

Smart 3D Drawings Creation

Practice Labs



PROCESS, POWER & MARINE

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Contents

Preliminaries	7
Composed Drawing Workflow	8
Define Workspace.....	9
Place Volume by Two Points	13
Create New Drawing.....	16
Place View	20
Associate View to Volume	24
Update View.....	25
Associate View to Restrict Filter	28
Exclude Objects	31
Un-Exclude Objects	35
Rotate View Based on a Referenced Coordinate System.....	37
Create Composed Drawing by Copying Template	39
Create Composed Drawing by Copying Associated Drawing	41
Report and Key Plan Views	43
Define Workspace.....	44
Create New Drawing.....	44
Place Graphic View.....	45
Place Report View Using Excel Format.....	46
Associate Graphic View to Volume.....	49
Associate Report View to Graphic View	50
Update the Drawing	51
Resize the Excel Report View.....	52
Use Native Text Boxes Format for the Report View	55
Use Differential Reporting Feature	57
Place Key Plan View	61
Associate Key Plan View to Drawing View	63
Additional Volume Placement Methods	65
Define Workspace.....	65
Place Non-rectangular Volume	66
Place Volume by Selection	72
Place Volumes by Plane and Offset	74
Create New Drawing	79
Place View	80
Copy/Paste Unassociated View	81
Associate Views to Volumes and Filter.....	83
Create New Drawing	84
Place View	85
Copy/Paste Unassociated View	86
Associate Views to Volumes and Filter.....	86
Copy and Paste Views with Associations.....	89
Define Workspace.....	89

Contents

Create New Drawing	90
Place View	90
Associate View to Volume and Filter	92
Copy/Paste Associated View	92
Align Views.....	96
Update the Drawing	97
Change Reference for Coordinate Labels	98
Snapshot Views	103
Define Workspace.....	104
Create a Clipped View	106
Create Snapshot View with All Objects Command.....	106
Create Snapshot View with Visible Objects Only Command.....	108
Place Visible Objects Only Snapshot View.....	109
Place All Objects Snapshot View.....	111
Section and Detail Views	115
Define Workspace.....	116
Edit Drawing.....	116
Place Cutting Plane	117
Place and Update Section View.....	120
Modify Section View.....	123
Place Detail Envelope	130
Place and Update Detail View	131
Move Section and Detail Views to Another Drawing	133
Editing Drawing Properties	135
Define Workspace.....	136
Edit Properties on Folder	136
Edit Notes on a Component	138
Edit Notes on a Drawing	140
Update and Review Drawing with Property Changes	140
Append Revision Records from a Component	142
Edit Revision Records on a Drawing	144
Update and Review Revision Record Changes	145
Edit the Last Revision Record on Multi-Selected Drawings	146
Delete Revision Records on a Drawing	147
Placing Graphics and Text	149
Define Workspace.....	149
Change Undo Steps.....	150
Change Layer of Objects within the Graphic View	152
Change Display Manager Settings within the Graphic View	153
Add Symbol Inside View	159
Use Leaders to Associate Annotation to View	163
Use Associate Graphics to Graphic View Command	165
Move a View with Associated Graphics	167
Use Hide/Show to Hide and Copy Graphics in the View	168
Modify Copied Graphics within the View	170

Placing Labels and Dimensions	173
Define Workspace.....	175
Place a View Label	175
Place an Object Label.....	178
Use As Drawn Option when Placing an Object Label.....	180
Use Leader Boundary Option when Placing a Label	182
Use Dimension Style Option when Placing a Label.....	184
Show Behaviour of Manual and Automatic Labels	185
Add Drawings Custom Commands.....	193
Use the Highlight Command	196
Clear Manual Edits	199
Use the Smart Dimension Command	201
Use the Distance Between Dimension Command.....	203
Delete Copied Equipment.....	205
Drawings by Query.....	207
Add Drawings by Query Manager Component	207
Setup Drawings by Query Manager Component	208
Execute the DBQM Query and Create Drawings	211
Update Drawings by Query	212
Modify Coordinate System for DBQ Labels	215
Add a Support to the Existing System	217
Create a Drawing for the New Support.....	219
Move the New Support to a New System	220
Execute the DBQM Query and Create Drawings	221
Creating Volume Drawings.....	223
Define Workspace.....	224
Add a Predefined Volume Drawing Component	224
Modify the Template	226
Place Drawing Volumes	228
Update the Drawings	231
Index	235

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

Composed Drawing Workflow

Objective

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

- Place a volume by two points using 3D PinPoint
- Create a new composed drawing
- Place a view
- Associate a view to a volume with and without a restrict filter
- Update a view
- Exclude and un-exclude objects from the drawing
- Rotate a view based on a referenced coordinate system

Overview

Drawings and Reports tasks allow designers to provide detailed drawings of a plant design quickly and accurately. Drawings can be of the entire plant or zoomed to a specific area. There is more than one type of drawing document. The one covered in this lab is the composed drawing type, one of the more frequently used drawing types.

A composed drawing is an orthographic drawing that you create by defining one or more drawing views of selected volumes in a 3D task. A drawing view processes all objects in the model that are in its associated volume, and not just the objects displayed in the current workspace. You can then use filters to specify which objects you want to show in the drawing view. You can use any method in the Space Management task to create the volumes.

You access the Drawings and Reports task by going to **Tasks > Drawings and Reports**. This series will cover the procedures pertaining to the Drawings & Reports task in Smart 3D.

The first topic demonstrates the steps for creating a new composed drawing. The look of a drawing is configured by view layout templates and border templates. Your administrator primarily defines these aspects of the workflow, but they are important for you as a designer to understand.

Layout templates define standard single and multiple view drawing layouts, and default values for all view properties such as view direction, view style, and scale. Border templates define standard drawing sizes and standard title block properties. When you create a new drawing, the view layout you select is scaled to fit your selected border and added to the drawing so that you don't have to place all your views manually. You can add more views or edit the existing views as needed.

Each individual composed drawing must be placed within a composed drawing folder in the drawings hierarchy. It is possible to create any number of composed drawing folders under a generic drawing folder. You can also create a composed drawing folder when you create a composed drawing. It is likely your administrator will have already predefined your drawing

folder hierarchy to facilitate efficient browsing to the specific drawings of interest. But you should be aware of how the system is configured, in any case.

Individual designers create volumes as needed for their composed drawing views. These drawing volumes should be organized in the **Space Management** hierarchy according to the management plan of your administrator. For example, the administrator can create a space folder for each design application area. You can then associate volumes to a drawing view, a task to be demonstrated later.

Create the volumes for your drawing views in the **Space Management** environment is performed using several unique methods. You can place a volume by two points, place a volume by selection, along a path, or place volumes by plane and offset. Whichever you choose, you will assign the created volumes to a Space Management folder so they remain organized.

A single volume can be referenced by multiple drawing views in multiple drawings. Editing the volume impacts all drawing views that reference the volume. You can create volumes for the drawing views at any time before the step of associating a drawing view to a volume.

The workflow for creating a new composed drawing generally regards the following steps:

1. Define your workspace to display a segment of your plant.
2. Select **New Drawing** on a composed component from the **Drawing Console**.
3. Configure the save location and name for your new drawing.
4. Create a new or edit an existing drawing view by editing its view properties, such as view style, scale, look direction, view direction, and annotation coordinate systems. The software allows you to copy and paste views as well.
5. Associate the drawing view to a volume by selecting **Associate Objects to View** . Upon selecting this command, a ribbon displays, allowing to you define a filter to restrict which items in the volume display in the drawing views. If a drawing view is already associated to a volume, the associated volume is highlighted. You can select a different volume or pick a different drawing view to associate from the select list. If you do not select a filter, then all objects in the associated volume are passed to the view style associated with the view. The view style determines which objects are displayed in the drawing view.
6. Update the view.
7. Update the drawing interactively or, if you administrator has set up a batch server, by batch.

You can update multiple composed drawings at once and you can update folders that contain composed drawings. To update drawings on a batch server, select one or more drawings or folders and select the **Batch...** menu. You can then select actions such as update and print to queue and schedule the batch job.

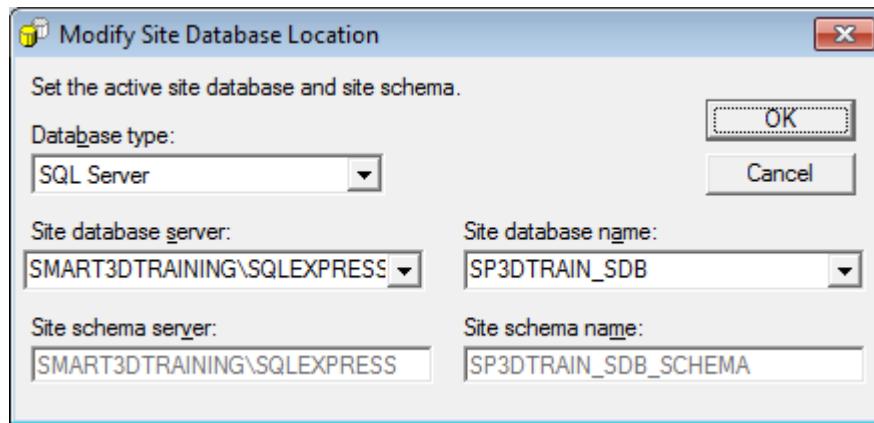
Define Workspace

Objective: Configure the session prior to working with drawings.

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

Composed Drawing Workflow

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.

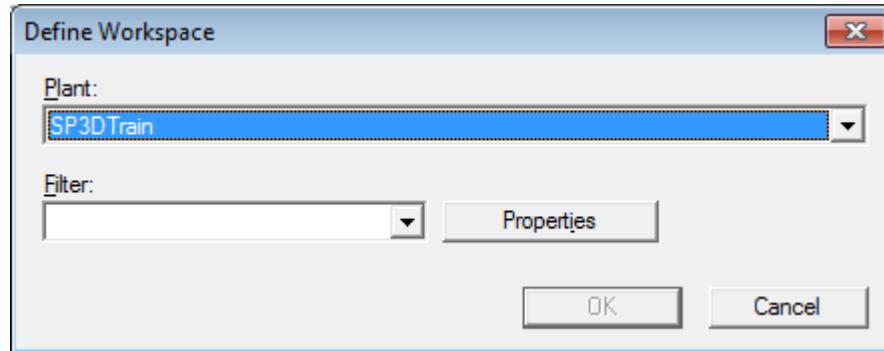


2. Click **OK** on the **Modify Site Database Location** dialog box.
3. From the **Windows Start** menu, select **All Programs > Intergraph Smart 3D > Smart 3D**.
*The **New** dialog box displays.*
4. Click **MetricUnits** on the **New** dialog box, and then click **OK**.

TIP The selections are session templates that set the workspace environment. New session templates can be created and saved in *[Product Folder]\CommonApp\SessionTemplates\General*. The software adds these session templates to this dialog box automatically.

5. Click **File > Define Workspace**.

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

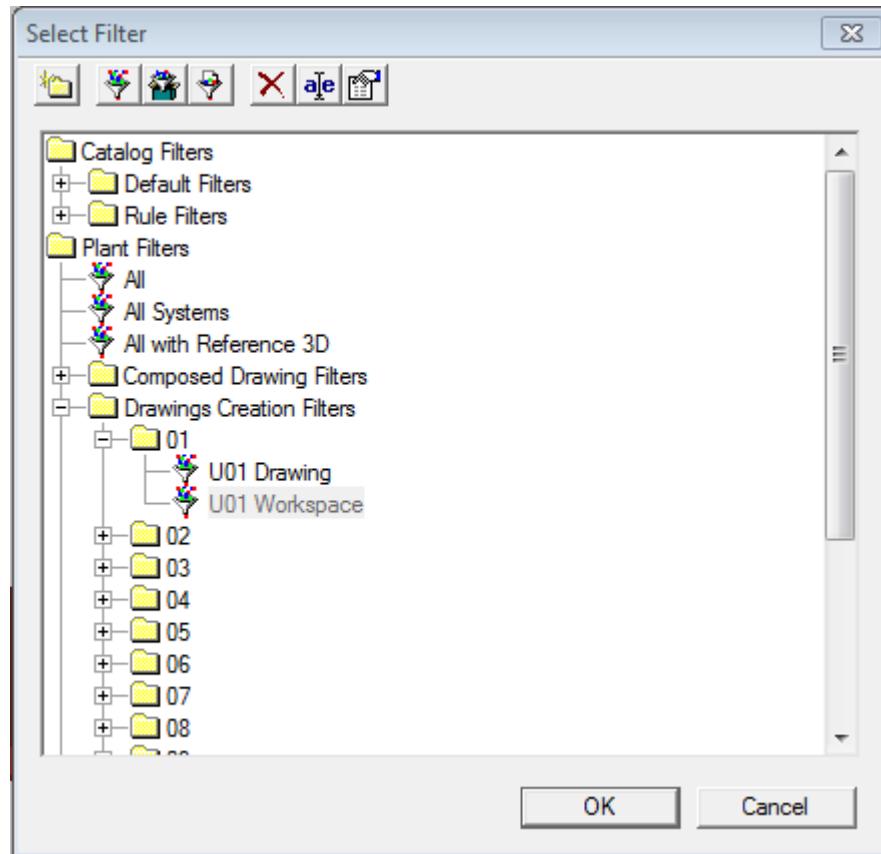


TIP It is necessary to define a workspace before using the product.

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 Creation Filters\01** on the **Select Filter** dialog box.
9. Select the **U01 Workspace** filter.



NOTE The **U01 Workspace** filter includes objects on the **System** tab of the **Workspace Explorer** and the appropriate space folder for this lab.

10. Click **OK** on the **Select Filter** dialog box.
11. Click **OK** on the **Define Workspace** dialog box.

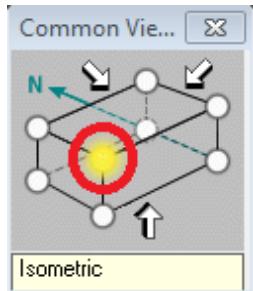
The workspace populates with modeled objects.

12. When the workspace query completes, click **Common Views**  on the **Common** toolbar.

*The **Common Views** dialog box displays.*

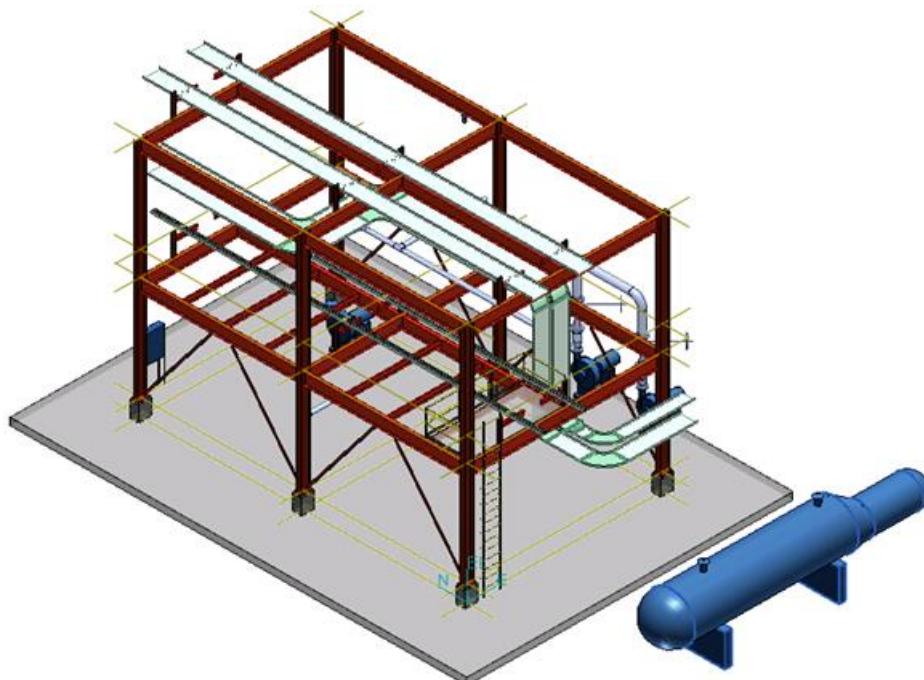
Composed Drawing Workflow

13. On the **Common Views** dialog box, select the node that changes the look direction to **Looking NE and Down**.

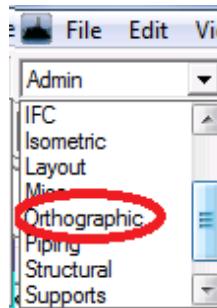


14. Click **Fit** on the **Common** toolbar.

All the objects fit into the graphic window.



15. Select **Orthographic** from the **Active Permission Group** list.



TIP The **Active Permission Group** list is located in the upper-left corner of the **Smart 3D** application. Objects added to the model during class, including drawings and views, will be added to this permission group.

Place Volume by Two Points

Objective: Place a volume for eventual use by a drawing.

16. Click **Tasks > Space Management** to enter the task to place the volume to be used by the drawing.

17. Click **PinPoint**  on the **Common** toolbar.

The **PinPoint** ribbon displays.



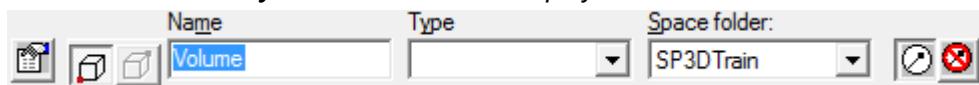
18. Ensure that the **Coordinate System** field is set to **Global**.

19. Click **Set Target to Origin**  to ensure that the points are measured from the Global origin.

TIP The coordinate system also determines the *alignment* of the volume for most of the volume placement commands. In this case, the faces of the two-point volume will be parallel with the planes of the Global coordinate system.

20. Click **Place Volume by Two Points**  on the vertical toolbar.

The **Place Volume by Two Points** ribbon displays.



TIP The green-colored buttons at the bottom of the vertical toolbar in the Space Management task are for the placement of volumes for use with the volume drawing component. These commands are not to be used in this lab. The volume placement command to be used for this step is the one near the top of the vertical toolbar.

TIP With the **Place Volume by Two Points** command, volumes are placed by specifying the location of two diagonal points forming a rectangular prism.

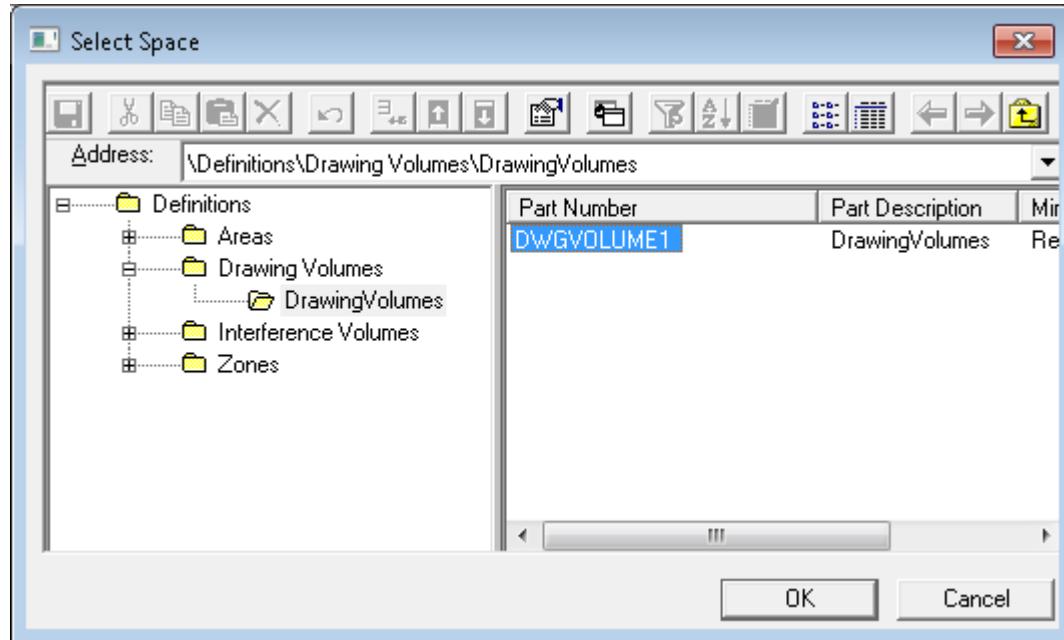
21. Type **U01 2 Points** in the **Name** field on the **Place Volume by Two Points** ribbon.

22. Select **More** from the **Type** list on the **Place Volume by Two Points** ribbon.

The **Select Space** dialog box displays.

Composed Drawing Workflow

23. In the **Select Space** dialog, expand **Definitions\Drawing Volumes** and click **DrawingVolumes** in the tree view.
24. Select **DWGVOLUME1** in the list view.



25. Click **OK** on the **Select Space** dialog box.
*The volume type is populated in the **Type** list.*
26. Select **More** from the **Space** folder list.
*The **Select System** dialog box displays.*
27. In the **Select System** dialog, expand **Drawings Creation Labs** and select the **01** space folder.
28. Click **OK** on the **Select System** dialog box.
29. Click **Disable Assoc Point Creation** so that the volume points are not locked to their initial position.
30. Type **21945.6** in the **E** field on the **PinPoint** ribbon. Press TAB.
*The field displays **21945.60 mm** and is locked.*
31. Type **609.6** in the **N** field on the **PinPoint** ribbon. Press TAB.
*The field displays **609.60 mm** and is locked.*
32. Type **-609.6** in the **EI** field on the **PinPoint** ribbon. Press TAB.
*The field displays **-609.60 mm** and is locked.*
33. Click anywhere in the graphic window to complete placement of the first point of the volume.
34. Type **34137.6** in the **E** field on the **PinPoint** ribbon. Press TAB.
*The field displays **34137.60 mm** and is locked.*
35. Type **17678.4** in the **N** field on the **PinPoint** ribbon. Press TAB.

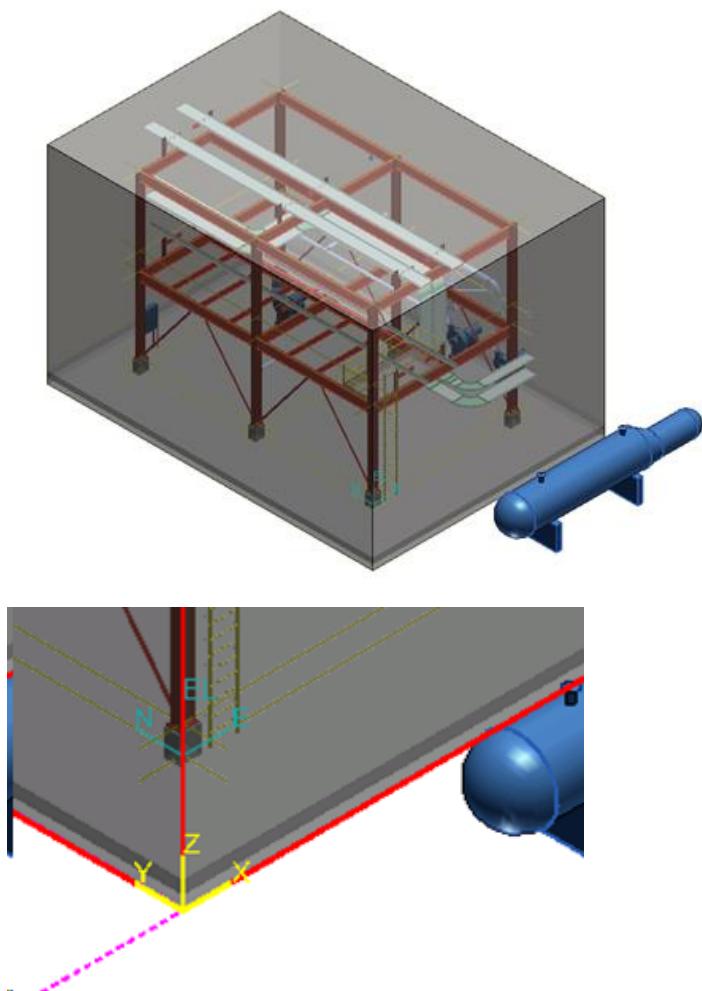
The field displays **17678.40 mm** and is locked.

36. Type **10363.2** in the **EI** field on the **PinPoint** ribbon. Press TAB.

The field displays **10363.20 mm** and is locked.

37. Click anywhere in the graphic window to complete placement of the two-point volume.

38. Press ESC to exit **Place Volume by Two Points**.



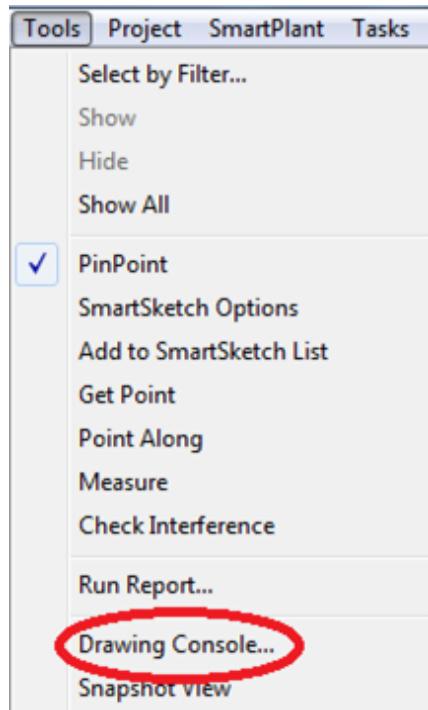
TIP If you select a volume while in the **Space Management** task, a local coordinate system triad displays at one corner of the volume. In the case of a two-point volume, the triad displays at the location of the first point.

TIP The orientation of the local coordinate system is important for drawings, as you will see later in this lab.

Create New Drawing

Objective: Create a new composed document in the hierarchy. Later sections will place a view in the document and associate the view with the volume previously placed.

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



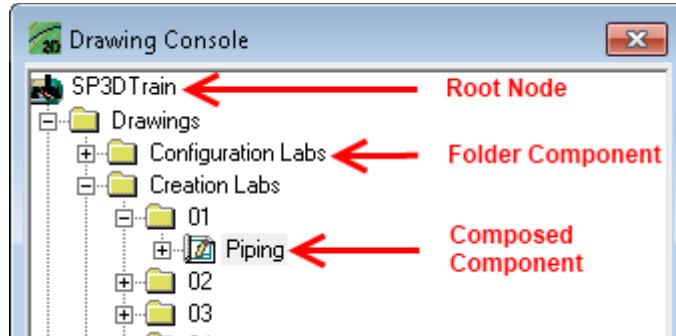
The **Drawing Console** window displays.

TIP Drawings can be managed from the **Drawing Console** or within the **Drawings and Reports** task.

TIP The **Drawing Console** remains open until you enter any one of the following *non-modeling* tasks:

- **Drawings and Reports**
- **Catalog**
- **Systems and Specifications**

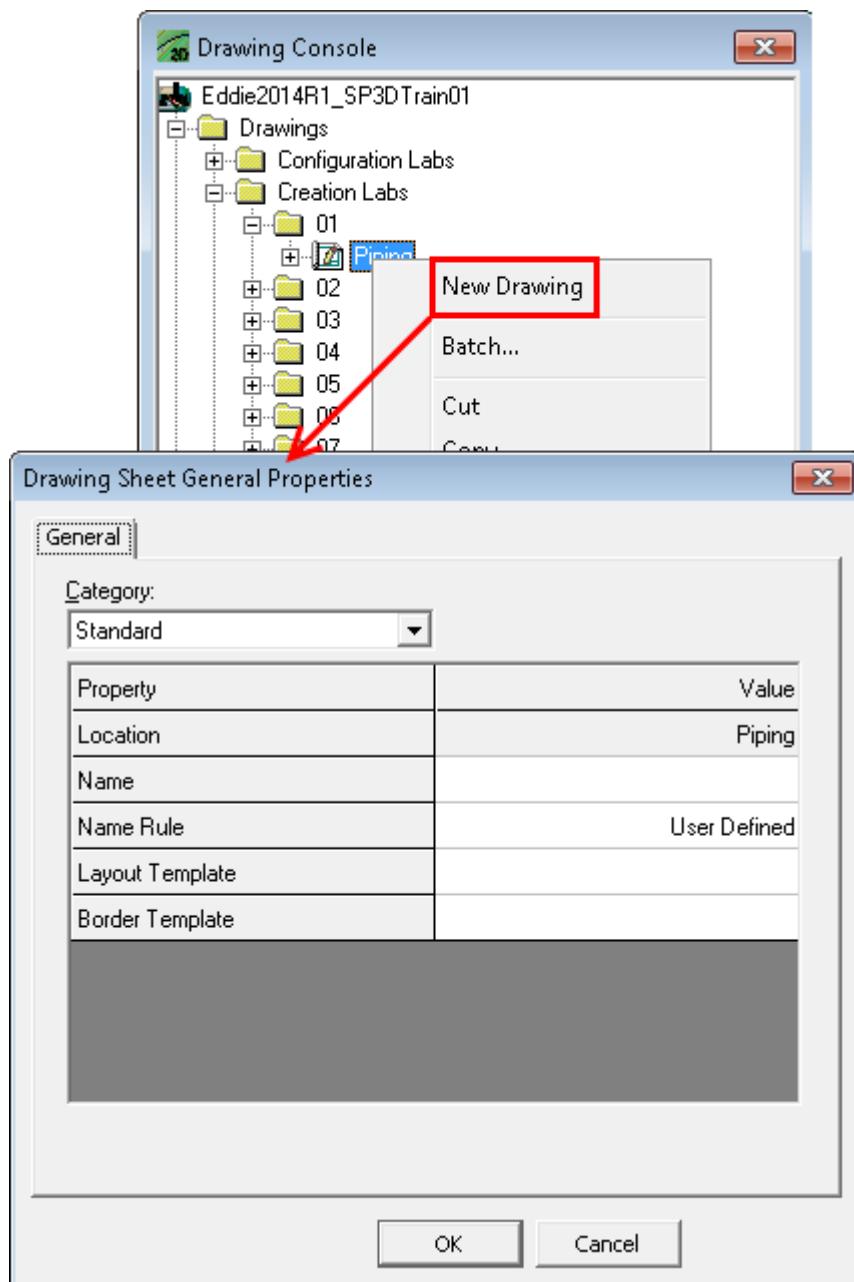
2. In the **Drawing Console** window, expand the **Drawings\Creation Labs\01** folders.



3. Right-click **Piping**, and select **New Drawing**.

Composed Drawing Workflow

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

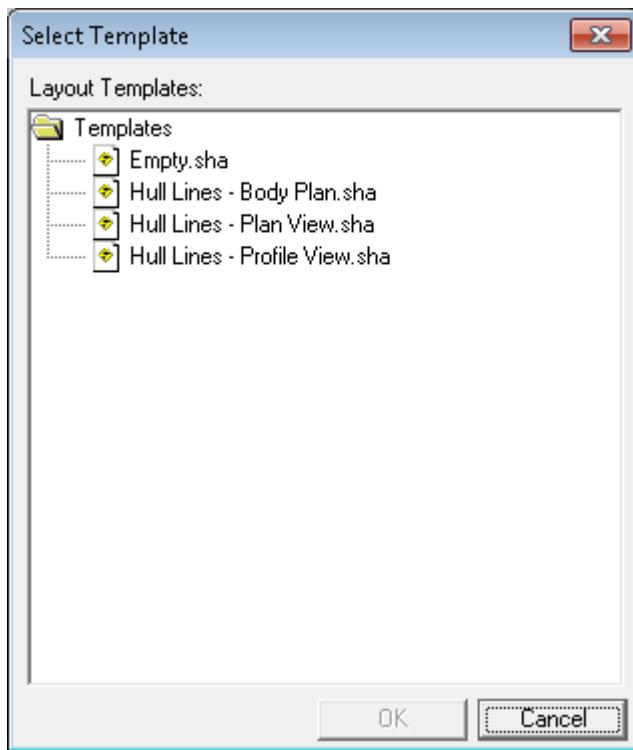


TIP The commands seen on the pop up menu depend on the component that is accessed. The appearance of some commands is further restricted by the environment. For example, **New Drawing** is only available on the shortcut menu of a composed component in the **Drawing Console**. The command does not display on the shortcut menu of a composed component in the **Drawings and Reports** task.

4. Type **Piping Plan01** in the **Name** field on the **Drawing Sheet General Properties** dialog box.

5. Select **More** from the **Layout Template** list on the **Drawing Sheet General Properties** dialog box.

The **Select Template** dialog box displays.



6. Select **Empty.sha** on the **Select Template** dialog box.

TIP Layout templates can have a set of views already predefined and prearranged for producing standardized drawings.

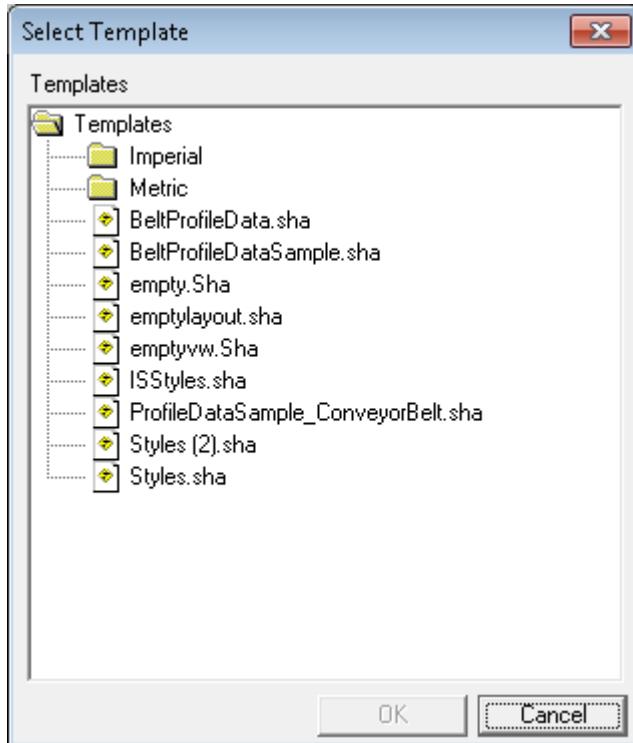
The delivered **Empty.sha** template has no views saved in it.

7. Click **OK** on the **Select Template** dialog box.

The **Layout Template** field is populated with **Layout Templates\Empty.sha**.

8. Select **More** from the **Border Template** list.

The **Select Template** dialog box displays.



- Double-click the **Metric** folder on the **Select Template** dialog box to expand it, and select **A1_Wide.sha**.

TIP The delivered border templates already contain predefined border graphics and border labels.

- Click **OK** on the **Select Template** dialog box.

*The **Border Template** field is populated with **Templates\Metric\A1_Wide.sha**.*

TIP The values entered into the **Layout Template** and **Border Template** fields are remembered while in the same session. They are also remembered in the session template.

- Click **OK** on the **Drawing Sheet General Properties** dialog box.

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

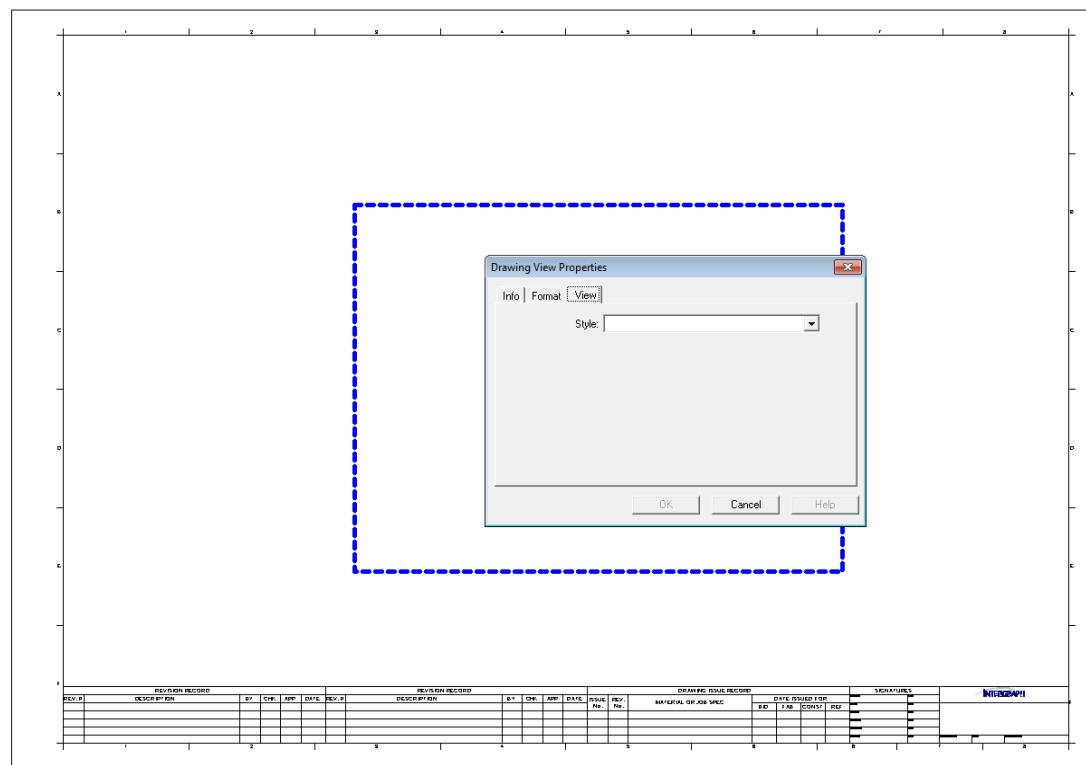
Place View

Objective: Place a graphic view in the composed drawing. The view will eventually contain a 2D rendering of the contents of the volume.

- Maximize the drawing window in **SmartSketch Drawing Editor**.
- Click **Fit** from the **Main** toolbar in **SmartSketch Drawing Editor**.
- Click **Place View** from the **Compose** toolbar.

- TIP** The toolbar is officially called **SP3D Drawings Compose Toolbar**. The buttons on this toolbar are added by Smart 3D to perform specialized drawings operations. This toolbar is not available if **SmartSketch Drawing Editor** is used outside of Smart 3D.
- TIP** Views placed with this command are rectangular in shape and defined by two diagonal points.
- TIP** Views can be placed with **Place View** by two methods:
- Position the cursor in the window and click to place the first point; move the cursor to a different position in the window and click again to place the second point.
 - Position the cursor in the graphic window and mouse down; drag the cursor to the second point in the window and mouse up.
- TIP** Views are based on the SmartFrame element. However, views have additional attributes which give them behaviors not available to a SmartFrame. These additional behaviors are only available when editing the drawing within Smart 3D.
4. Place a two-point rectangle of any size approximately centered within the border area.

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



5. Select **More** from the **Style** list on the **Drawing View Properties** dialog box.

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

6. Select **Orthographic\Piping Plan Style2**.

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

The **Style** field is populated with **Orthographic\Piping Plan Style2**.

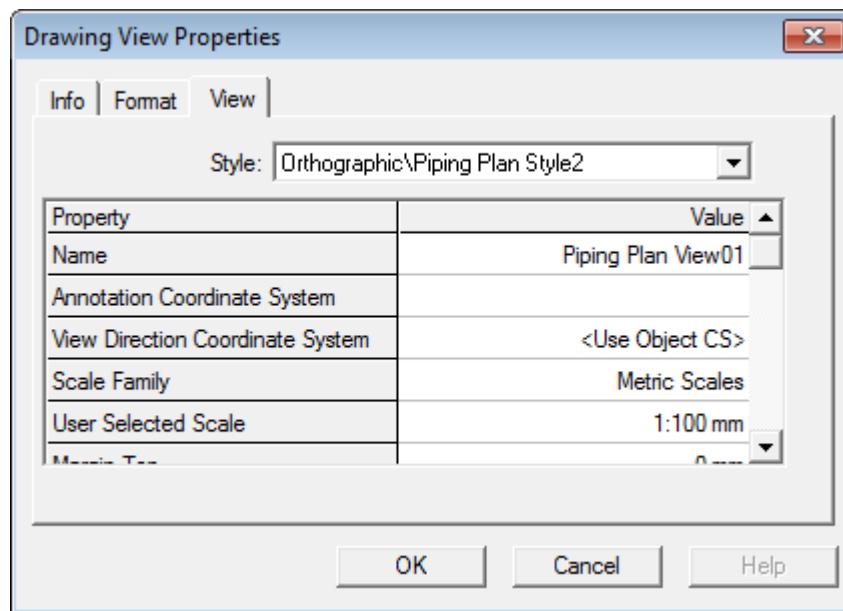
Composed Drawing Workflow

TIP The purpose of a view style is to determine what and how objects display in the drawing. The delivered Piping Plan view style includes several objects in its definition: piping parts, equipment, and structure, to name a few.

TIP The naming convention of this view style does not mean it is limited for use only in the plan look direction. It can be used in views of other look directions but it was designed to work best in the plan direction.

After selecting a view style, additional fields display on the **Drawing View Properties** dialog box.

8. Type **Piping Plan View01** in the **Name** box.
9. Select **Metric Scales** from the **Scale Family** list.
10. Select **1 : 100 mm** from the **User Selected Scale** list.
11. Click **OK** on the **Drawing View Properties** dialog box to complete the view definition.



TIPS

- Additional values in the **Scale Family** and **User Selected Scale** fields can be bulkloaded into the catalog database.
- At a minimum, the following fields must be edited when creating a *normal* graphic view; other fields already have default values:
 - **Name**
 - **Scale Family**
 - **User Selected Scale** (if **Scale Family** is not **Fit To Scale**)
- The software automatically saves the drawing after clicking **OK** on the **Drawing View Properties** dialog box.
- After clicking **OK** on the **Drawing View Properties** dialog box, the software automatically saves the drawing.

- Notice that the **View Direction Coordinate System** field displays **<Use Object CS>**. This means that the view's look direction is relative to the local coordinate system of the associated volume.

Associate View to Volume

Objective: Establish a relationship between the view in the composed drawing and the volume placed earlier in this lab.

1. Click the view just placed then click **Associate Objects to View**  from the **Compose** toolbar.

TIP One purpose of the **Associate Objects to View** command is to establish a relationship between a graphic view and a volume in the model. The relationship is established by selecting a volume in the **Workspace Explorer** or in a graphic modeling window. Therefore, the volume must be in the workspace to complete this command.

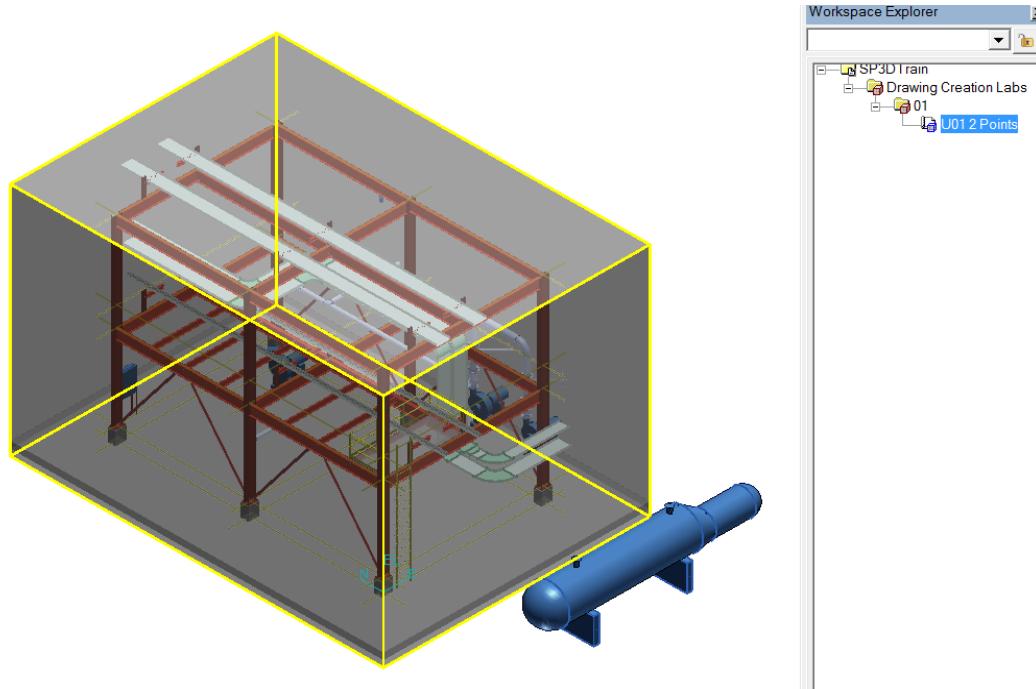
2. Switch to the **Smart 3D** window.

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



3. Click the **Space** tab in the **Workspace Explorer**.
4. Click the volume **U01 2 Points** in the **Workspace Explorer**.

The volume in the model is outlined with heavy yellow edges. This is a visual indication showing that a relationship to the view has been established.



TIP The objects in the volume are *candidate* objects to appear in the drawing. The candidate objects are passed to the view style where they might be further restricted.

Update View

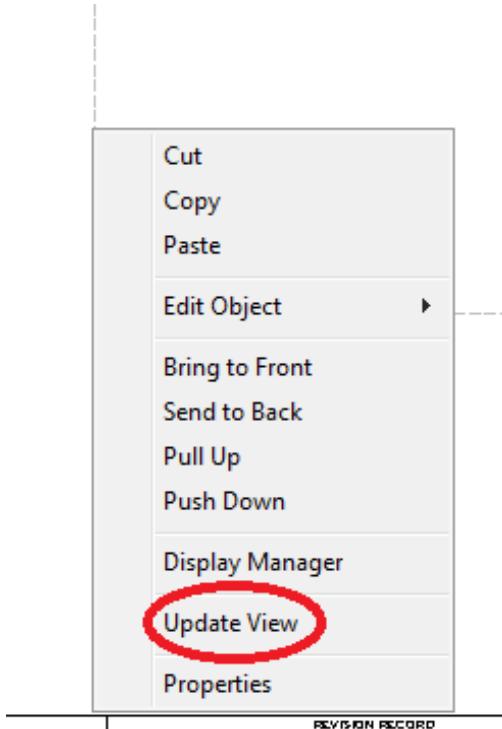
Objective: Generate the rendered contents of the view based on the contents of the associated volume.

1. Switch to the **SmartSketch Drawing Editor** window.

The view is still centered in the same position but has resized to match the scaled dimensions of the associated volume.

TIP By design, composed views that are **not Fit to Scale** always match the scaled size of the associated volume. This is not true for volume and drawing by query type drawings, where the view size is not in sync with the size of the volume.

2. Right-click the view boundary once to exit the **Associate Objects to View** command.
3. Right-click the view boundary again to display the shortcut menu for the view.
4. Select **Update View**.



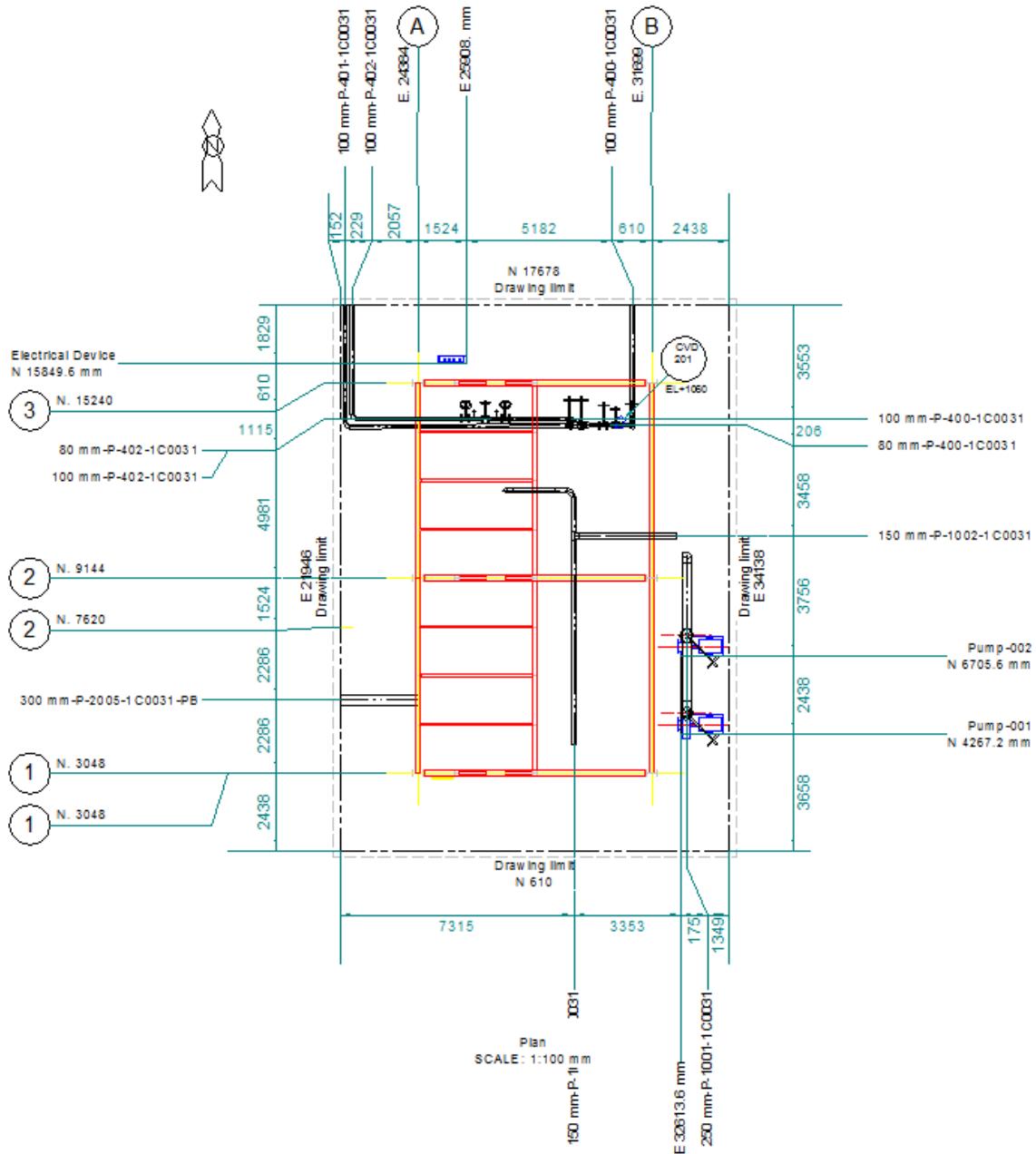
TIP The **Update View** command renders the graphics from the model and places dimensions and labels if they are specified in the view style.

Updating view 'Piping Plan View01'. This may take some time...

TIP Notice that the **Status Bar** in the lower left corner of the **Drawing Editor** window indicates that a view update is in progress. When the view update completes, the software automatically saves the drawing.

Composed Drawing Workflow

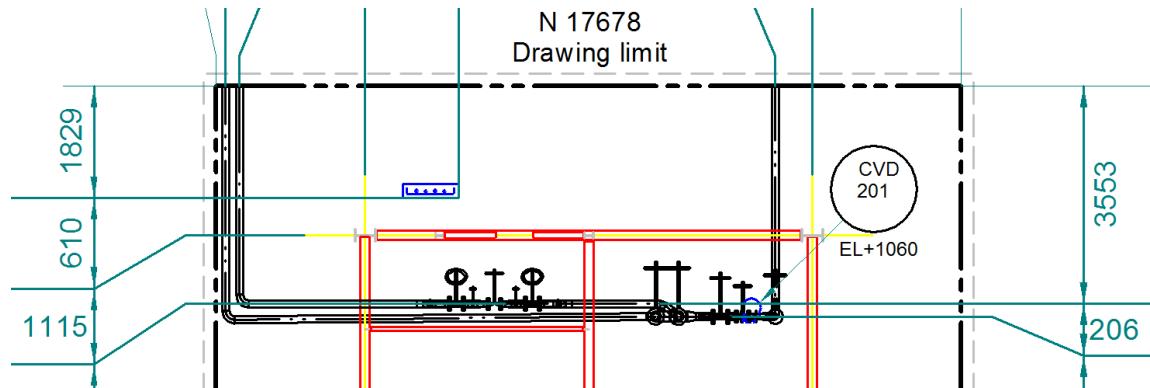
The updated view contents should appear similar to the picture below:



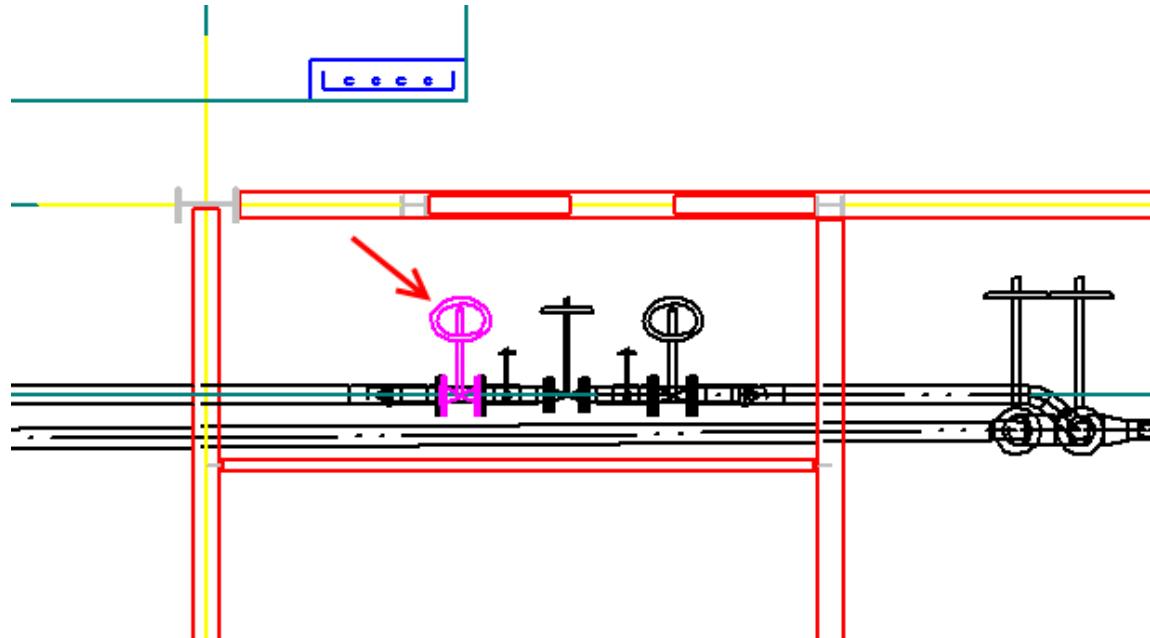
5. Click **2D/3D Selection**  from the **Compose** toolbar.

- TIP** By clicking on a drawing object while the **2D/3D Selection** command is enabled, the corresponding object in the model is selected. The selected object in the model can be edited if needed.
- TIP** Selecting a drawing label while the command is enabled also selects the associated object in the model.

6. Click **Zoom Area**  from the **Main** toolbar.
7. Drag a rectangle around the top half of the view to get a closer look at the contents.

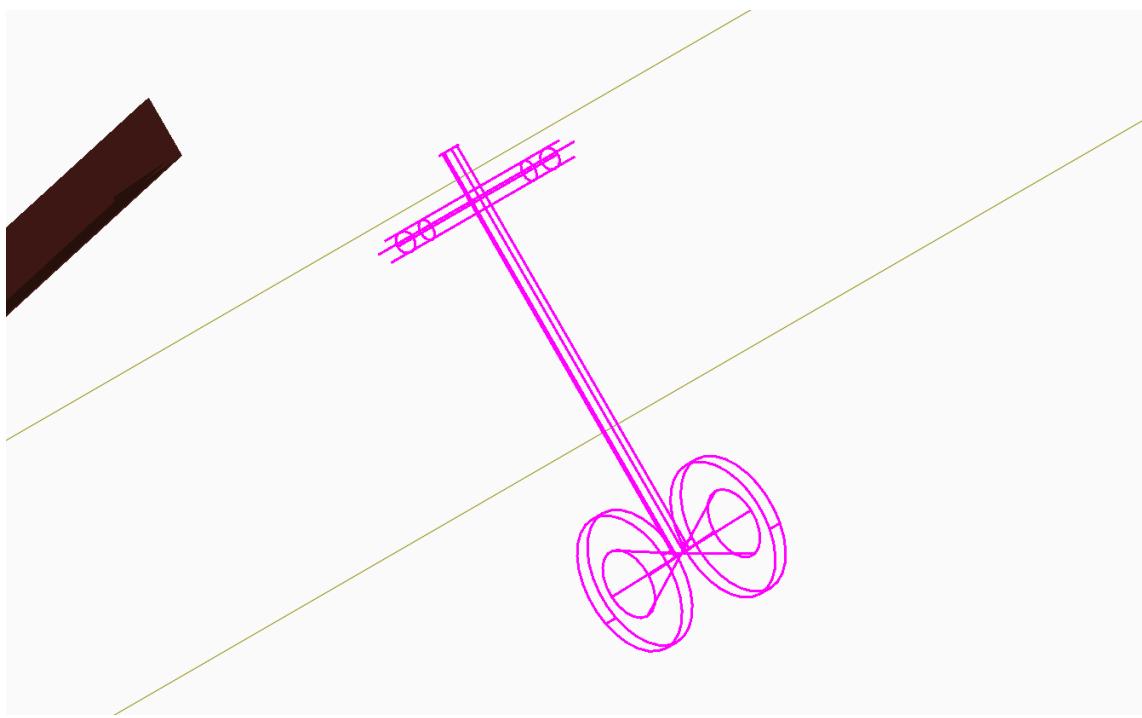


8. Right-click to exit **Zoom Area**.
9. Click on the pipe valve indicated in the picture below:



10. Switch to the **Smart 3D** window and notice the ribbon bar indicates that the corresponding model object is selected.
11. Click **Fit** .

The software fits the selected pipe valve in the graphic window.



TIP Notice that this valve is not part of the workspace but still appears in the drawing view because it is within the volume boundaries and passes the tests in the view style.

TIP The next section in this lab associates the view to a filter that further restricts what objects in the volume are passed to the view style.

12. Switch to the **SmartSketch Drawing Editor** window.
13. Click **2D/3D Selection** to exit the command.
14. Press ESC to clear the selection from the pipe valve in the drawing.

Associate View to Restrict Filter

Objective: Refine the rendered contents of the view such that only objects in the volume from a particular system are included in the drawing.

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

TIP If Drawing Editor window is zoomed in so tightly that the view boundary is not visible, it is not necessary to zoom out to select the view boundary. The view boundary can still be selected by clicking any object embedded within the view. Notice also that the view shortcut menu appears if any embedded object is right-clicked. Simply right-click an object in the view to update the view or click an object in the view to select the view for the **Associate Objects to View** command.

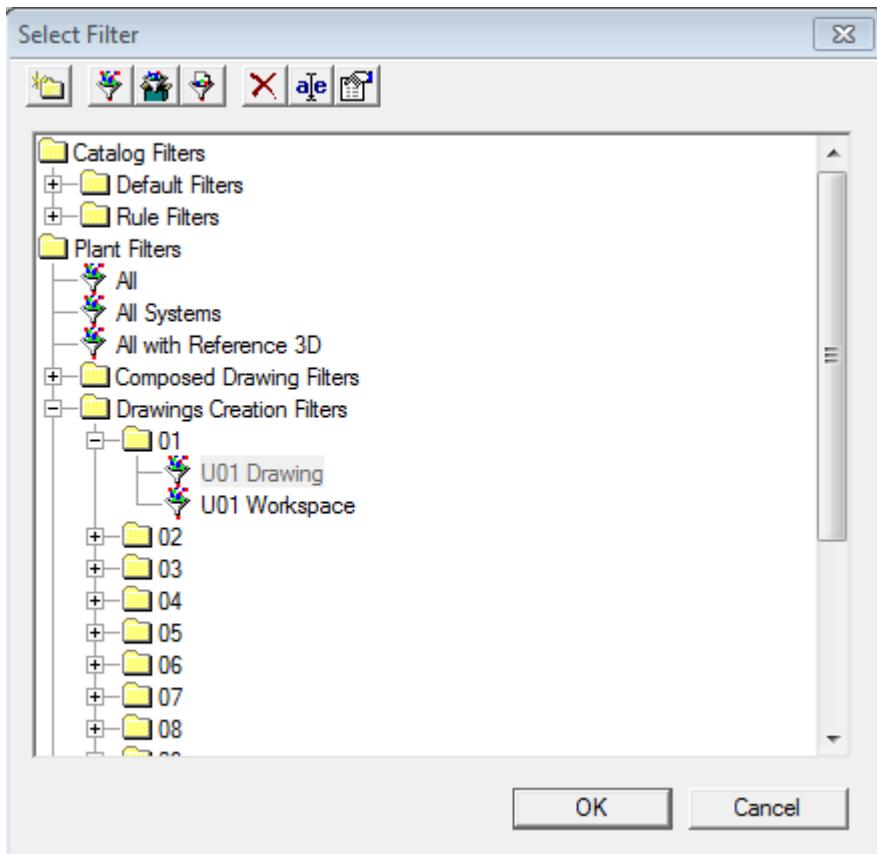
2. Switch to the **Smart 3D** window.

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

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

The **Select Filter** dialog box displays.

4. On the **Select Filter** dialog, expand **Plant Filters\Drawings Creation Filters\01**.
5. Select the **U01 Drawing** filter.



NOTE The filter only includes objects within the U01 system as well as the U01 grid.

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

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

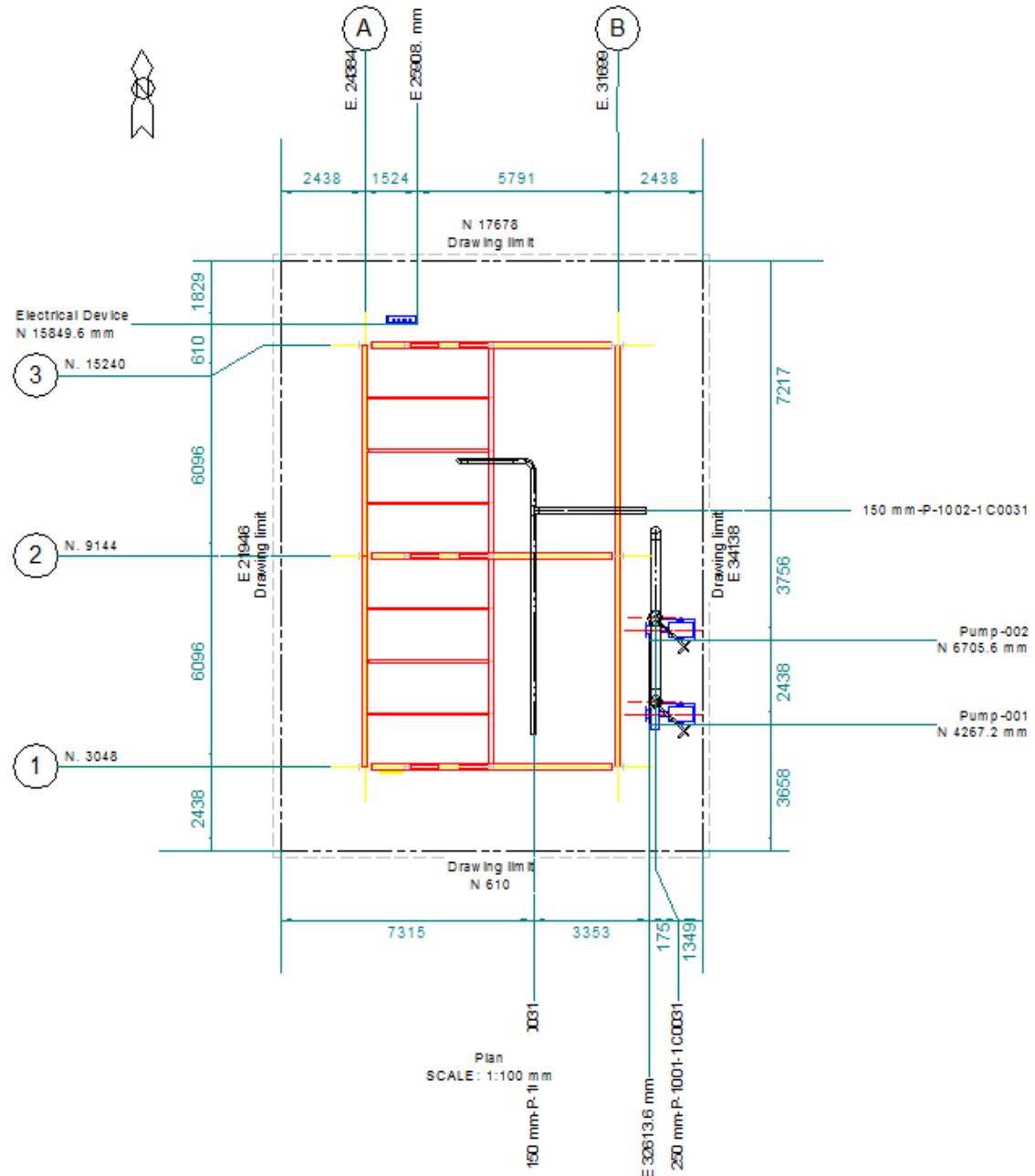


TIP The purpose of the **Filter** field on the **Associate Objects to View** ribbon is to further restrict the objects being passed to the view style. In this case, the candidate objects passed to the view style are those in the volume AND within the U01 system.

7. Switch back to the **SmartSketch Drawing Editor** window.
8. Right-click the view boundary once to exit the **Associate Objects to View** command.
9. Right-click the view boundary again and select **Update View**.
10. When the update completes, click **Fit**

Composed Drawing Workflow

The updated view contents should appear similar to the picture below:

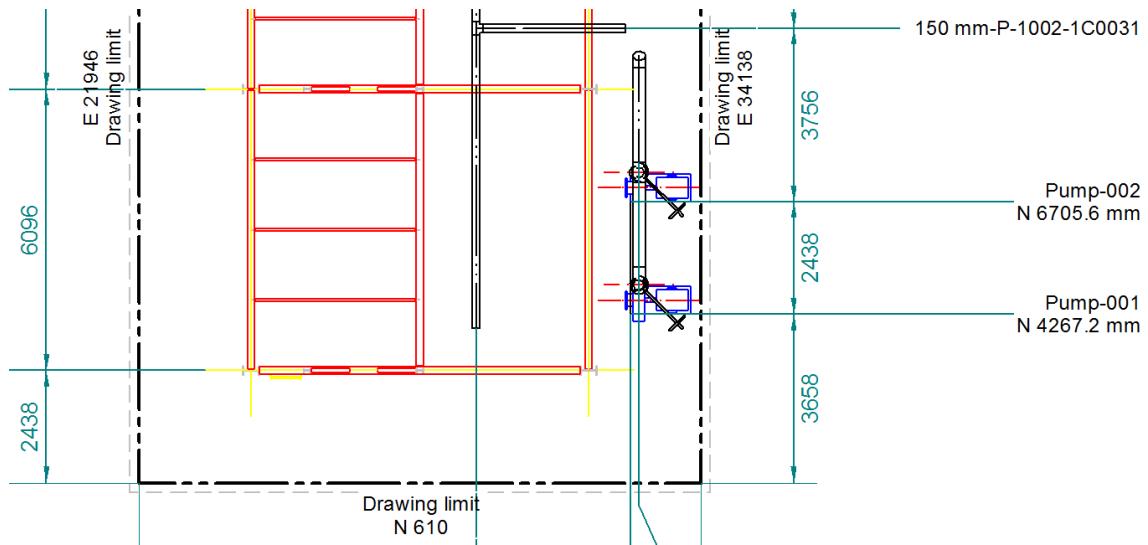


TIP Notice the reduced number of objects in the drawing. Notice that the pipe valve that was selected earlier with **2D/3D Select** is no longer displaying in the drawing. This is because that object is not included in the restrict filter.

Exclude Objects

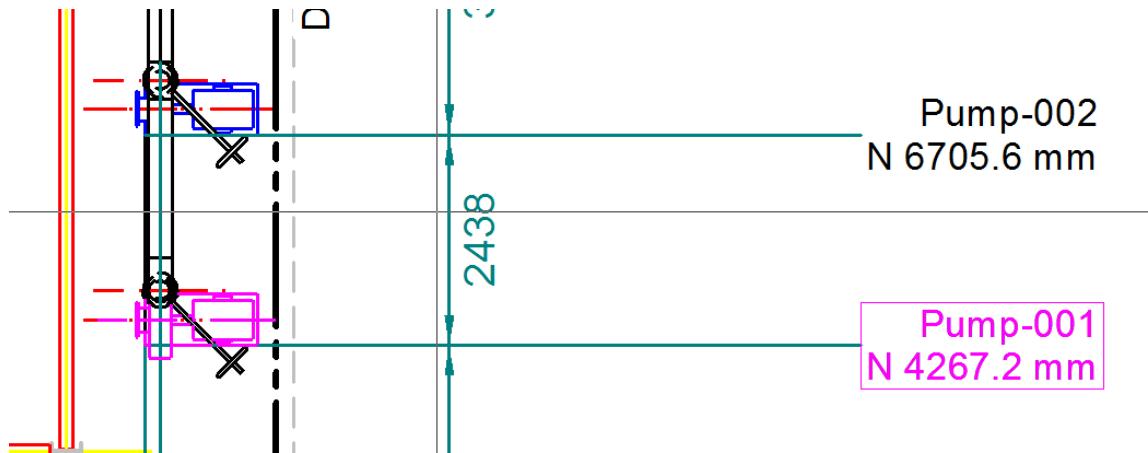
Objective: Select objects in the associated volume that are not to be included in the view.

1. Click **2D/3D Selection**  on the horizontal toolbar.
 2. Click **Zoom Area** .
 3. Drag a rectangle around the bottom half of the view to get a closer look at the contents.



4. Right-click to exit **Zoom Area**.
 5. Click on the label that displays **Pump-001**.

The pump is selected in the drawing.



Composed Drawing Workflow

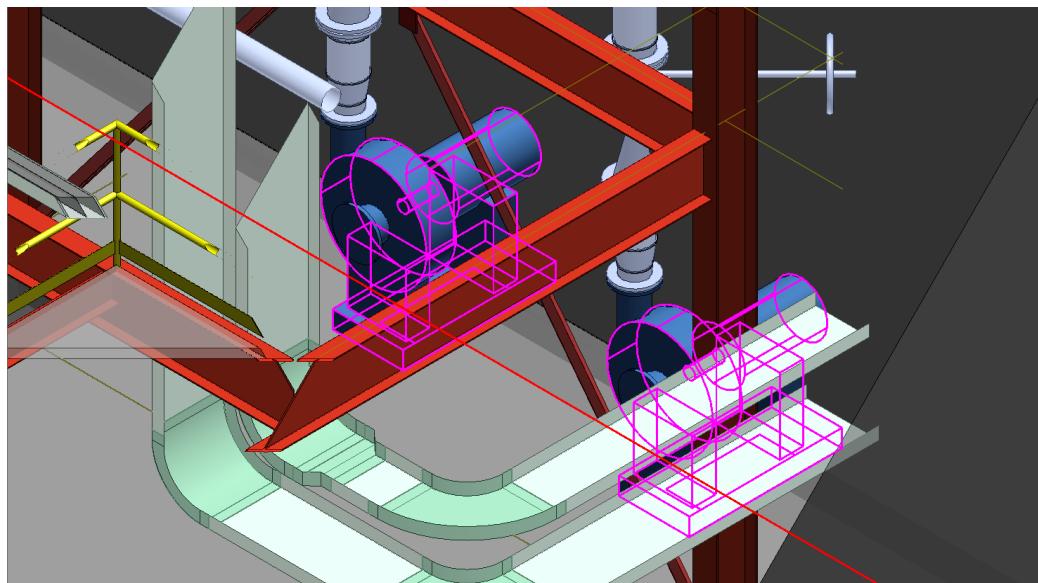
TIP Notice that selecting the label while in the **2D/3D Select** command also selects the associated object.

6. Press CTRL and click on the label that displays **Pump-002**.

Both pumps are selected in the drawing.

7. Switch to the **Smart 3D** window and click **Fit** .

The software fits the selected pumps in the graphic window.



8. Switch to the **SmartSketch Drawing Editor** window.

9. Click **2D/3D Selection**  to turn off the command.

10. Press ESC to clear the selection from the objects.

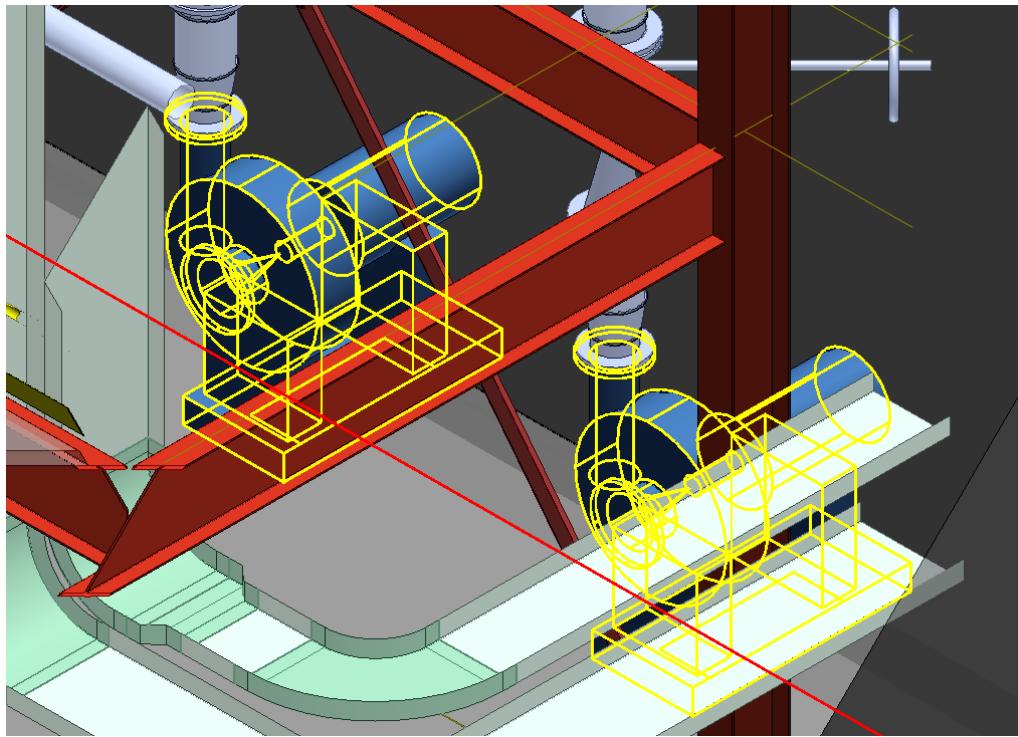
11. Select the view and click **Associate Objects to View** .

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

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

13. Click **Exclude Objects**  on the **Associate Objects to View** ribbon.

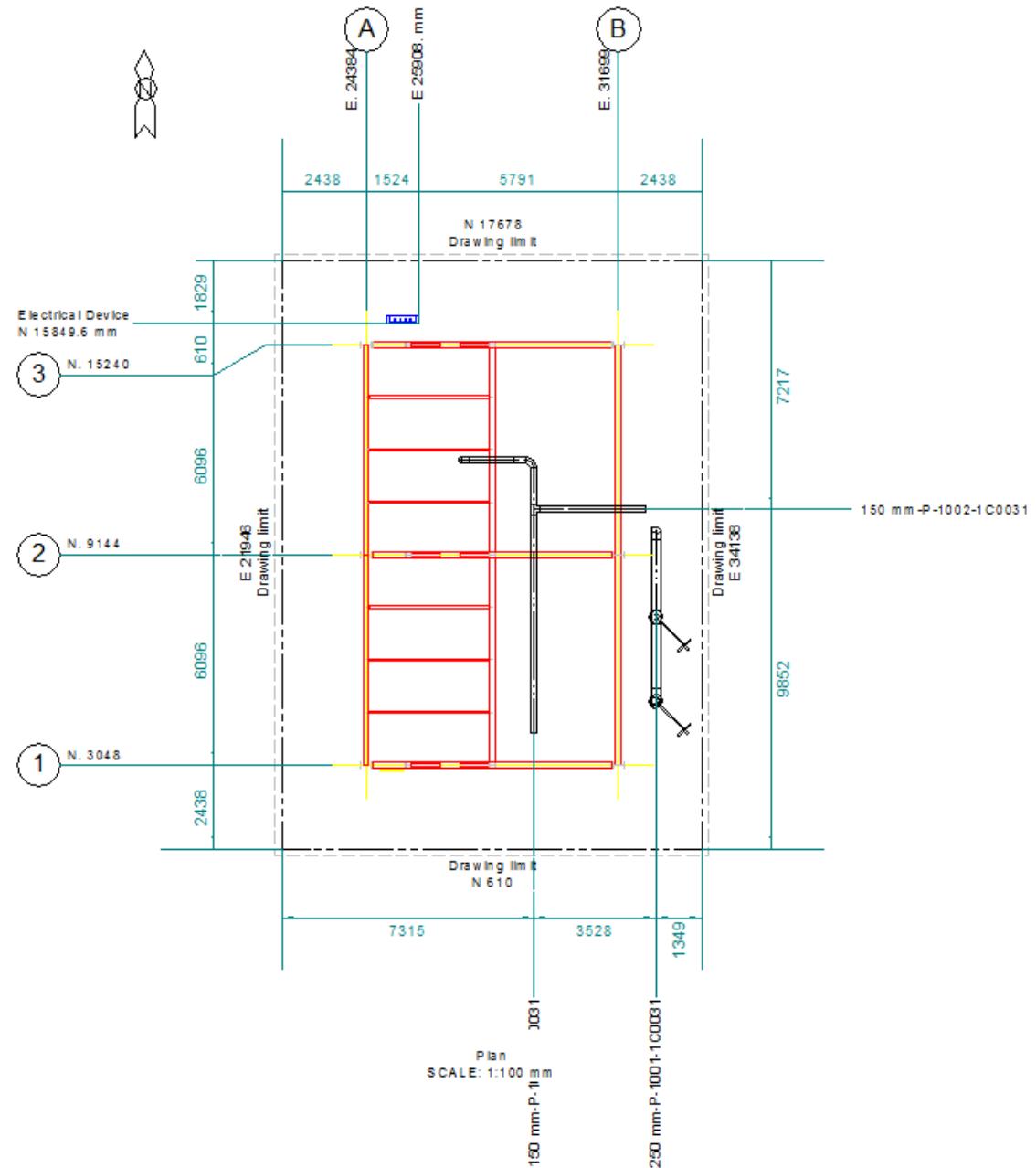
14. Click both pumps that were selected previously with the **2D/3D Select** command so that they are displayed with a yellow outline.



15. Click **Accept** on the **Associate Objects to View** ribbon to add the pumps to the exclude list for that view.
16. Switch to the **SmartSketch Drawing Editor** window.
17. Right-click the view boundary once to exit the **Associate Objects to View** command.
18. Right-click the view boundary again and select **Update View**.
19. When the update completes, click **Fit** .

Composed Drawing Workflow

The updated view contents should appear similar to the picture below:



TIP Notice the excluded pumps are no longer in the view. Notice also that the each pumps' label and dimension do not appear.

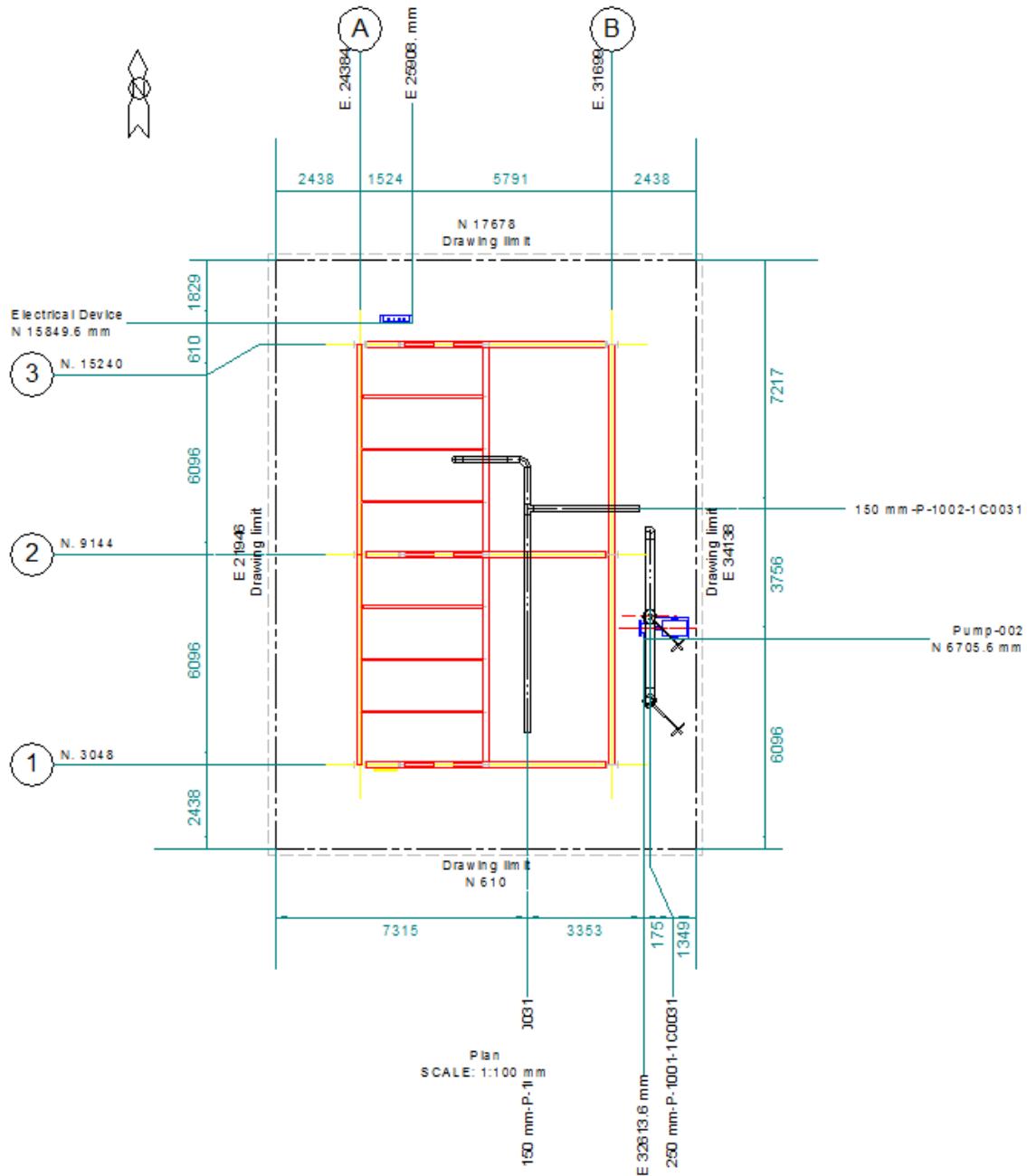
Un-Exclude Objects

Objective: Select an object in the associated volume that was previously excluded from the view and make it included in the view.

1. Select the view and click **Associate Objects to View** .
2. Switch to the **Smart 3D** window.
*The **Associate Objects to View** ribbon displays in the modeling environment.*
3. Click **Exclude Objects**  on the **Associate Objects to View** ribbon.
The current set of excluded objects displays with a yellow outline.
4. In the graphic window, select **Pump-002** so that it no longer has the yellow outline.
5. Click **Accept**  on the **Associate Objects to View** ribbon to remove the pump from the exclude list.
6. Switch to the **SmartSketch Drawing Editor** window.
7. Right-click the view boundary once to exit the **Associate Objects to View** command.
8. Right-click the view boundary again and select **Update View**.

Composed Drawing Workflow

The updated view contents should appear similar to the picture below:

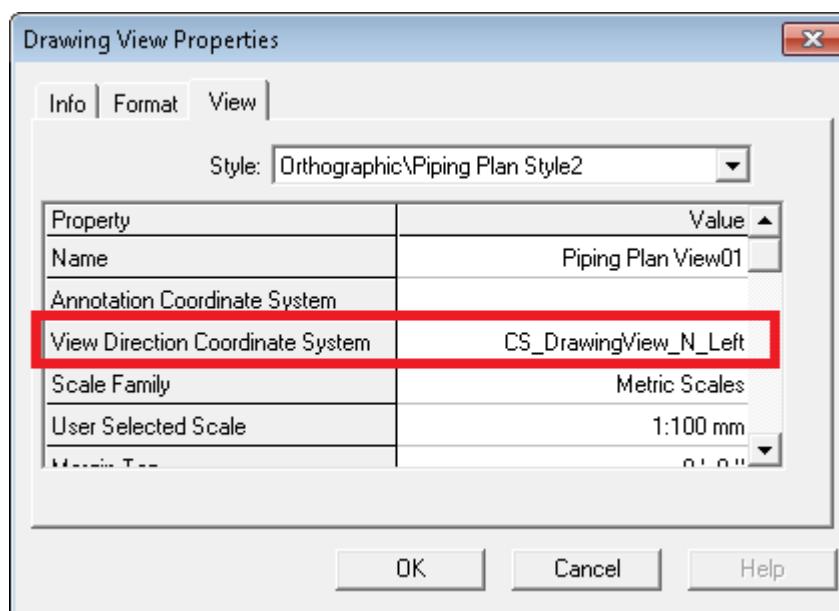


TIP Notice that Pump-002 appears in the drawing after it was removed from the exclude list. Notice also that its associated labels and dimensions also appear.

Rotate View Based on a Referenced Coordinate System

Objective: Rotate the view so that its longest side aligns with the border's longest side.

1. Right-click the view boundary and select **Properties**.
The **Drawing View Properties** dialog box displays.
2. Select **CS_DrawingView_N_Left** from the **View Direction Coordinate System** list on the **Drawing View Properties** dialog box.
3. Click **OK** on the **Drawing View Properties** dialog box.



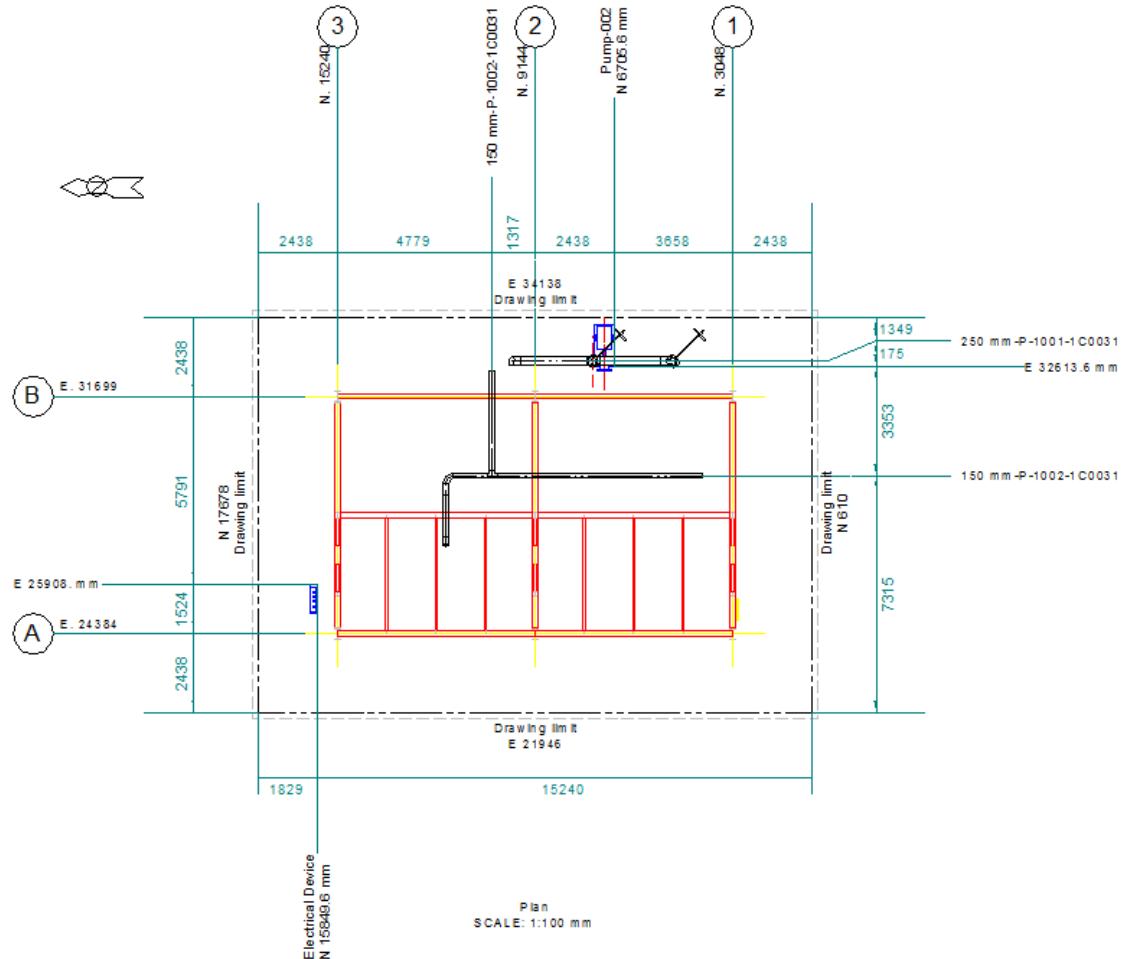
TIP Instead of using the associated volume's local coordinate system, the view's look direction is now relative to the selected coordinate system. In this case, **CS_DrawingView_N_Left** is rotated such that the local North axis is at an angle of 90 degrees East of Global North.

The view resizes to match the new range of the contents.

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

Composed Drawing Workflow

The updated view contents should appear similar to the picture below:



TIP Notice that the North arrow is now pointing toward the left instead of toward the top of the page. In a plan looking direction, the software is designed to orient the view such that the North axis of the **View Direction Coordinate System** is pointing toward the top of the page. The North arrow label is designed to point in the direction of Global North.

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

Create Composed Drawing by Copying Template

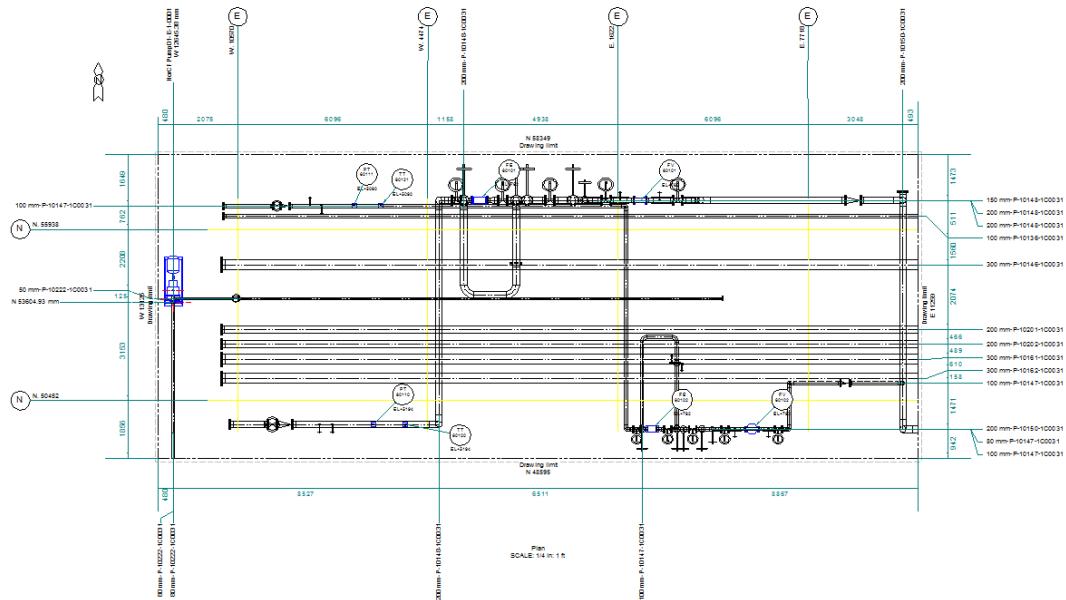
Objective: Use the **Copy** command on the right-click menu to copy a composed drawing that is configured as a template. This template drawing contains views that are not associated to a volume. A later section in this lab will use the same command to create a composed drawing from another drawing that does have associated volumes.

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 Creation Filters\01** folder.
4. Select the **U13 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 software populates the workspace with modeled objects.
6. When the workspace query completes, select the node that changes the look direction to **Looking SE and Down** on the **Common Views** dialog box.
7. Click **Fit** .
8. Switch to the **Drawing Console** window.
9. Expand the **_Templates** composed component under **Drawings\Creation Labs\01**.
10. Right-click the drawing document **Piping Plan Template One View** and select **Copy**.
TIP The copied document contains one graphic view that already has a view style, scale, and look direction assigned.
11. Right-click the composed component **Piping** and select **Paste**.
A copy of the original drawing is created in the new location.
12. Right-click the pasted drawing document and select **Rename**.
13. Type **U13-1** for the new drawing name.
14. Right-click the drawing document **U13-1** and select **Edit**.
*The software opens the drawing in a **SmartSketch Drawing Editor** window.*
15. Maximize the drawing window in **SmartSketch Drawing Editor**.
16. Click **Fit** .
17. Click the view boundary then click **Associate Objects to View** .
18. Switch to the **Smart 3D** window.
*The **Associate Objects to View** ribbon displays in the modeling environment.*

Composed Drawing Workflow

19. On the **Space** tab in the **Workspace Explorer** expand **Drawings Creation Labs\01**.
20. Click the volume **U13A** in the **Workspace Explorer**.
21. Switch to the **SmartSketch Drawing Editor** window.
22. Right-click the view boundary once to exit the **Associate Objects to View** command.
23. Right-click the view boundary again to display the shortcut menu for the view.
24. Select **Update View**.

The updated view contents should appear similar to the picture below:



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

Create Composed Drawing by Copying Associated Drawing

Objective: Use the **Copy** command on the right-click menu to copy a composed drawing that contains views that are associated to volumes.

1. Switch to the **Drawing Console** window.
2. Right-click the drawing document **U13-1** and select **Copy**.
3. Right-click the composed component **Piping** and select **Paste**.

*The **Paste Special** dialog box appears.*

4. On the **Paste Special** dialog box, select **Drawing(s) and Associated Volume(s)**.
5. Click **OK** on the **Paste Special** dialog box.

A copy of the original drawing is created under the same parent as the original drawing.

6. Right-click the pasted drawing document and select **Rename**.
7. Type **U13-2** for the new drawing name.
8. On the **Space** tab in the **Workspace Explorer** notice that new volume is present in the space folder **Drawings Creation Labs\01**.
9. Click on the new volume in the **Workspace Explorer**.

*The **Modify Volume** ribbon displays.*

10. On the **Modify Volume** ribbon, highlight the contents of the **Name** field and type **U13B** and press TAB.

11. With the volume **U13B** still selected, click **Move** from the **Common** toolbar.

12. Use the **PinPoint** ribbon to define the reference point of the copy:

13. Type **0** in the **E** field on the **PinPoint** ribbon. Press TAB.

*The field displays **0.00 mm** and is locked.*

14. Type **0** in the **N** field on the **PinPoint** ribbon. Press TAB.

*The field displays **0.00 mm** and is locked.*

15. Type **0** in the **EI** field on the **PinPoint** ribbon. Press TAB.

*The field displays **0.00 mm** and is locked.*

16. Click anywhere in the graphic view to complete the definition of the origin point of the move.

17. Type **24384** In the **E** field on the **PinPoint** ribbon. Press TAB.

*The field displays **24384.00 mm** and is locked.*

18. Type **0** in the **N** field on the **PinPoint** ribbon. Press TAB.

*The field displays **0.00 mm** and is locked.*

19. Type **0** in the **EI** field on the **PinPoint** ribbon. Press TAB.

*The field displays **0.00 mm** and is locked.*

Composed Drawing Workflow

20. Click anywhere in the graphic view to complete the movement of the volume.

21. Switch to the **Drawing Console** window.

22. Right-click the drawing document **U13-2** and select **Edit**.

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

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

24. Click **Fit** .

25. Click the view boundary then click **Associate Objects to View** .

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

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

27. In the **Workspace Explorer**, click on volume **U13B**.

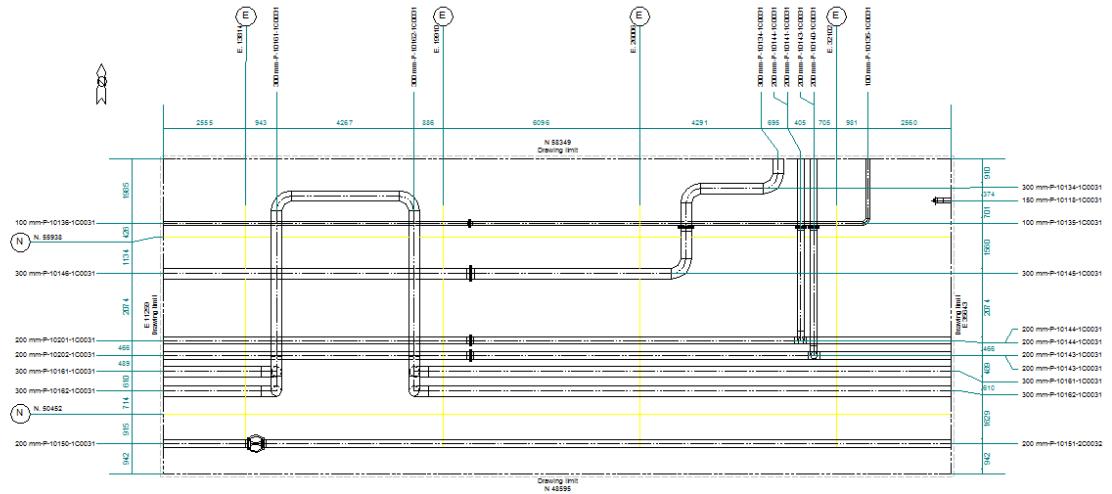
28. Switch to the **SmartSketch Drawing Editor** window.

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

30. Right-click the view boundary again to display the shortcut menu for the view.

31. Select **Update View**.

The updated view contents should appear similar to the picture below:



Plan
SCALE: 1/4 in. = 1 ft

32. Select **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

Report and Key Plan Views

Objective

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

- Place report and key plan views in a composed drawing using 2D Pin Point
- Modify the justification of the report view
- Associate report and key plan views to the drawing view
- Update the report and key plan views

Overview

Smart 3D allows users to create report views and key plan views in orthographic drawings. Both of these views are called child views. Child views can be placed independently, but they cannot be updated unless they are associated to a parent graphic view (such as a composed view).

Report views placed on orthographic drawings use a report template from the catalog. The contents of the drawing view are an input into the report view. The report view can then output properties of the objects in the graphic view in a tabular form. The view style for the graphic view can be configured to generate reference labels that annotate the graphic view with item numbers in the associated report.

There are two options for the report output format: Excel and Native text boxes. Excel displays the report contents in an Excel spreadsheet, while Native text boxes display the report contents in SmartSketch text boxes. There are advantages to choosing Native text boxes, depending on your needs. Native text boxes do not truncate rows, should the report exceed the Excel display limitation with embedded reports. Additionally, Native text boxes, unlike the Excel format, can justify the report contents in the view and expand the view to accommodate the size of the report. If you are saving the drawing in a third party format, such as DWG or DGN, Native text boxes are translated as data in the destination format, while Excel spreadsheets are translated as an embedded image.

The software supports the ability to show differences between the current run of a report and its previous run. An example of this is demonstrated in this lab.

Key plan views show the associated volume's position relative to the other drawings or the rest of the objects in the model. Smart 3D allows three kinds of key plan views:

- One Volume with Plant View - Shows the full plant view with a "you are here" representation for the associated volume.
- Natural Volumes Only - Displays the volumes by their actual size in the model. The key plan layout is based on the size of each volume, which can be irregular if the volumes are of different sizes.
- Normalized Volumes Only – Displays the volumes as occupying the same amount of space in the model.

In this session, we will learn how to place report and key plan views and associate them to a graphic view. We will also learn how to change the output format and justification for a report view.

On the following pages, we will cover procedures for how you can place graphic views, report views, and key plan views in composed drawings using **Pin Point**. Afterwards, the report and key plan view will be associated with the graphic view.

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 Creation Filters\02** folder.
4. Select the **U01 Workspace** filter and click **OK** on the **Select Filter** dialog box.
*The **Filter** field populates.*
TIP The **U01 Workspace** filter includes objects on the **System** and **Named Space** tab of the **Workspace Explorer** that are used for this lab.
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 New Drawing

Objective: Create a new drawing so that views can be added to it.

1. Switch to the **Drawing Console** window.
2. Expand the **02** folder under **Drawings\Creation Labs**.
3. Right-click the composed component **Equipment**, and select **New Drawing**.
*The **Drawing Sheet General Properties** dialog box displays.*
4. Type **Equipment Plan01** in the **Name** field on the **Drawing Sheet General Properties** dialog box.
TIP The **Layout Template** and **Border Template** fields remain populated, so you do not need to edit them.

5. Click **OK** on the **Drawing Sheet General Properties** dialog box.

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

Place Graphic View

Objective: Place a graphic view in the composed drawing using **Pin Point**. The view will eventually contain a 2D rendering of the contents of the volume.

1. Maximize the drawing window in **SmartSketch Drawing Editor**.
2. Click **Fit** .
3. Click **Tools > Pin Point**.

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



TIP The **Pin Point** ribbon initially displays in a disabled state with a target symbol at the end of the cursor. The target symbol is used to define a new origin for the Pin Point tool.

4. Click **Select**  to dismiss the target at the end of the cursor.
 5. Click in the drawing sheet.
- The **Pin Point** ribbon activates.*
6. Click **Place View** .
 7. Type **219** in the **X** field on the **Pin Point** ribbon. Press TAB.
*The field displays **219 mm** and is locked.*
 8. Type **380** In the **Y** field on the **Pin Point** ribbon. Press TAB.
*The field displays **380 mm** and is locked.*
 9. Click anywhere in the **SmartSketch Drawing Editor** graphic window to place the first point of the view.
 10. Type **321** in the **X** field on the **Pin Point** ribbon. Press TAB.
*The field displays **321 mm** and is locked.*
 11. Type **278** in the **Y** field on the **Pin Point** ribbon. Press TAB.
*The field displays **278 mm** and is locked.*
 12. Click anywhere in the **SmartSketch Drawing Editor** graphic window to place the second point of the view.
- The **Drawing View Properties** dialog box displays.*
13. Select **More** from the **Style** list on the **Drawing View Properties** dialog box.
*The **Select View Style** dialog box displays.*
 14. Select **Orthographic\Equipment Plan** on the **Select View Style** dialog box.
 15. Click **OK** on the **Select View Style** dialog box.

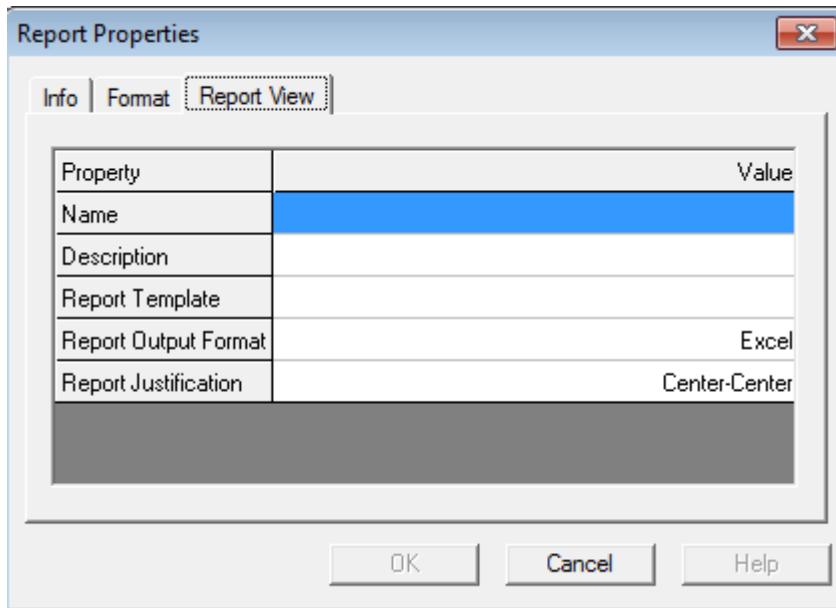
16. Type **EQ Plan View01** in the **Name** field.
17. Select **Metric Scales** from the **Scale Family** list.
18. Select **1 : 50 mm** from the **User Selected Scale** list.
19. Click **OK** on the **Drawing View Properties** dialog box to complete the view definition.

Place Report View Using Excel Format

Objective: Place a report view that uses Excel. The view is placed using the **Pin Point** command.

1. Click **Place Report View**  in the toolbar.
TIP A report view is a non-graphic type of view to display a report of the associated view's contents.
2. Type **500** in the **X** field on the **Pin Point** ribbon. Press TAB.
*The field displays **500 mm** and is locked.*
3. Type **480** in the **Y** field on the **Pin Point** ribbon. Press TAB.
*The field displays **480 mm** and is locked.*
4. Click anywhere in the **SmartSketch Drawing Editor** graphic window to place the first point of the view.
5. Type **710** in the **X** field on the **Pin Point** ribbon. Press TAB.
*The field displays **710 mm** and is locked.*
6. Type **355** in the **Y** field on the **Pin Point** ribbon. Press TAB.
*The field displays **355 mm** and is locked.*
7. Click anywhere in the **SmartSketch Drawing Editor** graphic window to place the second point of the view.

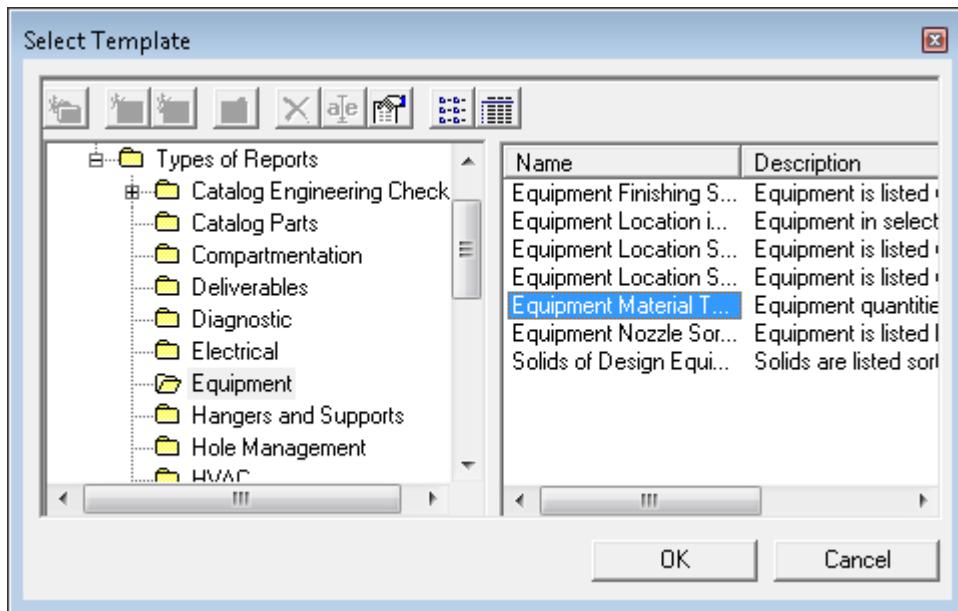
The **Report Properties** dialog box displays.



8. Type **EQ Plan Report View01** in the **Name** field on the **Report Properties** dialog box.
9. Select **More** from the **Report Template** list.

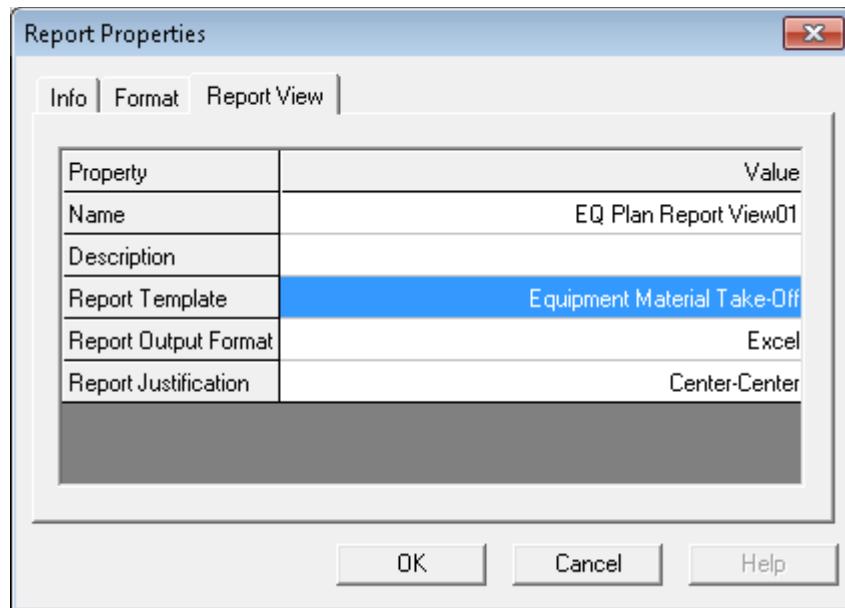
The **Select Template** dialog box displays.

10. Expand the **Reports** and **Types of Reports** folders on the **Select Template** dialog box.
11. Select the **Equipment** folder.
12. Select the **Equipment Material Take-Off** report in the list view of the dialog box.



Report and Key Plan Views

13. Click **OK** on the **Select Template** dialog box.



TIP Notice that if you click in the **Report Justification** field, it is disabled. This field is disabled if the **Report Output Format** is set to *Excel*.

14. Click **OK** on the **Report Properties** dialog box.

TIP There are two options for the **Report Output Format**:

- **Excel**
- **Native text boxes**

When using **Excel**, the report contents are a Microsoft Excel workbook.

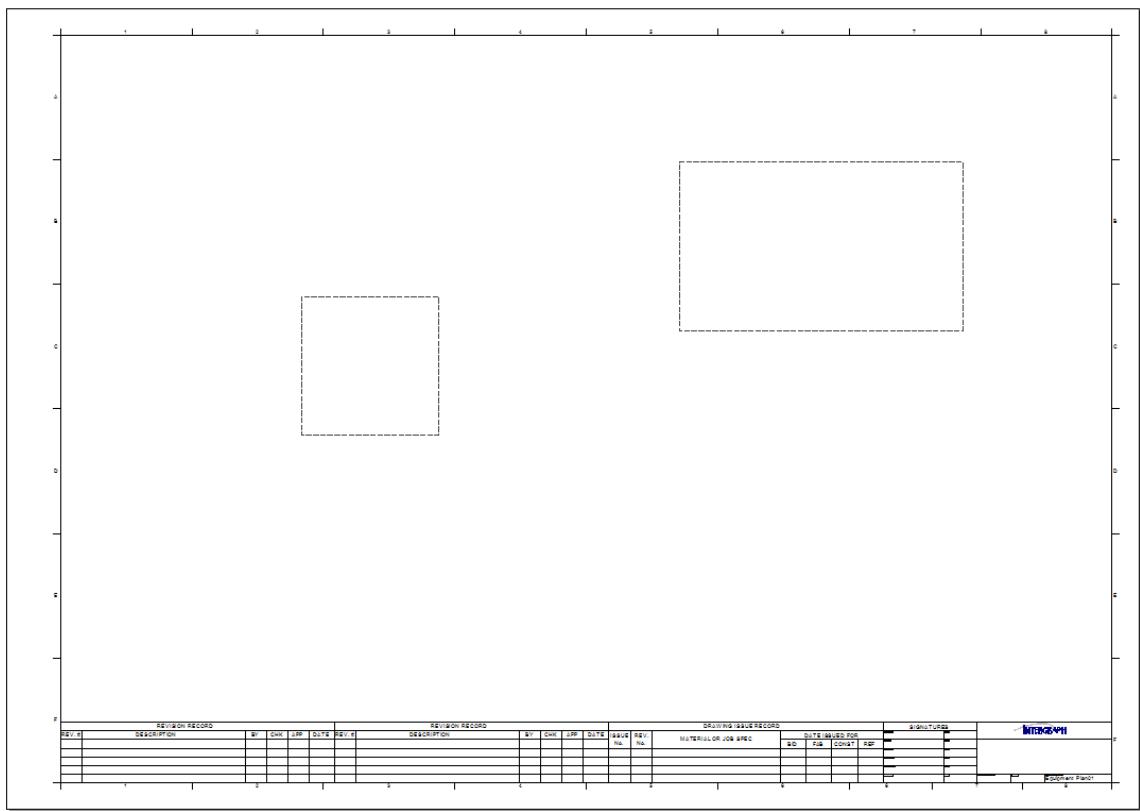
When using **Native text boxes**, the report contents are placed in SmartSketch text boxes.

Using **Native text boxes** has the advantage of not truncating rows should the report exceed the **Excel** display limitation with embedded reports.

Additionally, **Native text boxes**, unlike the **Excel** format, has the option to justify the report contents in the view and expand the expand view to accommodate the size of the report. This will be demonstrated later in this lab.

Make sure the Excel macro security settings are properly set before updating a drawing with an **Excel** report.

The arrangement of the views should look like the picture below:



Associate Graphic View to Volume

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 Creation Labs\02**.
4. Click on the volume **U01 2 Points** 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 Creation Filters\02**.

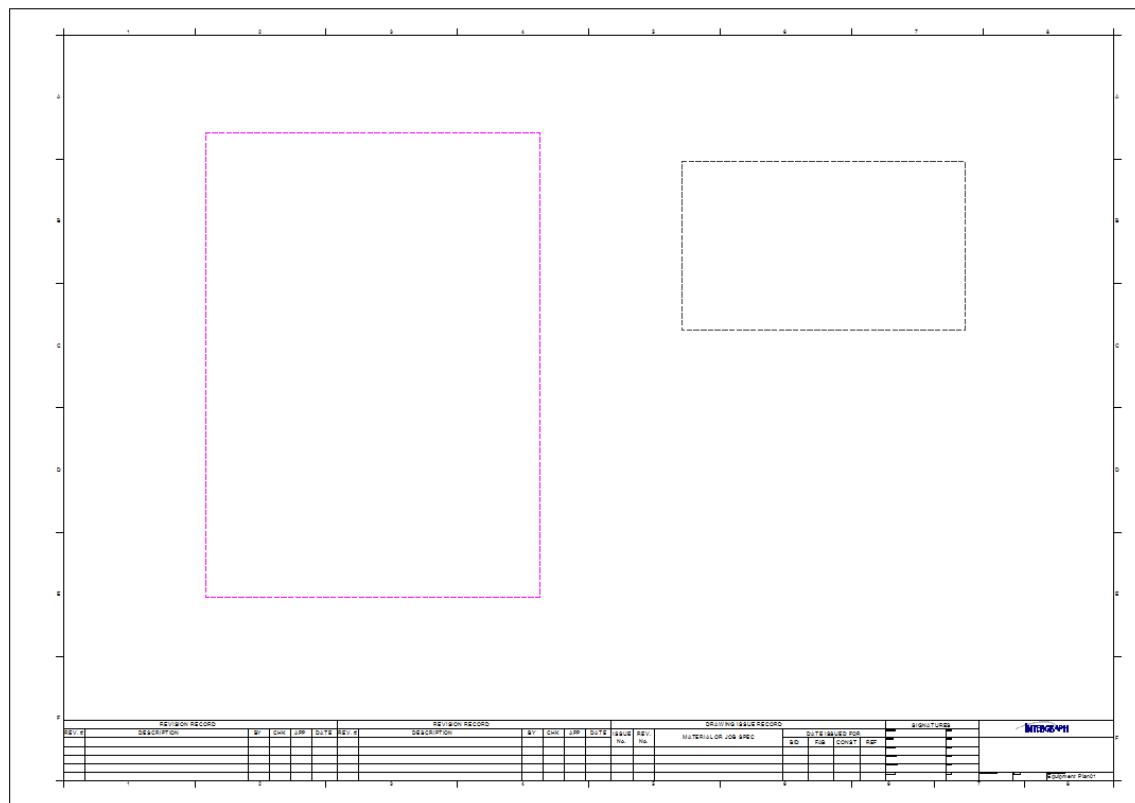
Report and Key Plan Views

7. Select the **U01 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.

Associate Report View to Graphic View

Objective: Establish a relationship between the report view and graphic view in the composed drawing.

1. Click the report view and then click **Associate Objects to View** .
2. Switch to the **Smart 3D** window.

The **Associate Objects to View** ribbon in the modeling environment has a different appearance for a report view than for a graphic view.



TIP You must go to the modeling environment to associate a report view to a graphic view. The **View** list on the **Associate Objects to View** ribbon for a report view displays all graphic views in the drawing. Because there is only one graphic view in the drawing in this case, it is not necessary to select a view in the **View** list.

The software prevents the association of report views to graphic views that are not associated to a volume. If it is attempted, a message displays stating this, and the software allows you to select another view.

3. Click **Finish** on the **Associate Objects to View** ribbon.

Update the Drawing

Objective: Generate the contents of both the graphic and report views using the **Update Now** command. The contents of the report view are based on the contents of the associated graphic view.

1. Switch back to the **SmartSketch Drawing Editor** window.
2. Click **File > Exit** to exit **SmartSketch Drawing Editor**.
3. Click **Yes** to save the drawing.
4. Switch to the **Drawing Console** window.
5. Expand the **Equipment** composed component under the **Drawings\Creation Labs\02** folder.
6. Right-click on the drawing **Equipment Plan01**, and select **Update Now**.

The software generates the contents of the graphic and report views as well as the border labels.

TIP The software prevents the use of the **Update View** command on graphic views that are associated to a report view. If you attempt this, a warning message displays.

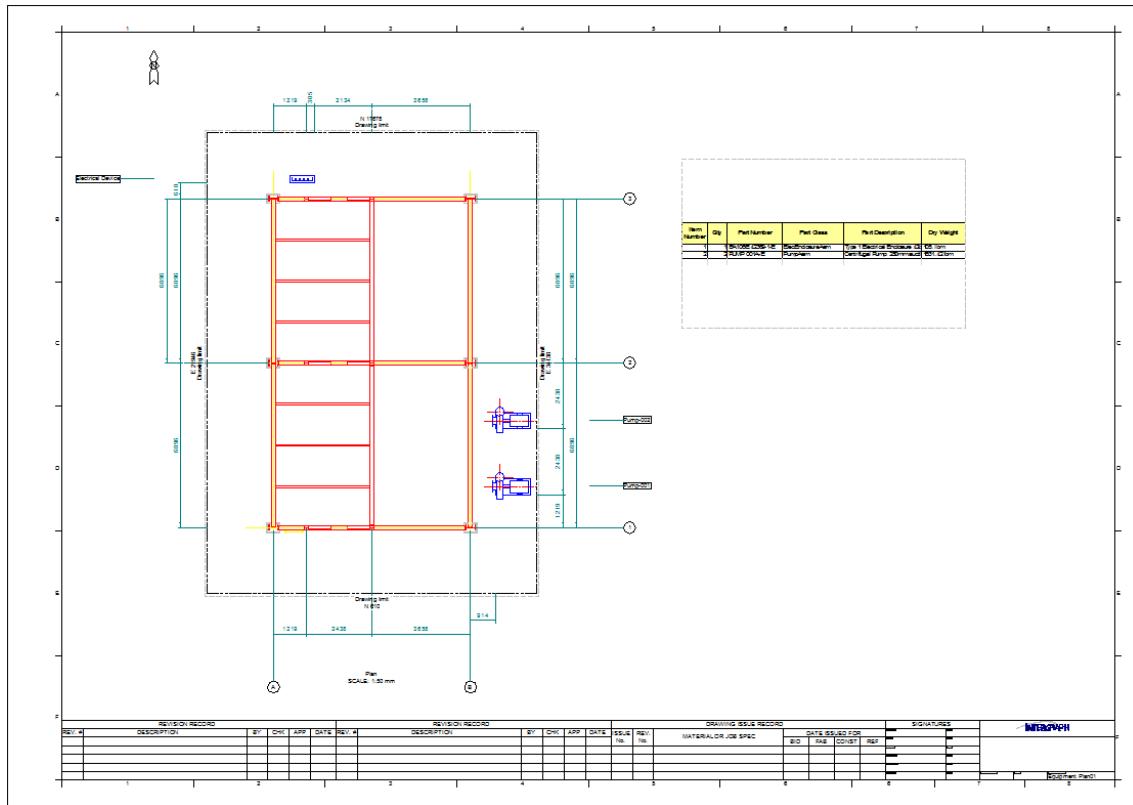
7. When the update completes (as shown by the **Status Bar** message in the lower left corner of the **Smart 3D** window), right-click on the drawing **Equipment Plan01**, and select **Edit**.

*The **SmartSketch Drawing Editor** window displays.*

8. Maximize the drawing window in **SmartSketch Drawing Editor**.
9. Click **Fit** .

Report and Key Plan Views

The results should look similar to the picture below.



- Click **Zoom Area**

- Drag a rectangle around the report view to get a closer look at its contents.

The results should look similar to the picture below:

Item Number	Qty	Part Number	Part Class	Part Description	Dry Weight
1	1	BA106E 42369-1-E	ElecEnclosureAsm	Type 1 Electrical Enclosure 42x105.1bm	
2	2	PUMP 001A-E	PumpAsm	Centrifugal Pump, 250mm suction	1631.421bm

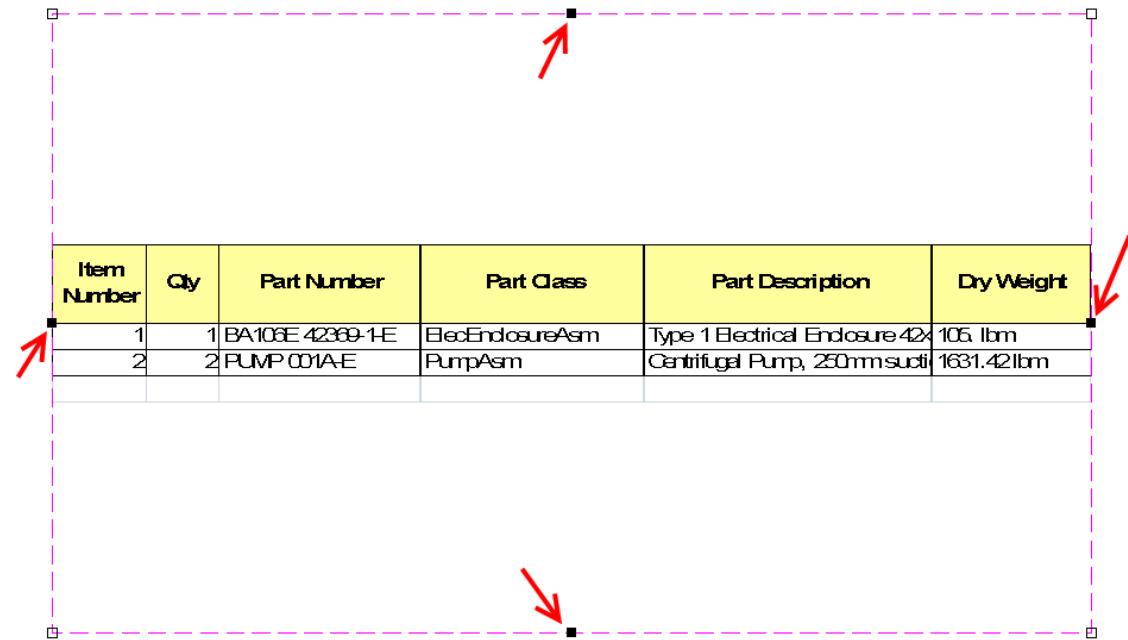
- Right-click to exit Zoom Area.

Resize the Excel Report View

Objective: Demonstrate how a report using Excel format is always scaled to fit the size of the view.

- Click on the report view.

The software displays resize handles, one in the center of each side of the view.



Report and Key Plan Views

2. Drag the resize handle on the right side of the report view and move it toward the left so that about half of the view is clipped.

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

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

When the update completes, notice that the spreadsheet scales down to fit within the size of the view.

Item Number	Gty	Part Number	Part Class	Part Description	Dry Weight
1	1	BA10E 42359-1-E	ElectricalEnclosureAem	Type 1 Electrical Enclosure 42x105.4cm	105.42 lbm
2	2	PUMP 001 AE	PumpAem	Centrifugal Pump, 250mm outlet	1631.42 lbm

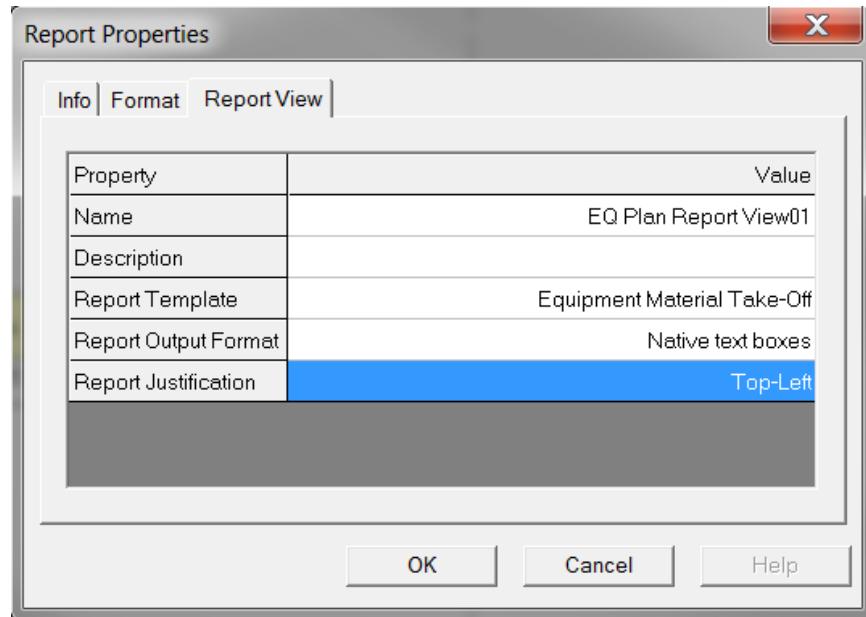
TIP If the report output format is Excel, the contents of the report view scale to fit the size of the view.

Use Native Text Boxes Format for the Report View

Objective: Configure the report view to use text boxes instead of Excel and demonstrate the report justification behavior supported by this format.

1. Right-click the view boundary and select **Properties**.
The **Report Properties** dialog box displays.
2. On the **Report Properties** dialog box, select **Native text boxes** from the **Report Output Format** list.

3. On the **Report Properties** dialog box, select **Top-Left** from the **Report Justification** list.



TIP Behavior rules when **Report Output Format** is **Native text boxes**:

Report Justification equal Center-Center

- If report is smaller than view, report scales up to fit the view; that is, the view does not change size.
- If report is larger than view, view grows about the justification point to accommodate the report.

Report Justification not equal Center-Center

- If report is smaller than view, report maintains 1:1 size and justifies within the view; i.e., the view does not change size.
- If report is larger than view, view grows about the justification point to accommodate the report.

4. Click **OK** on the **Report Properties** dialog box.
5. Right-click the view boundary and select **Update View**.

When the update completes, notice that the view resizes about the justification point, the top-left in this case, to fit the width of the report.

Item Number	Qty	Part Number	Part Class	Part Description	Dry Weight
1	1	BA106E 42369-1-E	ElecEnclosureAsm	Type 1 Electrical Enclosure	105. lbm
2	2	PUMP 001A-E	PumpAsm	Centrifugal Pump, 250mm	1631.42 lbm

Use Differential Reporting Feature

Objective: The delivered Equipment Material Take-Off supports a feature called differential reporting. This flags differences between the current and previous generation of the report in a drawing. The feature is demonstrated by excluding objects in the graphic view and updating the drawing.

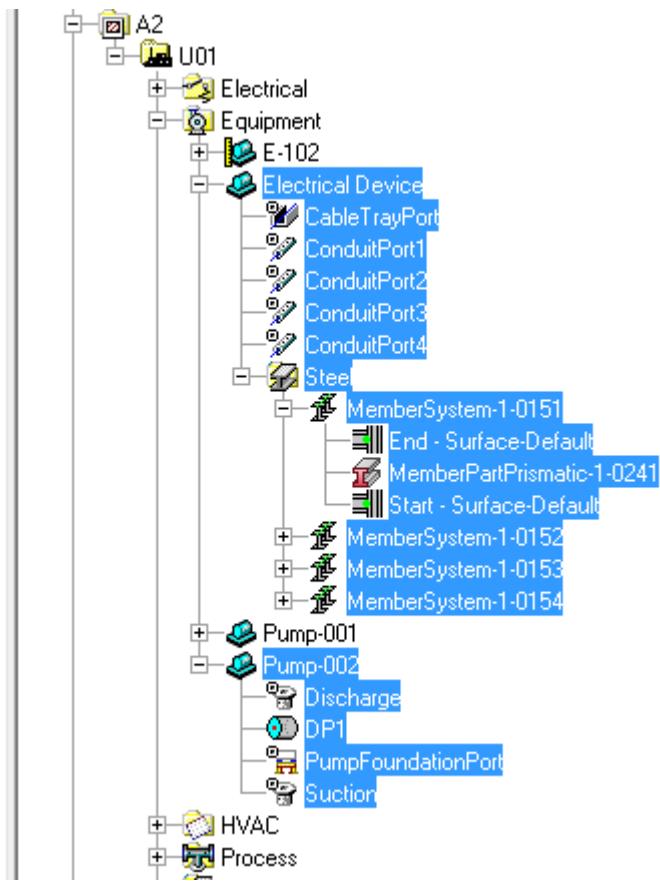
6. In **SmartSketch Drawing Editor**, click **Fit** 
7. Click the graphic view then select **Associate Objects to View**  from the **Compose** toolbar.
8. Switch to the **Smart 3D** window.
*The **Associate Objects to View** ribbon displays in the modeling environment.*
9. Click **Exclude Objects**  on the **Associate Objects to View** ribbon.
10. Click the **System** tab in the **Workspace Explorer**.

Report and Key Plan Views

11. In the **Workspace Explorer** under the **A2\U01\Equipment** system, click the objects **Electrical Device** and **Pump-002**.

*In addition to the yellow outline around the objects in the graphic window, notice that the objects and their children are selected in the **Workspace Explorer**. The Exclude command automatically includes any children of the selected object.*





12. Click **Accept** on the **Associate Objects to View** ribbon to add the objects to the exclude list for that view.
13. Switch to the **SmartSketch Drawing Editor** window.
14. Click **File > Exit** to exit **SmartSketch Drawing Editor**.
15. Click **Yes** to save the drawing.
16. Switch to the **Drawing Console** window.
17. Right-click on the drawing **Equipment Plan01** in **Drawings\Creation Labs\02\Equipment**, and select **Update Now**.

The software generates the contents of the graphic and report views.
18. When the update completes (as shown by the **Status Bar** message in the lower left corner of the **Smart 3D** window), right-click on the drawing **Equipment Plan01**, and select **Edit**.

*The **SmartSketch Drawing Editor** window displays.*
19. Maximize the drawing window in **SmartSketch Drawing Editor**.
20. Click **Fit** .
21. Click **Zoom Area** .
22. Drag a rectangle around the report view to get a closer look at its contents.

The results should look similar to the picture below:

Item Number	Qty	Part Number	Part Class	Part Description	Dry Weight
1	1	BA106E 42369-1-E	ElecEnclosureAsm	Type 1 Electrical Enclosure	105. Ibm
2	2	PUMP 001A-E	PumpAsm	Centrifugal Pump, 250mm	1631.42 Ibm
2	1	PUMP 001A-E	PumpAsm	Centrifugal Pump, 250mm	1631.42 Ibm

TIP The color red indicates a row that was present in the previous run of the report but is no longer in the current report. The gray row indicates a change has taken place in one or more of the columns, in this case the Qty column. The row below the gray row is the current results from the graphic view.

TIP Not all delivered reports are designed to work as embedded reports in a drawing.

Place Key Plan View

Objective: Place a key plan view and set its properties. The view is placed using 2D Pin Point command.

1. Click **Fit** .

2. Click **Tools > Pin Point**.

The **Pin Point** ribbon displays.

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

4. Click in the drawing sheet.

The **Pin Point** ribbon activates.

5. Click **Place View** .

6. Type **700** in the **X** field on the **Pin Point** ribbon. Press TAB.

The field displays **700 mm** and is locked.

7. Type **180** in the **Y** field on the **Pin Point** ribbon. Press TAB.

The field displays **180 mm** and is locked.

8. Click anywhere in the **SmartSketch Drawing Editor** graphic window to place the first point of the view.

9. Type **800** in the **X** field on the **Pin Point** ribbon. Press TAB.

The field displays **800 mm** and is locked.

10. Type **80** in the **Y** field on the **Pin Point** ribbon. Press TAB.

The field displays **80 mm** and is locked.

Report and Key Plan Views

11. Click anywhere in the **SmartSketch Drawing Editor** graphic window to place the second point of the view.

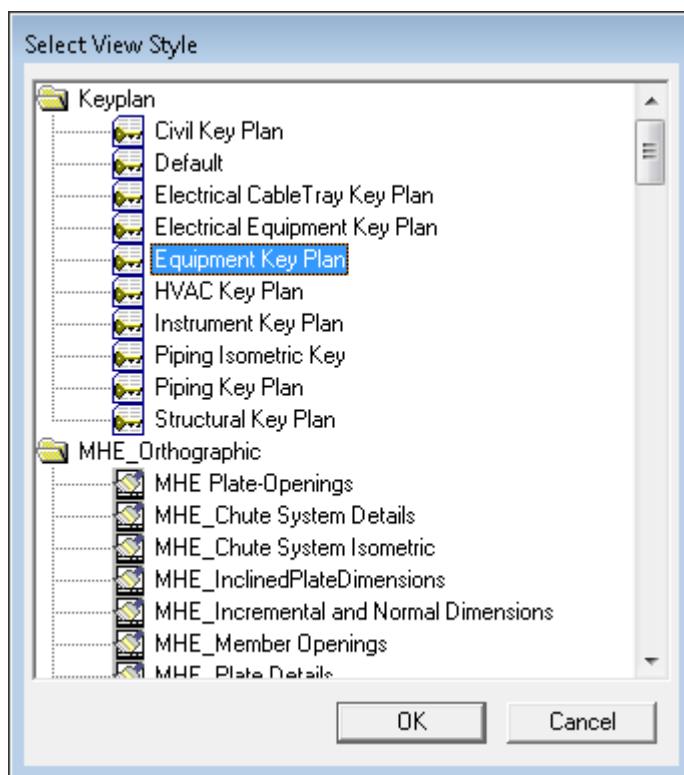
*The **Drawing View Properties** dialog box displays.*

12. Select **More** from the **Style** list on the **Drawing View Properties** dialog box.

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

13. Select **Keyplan\Equipment Key Plan**.

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

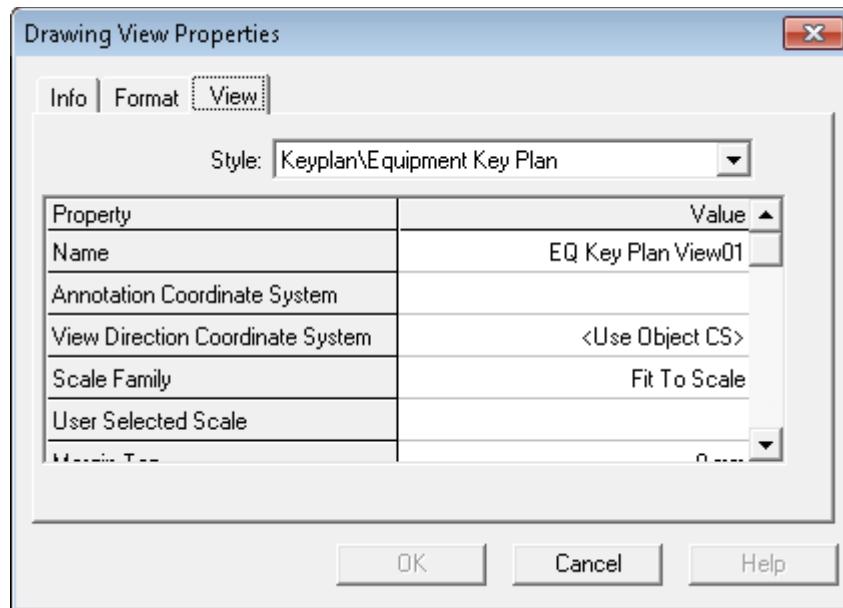


TIP By choosing a view style from the **Keyplan** folder, the view becomes a key plan view. While a key plan view is a graphic view, it has different behaviors than a *normal* graphic view.

15. Type **EQ Key Plan View01** in the **Name** field.

16. Select **Fit To Scale** from the **Scale Family** list.

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



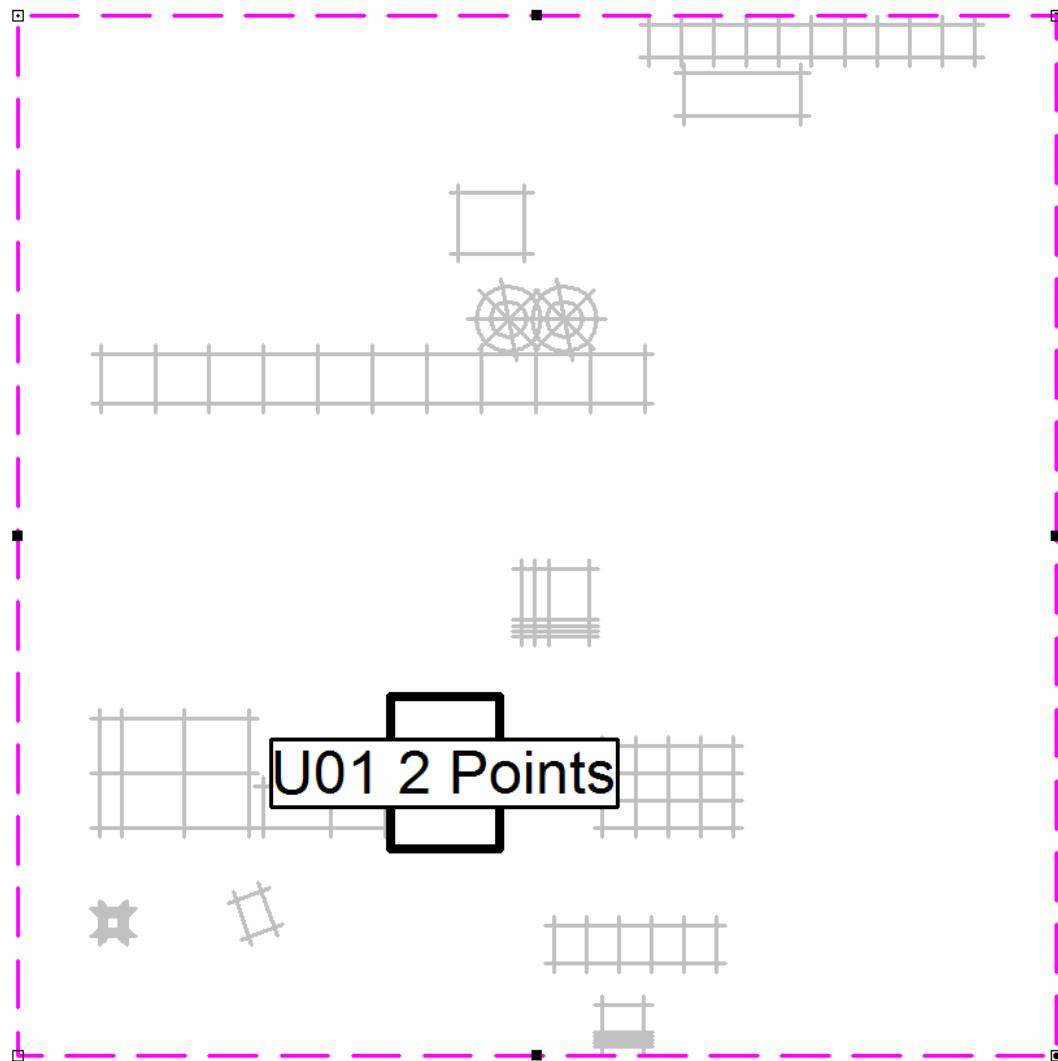
Associate Key Plan View to Drawing View

Objective: Associate the key plan view to the graphic view and update it.

1. Click the key plan view and then click **Associate Objects to View** .
2. Switch to the **Smart 3D** window.
*The **Associate Objects to View** ribbon in the modeling environment looks similar in appearance to the one for a report view.*
3. Click **Finish** on the **Associate Objects to View** ribbon.
4. Switch back to the **SmartSketch Drawing Editor** window.
5. Right-click the key plan view boundary and select **Update View**.
6. When the update completes, click on the key plan view.
7. Click **Fit**  to fit the contents of the key plan view to the window.

Report and Key Plan Views

The results of the key plan view contents should appear similar to the picture below:



TIP This type of key plan is called One Volume with Plant View. This particular key plan view style displays grids and an outline of the associated volume. The volume is labeled with its name.

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

LAB 3

Additional Volume Placement Methods

Objective

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

- Place a drawing volume along a single segment path (for non-rectangular volume)
- Place drawing volume by selection (growing to include newly selected objects)
- Place drawing volumes by plane and offset (an example of multiple volume placement in a single operation)

Overview

Smart 3D provides you several methods to place volumes that can be associated with drawings. Some methods allow you to place volumes one at a time, while others allow placement of multiple volumes with a single operation. You can use coordinates to place a volume or you can create a volume by selecting objects in the model - the volume will grow to include all selected objects. You can place a volume with a non-rectangular cross section along a single-segment path to exclude objects that cannot be easily excluded by other means, such as by filters or direct exclusion. You can also place multiple volumes with by plane and offset. This is useful if you want to place volumes along a set of grid planes in a structure.

Smart 3D allows you to copy and paste views in a composed drawing. Copying and pasting a view lets you reuse a large number of properties that may be common between views and change properties specific to the view being pasted.

In this session, we will learn various volume placement methods. The first task will have us placing a drawing volume alongside a single-segment path, otherwise known as placing a "non-rectangular" volume. The second procedure will cover placing drawing volumes by selection and by plane and offset. Then we will look at copying and pasting a drawing view within the same drawing.

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 Creation Filters\03** 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 software populates the workspace 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.

Place Non-rectangular Volume

Objective: Place a volume with a non-rectangular cross-section using the **Place Volume Along Path** command in the **Space Management** task.

1. Click **Place Volume Along Path**  on the vertical toolbar.

The **Place Volume Along Path** ribbon displays.



TIP The path to be drawn is simply a vertical line. The next steps will create this path.

2. Type **6096** in the **E** field on the **PinPoint** ribbon. Press TAB.

The field displays **6096.00 mm** and is locked.

3. Type **6096** in the **N** field on the **PinPoint** ribbon. Press TAB.

The field displays **6096.00 mm** and is locked.

4. Type **13716** in the **EI** field on the **PinPoint** ribbon. Press TAB.

The field displays **13716.00 mm** and is locked.

5. Click anywhere in the graphic window to complete placement of the first point of the path.

6. Type **6096** in the **E** field on the **PinPoint** ribbon. Press TAB.

The field displays **6096.00 mm** and is locked.

7. Type **6096** in the **N** field on the **PinPoint** ribbon. Press TAB.

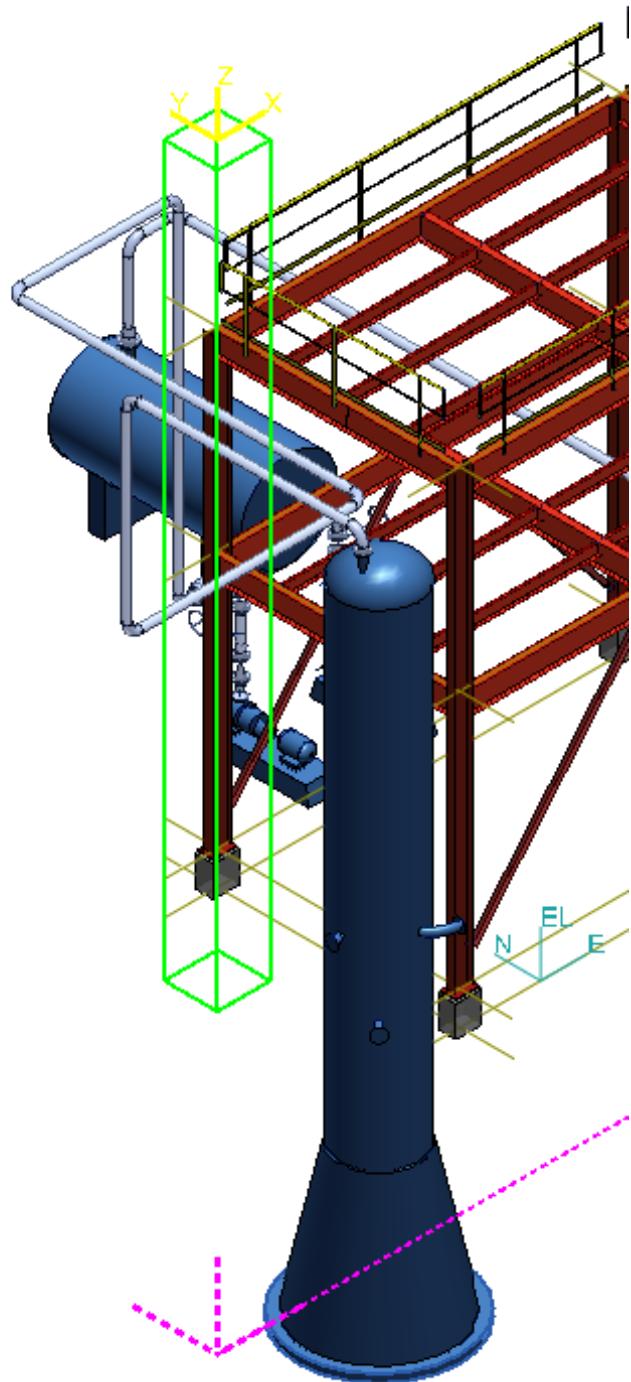
The field displays **6096.00 mm** and is locked.

8. Type **0** in the **EI** field on the **PinPoint** ribbon. Press TAB.

The field displays **0.00 mm** and is locked.

9. Click anywhere in the graphic window to place the second point of the path.

10. Click **Finish** on the **Place Volume Along Path** ribbon to complete the placement of the path and place a tentative volume along the path with a rectangular cross-section.



TIP The local coordinate system of the volume by path is located at the first point of the path.

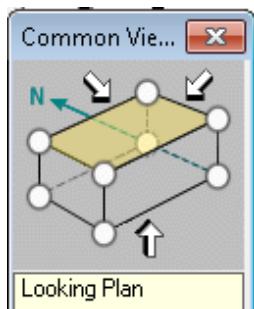
The **Place Volume Along Path** ribbon contains new fields **Cross-Section**, **Name**, **Type**, and **Space Folder**. The **Type** field should already be populated with the value (i.e., **DrawingVolumes**) from the placement of the two-point volume.

11. Double-click the **Name** field on the **Place Volume Along Path** ribbon to highlight its contents. Type **Volume Along Path**.
12. Select **More** from the **Space Folder** list.
13. Expand **Drawings Creation Labs**, select **03** and click **OK**.
14. Select **Sketch** from the **Cross-Section** list.
15. Click **Cross-Section** to highlight the cross-section of the volume at the first point of the path.

The ribbon changes again to a set of commands to sketch a new cross-section.



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



17. Click **Zoom Area** , then drag a rectangle around tentative volume.
18. Right-click to exit **Zoom Area**.
19. Press CTRL, and select the four segments highlighted in yellow.
20. Click **Delete Selected Items**  on the **Place Volume Along Path** ribbon to delete the original cross-section elements.

21. Click **Fit** .
22. Sketch the new cross-section. Type **0** in the **E** field on the **PinPoint** ribbon. Press TAB.
*The field displays **0.00 mm** and is locked.*
23. Type **-3048** In the **N** field on the **PinPoint** ribbon. Press TAB.
*The field displays **-3048.00 mm** and is locked.*
24. Click anywhere in the graphic window to complete placement of the first point of the cross-section.
25. Type **0** in the **E** field on the **PinPoint** ribbon. Press TAB.
*The field displays **0.00 mm** and is locked.*
26. Type **3352.8** In the **N** field on the **PinPoint** ribbon. Press TAB.

*The field displays **3352.80 mm** and is locked.*

27. Click anywhere in the graphic window to complete placement of the second point of the cross-section.

28. Type **4572** in the **E** field on the **PinPoint** ribbon. Press TAB.

*The field displays **4572.00 mm** and is locked.*

29. Type **3352.8** in the **N** field on the **PinPoint** ribbon. Press TAB.

*The field displays **3352.80 mm** and is locked.*

30. Click anywhere in the graphic window to complete placement of the third point of the cross-section.

31. Type **4572** in the **E** field on the **PinPoint** ribbon. Press TAB.

*The field displays **4572.00 mm** and is locked.*

32. Type **10058.4** the **N** field on the **PinPoint** ribbon. Press TAB.

*The field displays **10058.40 mm** and is locked.*

33. Click anywhere in the graphic window to complete placement of the fourth point of the cross-section.

34. Type **13411.2** in the **E** field on the **PinPoint** ribbon. Press TAB.

*The field displays **13411.20 mm** and is locked.*

35. Type **10058.4** in the **N** field on the **PinPoint** ribbon. Press TAB.

*The field displays **10058.40 mm** and is locked.*

36. Click anywhere in the graphic window to complete placement of the fifth point of the cross-section.

37. Type **13411.2** in the **E** field on the **PinPoint** ribbon. Press TAB.

*The field displays **13411.20 mm** and is locked.*

38. Type **7924.8** in the **N** field on the **PinPoint** ribbon. Press TAB.

*The field displays **7924.80 mm** and is locked.*

39. Click anywhere in the graphic window to complete placement of the sixth point of the cross-section.

40. Type **7010.4** in the **E** field on the **PinPoint** ribbon. Press TAB.

*The field displays **7010.40 mm** and is locked.*

41. Type **7924.8** in the **N** field on the **PinPoint** ribbon. Press TAB.

*The field displays **7924.80 mm** and is locked.*

42. Click anywhere in the graphic window to complete placement of the seventh point of the cross-section.

43. Type **7010.4** in the **E** field on the **PinPoint** ribbon. Press TAB.

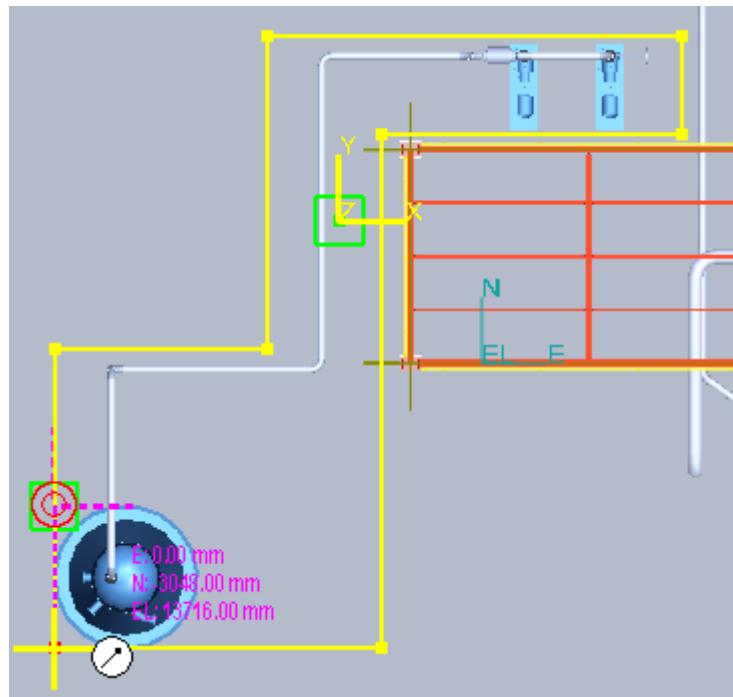
*The field displays **7010.40 mm** and is locked.*

44. Type **-3048** in the **N** field on the **PinPoint** ribbon. Press TAB.

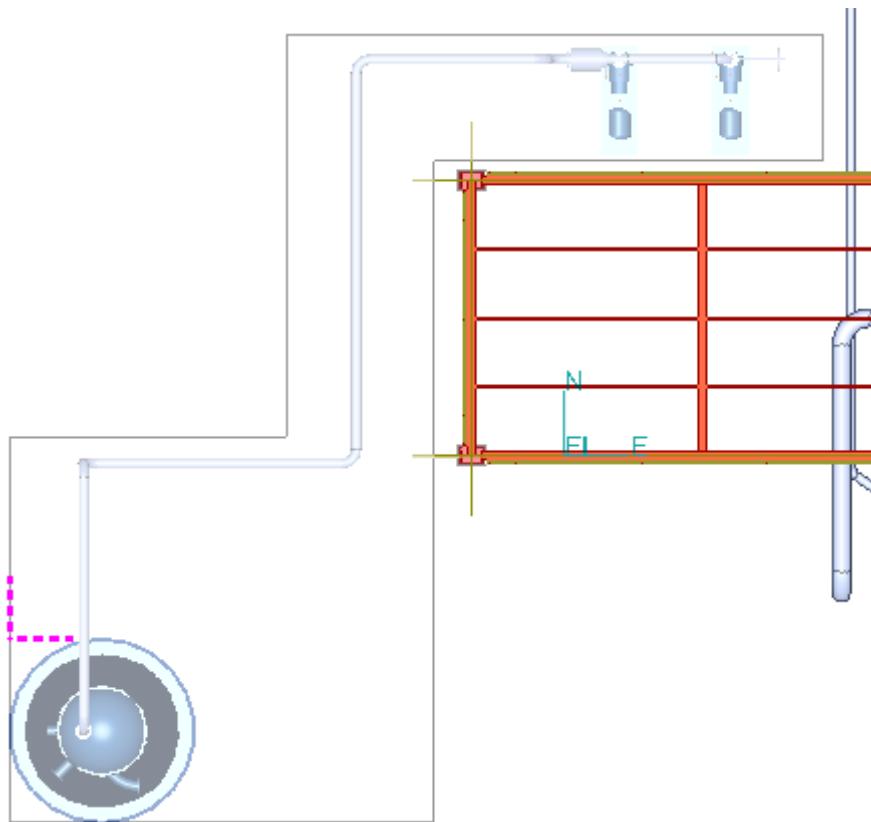
*The field displays **-3048.00 mm** and is locked.*

Additional Volume Placement Methods

45. Click anywhere in the graphic window to complete placement of the eighth point of the cross-section.
46. To complete the last entry, move the cursor to the first point placed until the keypoint glyph displays.

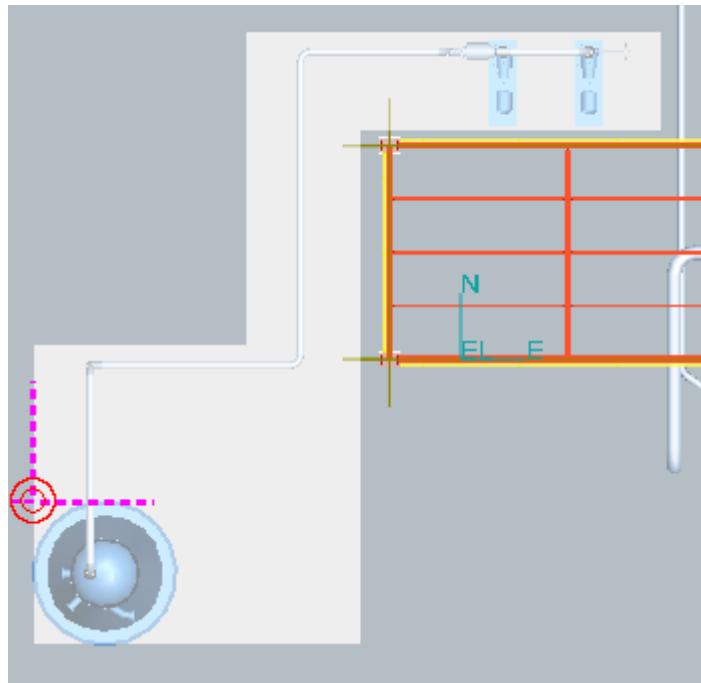


47. Click to complete placement of the cross-section.



48. Click **Finish** on the **Place Along Path** ribbon to complete the sketch path.

49. Click **Finish** again on the **Place Along Path** ribbon to complete the volume placement.



50. Click **Select**  to exit **Place Volume Along Path**.

Place Volume by Selection

Objective: Place a volume based on the range of selected objects using the **Place Volume by Selection** command in the **Space Management** task.

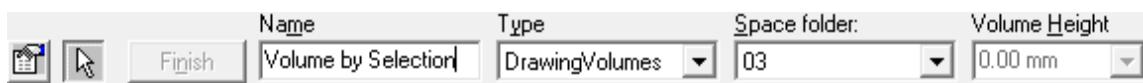
1. On the **Common Views** dialog box, select the node that changes the look direction to **Looking NE and Down**.
2. Click **Place Volume by Selection**  on the vertical toolbar to display the **Place Volume by Selection** ribbon.



TIP The **Type** and **Space Folder** fields have preserved the values used from the previous volume placement command.

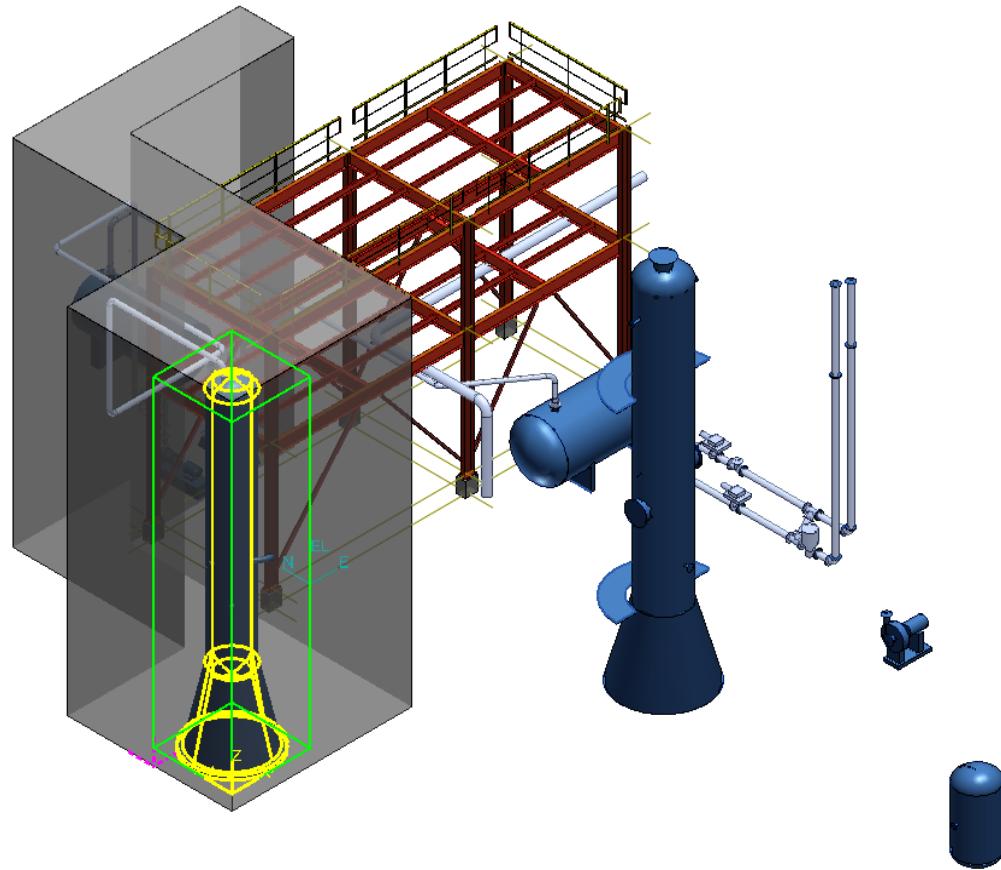
3. Type **Volume by Selection** in the **Name** field on the **Place Volume by Selection** ribbon.

The ribbon should appear as in the following picture:



4. On the **System** tab of the **Workspace Explorer**, expand the **A2**, **U02**, and **Equipment** nodes.
5. Click the equipment **VS-102** on the **System** tab of the **Workspace Explorer**.

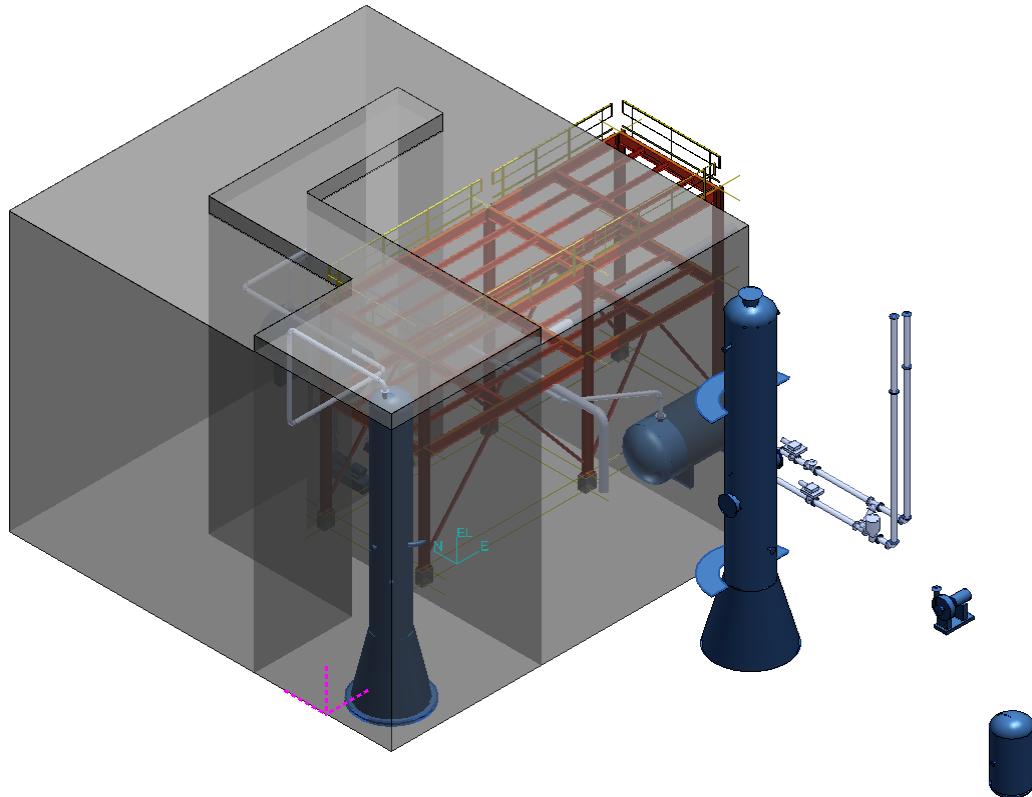
In the graphic window, a box with a green outline surrounds the range of the equipment.



TIP During initial creation of the volume, objects can be removed from the collection by clicking them a second time. After the volume by selection is created, the collection of objects used to create the volume is not persisted in the database. Therefore, the volume cannot be resized by modifying the collection after it is created.

6. Select equipment **PUS2-02** in the **Workspace Explorer**.
The box increases in size to encompass the range of both pieces of equipment.
7. Expand the **Process** and **2001-P** nodes on the **System** tab of the **Workspace Explorer**.
8. Click the pipe run **U02-6-P-0002-1C0031** on the **System** tab of the **Workspace Explorer**.
The box increases in size to encompass the range of both pieces of equipment as well as the pipe run.

9. Click **Finish** on the **Place Volume by Selection** ribbon to complete the volume placement.



10. Press ESC to exit **Place Volume by Selection**.

Place Volumes by Plane and Offset

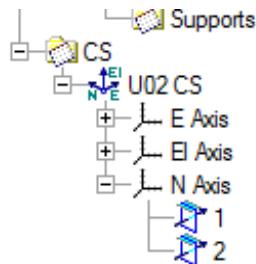
Objective: Place two volumes based on grid planes using the **Place Volume by Plane and Offset** command in the **Space Management** task.

1. In the graphic window, right-click **Volume by Selection** and select **Hide**.
The volume no longer displays.
2. In the graphic window, right-click **Volume Along Path** and select **Hide**.
The volume no longer displays.
3. Click **Place Volume by Plane and Offset**  on the vertical toolbar.
*The **Place Volumes by Plane and Offset** ribbon displays.*
4. Type **Volumes by Plane and Offset** in the **Name** field on the **Place Volumes by Plane and Offset** ribbon.

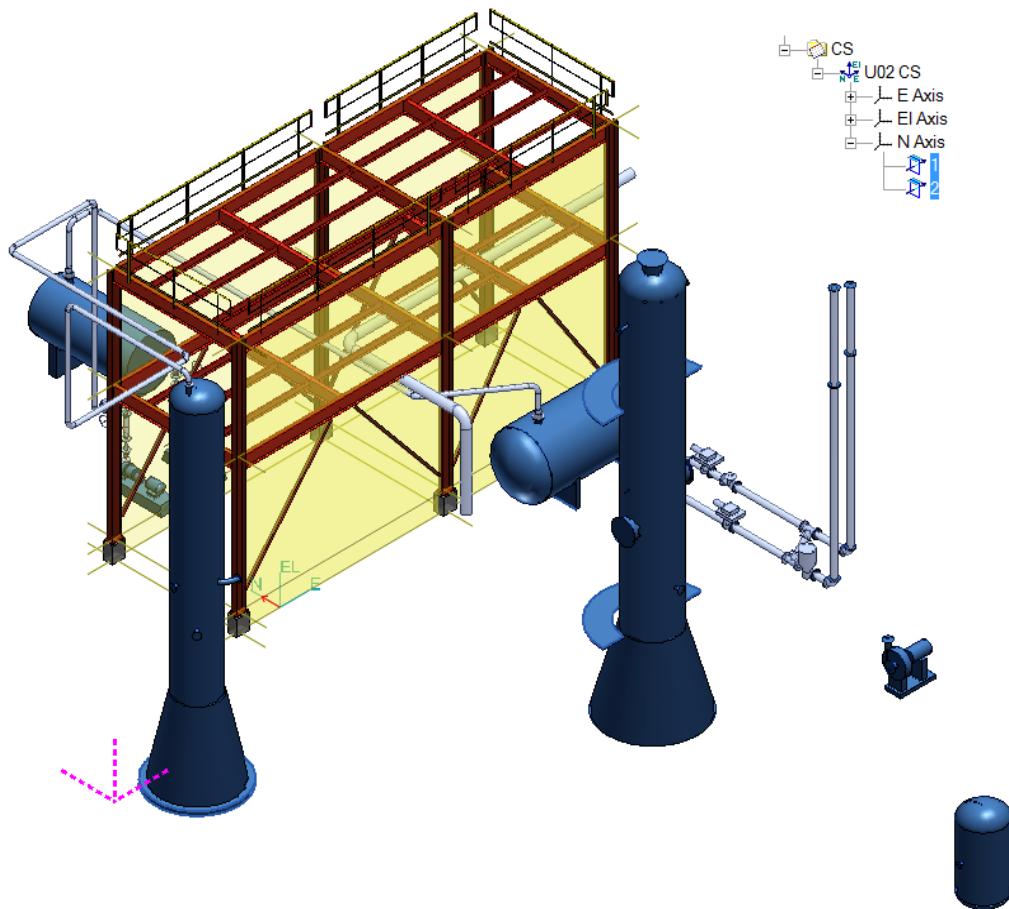


The status bar displays **Select plane(s)**.

5. Expand the nodes **CS**, **U02 CS**, and **N Axis** on the **System** tab of the **Workspace Explorer**.



6. Click on planes **1** and **2** to highlight them in the model.



7. Click **Accept** on the **Place Volumes by Plane and Offset** ribbon to complete the selection of planes.

Select Three Points becomes available on the **Place Volumes by Plane and Offset** ribbon.

8. Type **304.8** in the **Offset 1** field and press TAB.

The field displays **304.80 mm**.

9. Type **-304.8** in the **Offset 2** field and press TAB.

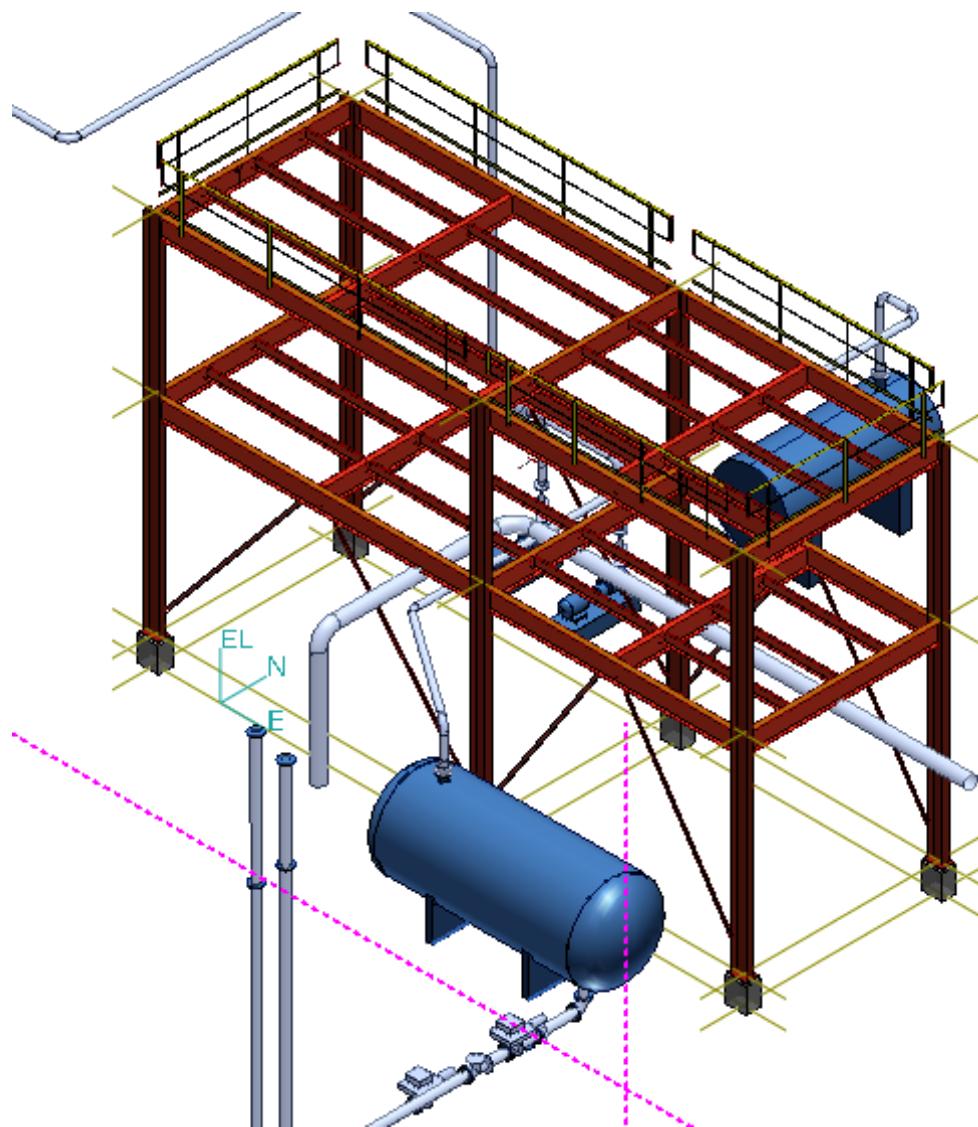
The field displays **-304.80 mm**.

TIP The offset values determine the depth of each volume that you create as measured from the selected planes. The value of **Offset 1** must exceed the value of **Offset 2**.

The status bar displays **Enter First Point**. The purpose of the next steps is to draw the volume cross-section that you will then project onto each selected plane.

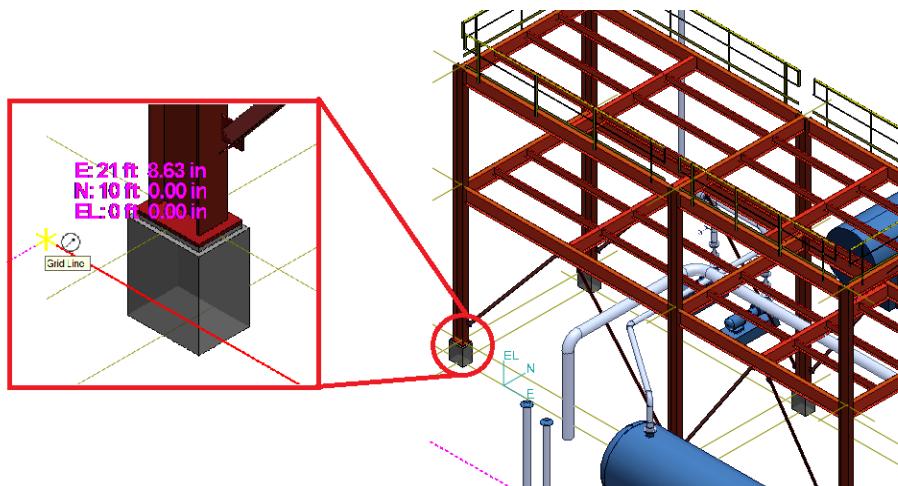
10. On the **Common Views** dialog box, select the node that changes the look direction to **Looking NW and Down**.

11. Click **Zoom Area** , then drag a rectangle around the structural rack to get a closer look.

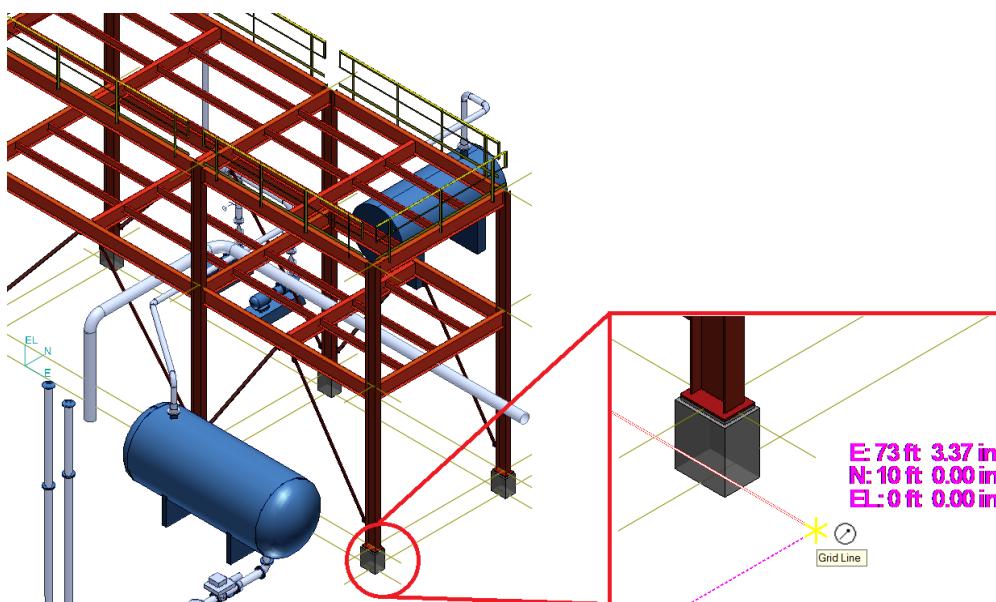


12. Right-click to exit **Zoom Area**.

13. For point 1 of the cross-section, click at the end point of the lowest grid line in the southwest corner of the rack, as shown in the following picture:

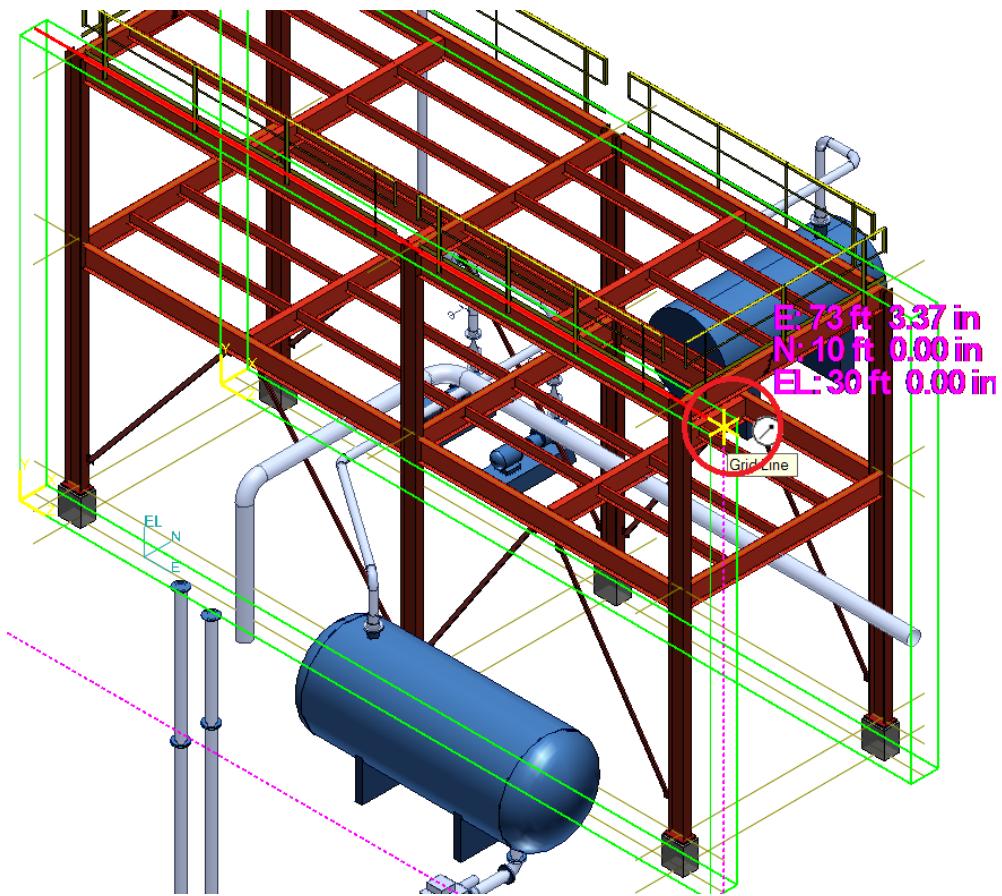


14. For point 2 of the cross-section, click at the end point of the lowest grid line in the southeast corner of the rack, as shown in the following picture:

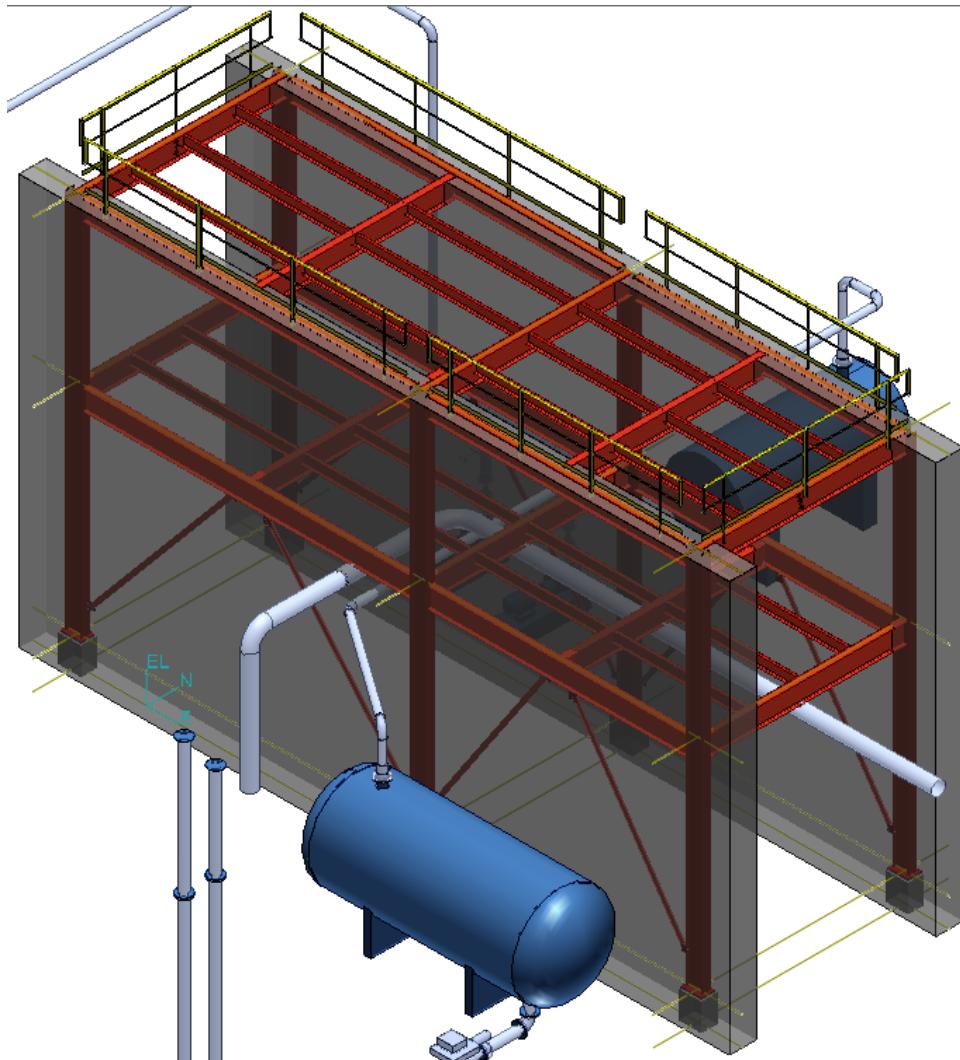


Additional Volume Placement Methods

15. For point 3 of the cross-section, click at the end point of the highest grid line in the southeast corner of the rack, as shown in the following picture:



16. Click **Finish** on the **Place Volumes by Plane and Offset** ribbon to complete the creation of the volumes.



17. Press ESC to exit **Place Volumes by Plane and Offset**.

Create New Drawing

Objective: Create a new drawing so that views can be added to it and associated to the volumes just placed.

1. Switch to the **Drawing Console** window.
2. Expand the **03** folder under **Drawings\Creation Labs**.
3. Right-click the composed component **Piping**, and select **New Drawing**.

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

4. Type **Piping Plan02** in the **Name** field on the **Drawing Sheet General Properties** dialog box.
TIP The **Layout Template** and **Border Template** fields remain populated, so you do not need to edit them.
5. Click **OK** on the **Drawing Sheet General Properties** dialog box.

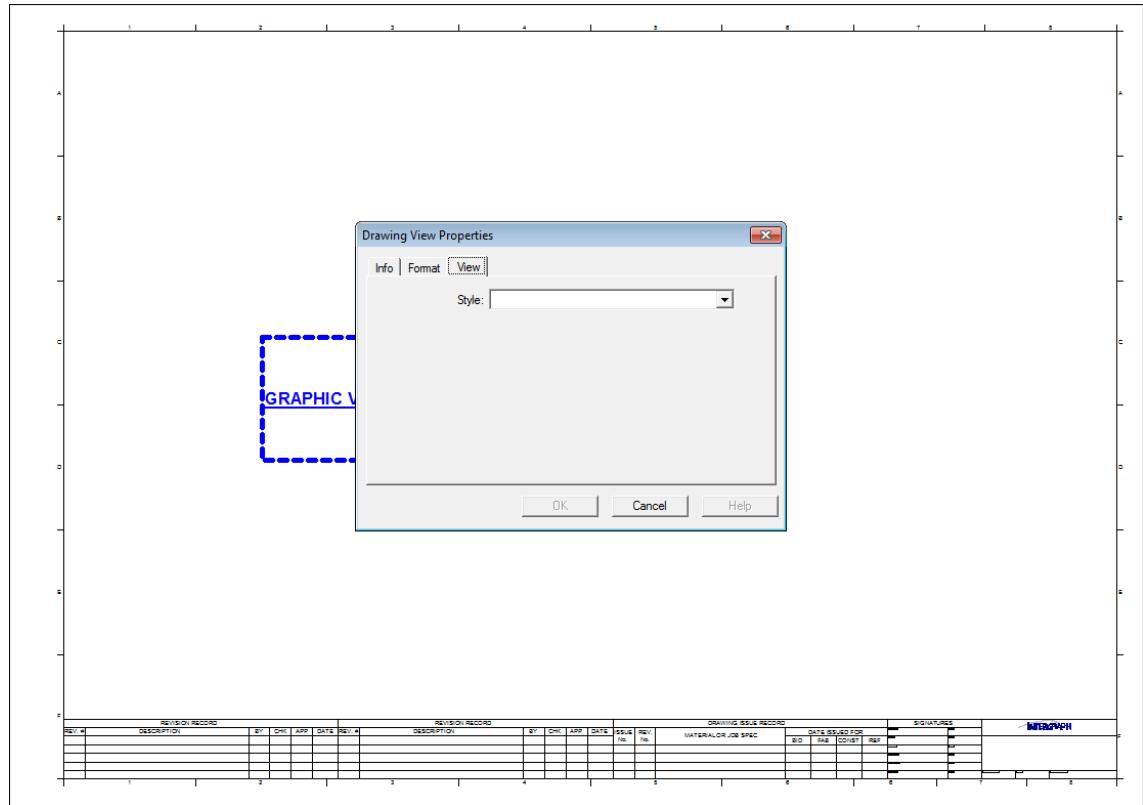
*The software opens the new drawing in a **SmartSketch Drawing Editor** window.*

Place View

Objective: Place a graphic view in the composed drawing so that it can be associated to the volumes placed earlier.

1. Maximize the drawing window in **SmartSketch Drawing Editor**.
2. Click **Fit**  from the **Main** toolbar in **SmartSketch Drawing Editor**.
3. Click **Place View** .
4. Drag a rectangle approximately centered on the left half of the border area.

*The **Drawing View Properties** dialog box displays when placement completes.*



5. Select **More** from the **Style** list on the **Drawing View Properties** dialog box.

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

6. Select **Orthographic\Piping Plan** on the **Select View Style** dialog box.
7. Click **OK** on the **Select View Style** dialog box.
8. Type **Piping Plan View02** in the **Name** field.
9. Select **Metric Scales** from the **Scale Family** list.
10. Select **1 : 100 mm** from the **User Selected Scale** list.
11. Click **OK** on the **Drawing View Properties** dialog box to complete the view definition.

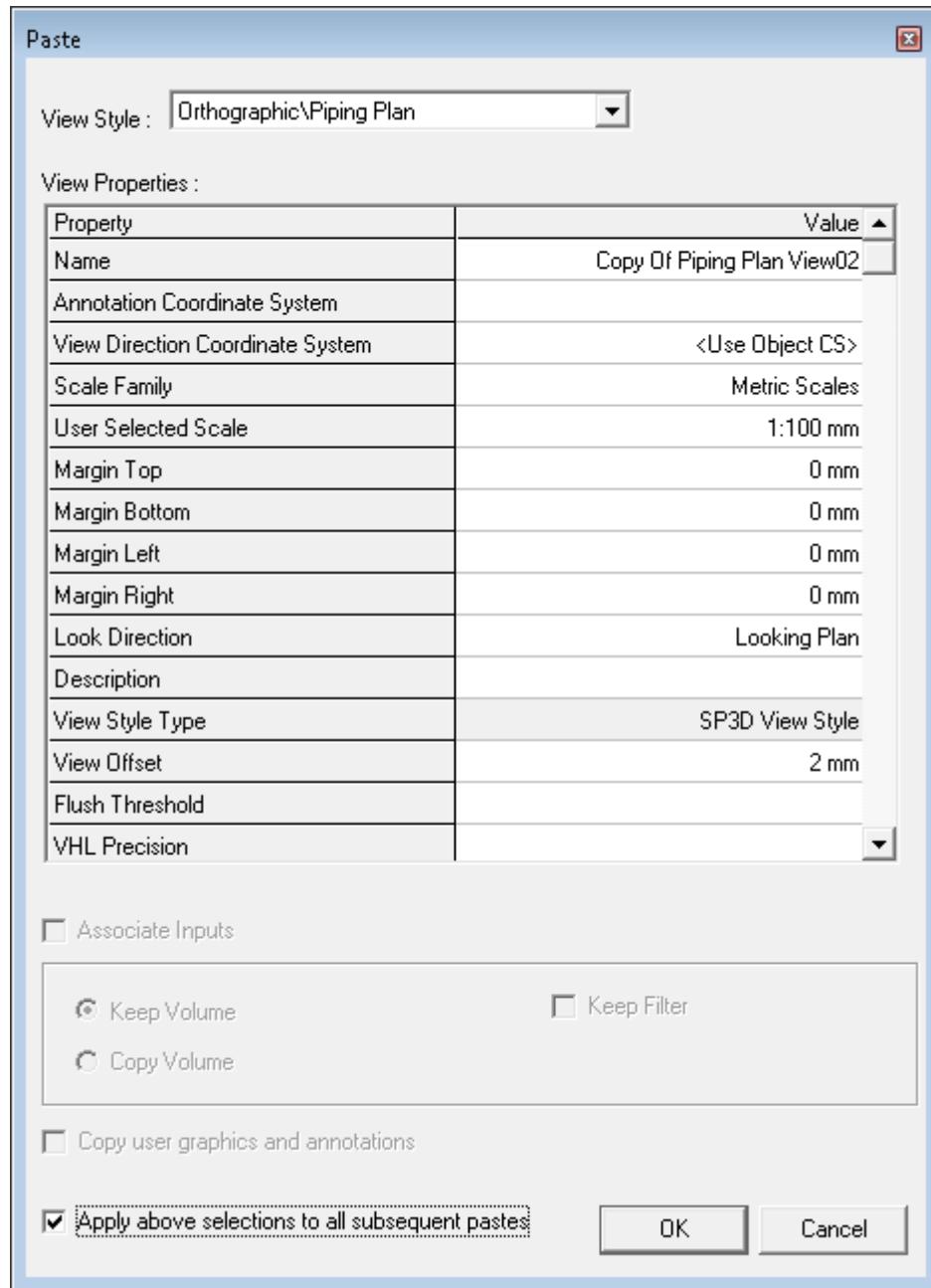
Copy/Paste Unassociated View

Objective: Copy and paste the graphic view just placed using the **Copy and Paste View** command.

1. Click the view and then click **Copy and Paste View**  on the **Composed** toolbar.
TIP The purpose of **Copy and Paste View** is to copy and paste eligible graphic view types within the same drawing.
Report, detail, and sections views are not supported by this command.
An outline of the selected view attaches to the cursor.
2. Click within the border area to place the new view on the right center of the sheet.

Additional Volume Placement Methods

The **Paste** dialog box displays.



TIP The fields at the top of the **Paste** dialog box are identical to those on the **Drawing View Properties** dialog box. There are some additional options on the lower section of the dialog box that specify how to handle the associated inputs and manual edits.

The **Associate Inputs** set of controls is disabled because the original view has not been associated to a volume.

The default view settings for the pasted view are identical to the original except for **Name**.

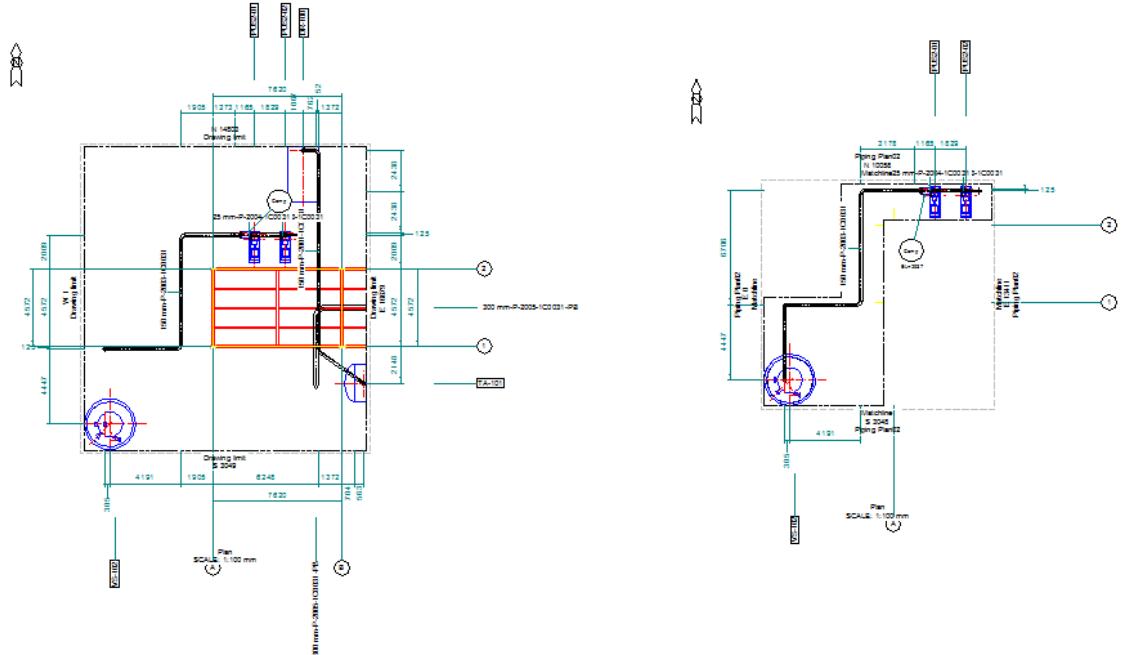
3. Highlight the contents of the **Name** field on the **Paste** dialog box and type **Piping Plan View03** in it.
4. Click **OK** on the **Paste** dialog box to place the new view.
Another view attaches to the cursor so that you can place it.
5. Right-click to exit **Copy and Paste View**.

Associate Views to Volumes and Filter

Objective: Each graphic view in the composed drawing is associated to one of the volumes previously placed.

1. Press CTRL, and click on both view boundaries so that they are selected.
2. Click **Associate Objects to View** 
TIP You can select multiple views when clicking **Associate Objects to View**. The **Select View** list on the **Associate Objects to View** ribbon in the modeling environment contains each view in the select set. The views in the select set, however, must be of the same type.
3. Switch to the **Smart 3D** window.
*The **Associate Objects to View** ribbon displays in the modeling environment.*
4. Select **Piping Plan View02** from the **Select View** list on the **Associate Objects to View** ribbon, if it is not already displayed.
5. Select **More** from the **Filter** list on the **Associate Objects to View** ribbon.
*The **Select Filter** dialog box displays.*
6. Expand the **Drawings Creation Filters** folder and the **03** folder on the **Select Filter** dialog box.
7. Select the **U02 Drawing** filter and click **OK**.
*The software populates the **Filter** field on the **Associate Objects to View** ribbon.*
8. Click the **Space** tab in the **Workspace Explorer**.
9. Click on the volume **Volume by Selection** under **Drawing Creation Labs\03** in the **Workspace Explorer**.
TIP After the view is associated to a volume, the next unassociated view, **Piping Plan View03**, displays in the **Select View** field on the **Associate Objects to View** ribbon.
10. Select **U02 Drawing** from the **Filter** list on the **Associate Objects to View** ribbon.
11. Click **Volume Along Path** in the **Workspace Explorer**.
12. Switch back to the **SmartSketch Drawing Editor** window.
13. Press ESC once to exit **Associate Objects to View**.
14. Press ESC again to clear the selection of the views.
15. Right-click the left view boundary and select **Update View**.
16. When the update completes, right-click the right view boundary, and select **Update View**.

When update of the right view completes, the results should look like the picture below:



TIP Notice that the right view, which is associated with the non-rectangular volume, does not include the structural rack since it is outside the boundary of the volume.

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

Create New Drawing

Objective: Create a new drawing so that views can be added to it and associated to the volumes previously placed.

1. Switch to the **Drawing Console** window.
2. Right-click the composed component **Structure** under **Drawings\Creation Labs\03**, and select **New Drawing**.

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

3. Key-in **Structural Elevation01** in the **Name** field on the **Drawing Sheet General Properties** dialog box.
TIP The **Layout Template** and **Border Template** fields remain populated, so you do not need to edit them.
4. Click **OK** on the **Drawing Sheet General Properties** dialog box.

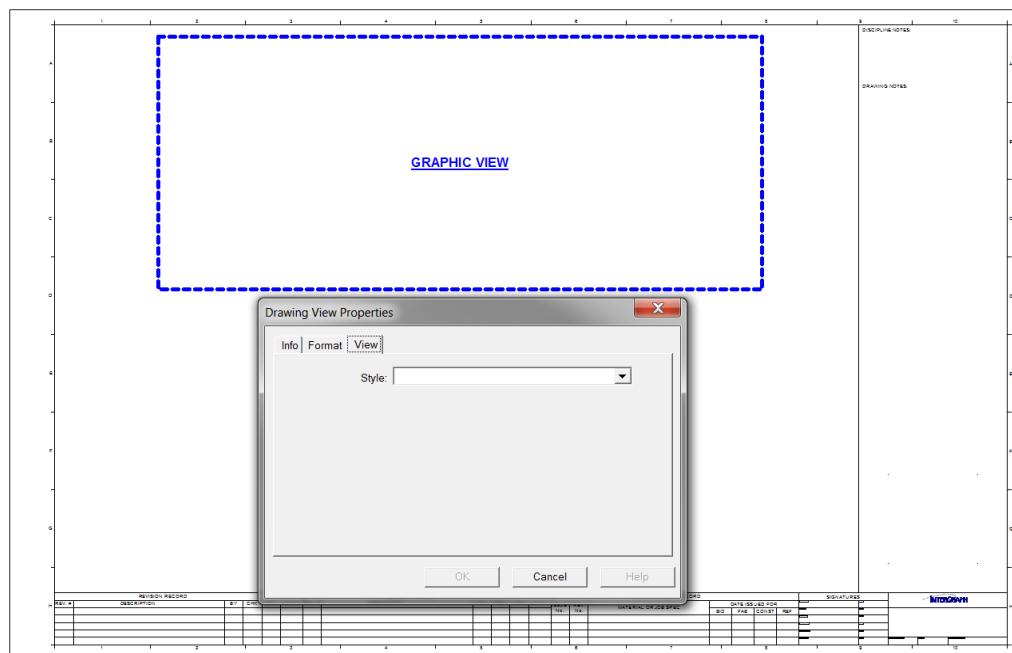
The software opens the new drawing in a **SmartSketch Drawing Editor** window.

Place View

Objective: Place a graphic view in the composed drawing so that it can be associated to the volumes placed earlier.

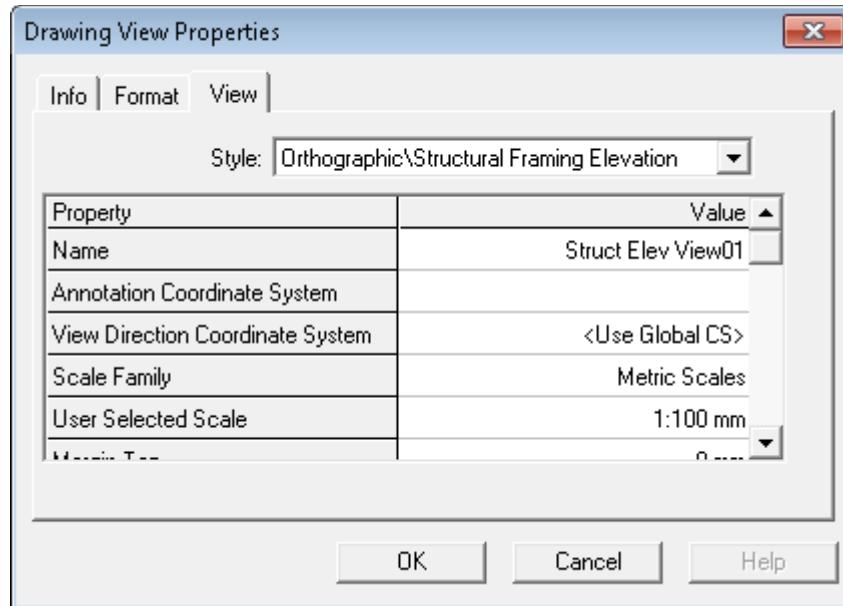
1. Maximize the drawing window in **SmartSketch Drawing Editor**.
2. Click **Fit**  from the **Main** toolbar in **SmartSketch Drawing Editor**.
3. Click **Place View** .
4. Drag a rectangle approximately centered on the top half of the border area.

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



5. Select **More** from the **Style** field on the **Drawing View Properties** dialog box.
- The **Select View Style** dialog box displays.
6. Select **Orthographic\Structural Framing Elevation** on the **Select View Style** dialog box.
 7. Click **OK** on the **Select View Style** dialog box.
 8. Type **Struct Elev View01** in the **Name** field.
 9. Select **<Use Global CS>** from the **View Direction Coordinate System** list.
 10. Select **Metric Scales** from the **Scale Family** list.
 11. Select **1 : 100 mm** from the **User Selected Scale** list.
 12. Select **Looking North** from the **Look Direction** list,

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



Copy/Paste Unassociated View

Objective: Copy and paste the graphic view using the **Copy and Paste View** command.

1. Click the view and then click **Copy and Paste View**  from the **Composed** toolbar.
2. Click below the original to place the new view approximately centered in the bottom half of the border area.
*The **Paste** dialog box displays.*
3. Highlight the contents of the **Name** field on the **Paste** dialog box and type **Struct Elev View02** in it.
4. Click **OK** on the **Paste** dialog box to place the new view.
Another view is attached to the cursor and ready to place.
5. Right-click to exit **Copy and Paste View**.

Associate Views to Volumes and Filter

Objective: Each graphic view in the composed drawing is associated to one of the volumes previously placed.

1. Drag a fence around both view boundaries so that they are selected, and click **Associate Objects to View** .
2. Switch to the **Smart 3D** window.

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

3. Select **Struct Elev View01** from the **Select View** list on the **Associate Objects to View** ribbon, if it is not already displayed.

4. Select **U02 Drawing** from the **Filter** list on the **Associate Objects to View** ribbon.

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

5. Click one of the volumes placed with **Place Volumes by Plane and Offset** in the graphic window.

*The next unassociated view displays in the **Select View** field on the **Associate Objects to View** ribbon.*

6. Select **U02 Drawing** from the **Filter** list on the **Associate Objects to View** ribbon.

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

7. Click the other volume placed with the **Place Volumes by Plane and Offset** command in the graphic window.

8. Switch to the **SmartSketch Drawing Editor** window.

9. Press ESC to exit **Associate Objects to View**.

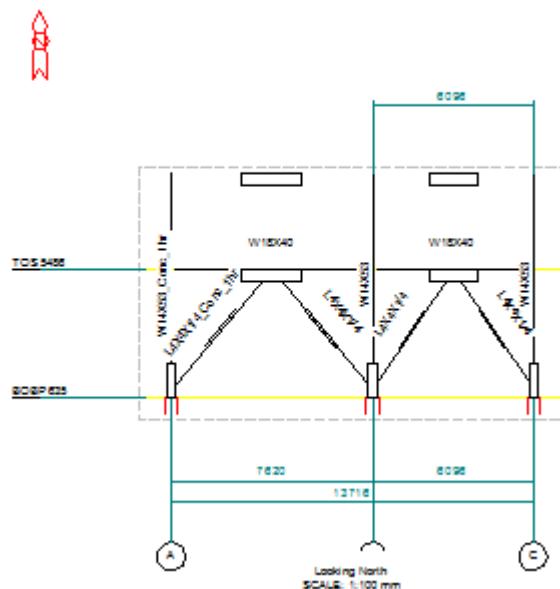
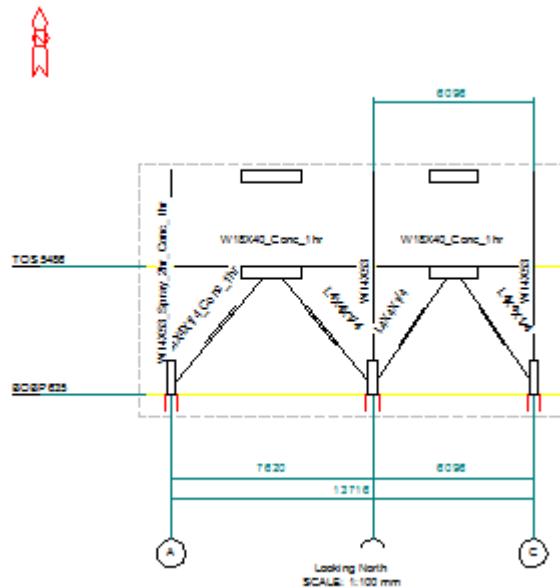
10. Press ESC again to clear the selection of the views.

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

12. When the update completes, right-click the bottom view boundary and select **Update View**.

Additional Volume Placement Methods

When update of the bottom view completes, the results should look like the picture below:



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

L A B 4

Copy and Paste Views with Associations

Objective

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

- Copy and paste views with associated volume and filter and keep associations
- Report coordinate values from an alternate CS rather than the Global CS

Overview

Smart 3D allows you to report coordinate values with reference to alternate coordinate systems than the ones used while placing objects in the model. It is a common practice to set up a plant monument coordinate system to get the desired coordinates on all deliverable documents, such as orthographic drawings, isometric drawings, and spreadsheet reports. For composed drawings, you can select the plant monument coordinate system on the property page of a graphic view.

In the previous session, we learned how to copy and paste views. If the views are associated to a volume or a filter, you can also keep the associations for the copied view. This is useful when you need to show various views of the same set of model objects with different view properties, such as view style or orientation.

Now, we will place a view, choose a plant monument coordinate system, and associate it to a volume and filter. We will then copy and paste the view, changing the orientation. We will also use **Align**  in SmartSketch Drawing Editor to align the views to each other in the sheet.

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 Creation Filters\04** folder.

4. Select the **U01 & U01 2 Points** filter and click **OK** on the **Select Filter** dialog box.

*The **Filter** field populates.*

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

The software populates the workspace with modeled objects.

6. When the workspace query completes, select the node that changes the look direction to **Looking NE and Down** on the **Common Views** dialog box.
7. Click **Fit** .

The software fits all the objects into the graphic window.

Create New Drawing

Objective: Create a drawing so that views can be added and associated to volumes.

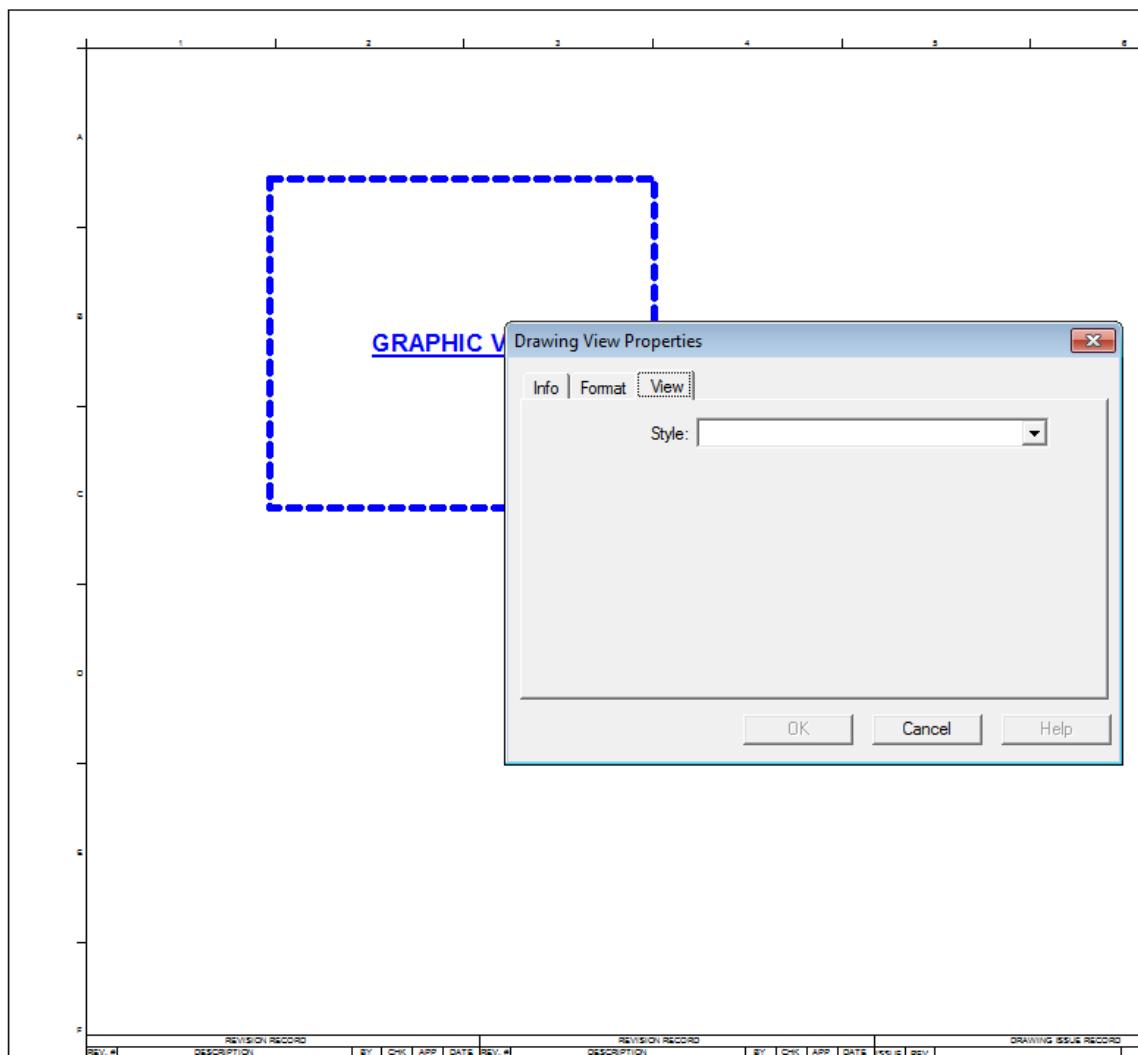
8. Switch to the **Drawing Console** window.
9. Expand the **04** folder under **Drawings\Creation Labs**.
10. Right-click the composed component **Piping**, and select **New Drawing**.
*The **Drawing Sheet General Properties** dialog box displays.*
11. Type **U01 Views** in the **Name** field on the **Drawing Sheet General Properties** dialog box.
TIP The **Layout Template** and **Border Template** fields remain populated, so you do not need to edit them.
12. Click **OK** on the **Drawing Sheet General Properties** dialog box.
*The software opens the new drawing in a **SmartSketch Drawing Editor** window.*

Place View

Objective: Place a graphic view in the composed drawing and, after associating it to a volume, copy and paste it using the **Copy and Paste View** command.

13. Maximize the drawing window in **SmartSketch Drawing Editor**.
14. Click **Fit** .
15. Click **Place View** .
16. Drag a rectangle that is approximately centered in the top left quadrant of the drawing sheet.

After placement of the view, the **Drawing View Properties** dialog box displays.



17. Select **More** from the **Style** list on the **Drawing View Properties** dialog box.

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

18. Select **Orthographic\Piping Plan Style2** on the **Select View Style** dialog box.
19. Click **OK** on the **Select View Style** dialog box.
20. Type **Piping Plan View04** in the **Name** field.
21. Select **ISO Scales** from the **Scale Family** list.
22. Select **1: 200** from the **User Selected Scale** list.
23. Click **OK** on the **Drawing View Properties** dialog box to complete the view definition.

Associate View to Volume and Filter

Objective: Associate the graphic view with a volume and filter.

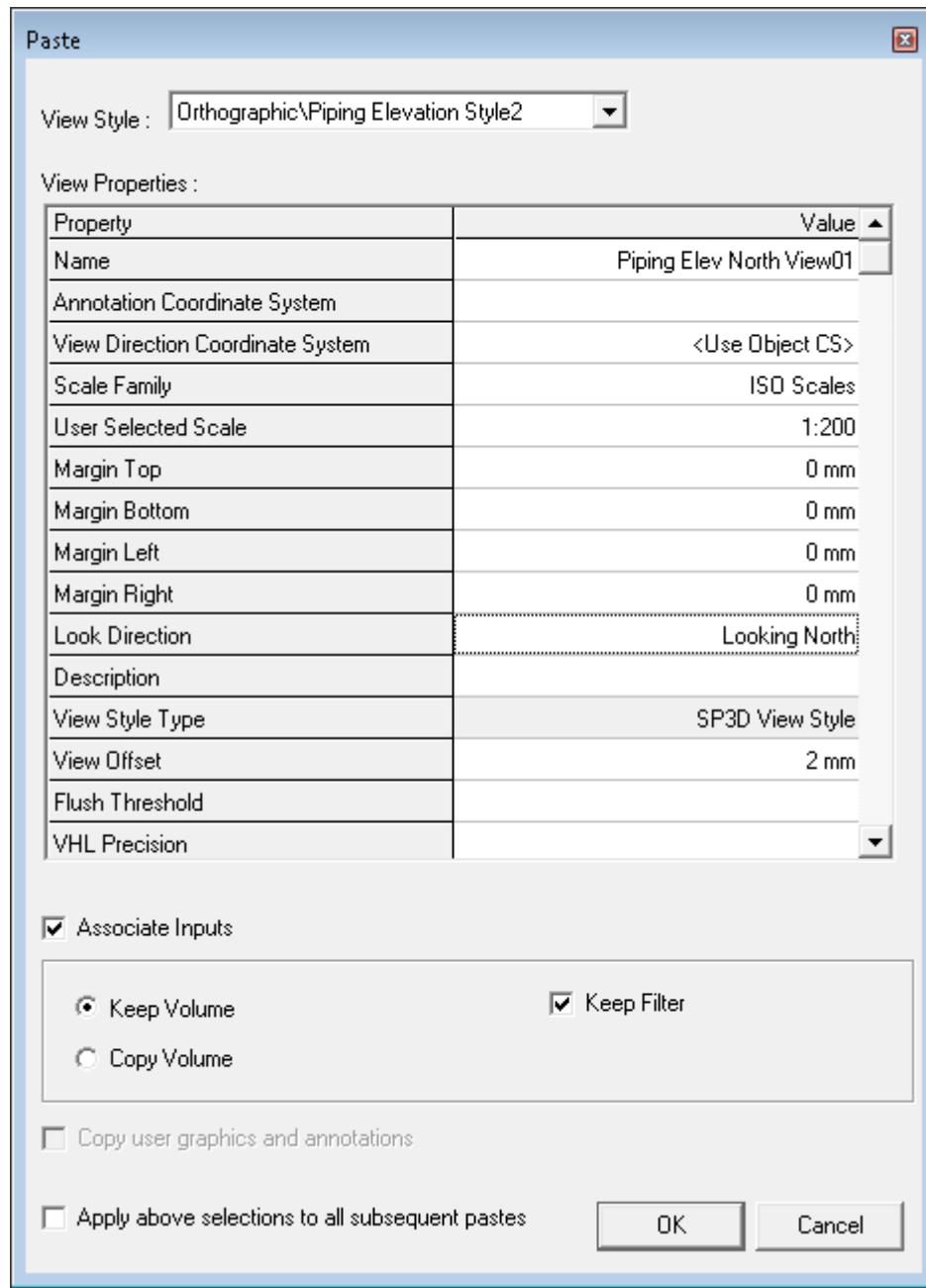
1. Click the view just placed, and click **Associate Objects to View** .
2. Switch to the **Smart 3D** window.
The Associate Objects to View ribbon displays in the modeling environment.
3. On the **Space** tab of the **Workspace Explorer**, expand the space folders **Drawing Creation Labs** and **04**.
4. Click the volume **U01 2 Points** 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 Creation Filters\04**.
7. Select the **U01 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 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.

Copy/Paste Associated View

Objective: Copy and paste a graphic view that is associated to a volume using the **Copy and Paste View** command.

1. With the view still selected, click **Copy and Paste View** .
2. Click within the border area below the original view.
*The software places the new view and displays the **Paste** dialog box.*
3. Select **More** from the **View Style** list on the **Paste** dialog box:
The Select View Style dialog box displays.
4. Select **Orthographic\Piping Elevation Style2** on the **Select View Style** dialog box.
5. Click **OK** on the **Select View Style** dialog box.
6. Highlight the contents of the **Name** field on the **Paste** dialog box and type **Piping Elev North View01** in it.

7. Select **Looking North** from the **Look Direction** list.
8. Ensure that **Associate Inputs** is selected.
9. Ensure that **Keep Volume** and **Keep Filter** are selected.
10. Uncheck **Apply above selections to all subsequent pastes**.



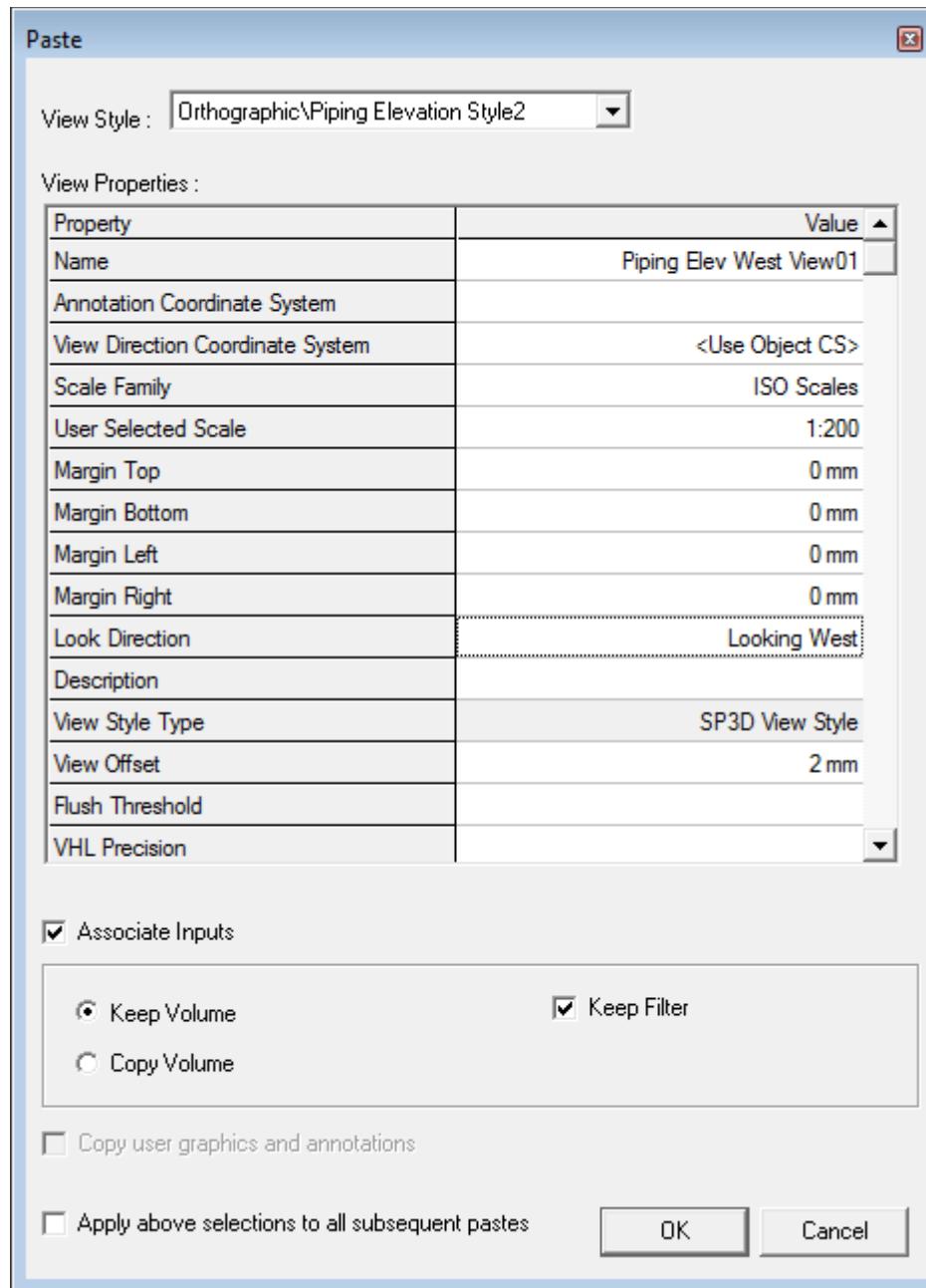
11. Click **OK** on the **Paste** dialog box.

The software places the new view. The view resizes to match the size of the volume from the new look direction. At this point, another view is attached to the cursor and ready to

place.

12. Click within the border area to the right of the original view to place the new view.
*The **Paste** dialog box displays.*
13. Select **More** from the **View Style** list on the **Paste** dialog box.
*The **Select View Style** dialog box displays.*
14. Select **Orthographic\Piping Elevation Style2**.
15. Click **OK** on the **Select View Style** dialog box.
16. Highlight the contents of the **Name** field on the **Paste** dialog box and type **Piping Elev West View01** in it.
17. Select **Looking West** from the **Look Direction** list.
18. Ensure that **Associate Inputs** is selected.
19. Ensure that **Keep Volume** and **Keep Filter** are selected.

20. Ensure that **Apply above selections to all subsequent pastes** is cleared.

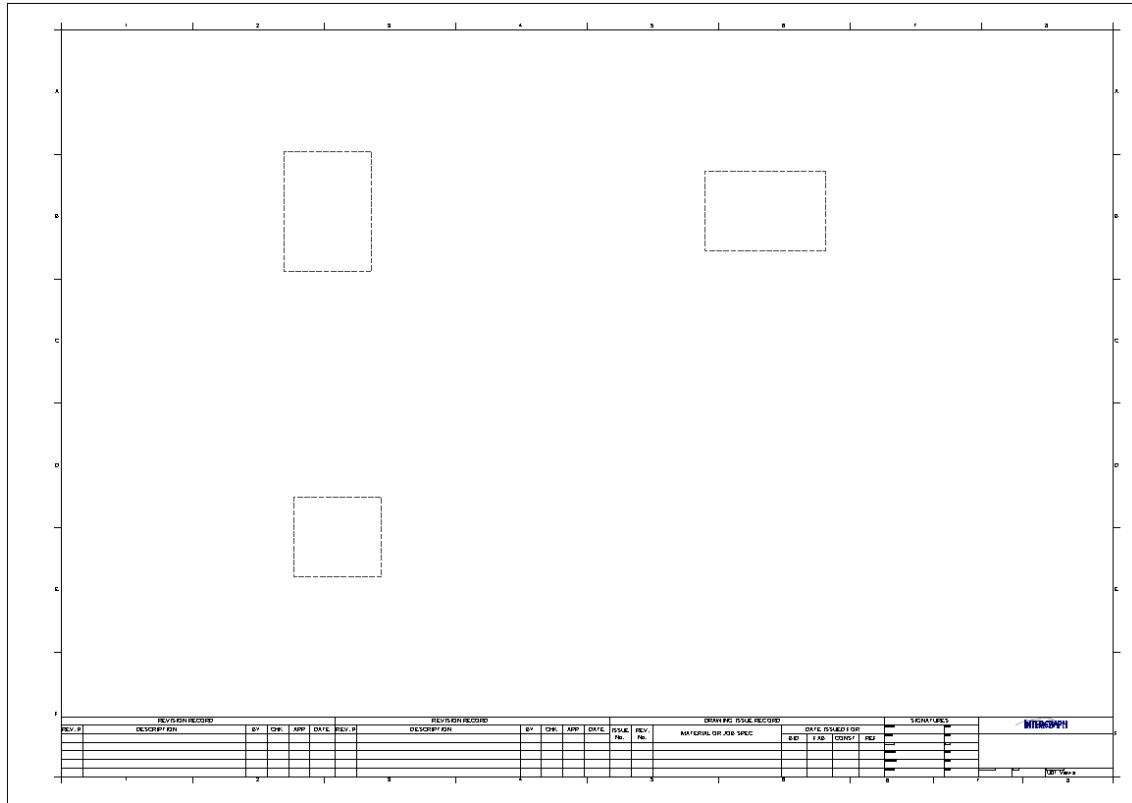


21. Click **OK** on the **Paste** dialog box.

The software places the new view. The view resizes to match the size of the volume from the new look direction. At this point, another view is attached to the cursor and ready to place.

22. Right-click to exit **Copy and Paste View**.

The results should look similar to the picture below:



Align Views

Objective: Align the views to each other using the **Align** command. The command is provided by **SmartSketch Drawing Editor** and is not a command added by **Smart 3D**.

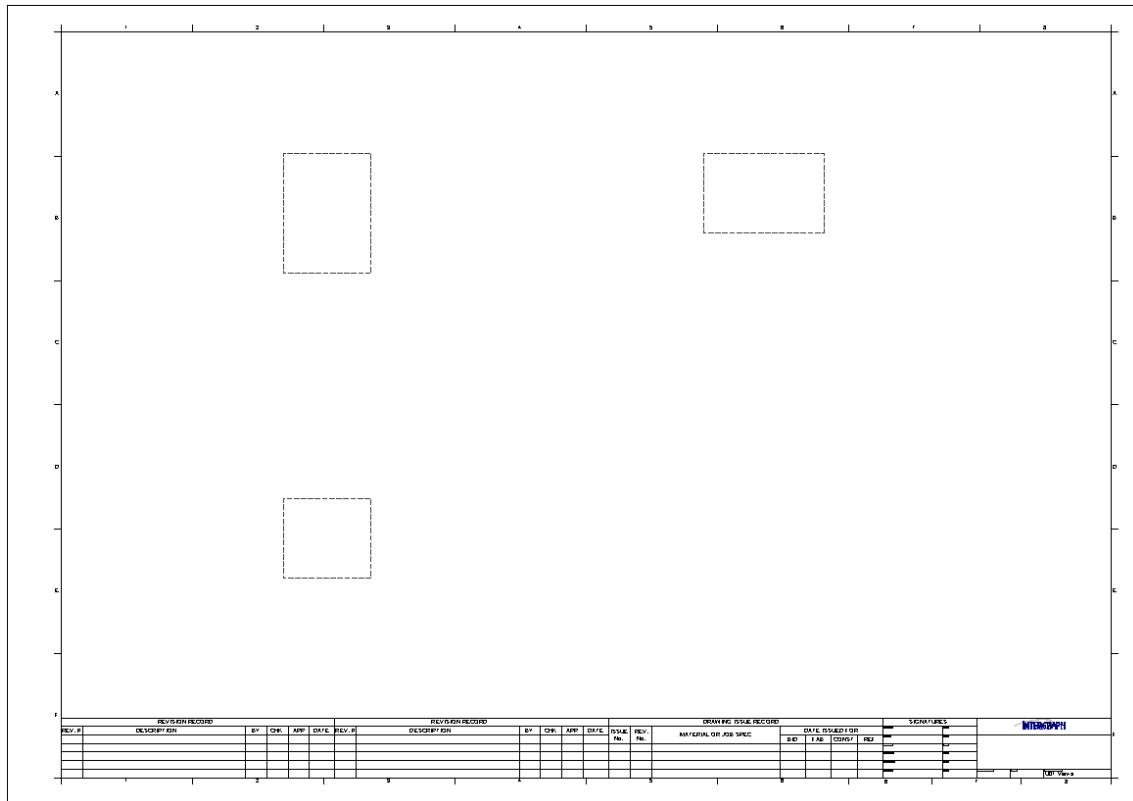
1. Click **Change** on the **Main** toolbar.
*The **Change** toolbar displays.*
2. Drag the **Change** toolbar to the toolbar area.
The toolbar docks.
3. Click **Align** on the **Change** toolbar.
*The **Align** ribbon displays.*
4. Drag a fence around the top two views to add them to a select set.
*The buttons on the **Align** ribbon enable.*
5. Click **Align Top** on the **Align** ribbon.
The two views align along their top edges.
6. Drag a fence around the leftmost views to add them to a select set.

- Click **Align Left**  on the **Align** ribbon.

The two views align along their left edges.

- Press ESC to exit the **Align** command.

The results should look similar to the picture below:



- Click **File > Exit** to exit **SmartSketch Drawing Editor**. Click **Yes** to save the drawing.

Update the Drawing

Objective: Generate the contents of the views.

- Switch to the **Drawing Console** window.

- Right-click on the drawing **U01 Views** and select **Update Now**.

The software generates the contents of the graphic views as well as the border labels.

- When the update completes (as shown by the status bar message in the lower left corner of the **Smart 3D** window), right-click on the drawing **U01 Views** and select **Edit**.

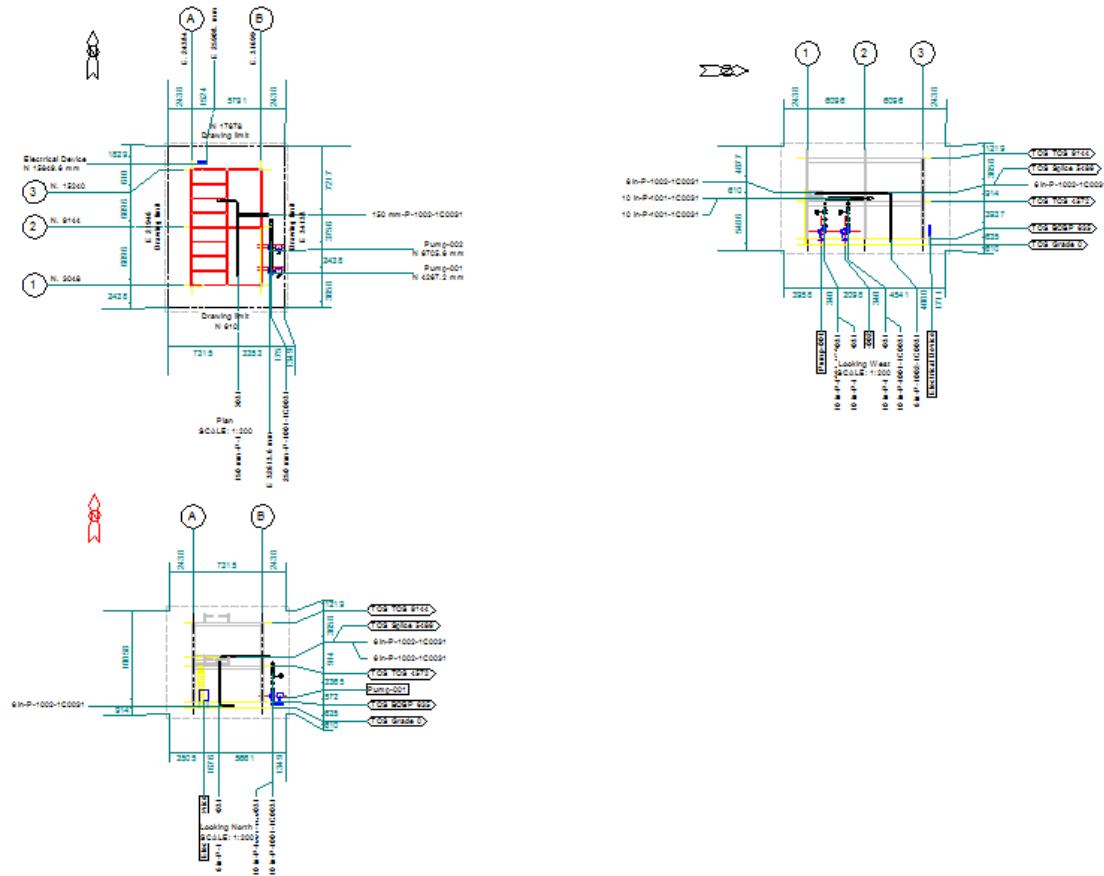
*The **SmartSketch Drawing Editor** window displays.*

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

Copy and Paste Views with Associations

5. Click **Fit** .

The results should look similar to the picture below:

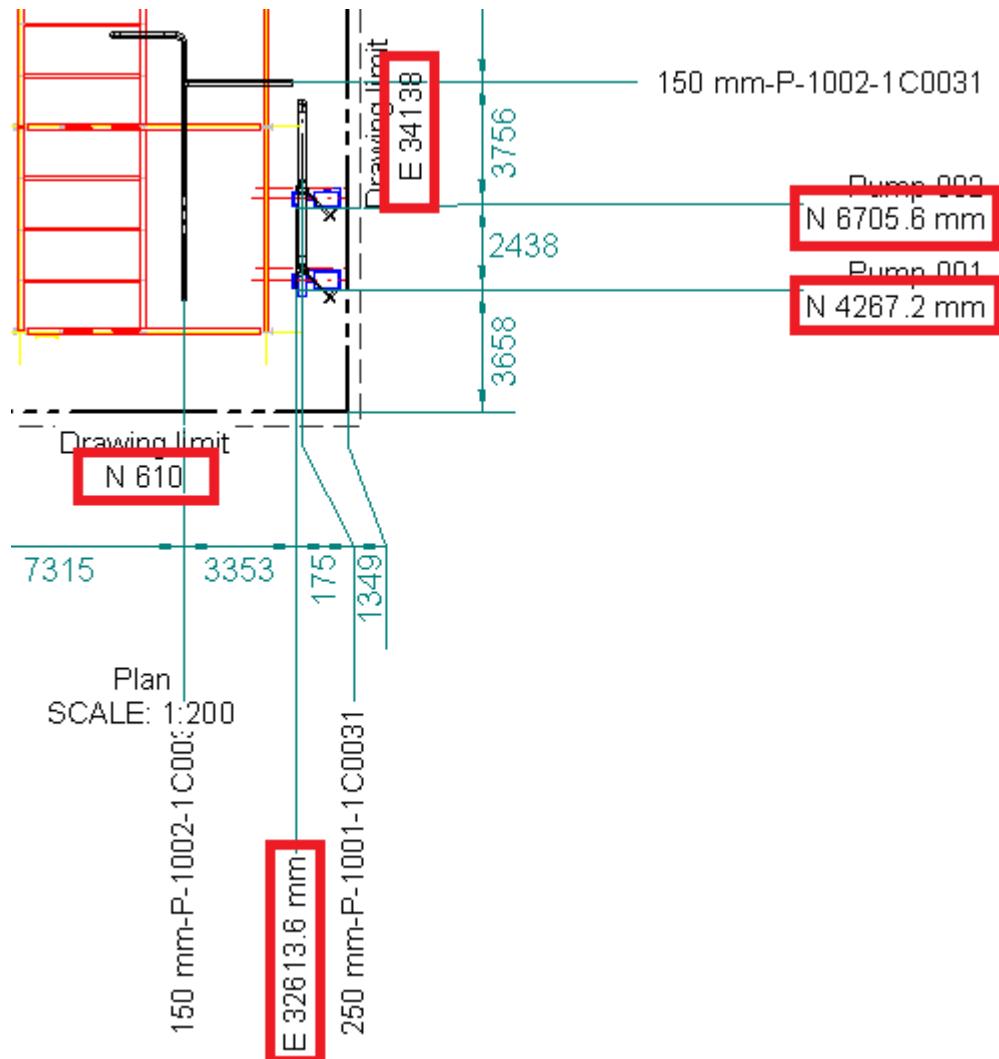


Change Reference for Coordinate Labels

Objective: In the view properties, modify the reference coordinate system for labels and regenerate the view to show the change in the coordinate labels.

6. Click **Zoom Area**  from the **Main** toolbar.
7. Drag a rectangle around the upper left view to get a closer look at the contents.
8. Notice the current values for the coordinates of the pumps and matchline.

The current values for the coordinates are referenced to the Global coordinate system.



9. Right-click to exit **Zoom Area**.
10. Right-click on the upper left view and select **Properties**.
The Drawing View Properties dialog displays.
11. Select **Plant_Monument_CS** from the **Annotation Coordinate System** list.
TIP The **Annotation Coordinate System** specifies the reference coordinate system for the labels in the view. If the field is blank, it uses the **Global Coordinate System**.
12. Click **OK** on the **Drawing View Properties** dialog box to complete the view definition change.
13. Switch to the **Smart 3D** window to verify the location of **Plant_Monument_CS** with respect to the Global coordinate system.
14. Select **All** from the **Locate Filter** list.
15. Click the **System** tab in the **Workspace Explorer**.
16. Right-click on **CS** node in the **Workspace Explorer** and select **Properties**.

The **Generic System Properties** dialog box displays.

17. Select the **Relationships** tab on the **Generic System Properties** dialog box.

18. Double-click on **Plant_Monument_CS** in the **Relationships** tab.

The **Coordinate System Properties** dialog box displays.

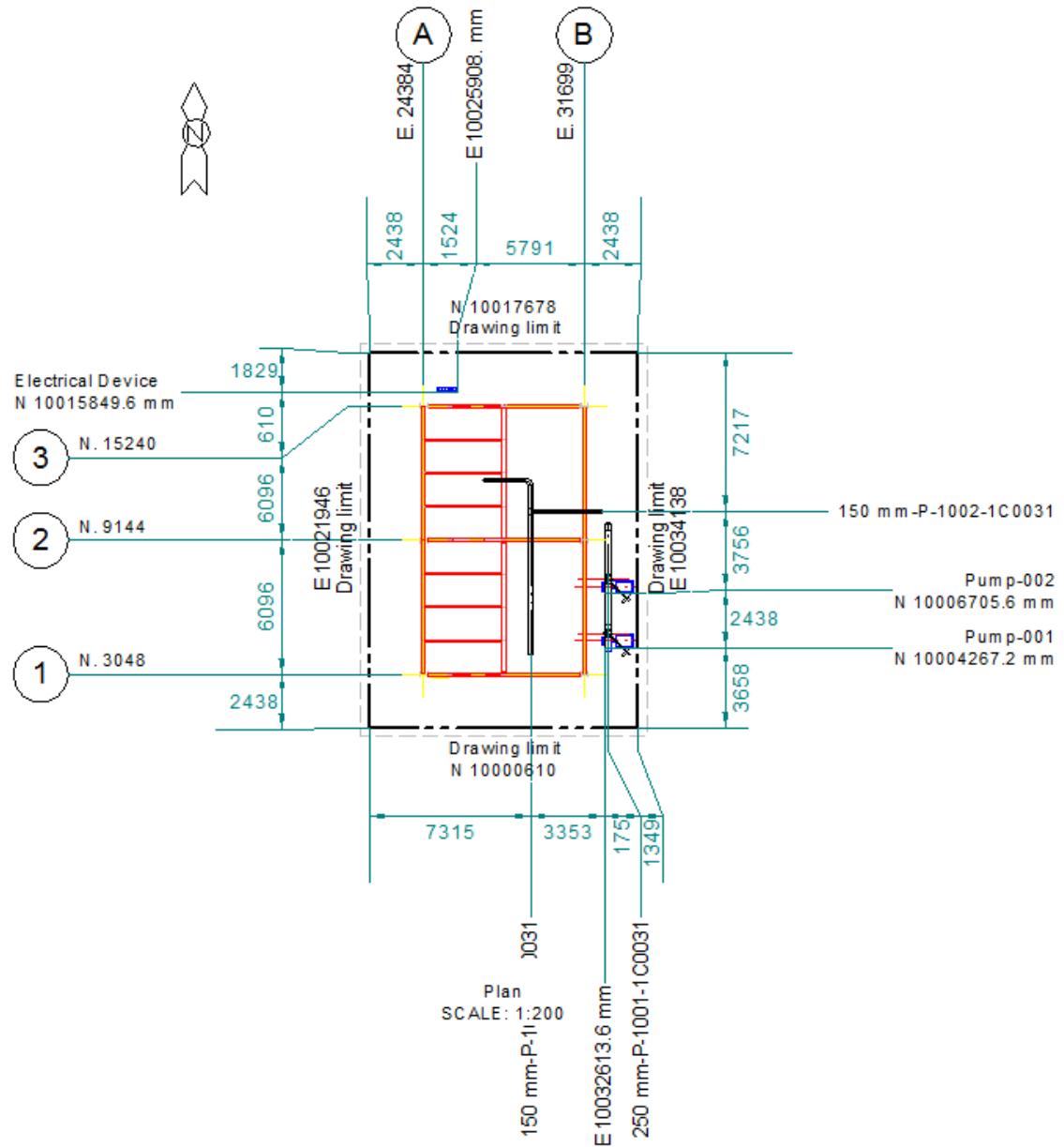
19. Notice that the origin of **Plant_Monument_CS** is at -10,000 m in both the X and Y directions from the Global origin.

20. Select **Cancel** on the **Coordinate System Properties** dialog.

21. Switch to the **SmartSketch Drawing Editor** window.

22. Right-click the upper left view boundary and select **Update View**.

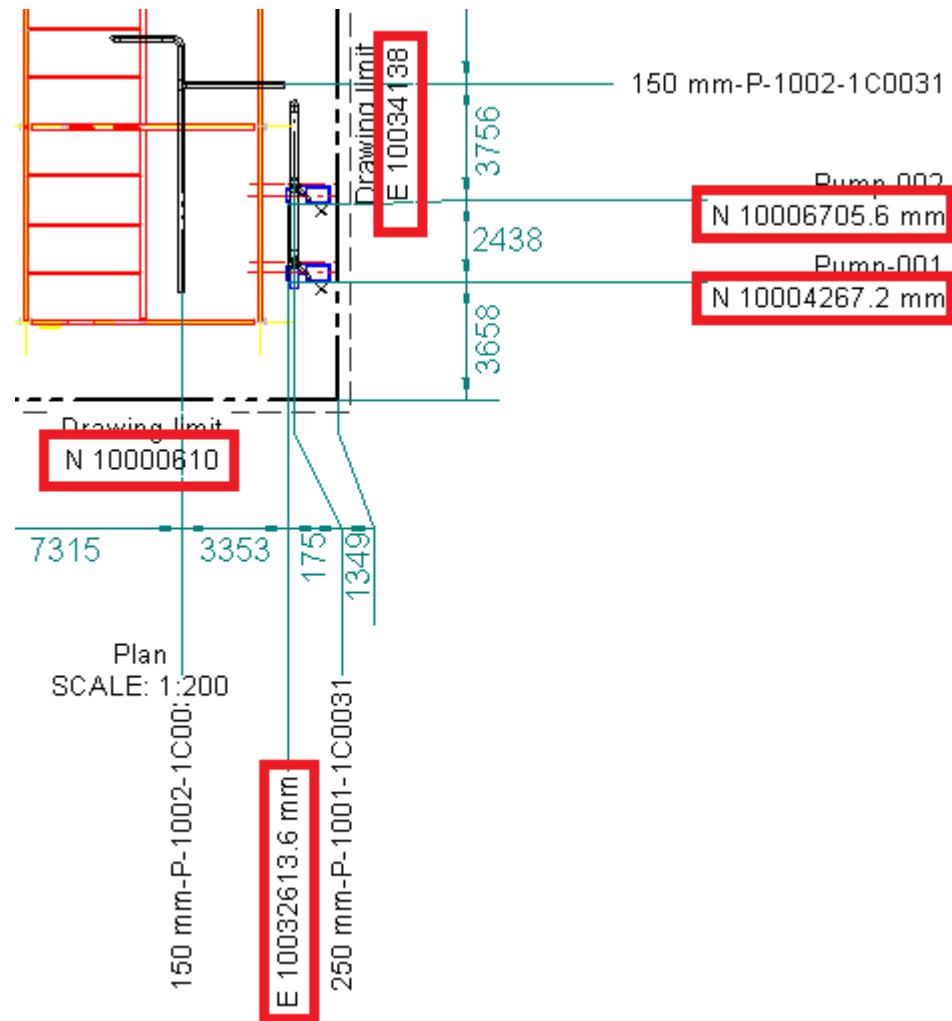
When update of the view completes, the results should look like the picture below:



23. Notice the current values for the coordinates of the pumps and the matchlines.

*The current values for the coordinates are referenced to the **Plant_Monument_CS** coordinate system. The values are now 10,000 m larger than they were earlier.*

Copy and Paste Views with Associations



24. 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 5

Snapshot Views

Objective

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

- Create a snapshot view in the 3D model using the **All Objects** command.
- Create a snapshot view in the 3D model using the **Visible Objects Only** command.
- Use the preview option for both commands.

Overview

In this lesson, we will look at creating snapshot views for drawings. Snapshot views provide a quick and easy way to convert the contents of a 3D graphic window into a drawing. Snapshot views are typically used for non-standard view orientations. By design, only objects included in the workspace definition are candidate objects to be included in the drawing.

Two commands are available to create snapshot views: **All Objects** and **Visible Objects Only**.

Both commands are similar in that:

- Only objects in the active graphic window are candidates to be drawn. If an object in the workspace is not visible in the graphic window due to the **Tools > Hide** command or because it is outside of a clipped view, this object will not be a candidate for the resulting drawing view.
- Volumes in a hidden state are automatically created in the designated space folder at completion of the command.
- If view clipping is present, the volume created by the command only encompasses the clipped boundary. Otherwise, the volume matches the range of the active graphic window. To better control the size of the volume, it is recommended to take snapshots from a clipped 3D view.
- The view style has the final determination of which and how candidate objects are drawn.

The commands differ in several respects:

- With the **Visible Objects Only** command, objects that are completely obscured by other objects in the graphic window will not be candidates to be drawn. Partially obscured objects are still candidates.
- The **All Objects** command saves the workspace definition with the view. As new objects are added within the snapshot volume, they may appear in the snapshot view if they pass the workspace definition. The **Visible Objects Only** command is limited to a set of object IDs that were present when the snapshot view was created. Therefore, objects cannot be added to a snapshot view created with the **Visible Objects Only** command; they can only be removed.

- The **All Objects** command has the option to generate a preview. More on this preview option later.
- The **All Objects** command has the option to limit the candidate options to a select set in the graphic window.
- The snapshot view created by the **All Objects** command is initially associated to a composed component and then can be placed into any drawing under that component. The view created by the **Visible Objects Only** command is associated to a drawing at creation time.

When you select either command in any 3D task, a ribbon appears allowing you to name the snapshot view and assign a view style. When you click **Finish**, the software captures the view in the look direction of the 3D view.

Consider using the **Visible Objects Only** command if the resulting view will only display visible edges. It is also recommended to use **Visible Objects Only** when performance matters since it will generally process fewer objects than the **All Objects** command.

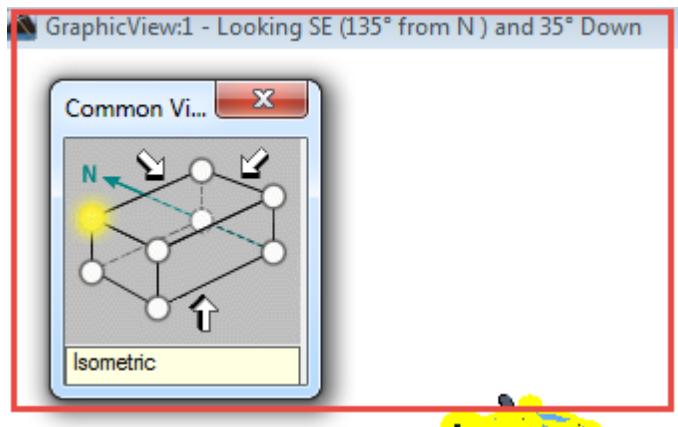
For the **All Objects** command, you can check the **Generate Preview** box on the ribbon to create a raster image of the contents of the graphic window. The drawing view will display this preview at placement. The preview goes away when the view is updated.

On the next pages, we will demonstrate how you can create a snapshot view and then generate a preview from the 3D model.

Define Workspace

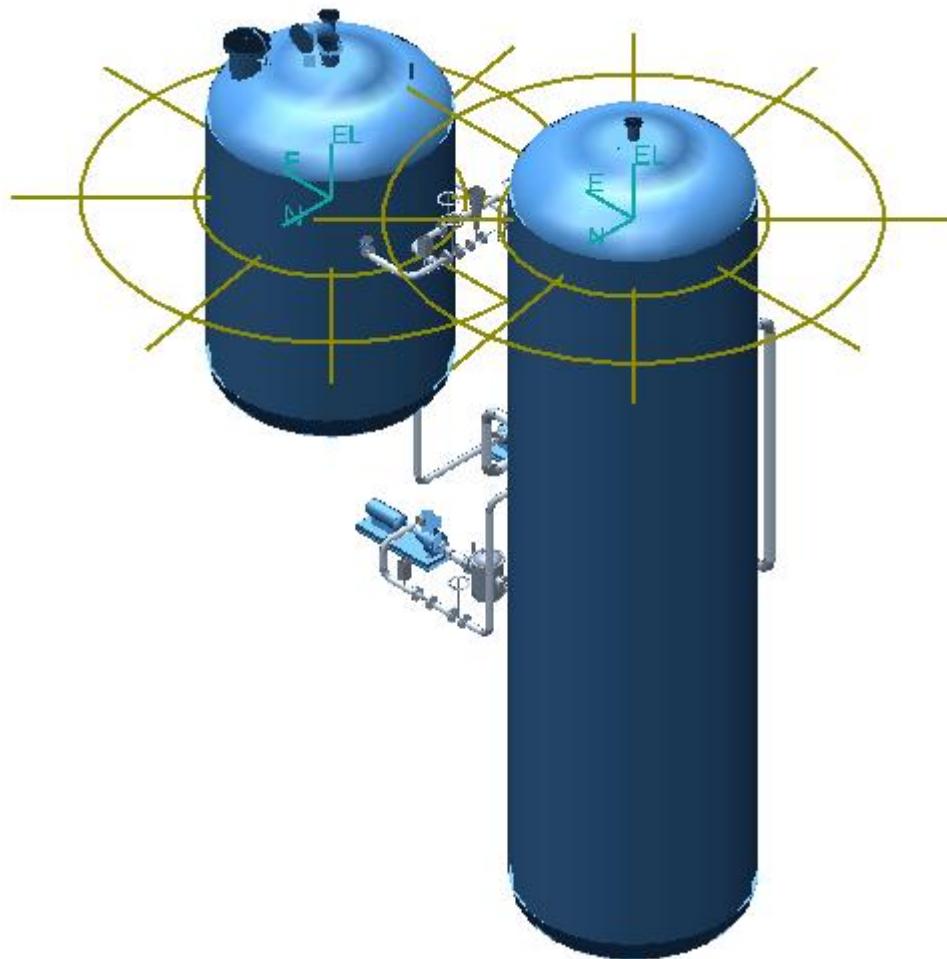
Objective: Configure the session prior to working with drawings.

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 **Filter** list, expand the **Plant Filters\Drawings Creation Filters\05** folder.
4. Select the **U14 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 software populates the workspace with modeled objects.
6. When the workspace query completes, select the node that changes the look direction to **Looking SE and Down** on the **Common Views** dialog box.



7. Click **Fit**

The software fits all the objects into the graphic window.



Create a Clipped View

Objective: Use the **Clip by Object** command to clip a portion of the workspace. This will later be used to demonstrate how the snapshot volume is sized to fit the clipped space.

1. On the **System** tab of the **Workspace Explorer**, right-click on the **A3** system node and click **Select Nested**.
2. Click **Clip by Object**  on the **Common** toolbar.
The contents of the graphic window are clipped to the range of the selected objects.
3. Click **Close** on the **Clip by Object** ribbon.
4. Right-click to deselect the objects.

Create Snapshot View with All Objects Command

Objective: Create a snapshot view using the **All Objects** command. In a later section, a snapshot view will be created using the **Visible Objects Only** command to show the differences between the two commands.

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

*The **Snapshot View All Objects** ribbon displays.*



TIP A snapshot view created with this command uses a drawing view query based on the workspace definition. The volume for the snapshot view is automatically created in a hidden state when you click **Finish** on the ribbon. It is defined in one of two ways:

- a. If there is no view clipping in the graphic window, the volume matches the view range in the active graphic window.
 - b. If there is view clipping in the graphic window, the volume created encompasses the clipping boundary.
2. Select **More** from the **Drawing Type** list on the **Snapshot View All Objects** ribbon:
*The **Select Drawing Type** window displays.*
 3. Expand the **Drawings\Creation Labs\05** folder on the **Select Drawing Type** window.
TIP The **Drawing Type** field needs to be populated with a composed component.
 4. Select the **Piping** composed component.
 5. Click **OK** on the **Select Drawing Type** window.
 6. Type **Snapshot Isometric View01** in the **View Name** field.
*The **Naming Rule** list changes to **User Defined**.*
 7. Select **More** from the **View Style** list.

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

8. Select **Orthographic\Piping Isometric** on the **Select View Style** dialog box.
9. Click **OK** on the **Select View Style** dialog box.
10. Select **More** from the **Space Folder** list.

The **Select Space Folder** dialog box displays.

11. Select the space folder **Drawings Creation Labs\05**.
12. Click **OK** on the **Select Space Folder** dialog box.
13. Select **Generate Preview**.

14. Click **Finish** to create the snapshot.



TIP The **Generate Preview** option produces a screenshot of the contents of the active graphic window at the time that the snapshot view is placed in the drawing.

15. Press **ESC** to exit **All Objects**.
16. Click the **Space** tab in the **Workspace Explorer**.
17. Expand the **Drawings Creation Labs** and **05** space folders on the **Space** tab of the **Workspace Explorer**.

A new volume with same name as the snapshot view displays in the folder.

Create Snapshot View with Visible Objects Only Command

Objective: Create a snapshot view using the **Visible Objects Only** command.

1. Click **Tools > Snapshot View > Visible Objects Only**.
*The **Select Drawing** window displays.*
2. Expand the **Drawings\Creation Labs\05** folder and the **Piping** component on the **Select Drawing** window.
TIP Unlike the **All Objects** command, the **Visible Objects Only** command needs a composed document to be open before the command will complete. If a composed document is already open, it will associate the snapshot view to that document.
3. Select the **Drawings\Creation Labs\05\Piping\Snapshot U14** drawing.
4. Click **OK** on the **Select Drawing** window.

*The **Snapshot View Visible Objects Only** ribbon displays with a default name for the view. The view style and space folder are preserved from the values used in the **All Objects** command.*

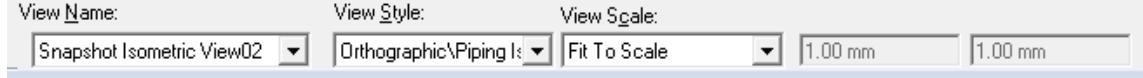


TIP A snapshot view created with this command uses a drawing view query that contains the object IDs of all visible or partially visible objects in the graphic window.

5. Highlight the contents of the **View Name** field and type **Snapshot Isometric View02**.
*The **Naming Rule** list changes to **User Defined**.*
6. Click **Finish** to create the snapshot.



*The command processes and eventually opens the **SmartSketch Drawing Editor** window with the **Placed Snapshot View Visible Objects Only** ribbon displaying.*



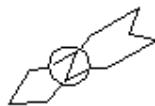
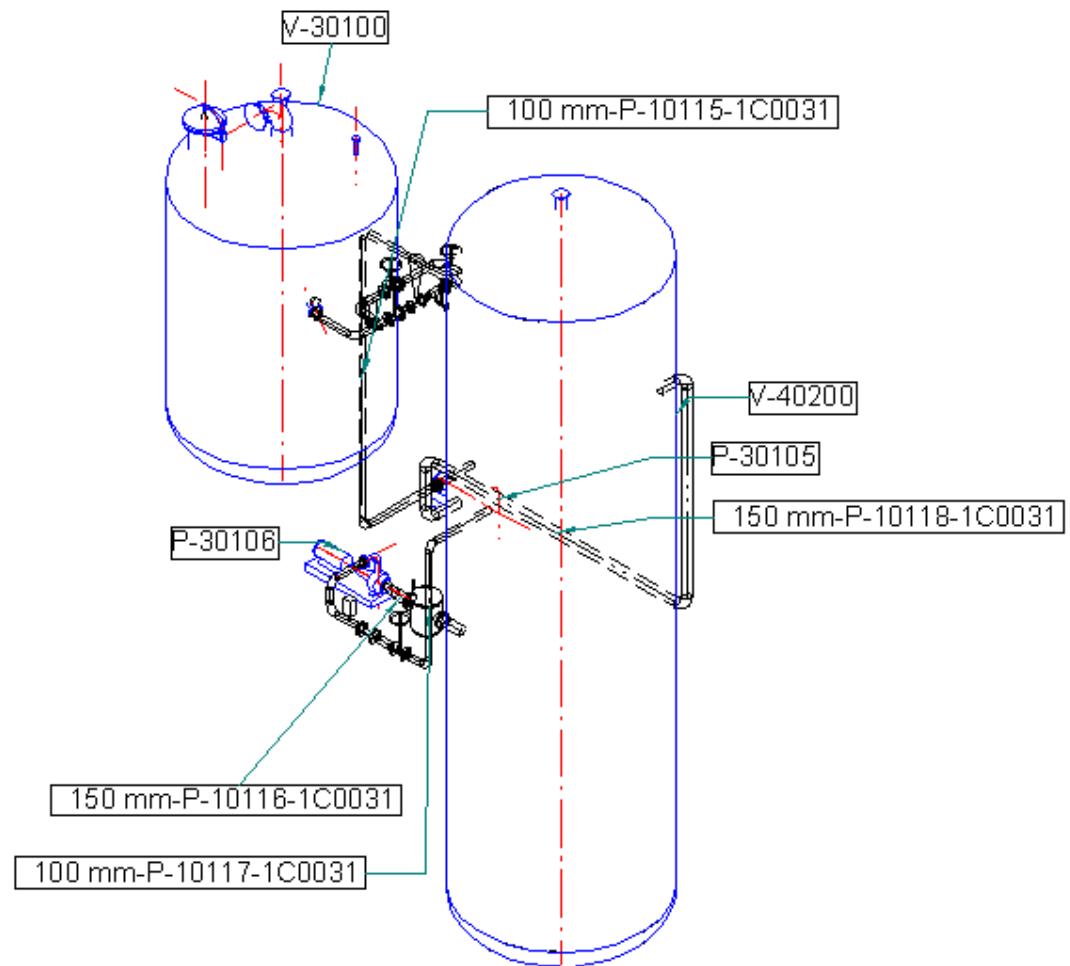
TIP The **Place Snapshot View Visible Objects Only** ribbon initially displays the **View Scale** as **Fit to Scale**. To place a snapshot with this scale, drag the cursor in the drawing window to create a rectangle of the required size. If a scale is chosen, as is done in this lab, the size of the view is determined by the scaled size of the snapshot volume and it is placed with a single click.

Place Visible Objects Only Snapshot View

Objective: Place the snapshot view resulting from the **Visible Objects Only** command.

7. Select **Metric Scales** from the **View Scale** list on the **Visible Objects Only** ribbon.
An additional list displays on the right end of the ribbon.
8. Select **1 : 100 mm** as the scale from the newly-added list.
9. Move the cursor over the drawing window.
The outline of a graphic view appears attached to the cursor.
10. Move the cursor to the approximate center of the right half of the drawing area and click to place the snapshot view.
A graphic view automatically updates. The updated view contents should appear similar to the picture below:

Snapshot Views



Place All Objects Snapshot View

Objective: Place the snapshot view resulting from the **All Objects** command.

1. Click **Place Snapshot View**  from the **Composed** toolbar.

*The **Place Snapshot View All Objects** ribbon displays.*



TIP The **View Name** list contains all of the unplaced snapshots created by the **All Objects** command and associated with the drawing's parent component. The **Place Snapshot View All Objects** ribbon initially displays the 'oldest' unplaced snapshot in the **View Name** list. Use the list, if necessary, to change what view to place.

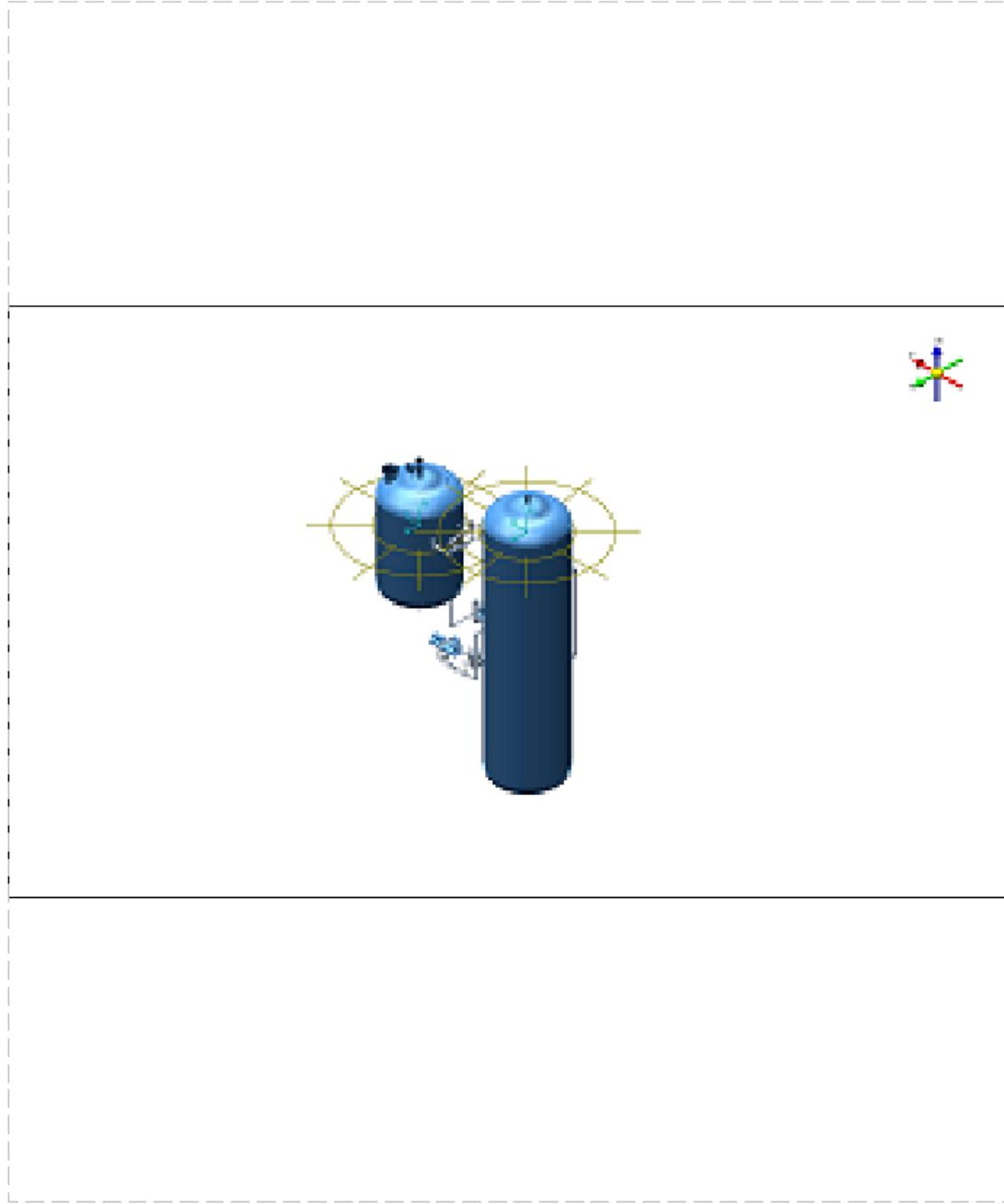
The **Place Snapshot View All Objects** ribbon preserves the **View Scale** from the placement of the **Visible Objects Only** snapshot view.

2. Move the cursor over the drawing window.

A graphic view with preview appears attached to the cursor.

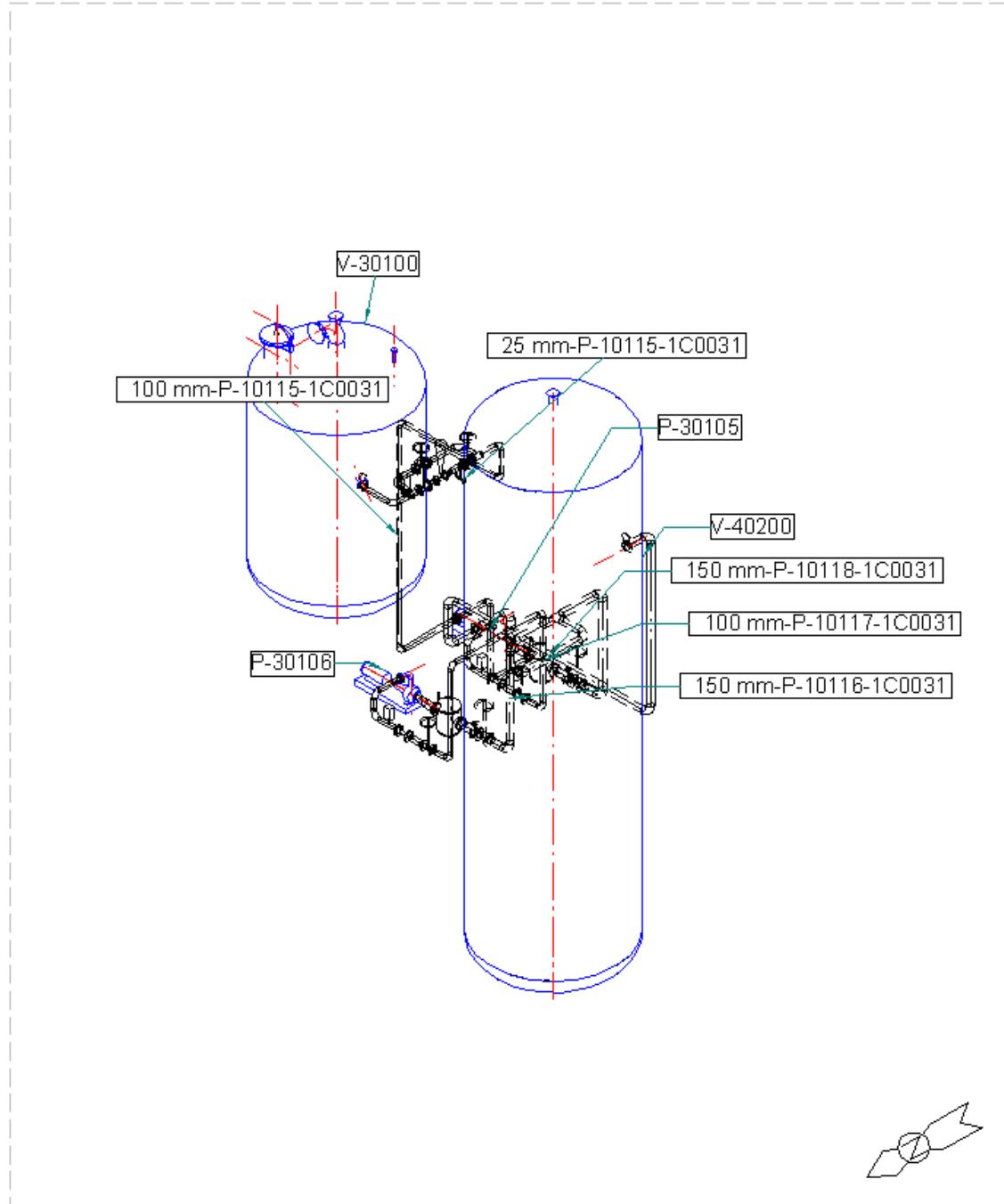
Snapshot Views

3. Move the cursor to the approximate center of the left half of the drawing area and click to place the snapshot view.



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

When the update completes, the view contents should appear similar to the picture below:



5. Notice the differences between the contents of the two graphic views. Notice that the view on the left, created with the **All Objects** command, contains objects that are completely obscured by other objects while the view on the right, created with the **Visible Objects Only** command does not display objects that are completely obscured.
6. Click **File > Exit** to exit **SmartSketch Drawing Editor**. You do not need to save the drawing because the software automatically saved during the update of the view.

Snapshot Views

7. Click the **Space** tab in the **Workspace Explorer**.
8. Expand the **Drawings Creation Labs** and **05** space folder on the **Space** tab of the **Workspace Explorer**.
9. Notice that two hidden volumes have been created by the snapshot commands. The volumes are created with the same name as the views to which they are associated.

Click **Clear View Clipping**  on the **Common** toolbar.

LAB 6

Section and Detail Views

Objective

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

- Place cutting planes on a 2D graphic view to create section views
- Place a detail envelope on a 2D graphic view to create a detail view
- Move the section and detail views to another drawing

Overview

Smart 3D lets you place section and details views as child views to other graphic views.

Section views show information similar to its parent graphic view in a different orientation.

Detail views are enlargements of the parent graphic view and often provide additional information that clarifies details about the portion of the drawing being enlarged.

Section and detail views display objects that are in the volume associated with the parent graphic view but they can use different view styles than the parent view.

To place a section view, first place a cutting plane on the parent graphic view. The cutting plane is an annotation marker that indicates where to slice a desired group of objects and from which direction to look at that slice. Cutting planes are made of one or more line segments. A cutting plane comprised of multiple line segments is referred to as a "jogged" cutting plane. Once a cutting plane has been defined, a section view displays on your cursor and may be placed by clicking anywhere in the drawing sheet. The **Section View** ribbon allows you to update the view immediately upon placement and to set other values, such as view style or scale.

To place a detail view, first place a detail envelope on the parent graphic view. Specify the detail envelope by drawing a circle or polygon around a portion of the main drawing view. Once the envelope is placed, the detail view can be placed by selecting the envelope and then clicking

Place Detail View . The **Detail View** ribbon allows you to set other values, such as view style or scale.

You can change the size of a section view by modifying the cutting plane or using the resize handles on the section view. Directly modifying the volume associated with a section view is not supported.

Section and detail views are frequently placed on a different drawing than the main view. Smart 3D allows you to move views from one drawing to another using **Move View** . If child views are moved, they retain their association with any parent views even if they are in a different drawing.

In this session you will learn how to place a cutting plane and a section view. You will learn how to place a detail envelope and a detail view. You will learn to modify section views using both the cutting plane modification and handle modification methods. You will then move the section and detail views onto a separate drawing.

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 Creation Filters\06** 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 software populates the workspace with modeled objects.

6. Click **Fit** .

The software fits all the objects into the graphic window.

Edit Drawing

Objective: Edit an existing drawing so that section and detail views can be added.

1. Switch to the **Drawing Console** window.

2. Expand the **Equipment** composed component under **Drawings\Creation Labs\06**.

*The **Drawing Console** displays two drawings called **Equipment Plan01** and **Section and Detail Views**.*

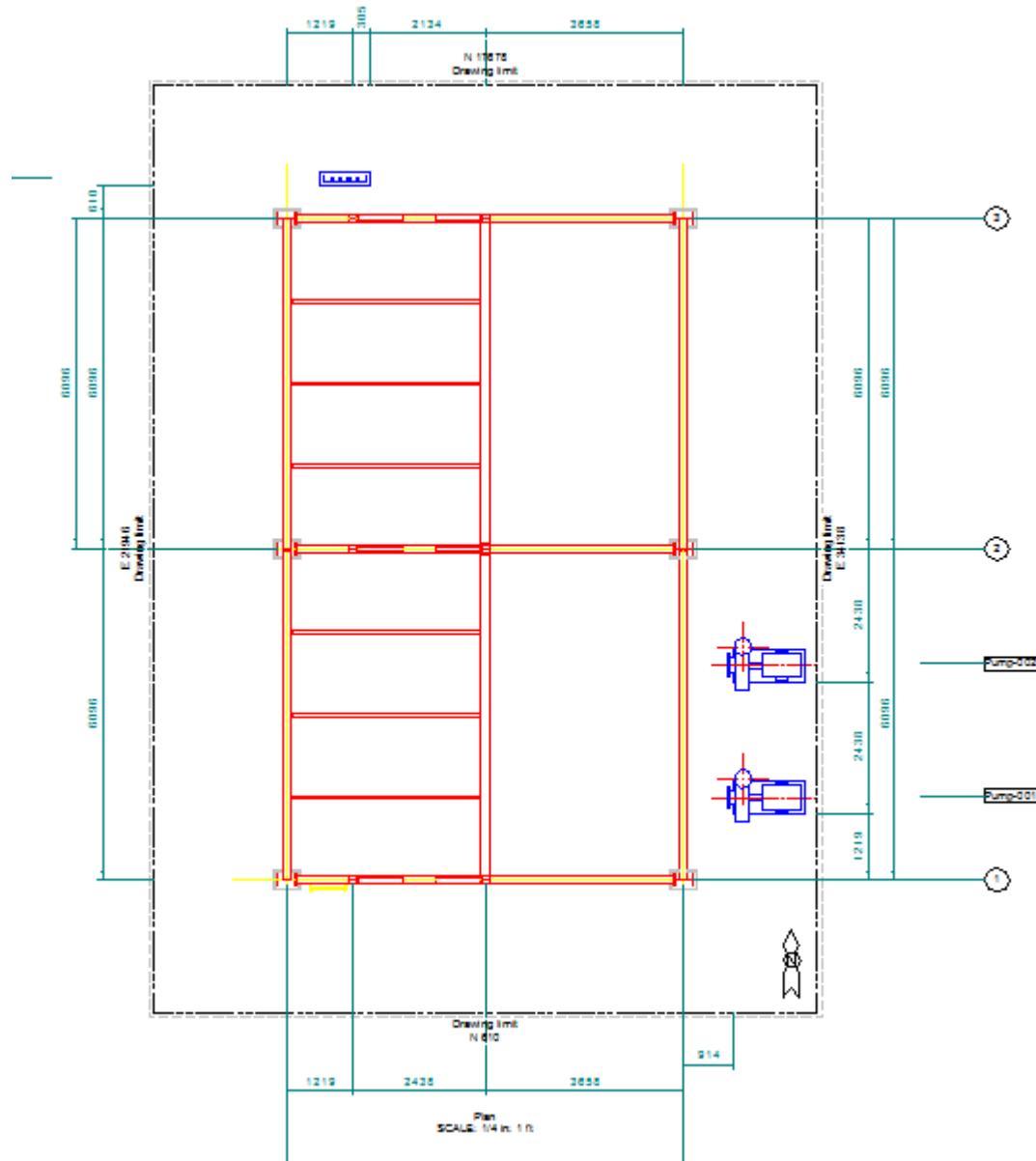
3. Right-click the drawing document **Equipment Plan01**, and select **Edit**.

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

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

5. Click **Fit** .

The main view contents should appear similar to the picture below:



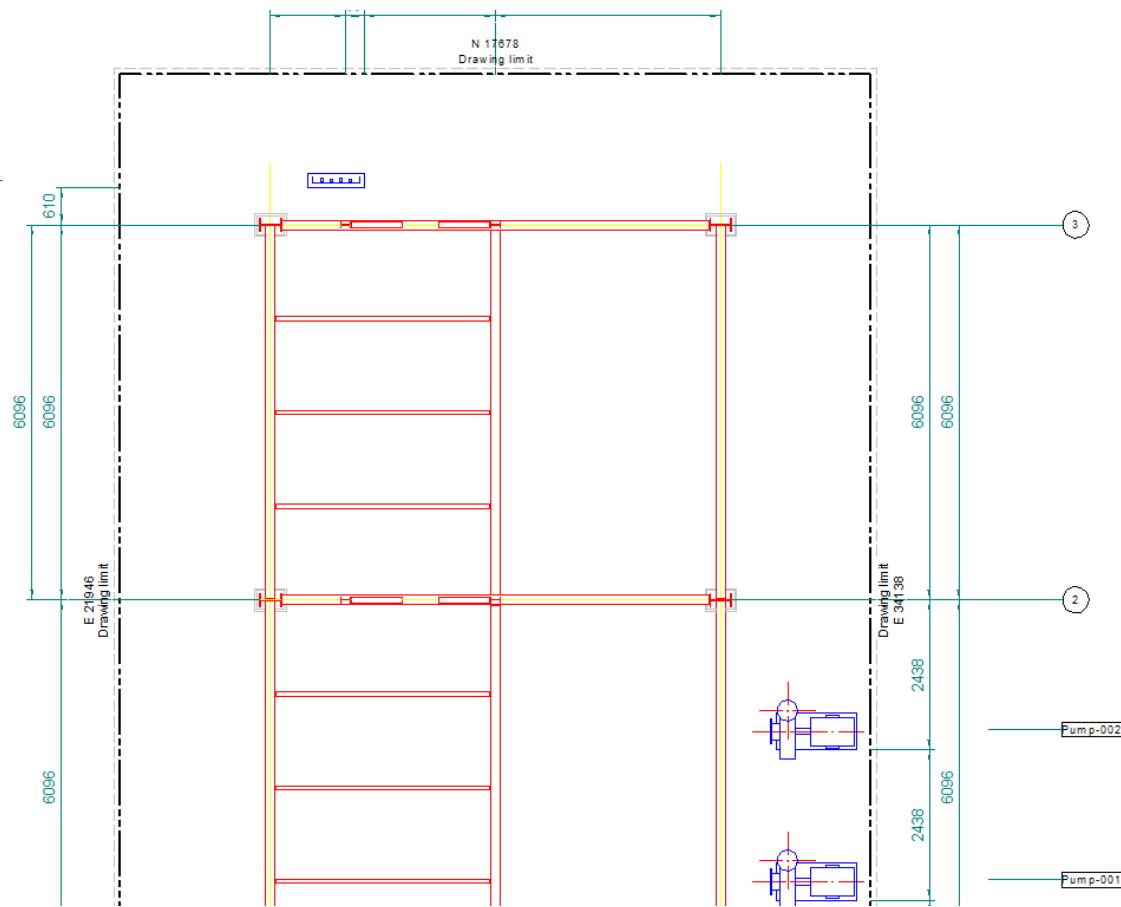
Place Cutting Plane

Objective: Place a single segment cutting plane in the graphic view.

1. Click **Zoom Area** .

Section and Detail Views

2. Drag a rectangle around the top two thirds of the main graphic view to get a closer look at the contents.



3. Click **Cutting Plane** .

The **Cutting Plane** ribbon displays.

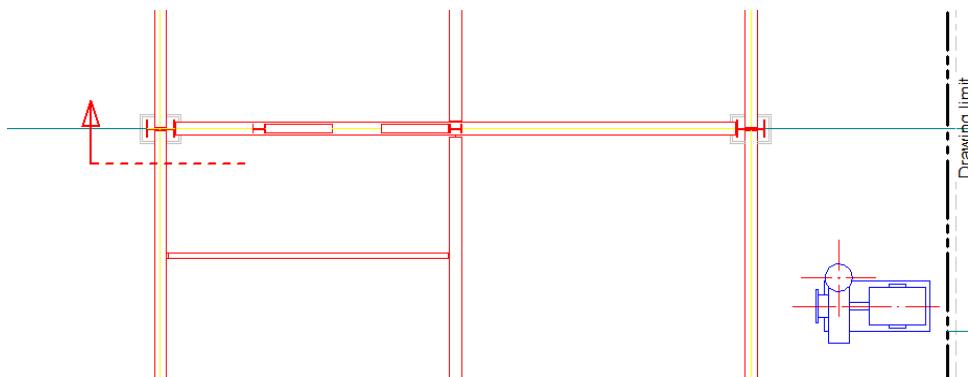
Reference 1:	<input type="text"/>	Reference 2:	<input type="text"/>
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The status bar displays **Select the drawing view that will contain the cutting plane**.

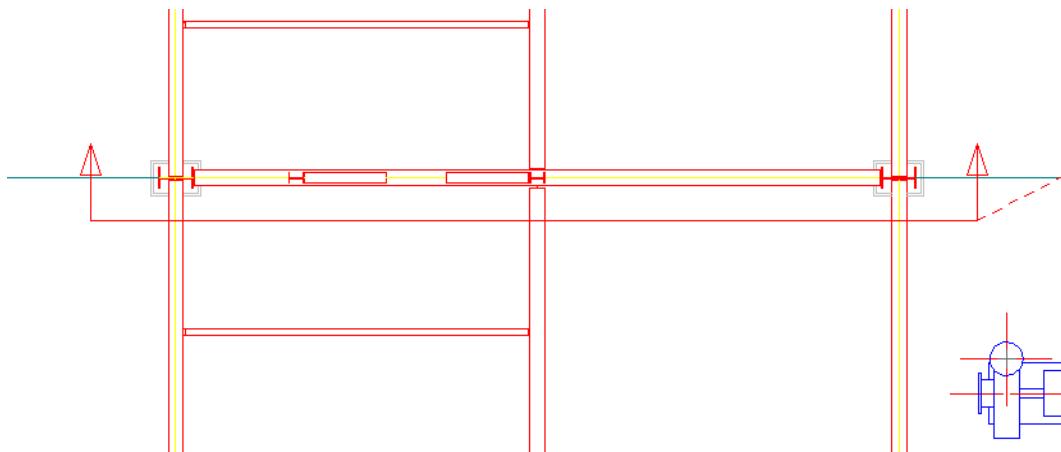
4. Select the graphic view.
5. Type **A1** in the **Reference 1** field on the **Cutting Plane** ribbon and press TAB to advance to the **Reference 2** field.
6. Type **A2** in the **Reference 2** field.

TIP To be an 'acceptable' cutting plane, the area defined during the **Cutting Plane** command must overlap some portion of the area bounded by the selected view.

7. For the first point of the cutting plane, click just below grid line 2 to the left of the rack, as shown in the picture below.



8. For the second point of the cutting plane, click to the right of the rack to produce a horizontal cutting plane, as shown in the picture below:



TIP This lab places a cutting plane comprised of one segment. However, a cutting plane is not limited to just one segment. To create a cutting plane with more than one segment, keep clicking points in the graphic window. When the placement of points is complete, right-click to signal the end of cutting plane point placement.

TIP The cutting plane symbology will appear bold during placement when the segment is horizontal or vertical

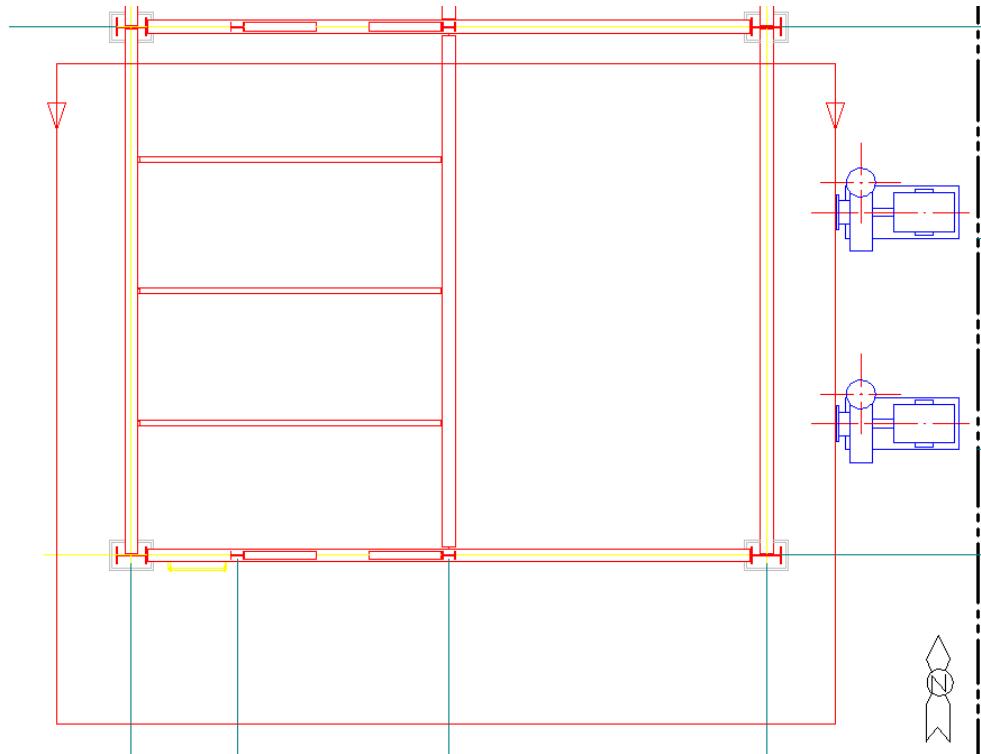
9. While the cursor is within the drawing window, right-click to complete the placement of cutting plane points, and enter the step to define the depth of the cutting plane.

The **Cutting Plane** ribbon displays a new field called **Depth** on its right side.

10. Type **25** in the **Depth** field and press TAB.

The value **25' 00"** displays in the field and is locked.

11. Move the cursor below the cutting plane to define the depth direction.



12. Click in the drawing window to complete the cutting plane placement.

The style of the cutting plane changes, a view is attached to the end of the cursor, and the Place Section View ribbon displays.



TIP The **View Style** list initially displays the scale of the parent view.

TIP The section view must be placed right after placement of the cutting plane. Unlike for detail views, there is no option to place a section view at a later time.

Place and Update Section View

Objective: Place the section view after completion of the cutting plane and update it.

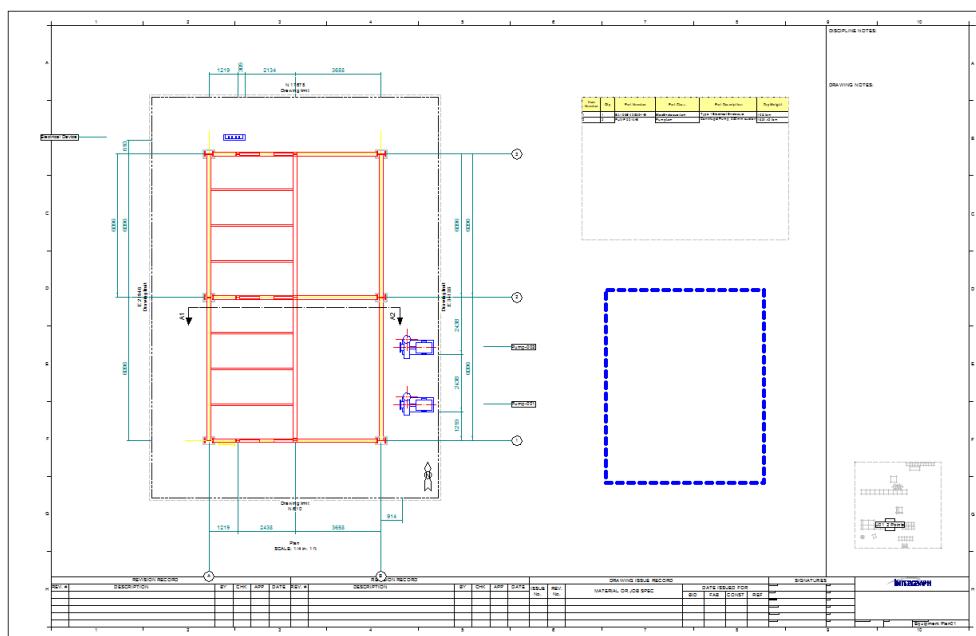
1. Select the **Update section** box on the **Place Section View** ribbon so that the section view automatically updates after placement.
2. Select **More** from the **View Style** list.
*The **Select View Style** dialog box displays.*
3. Select **Orthographic\Equipment Elevation** on the **Select View Style** dialog box.
4. Click **OK** on the **Select View Style** dialog box.

5. Select Architectural Scales and 3/16 in: 1 ft from the View Scale lists.



6. Click **Fit**

7. Click to place the section view in the clear space under the report view.

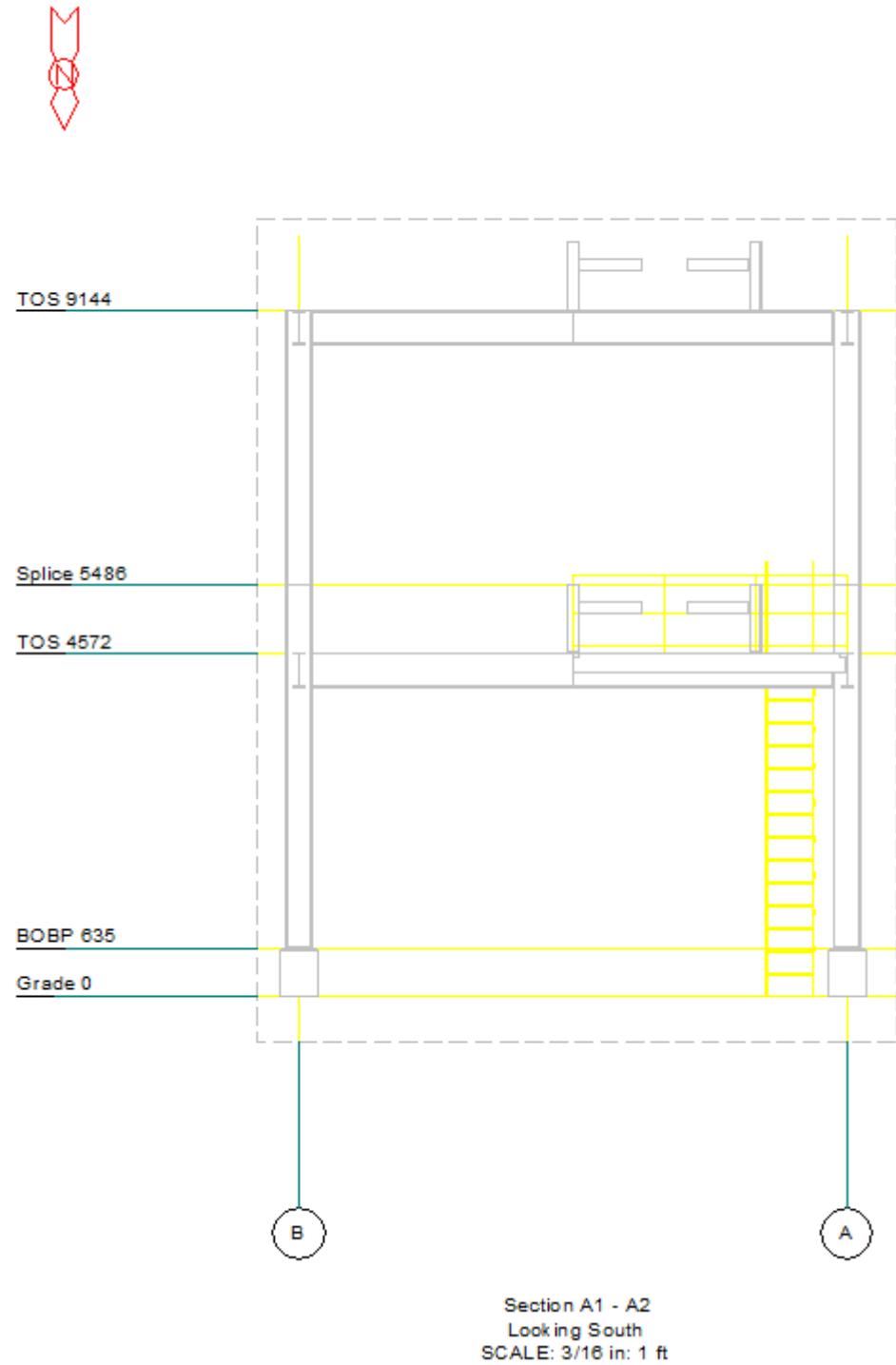


The view automatically updates. A message displays in the status bar.

Updating view 'Section A1-A2'. This may take some time...

Section and Detail Views

The updated section view contents should appear similar to the picture below:



TIP The section view will use the same restrict filter as the parent view if one has been specified.

8. Switch to the **Smart 3D** window.
9. Expand the **Drawings Creation Labs** and **06** space folder on the **Space** tab of the **Workspace Explorer**.

*A new volume has been created in the same space folder as the parent volume on the **Space** tab of the **Workspace Explorer**. The name of the volume includes the **Reference 1** and **Reference 2** terms from the cutting plane.*

The section volume now covers the southern half of the rack.

TIP The section volume that is placed in the model is automatically associated with the section view. The section volume is a ‘volume by path’ type volume. The width and depth of the section volume is controlled by the cutting plane. The height of the section volume matches the height of the parent view’s associated volume.

Modify Section View

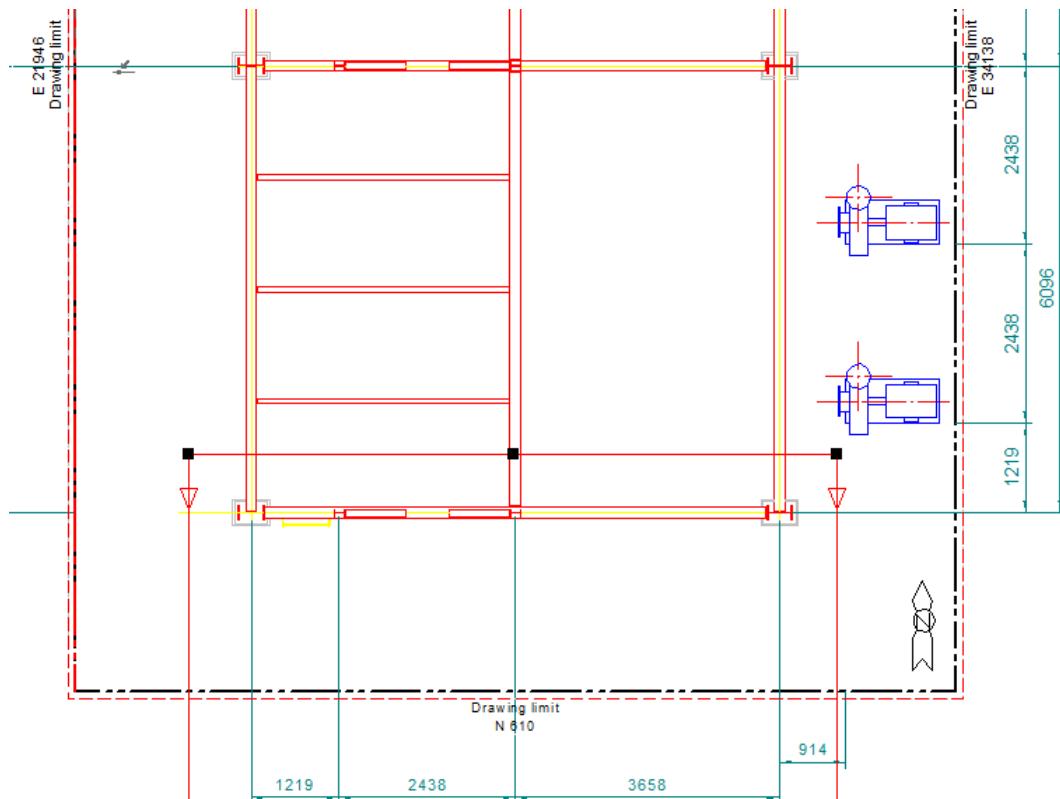
Objective: Modify the size of a section view by modifying the cutting plane and the resize handles on the section view. Demonstrate that the section volume is resized as a result of these changes.

1. Switch back to the **SmartSketch Drawing Editor** window.
2. Click **Zoom Area** .
3. Drag a rectangle around the bottom half of the main graphic view to get a closer look. Make sure to include the cutting plane in the window.
4. Right-click to exit **Zoom Area**.
5. Click the cutting plane

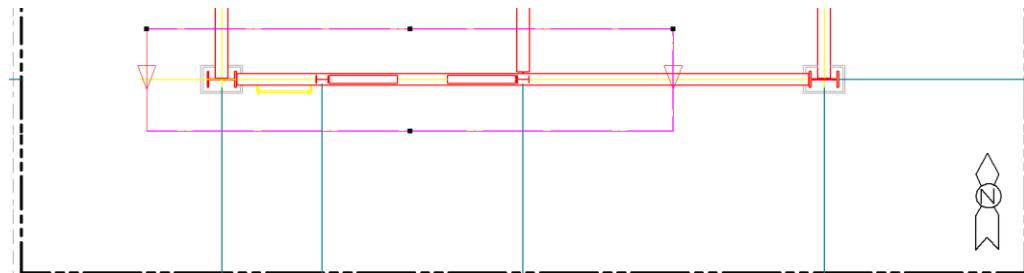
Section and Detail Views

The cutting plane changes symbology and displays handles along its length and depth line.

6. Mouse down on the cutting plane segment and drag it due South in the drawing so that the cutting plane segment is just above the bottom-most column line in the view.

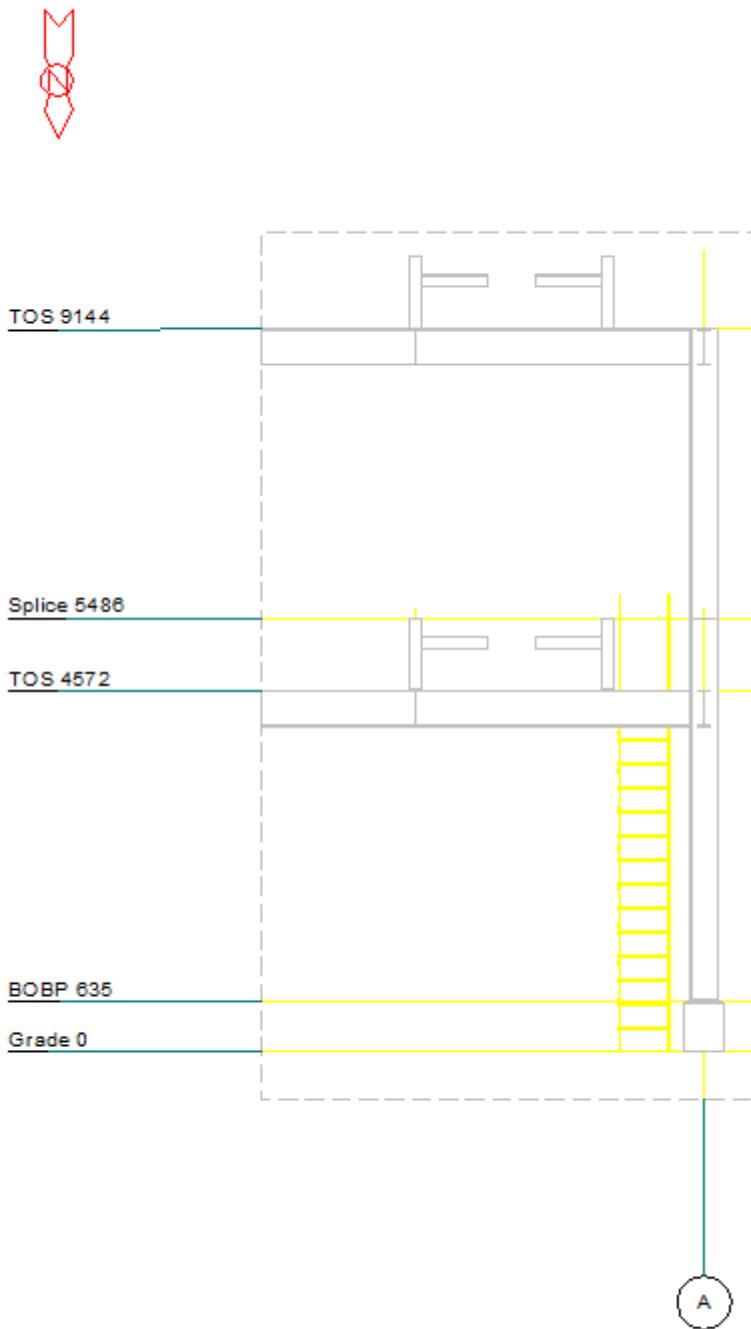


7. If necessary, click on the **Vertical View Scroll Bar** to move the view down to see the depth line of the cutting plane.
8. Drag the handle on the depth line so that the depth line is just below the bottom-most column line in the view.
9. Mouse down on the right handle on the cutting plane segment, and drag it to the left so that the segment is about 3/4 of its original length.



10. Click **Finish** on the **Cutting Plane Modify** ribbon to complete the modification of the cutting plane and update the section view (because **Update Section** is still selected on the ribbon).
11. Click **Fit** .

The section view is narrower to match the size of the cutting plane.

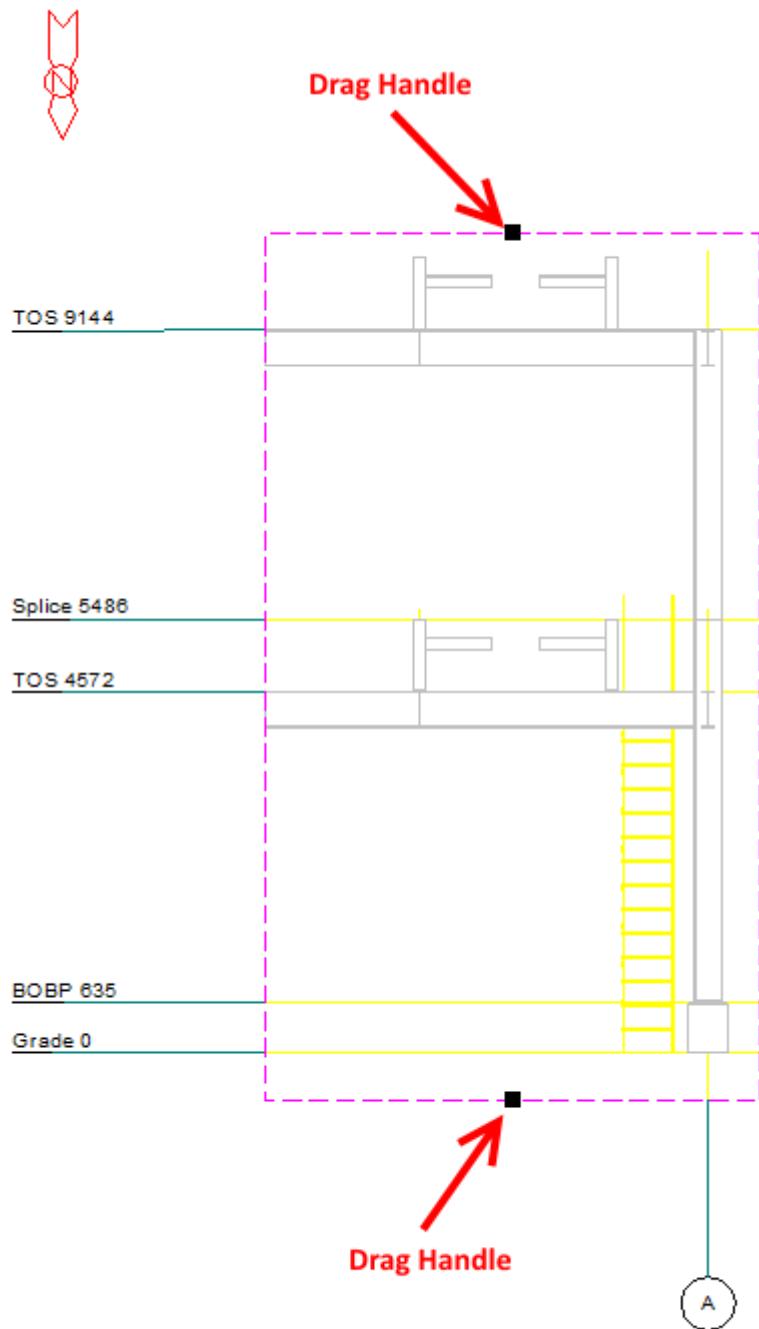


Section A1 - A2
Looking South
SCALE: 3/16 in: 1 ft

12. Click on the section view.

Section and Detail Views

Handles display on the top and the bottom of the section view.



Section A1 - A2
Looking South
SCALE: 3/16 in: 1 ft

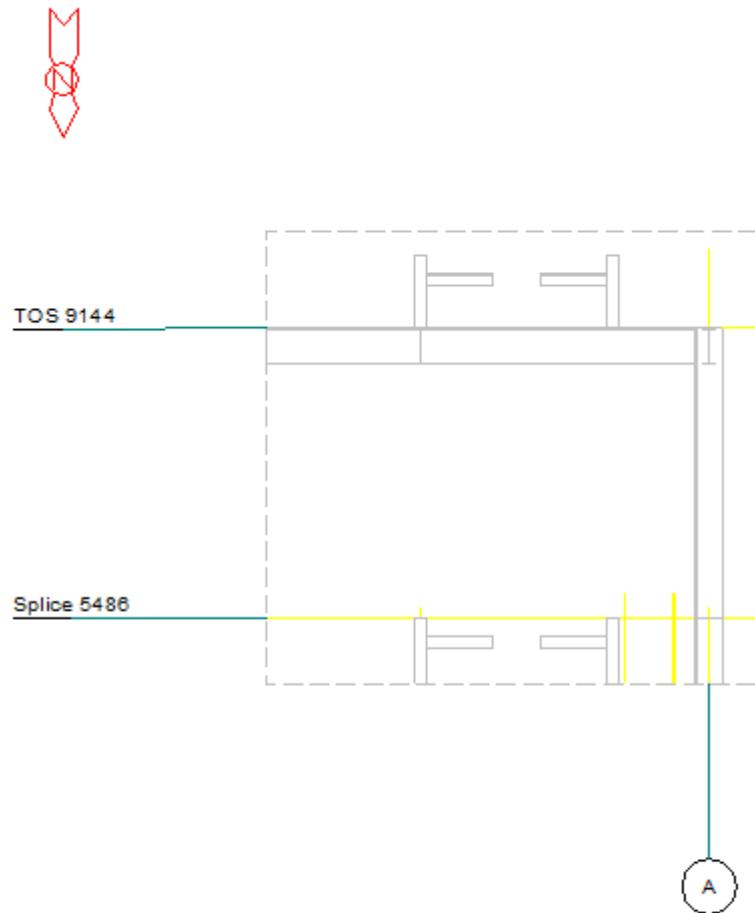
13. Mouse down on the bottom-most handle, and drag it up so that the view is about half as tall.



14. Click **Finish** on the **Cutting Plane Modify** ribbon to complete the modification of the section view and update it.

Section and Detail Views

The updated section view contents should appear similar to the picture below:

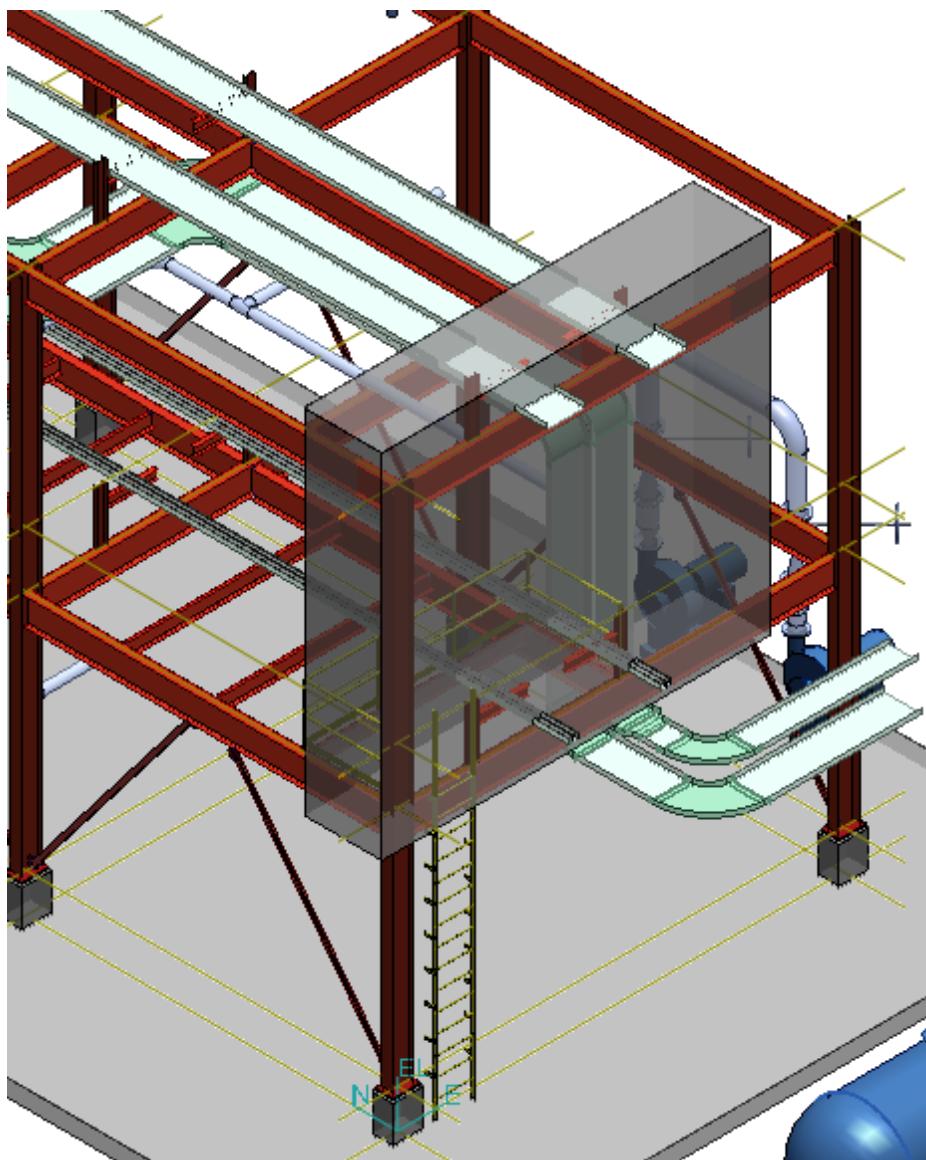


15. Switch to the **Smart 3D** window.

16. In the graphic window, right-click on **U01 2 Points** and select **Hide**.

*The volume **U01 2 Points** no longer is displaying so that the section volume can be clearly seen. The section volume is smaller to match the modifications made in the drawing.*

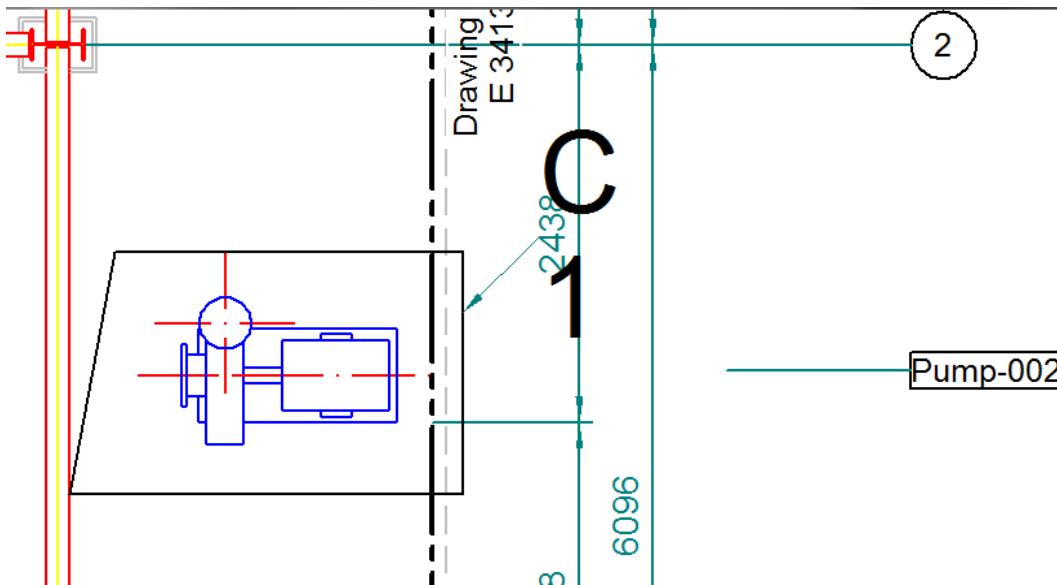
NOTE Modifying the section volume directly is not supported.



Place Detail Envelope

Objective: Place a polygon-shaped detail envelope in the graphic view.

1. Switch to the **SmartSketch Drawing Editor** window.
 2. Click **Detail Envelope** 
- The **Detail Envelope** ribbon displays.*
- The status bar displays **Select the drawing view for which to place a detail envelope**.*
3. Select the main graphic view.
 4. Ensure that **Polygon Shape**  is selected on the **Detail Envelope** ribbon.
 5. Type **C** in the **Reference mark** field and press TAB to advance to the **Additional callout text** field.
 6. Type **1** in the **Additional callout text** field.
 7. Place a four-sided detail envelope around **Pump-002** by clicking four points around the object. Make sure that the fourth and first points are at the same position.



*The style of the detail envelope changes, a view with a preview is attached to the end of the cursor, and the **Detail View** ribbon displays.*



TIP The ribbon for placing detail views does not have the feature to automatically update the view after placement as in the ribbon for placing section views.

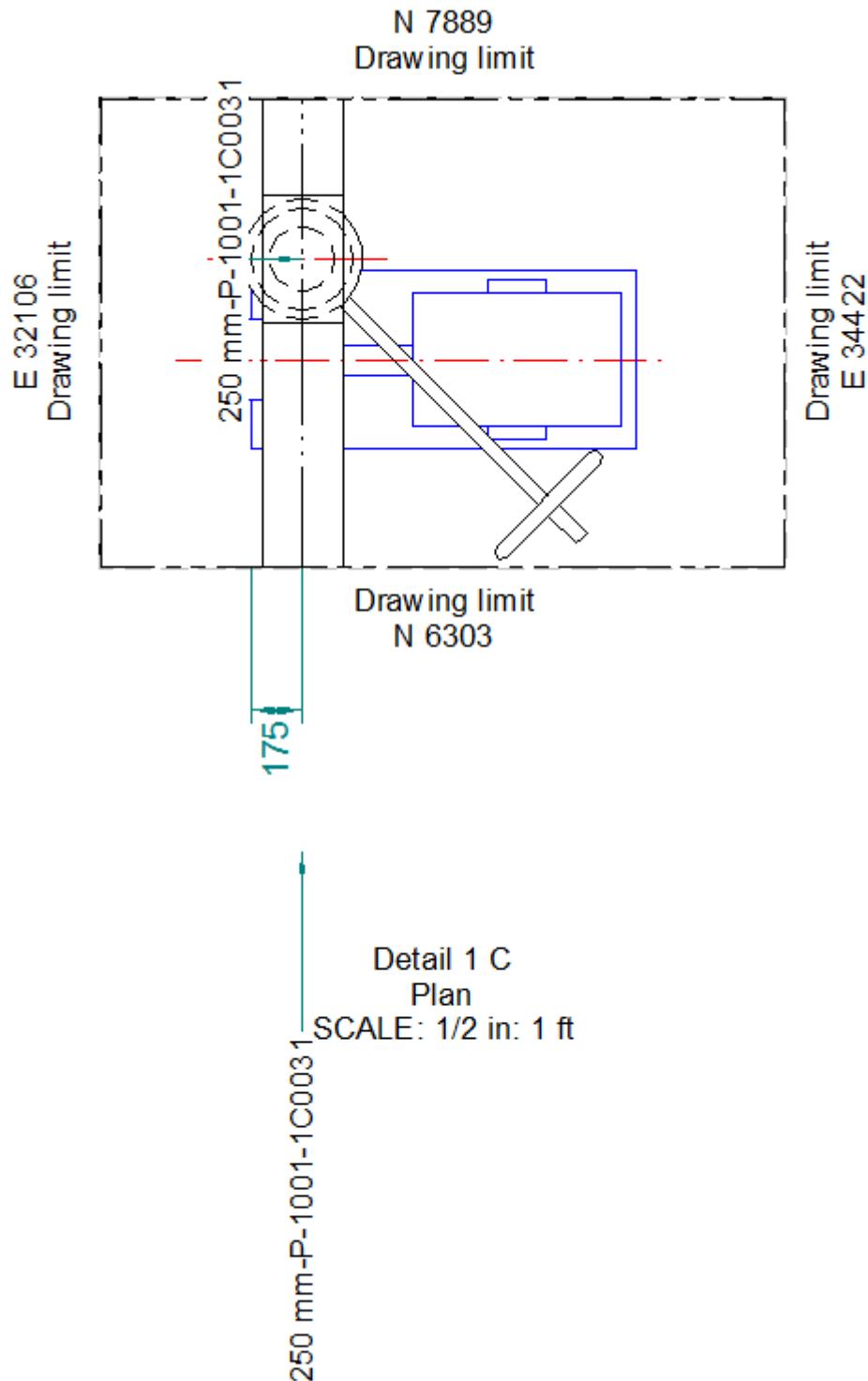
Place and Update Detail View

Objective: Place the detail view right after completion of the detail envelope.

1. Select **More** from the **View Style** list on the **Detail View** ribbon.
2. Select **Orthographic\Piping Plan** on the **Select View Style** dialog box.
3. Click **OK** on the **Select View Style** dialog box.
4. Select **Architectural Scales** and **1/2 in: 1 ft** from the **View Scale** list.
5. Click in the clear space above the key plan view to place the detail view.
6. Right-click the detail view boundary, and select **Update View**.

Section and Detail Views

When the update completes, the detail view contents should look like the picture below:

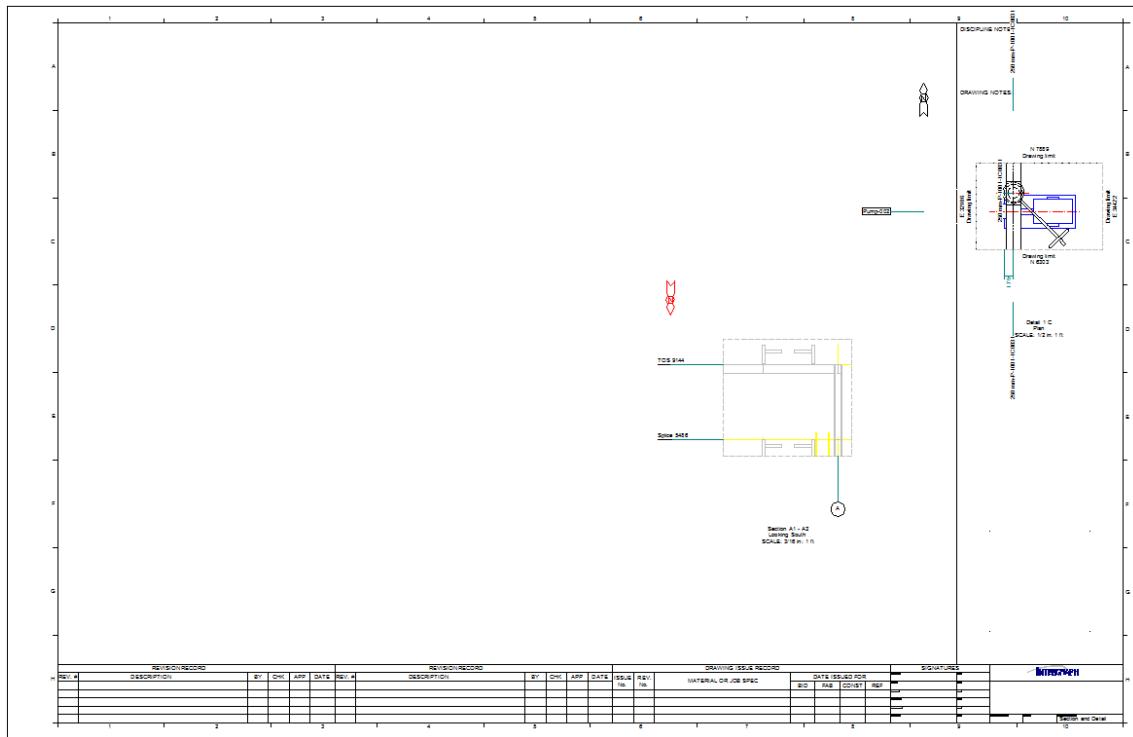


Move Section and Detail Views to Another Drawing

Objective: Place the detail view right after completion of the cutting plane.

1. Press CTRL and select the section and detail views.
 2. Click **Move View**  from the **Composed** toolbar.
- The **Move view** dialog box displays.*
3. Select the drawing **Drawings\Creation Labs\06\Equipment\Section and Detail Views** in the **Move view** dialog box.
 4. Click **OK** on the **Move view** dialog box.
 5. When the move completes, click **File > Exit** to exit **SmartSketch Drawing Editor**. It is not necessary to save the drawing because it was auto-saved during the move of the views.
 6. Switch to the **Drawing Console** window.
 7. Right-click on the drawing **Section and Detail Views** and select **Edit**.
- The **SmartSketch Drawing Editor** window displays.*
8. Maximize the drawing window in **SmartSketch Drawing Editor**.
 9. Click **Fit** .

The drawing contents should appear similar to the picture below:



Section and Detail Views

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

Editing Drawing Properties

Objective

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

- Edit properties at the root, folder, or drawing level
- Create drawing and component level notes
- Create, edit, and delete revision information

Overview

Smart 3D allows users to set properties for drawings and nodes at any level in the drawing hierarchy. The software propagates properties from parent nodes to child nodes and drawings. For example, you can display the **Properties** dialog box for a folder named "Isometric Drawings." If you set the **Division Location** to "Huntsville, Alabama," the software pushes this value to the items contained within the Isometric Drawings folder.

You can specify inheritance for each item with the **Properties** dialog box. Select **Override** to prevent a property from inheriting from the parent. You can provide a new, overriding value for the property. This new value then propagates to other items deeper in the hierarchy.

You can force override properties on all child nodes, canceling the previous override settings.

Properties for drawings are classified into tabs:

- **General** - Shows general properties for a drawing item, such as the size of drawing.
- **Title Area** - Shows properties for the title area of the drawing, such as the company name and the drawing name.
- **Signature Area** - Shows properties for the signature area of drawings, such as Drawn by and Approved by.
- **Style** - Shows properties that set the style for a drawing, such as the coordinate system and the WBS project.
- **Custom** - Shows user-specified custom drawing properties.
- **Notes** - Shows notes for a folder, component or a drawing. Notes from parents in the hierarchy are accumulated and available in the read-only Parent Notes section of this tab. Notes for the current item are in the Notes section of this tab.
- **Issue** - Shows issue properties for a drawing, such as the issue number, description, and date of issue. If a drawing is issued more than once, there can be multiple entries for the same drawing.
- **Revision** - Shows revision properties for a drawing, such as revision marks, minor revision numbers, and descriptions. It also allows you to add or edit a record for several selected documents, or for all documents under a component. You can delete individual revision records. If a drawing is revised more than once, each revision will display for that drawing.

In this session, we will look at drawing properties in Smart 3D. We will demonstrate how you can create revision information for your drawing. Then we will discuss how such data can be appended, edited, and/or deleted from a project drawing.

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 Creation Filters\07** 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 software populates the workspace with modeled objects.

6. Click **Fit** .

The software fits all the objects into the graphic window.

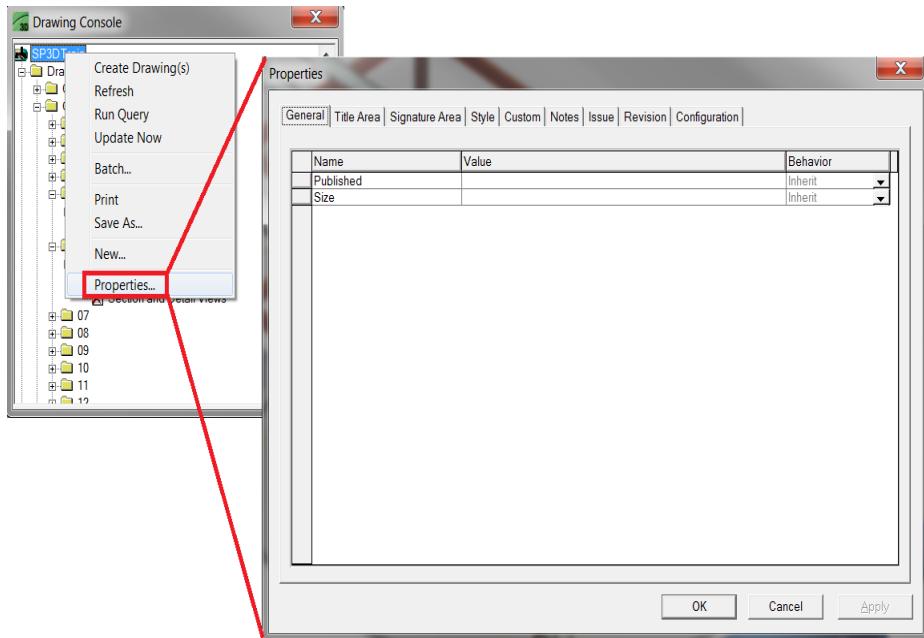
Edit Properties on Folder

Objective: Edit properties on a folder and show how they are pushed down to items below in the Drawings and Reports hierarchy.

1. Switch to the **Drawing Console** window.

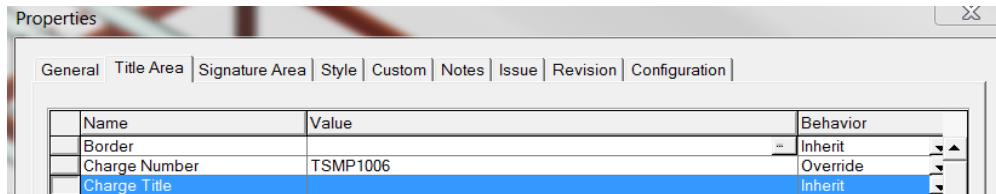
2. Right-click the folder **Drawings\Creation Labs\07**, and select **Properties**.

The **Properties** dialog box displays.



3. Click the **Title Area** tab on the **Properties** dialog box.
4. Type **TSMP1006** in the **Charge Number** field.
5. Click in any other field.

The **Behavior** for **Charge Number** changes from **Inherit** to **Override**.



TIP If the **Behavior** is **Inherit**, the property value comes from items higher in the hierarchy. If the **Behavior** is **Override**, the value present for the property propagates to other items deeper in the hierarchy unless it encounters another item with an **Override Behavior**. If the **Behavior** is set to **Force Override**, the property setting is forced to items deeper in the hierarchy, even if they are set to **Override**.

6. Click the **Notes** tab.

- Type **Folder Level Notes** in the **Notes** field.



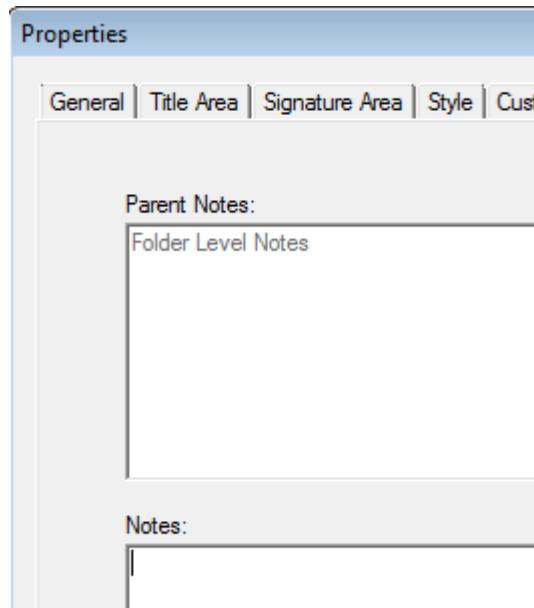
- Click **OK** on the **Properties** dialog box.

Edit Notes on a Component

Objective: Edit properties on a composed component node and show how the properties set at the folder node are inherited.

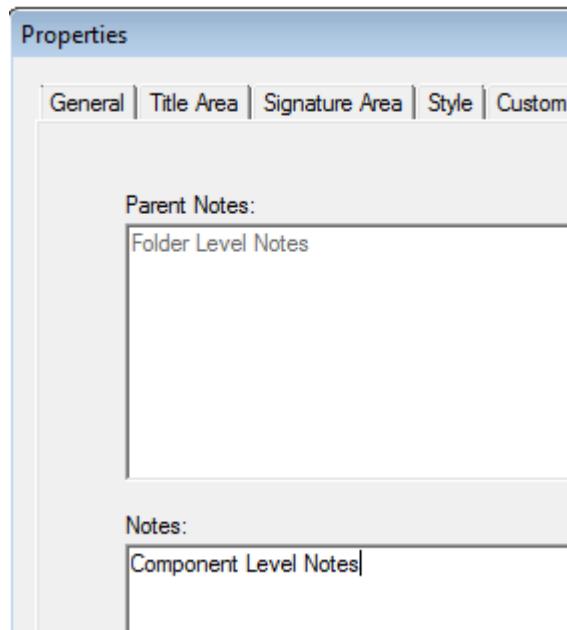
- Expand the folder **Drawings\Creation Labs\07**.
- Right-click on the composed component **Equipment** in the **Drawings\Creation Labs\07** folder, and select **Properties**.
*The **Properties** dialog box displays.*
- Click the **Title Area** tab.
*The **Charge Number** property shows the property added at the root level. The **Behavior** is set to **Inherit**.*
- Click the **Notes** tab.

The notes entered at the folder level display in the **Parent Notes** section.



TIP Text that displays in the **Parent Notes** field is inherited from higher in the hierarchy. It is presented read-only and cannot be overridden.

5. Type **Component Level Notes** in the **Notes** field.

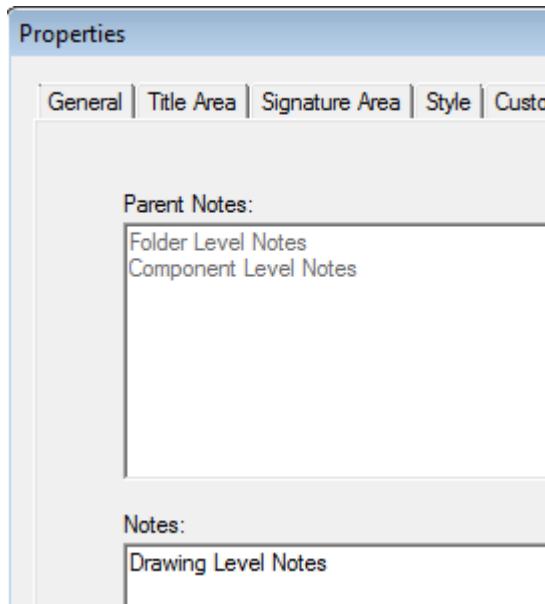


6. Click **OK** on the **Properties** dialog box.

Edit Notes on a Drawing

Objective: Edit properties on the document and show how the properties set higher in hierarchy are inherited.

1. Right-click the drawing **Equipment Plan01** in **Drawings\Creation Labs\07\Equipment** and select **Properties**.
*The **Properties** dialog box displays.*
2. Click the **Title Area** tab.
*The **Charge Number** property shows the property added at the root level. The **Behavior** is set to **Inherit**.*
3. Click the **Notes** tab.
4. Type **Drawing Level Notes** in the **Notes** field.



5. Click **OK** on the **Properties** dialog box.

Update and Review Drawing with Property Changes

Objective: Update and review a drawing with property changes.

1. Right-click **Equipment Plan01** and select **Update Now**.

TIP If property changes are indicated for a drawing, the **Update Now** command only updates the property changes to the border and does not update the drawing graphics. You must perform a second update to synchronize the drawing's graphics to the model.

The intent of this implementation is to avoid updating graphics if only a property change has been made to the drawing. The drawing receives a green check mark after the update of the property changes.

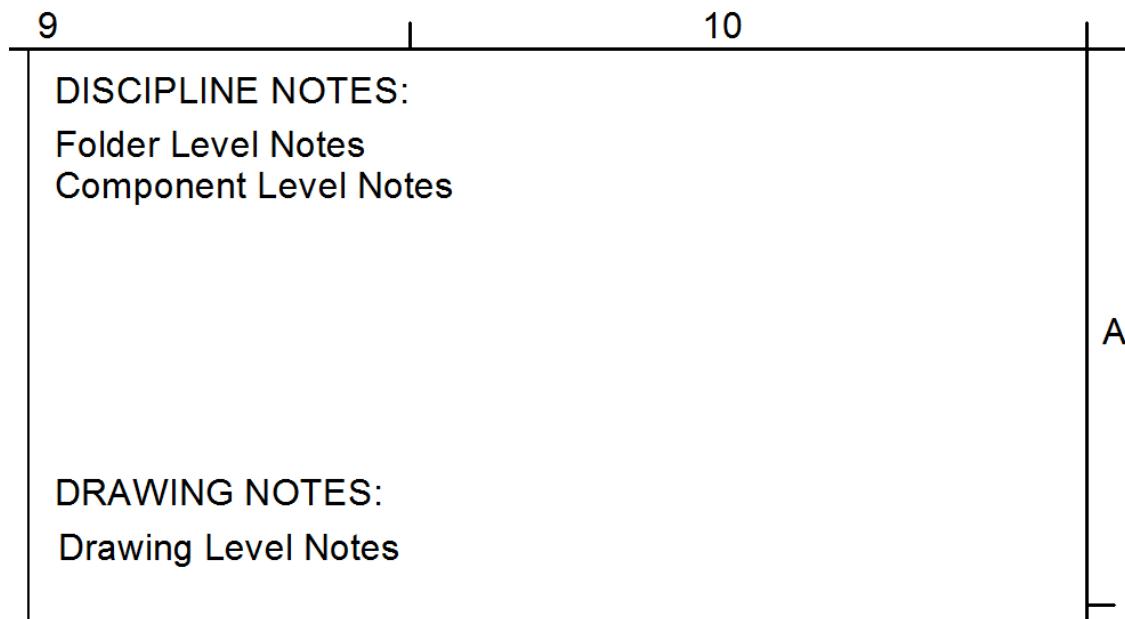
However, if the drawing is flagged for both property and modeling changes, the green check mark after performing the property change update can mislead you to think the graphics have been updated also.

2. When the update completes (as shown by the status bar message in the lower left corner of the **Smart 3D** window), right-click the drawing **Equipment Plan01**, and select **Edit**.

*The **SmartSketch Drawing Editor** window displays.*

3. Maximize the drawing window in **SmartSketch Drawing Editor**.
4. Click **Fit** .
5. Click **Zoom Area** .
6. Drag a rectangle around the upper right quadrant of the drawing border to get a closer look at the notes added to the drawing.

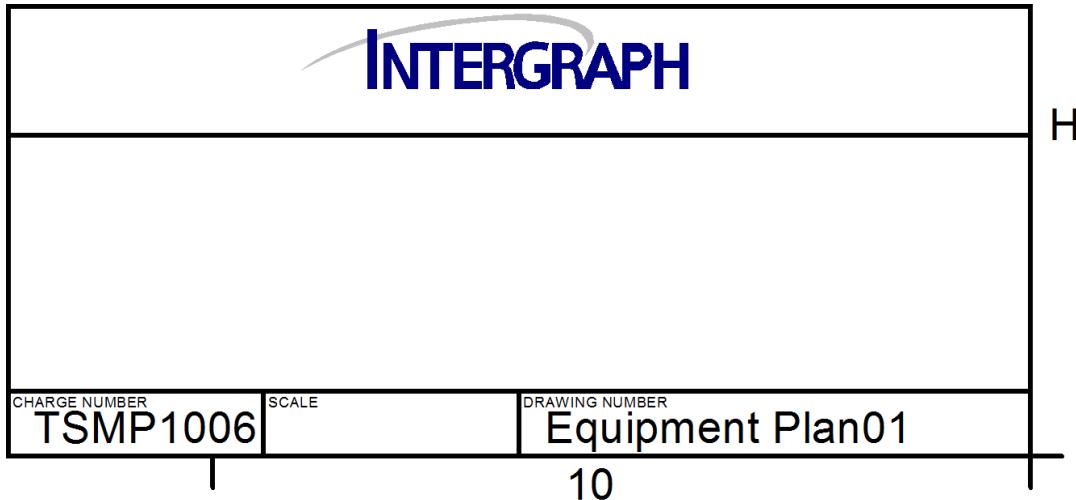
The results should look similar to the picture below:



TIP The notes are displayed by border labels saved in the border template.

7. Click **Fit** .
8. Click **Zoom Area** .
9. Drag a rectangle around the lower right quadrant of the drawing border to get a closer look at the title block changes added to the drawing.

The results should look similar to the picture below:



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

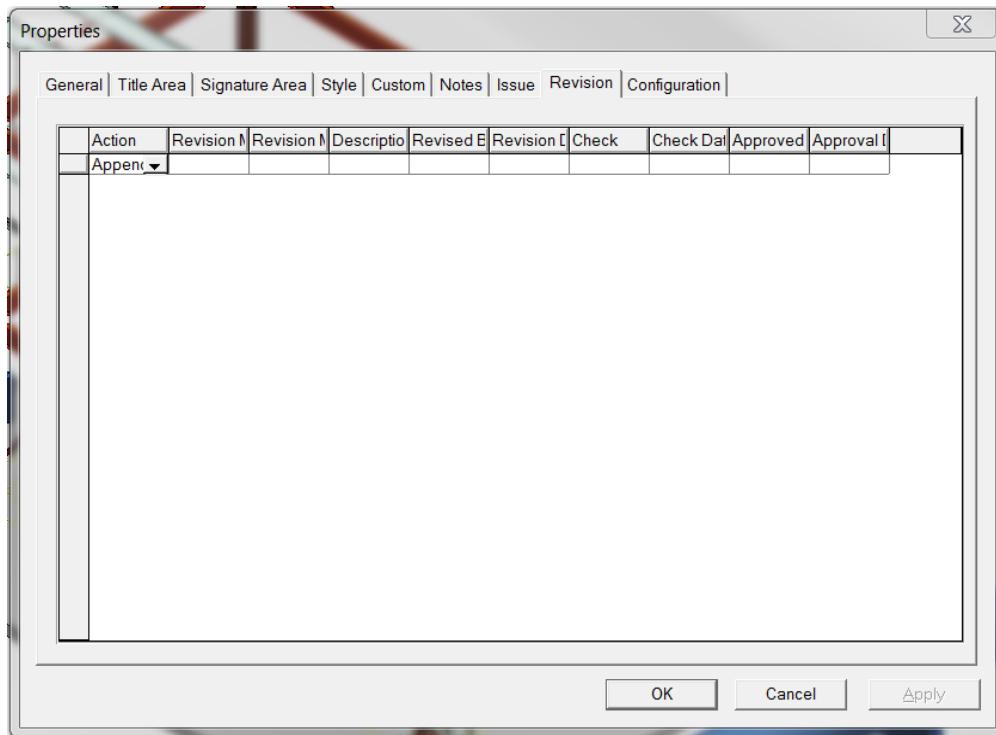
Append Revision Records from a Component

Objective: Add revision records to documents from a composed component.

1. Switch to the **Drawing Console** window.
2. Right-click on the composed component **Equipment** in the **Drawings\Creation Labs\07** folder and select **Properties**.

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

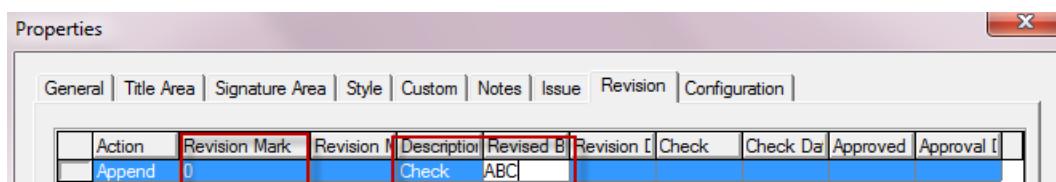
- Click the **Revision** tab.



TIP There are two values in the **Action** list:

- **Append Record** (the default value) - Adds a new row to the revision record of all accessible documents that are deeper in the hierarchy. The software populates the added row with the data that you entered in the cells before clicking **Apply** or **OK**.
- **Edit Last Record** - Modifies the last row in the revision record of all accessible documents that are deeper in the hierarchy. The software populates the last row with the data that you entered in the cells before clicking **Apply** or **OK**.

- Click the lowest cell in the **Revision Mark** column (this is the column to the right of the **Action** column).
- Type **0** and press TAB twice.
*The cursor advances to the lowest cell in the **Description** column.*
- Type **Check** and press TAB once.
*The cursor advances to the lowest cell in the **Revised By** column.*
- Type **ABC**.



- Click **Apply** on the **Properties** dialog box.

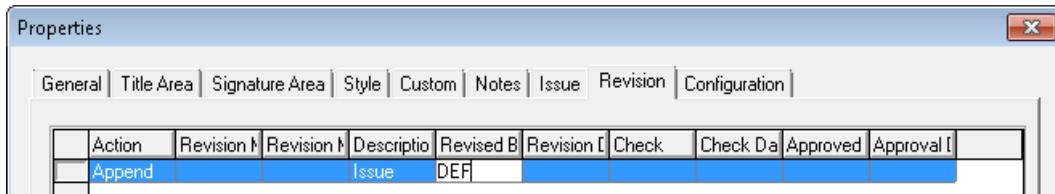
Editing Drawing Properties

The values disappear from the cells.

9. Click the lowest cell in the **Description** column.
10. Type **Issue** and press TAB once.

*The cursor advances to the lowest cell in the **Revised By** column.*

11. Type **DEF**.



TIP Notice that no value was assigned for **Revision Mark**. There is a rule for assigning a new revision mark to the documents when using the **Append Record** action. The default rule for adding a new revision mark to a record is to add one to the existing revision mark with the largest positive integer. If no previous revision mark uses a positive integer, the next revision mark is set to 1.

While you can type in your own preferred values to override the rule, the software does not support any other rule for automatically assigning revision marks.

12. Click **OK** on the **Properties** dialog box.

Notice that the status of the Equipment Plan01 drawing changes from up-to-date to out-of-date, as indicated by the red X next to the drawing.

Edit Revision Records on a Drawing

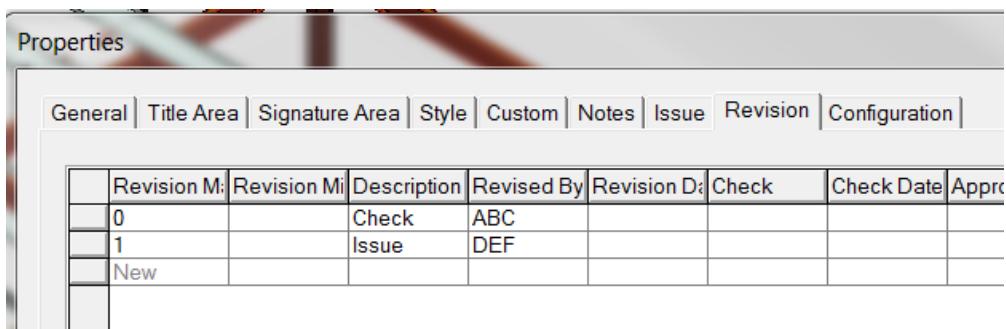
Objective: Add revision records to a document directly.

1. Right-click the drawing **Equipment Plan01** in **Drawings\Creation Labs\07\Equipment** and select **Properties**.

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

2. Click the **Revision** tab.

The revision information appended from the parent component displays in the revision record of the drawing.



3. Double-click the lowest cell in the **Revision Mark** column. This cell has the term **New** in it.
The software automatically populates the cell with the next number in the series, in this case, the number 2.
4. Press TAB twice to advance to the lowest cell in the **Description** column.
5. Type **Final** and press TAB once to advance to the lowest cell in the **Revised By** column.
6. Type **GHI**.

	Revision M#	Revision M#	Description	Revised By	Revision D#	Check	Check Date	Approved E	Approval D
	0		Check	ABC					
	1		Issue	DEF					
	2		Final	GHI					

7. Click **OK** on the Properties dialog box.

Update and Review Revision Record Changes

Objective: Update the border area of the drawing to show the revision record changes.

1. Right-click **Equipment Plan01** in the **Drawing Console** window and select **Update Now**.
2. When the update completes (as shown by the status bar message in the lower left corner of the **Smart 3D** window), right-click on the drawing **Equipment Plan01** and select **Edit**.
*The **SmartSketch Drawing Editor** window displays.*
3. Maximize the drawing window in **SmartSketch Drawing Editor**.
4. Click **Fit**
5. Click **Zoom Area**
6. Drag a rectangle around the lower left quadrant of the drawing border to get a closer look at the revisions added to the drawing.

The results should look similar to the picture below:

REVISION RECORD					
REV. #	DESCRIPTION		BY	CHK	APP
2	Final		GHI		
1	Issue		DEF		
0	Check		ABC		

TIP The revisions are displayed by border labels saved in the border template.

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

Edit the Last Revision Record on Multi-Selected Drawings

Objective: Edit the last revision record on a select set of documents with one operation.

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

*The drawings in **Drawings\Creation Labs\07\Equipment** appear in the **Document List**.*

2. Press CTRL and click the **Equipment Plan01** and **Equipment Plan02** drawings in the **Document List**.

TIP It is not possible to multi-select drawings in the **Drawings Console** window.

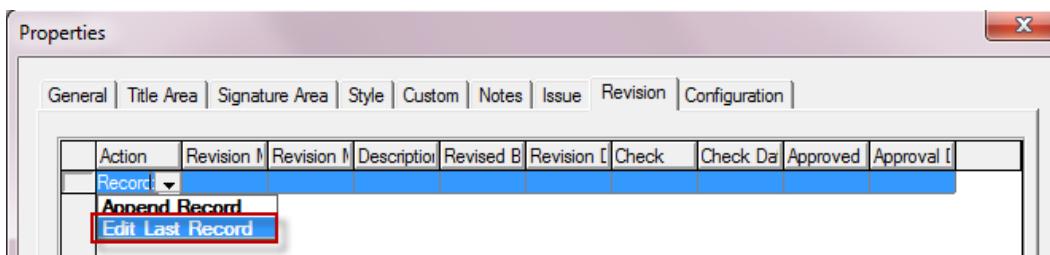
3. Right-click over the two highlighted drawings and select **Properties**.

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

4. Click the **Revision** tab.

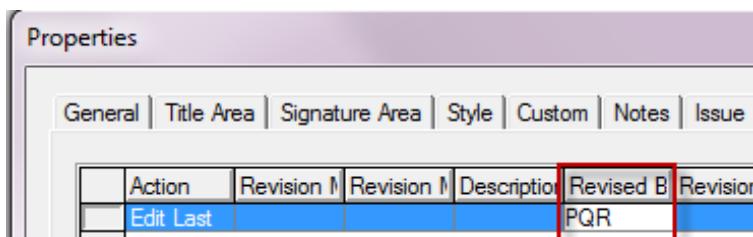
*Notice that when multiple documents are selected, the **Revision** tab looks the same as when a component is selected.*

5. Select **Edit Last Record** from the **Action** list.



6. Click in the lowest cell in the **Revised By** column.

7. Type **PQR**.



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

Notice that the status of the Equipment Plan01 drawing changes from up-to-date to out-of-date, as indicated by the red X next to the drawing.

9. Click in the white space in the **Document List**.

The software clears the selection from the two drawings.

10. Right-click **Equipment Plan01** in the **Document List** and select **Properties**.

The **Properties** dialog box displays.

- Click the **Revision** tab.

The cell entry in the **Revised By** column displays **PQR** for the last revision record, in this case **Revision Mark 2**. The value used to be **GHI**.

	Revision M	Revision M	Description	Revised By	Revision D.	Check	Comments
0			Check	ABC			
1			Issue	DEF			
2			Final	PQR			
New							

- Click **Cancel** on the **Properties** dialog box.

- Right-click **Equipment Plan02** in the **Document List** and select **Properties**.

The **Properties** dialog box displays.

- Click the **Revision** tab.

The cell entry in the **Revised By** column displays **PQR** for the last revision record, in this case **Revision Mark 1**. The value used to be **DEF**.

	Revision M	Revision M	Description	Revised By	Revision D.	Check	Comments
0			Check	ABC			
1			Issue	PQR			
New							

Delete Revision Records on a Drawing

Objective: Demonstrate the restrictions for deleting revision records on a drawing.

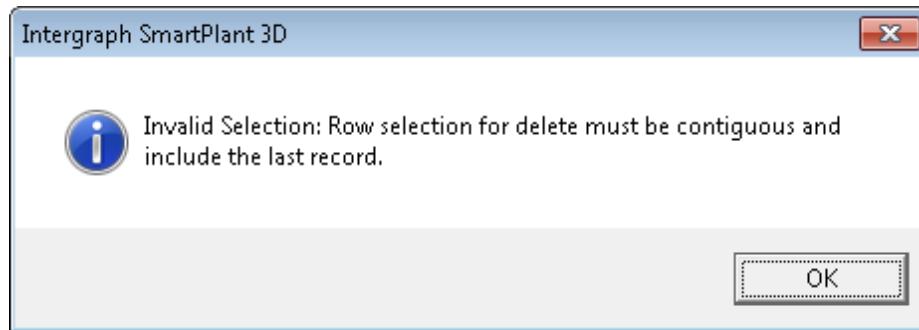
- Click the cell to the left of **Revision Mark 0** to highlight the top revision row.

	Revision M	Revision M	Description	Revised By	Revision D.	Check	Comments
0			Check	ABC			
1			Issue	PQR			
New							

- Press **DELETE** to attempt to delete that revision row.

Editing Drawing Properties

A message box displays.



3. Click **OK** on the message box.
4. Press CTRL and select the cell to the left of **Revision Mark 1**.

Both revision rows highlight.

	Revision M	Revision M	Description	Revised By	Revision D.	Check	Ch
0			Check	ABC			
1			Issue	PQR			
New							

5. Press DELETE to delete the revision rows.

The software deletes both revision rows since the selection meets the criteria to delete revisions.

6. Click **Cancel** on the **Properties** dialog box.

The software does not save the delete modification.

L A B 8

Placing Graphics and Text

Objective

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

- Edit within the graphic view
- Create and place symbols within the graphic view
- Change layers and layer symbology for objects in the graphic view
- Place revision clouds and associate them to a graphic view
- Place text boxes with manual leaders
- Move view with associated annotations
- Hide and copy objects using the **Hide** and **Show** commands
- Update the drawing and observe that the changes are preserved

Overview

Smart 3D automates the drawing creation process by using view styles that contain graphic, label, and dimension rules. However, there are times when the graphic representation obtained from the 3D model needs to be changed. At other times, you need to add additional graphics or annotations to the view.

The SmartSketch Drawing Editor allows users to open the graphic view and add graphics and layers, modify which layer intelligent graphics reside on, and use the display manager to change symbology (such as line type, weight and color) based on the layer. These edits inside the view are preserved through drawing updates.

The **Hide/Show** command lets you hide the graphics produced from the 3D model and lets you create a copy of the graphics for further editing inside the view.

The **Associate Graphics to Graphic View** command lets you associate graphics placed outside of the view to the view. The purpose of this is so the associated graphics will move with view, either within the drawing or to another drawing.

Define Workspace

Objective: Configure the session for this lab.

1. Select **Tasks > Space Management** to enter a 3D task.
2. Select **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 Creation Filters\08** folder.

5. Select the **U01 & U02 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** .

The software fits all the objects into the graphic window.

Change Undo Steps

Objective: Change the number of steps that can be undone in SmartSketch Drawing Editor.

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

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

2. Expand the **Equipment** composed component under **Drawings\Creation Labs\08**.

*The **Drawing Console** displays two drawings called **Equipment Plan01** and **Section and Detail Views**.*

3. Right-click the drawing document **Equipment Plan01** and select **Edit**.

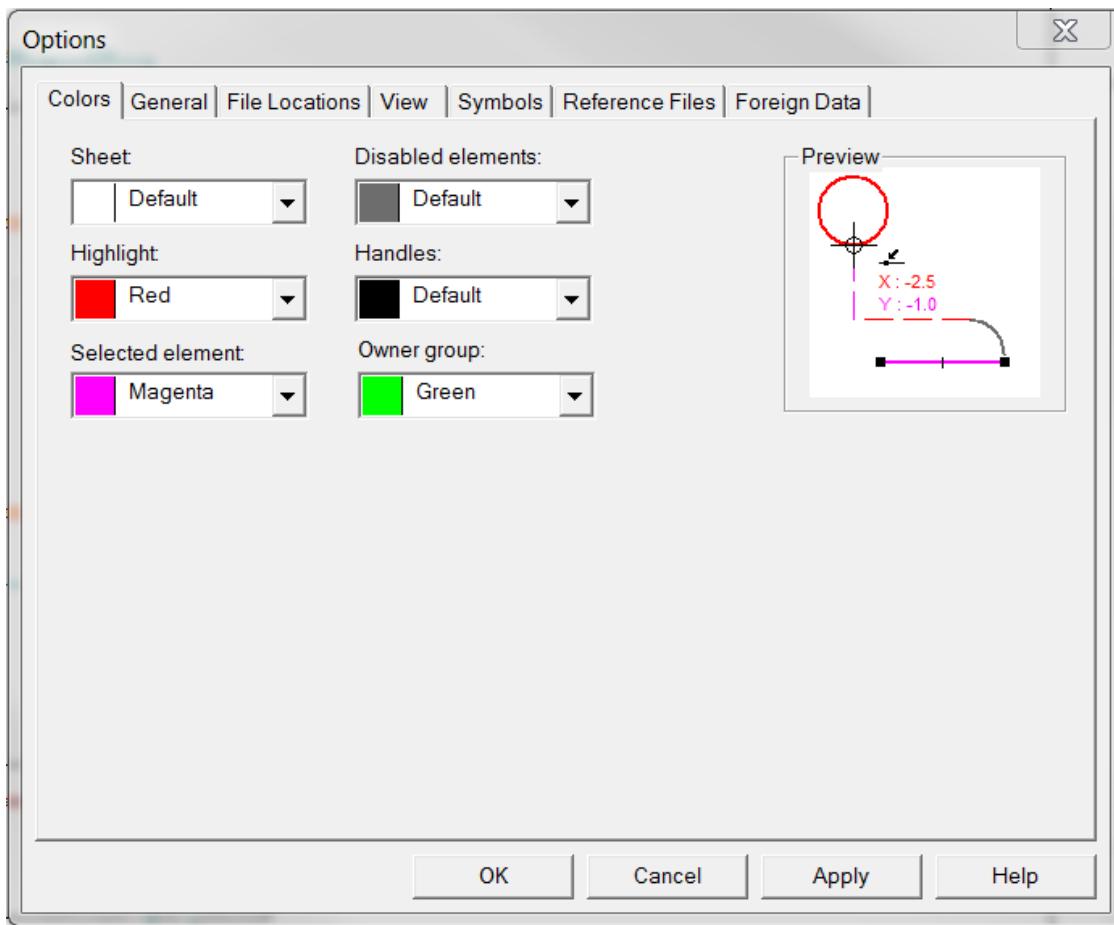
*The software opens the drawing in a **SmartSketch Drawing Editor** window.*

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

5. Click **Fit** .

6. Click **Tools > Options**.

The **Options** dialog box displays.



- Click on the **General** tab. Verify that the **Undo steps** field is set to **10**. If not, type **10** in the field to change the number of undo steps to 10 for this session of Smart 3D.

TIP Here is some information regarding how settings from the **Options** dialog box are stored:

- The values for the various **Options** settings are stored in the registry for each user, not in the document. Because it is saved by user, different users can log on to the same machine and open the same document and see different **Options** values.
- When Smart 3D is launched, it stores in memory the values of the **Options** settings in the registry at `HKEY_CURRENT_USER\Software\Intergraph\Applications\Shape2DServer.Application\PrefSets\Options-General`. When Smart 3D is exited, it takes the values stored in memory and writes them back to the registry, overwriting any changes made while the Smart 3D session was active.
- All of the various 2D environments in Smart 3D write to this same location in the registry. So during a session of Smart 3D, changes made to the **Options** settings while in Structure's Sketch 2D environment are seen when editing a drawing inside of Smart 3D or outside of Smart 3D. However, after Smart 3D is exited, the values saved into memory at the beginning of the Smart 3D session overwrite any **Options** changes made while the session was active.

In short, if the **Option** settings are made while outside of Smart 3D, then these settings are seen inside of Smart 3D.

8. Click **OK** on the **Options** dialog box.

Change Layer of Objects within the Graphic View

Objective: Change the layer of intelligent objects within the graphic view.

1. Double-click the main view's boundary to edit the objects inside the view.

TIP Notice that a new window opens with the contents of the view fit within it. The black rectangle around the edge represents the view boundary; any graphic placed outside that rectangle will not display when the embedded document is exited. The supported modifications are:

Layer changes:

- Creating new layers
- Changing the layer of an 'intelligent' or manually-placed graphic
- Changing how layers are displayed with the **Display Manager**

Graphic changes:

- Add graphics or text
- Copy intelligent objects
- Place fills or symbols

Label and dimension placement should still be performed 'outside' the view.

2. Click **Zoom Area** .
3. Drag a rectangle around the two pumps to get a closer look.
4. Right-click to exit **Zoom Area**.
5. Click **Tools > Layers**.

The **Layers** ribbon displays.



6. Click in the **Layer** field and type **Equipment**.

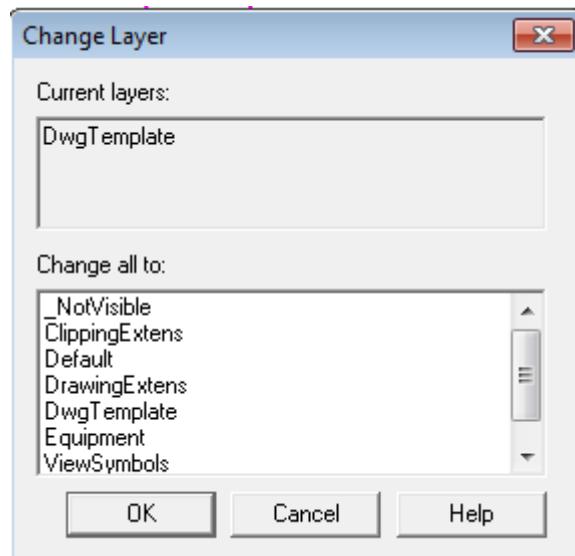
The software creates a new layer with that name and that layer is the active layer.

7. Ensure that **Top Down**  is selected on the **Select Tool** horizontal toolbar.

TIP The **Top Down** option specifies that groups of elements are selected rather than individual elements within the group.

8. Select one of the pumps to add the group to a select set.
9. Press CTRL and select the other pump to add the group to the select set.
10. Click **Change Layer**  on the **Layers** ribbon.

The **Change Layer** dialog box displays.



TIP Using the **Change Layer** command is the only way to change the layer of a group object. The ability to change the layer of a group is not available on the group property dialog box.

11. Select **Equipment** from the **Change all to** pane on the **Change Layer** dialog box.
12. Click **OK** on the **Change Layer** dialog box.
13. Press ESC to clear the selection from the objects.

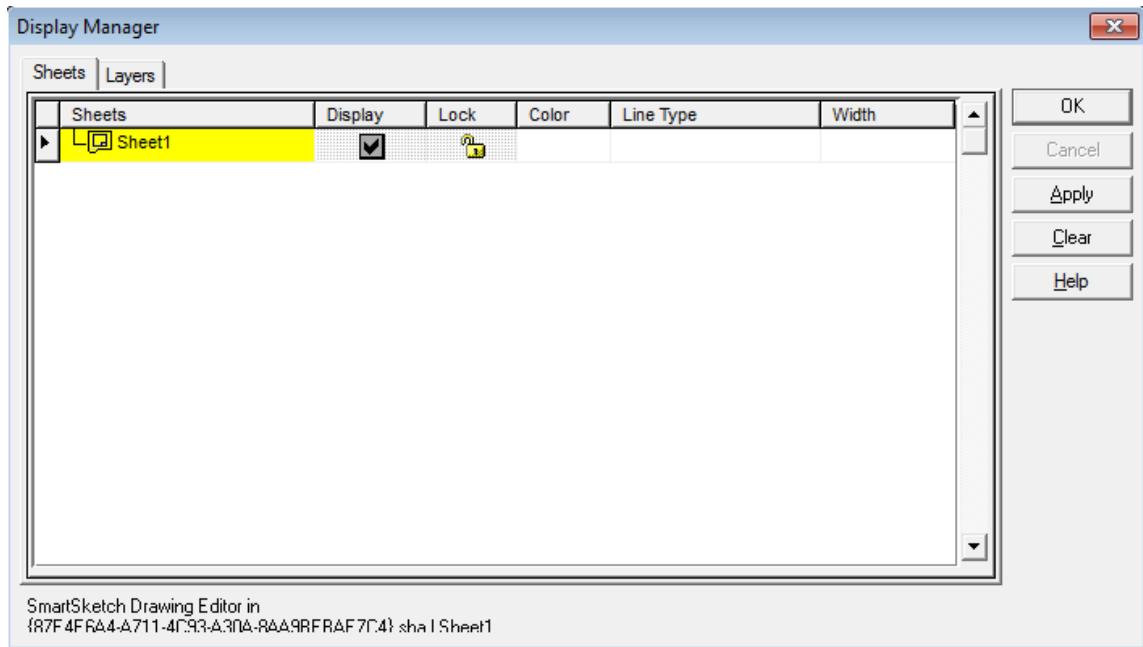
Change Display Manager Settings within the Graphic View

Objective: Make changes to **Display Manager** within the graphic view.

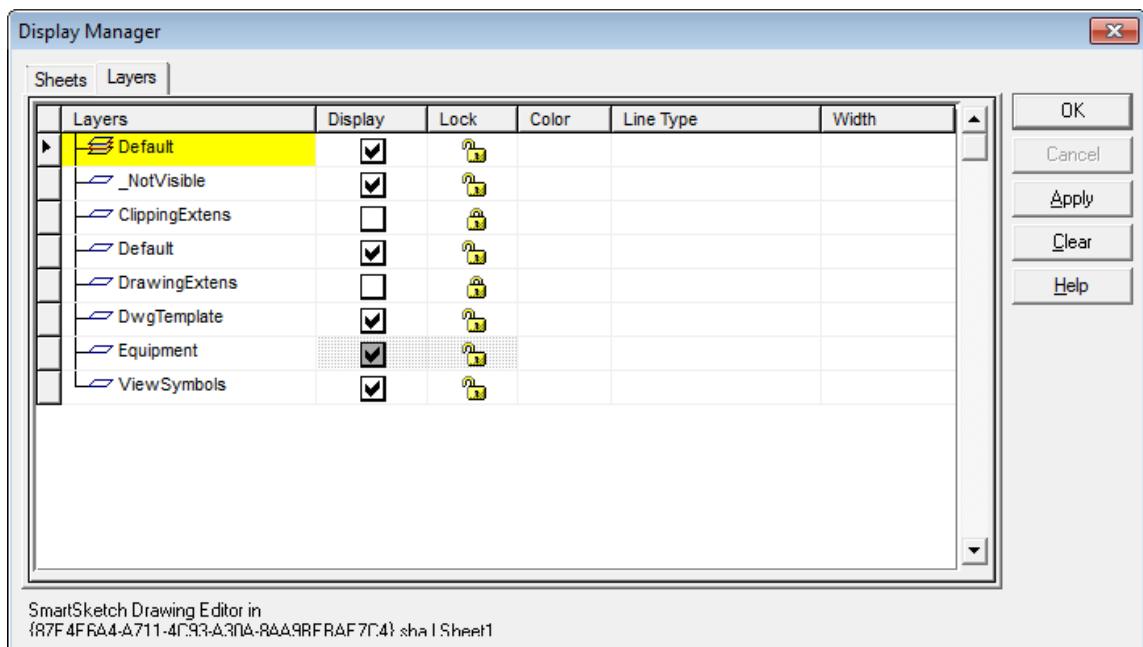
1. Select **Tools > Display Manager**.

Placing Graphics and Text

The **Display Manager** dialog box displays.

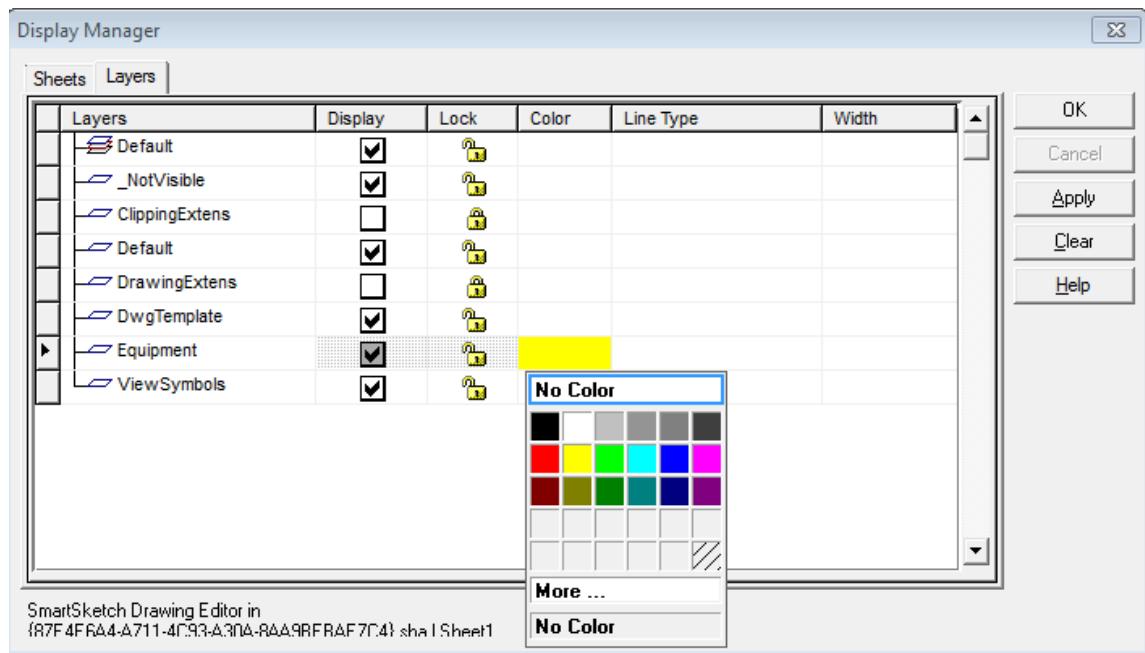


2. Click the **Layers** tab on the **Display Manager** dialog box to display every layer name inside of the view.

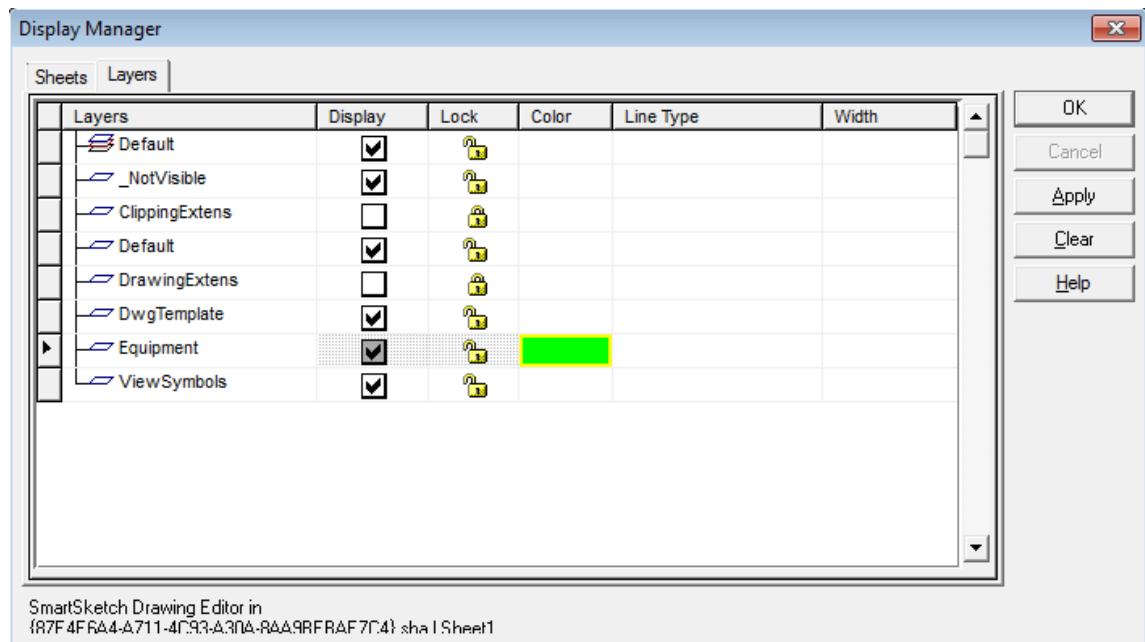


3. Click the **Color** cell in the row for layer **Equipment**.

A color palette displays.

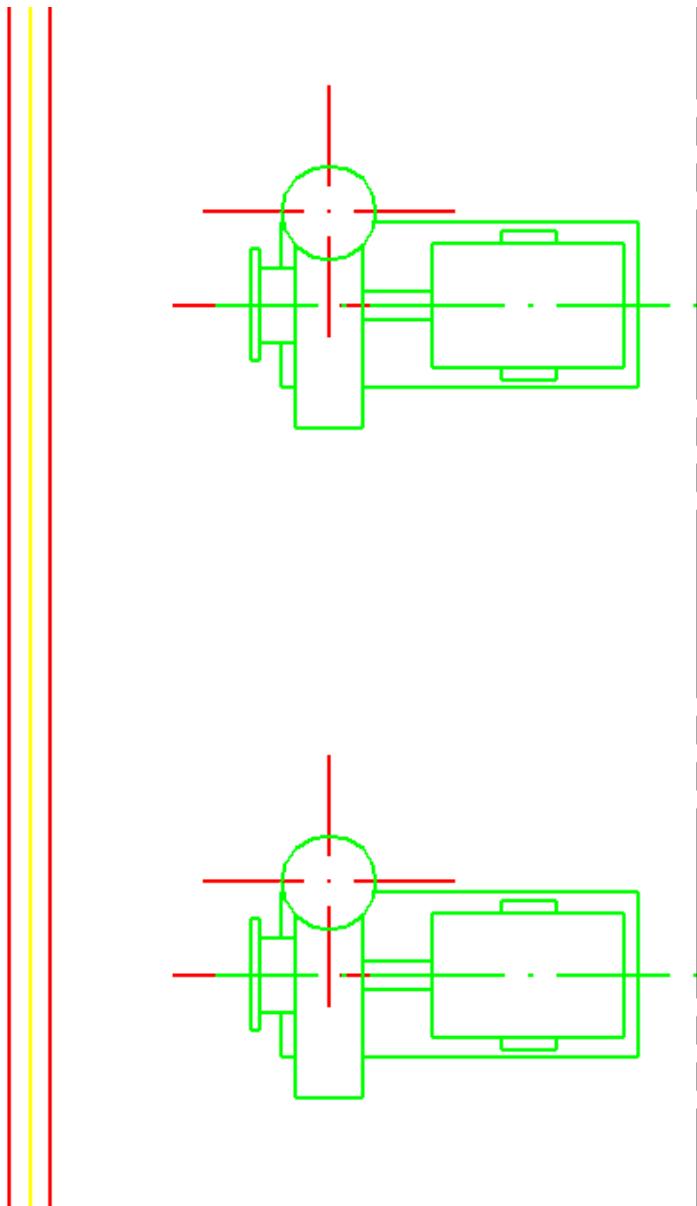


4. Click green on the color palette.



5. Click OK on the Display Manager dialog box.

Objects on the Equipment layer display with a green color.



6. Type **Foundation** in the **Layer** field on the **Layer** ribbon.

The software creates a new layer with that name and that layer is the active layer.

7. On the **Draw** toolbar, select **Rectangle** .

The **Rectangle** ribbon displays.



8. In the **Width** field, type **70** and press TAB.

*The field displays **70.00 in** and is locked.*

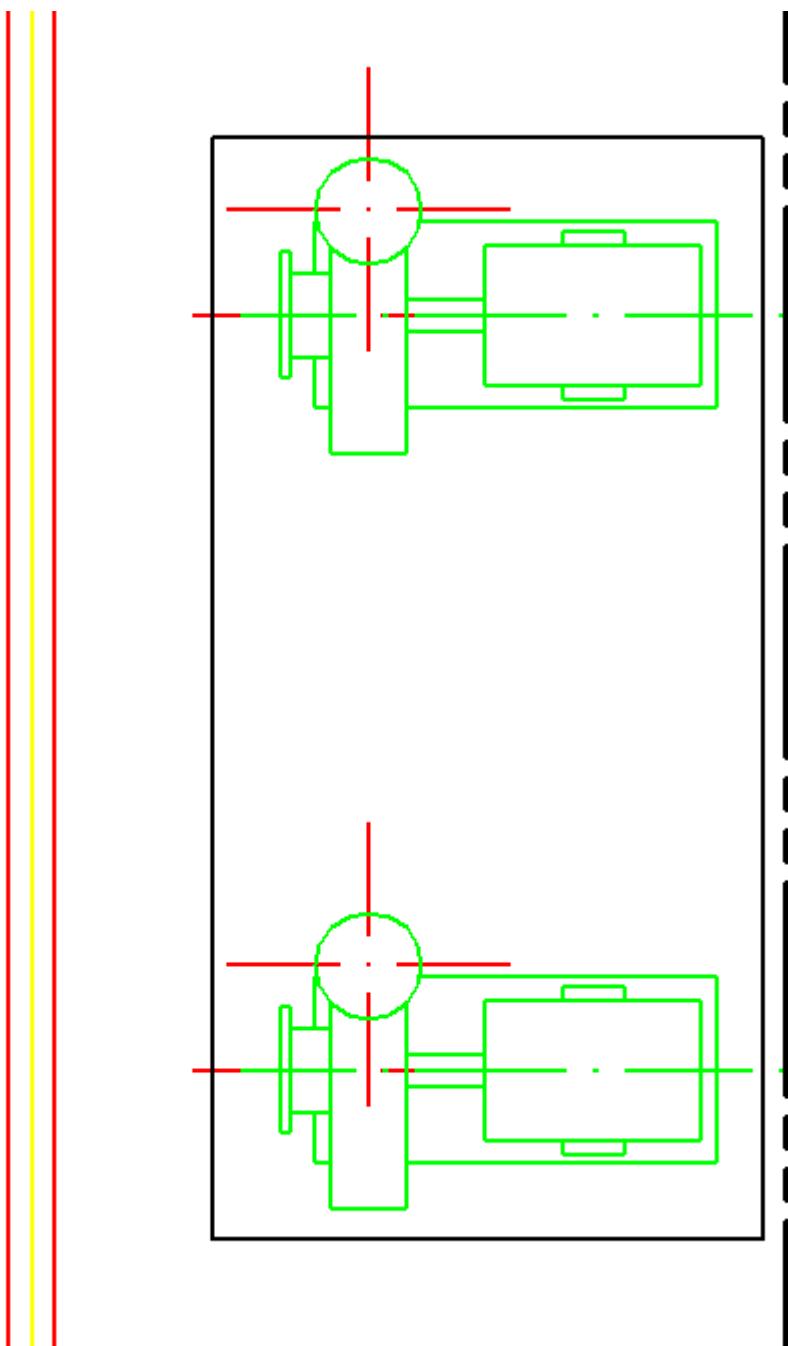
9. In the **Height** field, type **140** and press TAB.

*The field displays **140.00 in** and is locked.*

10. In the **Angle** field, type **0** and press TAB.

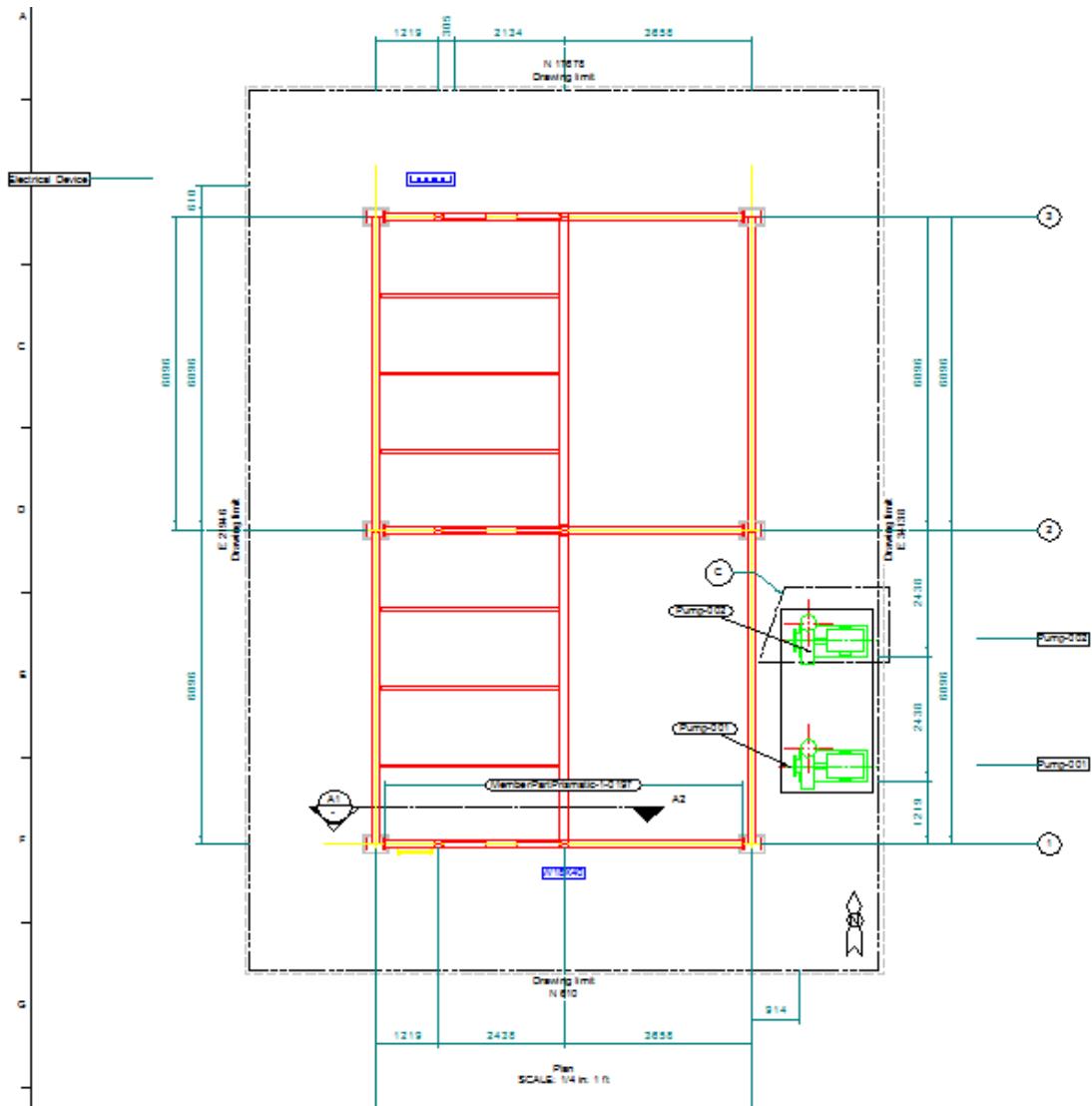
*The field displays **0.00 deg** and is locked.*

11. Position the rectangle around the base of the two pumps and click to place it.



12. Select **File > Update** to modify the view contents.
13. Select **File > Close** to close the view window and return control to the drawing window.

*The equipment objects display as green in the drawing window. They use the **Display Manager** settings inside of the view.*



14. Select **File > Exit** to exit this drawing. Save when prompted.

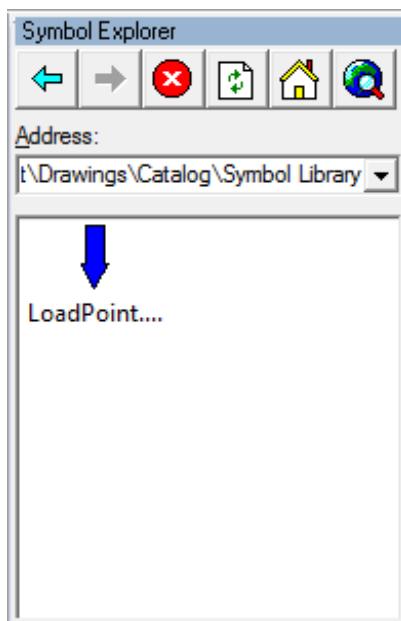
Add Symbol Inside View

Objective: Place a symbol inside of the graphic view.

1. Switch to the **Drawing Console** window.
2. Expand the **Piping** composed component under **Drawings\Creation Labs\08**.
The Drawing Console displays a drawing called Piping Plan02.
3. Right-click the drawing document **Piping Plan02** and select **Edit**.
The software opens the drawing in a SmartSketch Drawing Editor window.

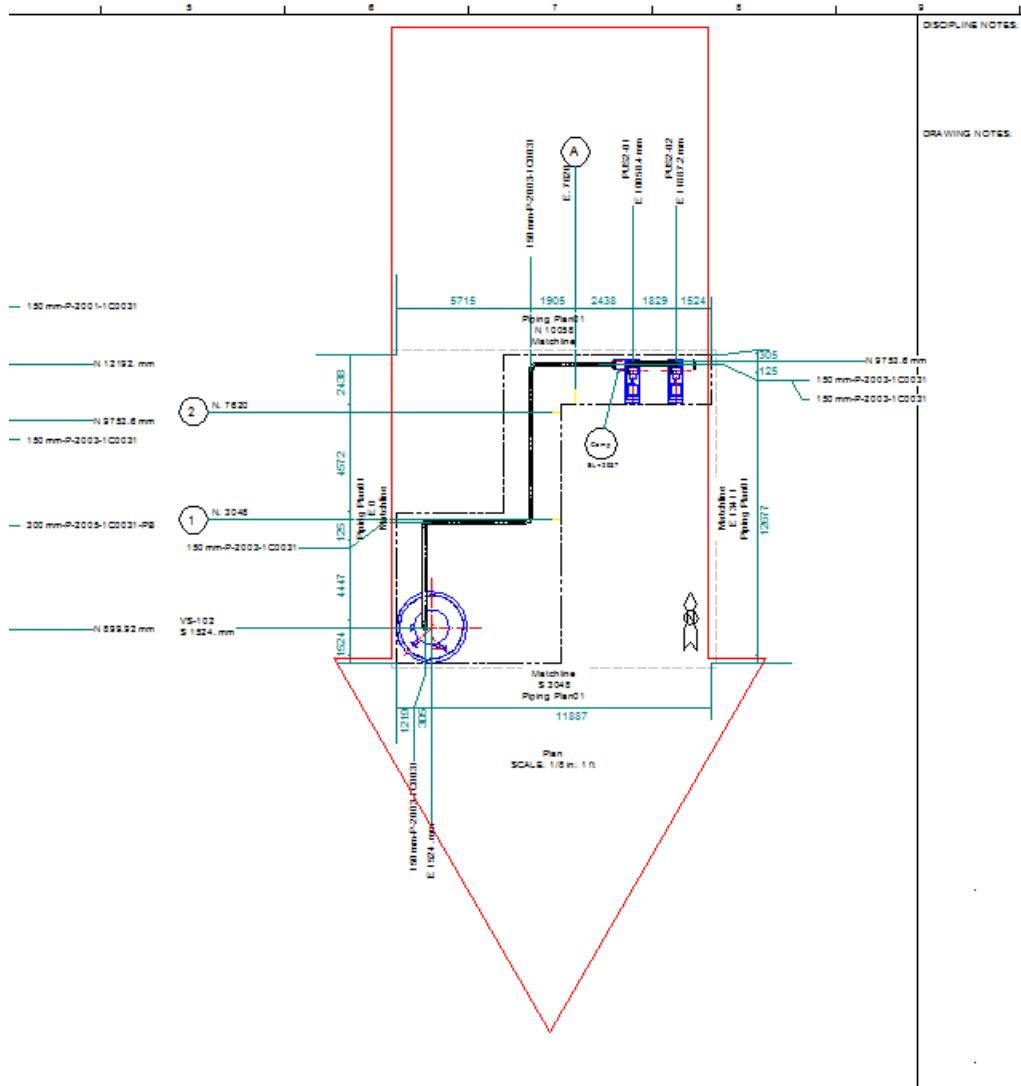
Placing Graphics and Text

4. Maximize the drawing window in **SmartSketch Drawing Editor**.
 5. Click **Fit** .
 6. Click **Symbol Explorer** .
- The **Symbol Explorer** dialog box displays.*
7. Click **Explore Elsewhere** .
- The **Browse for Folder** dialog box displays.*
8. Select **[SharedContent Location]\Drawings\Catalog\Symbol Library** and click **OK**.
- The **LoadPoint** symbol displays in the **Symbol Explorer**.*



9. Select the symbol.
10. Move the cursor into the graphics window to display the graphics of the symbol at the end of the cursor.

Notice that the symbol is coming in unscaled while the graphics inside of the view are scaled.



11. Right-click to exit symbol placement without placing the symbol.
12. Highlight the address path in **Symbol Explorer** and press CTRL+C to copy it to the clipboard.
The path will be used again when placing the symbol inside the graphic view.
13. Double click the left view to enter it for editing.
14. On the **Symbol Explorer** dialog, click in the **Address** field and press CTRL+V and ENTER to paste the path to the symbol.
15. In the **Symbol Explorer**, select the symbol.
16. Move the cursor into the graphics window to display the graphics of the symbol at the end of the cursor.

The graphics and symbol are both at 1:1 scale.

17. Click on one of the horizontal beams in the view to place the symbol.

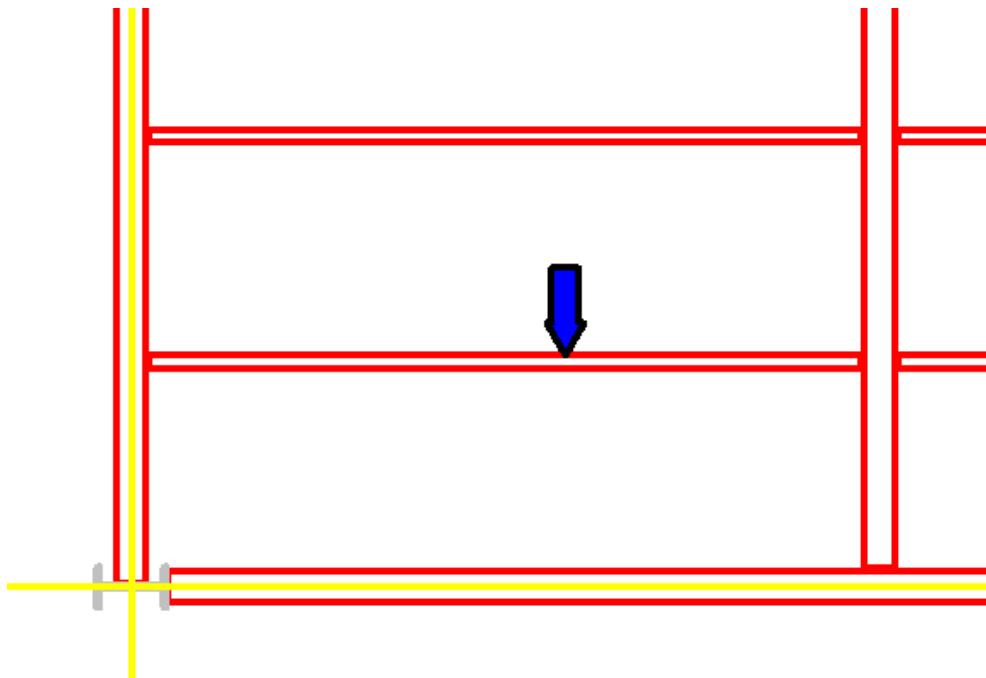
The symbol is placed and another symbol is on the end of the cursor.

18. Right-click to exit the symbol placement.

19. Press ESC to deselect the symbol.

20. Click **Zoom Area** 

21. Drag a rectangle around the symbol to get a closer look.



22. Select **File > Update** to modify the view contents.

23. Select **File > Close** to close the view window and return control to the drawing window.

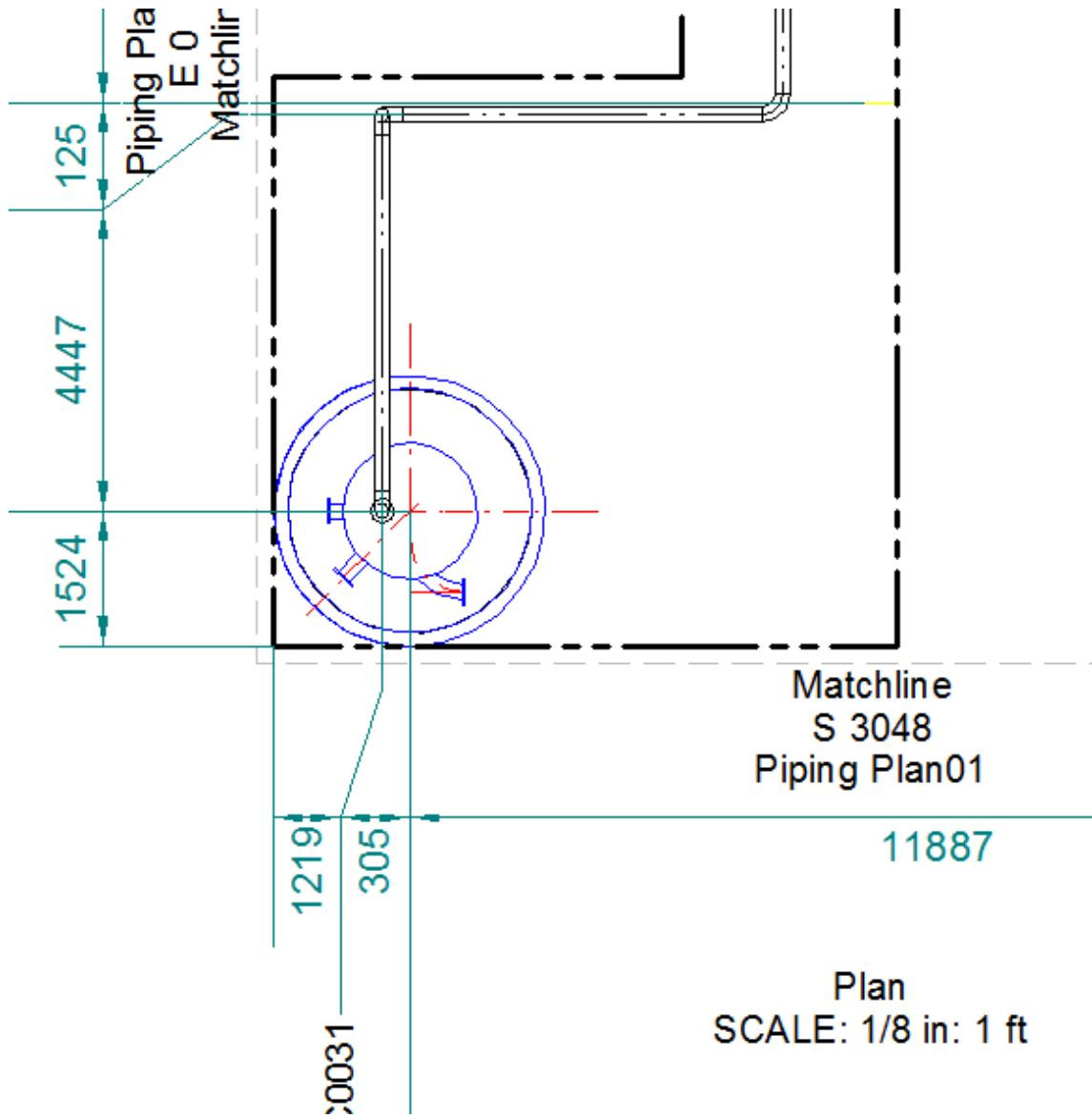
The symbol is present in the drawing window and is scaled along with the rest of the graphics within the view.

24. Click **File > Save** to save the drawing in its current state.

Use Leaders to Associate Annotation to View

Objective: Associate a text box to the view by placing a leader between the text box and an object in the view. This association will allow the text box to move with the view in the same drawing but not to another drawing.

1. Click **Zoom Area** .
2. Drag a rectangle around the lower half of the right view to get a closer look.



3. Right-click to exit **Zoom Area**.

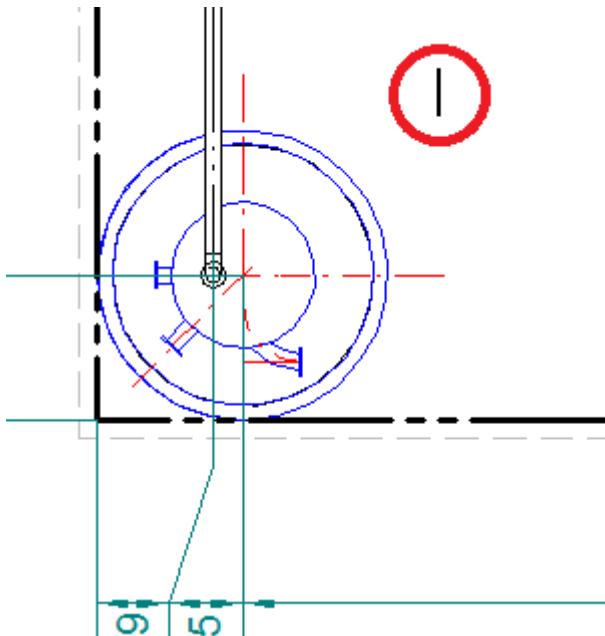
4. Click **Text Box**  on the vertical toolbar.

*The **Text Box** ribbon displays.*



*The status bar displays **Enter Text Position**.*

5. Click near the equipment **VS-102** to place the text box.



6. Type **WP** to enter text into the text box.

7. Click **Select**  to exit **Text Box**.

8. Click **Dimension**  on the **Common** toolbar.

*The **Dimension** toolbar displays.*

9. Drag the **Dimension** toolbar to the toolbar area to dock it.

10. Click **Leader**  on the **Dimension** toolbar.

*The **Leader** ribbon displays.*

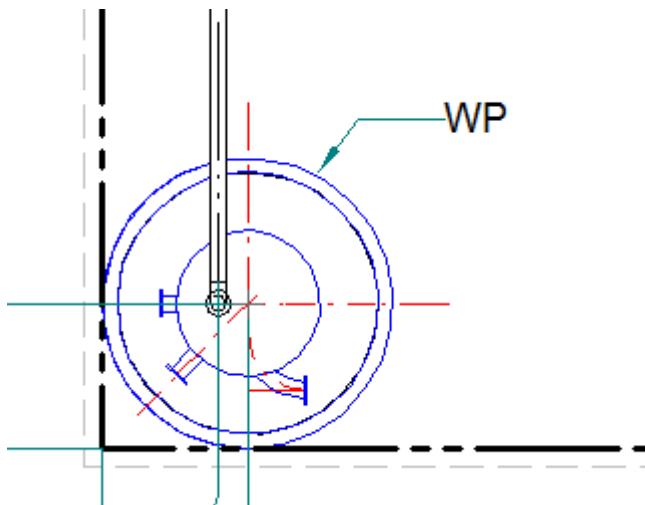


11. Click **Break Line**  on the **Leader** ribbon to enable a break line on the leader.

12. Select the text box.

A leader displays with one end attached to the text box and one end attached to the cursor.

13. Select the equipment **VS-102** to complete the placement of the leader.



14. Click **Select** to exit **Leader**.

Use Associate Graphics to Graphic View Command

Objective: Associate a revision cloud and text box to the view using the **Associate Graphics to Graphic View** command. This association will allow the objects to move with the view in the same drawing as well as to another drawing.

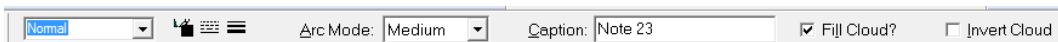
1. Click **Fit** .

2. Click **Revision Cloud** on the vertical toolbar.

The **Revision Cloud** ribbon displays.



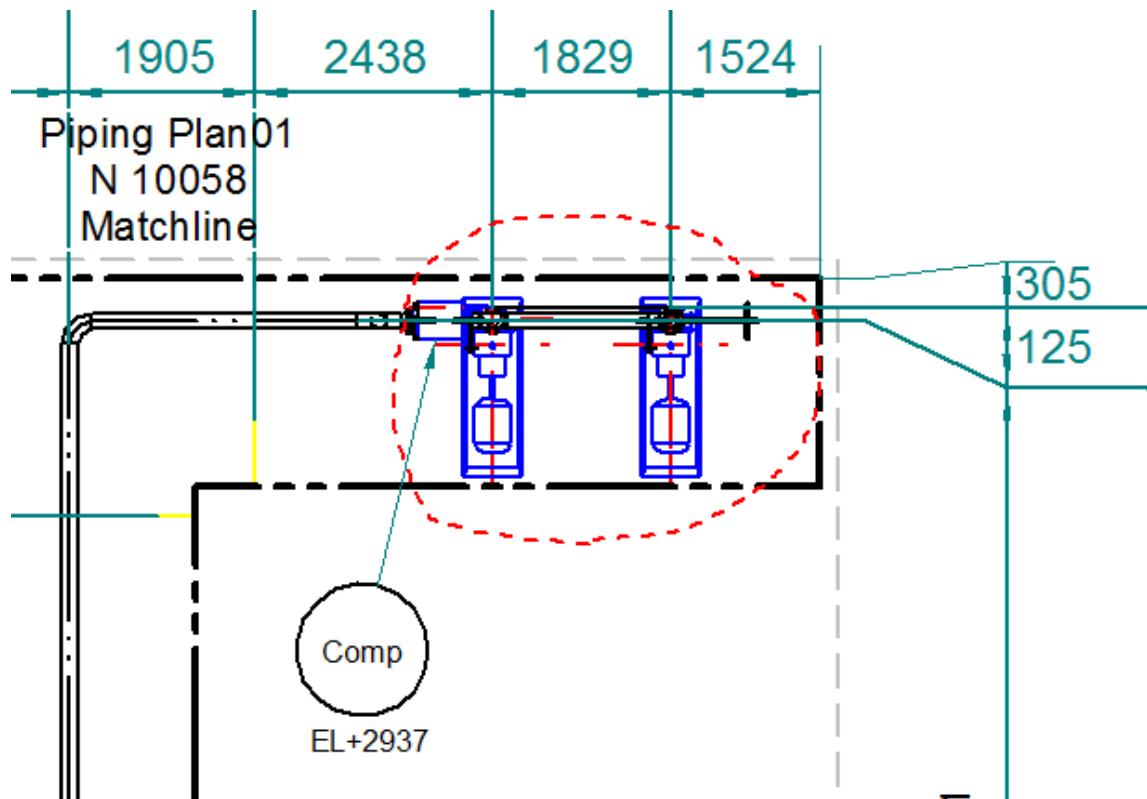
3. Set the **Arc Mode** to **Medium**, type **Note 23** in the **Caption** field, and click **Fill Cloud?**.



The status bar displays **Left Click to start placing revision cloud**.

4. Click below the two pumps in the right view to place the start point of the revision cloud.

5. Move the cursor in an approximate circle around the two pumps.

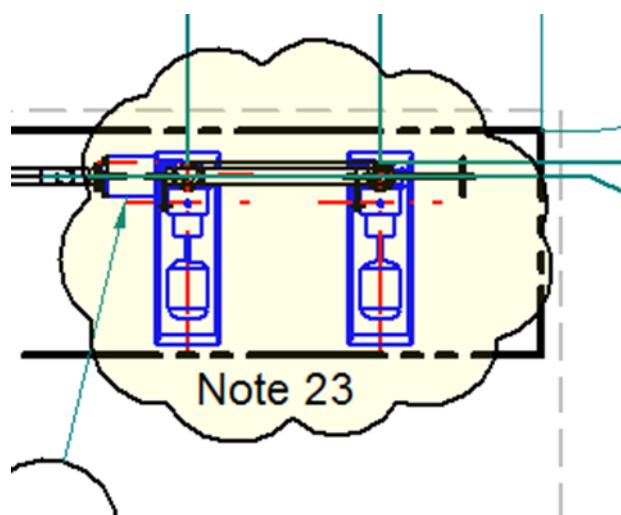


6. Click near the start point to close the shape and finish the cloud.

A text box displays attached to the cursor. This is the text box that contains the **Caption** value.

7. Click near the cloud to place the text box.

8. Click **Select** to exit **Revision Cloud**.



9. Click **Zoom Area** .
10. Drag a rectangle around the right view to get a closer look.
11. Right-click to exit **Zoom Area**.
12. While pressing CTRL, select the revision cloud, the revision cloud text, the text box placed on the equipment, and the right view.

13. Click **Associate Graphics to Graphic View**  on the **Composed** toolbar.

*A message box displays stating **Associated 3 out of 3 selected to view Piping Plan View02**.*

TIP The **Associate Graphics to Graphic View** command associates graphics to a graphic view so that they can be moved together.

Move a View with Associated Graphics

Objective: Move a view with associated graphics within the same drawing.

1. Click **Fit** .
2. Select the right view boundary and try to drag the view.
The view does not move. This is to prevent unintentional movement of the drawing view.
3. Press ESC to deselect the view.
4. Press ALT and click the right view. Continue pressing ALT until a message displays in the status bar telling you that the ALT + Select action is complete.

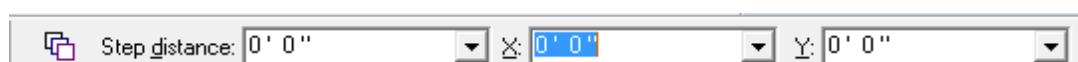
The associated objects appear in the select color.

TIP Holding the ALT key down when selecting a graphic view will add the view and all of the associated annotations to a select set. For views with a lot of annotations, it may take several seconds for the message to appear.

TIP The status bar message may flash a few times while the select set is being created; please continue pressing ALT until the message is stable.

5. Release the ALT key.
- TIP** Once the select set creation is complete, it is not necessary to keep pressing ALT.
6. Mouse down on the selected view and drag it to a new position within the border.
Notice the revision cloud moves with the view. Notice also that the text box and leader placed earlier move with the view.
7. With the view and associated objects still selected, click **Move/Copy**  on the **Change** toolbar.

The Move/Copy ribbon displays.



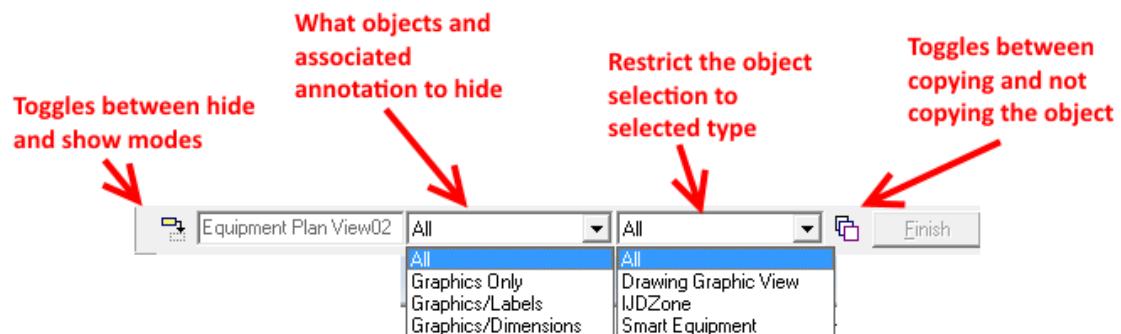
8. Ensure that **Copy**  is not selected so that the **Move** command is operational.
The status bar message tells you to select from point.
9. In the **X** field, type **0 1** and press TAB.
*The field displays **0' 1"** and is locked.*
10. In the **Y** field, type **0** and press TAB.
*The field displays **0' 0"** and is locked.*
11. Click in an open space in the drawing to define the 'from' point of the command.
The status bar message tells you to select to point.
12. Move the cursor to the left of the click point and notice that the select set moves 1" to the left from its original point.
13. Move the cursor to the right of the click point and notice that the select set moves 1" to the right from its original point.
14. Click to the left of the 'from' point to move the view 1" to the left.
15. Press ESC to deselect the objects.
16. Select **File > Exit** to exit **SmartSketch Drawing Editor**. Click **Yes** when asked to save the drawing.

Use Hide/Show to Hide and Copy Graphics in the View

Objective: Use the **Hide/Show** command to hide intelligent graphics in the view and replace them with a copy. The copy will subsequently be modified in a later section.

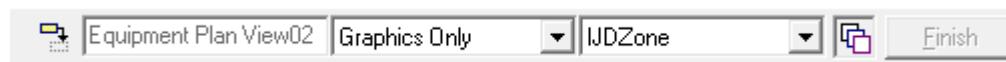
1. Switch to the **Drawing Console** window.
2. Expand the **Equipment** composed component under **Drawings\Creation Labs\09\Equipment**.
3. Right-click the drawing document **Equipment Drawing01**, and select **Edit**.
*The software opens the drawing in a **SmartSketch Drawing Editor** window.*
4. Maximize the drawing window in **SmartSketch Drawing Editor**.
5. Click **Fit** .
6. Click **Hide/Show**  on the **Composed** toolbar.
*The **Hide/Show** ribbon displays and the status bar displays **Select View**.*
TIP The purpose of **Hide/Show** is to hide or alter objects within the view.
7. Click on the view.

The **Hide/Show** ribbon displays the view name in the first field.

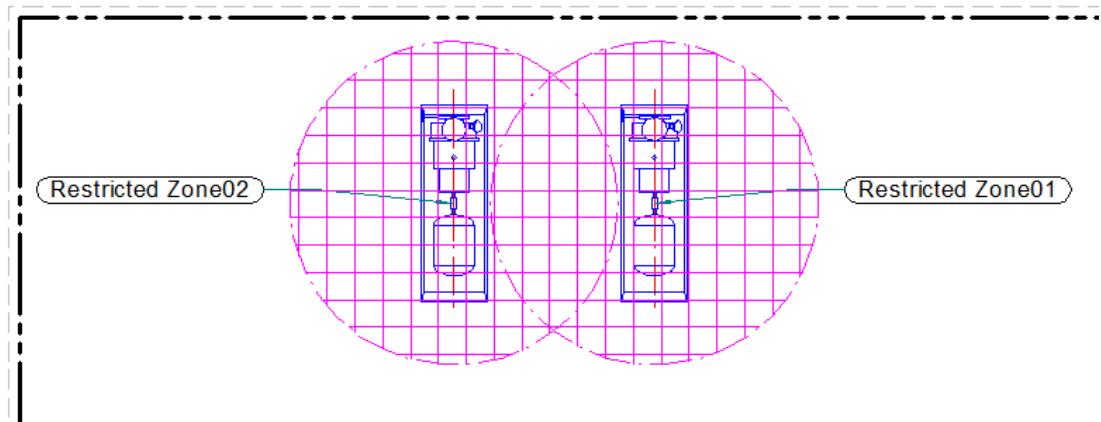


8. Select **Graphics Only** from the leftmost list on the **Hide/Show** ribbon so that no associated annotation is hidden.
9. Select **IJDZone** to restrict the objects selected to just space objects.

10. Click **Copy Graphics** to copy the selected objects.



11. In the drawing, select the edges of the two hazardous areas to hide the original objects and make *non-intelligent* copies of them.



12. Click **Finish** on the **Hide/Show** ribbon.
13. Press ESC to exit **Hide/Show**.

Modify Copied Graphics within the View

Objective: Modify the graphics that were copied using the **Hide/Show** command.

1. Double-click the view to edit the objects inside the view.

A new window opens with the contents of the view fit within it.

2. Click **Zoom Area** .

3. Drag a rectangle around upper left quadrant of the view to get a closer look.

4. Right-click to exit **Zoom Area**.

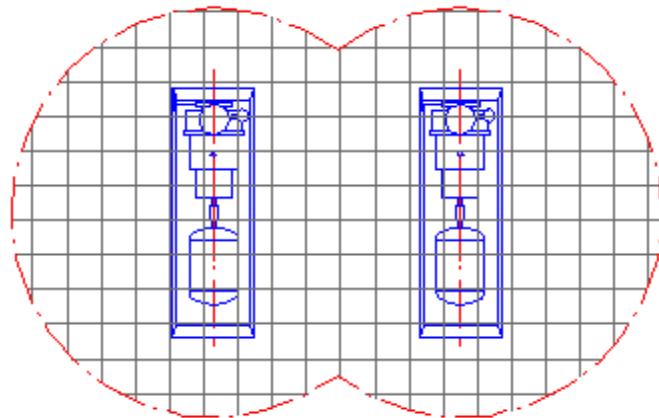
5. Click **Bottom Up**  on the horizontal toolbar.

TIP Because the copied graphics are in a group, using **Bottom Up** selects the child elements of the group without having to use **QuickPick**.

6. Click **Trim**  from the vertical toolbar.

TIP **Trim** trims open and closed elements to the closest intersection in both directions. When in the command, simply drag the cursor across the segments that you want to remove.

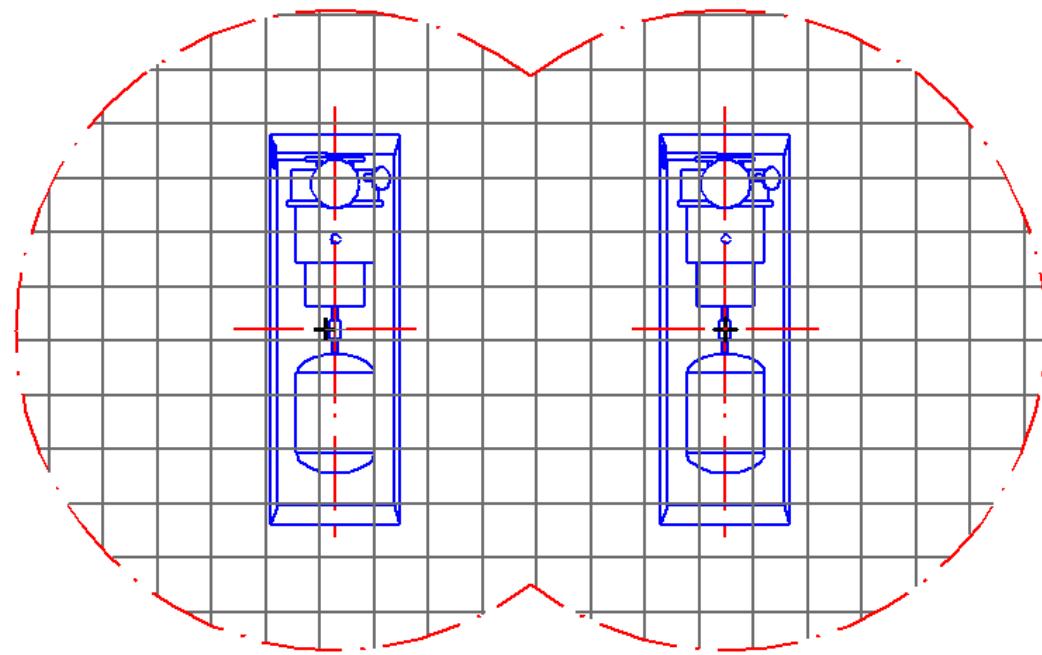
7. Drag the cursor over the interior edges of the space volumes.



8. Click **Line**  on the vertical toolbar.

9. Select **Dash Dot Red** from the **Style** list on the **Line** ribbon.

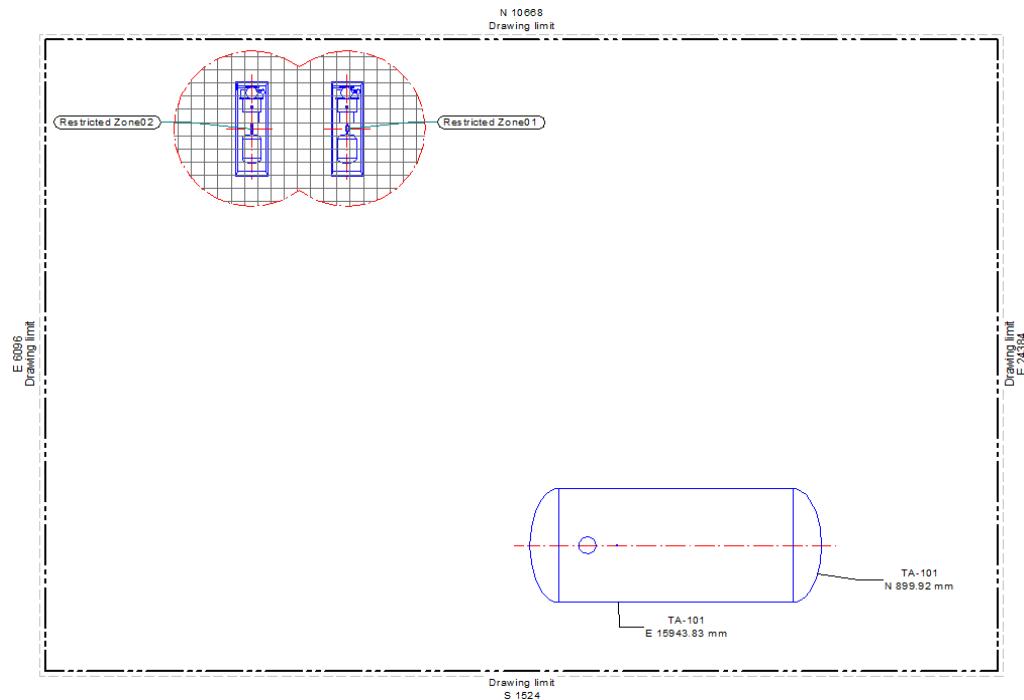
10. Draw a horizontal line through the approximate center of each equipment.



11. Click **File > Update** to save the contents of the embedded document.
12. Click **File > Close** to exit the embedded document and return to the drawing document.
13. Click **File > Save** in the drawing document.
14. Click **File > Exit** to exit **SmartSketch Drawing Editor**.
15. Switch to the **Drawing Console** window.
16. Right-click **Equipment Drawing01** in the **Drawing Console**, and select **Update Now**.
The software generates the contents of the drawing.
17. When the update completes, right-click again on the drawing **Equipment Drawing01**, and select **Edit**.
*The software opens the drawing in **SmartSketch Drawing Editor**.*
18. Maximize the drawing window in **SmartSketch Drawing Editor**.
19. Click **Fit**

Placing Graphics and Text

The software retains the view edits.



20. 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 9

Placing Labels and Dimensions

Objective

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

- Place view labels
- Place object labels using ribbon options and 'As Drawn'
- Place dimension style label
- Learn how modification of labels works
- Use custom command to highlight label status
- Use custom command to clear all manual edits to labels
- Place smart dimensions
- Place 'distance between' dimensions

Overview

An essential part of the drawing process is adding annotations that allow you to easily identify the objects in a drawing. Annotations provide information about a drawing and emphasize certain objects in the drawing view. Labels and dimensions can be placed automatically by label and dimension rules in the view style. You can modify the position of these automatically placed labels and dimensions or place additional labels and dimensions manually. Smart 3D treats automatic annotations differently than modified and manual annotations during subsequent updates of the view. Automatic annotations have the positioning rules re-applied, while manual and modified annotations are kept where the user moved or placed them.

Labels

Labels, unlike text boxes, query the database for attribute values. They are associated with an object in a drawing and they allow you to easily identify objects.

You can place labels on drawings either by label rules included in the view style during update or manually after the views have been updated. The command to place labels is available when you edit a drawing in SmartSketch Drawing Editor. You place labels by choosing one of the label templates available. You can use label templates that are delivered with the software or create your own label templates. Label rules control the appearance of labels as well as their automatic placement on drawings. For example, you can create label rules that place labels with or without borders and leader lines. Examples of rules that are available within Smart 3D are grid line labels, name labels, piping line number labels and structural member section size labels.

It should also be noted the label rules are saved in the SharedContent directory located in the \Drawings\Catalog\Rules\LabelRules folder. Rules have corresponding templates and symbols under \Drawings\Catalog\Labels\Templates.

Dimensions

Placing Labels and Dimensions

Dimensions supply information about the size, location, and orientation of objects in a drawing, such as the length of a line, the distance between points, or the angle of a line. Dimensions are associated with the objects to which they refer.

To place dimensions, select a command from the **Dimension** toolbar, and then select the elements or key points to be dimensioned. The commands on the Dimension toolbar from left to right are as follows:

- **Smart Dimension**  - Places several different dimensions, such as length and angle of a line, radius and diameter of a circle, and length, angle, radius, and diameter of an arc.
- **Distance Between**  - Places a linear dimension that measures the distance between elements or key points.
- **Angle Between**  - Places a dimension that measures the angle between elements or key points.
- **Axis**  - Sets a dimension axis for a drawing. A dimension axis allows you to place dimensions that are perpendicular to or parallel to an element.
- **Coordinate Dimension**  - Places a dimension that measures the distance from a common origin to one or more key points or elements.
- **Symmetric Diameter**  - Places a dimension that measures the distance between a center line and another element or key point.
- **Measure Distance**  - Measures the distance between points in free space or between key points.
- **Measure Distance Along**  - Measures the distance along an object based on two points.
- **Measure Area**  - Displays the most recently selected area of the boundary in the current units. It also displays the total area of all selected boundaries in the current document units.
- **Character Map**  - Inserts a character in a text box by using a different font. You can also insert special characters that do not appear on your keyboard.
- **Leader**  - Adds a leader to an annotation or to another leader.
- **Balloon**  - Places a balloon containing text. You can use balloons to refer to an element or a point in free space.
- **Dimension Text**  - Overrides a driven dimensional value with a text string. A driven dimension is a dimension that is placed as you draw in 2D Drawing Editor. To place this dimension, select **Tools > Options**. Under the **General** tab of the **Options** dialog box, check **Dimension key-in values automatically**.
- **Align Dimensions**  - Aligns linear dimensions with a selected point.

There are two methods you can use to place dimensions in drawings: automatic dimensioning and manual dimensioning. In automatic dimensioning, dimension rules within a view style control whether or not dimensions are placed in the drawing. When you use manual dimensioning, you edit an existing drawing and place dimensions manually. On the next pages, you will learn how to place manual dimensions.

Define Workspace

Objective: Configure the session for this lab.

1. Select **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 Creation Filters\10** 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 software populates the workspace with modeled objects.
 6. Click **Fit** .
- The software fits all the objects into the graphic window.*

Place a View Label

Objective: Use the Place Label command from the **Compose** toolbar to attach a label to the graphic view. The label displays the name of the view. The appearance of the label is controlled by the setting on the **Place a Label** ribbon.

1. Switch to the **Drawing Console** window.
2. Expand the **Equipment** composed component under **Drawings\Creation Labs\10**.
3. Right-click the drawing document **Equipment Plan01** and select **Edit**.
*The software opens the drawing in a **SmartSketch Drawing Editor** window.*
4. Maximize the drawing window in **SmartSketch Drawing Editor**.
5. Click **Fit** .
6. Click **Place a Label**  from the **Composed** toolbar.
*The **Place a Label** ribbon displays.*

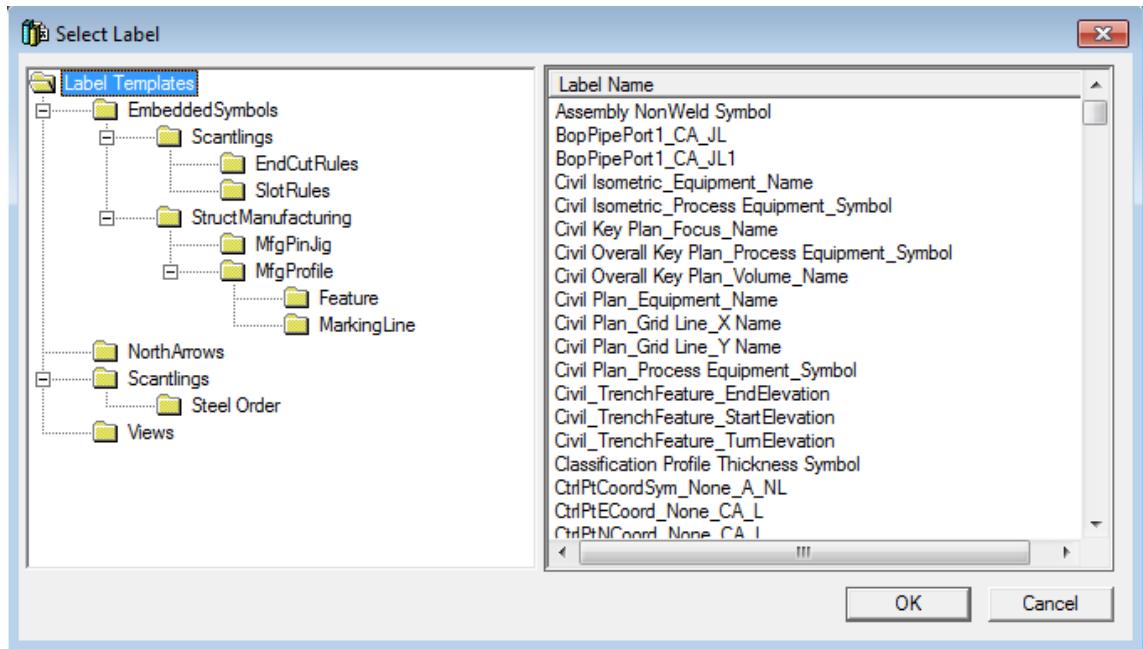


Placing Labels and Dimensions

7. Select **More** from the label name list on the **Place a Label** ribbon.



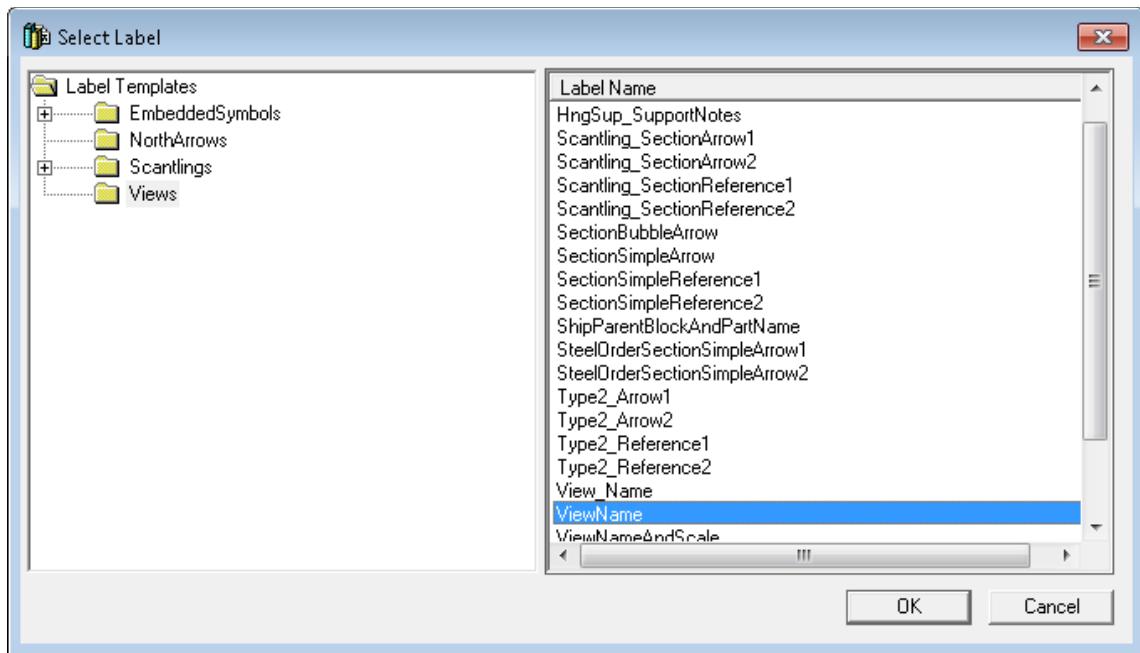
The **Select Label** dialog box displays.



8. Click the **Views** folder in the tree view.

The available labels in that folder display in the list view.

9. Select the label **ViewName**.



TIP Based on the naming convention of this label, it displays the **View Name** property. It is recommended to adopt a naming convention that adequately describes the label to make it easy to choose.

10. Click **OK** on the **Select Label** dialog box.

*The software returns control to **SmartSketch Drawing Editor**.*

*The status bar displays **Select object to attach label**.*

TIP The labels in the **View** folder are designed to be associated with graphic views.

11. Select the boundary of the main graphic view.

The label evaluates the property values of the view and displays the label contents at the end of the cursor.

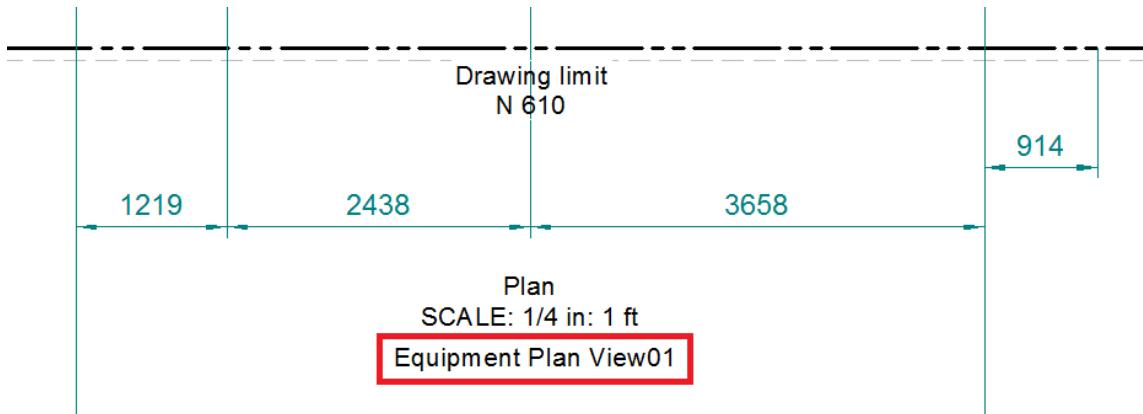
*The status bar displays **Click to place the label**.*

12. Click **Zoom Area**

13. Drag a rectangle around the area below the graphic view to get a closer look at the contents.

14. Right-click to exit **Zoom Area**.

15. Click at a position below the bottom edge of the main view, near its center, to place the label.



*The status bar displays **Select object to attach label**. The **Place a Label** command is still active.*

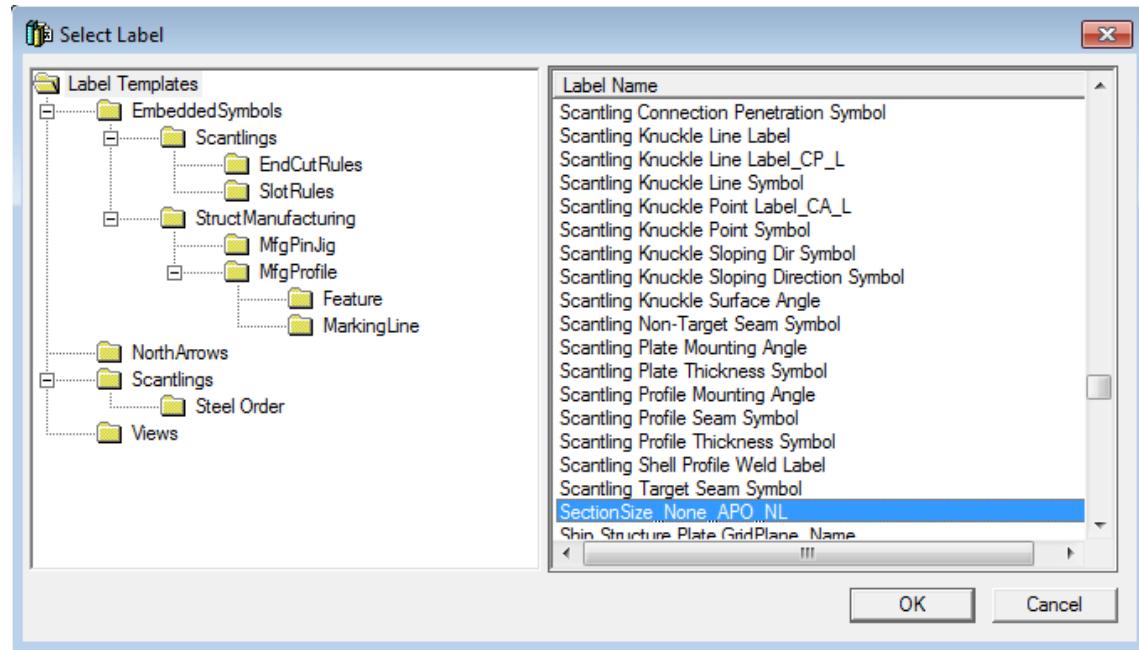
16. Press ESC to exit the **Place a Label** command.

Place an Object Label

Objective: Continue use of the **Place a Label** command to attach a section size label to a structural beam. The appearance of the label is controlled by the setting on the **Place a Label** ribbon.

1. Click **Fit** .
2. Click **Zoom Area** .
3. Drag a rectangle around the bottom half of the main view to get a closer look at the contents.
4. Right-click to exit **Zoom Area**.
5. Click **Place a Label**  from the **Composed** toolbar.
6. Select **More** from the label name list on the **Place a Label** ribbon.
*The **Select Label** dialog box displays.*
7. Select the **Label Templates** folder (i.e., the root node) in the tree view.
The software displays the available labels in that folder in the list view.

- Select the label **SectionSize_None_APO_NL**.



TIP Based on the naming convention of this label, it displays the **Section Size** property with no text box (the “**None**” in the label name) and no leader (the “**NL**” in the label name). The **APO** term refers to its automatic placement behavior: absolute X and Y location, parallel, and offset relative to an object.

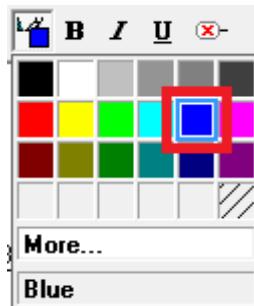
- Click **OK** on the **Select Label** dialog box.

The software returns control to **SmartSketch Drawing Editor**.

- Click **Text Color**  on the **Place a Label** ribbon.

A color palette displays.

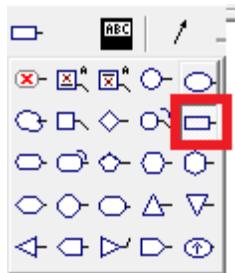
- Select blue from the palette.



- Click **Shape**  on the **Place a Label** ribbon.

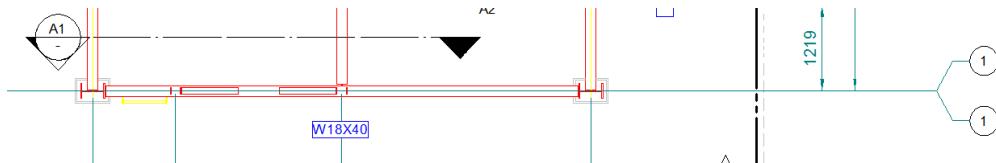
A shape palette displays.

13. Select **Rectangle** from the palette.



14. Select the horizontal beam aligned with grid line 1.

15. Click at a position below the bottom edge of the beam, near its center, to place the label.



Use As Drawn Option when Placing an Object Label

Objective: Continue use of the **Place a Label** command to attach a name label to an equipment object. The **As Drawn** option is enabled so that the display of the label is controlled by its definition.

1. Select **More** from the label name list on the **Place a Label** ribbon.

*The **Select Label** dialog box displays.*

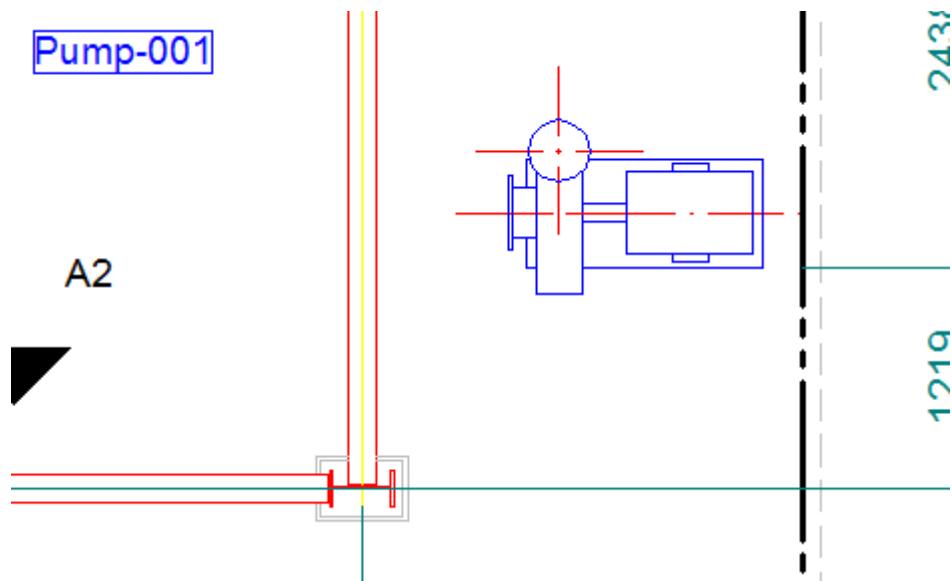
2. Select the label **Name_Capsule_CA_L** in the **Label Templates** folder.

TIP Based on the naming convention of this label, it displays the **Name** property with a capsule-shaped text box and a leader. The **CA** term refers to its automatic placement behavior. The label attempts clear-space positioning. If no clear space is found, it falls back to an absolute position relative to an object.

3. Click **OK** on the **Select Label** dialog box.

*The software returns control to **SmartSketch Drawing Editor**.*

4. Select **Pump-001** in the main view.

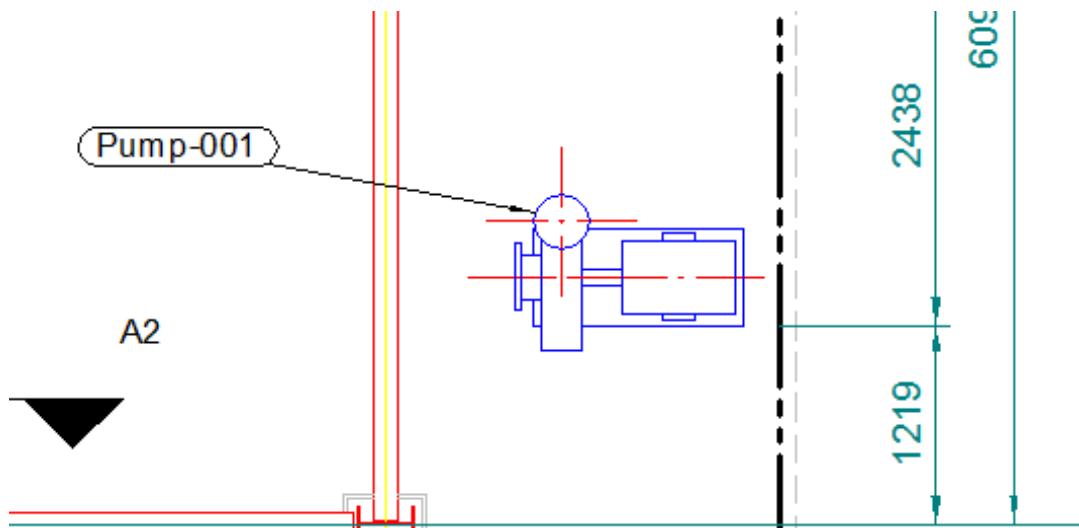


*The appearance of the label at the end of the cursor uses the properties from the **Place a Label** ribbon, overriding the label's definition.*

5. Click **As Drawn** on the **Place a Label** ribbon.

The software uses the label definition during placement.

*The appearance of the label at the end of the cursor uses the properties from its definition rather than the **Place a Label** toolbar.*

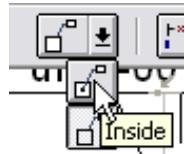


6. Click at a position to the left of the pump to place the label.

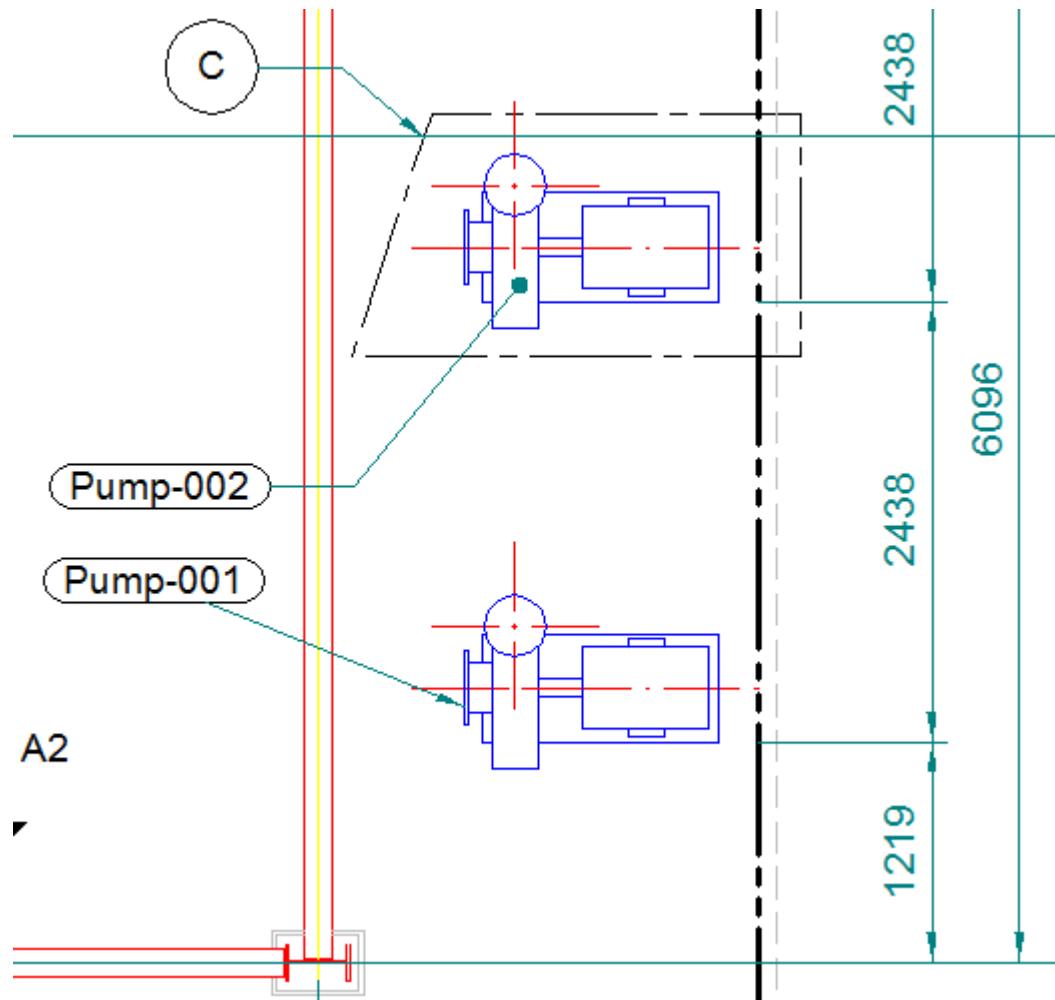
Use Leader Boundary Option when Placing a Label

Objective: Continue use of the **Place a Label** command with the option to extend the leader to the origin of the object rather than stop at its boundary.

1. With the **Place a Label** command still active, select **Pump-002** in the main view.
The leader attachment point is on the boundary of the pump.
2. Select **Inside** from the **Boundary** list on the **Place a Label** toolbar.



The leader attachment point moves to the inside of the pump from the boundary.



TIP Notice that the leader terminator is a filled circle instead of an arrow. This indicates that the terminator is not actually connected to the pump but placed in free space. The label is still associated with the pump, however.

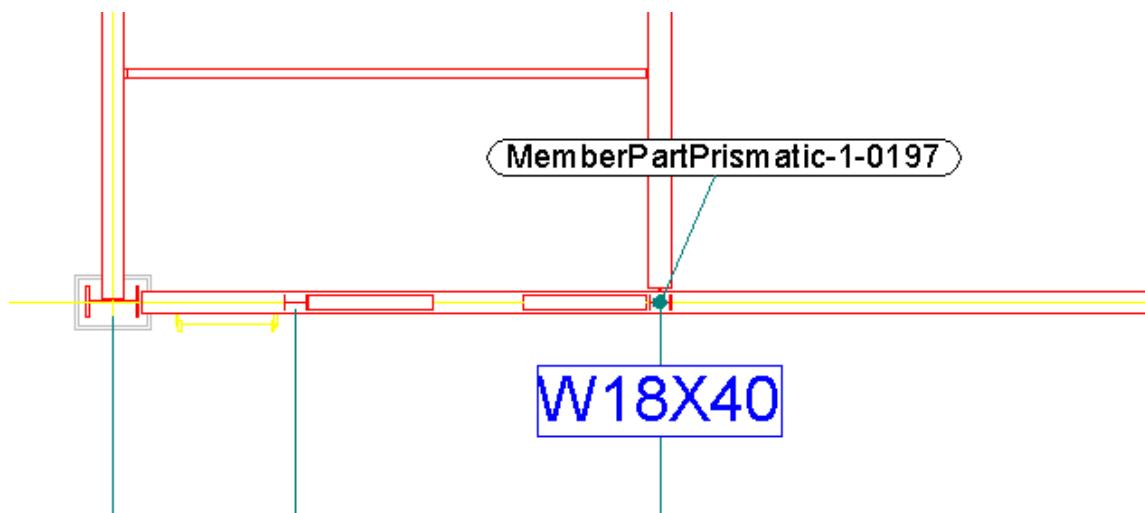
3. Click at a position to the left of the pump to place the label.

Use Dimension Style Option when Placing a Label

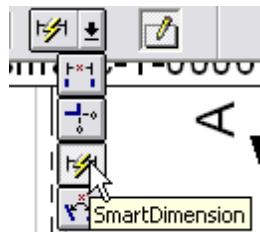
Objective: Continue use of the **Place a Label** command with the dimension mode of placement.

1. With the **Place a Label** command still active, select the horizontal beam aligned with grid line 1.

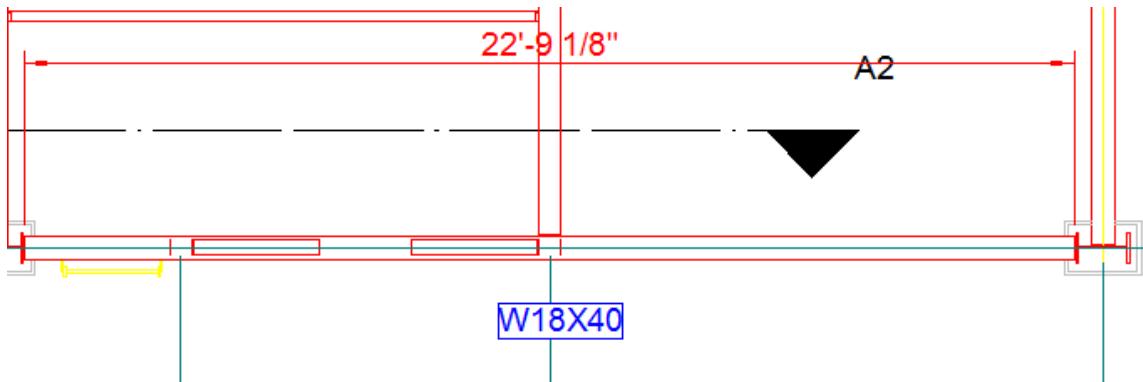
The appearance of the label at the end of the cursor uses the properties as the previous label.



2. Select **SmartDimension** from the **Dimension** list on the **Place a Label** toolbar.



- Select the beam again to display a dimension at the end of the cursor.



- Click to position the dimension.

The dimension is placed and is immediately replaced by the label contents.



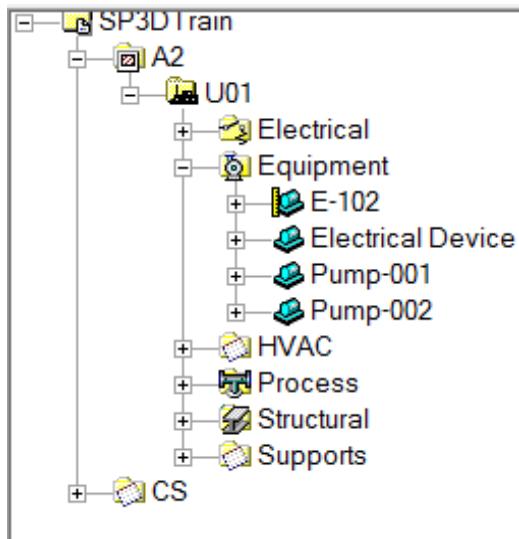
- Click **File > Exit** to exit **SmartSketch Drawing Editor**. Click **Yes** to save the drawing.

Show Behaviour of Manual and Automatic Labels

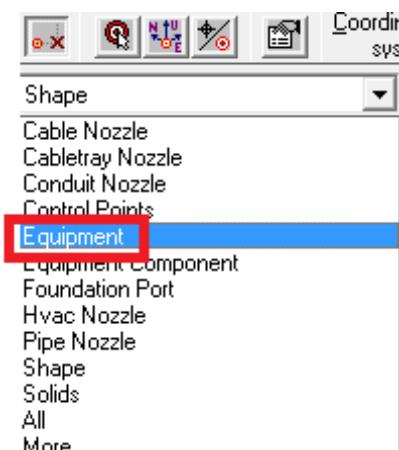
Objective: Copy one of the pumps and show the different behaviour of automatically-placed versus manually-placed labels.

- Click **Tasks > Equipment and Furnishings** to enter the task to modify the position of an equipment object.
- Select the face that changes the look direction to **Looking Plan** on the **Common Views** dialog box.
- Click **Fit** .
- Select the **System** tab of the **Workspace Explorer**.

5. Expand the **A2**, **U01**, and **Equipment** nodes.



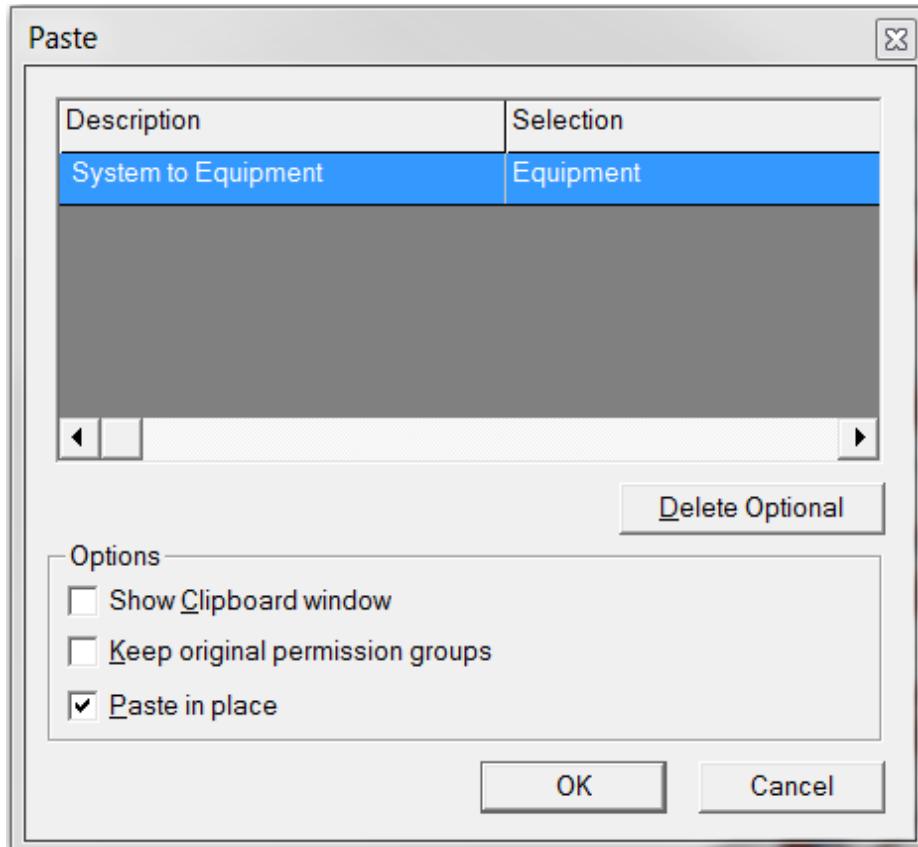
6. Ensure **Equipment** displays in the **Locate Filter** list in the upper left area of the **Smart 3D** window.



7. Select **Pump-002** on the **System** tab of the **Workspace Explorer** to select the object in the graphic window.
8. Click **Edit > Copy**.
9. Use the **PinPoint** ribbon to define the reference point of the copy:
10. Type **0** in the **E** field on the **PinPoint** ribbon. Press TAB.
The field displays 0.00 mm and is locked.
11. Type **0** in the **N** field on the **PinPoint** ribbon. Press TAB.
The field displays 0.00 mm and is locked.
12. Type **0** in the **EI** field on the **PinPoint** ribbon. Press TAB.
The field displays 0.00 mm and is locked.
13. Click anywhere in the graphic view to complete the definition of the origin point of the move.

14. Click **Edit > Paste**.

The **Paste** dialog box displays.



15. Clear **Paste in place**.

16. Click **OK** on the **Paste** dialog box.

17. Use the **PinPoint** ribbon to define the destination point of the pasted object:

18. Type **-3048** In the **E** field on the **PinPoint** ribbon. Press TAB.

*The field displays **-3048.00 mm** and is locked.*

19. Type **4572** in the **N** field on the **PinPoint** ribbon. Press TAB.

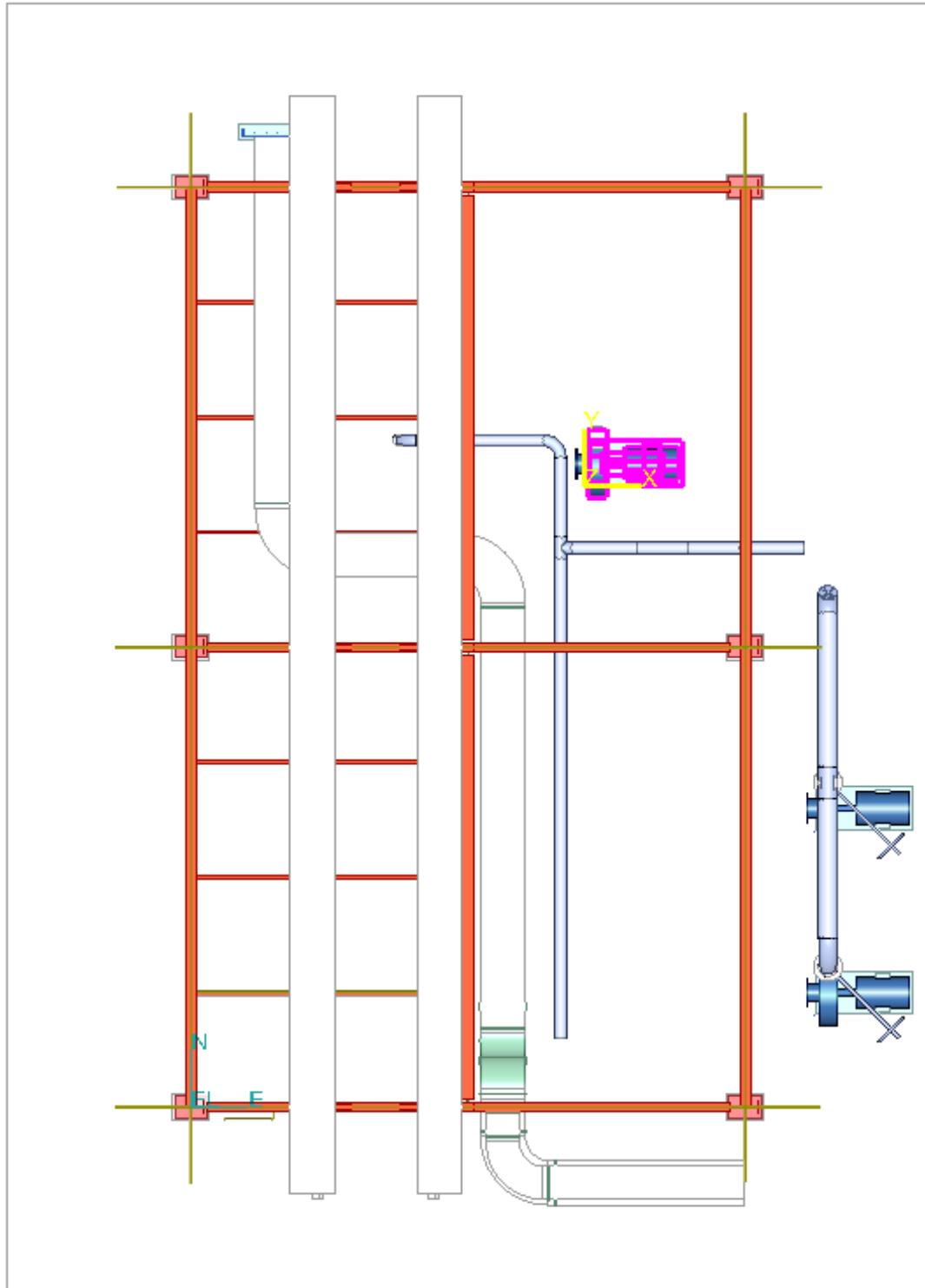
*The field displays **4572.00 mm** and is locked.*

20. Type **0** in the **EI** field on the **PinPoint** ribbon. Press TAB.

*The field displays **0.00 mm** and is locked.*

Placing Labels and Dimensions

21. Click anywhere in the graphic view to complete placement of the pasted object.



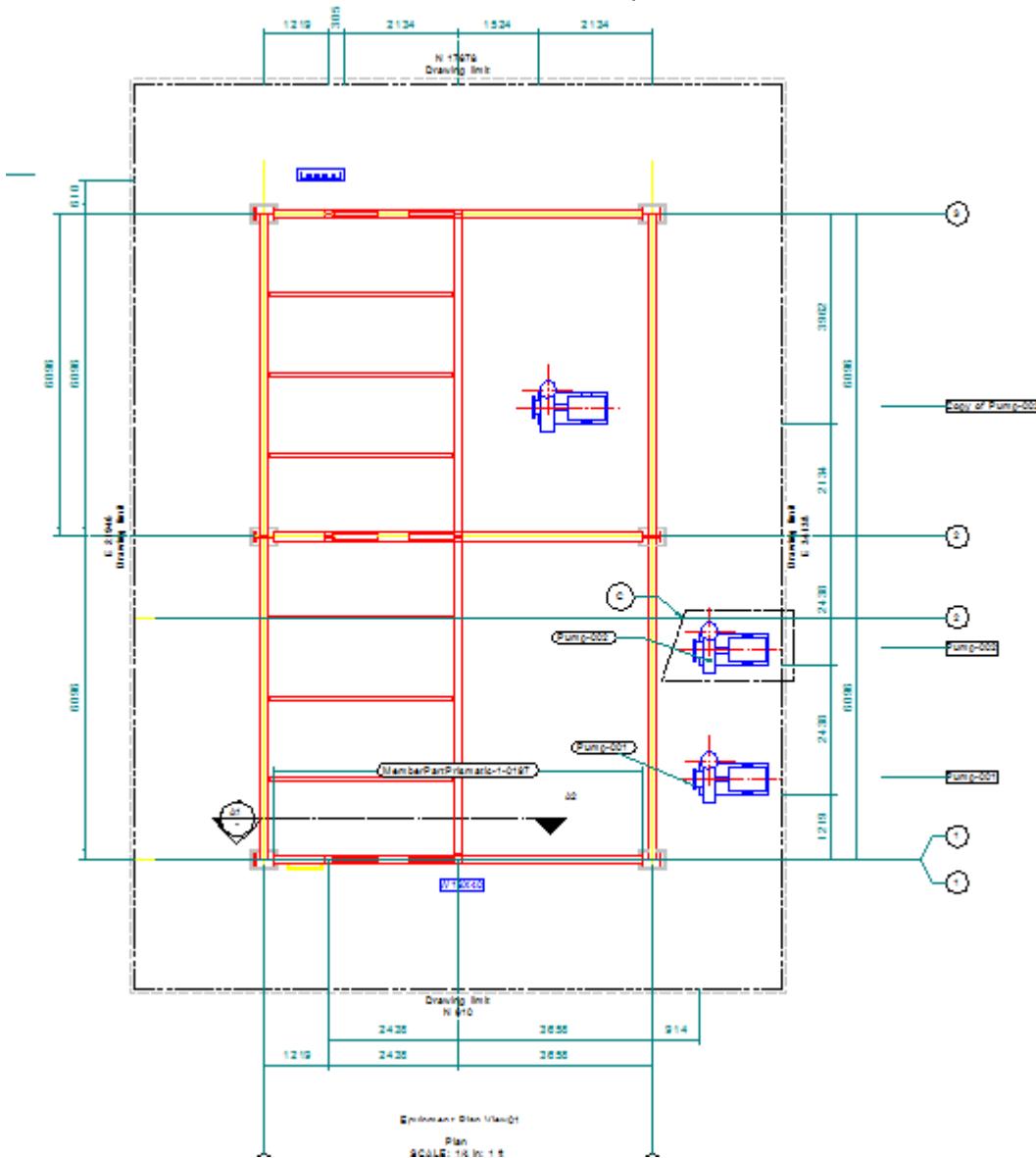
22. Right-click in the graphic window to clear the selection from the pasted object.

23. Switch to the **Drawing Console** window.
 24. Right-click **Drawings\Creation Labs\10\Equipment Plan01**, and select **Update Now**.

The software generates the contents of the drawing.
 25. When the update completes, right-click **Equipment Plan01** and select **Edit**.

*The **SmartSketch Drawing Editor** window displays.*
 26. Maximize the drawing window in **SmartSketch Drawing Editor**.
 27. Click **Fit** .

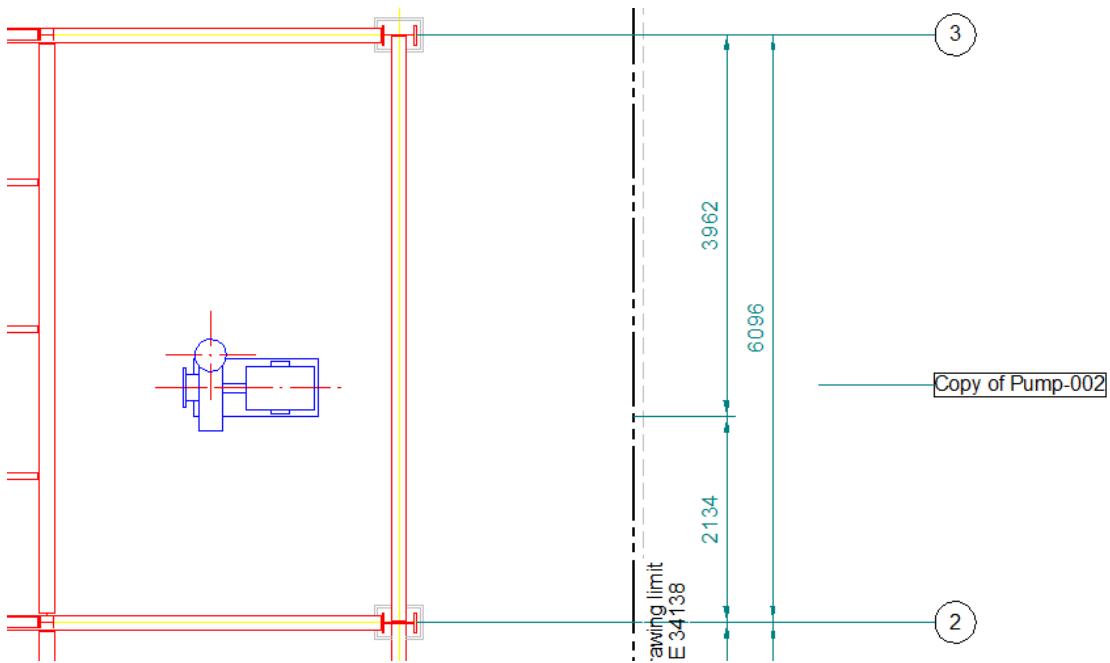
The results in the main view should look similar to the picture below:



TIP The copied pump displays in the drawing and has automatic labels and dimensions attached to it.

28. Click **Zoom Area** .

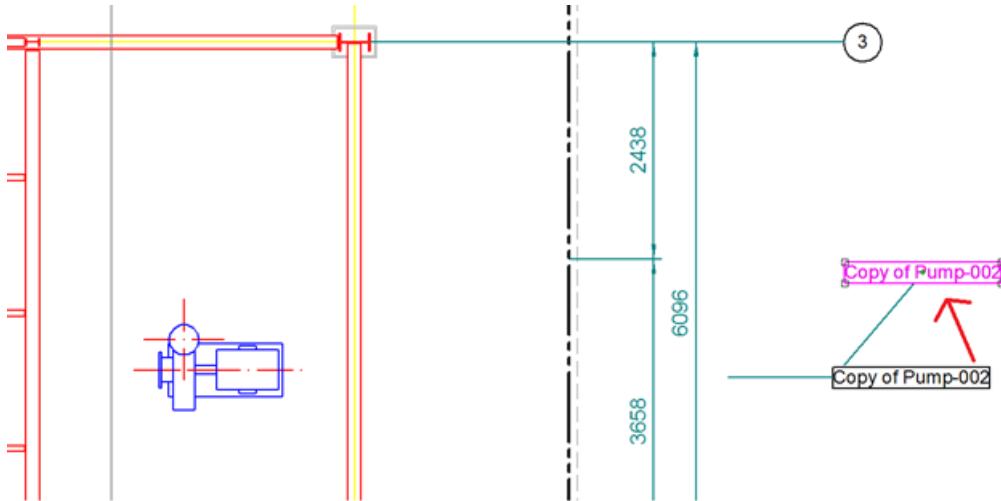
29. Drag a rectangle around the top half of the view to get a closer look at the contents.



30. Right-click to exit **Zoom Area**.

31. Select the label that displays **Copy of Pump-002**.

32. Drag the label to a position slightly up from its original position.



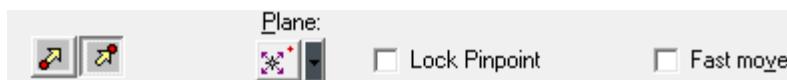
33. Click **File > Exit** to exit **SmartSketch Drawing Editor**. Click **Yes** to save the drawing.

34. Select **Copy of Pump-002** on the **System** tab of the **Workspace Explorer**.

The object highlights in the graphic window.

35. Click **Move**  on the **Common** toolbar.

The **Move** ribbon displays.



The selected object is attached to the cursor and the **Move To** button on the ribbon is enabled.

36. On the **Move** ribbon, select the **Move From** button.



37. Use the **PinPoint** ribbon to define the origin point of the move:

38. Type **0** in the **E** field on the **PinPoint** ribbon. Press TAB.

*The field displays **0.00 mm** and is locked.*

39. Type **0** in the **N** field on the **PinPoint** ribbon. Press TAB.

*The field displays **0.00 mm** and is locked.*

40. Type **0** in the **El** field on the **PinPoint** ribbon. Press TAB.

*The field displays **0.00 mm** and is locked.*

41. Click anywhere in the graphic view to complete the definition of the origin of the move.

42. Use the **PinPoint** ribbon to define the destination point of the move:

43. Type **0** in the **E** field on the **PinPoint** ribbon. Press TAB.

*The field displays **0.00 mm** and is locked.*

44. Type **1524** in the **N** field on the **PinPoint** ribbon. Press TAB.

*The field displays **1524.00 mm** and is locked.*

45. Type **0** in the **El** field on the **PinPoint** ribbon. Press TAB.

*The field displays **0.00 mm** and is locked.*

46. Click anywhere in the graphic view to complete the move of the object.

47. Right-click in the graphic window to clear the selection from the moved object.

48. Switch to the **Drawing Console** window.

49. Right-click **Equipment Plan01**, and select **Update Now**.

The software generates the contents of the drawing.

50. When the update completes, right-click **Equipment Plan01**, and select **Edit**.

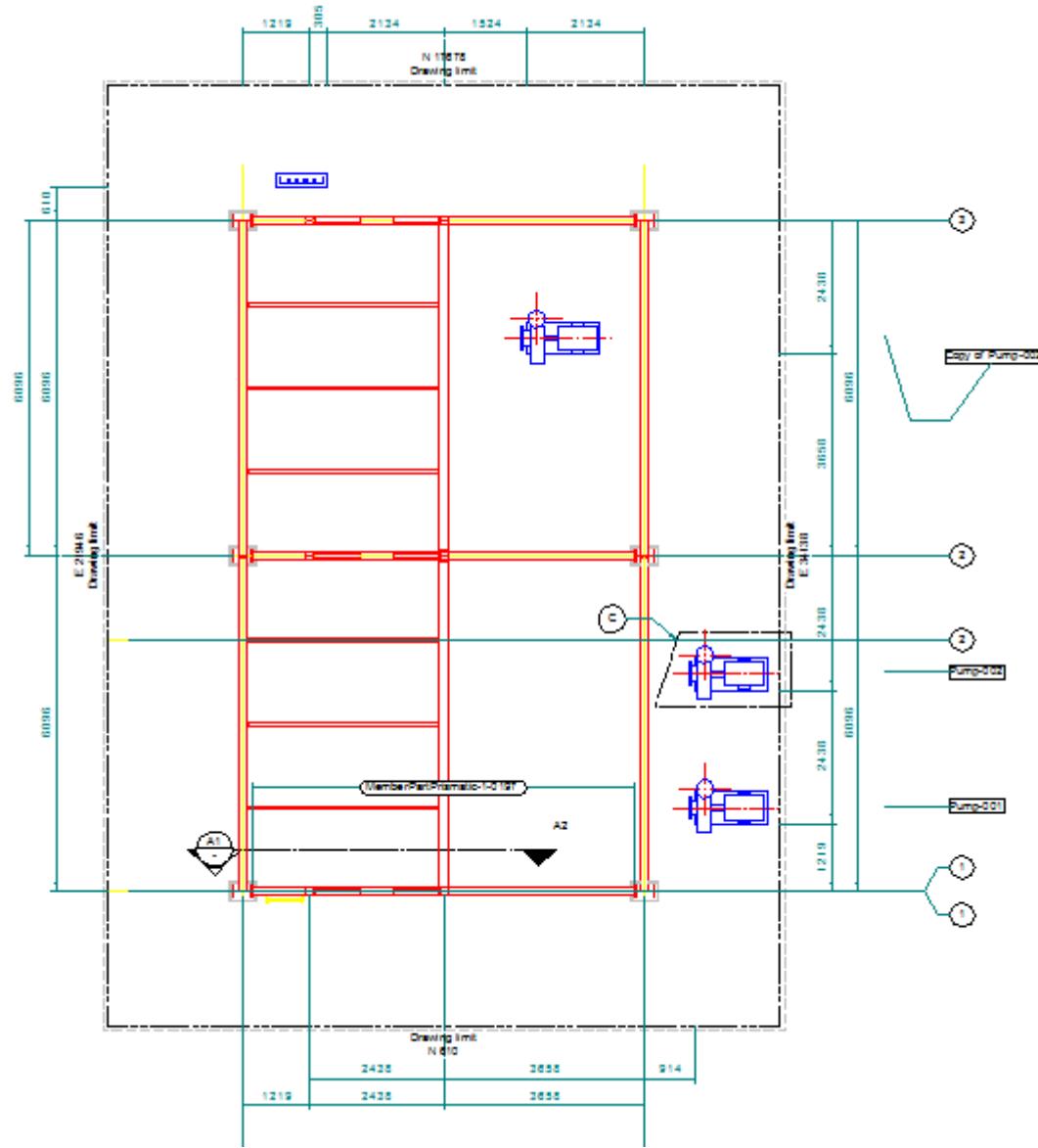
*The **SmartSketch Drawing Editor** window displays.*

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

52. Click **Fit** .

Placing Labels and Dimensions

The results in the main view should look similar to the picture below:



The equipment reflects the new position in the model, but the modified label stays where it was moved.

The leader extends to connect to the new position of the equipment.

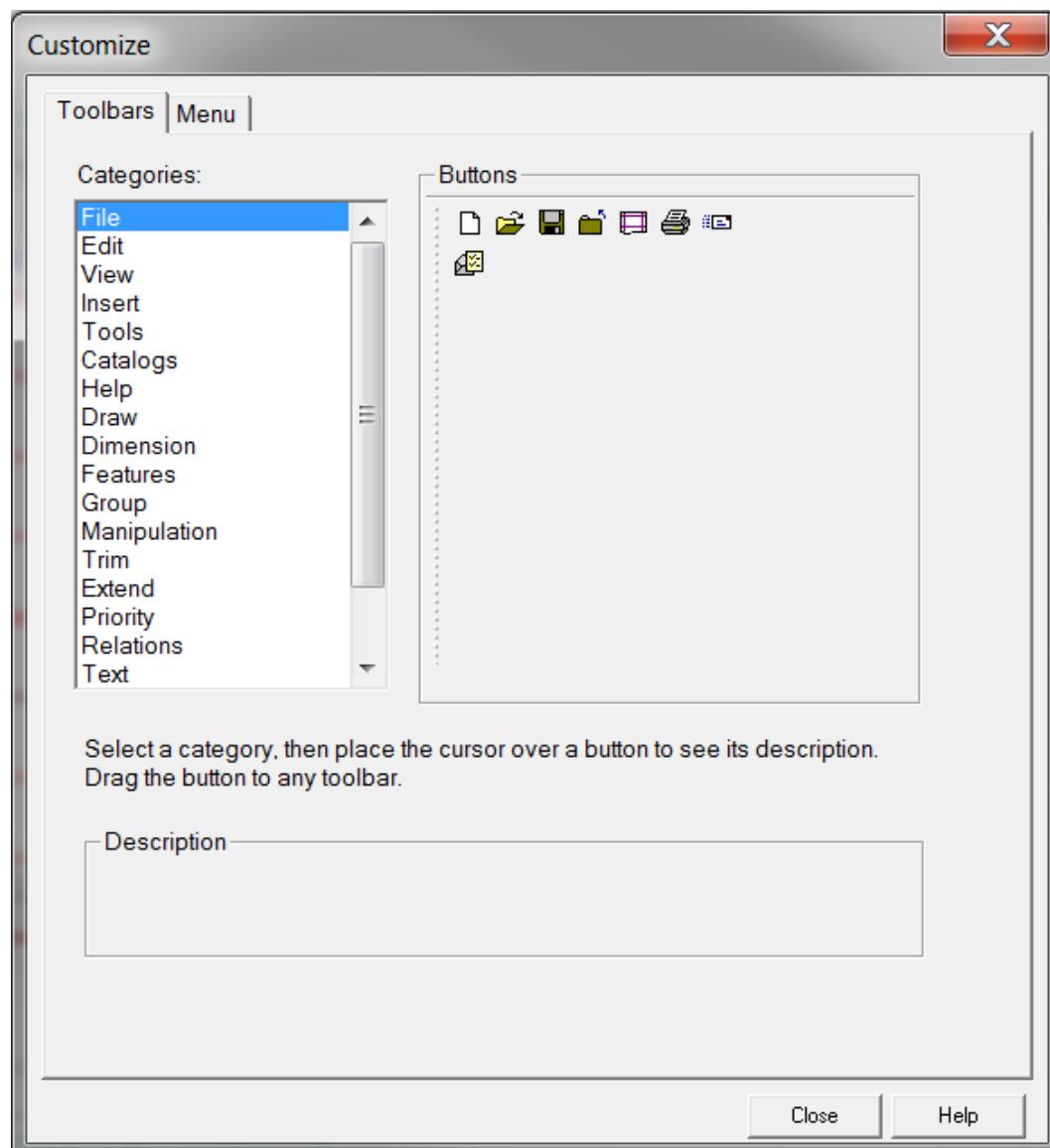
TIP Labels that have been *manually* placed with the **Place a Label** command maintain their position after update. In addition, automatically-place labels that have been moved or modified also maintain their position after update. Only labels that are automatically-placed and never modified or moved will move with the labeled object on update.

Add Drawings Custom Commands

Objective: Create toolbars by dragging the **ClearManualEdits.dll** and **SP3DDwgHighlightCmd.dll** custom commands to the toolbar area.

1. Click **Tools > Customize** in **SmartSketch Drawing Editor**.

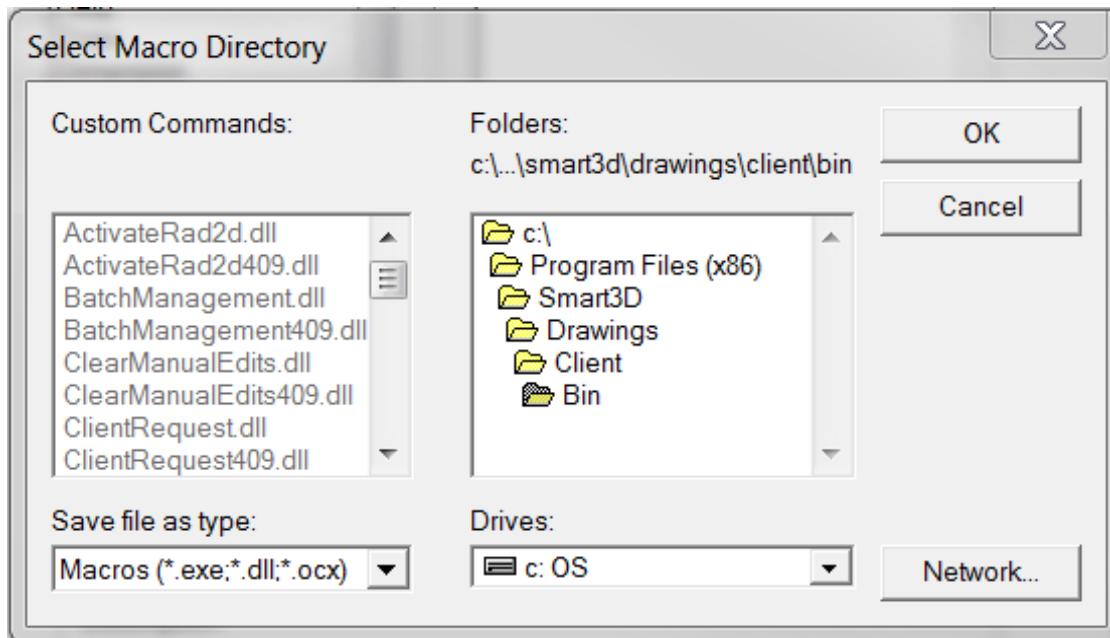
The **Customize** dialog box displays.



2. Scroll to the bottom of the **Categories** list, and select **Custom Commands**.
3. Click **Browse** on the **Customize** dialog box.

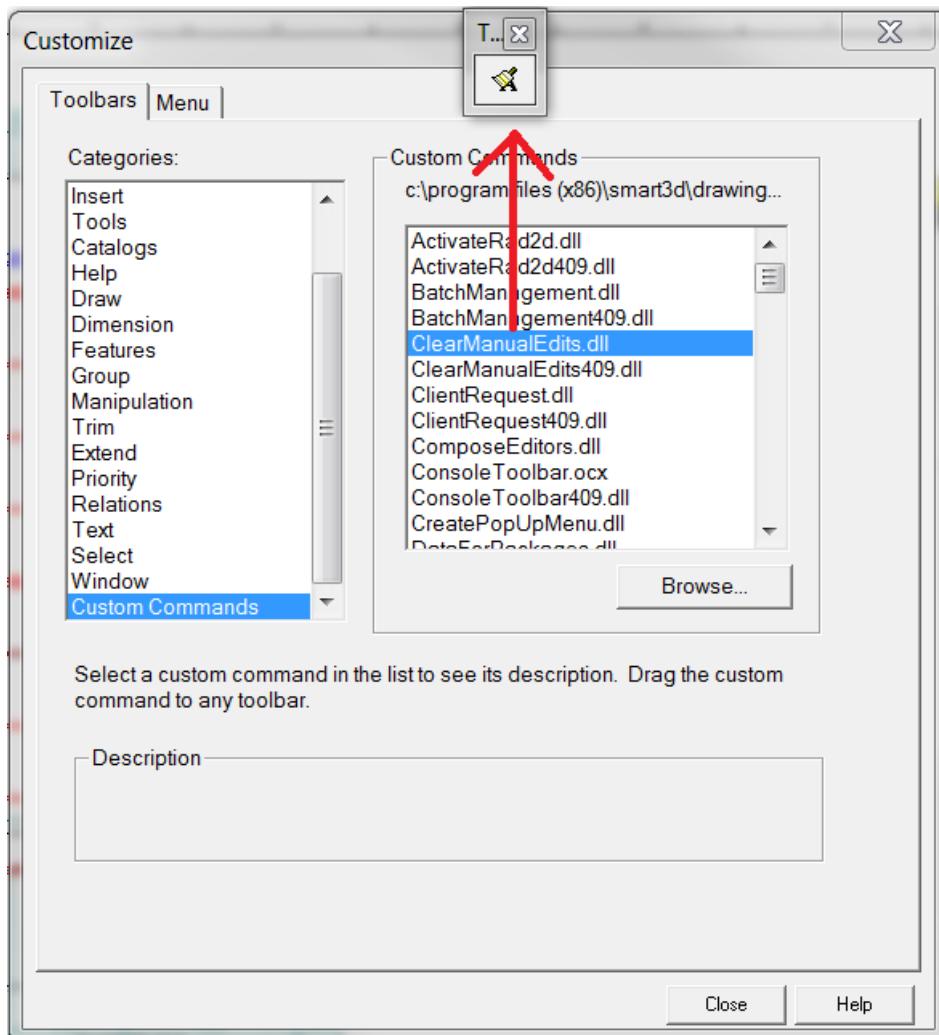
The **Select Macro Directory** dialog box displays.

4. Browse to the folder [Smart 3D Installation Directory]\Drawings\Client\Bin in the **Select Macro Directory** dialog box .



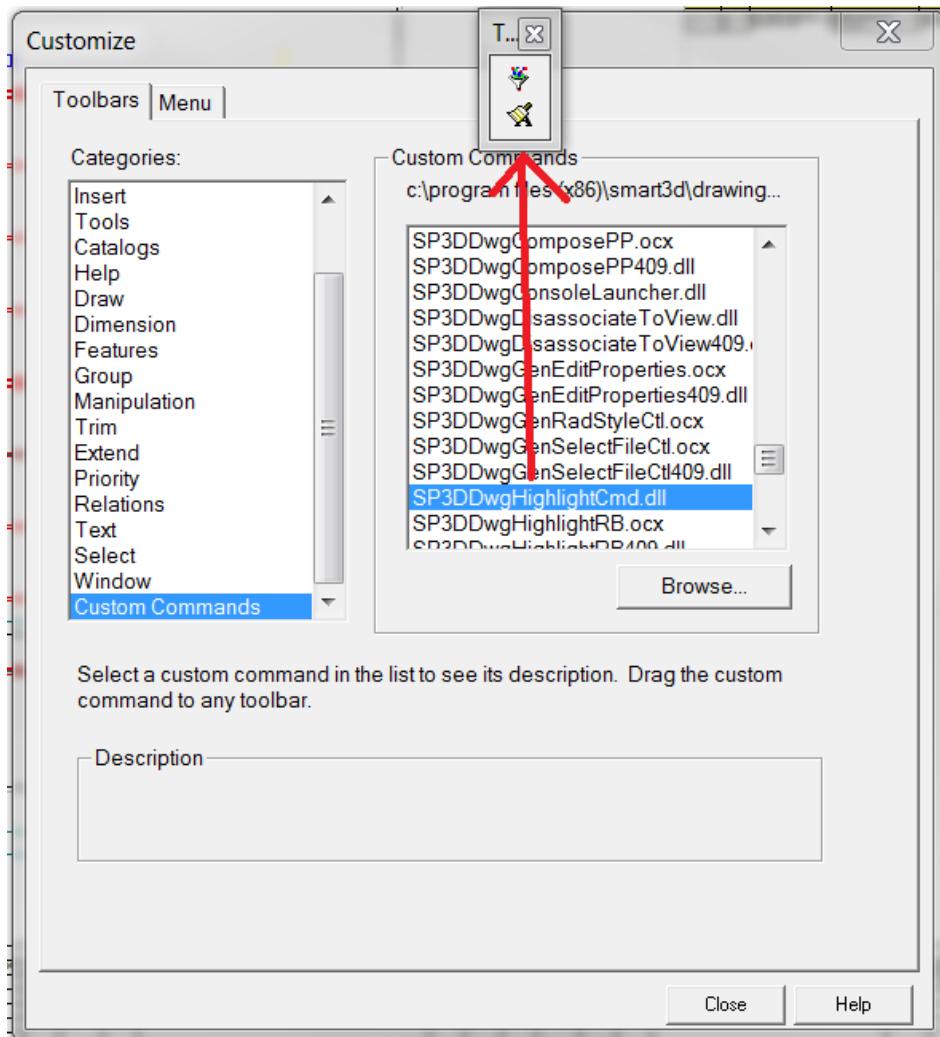
5. Click **OK** on the **Select Macro Directory** dialog box to return control to the **Customize** dialog box.
6. Drag **ClearManualEdits.dll** from the **Custom Commands** area to the toolbar area of **SmartSketch Drawing Editor** on the **Customize** dialog box.

The software creates a new toolbar and adds an icon to it.



7. Scroll through the **Custom Commands** list, and drag **SP3DDwgHighlightCmd.dll** from the **Custom Commands** area to the **Clear Manual Edits** toolbar.

The software adds the **Highlight** button to the toolbar.



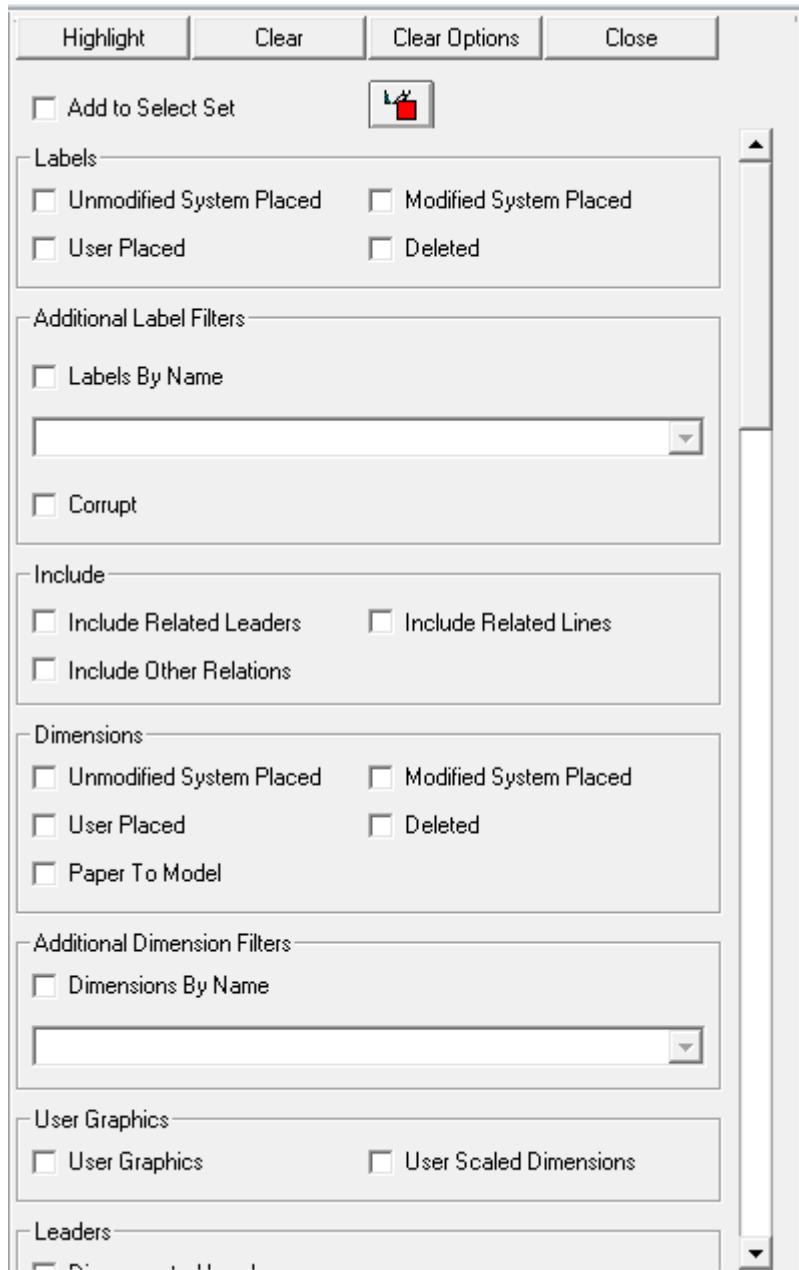
8. Click **Close** on the **Customize** dialog box.

Use the Highlight Command

Objective: Use the **Highlight** command to locate labels that have been manually placed in the drawing.

1. Click **Highlight**

The **Highlight** dialog box displays docked to the left of the graphic window.

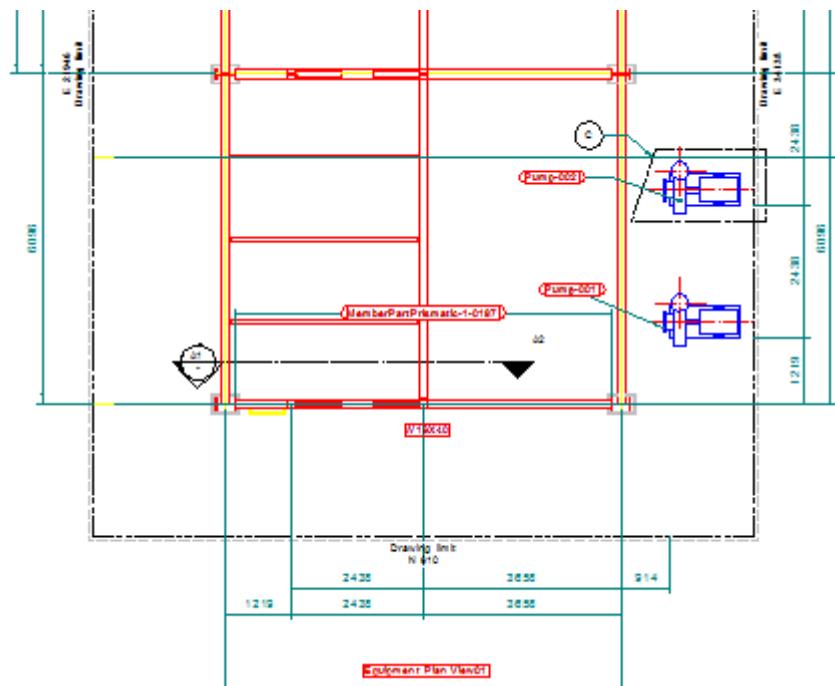


TIP The **Highlight** dialog box highlights or selects labels and dimensions based on their state or source. This can be useful for troubleshooting.

2. In the **Labels** section of the dialog box, select **User Placed** and click **Highlight** to highlight user-placed labels.

Placing Labels and Dimensions

The highlighted labels are the ones placed earlier in this lab.



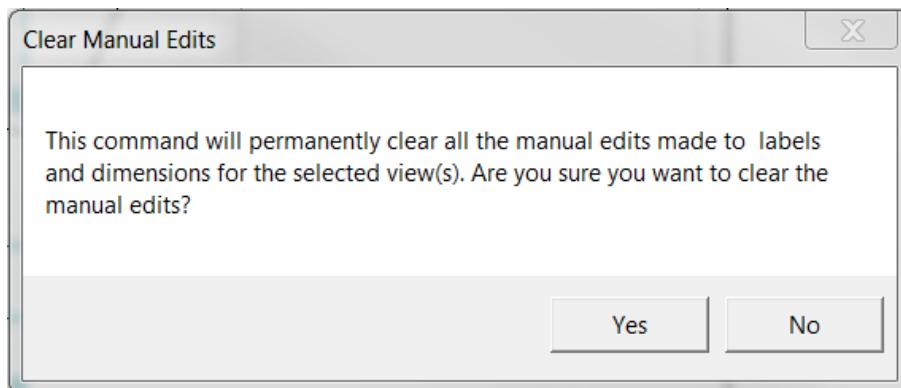
3. Click **Close** on the **Highlight** dialog box.

Clear Manual Edits

Objective: Use the **Clear Manual Edits** command to remove any modifications in the drawing.

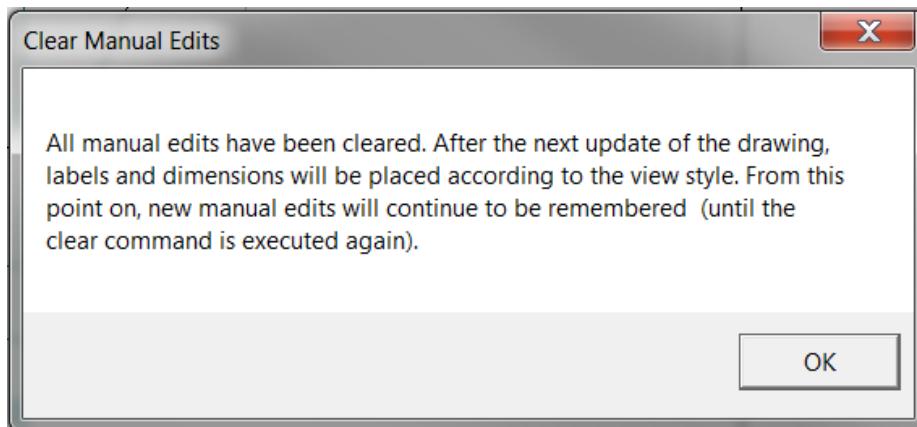
1. Select the main graphic view.
2. Click **Clear Manual Edits** .

A message displays indicating that the software will remove any manual edits made to automatically-placed labels and dimensions as well as manually-placed labels and dimensions.



3. Click **Yes** on the message box.

A message displays explaining that the software will remove the edits after the next update.



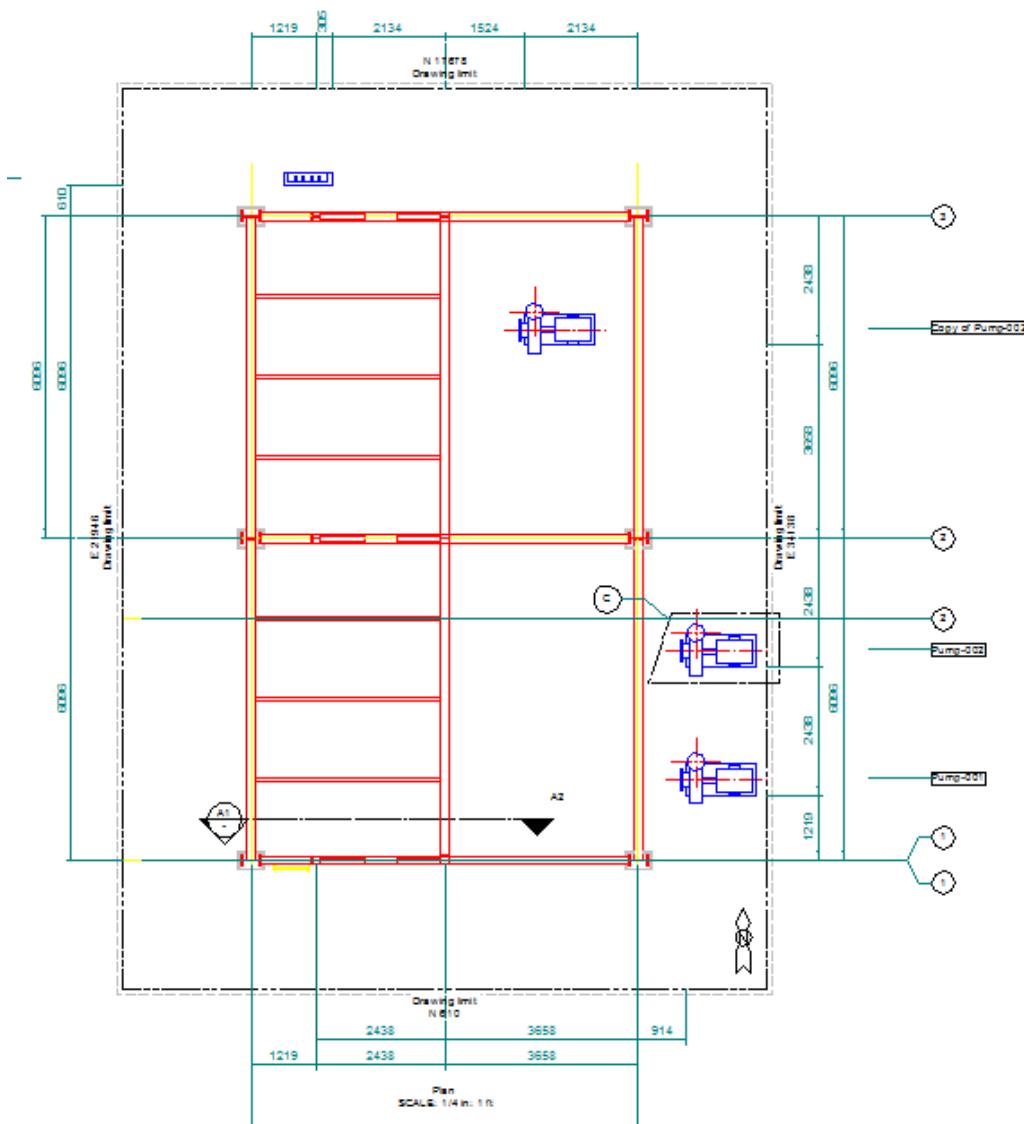
TIP The message does not mention that it is necessary to save the drawing before performing the update to remove the manual edits.

4. Click **OK** on the message box.
5. Click **File > Exit** to exit **SmartSketch Drawing Editor**. Click **Yes** to save the drawing.
6. Switch to the **Drawing Console** window.

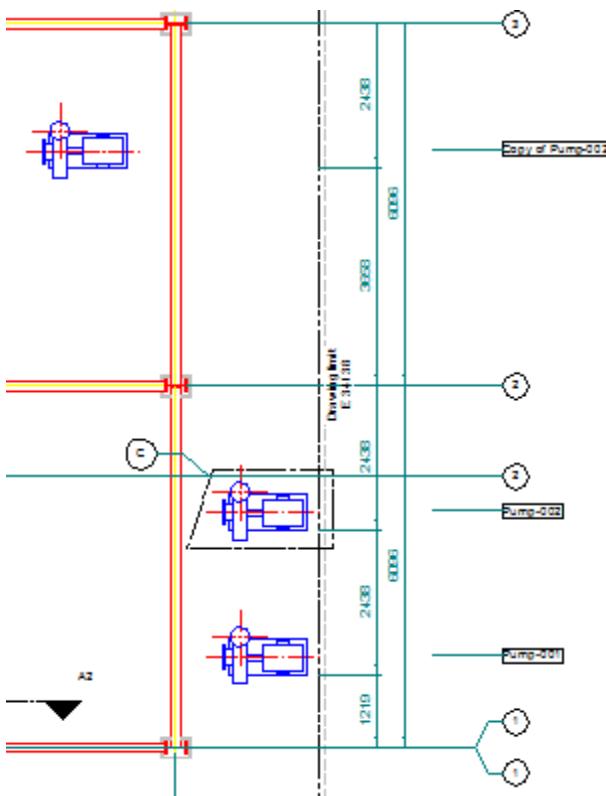
Placing Labels and Dimensions

7. Right-click on the drawing **Drawings\Creation Labs\10\Equipment\Equipment Plan01**, and select **Update Now**.
The software generates the contents of the drawing.
 8. When the update completes, right-click on the drawing **Equipment Plan01**, and select **Edit**.
*The **SmartSketch Drawing Editor** window displays.*
 9. Maximize the drawing window in **SmartSketch Drawing Editor**.
 10. Click **Fit** .

The results in the main view should look similar to the picture below:



The manually-placed labels are removed and the label for the new pump has moved.



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

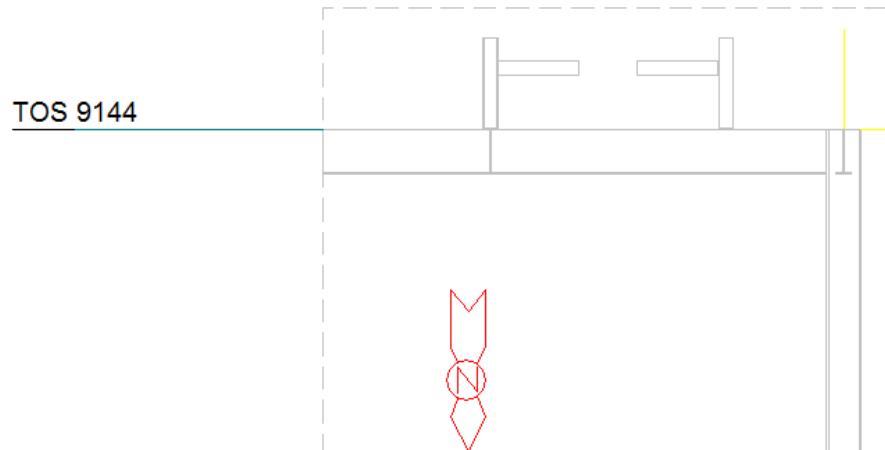
Use the Smart Dimension Command

Objective: Use the **Smart Dimension** command to place dimensions in the drawing.

1. Switch to the **Drawing Console** window.
2. Right-click **Drawings Creation Labs\10\Section and Detail Views**, and select **Edit**.
*The **SmartSketch Drawing Editor** window displays.*
3. Maximize the drawing window in **SmartSketch Drawing Editor**.
4. Click **Fit** .
5. Click **Zoom Area** .

Placing Labels and Dimensions

6. Drag a rectangle around the top half of the section view to get a closer look at the contents.

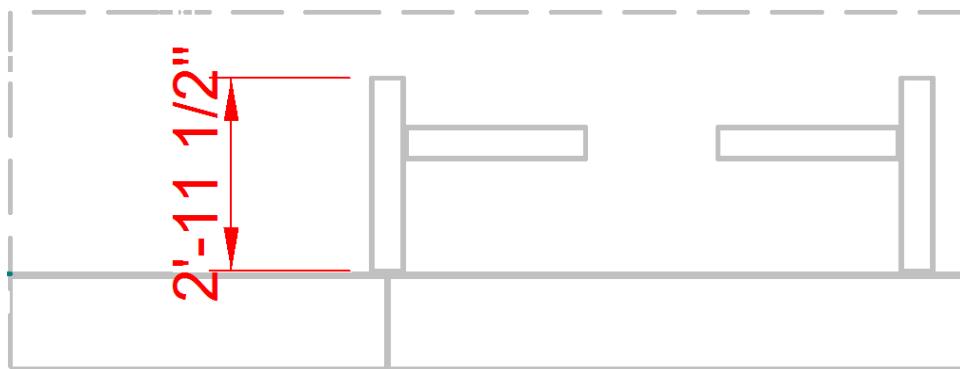


7. Right-click to exit **Zoom Area**.

8. Click **SmartDimension**  on the **Dimension** toolbar.

The status bar displays **Click on an element to dimension**.

9. Select the left edge of the column as shown in the picture below to display the dimension attached to the cursor.



TIP The value of the dimension is in *model space*. Dimensioning elements that exist within the view (that is, embedded within the SmartFrame element) applies the scale of the view to the dimension.

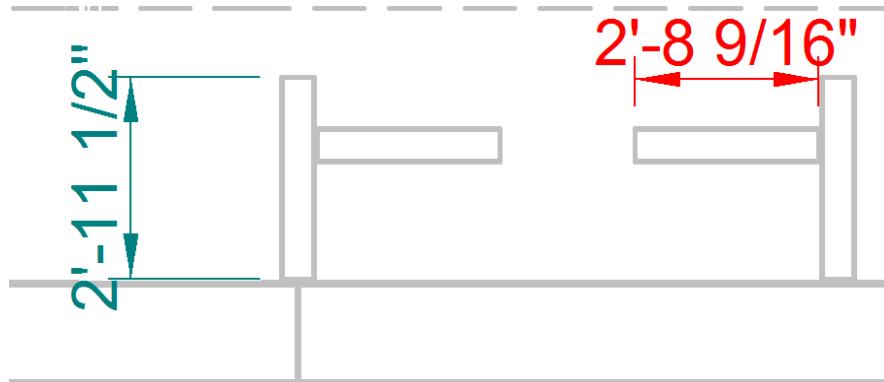
The status bar displays **Click to create the dimension**.

10. Click to the left of the column to place the dimension.

The status bar displays **Click on an element to dimension**.

The **SmartDimension** command is still active.

11. Select the top edge of the beam at the right as shown in the picture below to display the dimension attached to the cursor.

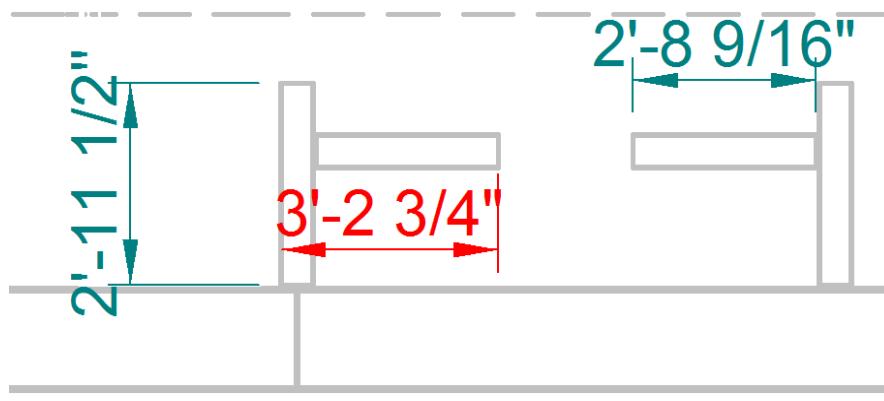


12. Click above the beam to place the dimension.

Use the Distance Between Dimension Command

Objective: Use the **Distance Between** command to place dimensions in the drawing.

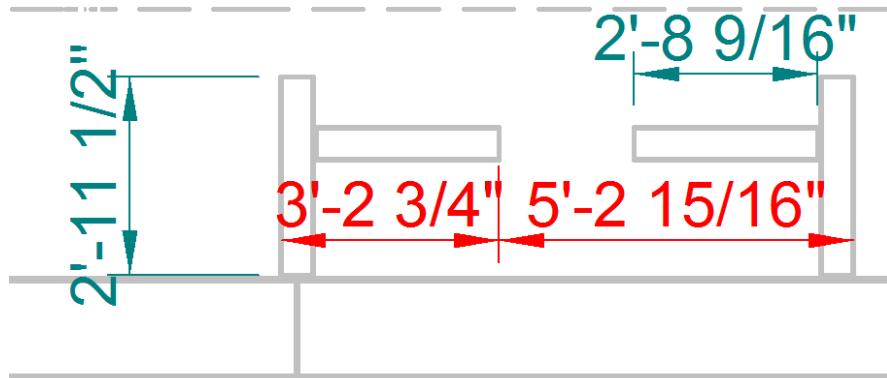
1. Click **Distance Between**  on the **Dimension** toolbar.
*The status bar displays **Click on the dimension origin element**.*
2. Select the same left edge of the column as before to define the start point of the dimension.
*The status bar displays **Click on the dimension measurement element**.*
3. Select the right edge of the left beam as shown in the picture below to display the dimension attached to the cursor.



*The status bar displays **Click to create the dimension**.*

4. Click below the beam to place the dimension.
*The status bar displays **Click on the dimension measurement element**.
The **Dimension Between** command is still active.*

- Select the right edge of the right column as shown in the picture below to display the dimension attached to the cursor.

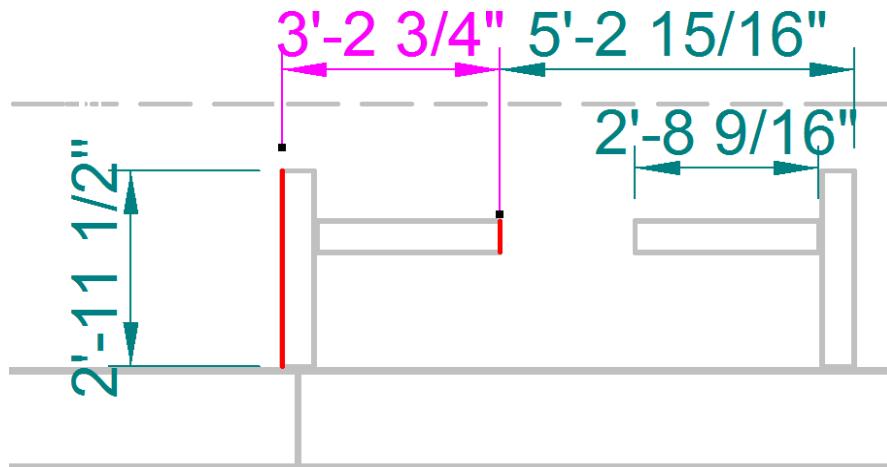


If you move the cursor to the right of the first dimension, the second dimension is automatically aligned with the first dimension placed. If you move the cursor below the first dimension, the second dimension is stacked with the first dimension.

The status bar displays **Click to create the dimension**.

- Click alongside the first dimension so that the second is aligned with it.
- Press ESC to exit **Dimension Between**.
- Drag the first dimension line that you placed (not the dimension text but the dimension line) above the beams.

The second dimension is still aligned with the first dimension when the move is complete.



TIP Dimensions placed with **Dimension Between** are grouped. However, it depends on which dimension in the group is moved that determines whether the group moves as one element. If the first dimension (the *master* dimension) is moved, the other dimensions move with it. If another dimension is moved, it moves independently; no other dimension moves.

- Click **File > Exit** to exit **SmartSketch Drawing Editor**. Click **Yes** to save the drawing.

Delete Copied Equipment

Objective: Delete the pasted equipment so that it does not affect later drawings.

1. Select the pasted equipment created earlier in this lab.
2. Press DELETE.

The pasted equipment is removed from the model.

L A B 1 0

Drawings by Query

Objective

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

- Specify the "where" filter to create drawing by query for hanger supports
- Edit the Coordinate System property of a drawing to create location plans
- Add a new support to the model that is returned by the "where" filter
- Modify the "where" filter to include another system node.

Overview

Smart 3D provides a drawing component that allows you to create orthographic drawings using a filter-based query, as opposed to the volume-based query of the composed component. Two components are involved in the creation of these drawings: orthographic drawings by query and drawings by query manager. For simplicity, the method of drawing creation using these components is called drawings by query or DBQ for short.

Using the DBQ method is useful when many objects in the model, such as hangers or equipment, need to be documented with the same view layout, properties, and style.

With DBQ, there is no need to place volumes in the model. Volumes are generated based on the object that is the subject of the drawing, as well as navigation rules, which further control the size of the volume and the contents of the view.

In this session, we cover the procedure for how to create a DBQ and the reference coordinate system property. We will also add another support and modify the DBQ filter and see the results of the changes.

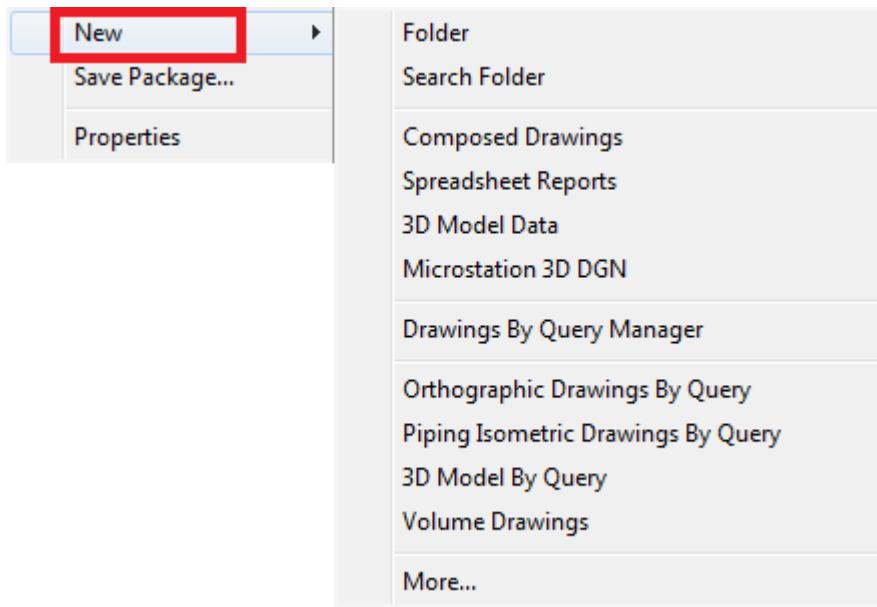
Add Drawings by Query Manager Component

Objective: Add a drawings by query manager component to the drawings hierarchy. In a later section, the manager component will reference a "package" containing information on the border template and the type of object to include in each drawing.

NOTE This task is typically performed by your administrator.

1. Switch to the **Drawing Console** window.
2. Right-click the **Drawings/Creation Labs\11** folder in the **Drawing Console**, and hover over **New**.

*The sub-menu for the **New** command displays.*



3. Select **Drawings By Query Manager**.

*A new component called **Drawings By Query Manager** displays under the folder.*

4. Right-click the component **Drawings By Query Manager** in the **Drawing Console**, and select **Rename**.
5. Type **Hanger Support Drawings**.

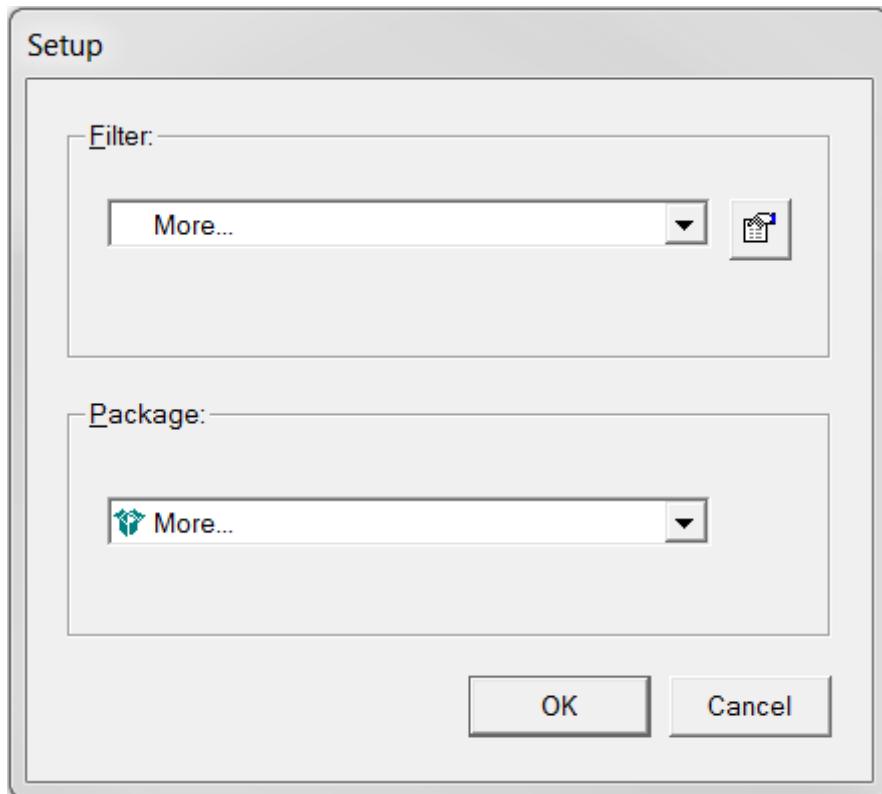
Setup Drawings by Query Manager Component

Objective: Edit the setup of the DBQM and specify where in the model to look for the focus object type.

NOTE This task is typically performed by your administrator.

1. Right-click **Hanger Support Drawings** in the **Drawing Console**, and select **Setup**.

The **Setup** dialog box displays.



TIP The setup for the DBQM component tells the software what object type is the focus of the DBQ drawings and where to look for the object type in the model. In this lab, the focus object type is pipe supports. The package contains the information regarding the object type as well as the drawing template. The filter specifies where in the model to look for the object type.

TIP Packages are files saved on disk (in the shared content, to be exact) that, among other things, store templates for volume drawings and drawings by query. They are not used, however, for storing composed drawing templates.

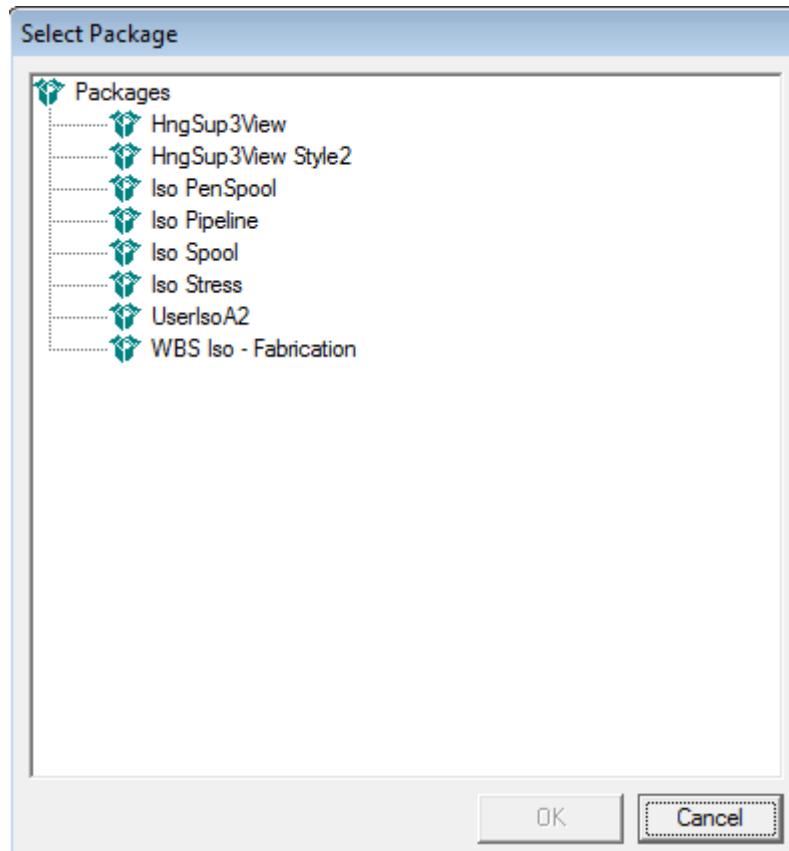
2. Select **More** from the **Filter** list on the **Setup** dialog box.

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

3. Expand the **11** folder under the **Drawings Creation Filters** node on the **Select Filter** dialog box.
4. Select the **U01 Drawing** filter.
5. Click **OK** on the **Select Filter** dialog box.
6. Select **More** from the **Package** list on the **Setup** dialog box.

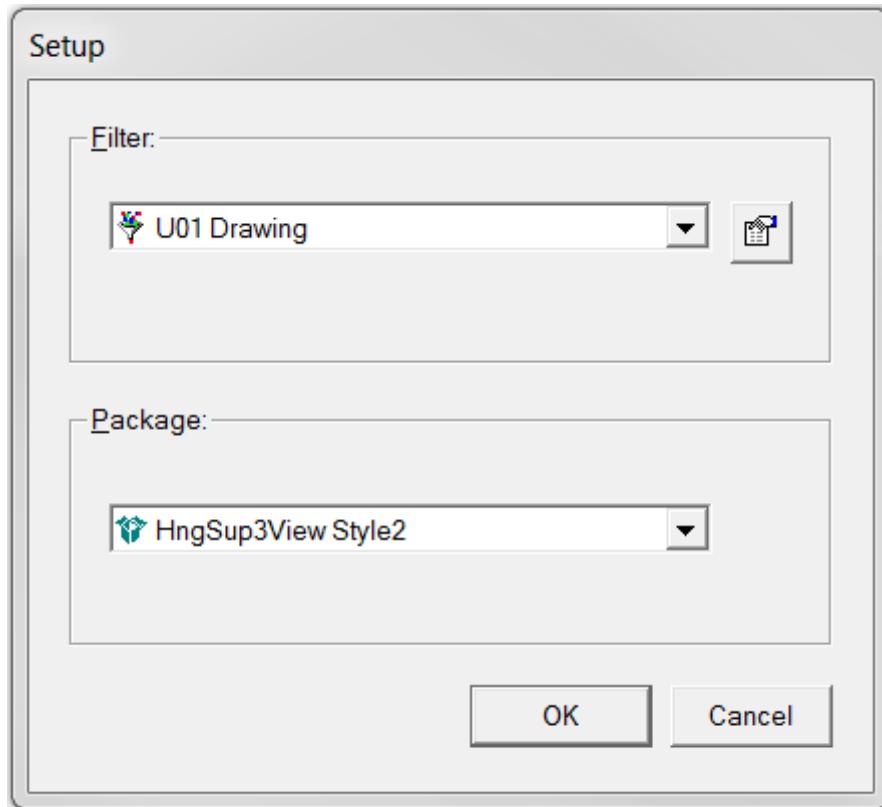
*The software populates the **Filter** field on the **Setup** dialog box.*

The **Select Package** dialog box displays.



7. Select **HngSup3View Style2** on the **Select Package** dialog box.
8. Click **OK** on the **Select Package** dialog box.

The software returns control to the **Setup** dialog box.



9. Click **OK** on the **Setup** dialog box to save and exit the setup of the DBQM component.

Execute the DBQM Query and Create Drawings

Objective: Now that the setup on the DBQM is complete, run the query comprised of the “where” filter in the DBQM setup with the “what” filter in the package.

1. Right-click **Hanger Support Drawings** on the **Drawing Console**, and select **Run Query**.

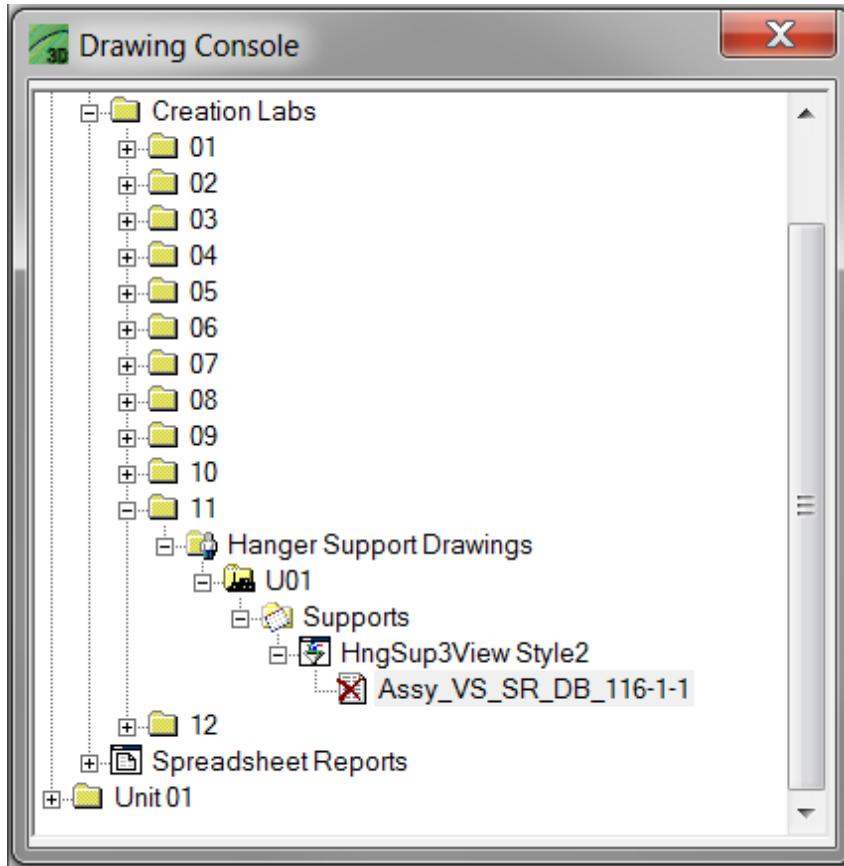
The software constructs the hierarchy underneath the DBQM component.

TIP The hierarchy is constructed from the filter value on the DBQM setup, in this case the **U01** unit system, down to each support assembly.

2. Right-click **Hanger Support Drawings** on the **Drawing Console**, and select **Create Drawing(s)**.

The software creates a drawing for each support assembly under the U01 unit system.

3. Expand **Hanger Support Drawings** and each node underneath until the drawing displays.



TIP Only one support assembly exists under the unit system U01 so only one drawing is created. The name of the drawing matches the name of the support assembly in the model.

4. On the **System** tab of the **Workspace Explorer**, expand the **U01** and **Supports** nodes to display the lone support assembly.

*Notice that the hierarchy in the **Workspace Explorer** matches the hierarchy in the **Drawings Console** under the DBQM. The name of the parent node of the drawing is taken from the name of the DBQ template in the package.*

Update Drawings by Query

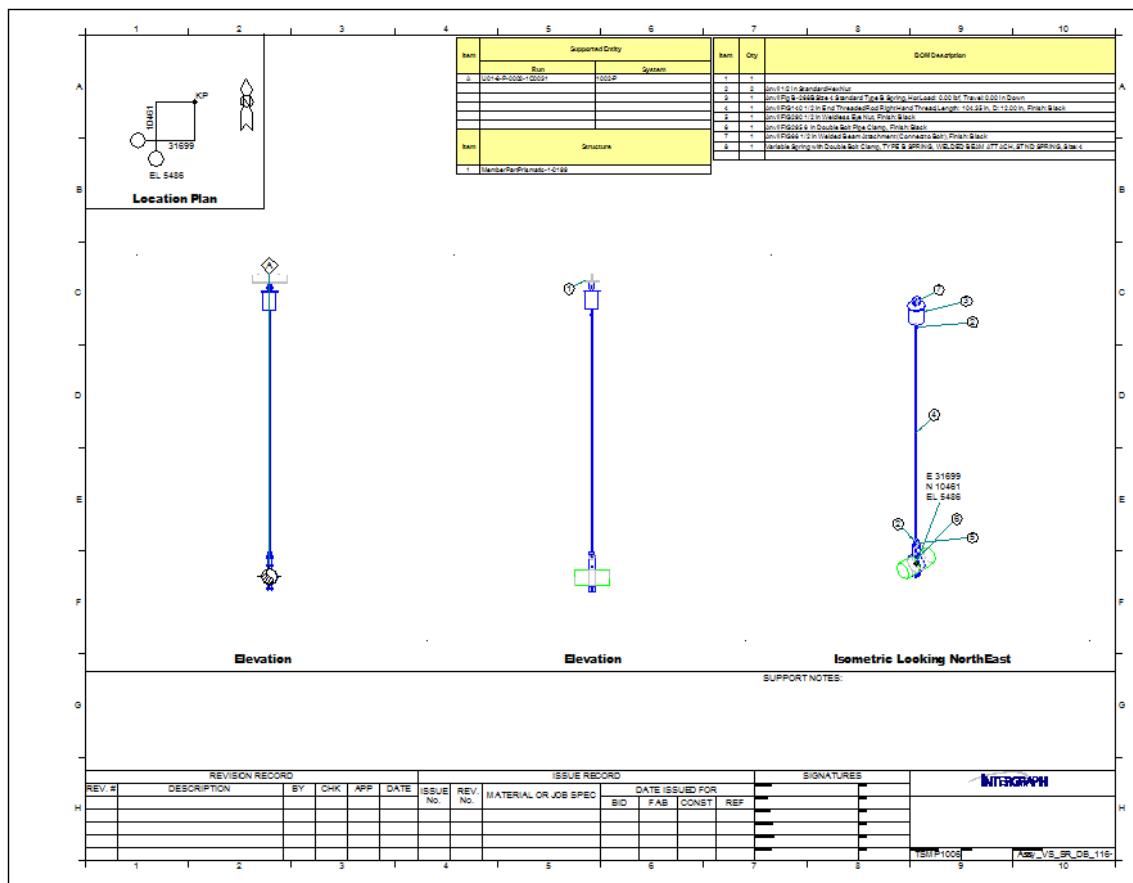
Objective: Generate the drawing content.

1. Right-click the drawing on the **Drawing Console**, and select **Update Now**.
The software generates the drawing.
2. After the update completes, right-click the drawing on the **Drawing Console** window, and select **Edit**.
*The **SmartSketch Drawing Editor** window displays.*

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

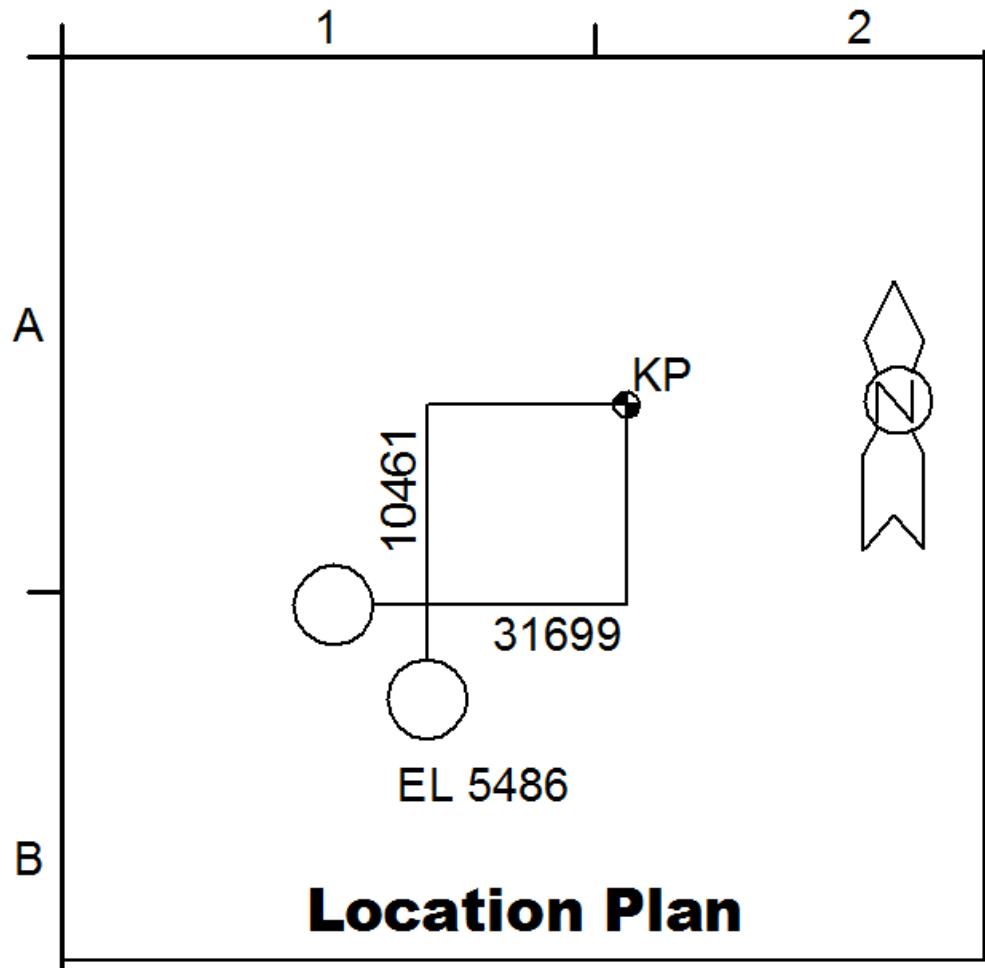
4. Click **Fit** .

The drawing contents should look similar to the picture below:



5. Click **Zoom Area** .

6. Drag a rectangle around the top left quadrant of the drawing to get a closer look at the contents.



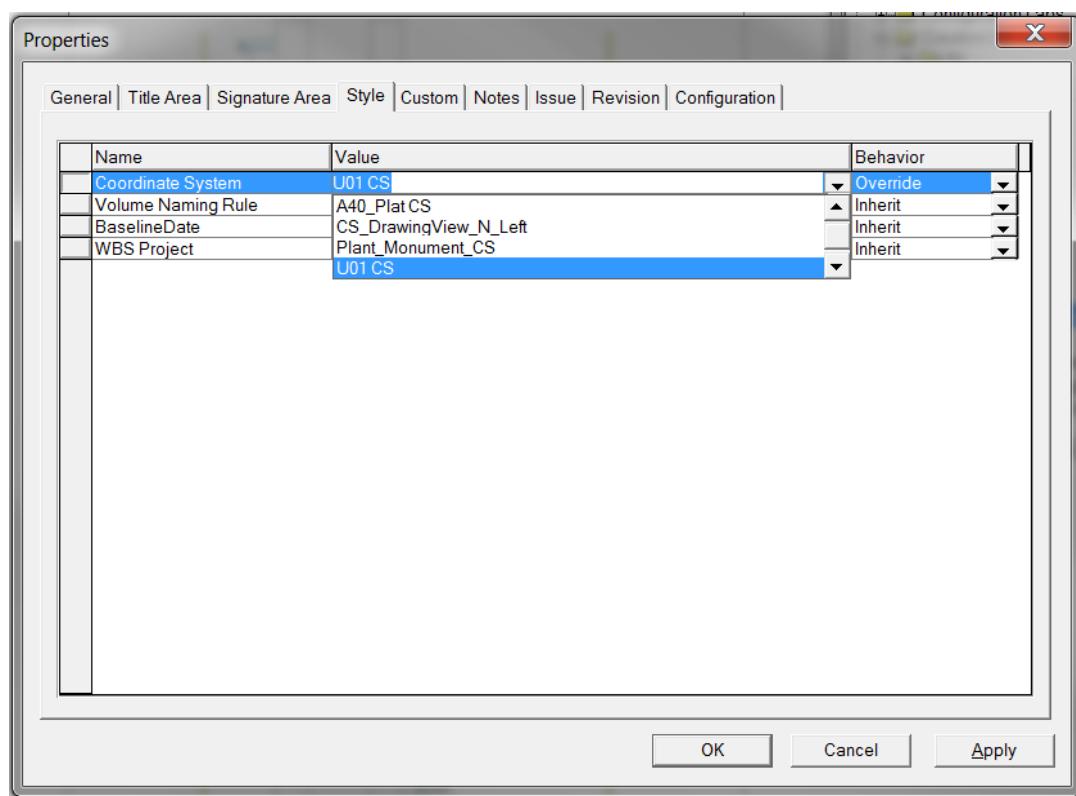
The grid bubbles are empty. This is because the distances are measured from the Global origin. In the next section of this lab, you will measure the hanger key point relative to the closest grid intersection of the U01 CS coordinate system.

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

Modify Coordinate System for DBQ Labels

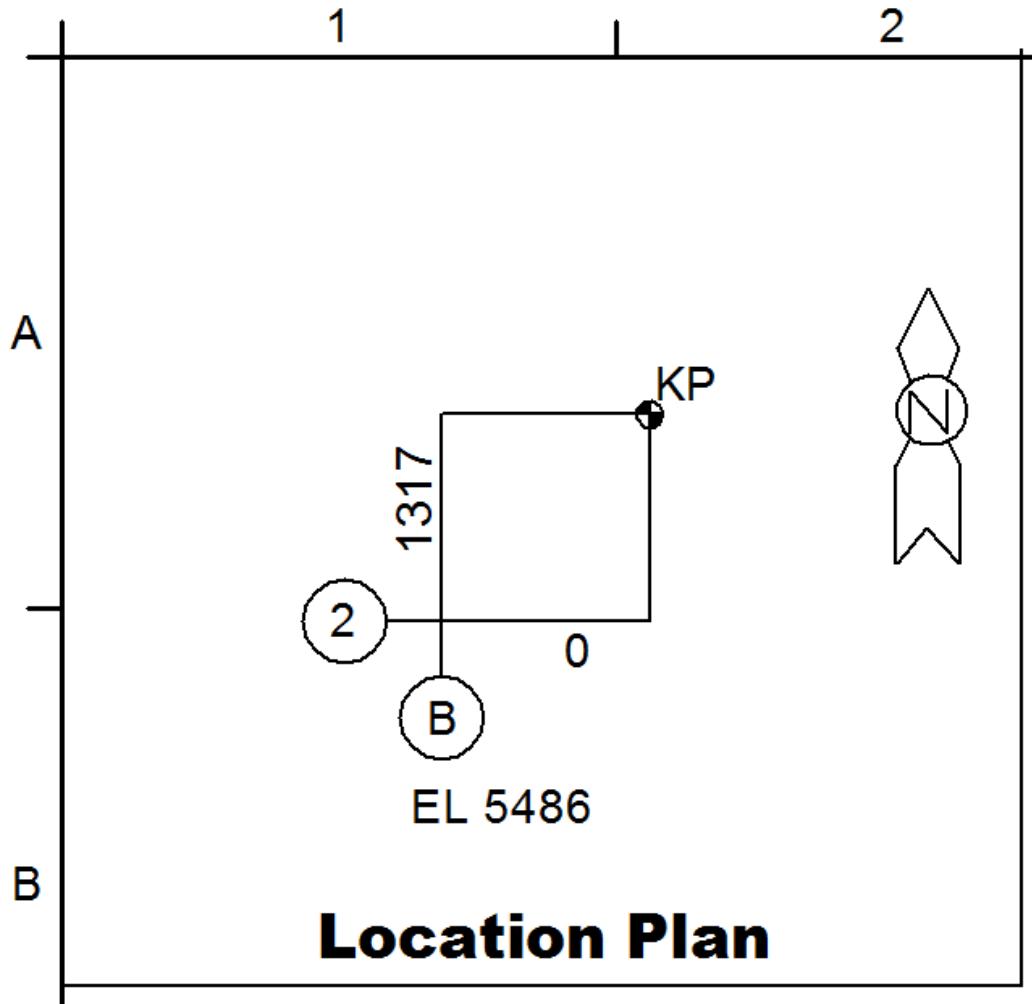
Objective: Unlike composed drawings, the reference coordinate system to labels and look direction is on the DBQ properties. Therefore, it is not possible for each view in a DBQ drawing to have different reference coordinates.

1. Switch to the **Drawing Console** window.
2. Right-click the **Hanger Support Drawings** component in the **Drawing Console**, and select **Properties**.
*The **Properties** dialog box displays.*
3. Click the **Style** tab on the **Properties** dialog box.
4. Select **U01 CS** from the **Coordinate System** list.



5. Click **OK** on the **Properties** dialog box.
6. Right-click the drawing In the **Drawing Console**, and select **Update Now**.
The software generates the drawing.
7. After the update completes, right-click the drawing in the **Drawing Console** window, and select **Edit**.
*The **SmartSketch Drawing Editor** window displays.*

8. Maximize the drawing window in **SmartSketch Drawing Editor**.
9. Click **Fit** .
10. Click **Zoom Area** .
11. Drag a rectangle around the top left quadrant of the drawing to get a closer look at the contents.



The grid bubbles are populated, indicating the nearest grid intersection to the assembly.

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

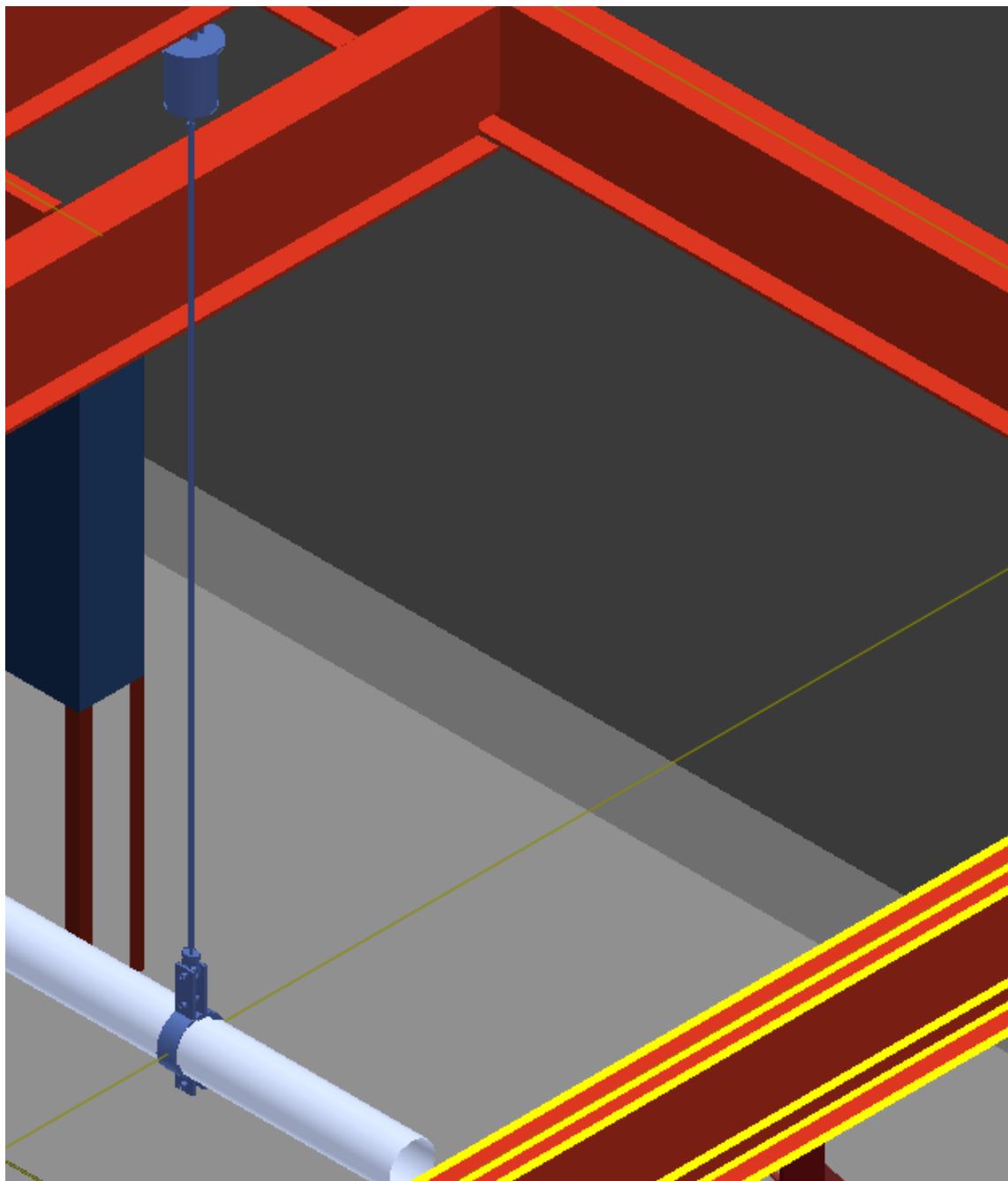
Add a Support to the Existing System

Objective: Add another support to the same system and show how a new drawing can be created for this support. The new support will overlap the range of the existing support but only one support will be included in each drawing.

1. On the **Common Views** dialog box, select the node that changes the look direction to **Looking NW and Down**.
2. Click **Tasks > Hangers and Supports** to enter the task to place a new support.
3. On the **System** tab of the **Workspace Explorer**, select the support assembly **Assy_VS_SR_DB_116-1-1**, the support that was the subject of the drawing created earlier.
4. Click **Fit** .

The software fits the support assembly into the graphic view.

5. Press ESC to deselect the support assembly.
6. Select **Place Support by Structure** on the vertical toolbar.
*The status bar displays **Select one or more Features to support**.*
7. Select the pipe feature that is supported by **Assy_VS_SR_DB_116-1-1**.
8. Click **Accept**  on the **Place Support by Structure** ribbon to complete the selection of features to support.
*The status bar displays **Select one or more structural members for attachment of supports**.*
9. Select the beam that is below the pipe.



10. Click **Accept** on the **Place Support by Structure** ribbon to complete the selection of support attachment.

The Inverted T Shaped Frame L3x3x1/4 w/ Baseplate support is tentatively placed in the model.

11. Select **More** from the **System** list.

*The **Select System** dialog box displays.*

12. In the **Select System** dialog, expand **A2** and **U01** nodes then select the **Supports** node.
13. Click **OK** on the **Select System** dialog box.

A warning message box displays regarding the pipeline rule.
14. Click **OK** on the message box.
15. Click **Finish** on the **Place Support by Structure** ribbon to complete the placement of the support.
16. Press **ESC** to exit the **Place Support by Structure** command.
17. On the **System** tab of the **Workspace Explorer**, notice that a new support is placed in the same system as support **Assy_VS_SR_DB_116-1-1**.
18. Select the new support on the **System** tab of the **Workspace Explorer**.
19. Click **Clip by Object**  on the **Common** toolbar.

The contents of the graphic window are clipped to the range of the selected support assembly.
20. Notice that the range of the new support overlaps the range of **Assy_VS_SR_DB_116-1-1**.
21. Click **Clear View Clipping**  on the **Common** toolbar.
22. Press **ESC** to deselect the support assembly.

Create a Drawing for the New Support

Objective: Demonstrate how a new DBQ drawing is created in the existing hierarchy under the DBQM. Also show that, despite the overlapping ranges of the two supports, the drawings only document one support each.

1. Switch to the **Drawing Console** window.
2. Right-click **Hanger Support Drawings** on the **Drawing Console**, and select **Create Drawing(s)**.

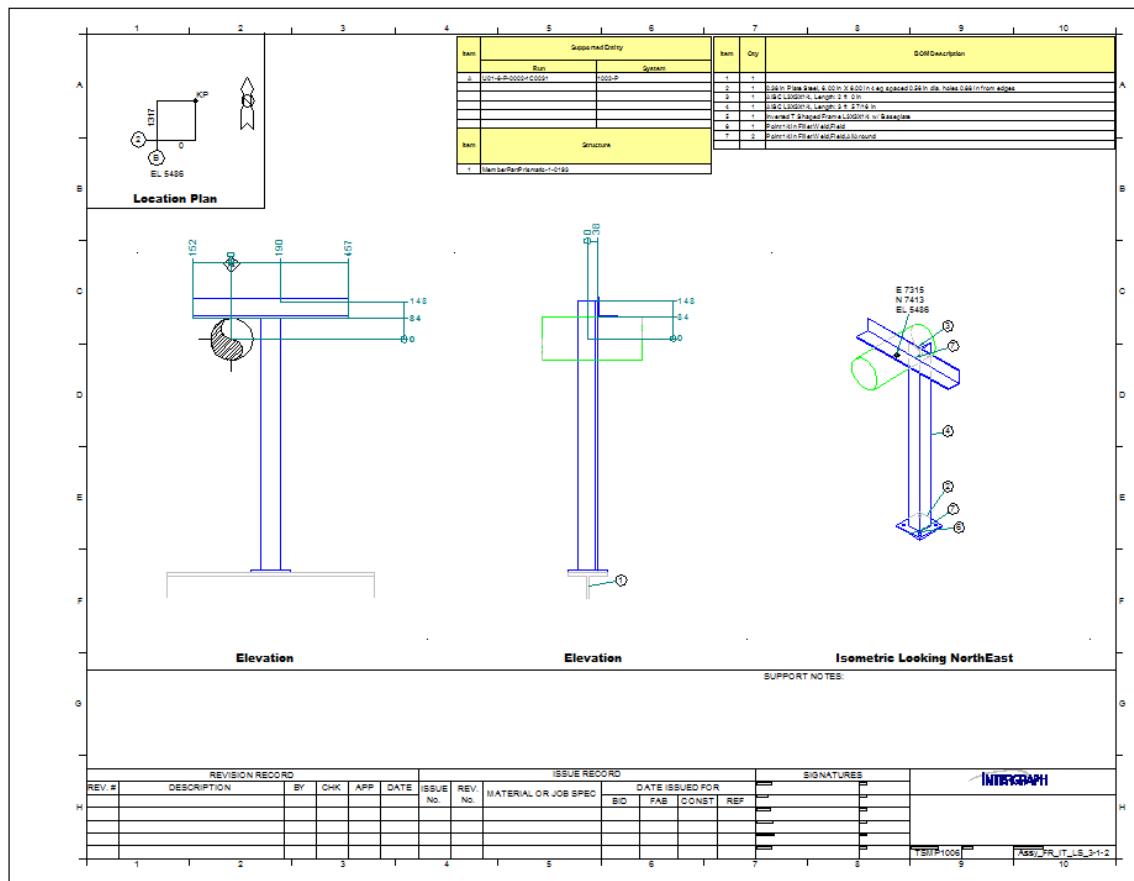
The software adds a drawing for the new support assembly under the U01 unit system. The existing drawing is unaffected by this addition.
3. Right-click the new drawing on the **Drawing Console**, and select **Update Now**.

The software generates the drawing.
4. After the update completes, right-click the drawing on the **Drawing Console** window, and select **Edit**.

*The **SmartSketch Drawing Editor** window displays.*
5. Maximize the drawing window in **SmartSketch Drawing Editor**.
6. Click **Fit** .

Drawings by Query

The drawing contents should look similar to the picture below:



TIP Notice that the support assembly **Assy_VS_SR_DB_116-1-1** is not included in this drawing despite the fact that the ranges of the two supports overlap. The navigation rule on each view prevents unrelated objects of the subject support assembly from appearing in the drawing.

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

Move the New Support to a New System

Objective: Demonstrate how a DBQ drawing is created in a new hierarchy under the DBQM.

- Select the new support on the **System** tab of the **Workspace Explorer**.

*The **Modify Support** ribbon displays.*

- Select **1002-P** from the **System** list.

*The support assembly moves to the **1002-P** pipeline under the **U01** system.*

- Press ESC to deselect the support assembly.

Execute the DBQM Query and Create Drawings

Objective: Now that the setup on the DBQM is complete, run the query comprised of the “where” filter in the DBQM setup with the “what” filter in the package.

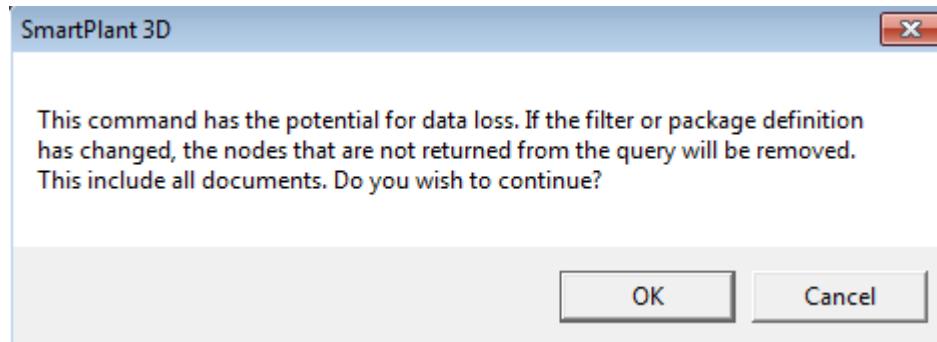
1. Switch to the **Drawing Console** window.
2. Right-click **Hanger Support Drawings** on the **Drawing Console**, and select **Create Drawing(s)**.

The software removes the drawing of the support from the hierarchy since it no longer exists at that location.

TIP The **Create Drawing(s)** can create new drawing under existing nodes under the DBQM but it cannot create new nodes. The **Run Query** command is required to do this.

3. Right-click **Hanger Support Drawings** on the **Drawing Console**, and select **Run Query**.

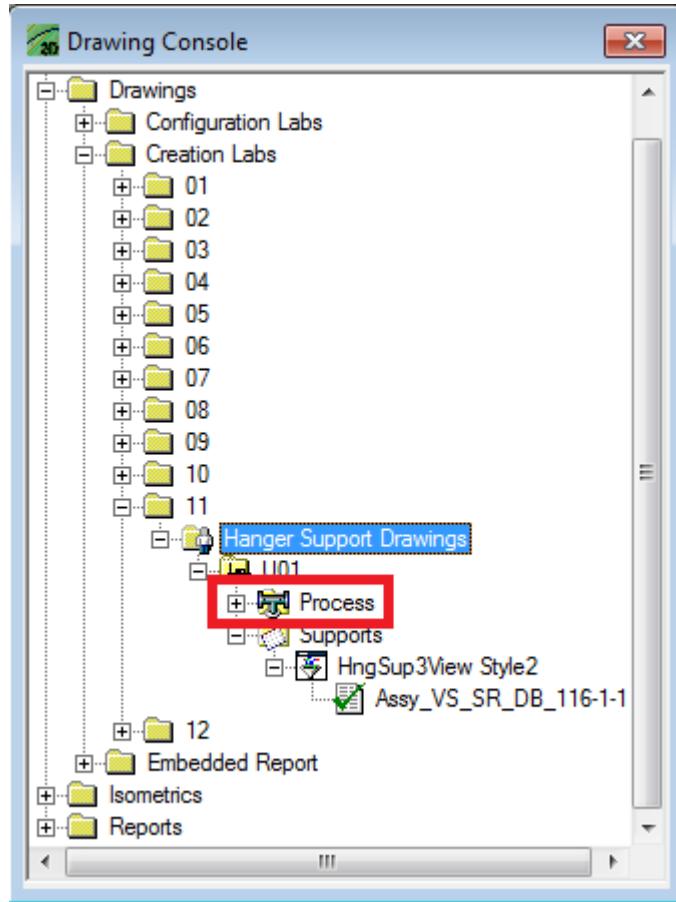
A message box displays warning of the potential for data loss.



TIP Data loss can occur with this command if the “where” filter has been changed from its original value.

4. Select **OK** on the message box.

*A new hierarchy node called **Process** is created under the DBQM.*



5. Right-click **Hanger Support Drawings** on the **Drawing Console**, and select **Create Drawing(s)**.

The software creates a drawing of the new support under the DBQM.

6. Expand **Process** and each node underneath until the drawing displays.

TIP The drawing for support assembly **Assy_VS_SR_DB_116-1-1** is unaffected by execution of **Run Query** and **Create Drawing(s)** in this situation since it was not re-created. If it had manual edits, they would not have been lost. However, if the support is ever moved to a new location in the system hierarchy, the drawing will get removed from its current position in the drawings hierarchy and be re-created in its new position. In that case, any manual edits will be lost.

LAB 11

Creating Volume Drawings

NOTE This is an optional exercise. If you anticipate that you will use only composed drawings rather than volume drawings, then you can skip this lab.

Objective

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

- Add a volume drawing component and adjust the scale in the template
- Create drawing volumes using the drawing volume by two points command and 3D pinpoint.

Overview

Volume drawings enable you to document the model with drawings that share the same drawing template. The template contains a border and a standardized layout of views. A Smart 3D administrator needs to create new view styles and templates to use with the drawings, or edit the existing styles and templates. For example, the administrator can place title block labels and reports on templates to reflect your project or company standards.

Once the templates and view styles are created or edited, you can place a view on a template and associate the view with a view style to determine the appearance of the resulting drawing. You can then define the contents of the view by creating a drawing volume, which is associated to all of the views in the template.

Volume drawings do not support automatic resizing of views or placement of section and detail views. The contents of a view in a volume drawing are controlled by the size of the volume and the view style associated with it. You cannot further refine the view contents with associated filters or by explicitly hiding objects. For these reasons, composed drawings are generally preferred over volume drawings.

Creation of volume drawings involves the following tasks:

- Adding a volume drawing component from a package. The package contains a template with the views already predefined.
- Placing a drawing volume. These volumes are placed and associated with the appropriate volume drawing component to create a volume drawing. You can define a drawing volume by using four specific drawing volume commands in the Space Management task. Volumes can be placed using the following commands:
 - Place Drawing Volume by View 
 - Place Drawing Volume by Selection 
 - Place Drawing Volume by Two Points 
 - Place Drawing Volume by Four Points 
- Updating the drawing. Drawings can be updated individually or in groups. The drawings may be updated on your client workstation using Update Now or sent to a batch server if one has been setup.

In this session, you will learn how to place drawing volumes and update volume drawings.

Define Workspace

Objective: Configure the session for this lab.

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 Creation Filters\12** folder.
 5. Select the filter **U01 & U02 Workspace** on the **Select Filter** dialog box.
 6. Click **OK** on the **Select Filter** dialog box.
 7. Click **OK** on the **Define Workspace** dialog box.
The software populates the workspace with modeled objects.
 8. On the **Common Views** dialog box, select the node that changes the look direction to **Looking NE and Down**.
 9. Click **Fit** .
- The software fits all the objects into the graphic view.*

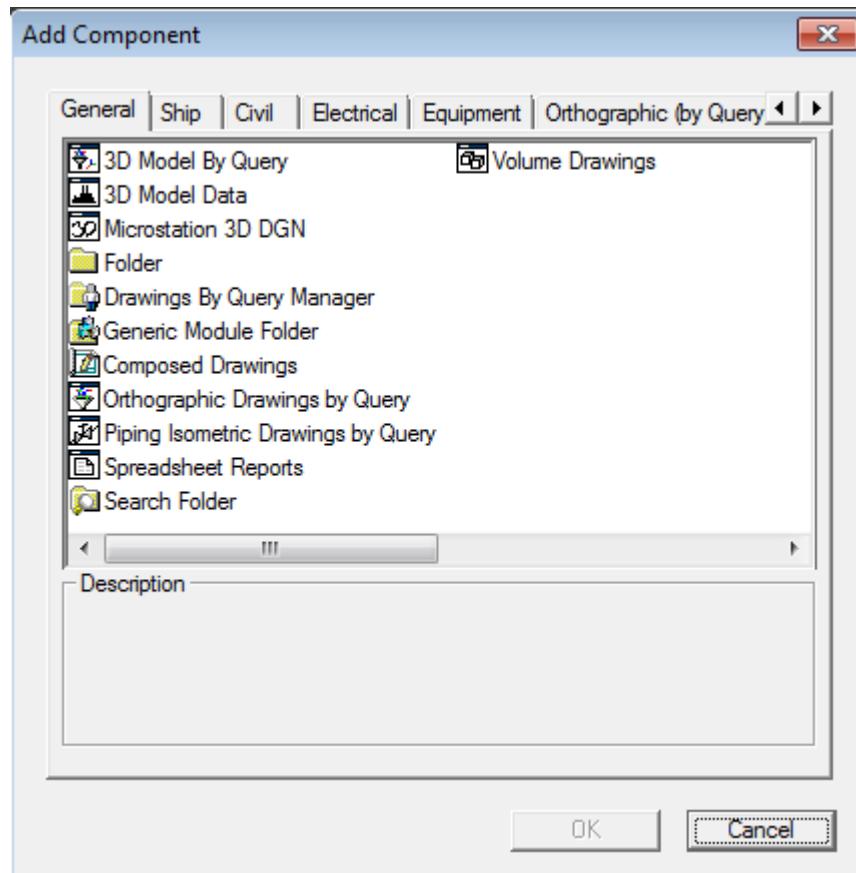
Add a Predefined Volume Drawing Component

Objective: Add a volume component from a package to the drawings hierarchy. The volume component's template is already predefined in the package.

1. Switch to the **Drawing Console** window.
2. Right-click the **Drawings Creation Labs\12** folder on the **Drawing Console**, and hover over **New**.
*The sub-menu for the **New** command displays.*

3. Select **More**.

The **Add Component** dialog box displays.



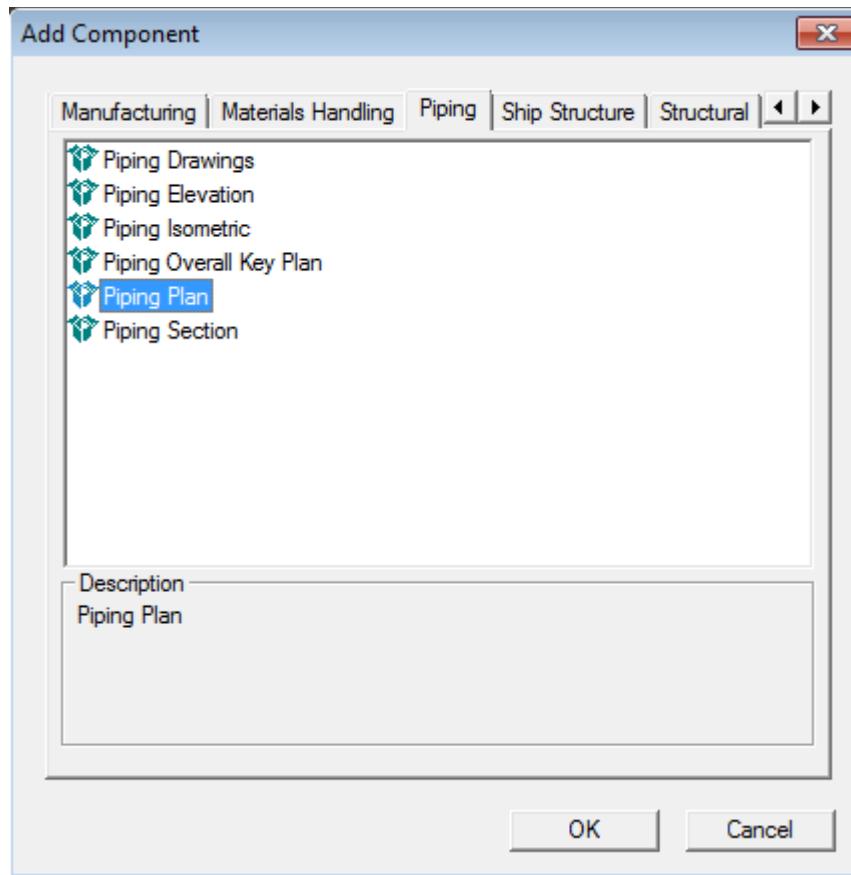
4. Use the arrow buttons near the top right of the **Add Component** dialog box to navigate to the **Piping** tab.
5. Click the **Piping** tab to display the delivered packages containing predefined templates for Volume drawings.

TIP Packages are files saved on disk (in the shared content, to be exact) that, among other things, store templates for volume drawings and DBQ. They are not used, however, for storing composed drawing templates.

Packages can be copied from one shared content to another, making them a convenient way to get template definitions created in one project into another project. Smart 3D delivers several packages containing predefined templates for use in volume drawings and drawings by query.

The creation of packages is covered more thoroughly in the Drawings Configuration class.

6. Click **Piping Plan** on the **Add Component** dialog box.



7. Click **OK** on the **Add Component** dialog box.
8. Expand **12**.

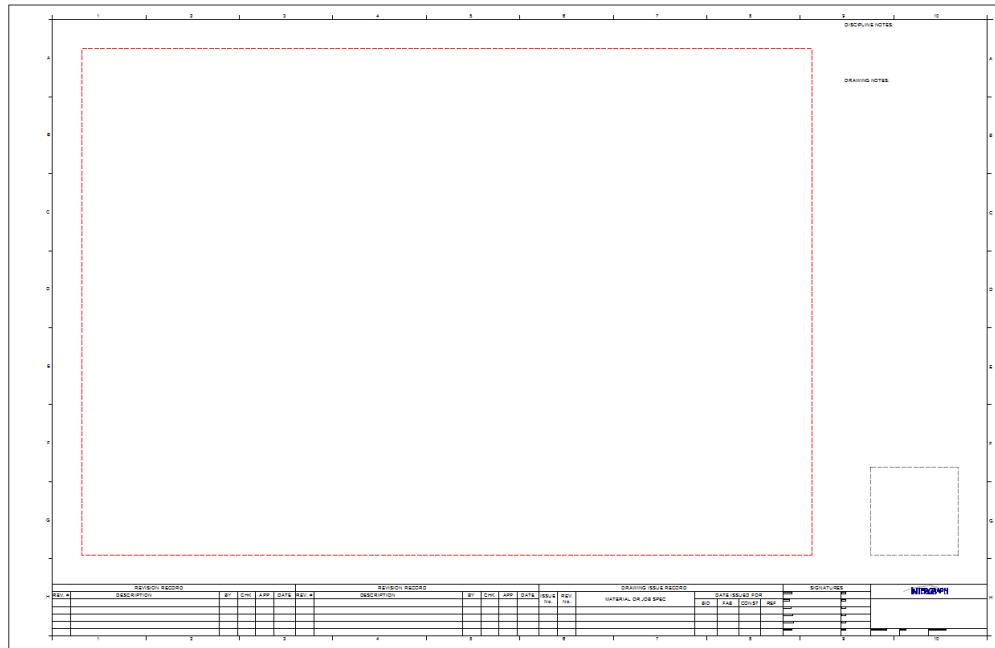
*The software adds the **Piping Plan** component under the **12** folder.*

Modify the Template

Objective: Modify the properties of the graphic view in the template by changing its scale. In a later section, drawings will be created from this template.

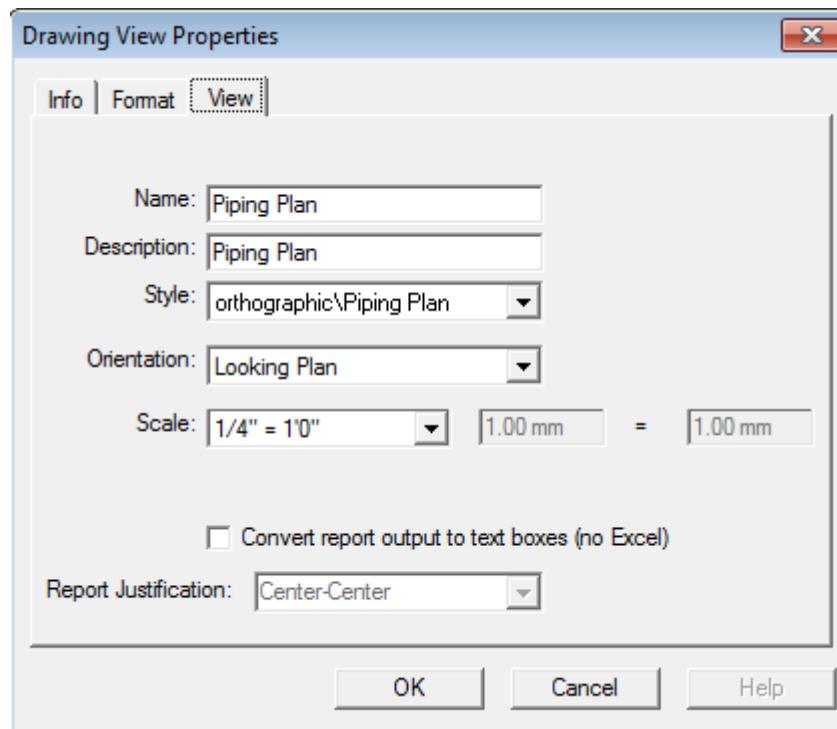
1. Right-click the **Piping Plan** component, and select **Edit Template**.
*The software opens the template in a **SmartSketch Drawing Editor** window.*
2. Maximize the drawing window in **SmartSketch Drawing Editor**.
3. Click **Fit**

4. Because the view is hidden, move the cursor slowly across the drawing from left to right until the view highlights.



5. Right-click the view boundary, and select **Properties**.

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



The properties for this template that originated from a package are already predefined.

6. Select **1/2" = 1'0"** from the **Scale** list on the **Drawing View Properties** dialog box.
The software changes the scale of the template view.
7. Click **OK** on the **Drawing View Properties** dialog box.
8. Click **Save** .

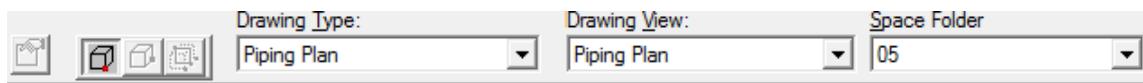
*The software saves the template changes.*9. Click **File > Exit** to exit **SmartSketch Drawing Editor**.

Place Drawing Volumes

Objective: Place drawing volumes in the model. The volumes are associated to the drawing during placement. All of the graphic views in the drawing are associated to a single volume.

1. Click **Place Drawing Volume by View** .

The **Place Drawing Volume by View** ribbon displays and a volume cross-section is attached to the cursor. The software automatically populates the **Drawing Type** list with **Piping Plan** on the **Place Drawing Volume by View** ribbon because it is the only eligible volume type template in the model.



TIP The green-colored buttons at the bottom of the vertical toolbar in the **Space Management** task are for the placement of volumes for use with the volume component. The volumes placed with these commands are of type Drawing Volume with no option to change them to a different type.

Composed drawing views can be associated to volumes drawn with these commands.

The **Place Drawing Volume by View** command places a volume whose cross-section matches the scaled size of the view in the template. The two points to define the volume determine the depth of the volume.

2. Select **More** from the **Space Folder** list on the **Place Drawing Volume by View** ribbon.
*The **Select Space Folder** dialog box displays.*
3. In the **Select Space Folder** dialog, expand **Drawings Creation Labs** and select the **12** space folder.
4. Click **OK** on the **Select Space Folder** dialog box.
*The folder parent for the new volume is populated in the **Space Folder** list.*
5. Type **21945.6** in the **E** field on the **PinPoint** ribbon. Press TAB.
*The field displays **21945.60 mm** and is locked.*
6. Type **-609.6** in the **N** field on the **PinPoint** ribbon. Press TAB.
*The field displays **-609.60 mm** and is locked..*
7. Type **-914.4** in the **EI** field on the **PinPoint** ribbon. Press TAB.

*The field displays **-914.40 mm** and is locked..*

8. Click anywhere in the graphic view to complete placement of the first point of the drawing volume.

9. Type **10058.4** In the **EI** field on the **PinPoint** ribbon. Press TAB.

*The field displays **10058.40 mm** and is locked.*

10. Click anywhere in the graphic view to complete placement of the first drawing volume.

The volume is placed and a cross-section is attached to the cursor to place the next drawing volume.

11. Type **21945.6** In the **E** field on the **PinPoint** ribbon. Press TAB.

*The field displays **21945.60 mm** and is locked..*

12. Type **9906** in the **N** field on the **PinPoint** ribbon. Press TAB.

*The field displays **9906.00 mm** and is locked.*

13. Type **-914.4** in the **EI** field on the **PinPoint** ribbon. Press TAB.

*The field displays **-914.40 mm** and is locked.*

14. Click anywhere in the graphic view to complete placement of the first point of the drawing volume.

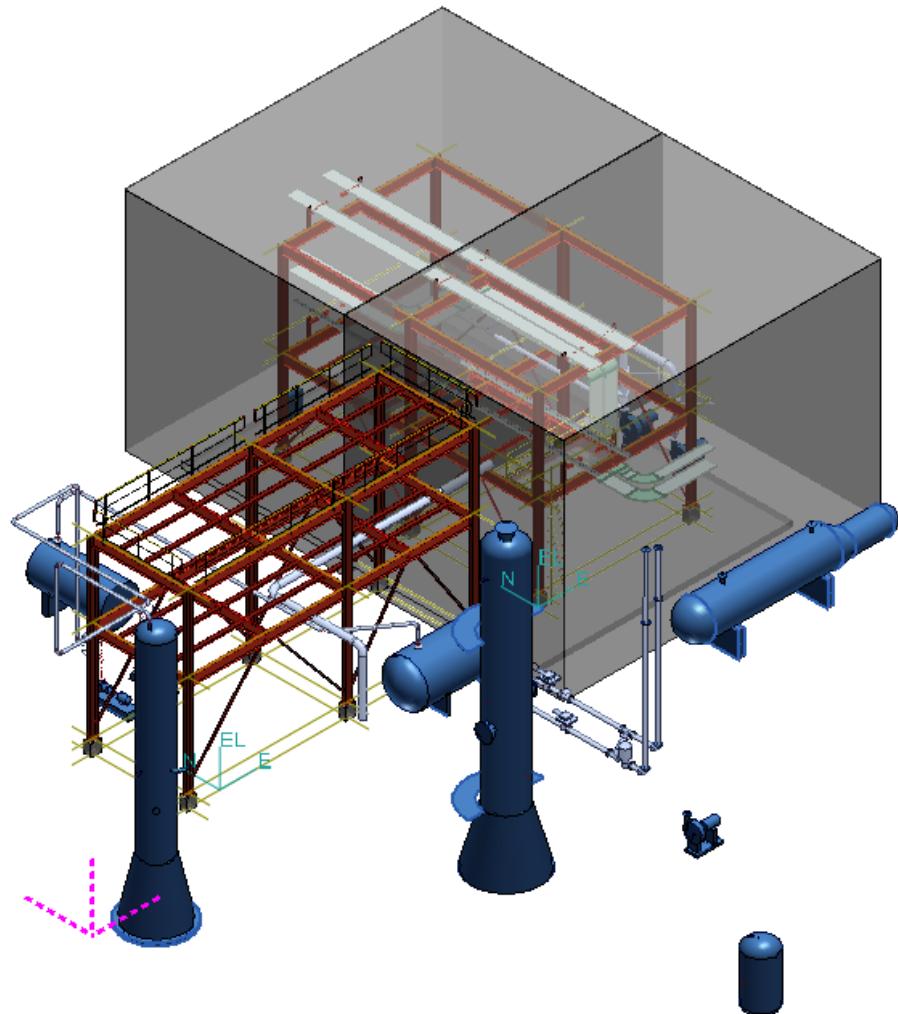
15. Type **10058.4** in the **EI** field on the **PinPoint** ribbon. Press TAB.

*The field displays **10058.40 mm** and is locked.*

16. Click anywhere in the graphic view to complete placement of the second drawing volume.

The volume is placed and a cross-section is attached to the cursor to place the next drawing volume.

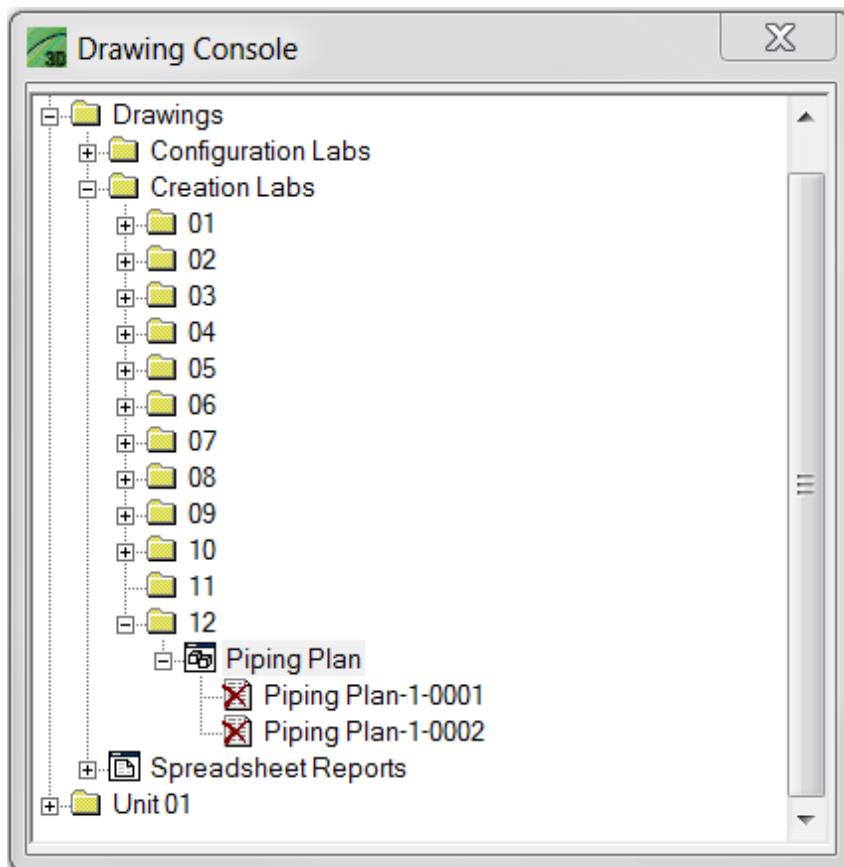
17. Right-click in the graphic window to end **Place Drawing Volume by View**.



Update the Drawings

1. Switch to the **Drawing Console** window.
2. Right-click **Piping Plan**, and select **Create Drawing(s)**.

The software creates the two drawings based on the two volumes previously placed.



3. Right-click **Piping Plan**, and select **Update Now**.

The software generates the contents of both drawings.

4. After the update completes, right-click on the topmost drawing, and select **Edit**.

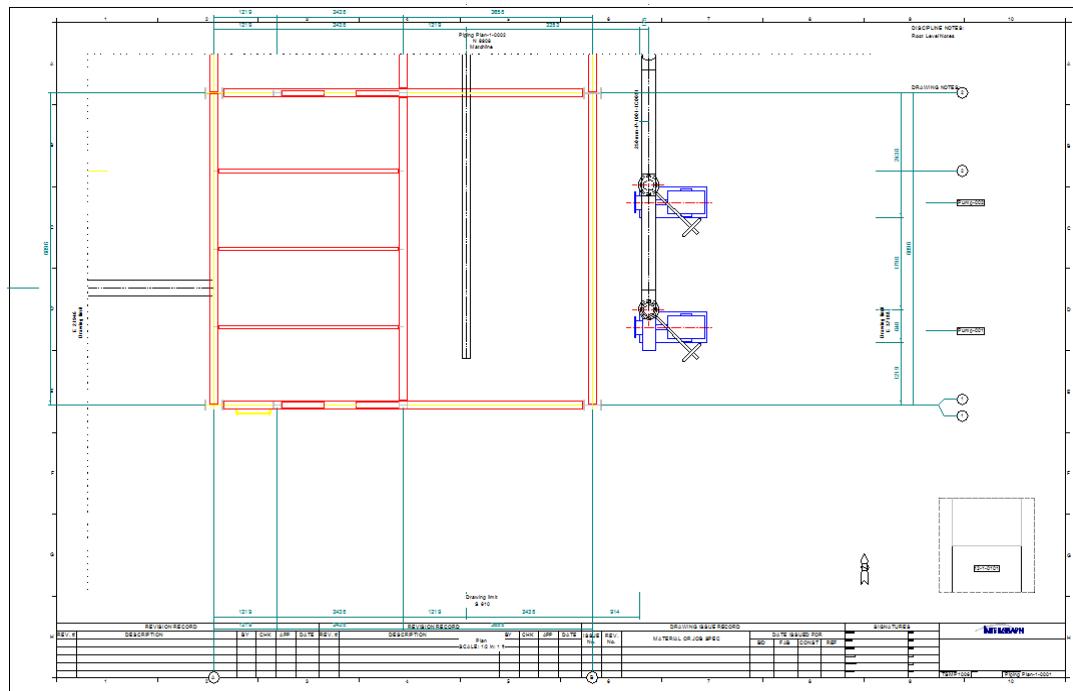
*The **SmartSketch Drawing Editor** window displays.*

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

6. Click **Fit** .

Creating Volume Drawings

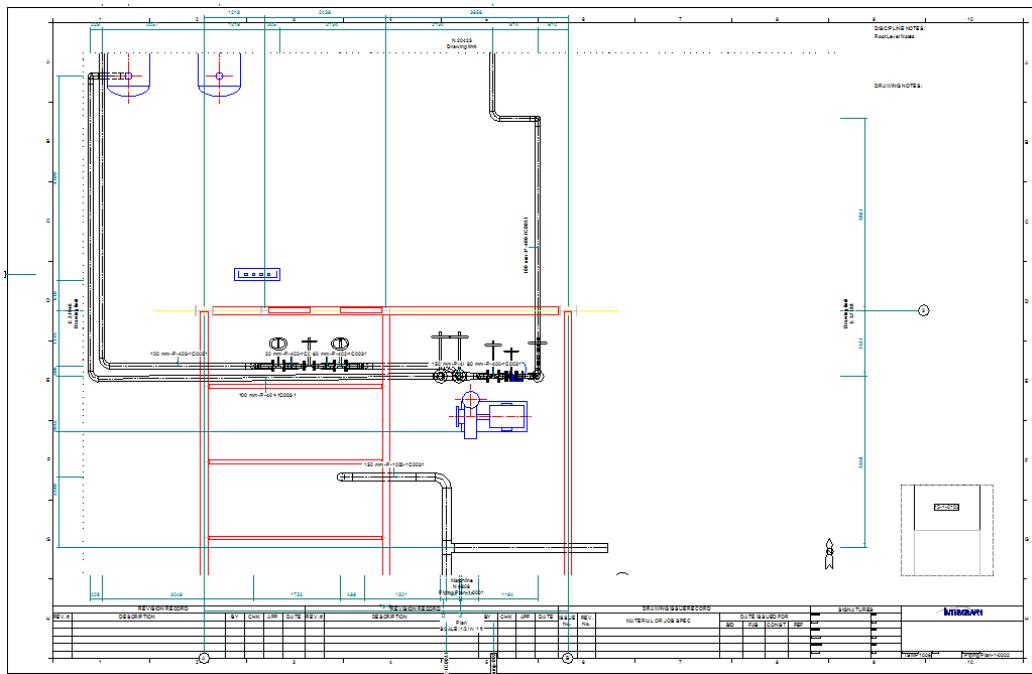
The drawing contents should look similar to the picture below:



The drawing contains a main view and a key plan view. Both of these were predefined in the template which in turn was saved in a package.

7. Click **File > Exit** to exit **SmartSketch Drawing Editor**. You do not need to save the drawing because you did not change it.
8. Switch to the **Drawing Console** window.
9. In the **Drawing Console** window, right-click on the other volume drawing, and select **Edit**.
The SmartSketch Drawing Editor window displays.
10. Maximize the drawing window in **SmartSketch Drawing Editor**.
11. Click **Fit** .

The drawing contents should look similar to the picture below:



The drawing contains a main view and a key plan view like the previous drawing.

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

Index

A

- Add a Predefined Volume Drawing Component • 224
- Add Drawings Custom Commands • 193
- Add Notes • 140, 142, 144, 145
- Add Symbols Inside View • 159
- Additional Volume Placement Methods • 65
- Align Views • 96
- Associate Drawing View to Volume • 49
- Associate Drawing Views to Volumes • 83, 86
- Associate Key Plan View to Drawing View • 63
- Associate Report View to Drawing View • 50
- Associate View to Filter • 28
- Associate View to Volume • 24
- Associate View to Volume and Filter • 92

C

- Change Undo Steps • 175
- Clear Manual Edits • 199
- Composed Drawing Workflow • 8
- Copy and Paste Views • 92
- Copying and Pasting Views with Associations • 89
- Create Drawings by Query • 207, 208, 211, 212, 219, 220, 221, 228
- Create New Drawing • 16, 44, 79, 84, 90, 108
- Create Snapshot View • 106
- Creating Snapshot Views • 103
- Creating Volume Drawings • 223

D

- Define Workspace • 9, 65, 89, 104, 106, 116, 136, 149, 150, 224
- Drawings by Query • 207

E

- Edit the Template • 226
- Edit Title and Notes Properties • 136, 138
- Edit Within the Drawing View • 170
- Edit Within the View • 152, 153
- Editing and Deleting Revisions • 146, 147

Editing Drawing Properties • 135

Editing Drawings • 149

Exclude Objects • 31

I

Include Objects • 35

M

- Modify Coordinate System for Labels • 215, 217
- Modify Section View • 123
- Modify the 3D Model • 185
- Move a View with Associated Graphics • 167
- Move Section and Detail Views to Another Drawing • 133

P

- Place a Dimension Style Label • 184
- Place a View • 20, 45, 46, 55, 57, 80, 85
- Place and Copy/Paste Drawing View • 81, 85
- Place Cutting Plane and Section View • 116
- Place Detail Envelope and Detail View • 130, 131
- Place Drawing View • 44, 90, 117, 120
- Place Key Plan View • 61
- Place Non-rectangular Volume • 66
- Place Object Labels • 178
- Place Snapshot View • 109, 111
- Place Text Boxes and Manual Leaders • 163
- Place View Labels • 175
- Place Volume by Selection • 72
- Place Volume by Two Points • 13
- Place Volumes by Plane and Offset • 74
- Placing Labels and Dimensions • 173
- Placing Section and Detail Views • 115
- Preliminaries • 7

R

- Report and Key Plan Views • 43
- Resize the Excel Report View • 52
- Rotate View using View Direction Coordinate System • 37, 41

U

- Update the Drawing • 51, 97, 98
- Update the Drawings • 231
- Update View • 25
- Use As-Drawn • 180
- Use Leader Boundary Option • 182
- Use the Distance Between Dimension Command • 203
- Use the Hide/Show Command • 168
- Use the Highlight Command • 196
- Use the Smart Dimension Command • 201, 205