Note: Use Bookmark Option
to move through textbook

Solid Edge
2D Drafting
by Jerry Craig

A textbook on setting up pages and drawing using Solid Edge 2D. This document may be copied and used freely. It may not be resold in any form.

http://www.solid-edge.com to download a free copy of the software.

http://engr-tech.com to download a free copy of the textbook

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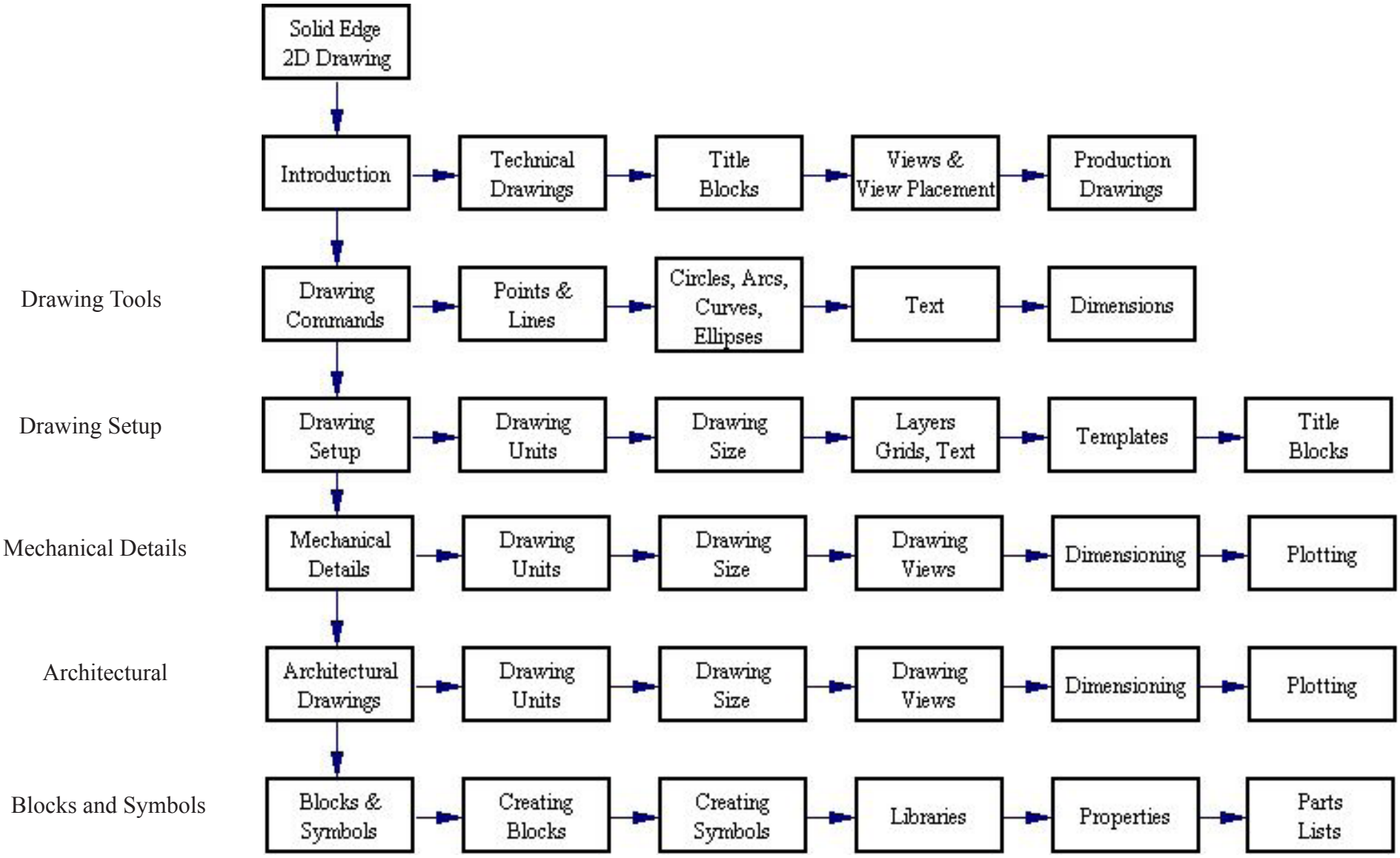
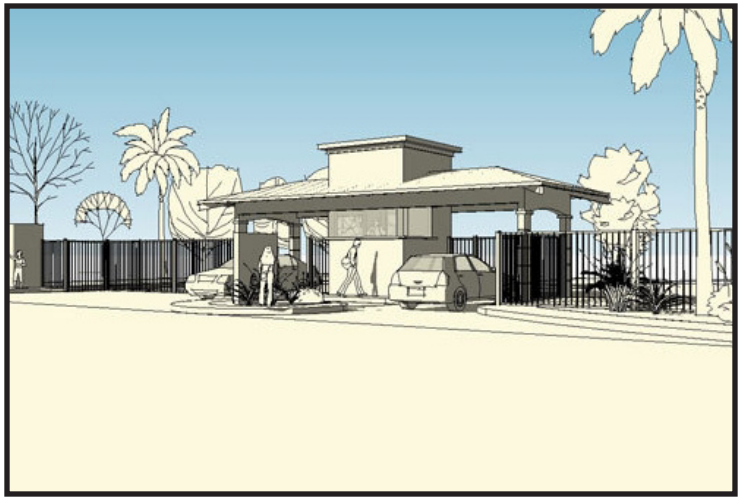
Comments email: jwcraig@engr-tech.com

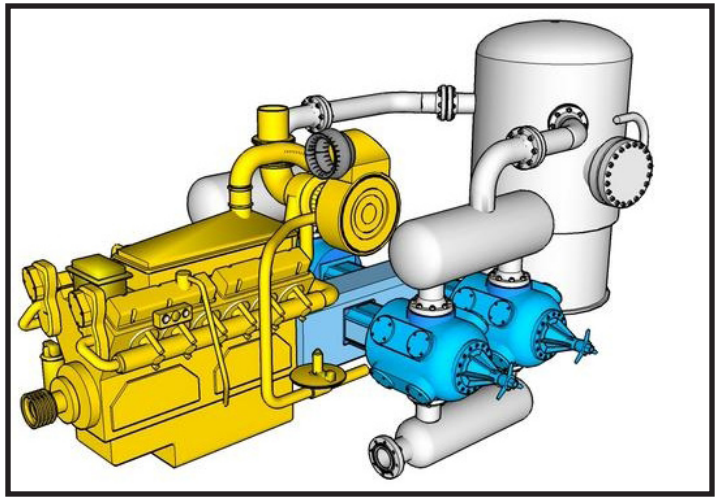

Solid Edge 2D Drawing
Introduction
Technical Drawings
Title Blocks
Views & View Placement
Production Drawings
Drawing Tools
Drawing Commands
Points & Lines
Circles, Arcs, Curves, Ellipses
Text
Dimensions
Drawing Setup
Drawing Setup
Drawing Units
Drawing Size
Layers Grids, Text
Templates
Title Blocks
Mechanical Details
Mechanical Details
Drawing Units
Drawing Size
Drawing Views
Dimensioning
Plotting
Architectural
Architectural Drawings
Drawing Units
Drawing Size
Drawing Views
Dimensioning
Plotting
Blocks and Symbols
Blocks & Symbols
Creating Blocks
Creating Symbols
Libraries
Properties
Parts Lists

SketchUp

3D Visualization
"Thinking in 3D"
http://www.sketchup.com
Download free copy.

Sketchup is designed to develop ideas in 3D. It is a freeform modeler. SketchUp does not make production drawings. Many excellent tutorials are available.
Runs on PC and MAC.





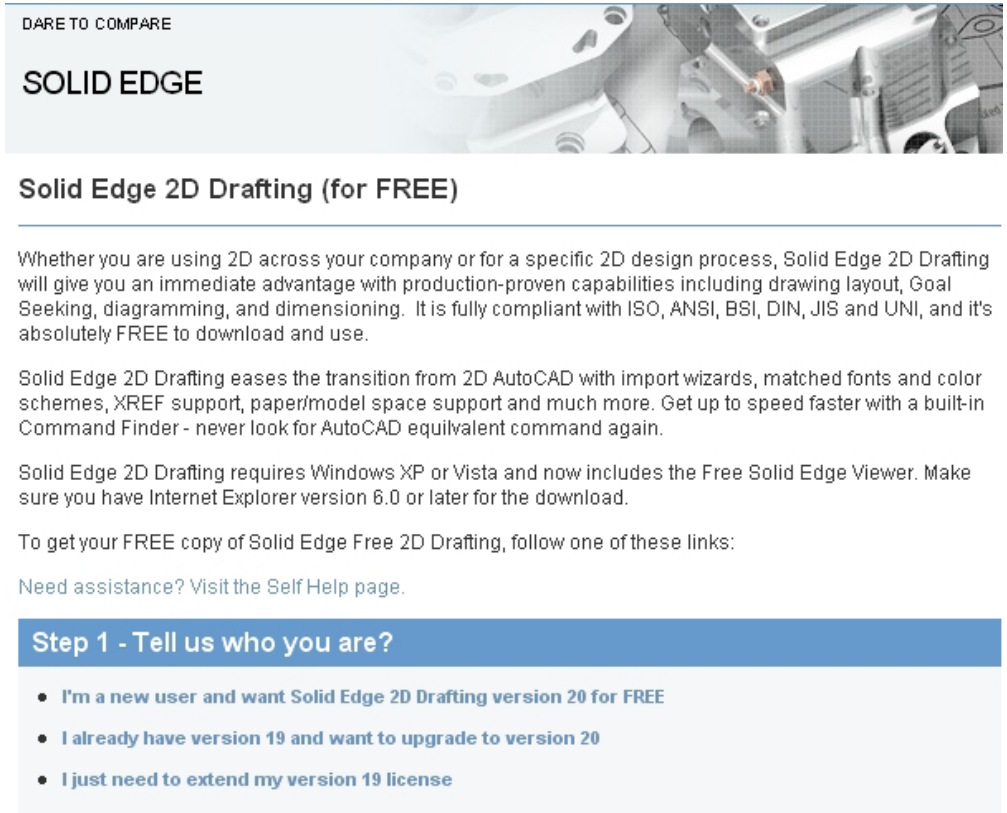
Solid Edge 2D

Used to create 2D production drawings. Drawings show two-dimensional views with dimensions and notes.

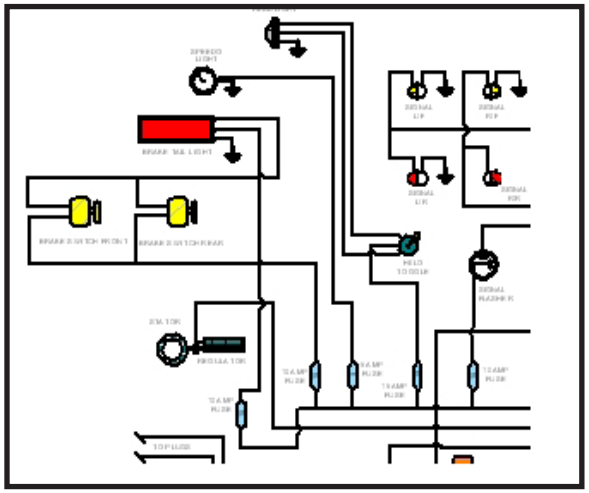
Obtaining a free copy of Solid Edge 2D
http://www.solid-edge.com

Download free copy.

Runs on PC only.

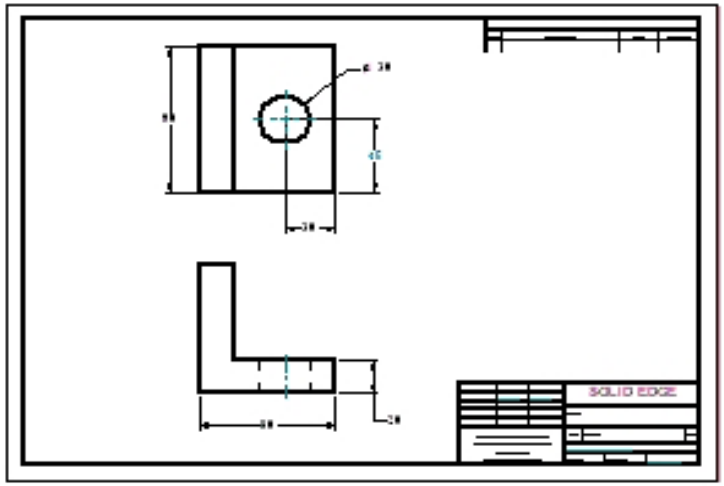


Symbolic



Symbolic drawings are used in Electronics, Piping Design, Hydraulics, Pneumatics, Mapping and many other fields. Symbol libraries are a efficient way of storing symbols and quickly creating symbolic drawings.

Mechanical

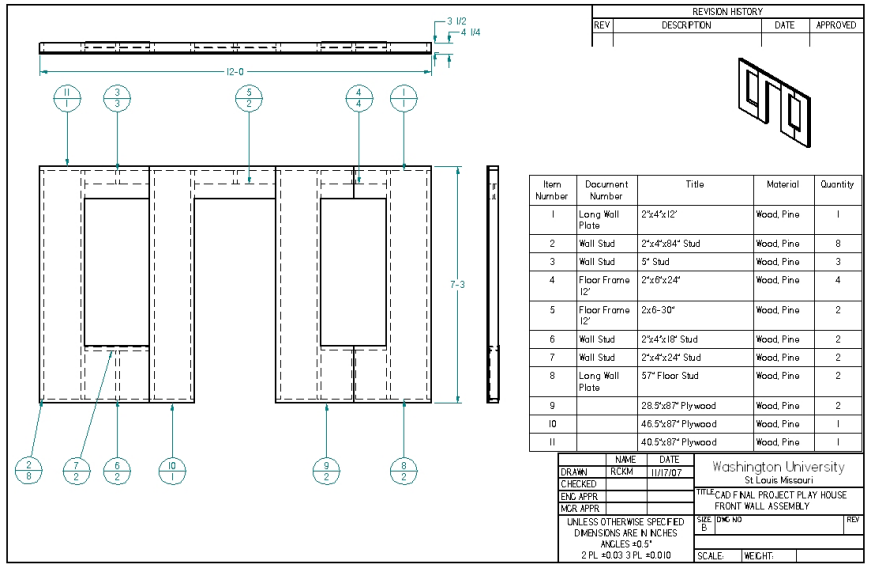


Mechanical drawings show views of parts with dimensions. All information for producing the part is included in the drawing. The rules for production drawing layouts have been in use for nearly 300 years. Solid Edge 2D software has all the features needed for 2D drawing creation. Drawings are placed on title blocks.

Architectural

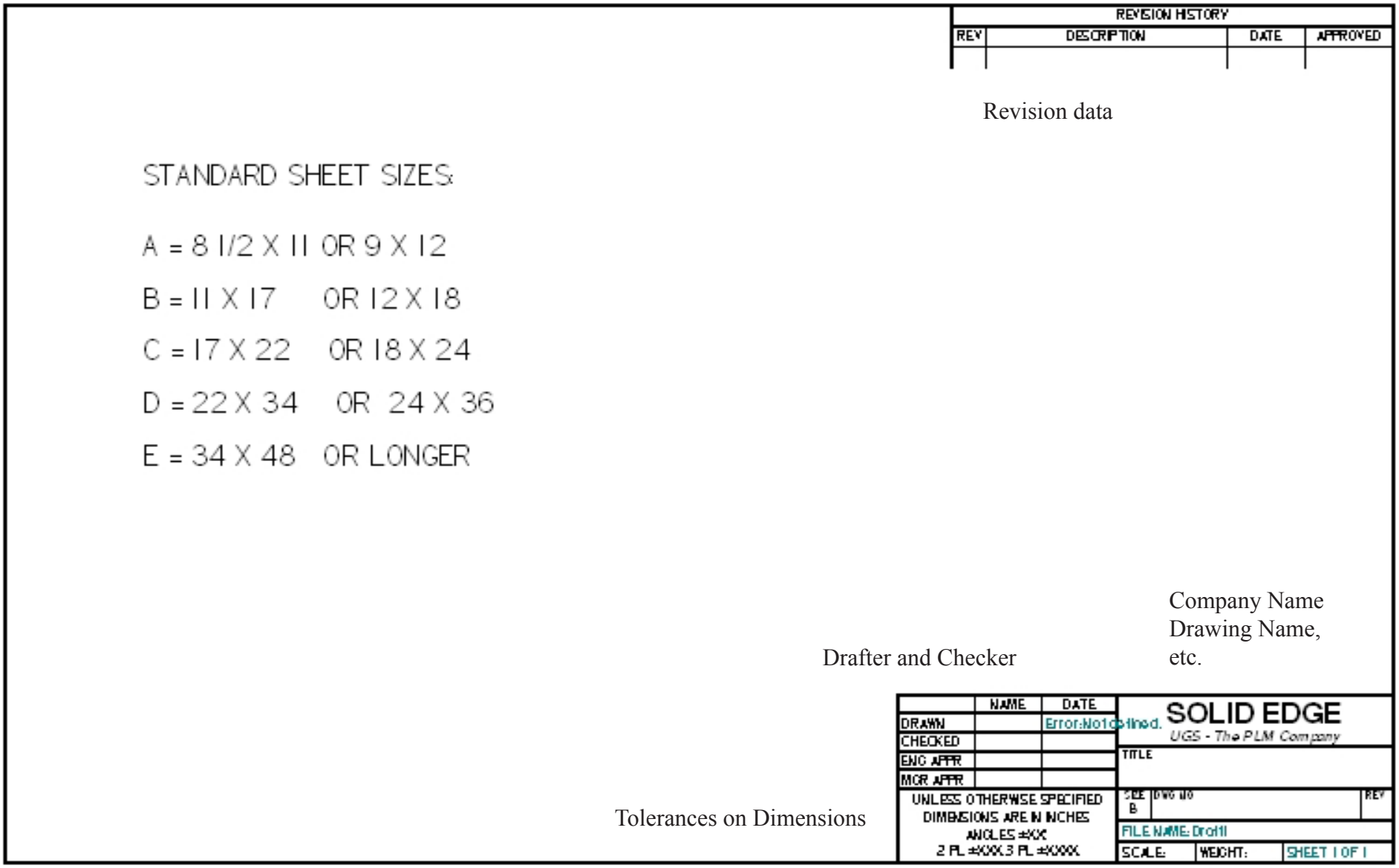
SketchUp model of backyard playhouse and front wall assembly
by
Rose Mahoney

Above, SketchUp concept model.
Right, Solid Edge assembly drawing.



Title Blocks

Technical drawings are placed on title blocks. A number of forms are provided by Solid Edge. They may be customized by the user. Title blocks give standard information as shown:

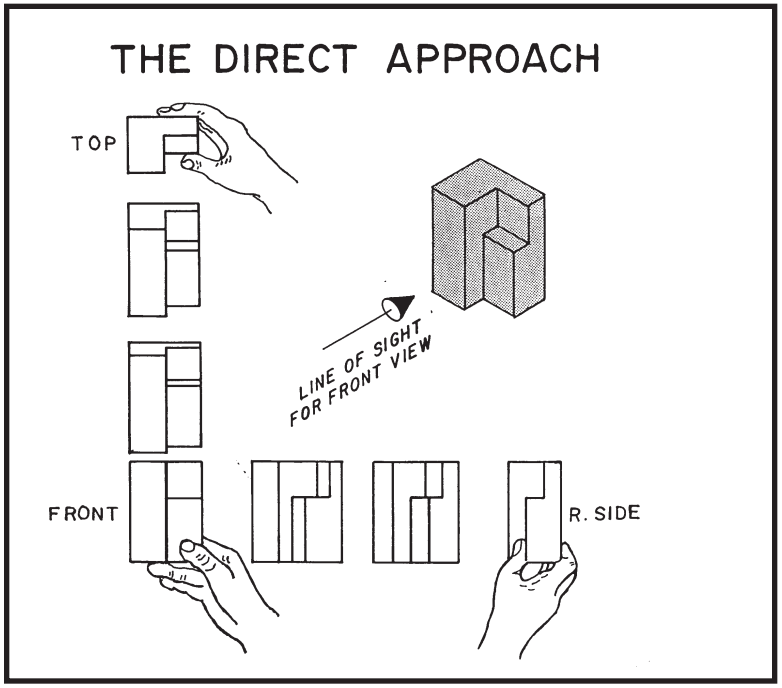


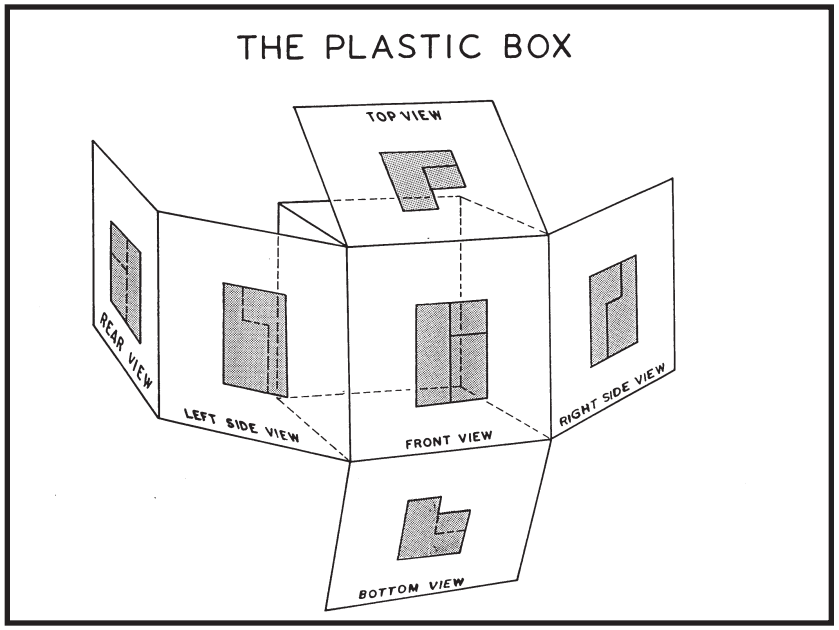
A 3D object requires several 2D drawings to fully show the shape. Orthographic views are used. That is, views are displayed in a way that each view is a 90 degree rotation from the previous view.

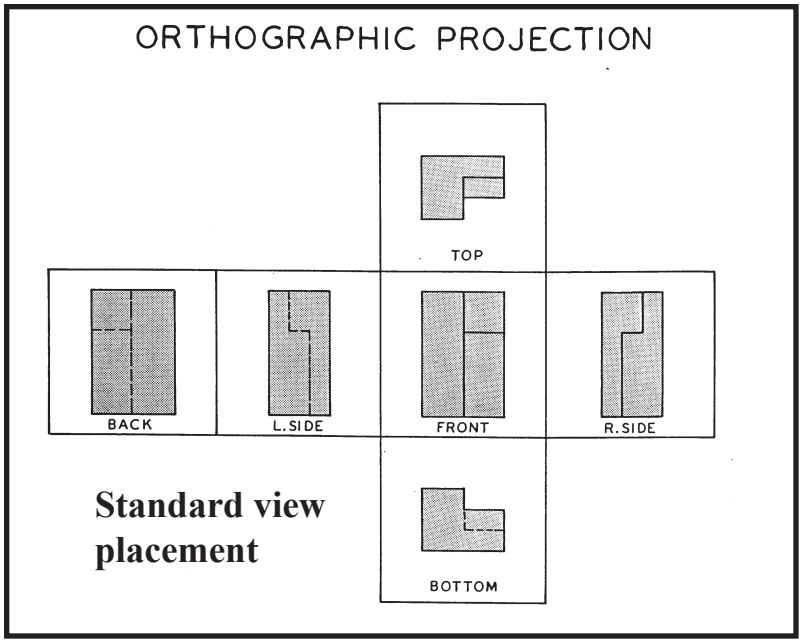
The picture to the right shows the rotation from front-to-side and front-to-top.
The front view is the key view.
The top view is a 90 degree rotation from the front.
The right view is a 90 degree rotation from the front.

Place an object in a plastic box. Draw each view on a surface of the box.. 6 "regular" views are shown. Each view is a different 90 degree picture.

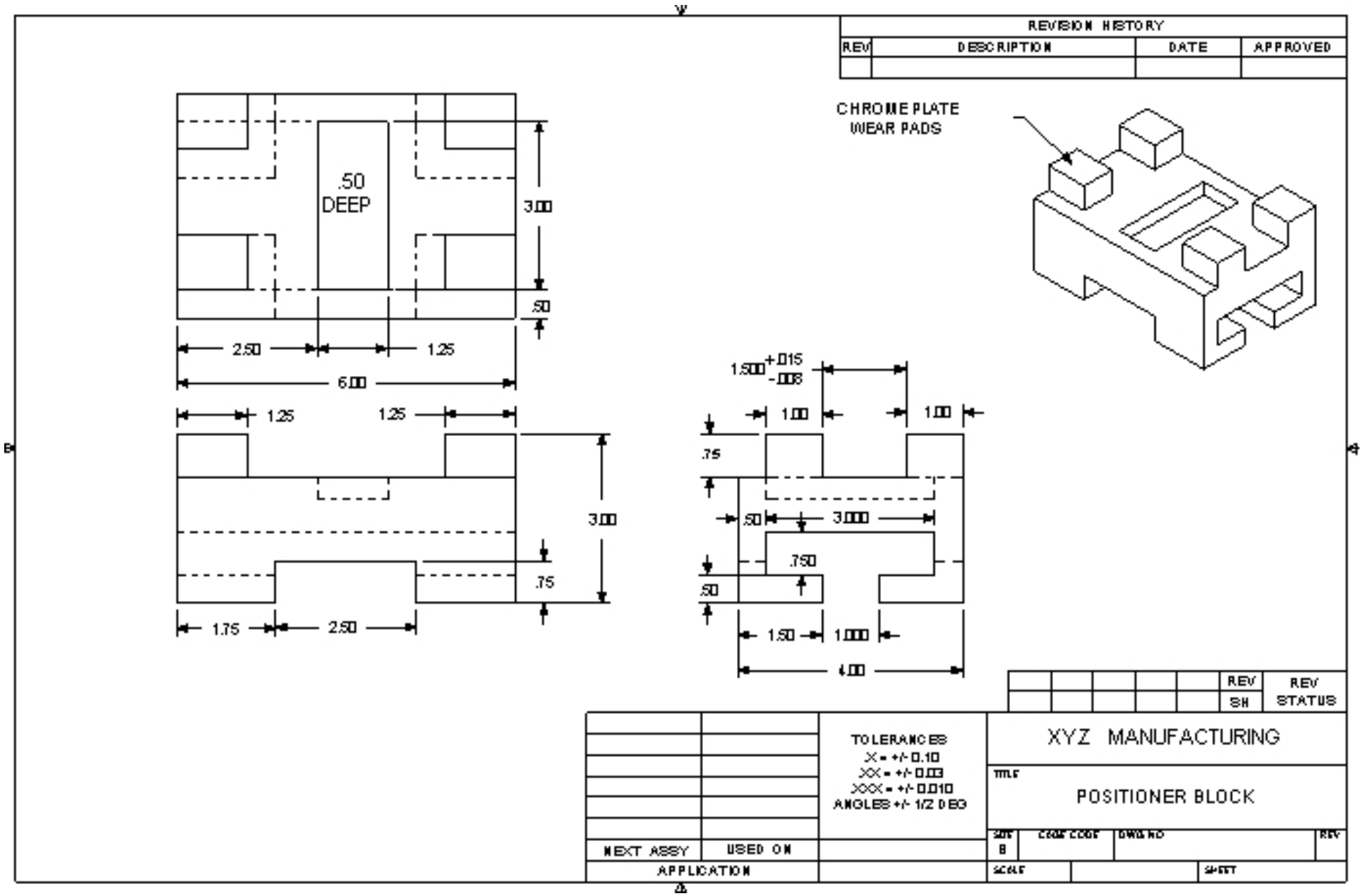
Opening the box shows the **standard view placements**. This is a ***rule.*** Views must be placed on the page in this order. Otherwise people would not know what they were seeing.



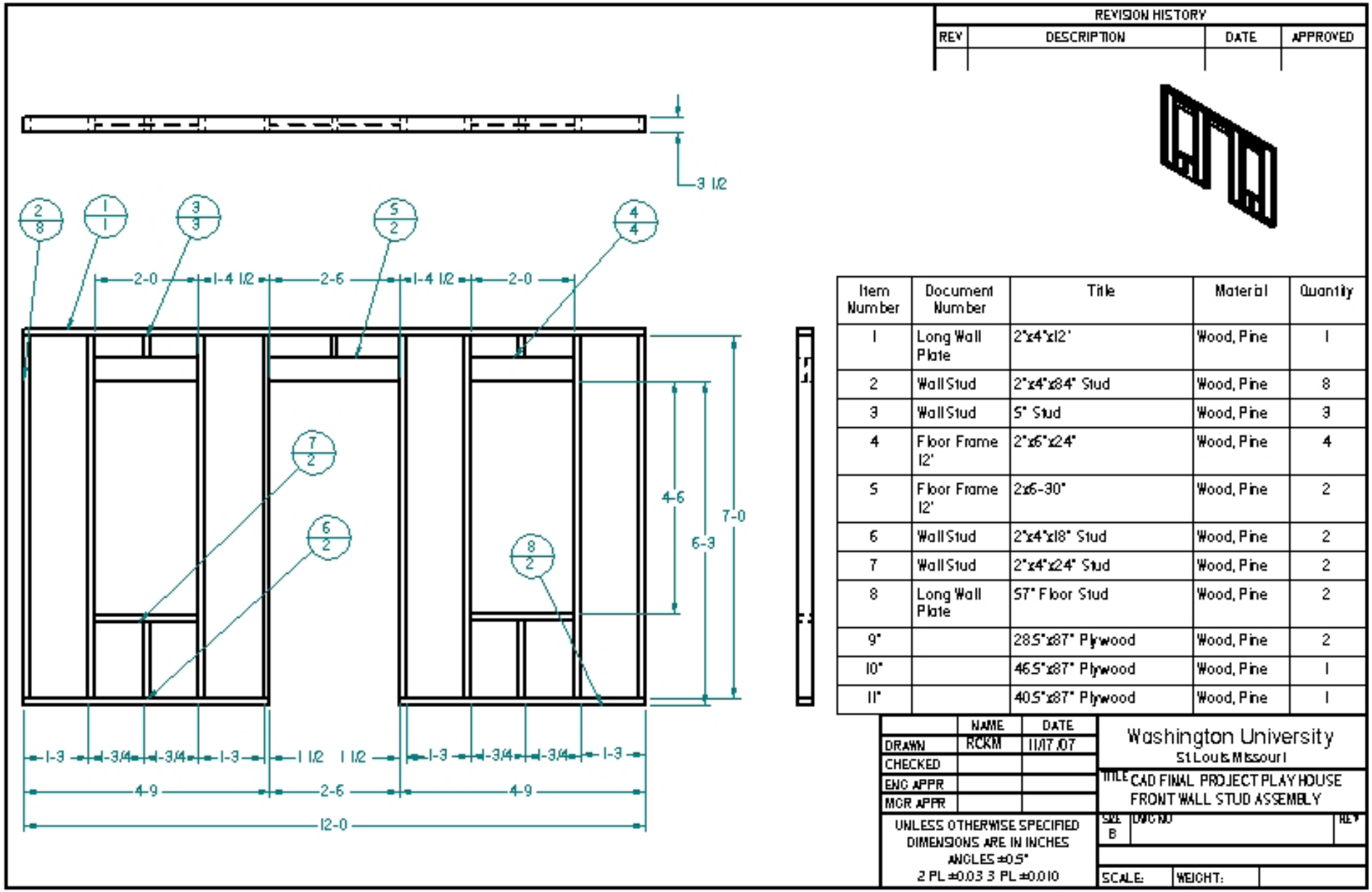




A detail drawing is shown. Front, right, top and pictorial views are seen. The pictorial view is not a required view - it is shown as a reference to help understand the orthographic views. Visible features are solid lines, Invisible features are dashed lines. Decimal inch dimensions show size. Tolerances on sizes are given by the number of decimal places. 2.00 = 2.00 +/- .03 inches 2.000 = 2.000 +/- .010 inches.

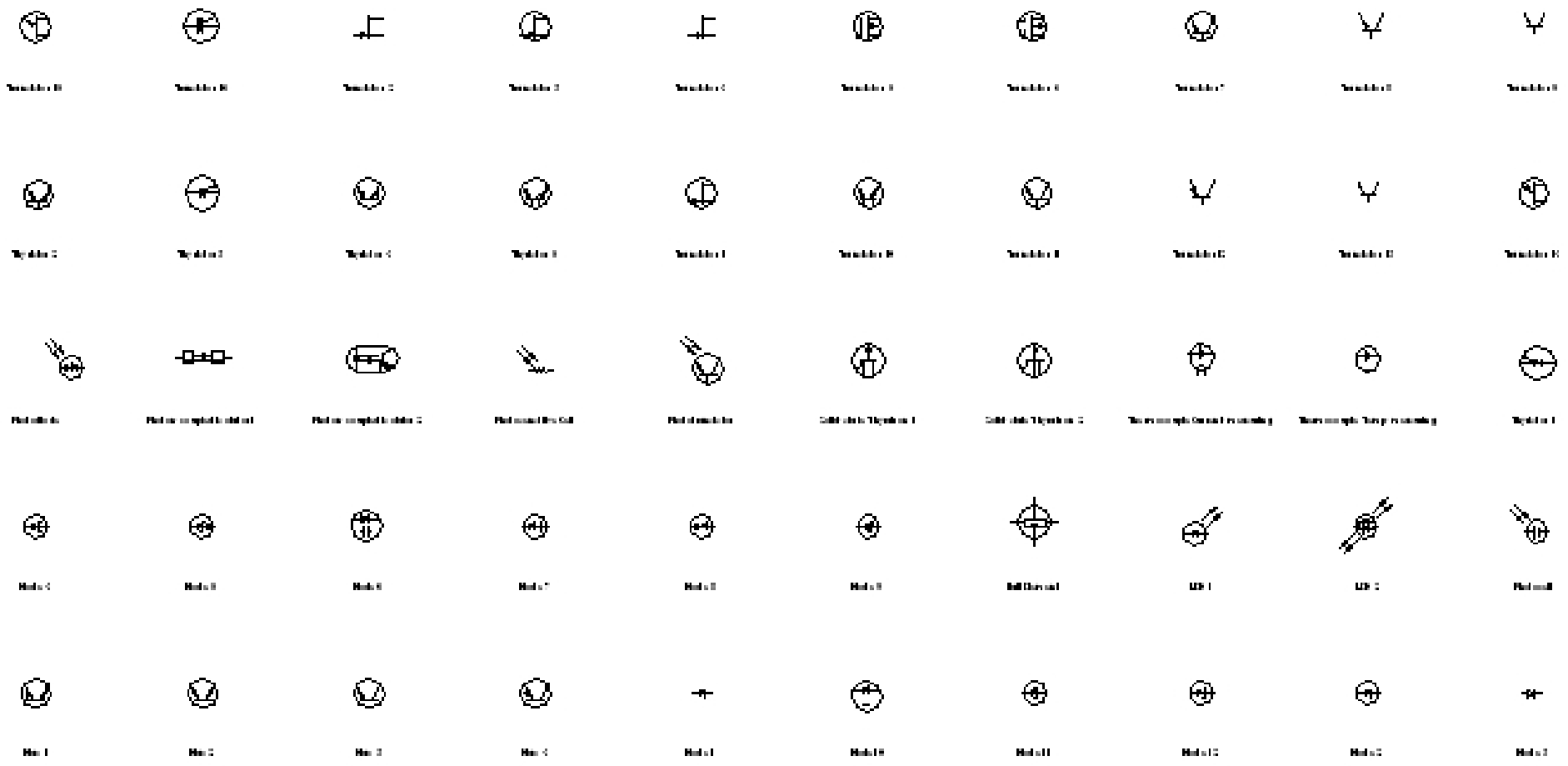


A architectural wall detail drawing is shown. Dimensions are in feet and inches. Notice that the size of the wall is much bigger than the machine part. Solid Edge may be set to draw very small parts or very large buildings. At times, large drawings need to be printed to an accurate scale. Solid Edge has tools to make accurate scale drawings.



A semiconductor symbols library is shown.
Solid Edge provides tools to create and store symbols and parts libraries. The speeds up the work of creating drawings where the same components are used over and over.

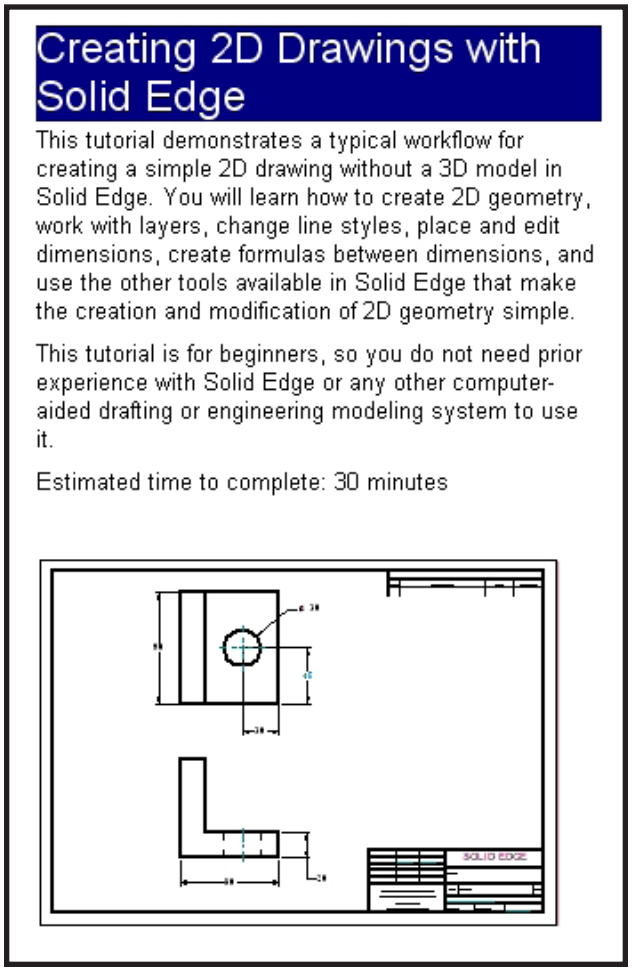
A company that manufactures windows gives out free libraries of their products. An architect can quickly place windows in a house without having to draw each detail. Saves time and sells windows.



Exercise 1. Do the first tutorial .

This tutorial introduces important features that make Solid Edge 2D a very accurate and unique drawing software.

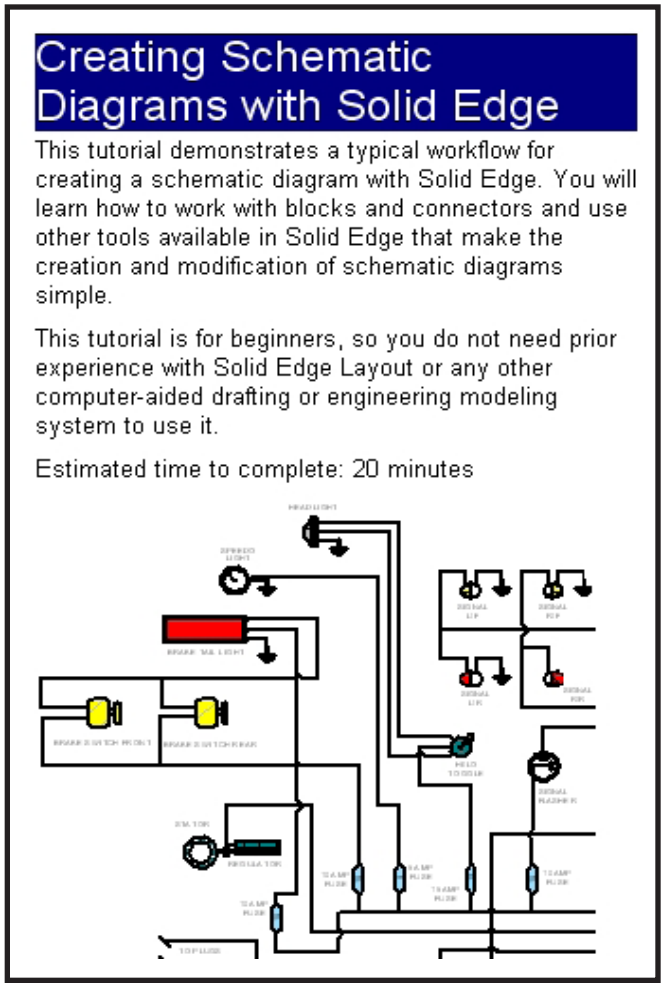
Chapter 2 will add much more to this introduction.



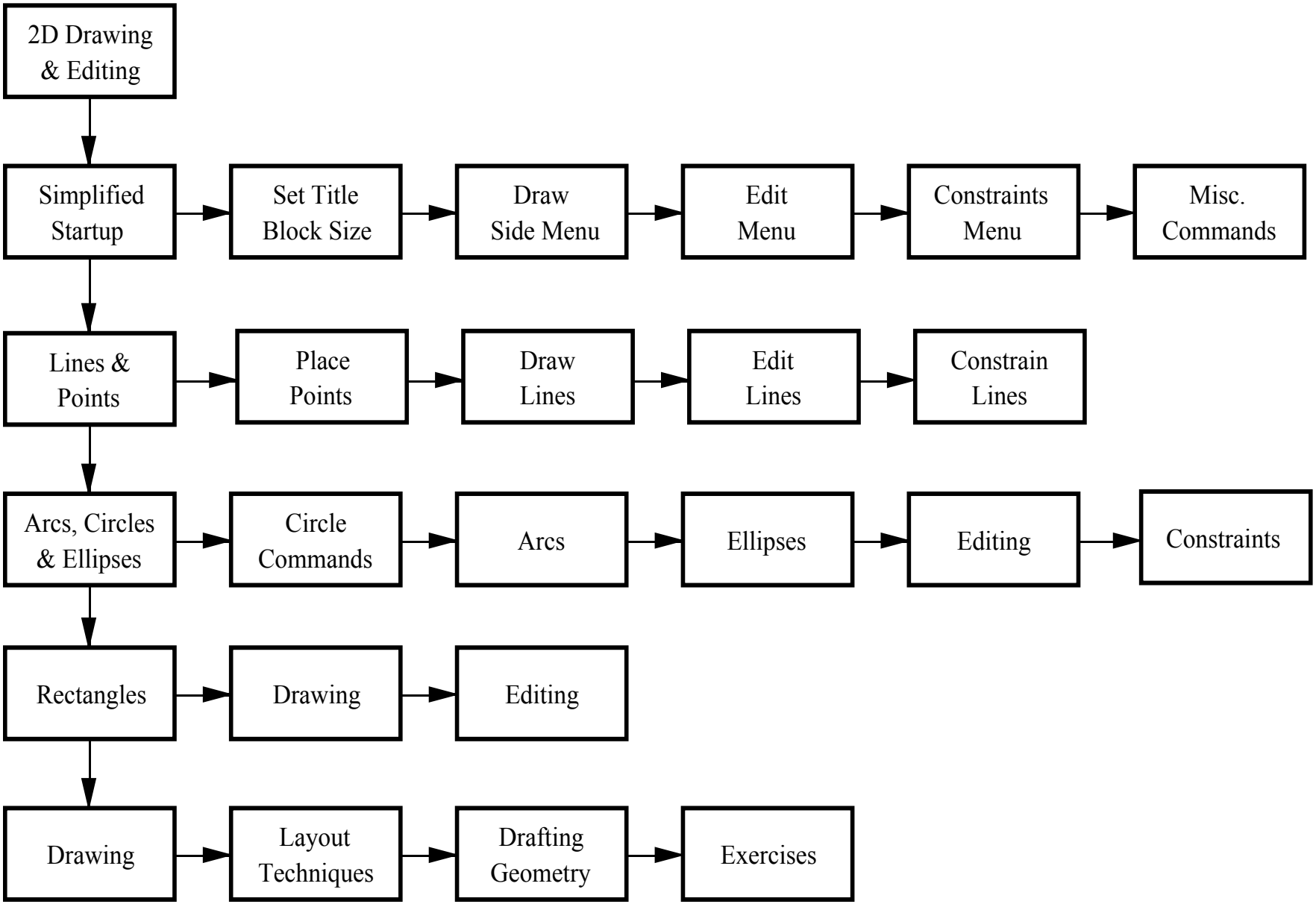
Exercise 2. Do the symbols tutorial.

Blocks and symbols are advanced drawing applications. Solid Edge 2D has added special tools not found in other 2D software.

Chapter 6 has more information on symbols and blocks.

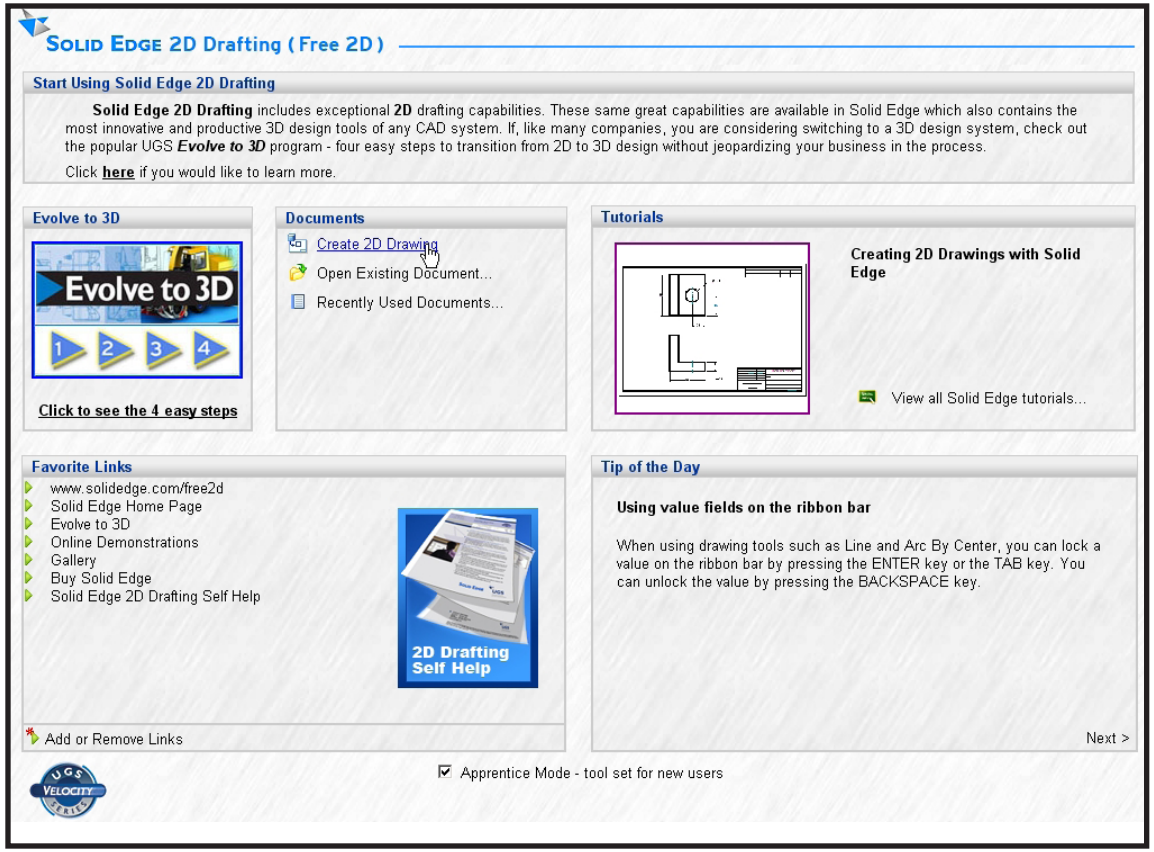


This chapter will introduce the 2D drawing commands. Drawn shapes must often be edited - copied, rotated, moved, trimmed, etc. to complete the desired shape. Solid Edge adds another control; constraints. Constraints control the behavior of drawing elements as changes are made. *Parametric modeling* is available so shapes may be driven by formulas or spreadsheets.

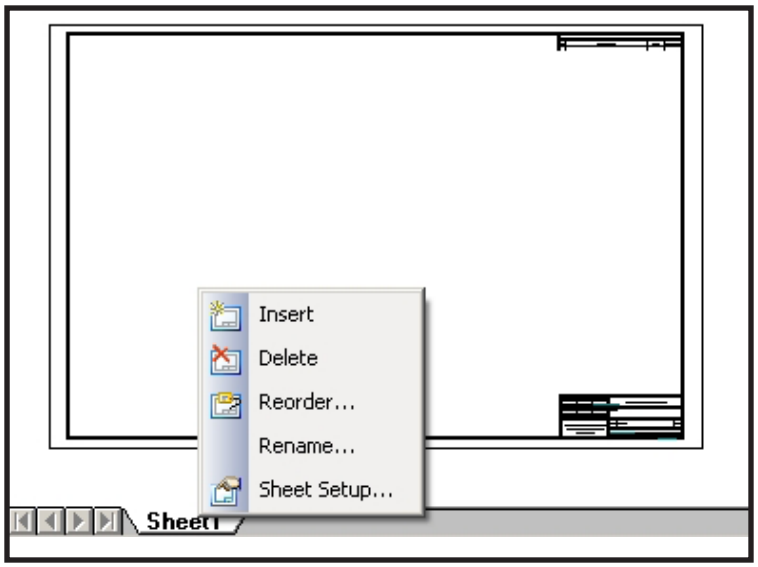


__ 1. Start Solid Edge.

__ Click "**Create 2D Drawing**". A title block will display in the drawing area.



Note: It is possible to draw on a B-Size 11 x 17 computer sheet even if the printer is only a A-Size 8 1/2 x 11 page. This gives more room to draw and the printer will still print a readable - but not to scale - "check drawing"

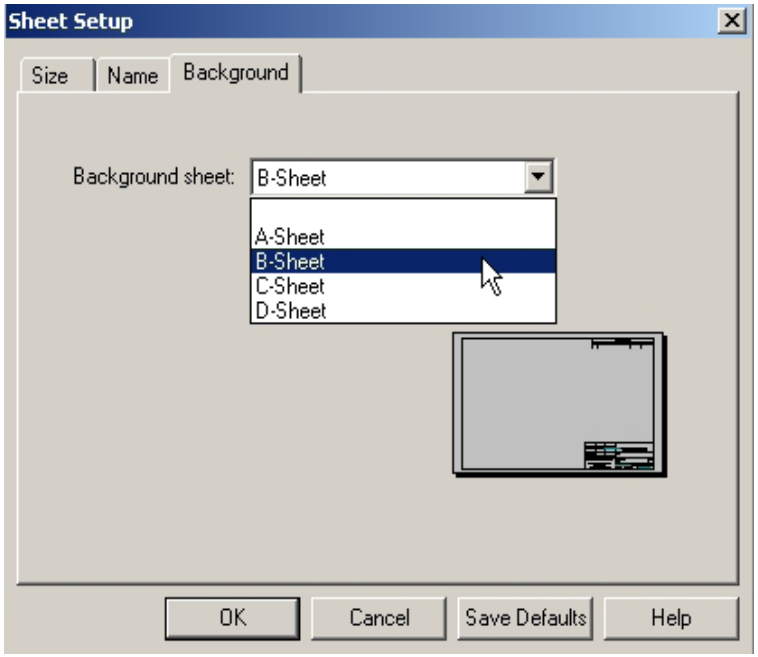


__ 2. Right-click on "Sheet" at the bottom of the screen. Select "Sheet Setup".

__ 3. Select "Background" tab.

__ Pop down the Background Sheet dialog box.

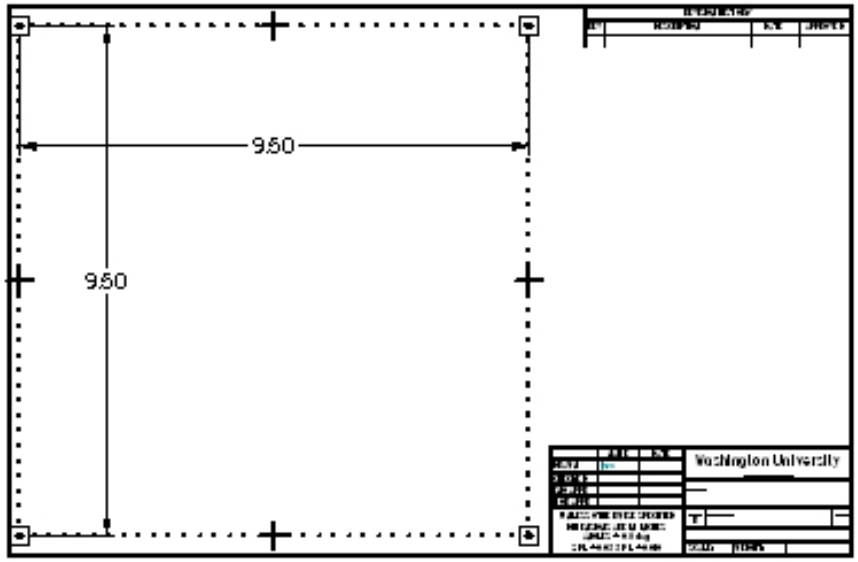
__ Select B-Sheet .... O.K..



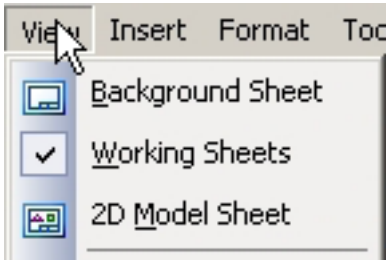
Working Drawings.
Computer drawings are always made using real, full units.
Working in Metric (millimeters), Architectural (feet and fractional inches), etc. will be covered in later chapters.

Title blocks are designed to be a 1 = 1 scale with the printer or plotter.

Drawing Area.
Using a "B" size drawing sheet gives a drawing area about 9.50" by 9.50". Only small objects may be drawn directly on the title block.



Drawing Environments
Pop down the **View** Menu.
Three types of drawing Sheets are seen. At start, only the **Working Sheet** is seen.
This is usually a title block with a open area for displaying a drawing.



Background Sheet
This is the lines and other items that display the default title block. Chapter 3 will show how to modify and customize the various title blocks for personal or company use.

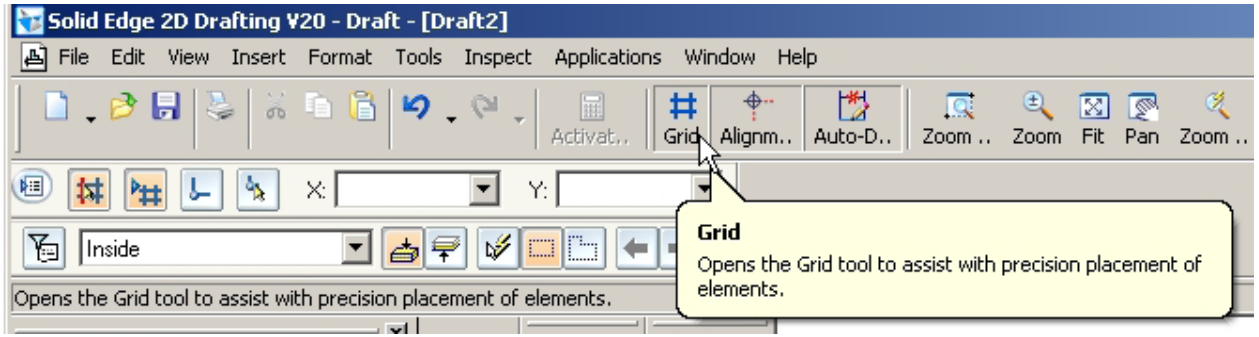
2D Model Sheet.
Very large drawings are made on a ***2D Model Sheet.*** The 2D Model Sheet is set to the proper units and the size is set to work 1 = 1 with the "World". The 2D Model Sheet is scaled and inserted into the title block at print time using a standard scale factor. Later chapters will show how to set this up.

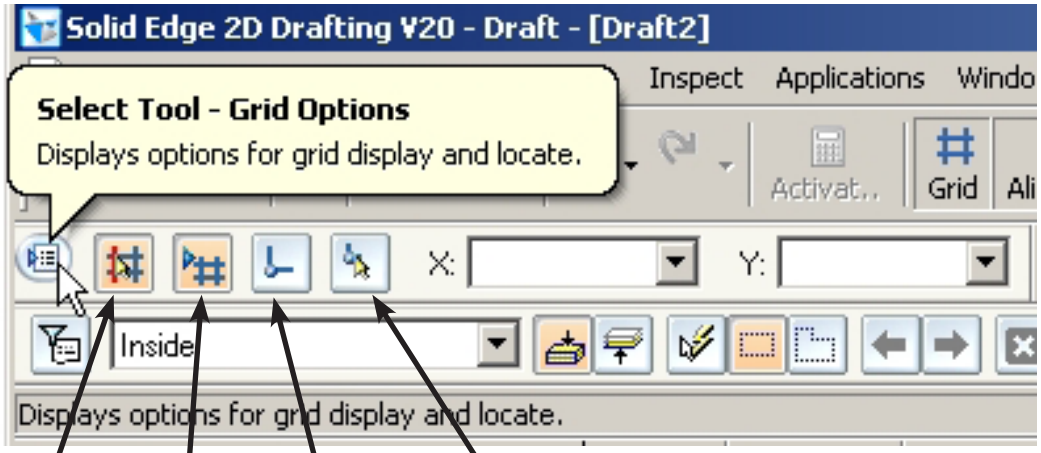
The puropse of this chapter is to become familar with the various drawing tools. Drawings will be made directly on the Working Sheet.

Grids.

Grids are handy for some layout constructions. Grids may be used for display or drawing entities may be locked to grid points (grid snap). At times, grid snap must be turned off to allow accuracy for other constructions.

Activate Grid



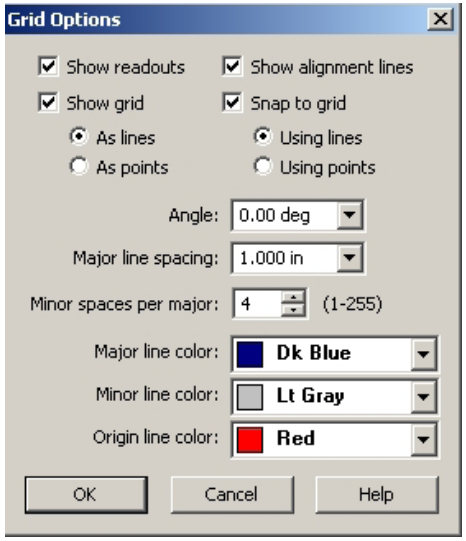


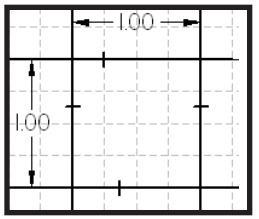
Snap To Grid On/ Off

Turn Grid On/Off

Reset Grid To World

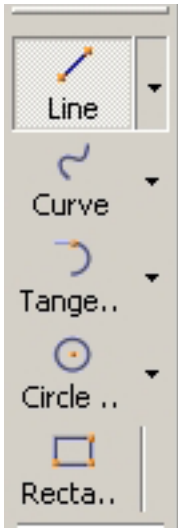
Set New 0,0 Location

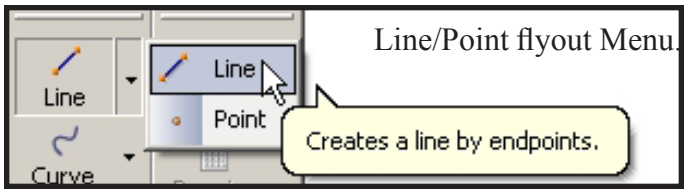


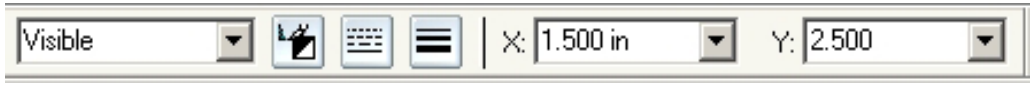


Grid with 1.00" major lines and .25 minor lines.

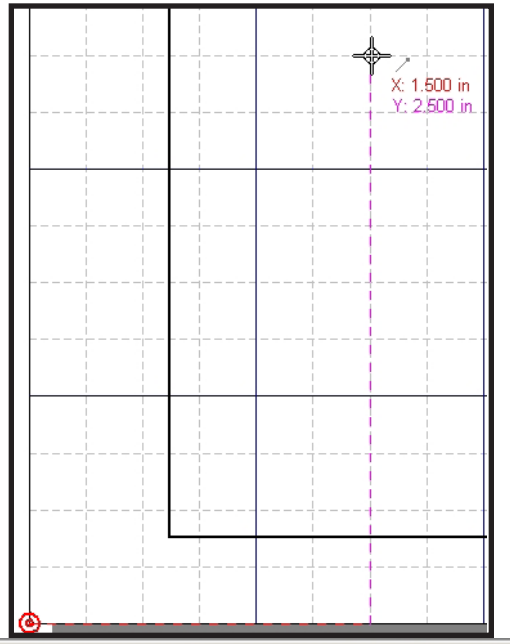
Note: Turning **snap to grid *on*** and turning **grid display *off*** will leave a *invisible* snap to grid invoked.



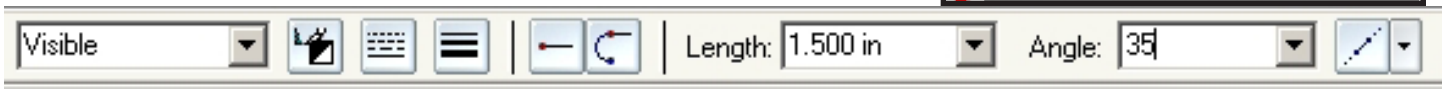




Point Command. The **ribbon bar** for placing points is shown above. At startup, the origin (X=0, Y=0) is at the lower corner of the ***paper.*** (Not the title block lines). The origin may be moved to another location on the page using the **Set New Grid 0,0** icon command. The screen pointer displays the point location relative to the Grid 0,0 location. You can key in the X,Y offsets in the ribbon bar.



Temporary Origin X=0, Y=0



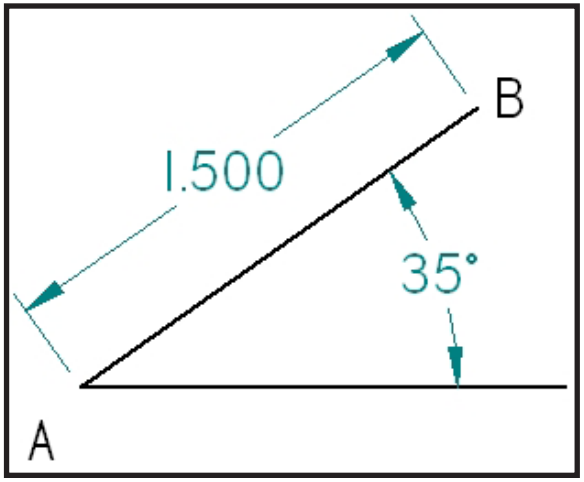
Color Type Thickness

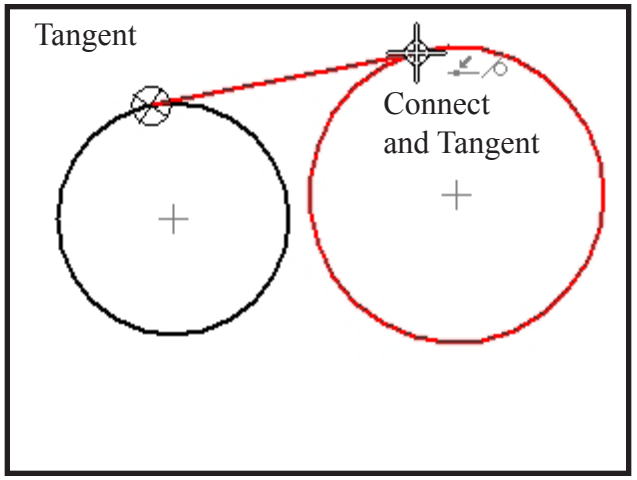
Line Command.
Options on the ribbon bar:

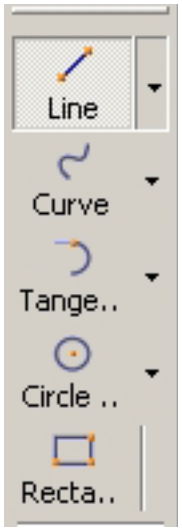
- Line color
- Line type
- Line thickness
- Line/Arc toggle
- Length
- Angle
- Line extension display

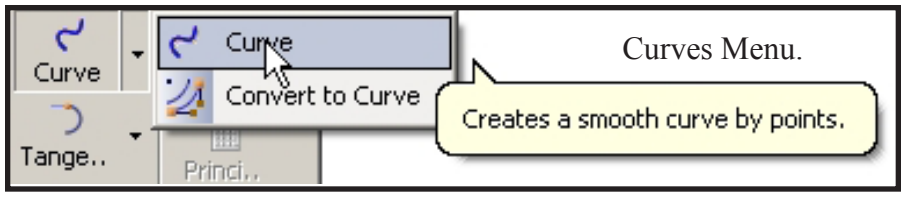
Angles for lines are measured from the horizontal as shown.

Lines may also be drawn using **Intellisketch** geometry controls. (Connect, Tangent, etc.)

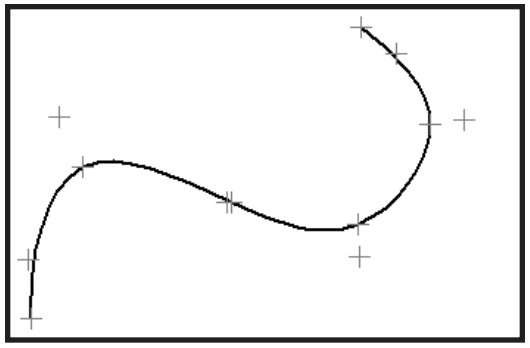








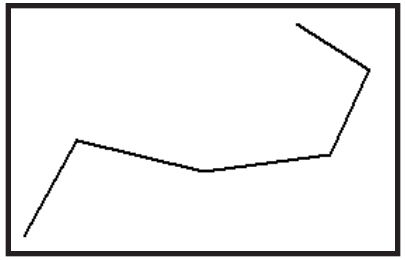
Curves Menu.

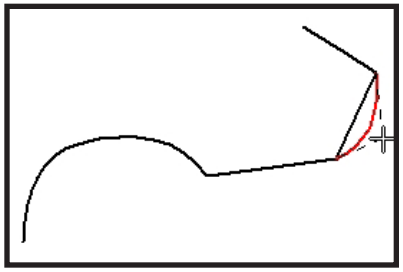


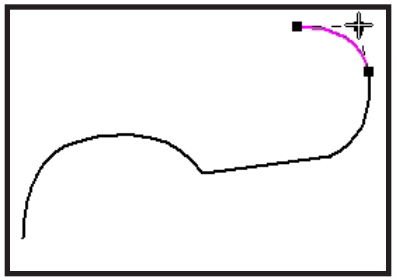
Points on curve are selected to control the shape. Points plotted using the **Point** command may be used to create accurate shapes.

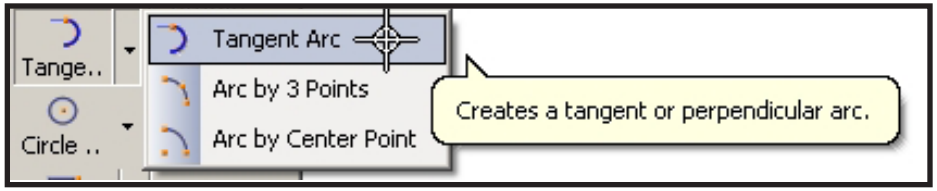
Convert to Curve

Converts straight sections to approximate curve sections.



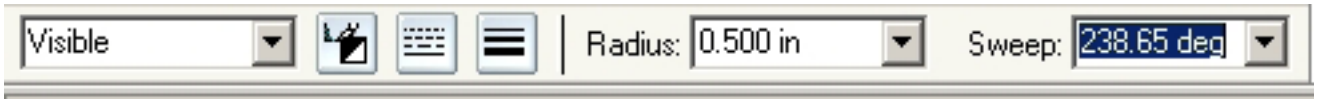


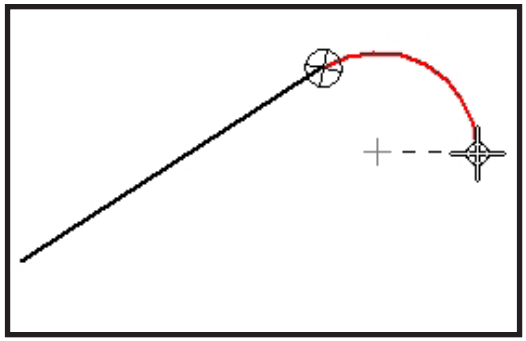




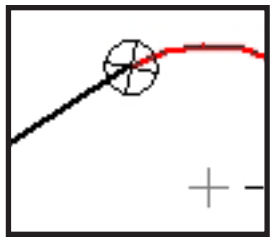
Tangent Arc Menu.
On many constructions it is better to draw tangent circles then trim.

Tangent Arc Ribbon Bar.

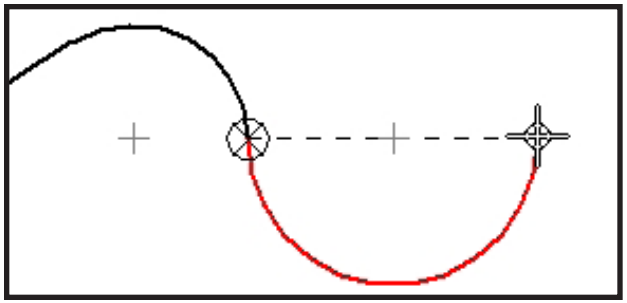




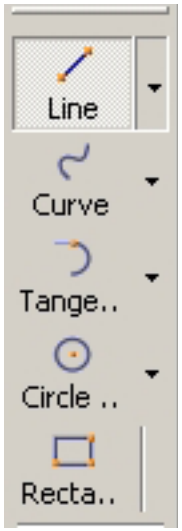
Tangent Arc command

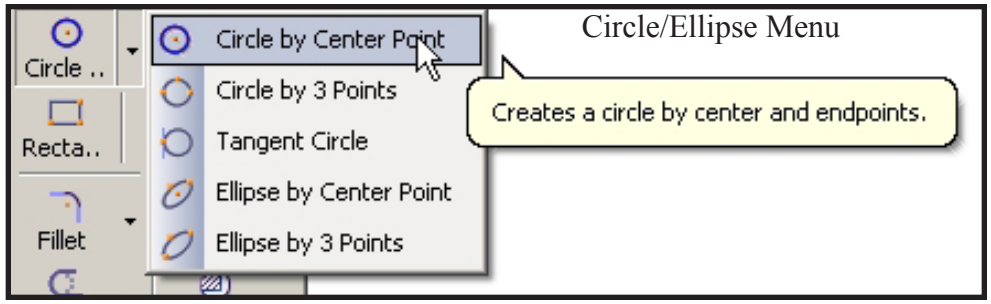


Intent Zone determines arc direction

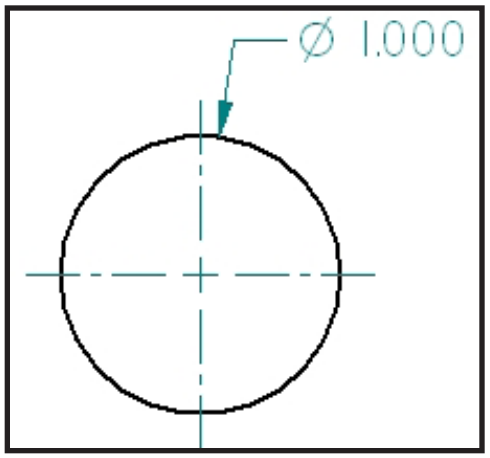


Tangent arc from existing arc.



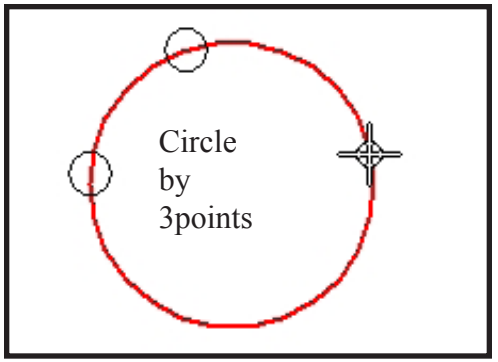


Circle/Ellipse Menu



Circle by Center and Circle by 3 Points Ribbon Bar

- You can also place two points and input the diameter or the radius.

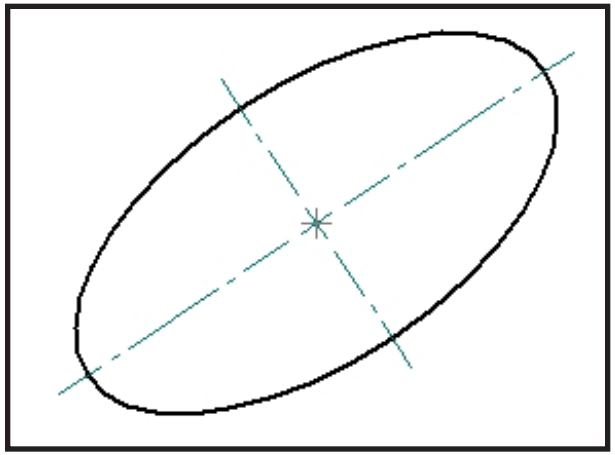


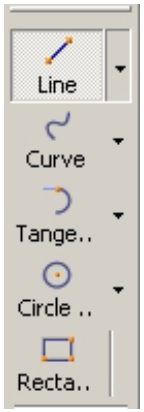
Ellipses Ribbon Bar - Ellipse by center point and Ellipse by 3 points.

Click or input: center, major axis and minor axis

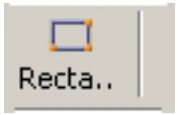
or

click center and 2 points on curve

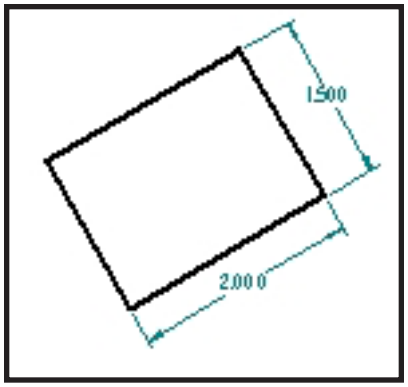




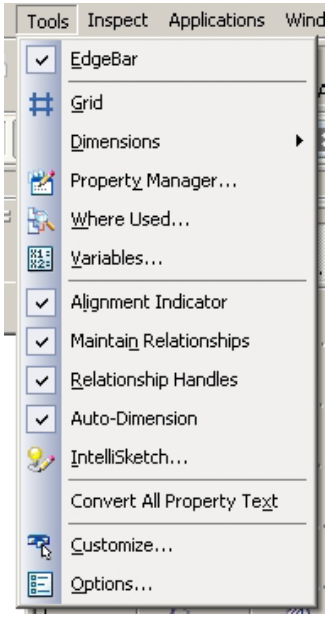
Rectangle



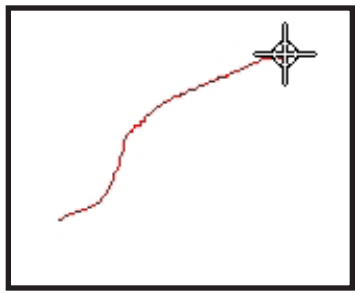
Input Width, Height and Rotation Angle.



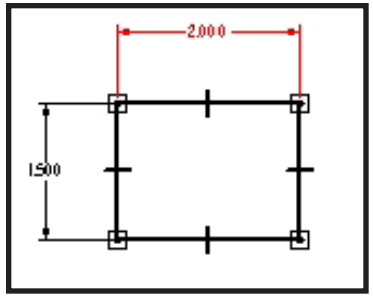
Alternate method: Draw diagonal line then dimension to size.
Turn on: Tools ...



Turn On



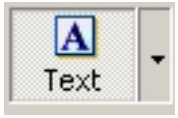
Draw diagonal Line



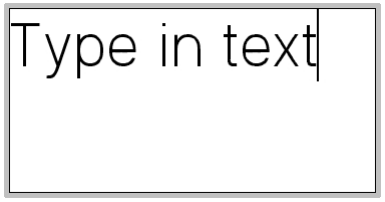
Dimension to size

Draw Text

Text Ribbon Bar

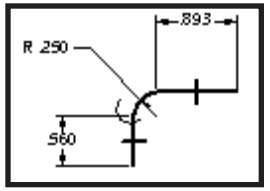


Draw a box for the text.
Type in text.

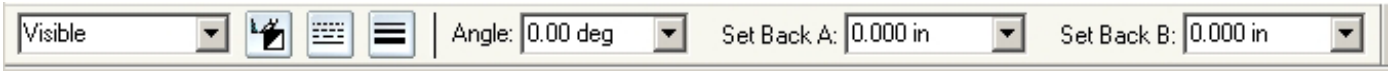


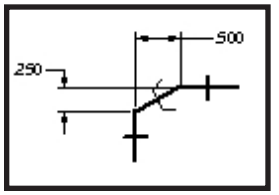
Edits are used to change or adjust existing geometry. A shape with many rounded corners is easier to draw using square corners. Rounded corners are quickly added using the Fillet command.

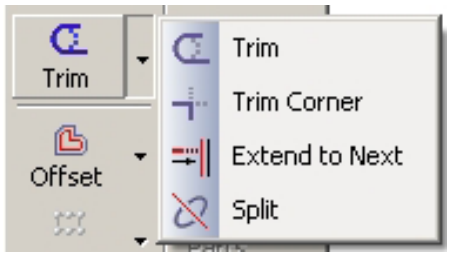
Fillet Toolbar



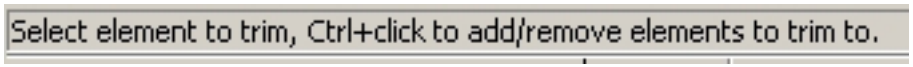
Chamfer Toolbar

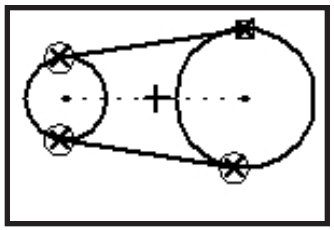




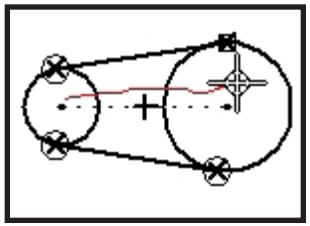


Trim Prompt

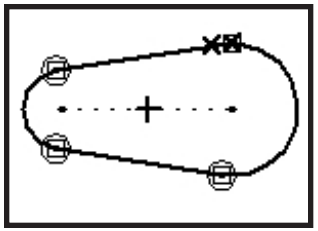




Original shape

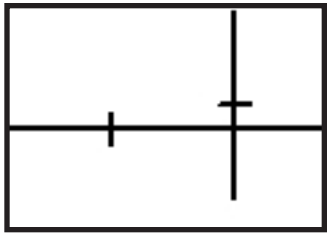


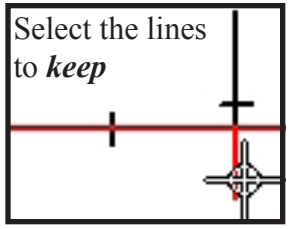
Trim: Select lines or draw trim line across.

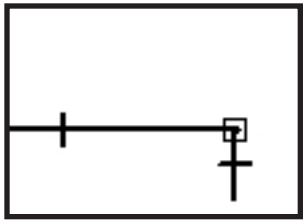


Final shape.

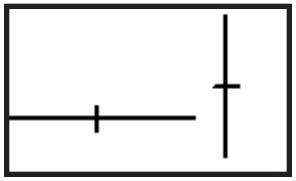
Trim Corner

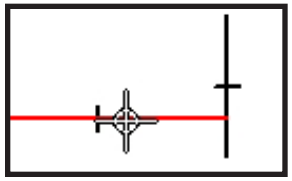




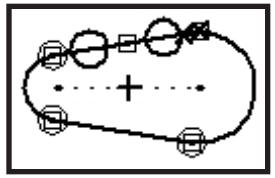


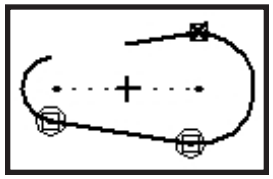
Extend
Select object to extend



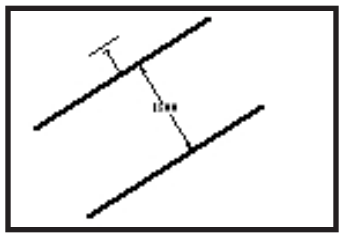


Split
Pick element.
Pick split point.

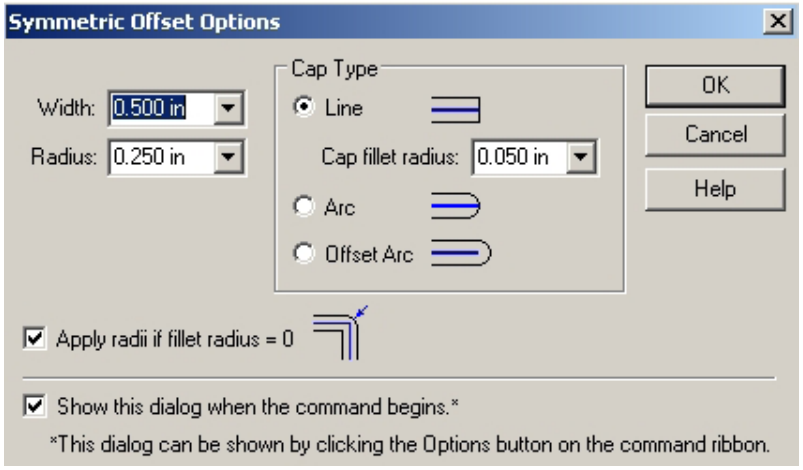




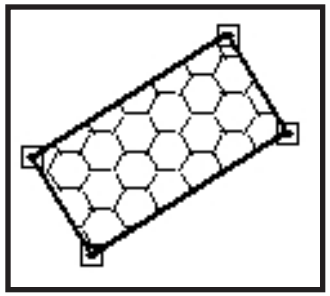
Offset. This is a "copy parallel" command.

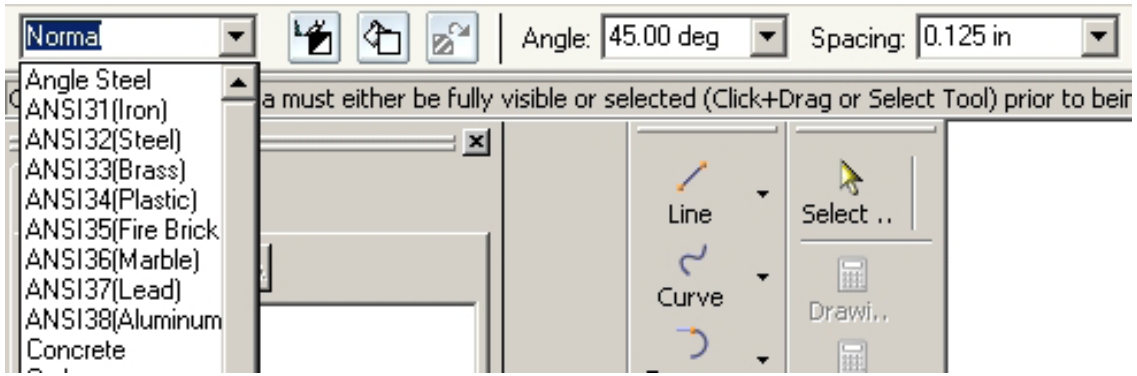


Select object to copy.
Select distance.
Select side.



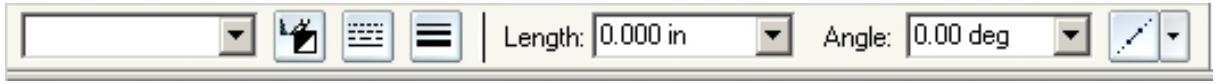
Fill
Fill places a crosshatch pattern inside a closed area. Fill ribbon bar is shown.





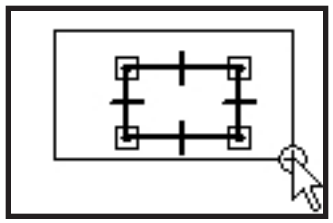
Copy and Paste are located on the **Edit** pop-down menu

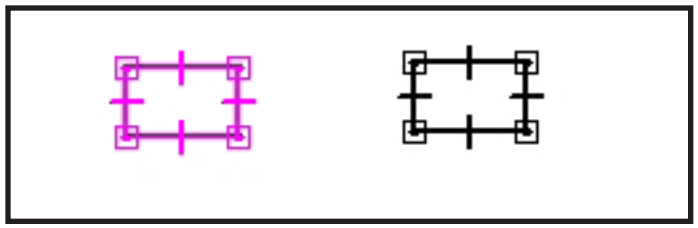
Paste Ribbon Bar

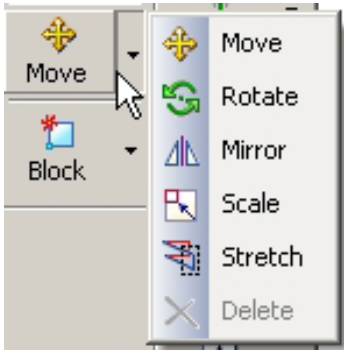


- Pick **Copy.**
- Use a **window** to select multiple items.
- Pick **Paste** to set 2nd item.

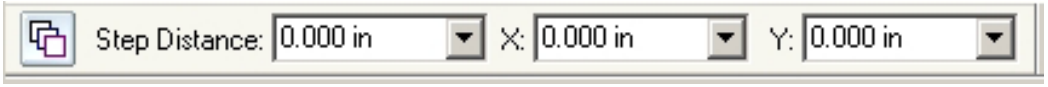
*If you Paste with no length, a 2nd item is pasted **on top of** the original item. Use Move to locate the 2nd item.*







Move ribbon bar



Note: Other commands work in a similar manner. Create small drawings and try each command.

Drawing Display

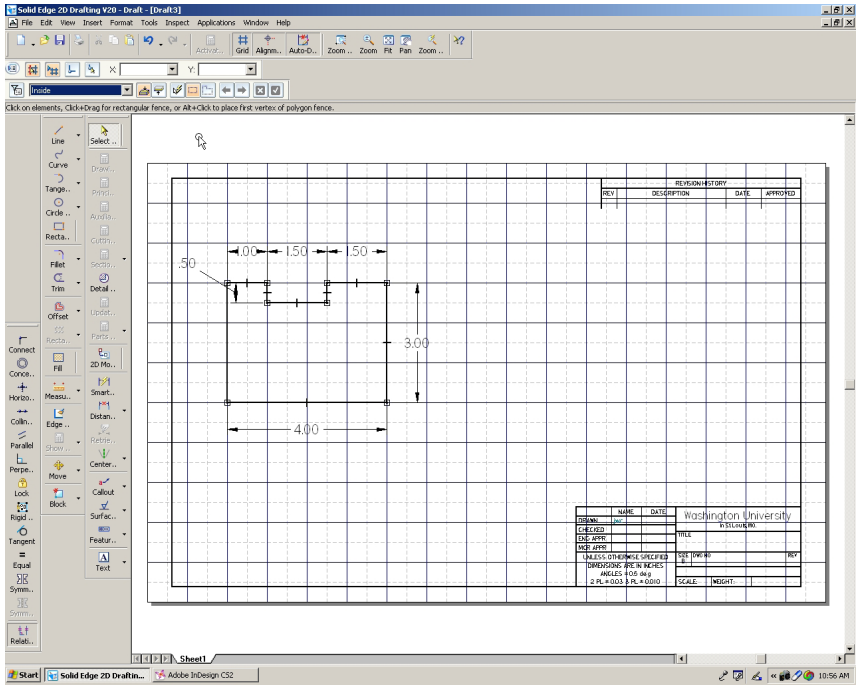
Magnifying an area of a drawing makes it easier to work and improves accuracy.

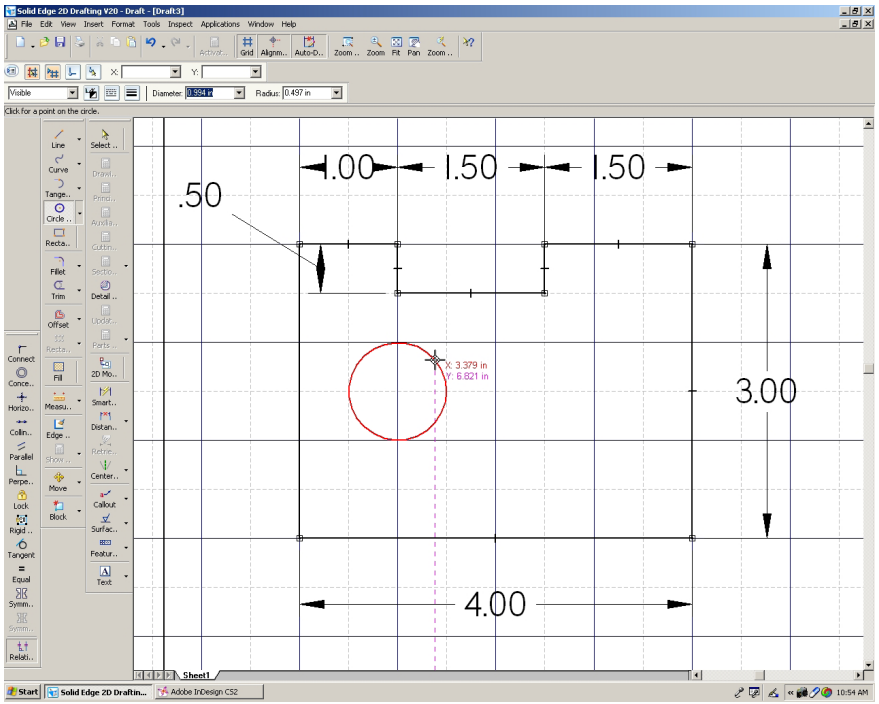
Zoom Window. Select icon. Click upper left corner. Move mouse down to right. Click lower right corner.

Fit. Zooms to full page view.

Window selection may also be used to pick entities for editing.

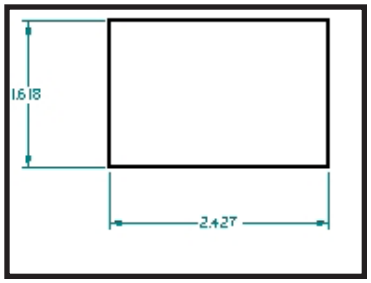
Zoom Window Fit



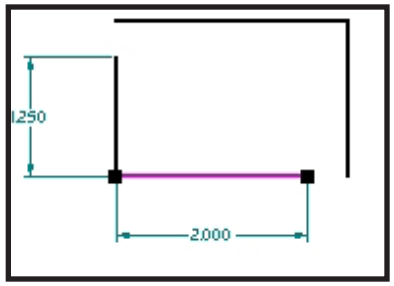


Constraints.

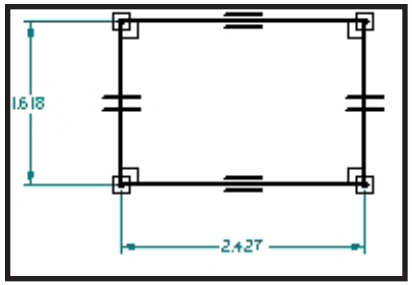
Constraints are used to control the shape and geometry of drawn objects. Changing the size of an element may cause unpredictable results. Adding constraints assures the desired shape will remain.



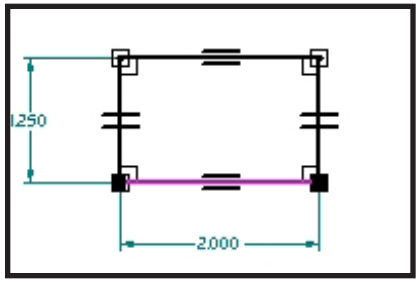
Unconstrained figure



Changing size = disjointed part

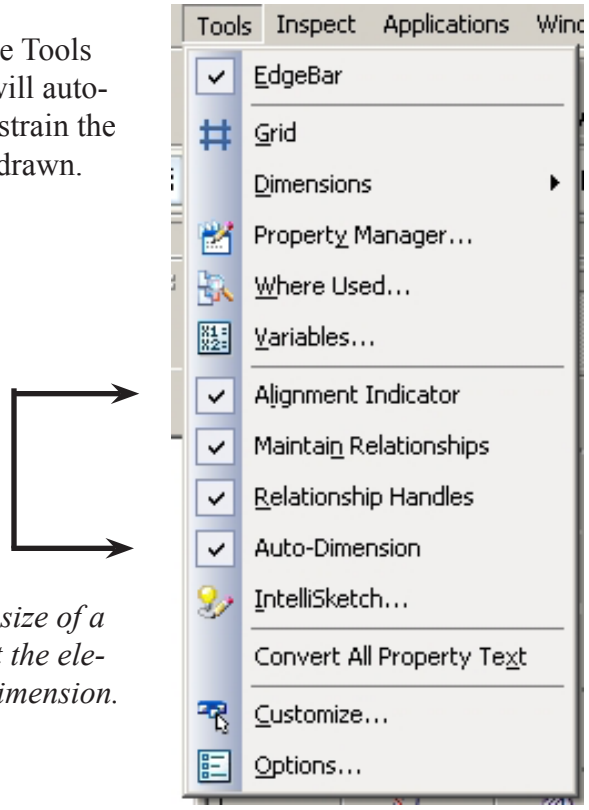


Connect, equal and perpendicular constraints added.



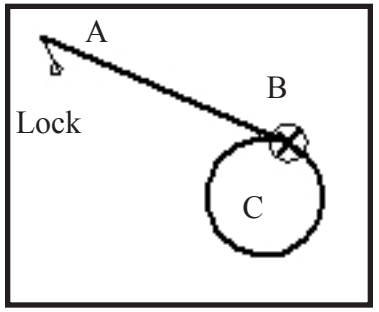
Changing size = predictable shape.

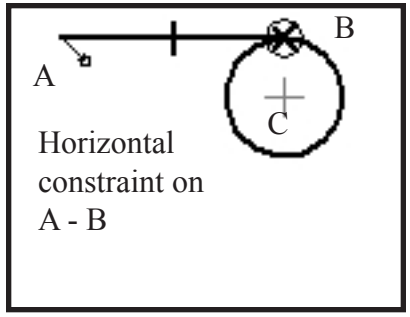
Note:
Turning on the Tools Menu items will automatically constrain the shape as it is drawn.



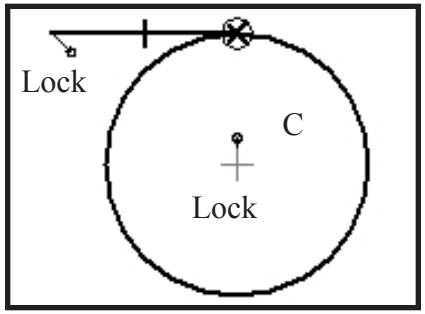
To change the size of a element, select the element not the dimension.

Lock will fix a point to prevent movement.





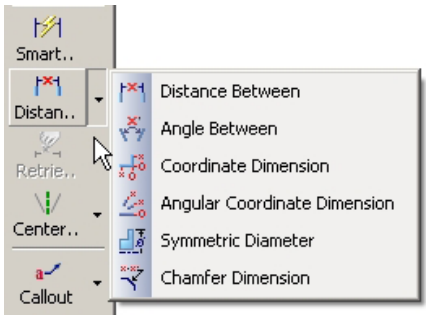
Note: The length of A - B changed - C moved straight up

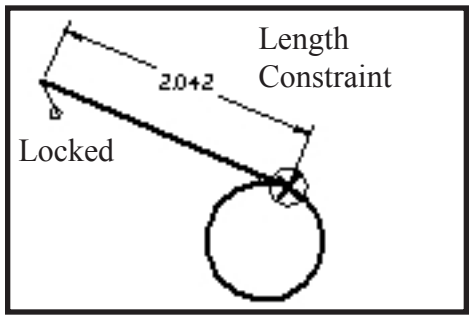


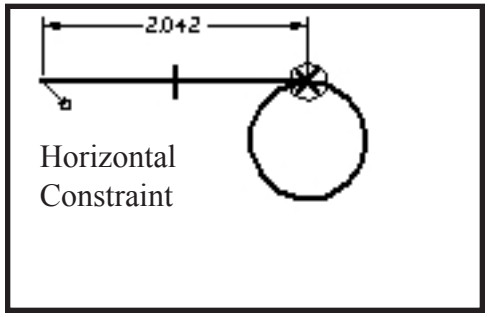
A and C are locked. Circle changed

Constraints 2

Dimensions are Constraints. Dimensioning an entity will constrain its length, diameter, radius, location etc.







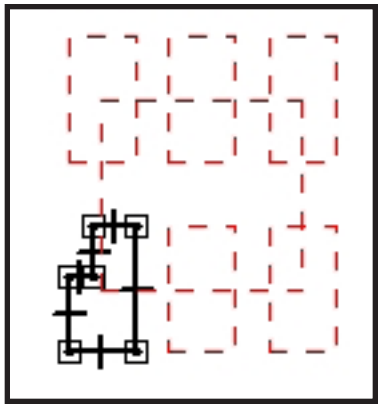
Notice the other dimension commands that display with the **Distance Between** flyout.

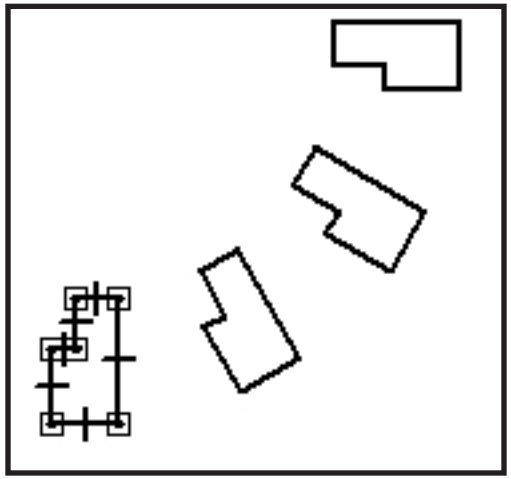
Smart Dimension works on one entity. ***Distance Between*** works on two entities.

Pattern (Array)

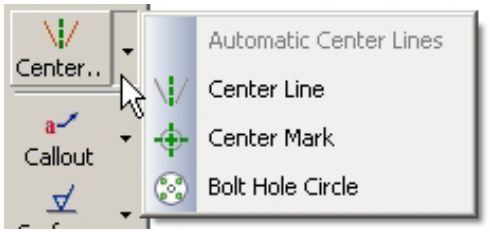
This command will make multiple copies of a object in rectangular or circular patterns.

- Select the object
- Select Pattern
- Key values into ribbon bar.



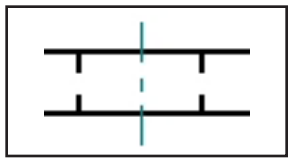


Center Lines

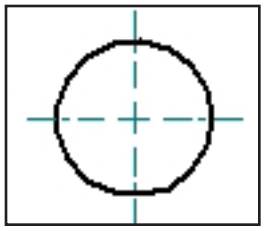


Center lines should be placed when circular shapes are shown.

Dimensions should be placed to the center of a hole or circle.

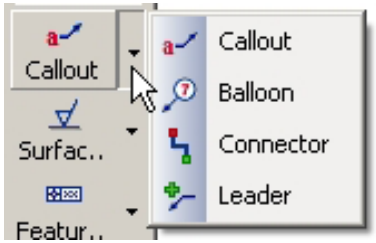


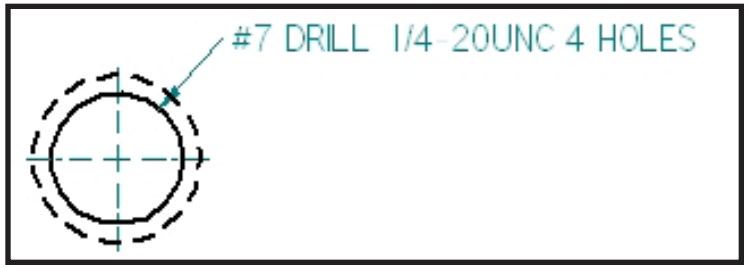
Hole - Linear
Centerline through hole center.



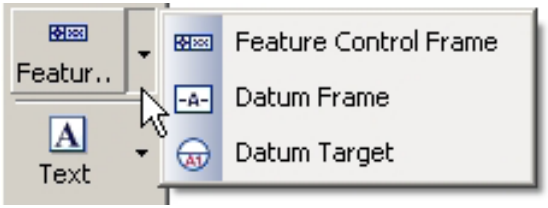
Circular - Centerline through center point.

Callouts. These add notes and other information to drawings.

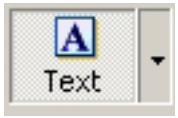




Special Symbols and notes.

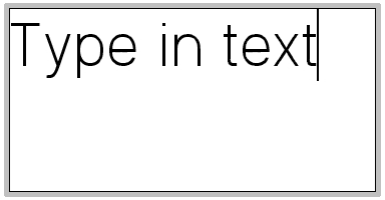


Draw Text



Text Ribbon Bar

Draw a box for the text.
Type in text.



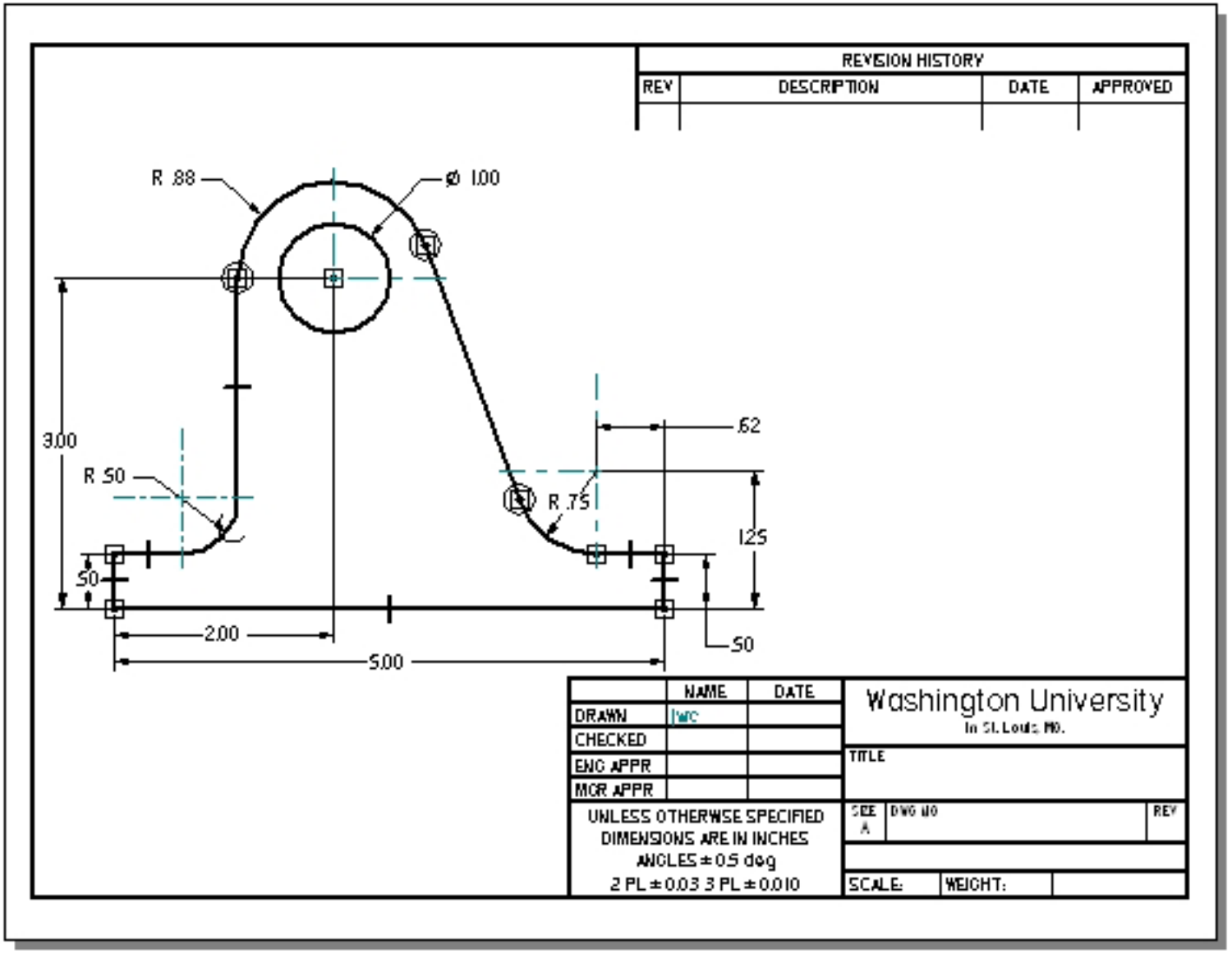
Tutorial

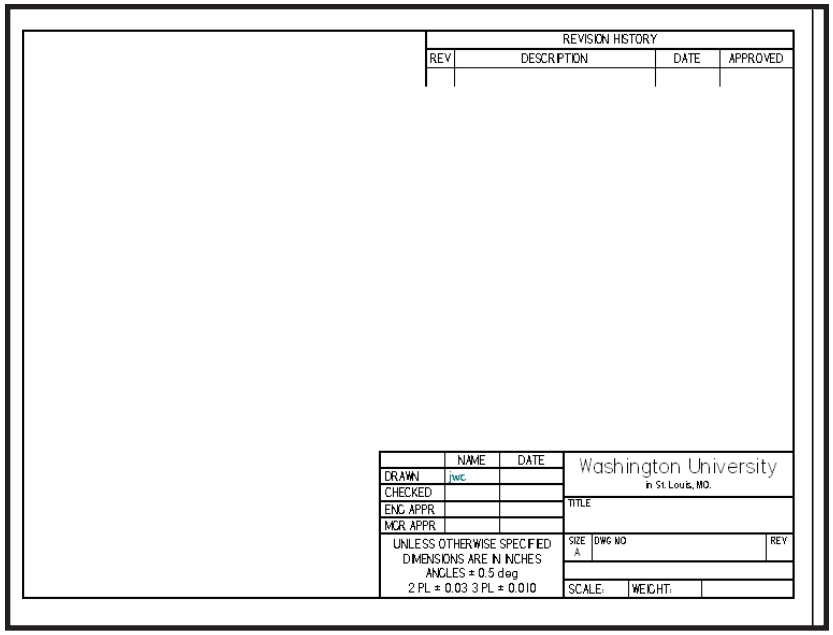
The next pages will create the drawing shown.

Refer back to this page for dimensions.

We will use a “A” size title block. Grids, multiple origins, tangents, fillets, trims, center lines and dimensions will be used.

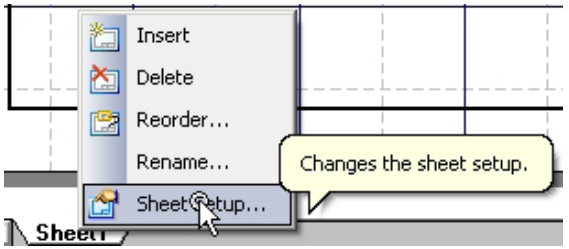
Save often so you do not loose work.



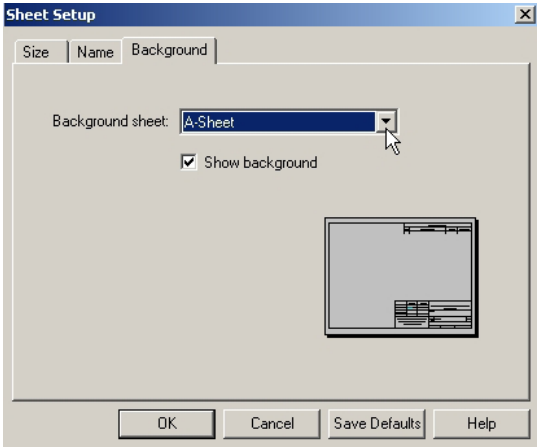


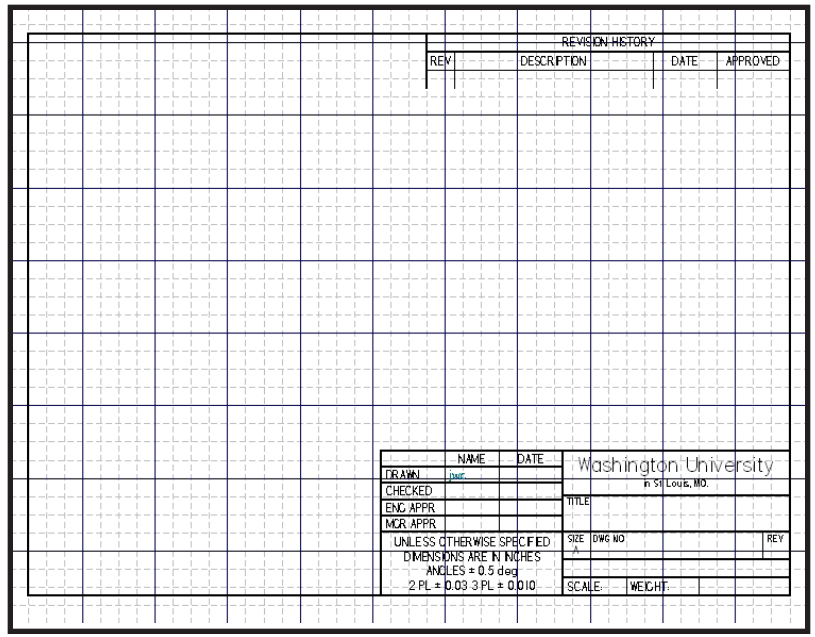
1. Start with a "A" size title block

Right-click **Sheet** at the bottom of the page



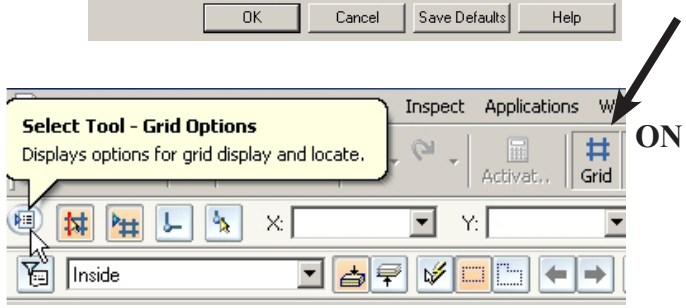
Set Background to "A" size. (8 1/2 x 11)





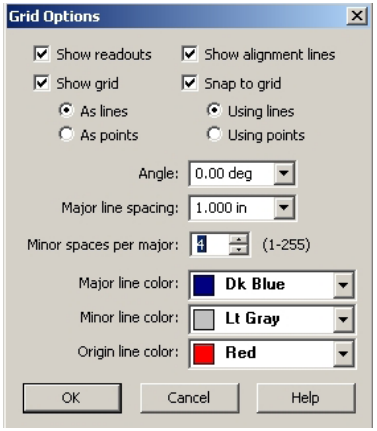
2. Set Grid to Major = 1.00 , 4 Minor Divisions

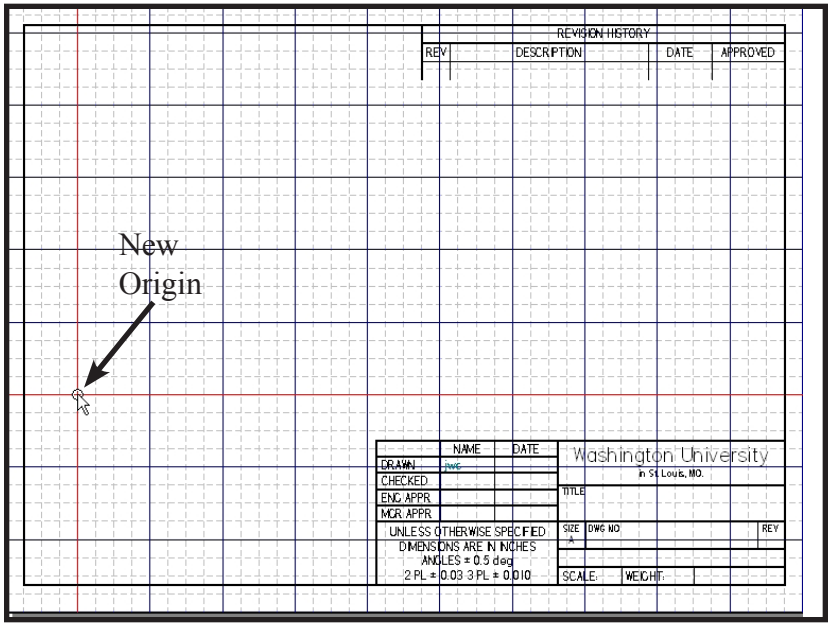
Turn Grid On



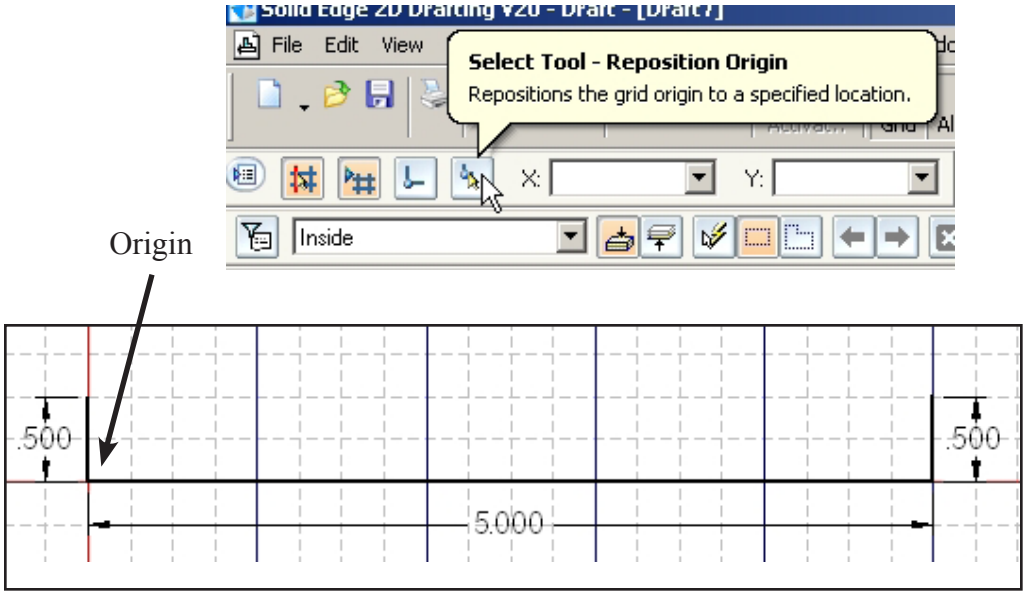
ON

Click Grid Options
Set 1.00 Major lines
Set 4 minor lines.

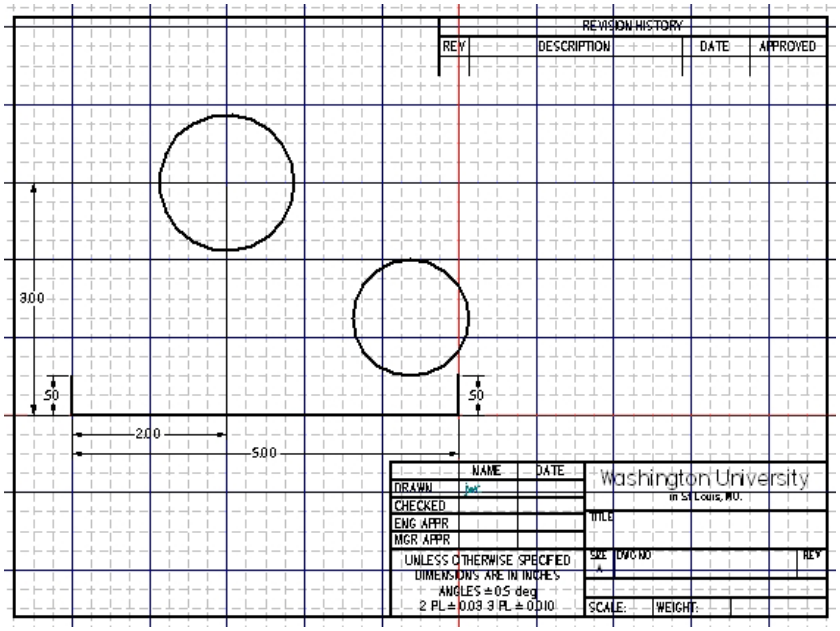


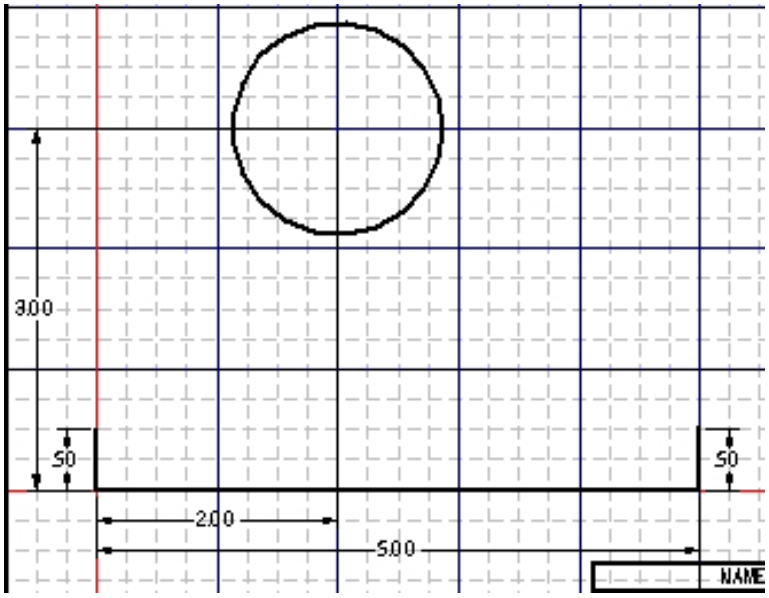


3. Reset the Origin to the point shown X=1.00, Y=3.00

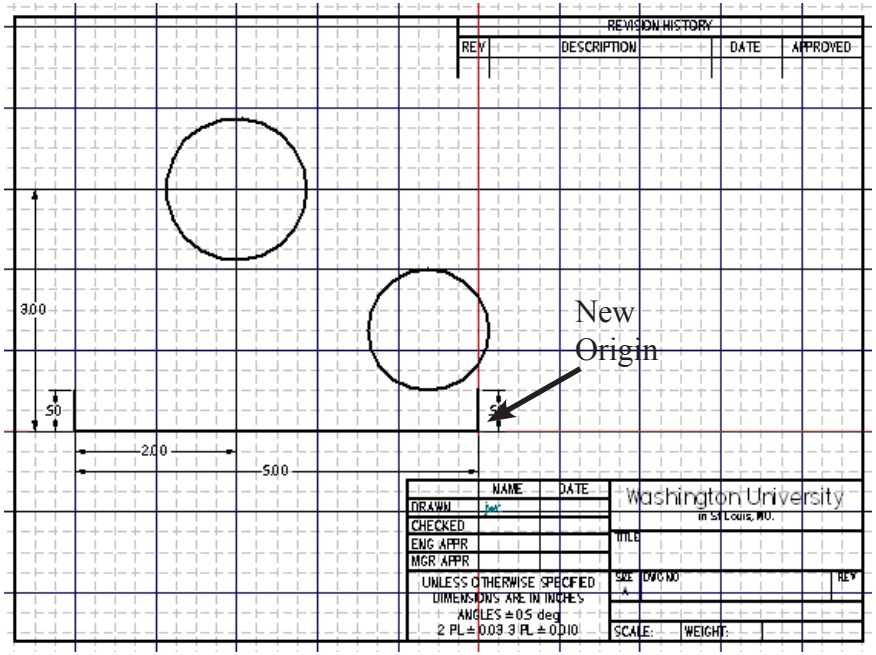


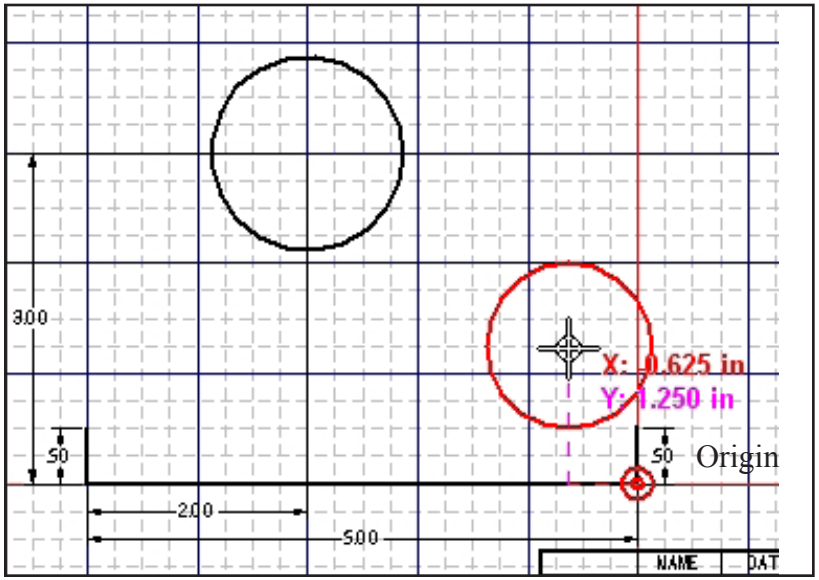
4. Draw 3 lines shown using Grid Snaps





5. Draw the 1.75 dia (.875 radius) circle as shown.



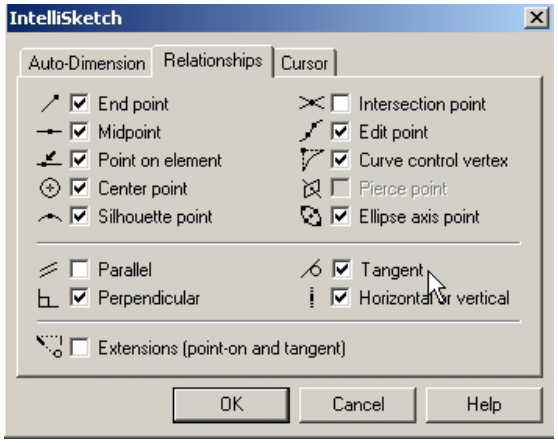


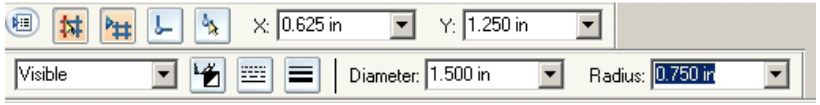
6. Re-set the Origin to the other end of the 5.00 line. Draw the 1.50 (.75 radius) circle as shown

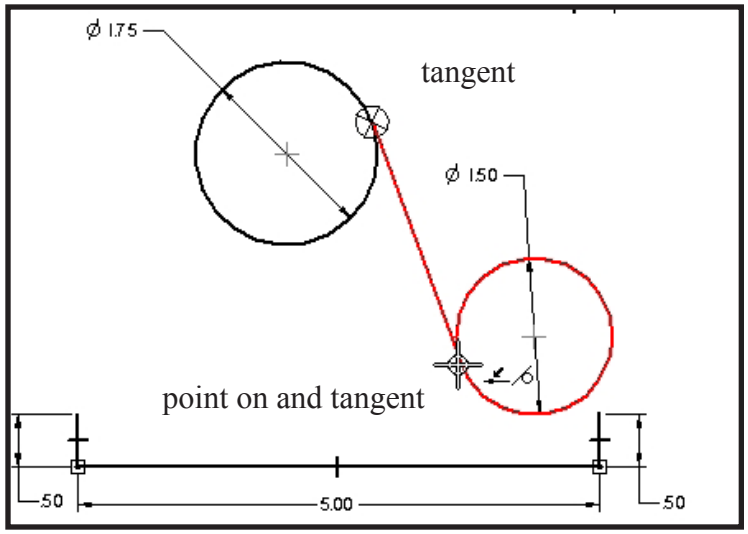
6. Click the Grid Icon to turn ***off*** the grid temporarily. *(Grid must be turned off to avoid a conflict with "grid snap" during the next construction).*

Pop down Tools.....
Intellisketch.

Make sure Tangent and other settings are invoked as shown,

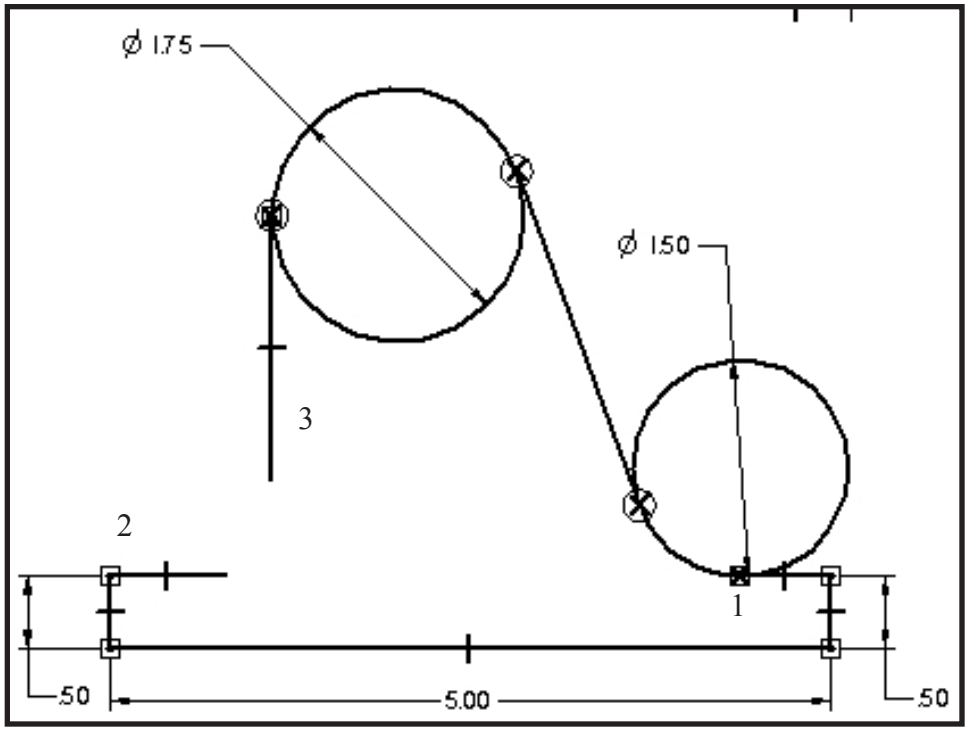




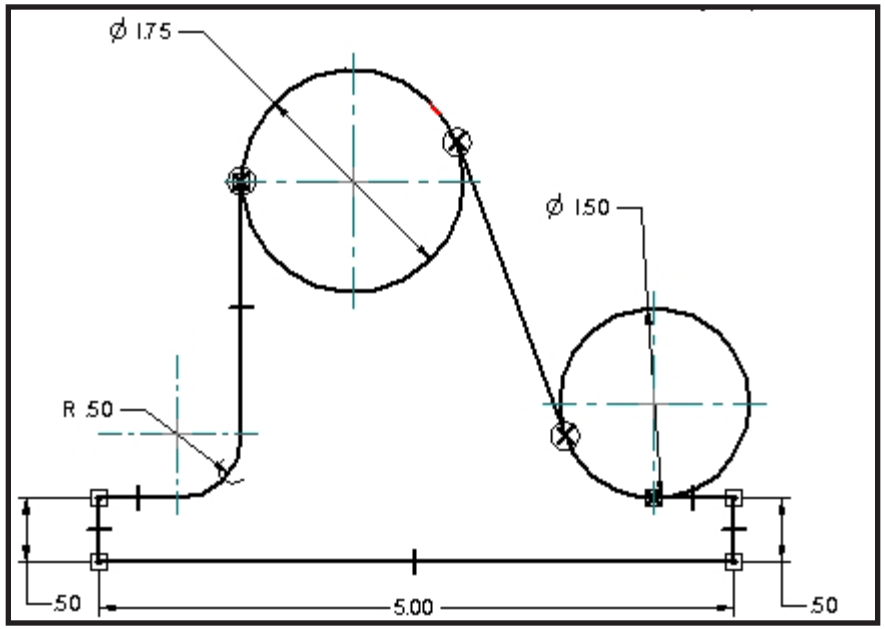


7. Draw the line tangent from the top circle to the lower left side of the bottom circle as shown. Watch for the "point on" and "tangent" indicators as you click to set the line.

8. Draw line 1 tangent to the bottom of the lower circle
   Draw line 2 any horizontal length.
   Draw line 3 vertical, tangent to the upper circle, any length.



9. Select Fillet
Set the fillet radius to .50
Click Line 2, Click line 3 to complete the shape.



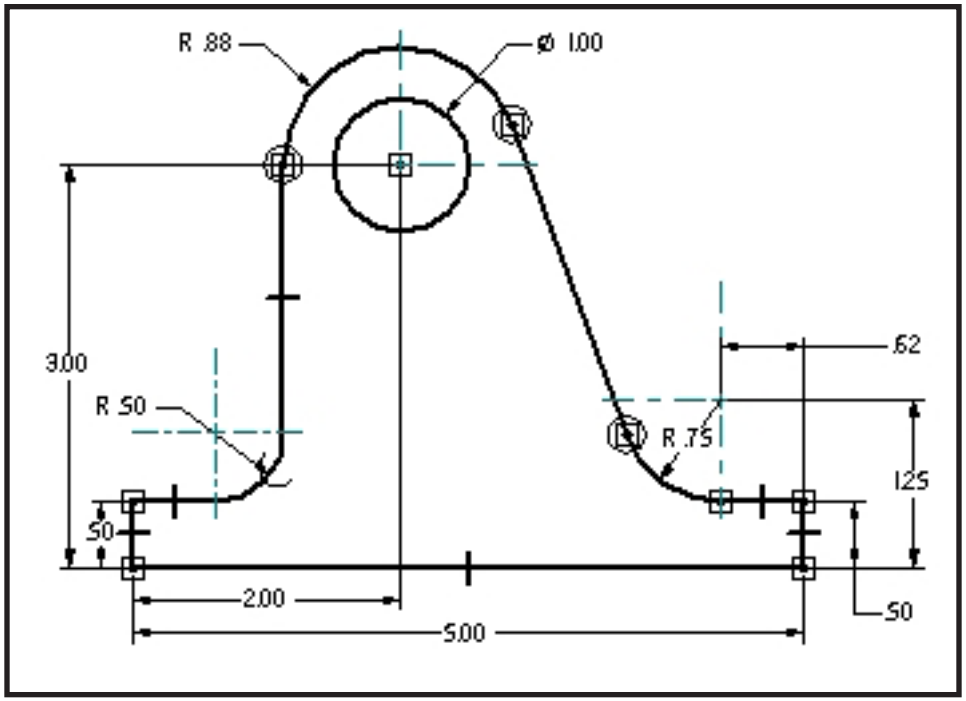
10. **Trim** the circles as shown.

Erase the diameter dimensions. Use SmartDimensions to place the radius dimensions.

Draw the 1.00 diameter circle.

Place Center Lines for circles and arcs.

Dimension the drawing as shown. Use Distance Between to place the .62 and the 1.25 dimensions. (See below).

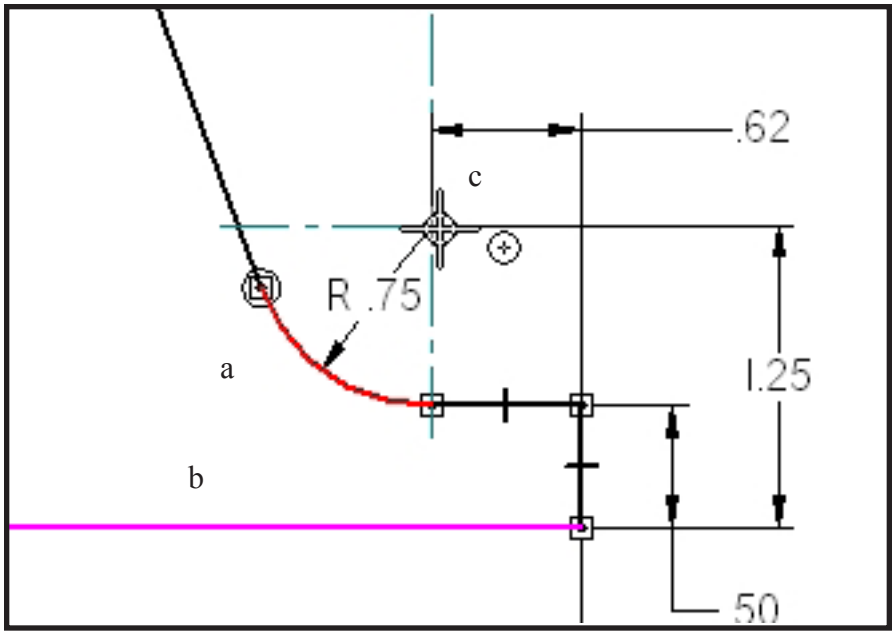


Note: Placing the 1.25 dimension:
(The way you move the mouse is critical)

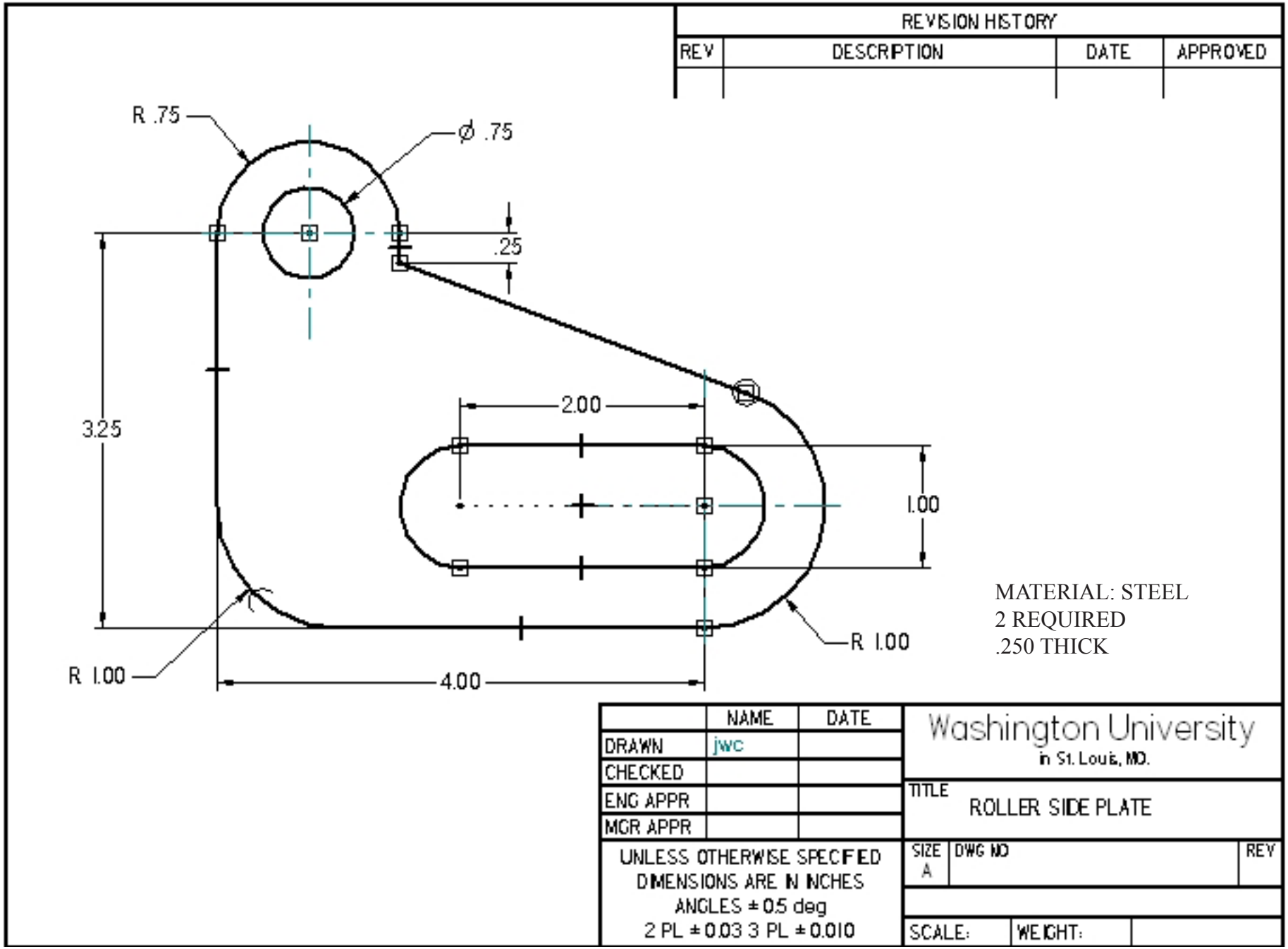
- Select Dimension .... "Distance between"
- Click bottom line "b"
- Move the mouse slowly across arc "a" - it will highlight.
- Move the mouse to the arc center "c" and click when the center icon "+" appears.
- Move the mouse to position the 1.25 dimension.

Place the .62 dimension in a similar manner.

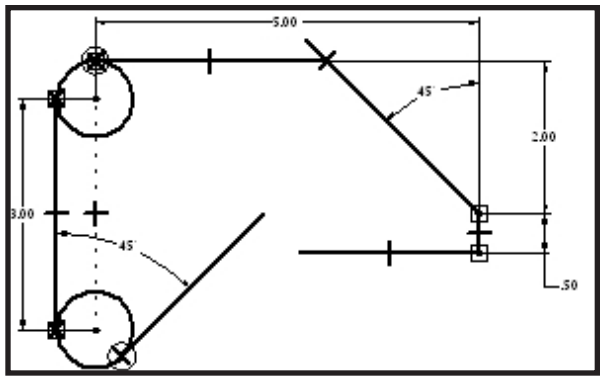
__Put your name on the drawing using the text icon
__ Save the drawing
__ Print the drawing
End of Tutorial



Exercise 1. Layout and dimension the part as shown.



Exercise 2. Layout and dimension the part as shown.



REVISION HISTORY

REV	DESCRIPTION	DATE	APPROVED

Ø .44
2 PL.

5.00

45°

R 2.00

2.00

3.00

45°

.50

R 2.00

R .50
2 PL.

MATERIAL: BRASS
1 REQD
THICKNESS: .030 IN

	NAME	DATE
DRAWN	JWC	
CHECKED		
ENG APPR		
MGR APPR		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
ANGLES ± 0.5 deg
2 PL ± 0.03 3 PL ± 0.010

Washington University
in St Louis, MO.

TITLE: SCRAPER PLATE

SIZE A | DWG NO | REV

SCALE: | WEIGHT:

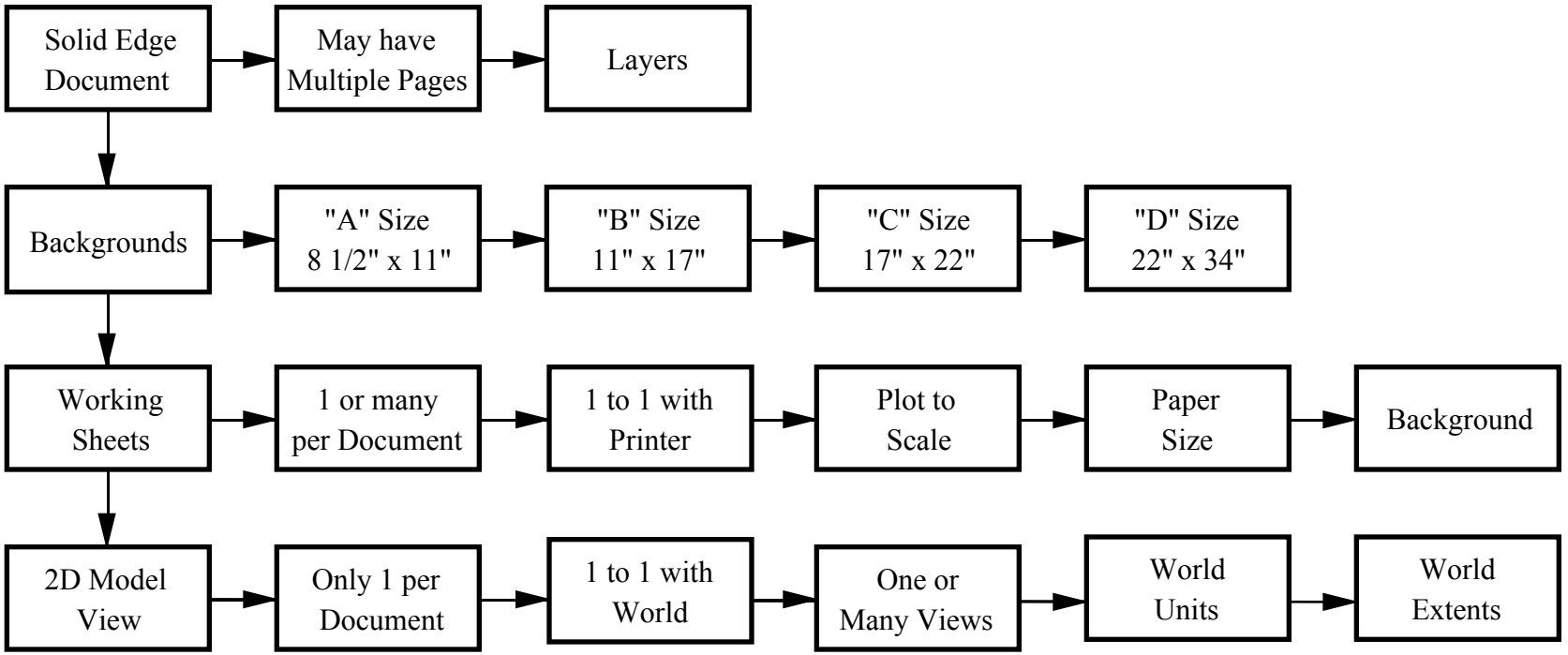
A Solid Edge **Document** is composed of the elements shown below. It may have one or many Working (printed) sheets.

▪ Views are drawn actual size on the 2D Model View page.

▪ Working Sheets are formatted from the views on the 2D Model page and combined with Backgrounds.

▪ Views may be plotted to accurate scales.

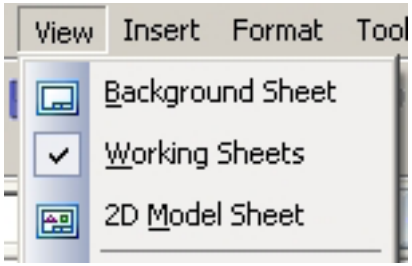
▪ Drawing elements may be organized using Layers.

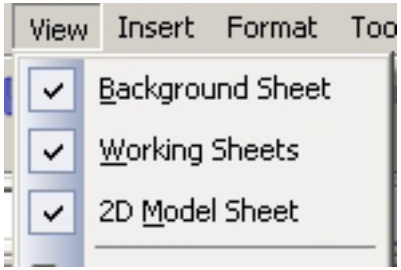


In the previous chapter drawings were created directly on Working Sheets because they fit at 1=1 scale. Many drawings are much larger (or smaller) than the drawing paper so a way is needed to scale real-world sizes into the Working Sheet. The Working Sheet is set to the size of the plotter. The 2D Model View size is set to the actual size of the object(s) being drawn. A scale between the Working Sheet and the 2D Model Sheet is set. Some drawings must be plotted to accurate scale. Architectural drawings are often plotted to a scale of 1/4" = 1' - 0" or one-forth inch = 1 foot. These items must be considered closely when starting a Document (set of drawings).

To change between the different sheets, pop down the View Menu. Place a check mark in the active sheets.

Click the sheet to work on from the list at the bottom of the screen. (Working) (Backgrounds)

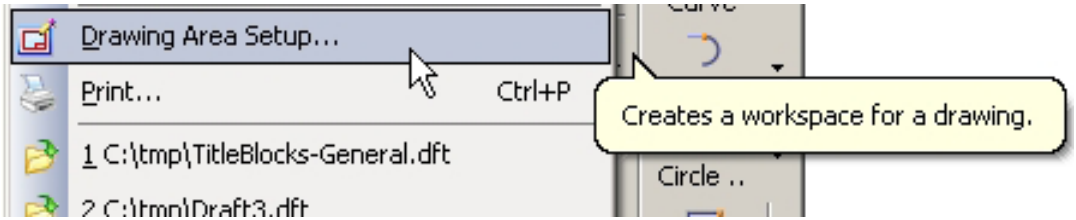




Setting the scale between the 2D Model Sheet and the Working Sheet requires planning. What final drawings will be needed? Is a standard scale required? Solid Edge uses the scale between the 2D Model Sheet and the Working Sheet to adjust text and dimension entities to assure correct sizes. These items are scaled up on the 2D Model Sheet for readability and scaled down to a precise size on the Working Sheet for plotting.

Only one scale is allowed between the 2D Model Sheet and the Working Sheets.

When the 2D Model Sheet is active (selected) then the scale between 2D Model space and Working space can be set. Pop down **File ... Drawing Area Setup**

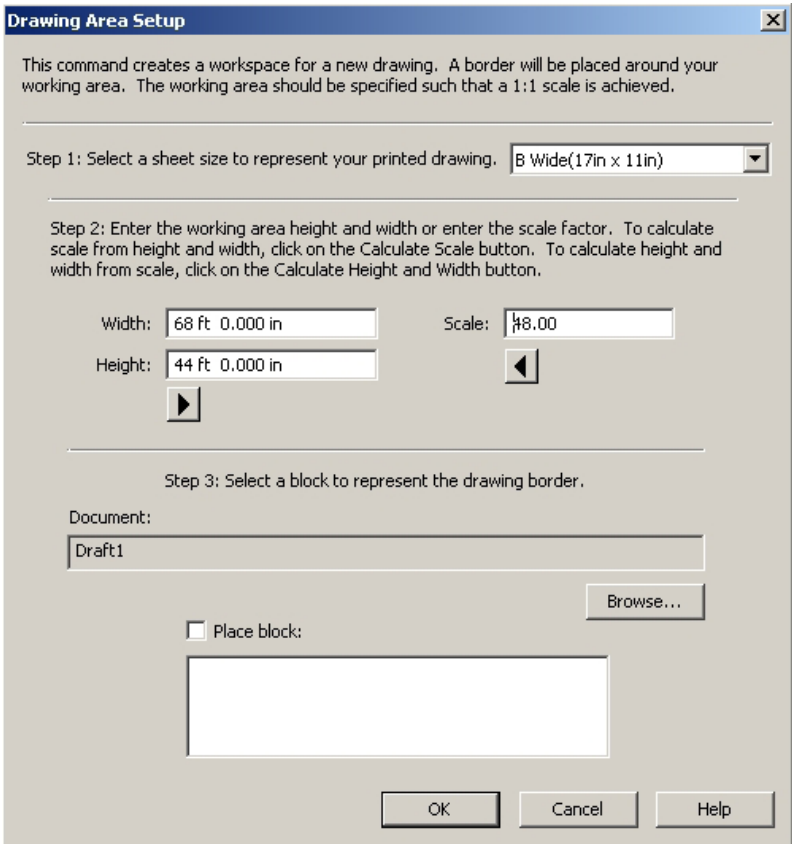


Example:
A "B- size" page (11" x 17") is to be plotted. An architectural layout using 1/4" = 1'-0" scale (1/4" = 12" { cross multiplying} = 48 scale)

The setup shows the maximum drawing area will be 68' by 44' on the Working Sheet.

All the views drawn on the 2D model sheet will be plotted at this scale.

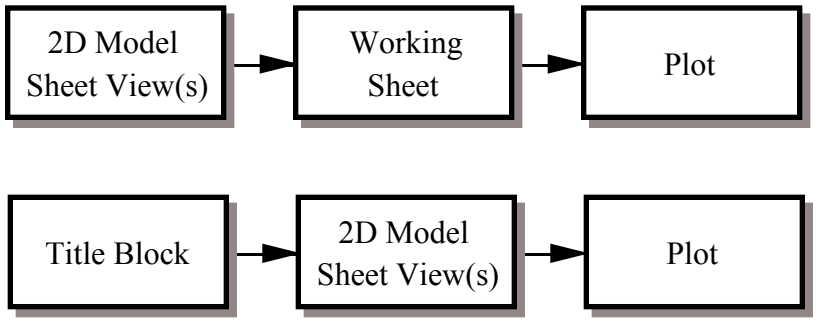
(More explanation and examples will be shown later in this chapter)



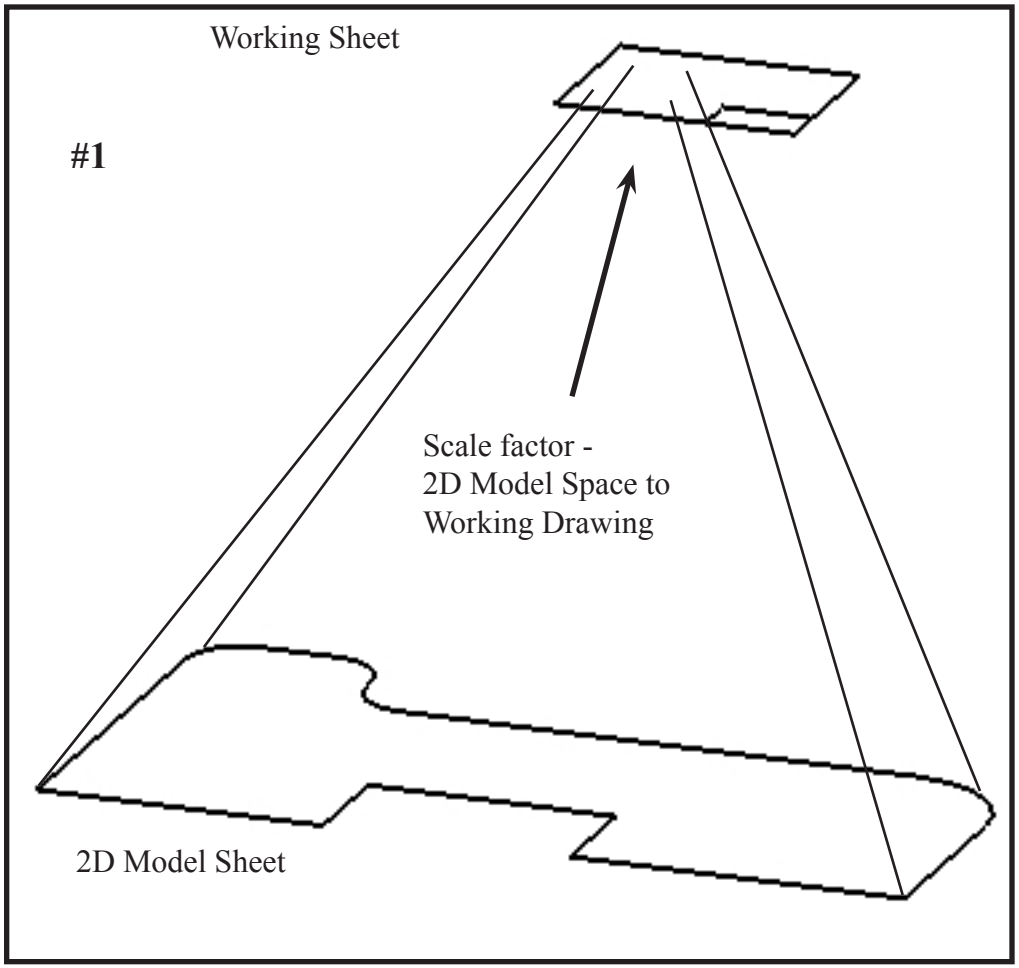
Two ways of combining working sheets (title blocks) with 2D Model Sheet views are used:

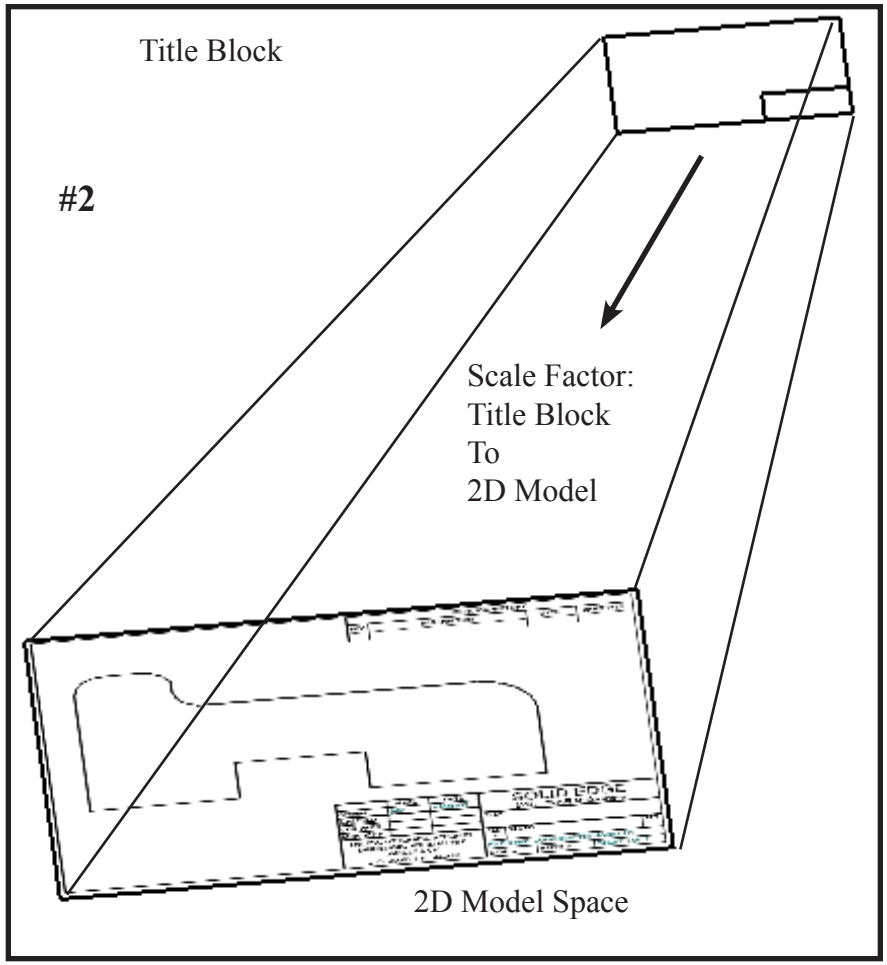
1. Scale the 2D Model View into the Title Block and plot 1=1 with paper size.

2. Scale the Title Block into the 2D Model View and plot 1=1 with paper size.



Each of these methods and more examples will be shown later in the chapter.





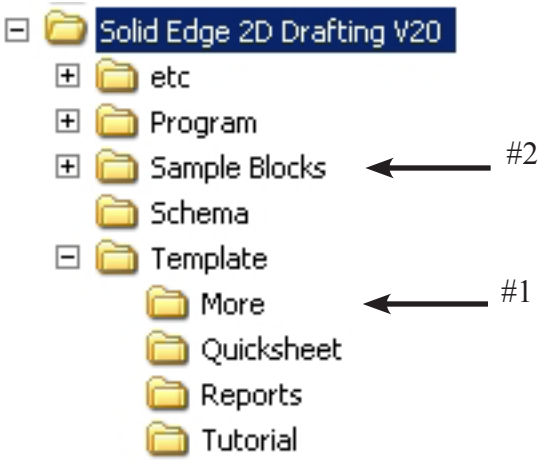
After installing Solid Edge one of the first jobs is to set up the Title Blocks to reflect the company name and preferred startup settings.

A title block is needed for each paper size to be used.

Title blocks for method #1 (previous page) are located in the **More** folder.

Title Blocks for method #2 (previous page) are located in the **Sample Blocks** folder.

C:/Program Files ....



Note: Copy title blocks from existing folder to a temporary folder for editing.
Do not edit or change the existing title blocks.

Title Blocks for Metric drawings are set for Metric paper sizes and are not used in the USA. These are denoted as A0, A1, A2, A3, A4 etc. These sizes may not work with USA printers as the paper is a different physical size.

Title Blocks for USA paper sizes are denoted as A-sheet, B-sheet, C-sheet, D-sheet, etc.

A= 8.5 x 11 inches
B= 11 x 17 inches
C= 17x 22 inches
D=22x34 inches
etc.

Customizing Title Blocks

Solid Edge comes with standard title block forms drawn in accordance with ANSI recommendations. (American National Standards Institute). Each company will customize the title blocks to contain company names and specific information. Every person starting a new drawing will access *company specific* title blocks to begin the layouts.

Items which may be set include:

Background Sheet
- Company Name, address etc.
- Tolerance Block
- Lines and text

(Fixed information that displays when title block opens).

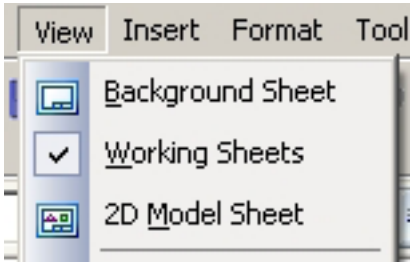
Drawing units
Text Fonts
Dimension styles
Layers

2D Model Sheet
- Real world extents.

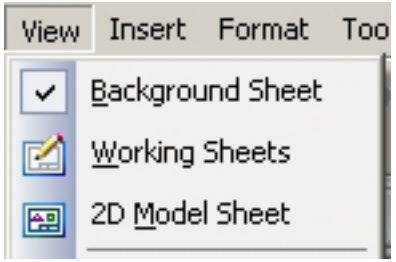
Note: Changing one sheet in the set does not change all sheets. They must be changed individually.

View Menu

When the title block is displayed "Working Sheets" is set.
Lines and text on the title block cannot be changed.

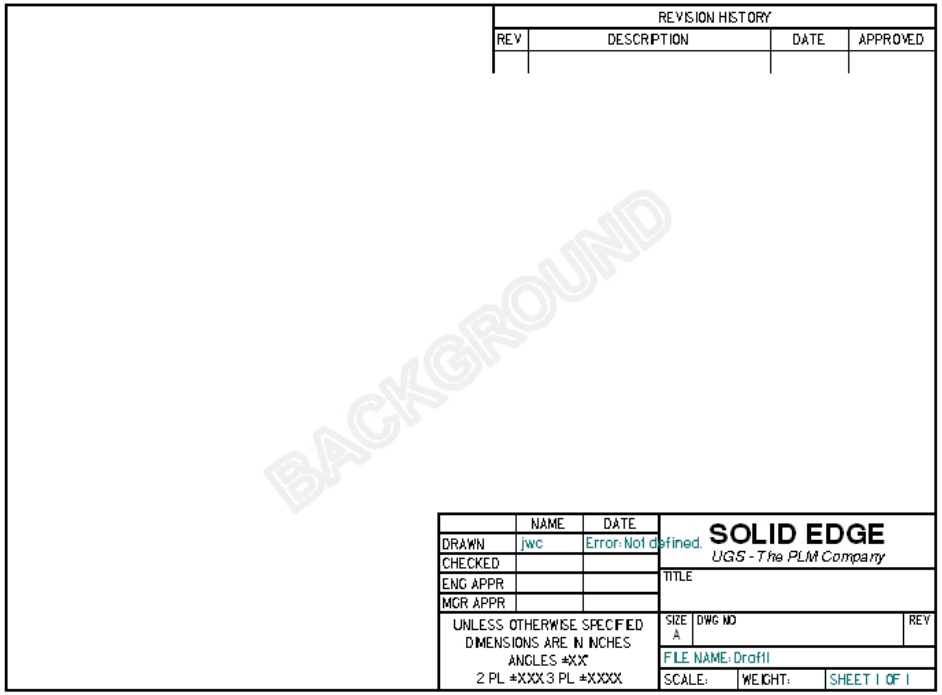


To modify the title block, turn off Working Sheets and turn on "Background Sheet"



The display will change to "Background".

Lines and text may now be edited.

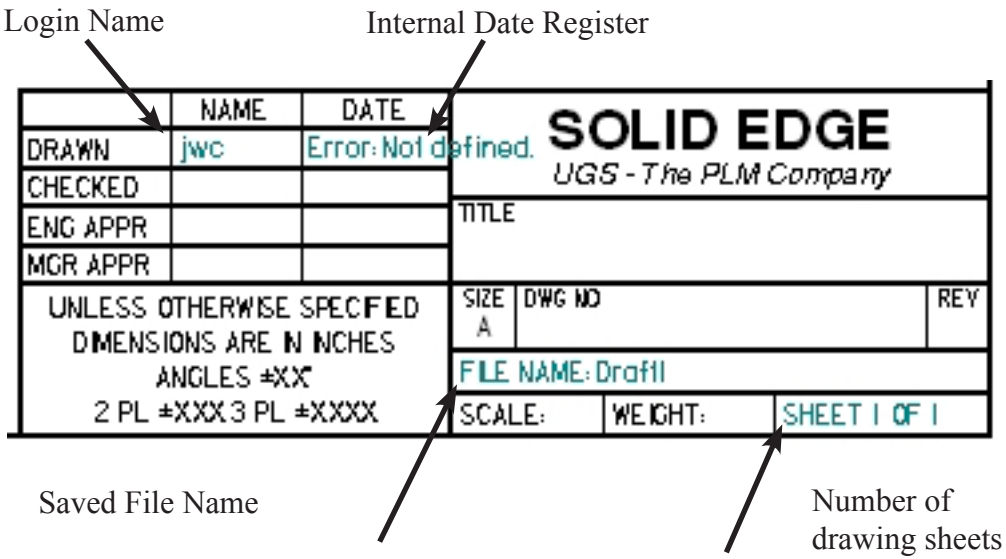


Property Text

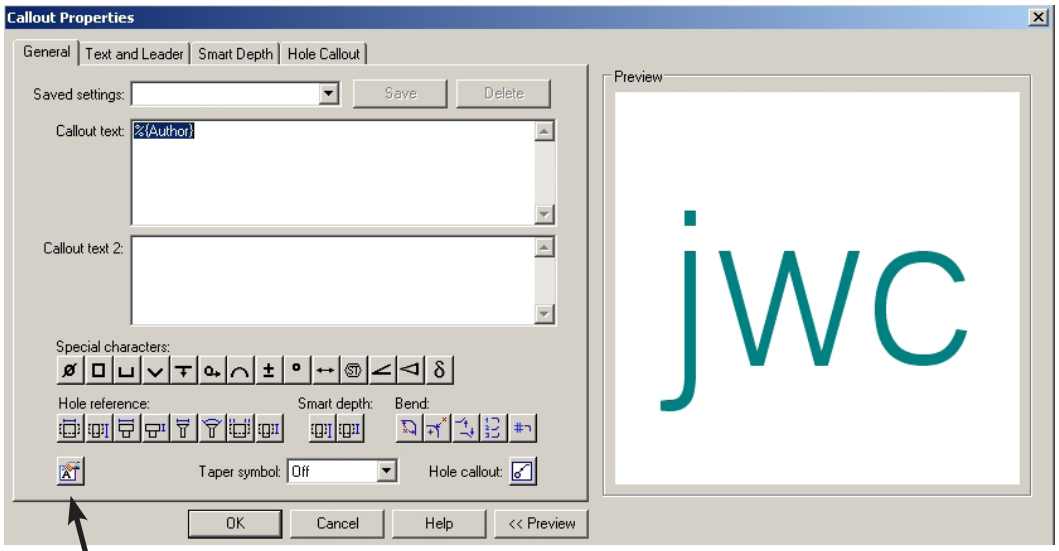
Solid Edge title blocks have areas that will automatically fill in text. These are generated from internal computer data and are accessed using “Property Text”. Some data is input after the sheet is saved because that is the first time the data is available.

The System Manager for a drafting office is usually responsible for setting up more complex features like this.

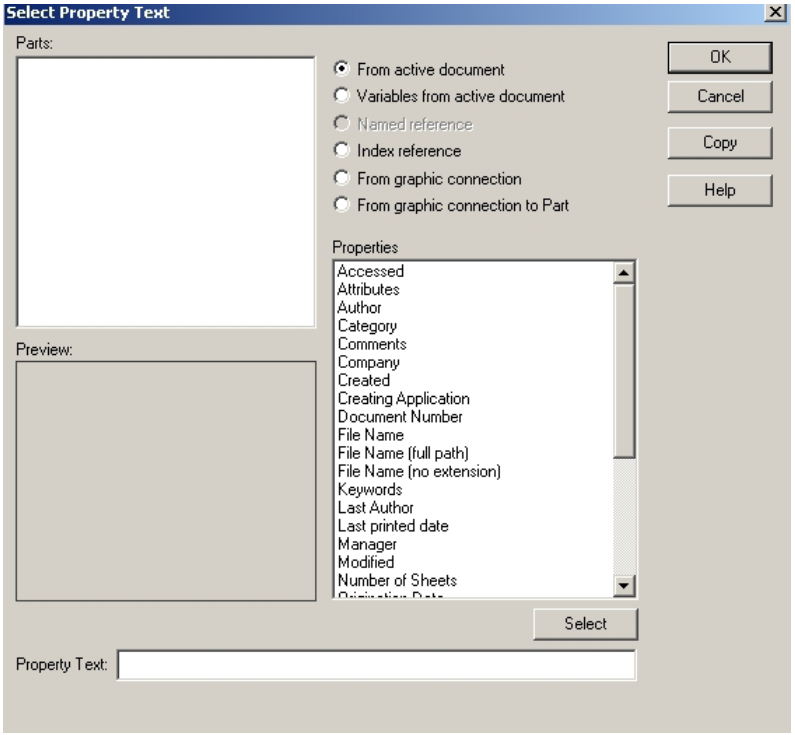
For these exercises. the Properties text items can be or kept or erased - user preference.



Property Text to automatically fill in title block data



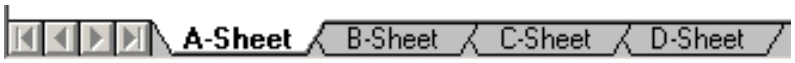
Turns on Property Text Listing



Property Text Variables

When the background sheet is displayed, information in the title block may be changed.

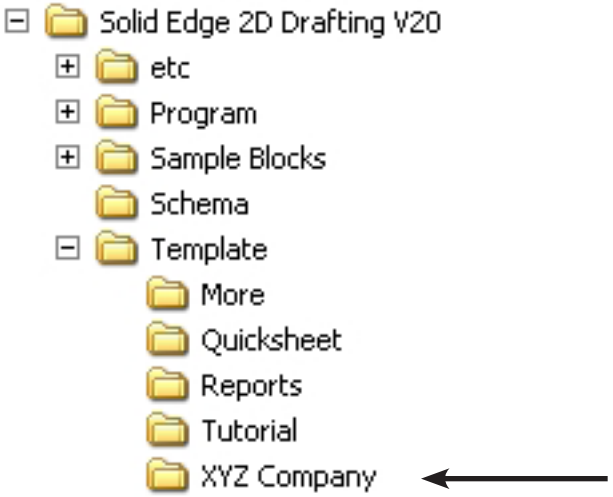
Double-click on the text and edit the text.



Each sheet in the entire set must be changed.

SAVE the new set as a different name in a new folder.

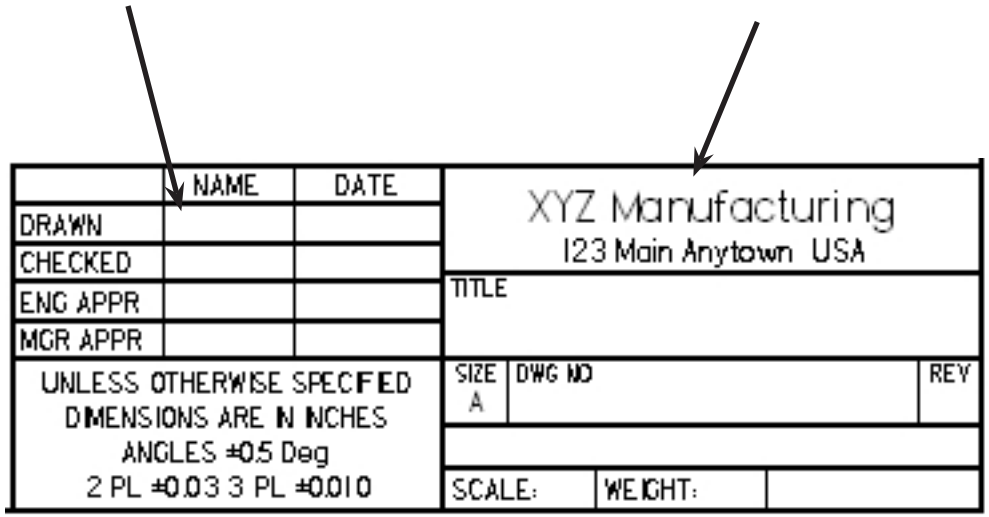
C:/Program Files



Create New folder for modified title blocks

If this is your personal title block, you can add your name permanently

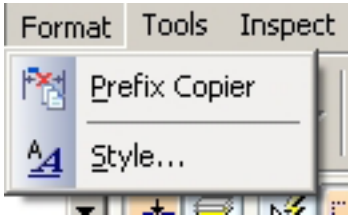
Change Company name



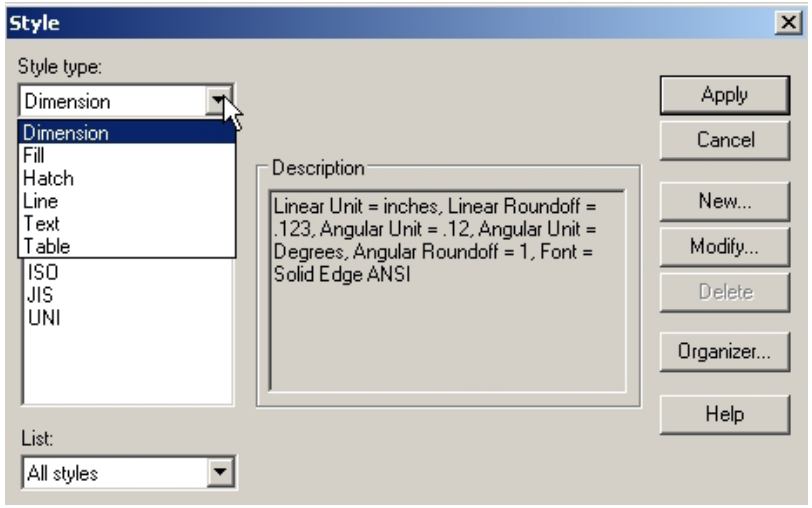
Change Tolerance Block information to company preferences.

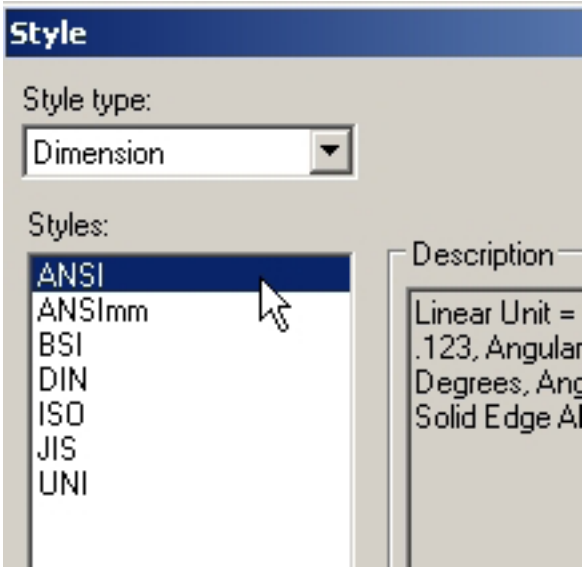
Tolerances shown:

Two decimal places = +/- .03 IN (thickness of a dime)
Three decimal places = +/ .010 IN (5 pieces of paper thickness)



Settings for a
Decimal Inch Title Block





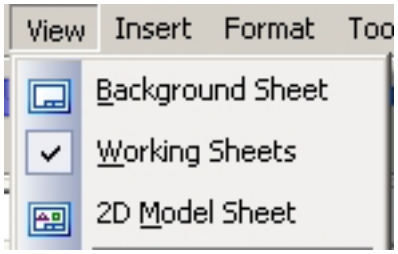
Starting a document with preferred settings saves time.

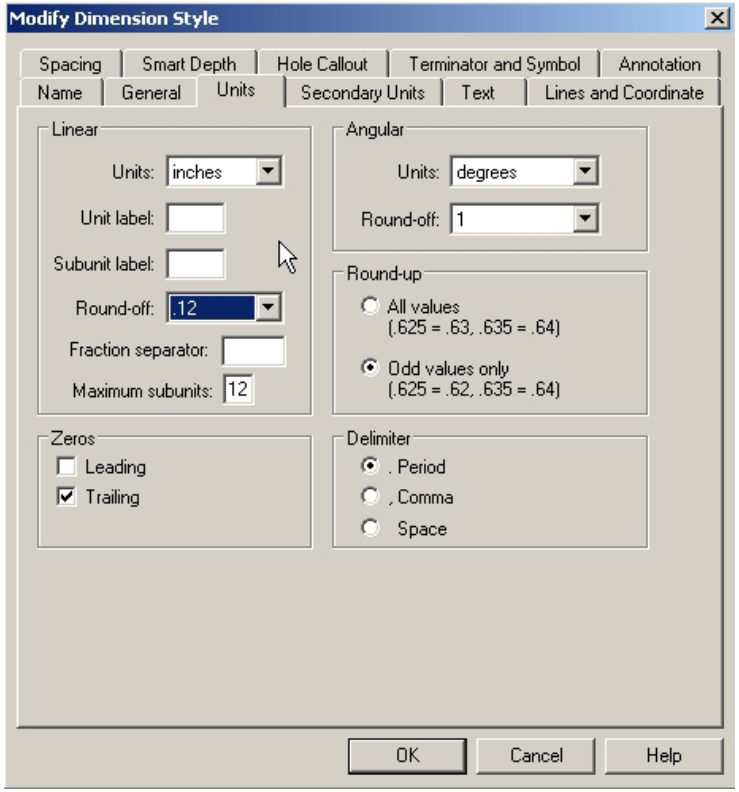
The **Format .... Style** menu opens dialog boxes for setting a number of preferences that may be saved with the title blocks.

Two decimal place dimensions are used for non-critical sizes. The example shows the sequence for setting.

Other items include text style, etc. Care must be used in choosing a non-standard text style font. Loading a drawing with a different font on a computer that does not have that font may cause loss of text.

When all changes have been made to every sheet, turn on Working Sheet, turn off Background Sheet and save the new templates to the new folder.



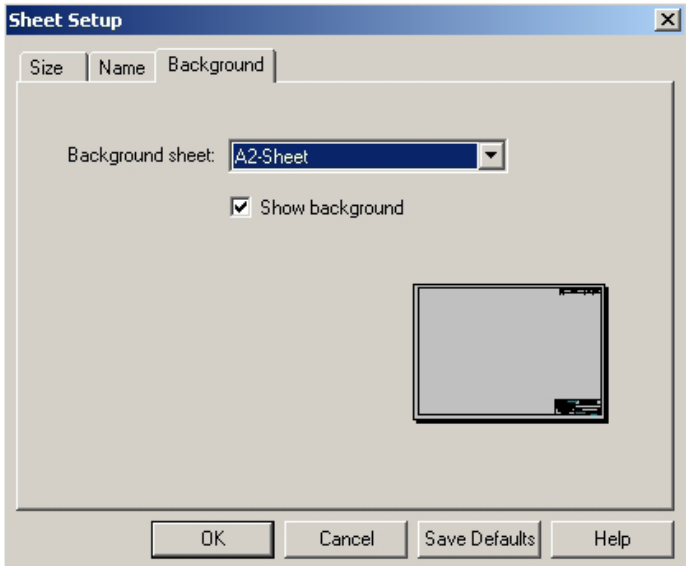


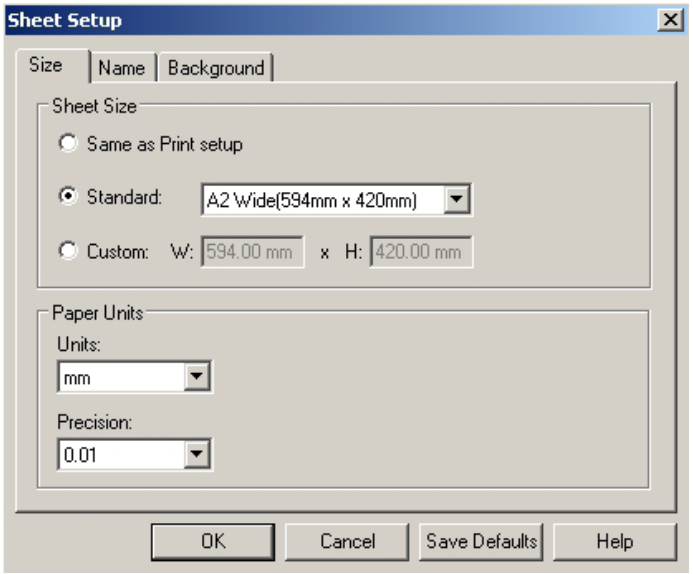
Starting a **Metric** template will set the units to milli-meters *but will also set the paper and background sizes to metric.*

In the USA borders and paper sizes need to be set to USA standard sizes. Some printers will crash if a "non-standard" drawing size is printed.

To work in USA metric units, modify the **normeng.dft** templates to reflect metric dimensions. (2 settings)

Units = millimeters
Precision = 0.12

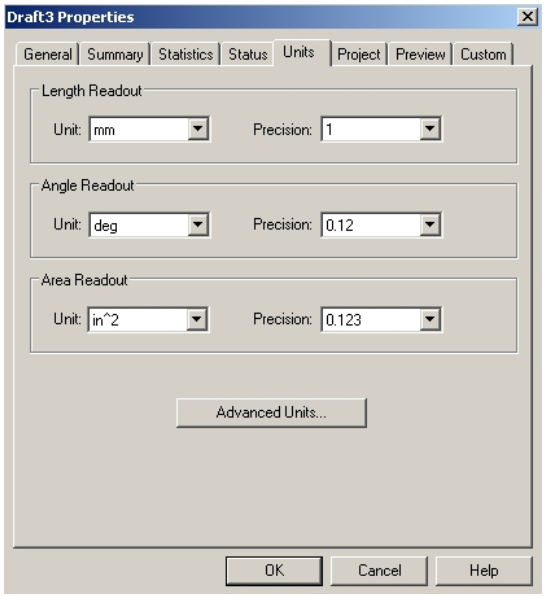


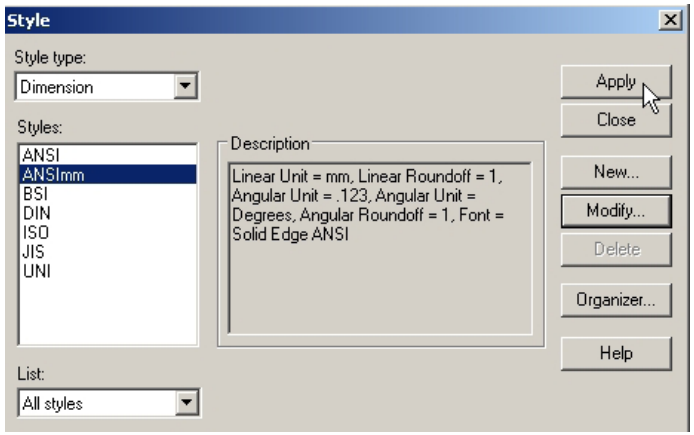


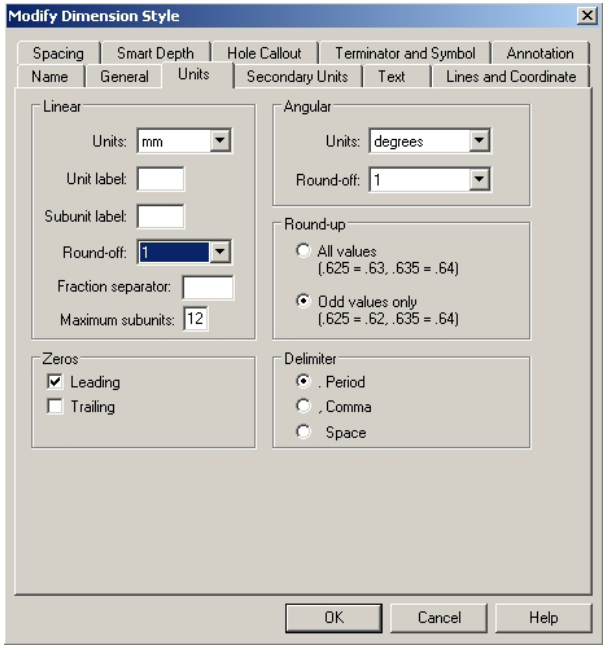
1. Pop down **File... File Properties**
   Set **Units** to **mm, Precision to 0.12**
2. Pop down **Format ... Style**
   Select **ANSI MM**
   Set **Roundoff = 1**

Apply the new settings

Note: You could also modify the ANSIMM.dft templates.



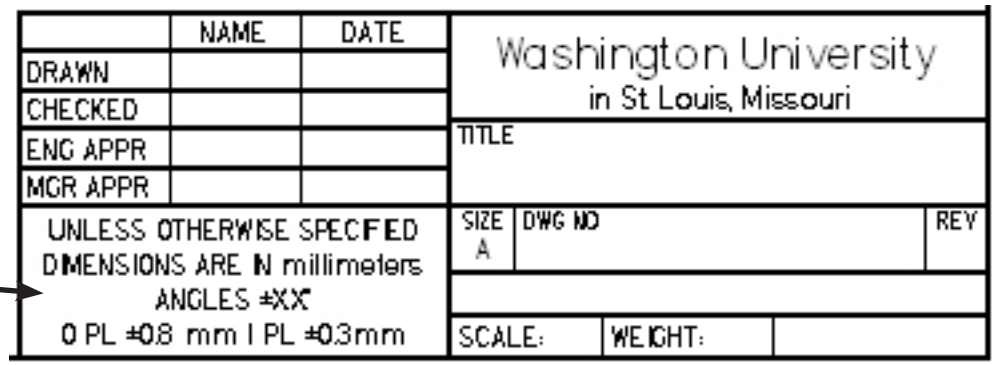




Change the Title Blocks

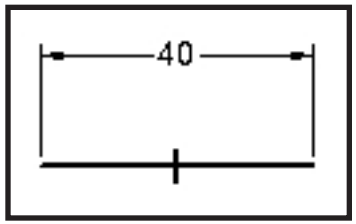
Change all the Background Sheets

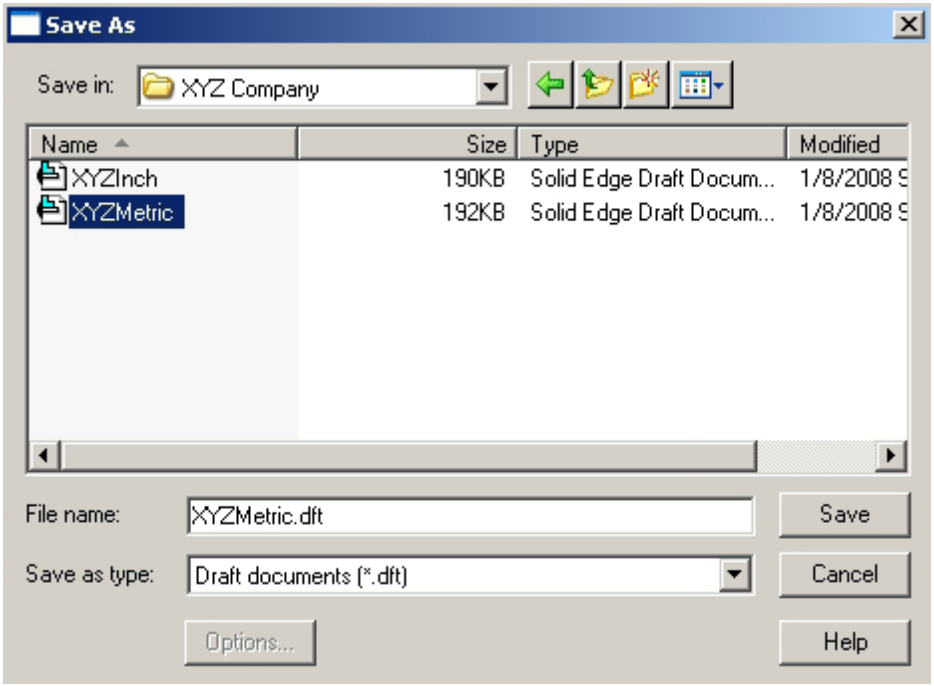
Type in metric information



Save As the new title block template files.

- Ribbon Bar now will display in millimeters
- Dimensions will be in millimeters





Architectural Templates may also be constructed from the **normeng.dft** templates. Units should be changed to feet and inches and roundoff might be set to 1/16”

1. Pop down **File ... File Properties**

- Set Units to ft-in
- Set precision to 1/16”
- Set Area Readout to sq ft

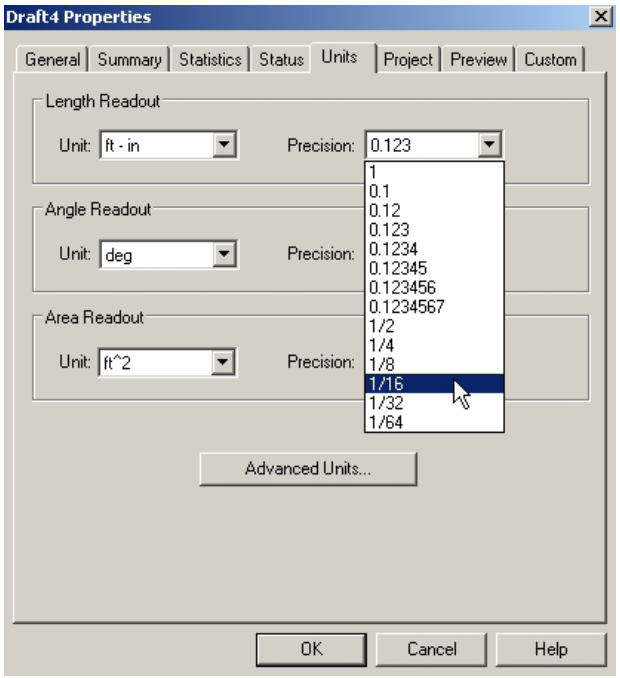
2. Pop down **Format ...Style**
ANSI

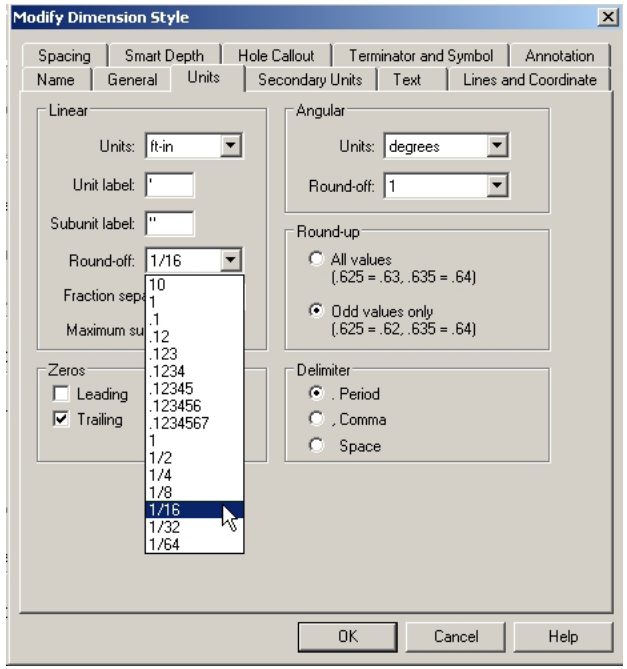
- Set Units to ft-in
- Set Units Label to ‘ (single quote)
- Set Subunits label to “
- Set Precision to 1/16”

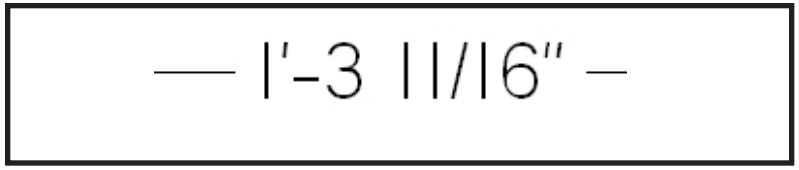
Apply the settings.

Ribbon Bar will now read in feet , inches and fractions.

Dimensions will display feet, inches and fractions.







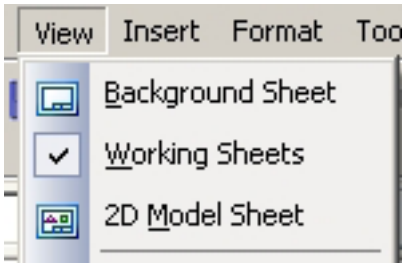
Modify the title block.

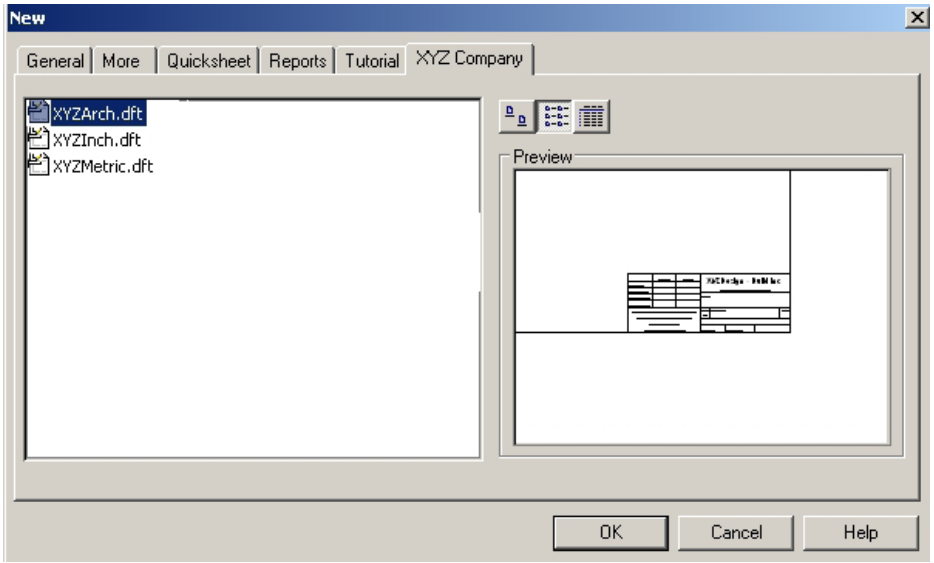
Modify Tolerance block.

	NAME	DATE	XYZ Design - Build Inc 123 Main Anytown USA
DRAWN			
CHECKED			TITLE
ENG APPR			
MGR APPR			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN FT- IN ANGLES ± 1/2° Tolerance +/- 1/32"			SIZE A | DWG NO | REV SCALE: | WEIGHT:

Modify each title block for each sheet size.

Set **View ... Working Sheet**





Save As the new title block templates.

The second method is to insert a Title **Block** into 2D Model space. Terminology gets confusing here. The previous pages involved modifying *drawings of standard forms* referred to as *Title Blocks.*

In order to insert a standard form into 2D Model space the form must be converted to a **Block**. **Blocks** are lines, text and graphics which are converted to be a single entity. (See chapter on Symbols and Blocks).

As shown in the previous pages, the sample blocks must be edited and re-saved to reflect company names and settings.

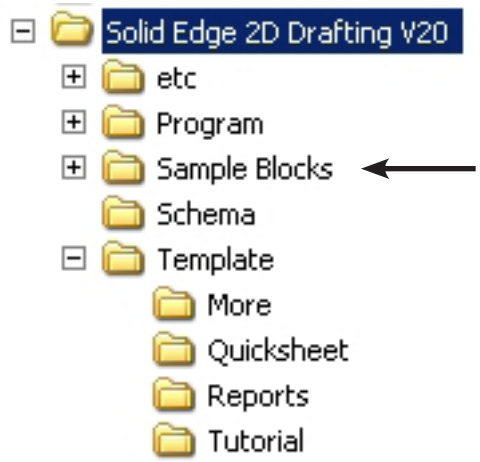
Copy the **Sample Blocks** folder to a temporary folder for editing.

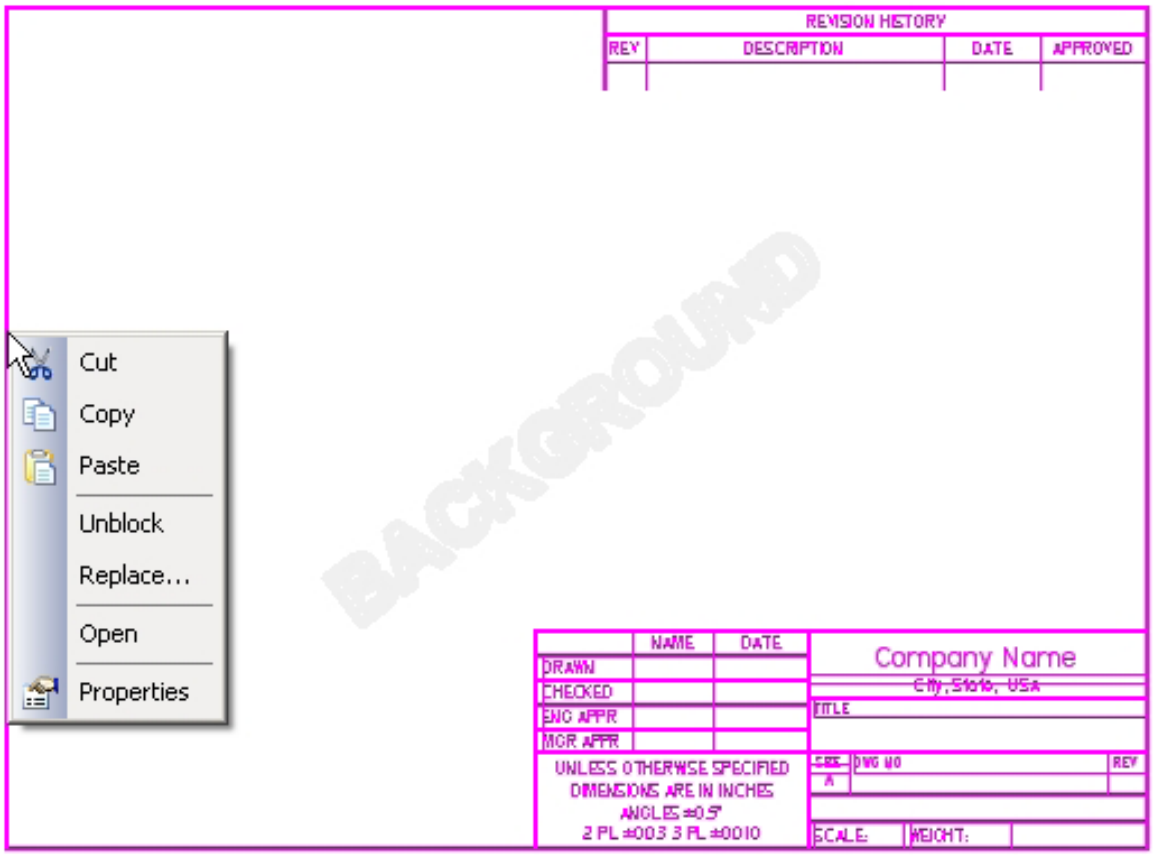
We may need to modify and create new **block**s of each size for decimal inch, metric, architectural measurements as shown in the previous pages.

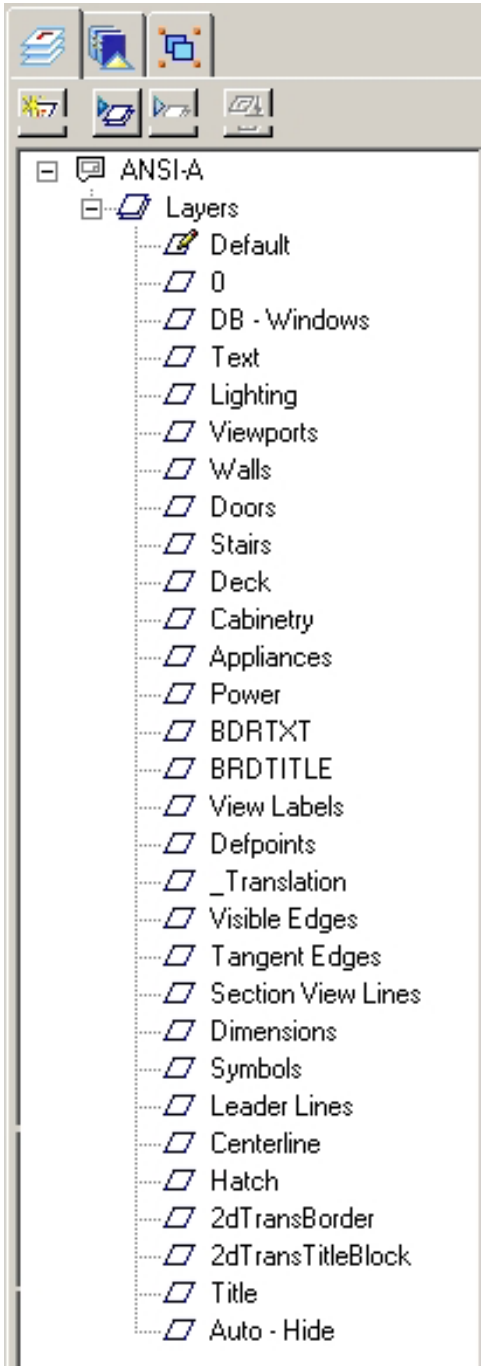
To edit a block, it must be **un-blocked** so individual lines and text can be changed. Then, it must be **blocked** again for inserting to 2D Model space.

- Set the view to Background.
- Right-click the title block.
- Select Unblock

- Make changes (text, units, etc. per previous pages).







These Title Blocks have a number of **Layers** associated. Certain information is drawn on specific layers to help separate data. Drawings can get very crowded with objects and text.

Layers may be set to display or not. Different drawings for different purposes may be plotted from master documents.

For example, a plumber may only need to see walls, cabinets and plumbing. Electrical, roof and other information is not needed.

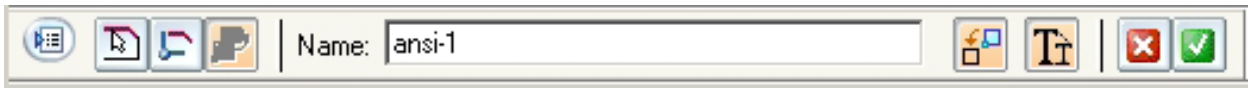
New Layers may be added as needed.

Double-click a layer name to make it the current layer. All elements drawn will "live" on that layer. Only one layer may be current at a time.

Right-click a layer name to **Hide** or **Show.**

When all changes have been made to the lines and text, select the Block icon.

- Window the entire block and alignment arrows.
- O.K the selection
- Pick the lower left corner for insert point.
- Set the name and OK.



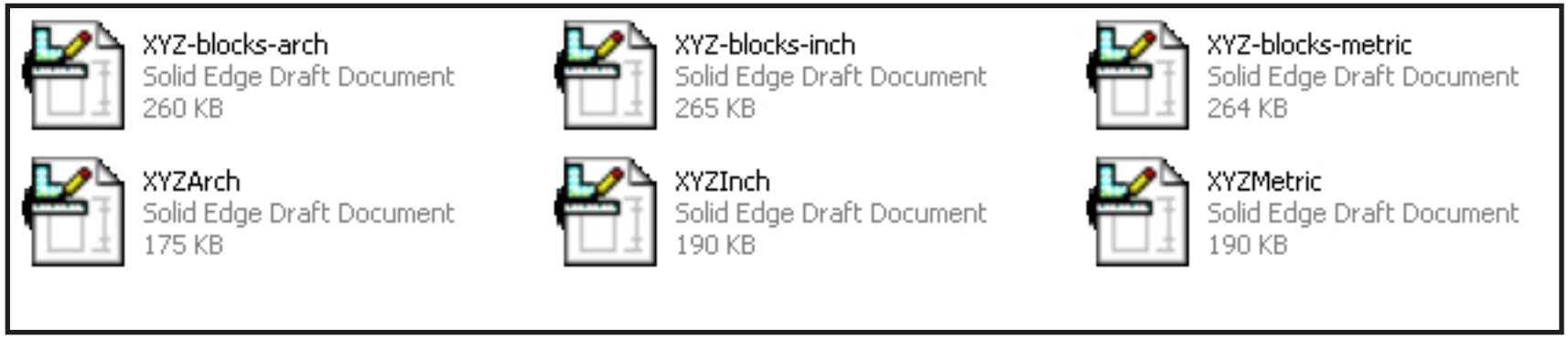
Edit all the ANSI title blocks and save the set.

Edit again for metric if needed.

Edit again for architectural if needed.

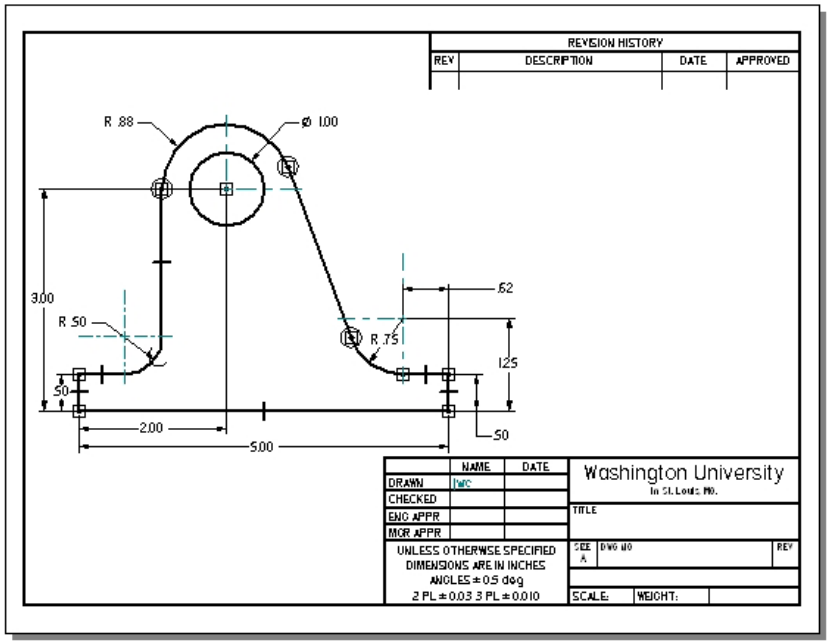
The title blocks folder for XYZ company might have the following files:

- XYZ-blocks for inserting into 2D Model Sheets
- XYZ title blocks with Working Sheets .
- Each set would have A-size, B-size, C-size and D-size title blocks.



Small objects may sometimes be drawn directly on one of the Working Sheets.

This was the way the drawings were made in Chapter 2.



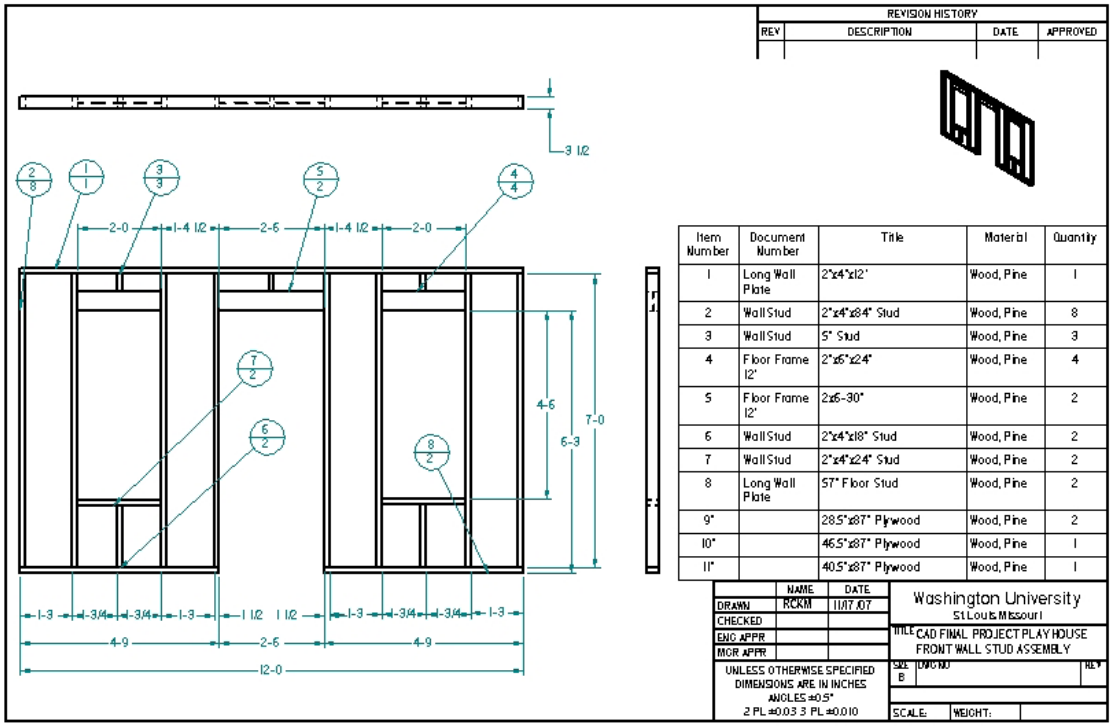
Large objects should be drawn in 2D Model space at a 1=1 scale with the real world.

Before starting a large object drawing decide:

- What Units will be used for measurements?
- What size paper will be used to plot the drawings?
- Maximum size of view(s) to be placed on a sheet.

From this information, decide on a scale setting for 2D Model Space in relation to Working Space.

- Is “Standard “ scale needed or do we just need a good fit for the views?



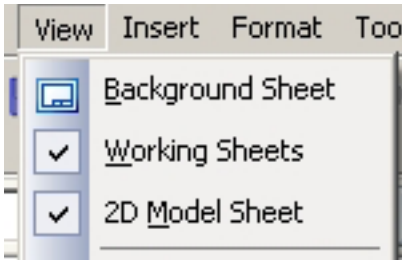
Method #1. Inserting 2D Model Views into a Title Block.

The 2D Model Sheet is a very large page. Many views may be drawn on this sheet. Views are selected by windowing then pasting onto a title block at the correct scale.

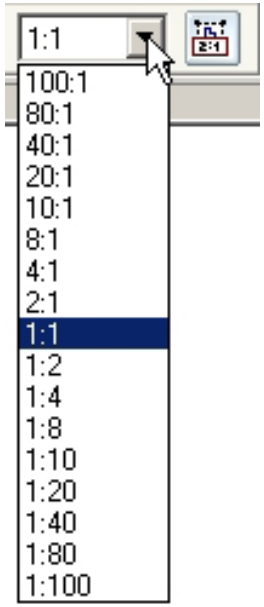
A scale between the drawing views and the title block must be set because the scale controls text height and dimension entities. Only one scale may be used per document.

Some drawings require an accurate "standard" scale while other drawings only need to fit the views on the page. Solid Edge has some standard scales built in while others must be calculated.

When working on drawings, be sure to turn on both Working and 2D Model sheets.



At the bottom of the screen, click to select the sheet to work on.



Standard Scales

These are often used in Civil Engineering and Metric drawings.

Calculated Scale

A common architectural scale is:
1/4" = 1'-0"
(1/4 inch on the title block = 1 foot)

1/4" = 12" (cross multiplying), 4 x 12 = **48**
2D Model space is set 48 times larger than Working space.

Inserting 2D Model space views into Working space: Scale factor is 1/48

Tutorial. Start a new drawing.

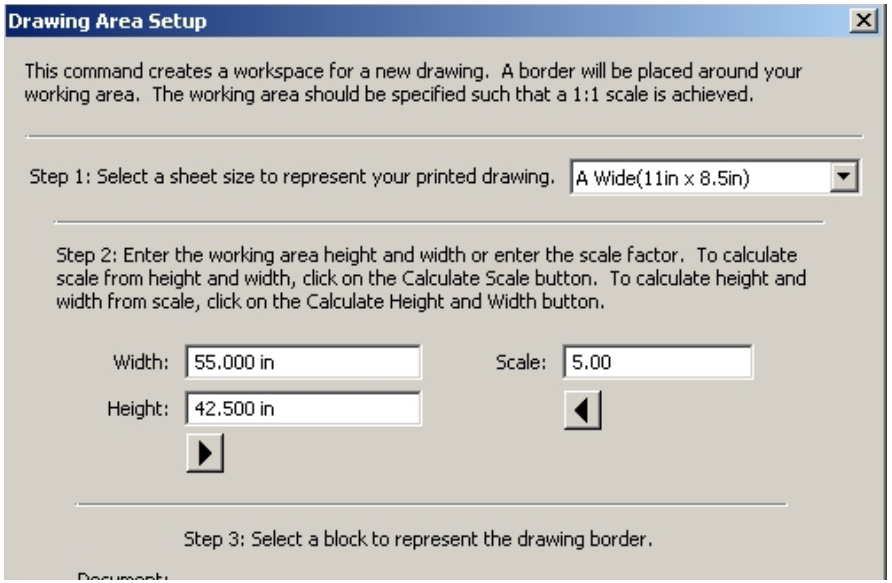
1. Select a **A-sheet** Title Block

2. Select **2D Model Sheet**

3. Pop down **Files**
and select
"**Drawing Area Setup"**

4. Set the sheet size to be plotted.
(A wide 11 x 8.5)

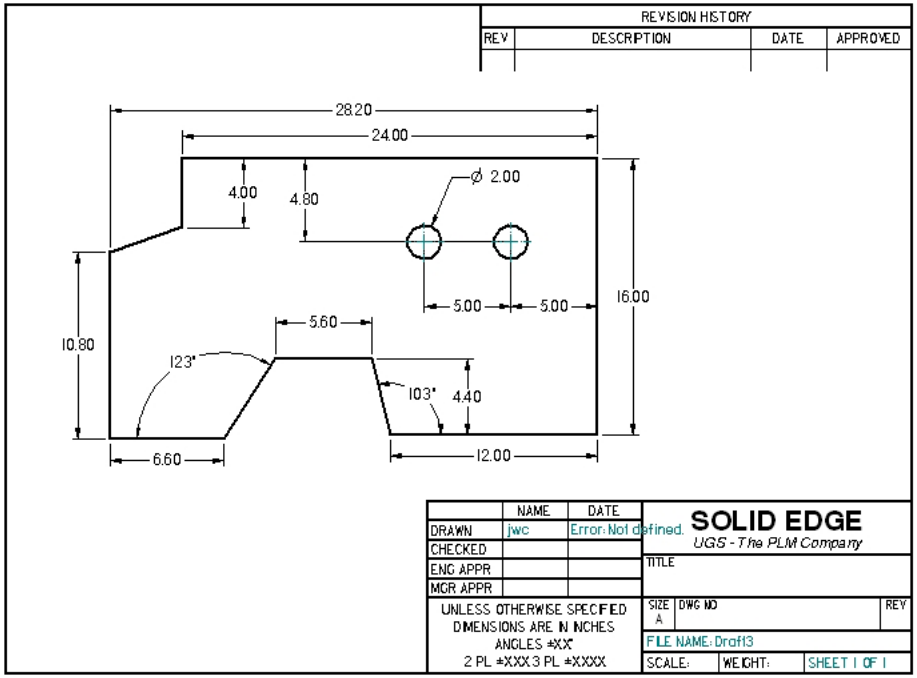
5. Set the scale to 5.00. Press **Enter.**
This is not a standard scale.

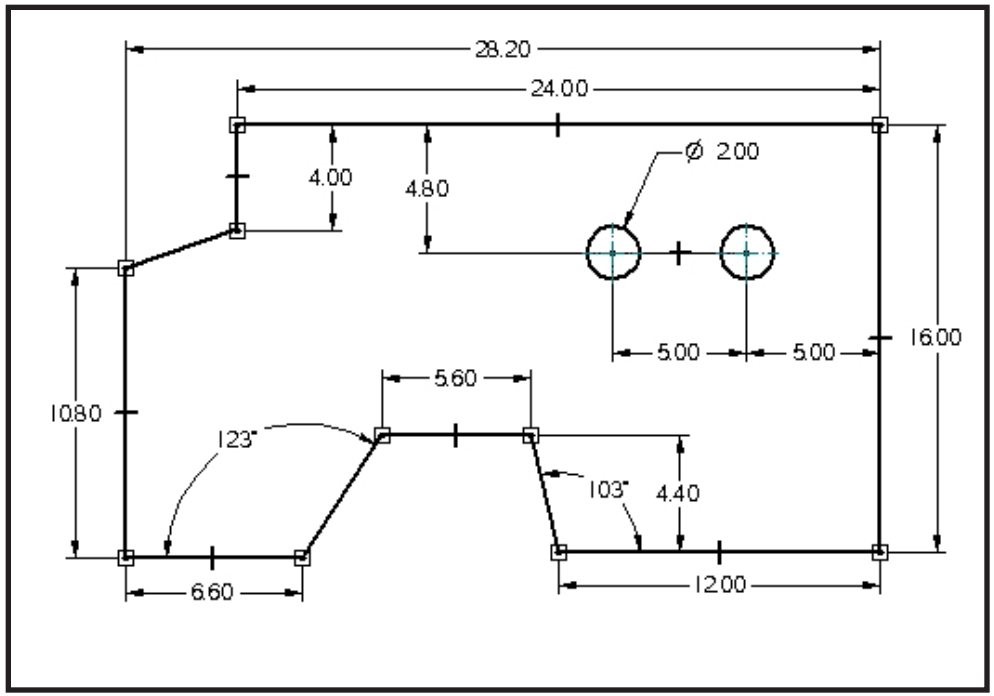


The working area displays.

6. Make the drawing shown at the right
in 2D Model space.

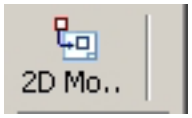
Save the drawing





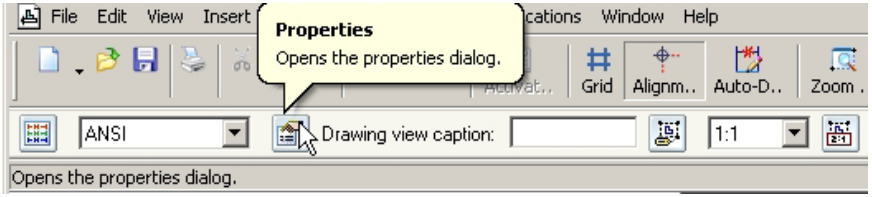
7. Go back to Sheet 1

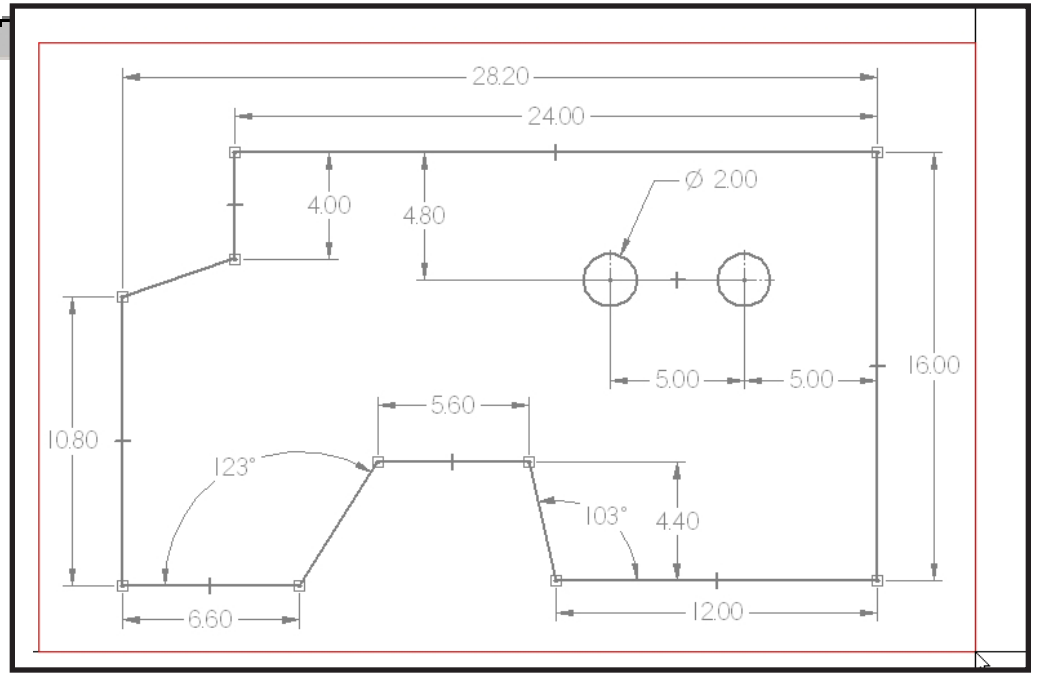
8. **Select**
Place 2D Model View icon



9. Window the drawing in
2D Model space.

10. *This is not a standard view size.*
Select **Properties**.

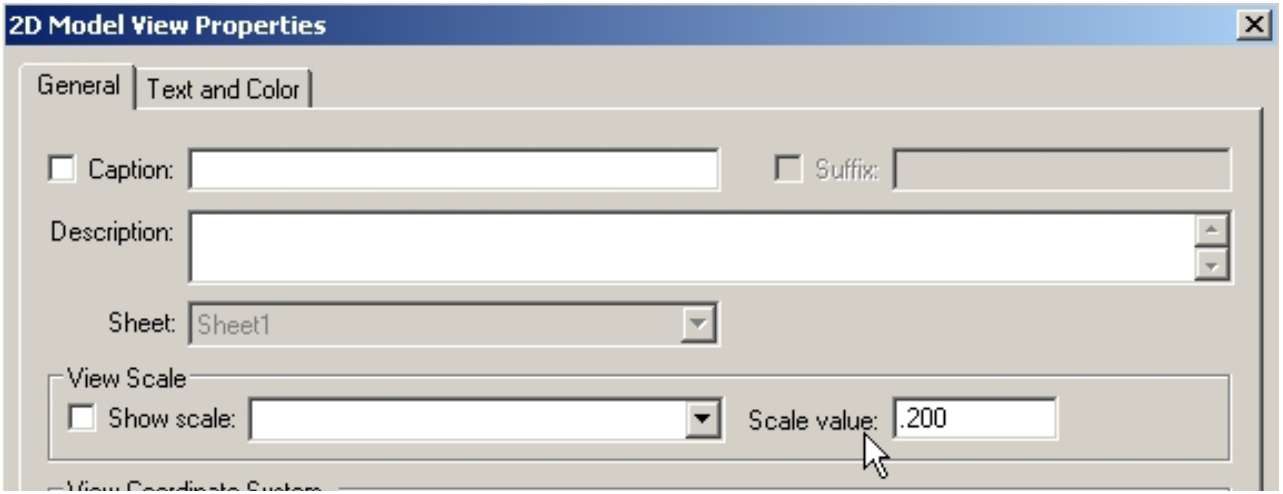




11. **Set the Scale Value to .200**

(2D Model space was set to a scale of 5.000. To insert the drawing, the scale must be 1/5 or .200).

This will make the text height and dimensions the correct size on the A-sheet when printed.



Save the Drawing

12. Select **Print.**

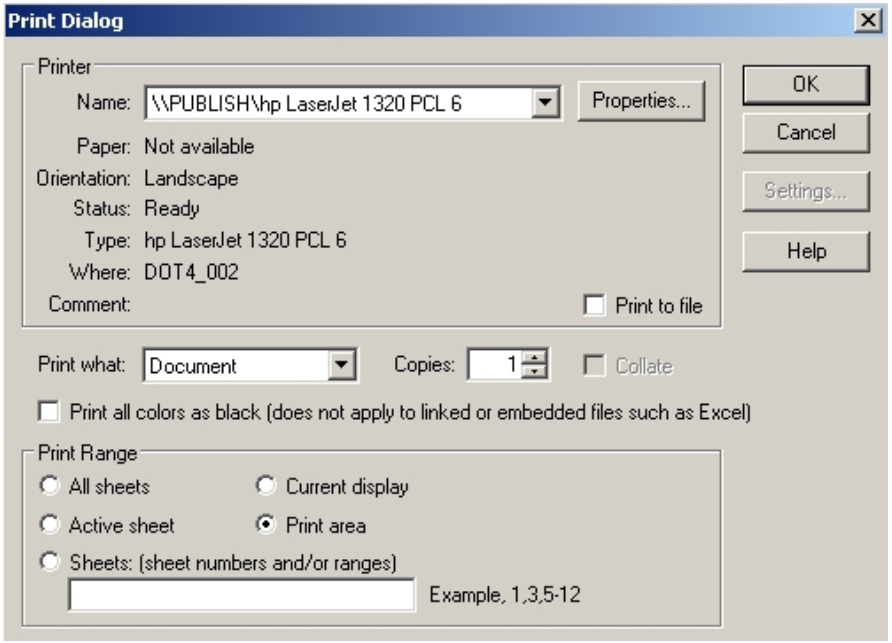
Dialog boxes will vary here.

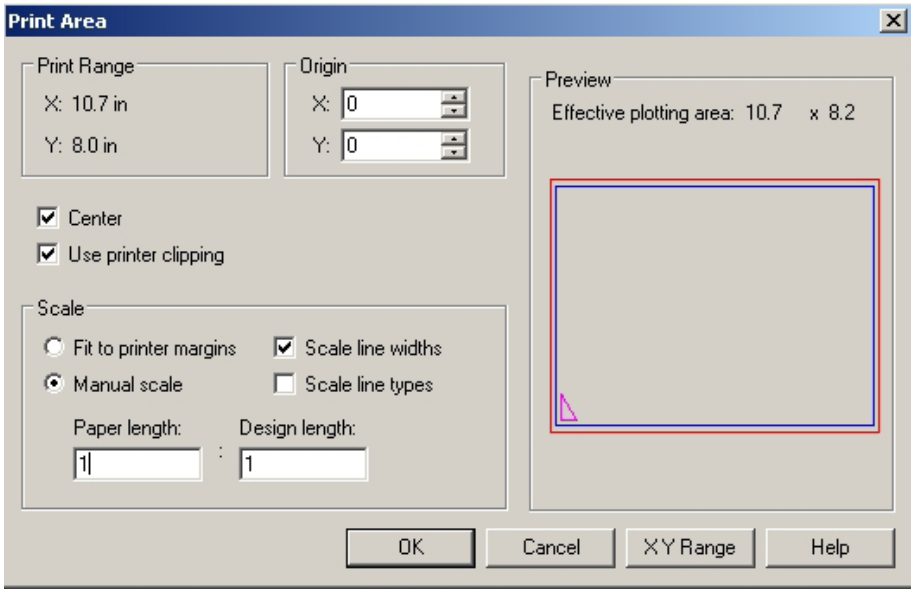
"All Sheets" may be O.K.

"Print Area" was selected to control the scale.

The scale was set 1 = 1 to be sure the lines were the correct length on the printed sheet.

End of Tutorial





Method #2

As shown earlier in the chapter, a Title **Block** may be inserted into 2D Model space at a certain scale.

Blocks from the **Sample Blocks** folder will be used.

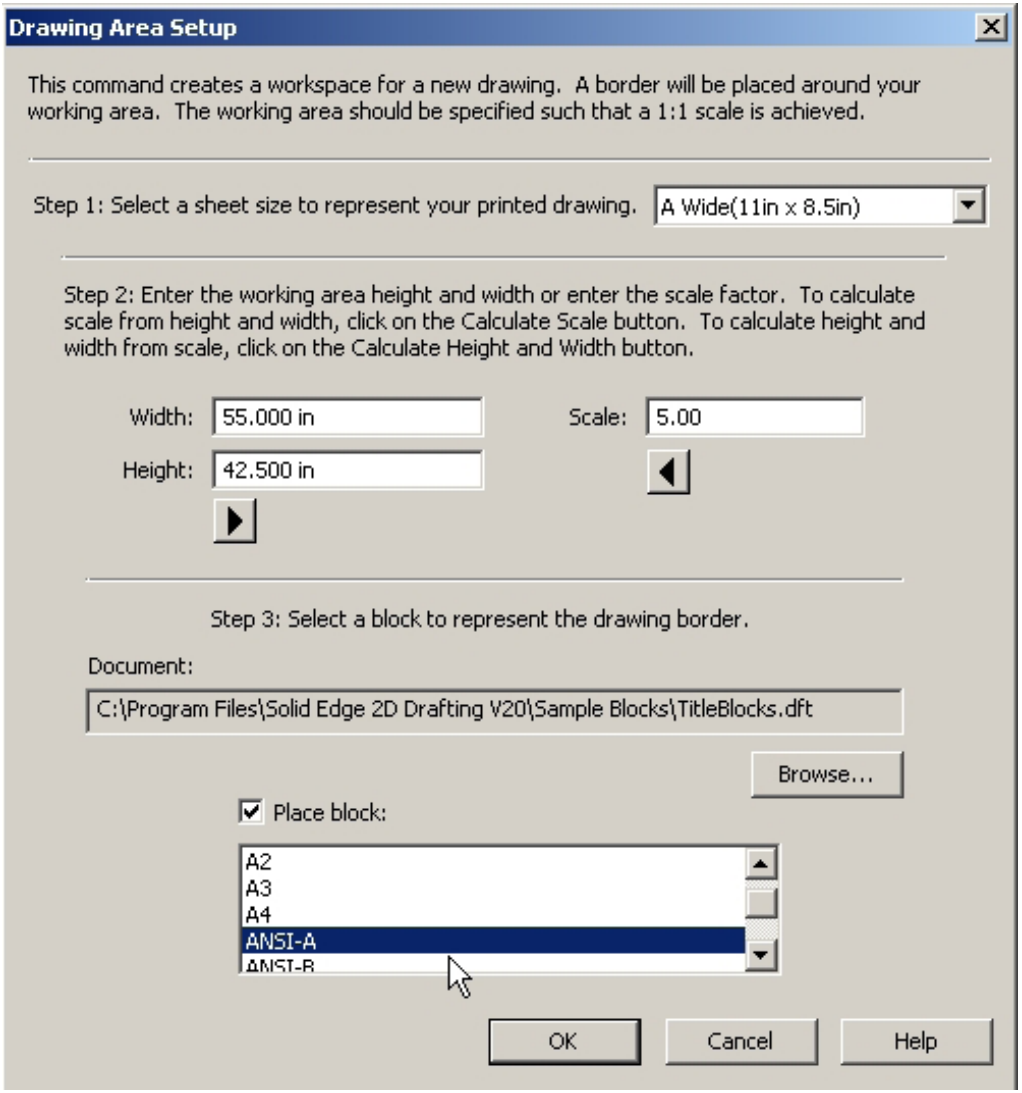
Tutorial #2

1. Go back to 2D Model space.

2. Select **File ...**
   Drawing Area Setup
   Set **A wide** 11 x 8.5
   Set the scale to 5.00 again

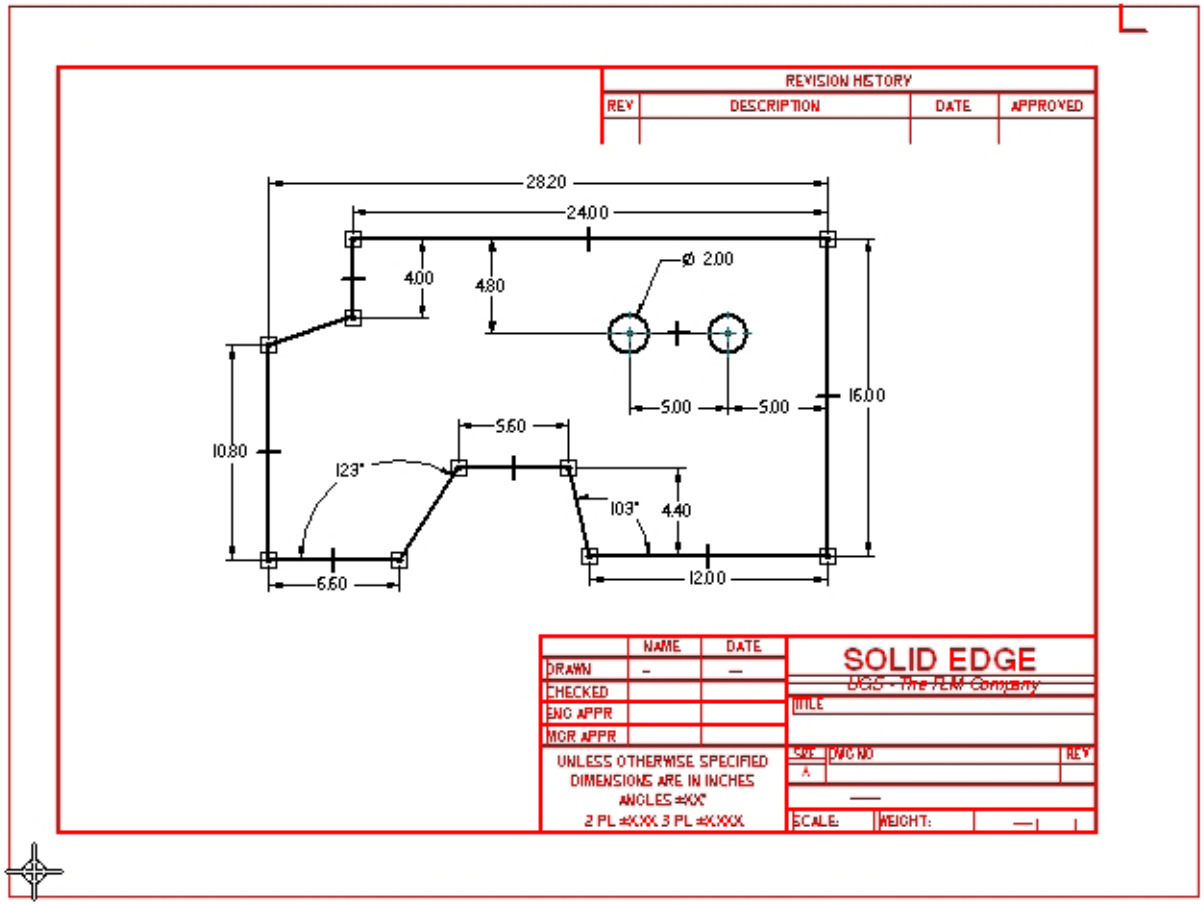
3. Browse to the document
   C:\Program Files\
   Solid Edge 2D Drafting V20\
   Sample Blocks\
   Title Blocks.dft

4. Select ANSI A ... OK
   Place the title block around the drawing.
   It will be scaled correctly.



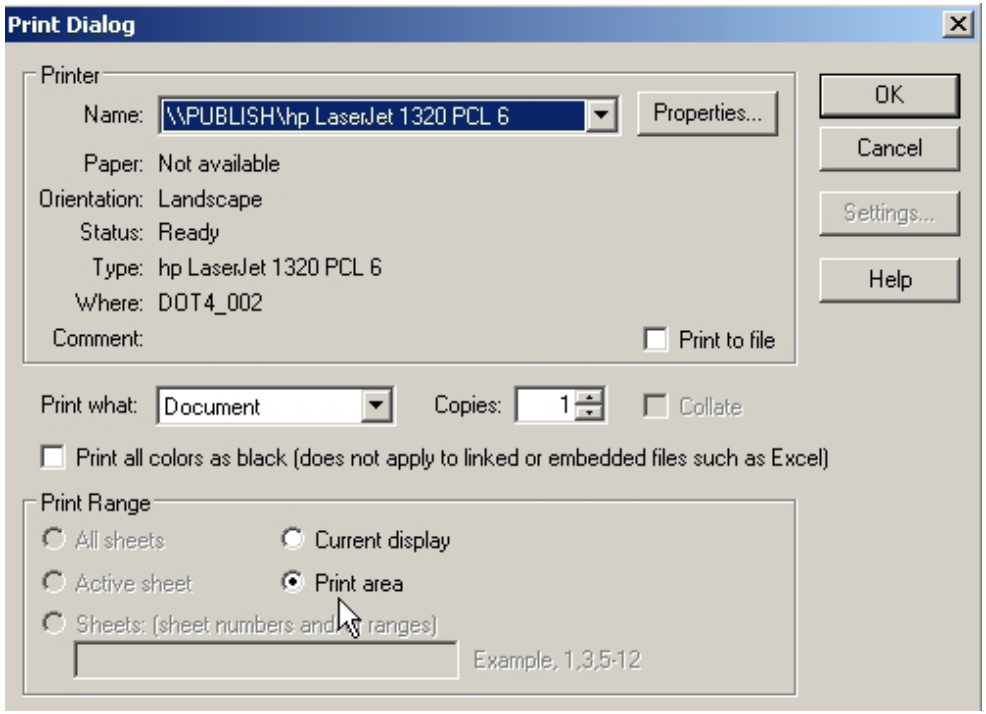
4. Place the title block around the drawing.
It will be scaled correctly.

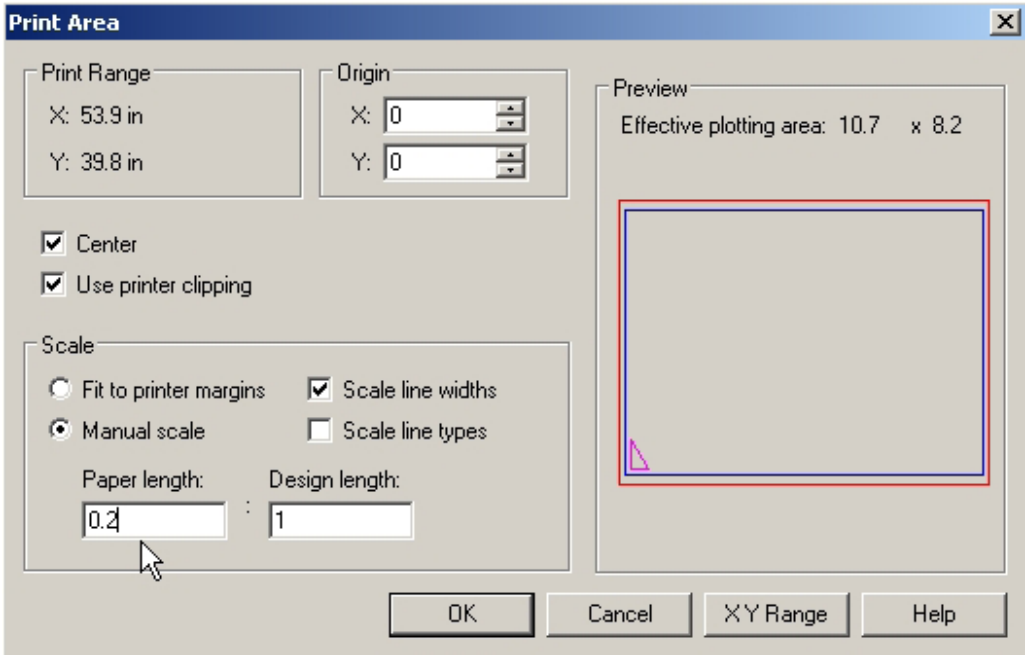
Save the drawing.



5. **Printing.**

Select **Print Area**





Set Scale: **.2 paper length to 1 Design Length**

End of Tutorial

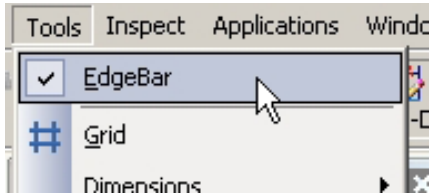
Layers are used to separate the information in a drawing.

- Layers are named according to use.
- Layers may have a specific color and line-type.
- You can draw on only one layer at a time.
- Layers may be turned on or off as needed.

For example, construction lines and points may be used to layout a drawing but they should not be seen on the final drawing. Construction lines may be placed on a separate layer and assigned a red color. They may be shown while the drawing is being constructed but turned off for plotting.

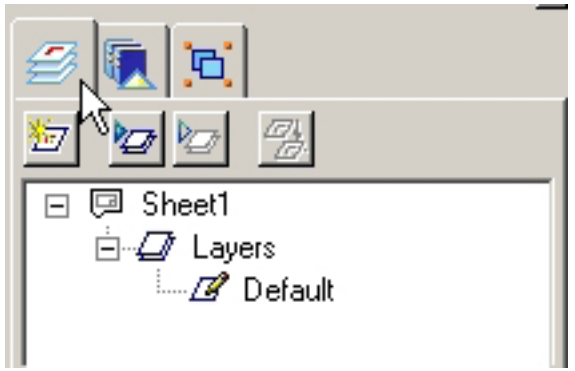
Companies may have layer name standards.

The American Institute of Architects (AIA) has a extensive layer standard which many contracts require. *See Architectural Drawing chapter.*

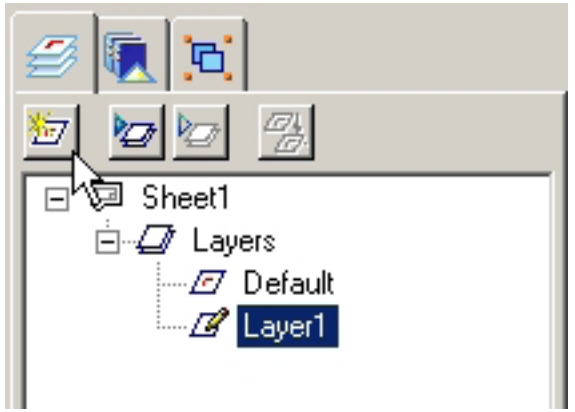


__ Click **Tools ....** Select **Edgebar**

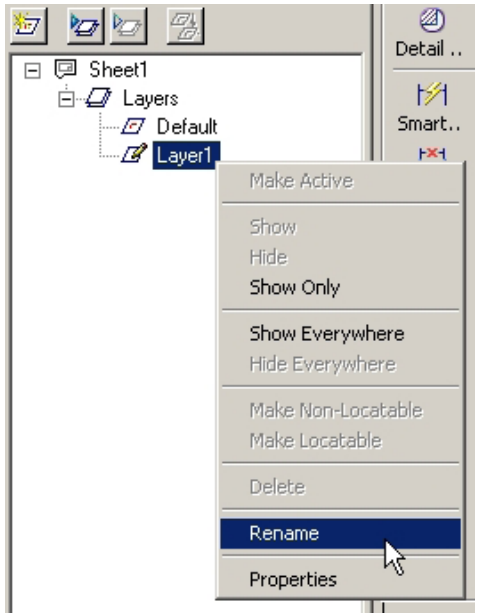
__ Click the Layer icon.

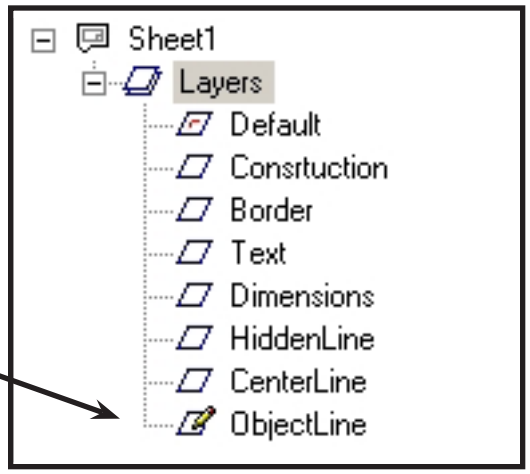


__ Click the **New Layer** icon.



__ Right-click **Layer 1** and select **Rename.**





Pencil indicates "current" layer.

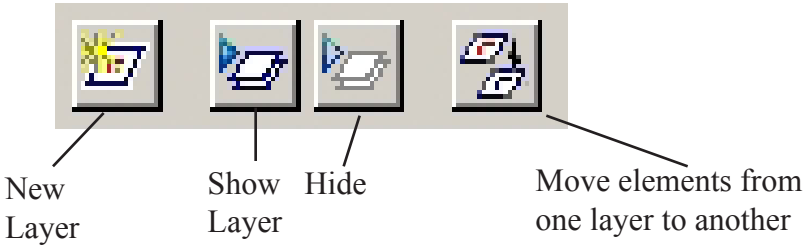
Double-click a layer to make it current.

Other layer settings.

Show and Hide layer are used to turn layers On/Off. You can also right-click a layer and use the dialog box to turn layers On/Off.

Sometimes objects need to be moved from one layer to another. The Move Elements icon is used to do this.

First select the elements then click the Move Elements icon. A list of layers will display. Select the layer to move to.



Drawing Setup Exercises

Exercise 1.

a. Customize a set of decimal inch title blocks as shown in the chapter with your company or school name and other startup settings.

Use C:\Program Files\
Solid Edge 2D Drafting V20\
Template\
More\
Normeng.dft
template.

Copy to a temporary folder and modify the copied files.

Exercise 2.

a. Customize a set of USA Metric title blocks as shown in the chapter with your company or school name and other startup settings.

Use C:\Program Files\
Solid Edge 2D Drafting V20\
Template\
More\
ANSIMM.dft
template.

Copy to a temporary folder and modify the copied files.

Exercise 3.

a. Customize a set of Architectural (feet-inch) title blocks as shown in the chapter with your company or school name and other startup settings.

Use C:\Program Files\
Solid Edge 2D Drafting V20\
Template\
More\
Normeng.dft
template.

Copy to a temporary folder and modify the copied files.

Exercise 4.

a. Customize a set of decimal inch Title **Blocks** as shown in the chapter with your company or school name and other startup settings.

Use C:\Program Files\
Solid Edge 2D Drafting V20\
Sample Blocks\
TitleBlocks.dft
template.

Copy to a temporary folder and modify the copied files.

Exercise 5.

a. Customize a set of Metric Title **Blocks** as shown in the chapter with your company or school name and other startup settings.

Use C:\Program Files\
Solid Edge 2D Drafting V20\
Sample Blocks\
TitleBlocks.dft
template.

Copy to a temporary folder and modify the copied files.

Exercise 6.

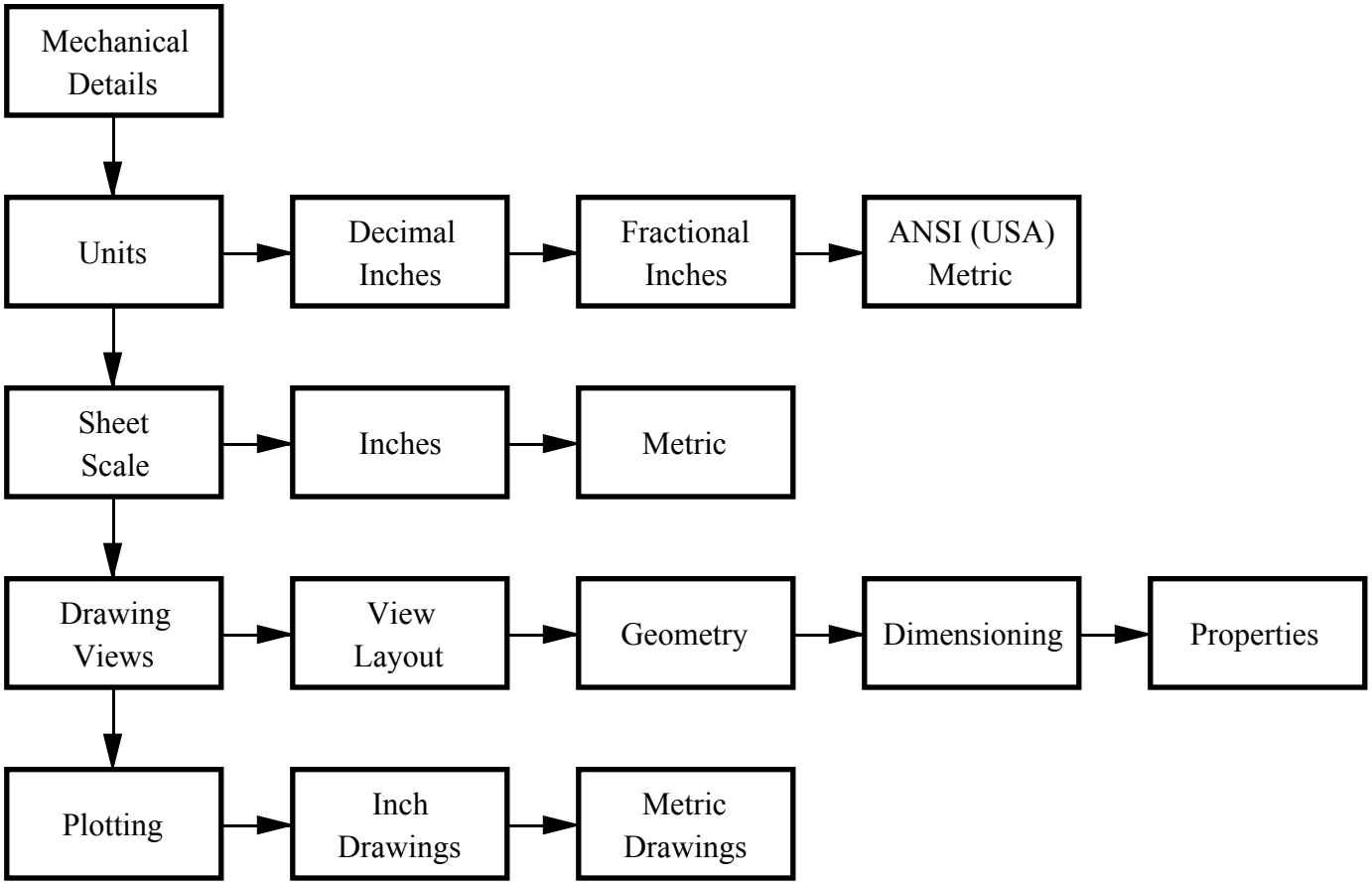
a. Customize a set of Architectural (feet-inch) Title **Blocks** as shown in the chapter with your company or school name and other startup settings.

Use C:\Program Files\
Solid Edge 2D Drafting V20\
Sample Blocks\
TitleBlocks.dft
template.

Copy to a temporary folder and modify the copied files.

b. These files may be saved to C:\Program Files\Solid Edge 2D Drafting V20\Template\More\ ..... on your personal computer for your use.

Notes:



This chapter deals with drawing small mechanical parts which would be measured in decimal inches, fractional inches or Metric millimeters. When working in metric measurements, Millimeters is the preferred unit for small machine parts, etc.

Large Mechanical details for building construction are usually measured in feet, inches and fractions. That type of layout is discussed in the next chapter.

Before starting a drawing, set the type of units and the precision for both layout and dimensioning. These settings can be saved in title blocks for quick startup each time the same type of drawing is needed.

Small machine parts are often dimensioned in decimal inches. Some older industries may still use fractional inches.

Furniture, cabinets and small architectural items are often dimensioned in fractional inches.

Many companies have adopted metric measurements to stay in competition with foreign manufacturers and to keep up with the trend to metric design for automobiles and consumer goods.

Solid Edge has settings that allow working directly on any of these measurement systems.

1. Set the **Draft Properties ... Units** for entity inputs.

2. Set the **Dimension Units.**

3. Set the scale between the **Working Sheet** and the **2D Model Sheet.**

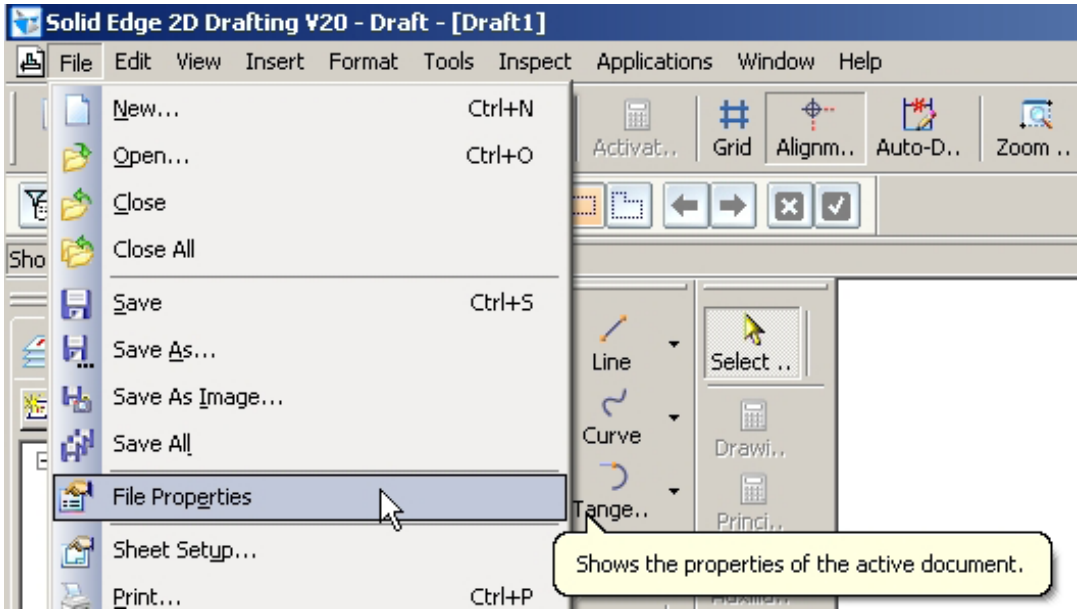
Decimal Inches set

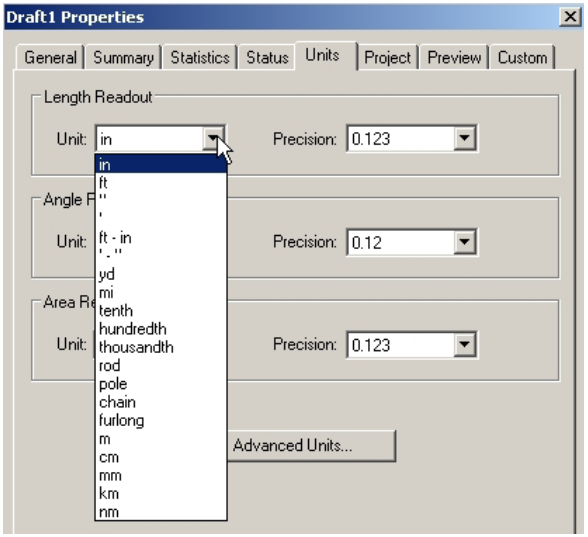
Fractional Inches set

Metric MM set

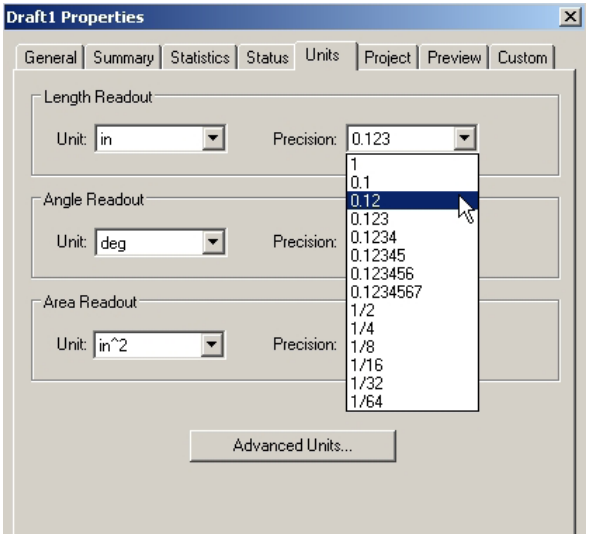
1. Setting Draft Properties Units

1. Pop down **File ... File properties** and select the **Units** tab.





Setting Length Units



Setting Decimal-Inch or Fractional-Inch measurement and precision.

2. Dimensioning units would *normally* be set to the same or similar values as Draft Properties. **

Pop down **Format ...Style**

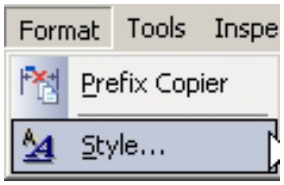
Select the **Style**: ANSI for inches
ANSI MM for metric

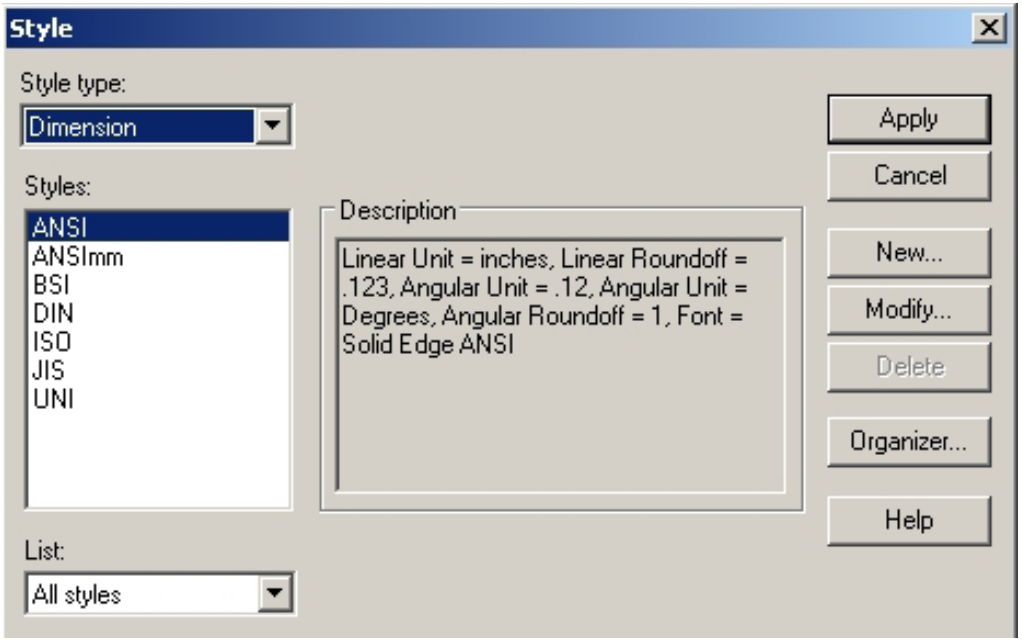
Click **Modify** and select **Units.**

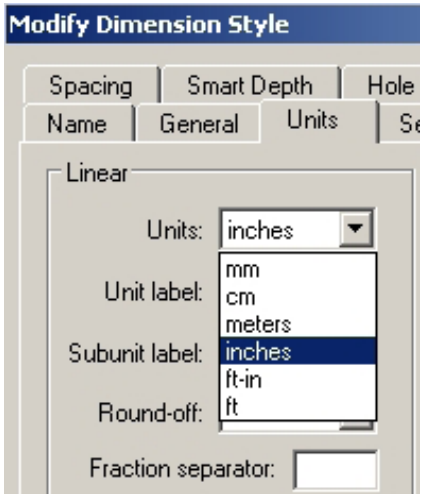
Set the **Linear Units.**

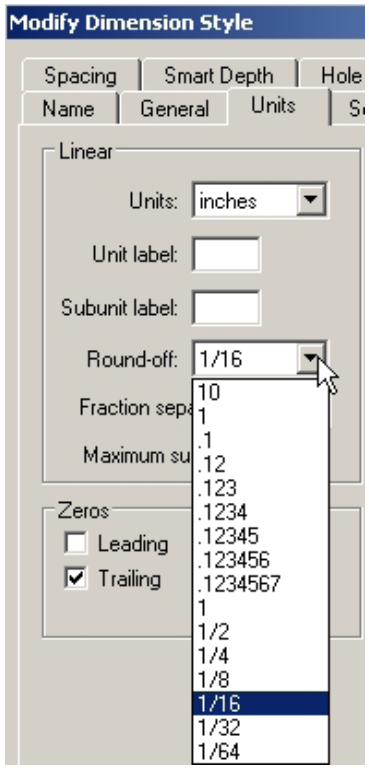
Set the **Round Off**: Decimal or
Fractional

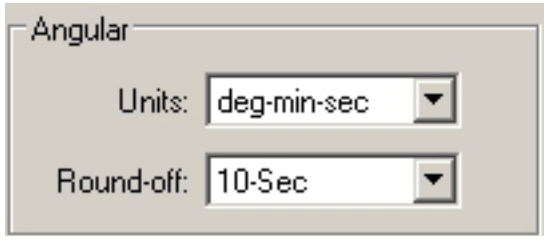
Set angular measurement as needed.









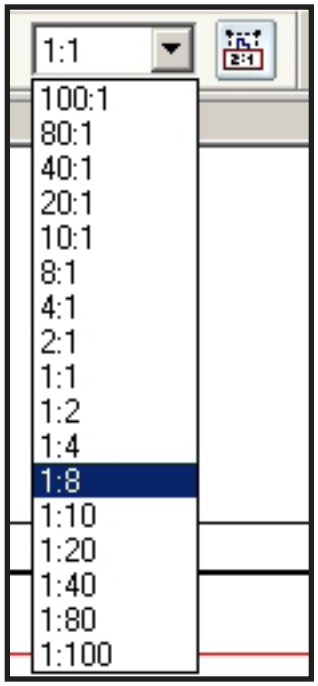


*** It is possible to draw in decimal inches and dimension in metric, for example.*

Set the scaling between the **Working Sheet** and the **2D Model Sheet** (if needed). Small items may be drawn directly on the title block.

Larger items should be drawn on the 2D Model sheet and scaled to fit the title block.

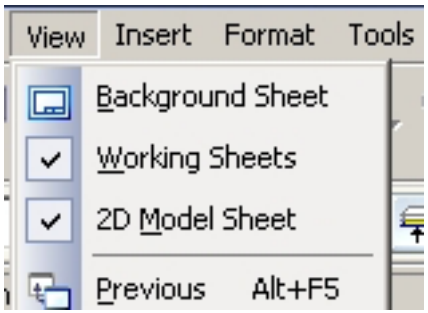
Standard Scales may be used or custom scales may be set. (Custom scales involve a little more work).



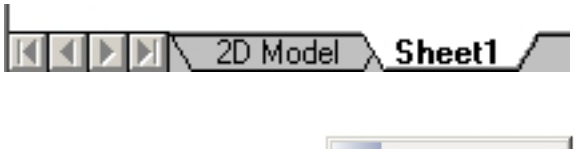
Setting the scaling between the working sheet and the 2d model sheet will assure the correct dimension text size on the final plot. The numbers used must be consistent.

We will use 1:8 for this example

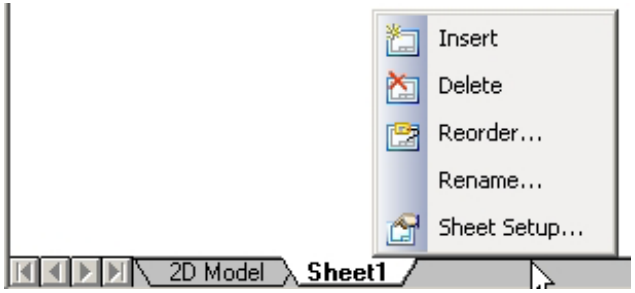
1. Turn on **Working Sheet** and **2D Model Sheet**



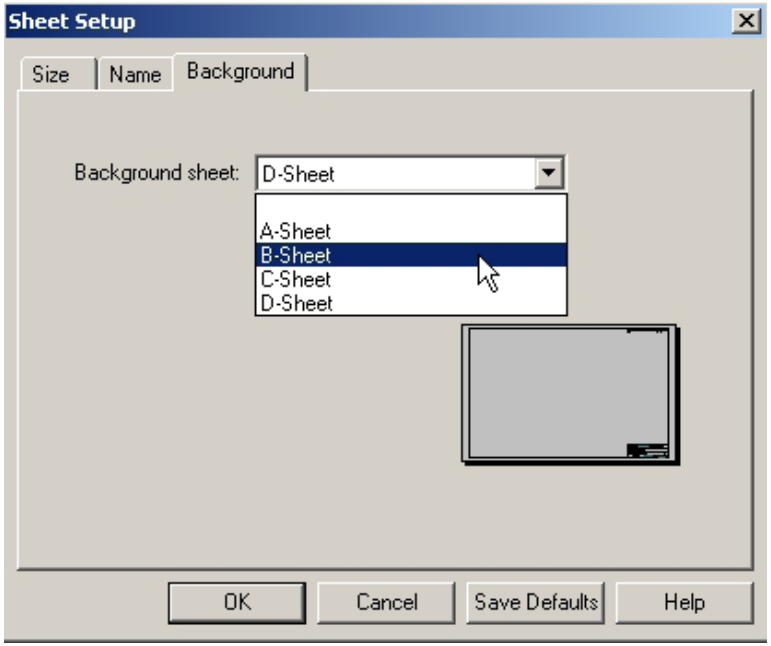
Right-click Sheet 1 at the bottom of the screen



Click Sheet Setup

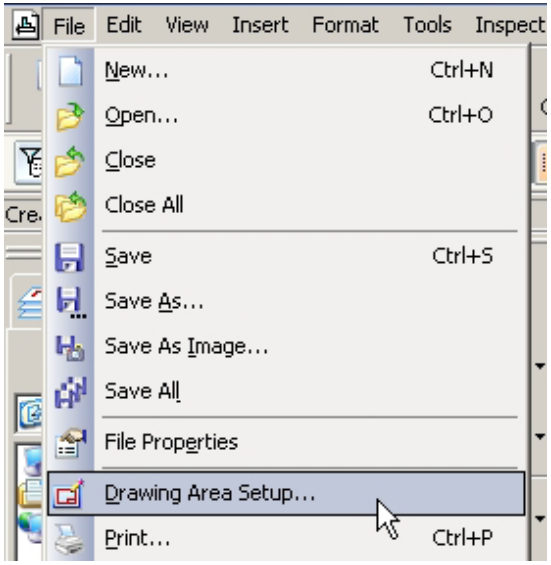


Select the sheet size to be printed.

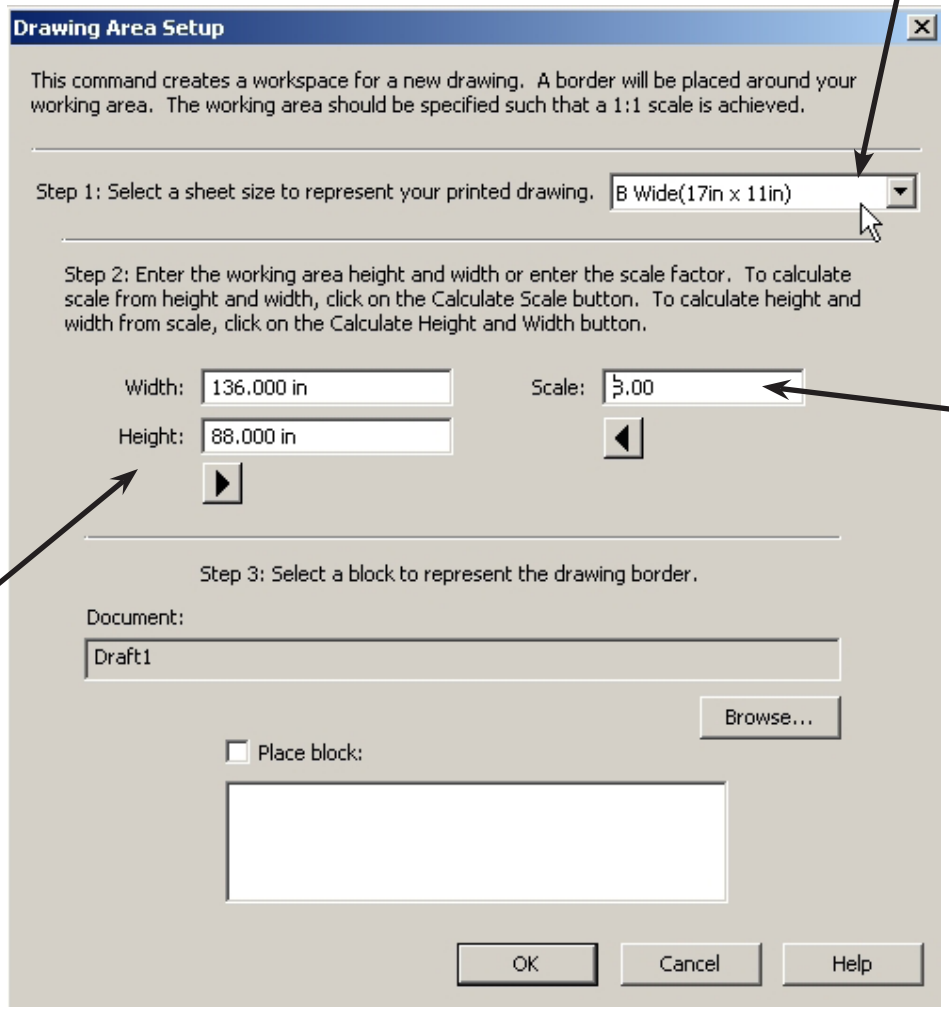


2. Select 2D Model
at the bottom of the screen.

Click **File ....**
Drawing Area Setup.



Set the Working Sheet (title block) size.



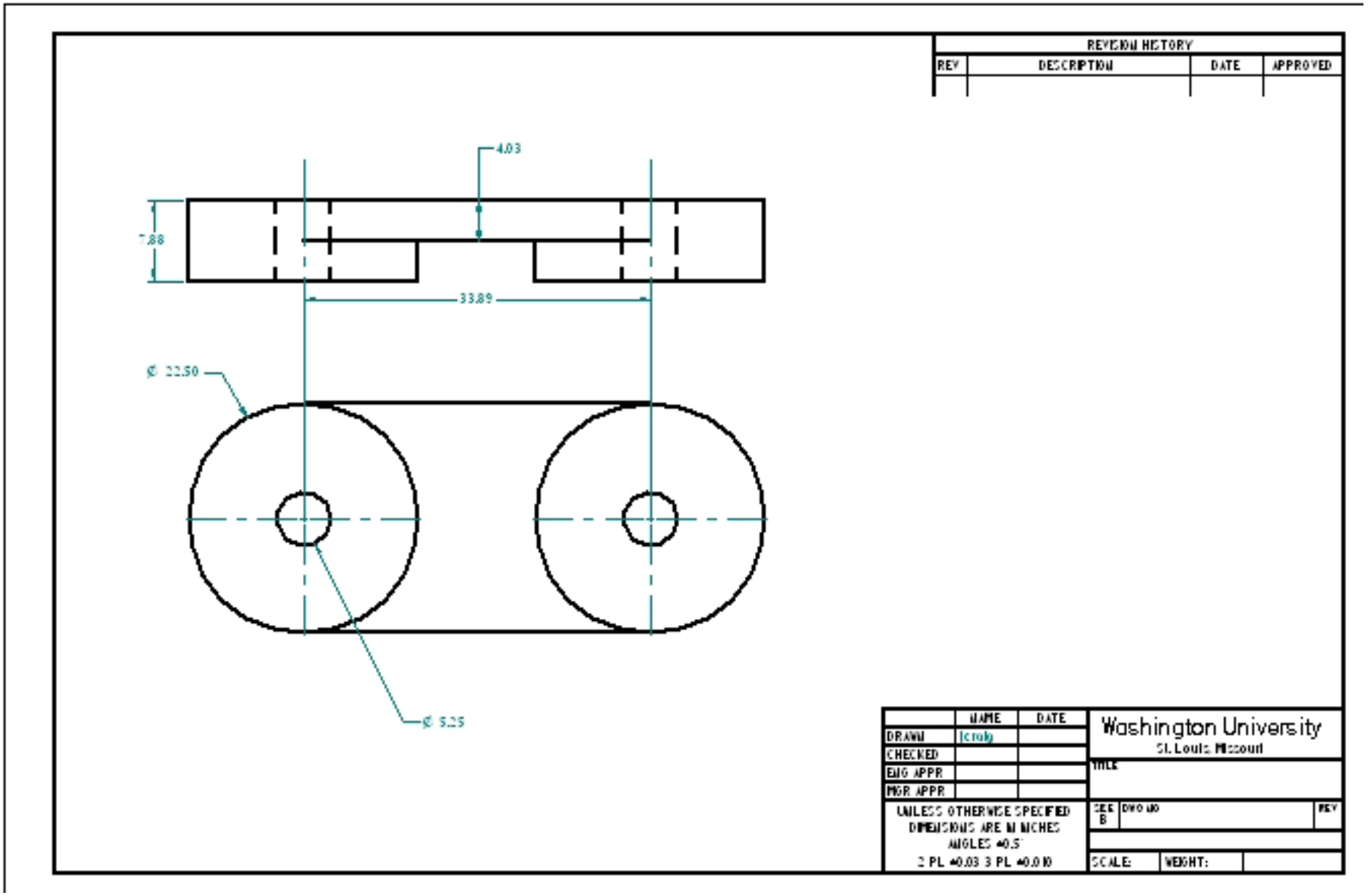
Set the scale to 8.

2D Model Sheet must be 8x larger than title block.

Drawing area(s)
for 2D Model Sheet

The drawing from 2D Model Sheet was inserted into the B-size title block at 1:8 scale.

Setting a consistent scale between 2D Model Sheet and Working Sheet assures that the dimension text and other items will be the correct height on the final plot.



Tutorial - Mechanical Layout

Start a drawing using the settings from the previous pages.

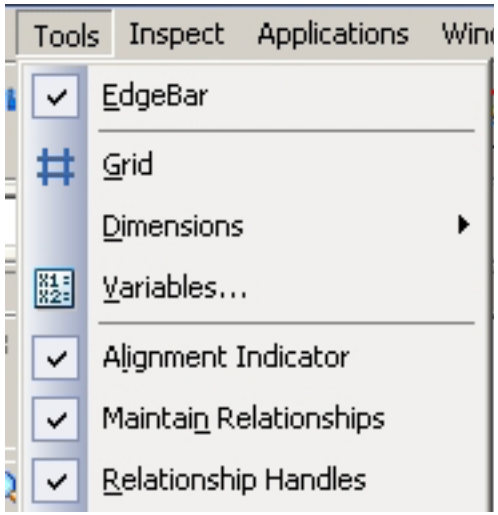
__ Use Fractional Inches with 1/16” precision for both Draft properties and Dimensions.

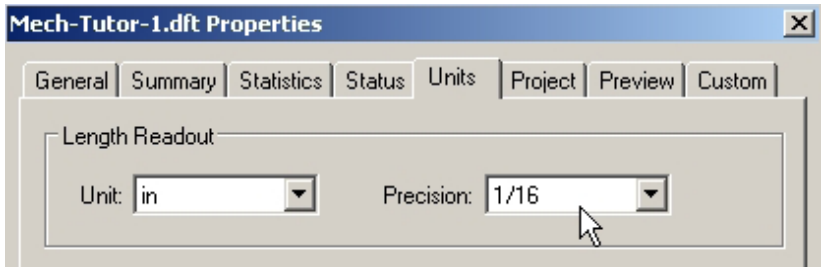
__ Use a A-size title block.

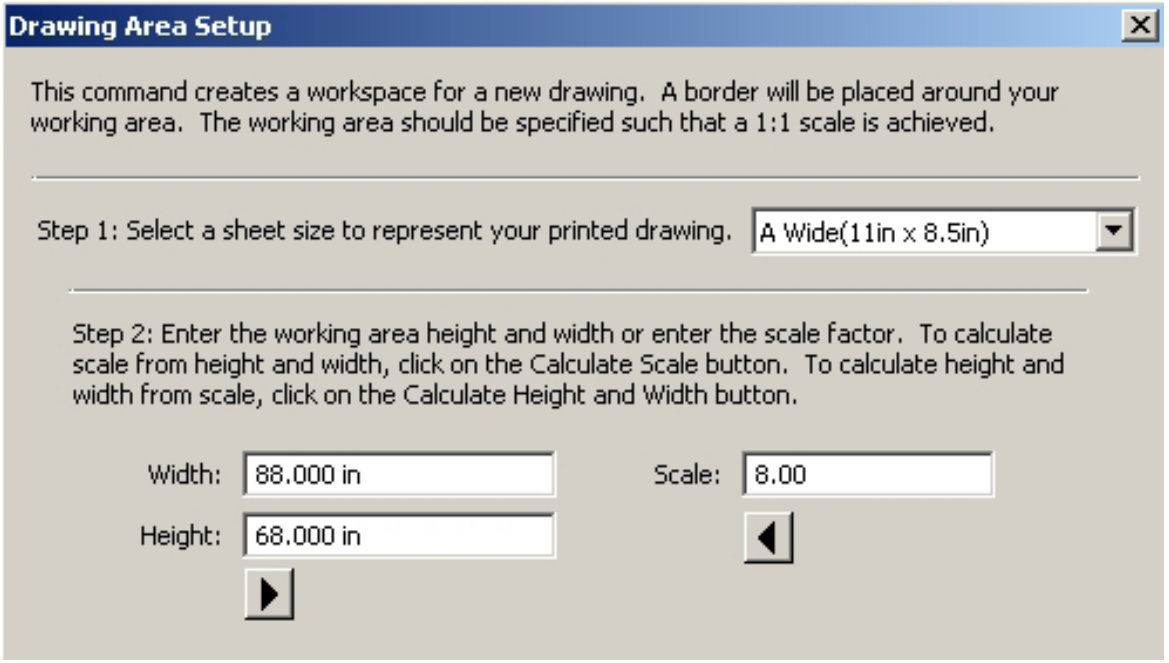
__ Set the scaling:
Working Sheet to 2D Model Sheet = 8
(Later, drawing will be inserted into working sheet at 1:8 scale).

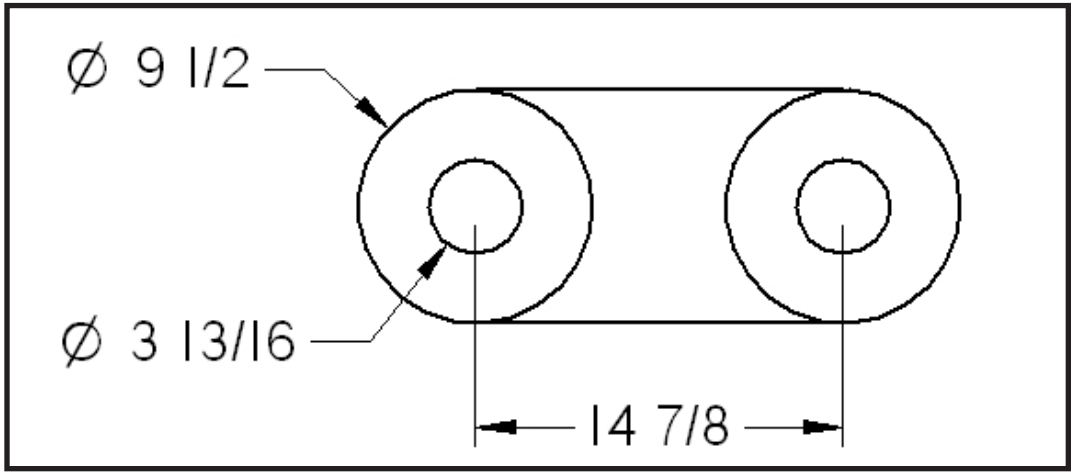
__ Create the drawing shown on the 2D Model Sheet.

Be sure Tools ... Alignment Indicator, Maintain Relationships and Relationship Handles are turned on.





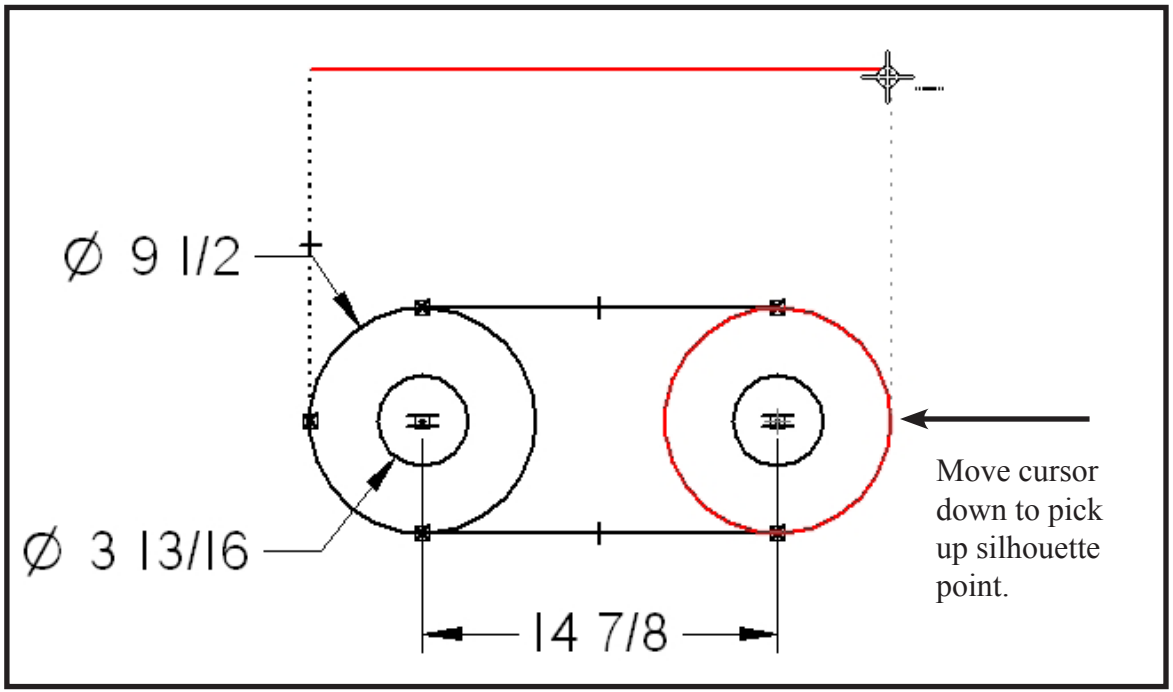




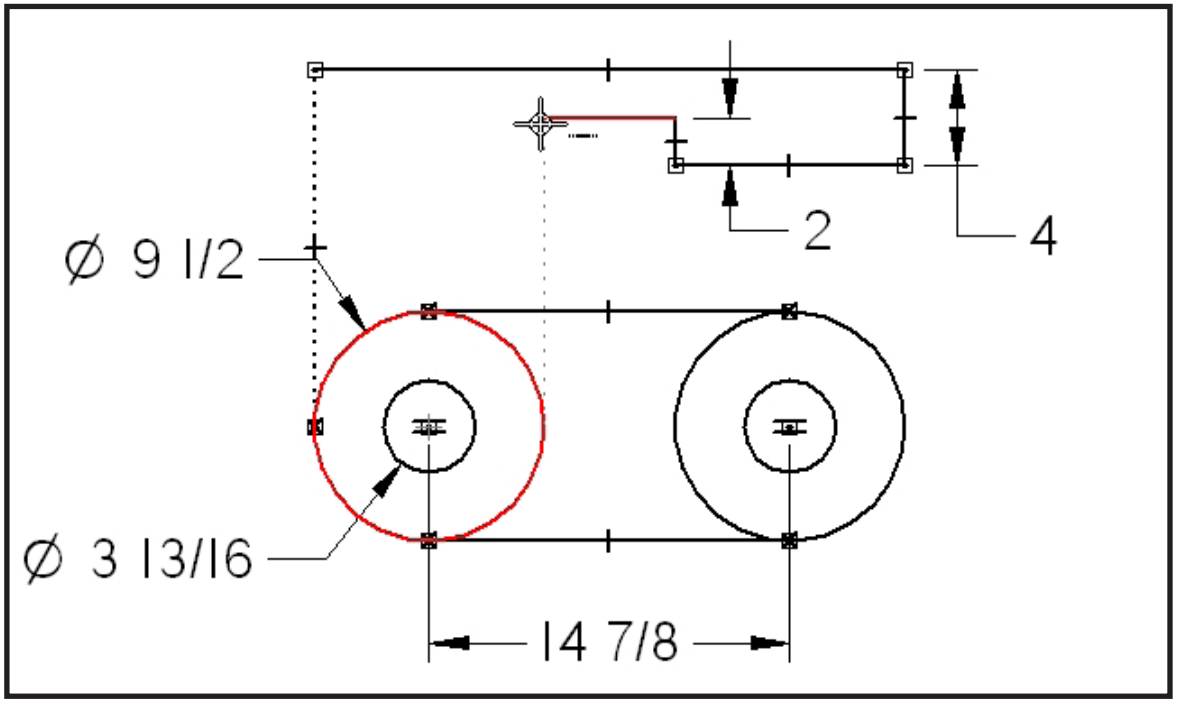
__ Draw the Top View

__ Start a line. Move the cursor over the left side of the left circle to invoke a alignment indicator. Click to start the line.

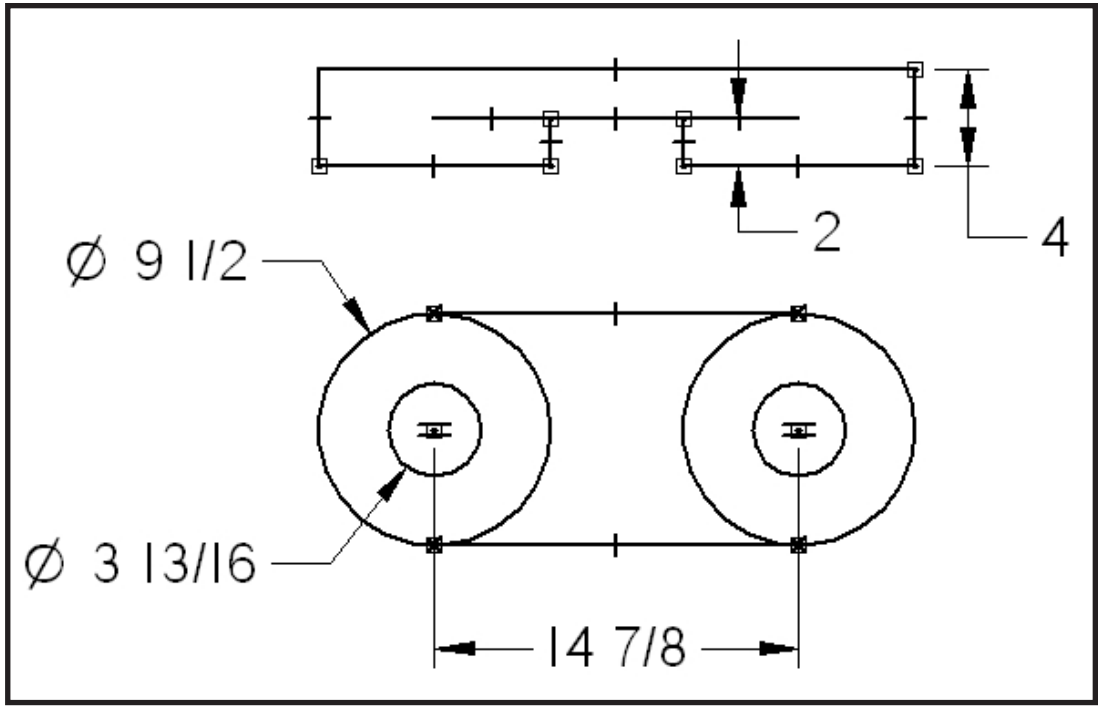
__ Finish the line. Again, move the cursor over the right side of the right circle to start the alignment indicator. Move the cursor until the line is horizontal and click.



__ Draw the top view as shown.
Each time, move the cursor down to pick up the alignment indicators.
Use the 4” and 2” dimensions.

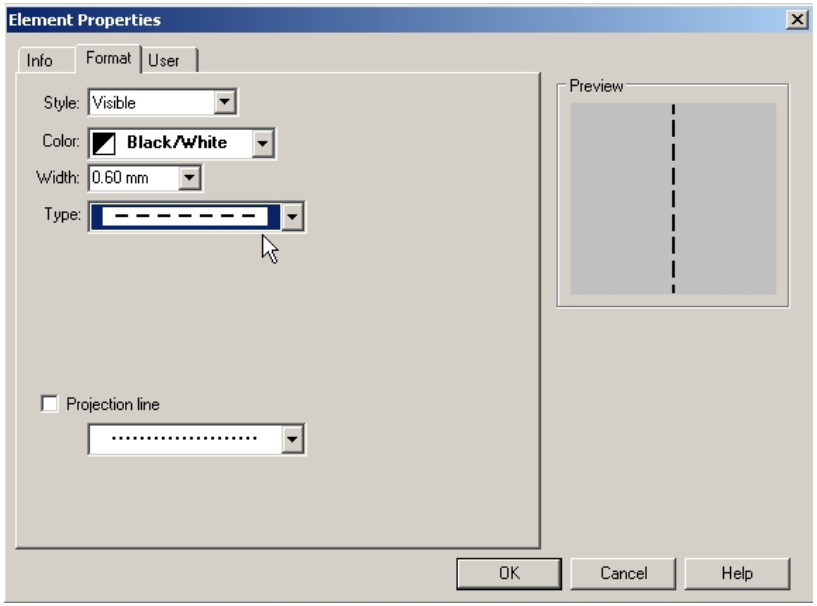


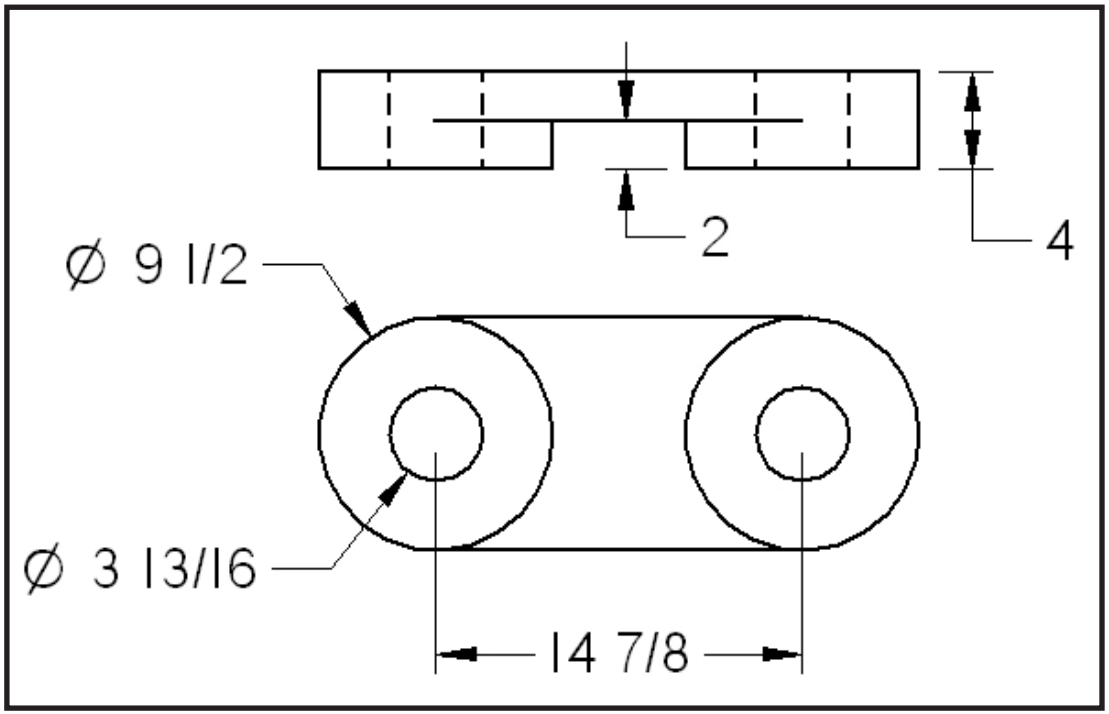
__ Finish the top view as shown.



__ Add the hidden lines for the 3 13/16” dia. holes. Draw solid lines in the top view.

__ Right-click each line, select **Properties** and set **Format Type** to **dashed**.

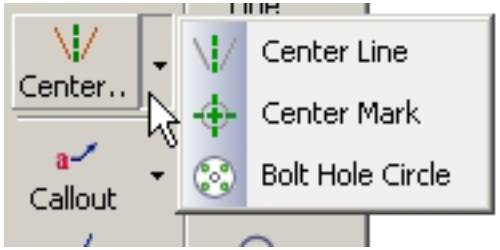


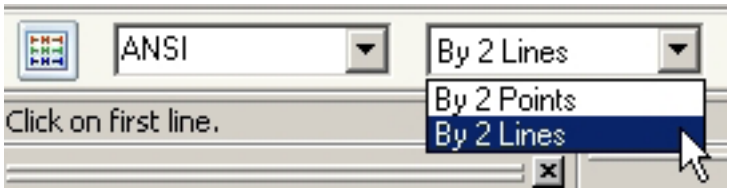


__ Place the Center Lines in each of the views.

__ Select Center Line ... By 2 Lines.

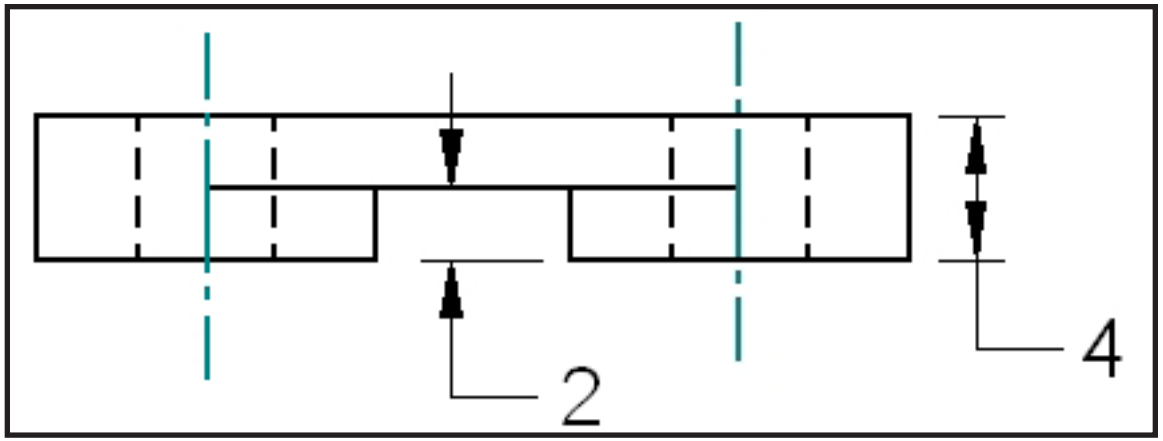
__ Click each set of hidden lines in the top view. This will place the center lines.



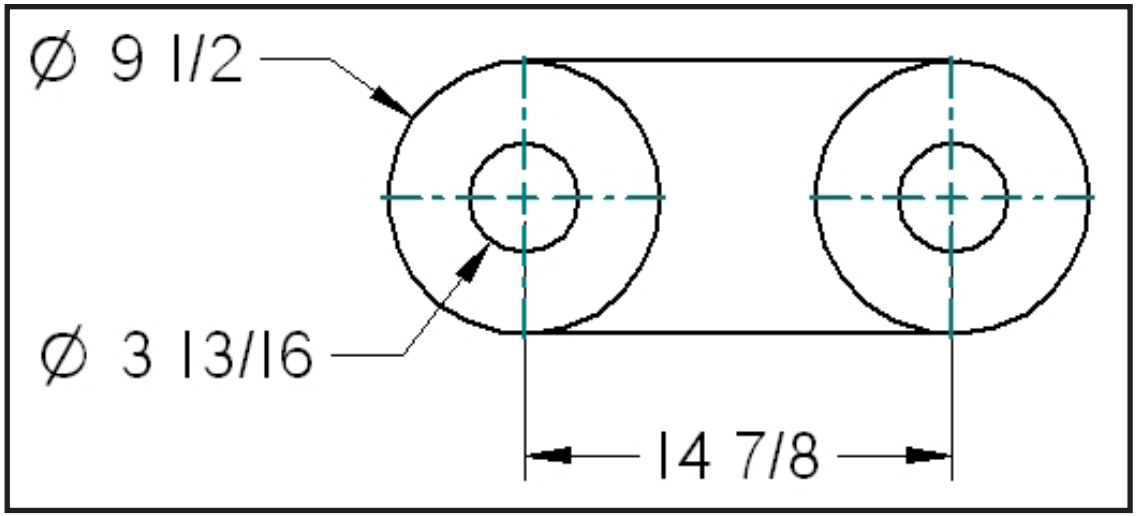


__ Click each center line and drag the ends out from the object to make the lines longer.

__ Front View: Select **Center Mark.**
Select the
Center Mark - Projection Lines
icon.
Place the center lines in the front view.

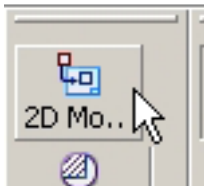


__ **Save** the Drawing as Link.



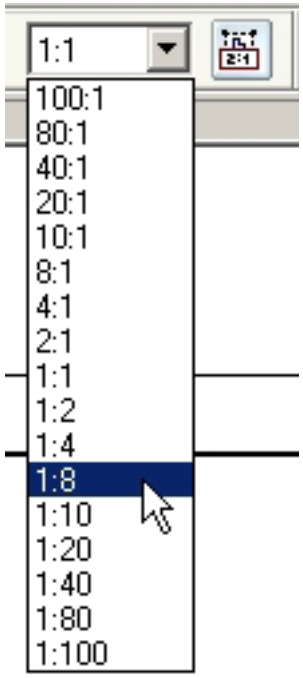
__ Select **sheet1** at the bottom of the screen to go back the the working sheet.

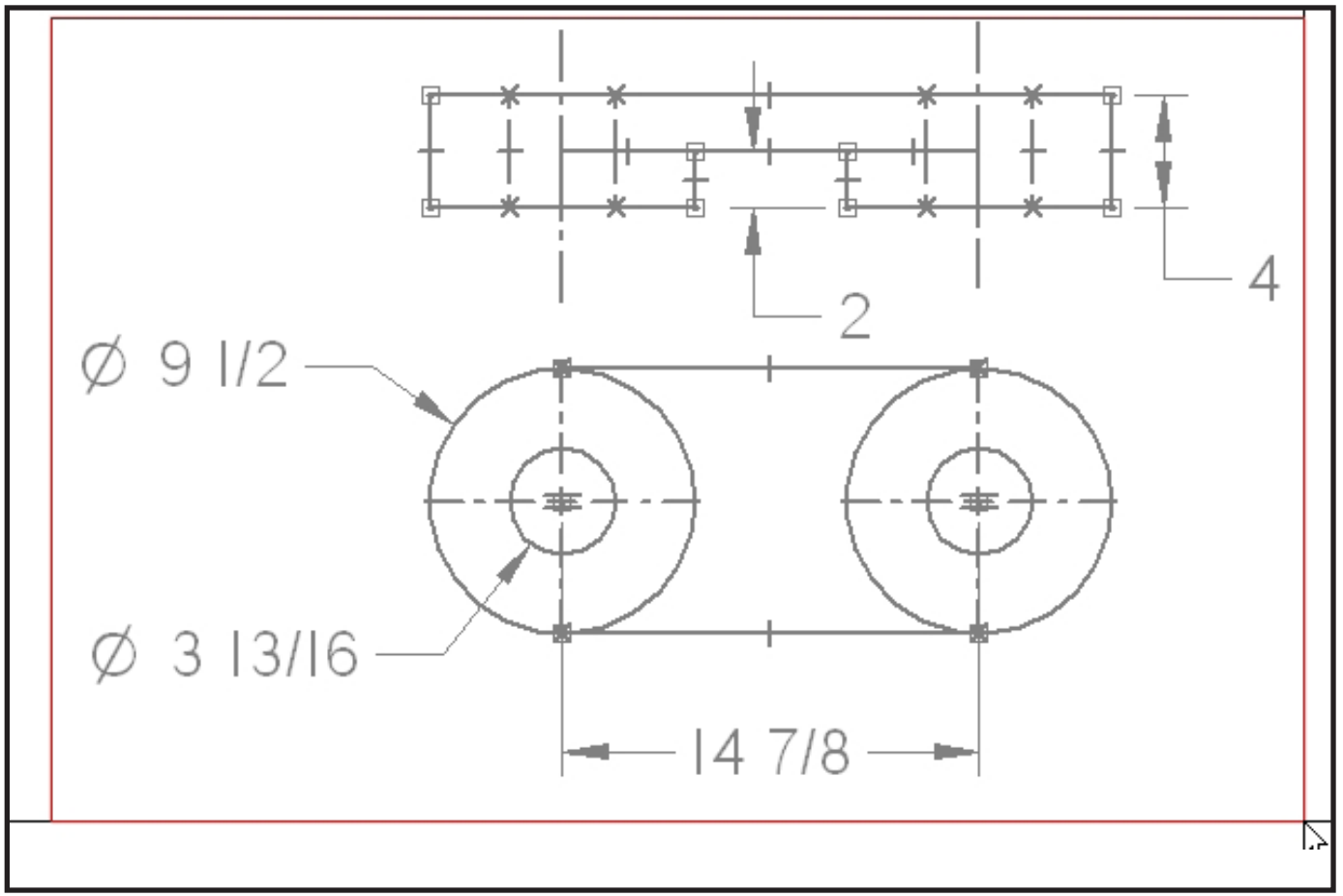
__ Click the icon to insert 2D Model View geometry.



__ Window the drawing view(s) to place on the title block.

__ Set the scale for placing the drawing views.
1:8



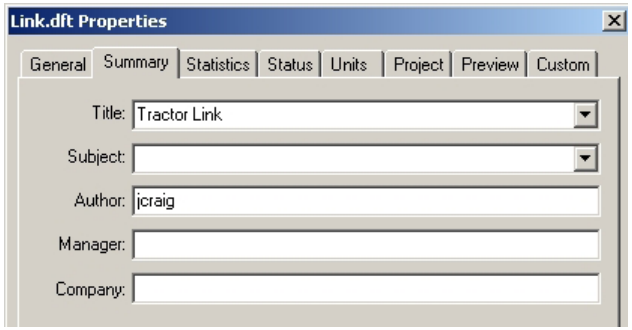


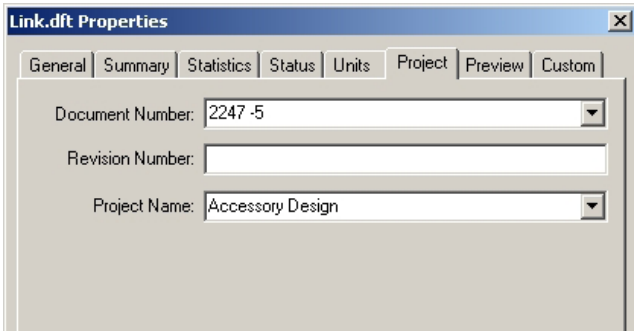
__ Place the views on the title block.

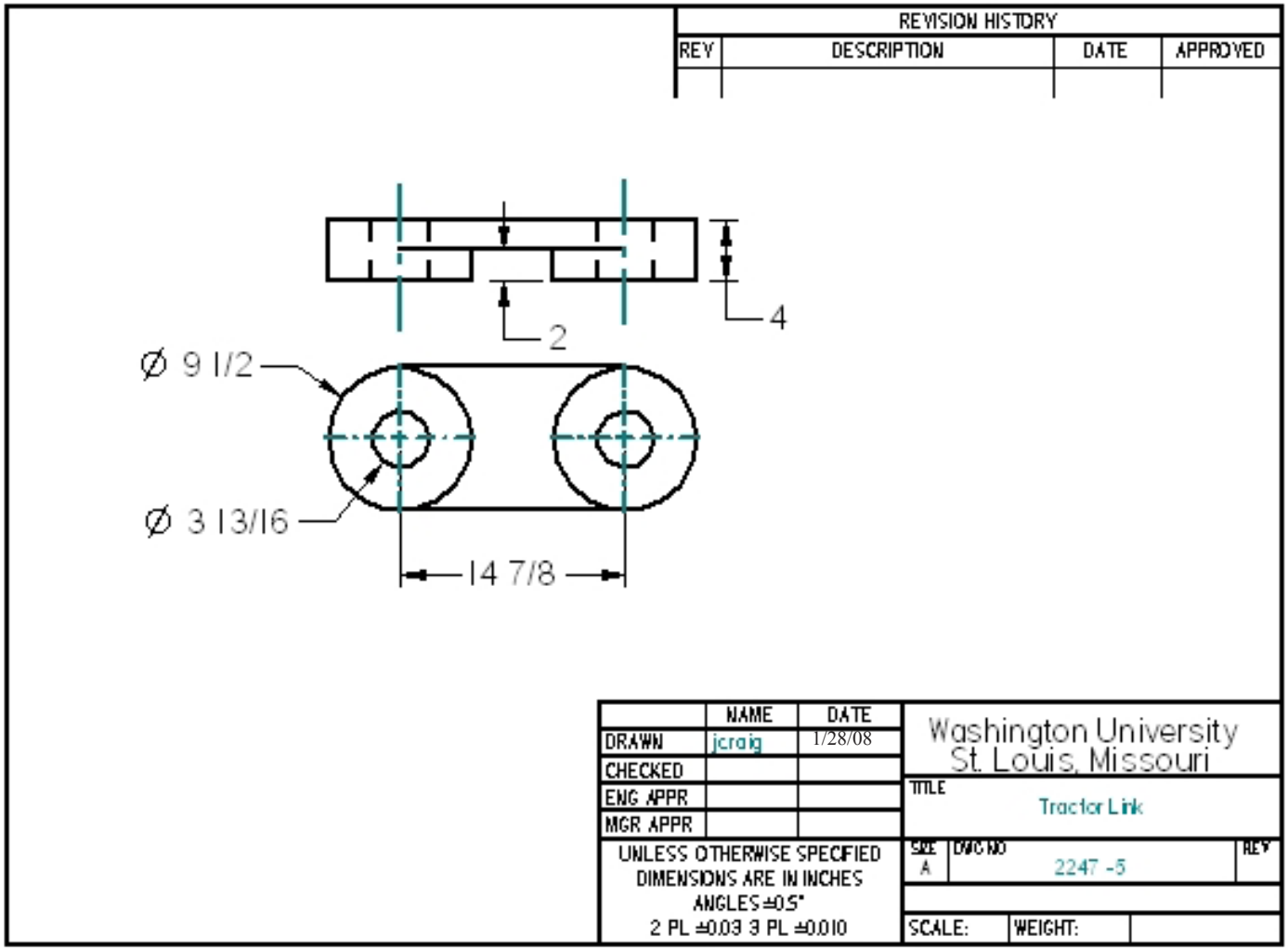
__ Pop down **File ...**
File Properties.
Fill in the **Summary** and **Project** tabs.

This information will be placed in the title block boxes as shown.

End of Tutorial







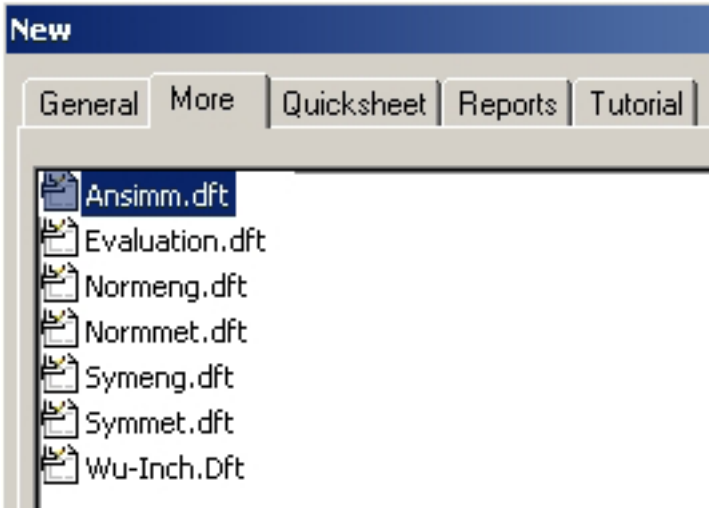
__ Start a drawing using the **Ansimm.dft** template.
This will start with metric measurements and standard A, B, C and D size drawing sheets.

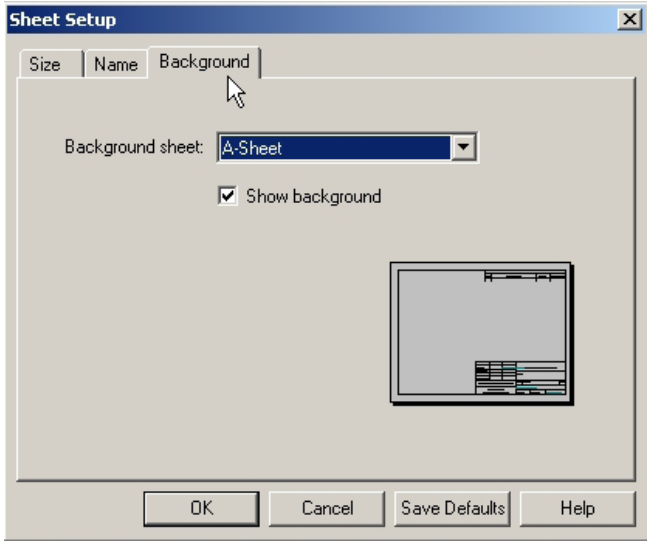
__ Set a A-size Background.

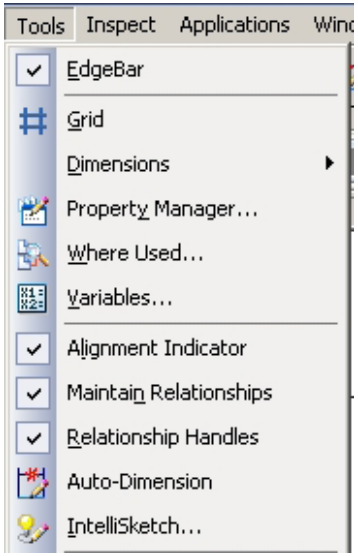
Note: *Using the Normet.dft template will start using metric measurements but with the A0, A1, A2, A3, A4 etc. size drawing sheets.*

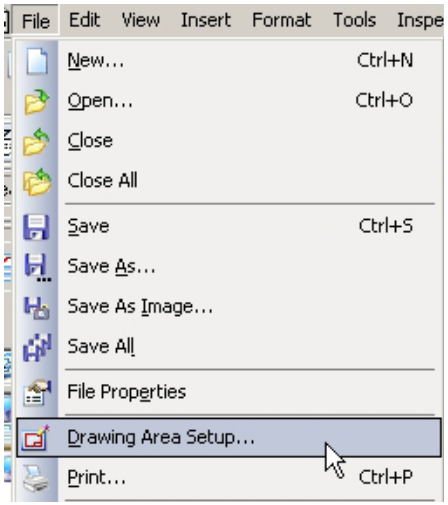
__ Turn on **Tools ...**
Alignment Indicator, Maintain Relationships, Relationship handles.

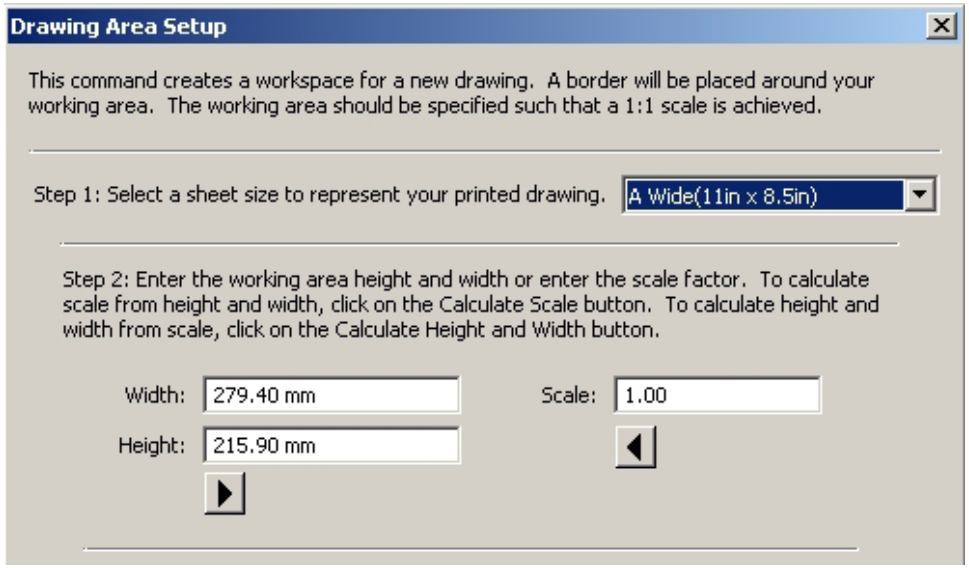
__ Select **2D Model** sheet at the bottom of the screen.
__ Pop down **File ....**
Drawing Area Setup.
Note the width = 279 mm and height = 215 mm



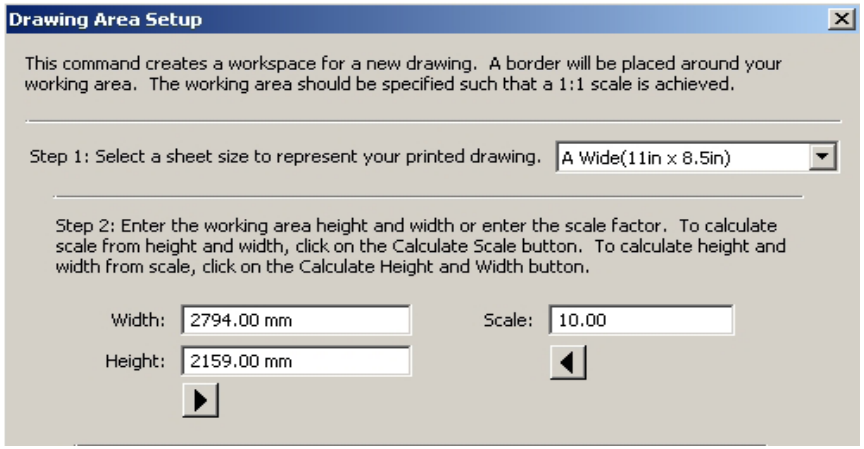


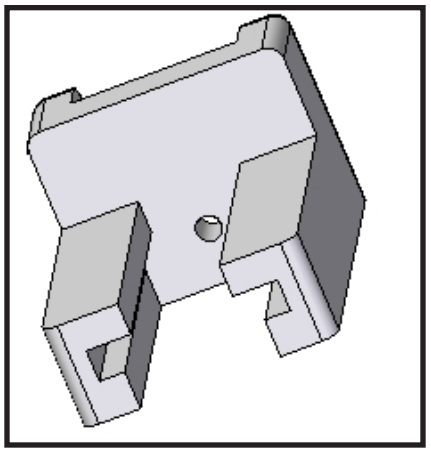






__ Re-set the scale factor to **10** and note the new 2DModel sheet size.



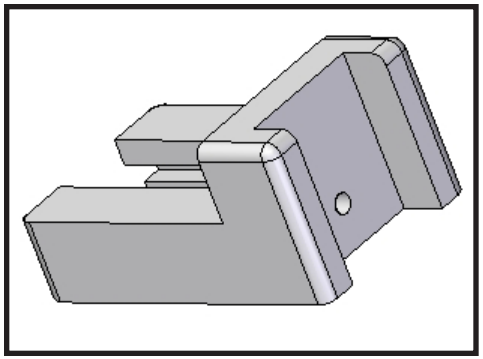


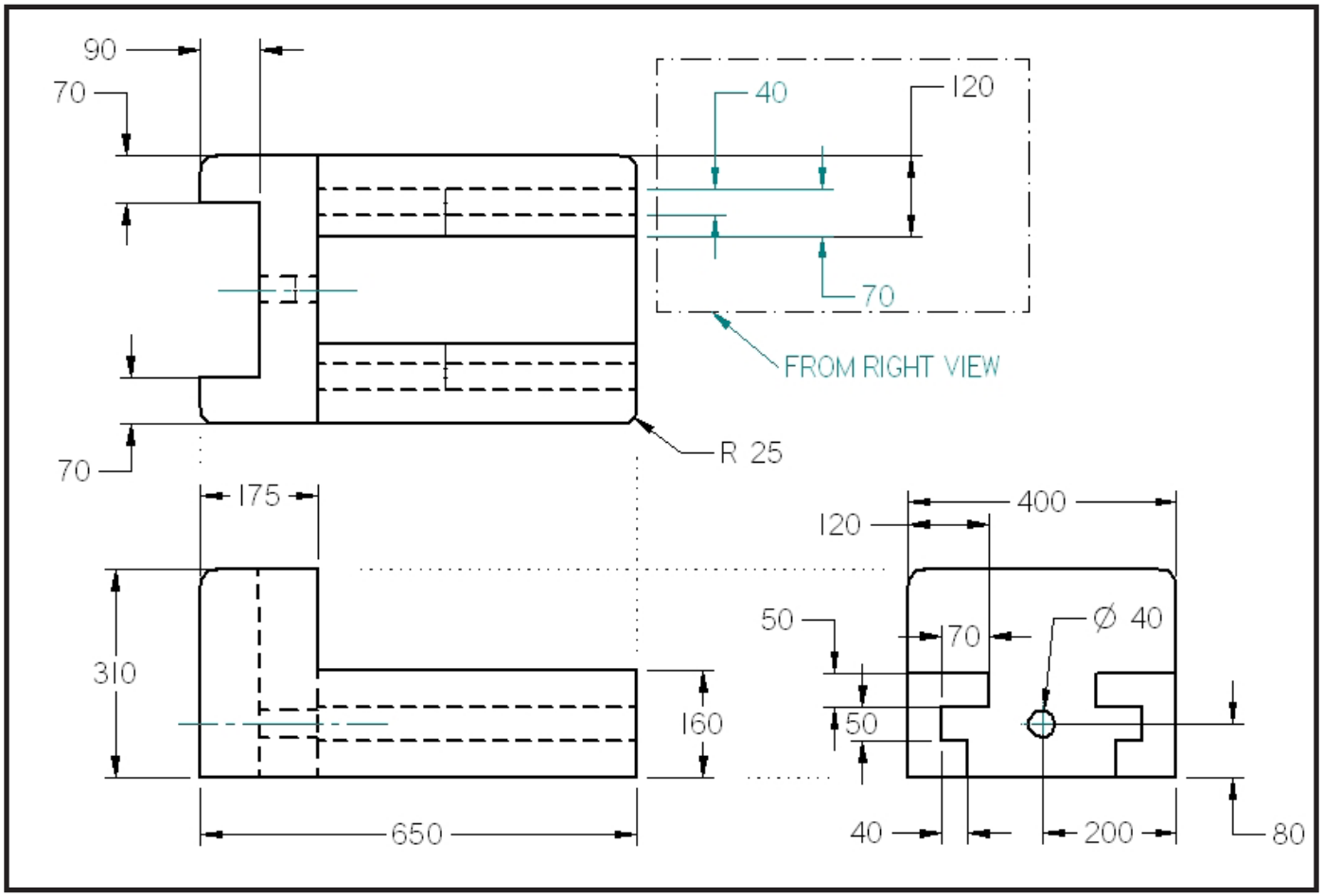
__ Create the 3-view drawing as shown in 2D Model space.

Draw the front view.

Use alignment indicators to position the other views and features.

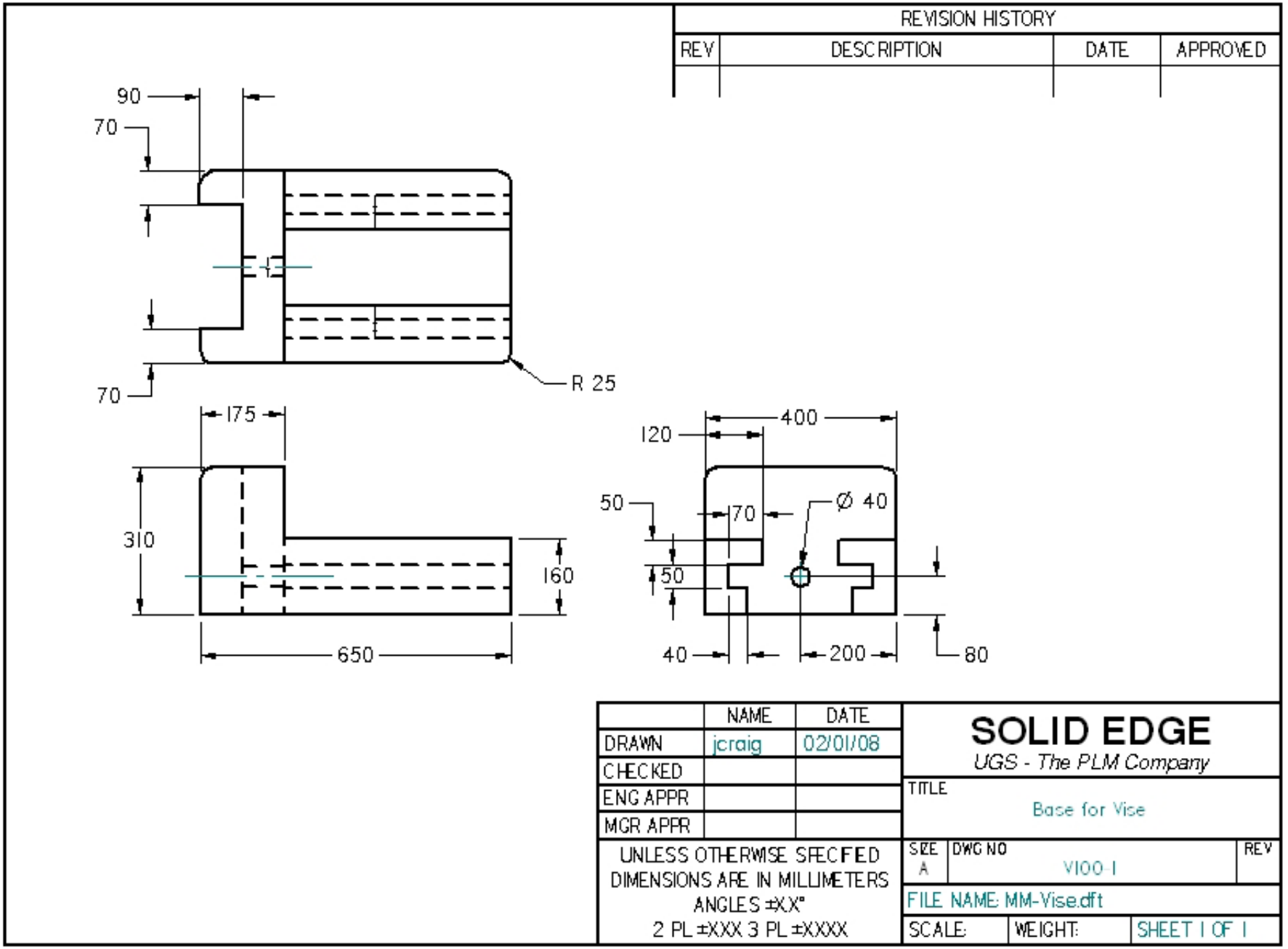
See the previous tutorial for placing hidden (dashed) lines.





__ Select **Sheet 1** at the bottom of the screen.
Place the 2D Model drawing in the title block at **1:10** scale.

End of Tutorial



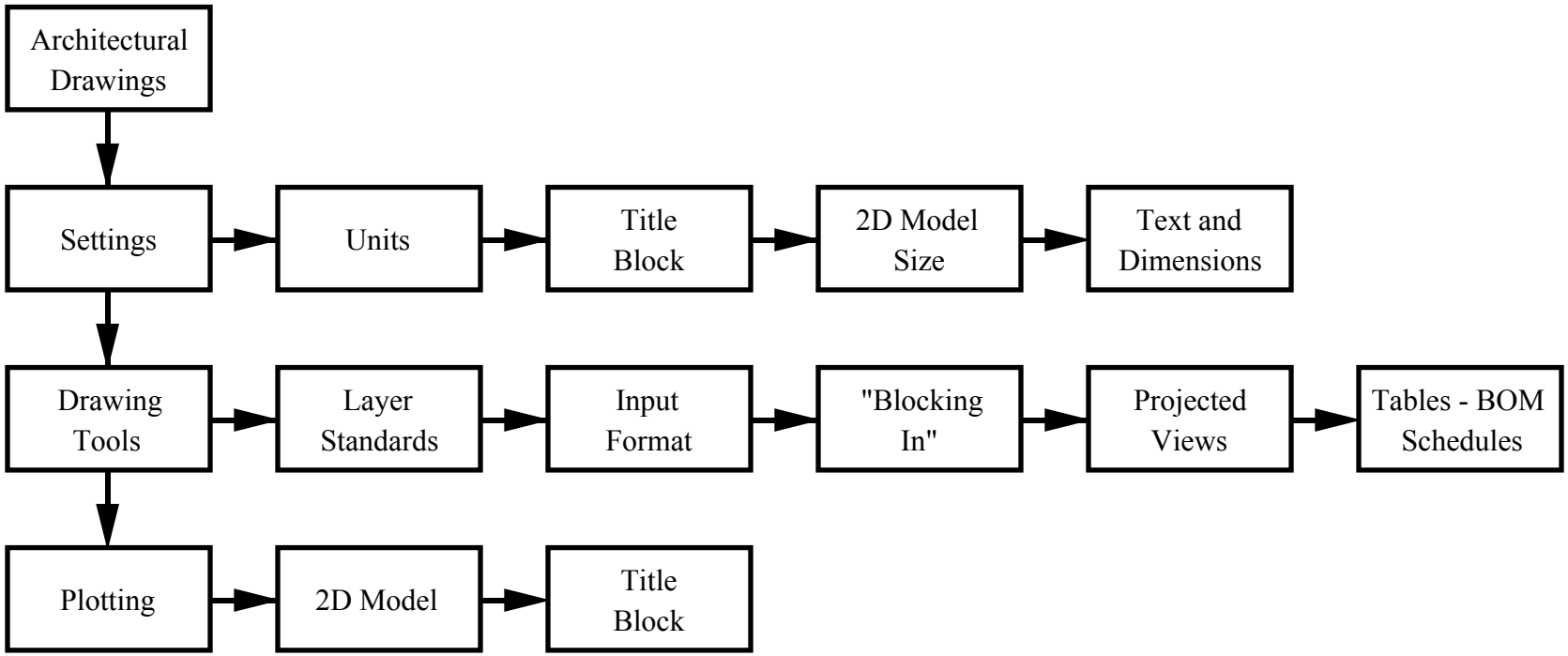
Architectural drawings require units in feet inches and fractions. Real World sizes are large and often must display many feet at times.

2D Model space must be set to a size that will accomodate the objects being drawn.

Plots must be scaled to the title block drawing sheets using **standard architectural scales**. Final plots should print at accurate scale sizes.

Layers are used extensively to separate and manage drawing information. Layer standards set by the American Institute of Architects (AIA) may need to be followed.

Bill of material and finish schedules require tables with precise information.



Architectural drawings and details often need to be plotted at a conventional ***architectural*** scale.

These scales are not part of the built-in scales that are provided with Solid Edge. Other scales may be set as needed.

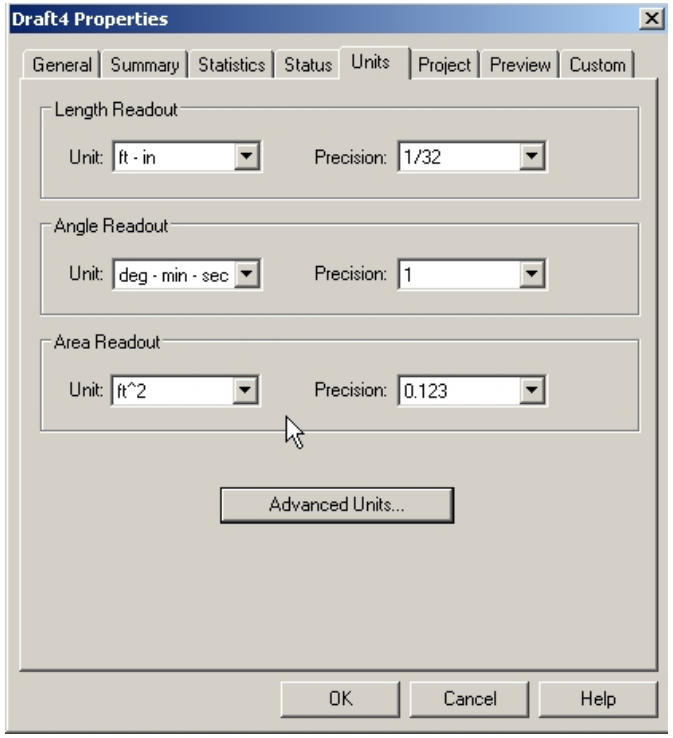
Conventional Architectural Scales	2D Drawing Factor
1/2”= 1’-0”	Factor = 1/2”=12” or 24
3/4“ = 1’-0” Used for details	3/4”=12” or 16
1/4” = 1’-0” Used for house plans	1/4”=12” or 48
1/8” = 1’=0” Used for buildings	1/8”=12” or 96
1/16” = 1’-0”	1/16” = 12” or 192

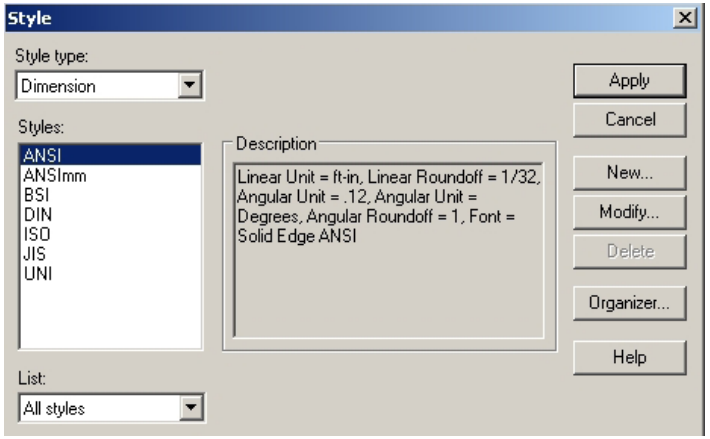
Setting Solid Edge for Architectural Drawing

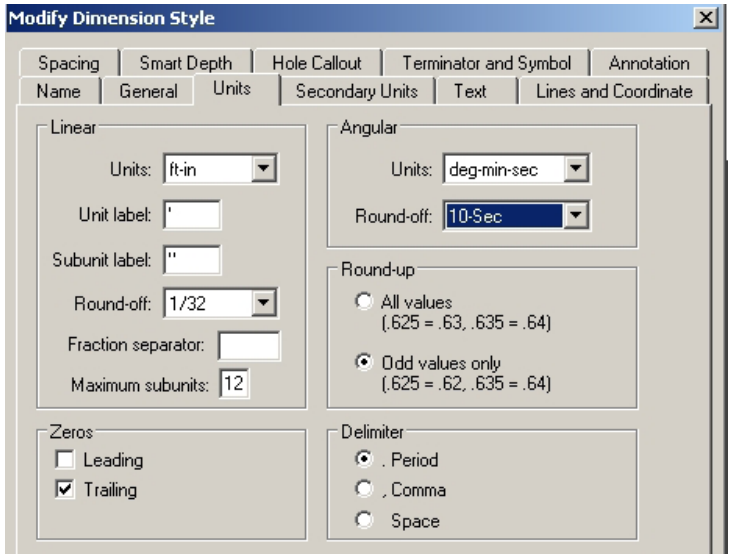
__ 1. Start a new drawing.

__ 2. Pop down **File .... Draft Properties**
__ Set **Units** as shown.

__ 3. Pop down **Format ....Style**
Set **ANSI ... Units** as shown.



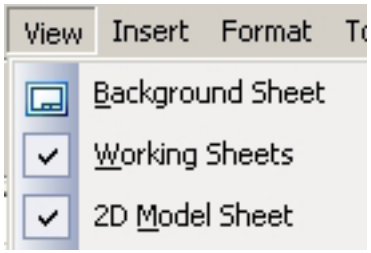




Note: Input Format
Type 27’ 6 3/8” for a line length.
That is, 27’ (space)
6 (space)
3/8” (return key)
Dimension on line length will read:

27'-6 3/8"

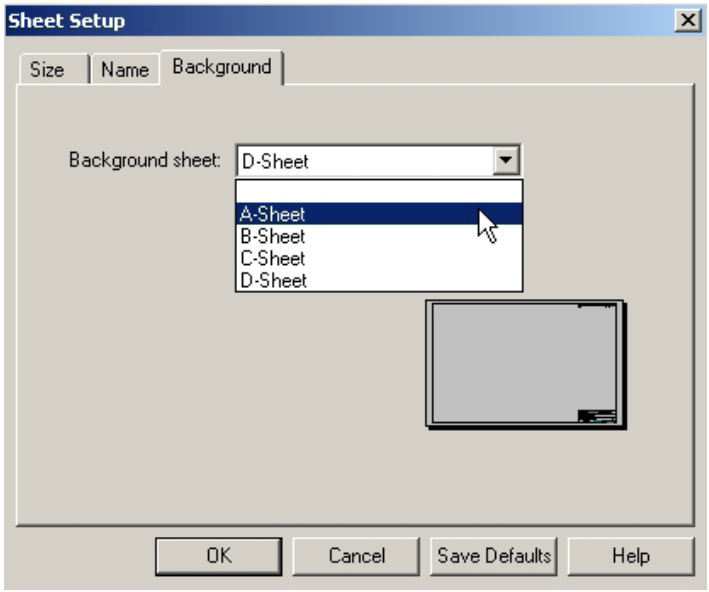
__ 4. Turn on display for Working Sheets and 2D Model sheet.
Pop down **View** and select both as shown.



Turn on both then ,
Click to select either "space" at the bottom of the screen.

__ 5. Right Click and select the Title Block to be used for plotting.

*Solid Edge must set up a scale relating Working Sheet to Model Sheet so that dimensions and standard text will display properly on the final drawing. Solid Edge automatically scales the text size and dimension elements **up** to 2D model space so they can be scaled **down** properly to Working space. The title block to be used must be set first.*

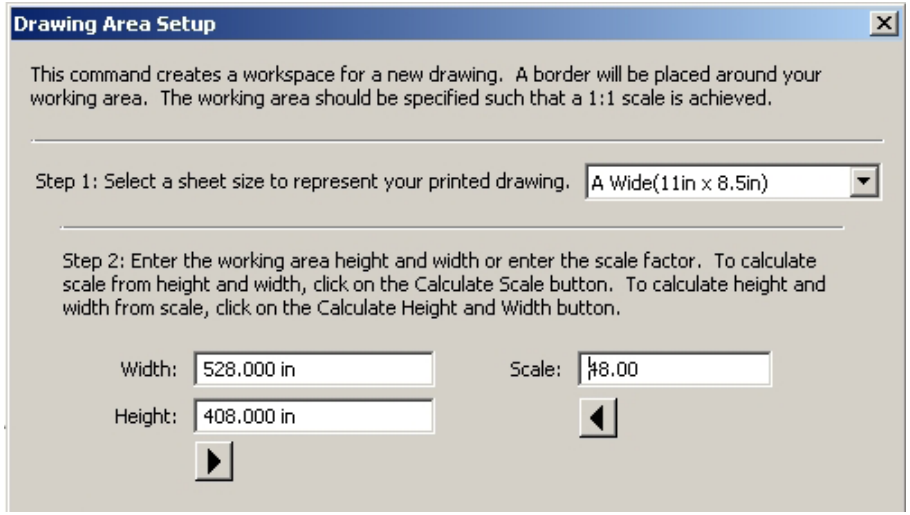


__ 6. Click 2D Model Sheet.
Pop down **File ....Drawing Area Setup.**
Set the Drawing size box. (Step 1)
Set the 2D Model space scale factor. (Step 2)
Click the arrow under scale to display the width and height.

The scale factor set is for a 1/4" = 1'- 0" scale.
1/4" = 12" = (48)

(Step 3) is not used for this setup.

Drawing setup is complete.



Draw the Plan View or key view for your layout in 2D Model space.

■ Layout using full scale "real world" units.

■ Use Layers to separate different types on information on the drawing.

■ Use Colors for different types of objects to make reading the drawing easier.

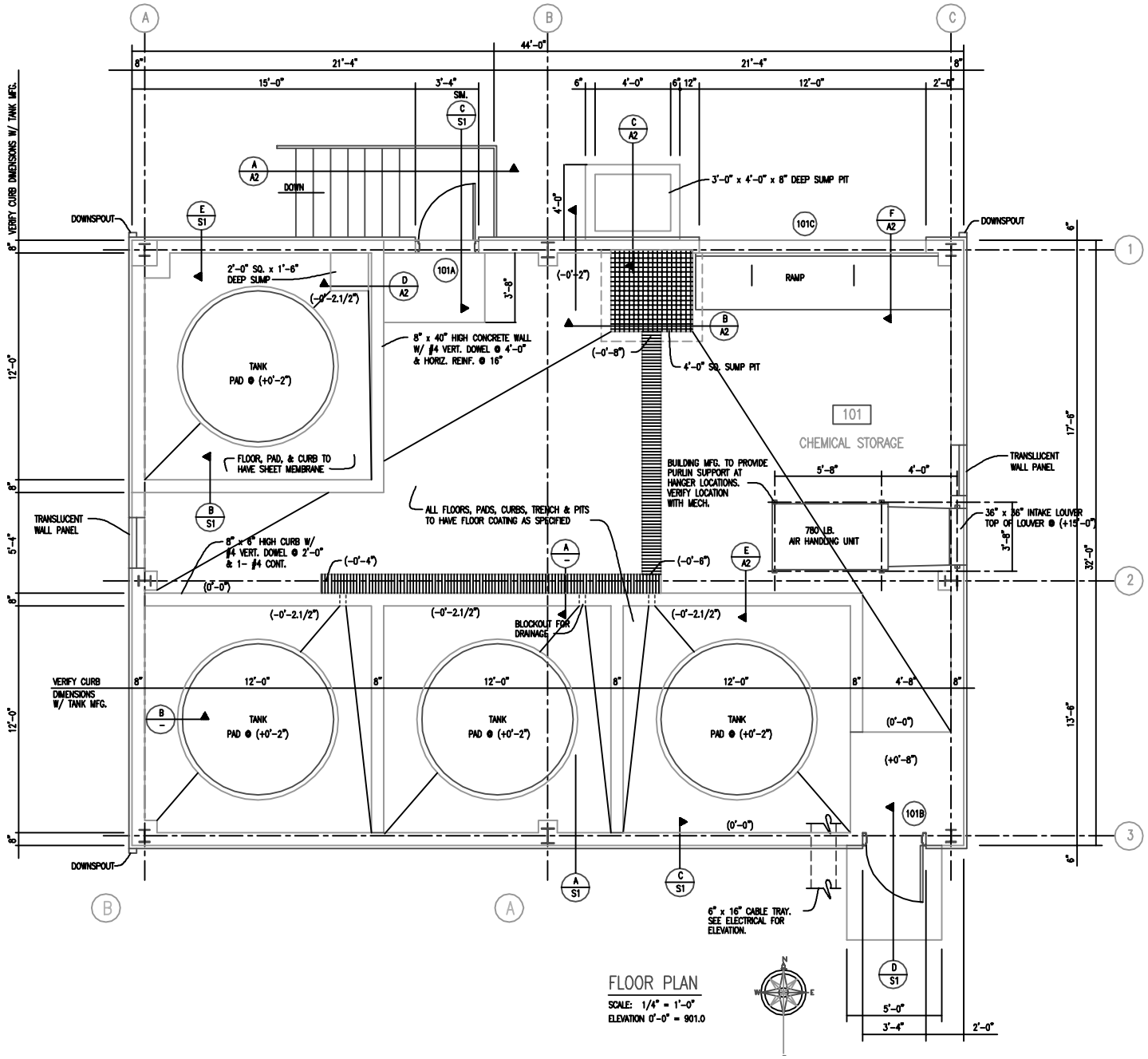
■ Use Linetypes according to standards.

Solid Lines indicate visible elements.

Dashed lines indicate hidden features.

Section Lines show cut locations.

Etc.



Below is a portion of a CAD Standards Guide for construction drawings. This type of document specifies Layer names, line colors and linetypes to be used in creating drawings. Contractors and sub-contractiors must follow these requirements.

* Based on American Institute of Architects (AIA) standards.

CORE	LAYER		ATTRIBUTE		
◆	Name	Description	Color	Lineweight	Linetype
	Architectural				
	A-ANNO-TEXT	General Text	4-cyan		continuous
	A-ANNO-REDL	Redlines	1-red		continuous
	A-ANNO-SYMB	Symbols	4-cyan		continuous
	A-ANNO-LEGN	Legends and schedules	4-cyan		continuous
	A-ANNO-DIMS	Dimensions	4-cyan		continuous
	A-ANNO-TTLB	Border and Title Block	7-white		continuous
	A-ANNO-NOTE	Job Notes	4-cyan		continuous
	A-ANNO-NPLT	Construction lines, nonplotting information, viewports			continuous
	A-ANNO-KEYN	Key notes	4-cyan		continuous
	A-AREA	Area calculation boundary lines			continuous
	A-AREA-IDEN	Room numbers, tenant identifications, area calcs			continuous
	A-AREA-OCCP	Occupant or employee names			continuous
	A-AREA-PATT	Area cross hatching			continuous
	A-CLNG	Ceiling information			continuous
	A-CLNG-GRID	Ceiling grid			continuous
	A-CLNG-PATT	Ceiling patterns			continuous
	A-CLNG-SUSP	Suspended elements			continuous
◆	A-DOOR	Doors	2-yellow		continuous

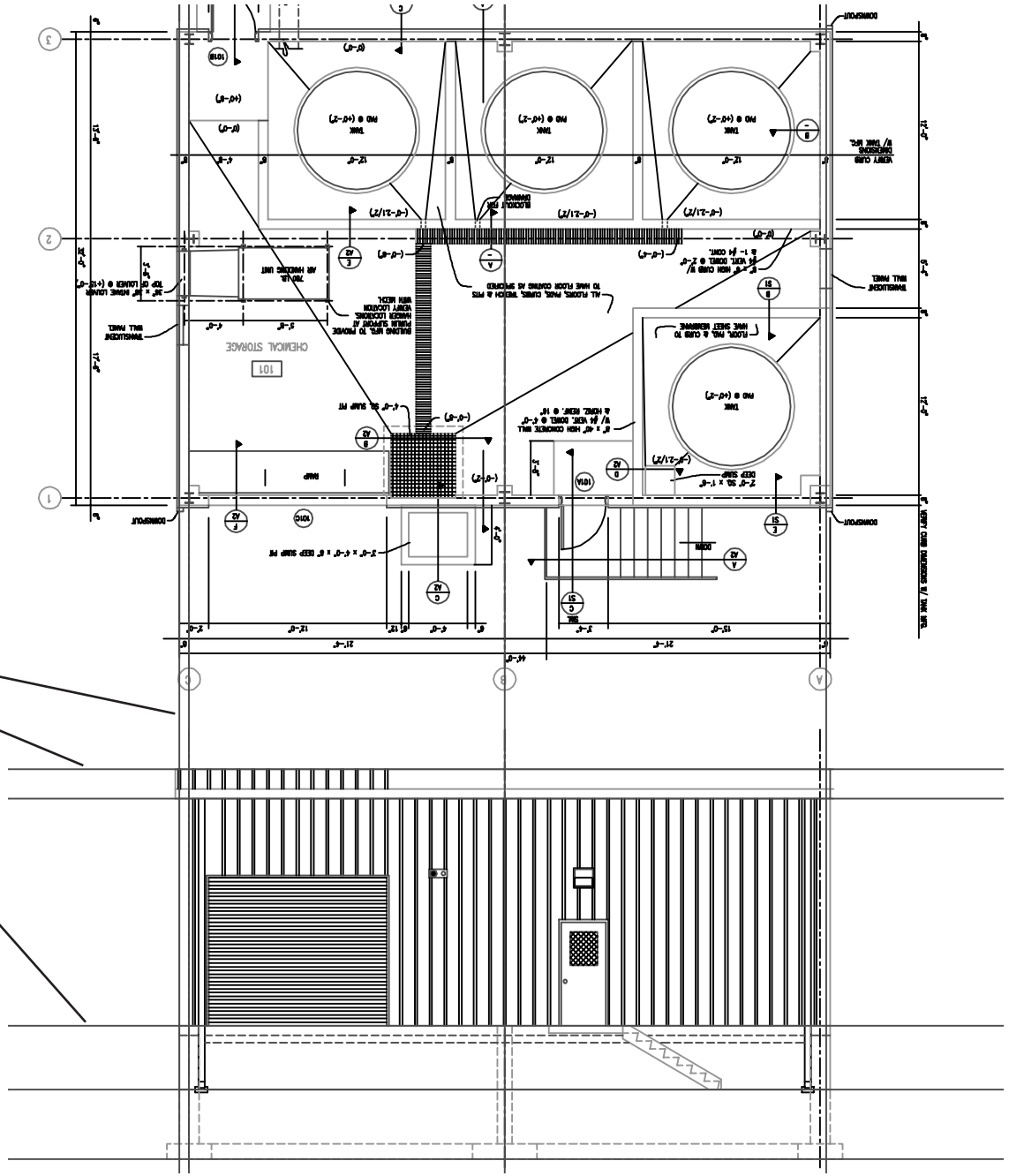
Elevation Views are often projected from the Plan view.

Construction Lines are used to “block in” the important locations (horizontal locations and vertical heights) on the layout.

■ Place construction lines on a separate layer so they can be hidden (Hide Layer option) before plotting.

We prefer to use red lines on the CON layer for construction lines.

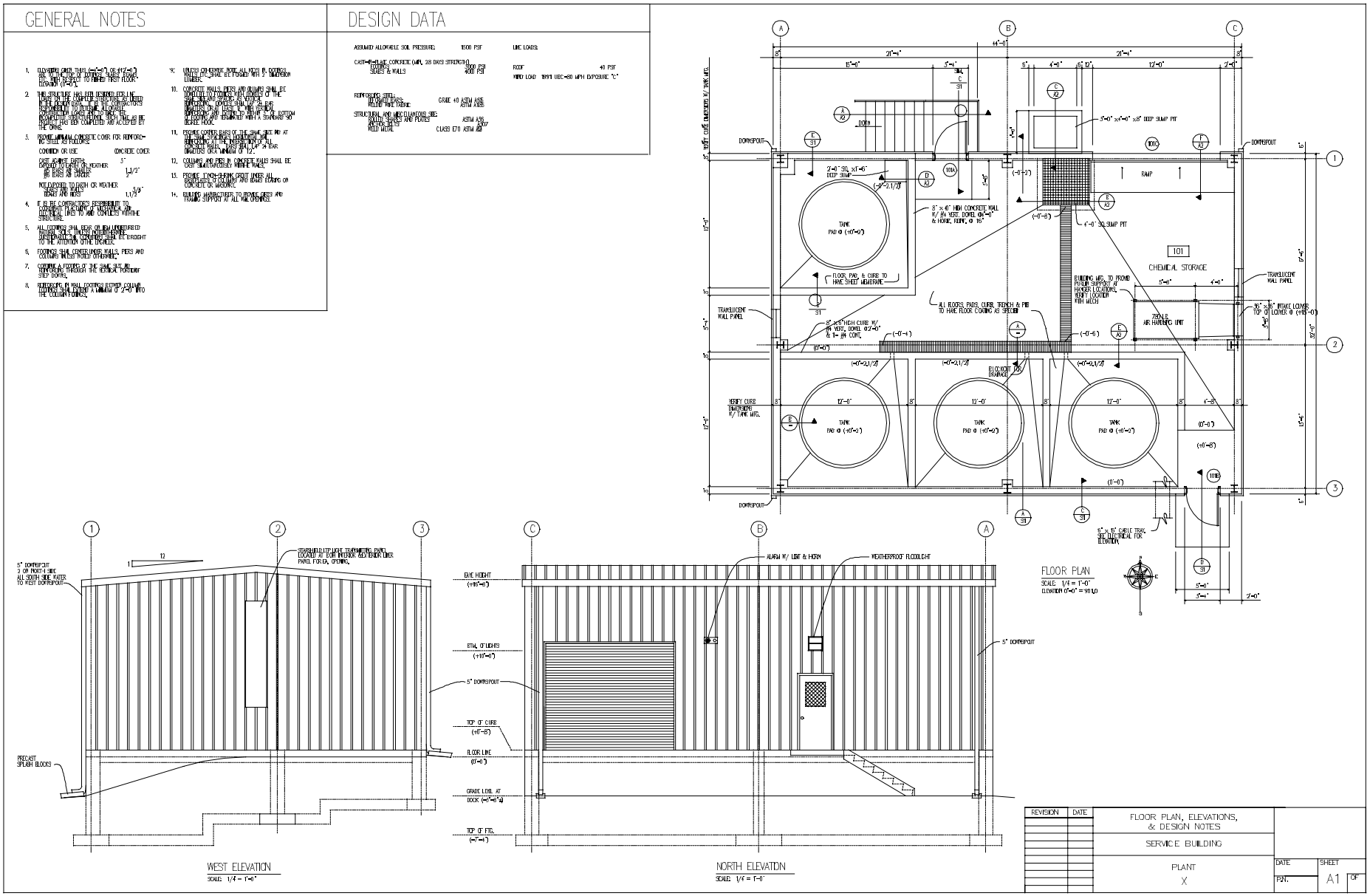
Construction lines are hidden before plotting



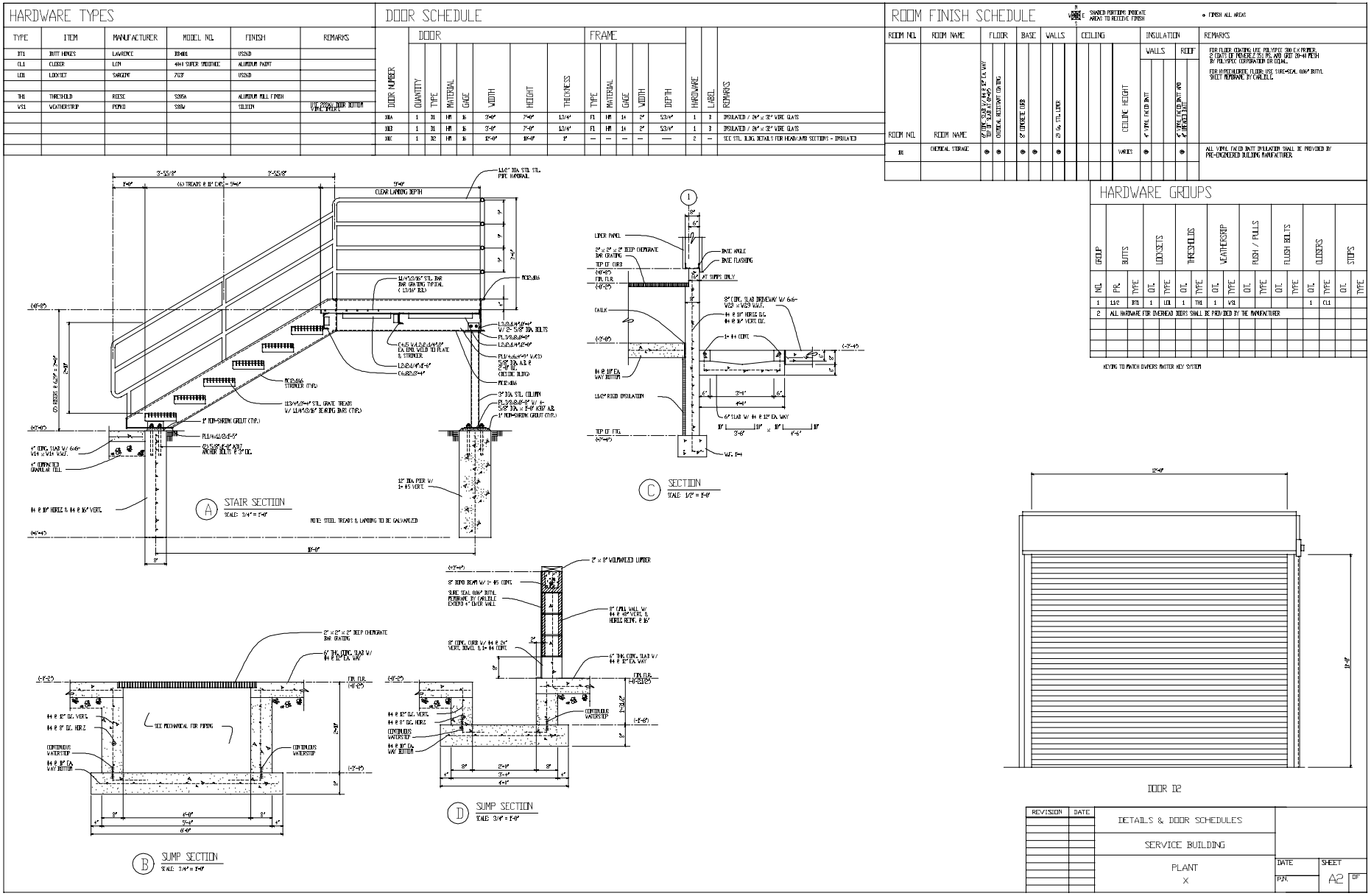
Front (North) elevation is projected from the Plan view. The projected view is moved and placed on the final drawing.

Place Views on Title Block. The Elevation Views are aligned as shown. Views are itentified by direction view faces.

Plan and elevation drawings are set to the same scale (1/4” = 1’-0”) on this page.

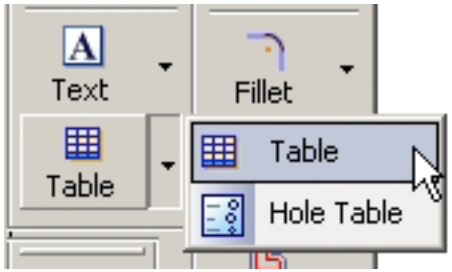


Details on this page are all 3/4" = 1'-0" (16) scale. Construction details are often the same for many items from one drawing to the next. Drawing details as Blocks and storing in libraries saves drawing time and makes putting together detail pages much faster.



Use the Table command to place and format schedules, Bill of Material, etc.

See the Table - Help menu for information on formatting and filling in table data.



HARDWARE TYPES

TYPE	ITEM	MANUFACTURER	MODEL NO.	FINISH	REMARKS
BT1	BUTT HINGES	LAWRENCE	BB4101	US26D	
CL1	CLOSER	LCN	4040 SUPER SMOOTHEE	ALUMINUM PAINT	
LO1	LOCKSET	SARGENT	7G37	US26D	
TH1	THRESHOLD	REESE	S205A	ALUMINUM MILL FINISH	
WS1	WEATHERSTRIP	PEMKO	S88W	SILICON	USE 222AV DOOR BOTTOM VINYL INSERT.

Plotting - Sheet Setup

■ Click **Sheet1** at the bottom of the page to go back to Working Drawing space.

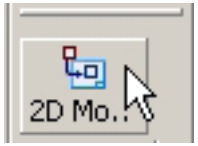
■ Click the 2D Model View icon.

■ Window the drawing area to plot.

■ Set the scale to insert the drawing. This scale is not listed on the pop down box.

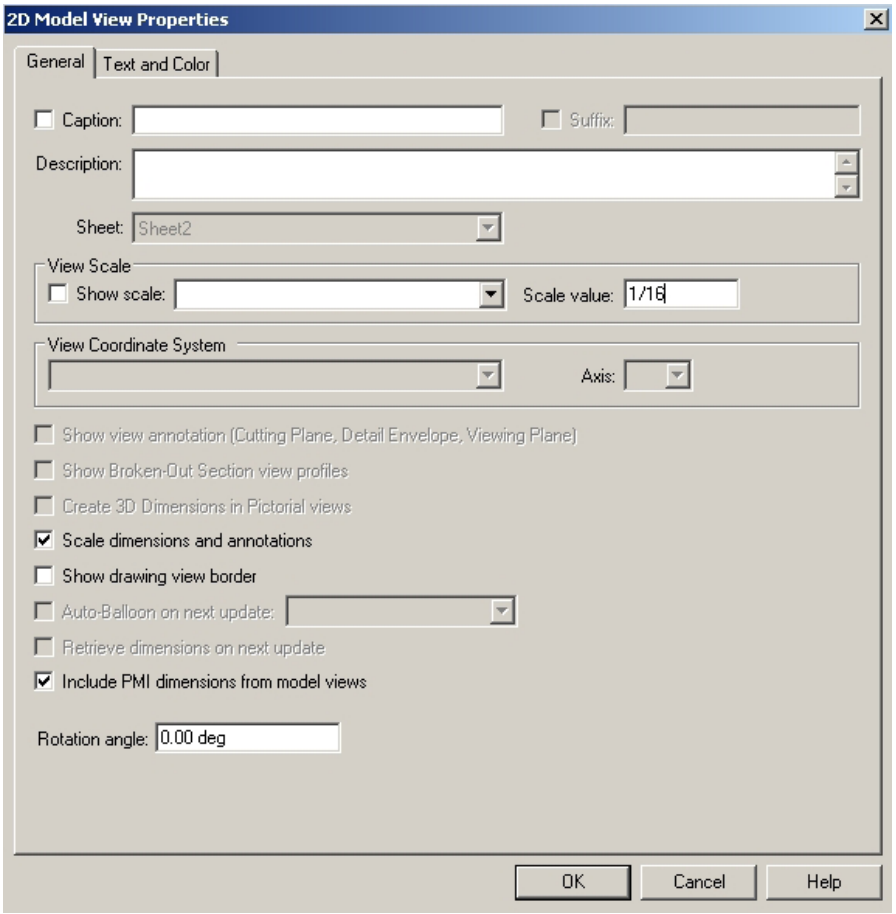
__ Click the Properties Icon and key in the scale 1/16

Calculations:
3/4" = 1'-0" or 3/4" = 12" = 48/3 =16
Scale is 16 for 2D model space
and 1/16 for inserting 2D Model into Working Drawing.

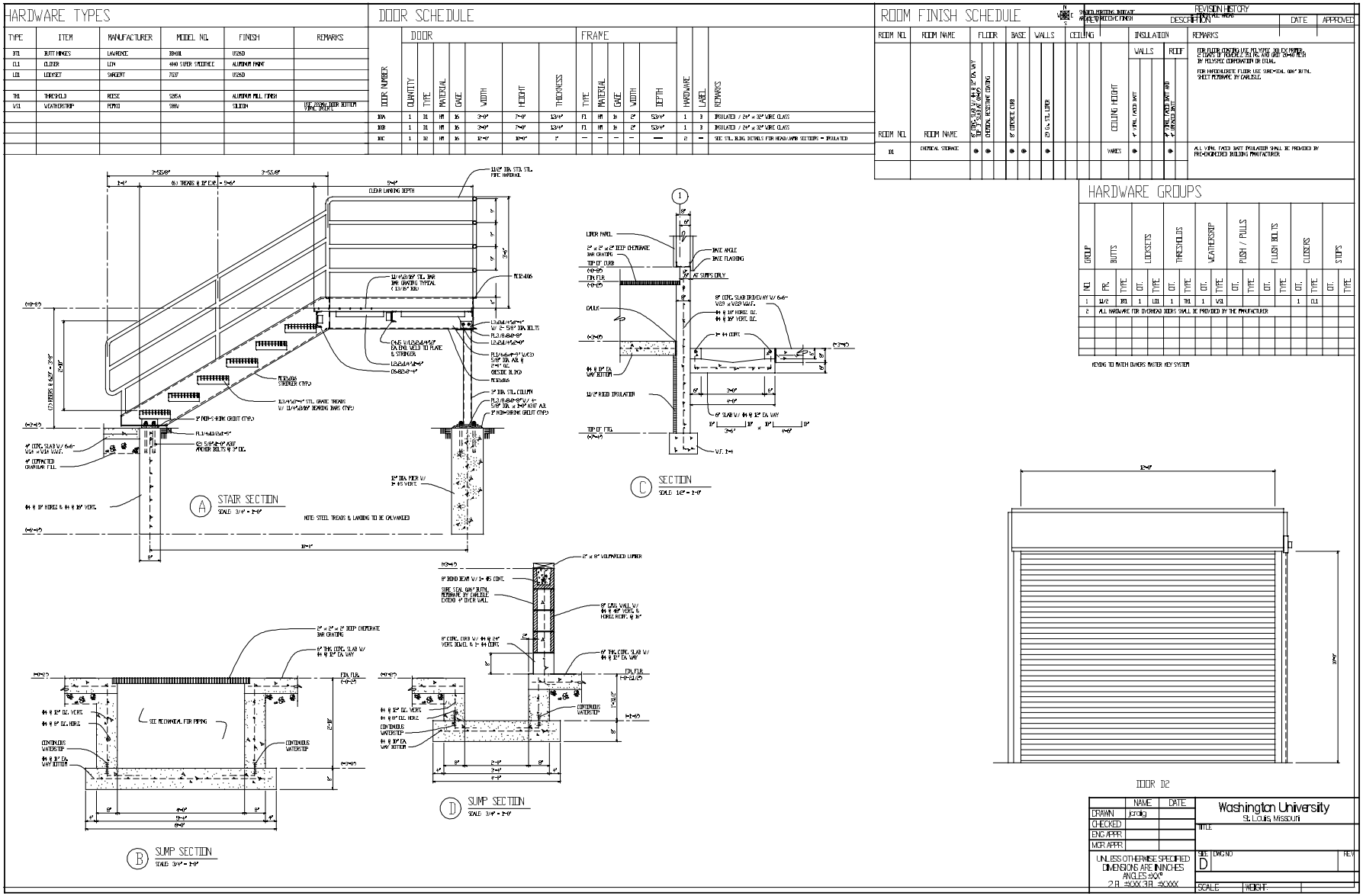


Click the Properties icon

Adds this Scale to the pop-down chart



Final Plot for details.



■ Set to 2D Model space. **Select File .... Drawing Area Setup**

Some drafters prefer to insert a title block at the appropriate scale into 2D Model space and create the drawing directly on the title block.

All layout work is done at "real world" units and full scale.

The title block and drawing are ratioed down at print time to fit the paper and provide the correct drawing scale on the printed sheet.

Following the steps shown, the title BLOCK will be scaled up to the correct size. Text and dimensions will also be scaled up properly so they can be scaled down at print time.

1. (Step 1)Set the Title Block size to be printed.

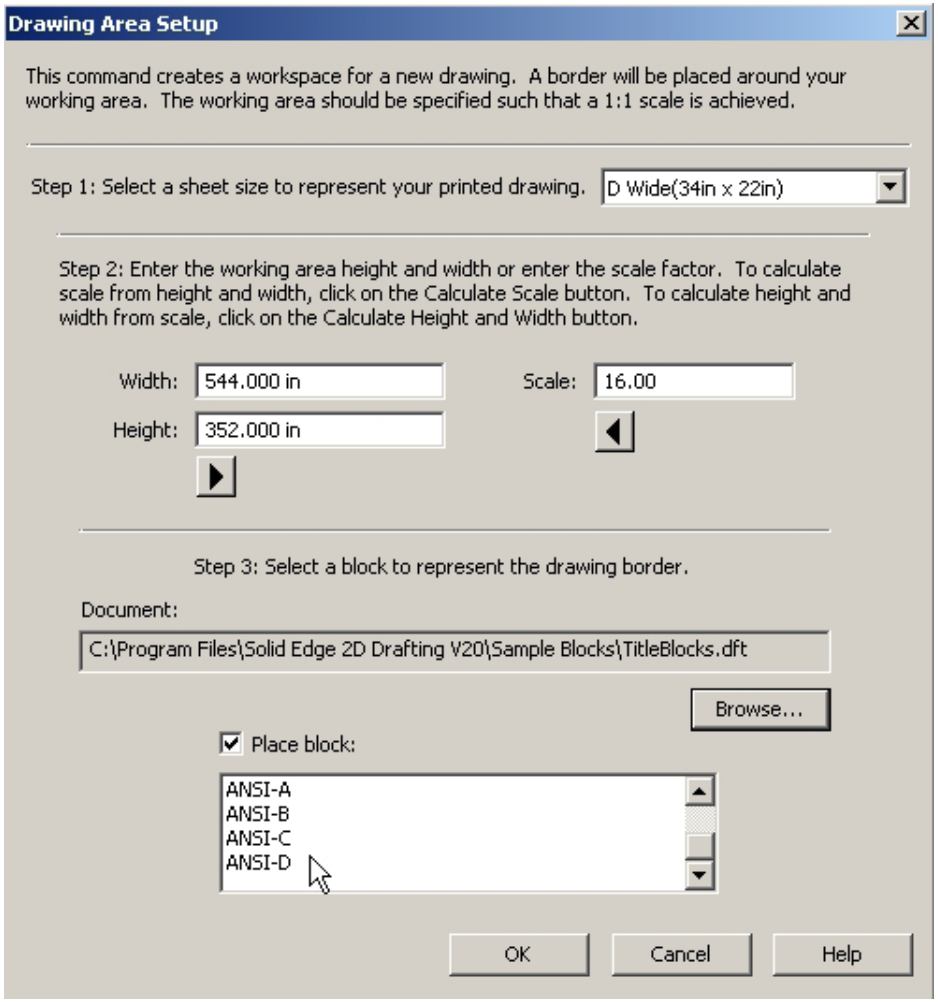
2. (Step 2) Set the Scale Factor 3/4"=1'-0" (16)

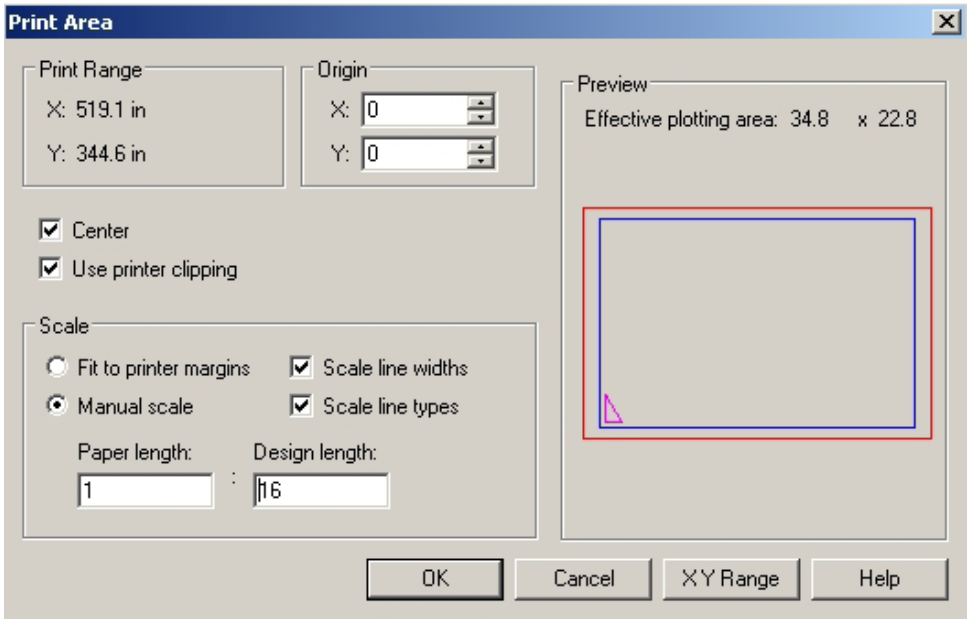
3. (Step 3) Select the correct BLOCK to insert.

The default path is shown.

ANSI-D is selected.

Create the drawing.

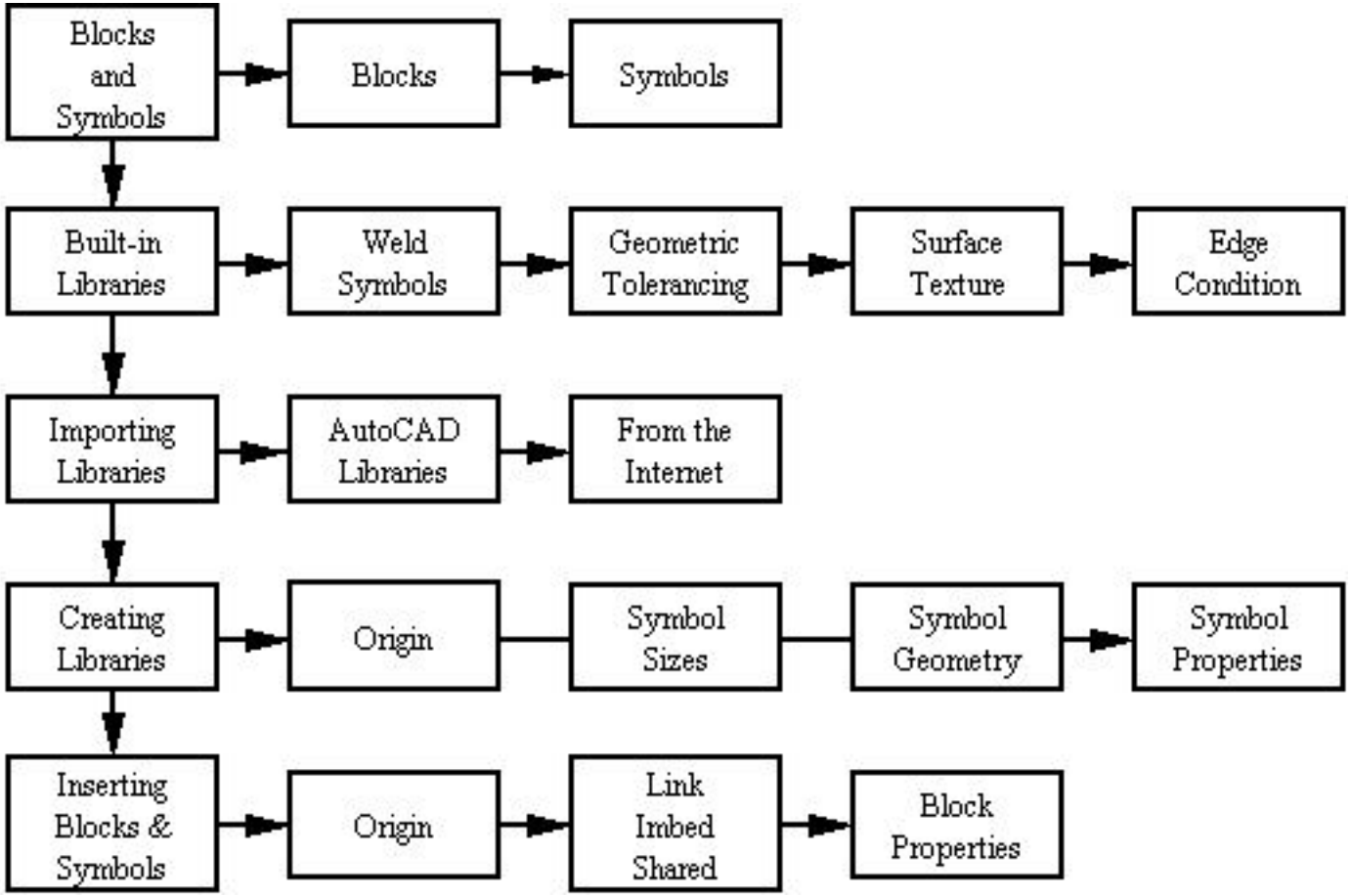




Printing the drawing to a D-size plotter.

Set the Paper Length to Design Length ratio. Verify that the drawing will fit properly.

Blank page



Components that are used frequently may be drawn once, stored in libraries and inserted quickly into drawings.

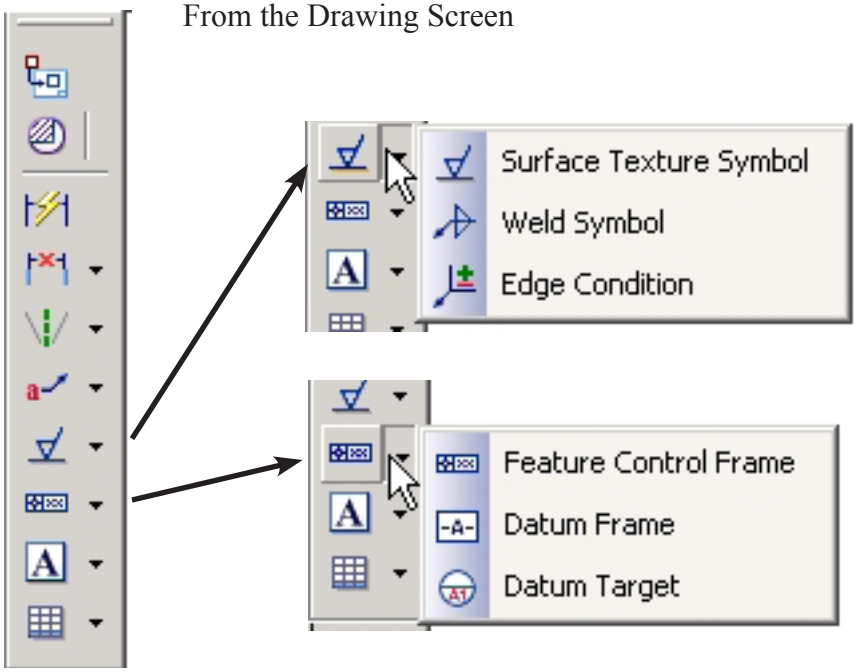
This saves time and increases accuracy.

Libraries may be shared by many workers.

A frequently used drawing or drawing component can be stored as a symbol for easy re-use in other documents. You can redefine the scale, position, and orientation of the geometry after you place it. Reusing geometry makes drawing more productive and efficient, and helps you maintain accuracy and consistency throughout a project.

Blocks are similar to symbols in their creation, use, and reuse capabilities. They can be imported from AutoCAD or defined in Solid Edge and stored in global libraries. ***Blocks also have some advantages over symbols.*** For example, they can contain intelligence in the form of variable text that can be referenced in callouts and part lists. They are also "lighter" than symbols. A block can be selected from a library and placed in a document as the master block, and then different representations, or views, of that master block can be added to the same document without the overhead of additional geometry and data. (*From Solid Edge Help file)*

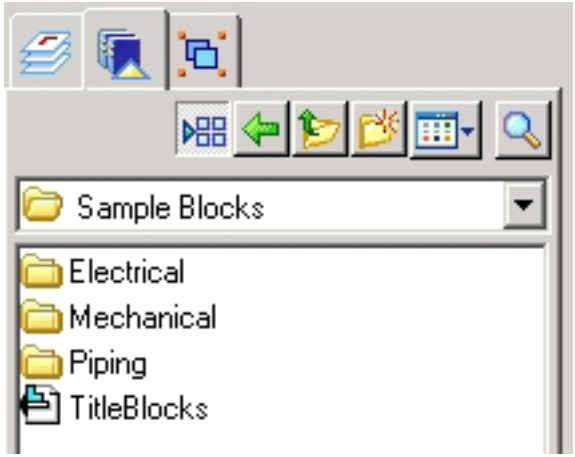
From the Drawing Screen



Frequently used symbols for machining and welding

Special symbols for True Position dimensioning.

From the Edge Bar **Library** tab



Sample Libraries

The Electrical library has a large number of symbols for use.

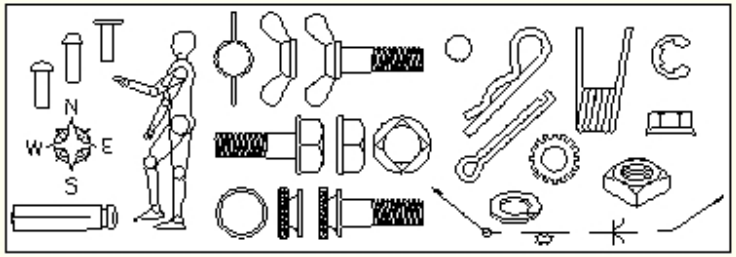
Exercise 1.

Explore the folders to see how blocks and symbols are stored.

Symbol Libraries may be purchased and converted for use by Solid Edge. This saves time and may be less expensive than drawing the symbols.

834 Mechanical Symbols **$89.00**

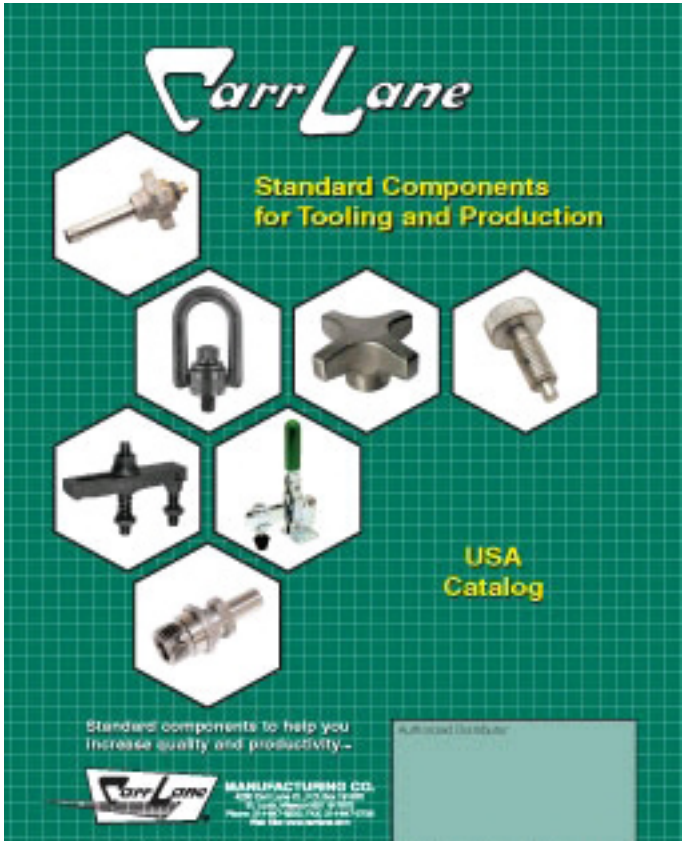
Including Bolts, Nuts, Cotter Pins, C-Rings, Dowels, Jigs & Fixtures, Rivets, Springs, Title Blocks, Washers, Mapping & Welding Symbols.



Most manufacturers now have on line catalogs of products for quick download.

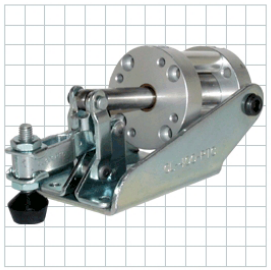
Solid models of components, and 2D drawings are provided. This saves much time in drawing and helps sell products.

Download items that are used often and save in folders.



Features | Dimensions | Larger Photo

AIR-POWERED CLAMPS



CL-400-PTC

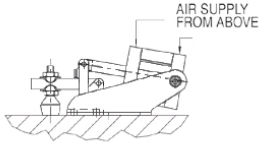
100 Lbs Holding Capacity

FEATURES: Super-compact air clamp for applications where space is at a premium. Similar to a vertical-handle hold-down clamp, except operated by an air cylinder instead of by hand. Toggle linkage provides high holding capacity and insures positive mechanical locking even if air pressure fails. Open arm provides adjustable spindle location. Arm opens 100°.

OPTIONAL POSITION SENSING: These clamps are optionally available with an air cylinder that has a magnetic piston ring for position sensing. Order Hall-effect switches separately (see Air Accessories).

MODELS AVAILABLE (STEEL):

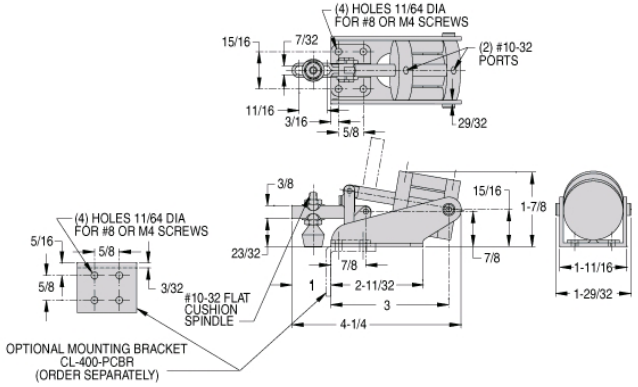
CL-400-PTC	Open Arm
CL-400-PTC-MP	Open Arm, Position Sensing



AIR CYLINDER: 3/4" bore, double acting, #10-32 ports. Buna-N seals for -20° to +200°F operating temperature. High-temperature viton seals are available by special order (+400°F maximum). 100-psi maximum input air pressure exerts 100 lbs maximum clamping force at center of arm.

ACCESSORIES: Supplied with #10-32 flat-cushion spindle CL-316112-SF and (2)

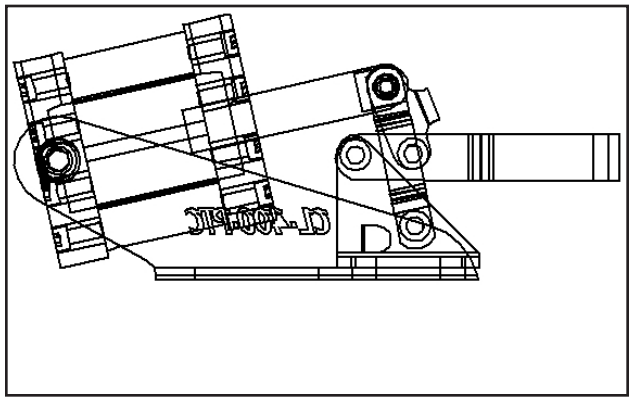
AIR-POWERED CLAMPS



PART NO.	DESCRIPTION	HOLDING CAPACITY	CLAMPING FORCE AT 100 PSI (AT CENTER OF ARM)	SHIPPING WEIGHT	OPTIONAL MOUNTING BRACKET
CL-400-PTC	Open Arm	100 lbs	100 lbs	0.8 lbs	CL-400-PCBR
CL-400-PTC-MP	Open Arm, Position Sensing				

Carr Lane MANUFACTURING CO.
4200 Carr Lane Ct., P.O. Box 191970
St. Louis, Missouri 63119-7970 USA
Phone: 314-647-6200, FAX: 314-647-5736
Web Site: www.carrlane.com

en_1384



Imported drawing view ready to use in a design

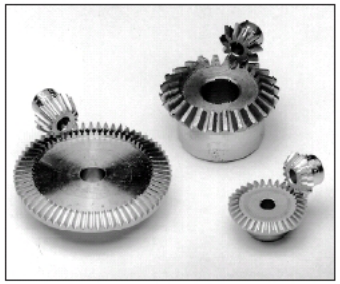
Boston Gear

http://bostongear.com

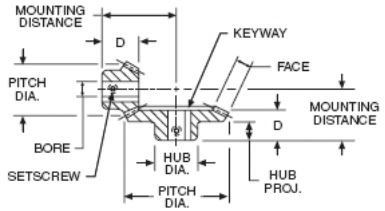
Examples from the Boston Gear catalog. 2D drawings and 3D solid models are available for download. Drawing and modeling gears can take much time.

48 THROUGH 20 DIAMETRAL PITCH
BRASS AND STAINLESS STEEL AND STEEL — HARDENED AND UNHARDENED

20° PRESSURE ANGLE



All gears have "Coniflex"® tooth form, except as noted. All hardened steel gears have teeth only hardened and are equipped with standard keyways and setscrews, except as noted.



REFERENCE PAGES

Alterations — 151
Lubrication — 151
Materials — 152

STANDARD TOLERANCES

DIMENSION		TOLERANCE
BORE	All	±.0005

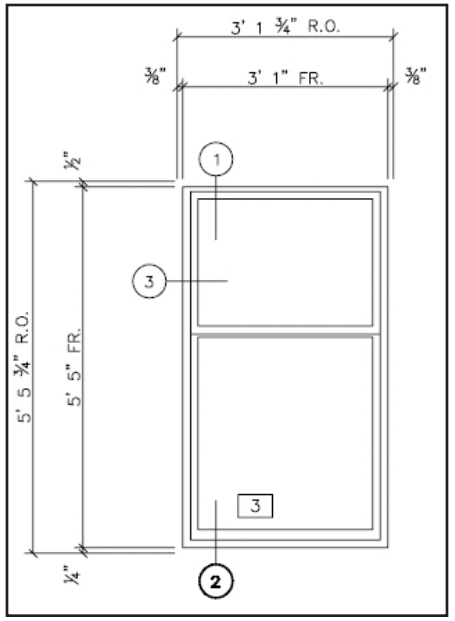
ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

Ratio	No. of Teeth	Pitch Dia.	Face	Bore	MD *	D	Hub Dia.	Hub Proj.	Catalog Number	Item Code	Catalog Number	Item Code
48 DIAMETRAL PITCH									BRASS		STAINLESS STEEL	
2:1	36 18	.750 .375	.12	.1875 .125	.438 .594	.257 .335	.44 .28	.19 .19	G479Y-G† G479Y-P†	12136 12134	GSS479Y-G† GSS479Y-P†	49991 49990
3:1	36 12	.750 .250	.09	.1875 .125	.375 .562	.257 .285	.44 .22	.19 .17	G478Y-G† G478Y-P†	12132 12130	GSS478Y-G† GSS478Y-P†	49989 49988

Architectural Details.

A large number of architectural items are available for download.

Windows,
Plumbing fixtures
Kitchen cabinets
etc.
are a few of the details that are available.



THE BOLD LOOK OF KOHLER.

GETTING STARTED | WHERE TO BUY | E-MAIL NEWSLETTER | KOHLER WORLDWIDE

SEARCH Keyword or item number GO

- Home
- Design & Create
- Bathroom Products
  - Categories & Service Parts
  - Commercial
  - Resources
- Kitchen Products
- Online Store

Sign up for our free, monthly e-mail newsletter.

Bathroom Products: CAD Symbols & Cutout Templates

CAD Symbols

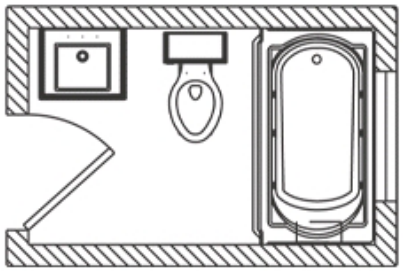
This section contains full-scale 2D and 3D DWG and DXF files of our products. These CAD files include 2D plan, front and side view files as well as 3D models. Architects and designers can use these files for space planning drawings and room renderings.

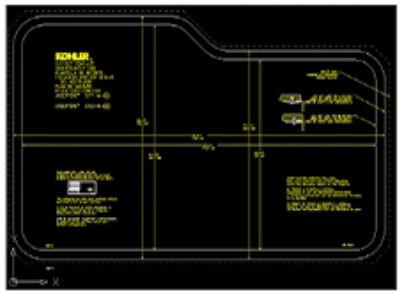
→ Find CAD Symbols

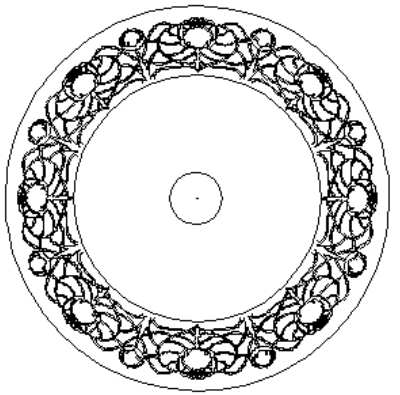
Cutout Templates

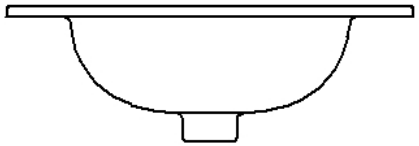
This section contains full-scale 2D DXF cutout templates of our products. These files can be used for computer-controlled (CNC) or manual cutting of countertops or bath surrounds.

→ Find Cutout Templates









Detail Drawings

Symbols

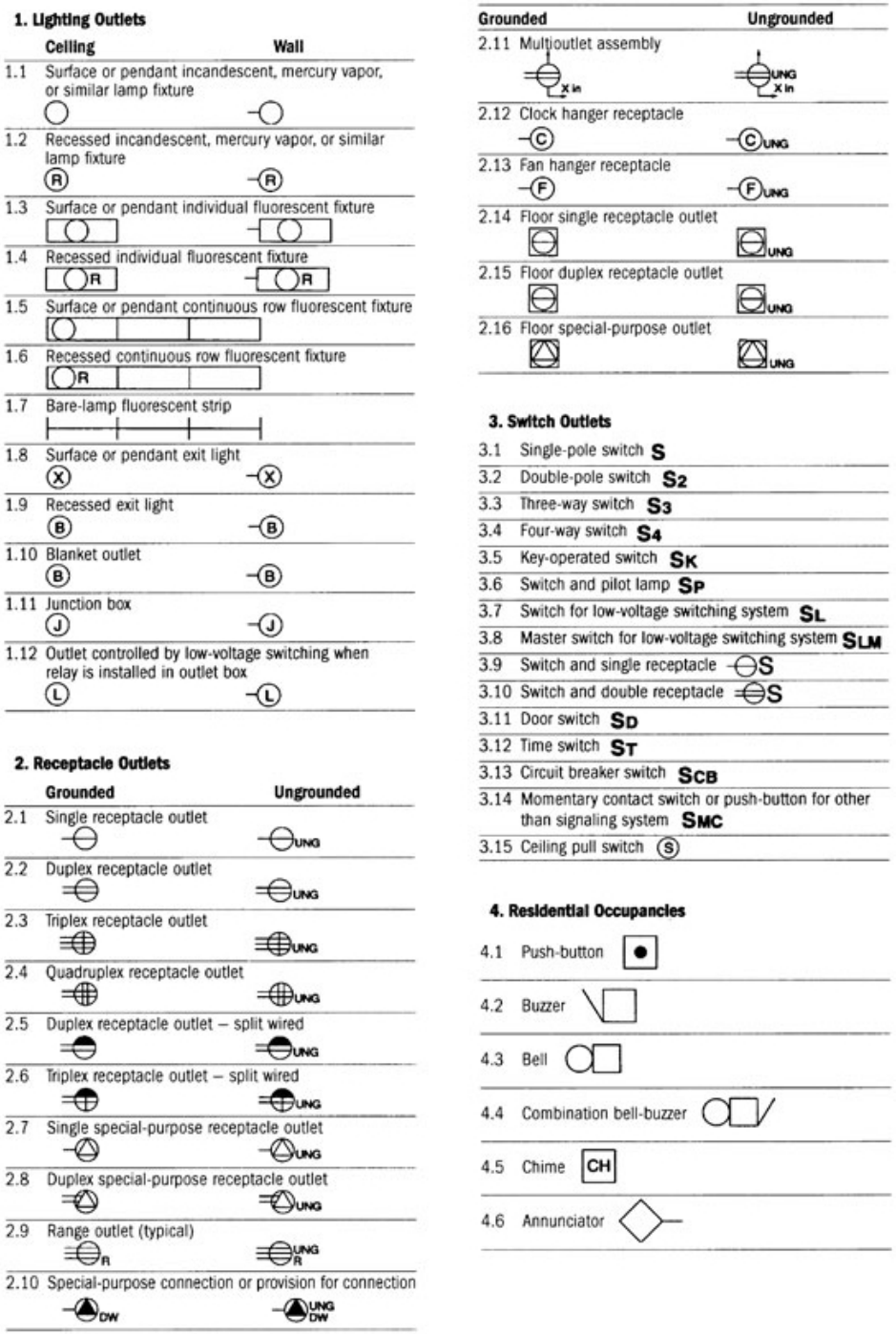
Almost all drawings contain symbols of some type. Symbols are a universal way of providing information without the need for text. Symbols are simple line drawings and the shapes are stardardized but the size is variable.

Sizes of symbols vary from 1/4 inch to an inch or so on the final plot. They must be big enough to read but not take up too much space. Symbol libraries may be drawn quickly.

Blocks are drawn like symbols. ***Attribute or data base information may be attached to blocks.*** For example, a symbol might be used for a bell as shown to the right. If a block is used, the symbol would show and information about the bell could be stored also. The manufacturer, part number, supplier, working voltage and other information could be collected. Later, this information could be automatically displayed in a bill of material.

Generating Bill of Material information requires very careful collection of data about the items in a drawing. All components that are purchased down to the simplest bolt, nut or wire must be listed. Before computers, this requred a person to look at the drawing and write down every item. This was refered to as "doing takeoffs". Removing one item and substituting a new item required careful record keeping

On the computer, if one bell was removed from the drawing and another inserted then the bill of material would be updated automatically. The same would be true for all kinds of objects that could be represented by a block. Doors, windows, gears, motors, bolts, etc. This automates the process of producing bill of material information and increases accuracy.



Drawing Symbols.

Obtain a listing of the symbols you need. Standards books or textbooks from mechanical, electronics, fluid power, architectural, etc. fields are best. Overview:

1. Create a library folder for the symbols. *If you are working on a school computer, be sure to create libraries and folders in your own filespace.*

2. Create Layers. If drawings are to be sent to others or are to be used with AutoCAD then using the proper layers is essential. AutoCAD often uses layer 0 (zero) for symbols. If layer zero is not used then create a named layer.

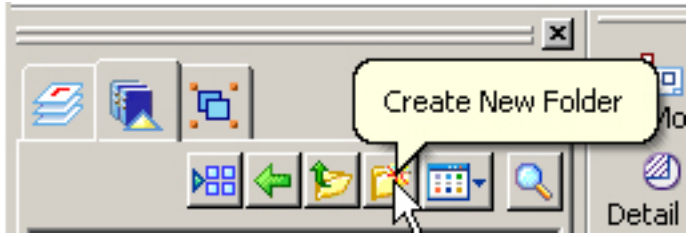
3. Set the Grid. Major lines = 1.00 inch, 20 minor lines (.050 inch) spacing is a good start.

4. Draw symbol

5. Save to library. Use a standard name.

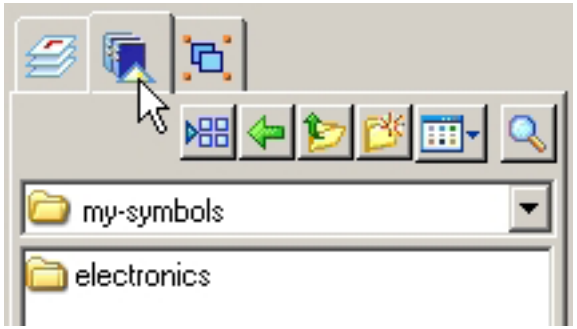
1. Click the Library Tab

Create a new folder in your personal filespace.



my-symbols is the master file.

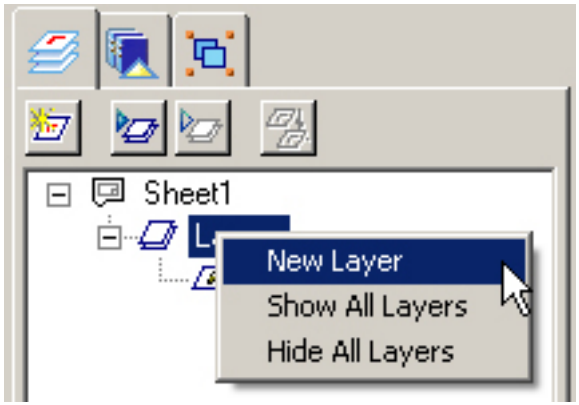
electronics is a folder under my-symbols.

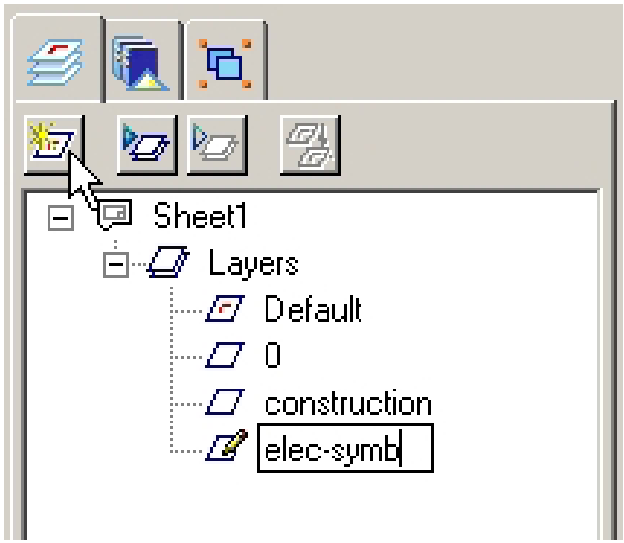


New layers were created. Use layer zero or a special named layer depending on the company or project standards.

2. Click the Layer Tab

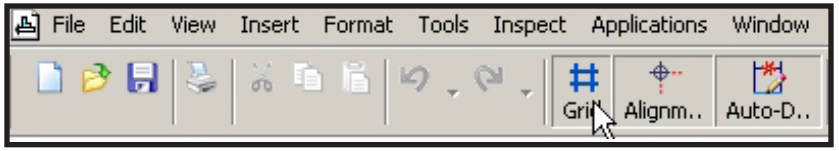
Right-click and select **New Layer**





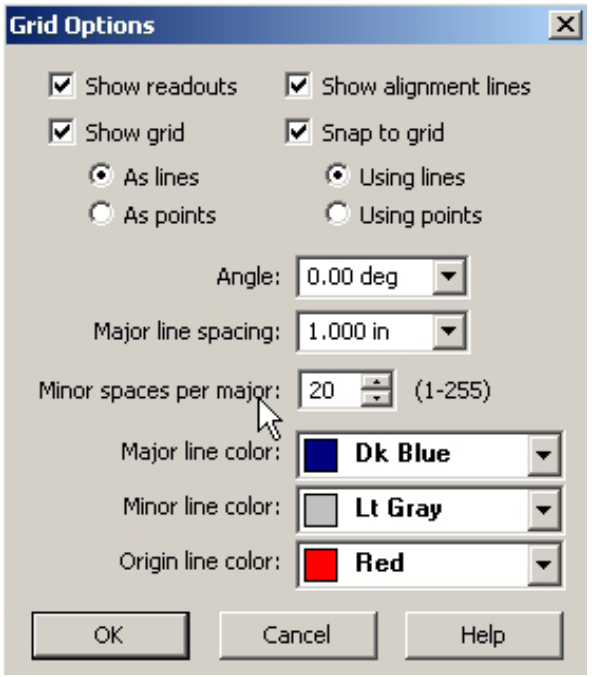
3. Set the Grid. Major lines = 1.00 inch, 20 minor lines (.050 inch) spacing is a good start.

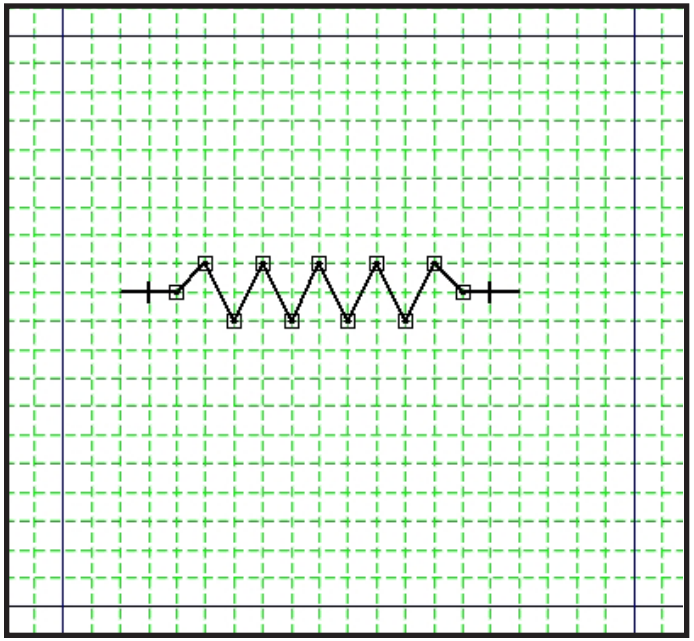
Zoom into about a 1 inch area.



4. Draw the symbol.

Click properties.
Click the settings as shown.

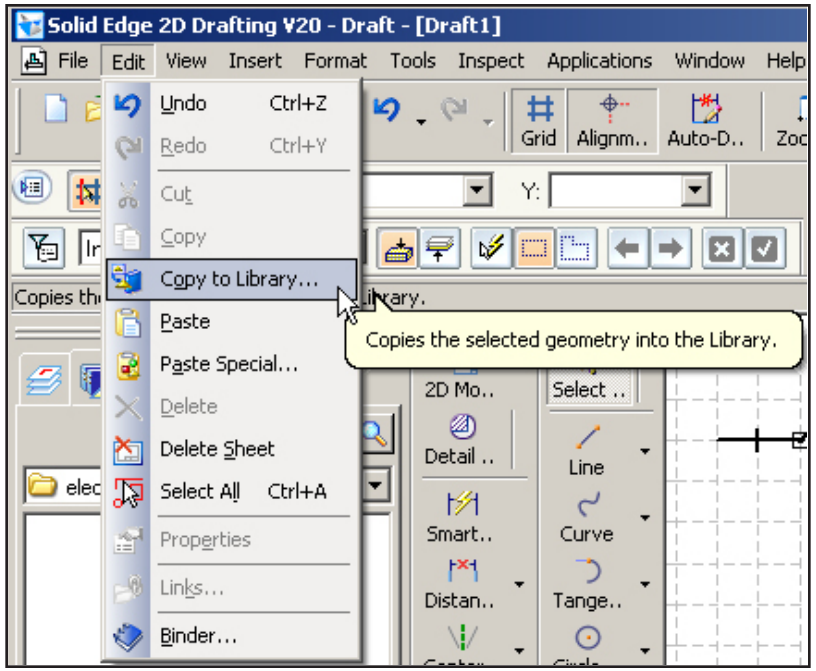




Resistor symbol.
Length = .7 inches

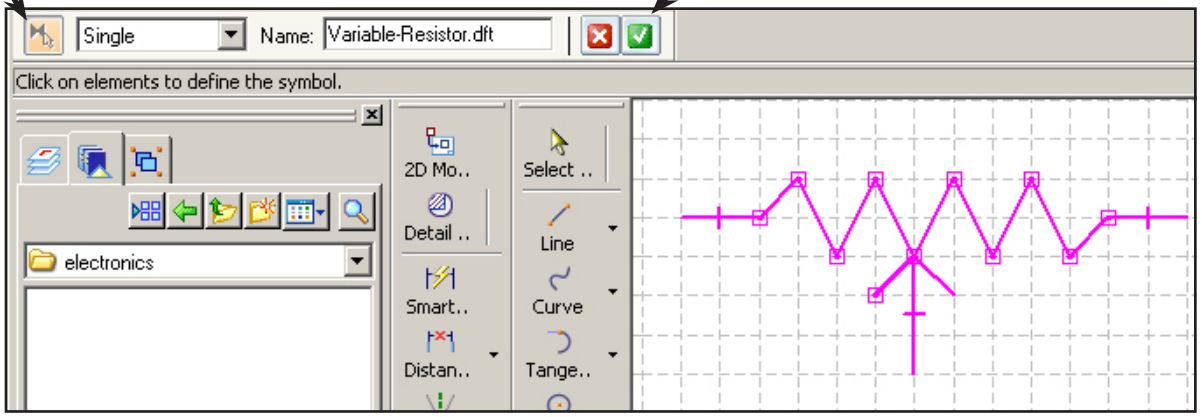
Saving a Symbol to a library.

- Pop down the **Edit** menu
- Click: **Copy to Library**
- Select the geometry.
- Name the item
- Click the O.K. checkmark. The prompt is for origin point.
- Set the origin point.

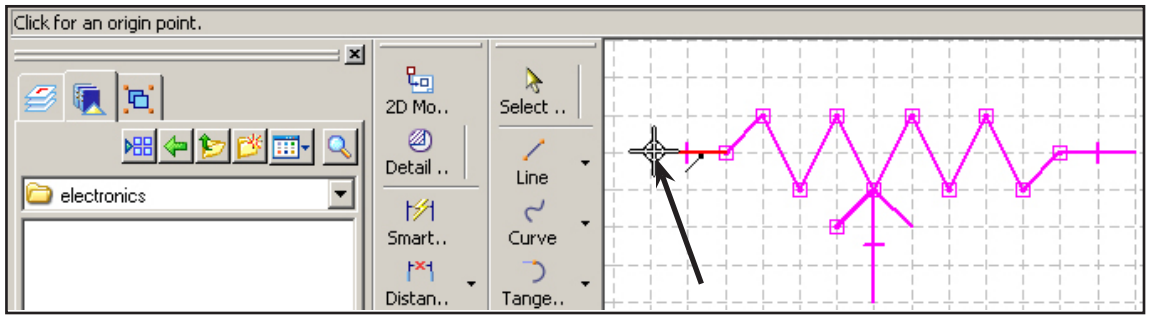


Select geometry

O.K.

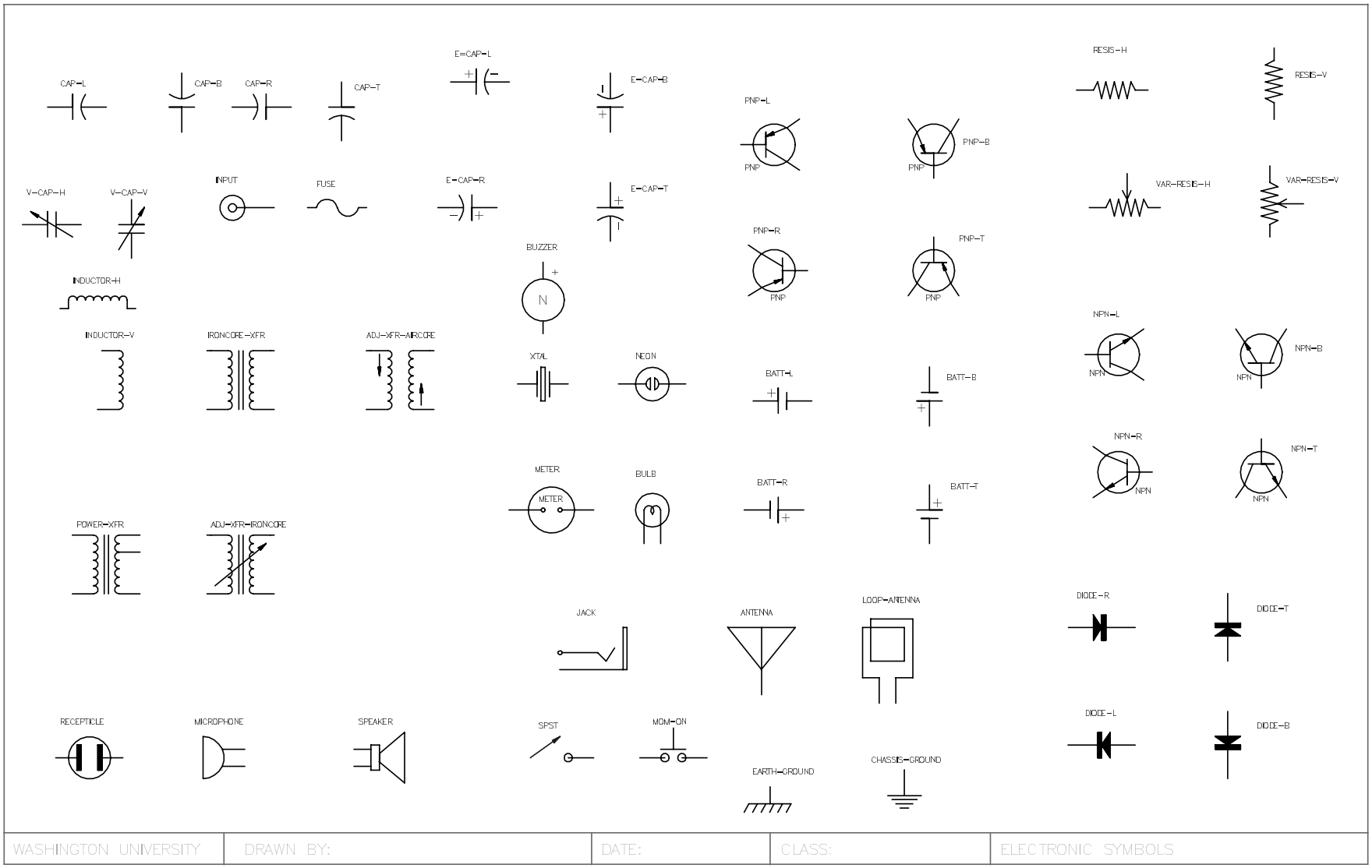


The origin point places the symbol on the drawing later. Pick the origin point at a logical location. Left? Top? Right? Bottom? or middle? depending on how the symbol will be used.



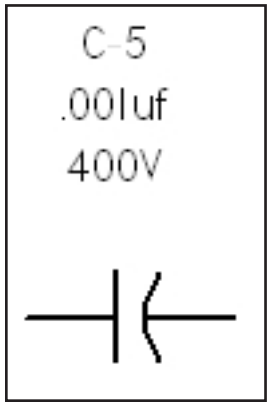
Blocks may be drawn using the drawing tools in Solid Edge. These electronic symbols are to be used in making schematic drawings. They will be stored in a library. Variable data will be assigned to each block to display on the drawing. For each block we need to know:

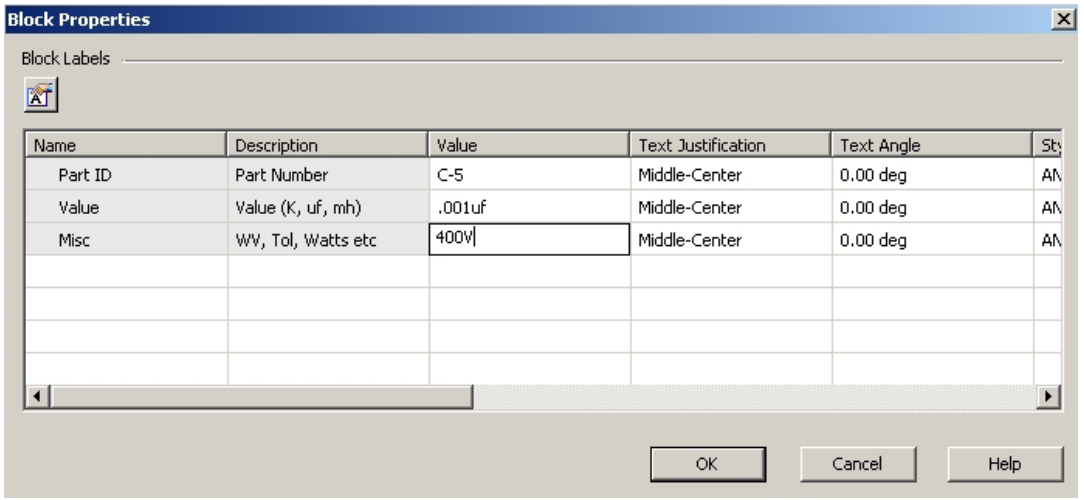
Part ID (C5 ... R7 ... I 2 ... Q3 etc.)
Value (.01 uf 10K 100mh 2N2222 etc.)
Misc (working voltage, wattage, manufacturer, etc.)



When the block is inserted, Solid Edge will prompt for the data to be displayed.

The drawing will show:

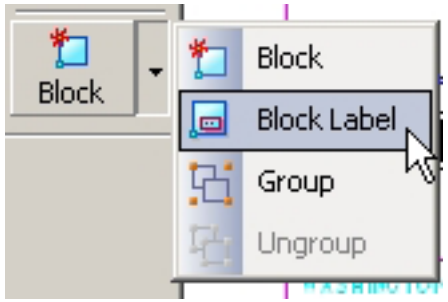




Label Prompt Data typed in

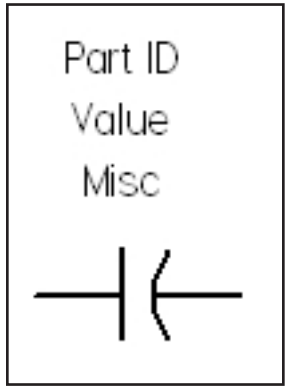
Block Labels must be set for each block before creating each block.

The Block icon has options:
Block
Block Label
Group



Three Block Labels were used in this example.

Depending on the application one or more block labels may be needed.



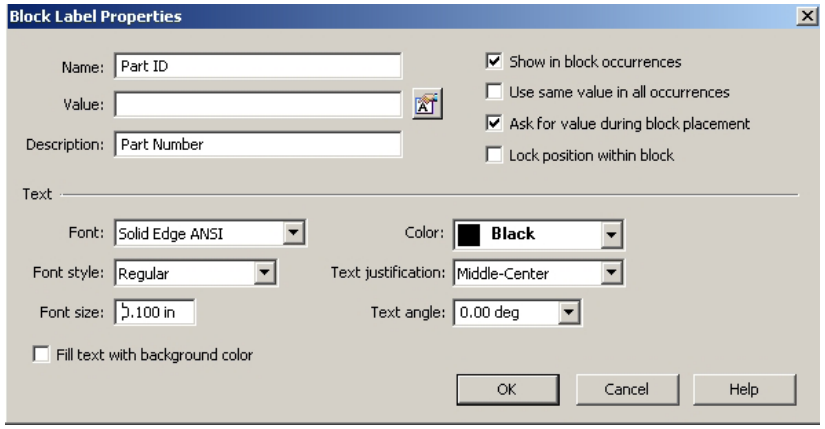
Click **Block Label**

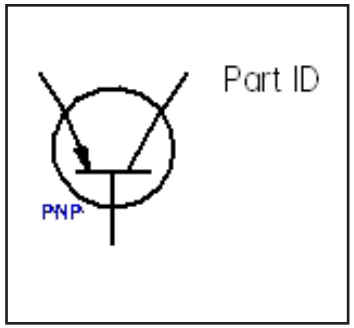
Input the information as shown.

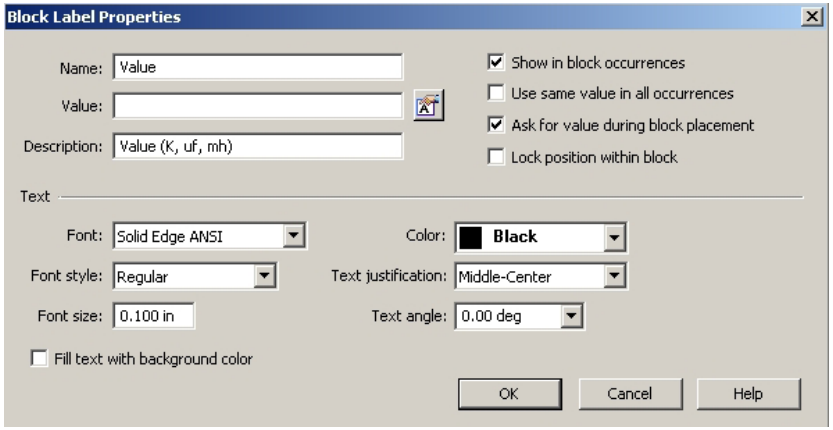
3 Block Labels are created.

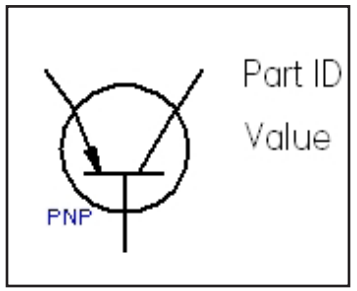
We want to use exactly the same block label for each symbol so,

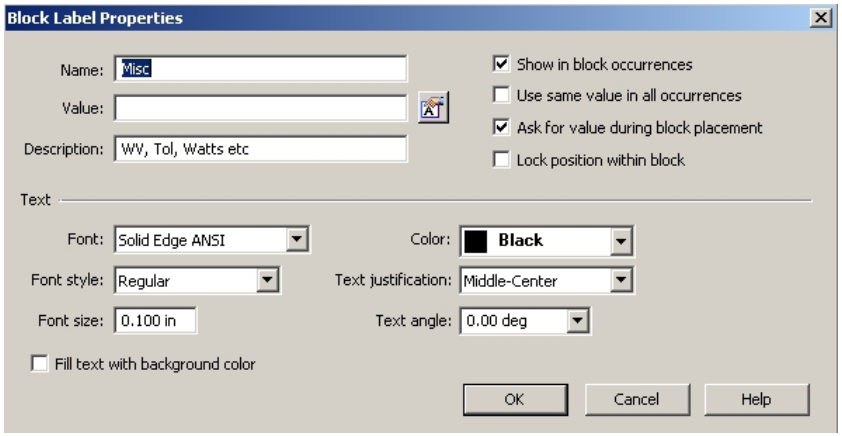
Once a set of block labels are created, they can be copied to all the other symbols.

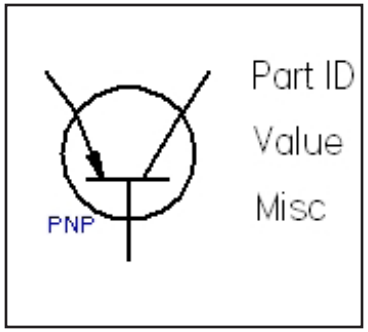










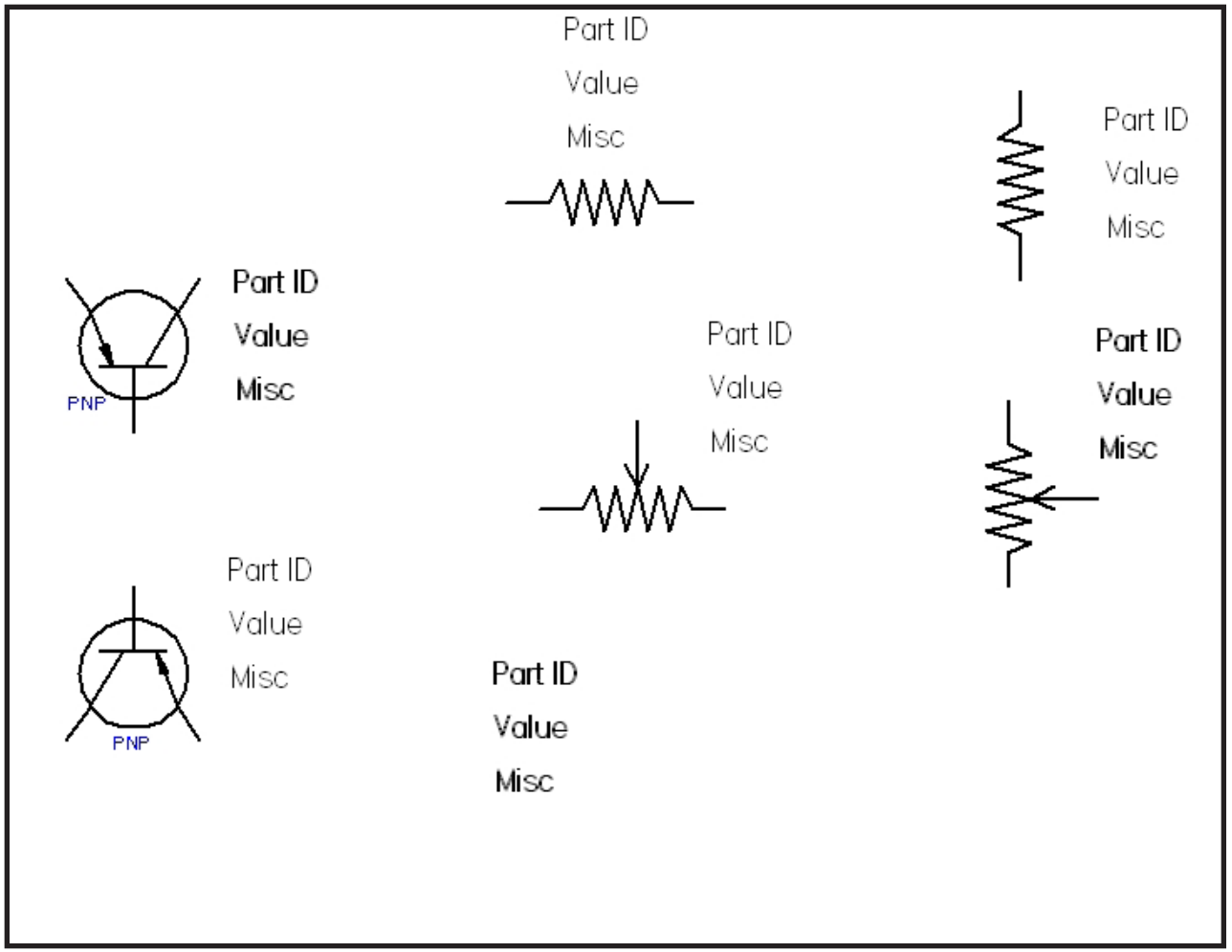


Copy Block Labels to all the other symbols.

- Click the Select Icon.
- Window the block labels.
- Hold down the CTRL key and drag the block labels to the next symbol.

Repeat for all symbols.

Standard Practice:
Block Labels are usually placed above or to the right of each symbol.



Block Library

● Create a Library Folder for this group of blocks.

Be sure to create this folder in your personal filespace.

__ Select the Library Tab in the Edge Bar.
__ Set the path to your personal file-space.
__ Create a folder for Electronics Blocks.

Example folder will be in:
D: Work (drive)
jcraig (personal filespace)
Electronic Blocks (folder)

● Block each symbol + block label assign a name to each block

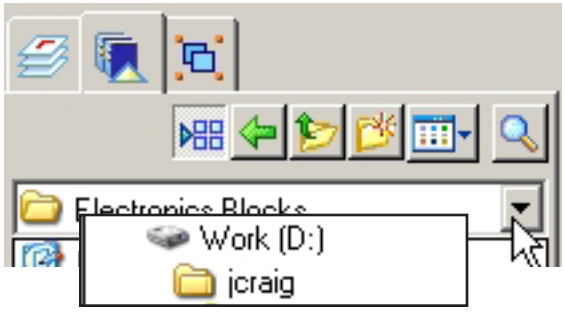
__ Start the Block command
Follow the prompts.

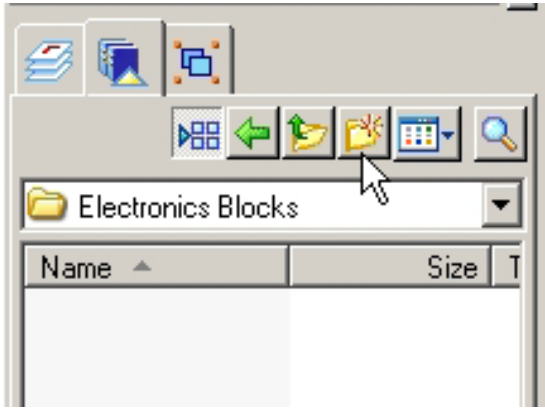
__ Window the symbol + block label
√ Click the Accept button.

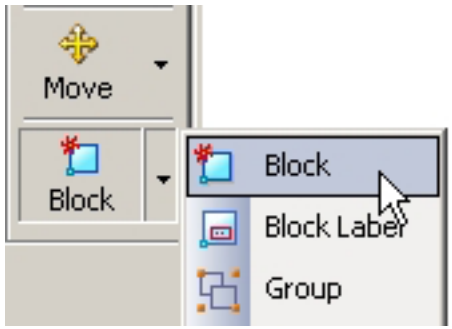
__ Select the origin.

__ Assign a name and click the Accept button.

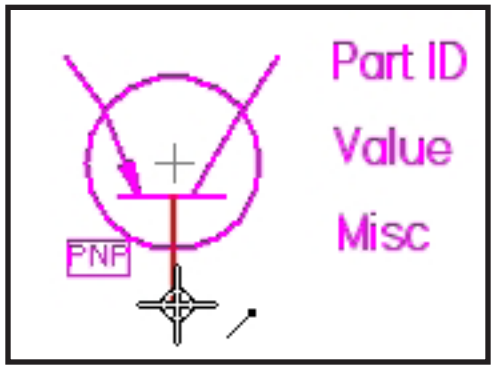
● Block all the items on the drawing.







Window the symbol + Block Label



Pick the insert point (origin) . Be sure to pick the most logical or most useful point for inserting later.

Note: Blocks are created and stored on the current drawing. The current drawing is saved to a library folder. Blocks are then copied from the library drawing to new drawings as needed.

When all the items on the current drawing have been converted to blocks, "Save As" to the folder created on the previous page:

ie D:/Work (Disk Drive)
jcraig (personal space)
Electronic Blocks (folder)
E-sym (new drawing name)

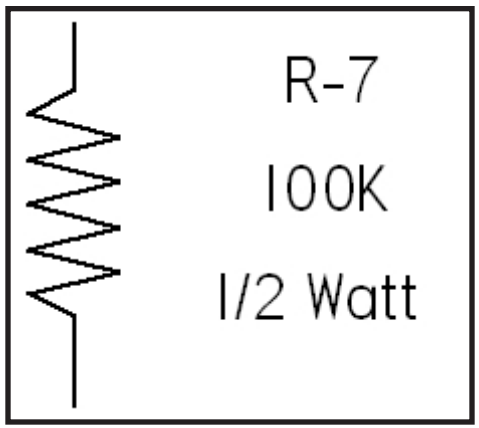
Inserting Blocks into a Drawing
(overview)
__Clicking E-sym will display the block names.

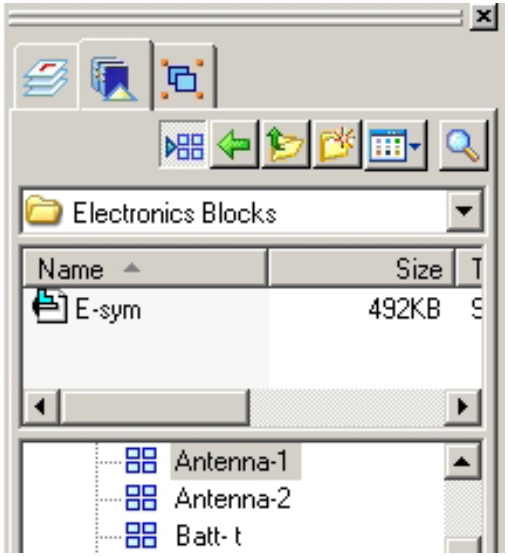
__ Clicking a block name will display the block for easier selection.

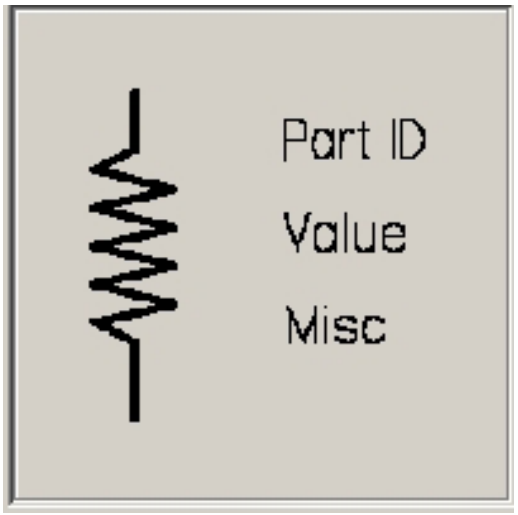
__ Drag the block to the drawing and click to place the block.

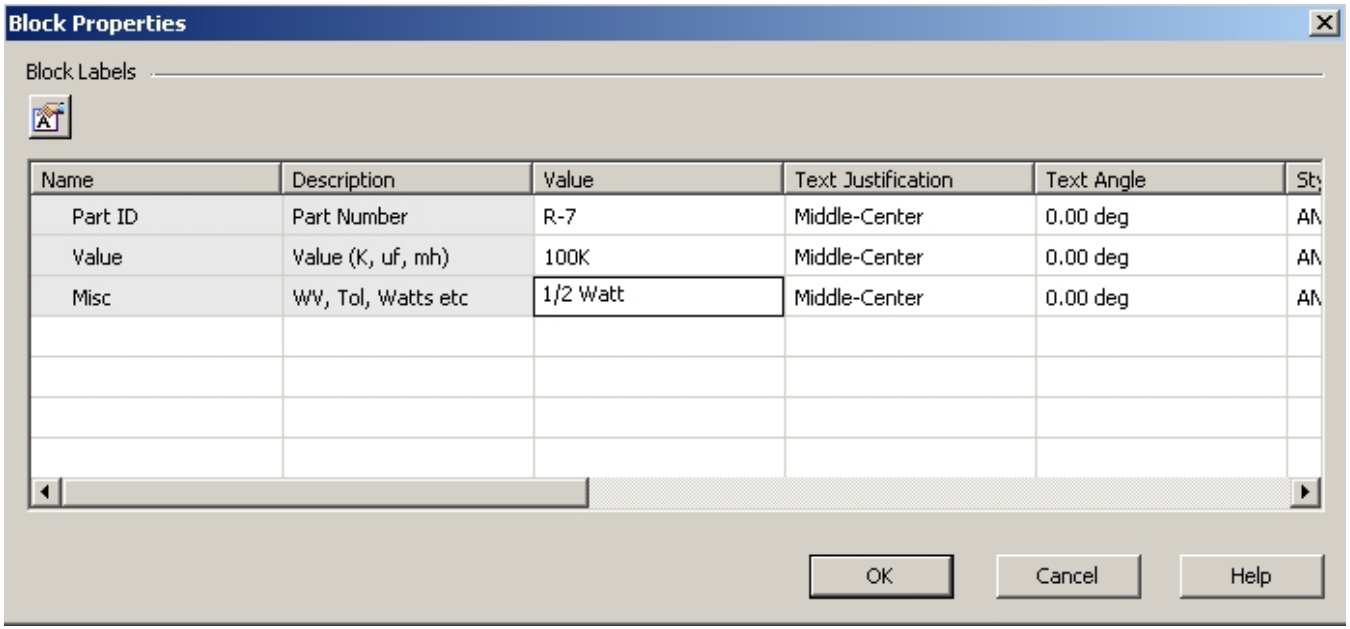
__ Fill in the Values for the block

Block will display with the values. Right-click to edit values.









Electronic Circuit Layout

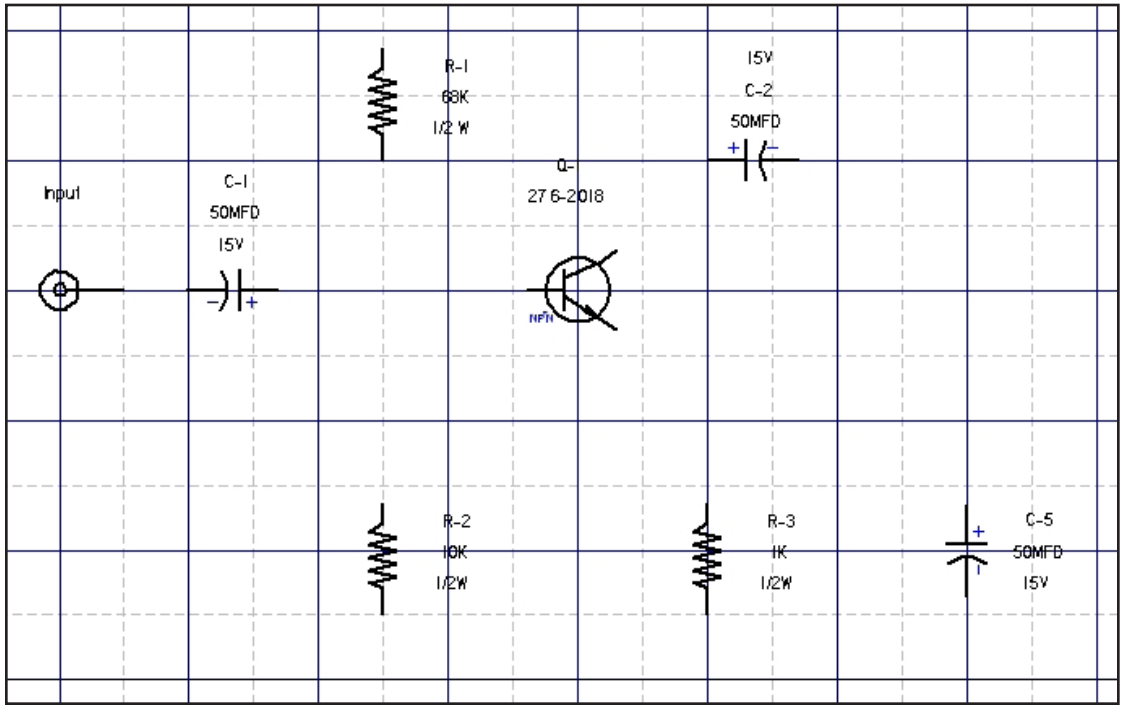
A portion of a electronic schematic drawing is shown. Symbols from the previous pages are used.

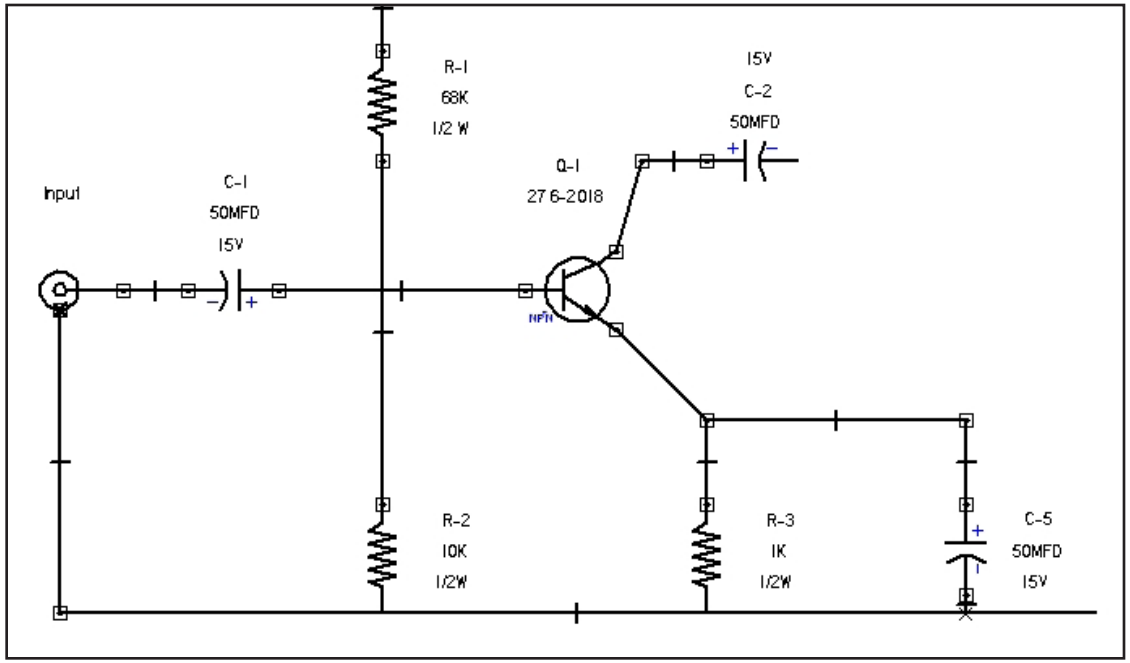
__ A 1.0 inch snap grid was set with 2 minor spaces per major. This gives a .50 inch snap grid to place the symbols.

Using a snap grid makes it easier to align the symbols and get good spacing.

__ Symbols were placed and Values were keyed-in.

__ Connecting lines were added to complete the circuits.





Solid Edge 2D does not provide access to the block attribute data.

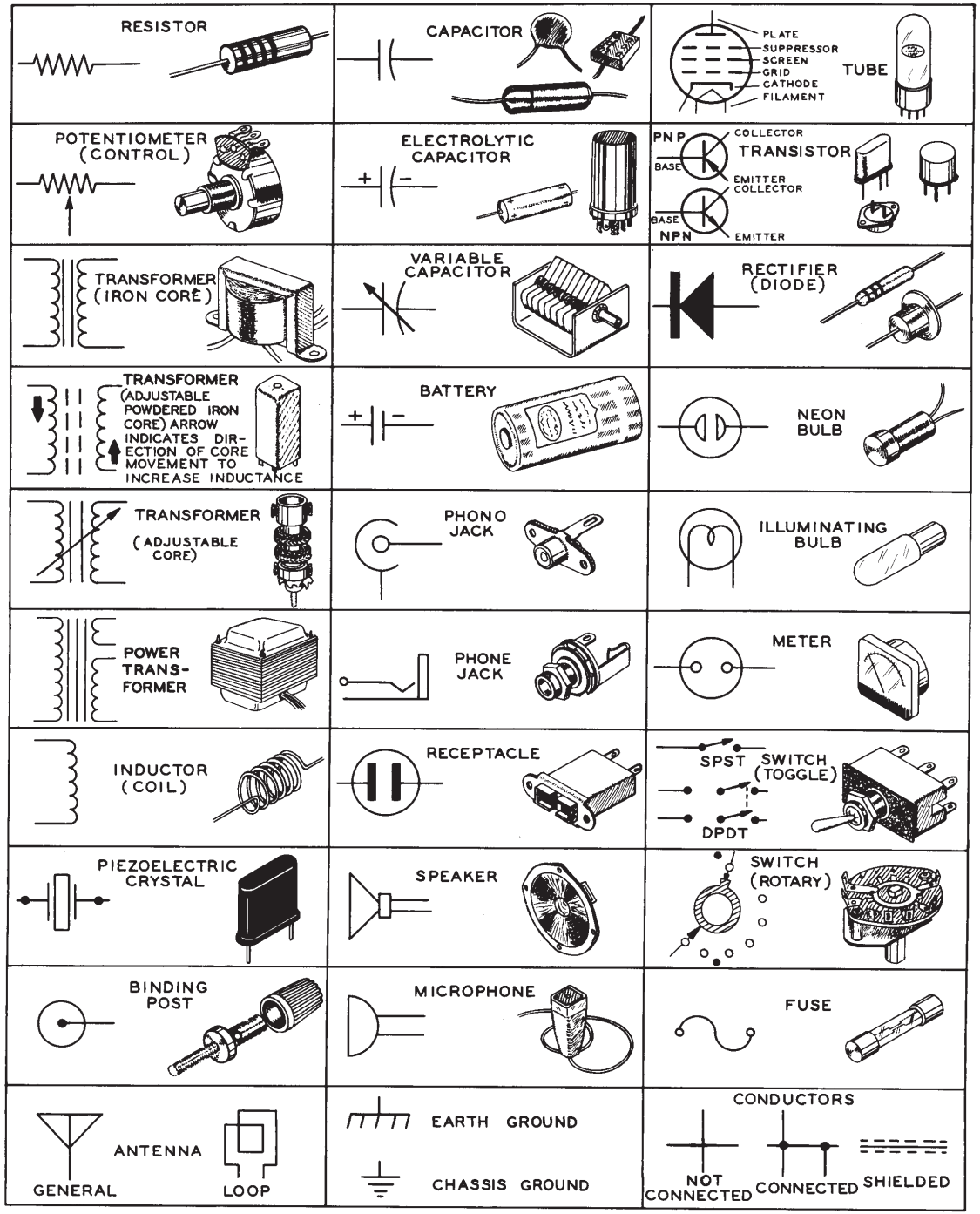
Parts Lists or Bill of Material tables may be created by loading the 2D drawing into Solid Edge 3D

Exercise 1.

Create a symbol library using the items shown.

Use symbol sizes as shown in the chapter.
Use three Block Labels as shown in the chapter.

Save the Block Library to your personal filespace.

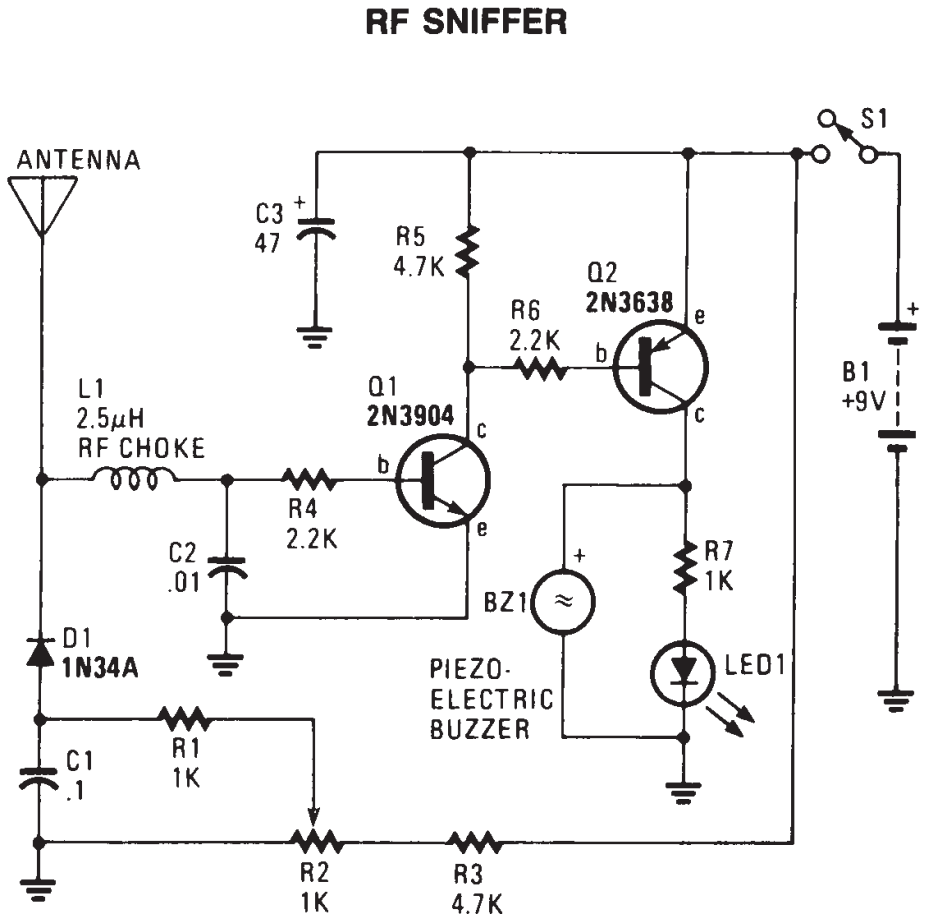


This page excerpted from a
Heathkit ™ assembly manual

Exercise 2

Using the library, create the schematic for the circuit shown. Include block label data.

You may have to add a few symbols.



HANDS-ON ELECTRONICS

Fig. 32-3

Comments and suggestions are welcome

Please email: **jwcraig@engr-tech.com**