AUTODESK UNIVERSITY 2013

Enhance Autodesk® AutoCAD® Designs with Autodesk® SketchBook® Designer

Jerry Berns – EMA Design Automation, Inc.

AC2950 AutoCAD and SketchBook Designer offer interoperability tools that allow you to take AutoCAD geometry to SketchBook Designer for illustration. The finished DWG™ file can be brought back into AutoCAD to be shared in plots or through DWF™ files. In this hands-on lab, you will discover creation, editing, and shading tools. You will explore layer management. You will also learn about the various configurations of the SketchBook Designer add-in for AutoCAD and how to create and manage canvases in AutoCAD. Enhance your next AutoCAD design presentation with the tools available from the Autodesk Design Suites.

Learning Objectives

At the end of this class, you will be able to:

- Discover creation, editing, and shading tools and explore layer management.
- Explore the various configurations of the SketchBook Designer add-in for AutoCAD.
- Enhance AutoCAD design presentations with the tools available from Autodesk® Product Design Suite.
- Create and manage SketchBook Designer canvases within AutoCAD.

About the Speaker

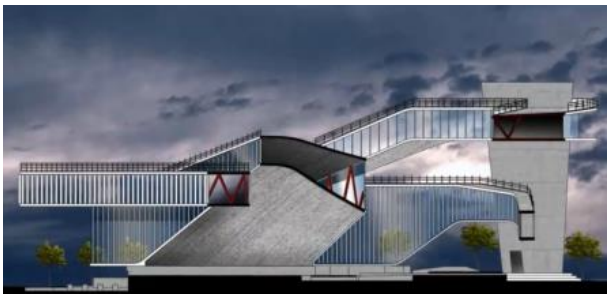
Jerry is an Applications Engineer for EMA Design Automation, Inc. He is involved with Pre-Sales and Post-Sales implementation, installation, configuration, education, and standardization of the Autodesk manufacturing products. Jerry has worked at engineering firms and Autodesk VARS, using and supporting Autodesk products since 1985.

Introduction

Autodesk® SketchBook® Designer 2014 software enables you to explore design concepts and produce stunning artwork. It offers a hybrid paint and vector workflow to give creative professionals the functionality they need to quickly transform ideas into compelling design iterations and visual communications.

With the interoperability introduced in AutoCAD 2012, the “connected” workflow allows designers to transfer geometry and images to SketchBook Designer. Create, edit, shade or annotate the design. Generate images from SketchBook Designer or return the illustration back to AutoCAD for communication with clients and stakeholders.

Image by Jerry Berns



Images courtesy of Autodesk, Inc.

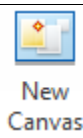
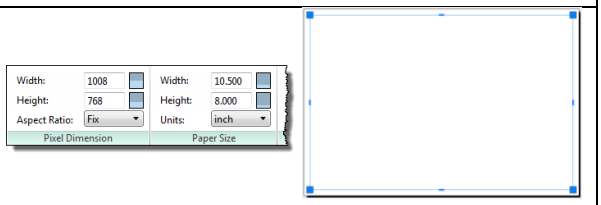
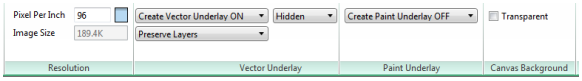
General Workflow

This class will focus on the SketchBook Designer Add-in for AutoCAD and the workflow options in which canvases are created in AutoCAD first. A designer could optionally begin a drawing in SketchBook Designer and then open it in AutoCAD. Less control is offered with the latter method and it would seem to require more steps to configure the canvases.

A series of exercises will demostrate creating canvases, optional underlays, opening SketchBook Designer to illustrate the model and finally returning the drawing to AutoCAD.

Please note this document is not intended to describe all the tools and workflows available in SketchBook Designer 2014. Consult the SketchBook Designer help system for additional information.

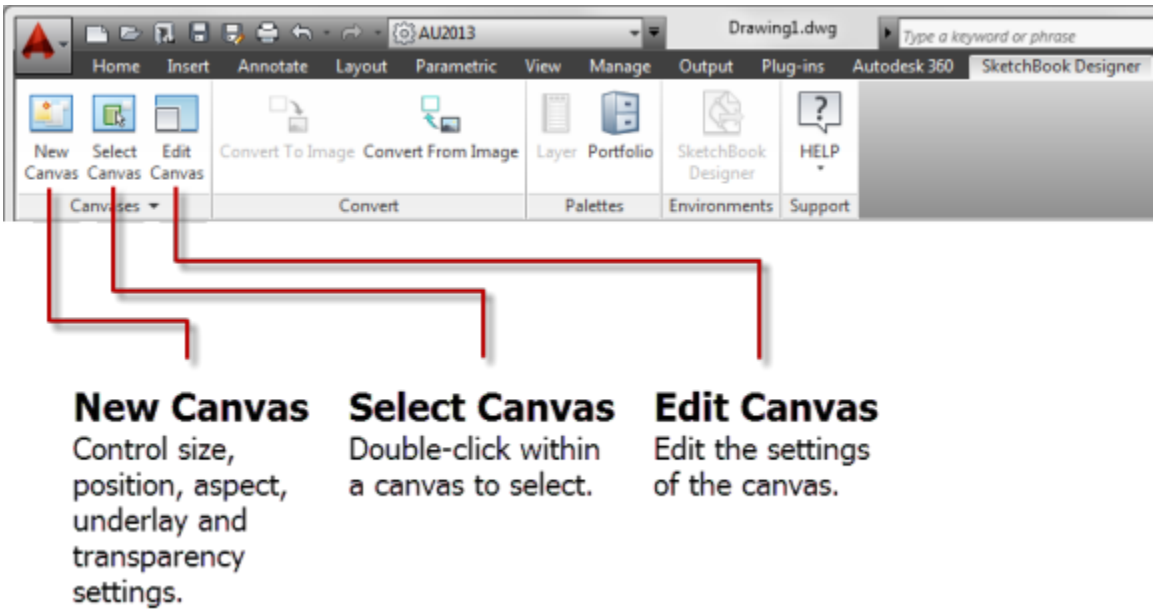
A common workflow to include SketchBook imagery in an AutoCAD drawing is as follows:

1. Create a canvas on an AutoCAD layout.	
2. Use Ribbon tools or grips to set canvas size and position.	
3. Use Ribbon tools to control resolution, underlays, and transparency.	
4. Apply canvas.	
5. Open SketchBook Designer.	
6. Convert any underlay layers to paint or vector layers as needed.	
7. Create additional vector or paint layers as needed.	
8. Complete the sketch.	
9. Return to AutoCAD.	

	For the purpose of brevity, the term **SBD** will often be used in place of **SketchBook Designer**.

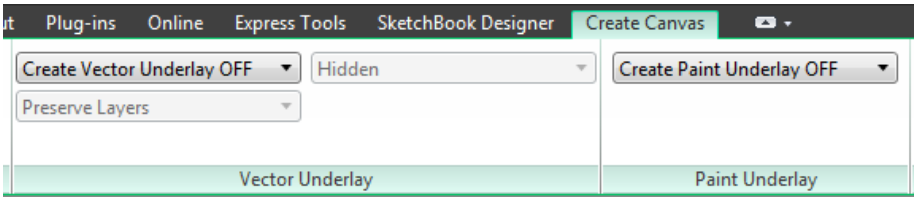
Create and Manage Canvases

Canvas management is controlled from the SketchBook Designer panels.



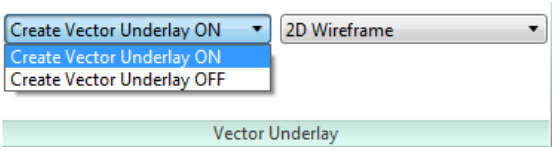
These canvases can be created in Model Space or Paper Space. Multiple canvases can be created. Each will become a page within the SBD environment. For clarity, the Model Space image below was configured with a light-gray background.

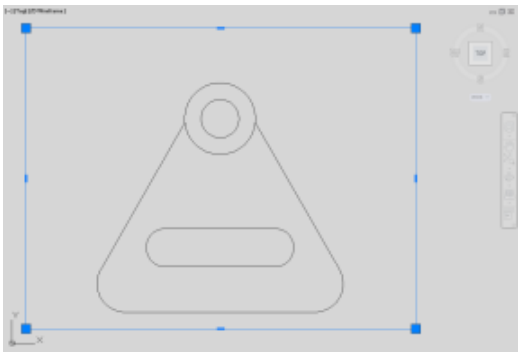
AutoCAD objects (with the exception of dimensions, text, annotations, and solids) that fall within the boundary of a canvas can be converted to an underlay. With *Create Vector Underlay OFF* and *Create Paint Underlay OFF*, no objects or images will be converted for transfer to SketchBook Designer.

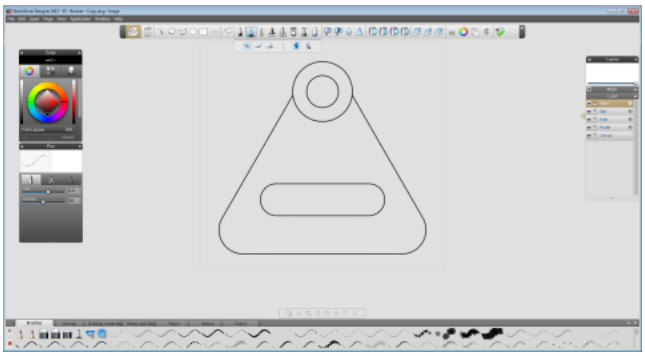


Vector Underlays

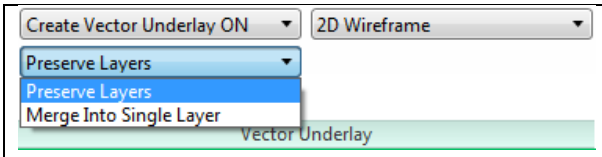
Selecting ***Create Vector Underlay ON*** in the Vector Underlay panel will convert objects within the canvas boundary into vector objects that will appear when opened in SBD.





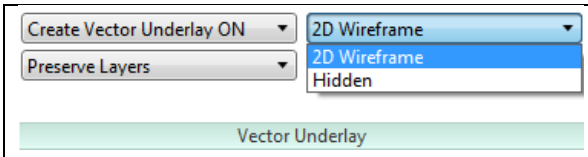
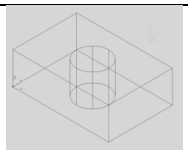
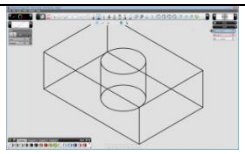
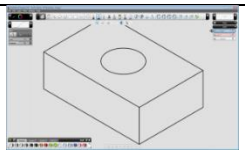


To control layer conversion from AutoCAD to SBD, toggle the layer control on the Vector Underlay panel.



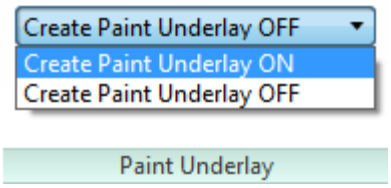
Preserve Layers	The AutoCAD object layers will have a matching vector layer in SBD.
Merge Into Single Layer	All geometry will be merged into a single vector layer in SBD.

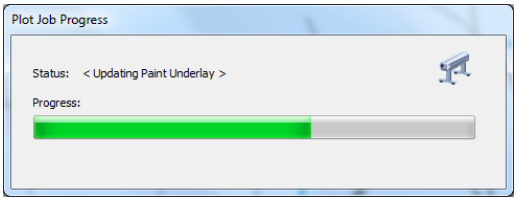
If working with a 3D model, toggle the display style to control appearance in SBD

		
2D Wireframe	Create a wireframe sketch of the 3D model.	
Hidden	Create a hidden-view sketch of the 3D model.	

Paint Underlays

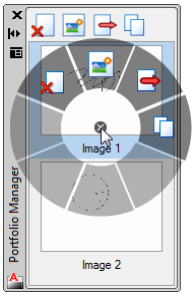
Selecting ***Create Paint Underlay ON*** will convert objects within the canvas boundary into paint objects that will appear when opened in SBD. Use this method if you do not need to manipulate the objects as vectors in SBD. Upon selecting the Apply button, AutoCAD will "plot" the canvas to create an image for transfer to SBD.





Portfolio Tool

The Portfolio tool allows the designer to name, place or delete a canvas. A canvas is similar to a block. Deleting an occurrence from a layout does not remove it from the drawing. It can be placed again on the same or a different layout.



Select a canvas on the palette then select the command from the menu at the top of the palette. Optionally, select a command from the Marking Menu shown to the left.

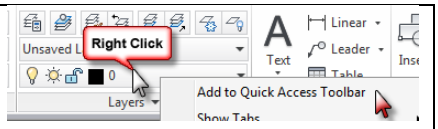
A final command available from the Portfolio palette is the ability to export a canvas as an image. This is a convenient way to create images without having to return to SBD to use its export tool.

Exercise 1 – New Canvas

The following exercise will have you create, select and edit a canvas using a vector underlay.

Create a new canvas on a layout

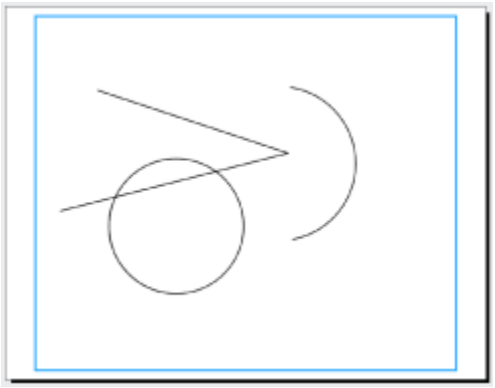
1. Launch AutoCAD.
2. Open **01 – New Canvas.dwg**
3. Select Layout1.
4. Make the **Objects** layer current.

TIP	For more convenient layer switching, add the Layer drop-down menu to the Quick access tool bar.	

5. Draw a few lines, arcs, or circles.
6. Select the SketchBook Designer tab from the Ribbon.
7. Make the **Canvas** layer current.

TIP	Use TFRAMES (Toggle Frames) to toggle the visibility of the canvas frame prior to plotting.

8. Select **New Canvas** from the Ribbon.
9. Set the following values:
    a. **Resolution = 96**
    b. **Create Vector Underlay ON**
    c. **Preserve Layers**
    d. **Create Paint Underlay OFF**
    e. **Transparent = Enable (checked)**
10. Select Apply.

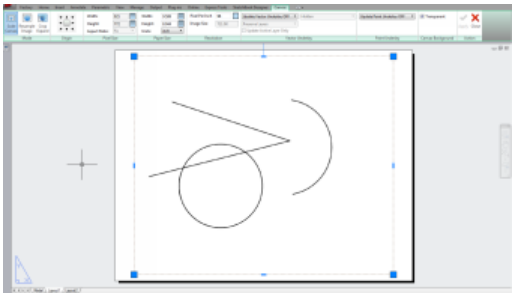


11. Double-click outside the canvas to deactivate it.

12. Toggle the canvas layer off and then back on.
13. Open the **Portfolio** palette to see the canvas created.

Select and Edit a canvas

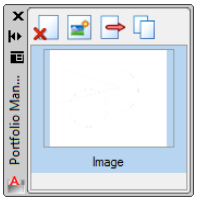
1. Double-click inside the canvas to activate it. Optionally, use the **Select Canvas** tool.
2. Select the **Edit Canvas** tool.



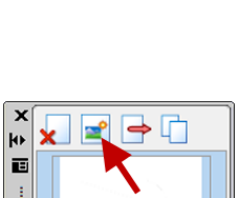
3. Use the grips to change the size of the canvas. Optionally, toggle between Free or Fixed ratio to control aspect.
4. **Apply** to save the changes.
5. Double-click outside the canvas to deactivate.

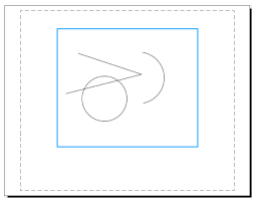
Delete and Place a canvas

1. Use the **Erase** command or **Delete** key to erase the canvas.
2. Use the **Portfolio** tool to confirm the canvas still exists in the drawing.



3. Select Layout2.
4. Make the **Canvas** layer current.
5. Use the **Place Canvas** tool from the Portfolio palette to insert the canvas. Follow the screen prompts to select the canvas corner points. The canvas should appear active.





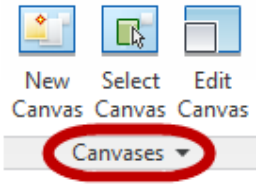
6. **Close** the drawing. No save required.

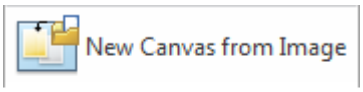
Exercise 2 – New Canvas from Image

The following exercise will create a new canvas from an image.

Create a new canvas on a layout

1. Launch AutoCAD.
2. Open **02 – New Canvas from Image.dwg**
3. Select Layout1.
4. Make the **Canvas** layer current.
5. From the Canvases drop-down panel, select **New Canvas from Image**.





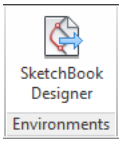
6. Select **Chicago_skyline.jpg** from the *Exercises* folder. *Change file type to JPG*
7. Select the corner points for the canvas.
8. A new canvas should appear containing the selected image.

9. The canvas should also be listed in the Portfolio palette.

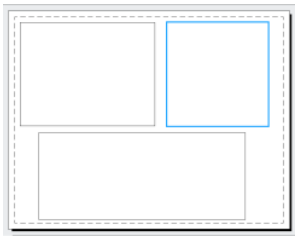
10. Practice canvas editing such as sizing, positioning and rotating.
11. **Close** the drawing. No save required.

TIP	Also can use Properties Palette to adjust canvas.

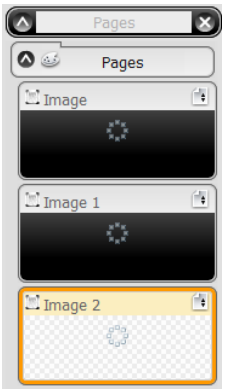
SketchBook Designer Add-in Tool



Once the canvas or canvases have been prepared in AutoCAD, the canvases can be transferred or opened in SBD. To determine which canvas will be active in SBD, activate it by double-clicking the mouse within the canvas boundary then select the SketchBook Designer tool from the Ribbon.



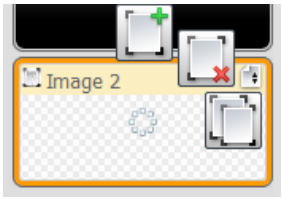
In this example, the upper right canvas is active (bold, blue border). This will become the active page in SBD.



Note: All canvases from all spaces will be available in SBD. Within SBD use the Page Manager (Alt + S shortcut) to select a canvas.

Double-click the page title to rename the page (canvas).

Use the Page Marking Menu to add, delete or duplicate a page.



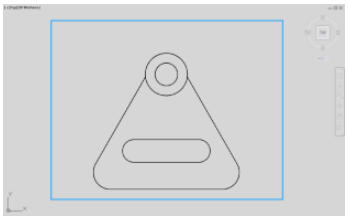
2012 ONLY

TIP	Canvases behave similar to AutoCAD viewports. Deactivate a canvas in order to move, copy or rotate a canvas.

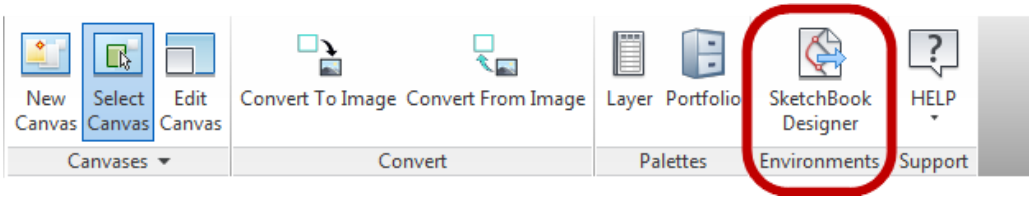
Exercise 3 – Connect to SketchBook Designer

The following exercise will demonstrate connecting to SBD from AutoCAD using the add-in tool.

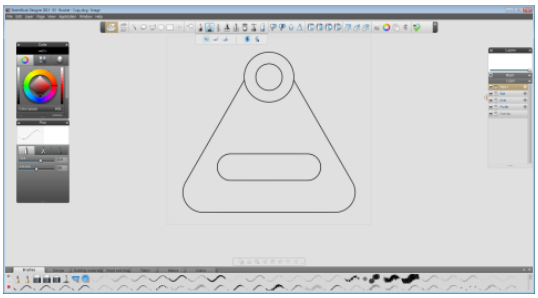
1. Launch AutoCAD.
2. Open **03 - Bracket.dwg**.
3. Activate the canvas on the Model tab.



4. Select the **SketchBook Designer** tool from the Ribbon.



5. In a moment, SketchBook Designer should appear with the selected canvas.



6. The *Create Vector Underlay ON* option was selected along with the *Preserve Layers* option. This resulted in the AutoCAD layers being available in SBD. The **Convert to vector layer** tool was used to convert the AutoCAD layers to SBD Vector layers as shown in the image below.

7. Select **Return to AutoCAD** from the SBD toolbar.

8. SBD closes and AutoCAD is activated.

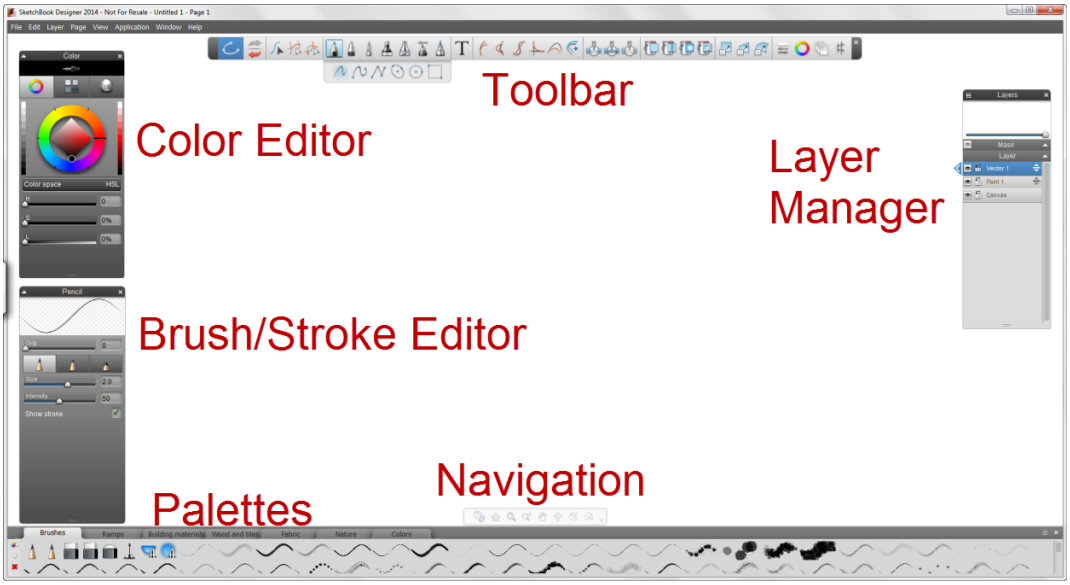
	While SBD is active, no AutoCAD commands can be performed. SBD must be closed to enable AutoCAD operations again.

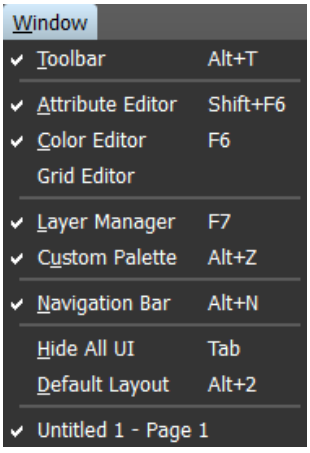
9. **Close** the drawing. No save required.

Sketchbook Designer Tools

Interface

The SketchBook Designer interface includes toolbars, editors and palettes.





Use the Window menu to control the visibility of each of these elements.

The element shortcuts are listed in the menu and Help system.

Use **Tab** to toggle visibility of interface elements.

Use **Alt+2** to restore the interface elements to a default layout.

Vector Toolbar

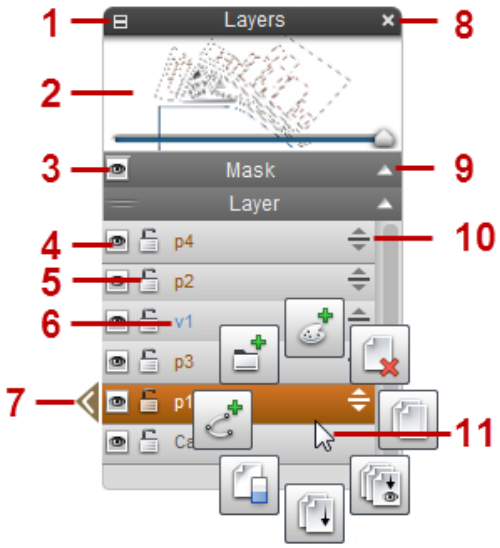
Selecting a vector layer will activate the Vector toolbar. Selectors, brushes, text, curve editors, stroke editors, fill tools, transformation tools, palette toggles, and grid controls are available.

Paint Toolbar

Selecting a paint layer will activate the Paint toolbar. Selectors, brushes, raster editors, fill tools, transformation tools, palette toggles, and grid controls are available.

Layer Manager and Marking Menu

The Layer Manager is essential to the organization and appearance of the illustration. The order of the layers in the manager also effects the illustration. Use the Marking Menu over a layer to create, clear, delete, duplicate, or merge layers. If you have several layers to manage, create a layer folder to provide improved organization.

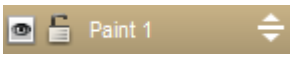


1 Show/Hide Layer Manager
2 Preview Window
3 Show/Hide Mask section
4 Toggle layer visibility
5 Lock a layer to prevent editing
6 Layer name
7 Layer Properties tab
8 Close Layer Manager
9 Collapse/Expand section
10 Rearrange layer tool
11 Layer Marking Menu

Exercise 4 – SBD Interface

The following exercise will explore the SBD interface. *(SBD Tour Guide – Pages 1-4)*

1. Launch SketchBook Designer.
2. Open **04 – SBD Interface.dwg**.
3. Press **Tab** to hide the interface elements. Press **Tab** again to restore elements.
4. Press **Alt + 2** to restore the default interface elements.

5. From the Help Menu, select **Tour Guide**.
6. Browse through the pages. Close the Tour Guide window.
7. Select Paint 1 layer from the Layer manager. 

Note the Toolbar options.
8. Select Vector 1 layer from the Layer manager. 

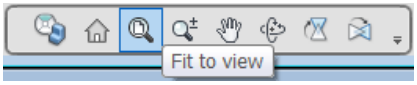
Note the Toolbar options.
9. Press and hold **Spacebar** to momentarily display the Navigation puck.

Zoom  *Pan*  *Rotate* 

10. Position the cursor as needed over the puck element. Left-click and drag to zoom, pan, and rotate. Release the Spacebar.

TIP	Roll the mouse wheel to zoom. Hold the mouse wheel to pan.

11. From the navigation toolbar, select **Fit to view** to see the entire page.

	*This does not rotate the page back to a normal orientation. Use the Rotate*  *tool as needed.*

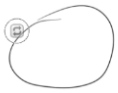
12. Select the **Pencil** tool. 
13. Select the **Curve stroke** tool. 
14. Left-click, drag, and release to create a stroke.
15. Press and hold **B** (brush) to momentarily display the Brush size/intensity controls.
16. Left-click and drag right to increase brush size. Release the **B** key.
Note the change in the Stroke Editor
17. Create another curve stroke.
18. Use the **B** (brush) key again to change the size/intensity.
19. Create another curve stroke.
20. Close the drawing. No save required.

Exercise 5 – SBD Brushes and Cycle Manipulator

The following exercise will explore the various vector and paint brush tools. The Cycle Manipulator is useful for refining a curve stroke to a desired shape. (SBD Tour Guide – Page 9)

1. Launch SketchBook Designer.
2. Open **05 – SBD Brushes.dwg**.
3. Select the Vector 1 layer.
4. Select the **Pencil** tool, **Curve stroke** mode.
5. Create a curve as shown. *Note the appearance of the Cycle Manipulator*

6. Click the Manipulator several times to cycle through the stroke options. Depending on how the curve was created, you may see an elliptical arc, an arc, and a straight line.
7. Click-drag the circular manipulator to refine the curve. 
8. To accept the stroke, press Enter or just create another curve.
9. Create an elliptical curve as shown.



10. Cycle through the options. You may see an ellipse or circle dependent on the curve stroke original shape.
11. Create a sketch as shown.

12. Explore the cycle options again using the Manipulator. You may see a straight line or arc dependent on the curve stroke original shape.
13. Explore the other curve options.

		Ctrl + Left-click drag to select a curve option from the Desktop Marking Menu.

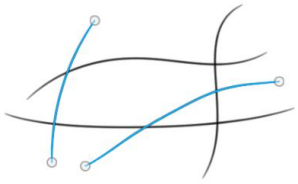
14. Close the drawing. No save required.

Exercise 6 – SBD Curve Edit

The following exercise will explore the vector curve edit tools. *(SBD Tour Guide – Page 5)*

1. Launch SketchBook Designer
2. Open **06 – SBD Curve Edit.dwg**.

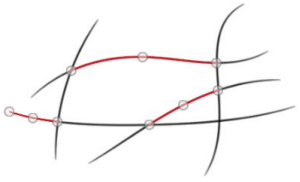
3. Use **Select curve (V)** tool to select a curve. Hold **Shift** to select multiple curves.



curves selected from left geometry

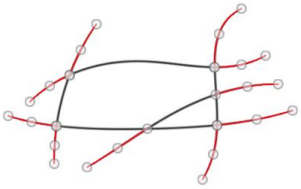
TIP	Drag a window to select multiple curves. Dragging to the left or right makes no difference, any curve inside or crossing the window will be selected.

4. Left-click in an empty area or press **ESC** to release the selection.
5. Use **Select curve segment (A)** tool to select a portion of a curve. Hold **Shift** to select multiple curves. The tool can select middle or tail portions of a curve.



segments selected from middle geometry

6. Press **Delete** to erase the curve segments.
7. Use **Select curve segment tails (Shift + A)** tool to select portions of a curve. Hold **Shift** to select multiple curves. This tool can only select tail portions of a curve.



segments selected from right geometry

8. Press **Delete** to erase the curve segment tails.

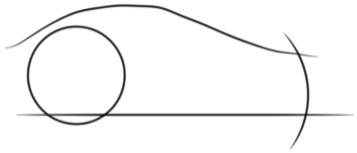
9. Close the drawing. No save required.

Exercise 7 – SBD Transform and Warping

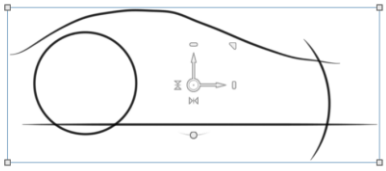
The following exercise will explore the transformation and warping tools. The drawing uses multiple pages (canvases). *(SBD Tour Guide – Page 6)*

Move, Scale, and Flip Objects

1. Launch SketchBook Designer.
2. Open **07 – SBD Transform & Warping.dwg**.

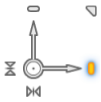


3. Select the Vector 1 layer. *Page 1 (canvas) should be active.*
4. Select the **Move** tool. Having selected the layer in the previous step, all objects on the layer are selected. The Move Manipulator appears along with a box around the objects.



5. Move the objects along a single axis using an Axis Arrow.

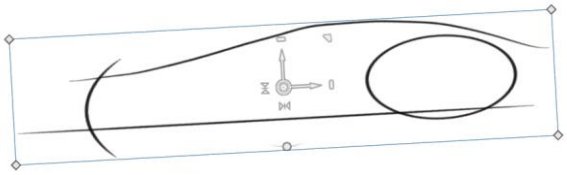
6. Scale the objects proportionally using the Proportional Scale Arrow.

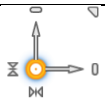
7. Scale along a single axis using the Axis Scale Grip. 

8. Scale the objects disproportionally using a Bounding Box Grip. 

9. Flip the objects using a Flip Arrow. 

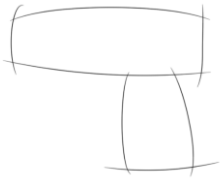
10. Rotate the objects using the Rotate Grip. 



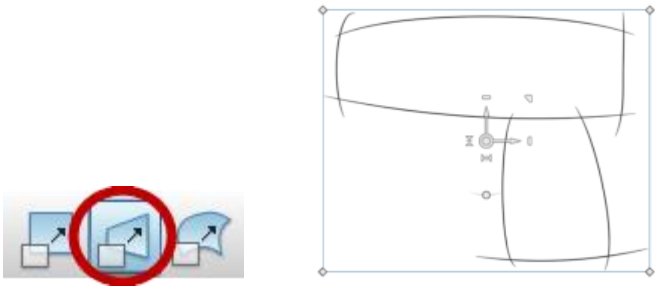
		Drag the ring on the Move Manipulator to change the base point for scaling, rotating, and flipping.

Distort Objects

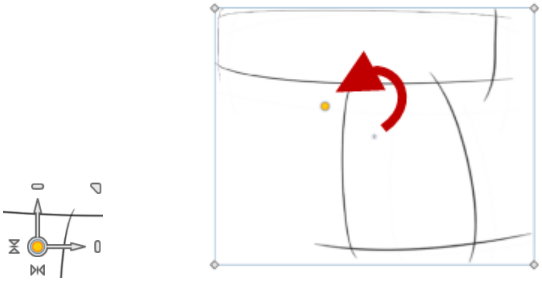
1. Select Page 2 from the Page Manager (2012 only). For 2014 use Page Menu, Previous.



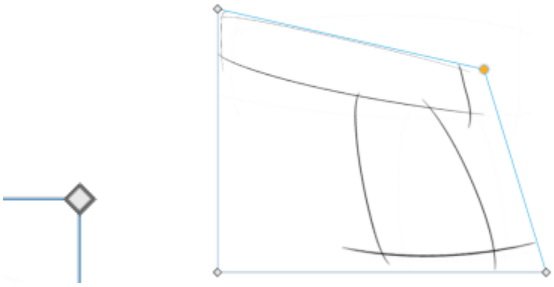
2. Select Vector 1 layer.
3. Select the **Distort** tool. The objects on the layer are selected. The Distort Manipulator appears. *Note a new grip at the center and the corner grips are now diamond-shaped.*



4. Drag the Bias (Center) Grip to distort the objects.

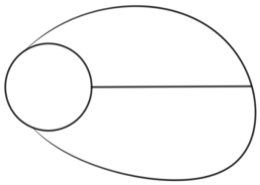


5. Drag a Corner Grip to distort the objects using the bounding box method.



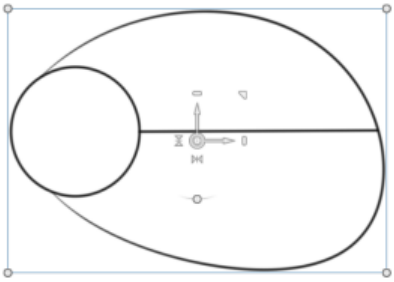
Warp Objects

1. Select Page 3 from the Page Manager (2012 only). For 2014 use Page Menu, Previous..

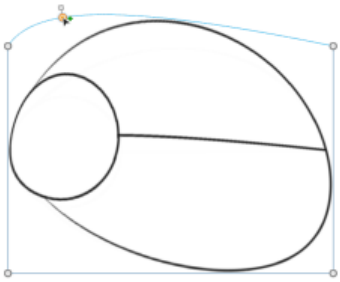


2. Select Vector 1 layer.

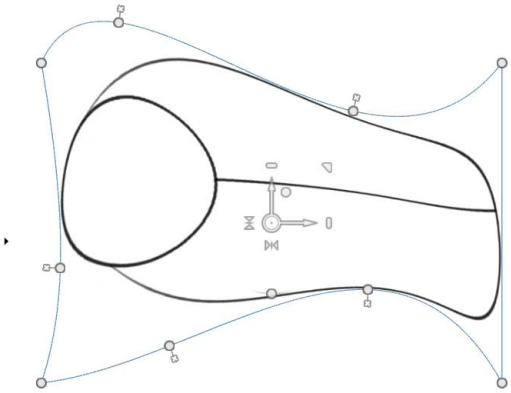
3. Select the **Warp** tool. The objects on the layer are selected. The Warp Manipulator appears. *Note the bounding box grips are now round.*



4. Add a bounding box grip to an edge then drag it to warp the objects.



5. Add additional warp grips to warp the objects.

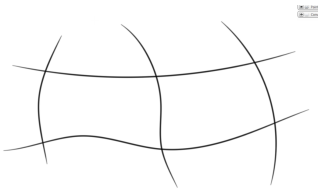


6. Close the drawing. No save required.

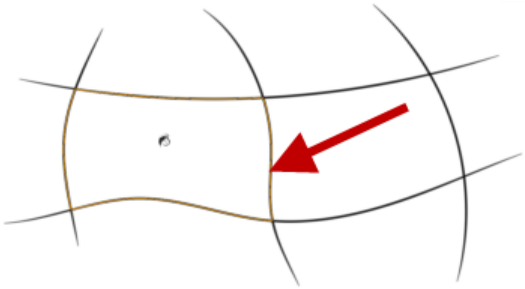
Exercise 8 – SBD Fills

The following exercise will explore the various fill tools. Options include solid, linear, radial, and texture. *(SBD Tour Guide – Page 7)*

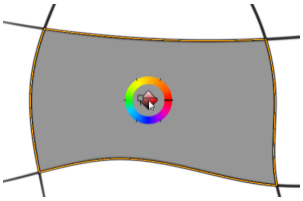
1. Launch SketchBook Designer.
2. Open **08 – SBD Fills.dwg**.



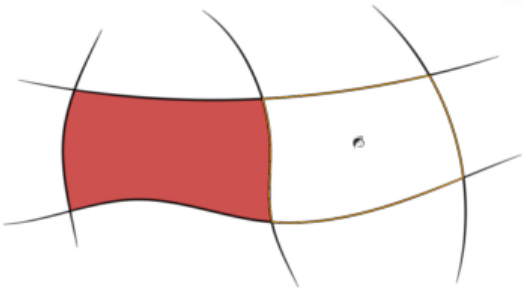
3. Select the **Solid fill** tool. Place the cursor inside the left closed region. The perimeter will highlight to indicate a valid fill region.



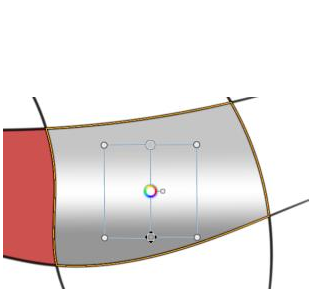
4. Left-click to fill the region. Double-click the color chip to change the fill color.

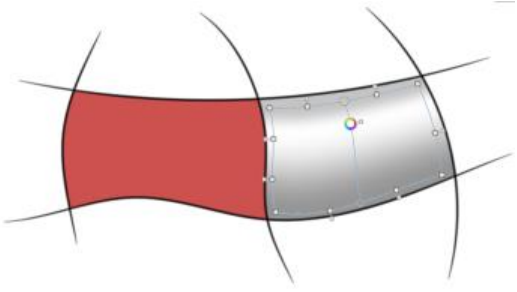


5. Select the **Linear fill** tool. Place the cursor inside the right closed region.

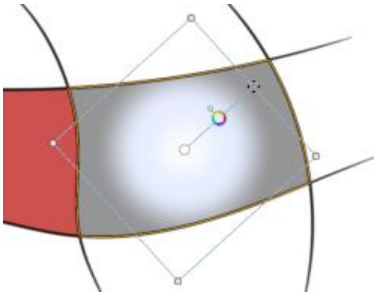


6. Left-click and drag to control the linear fill appearance. Double-click a color chip to set a color. Click along the central curve to add color chips. Drag the bounding box grips to distort the fill. Click the bounding box edges to add grips.



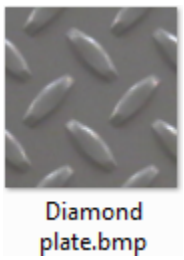


7. Select the **Radial fill** tool. Place the cursor inside the right closed region and left click. Use similar techniques as the Linear fill to manipulate the fill appearance.

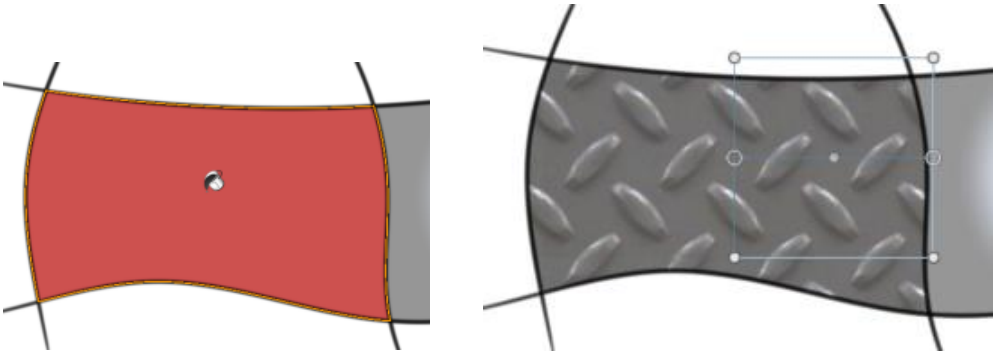


TIP	It is not necessary to erase an existing fill. SBD will replace the existing fill with the new fill.

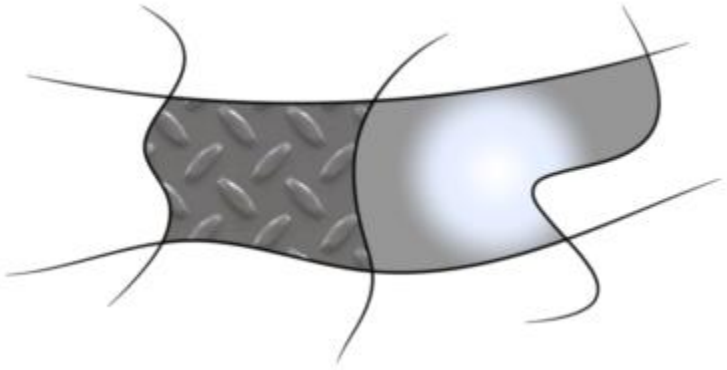
8. Select the **Texture fill** tool. Select the **Import…** button on the Texture Palette (Attribute Editor). Select **Diamond plate.bmp** from the *Exercises* folder.



9. Place the cursor inside the left closed region. Left-click and drag to suit.



10. Use similar techniques as the Linear fill to manipulate the fill appearance. Optionally, use the Texture palette to adjust Repeat and Flip settings.
11. Use the **Select curve (V)** tool to adjust the curve objects.
    a. Drag a curve endpoint to make a region smaller.
    b. Drag a curve endpoint to open a region.
    c. Drag the curve endpoint to reclose the region.
    d. Add grips along a curve and drag the curve to alter its shape.



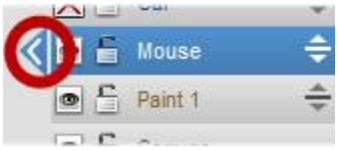
12. Close the drawing. No save required.

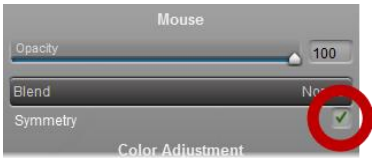
Exercise 9 – SBD Symmetry

The following exercise will explore the symmetry tool. You can create a simple mirror image or a radial pattern. *(SBD Tour Guide – Page 13)*

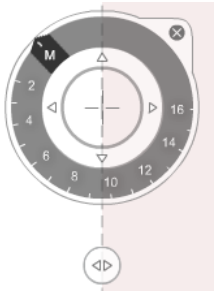
1. Launch SketchBook Designer.
2. Open **09 – SBD Symmetry.dwg**.

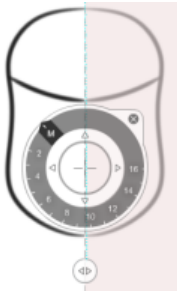
3. Select *Mouse* layer. Select the *Properties* flyout arrow. Enable Symmetry. Close the Properties window.

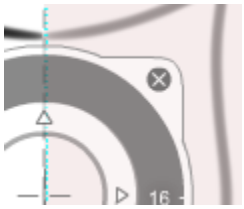




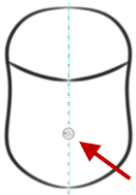
4. Drag the Symmetry Manipulator to create a mirror image of the mouse. The original should be in the non-shaded area. Close (X) the manipulator to accept the symmetry.



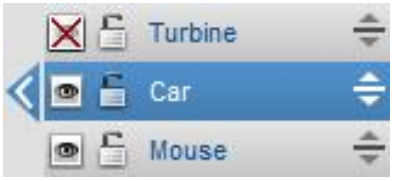




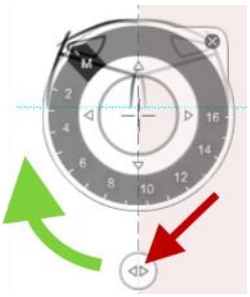
5. A small symmetry indicator will appear. Select it to open the manipulator if adjustments are required.

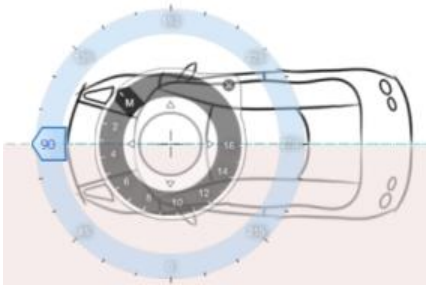


6. Select *Car* layer. Enable visibility. Enable symmetry.



7. Use the Rotate grip of the Symmetry Manipulator to rotate the symmetry horizontal with the shaded portion on the bottom. Use the Move grip to adjust. Close the manipulator.

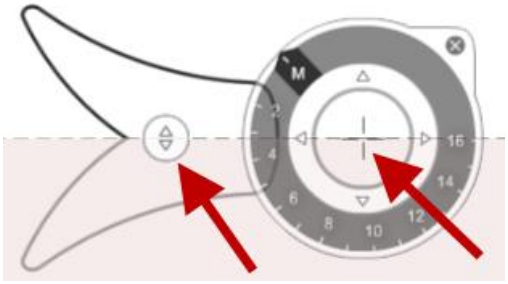




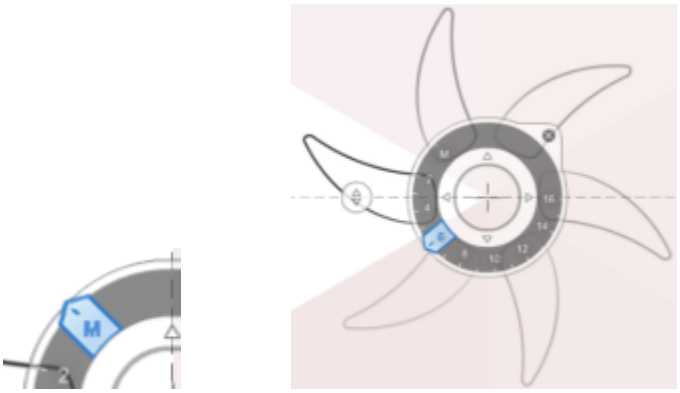
TIP	Because the Mouse objects were on a separate layer, they are unaffected by the symmetry settings of the Car layer.

8. Select *Turbine* layer. Enable visibility. Enable symmetry.

9. Rotate and position the manipulator to a setting approximately as shown.

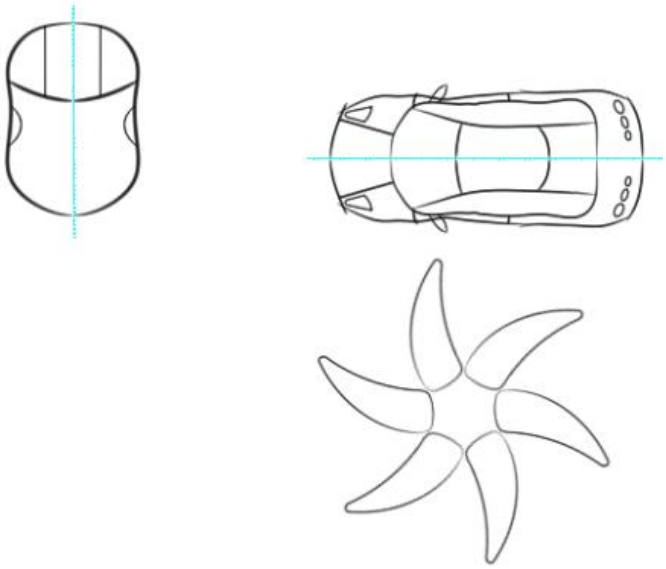


10. Drag the radial symmetry grip (M) to adjust the quantity. A value of six is shown below.



11. Drag the symmetry position to obtain different results.
12. Close the manipulator.

13. Use the **Select curve (V)** tool to adjust the shape of the original blade. Optionally add a fill pattern in the blade.
14. Select the *Car* layer to add another taillight.
15. Select the *Mouse* layer to add features.



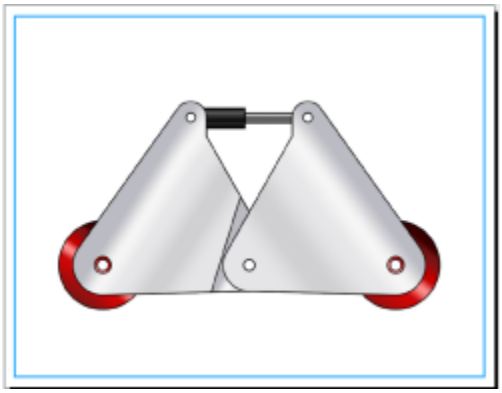
16. **Close** the drawing. No save required.

Illustrating with SketchBook Designer

The applications for SketchBook Designer are limitless. This section will provide basic illustration examples.

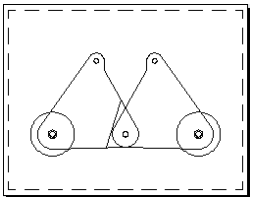
Exercise 10 – Roller Coaster Guide

The following exercise will have you illustrate a mechanical assembly. Objects have been created in AutoCAD which will be used for vector underlays.

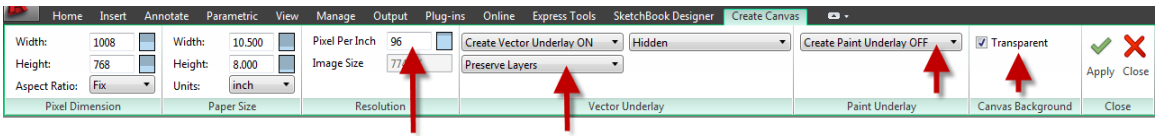


Create the canvas and open in SBD

1. Launch AutoCAD.
2. Open **10 - Upper Lateral Guide Asmb - Start.dwg.**



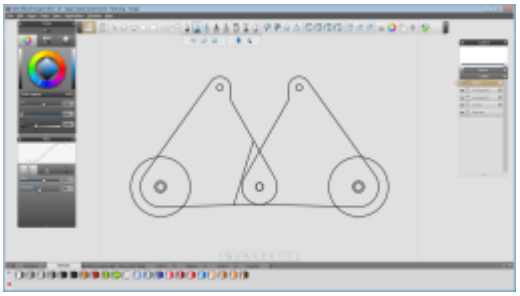
3. Select **Layout1.**
4. Make the **Canvas** layer current.
5. Use **New Canvas**, set the following values:
    a. **Resolution = 96**
    b. **Create Vector Underlay ON**
    c. **Preserve Layers**
    d. **Create Paint Underlay OFF**
    e. **Enable Transparent**



6. Select **Apply**.

7. Select **SketchBook Designer**.

NOTE: SketchBook Designer should open along with the AutoCAD geometry.



Convert AutoCAD geometry to SketchBook geometry for editing

1. Select the *Wheel* layer. Note its gray shaded appearance – geometry cannot be edited.

2. Select **Convert to vector layer**.

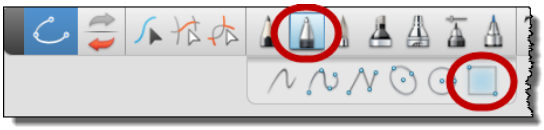
NOTE: The layer appearance updates in the Layer Manager and new vector tools are available.

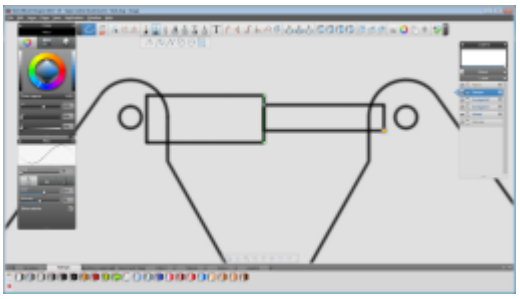
3. Repeat the vector layer conversion for Swingarm1 and Swingarm2 layers.

Create the Damper component

1. Create the *Damper* layer using the **New vector layer** tool.

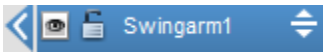
2. Select **Pen** brush. Select **Rectangle**. Select **Black** color. Sketch two rectangles as shown. Zoom as needed.



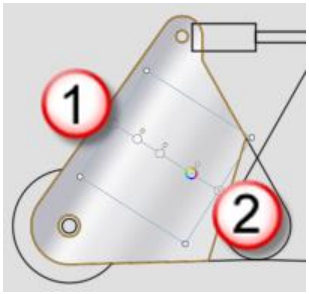


3. **Fit to View** 

Color Swingarm1 component using Fill Tools

1. Select the *Swingarm1* layer. 

2. Select **Linear Fill**. 
3. Select *White* from the *Ramps* asset collection. 
4. Click and drag as shown.

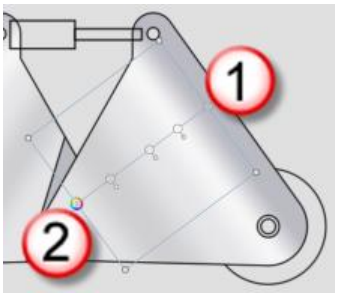


5. Adjust the fill to suit.
6. Press **ENTER** to accept.
7. Repeat for the lower right section of Swingarm1.

Color Swingarm2 component using Fill Tools

1. Select the *Swingarm2* layer.
2. Select **Linear Fill**.
3. Select *White* from the *Ramps* asset collection.

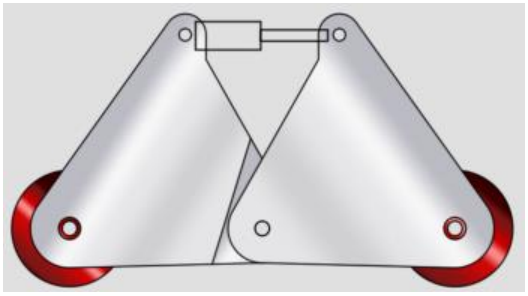
4. Click and drag as shown.



5. Adjust the fill to suit.
6. Press **ENTER** to accept

Color Wheel components

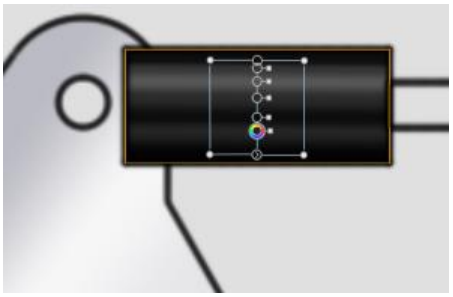
1. Select the *Wheel* layer.
2. Select **Linear Fill**.
3. Select *Red Gloss* from the *Ramps* asset collection. 
4. Select an area within the left wheel then drag to suit.
5. Press **ENTER.**
6. Repeat for the second wheel.



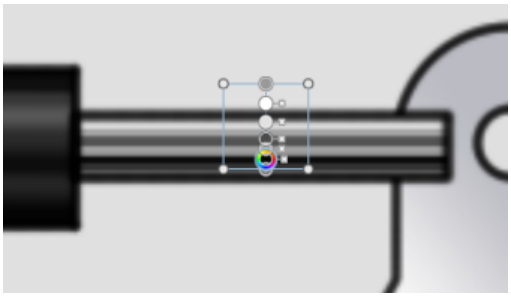
Color Damper component

1. Zoom in on the damper component.
2. Select the *Damper* layer.
3. Select **Linear Fill**.
4. Select *Black Mat* from the *Ramps* asset collection. 

5. Select an area near the top of the cylinder then drag down to fill. Adjust to suit.



6. Press **ENTER**.
7. Select *Grey Gloss* from the *Ramps* asset collection. 
8. Select an area near the top of the piston then drag and adjust to suit.



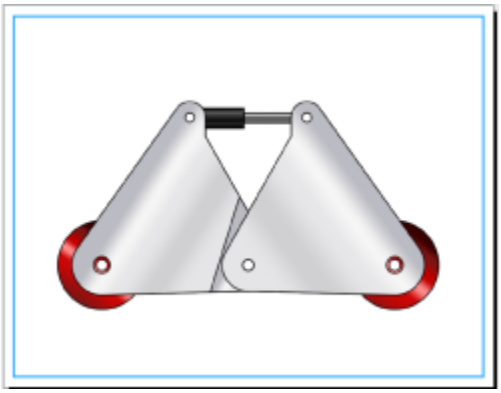
9. Press **ENTER**.
10. **Fit to View** 

Reorder layers

1. Drag *Damper* layer below *Swingarm1*.

Return the canvas to AutoCAD

1. Select **Return to AutoCAD**. 
2. Select **Save**.
3. The canvas reappears in AutoCAD.



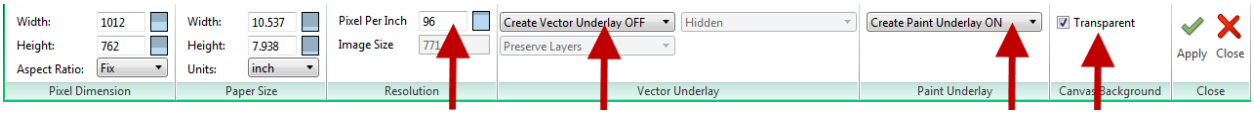
Exercise complete. Close drawing. No save required.

Exercise 11 – Cordless Drill

The following exercise will have you illustrate a cordless drill. The process will use paint underlays, selection masks, layer duplication, and various brushes.

Create the canvas and open in SBD.

1. Launch AutoCAD.
2. Open **11 – Cordless Drill.dwg**.
3. Select **Layout1.**
4. Make the **Canvas** layer current.
5. Use **New Canvas**, set the following values:
    a. **Resolution = 96**
    b. **Create Vector Underlay OFF**
    c. **Create Paint Underlay ON**
    d. **Enable Transparent**

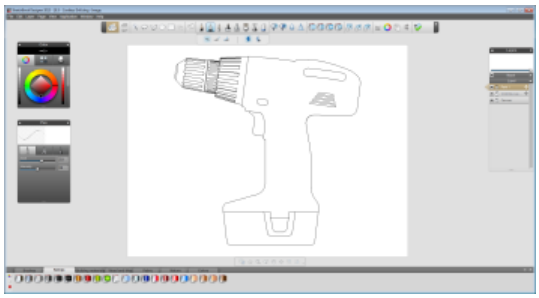


    e. **Select Apply**

NOTE: AutoCAD will take a moment to plot the viewport to create the canvas image.

6. After the background plot notice appears, select **SketchBook Designer**.

NOTE: AutoCAD will minimize and transfer the canvas image to SBD.



Convert AutoCAD layer to SBD paint layer

1. Select the *Underlayer* Layer.

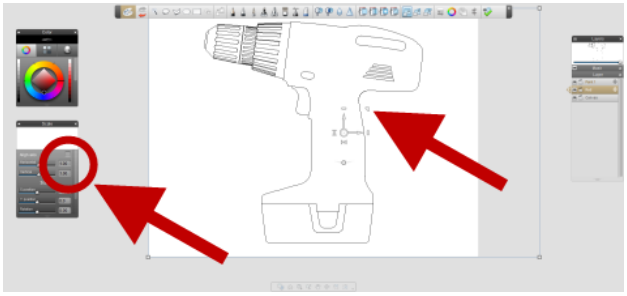
2. Select **Convert to paint layer**.

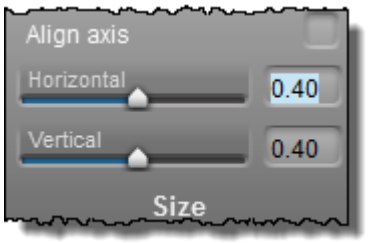
3. Rename the *Paint2* layer to *Red*. *(double-click the layer name)*

Scale and position layer

1. Select the *Red* layer.
2. Select **Scale**.

3. Scale the layer to approximately 40%.

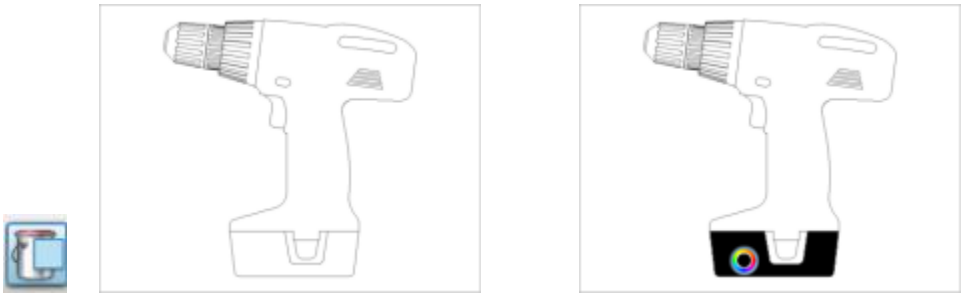




4. Press **ENTER** and then press **ESC** to set the scale and release the layer.

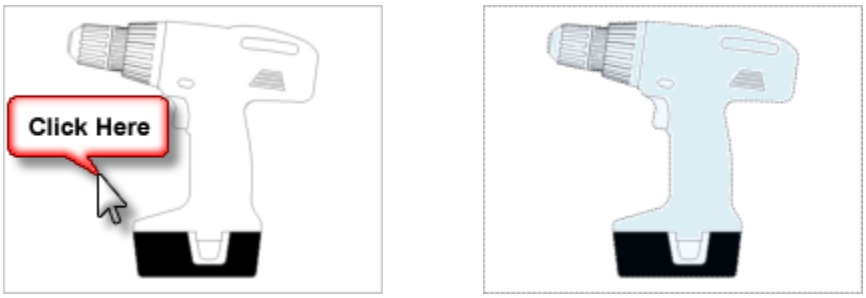
Color the battery and drill chuck

1. Use **Solid fill** to color the battery black.

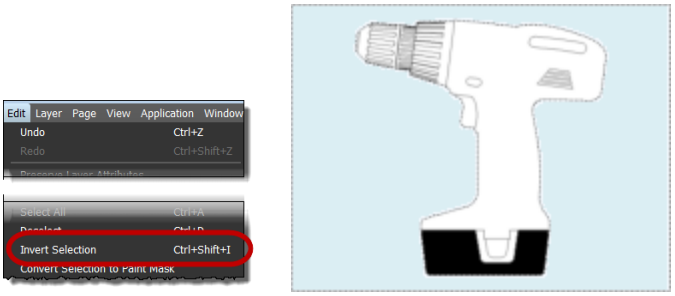


2. Select **Magic Wand (W)**.

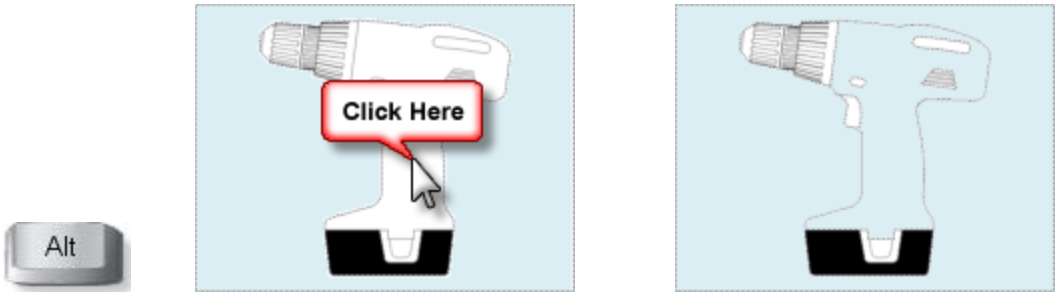
3. Select the area outside the drill. Note the blue mask and highlighted outline.



4. Invert the selection by using the **Edit** menu or press **Ctrl+Shift+I**.

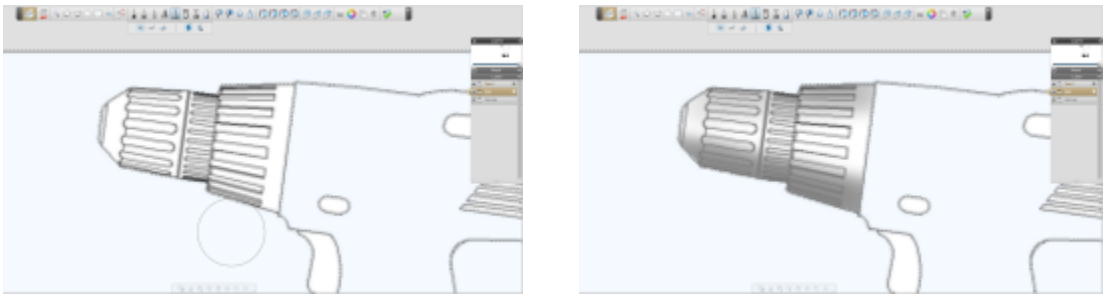


5. Remove the drill body from the selection – press **ALT** and pick inside the drill body.



6. Select the **Air brush**. Size = 15, Brush Intensity = 10.

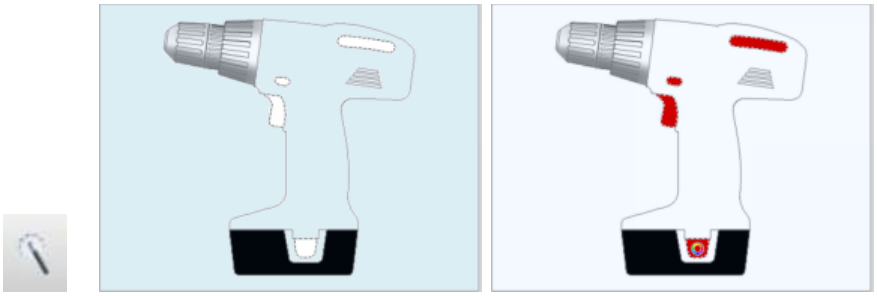
7. Zoom on the drill chuck. Use medium-gray to color the drill chuck. Add more color at the bottom to produce a shadow.



8. Use **Deselect (Ctrl-D)** to release the selection mask. Zoom to see full page.

Color the power button, lock, battery release logo areas

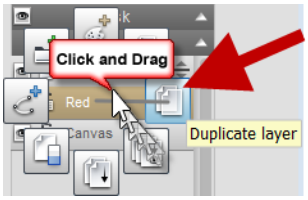
1. Use **Magic Wand (W)** to select the areas. Use **Shift** to select multiple areas. Use **Solid fill** and a bright red color. *Note that all areas should simultaneous fill.*



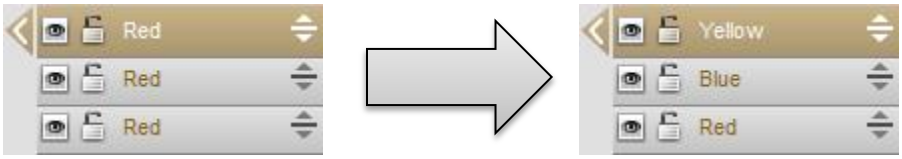
2. **Deselect** the selected areas.

Duplicate, position, and rename layers

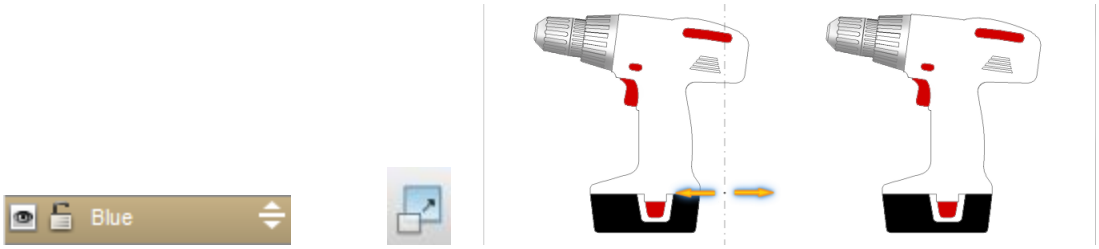
1. Select the *Red* layer. From the Marking Menu select **Duplicate layer**. *(Left-click on layer name and drag to layer option)*



2. Repeat **Duplicate layer** to create a third layer. Rename these new layers to *Blue* and *Yellow*.



3. Select the *Blue* layer. Select the **Scale** tool. Drag the image to the left as shown.

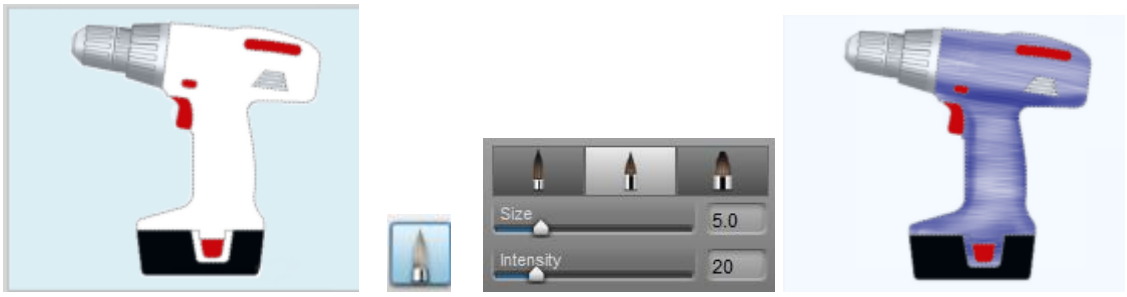


4. Repeat the process for the *Yellow* layer dragging it to the right as shown.

5. Zoom to see full page.

Color the alternates

1. Select the *Blue* layer. Use **Magic Wand (W)** to select the drill body. Color using a medium-blue with the **Paint brush**. Size = 5, Intensity = 20. Use white to add highlights.



2. **Deselect** the selected areas.
3. Select the Red layer. Use **Magic Wand (W)** to select the drill body. Use **Marker** and a medium-dark red. Use **Eraser** to create highlights.

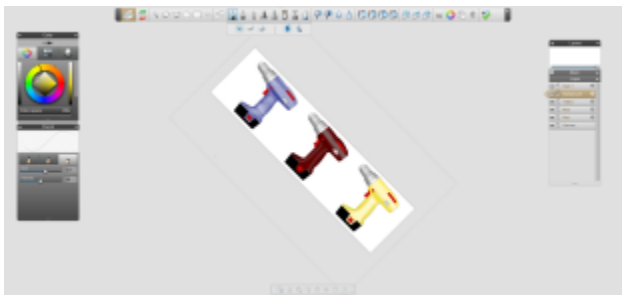
4. **Deselect** the selected areas. Repeat the process for the Yellow layer. Try **Air brush**. Size = 15, Intensity = 10. Begin with a medium yellow. Use a darker yellow for shadows.

5. **Deselect** the selected areas.
6. **Zoom actual size.**

Background

1. Use the layer Marking Menu to create a new paint layer. Name the layer *Background*.

2. **Rotate** the paper approximately 45 degrees. Use **Fit to view** to see the entire page.



3. Use **Magic Wand** to select an area outside of the drills. Select the Red layer and press **Delete**. Select the Blue layer and press **Delete**. Repeat for the Yellow layer. The white background should be erased.

4. Use **Paint brush** to create the image as shown. Color = Black, Point = Medium, Size = 50, Intensity = 10.

5. **Deselect** the selected areas.

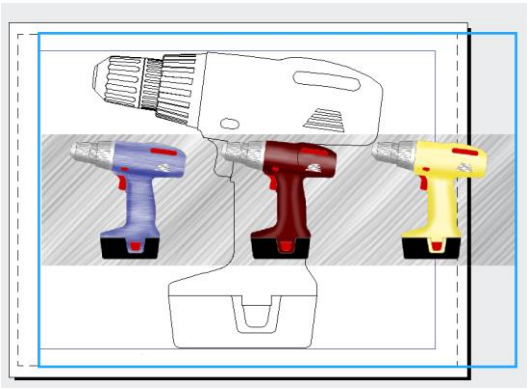
TIP	Save custom background images so that they can be imported for reuse in other illustrations.

6. Zoom **Actual size** to restore the paper rotation. 
7. Optionally, use selection masks and Delete to create clean edges.

Return to AutoCAD

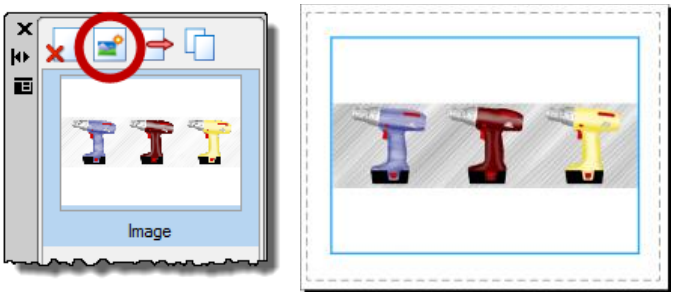
1. Select **Return to AutoCAD**. When prompted, **Save** the drawing.

2. Since the image was scaled and copied in SBD, its appearance will be very different from the original drawing. *The image below shows the canvas size edited after returning to AutoCAD.*



3. Delete the canvas from *Layout1*.
4. Select *Layout2*.
5. Select **Portfolio** to manage canvases in AutoCAD.

6. Place the canvas to suit.



7. Optionally, use the SBD Layer tool to toggle the Background layer visibility.

8. Close the drawing. No save required.

Exercise 12 – Table

The following exercise will have you illustrate a table. The main geometry will be illustrated from which a reflection will be created. Objects have been created in AutoCAD which will be used for vector underlays.

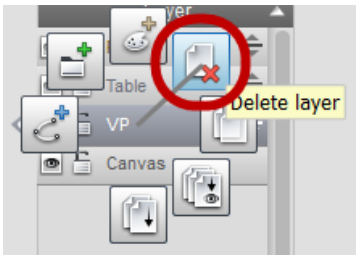
Create the canvas and open in SBD

1. Launch AutoCAD.
2. Open **12 – Table.dwg**.
3. Select *Layout1*.
4. Use **New Canvas** to create a canvas with properties:
    a. Resolution = 96
    b. Create Vector Underlay = ON

5. Select **Apply**.
6. Select **SketchBook Designer**.

Layer clean-up and conversion

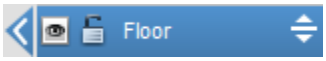
1. Select the *VP* layer. Use the Marking Menu to delete the layer.



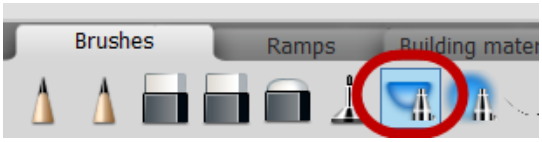
2. Select the *Table* layer. Use **Convert to vector layer** to allow layer editing in SBD. *Note how the disabled layer (gray) is now enabled (blue).*

3. From the *Woods and Tiles* asset tab, use **Linear fill**. Use **Solid fill** for the peg.
    a. Legs = Woodbeach
    b. Top = Wood001

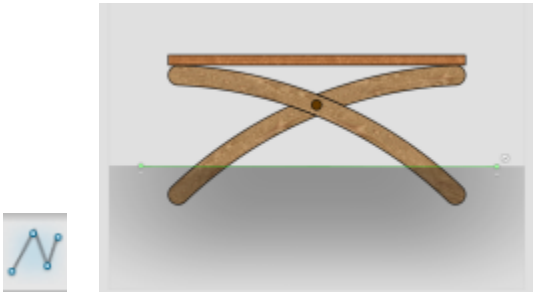
4. Create a new vector layer using the Marking Menu. Name it *Floor.* Set it as the active layer.



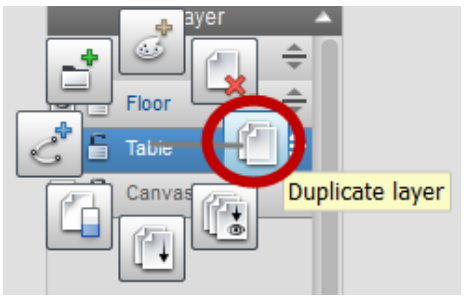
5. From the *Brushes* asset, select the Soft Air brush. Set the Size = 300, Intensity = 30.



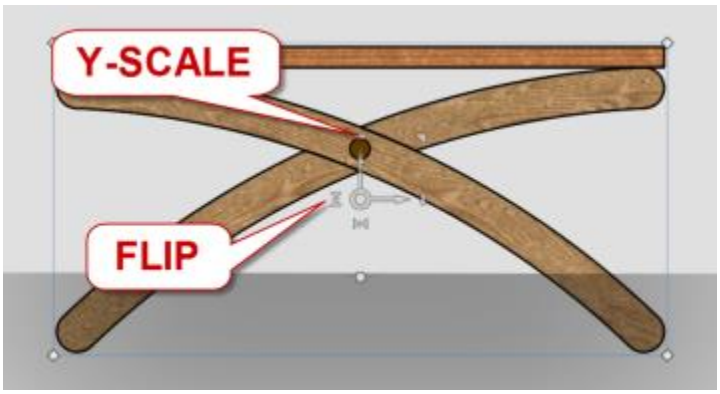
6. Use the Polyline point mode to create a horizontal line. This line can be adjusted later.

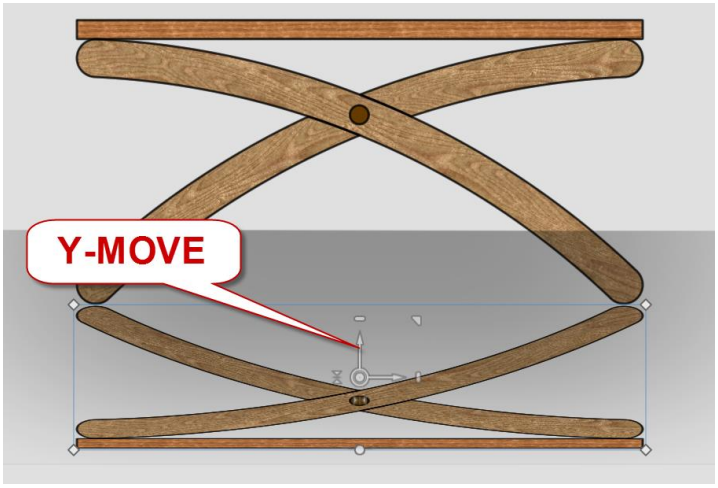


7. Use the Marking Menu to duplicate the *Table* layer. Rename *Table1* to *Reflection*.

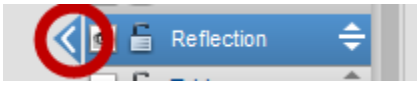


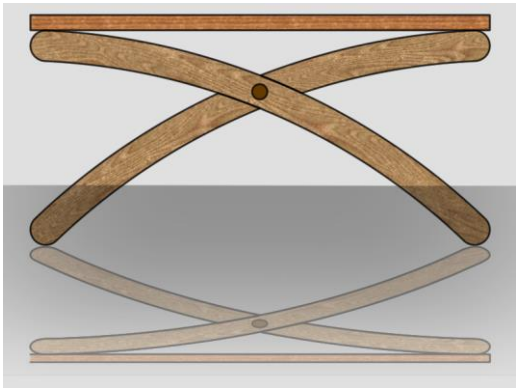
8. Select the *Reflection* layer. Select the **Distort** tool. Use the Flip and Y-Scale grips to change the image as shown below. *The scale value used below was 0.50.*





9. Select the *Reflection* layer Properties. Adjust the Lightness to suit.

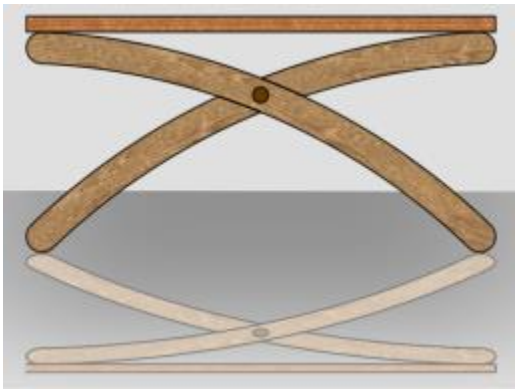




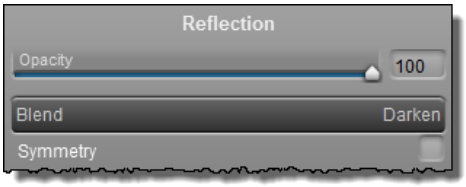
Lightness = 54

1. Drag the *Floor* layer below the *Table* layer.

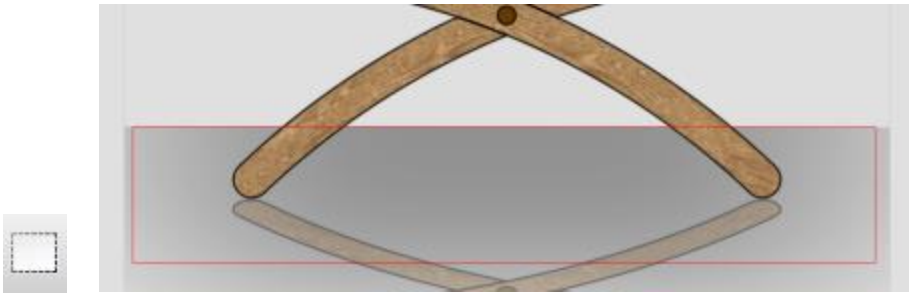
2. The reflection should appear “behind” or “below” the table.

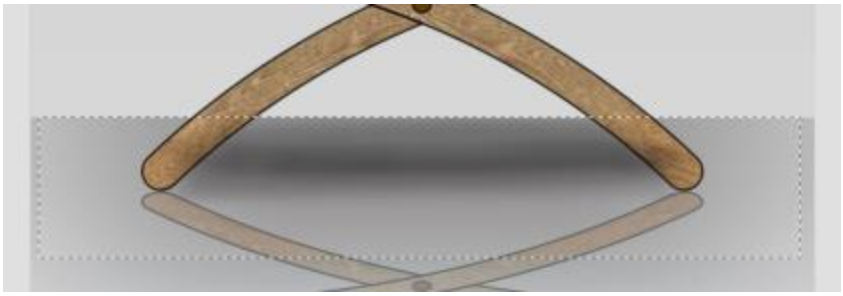


3. Select the *Reflection* layer. Change Blend = Darken.

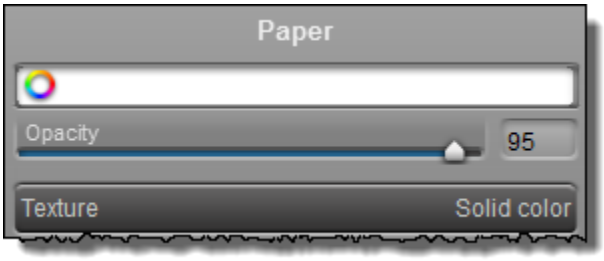


4. Rename the layer *Paint 1* to *Shadow*.
5. Use **Air brush** to add a shadow below the table. Optionally use a selection mask to restrict the paint area.

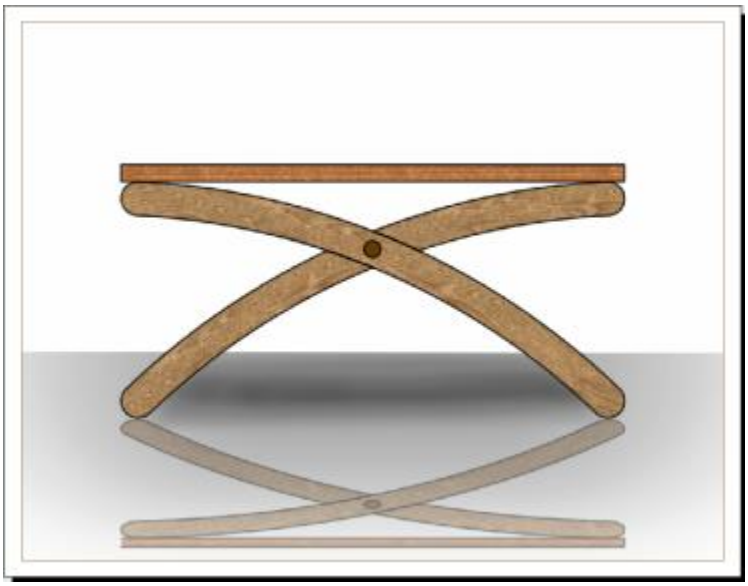




10. **Deselect** any selected areas.
11. Drag the *Shadow* layer below the *Table* layer.
12. Optionally, “brighten the room.” Select the *Canvas* layer. Increase Opacity to suit.



13. Select **Return to AutoCAD**. When prompted, **Save** the drawing.

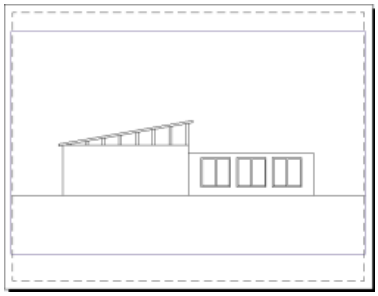


Exercise 13 – House Elevation View

The following exercise will have you illustrate an elevation view of a house. The process will use paint underlays, selection masks, image importing, fills, layer folders, and layer blending.

Create canvas and open SBD

1. Launch AutoCAD.
2. Open **13 – House Elevation.dwg**.
3. Select *Layout1*.



The layout contains a viewport displaying the model space objects.

4. Set Canvas layer current.
5. **New Canvas**.
    a. **Resolution = 96**
    b. **Create Vector Underlay ON**
    c. **Preserve Layers**
    d. **Transparent = Enable (checked)**
6. **Apply**.
7. Go to **SBD**.

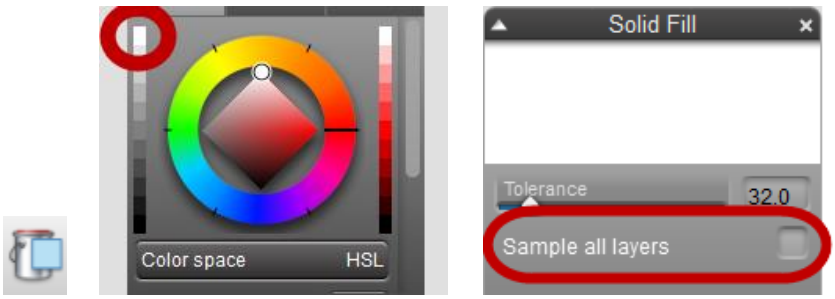
Delete VP layer and convert remaining AutoCAD layers to vector layers

1. Delete the *VP* layer.
2. Select layers *WINDOWS*, *WALLS*, *ROOF*, and *GROUND*. Convert to vector layers.

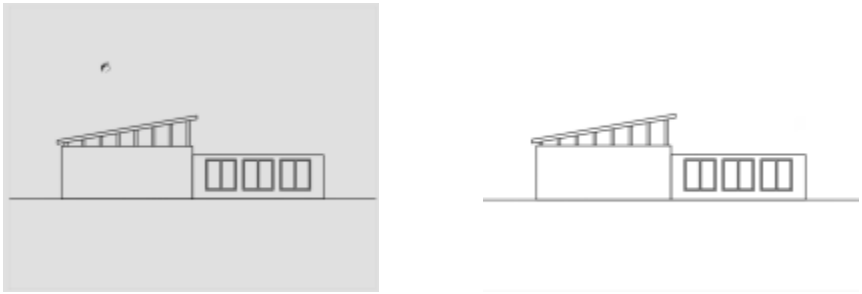
Create a Sky background

1. Create a new paint layer with the name *Sky_Glass.* Position above the *Canvas* layer.

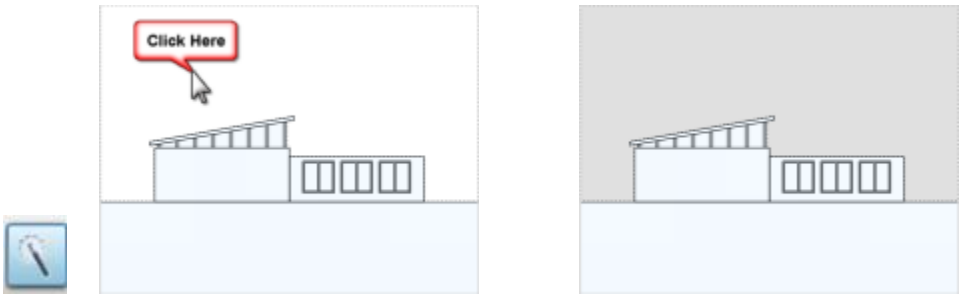
2. Select **Solid fill**, color = White, Sample all layers = Disabled (unchecked)



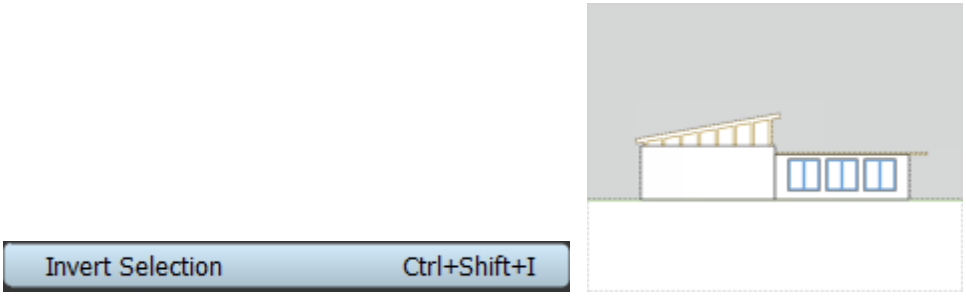
3. Pick anywhere in the canvas area to color the *Sky_Glass* layer white. Press **ENTER** to accept. A white background should appear.



4. Use **Magic Wand** to pick the sky portion of the image. (*Sky_Glass* layer still active). Press **Delete**.

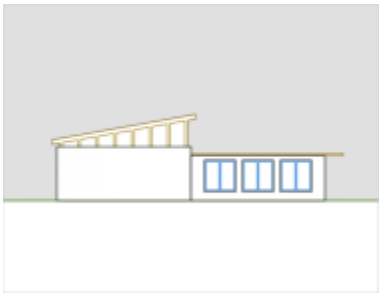


5. From the **Edit** Menu, select **Invert Selection** (Ctrl+Shift+I).



6. Select **Convert Selection to Paint Mask**. A paint mask layer will be created.

7. Disable the paint mask layer.



8. Select the *Canvas* layer.
9. **File** menu > **Import** > **Image** (Ctrl+R). Select **Sunset_violet.jpg**.

10. Use **Scale** tool (*if it does not automatically launch*) to scale and position on canvas.

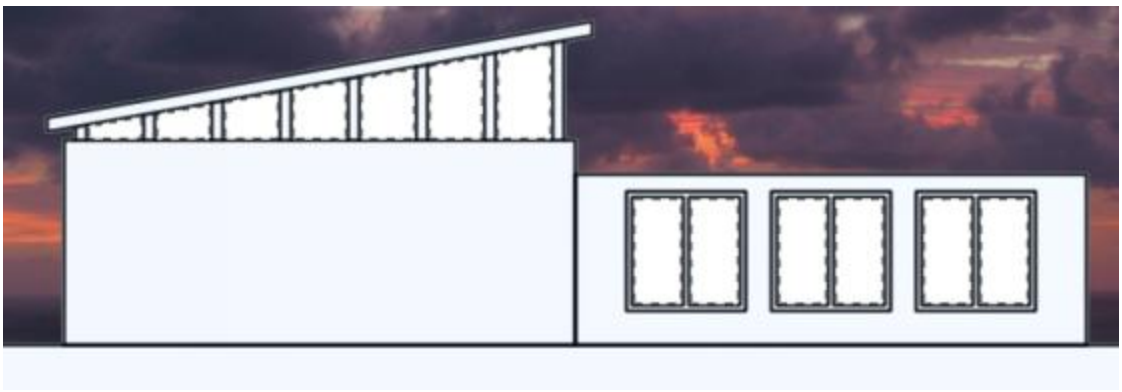
11. Press **ENTER** to accept. Press **ESC**.

TIP	The imported Image is now clipped; to adjust will require deleting or erasing the layer and re-importing the background image.

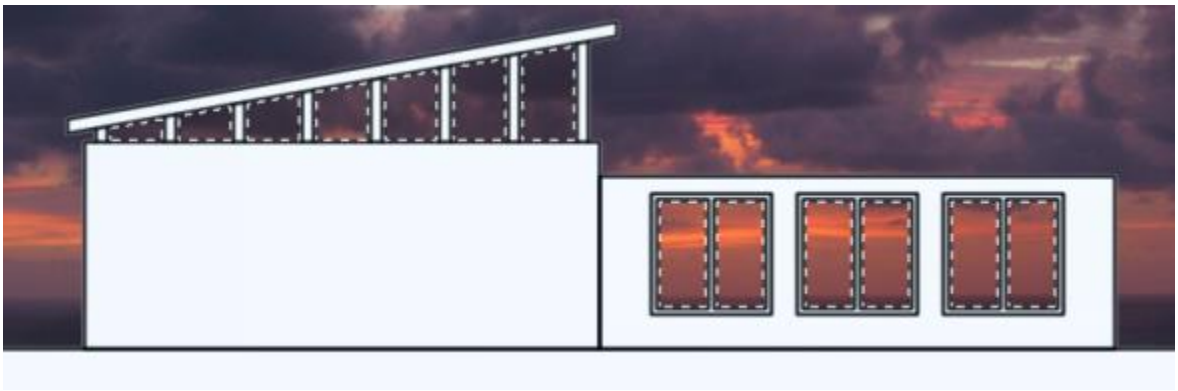
Create transparent windows

1. Select the *Sky_Glass* layer.

2. Use **Magic Wand** to pick within a window. Press **Shift** key (Add mode) to select within remainder of windows. *Use Alt key (Remove mode) as needed if extraneous areas are selected.*



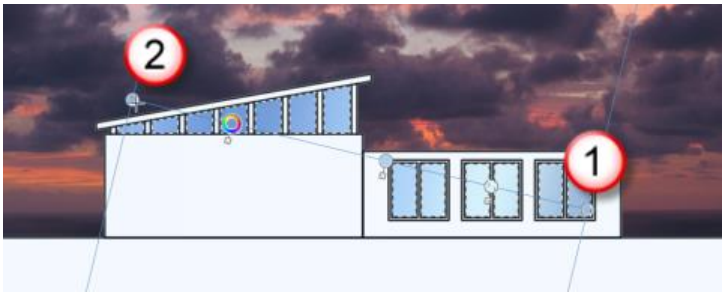
3. Press **Delete** to erase the paint. The windows become “transparent”.



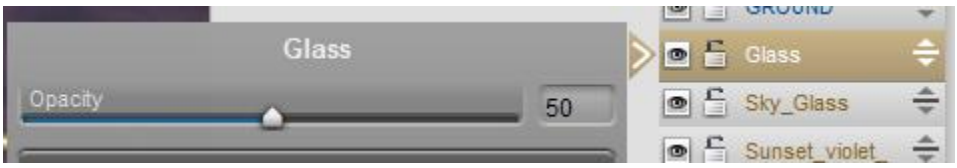
DO NOT DESELECT OR CHANGE THE SELECTION.

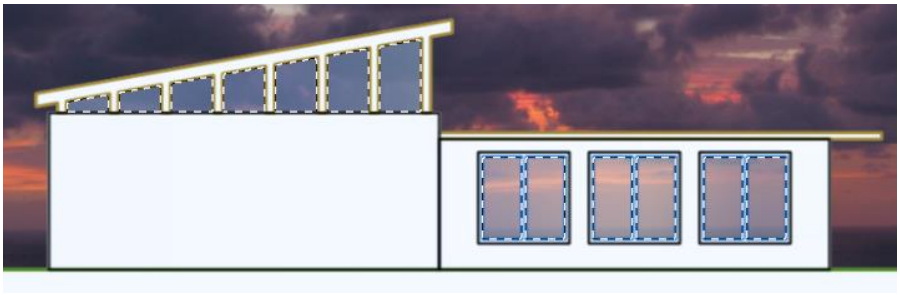
4. **New Paint Layer**, name it *Glass*.

5. **Linear fill**, select **Light Blue** from the *Ramps* asset. Click and drag as suggested.



6. Add and adjust additional color controls along the ramp to suit. Press **ENTER** to accept.
7. Expand the *Glass* layer Properties. Adjust opacity to about 50%. Press **ENTER** to accept. *Note how the background is visible through the Glass layer.*

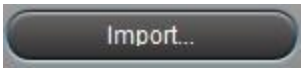




8. **Deselect**. 

Fill wall and roof objects

1. Select *WALLS* layer. **Texture Fill**. **Import,** select limestone texture from *Exercise* folder.

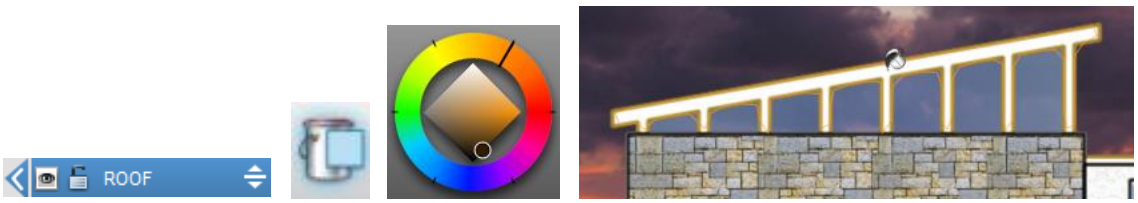


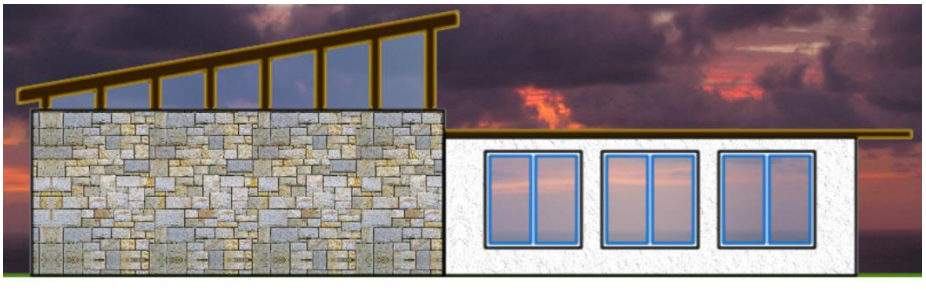
2. Fill to suit. Press **ENTER** to accept.

3. **Texture Fill**. Select Stucco from the *Building material* asset.

4. Fill second wall to suit. Press **ENTER** to accept.

5. Select *ROOF* layer. **Fill,** select a color from the wheel. Select an area within the roof objects. Press **ENTER** to accept.





Landscaping

1. Select *GROUND* layer. Select **Air Brush**, **Polyline**, dark green color (grass), half-brush mode, size=200, Intensity=80.

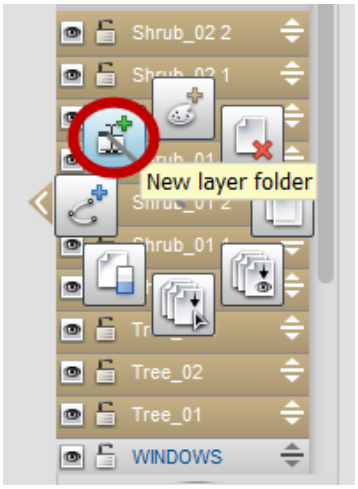
2. Pick on the horizontal line as shown. Adjust to suit. Press **ENTER** to accept.

3. **File** menu > **Import** > **Image (Ctrl+R).** Select *Tree_01.png*. Use **Scale** tool to suit.

4. **Import** other tree and shrub images from the *Exercise* folder. Use **Scale** tool to vary the images (size, x-scale, y-scale, horizontal flip, etc.). Use Import for each landscape element or use the layer duplicate tool.

Create folders

1. From the Marking Menu select **New layer folder**. Name it *Landscape*. Drag and drop all of the landscape layer elements into the *Landscape* folder.

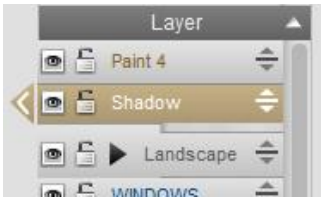


TIP	Layer folders provide easy organization and management of similar layers. Toggle the layer folder visibility to affect all layers in the folder. Expand the folder to adjust individual layers. Layer folders also have property controls for opacity, blending, etc.

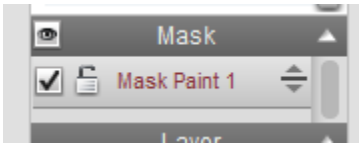
2. Collapse the *Landscape* layer folder.

Shadows

1. Create a new paint layer, name it *Shadow*. Place it above the *Landscape* folder.



2. Enable the paint mask layer created earlier.



TIP	The paint mask will prevent paint from going into the masked area, in this case, the sky / background.

3. Use **Air Brush** to add shadows to suit. Disable paint mask when complete.

Return to AutoCAD

1. Save the drawing.
2. Select **Return to AutoCAD**.
3. Save and close the AutoCAD drawing.

CLASS SUMMARY

Autodesk SketchBook Designer opens the door for designers to sketch concepts in a digital format to leverage these in the downstream design workflow. With its hybrid raster and vector tools, users can explore design concepts, annotate an AutoCAD drawing, or produce illustrations for more powerful visual communications.

Visit the resources to watch SketchBook Designer in action and to communicate with others.

Thank you for your time. I hoped you enjoyed the session.

Jerry Berns

Manufacturing Application Engineer

EMA Design Automation, Inc.

www.ema-eda.com

jerryb@ema-eda.com

TIPS

- AutoCAD layers brought into SBD are not color locked.
- AutoCAD Users, SBD uses an active mode in which a command or tool is active until cancelled.
- Resetting assets (Custom Palette). The Custom Palette saves its settings in a file named *Default.ILS*. This is stored in your roaming profile folder (Windows 7).

  If you need to reset or restore Assets to their default values, locate an original copy of the *Default.ILS* file in this folder:

  ```
  C:\Program Files\Autodesk\ApplicationPlugins\SketchBook Designer.bundle\Contents\AALSBin
  ```

  Close SketchBook Designer.

  Copy the file to your roaming folder (Window 7):

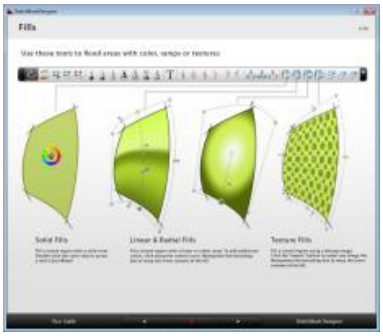
  ```
  C:\Users\YourProfileName\AppData\Roaming\Autodesk\SketchBookDesigner\2.0
  ```

  Open SBD to confirm the restore.

- Backup custom palettes using the Export Assets feature.

RESOURCES

SketchBook Designer contains a useful *Tour Guide* available in the Help Menu. Review or discover tools and shortcuts from this hands-on lab.



SBD 2012 – Getting Started Series:
http://www.youtube.com/playlist?list=PL29B8315388946108
Great video series on SBD basics.

SketchBook Designer – Tips & Workflows:
http://www.sketchbooknews.com/storage/downloads/SBD_2012_tips.pdf

SketchBook News blog:
http://www.sketchbooknews.com/
It covers most versions of the SketchBook product family.

DaVinci blog:
http://davinci-autodesk.typepad.com/blog/

SBD Forum at The Area:
http://area.autodesk.com/forum/autodesk-sketchbook-pro/sketchbook-designer/

SHORTCUTS

Undo	Ctrl + Z
Redo	Ctrl + Shift + Z
Select Curve	V
Select All	Ctrl + A
Deselect	Ctrl + D or ESC
Cycle Manipulator [momentarily] (if option off in Preferences)	Shift + Ctrl
Snap lines while drawing point curves	Shift + Alt