

Session 3: Creating a Composed Drawing

Objective:

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

- Create and update a composed drawing.

Prerequisite Sessions:

- SP3D Overview
- SP3D Common Sessions
- Drawings and Reports: An Overview
- Creating a Volume Drawing

Overview:

A composed drawing is an orthographic drawing that you create by defining one or more drawing views of selected volumes. A drawing view will process all objects in the model that are in its associated volume, not just the objects displayed in the current workspace. You can optionally select a filter to limit the objects processed by the drawing view and also individually select objects to exclude. You can use any method in the Space Management task environment to create the volumes.

The composed drawing workflow is as follows:

1. **Define drawing view layout templates and border templates (Administrator):** Your administrator defines Layout templates and Border Templates. The Layout templates define standard single and multiple view drawing layouts along with defaults for all view properties such as view direction, view style, and scale. The Border templates define standard drawing sizes along with the 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 you don't have to place all the views manually. You can later add more views or edit the existing views as needed.

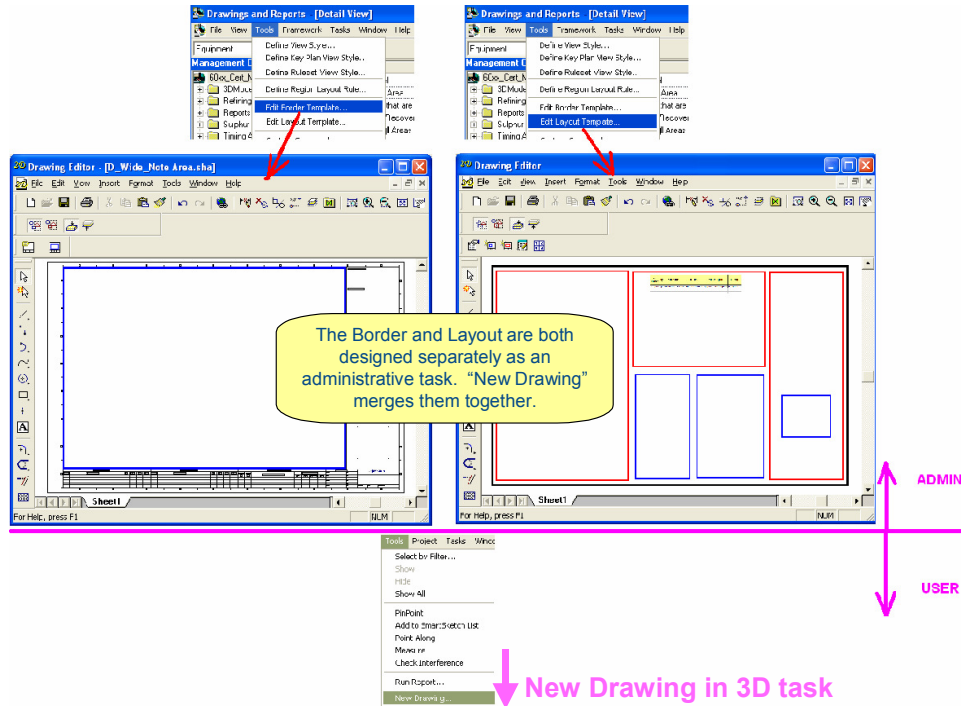


Figure 1: Administrator creates standard Layout and Border Templates

2. **Create a drawing folder for your composed drawings (Administrator):** Each individual composed drawing must reside within a composed drawing folder (sometimes called "Composed Drawing Component") in the drawings hierarchy. You can create any number of composed drawing Folders nested directly under a generic drawing folder. It is best practice for your administrator to predefine your drawing folder hierarchy using the Drawings and Reports environment. This hierarchy should be designed to facilitate browsing to the specific drawings of interest. It is possible, however, for you to create a new composed drawing folder at the time you create a composed drawing.
3. **Create a Space folder for the drawing volumes (Administrator):** Drawing views will reference Space Management volumes. Individual designers will create the volumes as needed for the composed drawing views. These drawing volumes should be organized in the Space Management hierarchy according to the management plan of your administrator. Since you can locate a volume used by a drawing view by picking on the drawing view (this will be demonstrated later), it is not necessary to have a deep browsing structure for the drawing volumes. An administrator may, for example, create a space folder for each design application area.
4. **Create 3D volumes for the views:** You create the volumes needed for your drawing views in the Space Management task environment. You assign these volumes to a Space Management folder to organize the volumes. A single volume can be referenced by multiple drawing views in multiple drawings. Editing the volume will impact 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.

5. **Create a composed drawing:** The **Drawing Console** command is available on the Tools menu in any 3D modeling task. Right mouse click on the Composed Drawing component in the Drawing Console to create a new drawing. For your new drawing, a drawing name must be entered, Layout Template, and Border Template need to be selected. The new drawing is created and displayed in a separate Drawing Editor window. Both the Drawing and the 3D modeling environments are available and can be used together as described below.

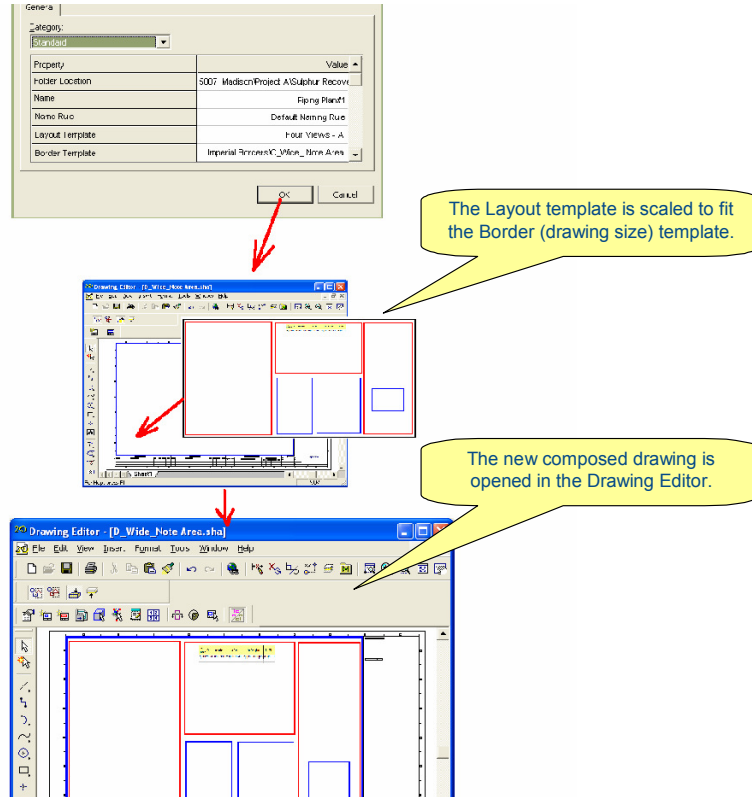


Figure 2: Layout and Border Templates used in New Drawing Creation

6. **Create new drawing views or edit existing drawing views:** If the default drawing view layout is not exactly what you need, you can create new drawing views or edit the existing views created by the Layout you selected.
7. **Associate each drawing view to a volume:** Select one or more views in the Drawing Editor window and pick the **Associate Objects to View** command.

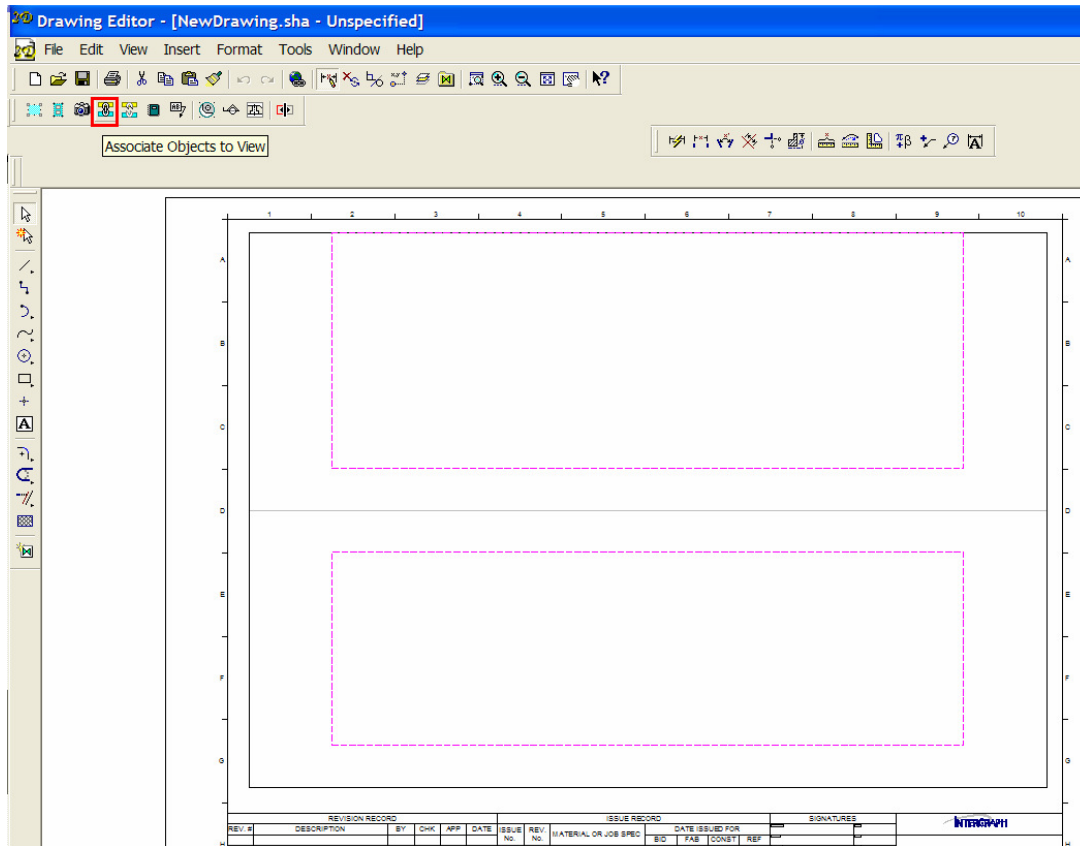


Figure 3: Associate Objects to View Command in the Drawing Editor

In the 3D task environment, a ribbon bar is displayed for selecting the associated volume the filter for the drawing views. If a drawing view is already associated to a volume, the associated volume is highlighted and you can select a different volume or pick a different drawing view to associate from the select list.

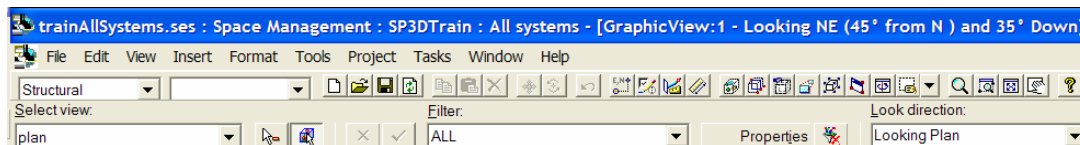


Figure 4: Associate Objects to View Ribbon in 3D Task Environment

If you do not select a filter, then all objects in the model database that are in the associated volume will be processed by the drawing view. This can be time and resource intensive and it is recommended to always select a filter for every composed view.

8. **Update drawing or view:** It is possible to update a composed drawing view immediately while in the Drawing Editor. You may also update a complete drawing which updates all the views in the drawing as well as the border labels by using the

'Update Now' command in the Drawing Console.

Steps for Creating Composed Drawings:

Create a composed drawing in Unit **U02** of your workspace by performing the following tasks:

- A. Place two volumes enclosing the elevation 31 ft and elevation 18 ft of the piping rack in Unit **U02**, using the **Place Volume by Selectset** command in the **Space Management** task. Name the top volume **U02 Top** and the middle volume **U02 Middle**. The view of the model after creating the volumes should resemble Figure 5.

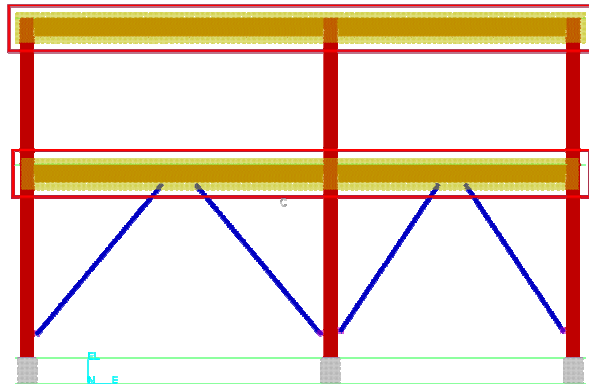


Figure 5: Placed the Volumes at 31 ft and 18 ft Elevation of the Piping Rack

- B. Create a new composed drawing, from any of the modeling tasks, with the drawing named **U02 Struc Plan** in the **Composed Drawings** component under the **Drawings** folder in the **Management Console**. The new composed drawing will appear in the Management console hierarchy, as shown in Figure 6.

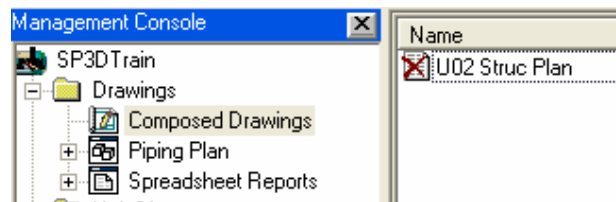


Figure 6: New Composed Drawing Component and Drawing

- C. Place two views in the composed drawing template with names **View1** and **View2** by using the **Place View** command. The specifications for the Views are as follows:

Points for View1: A1, C8

Points for View2: D1, G8

After placing the views in the template, it will resemble Figure 7.

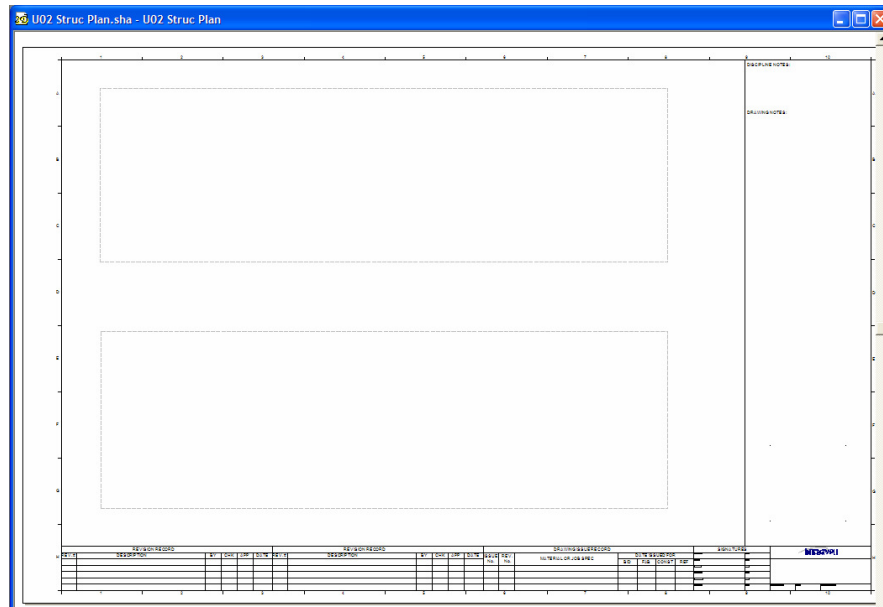


Figure 7: After Placing Views in the Composed Drawing Template

- D. Associate the drawing volumes, **U02 Top** and **U02 Middle** that you created in Unit **U02** with Views, **View1** and **View2** by using the **Associate Objects to View** command. Associate **View1** with **U02 Top** and **View2** with **U02 Middle**.

Steps for Creating Space Management Drawing Volumes:

You can create **Space Management** volumes in the **Space Management** task by using the following methods:

1. Select the **Tasks > Space Management** command to switch to the **Space Management** task.
2. Define your workspace for the unit where the drawing volumes need to be added. Define your workspace to display Unit **U02** by using a system filter, as shown in Figure 8.

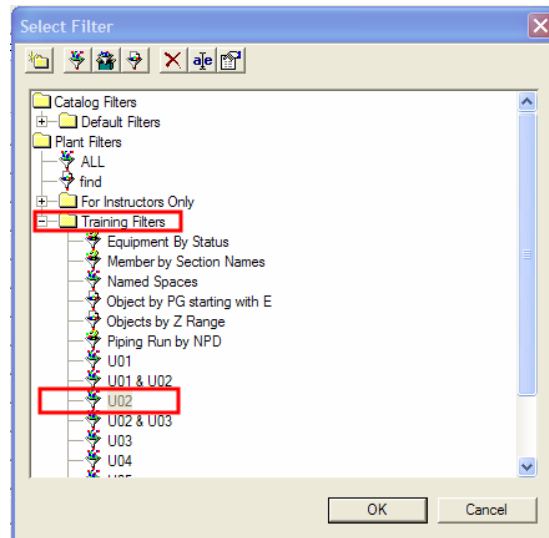


Figure 8: Select Filter Dialog Box

3. Select the **Tools > Select by Filter...** command, as shown in Figure 9.

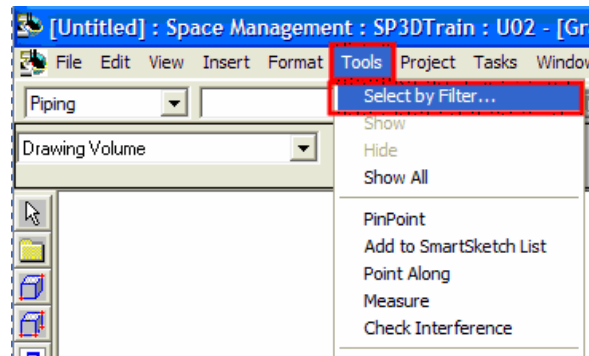


Figure 9: Tools>Select by Filter Command

4. Expand **Catalog Filters > Default Filters > SP3D Object Filters > Object Types** in the **Select Filter** dialog box and select the **Structure** filter, as shown in Figure 10. This will highlight all the structural objects in the graphic view as well as in the **Workspace Explorer**.

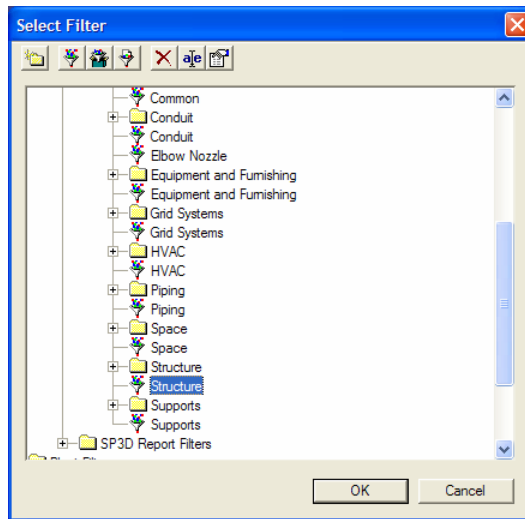


Figure 10: Select Filter Dialog Box

With all the structural objects highlighted, select the **Clip by Object** button on the **Common** toolbar, as shown in Figure 11. This will show all the structural objects of the unit in the graphic view.



Figure 11: Common Toolbar

Once you have clipped the objects, right mouse click twice to deselect the objects.

Change the orientation of the view to looking north (Front) by using the **Front** option from the **Named Views** drop-down list on the **Common** toolbar, as shown in Figure 12.

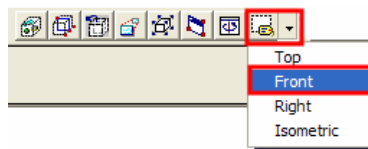


Figure 12: Named Views Drop-Down List

Your view should resemble Figure 13.

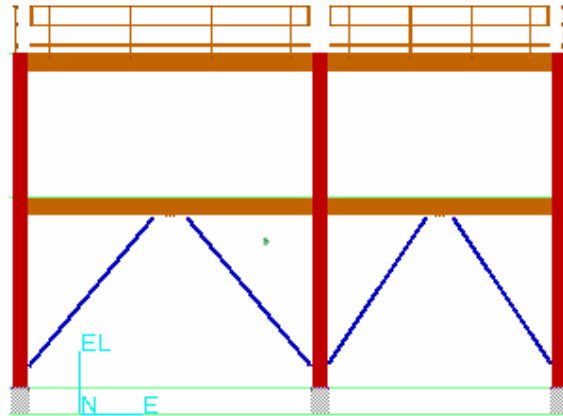


Figure 13: Model's Clipped View

5. Click the **Place Volume by Selectset** button on the vertical toolbar, as shown in Figure 14.



Figure 14: Place Volume by Selection Button on the Vertical Toolbar

The **Place Volume by Selection** ribbon appears, as shown in Figure 15.

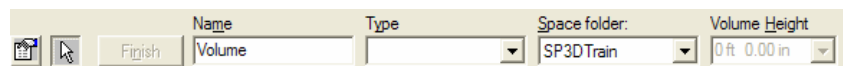


Figure 15: Place Volume by Selectset Ribbon

6. Key-in **U02 Top** in the **Name** field on the **Place Volume by Selectset** ribbon to specify the name of the top volume that you will place.

7. Select **More...** from the **Type** drop-down list on the **Place Volume by Selectset** ribbon, as shown in Figure 16.



Figure 16: Type Drop-Down List

8. The **Select Space** dialog box will appear. On the **Select Space** dialog box, expand **Definitions > Drawing Volumes > DrawingVolumes** and select the part number **DWGVOLUME1** from the right pane, as shown in Figure 17.

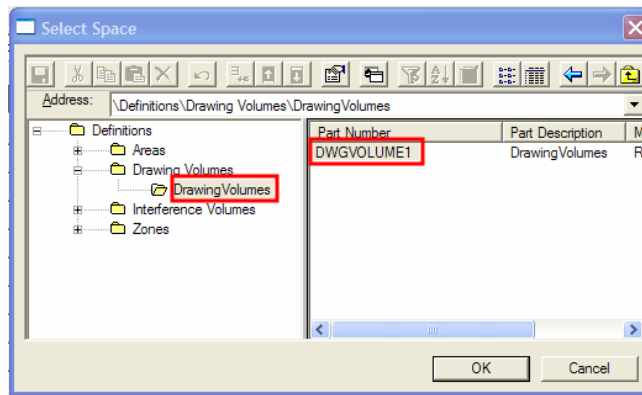


Figure 17: Select Space Dialog Box

9. Select **More...** from the **Space folder** drop-down list on the **Place Volume by Selectset** ribbon, as shown in Figure 18.

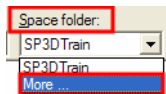


Figure 18: Space Folder Drop-Down List

10. The **Select Space Folder** dialog box appears. Select the **Database** option and expand the **SP3DTrain > Drawings > U01 and U02** folder.
11. Select **U01 and U02** from the **Space Folder** hierarchy, as shown in Figure 19.

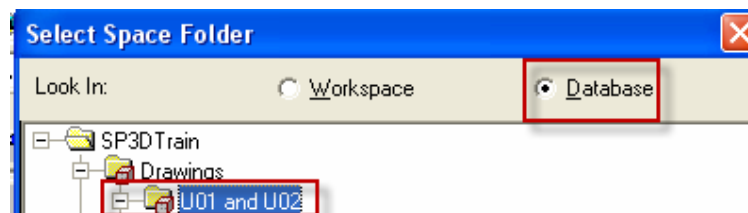


Figure 19: Select Space Folder Dialog Box

The place volume ribbon should resemble Figure 20.

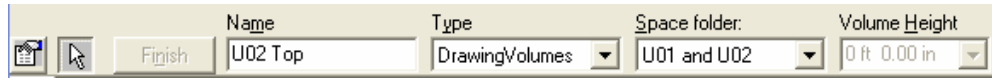


Figure 20: Place Volume by Selectset Ribbon

12. Select the structural objects at elevation 31 ft of the pipe rack by left mouse clicking and holding to drag the fence to enclose all the objects, as shown in Figure 21, in the graphic view.

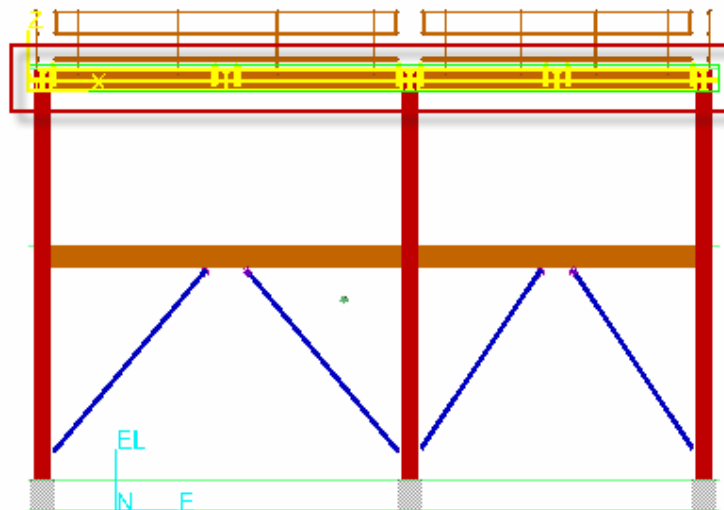


Figure 21: Fence Select for the Structural Objects

13. Once the structural objects are highlighted, select the **Finish** button on the **Place Volume by Selection** ribbon. This will create a volume enclosing the 31 ft elevation of the pipe rack, as shown in Figure 22.

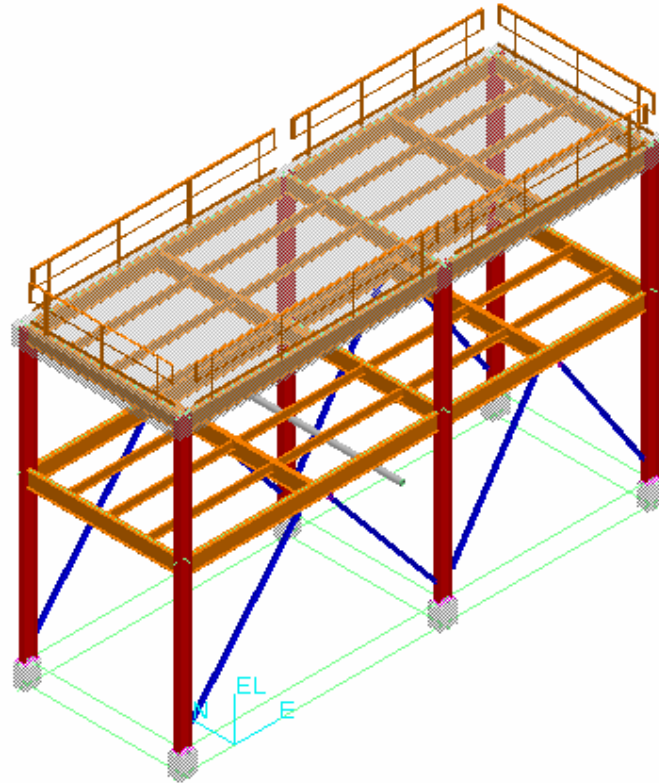


Figure 22: Volume Placed at 31 ft Elevation of the Pipe Rack

14. Similarly, place a volume using the **Place Volume by Selection** command at elevation 18 ft by using the options defined on the **Place Volume by Selection** ribbon, as shown in Figure 23.

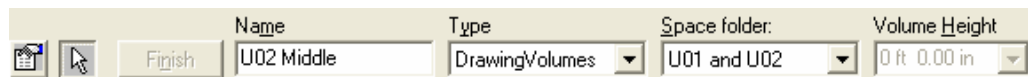


Figure 23: Place Volume by Selection Ribbon

15. Fence the structural objects at elevation 18 ft of the pipe rack by left mouse clicking and holding to drag the fence to enclose all the objects, as shown in Figure 24.

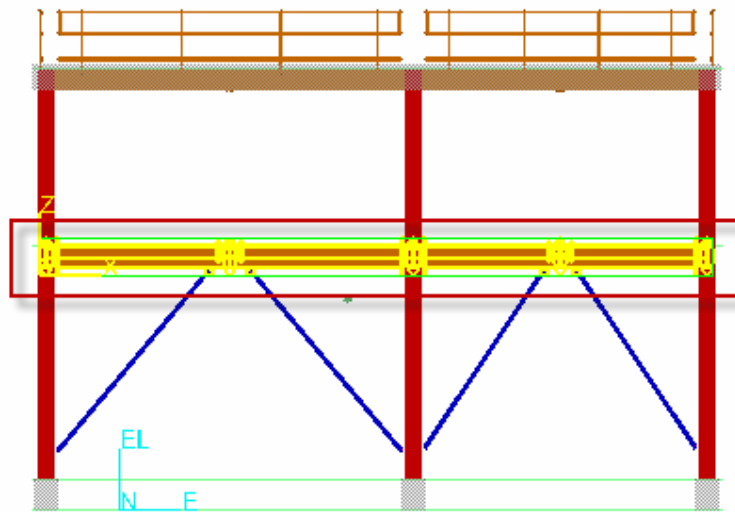


Figure 24: Fence Select for the Structural Objects

16. Once the objects are highlighted, click the **Finish** button on the **Place Volume** ribbon. This will create a volume enclosing the 18 ft elevation of the pipe rack, as shown in Figure 25.

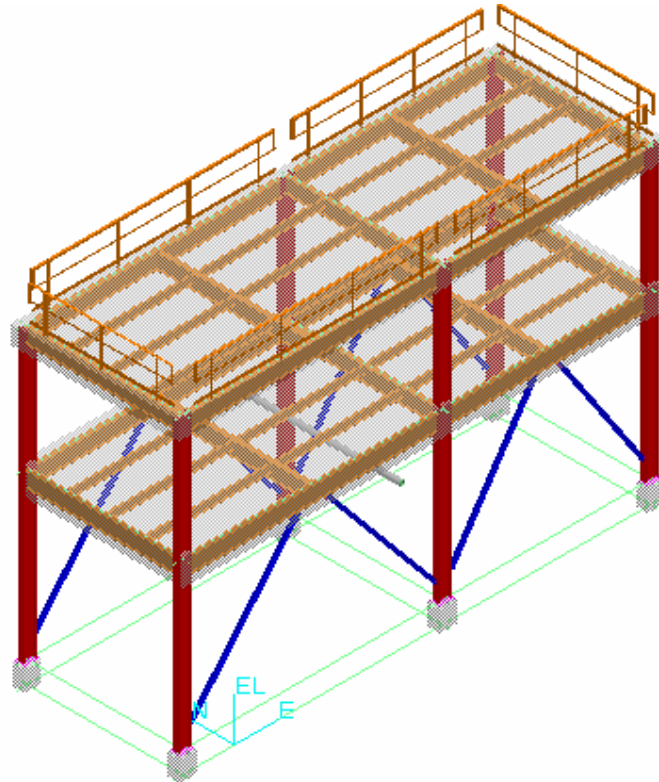


Figure 25: Volume Placed at 18 ft Elevation of the Pipe Rack

Steps for Creating the Drawing:

1. From any of the modeling tasks, select **Tools > Drawing Console...** command from the main menu, as shown in Figure 26.

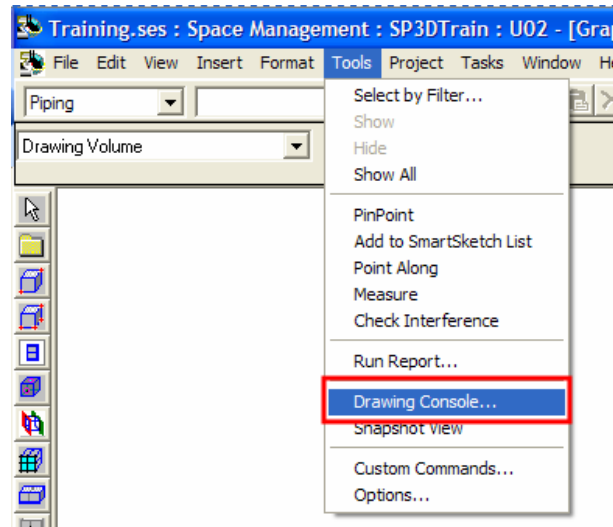


Figure 26: Tools > Drawing Console... Command

2. The **Drawing Console** dialog box appears. Right Click on the **Composed Drawings**, created in the previous section, and select **New Drawing**, as shown below in Figure 27.

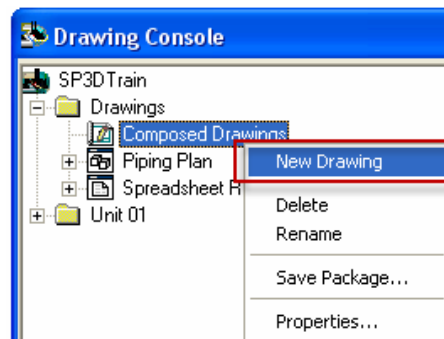


Figure 27: Drawing Console Dialog Box

3. The **Drawing Sheet General Properties** dialog box appears. In the **Name** property, key in **U02 Struc Plan**. This gives a name to the physical drawing that will be created in the **Composed Drawings** component.
4. In the **Layout Template** property drop-down list, click **More...** to select the layout of the drawing template.
5. The **Select Template** dialog box appears. Select the **Empty.sha** template, and click **OK**, as shown in Figure 28.

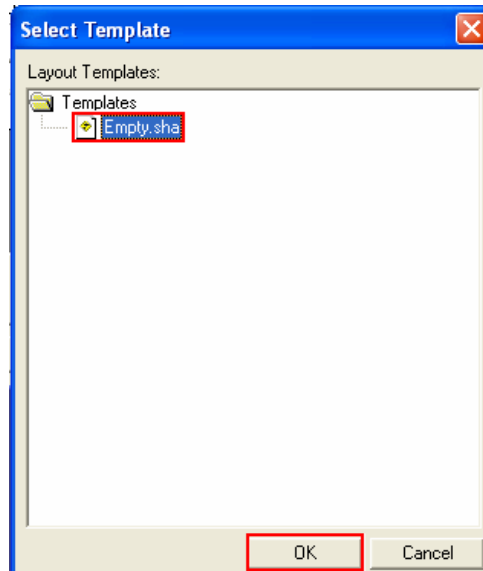


Figure 28: Select Template Dialog Box

6. In the **Border Template** property drop-down list, click **More...** to select the border of the template.
7. The **Select Template** dialog box appears. Double-click the **Imperial** folder, select the **D_Wide_NoteArea.sha** template, and then click **OK**, as shown in Figure 29.

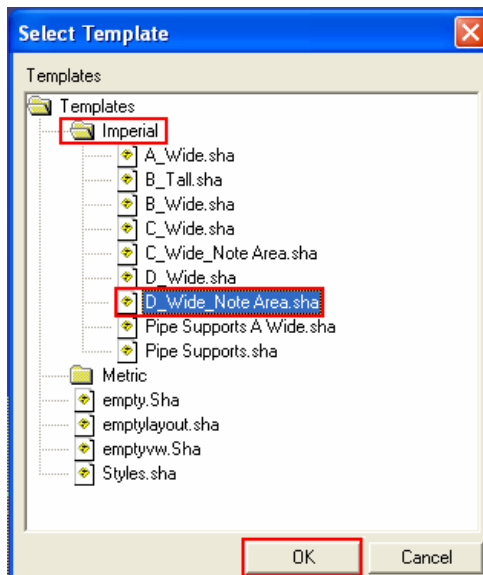


Figure 29: Select Template Dialog Box

8. In the **Drawing Sheet General Properties** dialog box shown in Figure 30, click **OK** to

apply the properties defined so far to the new drawing.

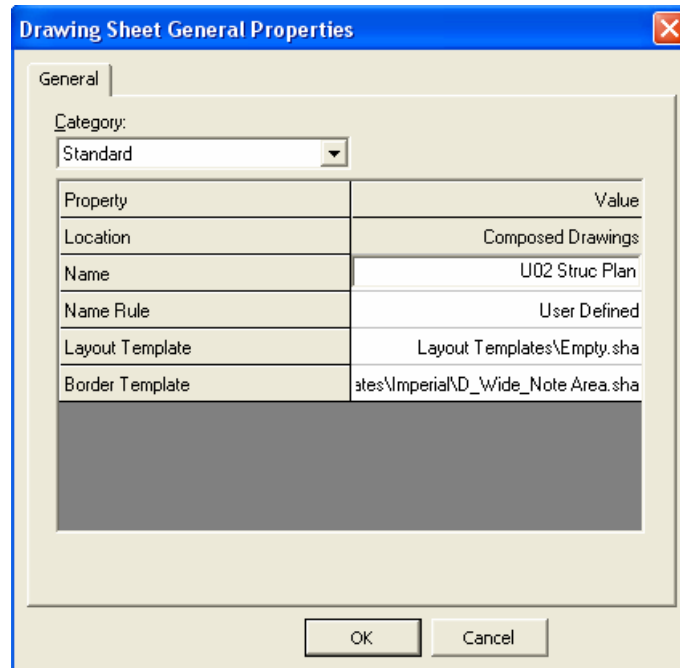


Figure 30: Drawing Sheet General Properties Dialog Box

9. The **2D Drawing Editor** window, as shown in Figure 31, appears behind SP3D. Bring the **2D Drawing Editor** window up as the active application to perform the next task in the workflow, which is placing the views.

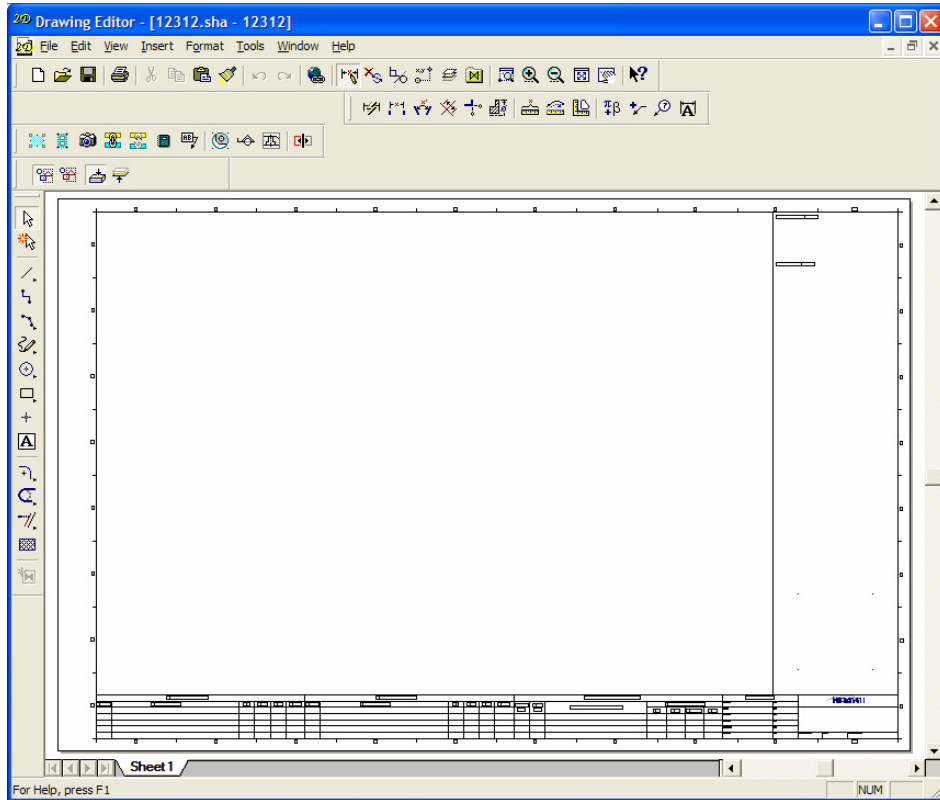


Figure 31: 2D Drawing Editor Window

Steps for Placing the Views:

1. In **2D Drawing Editor** window, click the **Fit** button on the **Common** toolbar to fit the view in the window, as shown in Figure 32.

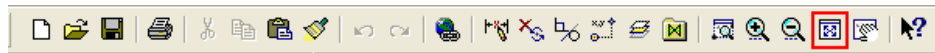


Figure 32: Fit Button on the Common Toolbar

2. On the horizontal toolbar, click the **Place View** button, as shown in Figure 33.



Figure 33: Place View Button on the Horizontal Toolbar

3. With the **Place View** command active, place the view in the drawing frame using a two point method. Click once at the **A1** position of the drawing frame to place your first point. Drag the mouse to position **C8** and click to place the second point.

4. After the view is placed the **Drawing View Properties** dialog box displays, as shown in Figure 34. Click **More...** in the **Style** drop-down list to select the view style.

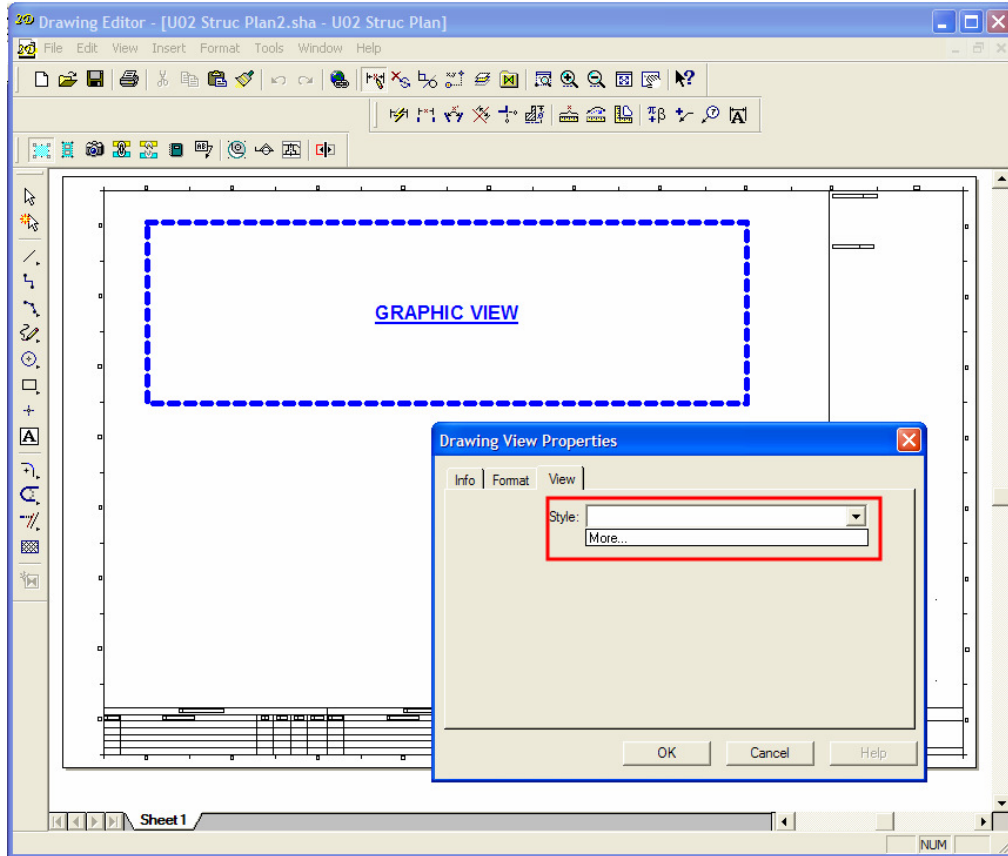


Figure 34: Placing the First View

5. The **Select View Style** dialog box displays. Under the **Orthographic** folder, select the **Structure Framing Plan** view style, and then click **OK**.

Notice, after the view style is selected, more options appear in the **Drawing View Properties** dialog box for the definition of this view, as shown in Figure 35.

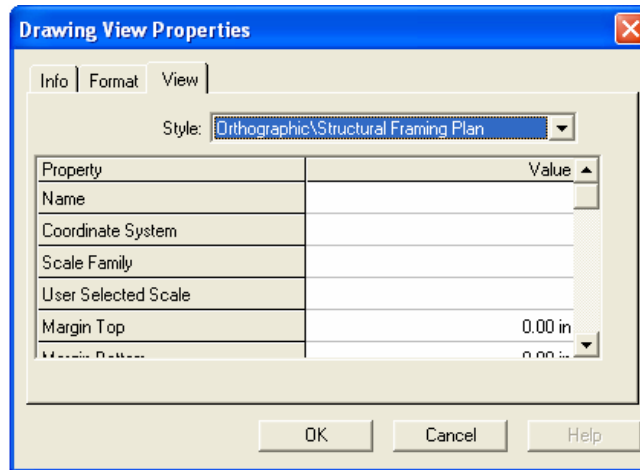


Figure 35: Drawing View Properties Dialog Box

6. In the **Drawing View Properties** dialog box, set the following properties for the first view, as shown in Figure 36:

Name	View1
Scale Family	Metric Scales
User Selected Scale	1:33mm
Look Direction	Looking Plan

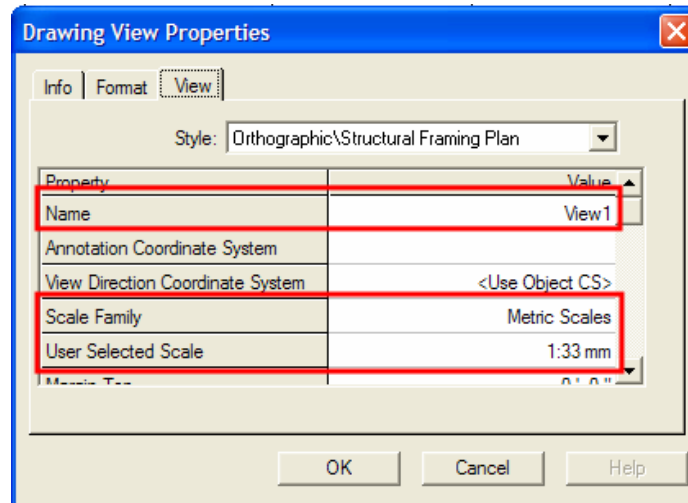


Figure 36: Drawing View Properties Dialog Box

Click OK to apply the settings and close the Drawing View Properties dialog box. After this dialog box is closed the drawing template automatically saves the changes made to it up to this point, as shown in Figure 37

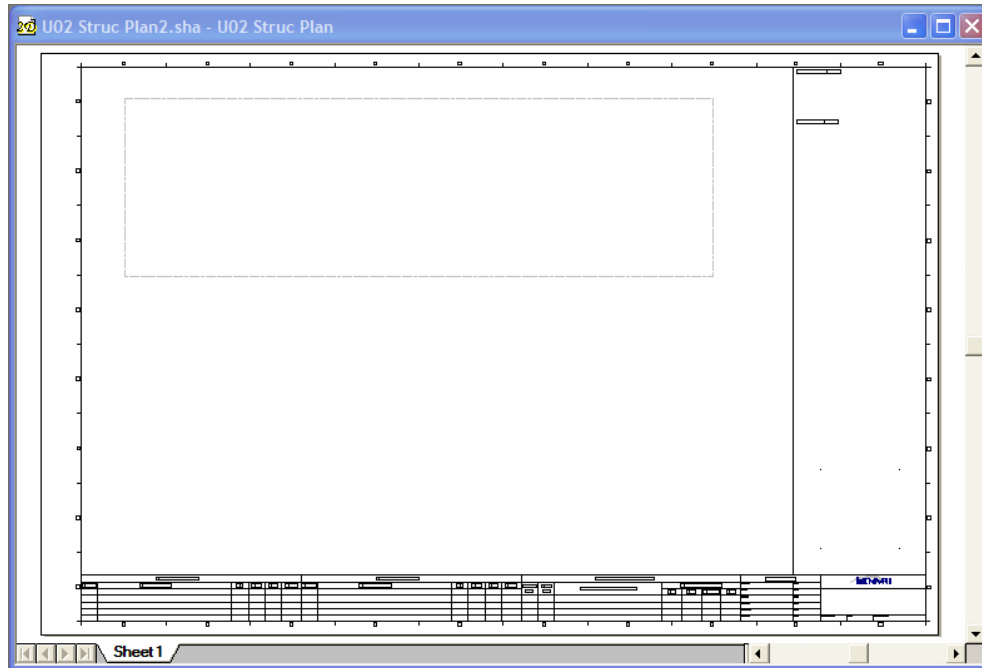


Figure 37: Drawing Template - After Placing the First View

7. Repeat steps 2 – 5 to place another view in the drawing frame. For the second view, the first point of the view is placed at **D1** and the second point at **G8**.
8. In the **Drawing View Properties** dialog box, set the following properties for the second view:

View Style	Structure Framing Plan
Name	View2
Scale Family	Metric Scales
User Selected Scale	1:33mm
Look Direction	Looking Plan

Again, the changes will be saved to the template. The two views that you created will resemble the Figure 38.

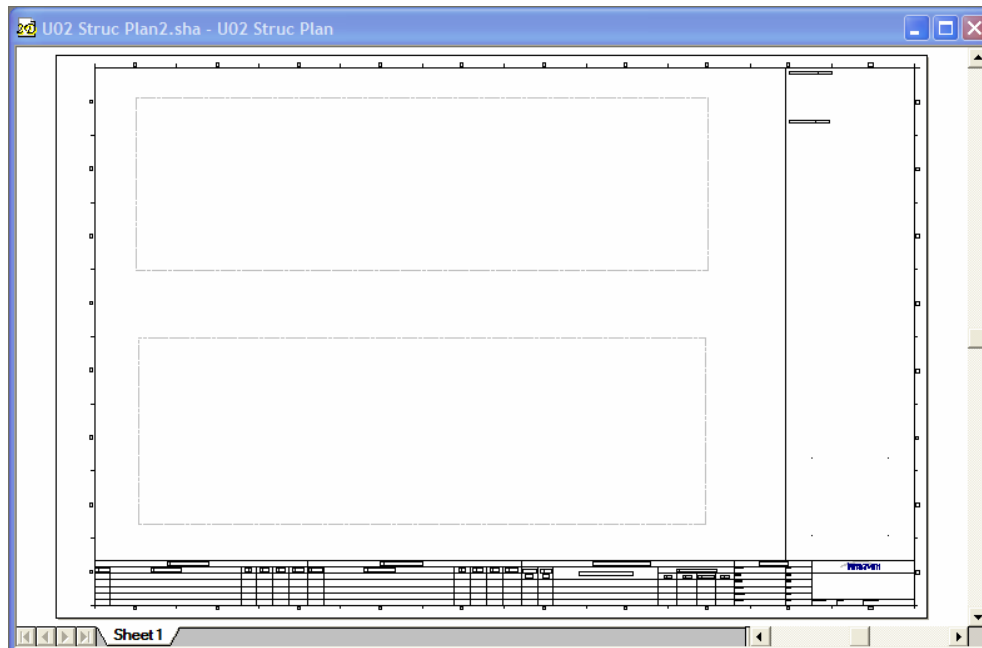


Figure 38: After Placing the Views in the Template

Steps for Associating the Volumes to Views:

After placing the views, associate volumes to them. Perform the following steps to associate the views with the volumes that you placed in the previous lab above.

1. Select both the views in the template by holding the **Ctrl** key down and clicking the border of both the views on your template, as shown in Figure 39.

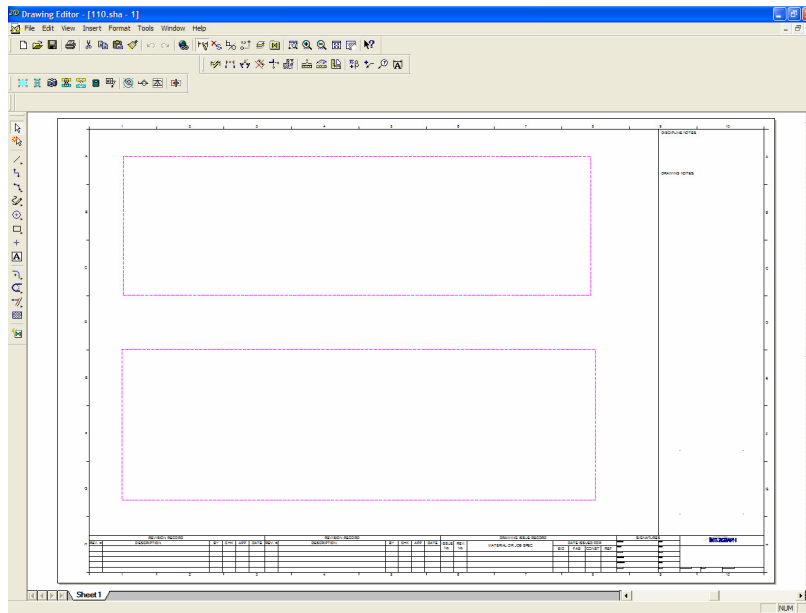


Figure 39: Selecting the Views

2. Click the **Associate Objects to View** button on the horizontal toolbar, as shown in Figure 40.



Figure 40: Associate Objects to View Button on the Horizontal Toolbar

3. With the **Associate Objects to View** command active, go back to the SP3D window, which is open behind the **2D Drawing Editor** window. In the SP3D window, the ribbon, as shown in Figure 41, appears.



Figure 41: Ribbon in SP3D Window

4. On the ribbon, select **View1** in the **Select view** option and then select the volume, **U02 Top** that you placed in Unit **U02** to associate it to **View1**, as shown in Figure 42.

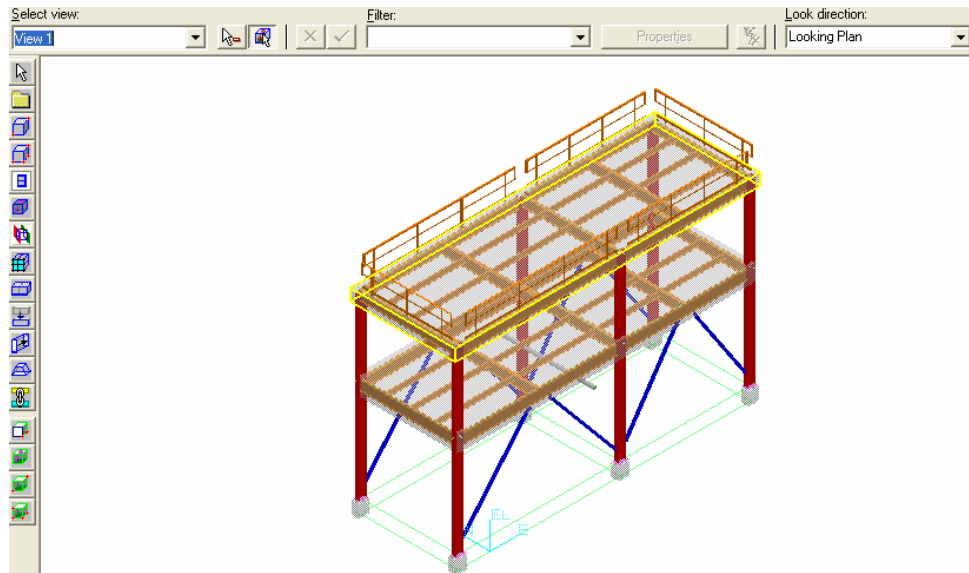


Figure 42: Associating View1 with U02 Top

Note:

After you have selected the volume for the first view, notice that in the **Select view** drop-down list the view name **View1** automatically changes to the next view name **View2**, as shown in Figure 43.



Figure 43: Ribbon in SP3D Window

5. For **View2**, select the second volume, **U02 Middle** that you placed in Unit **U02**, as shown in Figure 44.

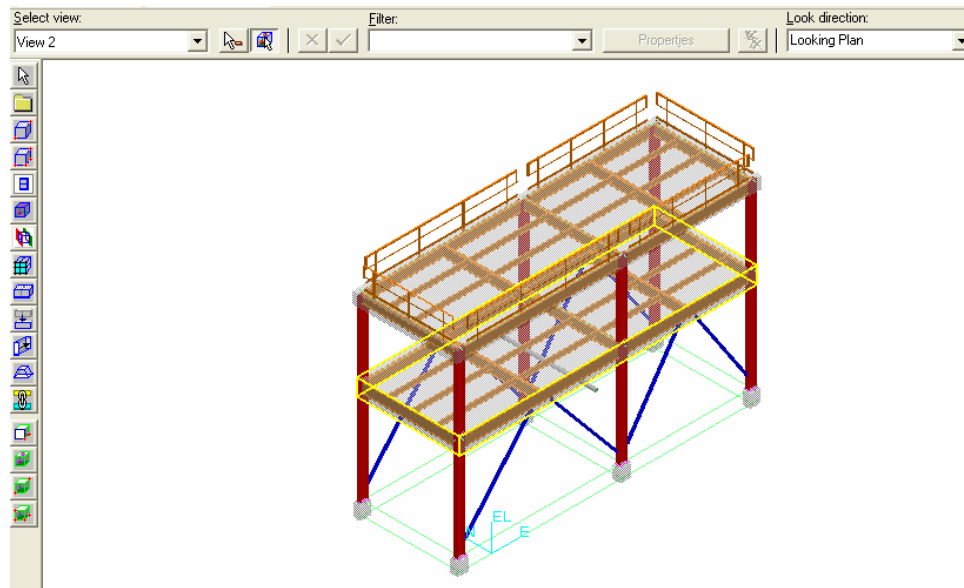


Figure 44: Associating View2 with U02 Middle

6. You have now associated both views from the template to volume objects in order to get the contents from the volume in these views, using the **Plan Looking** orientation.
7. Now, close the **2D Drawing Editor** window. A **Drawing** dialog box prompts asking you to save the changes. Click **Yes** to save the changes to the template, as shown in Figure 45.

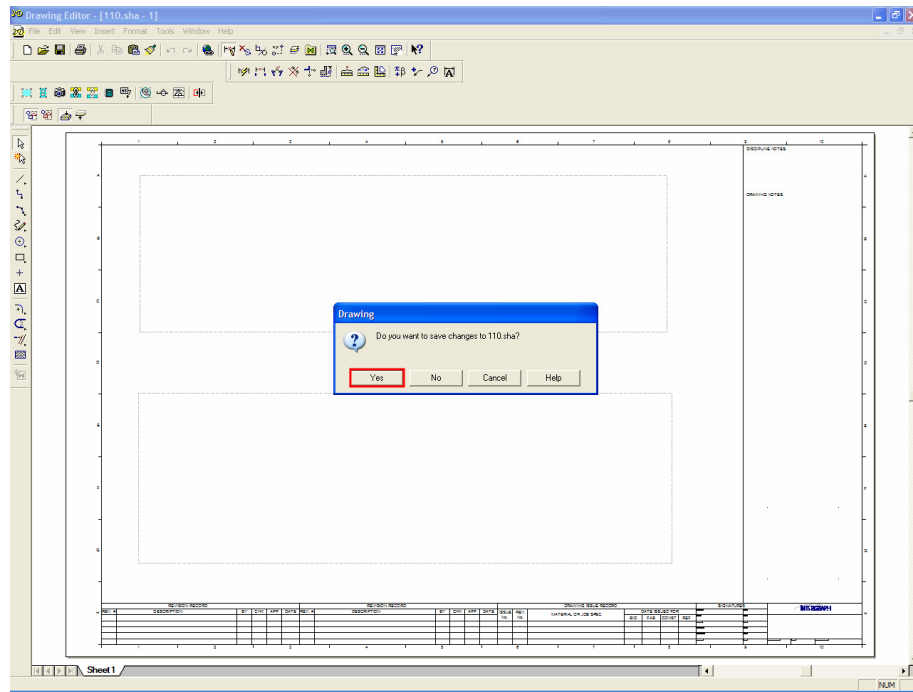


Figure 45: Drawing Dialog Box in 2D Drawing Editor Window

8. Now, you can switch to the **Drawings and Reports** task to verify that the new composed drawing component is created under the **Management Console** hierarchy. To view the composed drawing, you need to update it so that you can open it and view the objects that are included in the drawing.

Steps for Updating the Drawing:

After creating the composed drawing, you update it to the Batch Server to enhance the performance of SP3D. To update the drawing, you use the **Update Now** command, which is accessed by right-clicking the composed drawing in the **Detail View**. You can update one or more drawings at a time. If you have edited the previous copy of a composed drawing, the software recalls the changes and recreates them. To update the composed drawing you created, perform the following steps:

1. From the menu bar of your current SP3D environment, click **Tasks > Drawings and Reports** command to switch to the **Drawings and Reports** task.
2. In the **Management Console**, navigate to the **Composed Drawings** component, in the **Drawings** folder as shown in Figure 46.

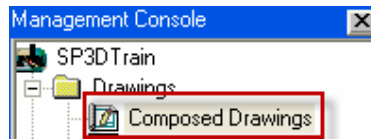


Figure 46: Management Console

3. In the **Detail View**, the newly created drawing, **U02 Struc Plan**, displays. Right-click **U02 Struc Plan** and click **Update Now**, as shown in Figure 47.

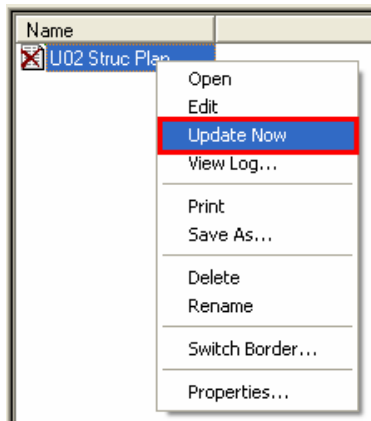


Figure 47: Update Now Command

When the drawing is updated, double-click the drawing to view the results. The template resembles Figure 48, in which the two views contain the objects that were included in the volumes that you associated with the views.

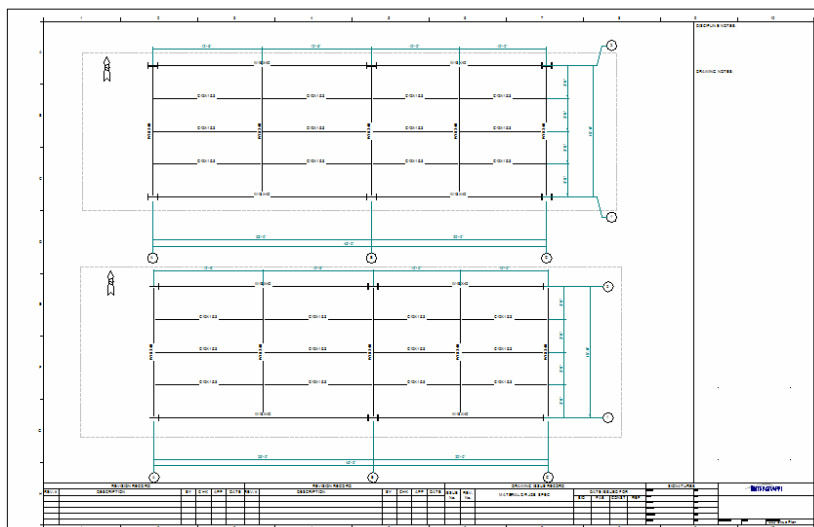


Figure 48: Output - Composed Drawing

Steps for Applying Drawing Property Labels:

The software updates properties from parent nodes to child nodes and drawings in the **Management Console**.

You can specify the inheritance for each item on it in the **Properties** dialog box. If you set the override flag for a property, the property is not inherited from the parent. You can provide a new, overriding value for the property. This new value then propagates to the other items deeper in the hierarchy.

1. In the **Drawings and Reports** task, right-click the **U02 Struc Plan** drawing, under the **New Composed Drawings** component, and select **Properties...** from the menu, as shown in Figure 49.

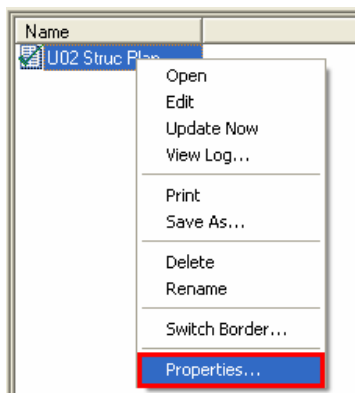


Figure 49: Properties Command

2. On the **Title Area** tab of the **Properties** dialog box, select the **Value** cell for **Title 1** and type in the value **Harvest Moon**. Likewise, fill in the **Title 2** value by typing **Harvest Gen. Facility**, as shown in Figure 50, and click **OK** in the **Properties** dialog box.

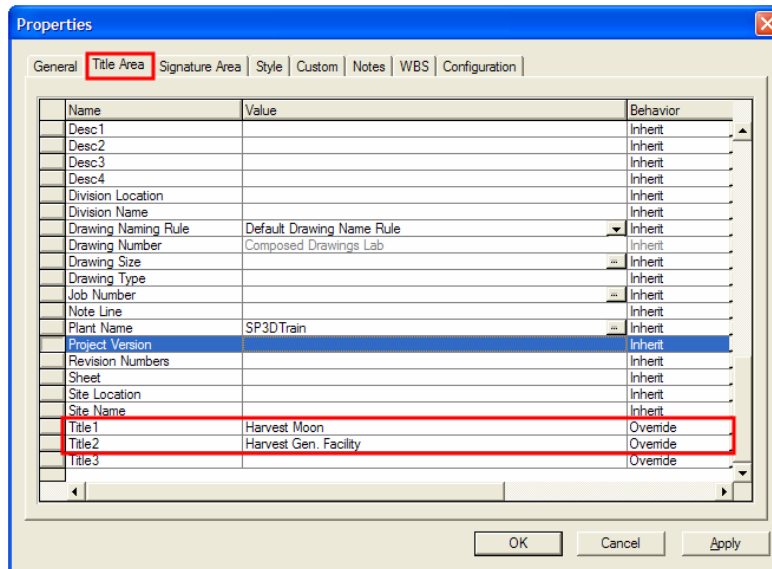


Figure 50: Properties Dialog Box

- Right-click the **U02 Struc Plan** drawing and select **Update Now**, as shown in Figure 51.

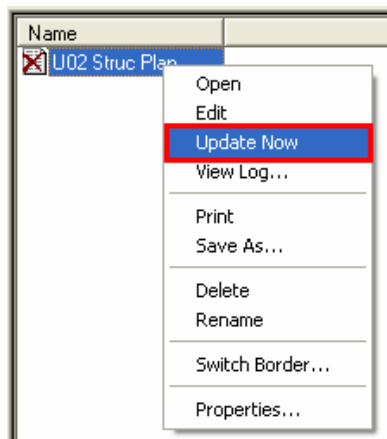


Figure 51: Update Now Command

- Once the drawing is updated successfully, right-click the drawing and select **Edit**, as shown in Figure 52. This will open the drawing in the **Shape2D Drawing Editor** window.

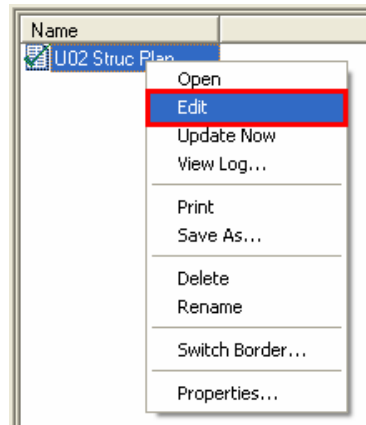


Figure 52: Edit Command

5. In the **Shape2D Drawing Editor** window, maximize the drawing window and select the **Zoom Area** button on the horizontal toolbar, as shown in Figure 53.

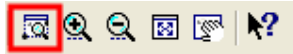


Figure 53: Zoom Area Command

6. With the **Zoom Area** command active, zoom into **Title Area** of the drawing around the **Intergraph** company logo, and notice the **Title 1** and **Title 2** border property values, as shown in Figure 54.

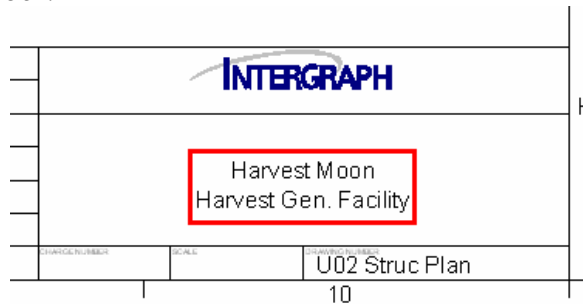


Figure 54: Output - Border Property Labels

For more information related to creating and updating composed drawings, refer to the following topics of the user guide *DrawingsandReportsUsersGuide.pdf*:

- *Composed Drawings: An Overview*
- *Updating Drawings: An Overview*