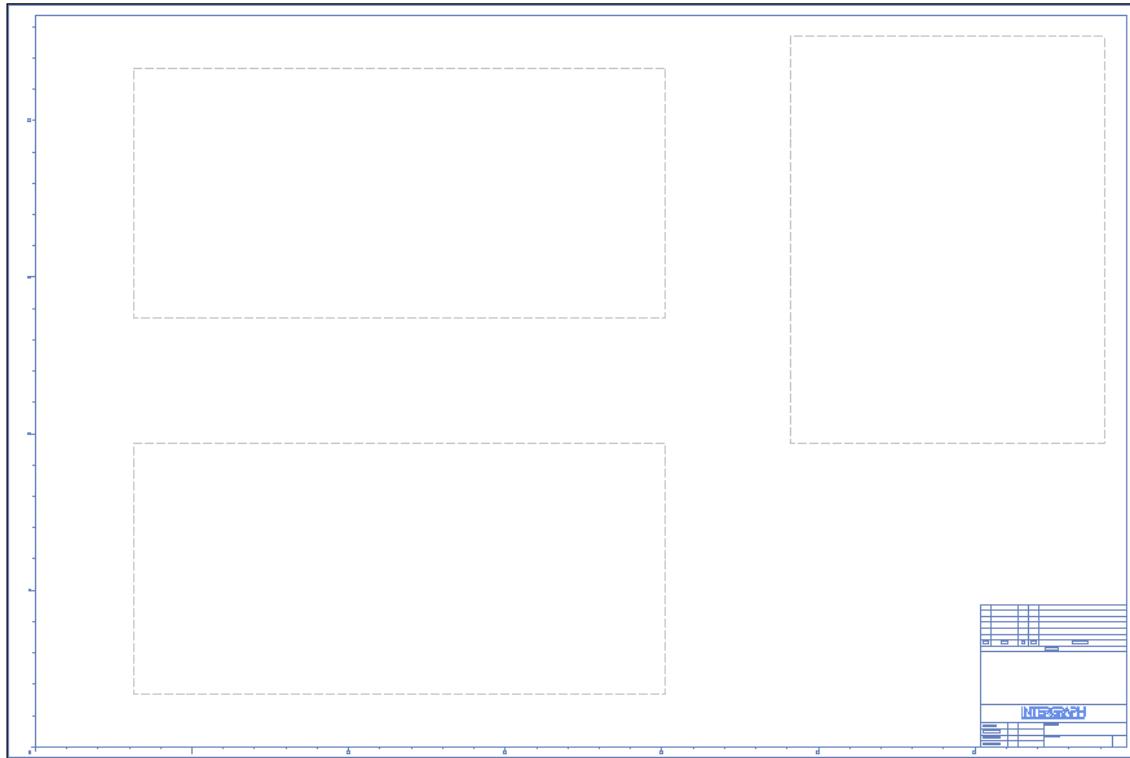
The **Layout Template** field is populated with **Layout Templates\Structure 3 View.sha**.

6. Select **More** from the **Border Template** list.  
The **Select Template** dialog box displays.
7. Double-click the **Imperial** folder on the **Select Template** dialog box to expand it, and select **ArchD\_Wide.sha**.  
**NOTE** This is the border template created earlier in this lab.
8. Click **OK** on the **Select Template** dialog box.  
The **Border Template** field is populated with **Templates\Imperial\ArchD\_Wide.sha**.
9. Click **OK** on the **Drawing Sheet General Properties** dialog box.  
The software opens the new drawing in a **SmartSketch Drawing Editor** window.
10. Maximize the drawing window in **SmartSketch Drawing Editor**.
11. Click **Fit** .

## Check Settings in Drawing

**Objective:** Check that the settings in the templates are preserved in the drawing.

1. Notice that the three views from the layout template display in the drawing.



2. Select **Symbol Explorer** .

The **Symbol Explorer** window displays and is docked on the right side of the **SmartSketch Drawing Editor**. The path in the **Address** field is the home path entered in the border template during a previous exercise.

3. Select **Symbol Explorer** .

The **Symbol Explorer** window no longer displays.

4. Click **File > Properties**.

The **Properties** dialog box displays for the file.

5. Select the **Units** tab to display the units assigned for length, angle, and area.

6. Notice that **Length readout** is set to **ft - in** in **Units**, the value set in the border template during a previous exercise.

7. Click **Cancel**.

8. Click **Format > Style**.

The **Style** dialog box displays.

9. Notice that the available styles for dimension, line, and text are called **DO NOT USE**, as was configured in the border template.

10. Click **Cancel** on the **Style** dialog box.

The **Style** dialog box closes.

11. Double-click one of the views in the drawing.

*The embedded document in the view opens in its own window. The embedded document is created from the emptyvw.sha file.*

12. Click **File > Properties**.

*The **Properties** dialog box displays for the file.*

13. Select the **Units** tab to display the units assigned for length, angle, and area.

14. Notice that **Length readout** is set to **ft - in** in **Units**, the value set in emptyvw.sha during a previous exercise.

15. Click **Cancel**.

16. Click **Format > Style**.

*The **Style** dialog box displays.*

17. Notice that the available styles for dimension, line, and text are called **DO NOT USE**, as was configured in emptyvw.sha.

18. Click **Cancel** on the **Style** dialog box.

*The **Style** dialog box closes.*

19. Click **File > Exit** to exit **SmartSketch Drawing Editor**. You do not need to save the drawing because you did not change it.



## L A B 2

# View Style Settings and Filters

### Objective

By the end of this session, you will be able to:

- Create a new meta style and shared content folder for storing view styles.
- Create a new view style that includes generic object types in the view.
- Select existing graphic rules for the view style.
- Modify view style behavior from volume (include) to snapshot (override).
- Use predefined classification filters to change appearance of *typed* equipment objects.
- Use specific object type filters to override generic filters used previously in the view style.
- Use view style orientation tests.

### Overview

View styles control what objects are displayed and how they are displayed in a view. View styles use filters to locate objects in the database and apply rules to these objects.

View styles are saved as XML-formatted files in the shared content.

This lab will focus on view style creation and organization as well as their different behaviors.

## Define Workspace

**Objective:** Configure the session for this lab.

1. Click **File > Define Workspace**.  
*The **Define Workspace** dialog box displays.*
2. Select **More** from the **Filter** list.  
*The **Select Filter** dialog box displays.*
3. On the **Select Filter** dialog box, expand the **Plant Filters\Drawings Configuration Filters\View Style Settings and Filters** folder.
4. Select the **U02 Workspace** filter and click **OK** on the **Select Filter** dialog box.  
*The **Filter** field populates.*
5. Click **OK** on the **Define Workspace** dialog box.  
*The workspace populates with modeled objects.*
6. When the workspace query completes, click **Fit**  on the **Common** toolbar.

*The software fits all the objects into the graphic window.*

## Create a New View Style Folder

**Objective:** Create a new view style type and view style folder in the shared content.

1. Switch to **Windows Explorer**, and then navigate to the **[SharedContent]\Drawings\Catalog\MetaStyles** folder.

*Several XML-formatted files already exist in this folder.*

**NOTE** The names of files in this folder show up as available view style types in the user interface from which to select and add view styles. If administrators do not want users to select view styles, for example, in the **Orthographic** folder, they can simply remove **Orthographic.xml** from the MetaStyles folder and not have to delete the **Orthographic** folder from shared content.

2. In **Windows Explorer**, right-click the file **Orthographic.xml** and select **Copy**.
3. In **Windows Explorer**, right-click in the background and select **Paste**.

*A file called Orthographic – Copy.xml is created.*

4. In **Windows Explorer**, right-click the file **Orthographic - Copy.xml** and select **Rename**.
5. Key in **Test View Styles**.

**NOTE** The steps above make **Test View Styles** a view style type available in the user interface from which you can save and select view styles. The next steps create a **Test View Styles** folder in the shared content where the view style files will be stored on disk.

6. In **Windows Explorer**, navigate to the **[SharedContent]\Drawings\Catalog\Rules** folder.
7. Create a new folder in the Rules directory and call it **Test View Styles** to match the name of the view style type created earlier.
8. Click **Tasks > Drawings and Reports**.
9. Click **Tools > Define View Style**.

10. Click in the **View Style Type** drop down, and notice your new view style folder.

## Show Generic Object Types

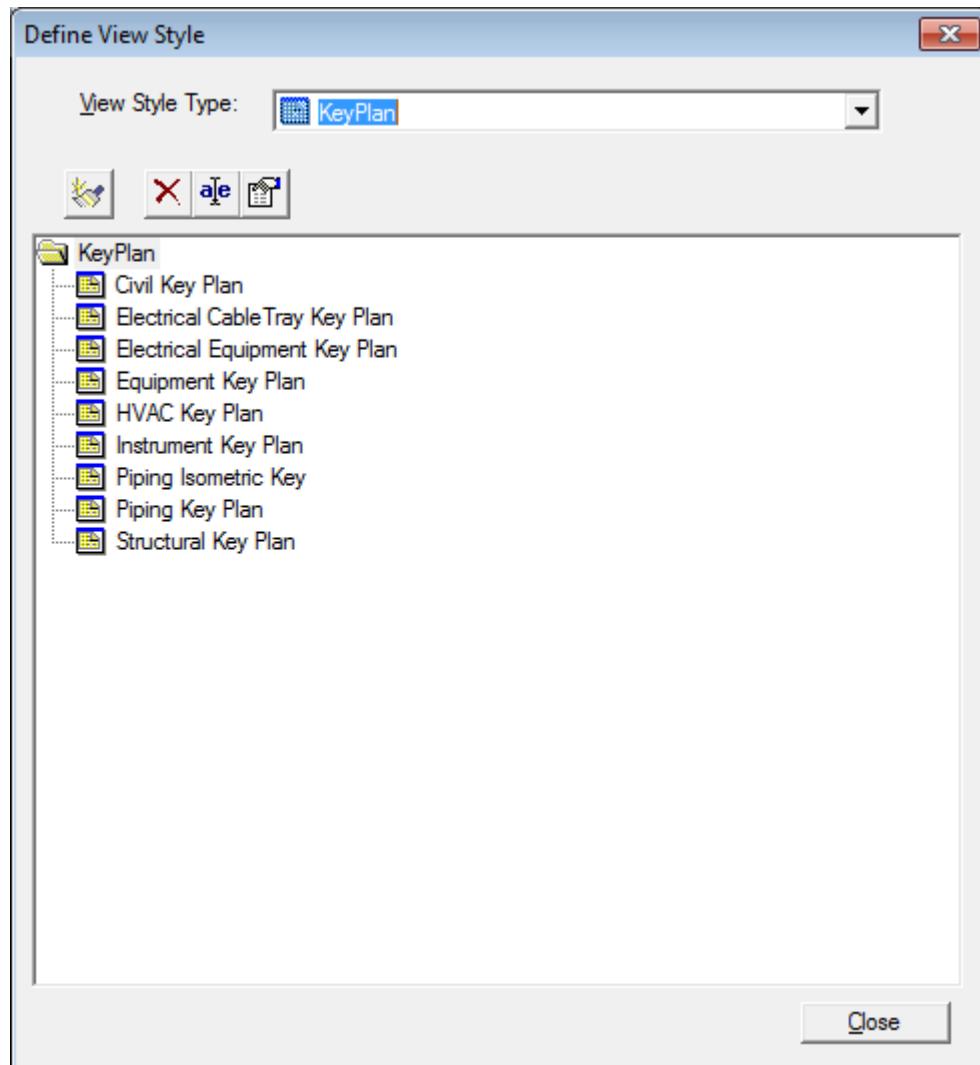
**Objective:** Create a new view style that shows various generic object types in a drawing.

## Create View Style with Equipment Object Type Filter

**Objective:** Create a new view style that uses a generic object type filter that returns equipment.

1. Switch to Smart 3D and make sure you are in the **Drawings and Reports** task.
2. Click **Tools > Define View Style**.

The **Define View Style** dialog box displays.



3. Select **Training** from the **View Style Type** list.

The **Training** folder displays on the **Define View Style** dialog box.

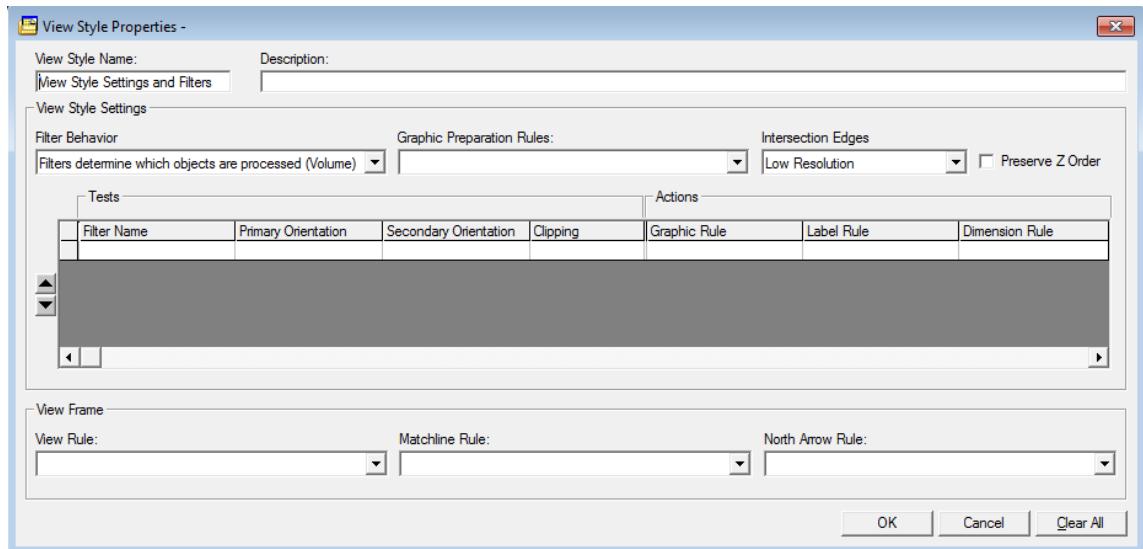
4. Click **New Style**  to create a new view style.

A view style is created in the dialog box and its name is presented in edit mode.

5. Key in **View Style Settings and Filters** to give a name to the new view style.
6. With the view style still highlighted in the dialog box, click **Properties** .

## View Style Settings and Filters

The **View Style Properties** dialog box displays.



### **NOTES**

The **View Style Properties** dialog box consists of three main areas:

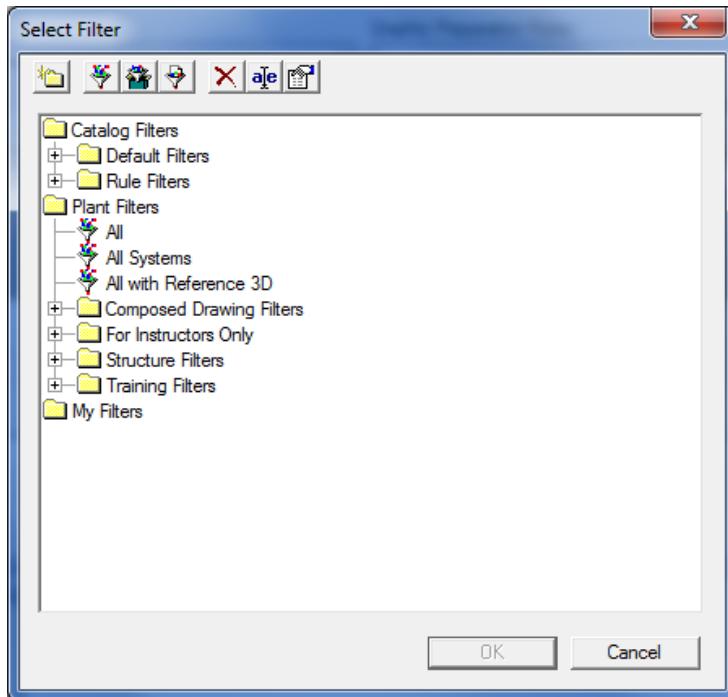
- **View Style Name**
- **View Style Settings**
- **View Frame**

The options in the **View Style Settings** area determine what objects appear, how they display in the drawing, and whether they are dimensioned or labeled. This area of the dialog box is the focus of this lab.

Of particular importance in this area is the table that appears in the center of the dialog box with the following column headings: **Filter Name**, **Primary Orientation**, **Secondary Orientation**, and so on. Each of the cells in this table contains a list, with the additional ability to type a value in the **Filter Name** box. Each field will be discussed in more detail as it is encountered in the lab.

- View styles are saved as XML-formatted files in the shared content and not in the database.
  - Smart 3D delivers view styles that can be used as examples for creating your own view styles.
7. Click in the bottom cell in the **Filter Name** column, and select **More** from the list.

The **Select Filter** dialog box displays.



8. Select **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Equipment and Furnishing\Equipment**.
9. Click **OK** on the **Select Filters** dialog box.

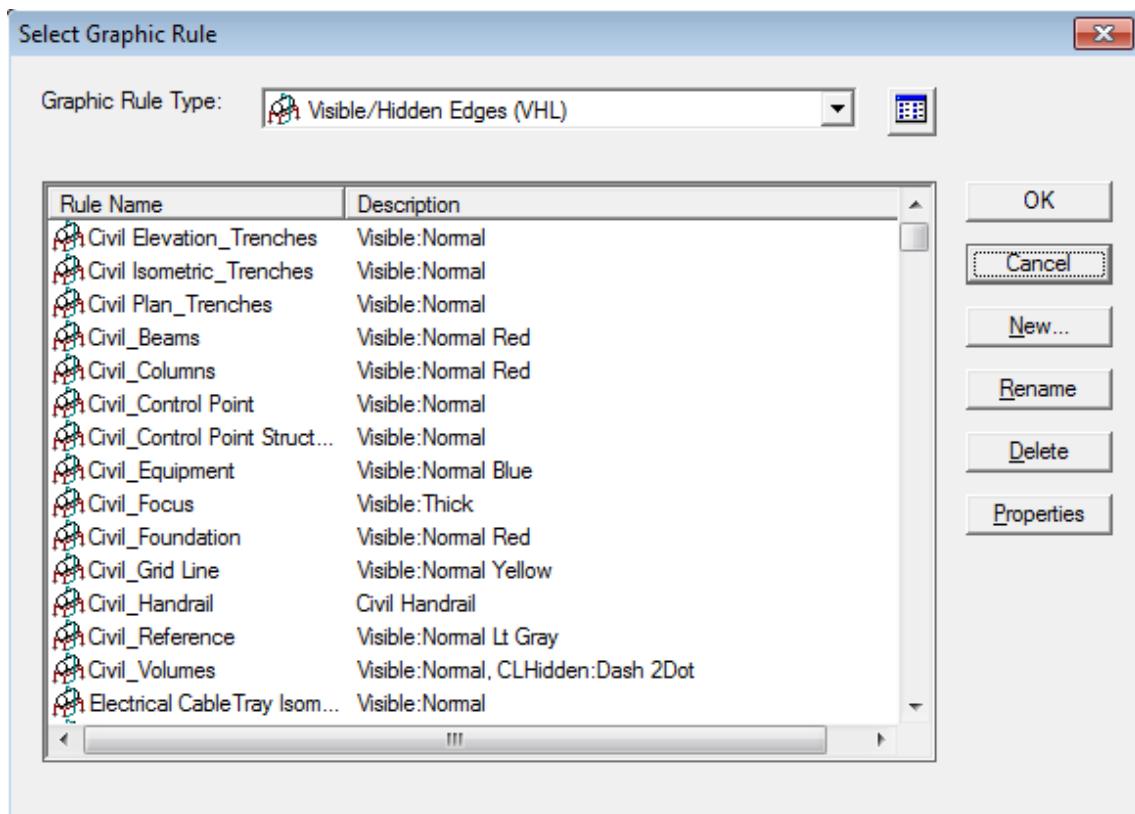
*The selected filter is entered into the cell on the **View Style Properties** dialog box.*

**[NOTE]** Candidate objects to appear in the view are those model objects within the volume associated to the view. These candidate objects are passed to the view style. If a candidate object matches a particular filter in a row on the view style, then the rules on that row are applied to the object. More information on rules will be provided as the lab progresses and in subsequent labs.

10. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **More** from the list.

## View Style Settings and Filters

The **Select Graphic Rule** dialog box displays. Notice that **Graphic Rule Type** is set to **Visible/Hidden Edges (VHL)** by default.



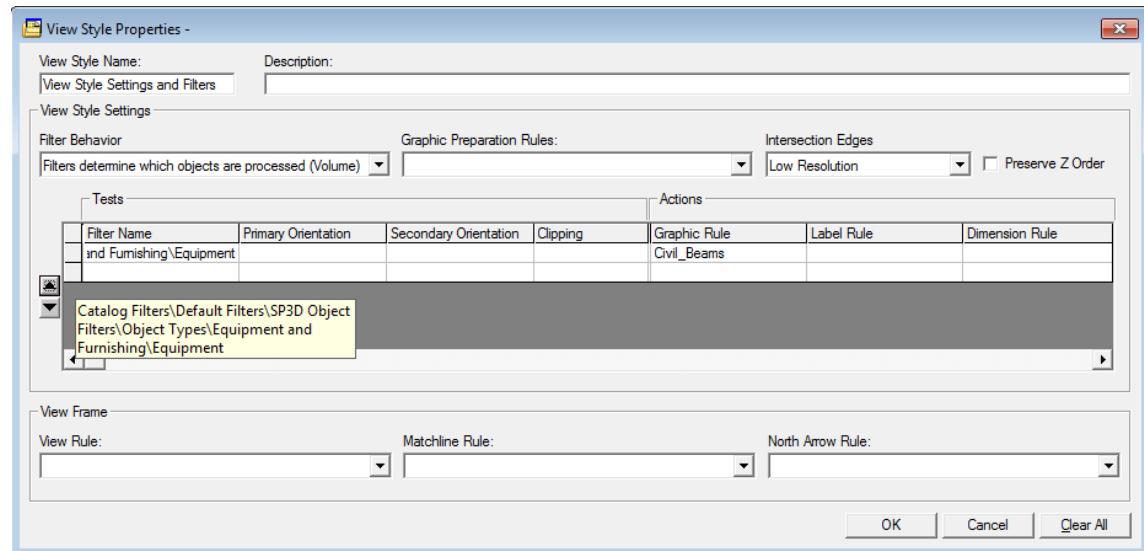
### **NOTES**

- Graphic rules determine the appearance of objects in the drawing, including: the line style to apply to visible edges, whether hidden lines should be drawn and their line style, the layer the object will reside on in the drawing, and so on. There are four types of graphic rules:
  - Visible/Hidden Edges (VHL)
  - Replace Object(s) with Line
  - Replace Object(s) with Line and Widget
  - Replace Object(s) with Symbol
- As with view styles, graphic rules are also XML-formatted files that are saved in the shared content and not in the database.
- Smart 3D delivers graphics rules that are used in the delivered view styles.
- More on graphic rules in the next lab.

11. Click **Civil\_Beams** on the **Select Graphic Rule** dialog box.

### **NOTES**

- Despite the naming convention used for this graphic rule, it can be applied to any objects returned by the filter.
  - Based on what is displayed in the **Description** column for this graphic rule, visible edges are displayed using the Normal Red line style.
12. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.



13. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
- NOTE** The label and dimension rules are optional. Notice that the minimum required settings for the remaining options on the **View Style Properties** dialog box already have default values.
14. Click **Close** on the **Define View Style** dialog box.

## Place View and Apply View Style

**Objective:** Place a graphic view and use the view style created earlier.

1. Expand the drawing hierarchy **Drawings\Configuration Labs\View Style Settings and Filters** and locate the drawing **View Style Settings and Filters**.
2. Right click the drawing, and select **Edit**.
3. Maximize the drawing window in **SmartSketch Drawing Editor**.
4. Click **Fit** .
5. Click **Place View** .
6. Drag a rectangle of any size approximately centered within the border area.  
*The **Drawing View Properties** dialog box displays when placement is complete.*
7. Select **More** in the **Style** list.

*The **Select View Style** dialog box displays.*

8. Select **Training\View Style Settings and Filters**.
9. Click **OK** on the **Select View Style** dialog box.
10. Type **View Style Plan View** in the **Name** field.
11. Select **Metric Scales** from the **Scale Family** list.
12. Select **1:50 mm** from the **User Selected Scale** list.
13. Click **OK** on the **Drawing View Properties** dialog box to complete the view definition.

## **Associate View to Volume and Update View**

**Objective:** Establish a relationship between the graphic view in the composed drawing, a volume in the model and a restrict filter.

1. Click the graphic view, and then click **Associate Objects to View** .

2. Switch to the **Smart 3D** window.

*The **Associate Objects to View** ribbon displays in the modeling environment.*

3. On the **Space** tab of the **Workspace Explorer**, expand the space folders **Drawings Configuration Labs\View Style Settings and Filters**.

4. Click on the volume **Volume U02** in the **Workspace Explorer**.

*The volume in the model is outlined with heavy yellow edges.*

5. Select **More** from the **Filter** list on the **Associate Objects to View** ribbon.

*The **Select Filter** dialog box displays.*

6. On the **Select Filter** dialog, expand **Plant Filters\Drawings Configuration Filters\View Style Settings and Filters**.

7. Select the **U02 Drawing** filter.

8. Click **OK** on the **Select Filter** dialog box.

*The software populates the **Filter** field on the **Associate Objects to View** ribbon.*

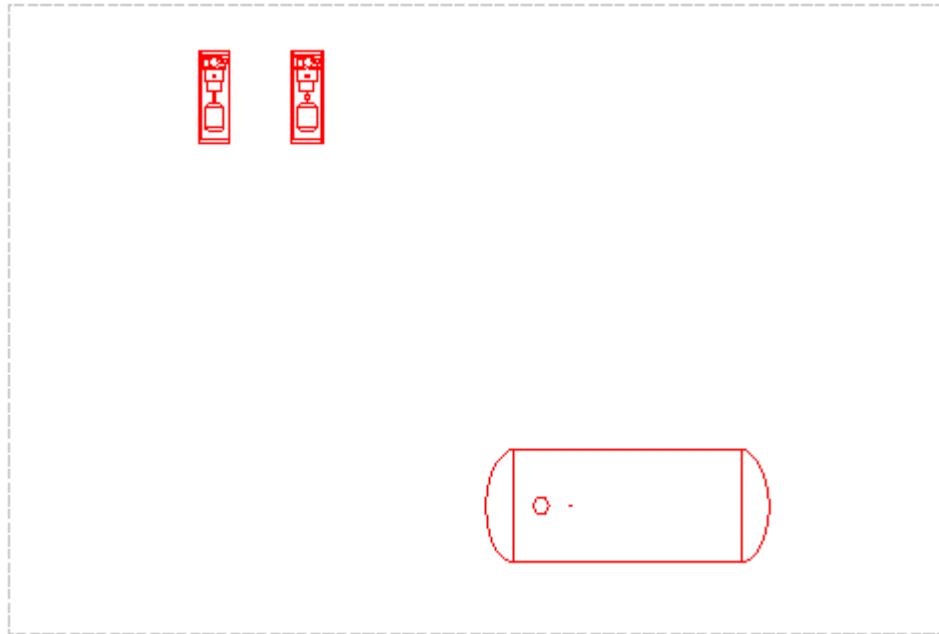
9. Switch back to the **SmartSketch Drawing Editor** window.

*The graphic view has grown about its center to resize to the scaled dimensions of the volume.*

10. Right-click the view boundary once to exit the **Associate Objects to View** command.

11. Right-click the view boundary again and select **Update View**.

The updated view contents should appear similar to the example below. Notice that only equipment objects appear in the view and they are red, as specified in the view style.



## Add Piping Parts Object Type Filter to the View Style

**Objective:** Edit the view style created earlier and add another row that filters on the generic object type piping parts.

1. Switch to the Smart 3D window.
2. Click **Tasks > Drawings and Reports**.
3. Click **Tools > Define View Style**.  
*The Define View Style dialog box displays.*
4. Ensure that the **View Style Type** is set to **Training** and click **View Style Settings and Filters**.
5. Click **Properties** .
  
*The View Style Properties dialog box displays.*6. Click in the bottom cell in the **Filter Name** column, and select **More** from the list.  
*The Select Filter dialog box displays.*
7. Select **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Piping\Piping Parts**.
8. Click **OK** on the **Select Filters** dialog box.

## View Style Settings and Filters

The selected filter is entered into the cell on the **View Style Properties** dialog box.

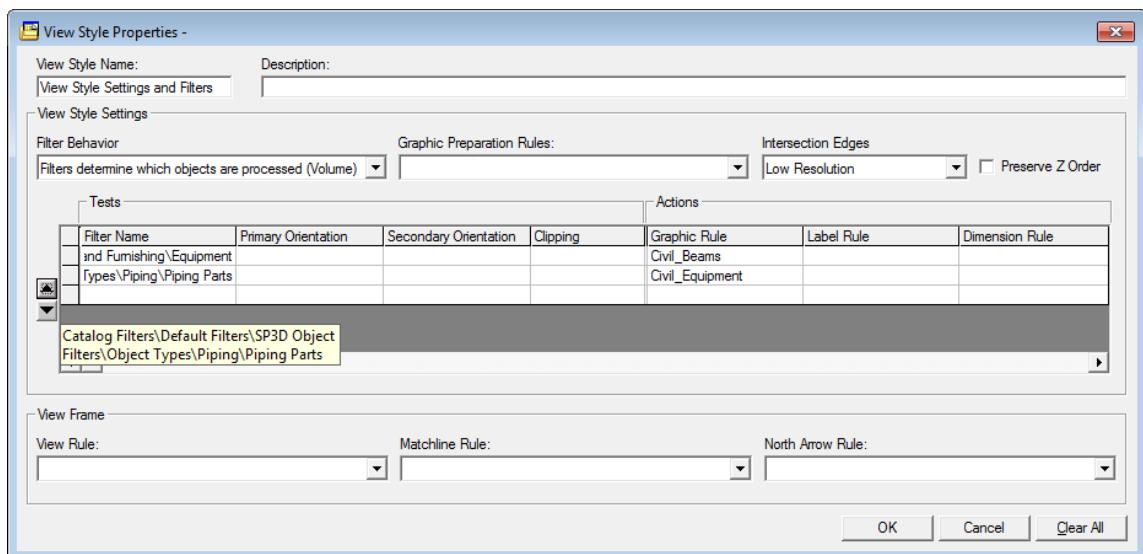
9. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **More** from the list.

The **Select Graphic Rule** dialog box displays.

10. Click **Civil\_Equipment** on the **Select Graphic Rule** dialog box.

**NOTE** Based on what is displayed in the **Description** column for this graphic rule, visible edges are displayed using the Normal Blue line style.

11. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.



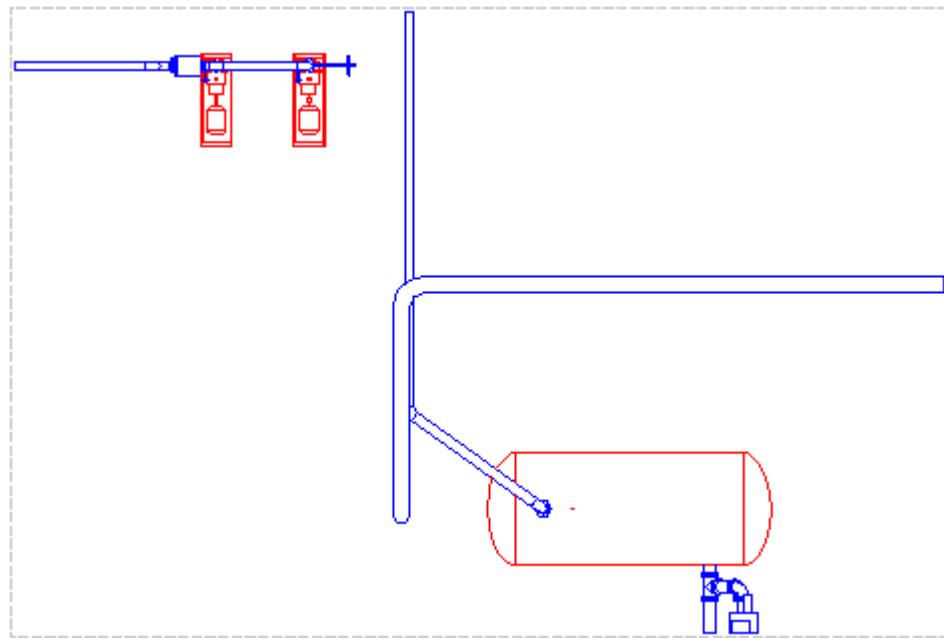
12. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
13. Click **Close** on the **Define View Style** dialog box.

## **Update View with Additional Objects**

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Switch back to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View**.

The updated view contents should appear similar to the example below. Notice that pipe part objects appear in the view and they are blue, as specified in the view style.



## Show Effects of Filter Behavior

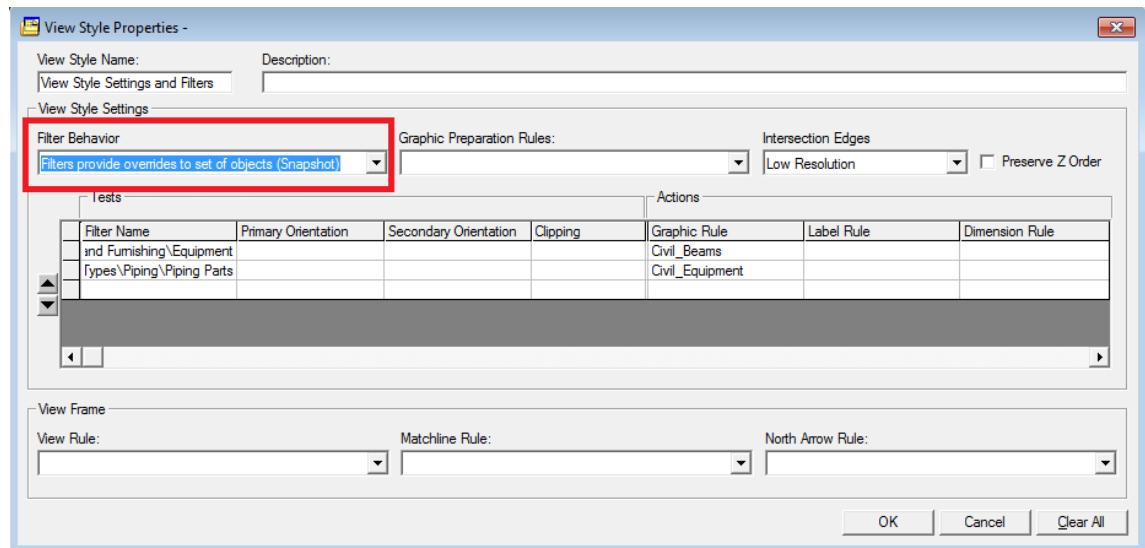
**Objective:** Show how the **Filter Behavior** setting affects the results in the drawing.

## Change Filter Behavior from Volume to Snapshot

**Objective:** Change the filter behavior of the view style from **Volume** to **Snapshot**.

1. Switch to the Smart 3D window.
2. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
3. Ensure that the **View Style Type** is set to **Training** and click **View Style Settings and Filters**.
4. Click **Properties** .  
*The **View Style Properties** dialog box displays.*
5. Select **Filters provide overrides to set of objects (Snapshot)** from the **Filter Behavior** list.

## View Style Settings and Filters



**NOTE** Snapshot behavior means that all objects in the volume are displayed in the drawing. No objects are eliminated due to the tests in the view style. When using the snapshot behavior, the software applies a hard-coded style to the objects, so it is not necessary to specifically mention a graphic rule in this type of view style. If a graphic rule is specified, it overrides the default graphic rule for those objects in the filter.

Volume behavior means that only objects that pass the tests in the **View Style Settings** area of the view style display in the drawing.

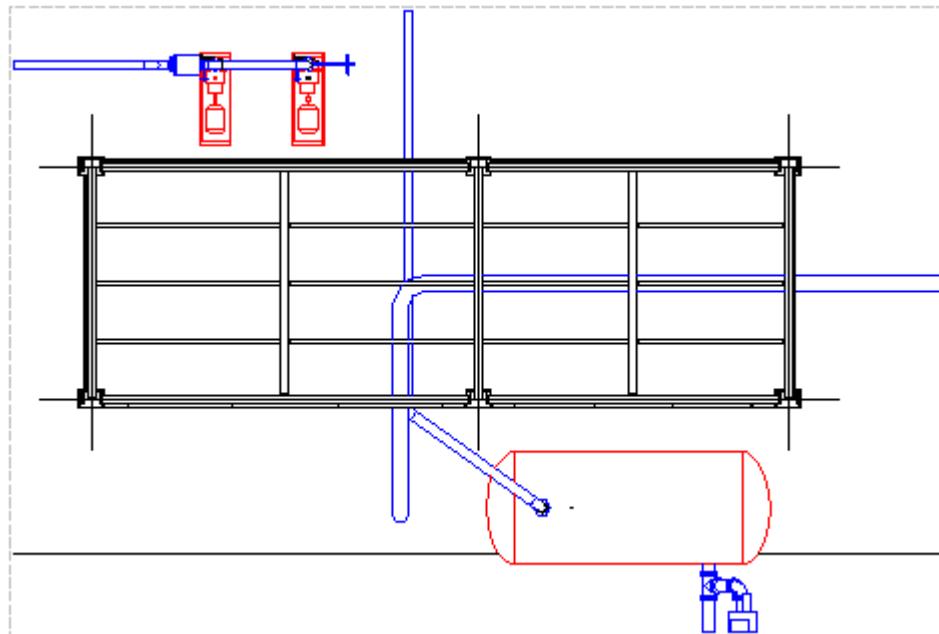
6. Select **OK** to complete the definition of the view style.
7. Click **Close** on the **Define View Style** dialog box.

## **Update View with Filter Behavior as Snapshot**

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View**.

The updated view contents should resemble the example below. Objects from the volume other than equipment and piping also appear in the view. This is caused by the snapshot behavior setting. The equipment and piping part objects are using the graphic rules for their appearance while the other objects are using the hard-coded graphic rule for their appearance.



## Show Specific Objects

**Objective:** Modify the view style to include various specific object types in a drawing.

## Add Classification Filters to View Style

**Objective:** Edit the view style created earlier and add another row that filters equipment with a "Process Vessel" classification.

1. Switch to the Smart 3D window.
2. Click **Tools > Define View Style**.  
*The Define View Style dialog box displays.*
3. Ensure that the **View Style Type** is set to **Training** and click **View Style Settings and Filters**.  
*The View Style Properties dialog box displays.*
4. Click in the bottom cell in the **Filter Name** column, and select **More** from the list.

## **View Style Settings and Filters**

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*The Select Filter dialog box displays.*

5. Select Catalog Filters\Default Filters\SP3D Object Filters\Classification Properties\Process Equipment\Process Vessel.

6. Click **OK** on the **Select Filters** dialog box.

*The selected filter is entered into the cell on the View Style Properties dialog box.*

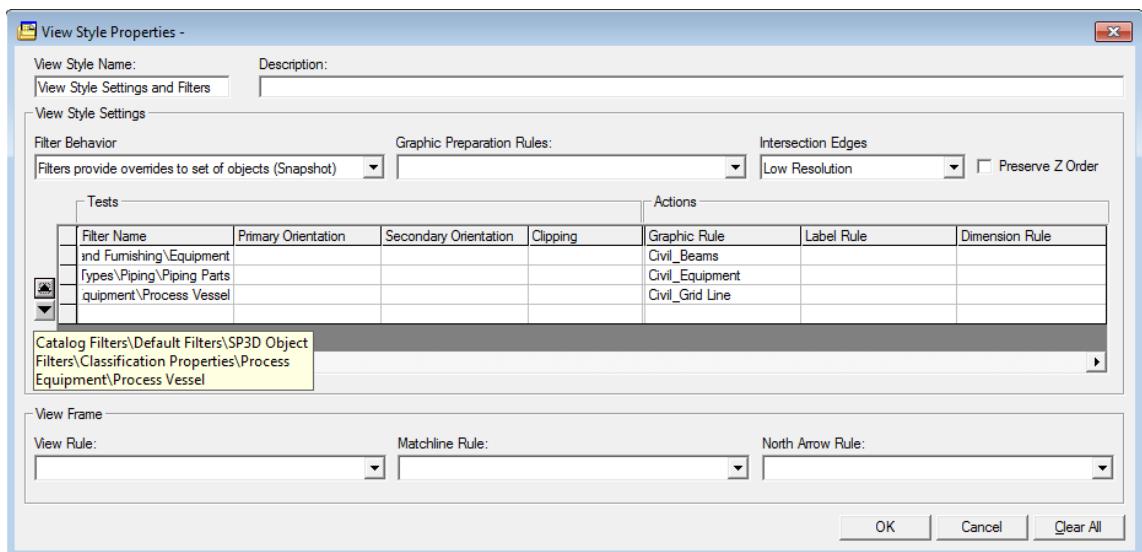
7. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **More** from the list.

*The Select Graphic Rule dialog box displays.*

8. Click **Civil\_Grid Line** on the **Select Graphic Rule** dialog box.

**NOTE** Based on what is displayed in the **Description** column for this graphic rule, visible edges are displayed using the Normal Yellow line style.

9. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.



10. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.

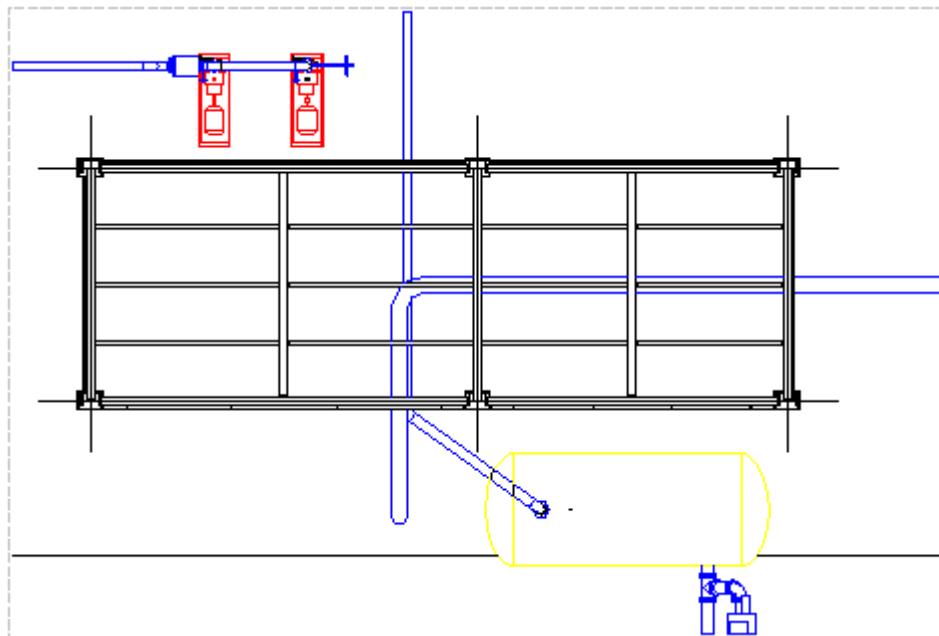
11. Click **Close** on the **Define View Style** dialog box.

## **Update View Using Classification Filter**

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View**.

The updated view contents should resemble the example below. Notice the tank in the lower right corner of the view no longer has the same appearance as other equipment objects in the view. The tank has a classification of "Process Vessel" and is yellow while the pumps are not in that classification and are still red.



**NOTE** Objects that pass more than one row in the view style can only have one graphic rule win out. The software is hard-coded to always have the bottommost graphic rule in the view style win.

## Add Specific Object Type Filter for Pipe

**Objective:** Edit the view style created earlier and add another row that filters on the object type pipe, a specific type of piping part.

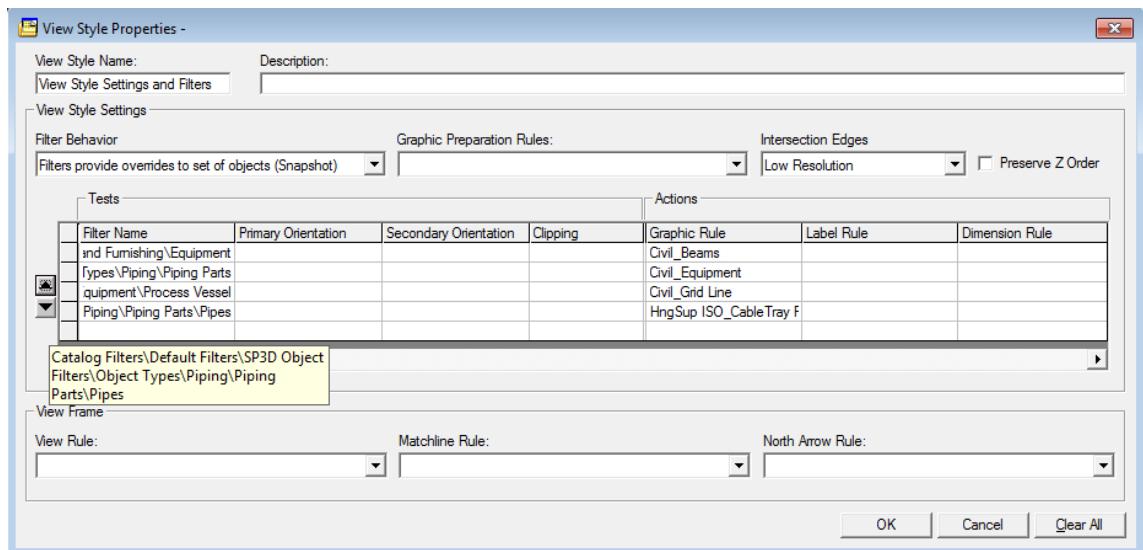
1. Switch to the Smart 3D window.
2. Click **Tools > Define View Style**.  
*The Define View Style dialog box displays.*
3. Ensure that the **View Style Type** is set to **Training** and click **View Style Settings and Filters**.
4. Click **Properties** .
- The View Style Properties dialog box displays.*
5. Click in the cell in the **Filter Name** column with the **Piping Parts** filter.  
*The filter name in the cell highlights.*
6. Press **CTRL+C** to copy the value to memory.
7. Click in the bottom cell in the **Filter Name** column.

## View Style Settings and Filters

8. Press CTRL+V to paste the value to the bottom cell.
9. Type **\Pipes** at the end of the pasted path so that the full value looks like **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Piping\Piping Parts\Pipes**.
10. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **More** from the list.

*The **Select Graphic Rule** dialog box displays.*

11. Click **HngSup ISO\_CableTray Reference** on the **Select Graphic Rule** dialog box.
- NOTE** Based on what is displayed in the **Description** column for this graphic rule, visible edges are displayed using the Normal Green line style.
12. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.



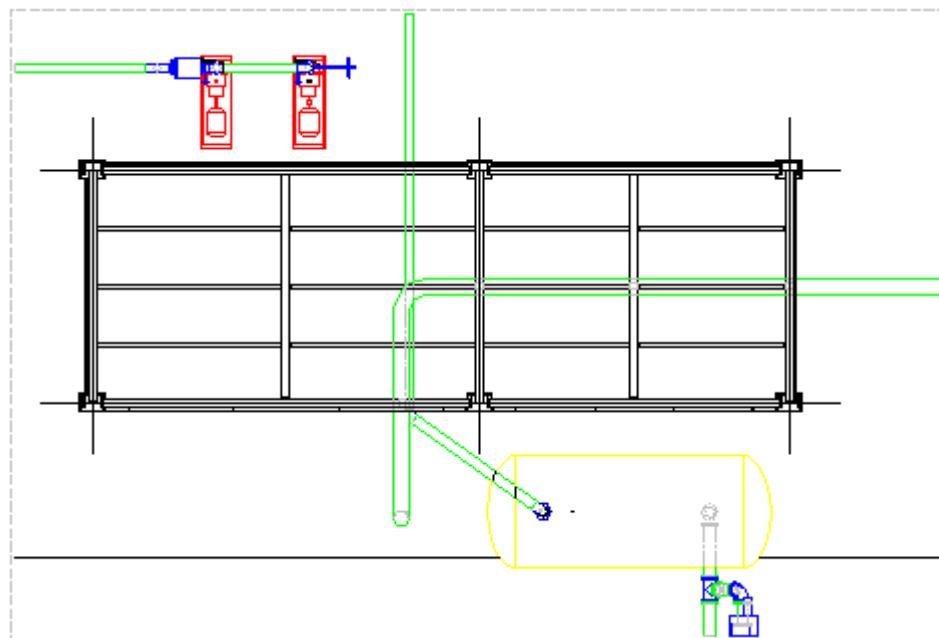
13. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
14. Click **Close** on the **Define View Style** dialog box.

## **Update View Using Specific Object Types Filter**

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View**.

The updated view contents should resemble the example below. Notice the pipes are green while the piping components remain blue. This is because the lowest row in the view style for pipes applies a green color while the lowest row in the view style for piping components applies a blue color.



## Show Effects of Orientation Tests

**Objective:** Demonstrate the effects of the orientation tests on the drawing results.

## Add Orientation Test for Pipe

**Objective:** Edit the view style created earlier and add another row that filters on the object type pipe, a specific type of piping part.

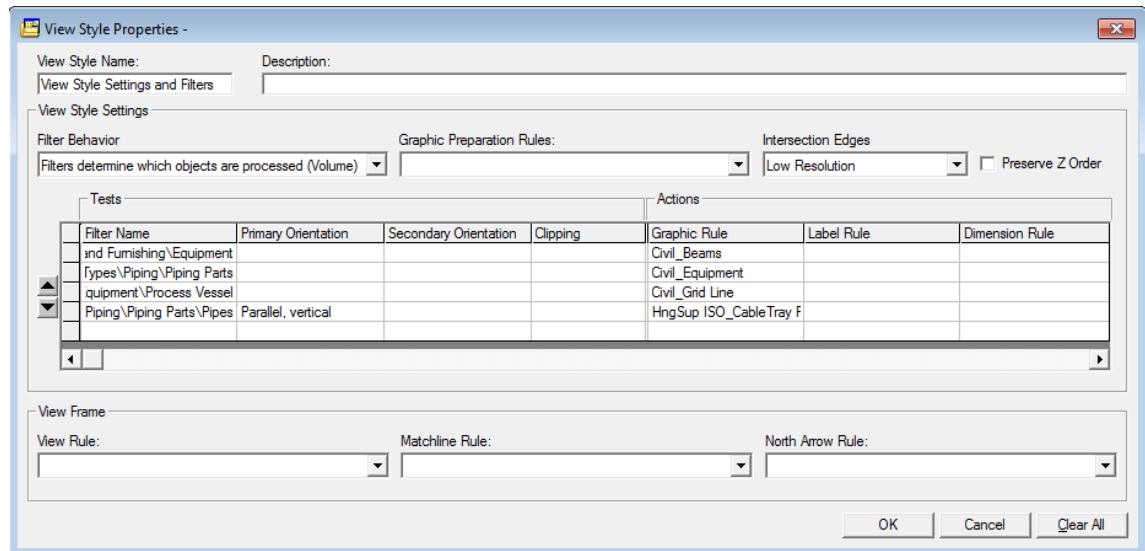
1. Switch to the Smart 3D window.
2. Click **Tools > Define View Style**.  
The **Define View Style** dialog box displays.
3. Ensure that the **View Style Type** is set to **Training** and click **View Style Settings and Filters**.
4. Click **Properties** .
5. Select **Filters determine which objects are processed (Volume)** from the **Filter Behavior** list.

## View Style Settings and Filters

6. In the **Primary Orientation** column on the row for pipes, select **Parallel, vertical** from the list.

*The Primary Orientation cell for the pipes row displays Parallel, vertical.*

**NOTE** Based on the changes made to the view style, vertical pipe that are parallel to the plane of the view will be drawn using Normal Green and other oriented pipe will be drawn using Normal Blue. Also, because of the change in the **Filter Behavior** property, only objects from the view style rows will be seen in the view.



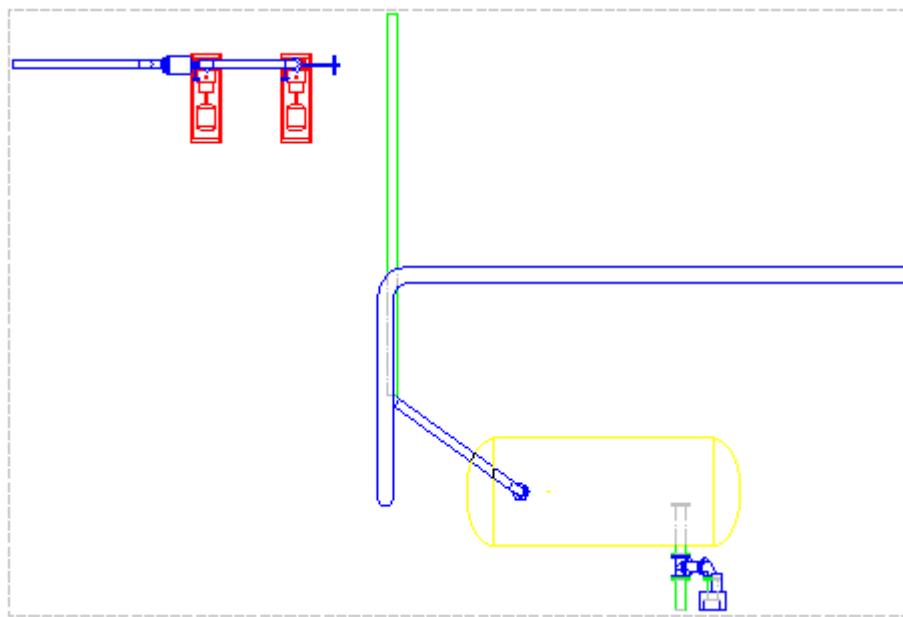
7. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
8. Click **Close** on the **Define View Style** dialog box.

## **Update View Using Orientation Test**

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View**.

The updated view contents should resemble the example below. Notice the vertical pipes that are parallel to the view plane are green while all other piping parts are blue. This is because the lowest row in the view style for vertical pipes applies a green color while the lowest row in the view style for other piping parts applies a blue color.



**NOTE** Notice in the center of the view that there appears to be a vertical pipe that is blue. Actually, this pipe is a bent pipe that contains some sections that are not vertical; as a result, it does not pass the parallel, vertical test in the view style.

## Show Effects of Intersection Edges

**Objective:** Demonstrate the effects of the Intersection Edges setting on the drawing results.

## Modify the Look Direction of View

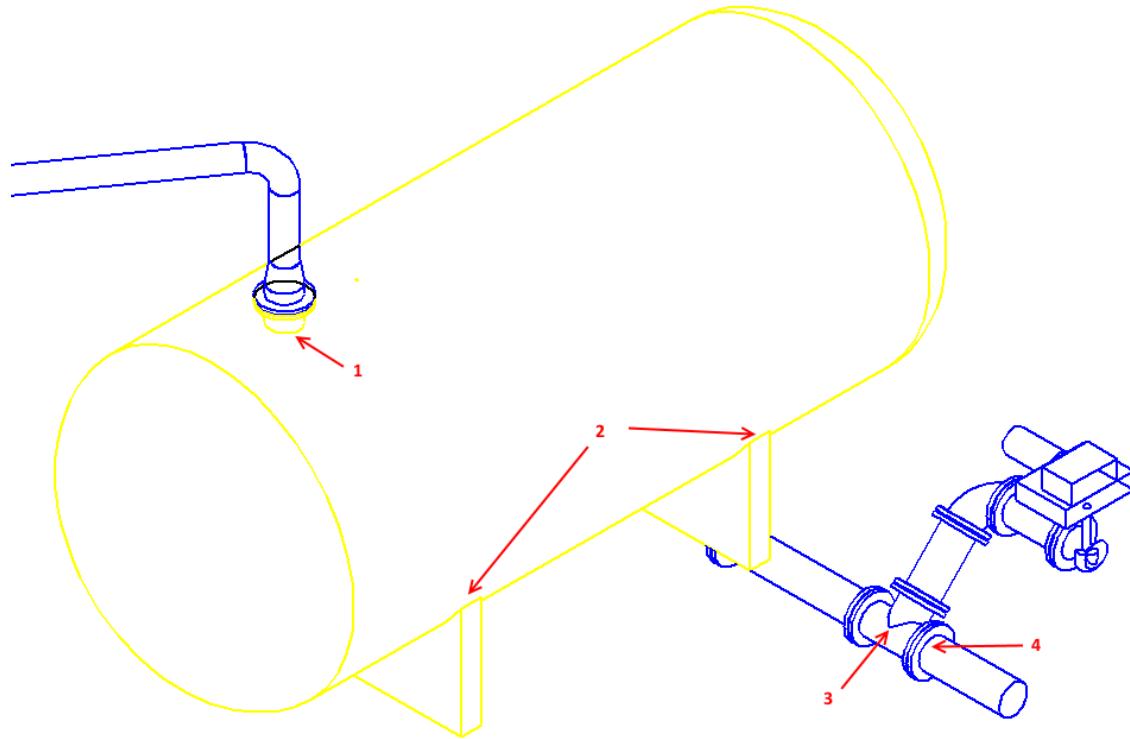
**Objective:** Edit the view properties and change the Look Direction from Looking Plan to Looking Northeast (Down).

3. Right-click the view boundary, and then select **Properties**.  
*The **Drawing View Properties** dialog box displays.*
4. Change the **Look Direction** from **Looking Plan** to **Looking Northeast (Down)**.
5. Click **OK** on the **Drawing View Properties** dialog box.
6. Right-click the view boundary, and then select **Update View**.
7. When the update completes, select **Zoom Area** and drag a rectangle around the yellow tank to get a closer look.

## View Style Settings and Filters

The updated view contents should resemble the picture below. The numbered edges do not exist in the model but are calculated:

1. The edge representing the intersection of the nozzle (a cylinder) with the body of the tank (also a cylinder).
2. The edges representing the intersection of the tank legs (rectangular prisms) with the body of the tank.
3. The edge that represents the intersecting cylinders of the tee pipe component.
4. The edge that represents the intersection of the pipe and the flange.



**NOTE** The next sections in the lab turn off the calculation of intersecting edges in the view style, update the view again, and show that the numbered edges are no longer drawn.

## **Set Intersection Edge Off in View Style**

**Objective:** Edit the view style created earlier and set Intersection Edges to Off.

1. Switch to the Smart 3D window.
2. Click **Tools > Define View Style**.  
The **Define View Style** dialog box displays.
3. Ensure that the **View Style Type** is set to **Training** and click **View Style Settings and Filters**.

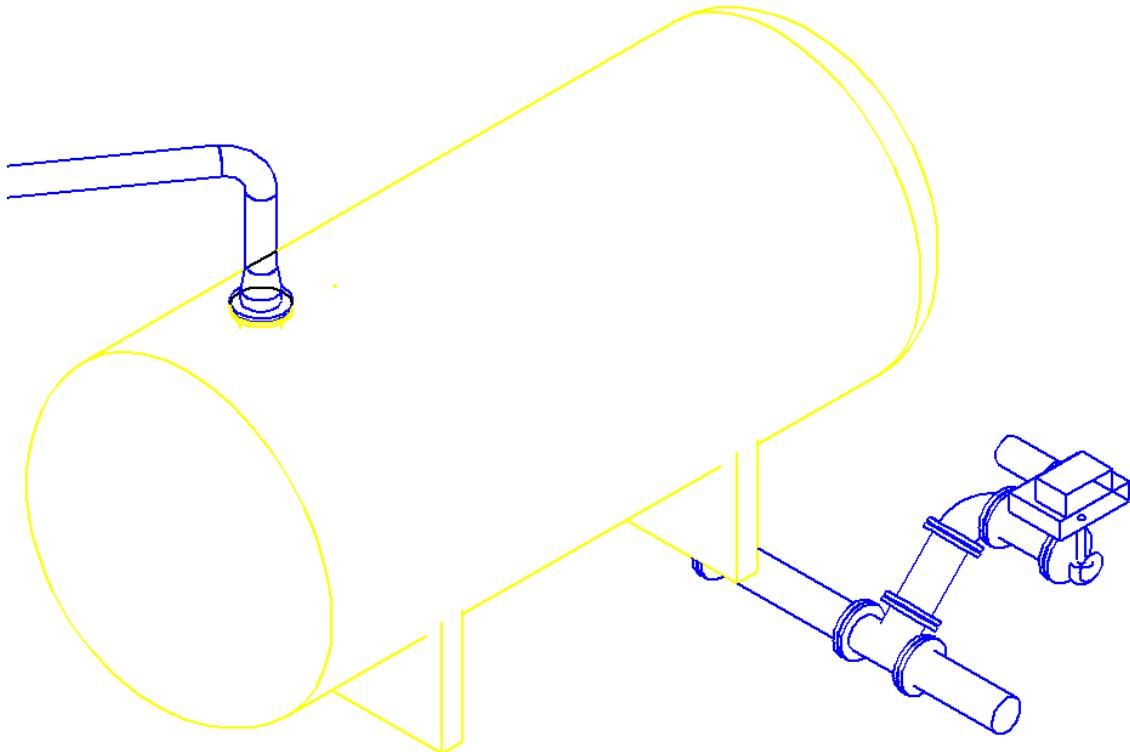
4. Click **Properties** .
- The View Style Properties dialog box displays.*
5. Select **Off** from the **Intersection Edges** list.
6. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
7. Click **Close** on the **Define View Style** dialog box.

## Update View Using Intersection Edges Off

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View**.

*The updated view contents should resemble the example below. Notice the edges pointed out earlier are no longer drawn since Intersection Edges is set to Off.*



**NOTE** Calculating edges that represent the intersection of surfaces increases the time to update the drawing.

3. Select **File > Exit** to exit **SmartSketch Drawing Editor**. You do not need to save the drawing because the software automatically saved it during the update of the view.



## L A B 3

# VHL Graphic Rules

### Objective

By the end of this session, you will be able to:

- Create your own graphic rules.
- Create a new graphic rule to apply a specific line style to draw visible edges of objects.
- Modify the graphic rule to apply a specific line style to draw hidden edges of objects.
- Modify the graphic rule to apply a specific line style to draw hidden edges of objects.
- Draw the centerlines for linear route objects.
- Use a graphic rule module to draw route component centerlines.
- Adjust equipment and nozzle centerline extension values.
- Add layers to graphic rules to draw objects on named layers.
- Copy graphic rules by renaming existing rules.
- Create new line styles in the Styles.sha file and use them.
- Draw different aspects with different line styles.
- Use the **Make transparent** property to draw both physical and insulation aspects of piping.
- Use the **Make transparent** property to draw an object in wire-frame mode.
- Use a fill style to fill the visible portion of objects with a predefined pattern.
- Use **Clipped Solid Fill** to fill the clipped portions of true solids such as walls and slabs.
- Use **Make Clipped Solid Monolithic** to remove edges between solids.

### Overview

Graphic rules control the visible and hidden line style of a rendered object. They also control the layer where objects are placed in the drawing. Graphic rules are applied to the objects that pass the view style tests.

Graphic rules are saved as XML-formatted files in shared content.

This lab will focus on applying newly-created VHL graphic rules to objects.

## Define Workspace

**Objective:** Configure the session for the first set of exercises.

1. Click **Tasks > Space Management**.

2. Click **File > Define Workspace**.  
*The **Define Workspace** dialog box displays.*
3. Select **More** from the **Filter** list.  
*The **Select Filter** dialog box displays.*
4. On the **Select Filter** dialog box, expand the **Plant Filters\Drawings Configuration Filters\VHL Graphic Rules** folder.
5. Select the **U01 Workspace** filter and click **OK** on the **Select Filter** dialog box.  
*The **Filter** field populates.*
6. Click **OK** on the **Define Workspace** dialog box.  
*The workspace populates with modeled objects.*
7. When the workspace query completes, click **Fit**  on the **Common** toolbar.  
*The software fits all the objects into the graphic window.*

## Show Visible Edges

**Objective:** Create a view style that assigns a line style to visible edges.

## Create View Style with New Graphic Rule

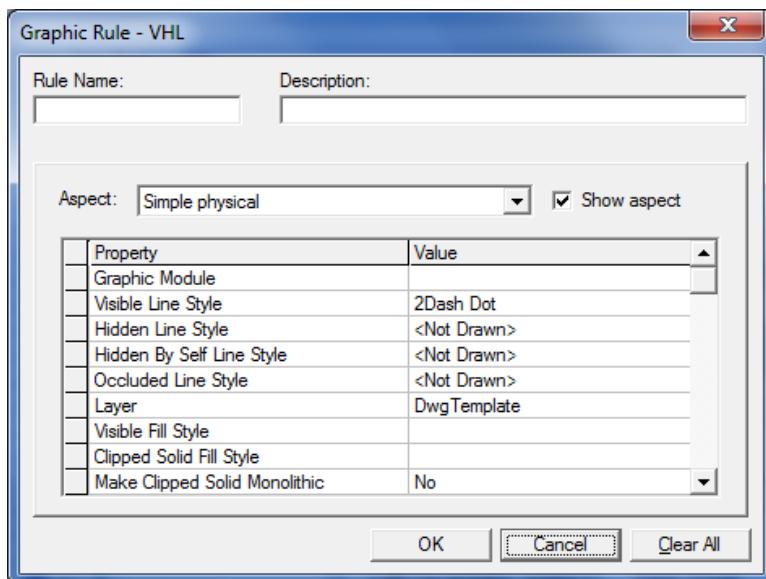
**Objective:** Edit a view style so that it contains a generic object type filter and a new graphic rule that applies a line style to visible edges.

1. Click **Tasks > Drawings and Reports**.
2. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
3. Ensure that the **View Style Type** is set to **Training**.
4. Highlight the view style **VHL Edges** in the dialog box, click **Properties** .
5. Click in the bottom cell in the **Filter Name** column, and select **More** from the list.  
*The **Select Filter** dialog box displays.*
6. Select **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Structure\Members**.
7. Click **OK** on the **Select Filters** dialog box.  
*The selected filter is entered into the cell on the **View Style Properties** dialog box.*
8. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **More** from the list.

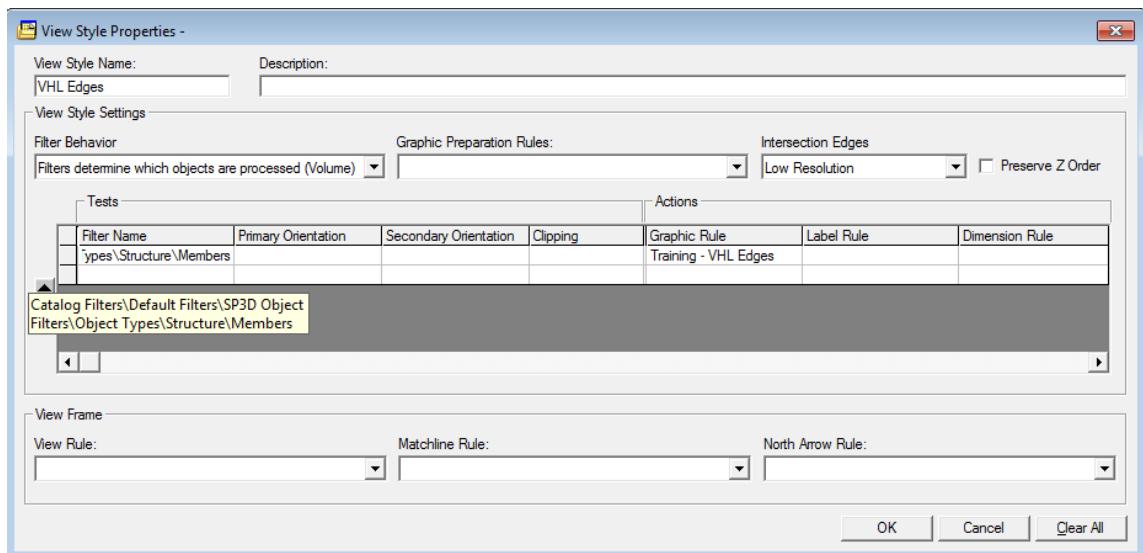
The **Select Graphic Rule** dialog box displays.

- Click **New** on the **Select Graphic Rule** dialog box.

The **Graphic Rule – VHL** dialog box displays.



- Type **Training – VHL Edges** in the Rule Name box.
- Select **Normal Blue** in the Visible Line Style list.
- Click **OK** to complete the definition of the graphic rule and return control to the **Select Graphic Rule** dialog box.
- Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.



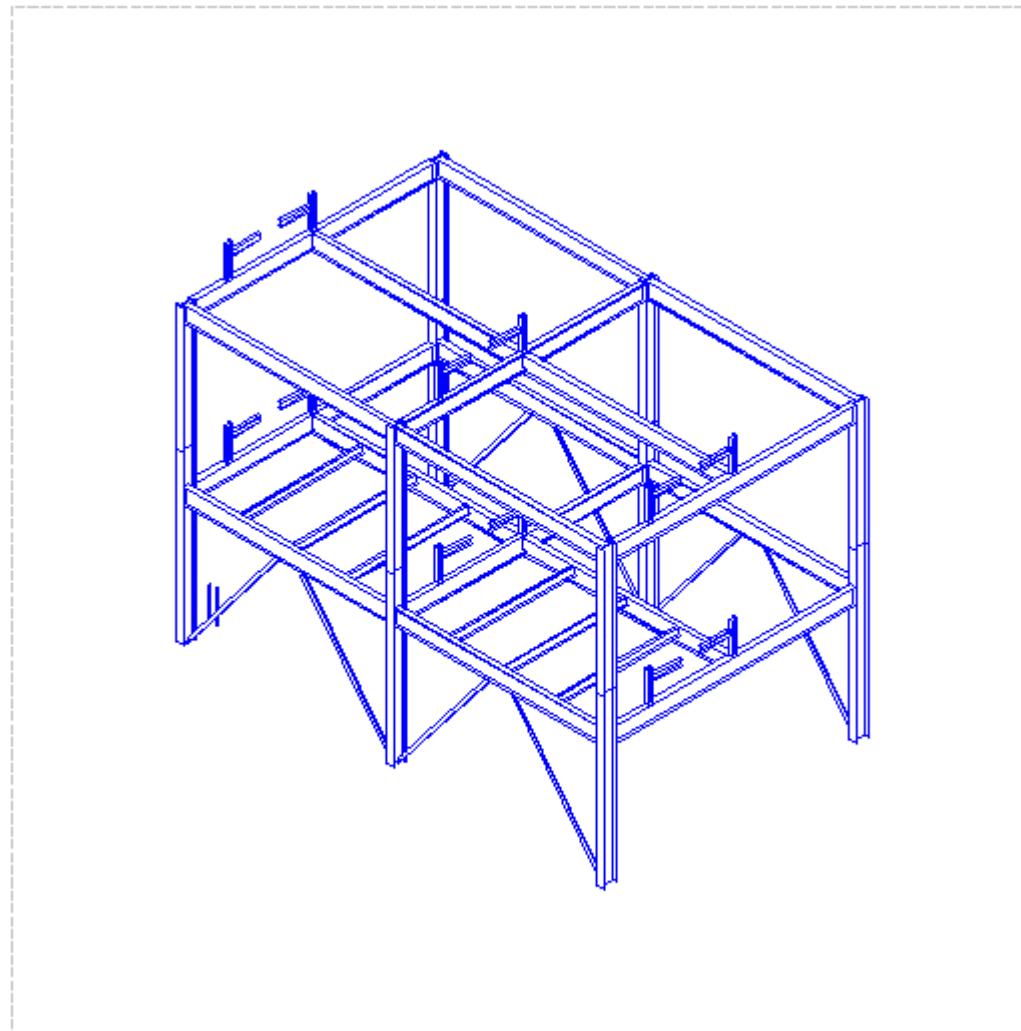
- Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
- Click **Close** on the **Define View Style** dialog box.

## Update View

**Objective:** Update a view to see the view style's results.

1. Expand the drawing hierarchy to locate the drawing **Drawings\Configuration Labs\VHL Graphic Rules\VHL Edges**.
2. Right click the drawing, and select **Edit**.
3. Right-click the view boundary again and select **Update View**.

*The updated view contents should appear similar to the example below. Notice that only the visible edges of structural member objects appear in the view and they are blue, as specified in the view style.*



## Show Hidden Edges

**Objective:** Edit a view style so that it assigns a line style to hidden edges.

## Add Hidden Lines to Graphic Rule

**Objective:** Modify the graphic rule to display hidden lines in a different line style than visible lines.

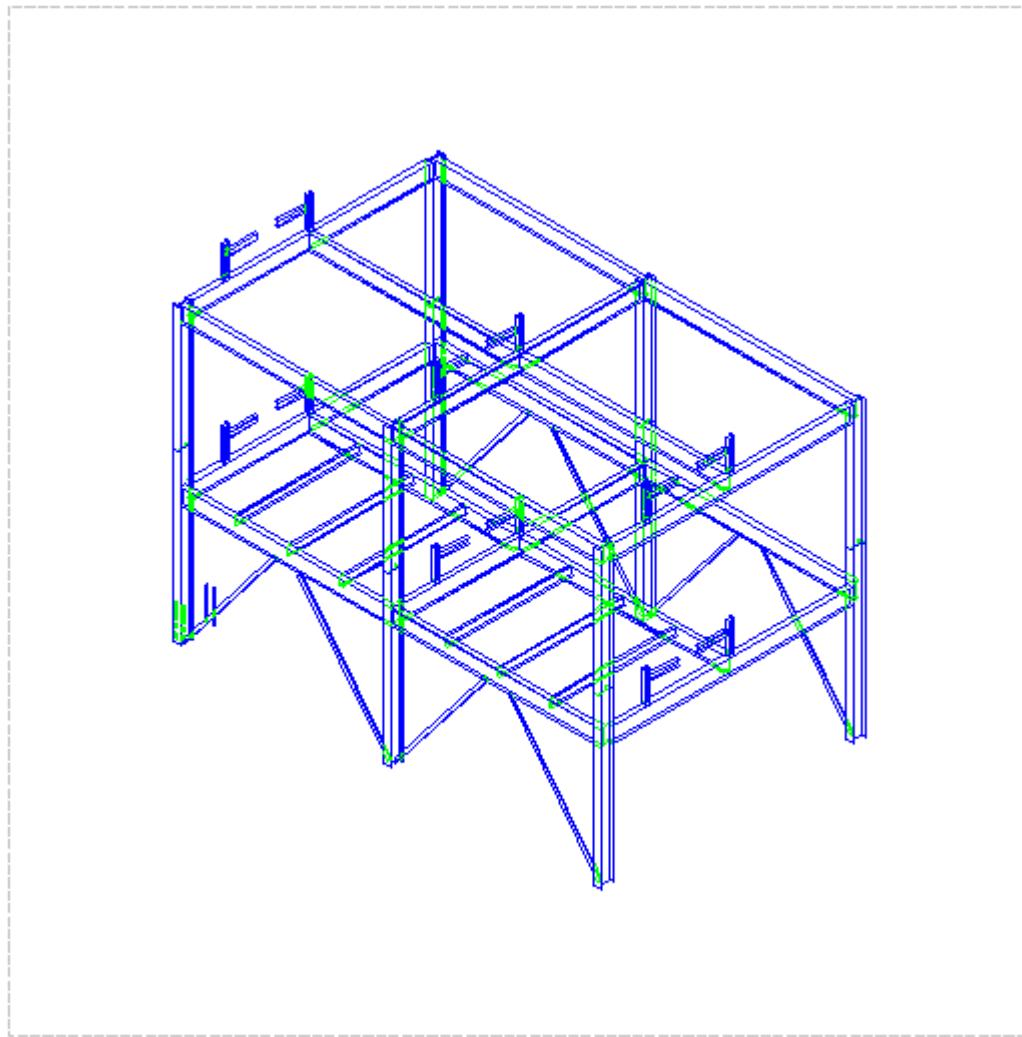
1. Switch to the Smart 3D window.
2. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
3. Ensure that the **View Style Type** is set to **Training**.
4. Double-click the **VHL Edges** view style.  
*The **View Style Properties** dialog box displays.*
5. Click the cell containing **Training – VHL Edges** in the **Graphic Rule** column, and then select **More** from the list.  
*The **Select Graphic Rule** dialog box displays.*
6. Double-click on the **Training – VHL Edges** graphic rule on the **Select Graphic Rule** dialog box.  
*The **Graphic Rule – VHL** dialog box displays.*
7. Select **Chain Green** in the **Hidden Line Style** list.
8. Click **OK** to complete the definition of the graphic rule and return control to the **Select Graphic Rule** dialog box.
9. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.
10. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
11. Click **Close** on the **Define View Style** dialog box.

## Update View with Hidden Lines

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View** from the list.

The updated view contents should resemble the example below. The hidden edges of the member objects now display with a chain green line style while the visible edges still display with a continuous blue line style.



## Show Hidden By Self Edges

**Objective:** Edit a view style so that it assigns a line style to hidden by self edges.

## Add Hidden By Self Lines to Graphic Rule

**Objective:** Modify the graphic rule to display hidden by self lines in a different line style than visible and hidden lines.

1. Switch to the Smart 3D window.

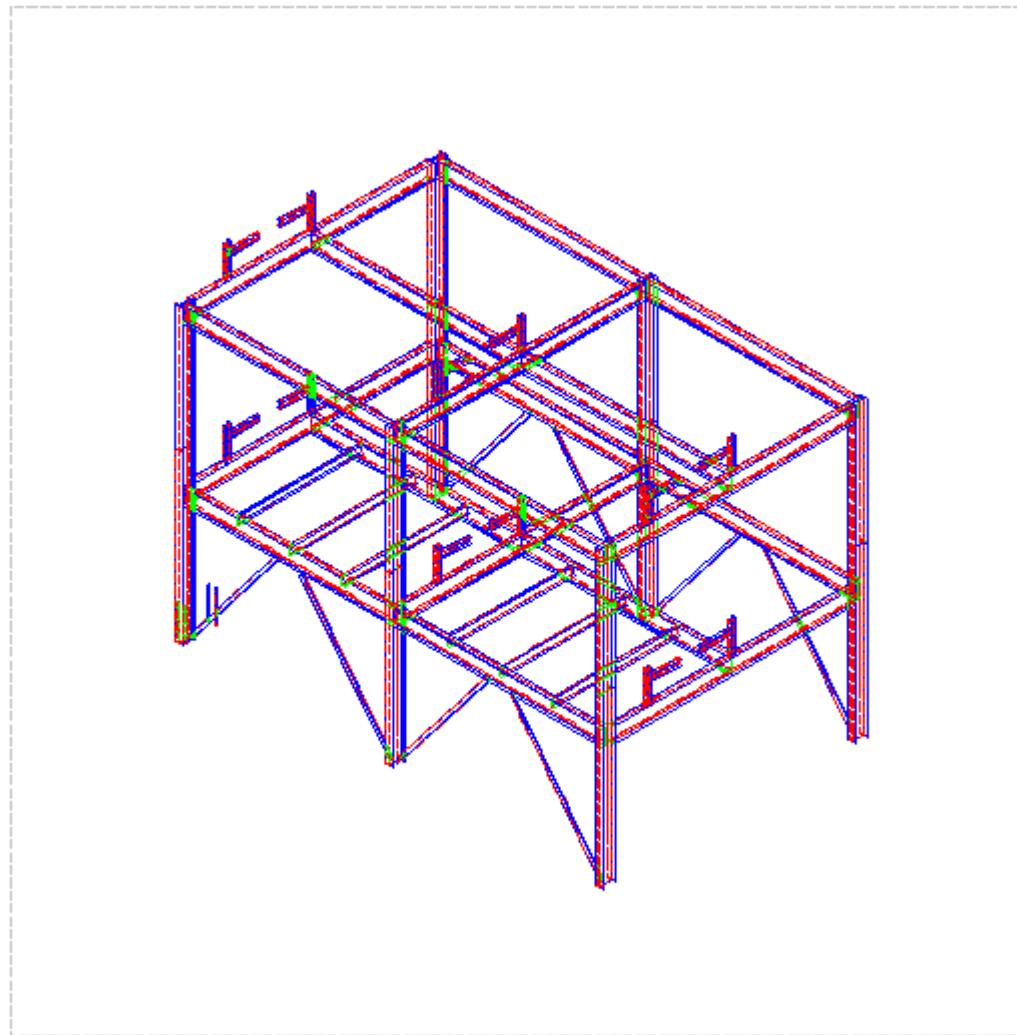
2. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
  3. Ensure that the **View Style Type** is set to **Training**.
  4. Double-click the **Training – VHL Edges** view style.  
*The **View Style Properties** dialog box displays.*
  5. Click the cell containing **Training – VHL Edges** in the **Graphic Rule** column, and then select **More** from the list.  
*The **Select Graphic Rule** dialog box displays.*
  6. Double-click on the **Training – VHL Edges** graphic rule on the **Select Graphic Rule** dialog box.  
*The **Graphic Rule – VHL** dialog box displays.*
  7. Select **Dashed Red** in the **Hidden By Self Line Style** list.
- NOTE** Edges that are hidden by surfaces belonging to the same object as the edge are considered “hidden by self” edges.
8. Click **OK** to complete the definition of the graphic rule and return control to the **Select Graphic Rule** dialog box.
  9. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.
  10. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
  11. Click **Close** on the **Define View Style** dialog box.

## Update View with Hidden By Self Lines

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View** from the list.

The updated view contents should resemble the example below. The hidden by self edges of the member objects now display with a dashed red line style while the visible and hidden edges still display with their respective line styles.



3. Select **File > Exit** to exit **SmartSketch Drawing Editor**. You do not need to save the drawing because the software automatically saved it during the update of the view.

## Show Piping Centerlines

**Objective:** Edit a view style so that it assigns centerlines on piping components and pipe.

## Create View Style with Pipe Centerlines

**Objective:** Edit a view style so that it contains a pipe object type filter with a new graphic rule that applies a line style to visible edges and enables centerlines.

1. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
2. Ensure that the **View Style Type** is set to **Training**.
3. Highlight the view style **Centerlines** in the dialog box, and click **Properties** .
- The **View Style Properties** dialog box displays.*
4. Click in the bottom cell in the **Filter Name** column, and select **More** from the list.  
*The **Select Filter** dialog box displays.*
5. Select **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Piping\Piping Parts\Pipes**.
6. Click **OK** on the **Select Filters** dialog box.  
*The selected filter is entered into the cell on the **View Style Properties** dialog box.*
7. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **More** from the list.  
*The **Select Graphic Rule** dialog box displays.*
8. Click **New** on the **Select Graphic Rule** dialog box.  
*The **Graphic Rule – VHL** dialog box displays.*
9. Type **Training - Route Centerlines** in the **Rule Name** box.
10. Select **Normal** in the **Visible Line Style** list.
11. Select **Yes** in the **Show Centerline** list.  
**NOTE** Notice that the **Aspect** list of the graphic shows **Simple Physical**. Centerlines for route objects are enabled on the Simple Physical aspect of the graphic rule. Later, you will see that equipment centerlines are enabled on the Centerline aspect of the graphic rule.
12. Select **Dashed** in the **Centerline Visible Line Style** list.
13. Click **OK** to complete the definition of the graphic rule and return control to the **Select Graphic Rule** dialog box.
14. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.
15. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
16. Click **Close** on the **Define View Style** dialog box.

## Apply View Style to Existing View

**Objective:** Use the view style created earlier in an existing view.

1. Right-click the **Centerlines and Layers** drawing under **Drawings\Configuration Labs\VHL Graphic Rules**.

2. Select **Edit**.

*The software opens the drawing in a **SmartSketch Drawing Editor** window.*

3. Right-click on the view boundary and select **Properties**.

*The **Drawing View Properties** dialog box displays when placement is complete.*

4. Select **More** in the **Style** list.

*The **Select View Style** dialog box displays.*

5. Select **Training\Centerlines**.

6. Click **OK** on the **Select View Style** dialog box.

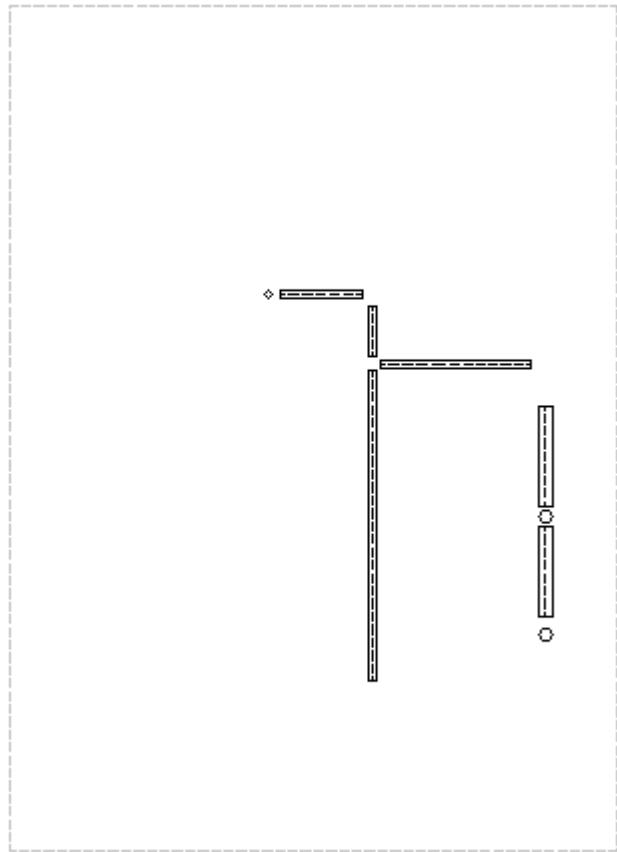
7. Click **OK** on the **Drawing View Properties** dialog box to complete the view definition.

## Update View with Pipe Centerlines

**Objective:** Update the view and review results.

1. Right-click the view boundary again and select **Update View**.

The updated view contents should appear similar to the example below. Notice that only pipe objects appear in the view and they display a centerline, as specified in the view style.



## Use Graphic Module to Show Piping Part Centerlines

**Objective:** Modify the graphic rule to display centerlines on both pipe and pipe components.

1. Switch to the Smart 3D window.
2. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
3. Ensure that the **View Style Type** is set to **Training**.
4. Double-click the **Centerlines** view style.  
*The **View Style Properties** dialog box displays.*
5. In the **Filter Name** column, click in the cell containing the pipes filter and remove the characters **\Pipes** at the end of the filter name.

The **Filter Name** cell displays **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Piping\Piping Parts**.

6. Click the cell containing **Training - Route Centerlines** in the **Graphic Rule** column, and then select **More** from the list.

The **Select Graphic Rule** dialog box displays.

7. Double-click on the **Training - Route Centerlines** graphic rule on the **Select Graphic Rule** dialog box.

The **Graphic Rule – VHL** dialog box displays.

8. Select **RteComponentsCtrLine.dll** in the **Graphic Module** list.

**NOTE** Graphic modules are used to process objects in ways that cannot be handled by a normal graphic rule. In this case, route components require the use of the RteComponentsCtrLine.dll module, or wrapper as it is sometimes called, to produce centerlines in drawings. The module analyzes the geometry of the component and the location of the ports to create the centerline. Pipes do not need this wrapper to get centerlines.

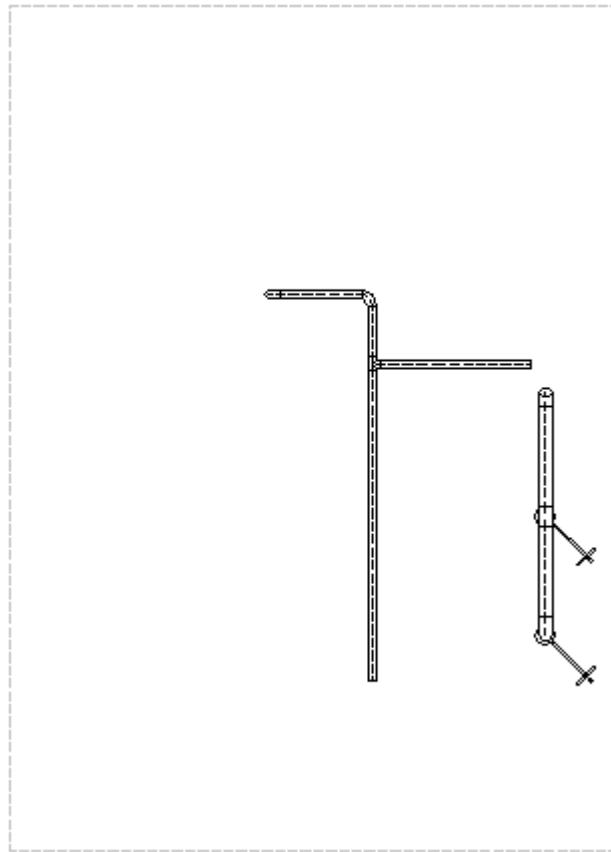
9. Click **OK** to complete the definition of the graphic rule and return control to the **Select Graphic Rule** dialog box.
10. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.
11. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
12. Click **Close** on the **Define View Style** dialog box.

## Update View with Piping Part Centerlines

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View** from the list.

The updated view contents should appear similar to the example below. Notice that all piping part objects appear in the view and they display a centerline, as specified in the view style.



## Show Equipment Centerlines

**Objective:** Create a view style with a new graphic rule that shows centerlines on equipment and nozzle objects.

## Modify View Style to Show Equipment Centerlines

**Objective:** Add equipment objects to a view style with a new graphic rule that is copied from a delivered one. The graphic rule applies a line style to visible edges and enables centerlines. A value for centerline extensions will also be assigned.

1. Switch to the Smart 3D window.
2. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
3. Ensure that the **View Style Type** is set to **Training**.

## VHL Graphic Rules

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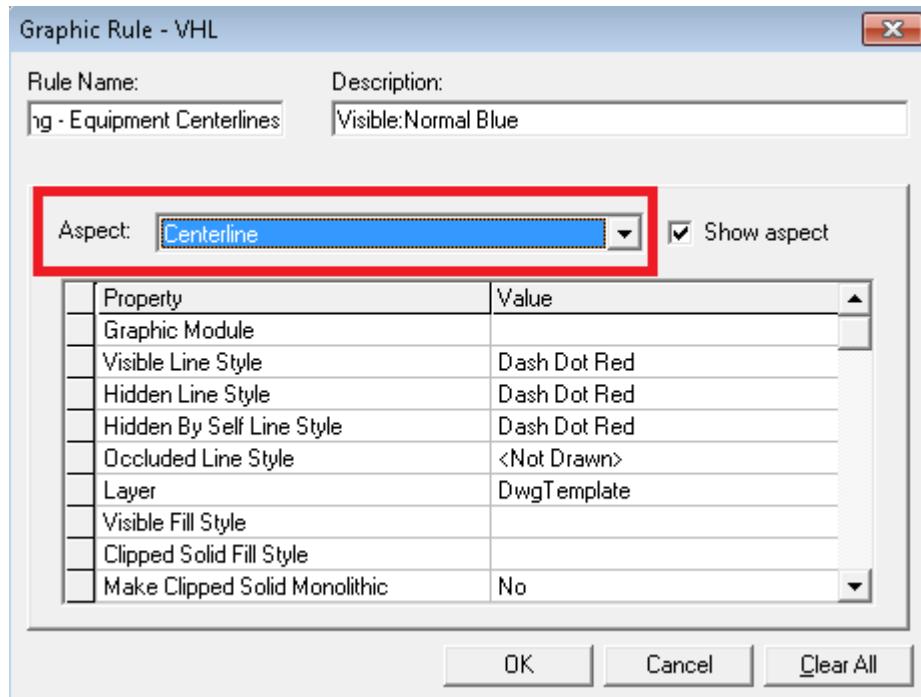
4. Double-click the **Centerlines** view style.  
*The View Style Properties dialog box displays.*
5. Click in the bottom cell in the **Filter Name** column, and select **More** from the list.  
*The Select Filter dialog box displays.*
6. Select **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Equipment and Furnishing\Equipment**.
7. Click **OK** on the **Select Filters** dialog box.  
*The selected filter is entered into the cell on the View Style Properties dialog box.*
8. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **More** from the list.  
*The Select Graphic Rule dialog box displays.*
9. Double-click the delivered graphic rule **Equipment \_Process Equipment** on the **Select Graphic Rule** dialog box.  
*The Graphic Rule – VHL dialog box displays.*

10. Highlight the contents of the **Rule Name** box and type **Training - Equipment Centerlines**.

**NOTES**

- The existing graphic rule is being renamed. When it comes time to save the rule, the software will give an option to save a new graphic rule or rename the delivered one. The lab has you save a new graphic rule.
- Notice that a visible line style is already assigned to the Simple Physical aspect.

11. Select **Centerline** from the **Aspect** list to display the graphic rule properties for that aspect.



**NOTES**

- Equipment centerlines are enabled on the Centerline aspect of the graphic rule. This is different from route centerlines which are enabled on the Simple Physical aspect of the graphic rule.
  - Notice that the graphic rule already assigns a line style of Dash Dot Red for centerlines.
12. Scroll down the list, click in the **Centerline Extension** box, and then drag the cursor over the contents of the box to highlight them.
13. Type **.06**, and then press TAB to overwrite the original value of 0.006 m with 0.060 m.
14. Click **OK** to complete the definition of the graphic rule.
15. Click **Yes** to create a new graphic rule and return control to the **Select Graphic Rule** dialog box.
- NOTE** Clicking **No** overwrites and renames the original graphic rule.
16. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.

## Modify View Style to Show Nozzle Centerlines

**Objective:** Add nozzle objects to the view style and use the same graphic rule as for the equipment.

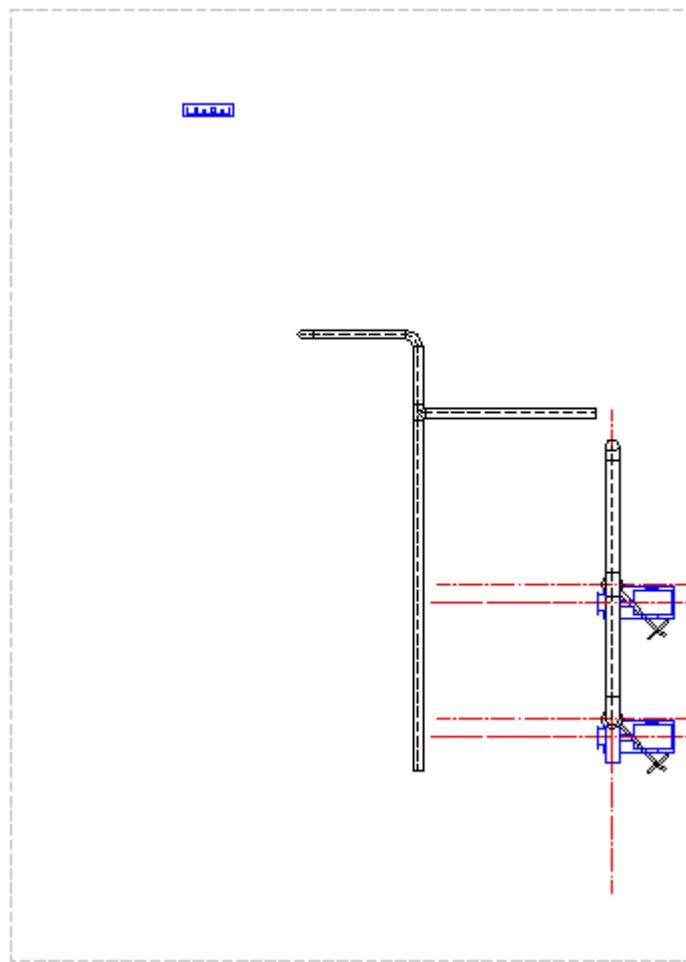
1. Click in the bottom cell in the **Filter Name** column, and select **More** from the list.  
*The Select Filter dialog box displays.*
2. Select **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Equipment and Furnishing\Pipe Nozzle**.
3. Click **OK** on the **Select Filters** dialog box.  
*The selected filter is entered into the cell on the View Style Properties dialog box.*
4. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **Training - Equipment Centerlines** from the list.  
*The graphic rule for nozzles is the same as for equipment.*
5. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
6. Click **Close** on the **Define View Style** dialog box.

## Update View with Equipment and Nozzle Centerlines

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View** from the list.

The updated view contents should appear similar to the example below. In addition to piping parts displaying centerlines, the equipment and nozzles display centerlines, as specified in the view style.



**NOTE** Notice that the electrical box does not have centerlines. The equipment centerlines are actually calculated during the update process based on certain geometries. The electrical box does not contain these geometries so no centerlines were placed for it. If centerlines are desired, they would need to be placed manually inside of the view.

## Use Layers

**Objective:** Create a view style that assigns layers to objects.

## Modify View Style to Assign Piping Layers

**Objective:** Modify the graphic rule for pipe components and assign them to the Piping layer in the view.

1. Switch to the Smart 3D window.
2. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
3. Ensure that the **View Style Type** is set to **Training**.
4. Double-click the **Centerlines** view style.  
*The **View Style Properties** dialog box displays.*
5. Click the cell containing **Training – Route Centerlines** in the **Graphic Rule** column, and then select **More** from the list.  
*The **Select Graphic Rule** dialog box displays.*
6. Double-click on the **Training – Route Centerlines** graphic rule on the **Select Graphic Rule** dialog box.  
*The **Graphic Rule – VHL** dialog box displays.*
7. Click in the **Layer** field, and then double-click the existing value to highlight it.
8. Type **Piping** in the **Layer** box.  
**NOTE** The software will place objects that are processed by this graphic rule on the Piping layer. If the layer does not already exist in the view, the software will create it.
9. Click **OK** to complete the definition of the graphic rule and return control to the **Select Graphic Rule** dialog box.
10. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.

## Modify View Style to Assign Equipment Layers

**Objective:** Modify the graphic rule for equipment and nozzles to assign them to the Equipment layer in the view.

1. Click one of the cells containing **Training - Equipment Centerlines** in the **Graphic Rule** column, and then select **More** from the list.  
*The **Select Graphic Rule** dialog box displays.*
2. Double-click on the **Training - Equipment Centerlines** graphic rule on the **Select Graphic Rule** dialog box.  
*The **Graphic Rule – VHL** dialog box displays.*
3. Click in the **Layer** field, and then double-click the existing value to highlight it.
4. Type **Equipment** in the **Layer** box.

**[NOTE]** The software will place objects that are processed by this graphic rule on the Equipment layer. If the layer does not already exist in the view, the software will create it.

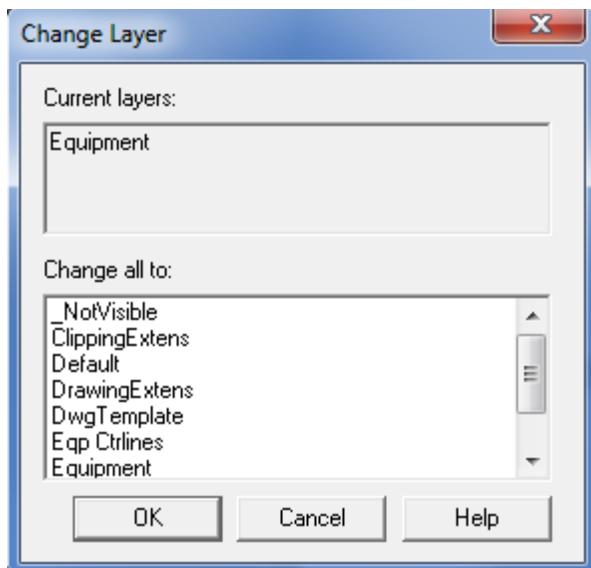
5. Select **Centerline** from the **Aspect** list to display the graphic rule properties for that aspect.
  6. Click in the **Layer** field, and then double-click the existing value to highlight it.
  7. Type **Eqp Ctrlines** in the **Layer** box.
- [NOTE]** The software will place objects that are processed by this graphic rule on the Eqp Ctrlines layer. If the layer does not already exist in the view, the software will create it.
8. Click **OK** to complete the definition of the graphic rule and return control to the **Select Graphic Rule** dialog box.
  9. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.
  10. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
  11. Click **Close** on the **Define View Style** dialog box.

## Update View with Layers for Piping and Equipment

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View** from the list.
3. When the update completes, double-click the view boundary.  
*The embedded document opens in another window.*
4. Select **Tools > Layers**.  
*The **Layers** ribbon displays.*
5. Select one of the pumps.
6. Click **Change Layer** on the **Layers** ribbon.

7. The **Change Layer** dialog box displays.



*Notice the current layer for the pump is Equipment, as specified in the view style.*

- Select **Cancel** on the **Change Layer** dialog box.
- Perform the same four steps above for piping parts and equipment center lines.  
*The layer for each object is as specified in the view style.*
- Select **File > Exit** to exit **SmartSketch Drawing Editor**. You do not need to save the drawing because the software automatically saved it during the update of the view.

## Use New Line Styles

**Objective:** Create a new line style and assign it to objects in the view style.

### Create New Line Style

**Objective:** Use the **Edit Border Template** command in Smart 3D to edit the **Styles.sha** and add another line style.

- Click **Tools > Edit Border Template**.  
*The **Select Template** dialog box displays.*
- Select the **Styles.sha** in the list.
- Click **OK** on the **Select Template** dialog box.

*SmartSketch Drawing Editor opens the file in the window.*

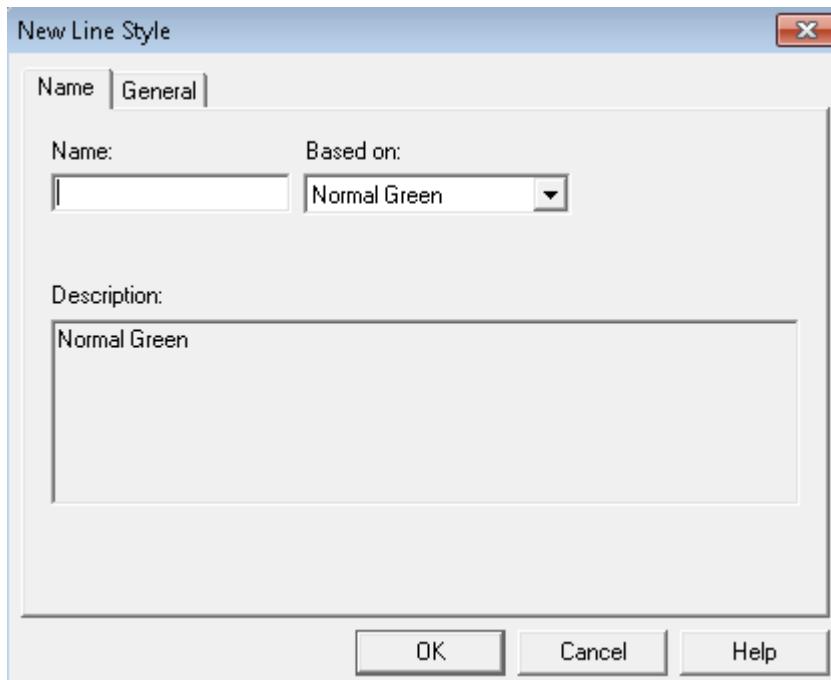
**TIP** Opening **SmartSketch Drawing Editor** from within Smart 3D does not require an additional license.

4. Click **Format > Style**.

The **Style** dialog box displays.

5. Select **Line** from the **Style type** list to display the line styles present in the file.
6. Scroll down the **Styles** list, and select **Normal Green** to display its description in the **Description** box.
7. Click **New**.

The **New Line Style** dialog box displays. The new line style is based on the selected line style **Normal Green**.



8. Type **Normal Dk Green** in the **Name** box.
9. On the **General** tab, select **Dk Green** from the **Color** list.
10. Click **OK** to complete the creation of the new line style.
11. Click **Apply**, and then click **Close**.
12. Click **File > Save** to save the changes to the **Styles.sha** file.
13. Click **File > Exit** to exit **SmartSketch Drawing Editor** and the **Edit Border Template** command.

## Modify Graphic Rule to Use New Line Style

**Objective:** Modify the graphic rule for equipment and nozzles to assign the new line style to visible edges.

1. In Smart 3D, click **Tools > Define View Style**.

The **Define View Style** dialog box displays.

2. Double-click the **Centerlines** view style.

The **View Style Properties** dialog box displays.

3. Click one of the cells containing **Training - Equipment Centerlines** in the **Graphic Rule** column, and then select **More** from the list.

The **Select Graphic Rule** dialog box displays.

4. Double-click on the **Training - Equipment Centerlines** graphic rule on the **Select Graphic Rule** dialog box.

The **Graphic Rule – VHL** dialog box displays.

5. Select **Normal Dk Green** in the **Visible Line Style** list.

6. Highlight the contents of **Description** and type **Visible:Normal Dk Green**.

7. Click **OK** to complete the definition of the graphic rule, and return control to the **Select Graphic Rule** dialog box.

8. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.

9. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.

10. Click **Close** on the **Define View Style** dialog box

## Update View with New Line Style for Equipment

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. In Smart 3D, select **File > Exit**, selecting Yes to save a session file to the desktop.

**NOTE** If Smart 3D is open while modifying the Styles.sha, it is necessary to exit Smart 3D and re-enter before the view style can be used during the update of a view or drawing.

2. Open up Smart 3D again by double-clicking the session file on the desktop.

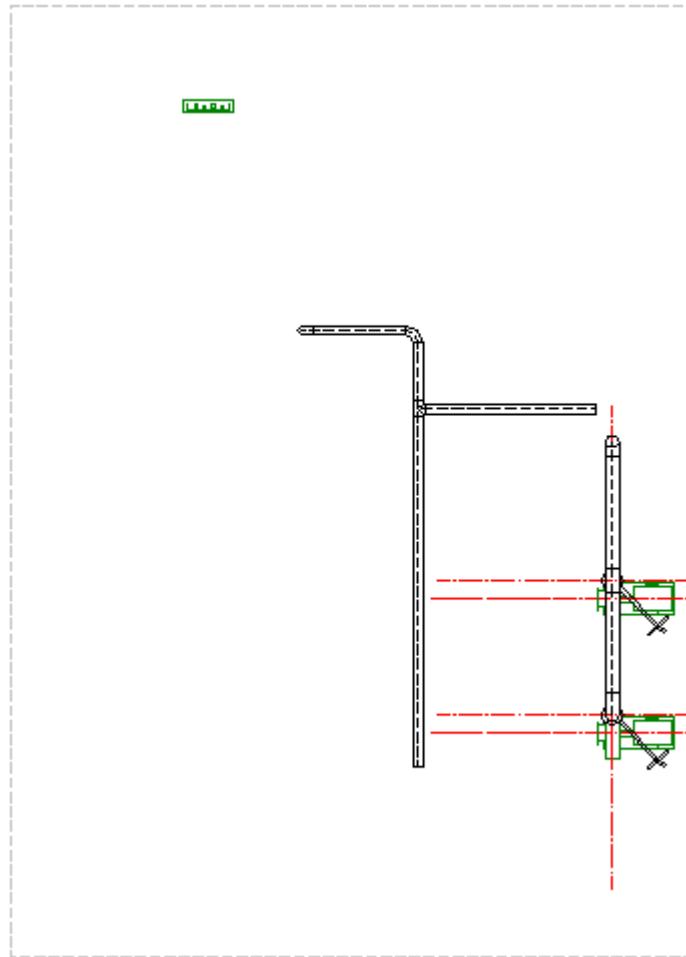
3. Right-click the **Centerlines and Layers** drawing under **Drawings\Configuration Labs\VHL Graphic Rules**.

4. Select **Edit**.

The software opens the drawing in a **SmartSketch Drawing Editor** window.

5. Right-click the view boundary, and then select **Update View**.

The updated view contents should resemble the example below. The equipment objects display in the colors specified by the new line style.



6. Select **File > Exit** to exit **SmartSketch Drawing Editor**. You do not need to save the drawing because the software automatically saved it during the update of the view.

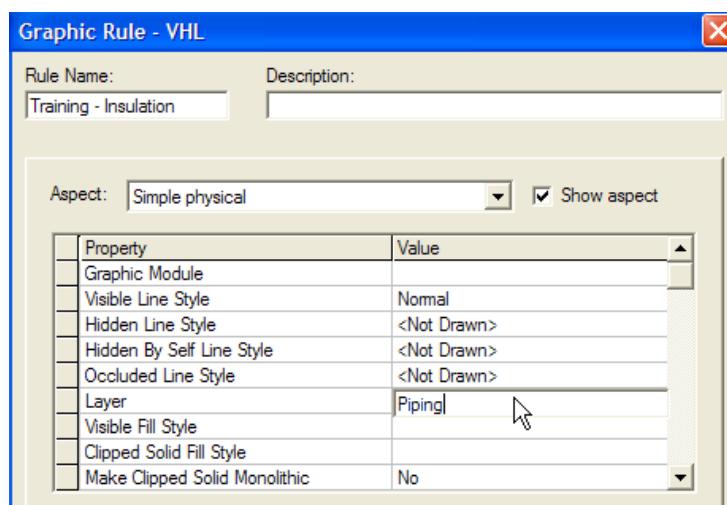
## Make Insulation Aspect Transparent

**Objective:** Edit a view style that makes pipe insulation transparent.

## Create View Style Using Make Transparent on Insulation Aspect

**Objective:** Edit a view style that makes the insulation aspect transparent for other aspects of the same object but not transparent to other objects.

1. In Smart 3D, click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
2. Ensure that the **View Style Type** is set to **Training**.
3. Highlight the **Make Insulation Transparent** view style, and click **Properties**.  
*The **View Style Properties** dialog box displays.*
4. Click in the bottom cell in the **Filter Name** column, and select **More** in the list.  
*The **Select Filter** dialog box displays.*
5. Select **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Piping\Piping Parts**.
6. Click **OK** on the **Select Filters** dialog box.  
*The selected filter is entered into the cell on the **View Style Properties** dialog box.*
7. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **More** in the list.  
*The **Select Graphic Rule** dialog box displays.*
8. Click **New**.  
*The **Graphic Rule - VHL** dialog box displays.*
9. Type **Training - Insulation** in the **Rule Name** box.
10. Select **Normal** in the **Visible Line Style** list.
11. Click in the **Layer** box, and then double-click the existing value to highlight it.
12. Type **Piping**.

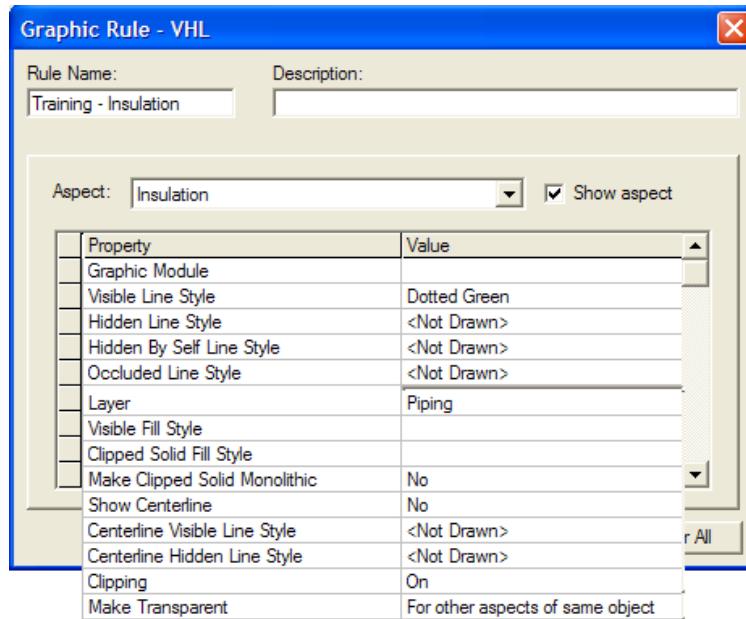


13. Select **Insulation** in the **Aspect** list to display the graphic rule properties for that aspect.
14. Select **Dotted Green** in the **Visible Line Style** list.
15. Click in the **Layer** box, and then double-click the existing value to highlight it.
16. Type **Piping** so that objects using this graphic rule are drawn on a layer with that name.

## VHL Graphic Rules

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17. Scroll down the list of properties, and set **Make Transparent** to **For other aspects of same object**.



18. Click **OK** on the **Graphic Rule – VHL** dialog box to complete the definition of the graphic rule, and return control to the **Select Graphic Rule** dialog box.
19. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.
20. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
21. Click **Close** on the **Define View Style** dialog box.

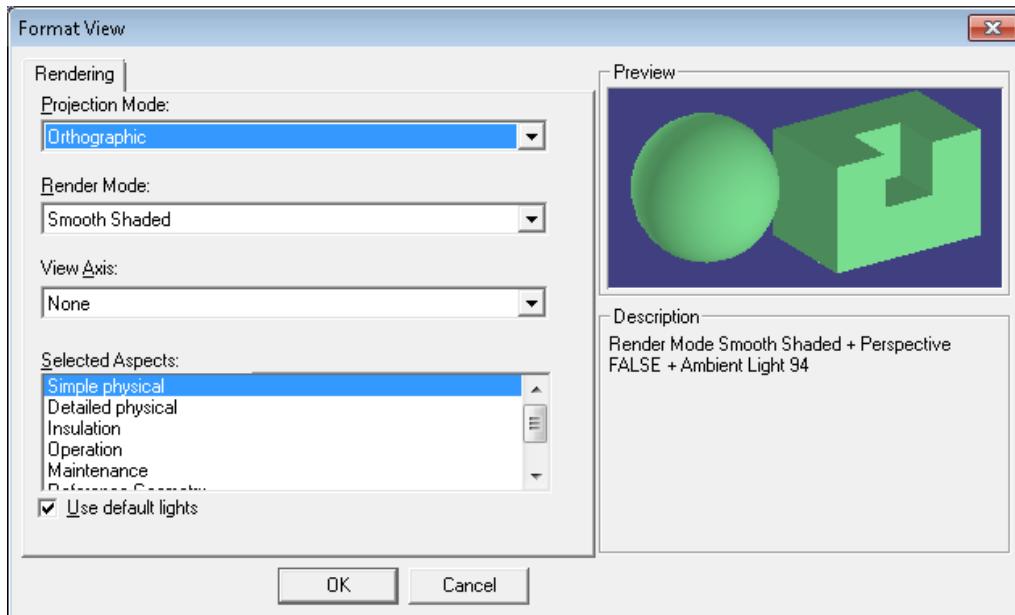
## Define Workspace

**Objective:** Configure the session for this exercise.

1. Click **Tasks > Space Management**.
2. Click **File > Define Workspace**.  
*The **Define Workspace** dialog box displays.*
3. Select **More** in the **Filter** list.  
*The **Select Filter** dialog box displays.*
4. On the **Select Filter** dialog box, expand the **Plant Filters\Drawings Configuration Filters\VHL Graphic Rules** folder.
5. Select the **U04 Workspace** filter and click **OK** on the **Select Filter** dialog box.  
*The **Filter** field populates.*
6. When the workspace query completes, click **Common Views** .

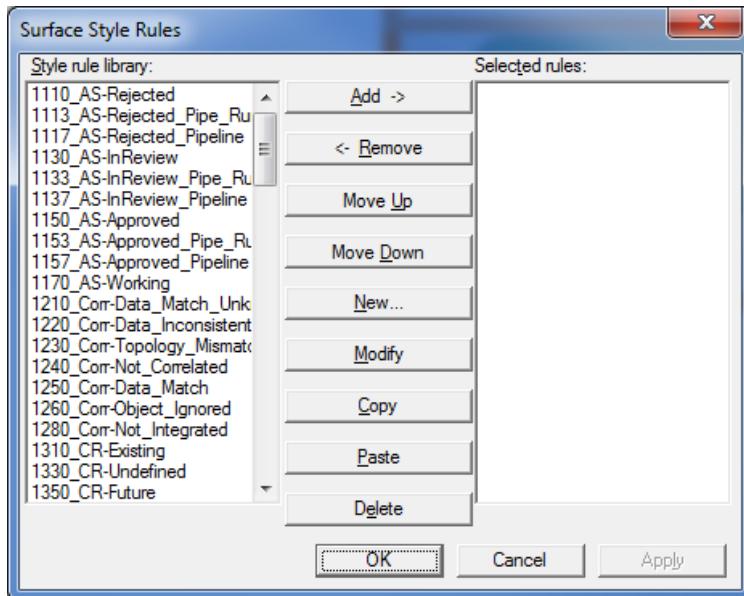
7. Select the node that changes the look direction to **Looking NE and Down**.
8. Ensure that **All** is selected from the **Locate Filter** list.  
**TIP** The list is located in the upper-left side of the Smart 3D window.
9. On the **Space** tab of the **Workspace Explorer**, right-click the root node and select **Hide**.  
*The volumes in the graphic window hide.*
10. Click **Fit** .
11. Click **Format > View**.

*The Format View dialog box displays.*



12. Select **Insulation** in the **Selected Aspects** list.  
*The software turns on the display of insulation in the graphic window.*
13. Click **OK**.
14. Click **Format > Surface Style Rules**.

The **Surface Style Rules** dialog box displays.



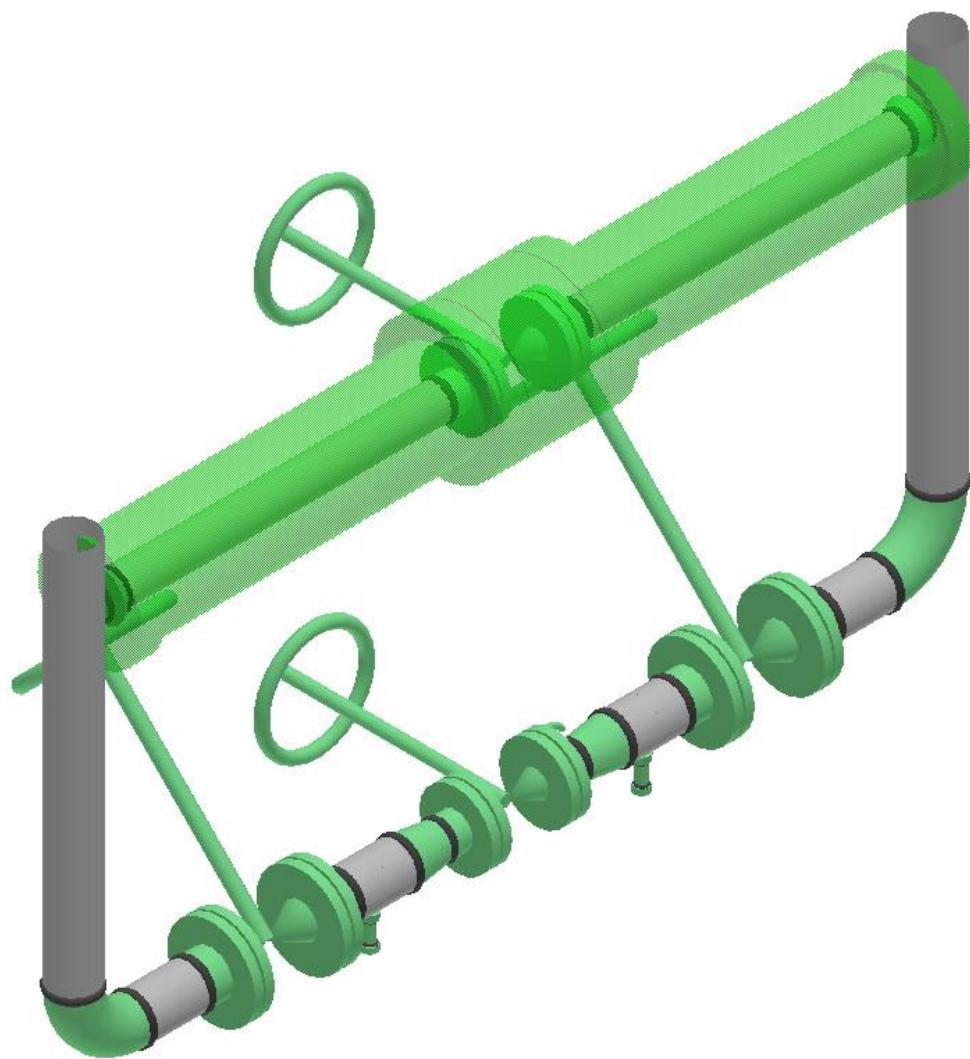
15. Scroll down the **Style rule library** list, and select **Piping Insulation – Delivered**.
16. Click **Add**.

*The software adds the selected style rule to the **Selected rules** list.*
17. Click **OK** to display insulation on pipe parts with a translucent green style.
18. On the **System** tab of the **Workspace Explorer**, expand the nodes **A2**, **U04**, **Process**, and **402-P**.
19. Press CTRL while selecting pipe runs **U04-3-P-0102-1C0031** and **U04-3-P-0104-1C0031**.

*The corresponding objects are also selected in the graphic window.*
20. Click **Clip by Object** .

*The software clips the graphic window contents to the range of the selected objects, and then fits the clipped contents to the window.*

21. Right-click twice, once to exit the **Clip by Object** command and the second time to clear the selection of objects.



## Create Snapshot View and Apply View Style

**Objective:** Create a snapshot view of the workspace contents.

1. Click **Tools > Snapshot View > All Objects**.  
*The **Snapshot View** ribbon displays.*
2. Select **More** in the **Drawing type** list.  
*The **Select Drawing Type** window displays.*
3. Select **Drawings\Configuration Labs\VHL Graphic Rules**, and then click **OK**.
4. Type **Transparent Insulation Iso View** in the **View Name** box.
5. Select **More** in the **View Style** box.

*The **Select View Style** dialog box displays.*

6. Select **Training\Make Insulation Transparent**, and then click **OK** on the **Select View Style** dialog box.
7. Select **More** in the **Space Folder** list  
*The **Select Space Folder** dialog box displays.*
8. Select the **Drawings Configuration Labs\VHL Graphic Rules** space folder, and then click **OK** in the **Select Space Folder** dialog box.
9. Click **Finish** to create the snapshot.
10. Press ESC to exit the **Snapshot View** command.

## Place Snapshot View

**Objective:** Place the snapshot view and use the view style created earlier.

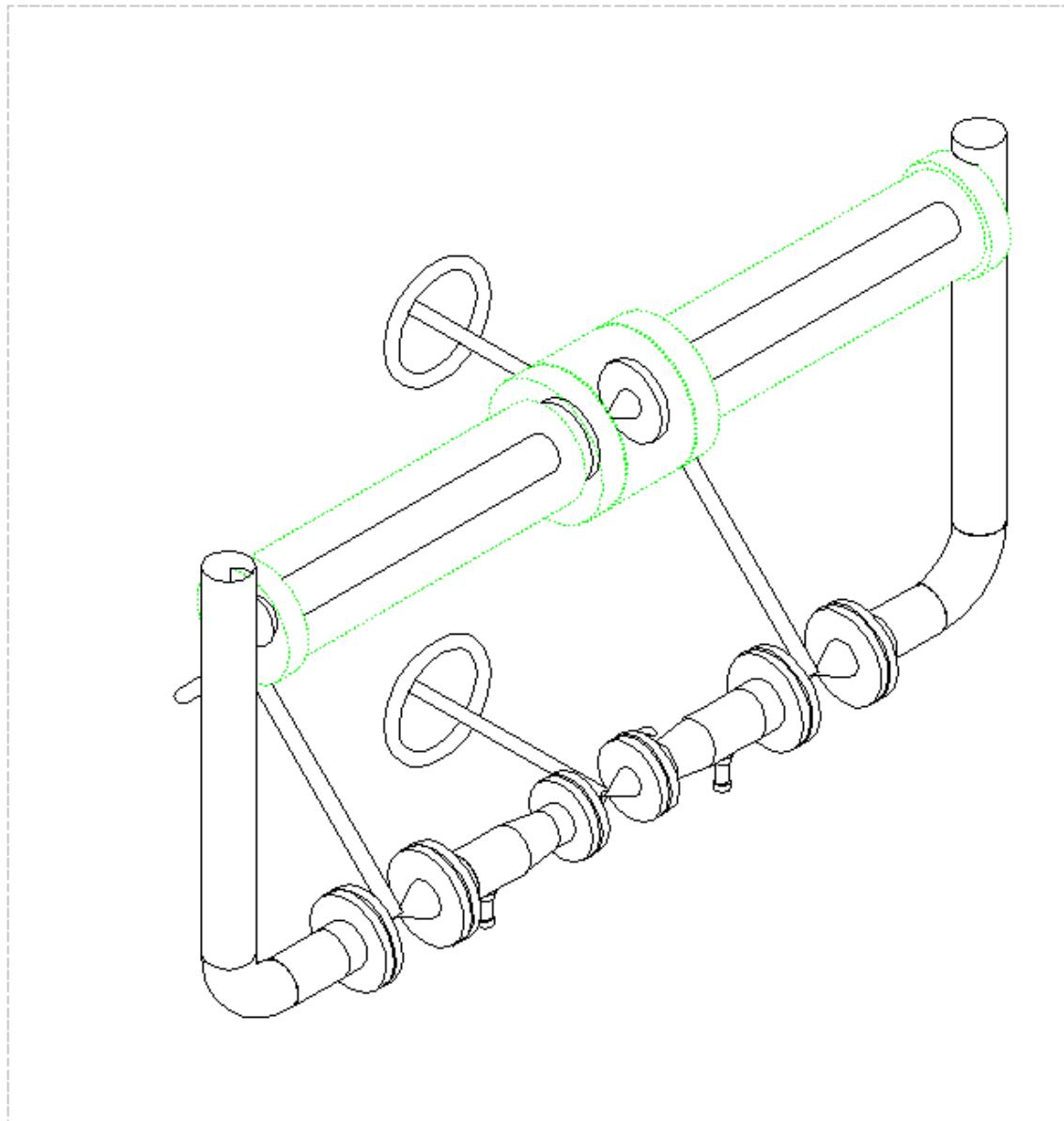
1. Click **Tools > Drawing Console**.  
*The **Drawing Console** window displays.*
2. Right-click the **Make Insulation Aspect Transparent** drawing under **Drawings\Configuration Labs\VHL Graphic Rules**.
3. Select **Edit**.  
*The software opens the drawing in a **SmartSketch Drawing Editor** window.*
4. Click **Place Snapshot View** .
5. Select **Metric Scales** from the **View Scale** list.  
*An additional list is added on the right end of the ribbon.*
6. In the newly-added list, select **1:5 mm** in the newly-added list.
7. Move the cursor over the drawing window. A graphic view appears attached to the cursor.
8. Click within the border area to place the view.

## Update View with Transparent Insulation

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Right-click the view boundary, and then select **Update View**.

The updated view contents should resemble the example below. Notice that the insulation is drawn with a dotted green style as specified in the graphic rule. Notice also that the insulation is transparent for other aspects of the same object as specified in the graphic rule but hides other objects.



2. Click **File > Exit** to exit **SmartSketch Drawing Editor**. It is not necessary to save the drawing because it was automatically saved during the update of the view.
3. In Smart 3D, click **Clear View Clipping**  to remove the boundary in the graphic window.

## Make Simple Physical Aspect Transparent

**Objective:** Create a view style that makes slabs transparent.

### Initially Create View Style with Non-Transparent Slabs

**Objective:** Create a view style that contains a slab object type filter with a new graphic rule that makes them visible and not transparent. The graphic rule will later be modified to make it transparent to other objects.

1. Click **Tasks > Drawings and Reports**.
2. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
3. Ensure that the **View Style Type** is set to **Training**.
4. Highlight the view style **Make Slab Transparent** and click **Properties**.  
*The **View Style Properties** dialog box displays.*
5. Click in the bottom cell in the **Filter Name** column, and select **More** in the list.  
*The **Select Filter** dialog box displays.*
6. Select **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Structure\Slabs**.
7. Click **OK** on the **Select Filters** dialog box.  
*The selected filter is entered into the cell on the **View Style Properties** dialog box.*
8. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **More** in the list.  
*The **Select Graphic Rule** dialog box displays.*
9. Click **New**.  
*The **Graphic Rule – VHL** dialog box displays.*
10. Type **Training – Transparent Slabs** in the **Rule Name** box.
11. Select **Normal Green** in the **Visible Line Style** list.
12. Click in the **Layer** box, and then double-click the existing value to highlight it.
13. Type **Slabs**.
14. Scroll down the list of properties, and notice that **Make Transparent** is set to **No**.  
**NOTE** For now, this graphic rule setting will remain No and initially draw the slab not transparent. After using it in a drawing this way, the graphic rule will be modified in a later section to make the slab transparent.
15. Click **OK** on the **Graphic Rule – VHL** dialog box to complete the definition of the graphic rule, and return control to the **Select Graphic Rule** dialog box.

16. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.
17. Click in the bottom cell in the **Filter Name** column, and select **More** from the list.  
*The **Select Filter** dialog box displays.*
18. Select **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Equipment and Furnishing\Equipment**.
19. Click **OK** on the **Select Filters** dialog box.  
*The selected filter is entered into the cell on the **View Style Properties** dialog box.*
20. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **More** from the list.  
*The **Select Graphic Rule** dialog box displays.*
21. Click **New**.  
*The **Graphic Rule – VHL** dialog box displays.*
22. Type **Training - Equipment** in the **Rule Name** box.
23. Select **Normal** in the **Visible Line Style** list.
24. Select **Dashed** in the **Hidden Line Style** list.
25. Click in the **Layer** box, and then double-click the existing value to highlight it.
26. Type **Equipment**.
27. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.
28. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
29. Click **Close** on the **Define View Style** dialog box.

## Define Workspace

**Objective:** Configure the session for this exercise.

1. Click **Tasks > Space Management**.
2. Click **File > Define Workspace**.  
*The **Define Workspace** dialog box displays.*
3. Select **More** in the **Filter** list.  
*The **Select Filter** dialog box displays.*
4. On the **Select Filter** dialog box, expand the **Plant Filters\Drawings Configuration Filters\VHL Graphic Rules** folder.
5. Select the **U03 Workspace** filter and click **OK** on the **Select Filter** dialog box.  
*The **Filter** field populates.*
6. Click **OK** on the **Define Workspace** dialog box.  
*The software populates the workspace with modeled objects.*

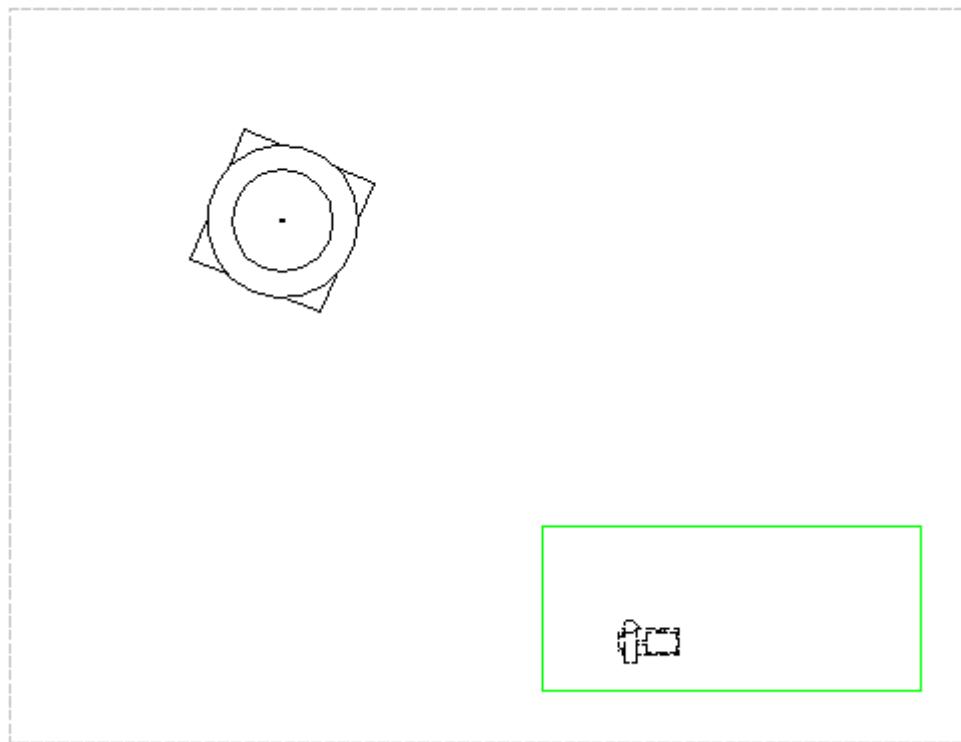
7. Click **Fit** .

## Update View with Non-Transparent Slabs

**Objective:** Update the view and review results.

1. Right-click the view boundary again and select **Update View**.

*The updated view contents should resemble the example below. The pump in the lower right of the view is drawn with its hidden line style because it is under the slab. In other words, the slab is not transparent to other objects in the view.*



## Modify the View Style to Make Slabs Transparent

**Objective:** Modify the graphic rule to make slabs transparent to other objects.

1. Click **Tasks > Drawings and Reports**.
2. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
3. Ensure that the **View Style Type** is set to **Training**.
4. Double-click **Make Slabs Transparent**.

*The View Style Properties dialog box displays.*

5. Click the cell containing **Training – Transparent Slabs** in the **Graphic Rule** column, and then select **More** from the list.

*The Select Graphic Rule dialog box displays.*

6. Double-click on the **Training - Transparent Slabs** graphic rule on the **Select Graphic Rule** dialog box.

*The Graphic Rule – VHL dialog box displays.*

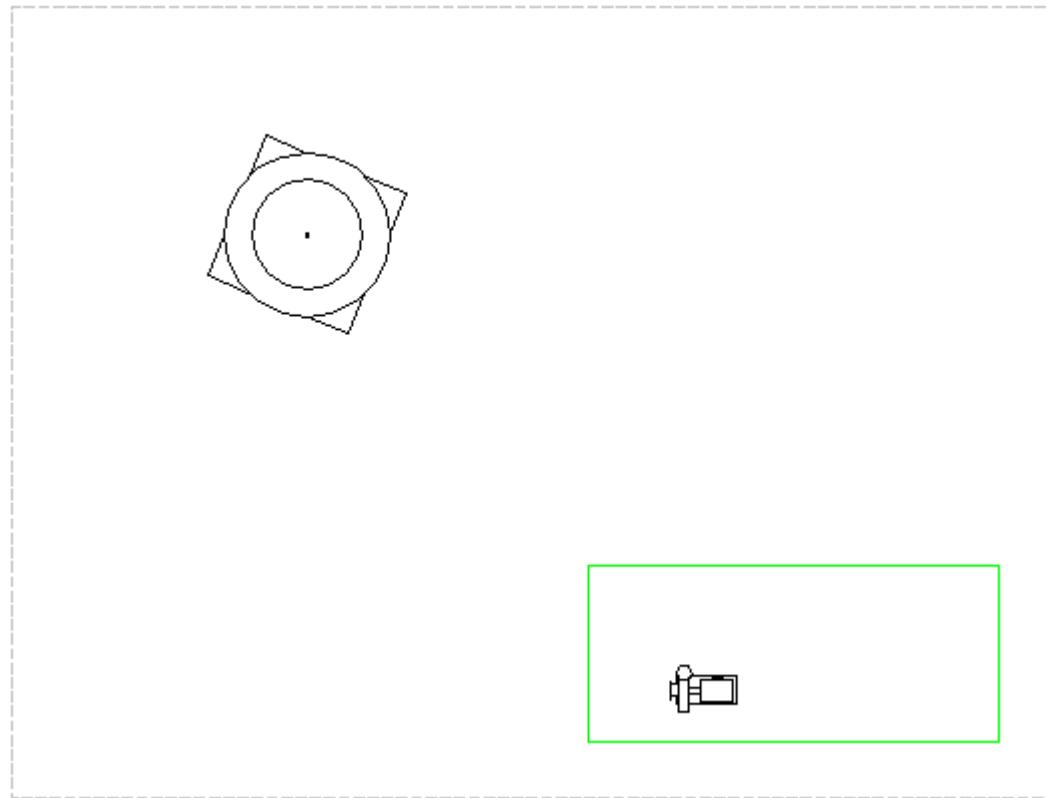
7. Scroll down the list of properties, and set **Make Transparent** to **For all objects in view**.
8. Click **OK** to complete the definition of the graphic rule and return control to the **Select Graphic Rule** dialog box.
9. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.
10. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
11. Click **Close** on the **Define View Style** dialog box.

## Update View with Transparent Slabs

**Objective:** Update the view and review results.

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary again and select **Update View**.

The updated view contents should resemble the example below. The pump in the lower right of the view is drawn with a visible line style even though it is under the slab. In other words, the slab is transparent to the pump.



## Add a Fill Style for Transparent Slabs to the Graphic Rule

**Objective:** Modify the graphic rule to display a fill on slabs.

1. In Smart 3D, click **Tasks > Drawings and Reports**.
2. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
3. Double-click **Make Slabs Transparent**.  
*The **View Style Properties** dialog box displays.*
4. Click the cell containing **Training – Transparent Slabs** in the **Graphic Rule** column, and then select **More** from the list.  
*The **Select Graphic Rule** dialog box displays.*
5. Double-click on the **Training - Transparent Slabs** graphic rule on the **Select Graphic Rule** dialog box.  
*The **Graphic Rule – VHL** dialog box displays.*
6. Select **Grid** in the **Visible Fill Style** list.

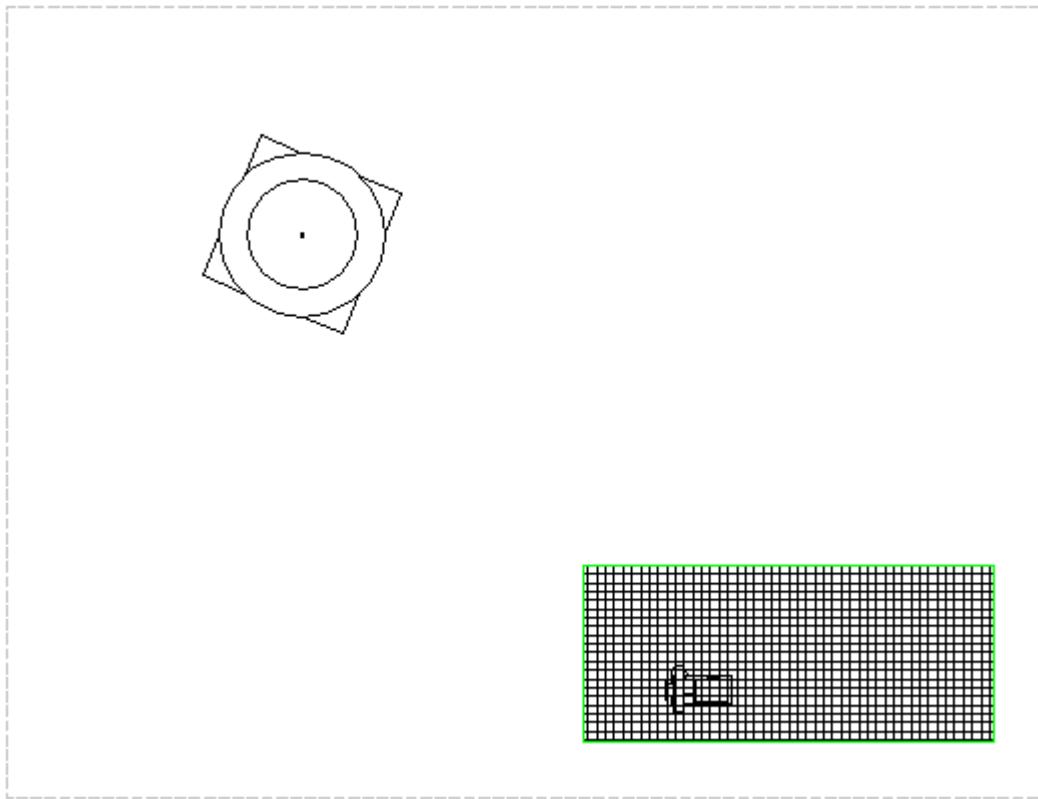
7. Click **OK** to complete the definition of the graphic rule and return control to the **Select Graphic Rule** dialog box.
8. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.
9. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.
10. Click **Close** on the **Define View Style** dialog box.

## Update View with Fill Style for Transparent Slabs

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the top left view boundary, and then select **Update View**.

*The updated view contents should resemble the example below. The pump appears to be seen through a grating.*



**NOTE** The grid fill in combination with the **Make Transparent** setting simulates the appearance of 'real world' objects underneath a grate.

3. Click **File > Exit** to exit **SmartSketch Drawing Editor**. It is not necessary to save the drawing because it was automatically saved during the update of the view.

## Use Clipped Solid Fill

**Objective:** Apply a fill to the clipped edges of solid objects.

**NOTES**

- Most objects in Smart 3D are not true solids. Instead, they are surfaces that surround a hollow interior. This is true for objects that would be typically considered solid, like slabs and members.
- When objects are clipped by a volume, the hollow insides of the objects are exposed in the drawing. Smart 3D drawings will treat certain object types as solid in that the clipped side of the object can be “capped” by a surface if the Clipped Solid Fill setting in the graphic rule is used.
  - An important point is that graphic rule fills have to be applied to object surfaces. If the software did not cap the clipped side of the object, then no fill could be applied.

## Add a Blank Fill Style to Styles.sha

**Objective:** Modify the Styles.sha file and create a new fill style with a blank fill color.

1. In Smart 3D, click **Tools > Edit Border Template**.

*The Select Template dialog box displays.*

2. Double-click **Styles.sha**.

*The SmartSketch Drawing Editor window displays.*

3. Click **Tools > Line Style Editor**.

*The Line Style Editor dialog box displays.*

**TIP** You may need to repeat this step a second time before the dialog box displays.

4. Expand the **Fill Styles** node to display the styles saved in the file.

5. Right-click the **Brick** fill style, and then select **Copy Style**.

*The Copy Fill Style dialog box displays.*

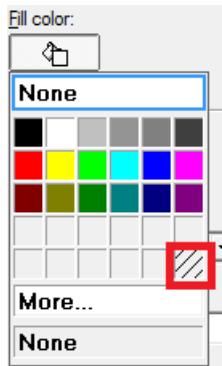
6. Type **Training – Brick** in the **Style name** box, and then click **OK**.

*The Fill Style Properties dialog box displays.*

7. Click **Fill color**.

*A color palette displays.*

8. Select **Blank** in the color palette.



**NOTE** The **Blank** option means that the fill will take on the same color as the background. A fill color of Blank has the effect of masking any elements that are behind the fill color. In this section of the lab, a fill pattern with a Blank fill color is applied to the clipped edges of objects. The purpose of applying the Blank fill is to mask any interior edges within the clipped object, making it appear solid.

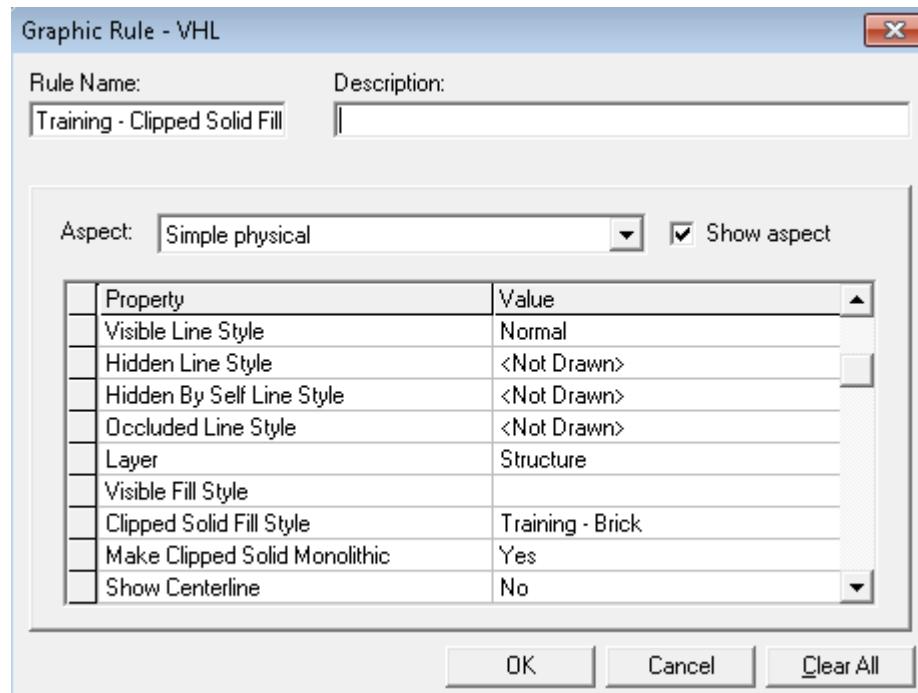
9. Click **OK**.
10. Click **File > Save** to save the changes to the **Styles.sha** file.
11. Click **File > Exit** to exit **SmartSketch Drawing Editor** and the **Edit Border Template** command.

## Edit View Style to have Solid Fill for Clipped Walls and Slabs

**Objective:** Create a new view style that applies the new fill to the clipped edges of walls and slabs.

1. In Smart 3D, click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
2. Ensure that the **View Style Type** is set to **Training**.
3. Highlight the **Clipped Solid Fill** view style.
4. Click **Properties**.  
*The **View Style Properties** dialog box displays.*
5. Click the last blank cell in the **Filter Name** column, and then select **More**.  
*The **Select Filter** dialog box displays.*
6. Select **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Structure**.
7. Click **OK** to enter the selected filter into the blank cell in the **View Style Properties** dialog box.
8. Click in the blank cell in the **Graphic Rule** column, and then select **More** in the list.  
*The **Select Graphic Rule** dialog box displays.*
9. Click **New**.  
*The **Graphic Rule – VHL** dialog box displays.*

10. Type **Training – Clipped Solid Fill** in the **Rule Name** box.
11. Select **Normal** in the **Visible Line Style** list.
12. Click in the **Layer** box, and then double-click the existing value to highlight it.
13. Type **Structure** in the box so that objects using this graphic rule are drawn on a layer with that name.
14. Select **Training – Brick** from the **Clipped Solid Fill Style** list.
15. Select **Yes** in the **Make Clipped Solid Monolithic** list.



### NOTES

- When **Make Clipped Solid Monolithic** is set to **Yes**, the clipped faces of the objects returned by the filter are temporarily merged into one object with no internal edges. The fill specified by the graphic rule is applied to the resulting contour
  - In this exercise, the filter is returning both slabs and walls that are adjacent to each other. The software will apply a single fill to both objects, making their clipped edges appear monolithic in the drawing.
16. Click **OK** to complete the definition of the graphic rule and return control to the **Select Graphic Rule** dialog box.
  17. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.
  18. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.

19. Click **Close** on the **Define View Style** dialog box.

## Define Workspace

**Objective:** Configure the session for this exercise.

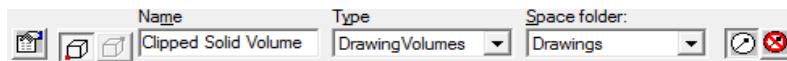
1. Click **Tasks > Space Management**.
2. In Smart 3D, select **File > Exit**, selecting Yes to save a session file to the desktop.  
**NOTE** If Smart 3D is open while modifying the Styles.sha, it is necessary to exit Smart 3D and re-enter before the view style can be used during the update of view or drawing.
3. Open up Smart 3D again by double-clicking the session file on the desktop.
4. Click **File > Define Workspace**.  
*The Define Workspace dialog box displays.*
5. Select **More** in the **Filter** list.  
*The Select Filter dialog box displays.*
6. On the **Select Filter** dialog box, expand the **Plant Filters\Drawings Configuration Filters\VHL Graphic Rules** folder.
7. Select the **U05 Workspace** filter and click **OK** on the **Select Filter** dialog box.  
*The Filter field populates.*
8. Click **OK** on the **Define Workspace** dialog box.  
*The software populates the workspace with modeled objects.*
9. Click **Fit** .
10. Click **Format > View**.  
*The Format View dialog box displays.*
11. Select **Shaded with Enhanced Edges** in the **Render Mode** list to enhance the display of edges in the graphic window.
12. Remove the highlighting of **Insulation** in the **Selected Aspects** list by clicking on it.  
*The software toggles off the display of insulation in the graphic window.*
13. Click **OK**.

## Create a Volume

**Objective:** Place a volume that will be used to create a clipped view.

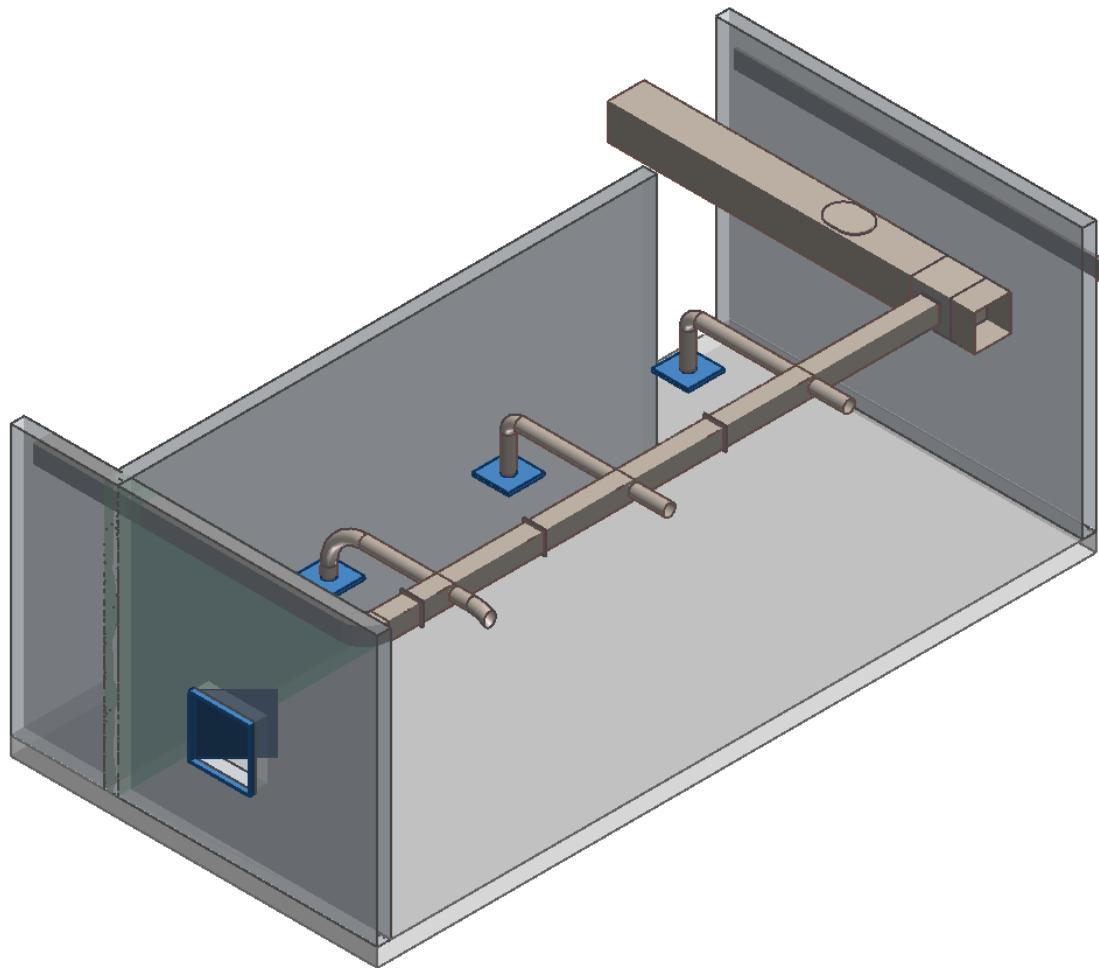
1. Click **Place Volume by Two Points**  on the vertical toolbar.  
*The Place Volume by Two Points ribbon displays*

2. Type **Clipped Solid Volume** in the **Name** box.



3. Ensure **DrawingVolumes** displays in the **Type** list.
4. Ensure **VHL Graphics Rules** displays in the **Space folder** list.
5. If **Pin Point** is not enabled, select **Tools > Pin Point**.
6. On the **Pin Point** ribbon, click in the **E** box, type **-10668**, and then press TAB.  
*The box displays the value -10668 mm and is locked.*
7. In the **N** box, type **-32004**, and then press TAB.  
*The box displays the value -32004 mm and is locked.*
8. In the **EI** box, type **0**, and then press TAB.  
*The box displays the value 0 mm in and is locked.*
9. Click anywhere in the graphic view to complete placement of the first point of the volume.
10. On the **Pin Point** ribbon, click in the **E** box, type **1524**, and then press TAB.  
*The box displays the value 1524 mm and is locked.*
11. Click in the **N** box, type **-25908**, and then press TAB.  
*The box displays the value -25908 mm and is locked.*
12. Click in the **EI** box, type **4877**, and then press TAB.  
*The box displays the value 4877 mm and is locked.*
13. Click anywhere in the graphic view to complete placement of the two-point volume.
14. Press ESC to exit the **Place Volume by Two Points** command.
15. Select the volume, **Clipped Solid Volume**, in the graphic window.
16. Click **Clip by Object** .
17. The software clips the graphic window contents to the range of the selected objects, and then fits the clipped contents to the window.
18. Press ESC to exit the **Clip by Object** command.
19. In the graphic window, right-click **Clipped Solid Volume**, and then select **Hide**.

The volume displays as shown in the example.



20. Click **Common Views** , and then select the node that changes the look direction to **Looking North**.

## Create Snapshot View and Apply View Style

**Objective:** Create a snapshot view of the workspace contents.

1. Click **Tools > Snapshot View > All Objects**.

*The Snapshot View ribbon displays.*

2. Select **More** in the **Drawing type** list.

*The Select Drawing Type window displays.*

3. Select **Drawings\Configuration Labs\VHL Graphic Rules**, and then click **OK**.

4. In the **View Name** box, type **Monolithic Clipped Fill**.

5. In the **View Style** box, select **More** in the list.

*The **Select View Style** dialog box displays.*

6. Select **Training\Clipped Solid Fill**, and then click **OK**.
7. Ensure **VHL Graphic Rules** displays in the **Space folder** list.
8. Click **Finish** to create the snapshot.
9. Press ESC to exit the **Snapshot View** command.

## Place Snapshot View

**Objective:** Place the snapshot view and use the view style created earlier.

1. Click **Tools > Drawing Console**.

*The **Drawing Console** window displays.*

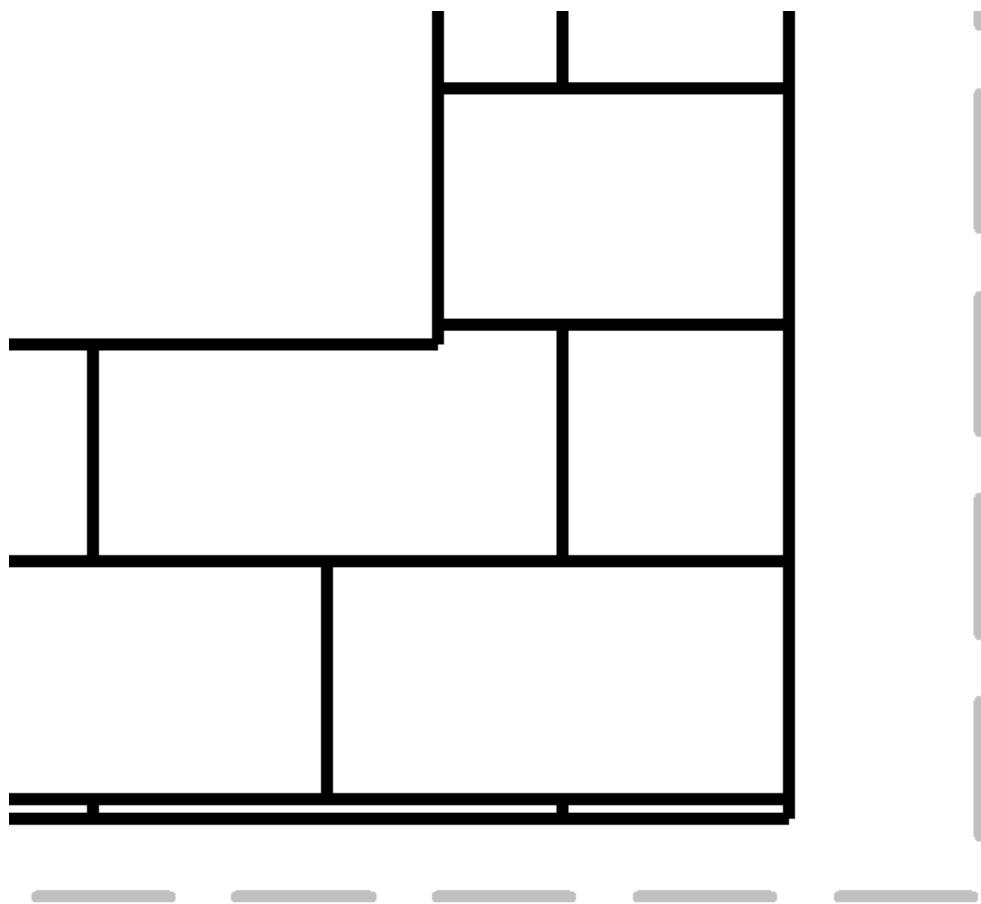
2. Right-click the **Clipped Monolithic Fill** drawing under **Drawings\Configuration Labs\VHL Graphic Rules**.
  3. Select **Edit**.
- The software opens the drawing in a **SmartSketch Drawing Editor** window.*
4. Click **Place Snapshot View** .
- The **Place Snapshot View** ribbon displays.*
5. Select **Metric Scales** in the **View Scale** list.
- The software adds an additional list to the right end of the ribbon.*
6. In the newly-added list, select **1:20 mm** as the scale.
  7. Move the cursor over the drawing window. A graphic view appears attached to the cursor.
  8. Click within the border area to place the view.

## Update View with Monolithic Fill for Slabs and Walls

**Objective:** Update the view that is using the modified view style and review the resulting changes.

1. Right-click the view boundary, and then select **Update View**.
2. When the update completes, select **Zoom Area** and drag a rectangle around the lower left corner of the view.

The updated view contents should resemble the example below. Even though the wall and slab are two separate objects, a continuous fill is applied to both, making them appear monolithic in the drawing.



3. Click **File > Exit** to exit **SmartSketch Drawing Editor**. Because the drawing was automatically saved when you updated the view, you do not need to re-save it.
4. In Smart 3D, click **Clear View Clipping** to remove the boundary in the graphic window.



# Advanced Graphic Rules

## Single Line Piping

### Objective

By the end of this session, you will be able to:

- Use graphic preparation rules to change the 3D graphics that are sent into VHL process.
- Draw elbows as arcs.
- Draw welds as lines to effectively eliminate them from the view.

## Define Workspace

**Objective:** Configure the session for this exercise.

1. Click **File > Define Workspace**.

*The **Define Workspace** dialog box displays.*

2. Select **More** from the **Filter** list.

*The **Select Filter** dialog box displays.*

3. On the **Select Filter** dialog box, expand the **Plant Filters\Drawings Configuration Filters\Advanced Graphic Rules** folder.

4. Select the **U01 Workspace** filter and click **OK** on the **Select Filter** dialog box.

*The **Filter** field populates.*

5. Click **OK** on the **Define Workspace** dialog box.

*The workspace populates with modeled objects.*

6. On the **Common Views** dialog box, select the face that changes the look direction to **Looking Down**.

7. When the workspace query completes, click **Fit**  on the **Common** toolbar.

*The software fits all the objects into the graphic window.*

## Define the View Style

1. Click **Tasks > Drawings and Reports**.

2. Click **Tools > Define View Style**.

The **Define View Style** dialog box displays.

3. Ensure that the **View Style Type** is set to **Training**.
4. Highlight the view style **Single Line Piping**, and click **Properties** .

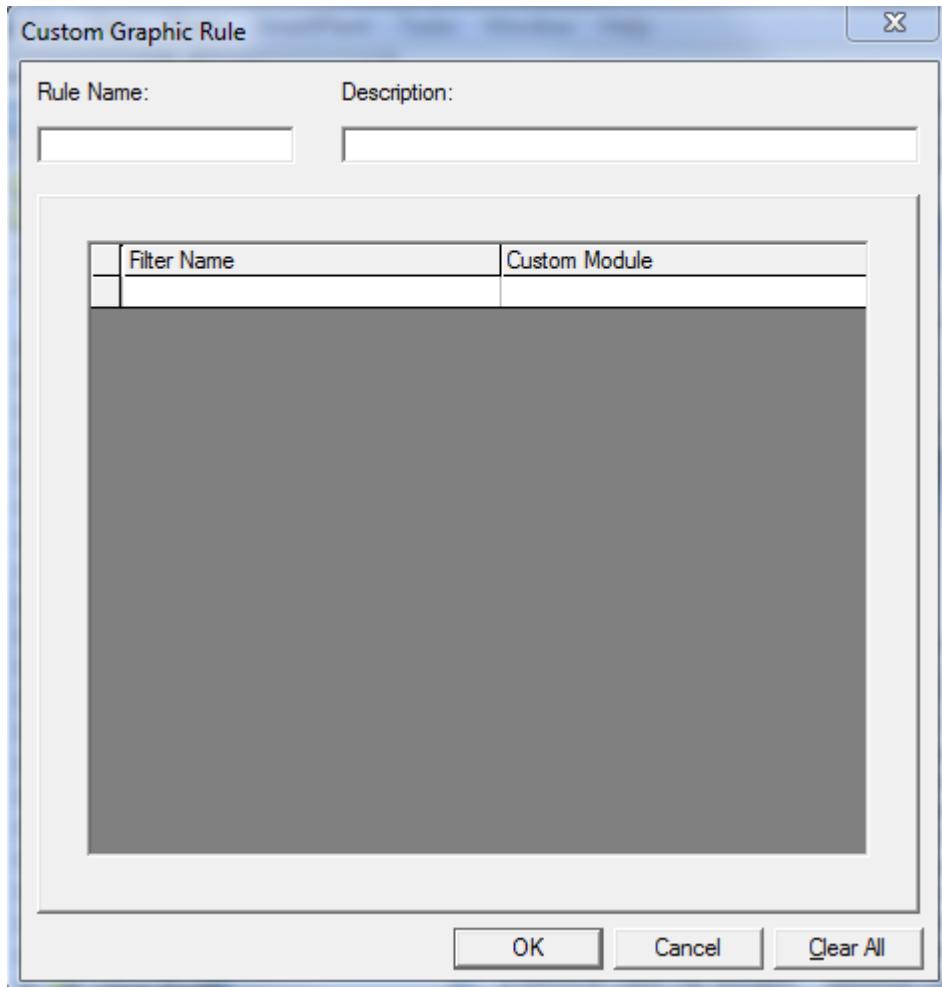
The **View Style Properties** dialog box displays.

5. Select **More** in the **Graphic Preparation Rule** list.

The **Select Graphic Preparation Rule** dialog box displays.

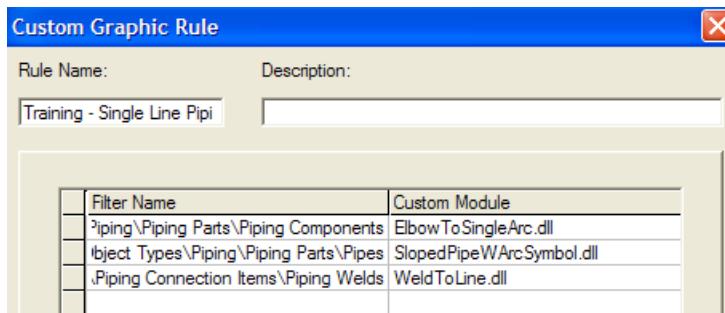
6. Click **New** on the **Select Graphic Preparation Rule** dialog box.

The **Custom Graphic Rule** dialog box displays.

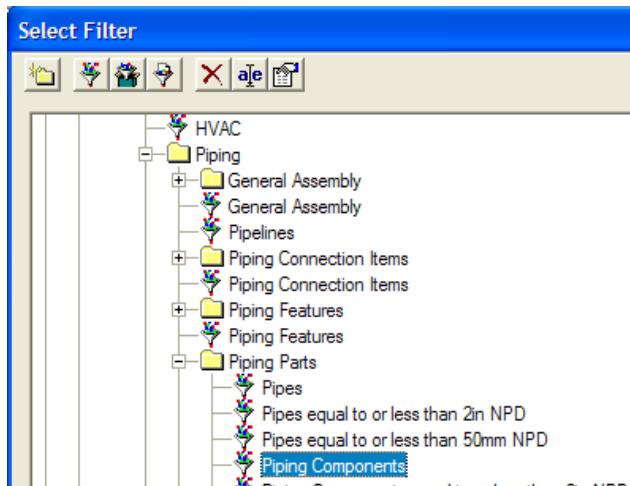


7. Type **Training – Single Line Piping** in the **Rule Name** box.

8. Select the filters and custom modules as shown in the example below.

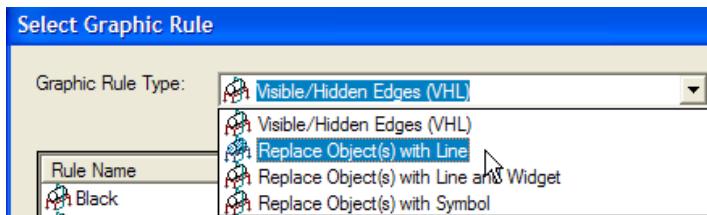


9. Click **OK** to define the rule.  
 10. Click on **Training – Single Line Piping** then **OK** to select the rule.  
 11. Select **More** in the **Filter Name** box on the first row, and then select **Piping Components**.



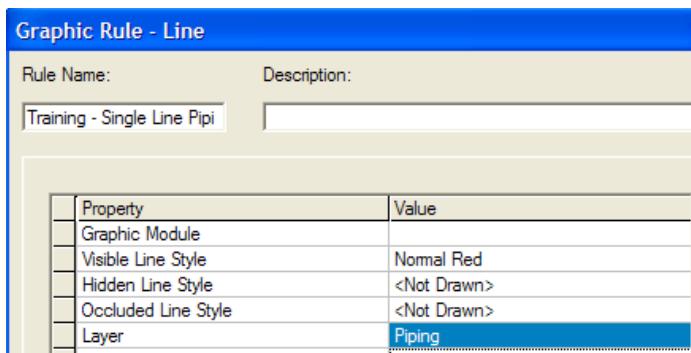
12. Click in the **Graphic Rule** box, and then select **More**.  
 13. Click **New** on the **Select Graphic Rule** dialog box.  
*The **Graphic Rule – VHL** dialog box displays.*  
 14. Type **Training – Piping Components** in the **Rule Name** box.  
 15. Select **Normal Red** in the **Visible Line Style** list.  
 16. Click in the **Layer** box, and then double-click the existing value to highlight it.  
 17. Type **Piping**.  
 18. Click **OK** on the **Graphic Rule – VHL** dialog box to complete the definition of the graphic rule, and return control to the **Select Graphic Rule** dialog box.  
 19. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.  
 20. Click in the **Filter Name** box in the second row, and add the **Pipes** filter.  
 21. Click in the **Graphic Rule** box, and then select **More**.  
*The **Select Graphic Rule** dialog box displays.*

22. Select **Replace Object(s) with Line** in the **Graphic Rule Type** list.



23. Click **New...** to create a new rule.

24. Type **Training – Single Line Piping** in the **Rule Name** box, define the rule as shown below, and then click **OK**.



25. Click **OK** on the **Graphic Rule – VHL** dialog box to complete the definition of the graphic rule, and return control to the **Select Graphic Rule** dialog box.

26. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.

27. Click **OK** on the **View Style Properties** dialog box to complete the definition of the view style.

28. Click **Close** on the **Define View Style** dialog box.

## Apply View Style to Existing View

**Objective:** Use the view style created earlier in an existing view.

1. Right-click the **Single Line Piping** drawing under **Drawings\Configuration Labs\Advanced Graphic Rules**.
2. Select **Edit**.  
*The software opens the drawing in a **SmartSketch Drawing Editor** window.*
3. Right-click on the view boundary and select **Properties**.  
*The **Drawing View Properties** dialog box displays when placement is complete.*
4. Select **More** in the **Style** list.  
*The **Select View Style** dialog box displays.*
5. Select **Training\Single Line Piping**.

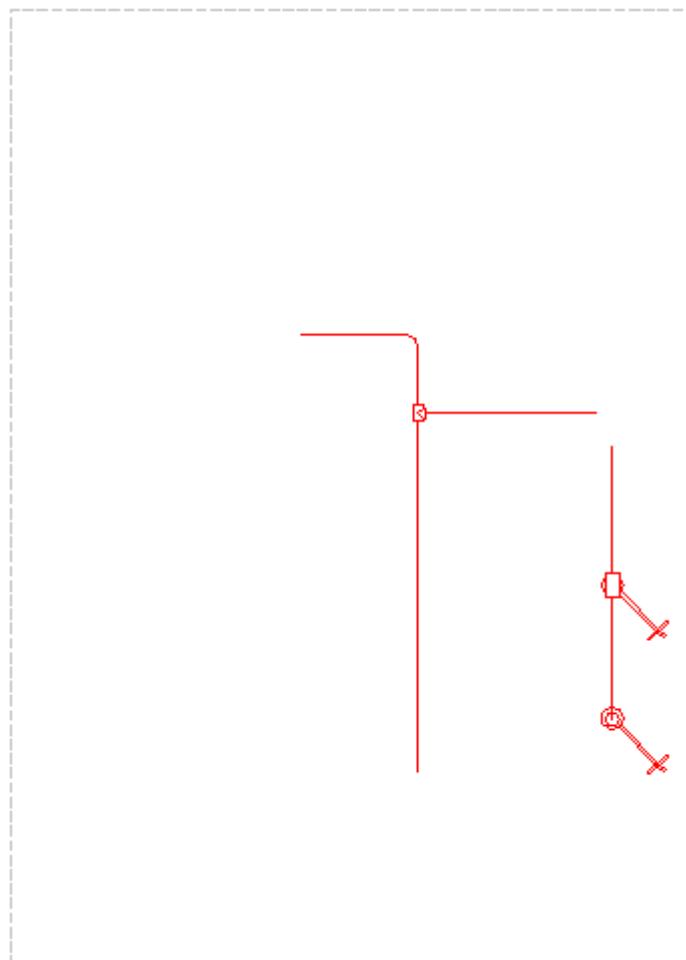
6. Click **OK** on the **Select View Style** dialog box.
7. Click **OK** on the **Drawing View Properties** dialog box to complete the view definition.

## Update View with Pipe Centerlines

**Objective:** Update the view and review results.

1. Right-click the view boundary select **Update View**.

*The updated view contents should resemble the example below. The pipes and elbows are represented as single lines.*



2. Exit **SmartSketch Drawing Editor**.

## Re-symbolize Structure Openings

### Objective

By the end of this session, you will be able to:

- Use the graphic preparation rule to re-symbolize structure openings.

## Define Workspace

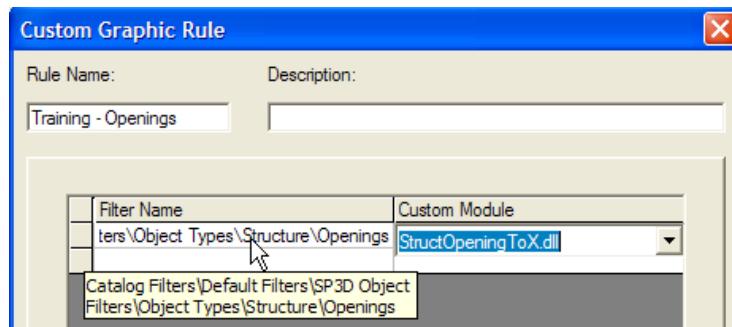
**Objective:** Configure the session for this exercise.

1. Click **Tasks > Space Management**.
2. Click **File > Define Workspace**.  
*The **Define Workspace** dialog box displays.*
3. Select **More** from the **Filter** list.  
*The **Select Filter** dialog box displays.*
4. On the **Select Filter** dialog box, expand the **Plant Filters\Drawings Configuration Filters\Advanced Graphic Rules** folder.
5. Select the **U03 Workspace** filter and click **OK** on the **Select Filter** dialog box.  
*The **Filter** field populates.*
6. Click **OK** on the **Define Workspace** dialog box.  
*The workspace populates with modeled objects.*
7. On the **Space** tab of the **Workspace Explorer**, right-click the root node and select **Hide**.  
*The volume in the graphic window hide.*
8. Click **Common Views** .
9. Select the node that changes the look direction to **Looking NE and Down**.
10. Click **Fit**  on the **Common** toolbar.  
*The software fits all the objects into the graphic window.*

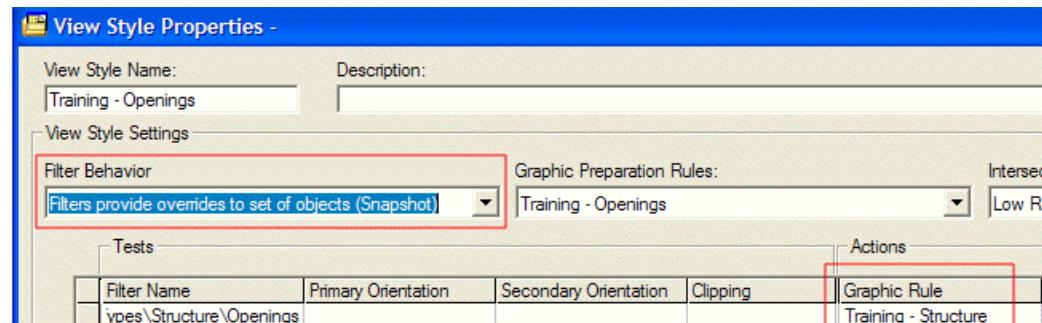
## Define the View Style

1. Click **Tasks > Drawings and Reports**.
2. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
3. Ensure that the **View Style Type** is set to **Training**.
4. Highlight the view style **Openings**, and click **Properties**.  
*The **View Style Properties** dialog box displays.*

5. Select **More** in the **Graphic Preparation Rule** list.  
*The **Select Graphic Preparation Rule** dialog box displays.*
6. Click **New** on the **Select Graphic Preparation Rule** dialog box.  
*The **Custom Graphic Rule** dialog box displays.*
7. Create the **Training - Openings** rule as shown below.



8. Click **OK** to save the rule.
9. Click on **Training – Openings** then **OK** to select the rule.
10. Click in the **Filter Name** box on the first row of the view style, and select the **Openings** filter.
11. Click in the **Graphic Rule** box, and then select **More**.
12. Click **New** on the **Select Graphic Rule** dialog box.  
*The **Graphic Rule – VHL** dialog box displays.*
13. Type **Training – Structure** in the **Rule Name** box.
14. Select **Normal Green** in the **Visible Line Style** list.
15. Click in the **Layer** box, and then double-click the existing value to highlight it.
16. Type **Structure**.
17. Click **OK** on the **Graphic Rule – VHL** dialog box to complete the definition of the graphic rule, and return control to the **Select Graphic Rule** dialog box.
18. Click **OK** on the **Select Graphic Rule** dialog box to populate the cell on the **View Style Properties** dialog box.
19. Select **Filters provide overrides to set of objects (Snapshot)** in the **Filter Behavior** list.



20. Click **OK** to save view style.

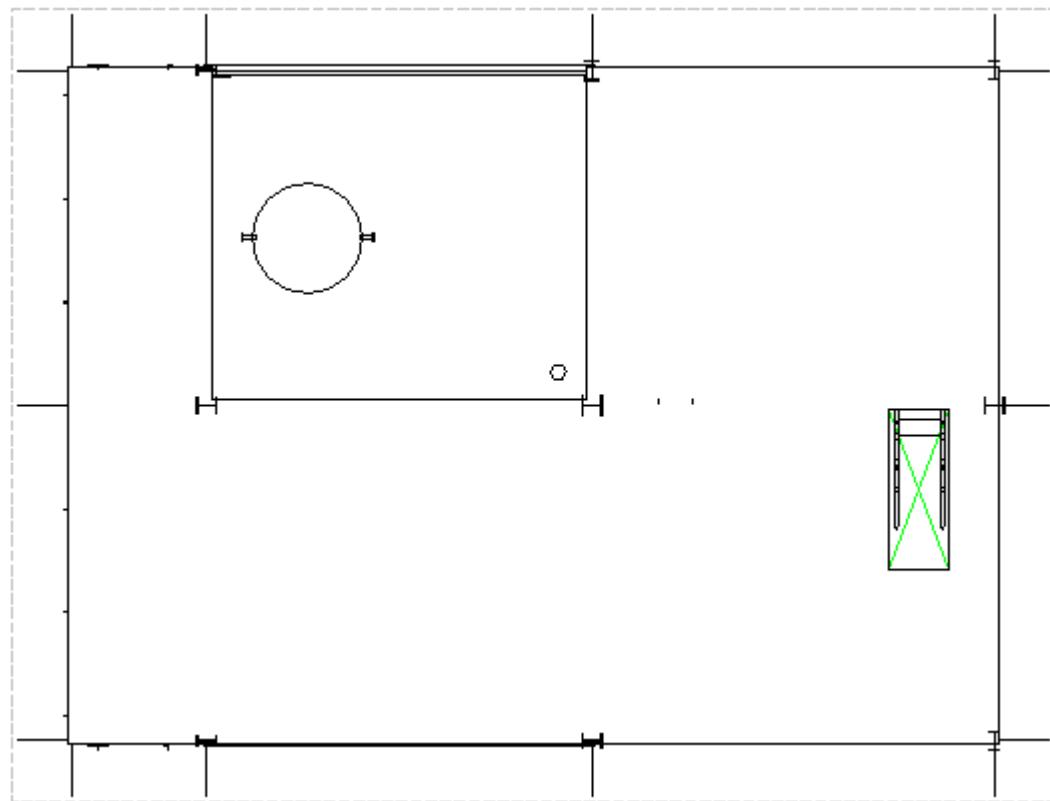
21. Click **Close** on the **Define View Style** dialog box.

## Update View

**Objective:** Update view to see results of your view style modifications.

1. Locate the drawing **Drawings\Configuration Labs\Advanced Graphic Rules\Re-symbolize Structure Openings**. Right click it and select **Edit**.
2. Right-click the view boundary once to exit the **Associate Objects to View** command.
3. Right-click the view boundary again and select **Update View**.

*The updated view contents should resemble the example below. The slab opening displays with an X symbol.*



## Turn Clipping Off

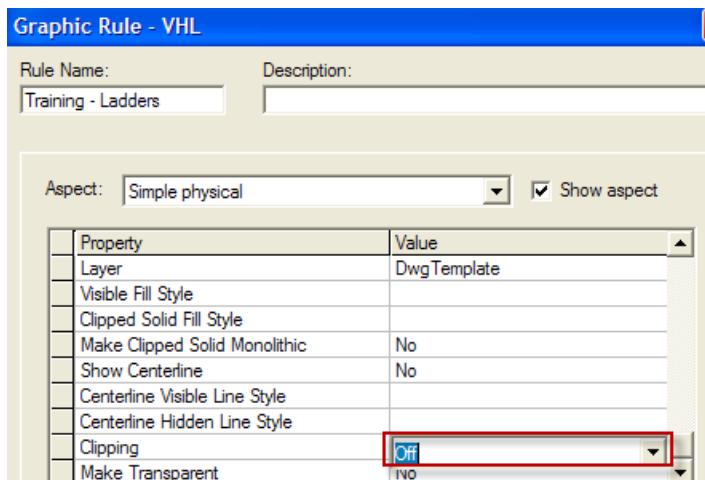
### Objective

By the end of this session, you will be able to:

- Use the **Clipping** property to draw clipped objects as if they were not clipped.

## Define the View Style

1. Click **Tasks > Drawings and Reports**.
2. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
3. Ensure that the **View Style Type** is set to **Training**.
4. Double-click the **Openings** view style.  
*The **View Style Properties** dialog box displays.*
5. Click the last blank cell in the **Filter Name** column, and then select **More**.  
*The **Select Filter** dialog box displays.*
6. Select **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Structure\Ladders**.
7. Click **OK** to enter the selected filter into the blank cell in the **View Style Properties** dialog box.
8. Click in the blank cell in the **Graphic Rule** column, and then select **More** in the list.  
*The **Select Graphic Rule** dialog box displays.*
9. Select **Training – Structure**, and then click **Properties**.  
*The **Graphic Rule - VHL** dialog box displays.*
10. In the **Rule Name** box, type **Training – Ladders** to change the name of the rule.
11. Scroll down to the bottom of the **Property** list, and set **Clipping** to **Off**.



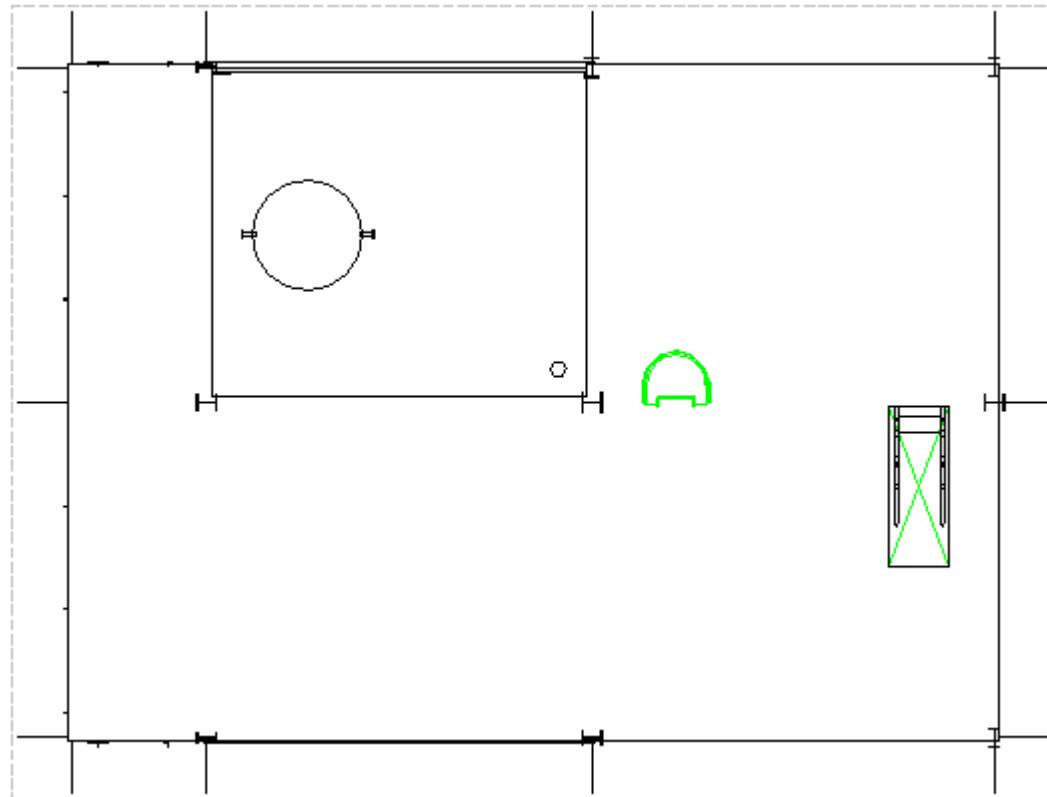
12. Click **OK** to save the rule, and then click **Yes** to create a new rule.
13. Click **OK** to apply the new graphic rule to the style.
14. Click **OK** to save the view style.

15. Click **Close** on the **Define View Style** dialog box.

## Test the View Style

1. Switch to **SmartSketch Drawing Editor** and update the view.

*The ladder is now shown in full even though only part of it is in the volume.*



2. Exit **SmartSketch Drawing Editor**.

## L A B 5

# View, KeyPlan, Matchline and North Arrow Rules

## View Rules

### Objective

By the end of this session, you will be able to:

- Copy a delivered view rule.
- Modify the view rule to change line symbology for cutting planes.

## Define Workspace

**Objective:** Configure the session for this exercise.

1. Click **Tasks > Space Management**.
2. Click **File > Define Workspace**.  
*The **Define Workspace** dialog box displays.*
3. Select **More** from the **Filter** list.  
*The **Select Filter** dialog box displays.*
4. On the **Select Filter** dialog box, expand the **Plant Filters\Drawings Configuration Filters\View and Keyplan Rules** folder.
5. Select the **U01 Workspace** filter and click **OK** on the **Select Filter** dialog box.  
*The **Filter** field populates.*
6. Click **OK** on the **Define Workspace** dialog box.  
*The workspace populates with modeled objects.*
7. On the **Common Views** dialog box, select the face that changes the look direction to **Looking Down**.
8. When the workspace query completes, click **Fit**  on the **Common** toolbar.  
*The software fits all the objects into the graphic window.*

## Define the View Style

1. Click **Tasks > Drawings and Reports**.
2. Click **Tools > Define View Style**.

*The Define View Style dialog box displays.*

3. Ensure that the **View Style Type** is set to **Training**.
4. Highlight the view style **View Rules**, and click **Properties** .

*The View Style Properties dialog box displays.*

5. Click in the bottom cell in the **Filter Name** column, and select **More** from the list.

*The Select Filter dialog box displays.*

6. Select **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Structure\Members**.
7. Click **OK** on the **Select Filters** dialog box.

*The selected filter is entered into the cell on the View Style Properties dialog box.*
8. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **Civil\_Beams** from the list.
9. In the **View Rule** field, select **More**.
10. Select the **Type1** rule and edit properties.
11. Name the rule **Training – View**.
12. Change the **Section Cutting Plane Style** to **2Dash Dot Blue**.
13. Click **OK** to save the rule.
14. Click **Yes** to create a new rule.
15. Click **OK** to select the rule for the view style.
16. Click **OK** to save the view style.
17. Click **Close** on the **Define View Style** dialog box.

## Test the View Style

1. Right-click the **View Rules** drawing under **Drawings\Configuration Labs\View and Keyplan Rules**.
2. Select **Edit**.

*The software opens the drawing in a SmartSketch Drawing Editor window.*

3. Edit the view properties, and set the view style to **Training\View Rules**.
4. Update the view.

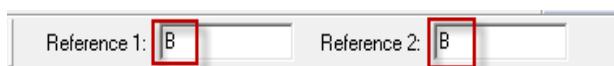
*A view label now appears below the view showing the view orientation and the scale, as specified in the view rule.*



Plan  
SCALE: 1:50 mm

5. Start the **Cutting Plane** command.

6. Type **B** for reference 1 and 2.



7. Select the view boundary.
8. Place a single segment cutting plane somewhere in the view.
9. Check the **Update Section** box in the ribbon bar.

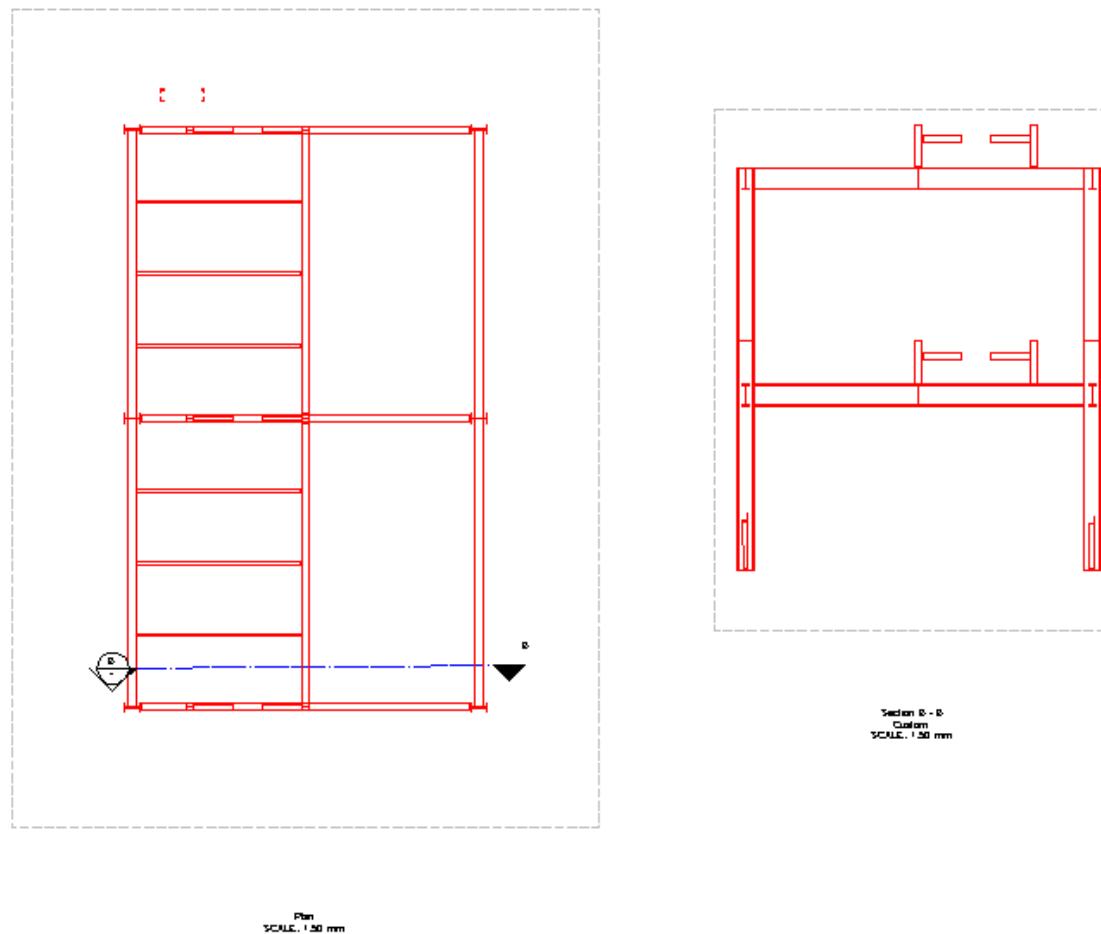


*A view appears on your cursor*

10. Click once in an empty area of the sheet to place the view.

*The view begins to update.*

The software displays the section mark in the 2Dash Dot Blue line style with arrows. The section view also has a view label. All of this is specified in the view rule.



11. Exit **SmartSketch Drawing Editor**.

## Key Plan Rules

### Objective

By the end of this session, you will be able to:

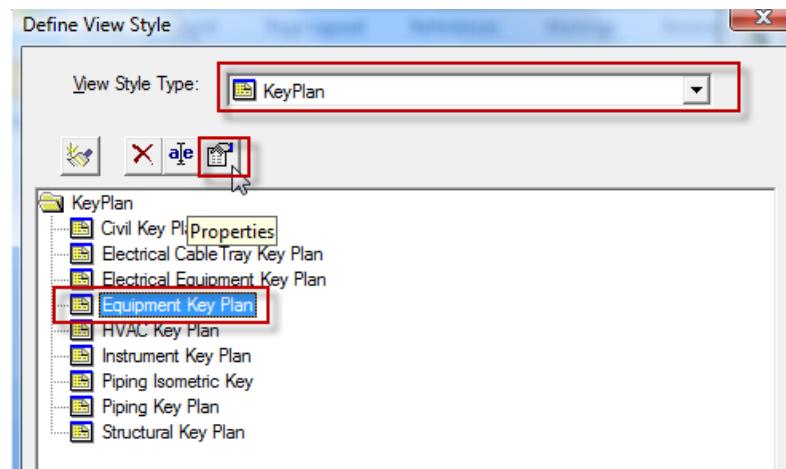
- Create a **One Volume with Plant View** type key plan view style.
- Create key plans of different orientation and content.

## Define the View Style

1. Click **Tools > Define View Style**.

The **Define View Style** dialog box displays.

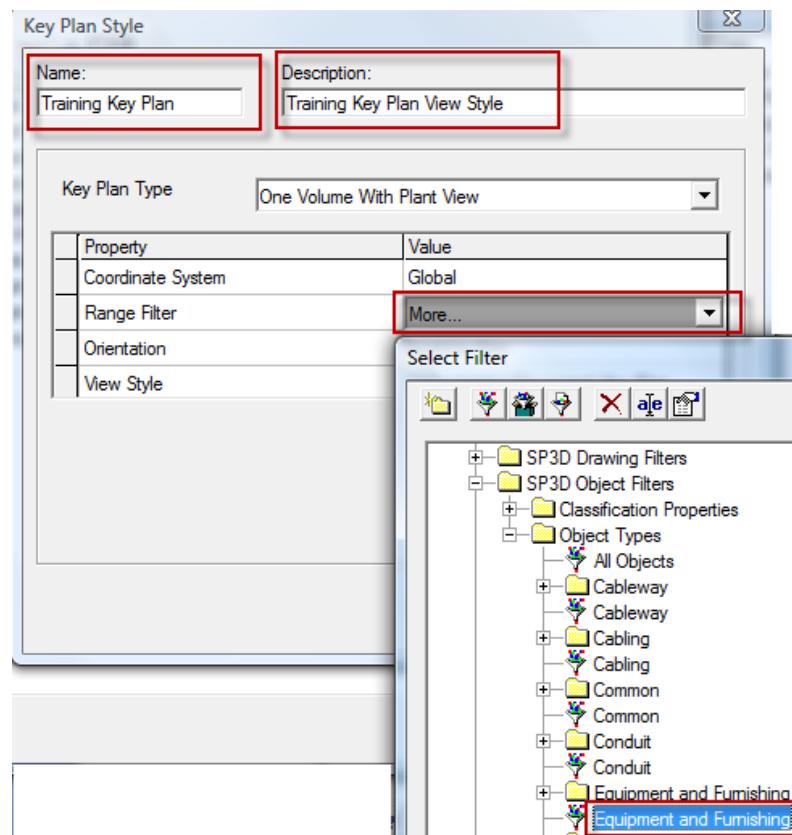
2. Set **View Style Type** to **Key Plan**.
3. Select **Equipment Key Plan**, and then click **Properties** .



4. Type **Training Key Plan** in the **Name** box.
5. Type **Training Key Plan View Style** in the **Description** box
6. In the **Range Filter** box, select **More**.

The **Select Filter** dialog box displays.

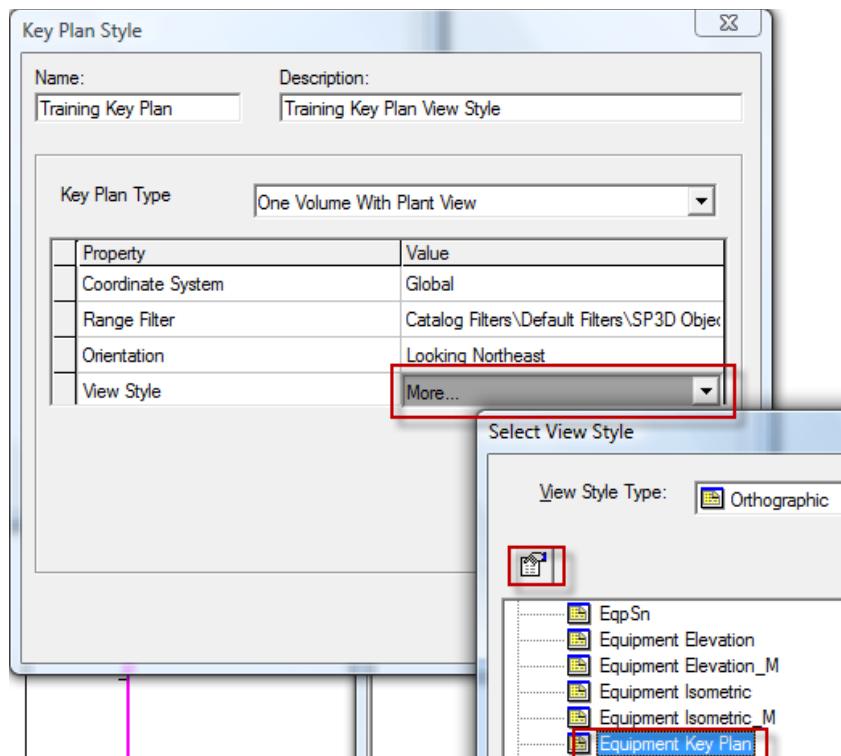
7. Select Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Equipment and Furnishing, and then click OK.



8. Set Orientation to Looking Northeast.
9. In the View Style box, select More.

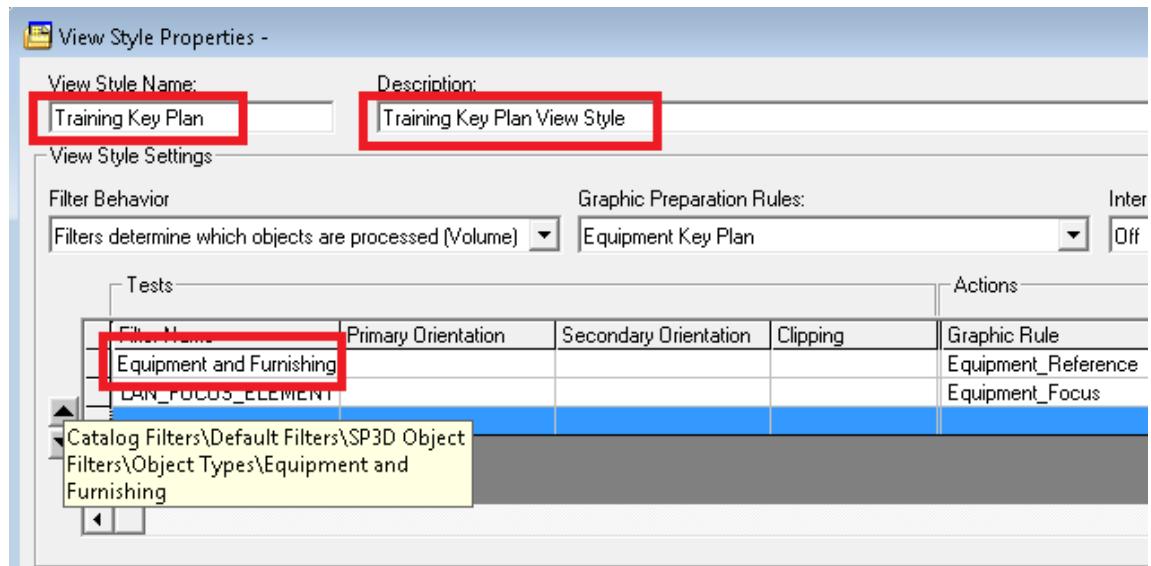
The **Select View Style** dialog box displays.

10. Select Orthographic\Equipment Key Plan, and then click **Properties**.



11. Type **Training Key Plan** in the **View Style Name** box.
12. Type **Training Key Plan View Style** in the **Description** box.
13. Select **Equipment and Furnishing** in the first row of the **Filter Name** column.

**NOTE** The value in the second row is a pseudo filter named **KEY\_PLAN\_FOCUS\_ELEMENT**.



14. Delete the third row in the view style.
15. Click **OK** to save the (orthographic) view style.

*The software displays a message.*
16. Click **Yes** to create a new (orthographic) view style.
17. Select **Orthographic\Training Key Plan** in the **Select View Style** dialog.

**TIP** This is the view style that you recently created.
18. Click **OK** to select the new orthographic view style for use in the key plan view style.
19. Click **OK** to save the (key plan) view style.

*The software displays a message.*
20. Click **Yes** to create a new (key plan) view style.
21. Click **Close** on the **Define View Style** dialog box.

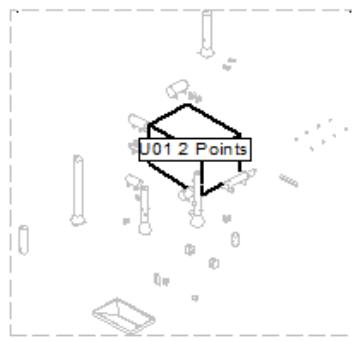
## Test the View Style

1. Right-click the **Key Plan Rules** drawing under **Drawings\Configuration Labs\View Frame**.
2. Select **Edit**.

*The software opens the drawing in a **SmartSketch Drawing Editor** window.*
3. Right-click the key plan view, and edit the properties in the **Drawing View Properties** dialog box.
4. Select **More** in the **Style** list.

*The **Select View Style** dialog box displays.*
5. Select **Keyplan\Training Key Plan**, and then click **OK**.
6. Right-click, and update the key plan view.

*The view should resemble the example below.*



7. Exit **SmartSketch Drawing Editor**.

## Matchline Rules

### Objective

By the end of this session, you will be able to:

- Copy a delivered matchline rule to create a new matchline rule.

### Copy a Matchline Rule

1. Navigate to the *[SharedContent]\Drawings\Catalog\Rules\MatchlineRules* folder.
2. Create a copy of the *Matchline\_None\_A.xml* file in the same folder location.
3. Rename the file **Training\_Matchline.xml**.
4. Open *Training\_Matchline.xml* in a text editor.
5. Find the one occurrence of the string **Matchline\_None\_A**, and replace it with **Training\_Matchline**.
6. Find **Double Chain Black Matchline**, and replace each occurrence with **Dashed Red**.
7. Find the one occurrence of **DwgTemplate**, and replace it with **MatchlineLayer**.
8. Save the file, and then exit the text editor.

### Copy a Matchline Label

1. Navigate to the *[SharedContent]\Drawings\Catalog\Labels\Templates\Matchline*
2. Create a copy of the *Matchline\_None\_A.xml* file and the *Matchline\_None\_A.sym* file in the same folder location.
3. Rename the files **Training\_Matchline.xml** and **Training\_Matchline.sym**, respectively.

### Modify View Style to use Matchline Label

1. Click **Tools > Define View Style**.  
*The Define View Style dialog box displays.*
2. Switch the **View Style Type** to **Training**.
3. Double-click the **View Rules** view style.  
*The View Style Properties dialog box displays.*
4. Select **Training\_Matchline** from the **Matchline Rule** list.
5. Click **OK** to save the view style.
6. Click **Close** on the **Define View Style** dialog box.

### Test the View Style

1. Right-click the **Matchline Rules** drawing under **Drawings\Configuration Labs\View and Keyplan Rules**.

2. Select **Edit**.

*The software opens the drawing in a **SmartSketch Drawing Editor** window.*

3. Right-click the view, and edit the properties in the **Drawing View Properties** dialog box.

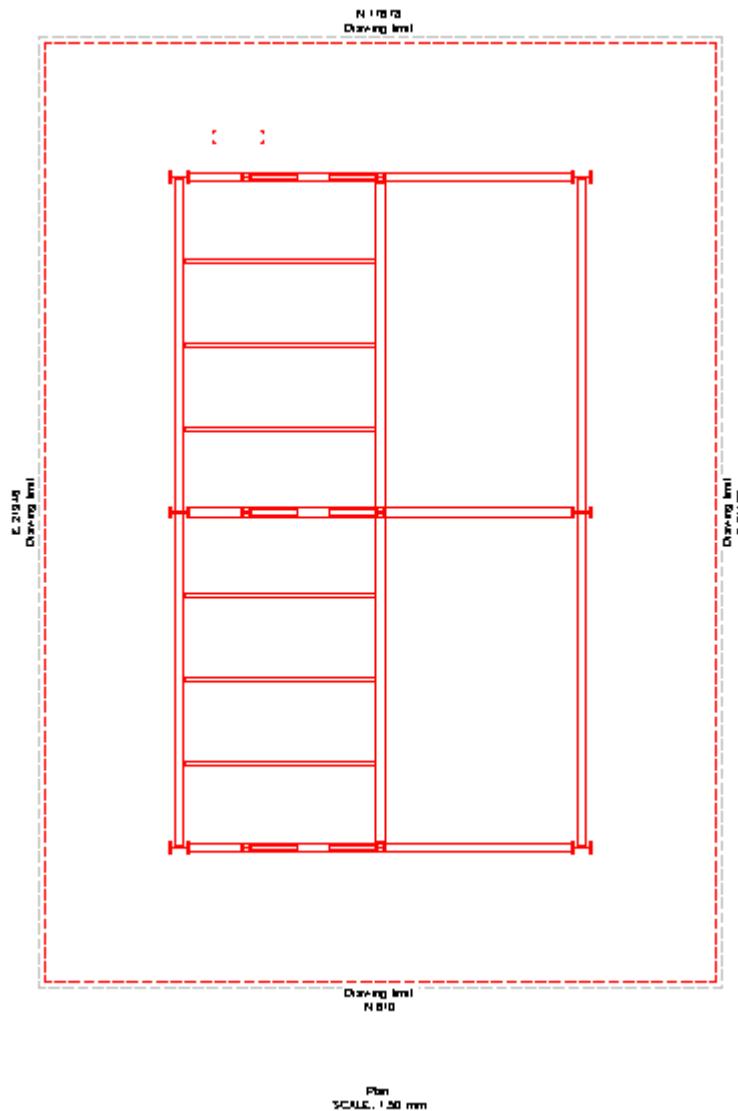
4. Select **More** in the **Style** list.

*The **Select View Style** dialog box displays.*

5. Select **View Rules**, and then click **OK**.

6. Right-click, and update the view.

*The view should resemble the example below. The matchline are drawn using the Dashed Red line style specified in the rule.*



7. Exit **SmartSketch Drawing Editor**.

## North Arrow Rule

### Objective

By the end of this session, you will be able to:

- Position a north arrow on the sheet relative to a single view.

## Copy the North Arrow Rule

1. Navigate to the *[SharedContent]\Drawings\Catalog\Rules\NorthArrowRules* folder.
2. Create a copy of the *NorthArrow.xml* file in the same folder location.
3. Rename the copy **FixedNorthArrow.xml**.
4. Open the *FixedNorthArrow.xml* file in a text editor.
5. Locate **<name>**, and set the tag value to **NorthArrows\FixedNorthArrow**.

```
<?xml version="1.0" encoding="utf-8"?>
<RULE>
    <ACTION>
        <CATEGORY>AddLabel</CATEGORY>

        <VALUE
            type="string">
            <labels>
                <label>
                    <name>NorthArrows\FixedNorthArrow</name>
                </label>
            </labels>
        </VALUE>
    </ACTION>
</RULE>
```

6. Save the file, and then exit the text editor.

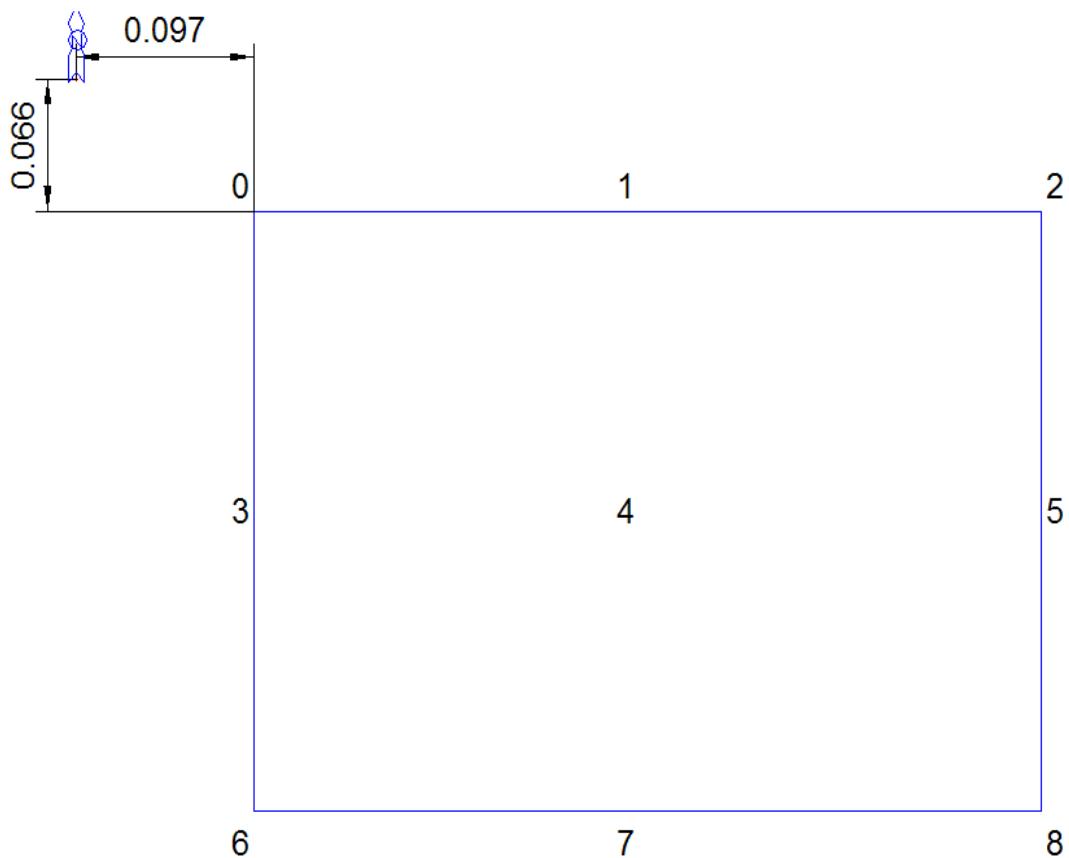
## Copy the North Arrow Label

1. Navigate to the *[SharedContent]\Drawings\Catalog\Labels\Templates\NorthArrows* folder.
2. Create a copy of the *NorthArrow.xml* file and *NorthArrow.sym* file in the same folder location.
3. Rename the files to **FixedNorthArrow.xml** and **FixedNorthArrow.sym**, respectively.

4. Open the FixedNorthArrow.xml in a text editor, and remove the first four **<posModule>** entries.

```
<posModules>
  <posModule value="DrawingquadOne">
    <connectPoint>6</connectPoint>
    <positioningPoint>6</positioningPoint>
  </posModule>
  <posModule value="DrawingQuadTwo">
    <connectPoint>8</connectPoint>
    <positioningPoint>8</positioningPoint>
  </posModule>
  <posModule value="DrawingQuadThree">
    <connectPoint>2</connectPoint>
    <positioningPoint>2</positioningPoint>
  </posModule>
  <posModule value="DrawingQuadFour">
    <connectPoint>0</connectPoint>
    <positioningPoint>0</positioningPoint>
  </posModule>
  <posModule value="DrawingAbsolute">
    <connectPoint>0</connectPoint>
    <voffset>0.04</voffset>
    <hoffset>-0.04</hoffset>
  </posModule>
</posModules>
```

5. Adjust the values for the **<connectPoint>**, **<vOffset>**, and **<hOffset>** to move the north arrow relative to the view using the diagram below as a guide.



6. To move the north arrow to the upper left corner of the drawing, enter the values shown below.

```
<posModule value="DrawingAbsolute">
  <connectPoint>0</connectPoint>
  <voffset>0.066</voffset>
  <hoffset>-0.097</hoffset>
</posModule>
```

## Modify View Style to use North Arrow Label

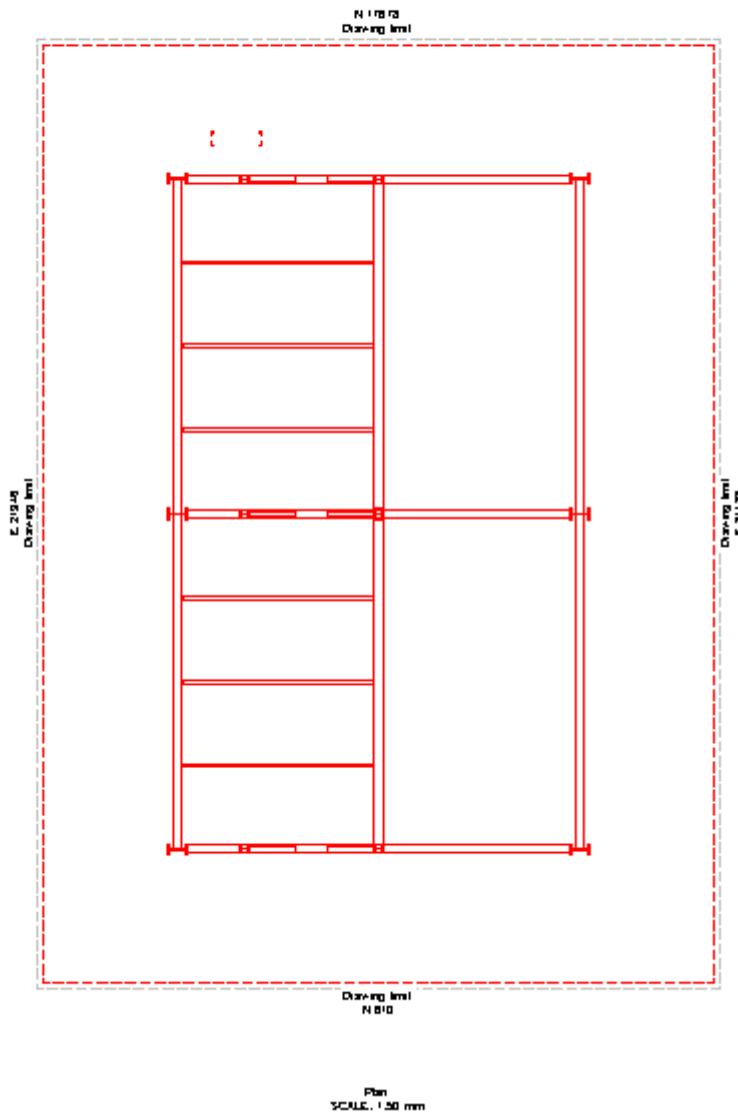
1. Click **Tools > Define View Style**.  
*The **Define View Style** dialog box displays.*
2. Ensure the **View Style Type** is set to **Training**.
3. Double-click the **View Rules** view style.  
*The **View Style Properties** dialog box displays.*
4. Select **FixedNorthArrow** from the **Matchline Rule** list.
5. Click **OK** to save the view style.
6. Click **Close** on the **Define View Style** dialog box.

## Test the View Style

1. Right-click the **North Arrow Rules** drawing under **Drawings\Configuration Labs\View and Keyplan Rules**.
2. Select **Edit**.  
*The software opens the drawing in a **SmartSketch Drawing Editor** window.*
3. Right-click the view, and edit the properties in the **Drawing View Properties** dialog box.
4. Select **More** in the **Style** list.  
*The **Select View Style** dialog box displays.*
5. Select **View Rules**, and then click **OK**.
6. Right-click, and update the view.

## View, KeyPlan, Matchline and North Arrow Rules

*The view should resemble the example below. The North arrow is positioned relative to the view as specified in the label template file.*



7. Exit **SmartSketch Drawing Editor**.

## L A B 6

# Label Rules

## Using Label Rules

### Objective

By the end of this session, you will be able to:

- Label objects automatically using a delivered label rules in a view style.
- Copy a label rule and the associated label template using the copy tool, and then use the copied label rule in the view style.
- Modify a label template to change the position of the label relative to the object.

## Define Workspace

**Objective:** Configure the session for this exercise.

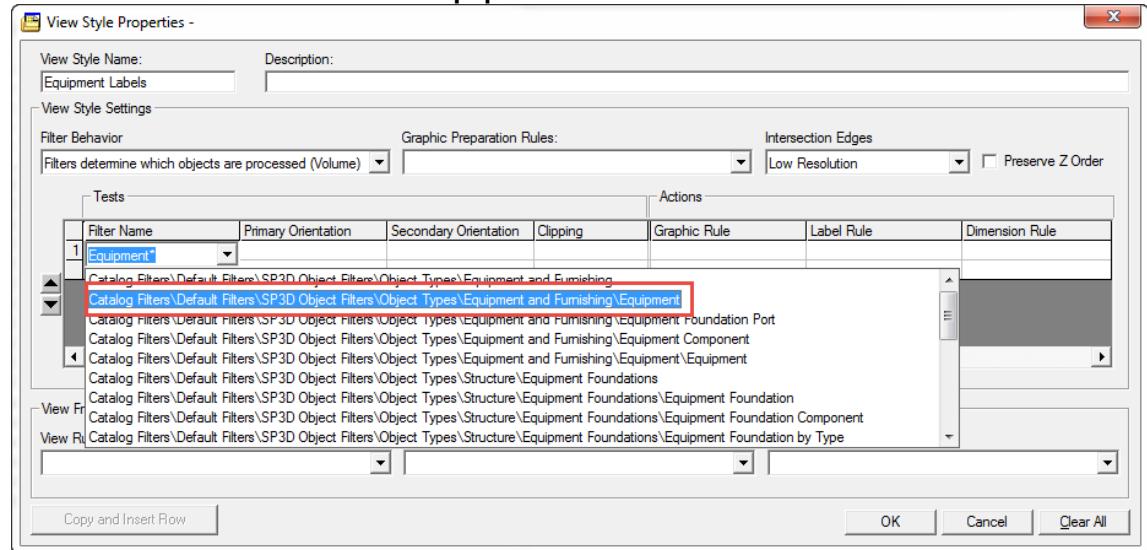
1. Click **Tasks > Space Management**.
2. Click **File > Define Workspace**.  
*The **Define Workspace** dialog box displays.*
3. Select **More** from the **Filter** list.  
*The **Select Filter** dialog box displays.*
4. On the **Select Filter** dialog box, expand the **Plant Filters\Drawings Configuration Filters\Label Rules** folder.
5. Select the **U01 Workspace** filter and click **OK** on the **Select Filter** dialog box.  
*The **Filter** field populates.*
6. Click **OK** on the **Define Workspace** dialog box.  
*The workspace populates with modeled objects.*
7. When the workspace query completes, click the node that changes the look direction to **Looking NW and Down** on **Common Views** .
8. Click **Fit**  on the **Common** toolbar.

## Add a Label Rule to View Style

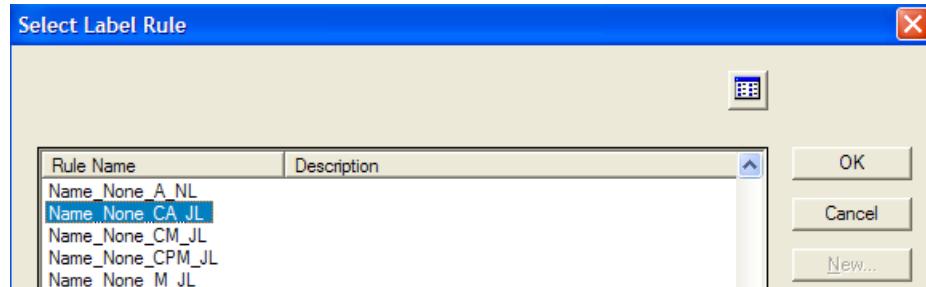
1. Click **Tasks > Drawings and Reports**.
2. Click **Tools > Define View Style**.
3. Ensure that the **View Style Type** is set to **Training**.

## Label Rules

4. Edit the **Equipment Labels** view style.
5. In the first row, enter **equipment\*** in the **Filter** field and press ENTER.
6. Click the arrow and select the filter **Equipment** as shown



7. In the Equipment row, click in the **Label Rule** box, and then select **More**.  
*The Select Label Rule dialog box displays.*
8. Select the **Name\_None\_CA\_JL** rule, and then click **OK**.

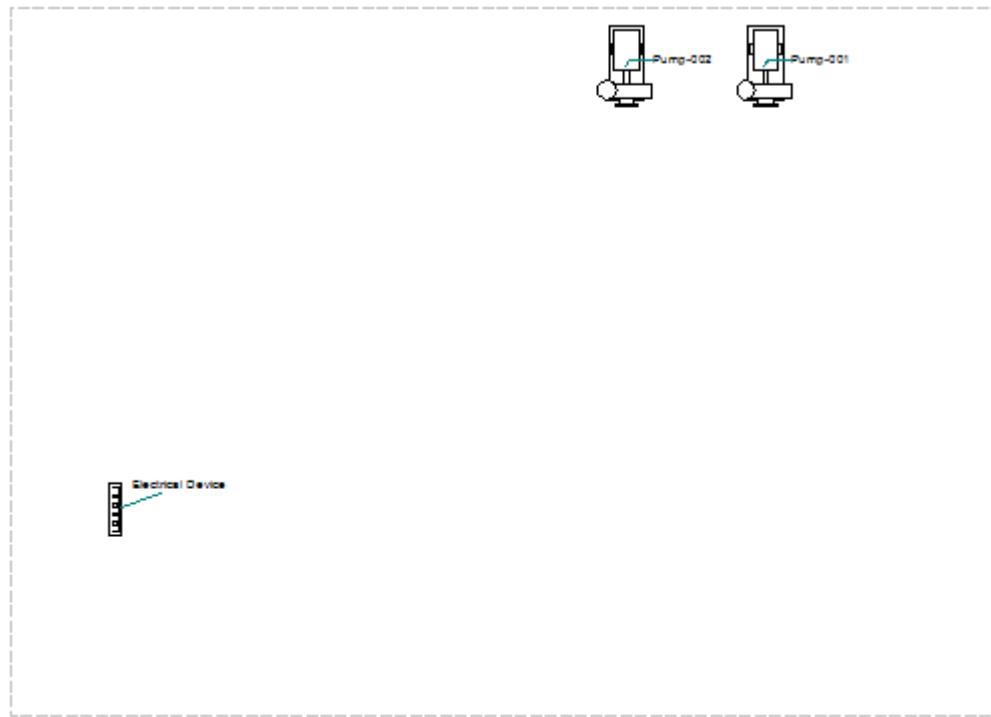


9. Click **OK** to save the view style.
10. Click **Close** on the Define View Style dialog box.

## Test the View Style

1. Right-click the **Equipment Labels** drawing under **Drawings\Configuration Labs\Label Rules**.
2. Select **Edit**.  
*The software opens the drawing in a SmartSketch Drawing Editor window.*
3. Right-click the view, and then select **Properties**.
4. Select **Training\Equipment Labels** and then click **OK**.

5. Update the view. Result looks like below.



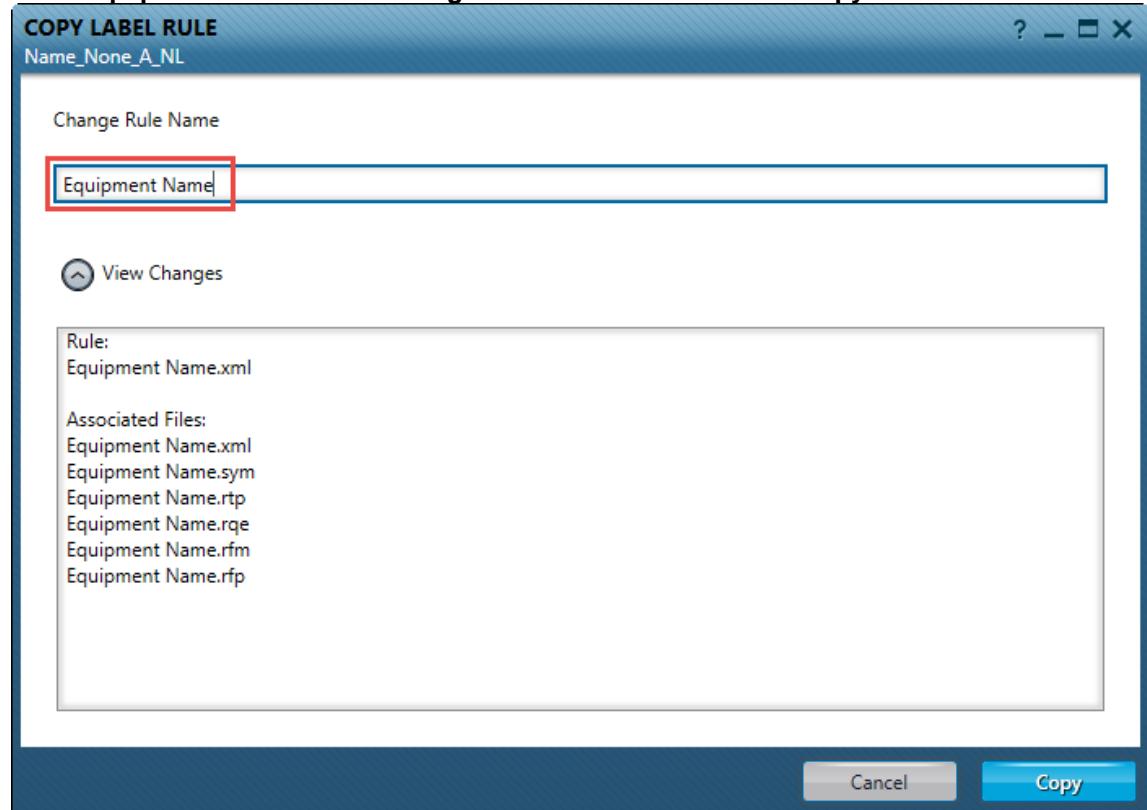
## Copy the Label Rule

1. Click **Tools > Define View Style**.
2. Ensure that the **View Style Type** is set to **Training**.
3. Edit the **Equipment Labels** view style
4. Click the cell containing **Name\_None\_CA\_JL** in the **Label Rule** column, and then select **More** from the list.  
*The **Select Label Rule** dialog box displays.*
5. Select **Name\_None\_A\_NL** rule and click **Copy**.

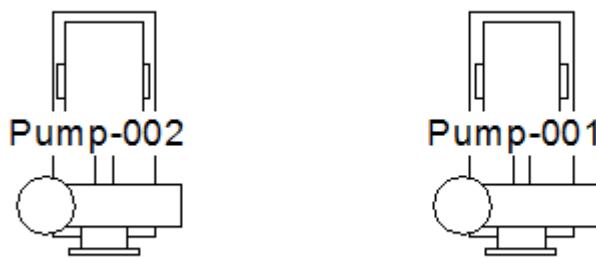
## Label Rules

---

6. Enter **Equipment Name** in the **Change Rule Name** field and click **Copy**.



7. In the **Select Label Rule** dialog, click **OK** to enter **Equipment Name** into the view style.
8. Click **OK** to save the view style.
9. Click **Close** on the **Define View Style** dialog box.
10. Switch to **SmartSketch Drawing Editor** and update the view. The label appears on top of the equipment as shown below.

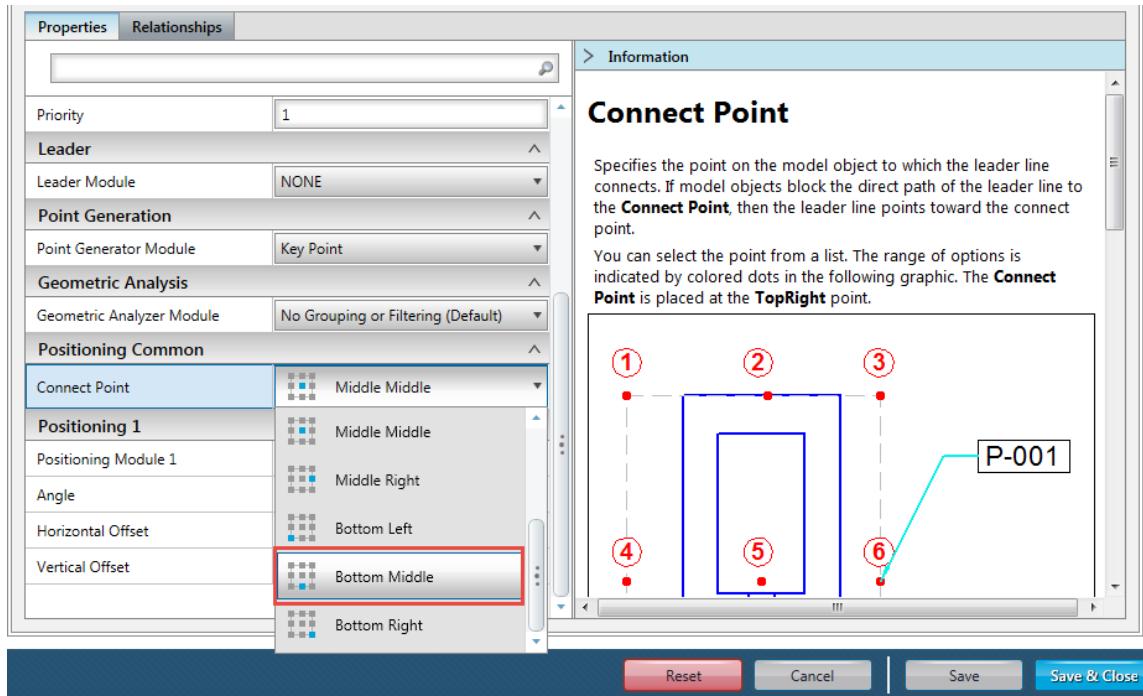


## Edit the Label Rule

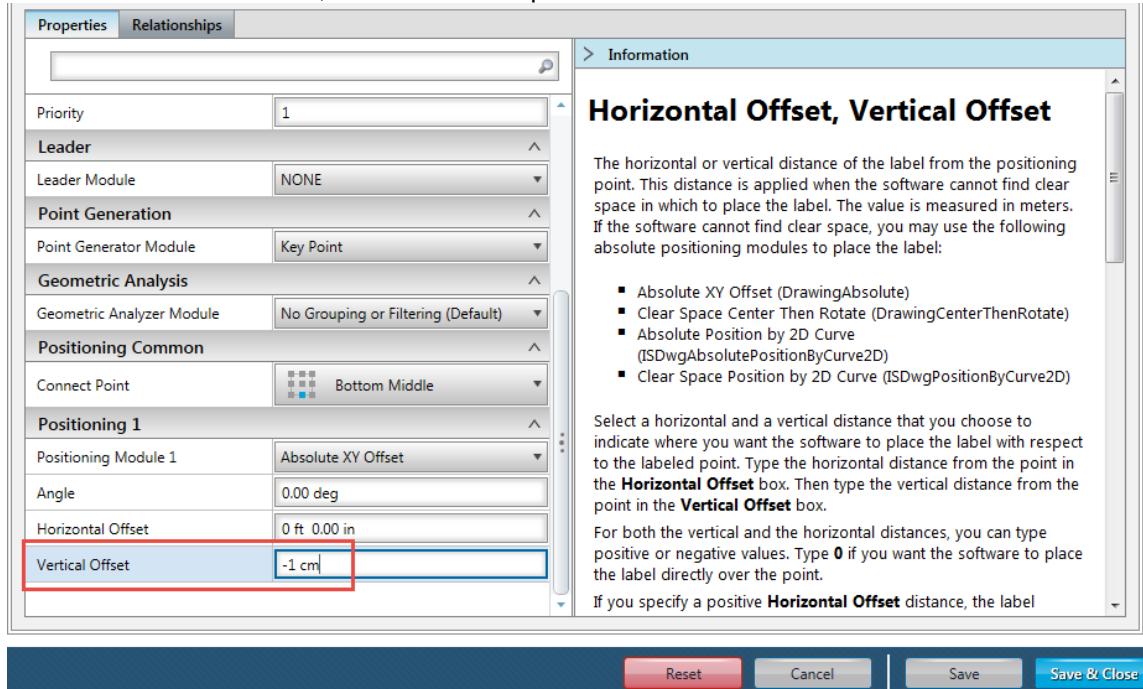
1. Click **Tools > Define View Style** and edit the **Equipment Labels** view style.
2. Click the cell containing **Equipment Name** in the **Label Rule** column, and press F12.

The **Label Rule Manager** dialog box displays.

3. Scroll down the grid to the **Positioning Common** section and select **Bottom Middle** in the **Connect Point** field.



4. In the **Vertical Offset** field, enter **-1 cm** and press TAB.

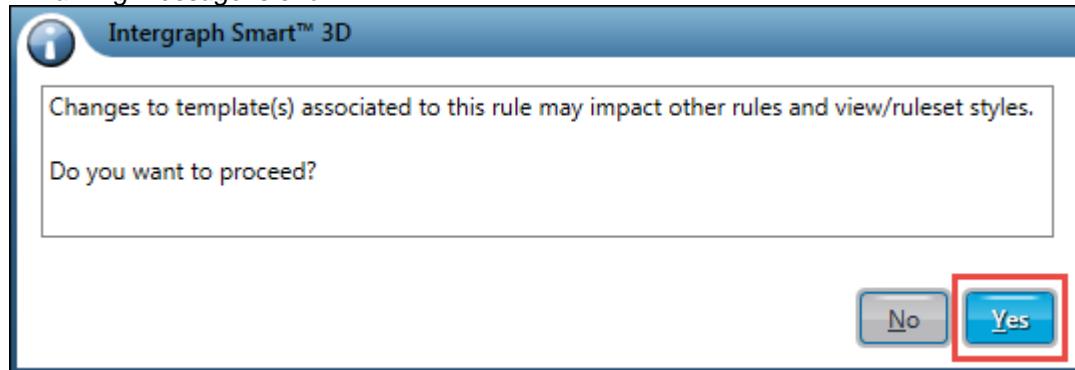


5. Click **Save & Close**.

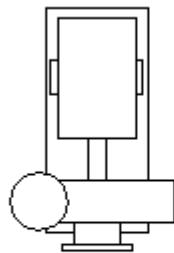
## Label Rules

---

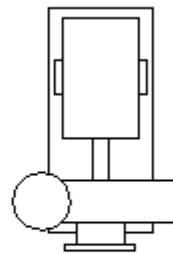
A warning message is shown.



6. Click **Yes** on the warning message.
7. Click **OK** to save the view style.
8. Click **Close** on the **Define View Style** dialog box.
9. Switch to **SmartSketch Drawing Editor** and update the view. The labels are now positioned 1 cm below the bottom middle of the pumps.



Pump-002



Pump-001

10. Exit **SmartSketch Drawing Editor**.

## Reference Labels

### Objective

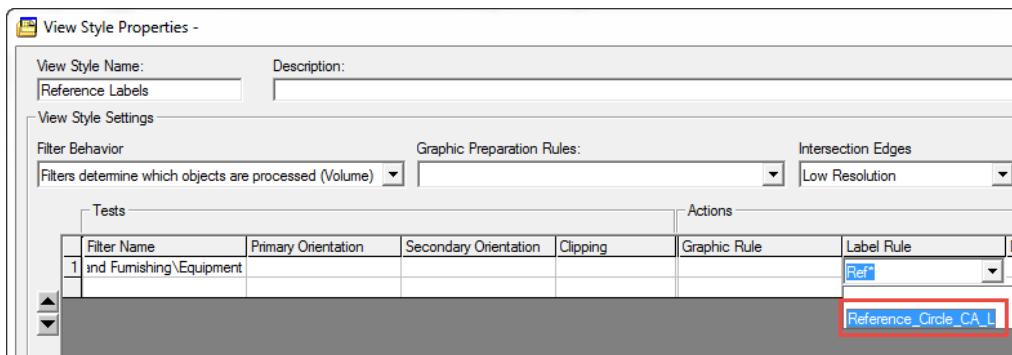
By the end of this session, you will be able to:

- Use a delivered rule to label objects with item numbers from a report associated to the drawing view.

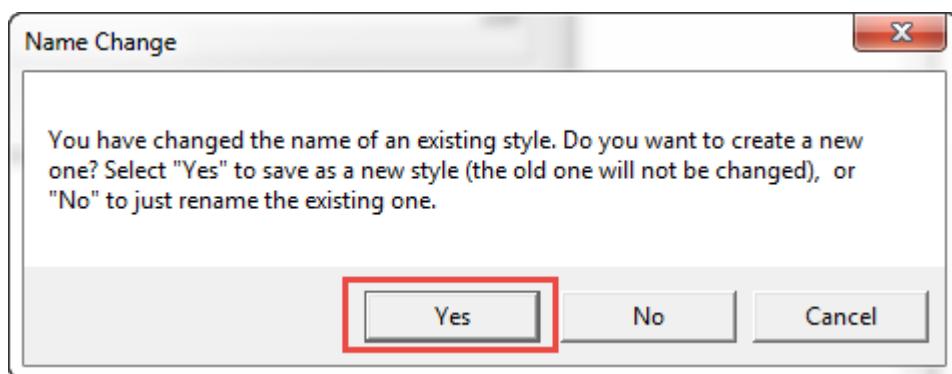
## Define the View Style

1. Click **Tools > Define View Style**.
2. Ensure that the **View Style Type** is set to **Training**.

3. Edit the **Equipment Labels** view style.
4. Rename the view style to **Reference Labels**.
5. Click the cell containing **Equipment Name** in the **Label Rule** column, and type **ref\*** and press **ENTER**.
6. Select the list and select **Reference\_Circle\_CA\_L** as the **Label Rule**.



7. Click **OK** to save the view style.
8. Click **Yes** in the **Name Change** confirmation box to create a new style.



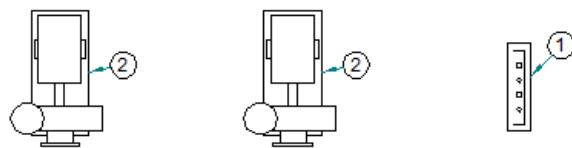
9. Click **Close** on the Define View Style dialog box.

## Test the View Style

1. Edit the **Reference Labels** drawing.
  2. Select the graphical view on the left and edit properties.
  3. Select the **Training\Reference Labels** view style, and then click **OK**.
  4. Exit **SmartSketch Drawing Editor**.
  5. Right-click the **Reference Labels** drawing, and then click **Update Now**.
  6. Edit the drawing and review the results.
- Instead of the labels appearing on the drawing, bubble labels now appear pointing to item numbers in the associated report.*

## Label Rules

---



Item Number	Qty	Part Number	Part Class	Part Description	Dry Weight
1	1	BA 106E 42369-1-E	ElecEnclosureAsm	Type 1 Electrical Enclosure	105. Ibm
2	2	PUMP 001A-E	PumpAsm	Centrifugal Pump, 250mm	1631.42 Ibm

7. Exit **SmartSketch Drawing Editor**.

## Grid Labels for Elevation Views

### Objective

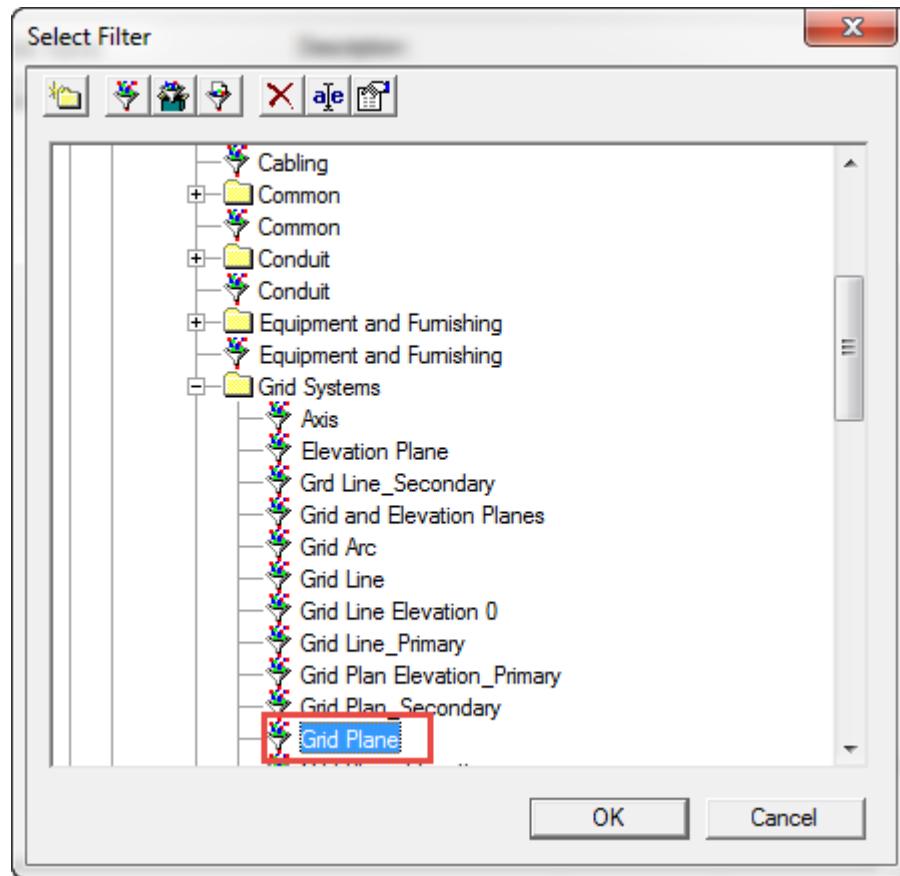
By the end of this session, you will be able to:

- Use a graphic preparation rule to re-symbolize grid planes as vertical gridlines.
- Edit the label template to position the labels relative to the grid planes.
- Edit the label template SYM file to modify the look and feel of the label.

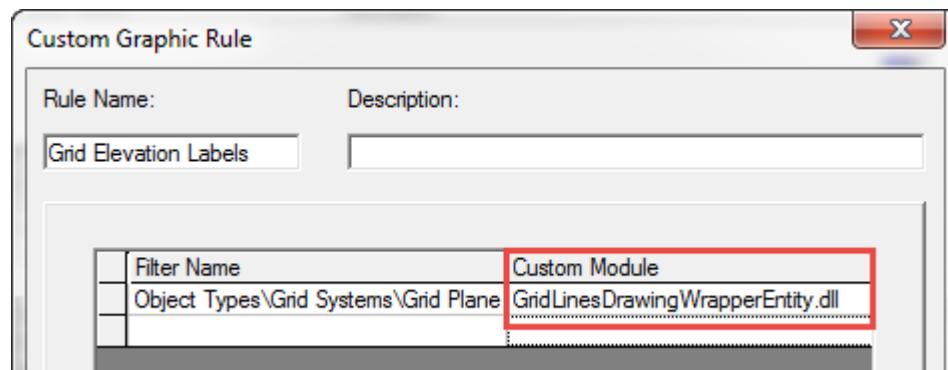
## Define the View Style

1. Click **Tools > Define View Style**.
2. Ensure that the **View Style Type** is set to **Training**.
3. Highlight the view style **Grid Elevation Labels**, and click **Properties**.
4. Click in the **Graphic Preparation Rule** drop down and select **More**.
5. Click **New** to create a new custom graphic rule.
6. Name the rule **Grid Elevation Labels**.

7. Click in the **Filter Name** box in the first row, and then select the **Grid Plane** filter as shown below.



8. Select **GridLinesDrawingWrapperEntity.dll** in the **Custom Module** list.

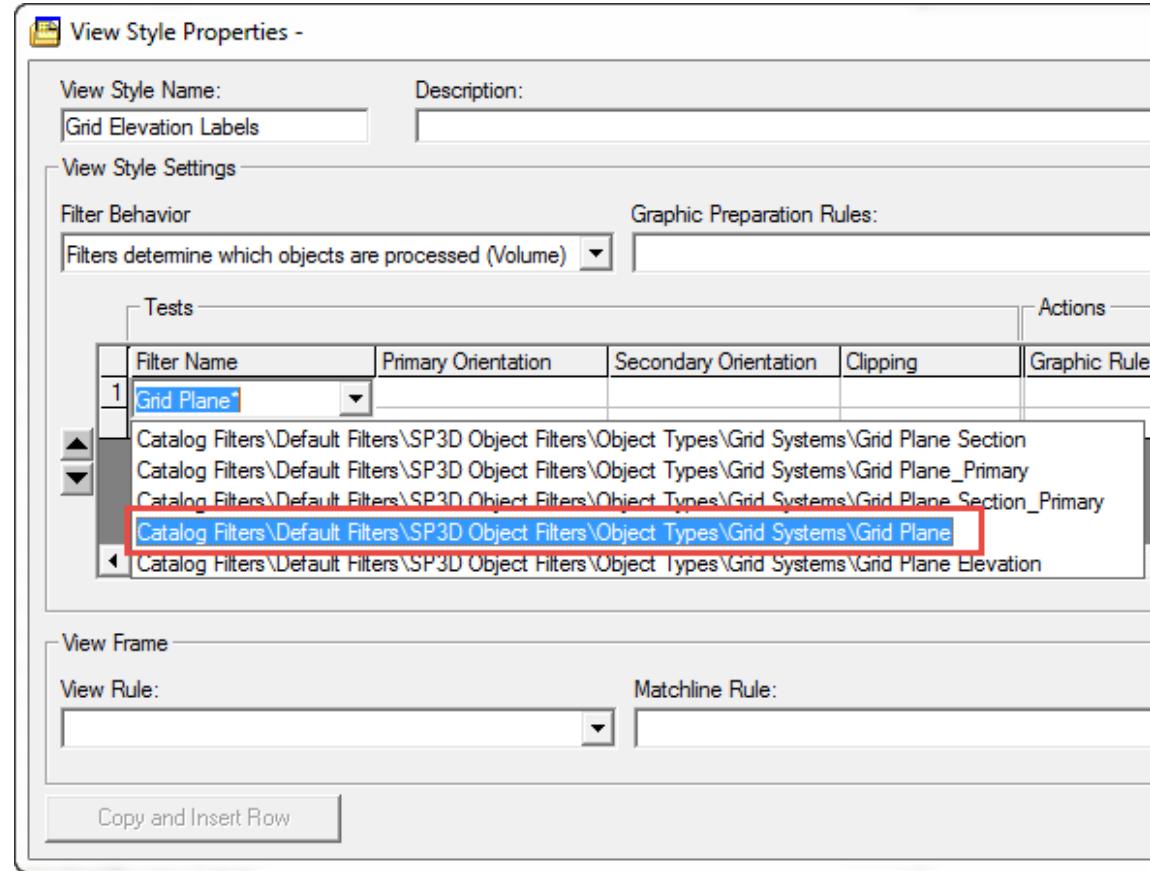


9. Click **OK** to define the rule.  
10. Click **OK** to select the rule to use in the view style.  
11. In the first row in the view style, type **grid plane\*** in the Filter field and press ENTER.

## Label Rules

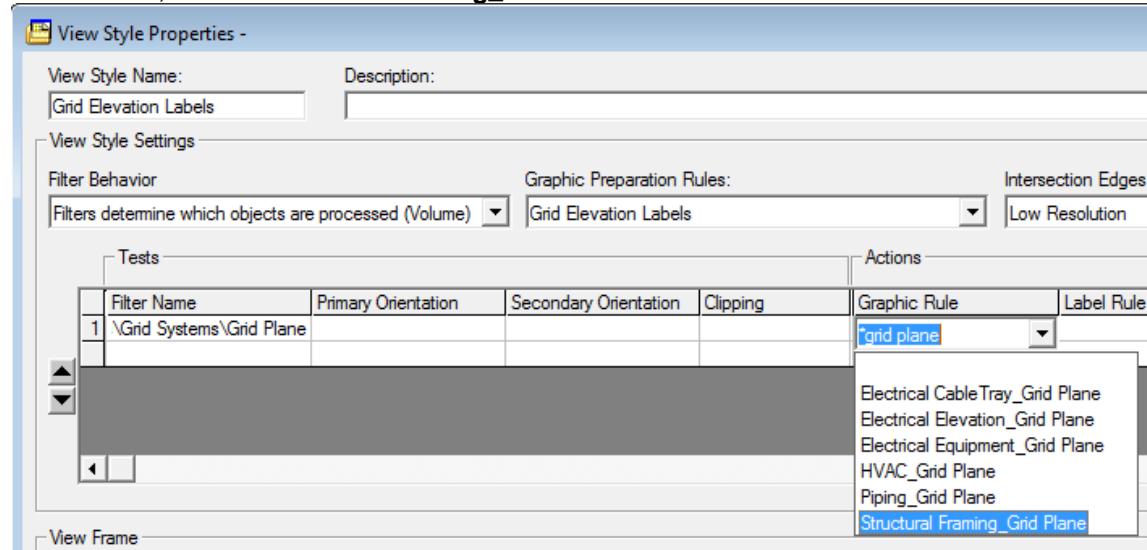
---

12. Select the list and select **Grid Plane** filter from the list shown



13. Click in the graphic rule box, key in **\*grid plane** and press ENTER.

14. From the list, select **Structural Framing\_Grid Plane**.



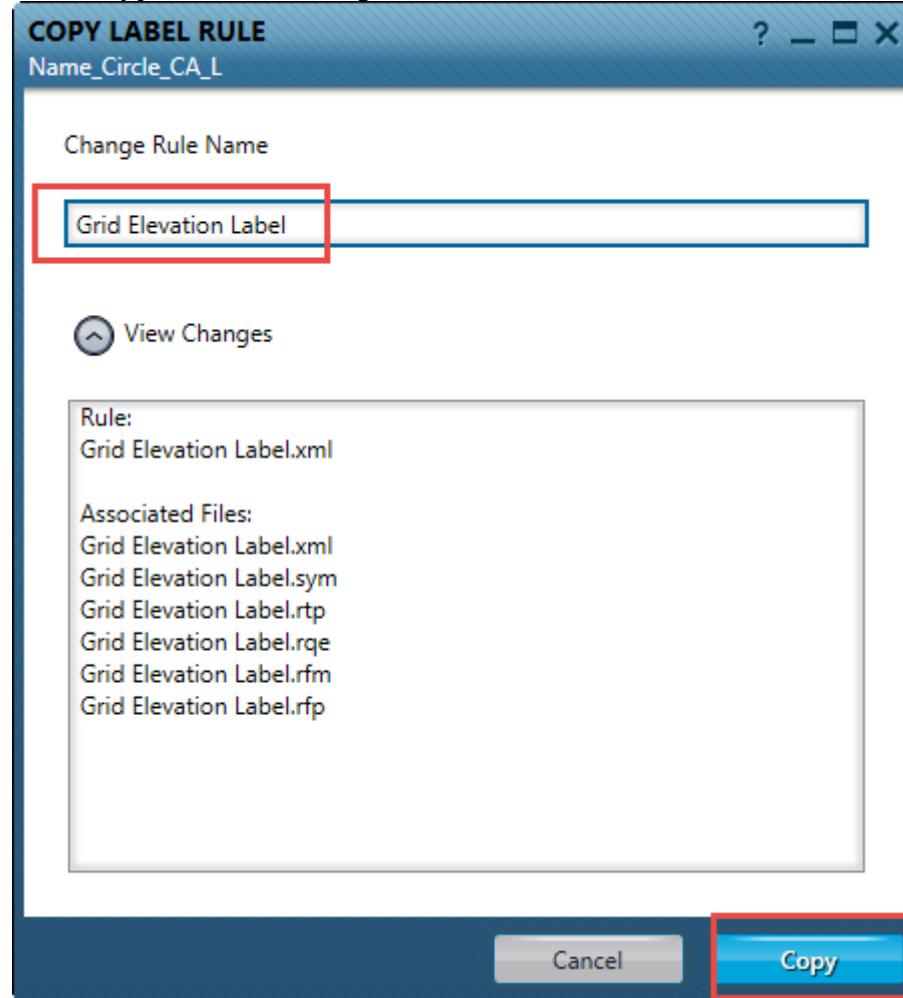
## Create and Edit Label Rule

1. Click in the label rule box, select **More**, and then select the **Name\_Circle\_CA\_L** label rule.
2. Click **Copy**.

## Label Rules

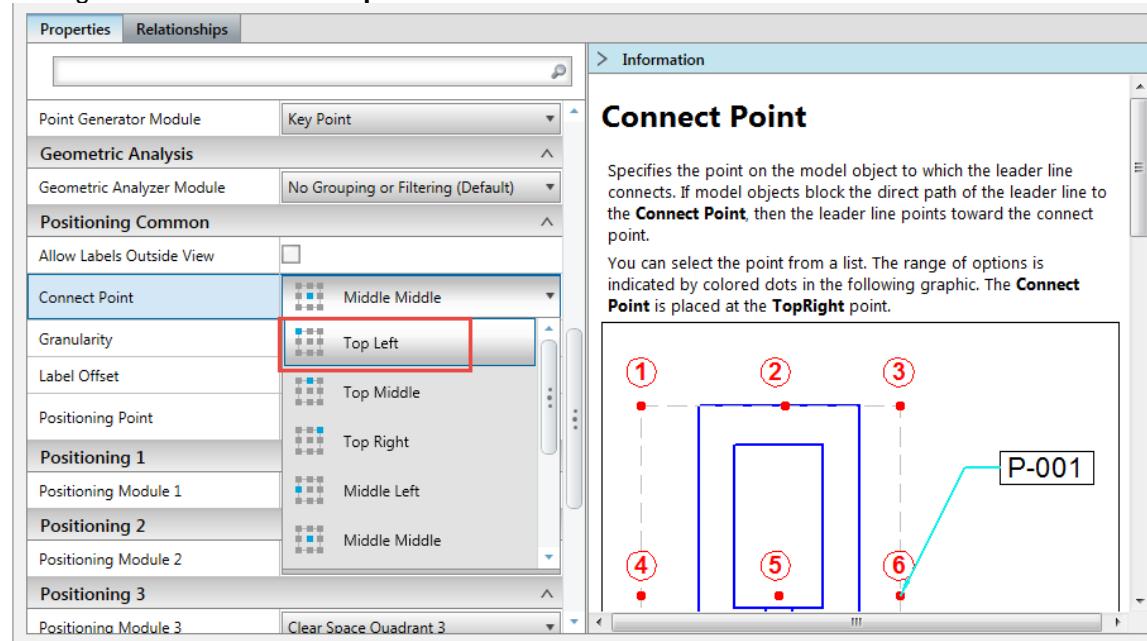
---

3. In the **Copy Label Rule** dialog, enter **Grid Elevation Label** as the rule name and click **Copy**.



4. Click **Properties** to edit the newly created label rule.

5. Change Connect Point to Top Left.



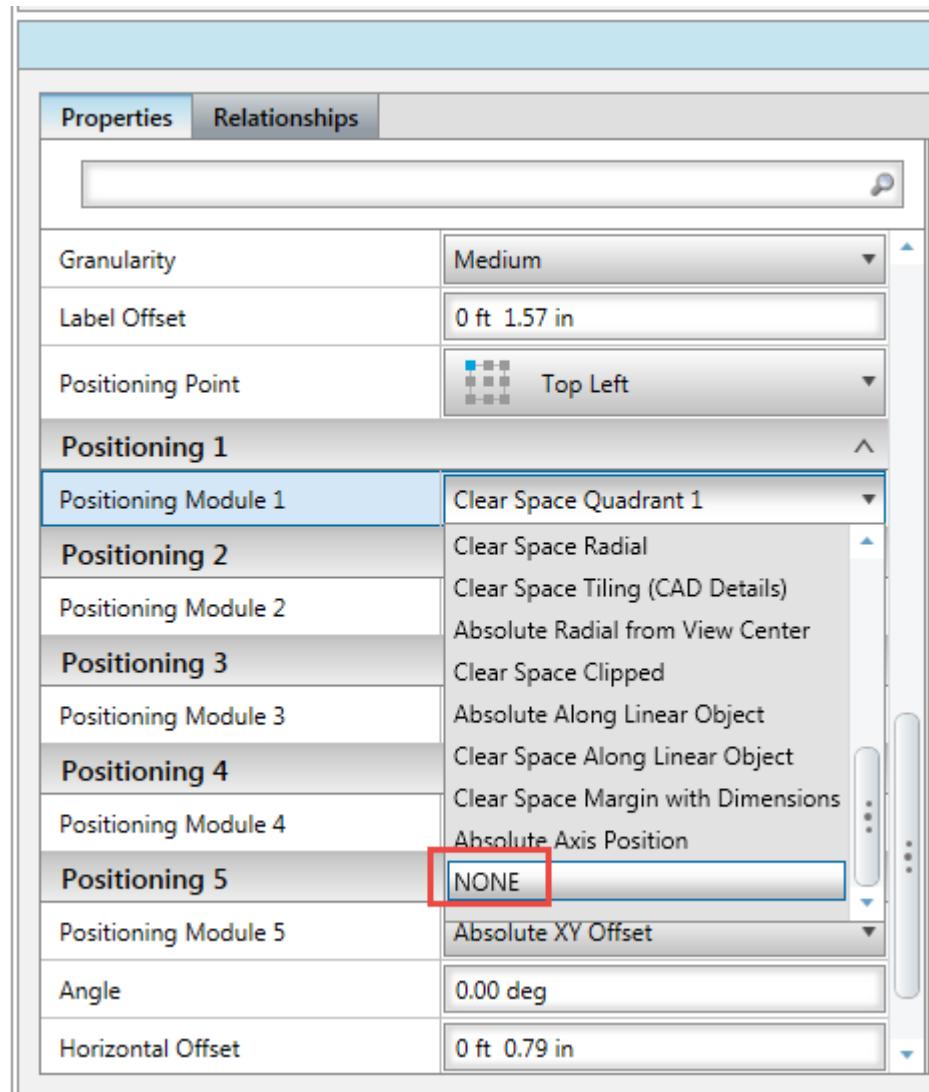
6. Change Positioning Point to Top Left.

7. For Positioning Module 1, select **NONE** instead of **Clear Space Quadrant 1**.

## Label Rules

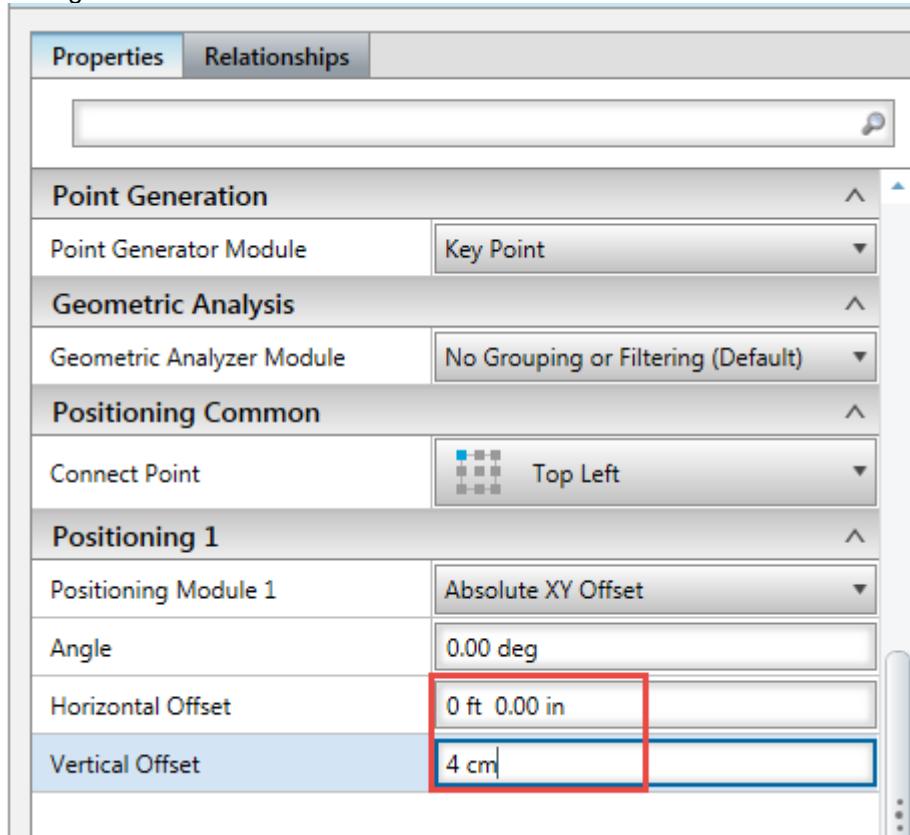
---

*This will remove the positioning module.*



8. Similarly delete the other three Clear Space modules by selecting **NONE** so the only module left is the **Absolute XY Offset**.

9. Change Horizontal Offset to 0 and Vertical Offset to 4 cm.



10. Click **Save & Close** on the label rule editor and click **Yes** on the prompt that is shown.
11. Click **OK** to select the label rule.
12. Click **OK** to save the view style.
13. Click **Close** on the **Define View Style** dialog box.

## Test the View Style

1. Edit the **Grid Elevation Labels** drawing in **SmartSketch Drawing Editor**.
2. Right-click the view and edit properties.
3. Change the view style to **Grid Elevation Labels**.
4. Update the view.

*The grid bubbles appear above the view, as shown in the example below.*

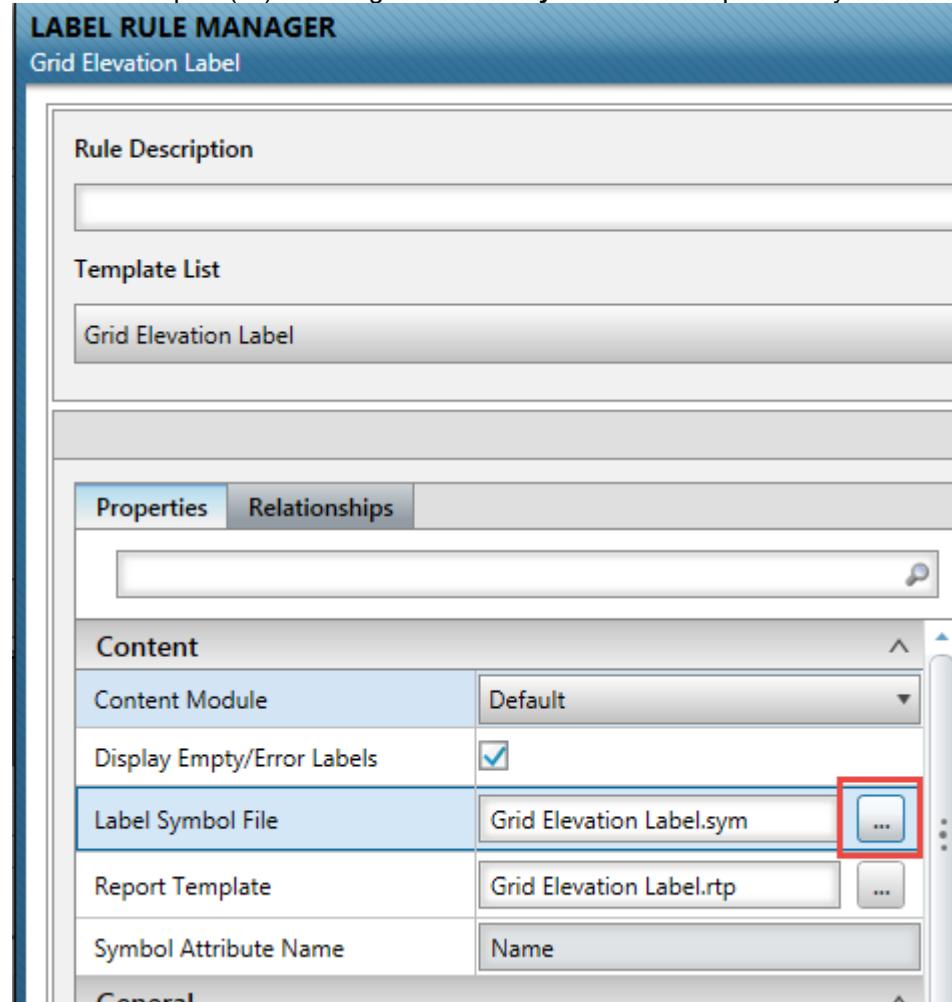


5. Exit **SmartSketch Drawing Editor**.

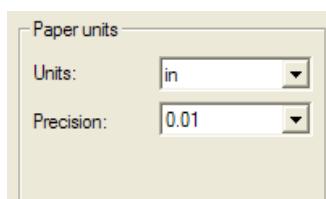
## Edit the Label Symbol

1. Select **Tools > Define View Style** and edit the **Grid Elevation Labels** view style
2. Select the **Grid Elevation Label** label rule and press F12 to edit it.

3. Select the Ellipsis (...) to the right of **Label Symbol File** to open the symbol file for the label.



4. Click **File > Sheet Setup**, and change the **Precision** setting to **0.01** then select **OK** on the **Sheet Setup** dialog.



5. Select the text box in the SYM file.  
6. In the ribbon, change the text size to **0.25 in**.



7. Save the SYM file, and exit **SmartSketch Drawing Editor**.  
8. Click **Save & Close** on the label rule editor and click **Yes** on the prompt that is shown.  
9. Click **OK** to save the view style.

10. Click **Close** on the **Define View Style** dialog box.
11. Edit the **Grid Elevation Labels** drawing, and update the view.

*The grid bubbles now reflect the new size.*



12. Exit **SmartSketch Drawing Editor**.

## Control Point Coordinate Labels

### Objective

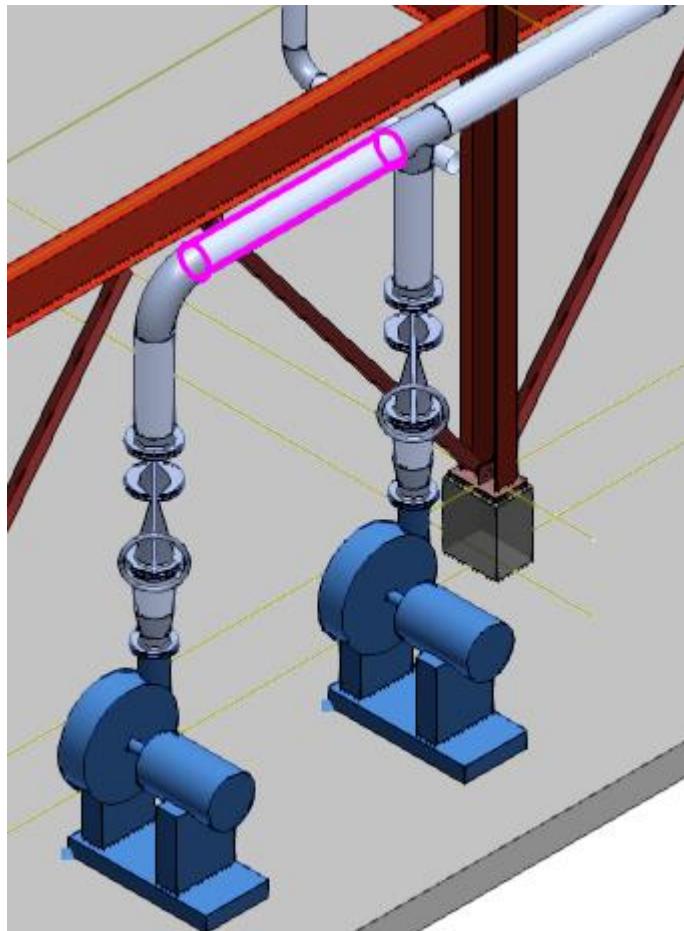
By the end of this session, you will be able to:

- Use a graphic preparation rule to draw reference objects that are usually not drawable.
- Copy a coordinate label, and modify it to use the desired point generator, geometric analyzer, and positioning modules.
- Modify the label template to add a jog to the leader line.
- Modify the label RFM file to show all three coordinates for the control point.

## Insert a Control Point

1. Switch to the Piping task.
2. Change your locate filter to **Piping Parts**.

3. In pipeline 1001-P, select the horizontal pipe between the elbow and the tee, as shown in the example below.

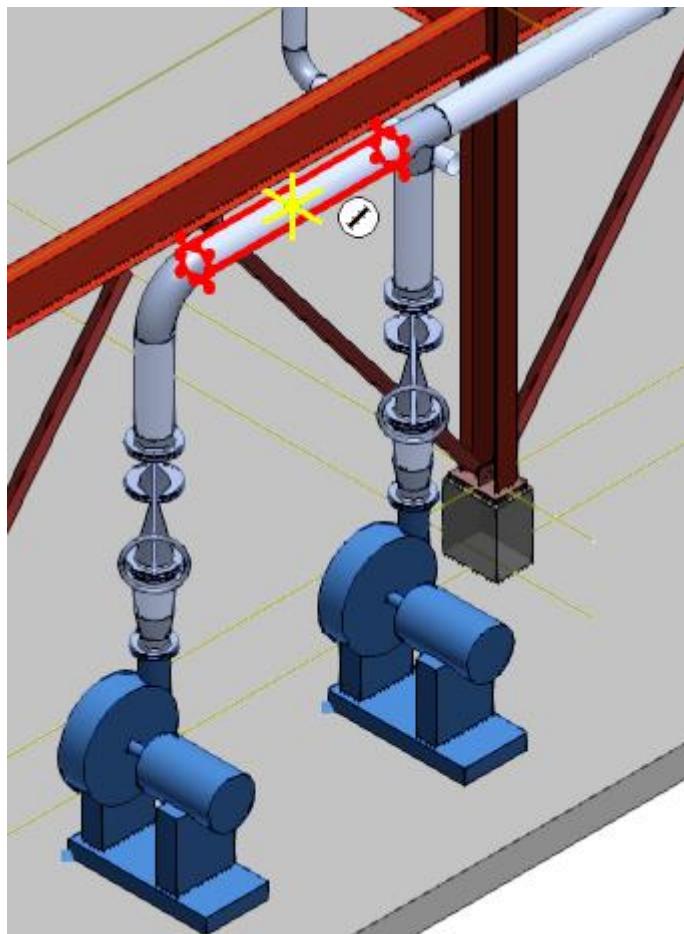


4. Click **Insert > Control Point**.

## Label Rules

---

5. Locate the control point at the center of the pipe, as shown in the example below.



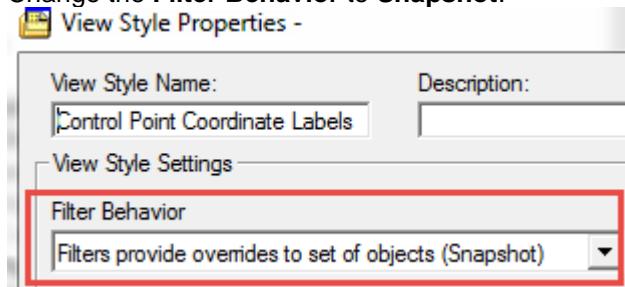
6. Name the control point **TP-001**, and change its subtype to **Elevation Callout**.

Parent object:	Type:	Subtype:	Name:
Pipe	Control Point	Elevation Callout	TP-001

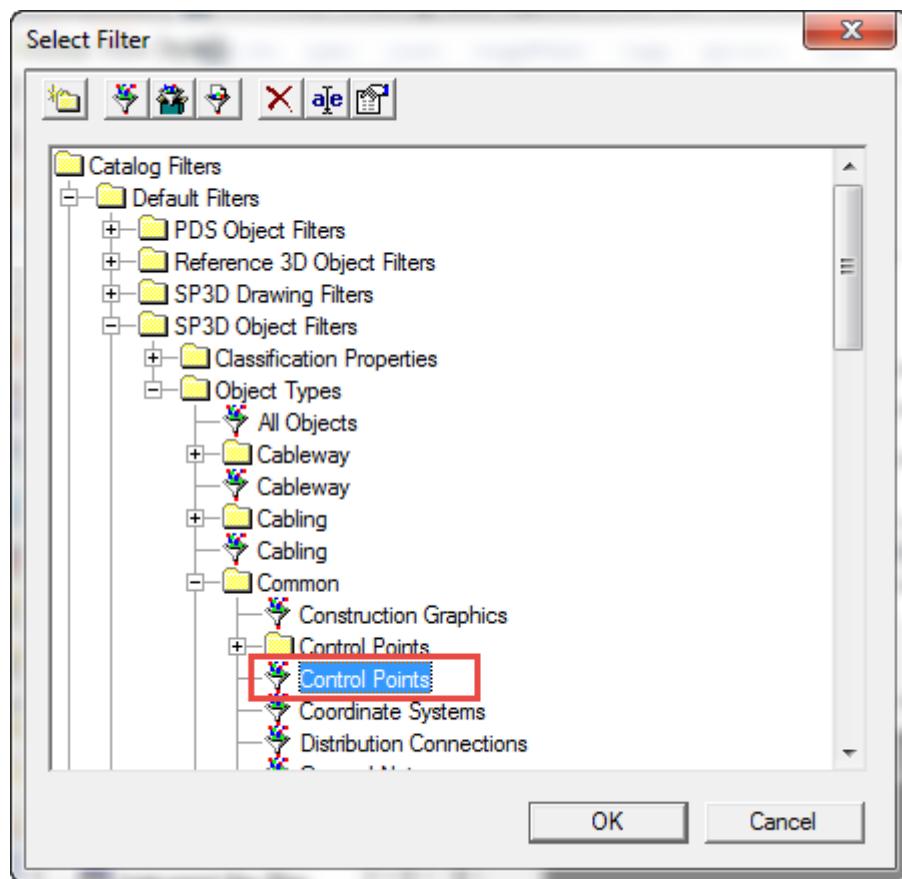
## Edit the View Style

1. Select **Tasks > Drawings and Reports**.
2. Select **Tools > Define View Style**.
3. Ensure that the **View Style Type** is set to **Training**.
4. Highlight the view style **Control Point Coordinate Labels**.
5. Edit properties on the view style.

6. Change the **Filter Behavior** to **Snapshot**.



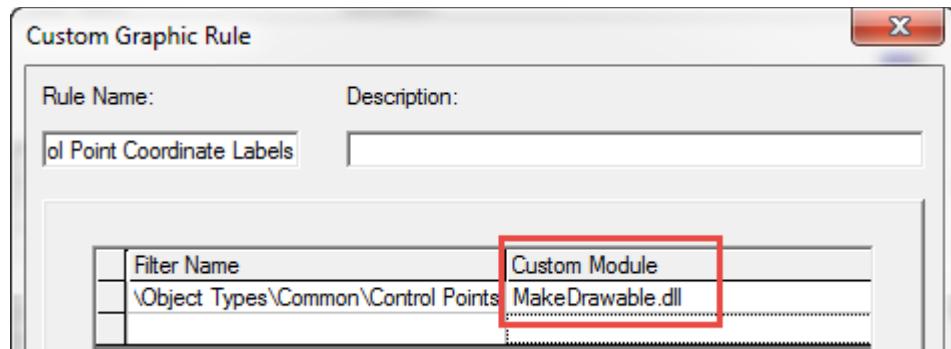
7. Select **More** in the **Graphic Preparation Rule** box.
8. Click **New** to create a new custom graphic rule.
9. Name the rule **Control Point Coordinate Labels**.
10. Add the **Control Points** filter.



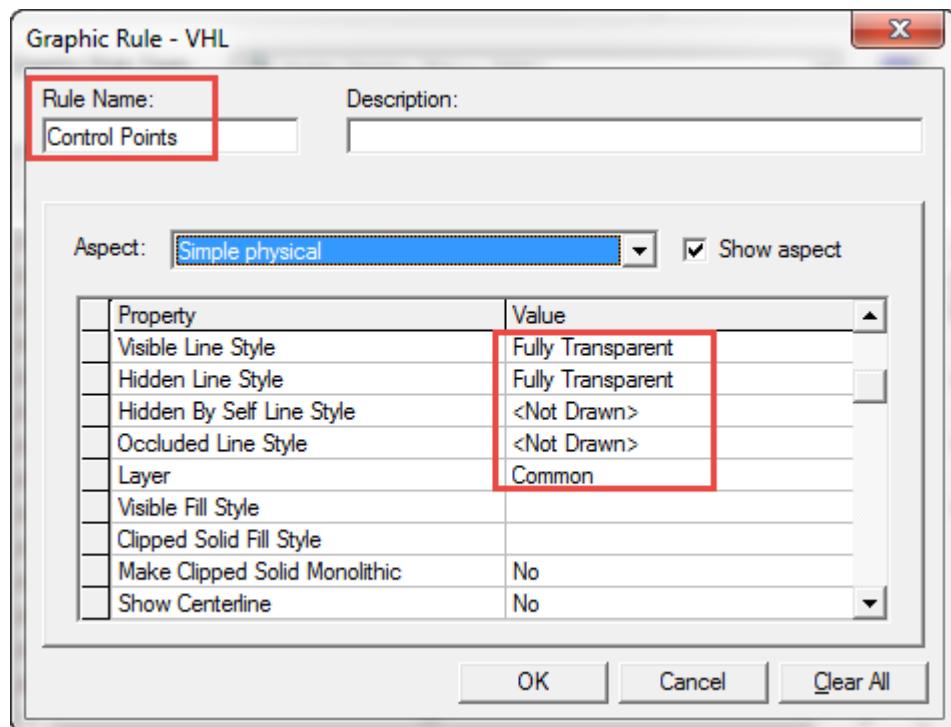
## Label Rules

---

11. Select the **MakeDrawable.dll** custom module.



12. Click **OK** to save the rule.
13. Select the newly defined custom graphic rule in the list and click **OK** to select the rule.
14. Add the **Control Points** filter used above in the first row of the view style.
15. Click **More** in the graphic rule box.
16. Create a new VHL rule and name it **Control Points**.
17. Set **Visible Line Style** to **Fully Transparent**.
18. Set **Hidden Line Style** to **Fully Transparent**.
19. Set **Layer** to **Common**.



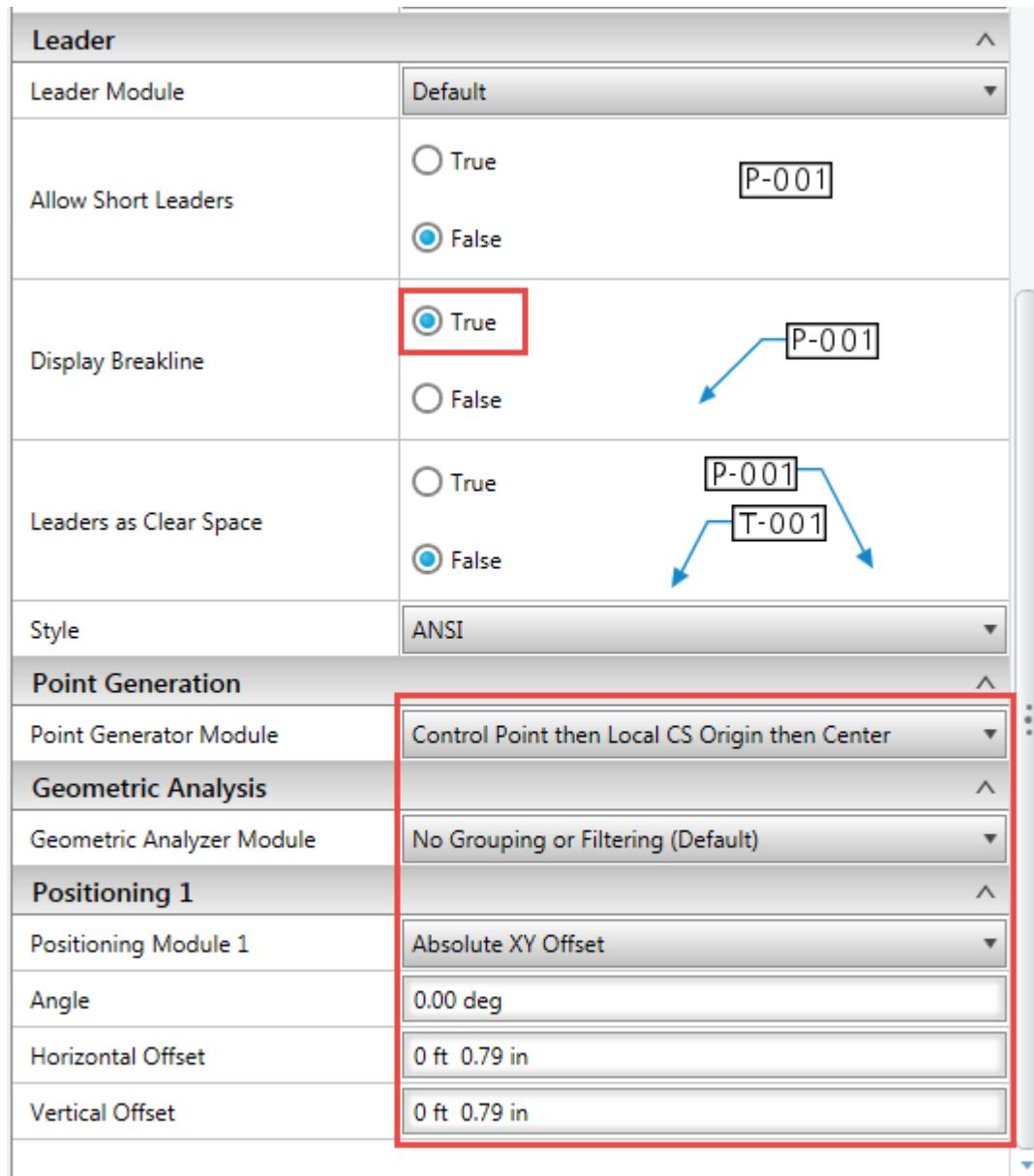
20. Click **OK** to select the rule.
21. Click **OK** to save the view style.

22. Click **Close** on the **Define View Style** dialog box.

## Copy and Edit the Label Rule

1. Click **More** in the **Label Rule** box.
2. Select the **SP3DCoordinate\_CA\_JL** label rule, and then click **Copy**.
3. Change the rule name to **Control Point Coordinate Label** and click **Copy**.
4. Select **Properties** to edit the new rule.
5. For **Positioning Module 2**, select **NONE**. This deletes the entry.
6. For **Positioning Module 1**, select **Absolute XY Offset**.
7. For **Horizontal Offset**, enter **2 cm**.
8. For **Vertical Offset**, enter **2 cm**.
9. For the **Geometric Analyzer Module** select **No Grouping or Filtering (Default)**.
10. For the **Point Generator Module** select **Control Point then Local CS Origin then Center**
11. Set **Display Breakline** to **True**.

## Label Rules

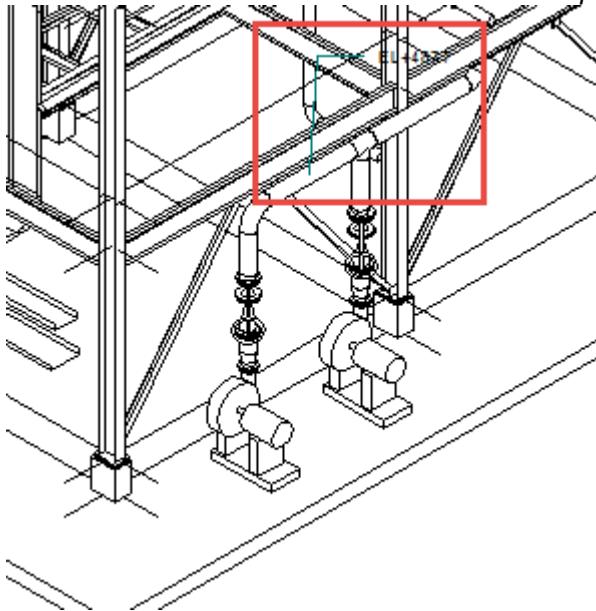


12. Click **Save & Close** on the label rule editor and click **Yes** on the prompt that is shown.
13. Click **OK** to select the label rule.
14. Click **OK** to save the view style.
15. Click **Close** on the **Define View Style** dialog box.

## Test the View Style

1. Edit the **Control Point Coordinate Labels** drawing.
2. Edit the view and select **Training\Control Point Coordinate Labels** for the view style.
3. Update the view.

*The software shows the elevation for the control point, as shown in the example below.*

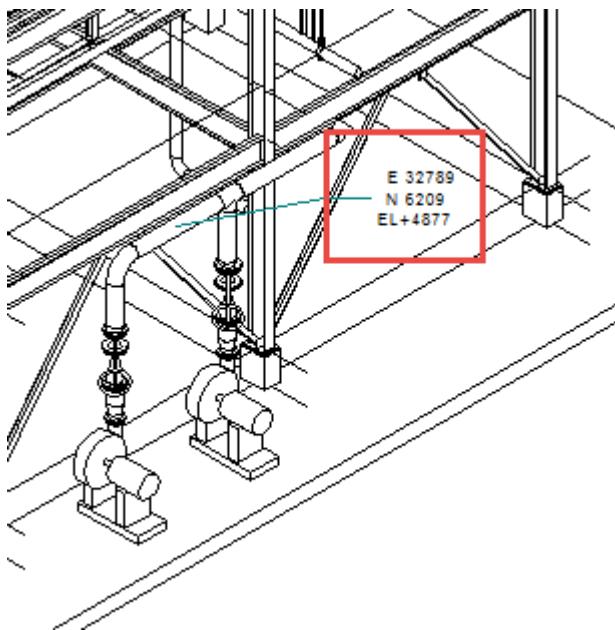


## Edit the Label Content

1. Locate **Control Point Coordinate Labels.rfm**, and open the file using your default text editor.
2. Set **Visible** to **Yes** for each of 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" />
```
3. Save the RFM file.
4. Switch to **SmartSketch Drawing Editor**, and update the view.

*As shown in the example below, all three coordinates display.*



5. Exit **SmartSketch Drawing Editor**.

## Grating Symbol Label

### Objective

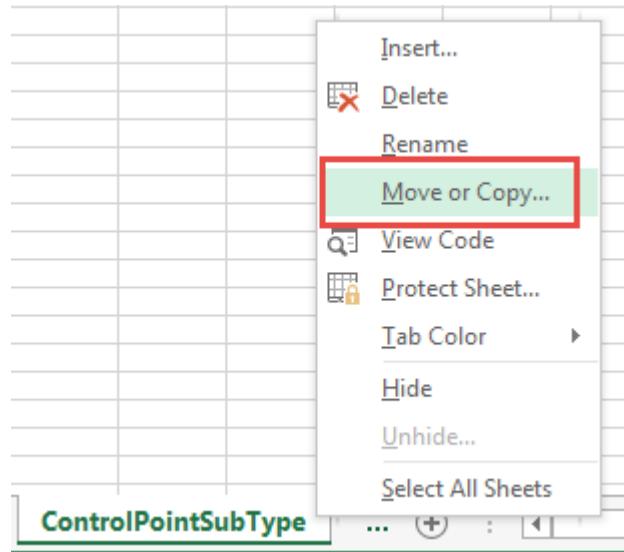
By the end of this session, you will be able to:

- Bulkload new control point subtypes for a grating symbol on a drawing.
- Create a label that places only the graphics you want in the drawing and uses them in a view style.

## Bulkload New Control Point Subtypes

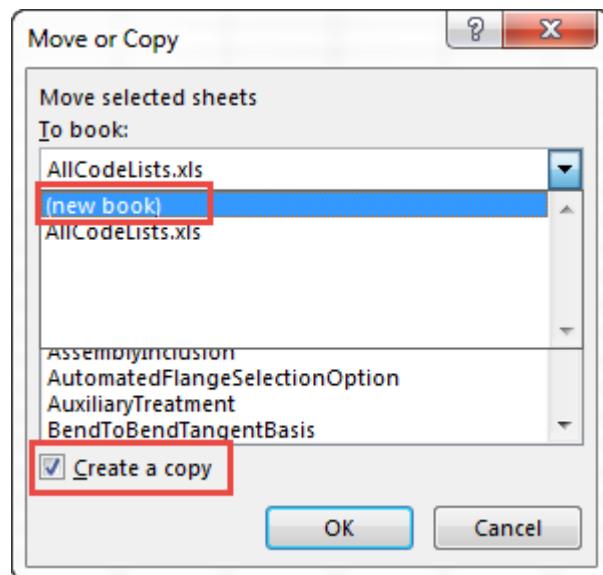
1. Exit the Smart 3D session if you have one open.
2. Open the *[Product Folder]\CatalogData\Bulkload\DataFiles\AllCodelists.xls* workbook, and locate the **ControlPointSubType** sheet.

3. Right-click the sheet tab, and then select **Move or Copy**.



The **Move or Copy** dialog box displays.

4. Select **Create a copy**, select **(new book)** in the **To book** list, and then click **OK**.



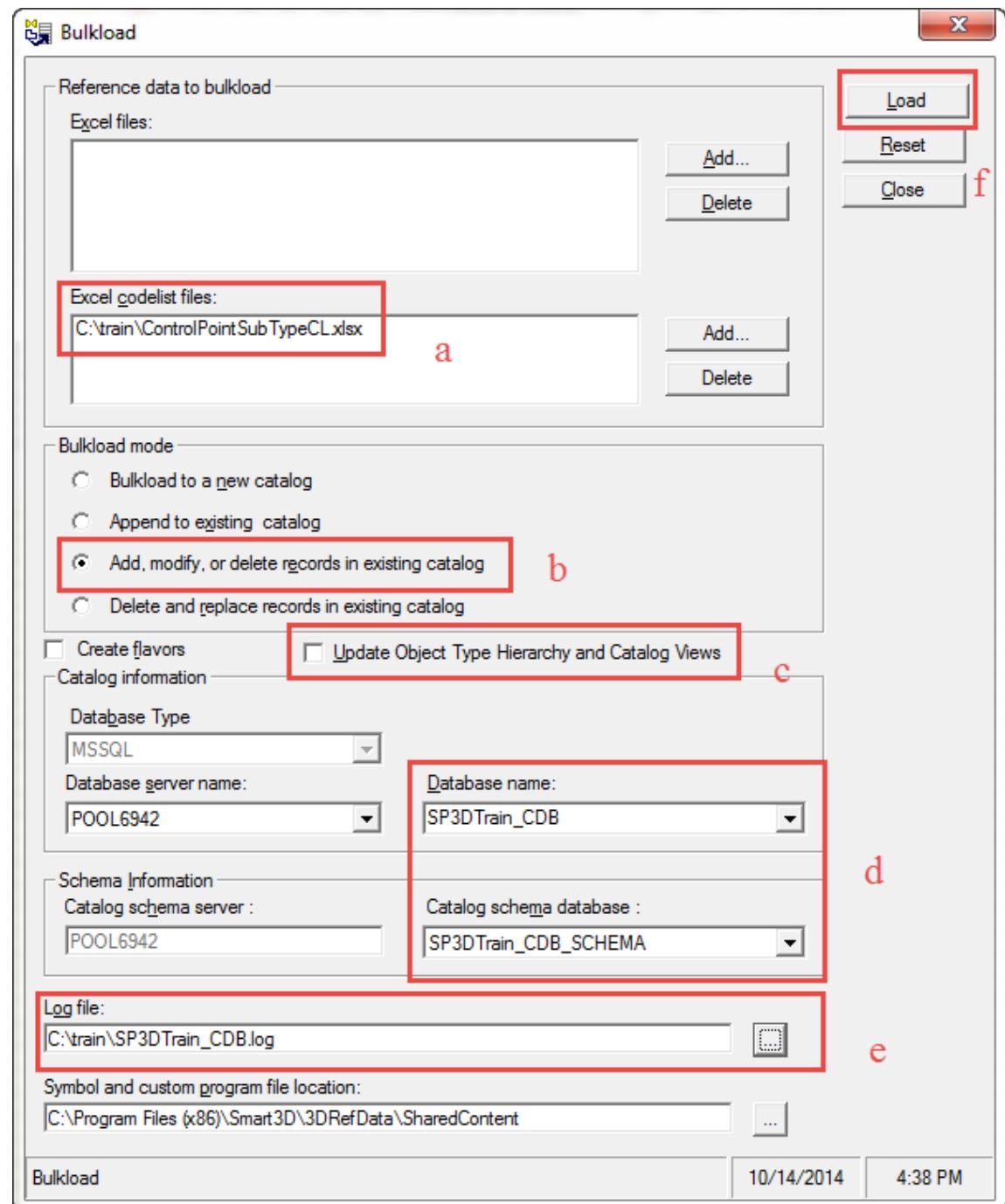
## Label Rules

---

5. Modify the rows containing code list numbers 41 through 44 as shown below, and then save the workbook on your disk. Name the workbook **ControlPointSubTypeCL.xls**.

48		User defined	User defined	38
49		User defined	User defined	39
50		User defined	User defined	40
51	a	Grating Symbol Bottom Left		41
52	a	Grating Symbol Top Left		42
53	a	Grating Symbol Bottom Right		43
54	a	Grating Symbol Top Right		44
55		User defined	User defined	45
56		User defined	User defined	46
57		User defined	User defined	47
58		User defined	User defined	48
59		User defined	User defined	49
60		User defined	User defined	50
61				
62		END		
63				
64				

6. Exit Excel.
7. Start the **Bulkload Reference Data** command, and make the following selections:
  - a. Select the ControlPointSubType.xls workbook in the **Excel codelist files** section.
  - b. Select **Add, modify or delete** as the bulkload mode.
  - c. Clear the **Update Object Type Hierarchy and Catalog Views** checkbox.
  - d. Select the appropriate server and database names in the **Catalog information** section.
  - e. Type the full path location and file name in the **Log file** box.
  - f. Click **Load** to begin the bulkload process.

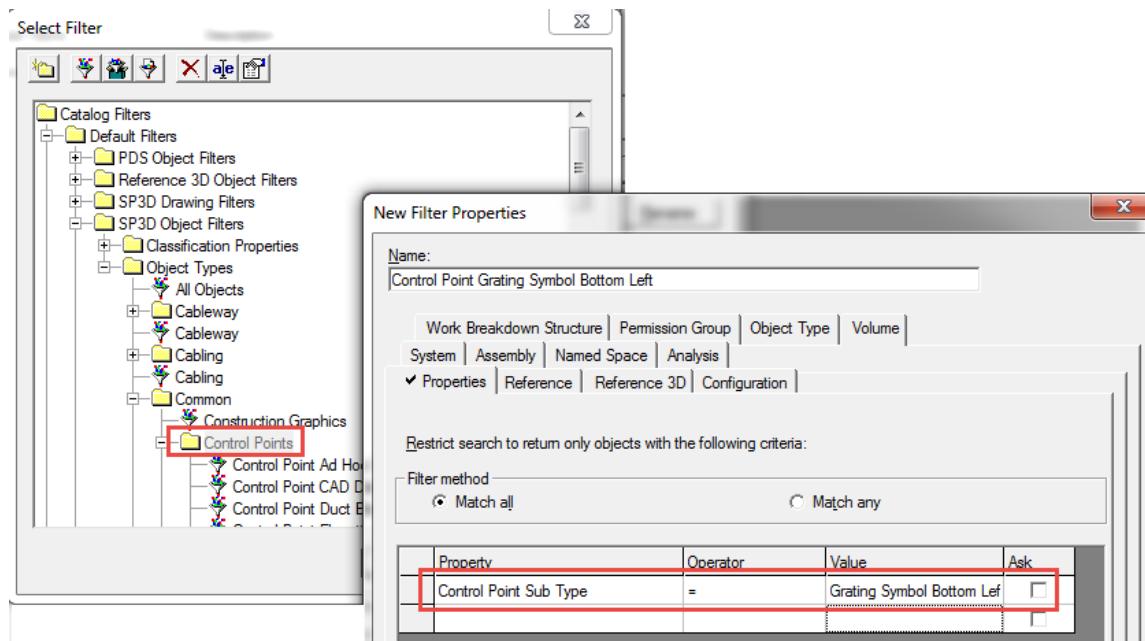


8. Close the **Bulkload** dialog.

## Define the View Style

1. Start the Smart 3D session.
2. Select **Tools > Define View Style**.
3. Ensure that the **View Style Type** is set to **Training**.
4. Highlight the view style **Grating Symbol Labels**, and click **Properties**.
5. Change the view style behavior to **Snapshot**.
6. Add a new graphic preparation rule named **Grating**, and edit its properties.
7. In the **Filter Properties** dialog box, create a catalog filter for control points of the subtype **Grating Symbol Bottom Left** as shown below.

**NOTE** Use the **MakeDrawableSimple.dll** to make the control points drawable.



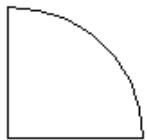
8. Click **OK** to save the graphic preparation rule.
9. Select the **Grating Symbol Labels** graphic preparation rule and click **OK** to select the rule.
10. In the first row in the view style, select **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Common\Control Points\Control Point Grating Symbol Bottom Left** filter in the **Filter Name** list.
11. Select **Control Points** as the **Graphic Rule**.

## Create the Label Rule

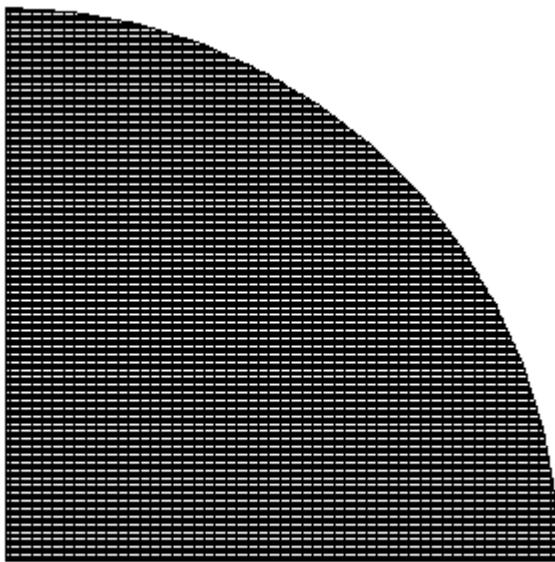
1. In the **Label Rule** field, select **More**.
2. Select the **Name\_None\_A\_NL** rule and **Copy**.
3. Change rule name to **Grating Bottom Left** and **Copy**.
4. Click **Properties** to edit the **Grating Bottom Left** rule.
5. Click the ellipsis (...) next to **Grating Bottom Left.sym**.

## Create a Grating Symbol

1. Delete the existing text box with the text **NAME**.
2. Click **Arc by Center Point**  on the vertical toolbar, and then draw an arc with the radius set to 1-inch and the sweep angle set to 90-degrees.
3. Click **Place Line**  on the vertical toolbar, and then draw vertical and horizontal lines connecting the center of the arc to its ends, to create a pie shape.  
**TIP** If needed, use **Trim**  to create a single closed shape.



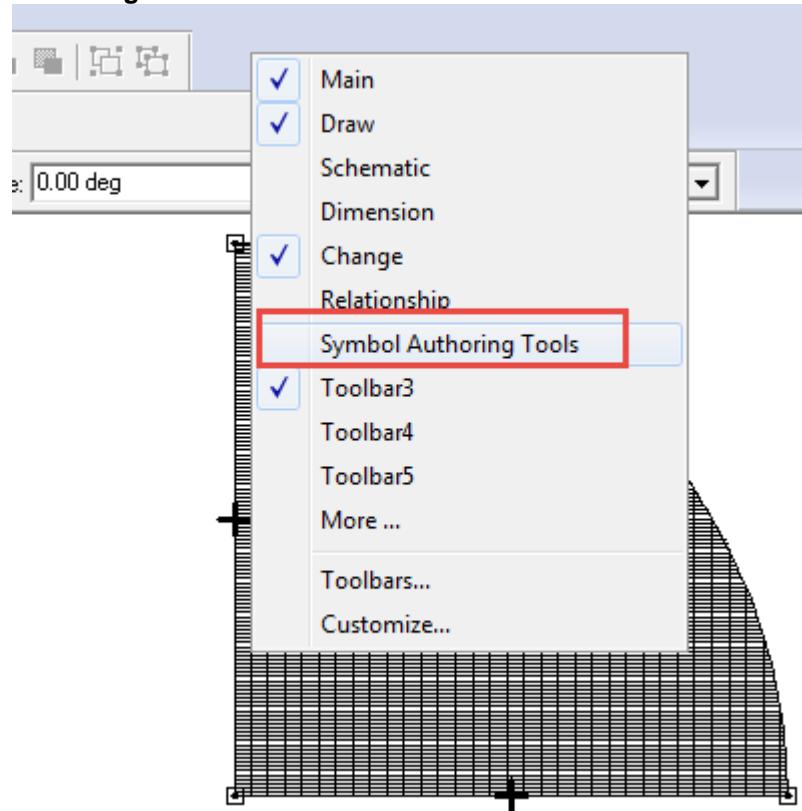
4. Click **Fill**  to fill the shape using the **Grate** pattern.



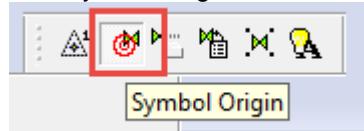
## Label Rules

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5. Right-click on the ribbon bar and select **Symbol Authoring Tools** to display the **Symbol Authoring Toolbar**.



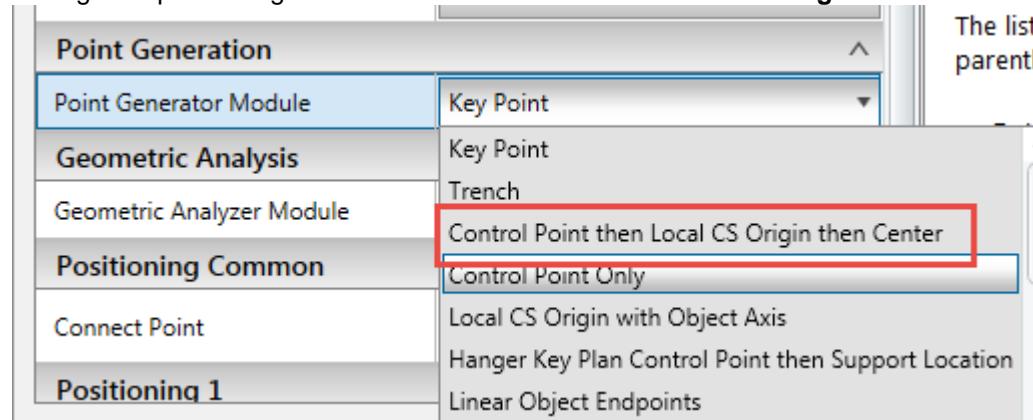
6. Use Symbol Origin command to move the symbol origin.



7. Click the center of the arc to place the symbol origin.
8. Save your document, and then exit **SmartSketch Drawing Editor**.

## Edit the Label Rule

1. Change the positioning module to **Control Point then Local CS Origin then Center**.



2. Click **Save & Close** on the label rule editor and click **Yes** on the prompt that is shown.
3. Click **OK** to select the label rule
4. Click **OK** to save the view style.
5. Click **Close** on the **Define View Style** dialog box.

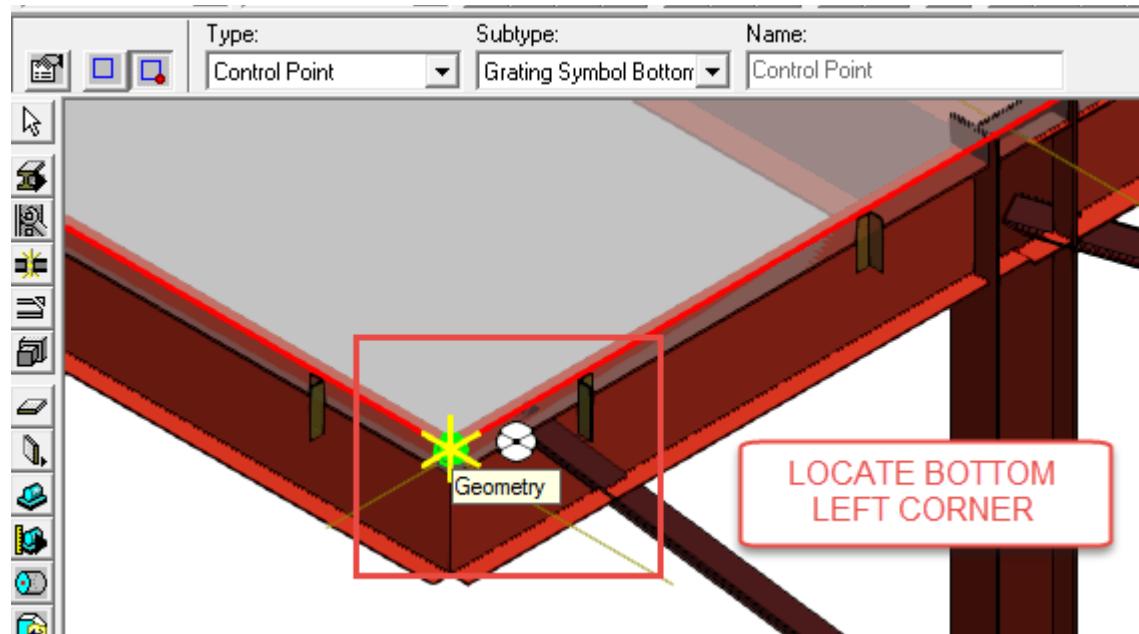
## Test the View Style

1. Switch to the **Structure** task, and define your workspace using **Plant Filters\Drawing Configuration Filters\Label Rules\U03 Workspace**.
2. Set your locate filter to All and hide the volume.
3. Click the node that changes the look direction to **Looking NE and Down** on **Common Views** .
4. Click **Fit**  on the **Common** toolbar.
5. Locate the slab at elevation 18 ft, and clip your view so that you can clearly see the slab.
6. Select the slab, and then click **Insert > Control Point**.
7. Set the subtype of control point to **Grating Symbol Bottom Left**

## Label Rules

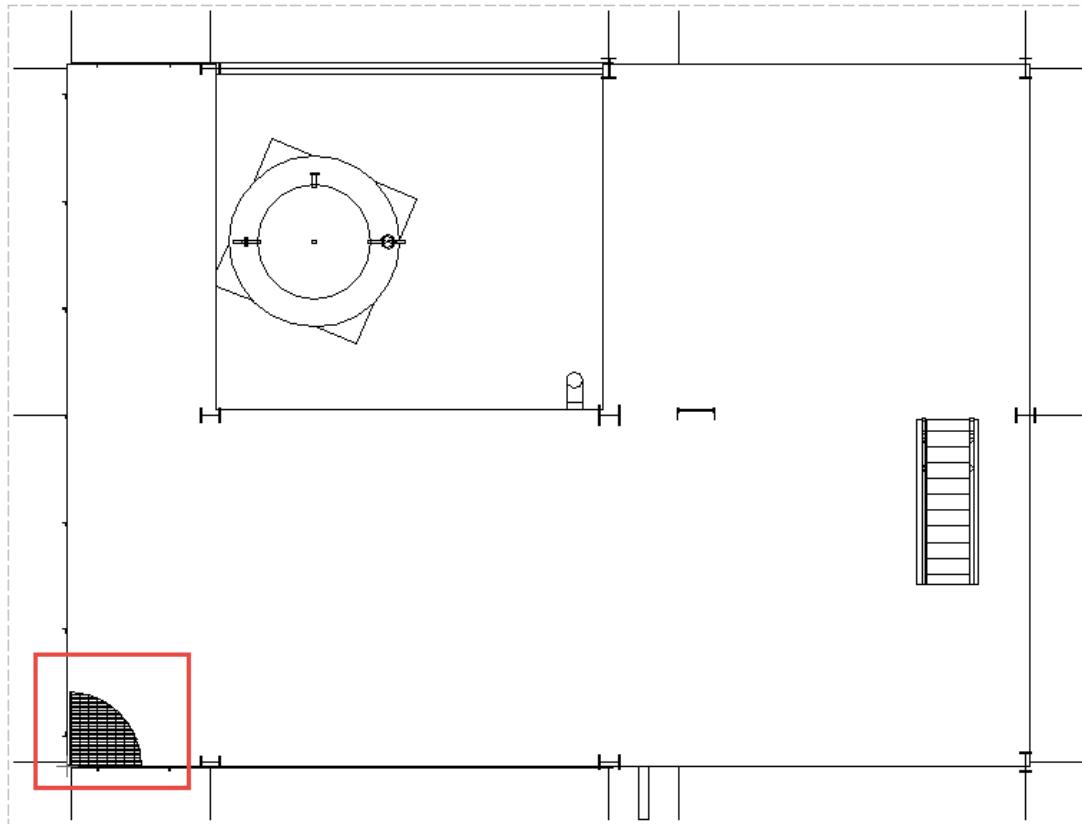
---

8. Locate the bottom left corner of the slab, and then click to place the control point.



9. Edit the **Grating Symbol Labels** drawing.
10. Edit the view properties to use the **Grating Symbol Labels** view style.
11. Update the view.

The software places the grating symbol label in the bottom left corner of the view, as shown in the example below.



12. Exit **SmartSketch Drawing Editor**.

## Creating a New Label for a Structural Member

### Objective

By the end of this session, you will be able to:

- Create a new label in the Catalog task to decide the data portion of a drawing label.
- Modify the SYM file of a label template to change the look and feel of the label.

### Define the View Style

1. Click **Tasks > Drawings and Reports**.
2. Click **Tools > Define View Style**.
3. Ensure that the **View Style Type** is set to **Training**.
4. Highlight the view style **Structure Member Labels**, and click **Properties**.

## Label Rules

---

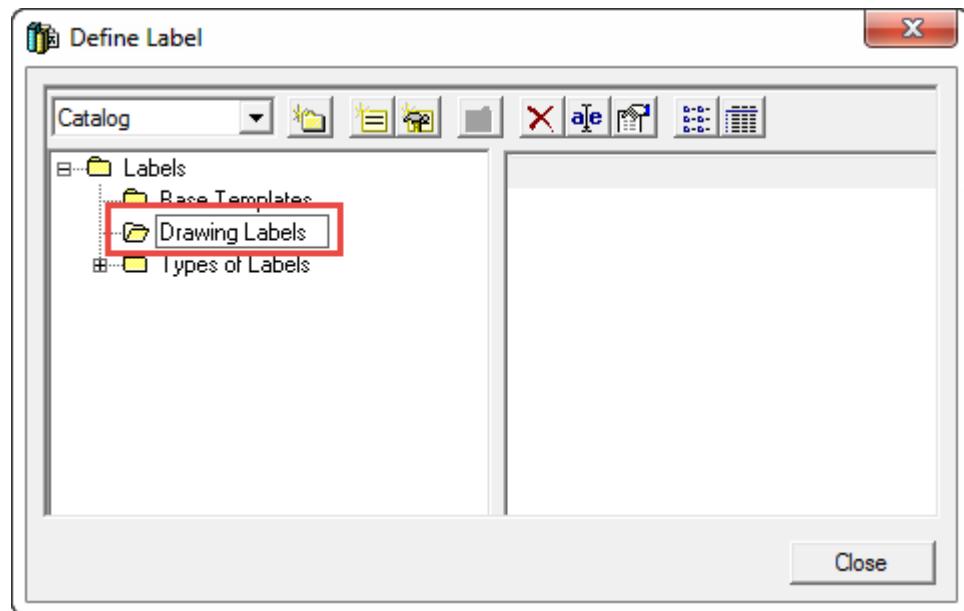
5. Enter **\*prismatic** in the first row and select the filter that shows up as a result of the search **Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Structure\Members\Member Part Prismatic**.
6. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **Civil\_Beams** from the list.

## Copy the Label Rule

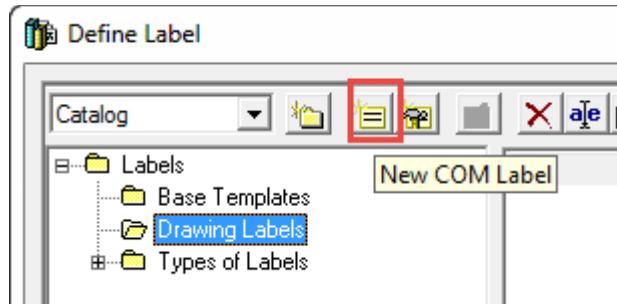
1. In the label rule field, select **More**.
2. Select the **SectionSize\_None\_APO\_NL** rule, and then click **Copy**.
3. Change rule name to **Structure Member Label** and then click **Copy**
4. Click **OK** to select the label rule for the view style.
5. Click **OK** to save the view style.
6. Click **Close** on the **Define View Style** dialog box.

## Label Template

1. Switch to the **Catalog** task.
2. Click **Tools > Define Label**.
3. Select the **Labels** folder, and create a new folder named **Drawing Labels**.

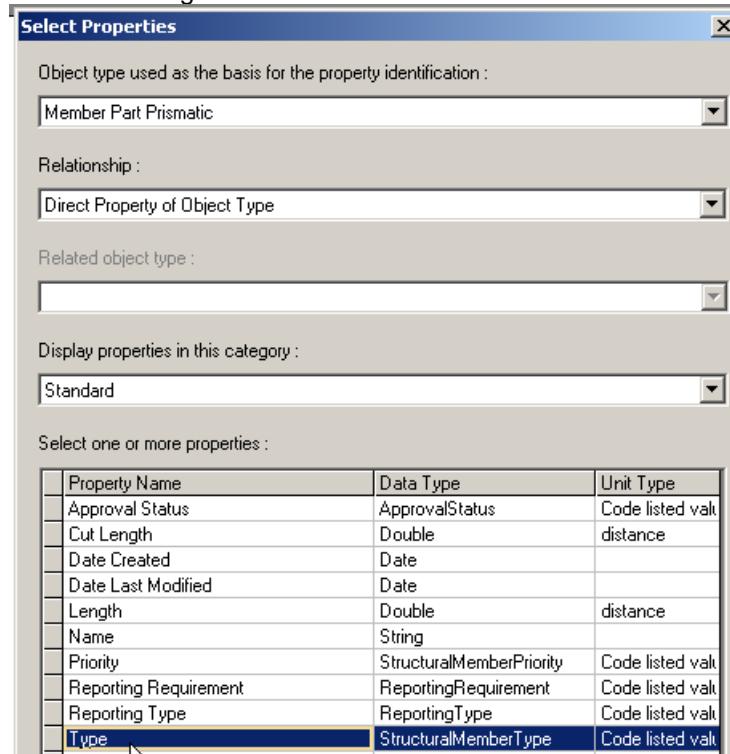


4. Select the **Drawing Labels** folder, and then click **New COM Label** .



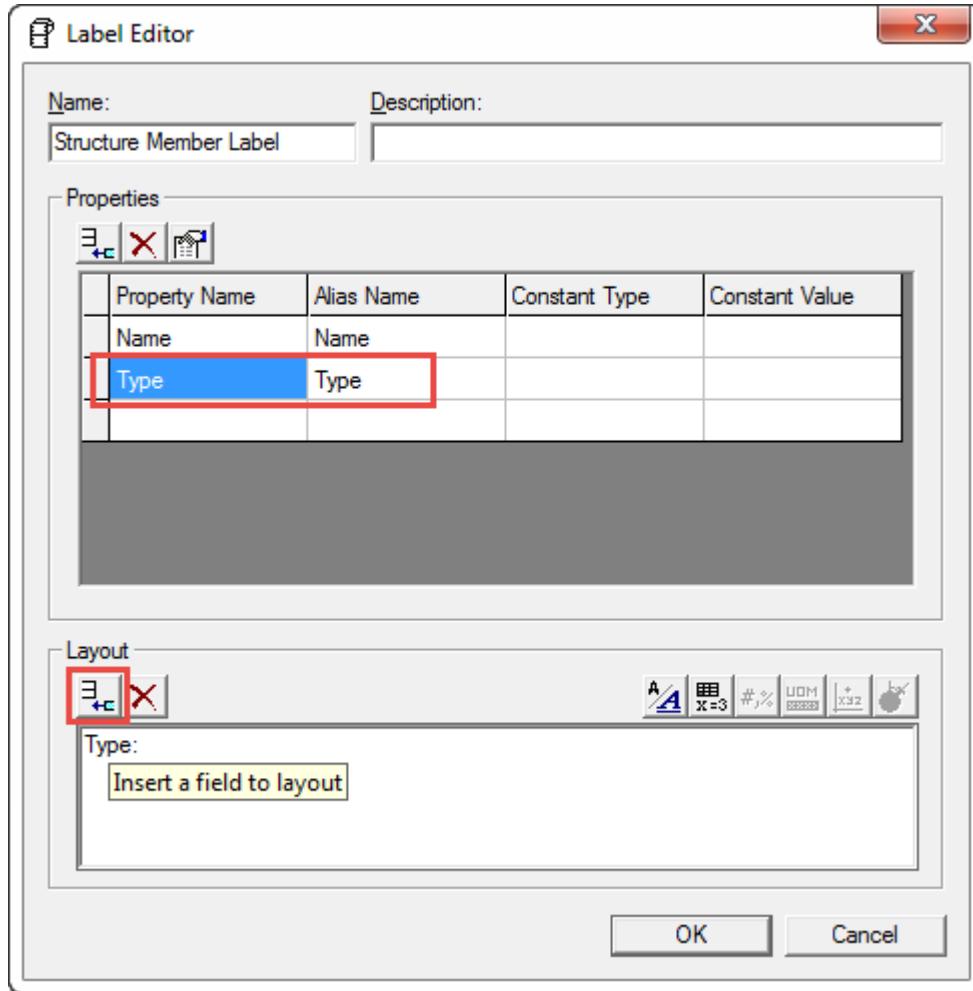
The **Label Editor** dialog box displays.

5. Type **Structure Member Label** in the **Name** box.
6. In the **Properties** section, click **Add**  to add an attribute to the selection.  
The **Select Properties** dialog box displays.
7. Select **Member Part Prismatic** in the **Object type used as the basis for the property identification** list.
8. Add a property named **Type** to the label, as shown in the example below, and then click **OK** to close the dialog box.

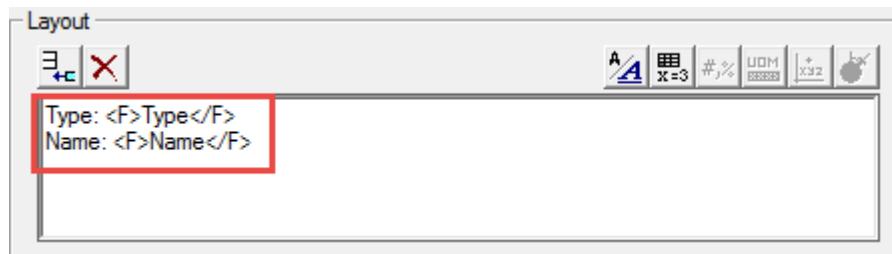


9. Click in the **Layout** box and key in **Type:** .
10. Select the **Type** property, and then click **Insert a field to layout**  to insert the property to the layout.

## Label Rules



11. With the blinking cursor in the **Layout** text box, press ENTER to move to the next line.
12. Key in **Name:** .
13. Select the **Name** property, and then click **Insert a field to layout** to insert the property to the layout.



14. Click **OK** on the **Label Editor** dialog to save the label.
15. Click **Close** on the **Define Label** dialog.
16. Using **Windows Explorer**, browse to the **[Product Folder]\SharedContent\Labels\Drawing Labels\Structure Member Label** folder, and copy all the files.

17. Browse to the [Product Folder]\SharedContent\Drawings\Catalog\Labels\Templates folder, and paste the copied files.

**TIP** Overwrite existing files if prompted by the software.

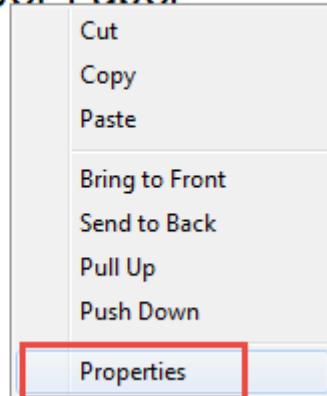
## Label Symbol File

1. Switch to the **Drawings and Reports** task.
2. **Tools > Define View Style**.
3. Ensure that the **View Style Type** is set to **Training**.
4. Edit properties for the **Structure Member Labels** view style.
5. Click in the label rule cell in the top row and press F12.
6. Select the ellipsis (...) next to **Structure Member Label.sym** to open it.
7. Double-click the word **SectionSize** until it highlights with a yellow background, and then type **Structure Member Label**.

**TIP** This is for your information only. The software does not care what text you type here.

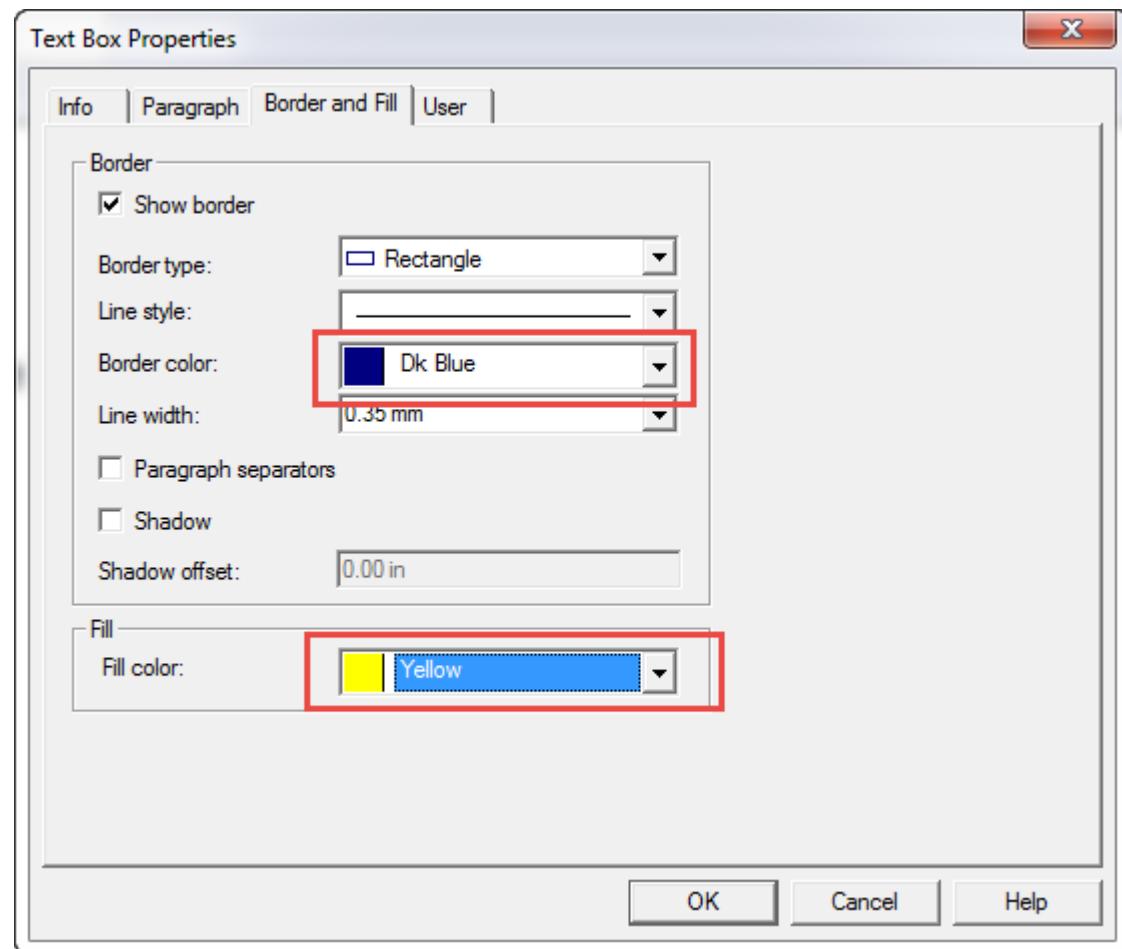
8. Right-click the text box, and then select **Properties**.

### Structure Member Label



9. Set **Border color** to **Dk Blue** and **Fill color** to **Yellow**.

## Label Rules



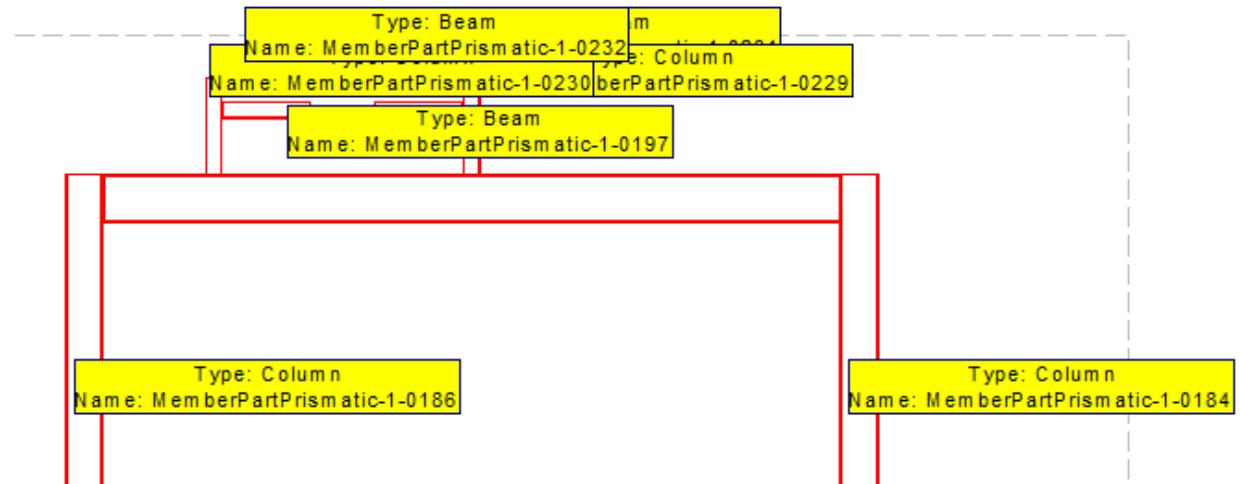
10. Click **OK** to close the dialog box.
11. Save the symbol, and then exit **SmartSketch Drawing Editor**.
12. Click **Save & Close** on the label rule editor and click **Yes** on the prompt that is shown.
13. Click **OK** to save the view style.
14. Click **Close** on the **Define View Style** dialog box.

## Test Label Rule

1. Edit the **Structure Member Labels** drawing.
2. Edit the view properties and select the **Training\Structure Member Labels** view style.

3. Update the view.

*Members now have the label applied to them.*



4. Exit **SmartSketch Drawing Editor**.



# Dimension Rules

## Dimension Rule for Equipment

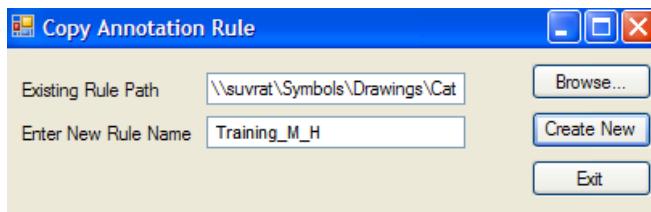
### Objective

By the end of this session, you will be able to:

- Copy a dimension rule and its template using a tool.
- Modify the dimension template XML tags to determine which dimensions are to be drawn.
- Use the new dimension rule in a view style to dimension equipment to one another.

### Copy the Dimension Rule

1. Run the **Copy Annotation Rule** application using the shortcut on the desktop.
2. Click **Browse**, and then navigate to the **[SharedContent]\Drawings\Catalog\Rules\DimensionRules** folder.
3. Select **Linear\_M\_HV**, and then click **Open**.
4. Type **Training\_M\_H** in the **New Rule Name** box, and then click **Create New**.



5. Click **OK** on any prompts the software displays.
6. Type **Training\_M\_V** in the lower box, and then click **Create New**.
7. Click **OK** on any prompts the software displays.
8. Click **Exit** to exit the **Copy Annotation Rule** application.

## Edit the Dimension Rule

1. Open **Windows Explorer**, and navigate to the [SharedContent]\Drawings\Catalog\Dimensions\Templates folder.
2. Locate **Training\_M\_H.xml**, and then open the file using a text editor.
3. Locate the first occurrence of the **<vert>** tag in the dimensionSettings section, and set it to **0**.

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

**NOTE** This change causes only horizontal dimensions to be placed.

4. Save the file.
5. Locate **Training\_M\_V.xml**, and then open the file using a text editor.
6. Locate the first occurrence of the **<horiz>** tag in the dimensionSettings section, and set it to **0**.

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

**NOTE** This change causes only vertical dimensions to be placed.

7. Save the file.

## Edit the View Style

1. Click **Tools > Define View Style**.
2. Ensure that the **View Style Type** is set to **Training**.
3. Click **New Style**  to create a new view style.  
*A view style is created in the dialog box and its name is presented in edit mode.*
4. Key in **Equipment Dimensions** to give a name to the new view style.
5. With the view style still highlighted in the dialog box, click **Properties** .
  

*The View Style Properties dialog box displays.*

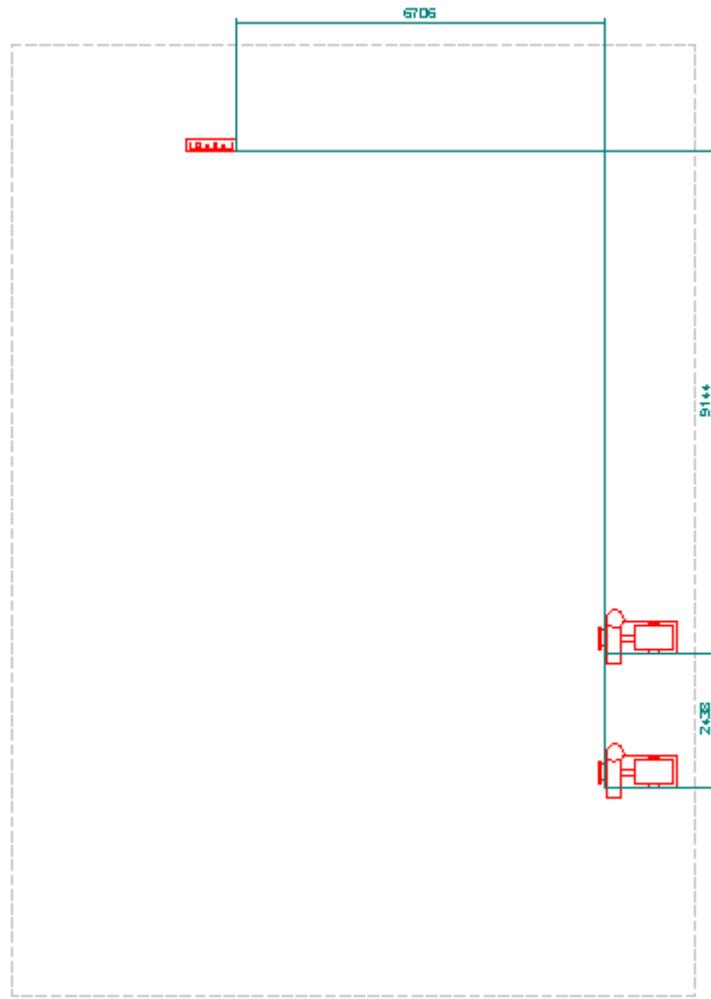
6. Click in the bottom cell in the **Filter Name** column, and select **More** from the list.  
*The Select Filter dialog box displays.*
7. Select Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Equipment and Furnishing\Equipment.
8. Click **OK** on the **Select Filters** dialog box.  
*The selected filter is entered into the cell on the View Style Properties dialog box.*
9. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **Civil\_Beams** from the list.
10. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Dimension Rule** column, and then select **More** from the list.
11. Select **Training\_M\_H**, and then click **OK**.
12. Copy and paste the equipment filter from the first row into the first cell on the next row.

13. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **Civil\_Beams** from the list.
14. At the end of the last row in the view style, click in the **Dimension Rule** box, and then select **More**.
15. Select **Training\_M\_V**, and then click **OK**.
16. Click **OK** to save the view style.
17. Click **Close** on the **Define View Style** dialog box.

## Test the View Style

1. Right-click the **Equipment Dimensions** drawing under **Drawings\Configuration Labs\Dimension Rules**.
2. Select **Edit**.  
*The software opens the drawing in a **SmartSketch Drawing Editor** window.*
3. Right-click on the view boundary and select **Properties**.  
*The **Drawing View Properties** dialog box displays when placement is complete.*
4. Select **More** in the **Style** list.  
*The **Select View Style** dialog box displays.*
5. Select **Training\Equipment Dimensions**.
6. Click **OK** on the **Select View Style** dialog box.
7. Click **OK** on the **Drawing View Properties** dialog box to complete the view definition.
8. Right-click, and update the view.

*The updated view contents should resemble the example below. The equipment is dimensioned both horizontally and vertically.*



9. Exit **SmartSketch Drawing Editor**.

## Dimension Rule for Piping

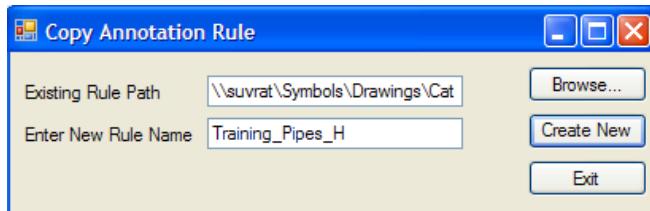
### Objective

By the end of this session, you will be able to:

- Modify the filter associated with a composed drawing view.
- Use the orientation tests in a view style to dimension pipes.
- Modify a dimension rule to dimension objects close to the margin using the "range" feature and turning off internal dimensioning.
- Modify a dimension rule to consume small dimensions within larger neighboring dimensions.
- Modify a dimension rule to trim witness lines at the margin.

## Copy the Dimension Rule

10. Run the **Copy Annotation Rule** application using the shortcut on the desktop.
11. Click **Browse**, and then navigate to  
[SharedContent]\Drawings\Catalog\Rules\DimensionRules folder.
12. Select **Piping Plan\_Pipes\_Horizontal**, and then click **Open**.
13. Type **Training\_Pipes\_H** in the **Enter New Rule Name** box, and then click **Create New**.



14. Click **OK** on any prompts the software displays.
15. Click **Browse**, select **Piping Plan\_Pipes\_Vertical**, and then click **Open**.
16. Type **Training\_Pipes\_V** in the **Enter New Rule Name** box, and then click **Create New**.
17. Click **OK** on any prompts the software displays.
18. Click **Exit** to exit the **Copy Annotation Rule** application.

## Edit the View Style to Add Dimension Rules to Parallel Pipe

1. Click **Tools > Define View Style**.
2. Ensure that the **View Style Type** is set to **Training**.
3. Click **New Style** to create a new view style.  
*A view style is created in the dialog box and its name is presented in edit mode.*
4. Key in **Pipe Dimensions** to give a name to the new view style.
5. With the view style still highlighted in the dialog box, click **Properties** .
6. Click in the bottom cell in the **Filter Name** column, and select **More** from the list.  
*The Select Filter dialog box displays.*
7. Select Catalog Filters\Default Filters\SP3D Object Filters\Object Types\Piping\Piping Parts\Pipes.
8. Click **OK** on the **Select Filters** dialog box.  
*The selected filter is entered into the cell on the View Style Properties dialog box.*
9. On the same row in the **View Style Properties** dialog box, click in the **Primary Orientation** column, and then select **Parallel, Horizontal**.
10. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **Civil\_Beams** from the list.

## Dimension Rules

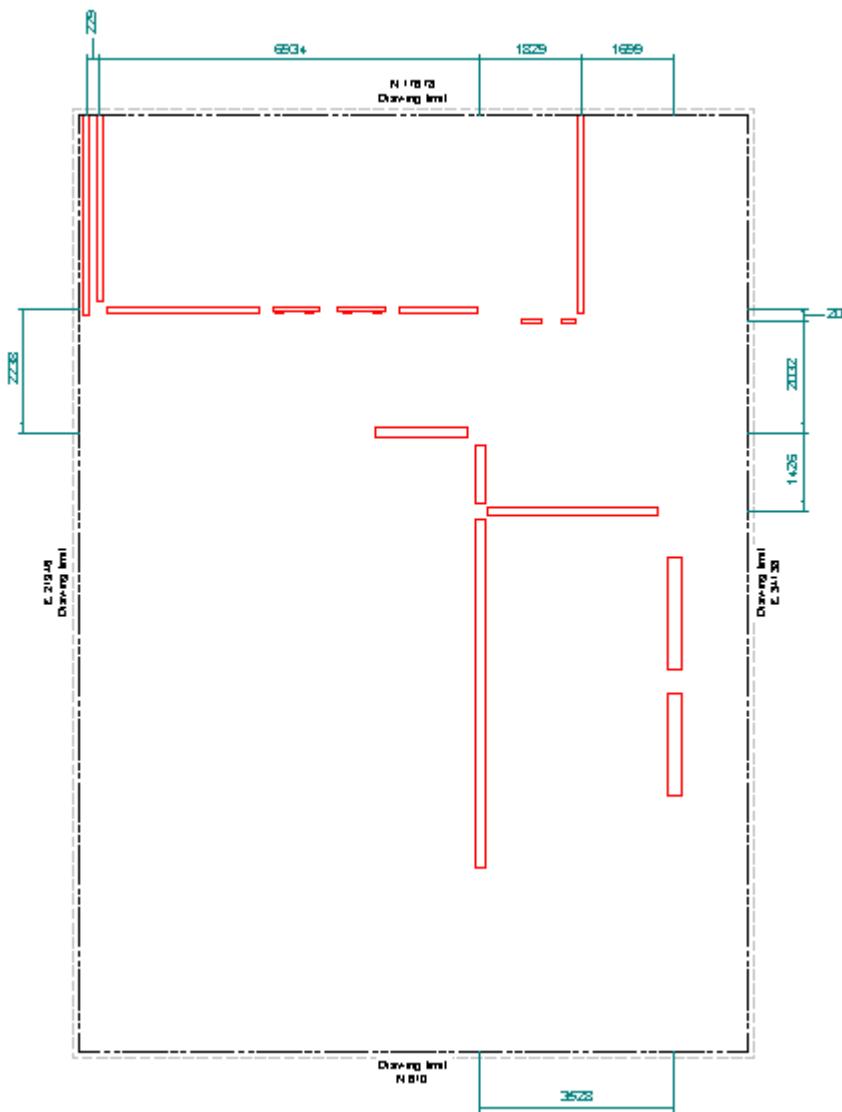
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11. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Dimension Rule** column, and then select **More** from the list.
  12. Select **Training\_Pipes\_V**, and then click **OK**.
  13. Copy and paste the pipes filter from the first row into the first cell on the next row.
  14. On the same row in the **View Style Properties** dialog box, click in the **Primary Orientation** column, and then select **Parallel, Vertical**.
  15. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **Civil\_Beams** from the list.
  16. At the end of the last row in the view style, click in the **Dimension Rule** box, and then select **More**.
  17. Select **Training\_Pipes\_H**, and then click **OK**.
- | Filter Name               | Primary Orientation  | Secondary Orientation | Label Rule | Dimension Rule   |
|---------------------------|----------------------|-----------------------|------------|------------------|
| Piping\Piping Parts\Pipes | Parallel, horizontal |                       |            | Training_Pipes_V |
| Piping\Piping Parts\Pipes | Parallel, vertical   |                       |            | Training_Pipes_H |
18. Click in the **Matchline Rule** box, and then select **Matchline\_None\_A**.  

  19. Click **OK** to save the view style.
  20. Click **Close** on the **Define View Style** dialog box.

## Test the View Style

1. Right-click the **Pipe Dimensions** drawing under **Drawings\Configuration Labs\Dimension Rules**.
2. Select **Edit**.  
*The software opens the drawing in a **SmartSketch Drawing Editor** window.*
3. Right-click on the view boundary and select **Properties**.  
*The **Drawing View Properties** dialog box displays when placement is complete.*
4. Select **More** in the **Style** list.  
*The **Select View Style** dialog box displays.*
5. Select **Training\Pipe Dimensions**.
6. Click **OK** on the **Select View Style** dialog box.
7. Click **OK** on the **Drawing View Properties** dialog box to complete the view definition.
8. Right-click and update the view.  
*The updated view contents should resemble the example below. Horizontal dimensions exist between pipe that are vertical to the plane of the sheet. Vertical dimensions exist between pipe that are horizontal to the plane of the sheet.*



## Edit the View Style to Add Dimension Rules To Normal Pipe

1. Click **Tools > Define View Style**.
2. Ensure that the **View Style Type** is set to **Training**.
3. Double-click **Pipe Dimensions**.  
*The **View Style Properties** dialog box displays.*
4. Copy and paste the pipes filter from the first row into the first cell on the blank row.
5. On the same row in the **View Style Properties** dialog box, click in the **Primary Orientation** column, and then select **Normal**.
6. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **Civil\_Beams** from the list.

## Dimension Rules

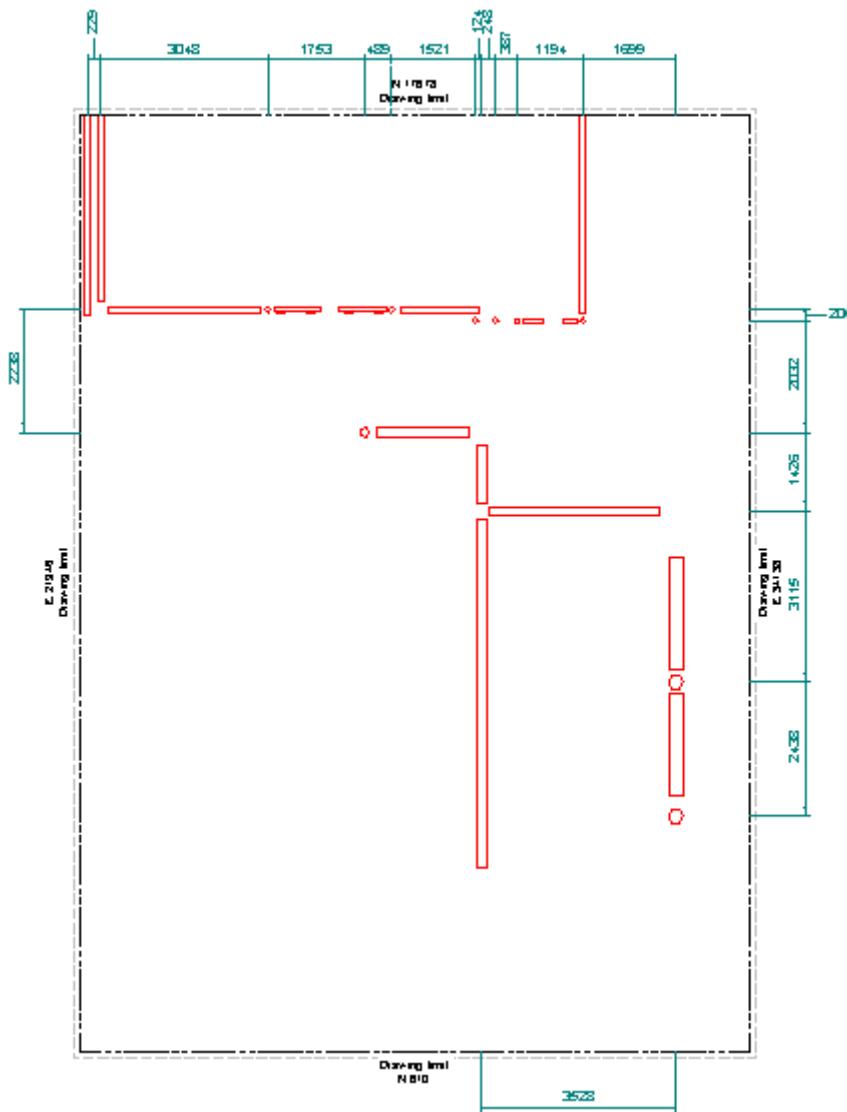
---

7. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Dimension Rule** column, and then select **More** from the list.
  8. Select **Training\_Pipes\_V**, and then click **OK**.
  9. Copy and paste the pipes filter from the first row into the first cell on the blank row.
  10. On the same row in the **View Style Properties** dialog box, click in the **Primary Orientation** column, and then select **Normal**.
  11. On the same row in the **View Style Properties** dialog box, click in the blank cell in the **Graphic Rule** column, and then select **Civil\_Beams** from the list.
  12. At the end of the last row in the view style, click in the **Dimension Rule** box, and then select **More**.
  13. Select **Training\_Pipes\_H**, and then click **OK**.
  14. Click in the **Matchline Rule** box, and then select **Matchline\_None\_A**.
- | Filter Name               | Primary Orientation  | Secondary Orientation | Label Rule | Dimension Rule   |
|---------------------------|----------------------|-----------------------|------------|------------------|
| Piping\Piping Parts\Pipes | Parallel, horizontal |                       |            | Training_Pipes_V |
| Piping\Piping Parts\Pipes | Parallel, vertical   |                       |            | Training_Pipes_H |
| Piping\Piping Parts\Pipes | Normal               |                       |            | Training_Pipes_V |
| Piping\Piping Parts\Pipes | Normal               |                       |            | Training_Pipes_H |
15. Click **OK** to save the view style.
  16. Click **Close** on the **Define View Style** dialog box.

## Test the View Style

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View** from the list.

*The updated view contents should resemble the example below. Horizontal dimensions exist between pipe that are vertical and normal to the plane of the sheet. Vertical dimensions exist between pipe that are horizontal and normal to the plane of the sheet.*



## Edit the Dimension Rule to Add the Range Functionality

1. Open **Windows Explorer**, and navigate to the **[SharedContent]\Drawings\Catalog\Dimensions\Templates** folder.
2. Locate **Training\_Pipes\_H.xml**, and open the using a text editor.
3. Locate **<range>**, and set the tag value to **-1**.
4. Locate **<rangeOffset>**, and set the tag value to **0.05**.

5. Locate **<internalDimension>**, and set the tag value to **0**.

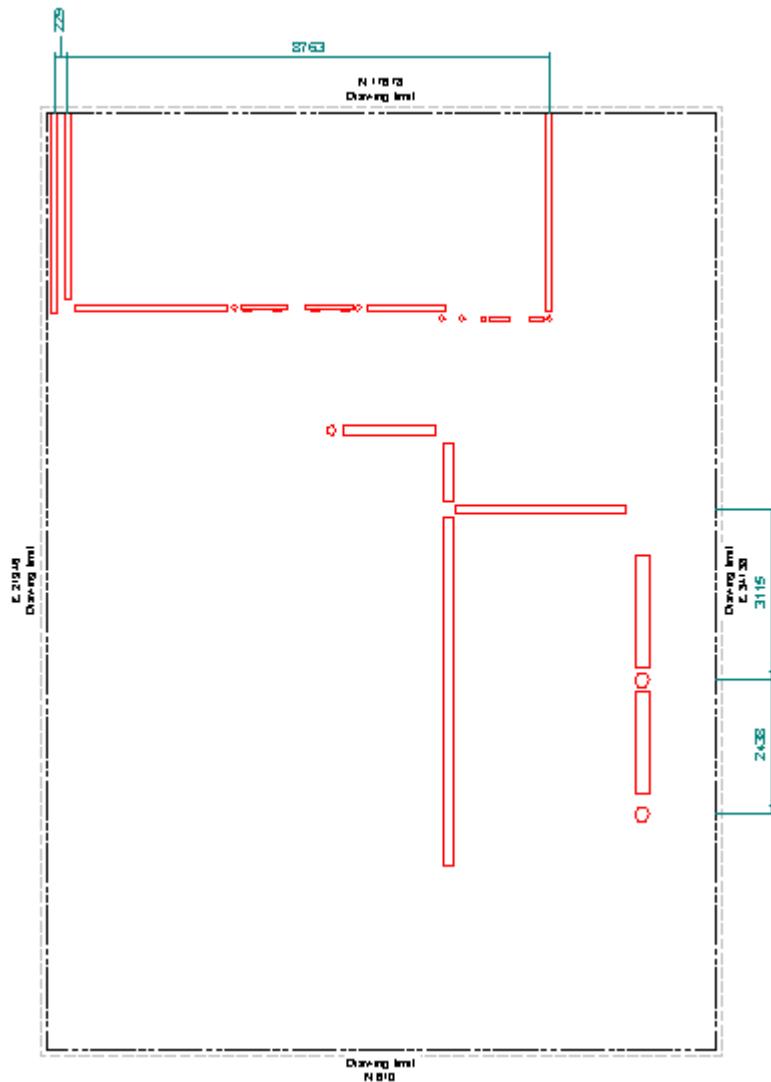
```
<range>-1</range>
<!--This option only use when range option is set true -->
<!--This option determines the distance from the matchline. unit of this option-->
<!--is paper unit-->
<rangeoffset>0.05</rangeoffset>
<!--This option determines whether internal dimensions are placed. Settings: -1 for-->
<!--true, 0 for false. if the value for range is 0, then this option is not work.-->
<!--If this option is true then do not recommend to use positioning module-->
<!--"DrawingDimMarginPos" or "DrawingDimAbsolutePos".-->
<internalDimension>0</internalDimension>
<!--This option determines whether external dimensions are placed. Settings: -1 for-->
<!--true, 0 for false. if the value for range is 0, then this option is not work.-->
<!--If this option is true, external dimension is enforced using positioning module -->
<!--"DrawingDimMarginPos".-->
<externalDimension>-1</externalDimension>
<!--This option determines minimum distance of dimension. if dimension distance is-->
<!--not same and upward this option, that dimension is not placed.-->
<minimumDimension>0.0</minimumDimension>
```

6. Save the file.
7. Locate **Training\_Pipes\_V.xml**, and open the file using a text editor.
8. Locate **<range>**, and set the tag value to **-1**.
9. Locate **<rangeOffset>**, and set the tag value to **0.05**.
10. Locate **<internalDimension>**, and set the tag value to **0**.
11. Save the file.

## Test the View Style

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View** from the list.

*The updated view contents should resemble the example below. The number of dimensions is vastly reduced because only the pipes within 50 mm of the matchline are now being dimensioned.*



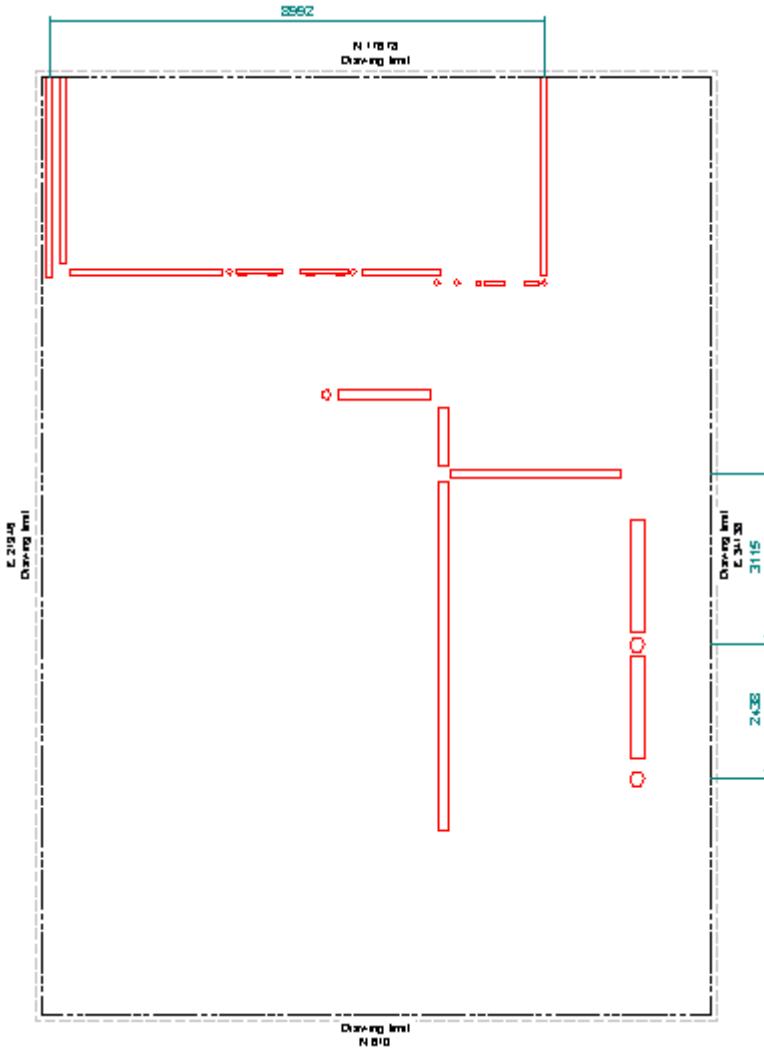
## Edit the Dimension Rule to Eliminate Small Dimensions

1. Open Windows Explorer, and navigate to [SharedContent]\Drawings\Catalog\Dimensions\Templates folder.
2. Locate **Training\_Pipes\_H.xml**, and open the file using a text editor.
3. Locate **<minimumDimension>**, and then set the tag value to **0.25**.  
`<minimumDimension>0.25</minimumDimension>`
4. Save the file.
5. Locate **Training\_Pipes\_V.xml**, and open the file using a text editor.
6. Locate **<minimumDimension>**, and then set the tag value to **0.25**.
7. Save the file.

## Test the View Style

1. Switch to the **SmartSketch Drawing Editor** window.
2. Right-click the view boundary, and then select **Update View** from the list.

*The updated view contents should resemble the example below. The number of dimensions is further reduced because dimensions smaller than 10" are removed.*



## Edit the Dimension Rule to Extend Witness Lines

1. Open **Windows Explorer**, and navigate to the [SharedContent]\Drawings\Catalog\Dimensions\Templates folder.
2. Locate **Training\_Pipes\_H.xml**, and open the file using a text editor.

3. Locate **<trimWitness>** and set the tag value to **-1**.

```
<trimWitness>0</trimWitness>
```

4. Set the **<rangeOffset>** tag value to **0.5**.

```
<rangeOffset>0.5</rangeoffset>
```

5. Save the file.

6. Locate **Training\_Pipes\_V.xml**, and open the file using a text editor.

7. Set the **<trimWitness>** tag value to **-1**, and set the **<rangeOffset>** tag value to **0.5**.

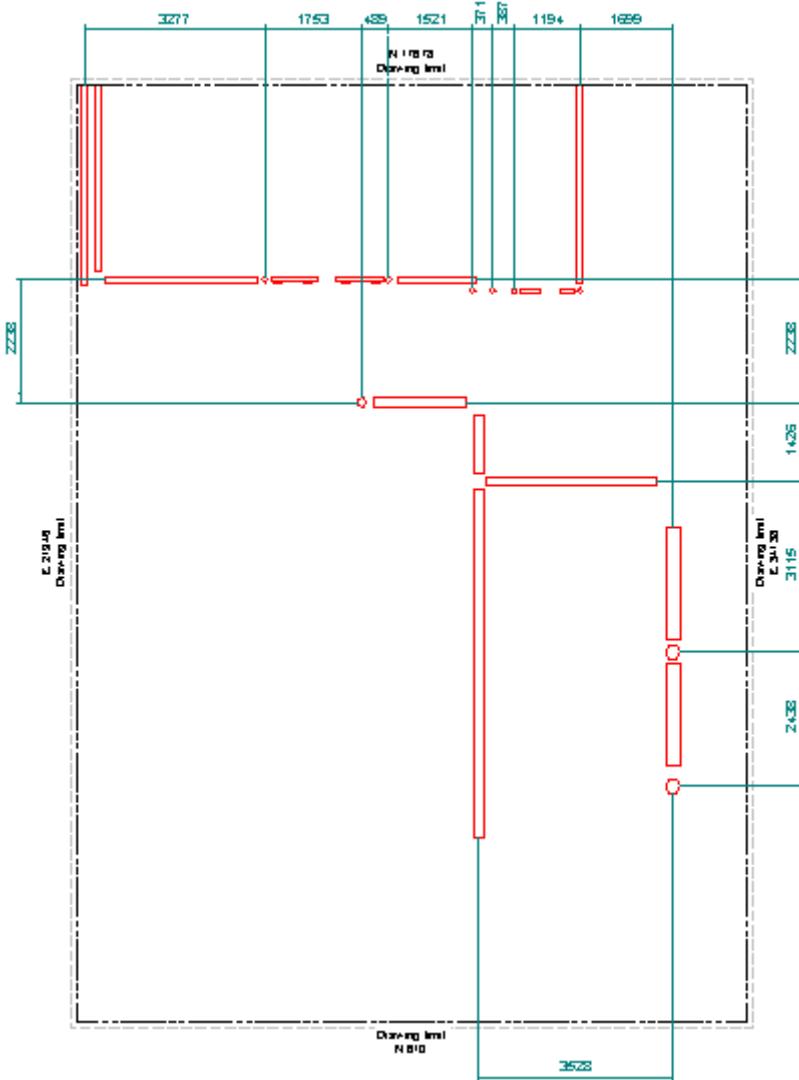
8. Save the file.

## Test the View Style

1. Switch to the **SmartSketch Drawing Editor** window.

2. Right-click the view boundary, and then select **Update View** from the list.

*The updated view contents should resemble the example below. The dimension witness lines now extend into the view.*



3. Exit SmartSketch Drawing Editor.

## Chained Dimensions

### Objective

By the end of this session, you will be able to:

- Setup a view style to use shared dimensioning.
- Create and edit anchor rules.
- Use anchored dimensioning to chain dimension rules together.
- Use different point generators to tie anchored dimensions together from different points on an object.
- Anchor in matchline dimension rules

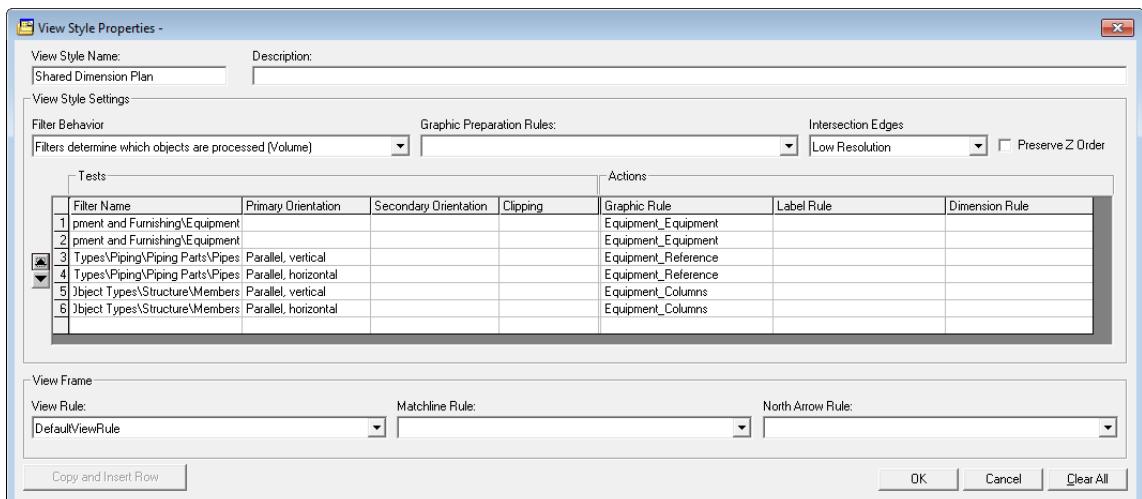
## Apply Shared Dimensions in a View Style

1. Switch to the Smart 3D window and ensure you are in the **Drawings and Reports** task.
2. Select **Tools > Define View Style**.
3. Ensure that the **View Style Type** is set to **Training**.
4. Double-click **Shared Dimension Plan**.

The **View Style Properties** dialog box displays.

*This is a basic view style with three object types: pipe, equipment, and structural members. A dimension rule will be applied to rows in this view style to demonstrate how the same dimension rule can be applied to multiple rows to create a group of chained dimensions between different object types. This is called Shared Dimensioning.*

5. In the first row with the equipment filter, click the row number to highlight the row.
6. Click the **Copy and Insert Row** button  to place a duplicate of the row directly beneath the highlighted row.
7. Repeat this step for the pipe row and the member row.
8. In the top row with the pipe filter, click in the **Primary Orientation** list, and select **Parallel, vertical**.
9. In the next row with the pipe filter, click in the **Primary Orientation** list, and select **Parallel, horizontal**.
10. Repeat this process for the rows with the members filter. The end result should resemble this:



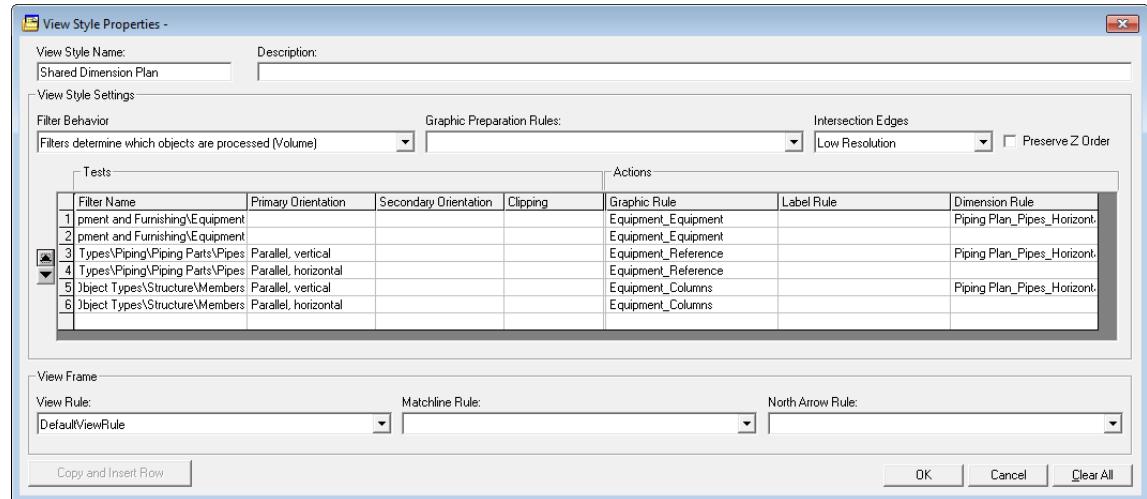
*This view style tests on the orientation of linear objects types so that only ones that are horizontal and vertical in the view are dimensioned.*

11. Click in the **Dimension Rule** list in the top equipment row
12. Select **More** from the list to bring up the **Select Dimension Rule** dialog.
13. Select the dimension rule **Piping Plan\_Pipes\_Horizontal** and click **OK**.

## Dimension Rules

---

14. Click on the dimension rule text to highlight it then right-click the highlighted text and select **Copy**.
15. Click in the **Dimension Rule** cell in the row for vertical pipe, then right-click and select **Paste**. This will paste the rule in the cell and select it for use.
16. Repeat the previous step in the **Dimension Rule** cell in the row for the vertical members. The end result should resemble this:



17. Click **OK** on the **View Style Properties** dialog to save your changes and close the dialog.
18. Click **Close** on the **Define View Style** dialog box.

## Test the View Style

1. Right-click the **Chained Dimensions** drawing under **Drawings\Configuration Labs\Dimension Rules**.
2. Select **Edit**.

*The software opens the drawing in a **SmartSketch Drawing Editor** window.*

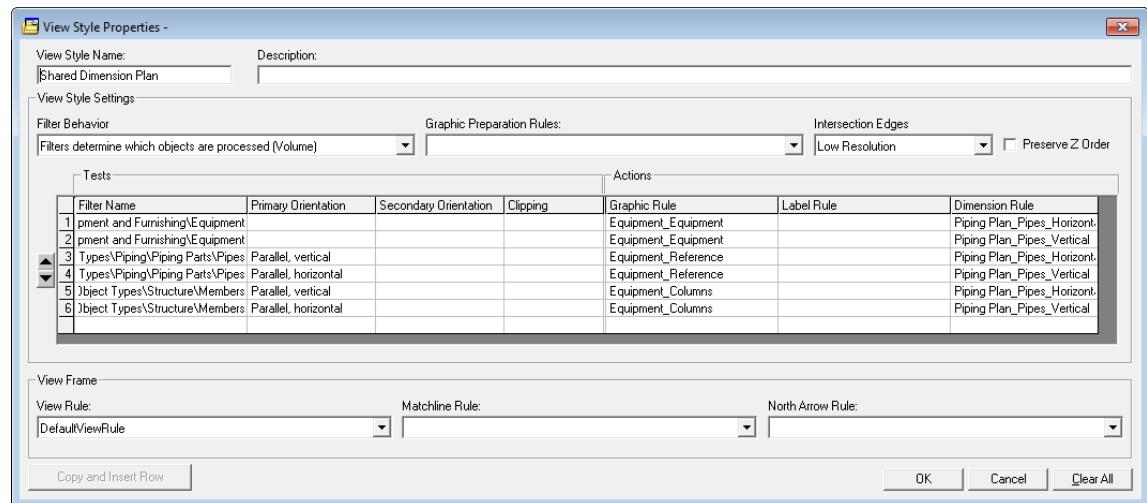
*This drawing has two predefined views that use the view styles being edited in this section. The left view is named Shared Dimensions, and will be used in this exercise.*

3. Right-click on the left view boundary, and select **Update View**.
4. When the view update completes, notice the chain of dimensions along the top and bottom of the view border. The dimension chains include all three object types in the drawing, dimensioned to the center of the objects.

*By convention, a vertical dimension is a dimension whose dimension line is vertical on the drawing sheet. A horizontal dimension is a dimension whose dimension line is horizontal on the drawing sheet. In this drawing, the view style is placing horizontal dimensions on vertically oriented objects. Vertical dimensions to horizontal objects will now be added to the view style.*

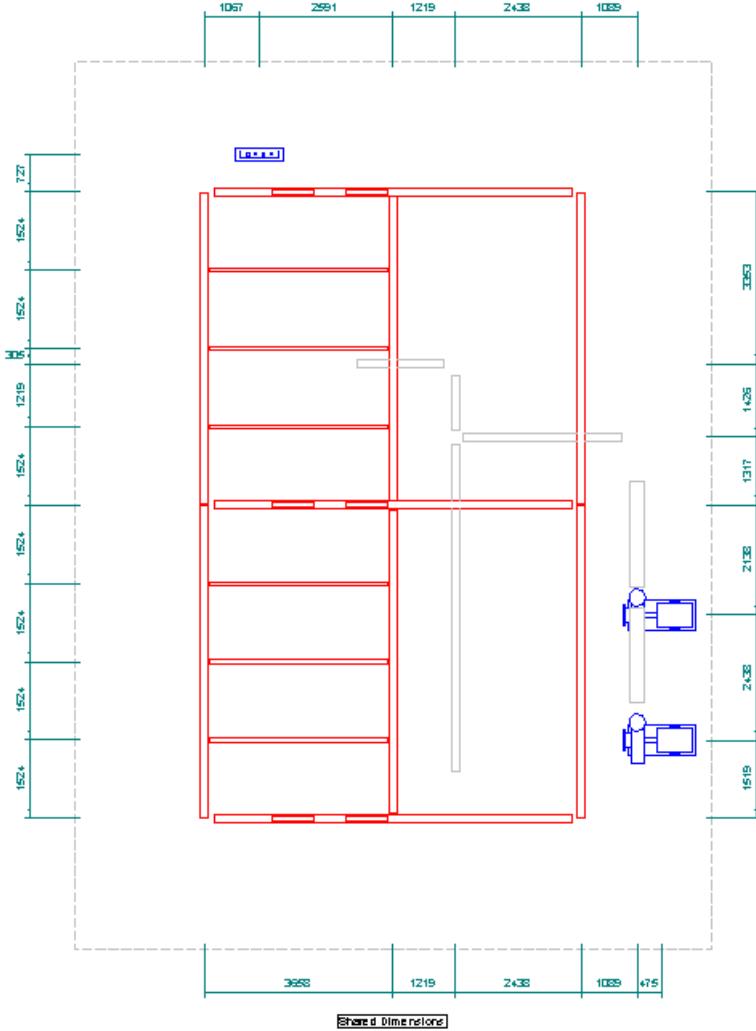
5. Switch back to the Smart 3D window and select **Tools > Define View Style**.
6. Ensure that **Shared Dimension Plan** is still highlighted, and select **Properties**.
7. On the second equipment row, click in the **Dimension Rule** list, and select **More**.
8. Locate and select **Piping Plan\_Pipes\_Vertical**.

9. Click in the cell to highlight the dimension rule name, then right-click and select **Copy**.
10. Click in the **Dimension Rule** cell in the row for horizontal pipe, then right-click and select **Paste**. This will paste the rule in the cell and select it for use.
11. Repeat the previous step in the **Dimension Rule** cell in the row for the horizontal members. The end result should look resemble this:



12. Click **OK** on the **View Style Properties** dialog to save your changes and close the dialog.
13. Click **Close** on the **Define View Style** dialog box.
14. Switch back to the **SmartSketch Drawing Editor** window.
15. Right-click on the left view boundary, and select **Update View**. Upon completion, your view should resemble this:

## Dimension Rules

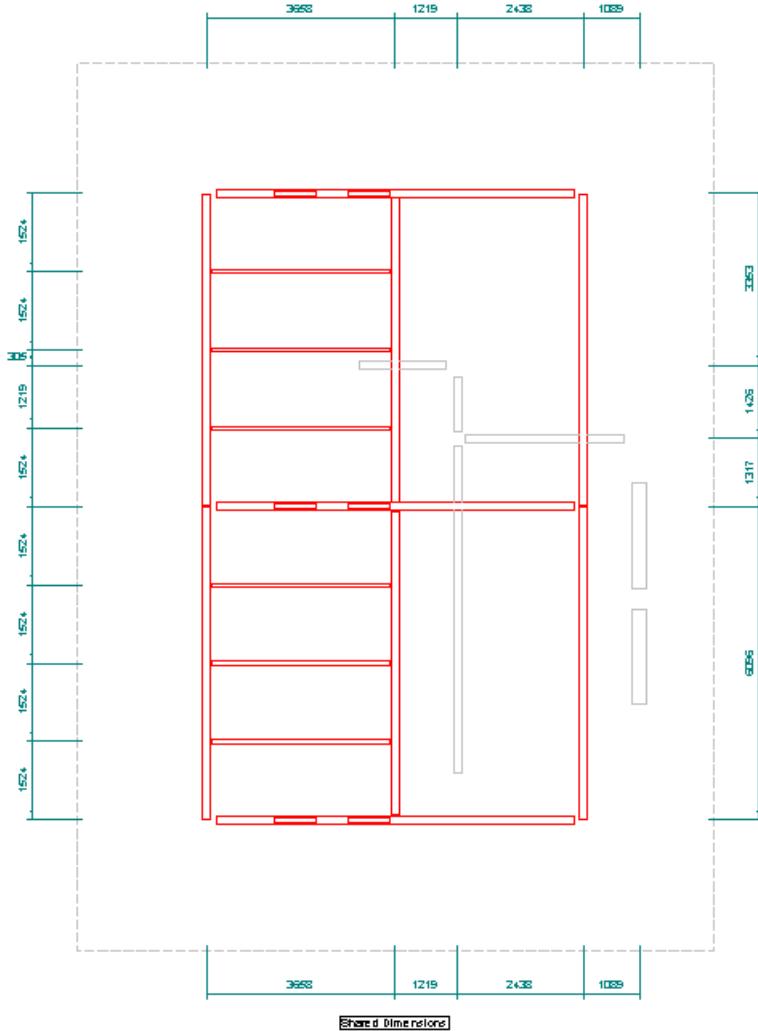


*Every item in the drawing is included in a dimension chain. The next steps demonstrate that shared dimension chains are placed even if one of the object types is not present in the view.*

16. Switch back to the **SmartSketch Drawing Editor** window.
  17. Close the drawing. Save when prompted.
  18. In the Smart 3D window, select **Tasks > Piping**.
  19. Select **Tools > Drawing Console**.
  20. Right-click on the drawing **Drawings\Configuration Labs\Dimension Rules\Chained Dimensions** and select **Edit**.
  21. Click on the left view boundary, and select **Associate Objects to View**.
  22. Switch to the Smart 3D window.
  23. Click on the **Filter** list in the ribbon bar and select **More**.
  24. Select the filter **Plant Filters\Drawing Configuration Filters\Dimension Rules\Pipe and Members**, and click **OK**.

**NOTE** By using this filter, the view is restricted to show only pipe and members in the view after update. The equipment will not get drawn.

25. Switch back to the **SmartSketch Drawing Editor** window.
26. Right-click the left view's border and select **Update View**.



*Even though the equipment is no longer in the drawing, the dimensions for the other objects are still placed.*

27. Click the view border, and select **Associate Objects to View**.
28. Switch back to the Smart 3D window.
29. In the ribbon bar, click in the **Filter** list and select **More**.
30. Select the filter **Plant Filters\Drawing Configuration Filters\Dimension Rules\U01 Drawing**.
31. Switch back to **SmartSketch Drawing Editor** and right-click to end the command.
32. Close the drawing, and save when prompted.

## Change to a Dimension Rule with a Different Point Generator

In the next steps, you will change the view style to use a dimension rule with a different point generator to demonstrate that shared dimension chains are limited to reference only one point generator, which may produce undesired results.

1. Open the **Copy Annotation Rule** tool.
2. Click **Browse** and navigate to *[Shared Content]\Drawings\Catalog\Rules\DimensionRules*.
3. Select the **Equipment Plan\_Process Equipment\_Horizontal** rule, and click **Open**.
4. Type **Training\_Point Generator\_Horizontal** in the **Enter New Rule Name** box, and then click **Create New**.
5. Click **Browse** again, select the **Equipment Plan\_Process Equipment\_Vertical** rule, and then click **Open**.
6. Type **Training\_Point Generator\_Vertical** in the **Enter New Rule Name** box, and then click **Create New**.
7. Open a Windows Explorer window, and navigate to *[Shared Content]\Drawings\Catalog\Rules\DimensionRules*.
8. Press CTRL and select the two rules just created.
9. Right-click one of the selected rules and select **Edit with Notepad++** to open each XML file in its own tab.
10. Ensure the rule **Training\_Point Generator\_Horizontal** is the active tab in **Notepad++**.
11. Locate the **<filter>** tag. Notice it has a different value than the **<name>** tag. The copy annotation rule does not propagate the name into the filter tag, so this must be done manually.
12. Copy the entry from the name tag, and paste it into the **<filter>** tag, overwriting the value that is currently there.

```
<name>Training_Point Generator_Horizontal</name>
<filter>Training_Point Generator_Horizontal</filter>
```
13. Save and close the file.
14. Ensure the rule **Training\_Point Generator\_Vertical** is the active tab in **Notepad++**.
15. Locate the **<filter>** tag.
16. Copy the entry from the name tag, and paste it into the **<filter>** tag, overwriting the value that is currently there.

```
<name>Training_Point Generator_Vertical</name>
<filter>Training_Point Generator_Vertical</filter>
```
17. Save and close the file.
18. Switch to **Windows Explorer**, and navigate to *[Shared Content]\Drawings\Catalog\Dimensions\Templates*.
19. Locate the XML files created by the copy annotation rule tool. Press CTRL and select both files.
20. Right-click one of the selected rules and select **Edit with Notepad++** to open each XML file in its own tab.

21. Ensure that **Training\_Point Generator\_Horizontal** is the active file, and locate the **<pgModule>** tag. It should be located around line 13.

22. Erase the current value, and type **DrawingPGLocalCS**.

```
<pgModule>DrawingPGLocalCS</pgModule>
```

23. Save and close the file.

24. Repeat this process with the **Training\_Point Generator\_Vertical** file.

25. Save and close the file.

26. Switch back to the Smart 3D window.

27. Select **Tasks > Drawings and Reports**.

28. Select **Tools > Define View Style**.

29. Ensure that the **View Style Type** is set to **Training**.

30. Double-click Shared Dimension Plan.

*The View Style Properties dialog box displays.*

31. On the topmost equipment filter row, click in the dimension rule cell and select **More...**

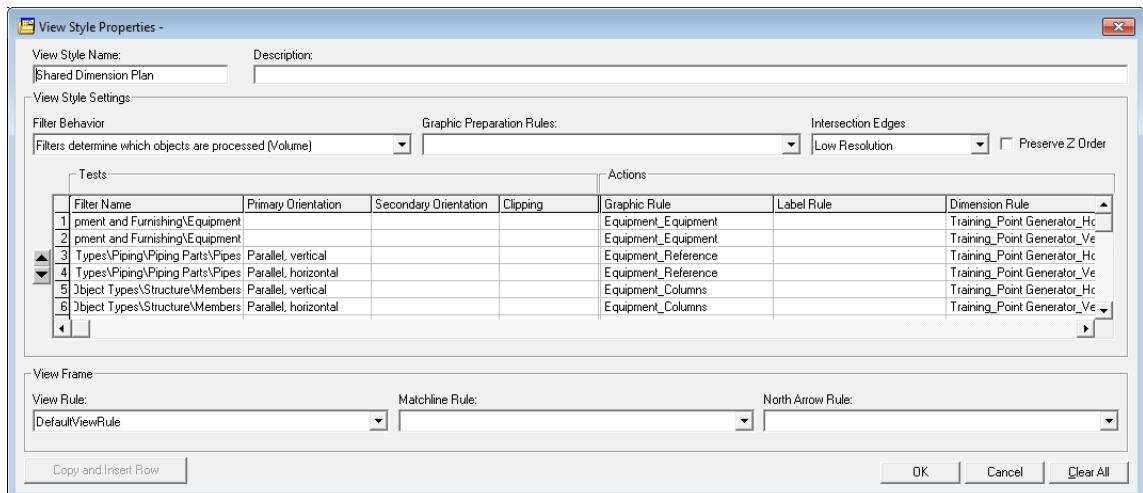
32. Locate and select the rule **Training\_Point Generator\_Horizontal**.

33. Click in the cell to highlight this rule, then copy and paste it into the rows for vertical pipe and members.

34. On the other equipment filter row, click in the dimension rule cell and select **More...**

35. Locate and select the rule **Training\_Point Generator\_Vertical**.

36. Click in the cell to highlight this rule, then copy and paste it into the rows for horizontal pipe and members.



37. Click **OK** to accept the view style changes.

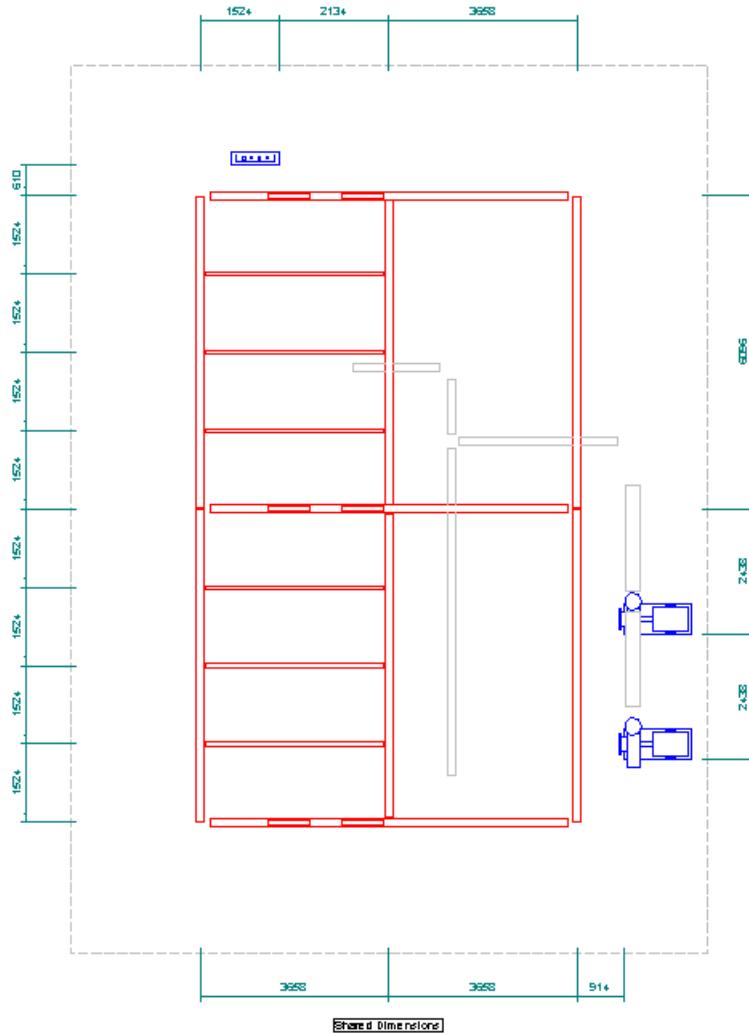
*This rule now uses the point generator DrawingPGLocalCS. This is a different point generator than what is used by the Piping Plan\_Pipes dimension rules, which place a point at the ends of linear objects, and defaults to center of range if the object is not linear. Equipment is usually dimensioned to the origin or control point, not center of range. The DrawingPGLocalCS point*

## Dimension Rules

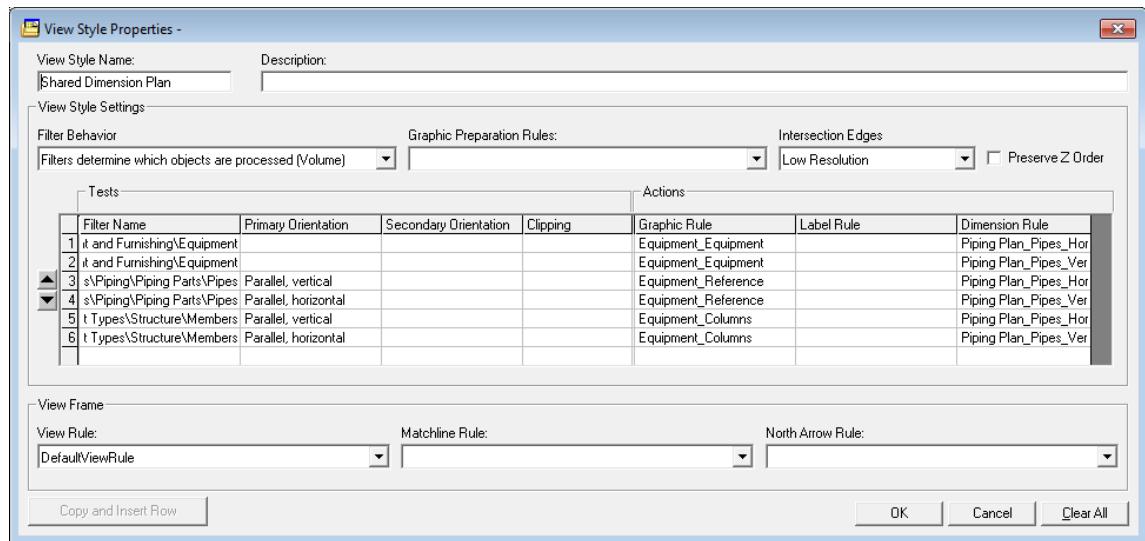
---

generator places a point on an object's local coordinate system. If an object, such as pipe, does not implement a local coordinate system then no dimension will be placed. We will now update the view to observe how this affects our dimensions.

38. Switch back to the **SmartSketch Drawing Editor** window.
39. Right-click on the left view boundary, and select **Update View**.
40. Notice the changes to the dimensions. Pipes are no longer included in the dimension chain while equipment are no longer dimensioned to their center of range.



41. Switch back to the Smart 3D window and select **Tools > Define View Style**.
42. Edit the **Shared Dimension Plan** view style, and revert the changes just made. Your view style should look like this:



43. Switch back to **SmartSketch Drawing Editor**, click on the left view boundary, and select **Update View**.

*The changes are being reverted so we can compare the results of the upcoming anchored dimensions to the results of the original shared dimensions.*

## Create and Edit Anchor Rules

Anchored dimensions tie different dimension rules into a single chain. Each dimension rule can reference a different point generator, if needed. When anchoring dimensions together, one rule will act as the “parent” rule and reference the other rules. The anchor rules will take on the settings of the parent rule in appearance and settings, with the exception of the point generator. In the next steps, you will make a copy of an existing rule and modify the xml to anchor dimensions together.

1. Open the **Copy Annotation Rule** tool.
2. Click **Browse** and navigate to **[Shared Content]\Drawings\Catalog\Rules\DimensionRules**.
3. Select the **Training\_Point Generator\_Horizontal** rule, and click **Open**.
4. Type **Training\_Dimension Types\_Horizontal** in the **Enter New Rule Name** box, and then click **Create New**.
5. Click **Browse** again, select the **Training\_Point Generator\_Vertical** rule, and then click **Open**.
6. Type **Training\_Dimension Types\_Vertical** in the **Enter New Rule Name** box, and then click **Create New**.
7. Click **Browse** again, select the **Equipment Plan\_Columns\_Anchor\_Horizontal** rule, and then click **Open**.
8. Type **Training\_Dimension Types\_Anchor\_Horizontal** in the **Enter New Rule Name** box, and then click **Create New**.
9. Click **Browse** again, select the **Equipment Plan\_Columns\_Anchor\_Vertical** rule, and then click **Open**.

10. Type **Training\_Dimension Types\_Anchor\_Vertical** in the **Enter New Rule Name** box, and click **Create New**.

11. Open a Windows Explorer window, and navigate to *[Shared Content]\Drawings\Catalog\Rules\DimensionRules*.

12. Press CTRL and select the four rules just created.

13. Right-click one of the selected rules and select **Edit with Notepad++** to open each XML file in its own tab.

14. Ensure the rule **Training\_Dimension Types\_Horizontal** is active tab in **Notepad++**.

15. Locate the **<filter>** tag. Notice it has a different value than the **<name>** tag. The copy annotation rule does not propagate the name into the filter tag, so this must be done manually.

16. Copy the entry from the name tag, and paste it into the **<filter>** tag, overwriting the value that is currently there.

```
<name>Training_Dimension Types_Anchor_Horizontal</name>
<filter>Training_Dimension Types_Anchor_Horizontal</filter>
```

17. Repeat this for the other three rules, making sure to use the appropriate entry in each rule.

18. Save and close all four files.

19. Switch to **Windows Explorer**, and navigate to *[Shared Content]\Drawings\Catalog\Dimensions\Templates*.

20. Locate the XML files created by the copy annotation rule tool. Press CTRL and select all four files.

21. Right-click one of the selected rules and select **Edit with Notepad++** to open each XML file in its own tab.

22. Ensure the **Training\_Dimension Types\_Horizontal** rule is the active file, and scroll down and find the **<dimensionAnchorSet>** tags, located around line 72.

23. Find the **<dimensionAnchor>** tag with a value of **Equipment Plan\_Columns\_Anchor\_Horizontal**.

```
<dimensionAnchor value="Equipment Plan_Columns_Anchor_Horizontal"/>
```

24. Delete the value between the double quotes, and type the name of the dimension anchor rule that was just created, **Training\_Dimension Types\_Anchor\_Horizontal**.

```
<dimensionAnchor value="Training_Dimension Types_Anchor_Horizontal" />
```

25. Save the file.

26. Repeat the process in the **Training\_Dimension Types\_Vertical** file, replacing the dimensionAnchor value with **Training\_Dimension Types\_Anchor\_Vertical** instead.

```
<dimensionAnchor value="Training_Dimension Types_Anchor_Vertical" />
```

27. Save the file.

28. Ensure the **Training\_Dimension Types\_Anchor\_Horizontal** rule is the active file, and locate the **<pgModule>** tag. Its current value is **DrawingPGControlPoint**.

29. Delete **DrawingPGControlPoint**, and type **DrawingPGStructVert**.

```
<pgModule>DrawingPGStructVert</pgModule>
```

30. Save the file.

31. Ensure the **Training\_Dimension\_Types\_Anchor\_Vertical** rule is the active file, and locate the **<pgModule>** tag. Its current value is **DrawingPGControlPoint**.
32. Delete **DrawingPGControlPoint**, and replace it with **DrawingPGStructHoriz**.  

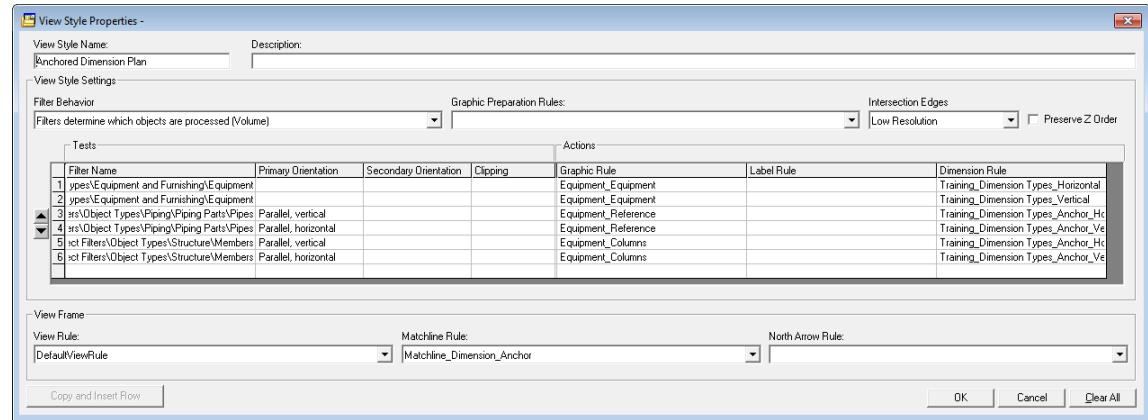
```
<pgModule>DrawingPGStructHoriz</pgModule>
```
33. Save the file.  

*The DrawingPGStructVert and DrawingPGStructHoriz modules place dimension points on linear objects. The former module is used for vertical dimensions and the latter for horizontal dimensions.*
34. Switch back to the Smart 3D window.
35. Select **Tools > Define View Style**.
36. Ensure that the **View Style Type** is set to **Training**.
37. Double-click **Anchored Dimension Plan**.  

*The View Style Properties dialog box displays.*

*This is a copy of the same view style we used for shared dimensions. In the next steps, you will make edits to demonstrate anchored dimensioning.*
38. Click on the numbered box next to each row, and click the **Copy and Insert Row** box. Your view style should now have six rows.
39. In the top row with the pipe filter, click in the **Primary Orientation** list, and select **Parallel, vertical**.
40. In the next row with the pipe filter, click in the **Primary Orientation** list, and select **Parallel, horizontal**.
41. Repeat this process for rows with the members filter.
42. Click in the **Dimension Rule** cell in the top equipment row
43. Select **More** from the list to bring up the **Select Dimension Rule** dialog.
44. Locate and select the **Training\_Dimension\_Types\_Horizontal** rule, and click **OK**.
45. On the second equipment row, click in the **Dimension Rule** list, and select **More**.
46. Locate and select the **Training\_Dimension\_Types\_Vertical** rule, and click **OK**.
47. On the row for vertical pipe, click in the **Dimension Rule** list, and select **More**.
48. Locate and select the **Training\_Dimension\_Types\_Anchor\_Horizontal** rule, and select **OK**.
49. On the row for horizontal pipe, click in the **Dimension Rule** list, and select **More**.
50. Locate and select the **Training\_Dimension\_Types\_Anchor\_Vertical** rule, and select **OK**.
51. Repeat this process for rows with the members filter. Your view style should now resemble this:

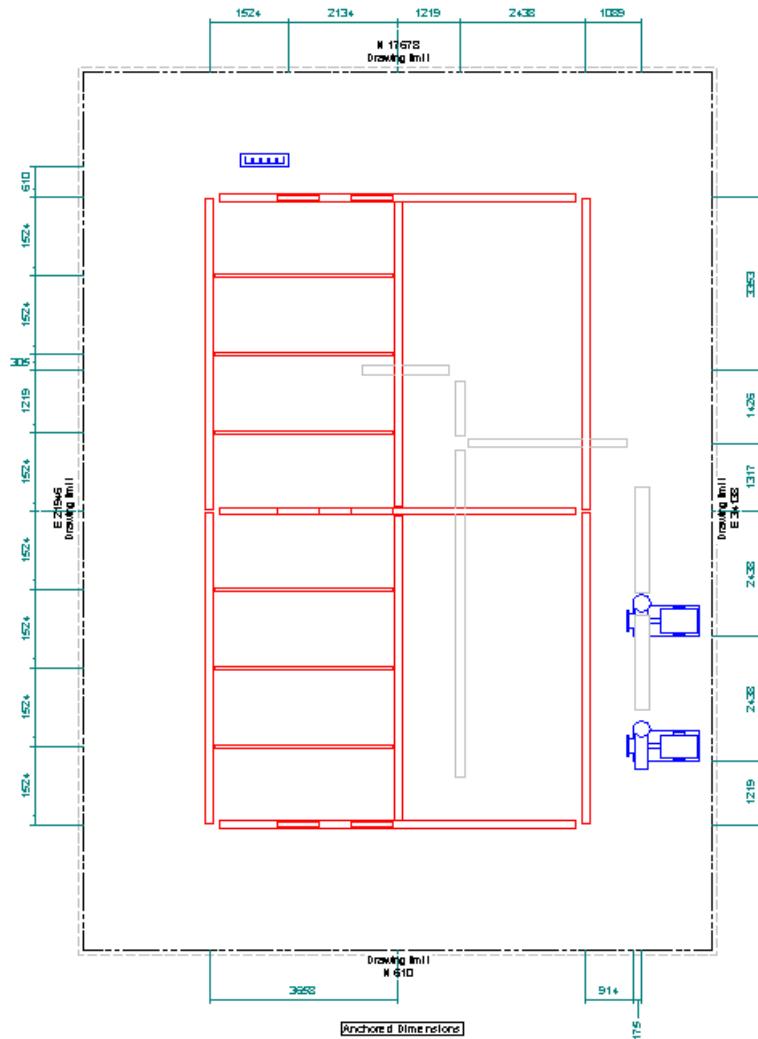
## Dimension Rules



52. Click **OK** to accept the changes to the view style.

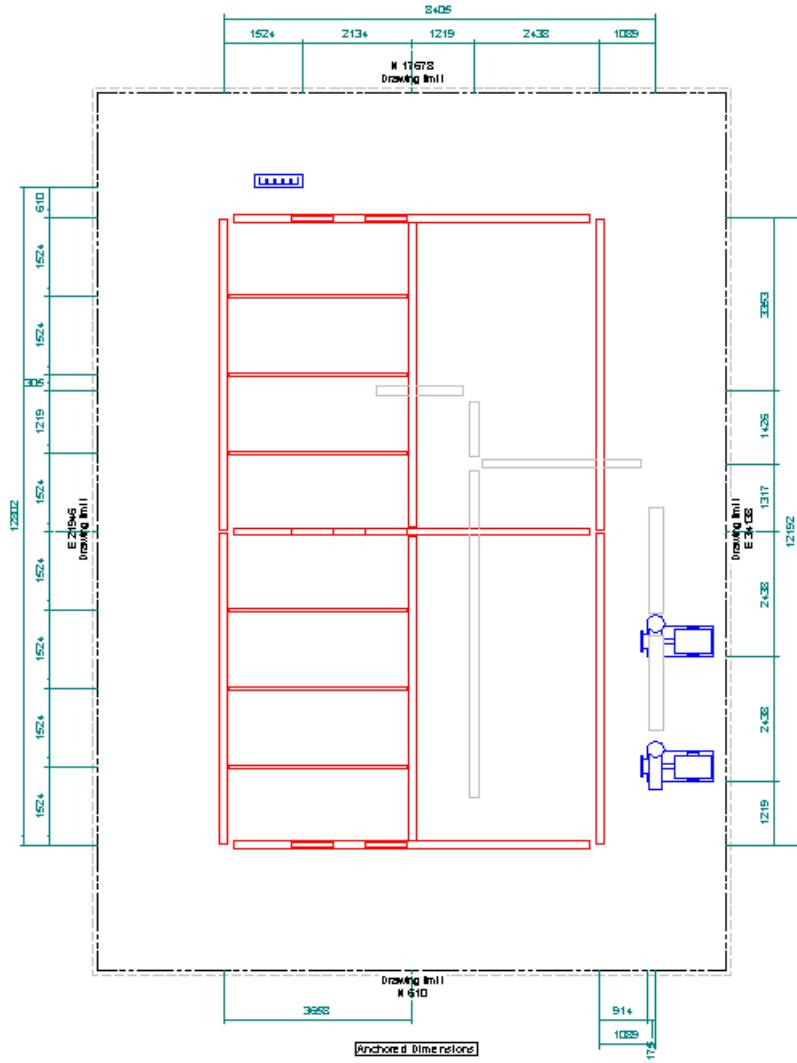
## Test the View Style

1. Switch back to the **SmartSketch Drawing Editor** window.
2. Right-click on the right view boundary, and select **Update View**.



Compare these results to the Shared Dimension view. Notice that equipment dimensions now point to the control point of the equipment, giving different values than the center of range dimensions.

3. Switch to the **NotePad++** window. Ensure the **Training\_Dimension Types\_Horizontal** file is active.
4. Locate the **<overall>0</overall>**
5. Delete the **0**, and replace it with **-1** to activate the overall dimension setting. Save the file.  
**<overall>-1</overall>**
6. Repeat this step for the **Training\_Dimension Types\_Vertical** file. Save the changes.
7. Switch to the **SmartSketch Drawing Editor** window.
8. Right-click on the right view boundary, and select **Update View**.



# Add Matchline Anchored Dimensions

1. Switch back to the Smart 3D window.
  2. Select **Tools > Define View Style**.
  3. Ensure that the **Anchored Dimension Plan** view style is highlighted, and select **Properties**.
  4. Find and click in the **Matchline Rule** list, and select the **Matchline\_Dimension\_Anchor** rule.
  5. Click **OK** to save the changes to the view style.

*This is a special matchline rule that calls corresponding dimension rules when placing the matchline. Let's inspect the rule.*

6. Switch to **Windows Explorer** and navigate to *[Shared Content]\Drawings\Catalog\Rules\MatchlineRules*.
  7. Right-click on the rule **Matchline\_Dimension\_Anchor**, and select **Edit with Notepad++**.
  8. Locate the **<addDimension>** line, it should be located around line 14:

```

<ACTION>
  <CATEGORY>AddDimension</CATEGORY>
  <VALUE type="string">
    <dimensions>
      <dimension>
        <name>Matchline_Anchor_Horizontal</name>
        <filter>Matchline_Anchor_Horizontal</filter>
      </dimension>
    </dimensions>
  </VALUE>
</ACTION>
<ACTION>
  <CATEGORY>AddDimension</CATEGORY>
  <VALUE type="string">
    <dimensions>
      <dimension>
        <name>Matchline_Anchor_Vertical</name>
        <filter>Matchline_Anchor_Vertical</filter>
      </dimension>
    </dimensions>
  </VALUE>
</ACTION>

```

*These lines are telling the matchline rule to add two dimension rules to the view style, Matchline\_Anchor\_Horizontal and Matchline\_Anchor\_Vertical. This can be added to a custom matchline rule to recreate this behavior. We now have a matchline and matchline dimensions being called, but we don't have a parent dimension for them! Let's edit our Training dimension styles to add the anchors in.*

9. In **NotePad++**, switch to **Training\_Dimension Types\_Horizontal** tab.
10. Scroll down and locate the **<dimensionAnchorSet>** tags.
11. Copy the existing tag, create a new line, and paste the text. Delete the value between the double quotes, and replace it with **Matchline\_Anchor\_Horizontal**.

```

<dimensionAnchorSet>
  <!--This is a list of dimension rules that will be used as anchors for
  <!--Anchor objects are any objects that are not the subject of the dime
  <!--included in the dimension chain.-->
  <dimensionAnchor value="Training_Dimension Types_Anchor_Horizontal" />
  <dimensionAnchor value="Matchline_Anchor_Horizontal" />
</dimensionAnchorSet>

```

12. Save the file.
13. Repeat this process in the **Training\_Dimension Types\_Vertical** file, except with the value **Matchline\_Anchor\_Vertical**.

```

<dimensionAnchorSet>
  <!--This is a list of dimension rules that will be used as anchors f
  <!--Anchor objects are any objects that are not the subject of the d
  <!--included in the dimension chain.-->
  <dimensionAnchor value="Training_Dimension Types_Anchor_Vertical" />
  <dimensionAnchor value="Matchline_Anchor_Vertical" />
</dimensionAnchorSet>

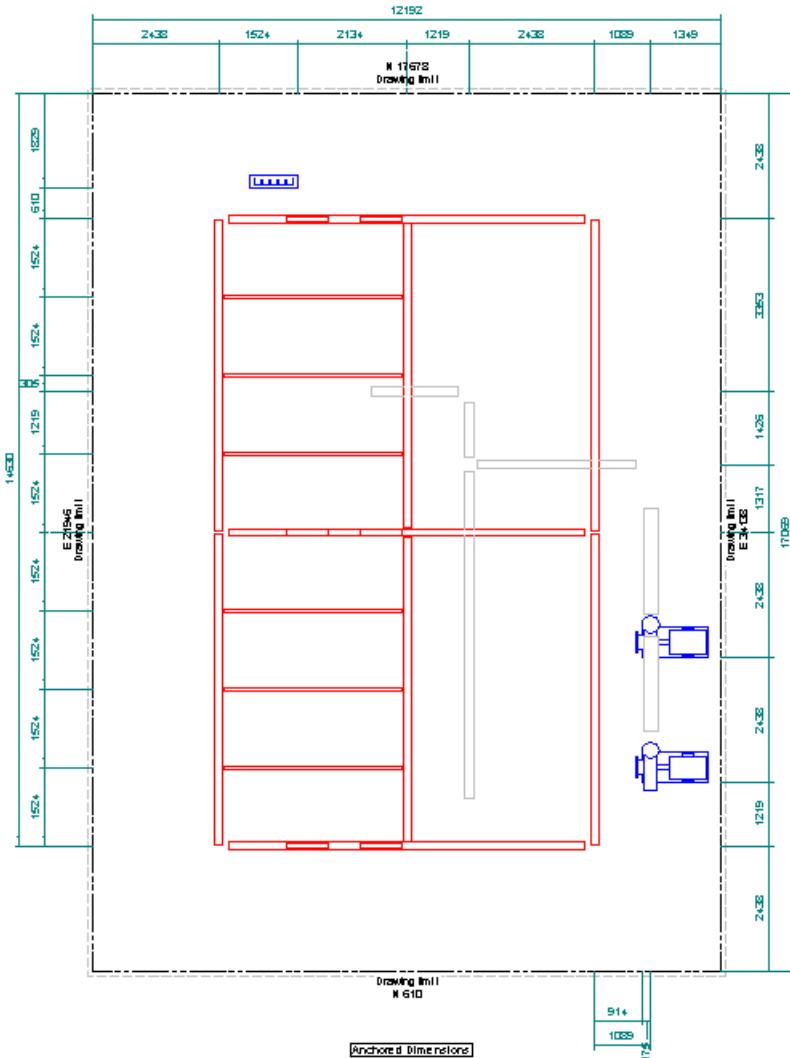
```

14. Save the file.
15. Switch back to the **SmartSketch Drawing Editor** window.

## Dimension Rules

---

16. Right-click the right view boundary, and select **Update View**.



*There is now a matchline around the view, and the dimension chains extend to the matchline border.*

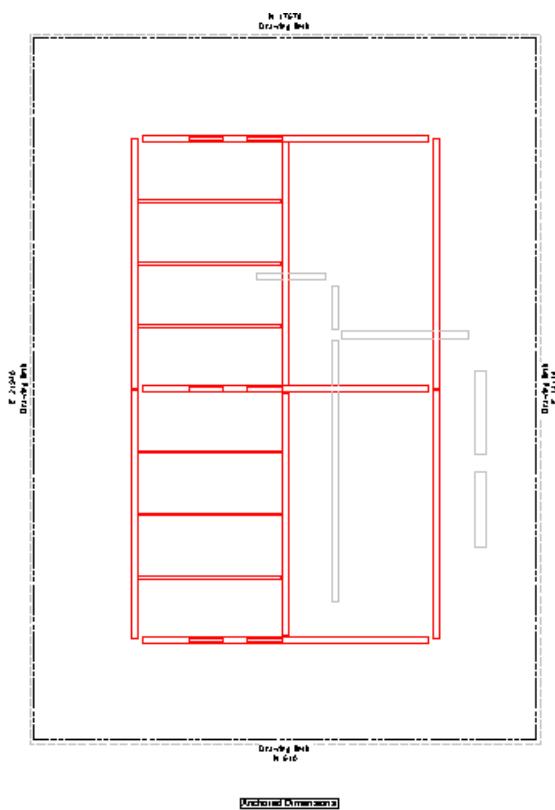
17. Close the **SmartSketch Drawing Editor** window, and save when prompted.

## Conditional Behavior of Anchor Rules

*Unlike shared dimensions, the appearance of an anchored dimension chain is conditioned on the presence of the object to which the parent dimension rule is applied. If the object is not present, then the anchor chain will not be placed. This is also why in the above exercise the anchored dimensions were only placed on the top and right hand side. There were no parent objects (in this case equipment) within range of the dimension rule to place bottom and left dimensions. This conditional behavior comes from the geometric analyzer present in the anchor rule. The anchor rules use a dummy geometric analyzer, which means the only information that is truly pulled from this file is the point generator.*

1. Switch back to the **Smart 3D** window.

2. Select **Tasks > Piping**.
3. Select **Tools > Drawing Console**.
4. Right-click the drawing **Chained Dimensions** and select **Edit**.
5. Click the **Anchored Dimensions** view's border, and then click **Associate Objects to View**.
6. Switch to the **Smart 3D** window.
7. Click in the **Filter** list, and select **More**.
8. Locate and select the filter **Plant Filters\Drawing Configuration Filters\Dimension Rules\Pipe and Members** and click **OK**.
9. Switch back to **SmartSketch Drawing Editor**, and right-click to end the command.
10. Right-click the right view boundary, and select **Update View**.
11. The drawing now has no dimensions, as no parent objects (i.e., no equipment objects) are present in the view.





## L A B 8

# Drawing by Query Package

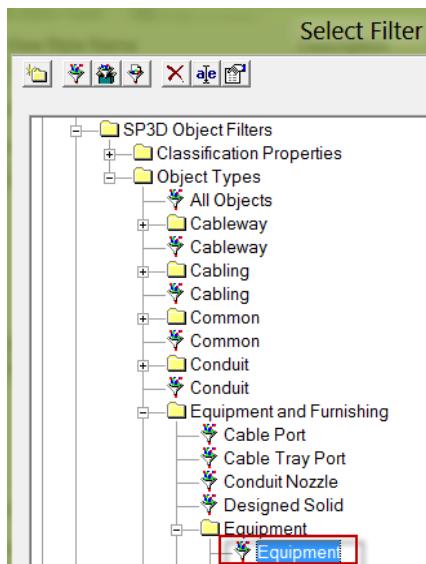
### Objective

By the end of this session, you will be able to:

- Create an orthographic drawing by query package to document equipment.

## Define a View Style

1. Click **Tools > Define View Style**.
2. Ensure that the **View Style Type** is set to **Training**.
3. Highlight the view style **Nozzles**, and click **Properties**.
4. Click in the **Filter Name** box in the first row in the view style, and then select **Equipment**.

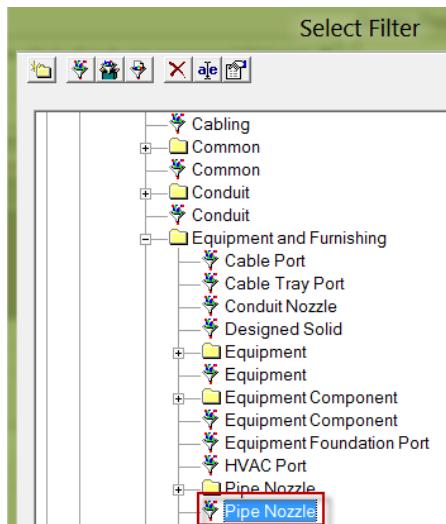


5. Click in the **Graphic Rule** box, and then select **Civil\_Beams**.

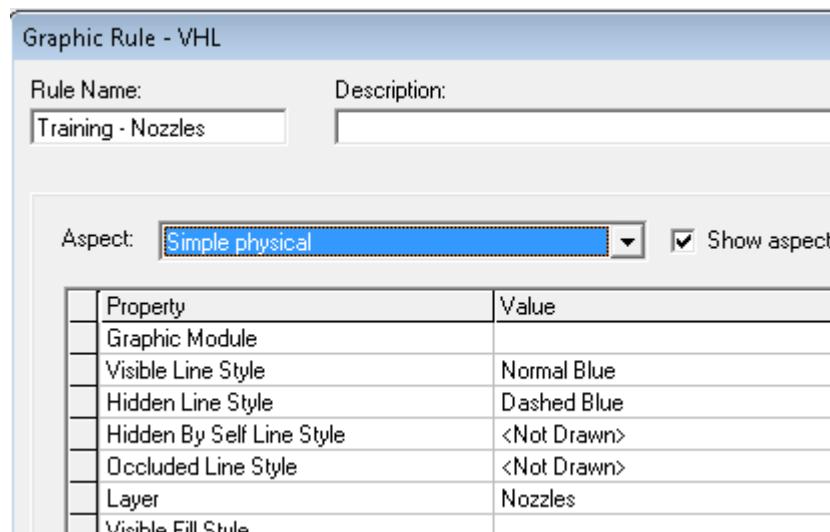
## Drawing by Query Package

---

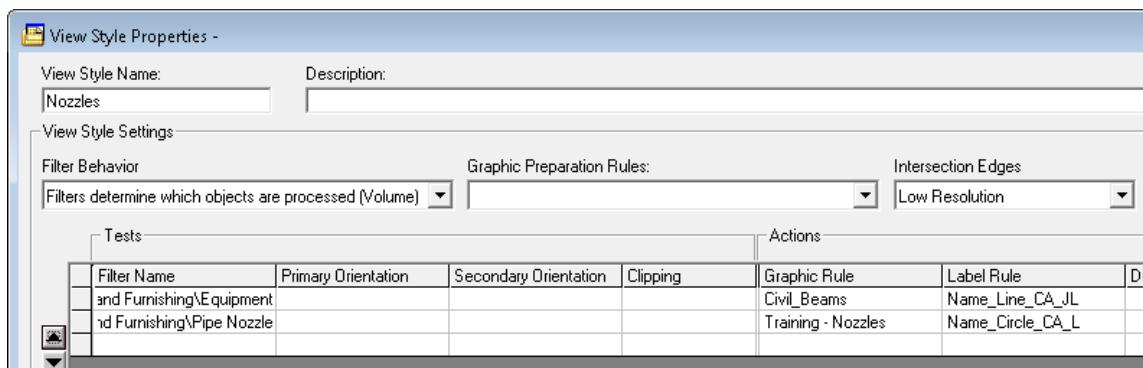
6. Click in the **Filter Name** box in the second row, and select **Pipe Nozzle**.



7. Click in **Graphic Rule** box, and then select **More....**
8. Define a new graphic rule named **Training – Nozzles**. An example is shown below.



9. Select **Name\_Line\_CA\_JL** for the first row and **Name\_Circle\_CA\_L** for the second row, as shown below.



10. Click **OK** to save the view style.
11. Click **Close** to close the **Define View Style** dialog box.

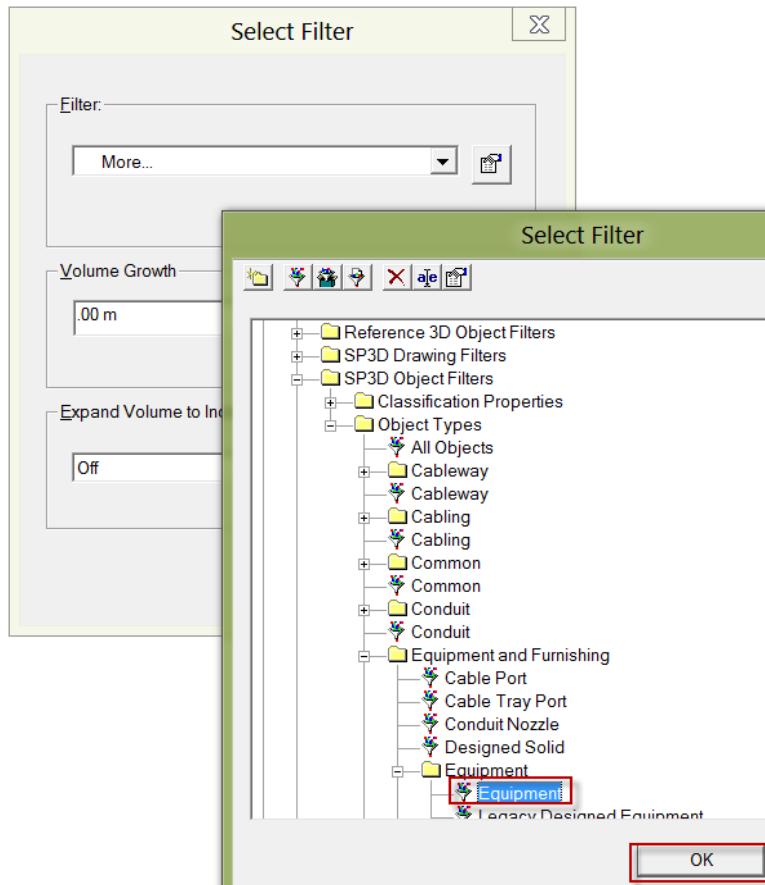
## Define a Template

1. In the **Management Console**, right-click the **Configuration Labs** folder, and then select **Orthographic Drawings by Query** from the **New** flyout.
2. Select **Orthographic Drawings**, and rename it to **Equipment Drawings**.

## Drawing by Query Package

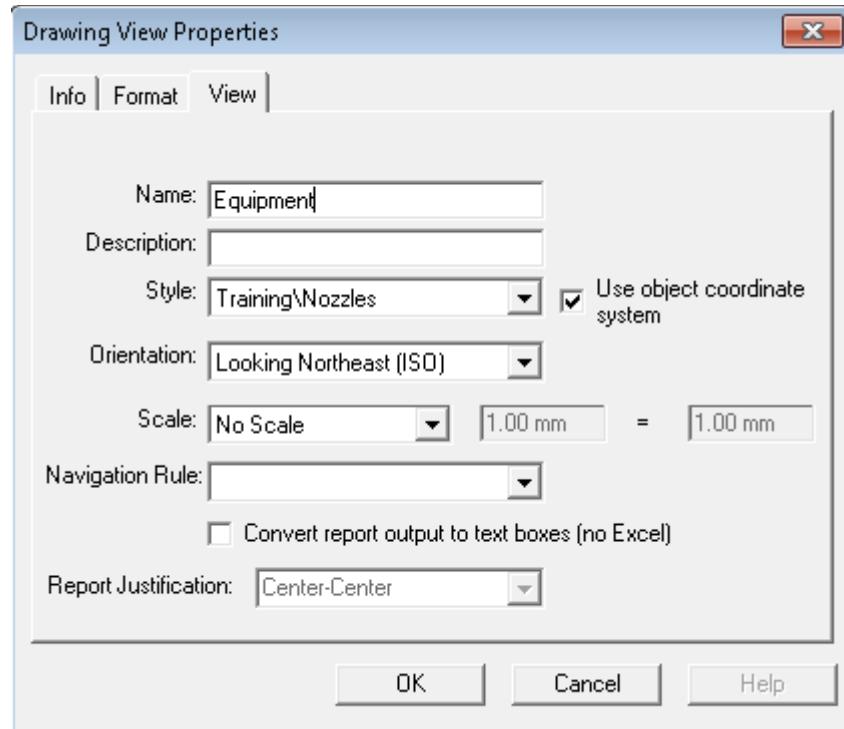
---

3. Right-click **Equipment Drawings**, and then select **Setup**.
4. Click **More** in the **Filter** box, and then select **Equipment**.

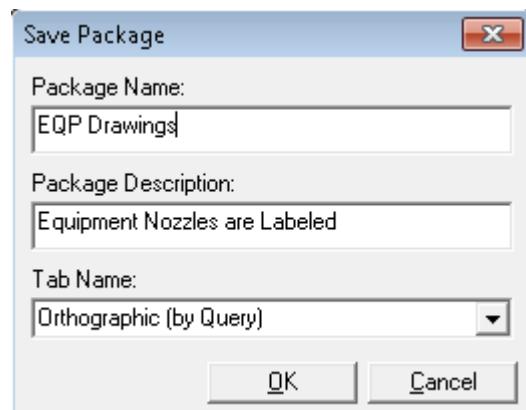


5. Click **OK** on the **Select Filter** dialog.
6. Right-click **Equipment Drawings**, and then select **Edit Template**.  
The **Select Template** dialog box displays.
  7. Select **D\_Wide.sha** in the Imperial folder, and then click **OK**.
  8. Place a drawing view using the following parameters: from **X = 0' 5"**, **Y = 1'7"** to **X = 2' 6"**, **Y = 0' 5"**.
  9. In the **Drawing View Properties** dialog box, enter values shown in the example below, and then click **OK**.

**IMPORTANT** Ensure that Orientation is set to **Looking Northeast (ISO)**.



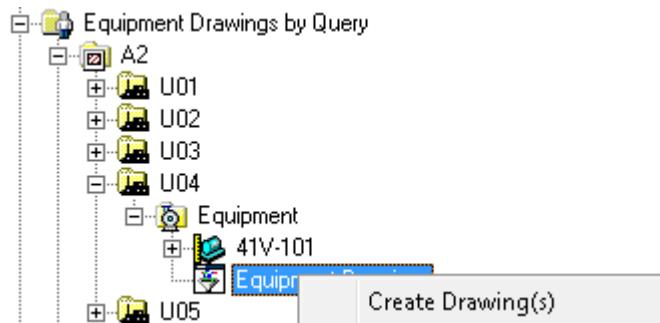
10. Close the drawing editor, and click **Yes** when prompted.
11. Right-click **Equipment Drawings**, and then select **Save Package**.  
*The Save Package dialog box displays.*
12. Enter the name and description as shown in the example, and then select the **Orthographic (by Query)** in the **Tab Name** list.



13. Click **OK** to save package.

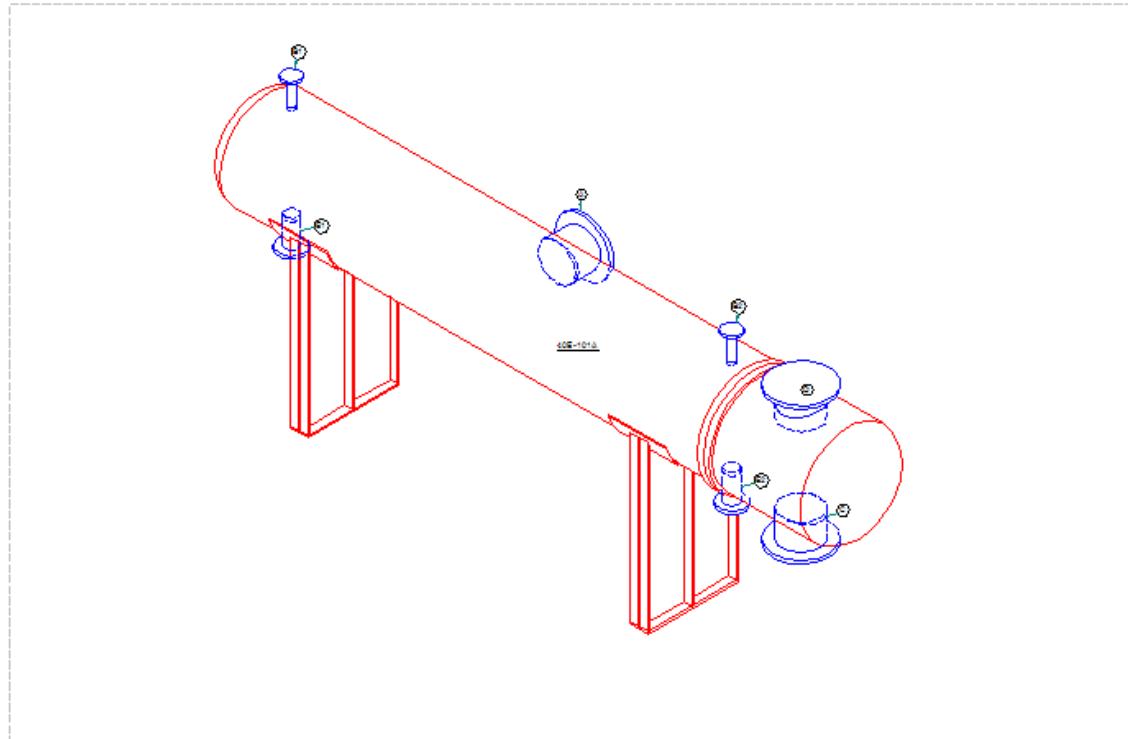
## Test the Package

1. In the **Management Console**, right-click the **Configuration Labs** folder, and then select **Drawings by Query Manager** from the **New** flyout.
2. Rename the newly created component to **Equipment Drawings by Query**.
3. Right-click **Equipment Drawings by Query**, and then select **Setup**.
4. Select **Plant Filters - All** in the **Filter** box.
5. Select **EQP Drawings** in the **Package** box, and then click **OK**.
6. Right-click **Equipment Drawings by Query**, and then select **Run Query**.
7. Expand **A2\U04\Equipment**.
8. Right-click **Equipment Drawings**, and then select **Create Drawing(s)**.



9. Right-click **40E-101A**, and then select **Update Now**.

*The view should resemble the example below.*



10. Exit **SmartSketch Drawing Editor**.



# WBS Project based View Style

## Objective

By the end of this session, you will be able to:

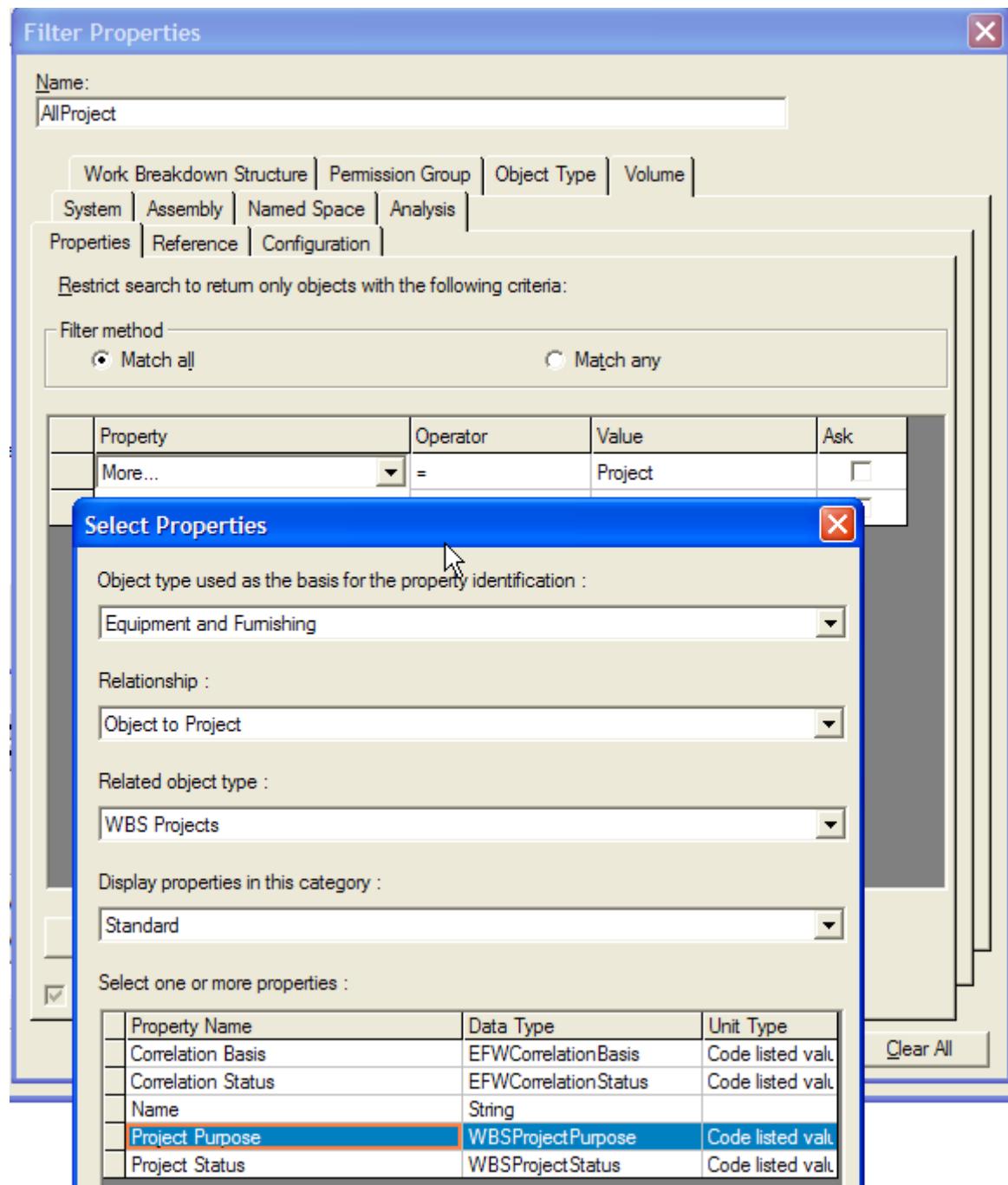
Use the Asking filter in a view style where the answers to the parameters are WBS project names.

## Define the View Style

1. Click **Tools > Define View Style**.
2. Ensure that the **View Style Type** is set to **Training**.
3. Highlight the view style **WBS Project**, and click **Properties**.
4. Click in the **Filter Name** box on the first row of the view style, and select **More**.

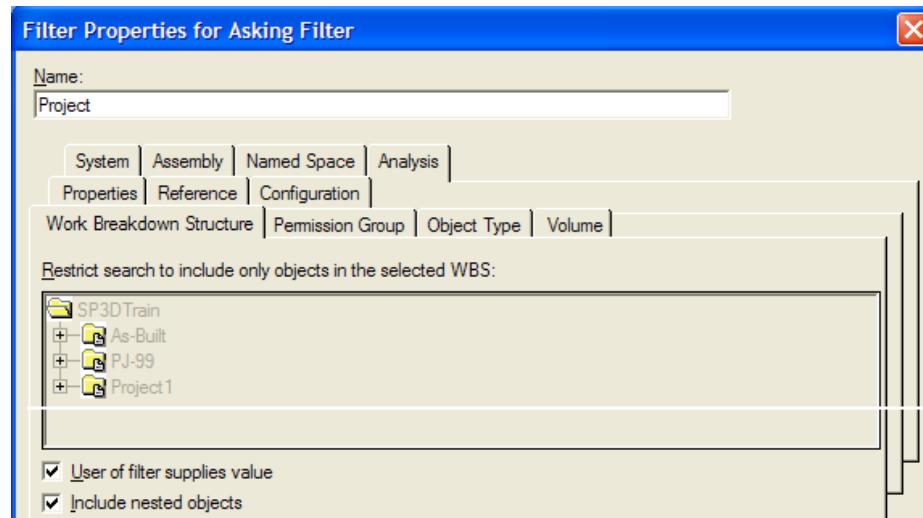
## WBS Project based View Style

5. Create a filter directly under **Catalog Filters** named **AllProject** (based on Project Purpose = Project). Add this filter to the view style. Use the example below to define the filter. The **WBS Projects** object is under the **Common** folder.

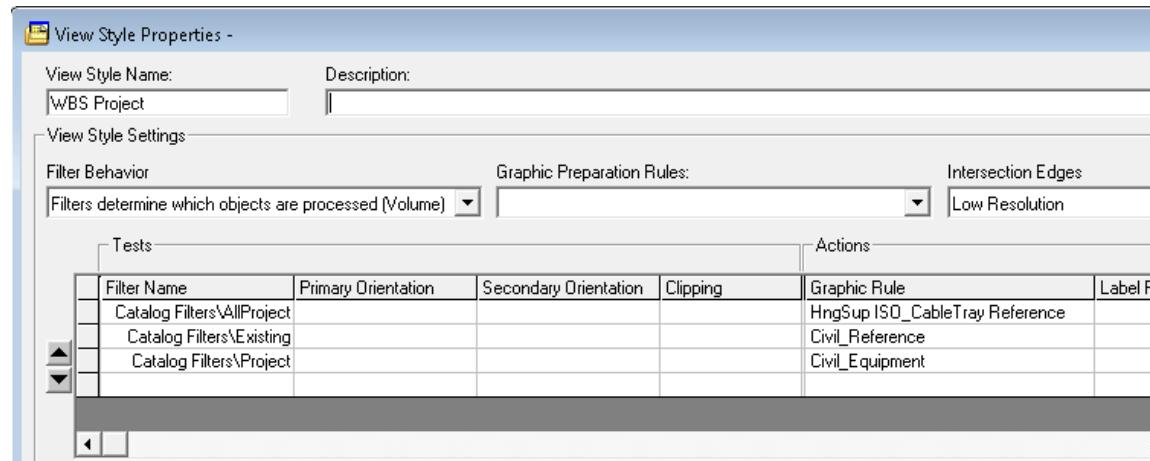


6. Use the graphic rule named **HngSup ISO\_CableTray Reference** that uses the **Normal Green** line style.
7. Add a filter in the second row named **Existing** (based on Project Purpose = As-Built), similar to the AllProject filter defined in the previous steps.

8. Use a graphic rule named **Civil \_ Reference** that uses **Normal Lt Gray** as the line style.
9. Add a filter in the third row named **Project** defined by selecting the **User of filter supplies value** check box on the **Work Breakdown Structure** tab.



10. Use a graphic rule named **Civil\_Equipment** that uses **Normal Blue** as the line style.



**NOTE** The order of the lines in the view style is important; the current project must appear in the view style after the other projects.

11. Click **OK** to save the view style.
12. Click **Close** on the **Define View Style** dialog box.

## Test View Style

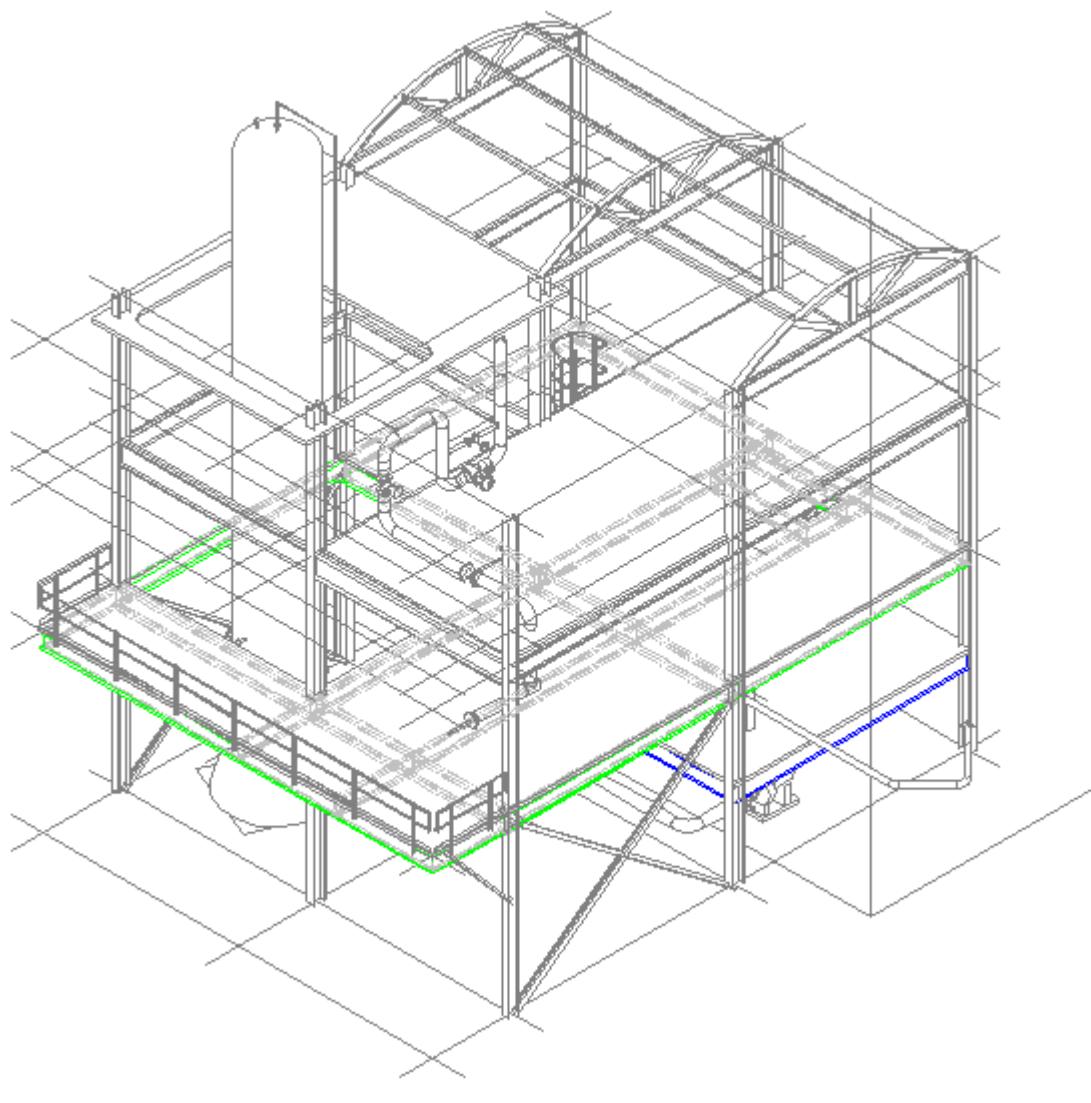
1. Switch to the Smart 3D Structure task.
2. Define the workspace using **U03 Workspace** from the **Plant Filters\Drawings Configuration Filters\WBS Project by View Style** folder.

## WBS Project based View Style

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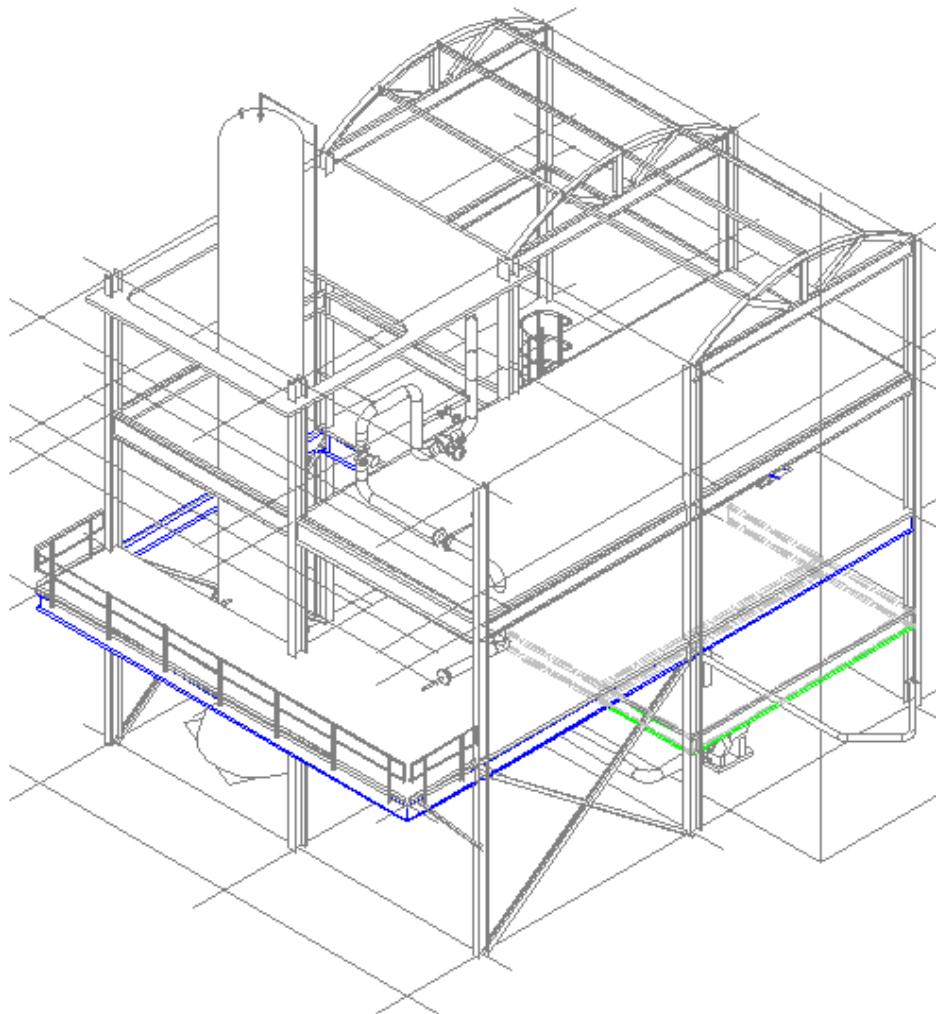
3. Set the locate filter to **Member Parts**.
  4. Select all beams on the first floor.
  5. Set **Active Project** to **Project1**.
  6. Click **Project > Claim**.
  7. Select all beams on the second floor.
  8. Set **Active Project** to **PJ-99**.
  9. Click **Project > Claim**.
  10. Select all of the objects in workspace.
  11. Set **Active Project** to **As-Built**.
  12. Click **Project > Claim**.
- The system displays a warning.*
13. Click **Yes** to continue.
  14. Edit the drawing **WBS Project by View Style\WBS Test**.
  15. Change the view style on the view in the drawing to **WBS Project**
  16. Save the drawing and exit **SmartSketch Drawing Editor**.
  17. Open the drawing console.
  18. Right-click **WBS Test**, switch to the **Style** tab.
  19. Select **Project1** in **WBS Project** box, and then click **OK**.
  20. Right-click **WBS Test**, and select **Update Now**.
  21. Review the drawing.

*The objects in Project1 (first floor beams) are blue, and the objects in PJ-99 (second floor beams) are green.*



22. Exit **SmartSketch Drawing Editor**.
23. Right-click **WBS Test**, and then switch to the **Style** tab.
24. Select **PJ-99** in the **WBS Project** box, and then click **OK**.
25. Right-click **WBS Test**, and then select **Update Now**.
26. Review the drawing.

*Now the objects in Project1 are green, and the objects in PJ-99 are blue.*



27. Exit **SmartSketch Drawing Editor**.

## L A B 1 0

# MicroStation 3D DGN Output

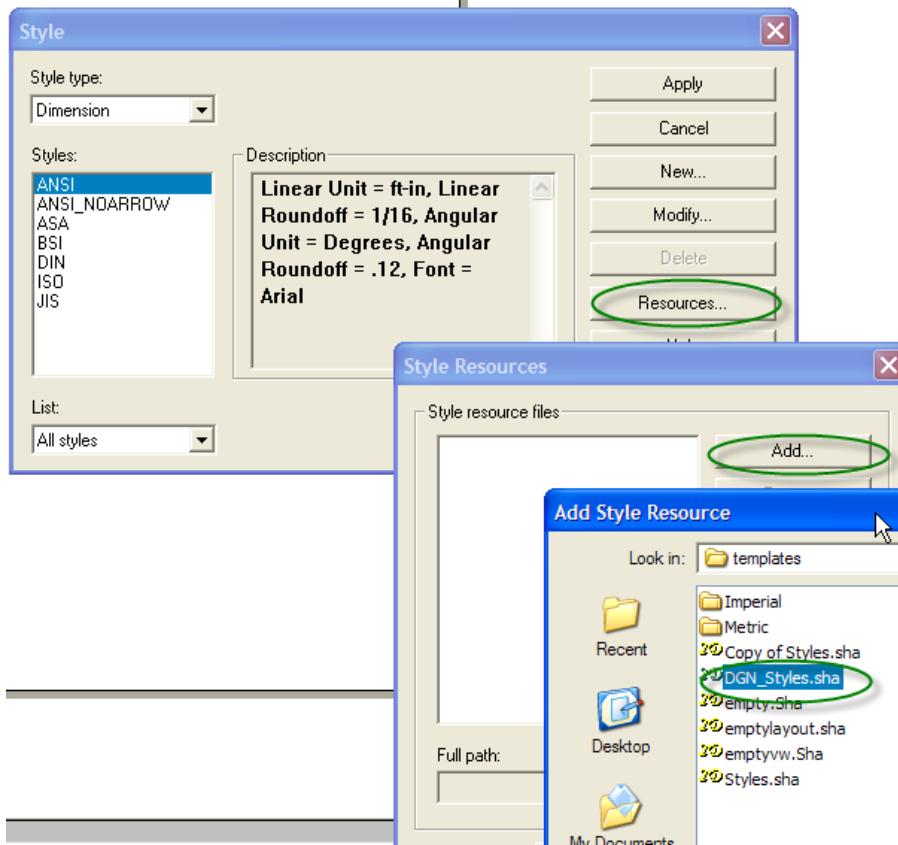
## Objective

By the end of this session, you will be able to:

- Copy line styles from a resource file into a Styles.sha file.
- Create 3D MicroStation output graphics from Smart 3D objects.

## Add Styles to Styles.sha

1. Open **Styles.sha** using the **Edit Border Template** command.
2. Click **Format > Style**.  
*The **Style** dialog box displays.*
3. Click **Resources**.  
*The **Style Resources** dialog box displays.*
4. Click **Add**.  
*The **Add Style Resource** dialog box displays.*
5. Navigate to the **[SharedContent]\Drawings\Catalog\Templates** folder, select **DGN\_Styles.sha**, and then click **Open**.



6. Click **OK** on the **Style Resources** dialog.
7. Click **Apply** then click **Close** on the **Style** dialog.
8. Click **Line**  on the vertical toolbar.
9. Select **Normal Cyan** as the style to copy its definition from the resource file to the Styles.shx.
10. Similarly, while still in the command, pick each of the line styles below to copy them to the Styles.shx.

**Normal Dk Cyan**

**Normal Dk Red**

**Normal Magenta**

11. Save the file, and then exit.

## Create DGN Output

1. Switch to the Space Management task.
2. Define the workspace using **All Workspace** from the **Plant Filters\Drawings Configuration Filters\MicroStation 3D DGN Output** folder.
3. Click **Tools > Drawing Console**.
4. Right-click the **Configuration Labs** folder, and then select **Microstation 3D DGN** from the **New** flyout.
5. Right-click **New 3D DGN Drawings**, and then select **Setup**.
6. Select the **Orthographic\DGN\_Export** view style, and then click **OK**.
7. Click **OK** again to finish the setup.
8. Select all objects in the plant.
9. Click **Place Drawing Volume by Selection** .
10. Select **New 3D DGN Drawing** for **Drawing Type**, select **Drawing Configuration Labs\MicroStation 3D DGN Output** as the **Space Folder**, and then click **Finish**.
11. Click **Select** to exit the command and clear the select set.
12. Switch to the **Drawing Console**.
13. Right-click **New 3D DGN Drawings**, and then select **Create Drawing(s)**.
14. Right-click **MicroStation 3D DGN Output-1-0001**, and then select **Update Now**.



15. When the output completes, double-click to open the DGN file.
16. Exit MicroStation after you finish reviewing the results.



## L A B 1 1

# Search Folder

The Search Folder component enables 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.

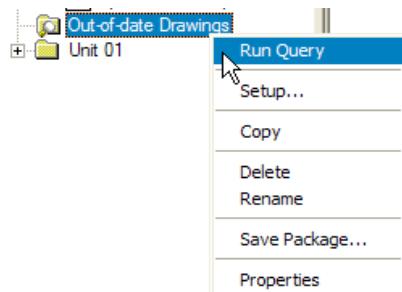
### Objective

By the end of this session, you will be able to:

- Create a Search Folder component in any folder in the **Management Console**.
- Run a query defined for a search folder.
- Perform such tasks as **Update** or **Publish** as if you were working from the actual owning component location for documents.

## Search for a document

1. In the **Drawings and Reports** task, right-click **Drawings Configuration Labs**, and then select **Search Folder** from the **New** flyout.
2. Rename **New Search Folder** to **Out-of-date Drawings**.
3. Right-click **Out-of-date Drawings**, and then select **Setup**.  
*The **Setup** dialog box displays.*
4. Select **More** in the **Filter** list.  
*The **Select Filter** dialog box displays.*
5. Select the **Catalog Filters\Default Filters\SP3D Drawing Filters\Types of Drawings\Orthographic\Search by\Out of Date** filter, and then click **OK**.
6. Change **Start From** to **Configuration Labs**, and then click **OK** to save and exit the **Setup** dialog box.
7. Right-click **Out-of-date Drawings** in the **Management Console**, and then select **Run Query**.



*The software returns the documents that meet the criteria defined in the filter.*

8. Right-click on the **Name** column header and select **More**.

## Search Folder

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*The **Column Settings** dialog displays.*

9. In the **Column Settings** dialog, scroll to the bottom and select **In Folder**.
10. Select **OK** on the **Column Settings** dialog.

*The **In Folder** column heading displays and shows the path to each document returned by the search folder.*

11. Select one of the drawings with a red X, and then click **Update Now**.

*The software updates the drawing and places a green check mark it.*

12. Run the query again on the **Out-of-date Drawings** folder.

*The updated drawing falls off the list.*

## L A B 1 2

# Batch Management

### Objective

By the end of this session, you will be able to:

- Set up a batch server, and submit and review batch jobs.

## Update Drawing Using Intergraph Batch Services Run Project Management Utility

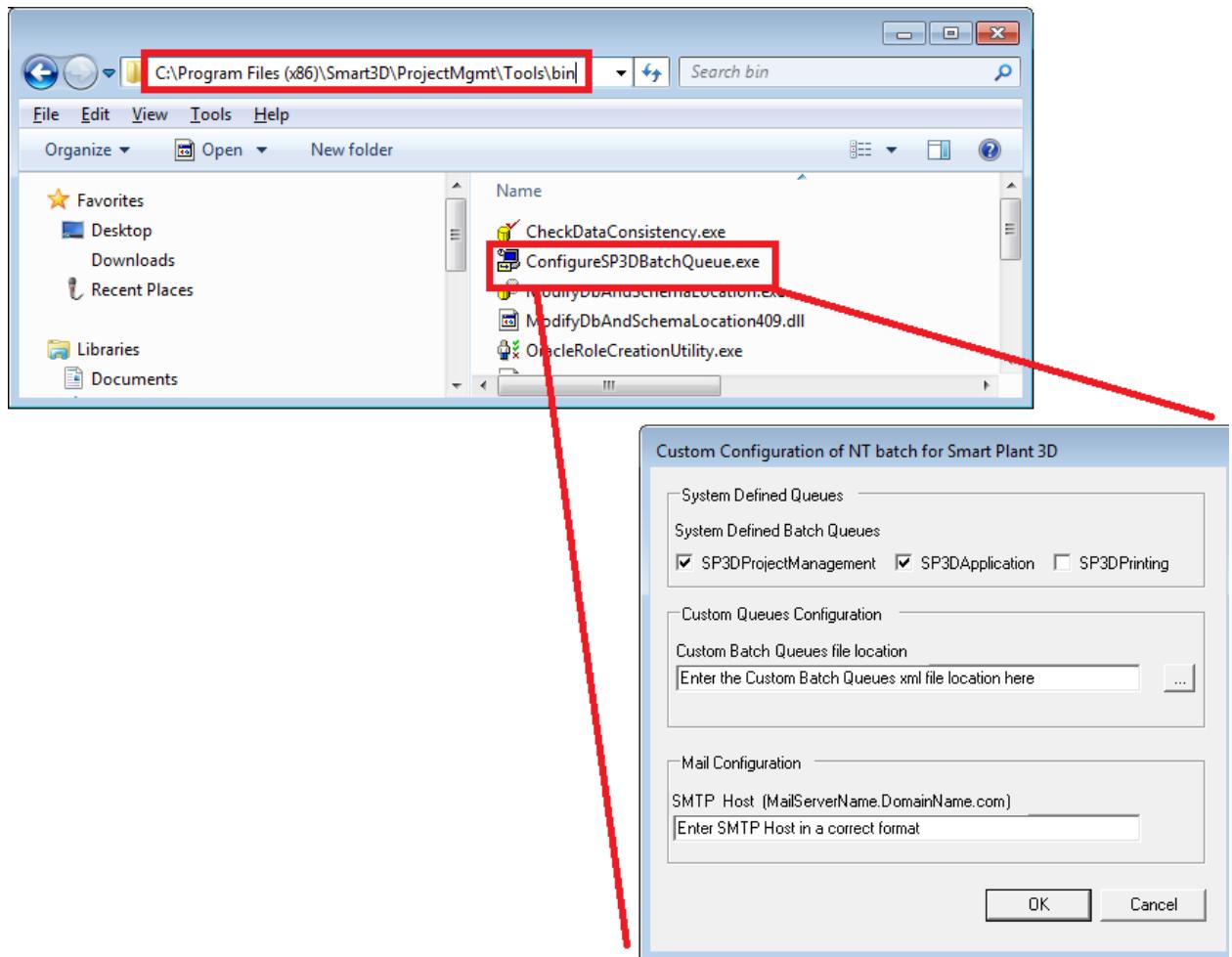
1. Open a **Windows Explorer** window.
2. Change to the folder to

*[Product Folder]\ProjectMgmt\Tools\bin*

3. Double-click the file *ConfigureSP3DBatchQueue.exe* to display the **Custom Configuration of NT batch for Smart Plant 3D** dialog.

## Batch Management

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**NOTES**

The **ConfigureSP3DBatchQueue** utility is required to be run on each computer submitting jobs and on each computer executing jobs. The utility creates at least one batch queue and sets some environment variables. The utility does not create pipe queues. Those need to be created using **Intergraph Batch Services (IBS)**.

**Definitions:**

**Batch job:** A set of instructions to **IBS** to perform a given task or set of tasks on a computer system. **IBS** must be installed on the computer submitting the job as well as the computer executing the job.

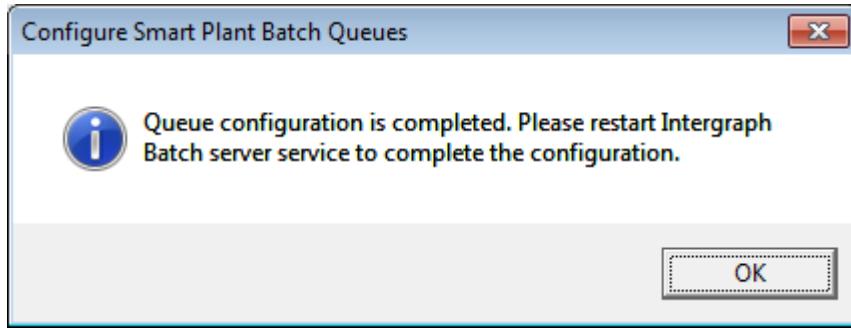
**Batch queue:** Batch jobs are executed in a batch queue. Batch queues can be created on the submitting computer or on a remote computer.

**Pipe queue:** Routes batch jobs to batch queues or other pipe queues. Pipe queues normally establish a connection to a batch queue on a remote computer. Pipe queues can have more than one destination queue. The destination list can be managed remotely.

4. On the **Custom Configuration of NT batch for Smart Plant 3D** dialog, uncheck *SP3DApplication* and *SP3DPrinting*.

**[NOTE]** The **ConfigureSP3DBatchQueue** utility requires that at least one batch queue be checked on the dialog. The batch queue can be deleted later if unwanted.

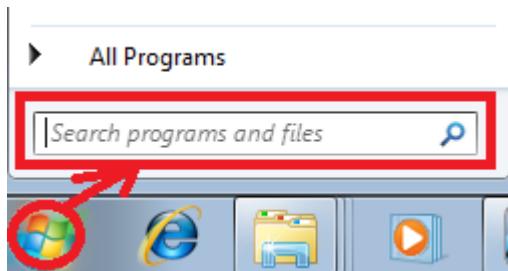
5. Select the **OK** button on the **Custom Configuration of NT batch for Smart Plant 3D** dialog to display a message regarding the next step in the process.



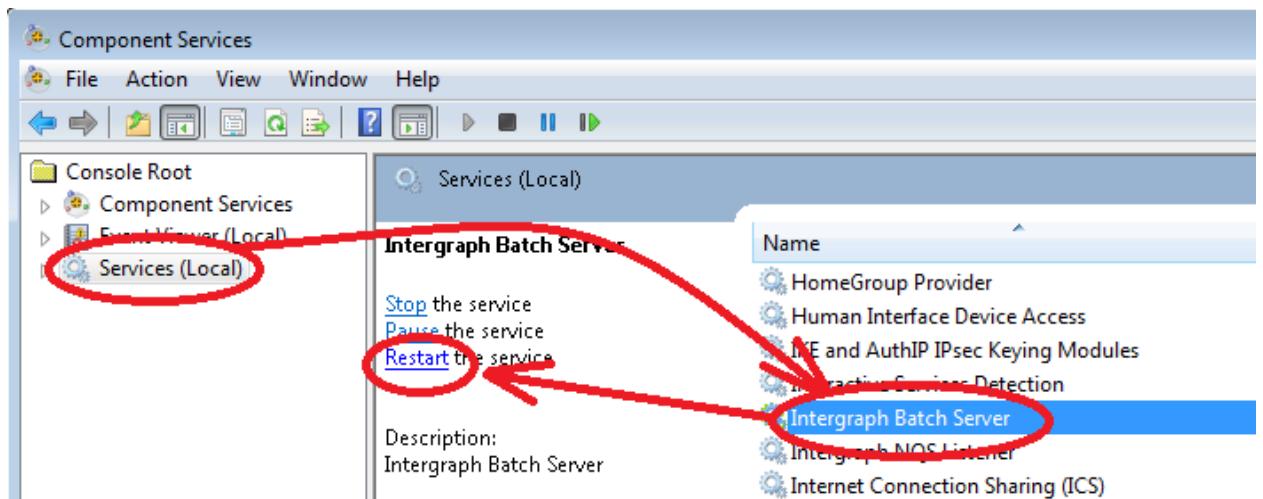
6. Select **OK** the message box.
7. From the **Windows Start** menu, click in the **Search programs and files** field.

## Batch Management

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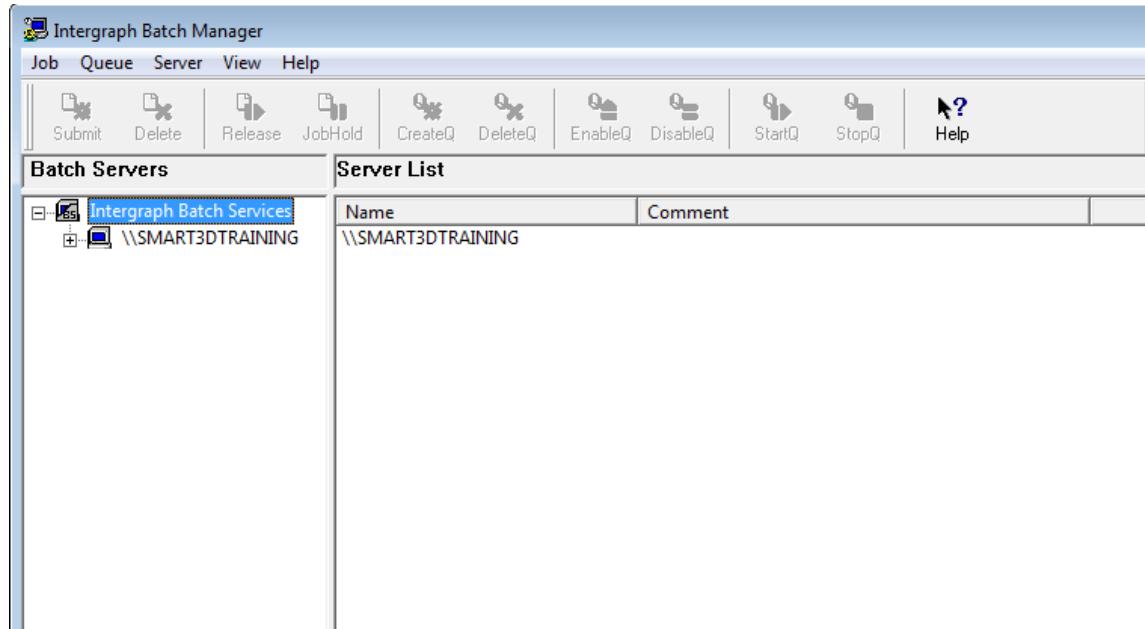
8. Key in **component services** to open the **Component Services** dialog.
9. Select the **Services (Local)** to display the local services in the list view.
10. In the list view, select *Intergraph Batch Server* then click **Restart** from the list of options



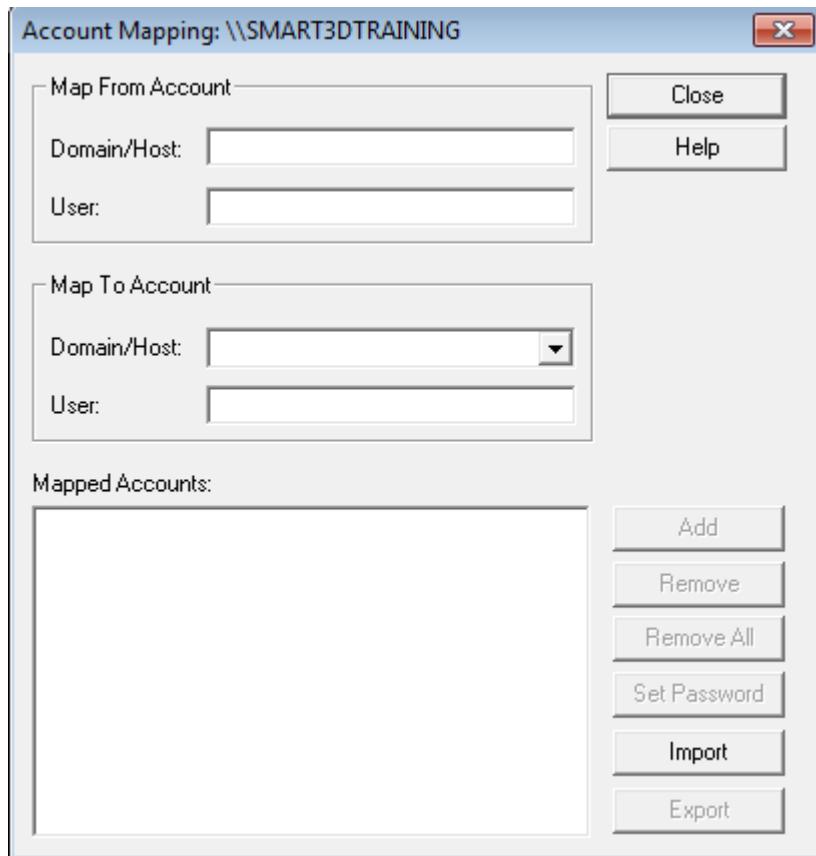
11. Close the **Component Services** dialog.

## Configure Account Mapping

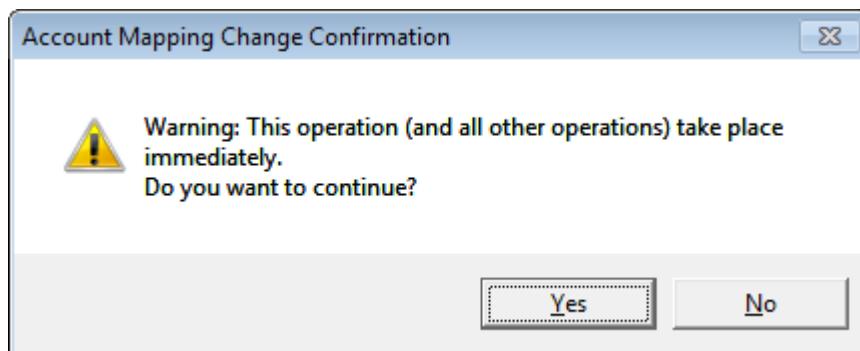
1. From the Windows Start menu, select All Programs > Intergraph Batch Services > Intergraph Batch Manager to display the **Intergraph Batch Manager** window.



2. Under the *Intergraph Batch Service* node in the *Batch Servers* tree view, right-click on the server and select **Account Mapping** from the pop up menu to display the **Account Mapping** dialog.



3. If a mapped account displays, select it and click **Remove**.
4. In the **Map From Account** section:
  - 4.1. **Domain/Host** = \*.
  - 4.2. **User** = \*.
5. In the **Map To Account** section:
  - 5.1. **Domain/Host** = [select machine name from list].
  - 5.2. **User** = [username].
6. Select the **Add** button to display a warning message



7. Select the **Yes** button to display the **Enter Password** dialog.

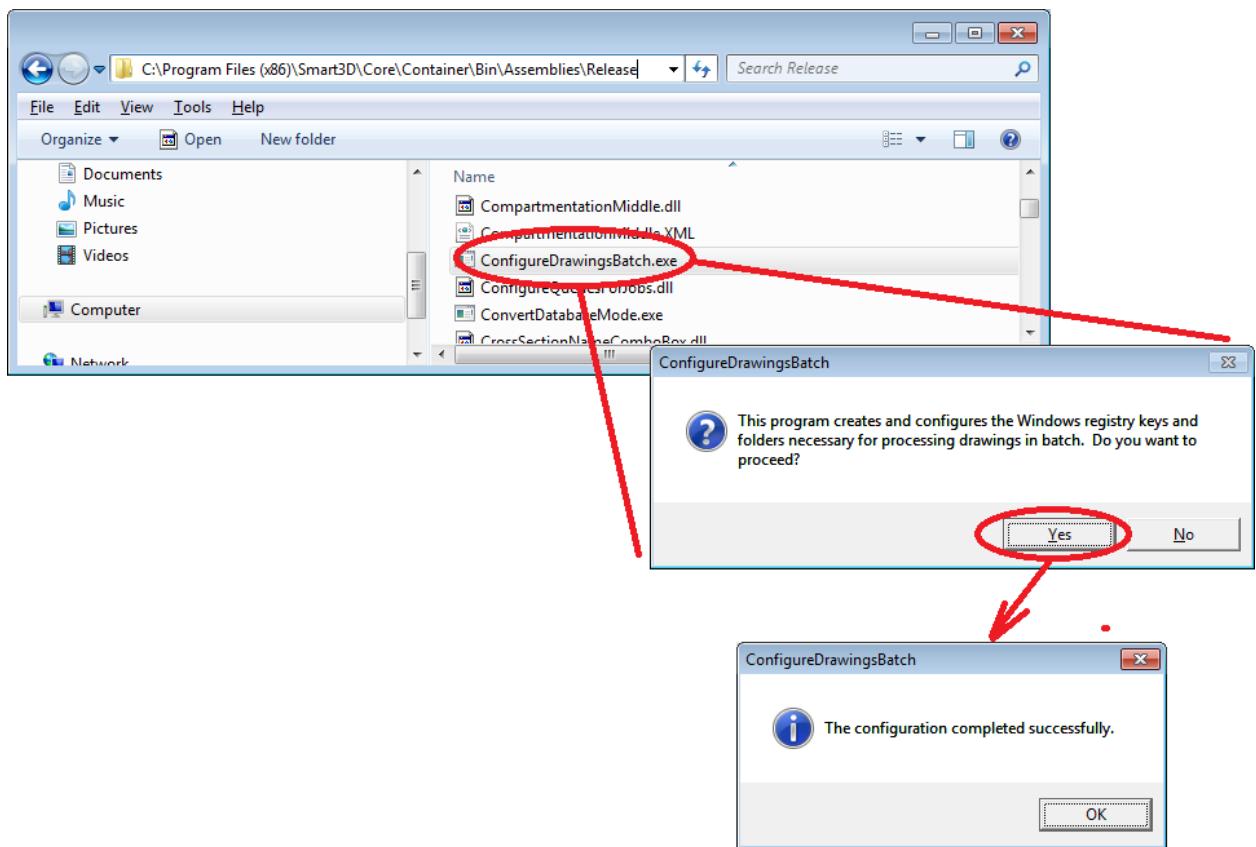
8. Key in *[password]* in both the **Password** and **Confirm Password** fields.
9. Select the **OK** button on the **Enter Password** dialog.
10. Select the **Close** button on the **Account Mapping** dialog.

## Run Drawings Utility

1. In **Windows Explorer**, change to the folder

C:\Program Files (x86)\Smart3D\Core\Container\Bin\Assemblies\Release

2. Double-click the file *ConfigureDrawingsBatch.exe* to display a confirmation message box.



3. Select the **Yes** button on the message box to display a message that the configuration is complete.
4. Select the **OK** button on the confirmation message box.

## Check Excel Security Settings

1. On the **Trust Center** dialog, select **Macro Settings** to display the **Macro Settings**.
2. Ensure that **Disable all macros with notification** is enabled and that **Trust access to the VBA project object model** is checked.

## Create Queues

1. In **Intergraph Batch Manager**, select the batch server name and click **CreateQ**.

*The Create Queue dialog box displays.*

2. Ensure that **Batch** is checked in the **Queue Type** frame.
3. Key in **UpdateLocalQueue01** in the **Queue Name** field.
4. Select **Apply** on the **Queue Name** dialog.
5. Key in **UpdateLocalQueue02** in the **Queue Name** field.
6. Select **Apply** on the **Queue Name** dialog.
7. Select **Pipe** in the **Queue Type** frame.
8. Key in **UpdatePipeQueue01** in the **Queue Name** field.
9. Switch to the **Destinations** tab.
10. Key in **UpdateLocalQueue01** in the **Destination** field and click **Add**.
11. Select **Apply** on the **Queue Name** dialog.
12. Key in **UpdatePipeQueue02** in the **Queue Name** field.
13. Switch to the **Destinations** tab.
14. Key in **UpdateLocalQueue02** in the **Destination** field and click **Add**.
15. Select **OK** on the **Queue Name** dialog to create the queue and close the dialog.
16. In **Intergraph Batch Manager**, select the queue **UpdateLocalQueue01** and click **EnableQ** and **StartQ**.
17. In **Intergraph Batch Manager**, select the queue **UpdateLocalQueue02** and click **EnableQ** and **StartQ**.
18. In **Intergraph Batch Manager**, select the queue **UpdatePipeQueue01** and click **EnableQ** and **StartQ**.
19. In **Intergraph Batch Manager**, select the queue **UpdatePipeQueue02** and click **EnableQ** and **StartQ**.

**NOTES**

The steps above:

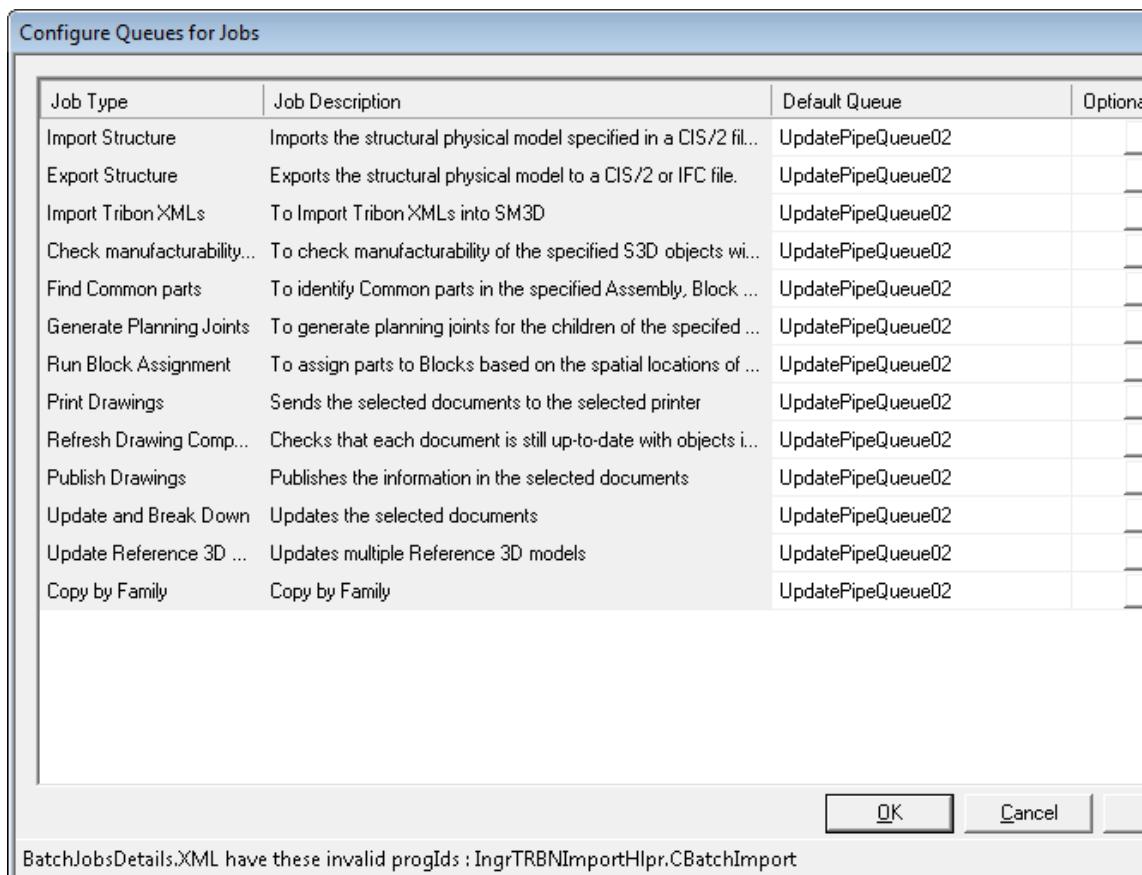
- Created, enabled, and started two batch queues: *UpdateLocalQueue01* and *UpdateLocalQueue02*.
- Created, enabled, and started two pipe queues: *UpdatePipeQueue01* and *UpdatePipeQueue02*.
- Set the destination of *UpdatePipeQueue01* to *UpdateLocalQueue01*.
- Set the destination of *UpdatePipeQueue02* to *UpdateLocalQueue02*.

**Definitions:**

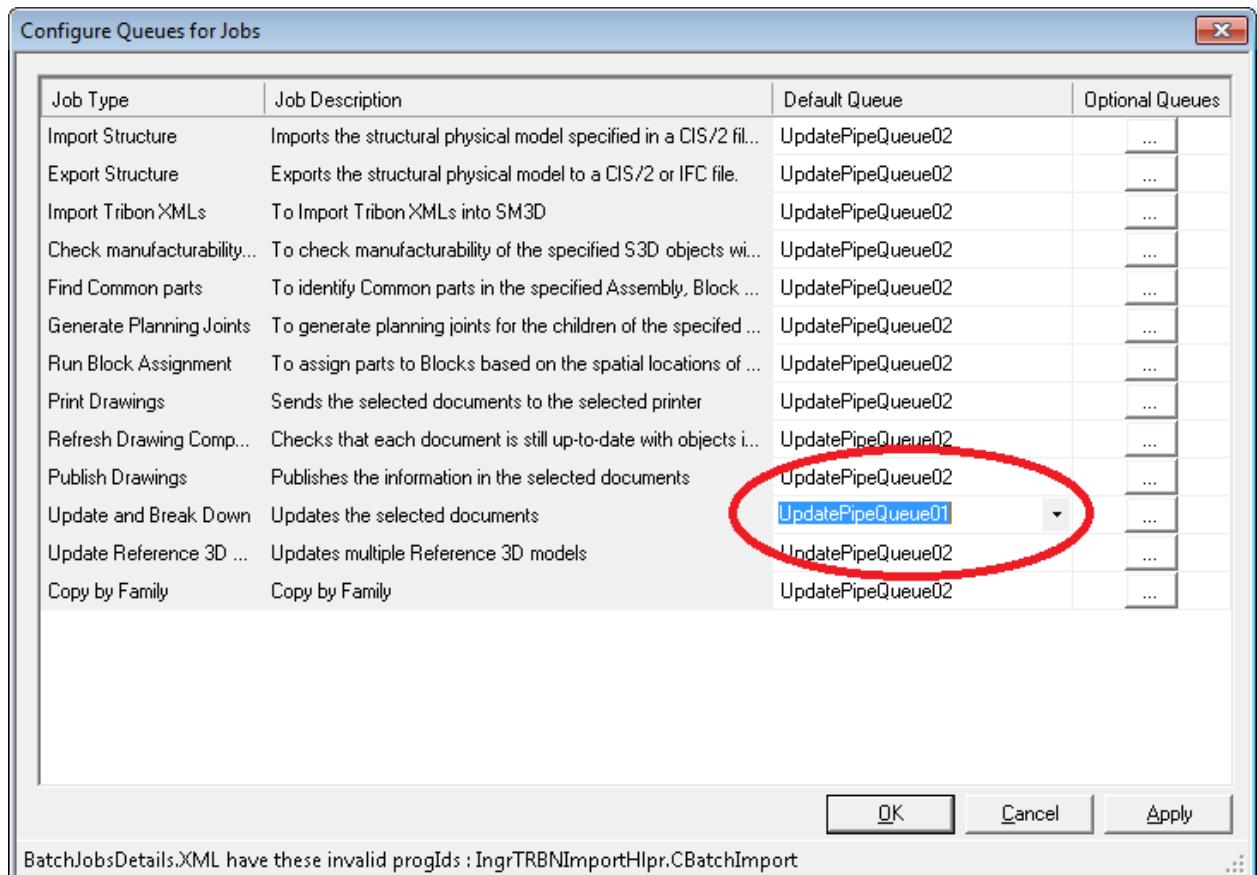
- **Enabled:** A queue state in which the queue will accept new jobs.
- **Started:** A queue state in which the queue will execute jobs submitted to it.

## Set the Default and Available Queues

1. From the Windows Start menu, select All Programs > Intergraph Smart 3D > Project Management to display the Project Management window.
2. Select the training plant.
3. Select Tools > Configure Queues for Jobs to display the Configure Queues for Jobs dialog.



4. In the row called **Update and Break Down**, click in the cell in the **Default Queue** column and select *UpdatePipeQueue01*.



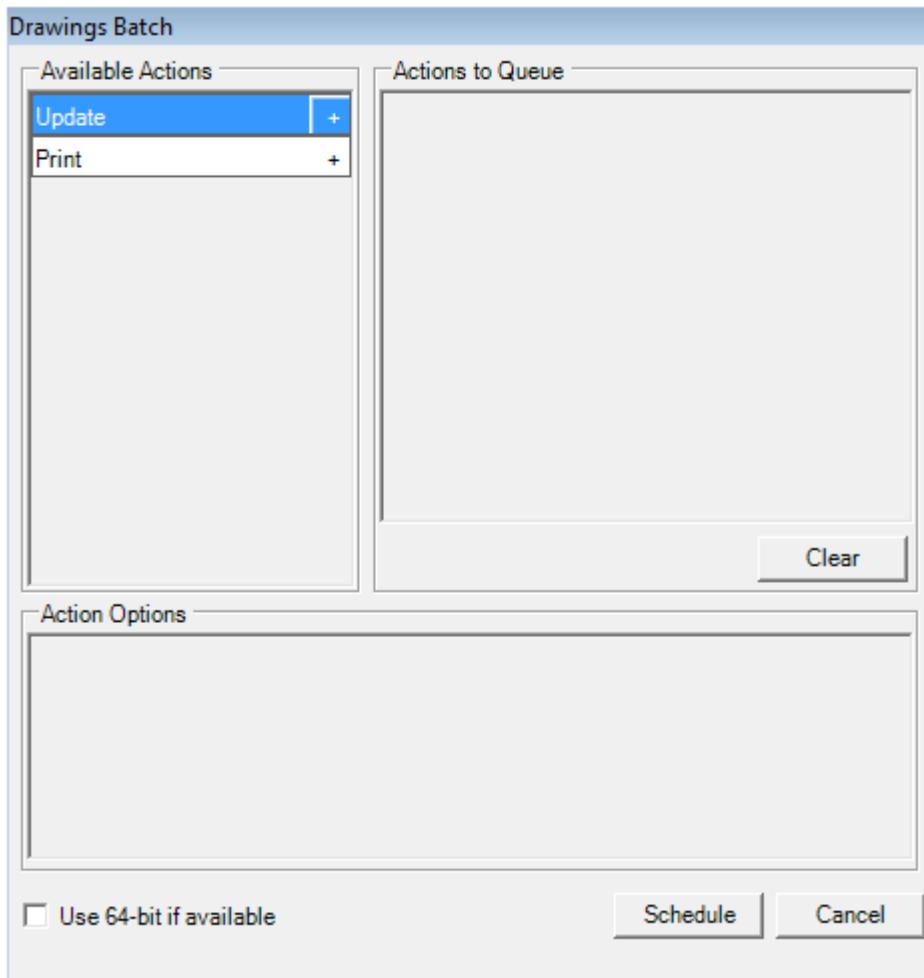
5. Select the **Optional Queues** button in the same row to display the **Configure Optional Queues** dialog.
6. In the **Available Queues** section, select *UpdatePipeQueue02*, then select the right arrow to add the queue to the **Allowed Queues** section.
7. Select **OK** on the **Configure Optional Queues** dialog.

**NOTE** With the above setup, only two queues should be seen on the client computer when submitting jobs: *UpdatePipeQueue01* and *UpdatePipeQueue02*.

8. Select the **OK** button on the **Configure Queues for Jobs** dialog.

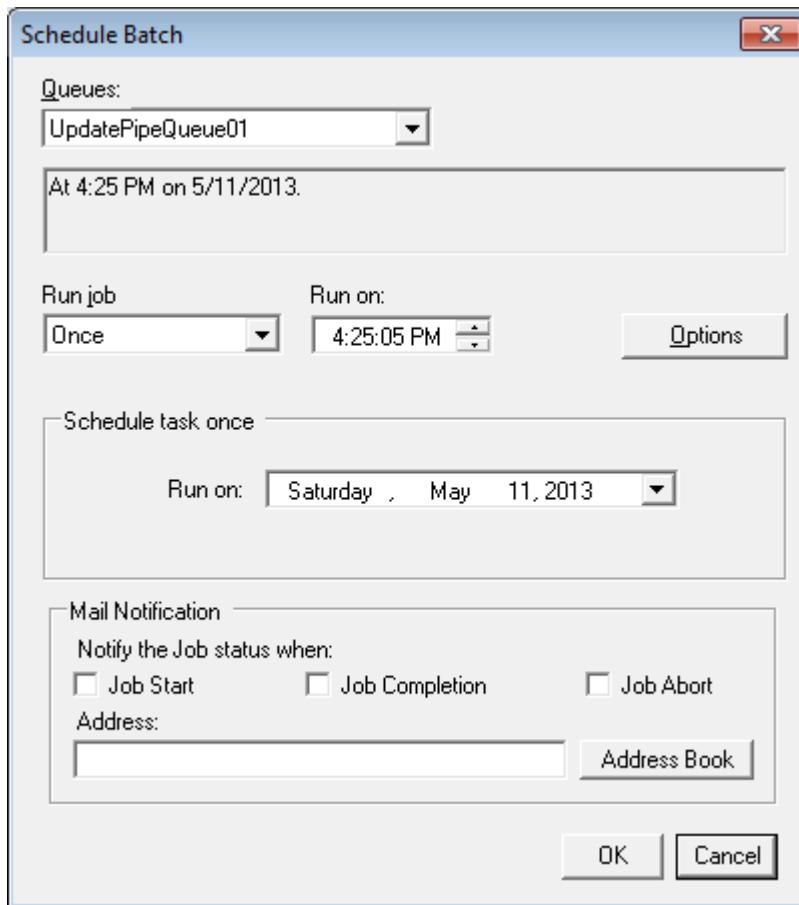
## Submit a Batch Job

1. Select **Tools > Drawing Console** to display the **Drawing Console** window.
2. On the **Drawing Console** window, expand the **Drawings\Configuration Labs\Intergraph Batch Services**.
3. Right-click on the drawing **Batch Drawing Equipment** and select **Batch** from the pop up menu to display the **Drawings Batch** dialog.

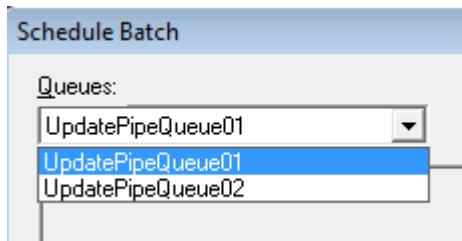


4. In the **Available Actions** section, click on the plus button adjacent to the **Update** action to add it to the **Actions to Queue** list.
5. Select the **Schedule** button to display the **Schedules Batch** dialog.

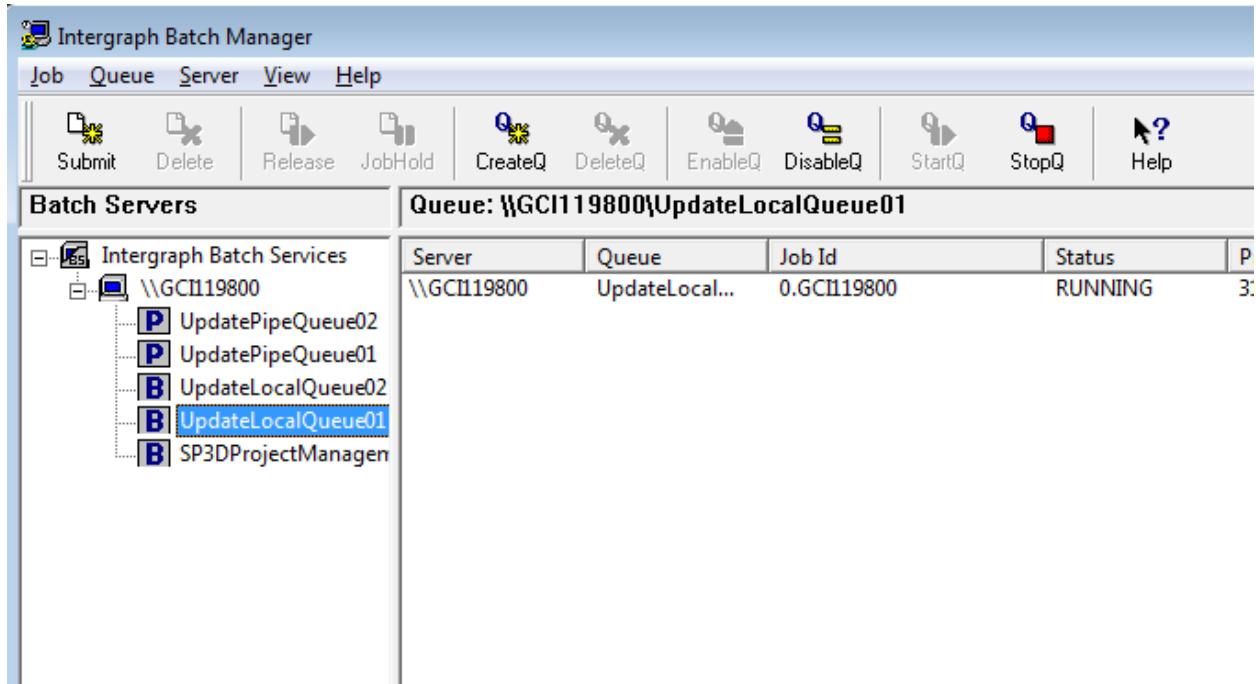
## Batch Management



6. Select the **Queues** list and see that only the two pipe queues are available for selection as set earlier in the lab.



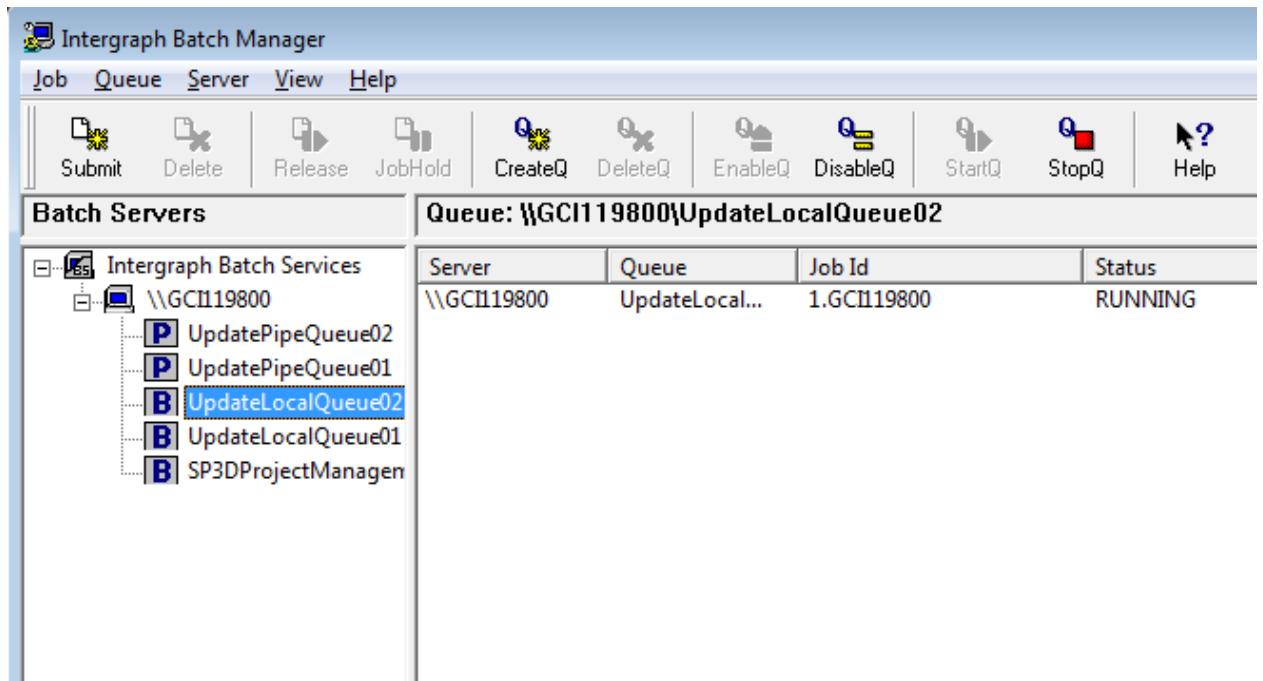
7. Select **UpdatePipeQueue01** in the **Queues** list.
8. Select the **OK** button on the **Schedule Batch** dialog to submit the job.
9. Switch to the **Intergraph Batch Manager** window and expand the server node.
10. Select the **UpdateLocalQueue01** queue and see that the job was routed to that queue like it should.



11. Switch to the **Smart> 3D** window, right-click on drawing **Batch Drawing Piping** select **Batch** from the pop up menu to display the **Drawings Batch** dialog.
12. In the **Available Actions** section, click on the plus button adjacent to the **Update** action to add it to the **Actions to Queue** list.
13. Select the **Schedule** button to display the **Schedules Batch** dialog.
14. Select *UpdatePipeQueue02* in the **Queues** list.
15. Select the **OK** button on the **Schedule Batch** dialog to submit the job.
16. Switch to the **Intergraph Batch Manager** window and expand the server node.
17. Select the *UpdateLocalQueue02* queue and see that the job was routed to that queue like it should.

## Batch Management

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18. Select **Job > Exit** in the **Batch Manager** window.
19. Select **Database > Exit** in the **Project Management** window.

# Index

## A

- Add a Label Rule to View Style • 143
- Add Border Labels • 19, 20, 25
- Add Hidden Lines to Graphic Rule ‘Blue’ • 74, 76, 81
- Advanced Graphic Rules • 117
- Associate Drawing View to Volume • 55, 56, 57, 59, 61, 63, 65, 68, 73, 75, 77, 80, 82, 86, 89, 92, 99, 104, 105, 106, 108, 115, 121, 125

## B

- Batch Management • 219
- Border and Layout Templates • 11
- Bulkload New Control Point Subtypes • 168, 173

## C

- Change Filter Behavior • 58
- Clipped Solid Fill (Optional) • 109
- Control Point Coordinate Labels • 160, 168
- Copy a Matchline Rule • 137
- Copy the Dimension Rule • 185, 189
- Copy the Label Rule • 145
- Copy the Label XML • 175
- Copy the North Arrow Label • 139
- Copy the North Arrow Rule • 139
- Create a Layout Template • 38, 41, 42, 43, 53, 54, 72, 80, 98, 99, 104, 107, 109, 110, 114, 115, 120, 125
- Create a New Drawing • 137, 141
- Create a New View Style • 48, 70, 79, 83, 85, 88, 90, 91, 93, 101
- Create DGN Output • 215
- Create New Drawing • 47, 69, 95, 102, 103, 112, 117, 122, 129, 143
- Create the View Style • 172
- Creating a New Label for a Structural Member • 177

## D

- Define a Template • 201
- Define a View Style • 199
- Define Style • 213

Define the View Style • 117, 123, 127, 148, 150, 207

Dimension Rule for Equipment • 185

Dimension Rule for Piping • 188

Dimension Rules • 185

Drawing by Query Package • 199

## E

Edit the Dimension Rule • 186

Edit the Dimension Rule to Add the Range Functionality • 193

Edit the Dimension Rule to Eliminate Small Dimensions • 195

Edit the Dimension Rule to Trim Witness Lines • 196

Edit the Label Content • 167

Edit the Label Rule • 146

Edit the Label Symbol • 158

Edit the View Style • 129, 132, 162, 165, 186

Edit the View Style to Add Dimension Rules To Normal Pipe • 191

Edit the View Style to Add Dimension Rules to Parallel Pipe • 189

## G

Graphic Rules • 69

Grid Labels for Elevation Views • 150

## I

Import DGN Border Template • 12, 13, 15, 17

Insert a Control Point • 160

## K

Key Plan Rules • 132

## L

Label Rules • 143

Label Template • 177, 178, 181, 182

## M

Make Symbols Share Files Modifiable • 11

Matchline Rules • 137

MicroStation 3D DGN Output • 213

Modify View Style to use Matchline Label •  
137, 141

### N

North Arrow Rule Type 1 • 139

### O

Other Border Template Settings • 30, 31, 36

### P

Preliminaries • 9

### R

Reference Labels • 148  
Remove Styles from Border Template • 26,  
30, 35  
Remove Styles from emptyvw.sha • 33  
Re-symbolizing Structure Openings • 122

### S

Search Folder • 217  
Search for a document • 217  
Single Line Piping • 117

### T

Test the Package • 204  
Test the View Style • 128, 130, 136, 144,  
149, 157, 167, 175, 187, 190, 192, 194,  
196, 197  
Test View Style • 209  
Turning Clipping Off • 126

### U

Update Drawing Using IBS • 219  
Use Classification Filters • 60  
Use Object Type Filters • 62, 64, 66, 67  
Using Label Rules • 143

### V

View Rules • 129  
View Styles, Line Styles, and Filters • 47  
View, KeyPlan, Matchline and North Arrow  
Rules • 129

### W

WBS Project based View Style • 207