Triton College
Computer Aided Design and Drafting (CADD) Standards Manual

Architecture
Interior Design
Construction Management

August, 2005
Rev. January, 2009

Triton College
CADD Standards Manual

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General CADD Recommendations:

These CADD Standards are based on AutoCAD 2006.

1. Drawings must ***always*** be created and edited on the network file server (the M:\ drive at Triton College). Use the Folder called “Architecture Interior Design and Construction Management” and create a new folder for yourself within that folder using your last name. Do not use the C: hard drive because it is automatically erased when the computer is rebooted, which may occur if the computer freezes (this does happen from time to time). Do not use your USB plug-in drive, because then you do not have any backup in case you lose it or it becomes damaged. The network is much more reliable and is faster. Besides, you need to get used to working on a network environment, which is used in most offices.
2. While drawing in AutoCAD, you must use the "save" command approximately every ten minutes to be sure that you have your file continuously updated to the network drive.
3. At end of the editing session or end of each day, save the drawing to the network file server one last time and exit AutoCAD. Copy the drawing file from the file server to your own USB plug-in drive. If the network drive fails, or the drawing file is corrupt for some reason, copy the duplicate copy you made on your plug-in drive back to your folder on the M: drive. Do not save your files on the C: drive, because it is erased whenever the computer is rebooted and automatically every day after the studio is closed.
4. AutoCAD can be set to automatically save your work periodically. It will save the current drawing to a special file called *Drawing1_1_1_****.SV$* (or something like that name, but it will always have a filename extension of SV$). This is another fail-safe device, in addition to the *.BAK file described above. To use this file, open the folder, find the SV$ file, rename it to a .DWG filename extension, and double click to open it. Note that SV$ files are saved by default to the folder:

   M:_Architecture\AutoCAD Autosave Files

   To save your drawing automatically in the form of an SV$ file to *M:_Architecture\AutoCAD Autosave Files* every 10 minutes, at the Command: prompt, type: savetime <RET> 10 <RET>

5. Never assume that either the network drive or any fixed or removable plug-in drives are error-free. You can never have too many backups.
6. In general, do not set a current color or linetype to anything other than "BYLAYER". Also do not CHANGE the color or linetype of an entity to anything other than "BYLAYER". There might be some exceptions to this in certain pieces of equipment, millwork, or furniture, but they should be very rare.

7. Draw in a locked viewport, rather than in pure Model Space, so that dimensions, notes and symbols (which are drawn in Paper Space) can be seen while you work.
8. Always plot your drawing in a Layout (Paper Space).
9. Show at least five visibly distinct lineweights in your drawing for visual clarity. Walls in plan have the thickest lineweight, then windows and doors, then notes, then objects on the floor in plan or wall in elevation, then far-away objects, then dimensions, and then hatch patterns (poché), which are the thinnest lines.
10. When selecting objects to edit, if those objects do not show on the screen they will not get picked, even if their layers were just thawed: Turn ON or THAW all layers, then "regen" to get those objects to appear on the screen so they can be picked.
11. Always THAW all layers prior to WBlocking to another file -- FROZEN layers will be purged during the WBlock. Also, layers with no entities on them, blocks which are not inserted and unused dimension and text styles will also be purged.
12. Always turn ON and THAW all layers that you want to plot prior to plotting -- OFF or FROZEN layers will not be plotted. To quickly turn ON and THAW all layers, type the following:
LA<RET>ON<RET>*<RET>T<RET>*<RET>REGENALL<RET>.
13. Always zoom to extents prior to plotting, to make sure there are no "stray" lines outside of the area you think is the extents of the drawing. This will also REGEN the drawing to allow fill and text to be shown.
14. The "Undo Back" command will only undo back to the last time drawing was plotted while in drawing editor.
15. To avoid plotting a Viewport entity (the rectangular box around a viewport), change its layer to DEFPOINTS. If the DEFPOINTS layer does not exist on your drawing, you may make it and Change the Viewport entity to be on it. AutoCAD automatically creates a layer called DEFPOINTS when you draw your first dimension line. AutoCAD places points on this layer which are the Origin points for the dimension line. The DEFPOINTS layer has the peculiar characteristic that you will be able to see it (if ON and Thawed) but it never plots.
16. A hatch pattern is a "pseudo-block" and has some block-like characteristics. For instance, a hatch pattern is made up of many lines but is considered one entity by AutoCAD. An exploded hatch pattern will "float" down to the "0" layer. *Do not explode hatch patterns*. You will get too many individual lines in the drawing as a result, and it will be difficult to edit them later.
17. Dimensions are also "pseudo-blocks" and they have some block-like characteristics. For instance, a dimension is made up of 3 lines, 2 solids, 2 points, and a text entity, but is considered one entity by AutoCAD. An exploded dimension will "float" down to the "0" layer. *Do not explode dimensions.* An exploded dimension will no longer be associative, so if the geometry of your drawing changes, the dimensions will not record the true measured sizes. You will no longer be able to use the "Dim" "Update"

command to change sizes of dimensions, either, if you decide to change your plot scale.

18. Place dimensions in Paper space on the A-ANNO-DIM layer. Be sure to set the variable DIMASSOC to 2, to make them associative and reach into the Model Space drawing to find the origins of the dimensions.
19. Place notes and drawing titles in Paper Space on the A-ANNO-NOTE layer.
20. Place "Keys" or "Targets" (like door numbers and section or elevation marks) in Paper Space (in the Layout). Most targets are 3/16" radius circles. Make sure that you move them if you move the drawing.
21. Make sure that units are set correctly:
    a. Type UNITS<RET>
    b. Set "Length Type" to "Architectural"
    c. Set "Length Precision" to 1/32"
    d. Set "Angle Type" to "Decimal Degrees"
    e. Set Angle Precision" to 0.00 Click "OK" button
22. Set the following AutoCAD variables to their correct values:
    a. Type MIRRTEXT <RET> 0 <RET>. This will make text "right reading" even if it is mirrored using the "mirror" command.
    b. Type FILLETRAD <RET> 0 <RET> This will make fillet radius zero to start with. (If you change this during the course of making the drawing, be sure to change it back to zero, otherwise you may try to cleanup line intersections using the fillet command and find that the cleaned up intersections will have a radius.)
    c. Type VIEWRES <RET> <RET> 20000 <RET> This will make circles and arcs appear smooth. (The default value is 200 which makes circles look like octagons on the screen)
    d. Type UCSICON<RET>ON<RET> This will turn the UCS icon on (make it visible).
    e. Type UCSICON <RET> OR <RET> This will place the "User Coordinate System" (UCS) icon at the drawing or UCS "origin" point (0,0,0).
    f. Type UCSICON <RET>P<RET> then select the radio button next to the 2D UCS Icon Style in the dialogue box that will appear. This is a much more informational icon style.
    g. Type REGENAUTO<RET>ON<RET> This will eliminate that annoying AutoCAD Alert box asking, "About to regen -- proceed" whenever you zoom to extents or into a small area.
    h. Type VISRETAIN<RET>1<RET> This will permit you to keep the layer visibility in the xref the way you have it set in the xref, rather than the host drawing.
    i. Type DIMASSOC<RET>2<RET> This will permit associative dimensioning in paper space which will attach dimensions to their model space entities.
    j. Type UCSFOLLOW<RET> 0<RET> This will prevent AutoCAD from automatically switching to the current plan view when you create a new User Coordinate System switch to one that is already made.

23. Set the Status Bar at the bottom of the screen to the following (buttons that have been pushed in are turned on):
    a. Turn on:
        i. GRID
        ii. POLAR
        iii. OSNAP
        iv. MODEL
    b. Turn Off:
        i. SNAP
        ii. ORTHO (this will automatically be turned off if POLAR is turned on)
        iii. OTRACK
        iv. DYN
        v. LWT
24. Set the following OSNAP functions: Right click on the word OSNAP in the Status Bar and select “Settings…”
    a. Endpoint
    b. Midpoint
    c. Center
    d. Node
    e. Quadrant
    f. Intersection
    g. Perpendicular
    h. Nearest
25. Set the following POLAR functions: Right click on the word POLAR in the Status Bar and select “Settings…”
    a. Change Increment angle to 45 degrees
    b. In the “Polar Angle measurement” area, select the radio button “Absolute”
26. **When you begin a new drawing**, you should start it using the Triton Template that has all the variables properly set, text and dimension styles created, and has a title block in the Layout. The Template to use is called “**Triton D**” which means that it is plotted at 24” x 36” size on the large plotter. To start a new drawing select the “QNEW” Icon that looks like a blank white sheet of paper with the upper right corner dog-eared. You may also use the pull down menu “File New” - it will take you to the “Select Template” dialogue box, so you will need to select a template that you want to use. If, for some reason, you do not want to select a template, pick the down arrow to the right of the “Open” button in the lower right hand corner of the dialogue box, and select “Open with no template – Imperial.” This will permit you to set up the drawing the way you want.
27. Palettes and Toolbars settings:
    a. The “Draw” and “Modify” toolbars are useful to have displayed docked at the left side of the drawing.
    b. The “Standard” toolbar should be docked at the top of the drawing.

c. The “3D Orbit” toolbar should be docked to the immediate right of the “Standard” toolbar.
d. The “Shade” toolbar should be docked to the right of the “3D Orbit” toolbar.
e. The “Layer” toolbar should be docked immediately under the “Standard” toolbar.
f. The “Properties” toolbar should be docked to the right of the “Layer” toolbar.
g. The “Dimension” toolbar should be docked under the “Layer” toolbar.
h. Always have the “Properties” palette floating on the right side of the drawing for easy access. It can “Auto-hide, which means that it can be closed up with only the Properties Palette bar showing on the screen. If the Properties Palette is not visible at all, you can turn it on by selecting the pull-down menu “Tools” and then select “Properties.”
i. Optionally, you may also want to keep the “Tool Palettes” palette displayed. To display it select the pull-down menu “Tools” and then select “Tool Palettes Window.”

28. To make a viewport current that lies on top of another viewport, use <CTRL>R to toggle from one viewport to another (It is the only way to do this).
29. To find the distance between 2 parallel lines, select from the "Tools" Pull-down menu, "Inquiry," then "Distance." (or type DI <RET>). Then OSNAP NEArest to one line, then OSNAP PERpendicular to the other.
30. To draw a line through the center point of an arc or circle but stop it at the edge of the arc or circle, draw a line from a point and when prompted for a To Point: OSNAP PERpendicular and pick the arc or circle.
31. When hiding lines using the HIDE command, polylines, filed Donuts and Solid fills will not be shown, even in plan. It will appear as if fill is turned off. Also, viewports in which "Shade Plot" has been turned to "Hidden" will not plot fill for polylines or donuts or solids. To allow solid fills to be seen in a viewport, shade the viewport in model space and set "Shade Plot" in the Plot dialogue box to "As Displayed." You could also create two overlapping viewports, one containing the hidden line model and the other containing only the solid fills, dimensions and notes. Turn on "hideplot" in the viewport containing the hidden line model and leave it off in the viewport that contains the other entities. To prevent double plotting of entities, you may want to freeze layers containing the hidden line model in the second viewport.

Standard Layer Names, Colors, Linetypes and Lineweights

These names are based on CAD Layer Guidelines, Second Edition, Michael K. Schley, ed., published in 1997 by the American Institute of Architects in Washington, D.C. I have assigned colors, linetypes, and lineweights. These layers are already created for you in the Template Drawing "Triton D".

Layer	Objects to Be Drawn on this Layer	Color	Linetype	Lineweight	Plot Style: "Style1," unless noted otherwise
A-ANNO-BORD	Information on sheet border	Cyan	Continuous	.3500 mm	
A-ANNO-DIMS	Dimensions	Magenta	Continuous	.1500 mm	
A-ANNO-NOTE	Notes	Cyan	Continuous	.3500 mm	
A-ANNO-SYMB	Symbols, Keys and Targets (Such as Door Numbers, Window Numbers, Furniture Numbers, Equipment Numbers, Toilet Accessory Numbers)	Cyan	Continuous	.3500 mm	
A-ANNO-VPRT	Viewports	Cyan	Continuous	.1000 mm	(Non-plotting)
A-AREA	Area Calculations, Hatch Patterns, and Numbers	60	Continuous	.1000 mm	
A-CEIL	Ceiling Information (Soffits, Holes, Skylights, Ceiling Grid)	10	Continuous	.1000 mm	

Layer	Objects to Be Drawn on this Layer	Color	Linetype	Lineweight	Plot Style: "Style1," unless noted otherwise
A-DOOR	Doors and Door Frames in Plan or Elevation (But Not Swing Arcs or Elevation Swing Indications of Doors)	Blue	Continuous	.2500 mm	
A-DOOR-GLAZ	Windows in Doors	Green	Continuous	.2500 mm	
A-DOOR-SWNG	Swing Arcs or Elevation Swing Indications of Doors	30	Hidden2	.1000 mm	
A-DOOR-ID	Door Number Symbols	Cyan	Continuous	.3500 mm	
A-ELEV	Elevation Drawings, Interior or Exterior	blue	Continuous	.2000 mm	
A-ELEV-PATT	Hatch Patterns for Elevations	30	Continuous	.0500 mm	
A-ELEV-OTLN	Elevation Outline	yellow	Continuous	.5000 mm	
A-FLOR	Any Information Relating to Floors Which Would Not Be Shown on Another Layer, Such as Holes in Floors, Edges of Slabs, Guardrails Around Floor Openings, or Curbs	red	Continuous	.2500 mm	

Layer	Objects to Be Drawn on this Layer	Color	Linetype	Lineweight	Plot Style: "Style1," unless noted otherwise
A-FLOR-APPL	Appliances: Refrigerators, Ovens, Stoves, and Any Fixed Element Which Requires a Plumbing or Electrical Connection to Make Operate	30	Continuous	.2000 mm	
A-FLOR-APPL-ID	Equipment Number Symbol	cyan	Continuous	.3500 mm	
A-FLOR-ID	Room Numbers	cyan	Continuous	.3500 mm	
A-FLOR-STRS	Stairs and Ladders in Plan or Elevation	red	Continuous	.2500 mm	
A-FLOR-STRS-RAIL	Stair Handrails in Plan or Elevation	green	Continuous	.2000 mm	
A-FLOR-STRS-AROW	Direction Arrows and Break Lines for Stairs	cyan	Continuous	.1500 mm	
A-FLOR-STRS-RISE	Risers of Stairs Should Be on a Separate Layer So That They Can Be Turned off on a Reflected Ceiling Plan	green	Continuous	.1500 mm	
A-FLOR-TPTN	Toilet Partitions, Doors, Door Swings	green, but door swing should be color 30	Continuous	.2500 mm	
A-FLOR-ELEV	Elevators Cars in Plan	green	Continuous	.2500 mm	

Layer	Objects to Be Drawn on this Layer	Color	Linetype	Lineweight	Plot Style: "Style1," unless noted otherwise
A-FLOR-RAMP	Ramps in Plan or Elevation	green	Continuous	.2500 mm	
A-FLOR-RAMP-RAIL	Ramp Handrails in Plan or Elevation	green	Continuous	.2000 mm	
A-FLOR-RAMP-AROW	Direction Arrows and Break Lines For Ramps	cyan	Continuous	.1500 mm	
A-FLOR-ACCS	Toilet Accessories	green	Continuous	.2000 mm	
A-FURN	Furniture	magenta	Continuous	.2000 mm	
A-FURN-ID	Furniture Numbers	cyan	Continuous	.3500 mm	
A-FURN-PLNT	Interior Plants	60	Continuous	.2000 mm	
A-FURN-PATT	Furniture Finish Patterns	30	Continuous	.0500 mm	
A-GLAZ	Windows	blue	Continuous	.2500 mm	
A-GLAZ-ID	Window Number	cyan	Continuous	.3500 mm	
A-ROOF	Roof, Gutters, Skylights	red	Continuous	.2500 mm	
A-ROOF-PATT	Hatch Patterns for Roofs	30	Continuous	.0500 mm	
A-SECT	Sections	red	Continuous	.3500 mm	
A-SECT-HIDD	Material Hidden in Section	30	hidden2	.1500 mm	
A-SECT-MCUT	Material Cut by Section	yellow	Continuous	.5000 mm	

Layer	Objects to Be Drawn on this Layer	Color	Linetype	Lineweight	Plot Style: "Style1," unless noted otherwise
A-SECT-MBND	Material Beyond Section cut	60	Continuous	.1500 mm	
A-SECT-PATT	Hatch Patterns of Section	30	Continuous	.0500 mm	
A-WALL	Walls	yellow	Continuous	.7000 mm	
A-WALL-PATT	Wall Hatch Pattern (Poché)	30	Continuous	.0000 mm	
A-WALL-HEAD	Door and Window Headers	30	Continuous	.2500 mm	
A-WALL-SILL	Door and window sills	30	Continuous	.2500 mm	
A-FIGS	People	green	Continuous	.1500 mm	
C-PKNG-CARS	Cars	green	Continuous	.1500 mm	
C-PKNG-STRP	Parking Lot Striping	30	Continuous	.0500 mm	
C-PROP	Property Lines	Magenta	Phantom2	.3500 mm	
C-COMM-UNDR	Site communication lines underground	140	Dashed	.3500 mm	
C-COMM-OVHD	Site communication lines above ground	140	Continuous	.3500 mm	
C-COMM	Site communication poles and any other object above ground	140	Continuous	.3500 mm	
C-WATR-UNDR	Site Water Lines Underground Piping	140	Center2	.3500 mm	

Layer	Objects to Be Drawn on this Layer	Color	Linetype	Lineweight	Plot Style: "Style1," unless noted otherwise
C-WATR	Site Water Meter and any object above ground	140	Continuous	.3500 mm	
C-NGAS-UNDR	Site Gas Lines Underground Piping	140	Center	.3500 mm	
C-NGAS	Site Gas Meter and any object above ground	140	Continuous	.3500 mm	
C-STRM-UNDR	Site Storm Sewer Lines Underground Piping	140	Dashed	.3500 mm	
C-STRM	Site Storm Sewer Manholes	140	Continuous	.3500 mm	
C-FIRE-UNDR	Site Fire Protection Lines Underground Piping	140	Center2	.3500 mm	
C-FIRE	Site Fire Hydrants, pumps, and any object above ground	140	Continuous	.3500 mm	
C-SSWR-UNDR	Sanitary Sewer Lines Underground Piping	140	Dashed	.3500 mm	
C-SSWR	Sanitary Sewer Manholes	140	Continuous	.3500 mm	
C-ROAD-CURB	Curbs	10	Continuous	.2000 mm	
C-WALK	Sidewalks	10	Continuous	.2000 mm	
C-TOPO	Proposed Contours	35	Continuous	.2500 mm	

Layer	Objects to Be Drawn on this Layer	Color	Linetype	Lineweight	Plot Style: "Style1," unless noted otherwise
C-TOPO-DEMO	Contours, to Be Changed	60	Hidden	.1500 mm	
C-TOPO-EXST	Contours, Existing to Remain	35	Continuous	.1500 mm	
E-COMM	Telephone Receptacles	red	Continuous	.3500 mm	
E-CTRL	Control Systems	red	Continuous	.1500 mm	
E-LITE	Lighting	30	Continuous	.2500 mm	
E-LITE-EMER	Emergency Lighting	30	Continuous	.2500 mm	
E-LITE-ID	Light Identification	cyan	Continuous	.3500 mm	
E-LITE-SWIT	Light Switch	red	Continuous	.2500 mm	
E-POWR	Electrical Power, Receptacles	red	Continuous	.2500 mm	
E-POWR-PANL	Power Panels	red	Continuous	.2500 mm	
L-PLNT	Landscape Materials	40	Continuous	.2500 mm	
L-PLNT-TREE-EXST	Trees - Existing to Remain	40	Continuous	.1000 mm	
L-PLNT-TREE-DEMO	Trees - to be removed	60	Continuous	.1000 mm	
L-PLNT-TREE-NEWW	Trees - New	40	Continuous	.3000 mm	

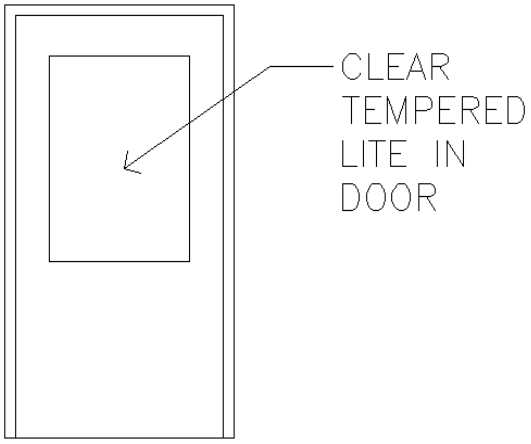
Layer	Objects to Be Drawn on this Layer	Color	Linetype	Lineweight	Plot Style: "Style1," unless noted otherwise
L-SITE-FNCE	Fences	yellow	Continuous	.1500 mm	
M-HVAC	HVAC System, Ductwork, Equipment	blue	Continuous	.2500 mm	
M-HVAC-CDFF	HVAC Ceiling Diffusers	30	Continuous	.2500 mm	
M-HVAC-ODFF	HVAC Wall and Other Diffusers	30	Continuous	.2500 mm	
P-FIXT	Plumbing Fixtures	Green	Continuous	.2000 mm	
P-FIXT-ID	Plumbing Fixture Identification	Cyan	Continuous	.3500 mm	
S-BEAM	Structural Beams (Any Material)	Red	Continuous	.2500 mm	
S-BEAM-HIDD	Structural Beams Hidden Elements	30	Hidden2	.1000 mm	
S-COLS	Structural Columns (Any Material)	Yellow	Continuous	.3500 mm	
S-COLS-HIDD	Structural Columns Hidden Elements	30	Hidden2	.1000 mm	
S-JOIST	Structural Joists (Any Material)	Magenta	Continuous	.3500 mm	
S-JOIST-HIDD	Structural Joists Hidden Elements	30	Hidden2	.1000 mm	
S-FNDN	Structural Foundation	Yellow	Continuous	.4000 mm	
S-FNDN-HIDD	Structural Foundation Hidden Elements	30	Hidden2	.1000 mm	

Layer	Objects to Be Drawn on this Layer	Color	Linetype	Lineweight	Plot Style: "Style1," unless noted otherwise
S-METL	Miscellaneous Metal Shapes & Plates	Magenta	Continuous	.3500 mm	
S-METL-HIDD	Miscellaneous Metal, Hidden Lines	30	Hidden2	.1000 mm	
S-DECK	Metal Deck	Magenta	Continuous	.2000 mm	
S-GRID	Structural Column Grid	20	Center2	.2500 mm	
S-GRID-ID	Structural Column Grid Bubbles and Numbers	20	Continuous	.3500 mm	

Text Standards:

Text is always necessary in a drawing to tell the contractor in words what he or she is looking at in order to construct the building. There are a few rules to remember:

1. Text should always be drawn in the Layout (Paper Space).
2. Text is entered from the keyboard using either the "DTEXT" or the “MTEXT” command.
3. Do not use abbreviations.
4. Do not use a period after a line of text.
5. Text lines should always be neatly organized on the sheet.
6. Multiple lines of text should be left justified.
7. If text refers to a graphic object, there should be a “callout” arrow from the text to the object, like this:



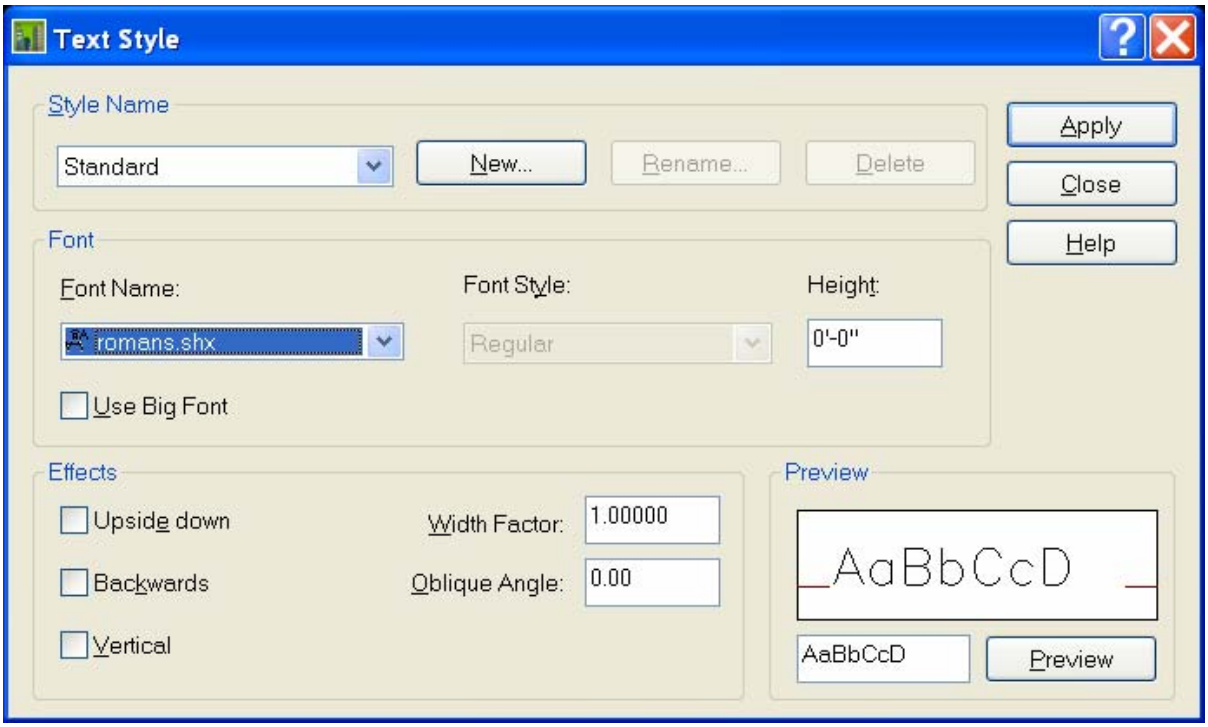
A “callout” is a leader line with text at its end. Leader lines are entered by using the LE command. Under this command there is a default variable that needs to be changed. This is changed in the “Triton D” template, but if you do not use the template and need to change it, type LE<RET><RET> Select the “Leader Line and Arrow” tab. Under the “Angle constraints” section, change the “Second segment” to “Horizontal.” Click OK. <ESC>

To create a callout, type LE<RET>, select the point where the arrow will be located, select the second point <RET><RET> enter the text, select OK on the “Text Formatting” dialogue box.

How to Create a Text Style:

The Triton D template has these text styles already created and the “Standard” style set as the current style.

But if you were not to use a Template drawing, you would need to create text styles that look good. To create a new text style, click on the word ”Format" from the pull-down menu, then "Text Style..." The “Text Style” dialogue box will appear on the screen:



Text styles consist of the following six variables which will need to be set:

A "Style Name" for the style, which is any name that you want to give it. Use a single work with no spaces.

A "Font Name" - this is a selection of one of several letter font designs which come with AutoCAD and your other Microsoft-compatible programs.

A "Height" for the style - always make this **0** (i.e., "zero") Never, change it from zero.

A "Width Factor" - this is set to the value **1** by default, but you can horizontally stretch out the width of the letters by setting this number to any number greater than 1, or you can skinny down the width by setting this value to any positive number less than one. Try to set this variable to various numbers in the dialogue box to observe instantly how the width would make your style look.

An "Oblique Angle" - this is set to the value of 0 by default. It is the angle of the vertical strokes of the letters. If you assign a positive value of some angle other than 0, the vertical strokes will angle toward the right at their tops. If you assign a negative value of some angle other than 0, the vertical strokes will angle toward the left at their tops. This is a way of creating an "Italics" type style.

The so-called "Effects", or, as it is sometimes called the "Generation" of the text. The "Normal" generation is writing the text from left to right. You may check the boxes which create an "Upside Down, "Backwards," or "Vertical" type effect. Note that some fonts will not allow a Vertical effect generation.

The default text style is called "Standard" and by default makes use of a very boxy and ugly looking lettering font design called the "TXT" font. A "font" is a set of designs for all the letters of the alphabet, all numbers, and all symbols on the keyboard. For instance, the font in which this text is printed is called the "Arial" font. It is one of the most popular designs for lettering used for printed books. I usually use the AutoCAD "romans" style for most notes and titles. To use a nicer font, pull down the list of available fonts under the "Font Name" section in the dialogue box.

Nota Bene: Do not set any value for the box after the word "BigFont" This is only to be used with Asian language (Japanese or Chinese) “Kanji” calligraphy alphabets which have more characters than the Latin alphabet which we use.

Text Styles to Create:

Style Name	Font Name	Height	Width Factor	Oblique Angle
Standard (use this text style for all text except for dimensions and sheet titles)	romans.shx	0	1	0
Dimensions (use for dimension numbers)	romans.shx	0	.75	0
Title (use for drawing titles)	arial	0	1	0
Freehand (use as an alternate to the “Standard” style if you want a hand-lettered look)	stylus	0	1	0
Freehand Dimensions (use for dimension numbers if you are using the “Freehand” style for notes)	stylus	0	.75	0

Entering Text using the DTEXT command:

The easiest way to enter text into the drawing is to use the **"DTEXT"** command (Dtext stands for "Dynamic text" because you can dynamically see it appear as you type it, which you could not do in the earlier "Text" command - the rudimentary "Text" command is still available to you if you really want to go back to an earlier time – or how about just getting a pencil and a straight edge). Select the word "Draw" from the pull-down menu, then "Text," then "Single Line Text" from the Pull-down menu (or type DT<RET>). You will then be prompted for a <Start point>. Pick the point where the lower left hand corner of the text string will be located. With the DTEXT command, each single line of text is one entity, although several lines may be typed sequentially.

Once you have selected a "Start point" location, you will then be asked how high you want to make the lettering. You should always enter text in the Layout (Paper Space). In that case, all notes in the drawing should be are 3/32" high. However, if you are somewhat old-fashioned and are placing notes in a drawing in Model Space drawing, the height you make the letters will depend on the scale at which you want to plot the drawing. By default, the preset text height is always the last height which you used in the drawing, or, if no text has been drawn yet, the default height will be 3/16" high (which, wouldn't you just know it, is too small for Model Space text, and too large for Paper Space text). The table below lists recommended sizes for text for each plot scale.

After you have typed in a height for the lettering, then a <RET>, you will be asked for a "rotation angle." That means the angle of the text baseline measured from a horizontal line drawn toward the east. Normally it would be 0, which is the default, and which gives text reading from left to right, horizontally. You may accept the default by hitting a carriage return on the keyboard.
You should not use too many variations of size of lettering you use on your drawings. Consistency and minimization of lettering variation is preferable. Text should be drawn on the A-ANNO-NOTE layer.

Table of Text Sizes to be used when entering text in "Model Space" – Note that entering text in Model Space is not recommended.

Table of Text Sizes in Model Space:

Architectural Drawing Scales:

Scale of Plotted Drawing	Plot Scale	Height of Standard Note Text	Height of More Important Note Text	Height of Drawing Title Text
1/16"=1'-0"	192	16	24	48
3/32"=1'-0"	128	12	18	36
1/8"=1'-0"	96	8	12	24
3/16"=1'-0"	64	6	9	18
1/4"=1'-0"	48	4	6	12
3/8"=1'-0"	32	3	4.5	9
1/2"=1'-0"	24	2	3	6
3/4"=1'-0"	16	1.33	2	4
1"=1'-0"	12	1	1.5	3
1 1/2" = 1'-0"	8	0.67	1	2
3"=1'-0"	4	0.33	0.5	1
Half Size	2	0.167	0.25	0.5
Full Size	1	3/32	1/8	1/4

Engineering Drawing Scales:

Scale of Plotted Drawing	Plot Scale Factor	Height of Note Text	Height of Important Note Text	Height of Drawing Title Text
1"=10'-0"	120	12	15	30
1"=20'-0"	240	24	30	60
1"=30'-0"	360	36	45	90
1"=40'-0"	480	45	60	120
1"=50'-0"	600	60	75	150
1"=60'-0"	720	68	90	180
1"=100'-0"	1200	120	150	300
1"=500'-0"	6000	600	750	1500

Entering Text using the MTEXT Command:

Another more sophisticated and flexible way to enter multiple lines of text into the drawing is to use the "**MTEXT**" command (Mtext stands for “multi-line text”).

Select the word "Draw" from the pull-down menu, then "Text," then "Multiline Text" - or type MT<RET>. You will then be prompted to "Specify First Corner." Pick the point where the upper left-hand corner of a text box will be located. Then pick a lower right corner of the defining text box. This is an imaginary border within which your text will be confined. With MTEXT, the entire paragraph of text that you type will be a single entity in AutoCAD. Once you have defined the text box area, the "Edit Mtext" dialogue box appears on the screen. This is where you will type in your text. You can set the height by clicking in the "Height:" box in this dialogue box and typing the height (in inches) you want the text to be, and then hitting a <RET> key. This should be done before you type in the text in the box. You can import Microsoft Word text files by copying it to the clipboard (<Ctrl>C) and then pasting it within the text box (<Ctrl> V); or, click on the down arrow on the right side of the “Text Formatting” box and select “Import Text….” item. Browse for the text file that you want to import into the dialogue box.

Once you have text in the text box, you have full editing capability. You can highlight letters or words and cut and paste them into different places in the dialogue box. You can delete letters or words. You can even format portions of the typed text by applying different fonts to highlighted text, change their color, change their case, underline them, or Italicize them.

If you have fractions in the text, like 3/4, you can stack the 3 on top of the 4 by highlighting the fraction and right-clicking and selecting “stack.” To make the stacking look better with a diagonal line between the numerator and the denominator of the fraction, highlight the stacked fraction a second time and right click again. You will now see a command line called “Stack Properties.” Click on it. Under the “Appearance” area of the dialogue box, select “Fraction, Diagonal” from the “Style” pulldown on this dialogue box, Then click on the “AutoStack Properties” button. Check “Enable AutoStacking” and “Remove leading blank.” Select the radio button “Convert to a diagonal fraction.” Check “Don’t show this dialogue again, always use these settings.” When you have finished composing your text, click the "OK" button.

Changing Text:

Text changes are frequent during the process of making a drawing. If you want to change one line of type to new wording or add text to a line or paragraph, simply double-click on the text to change.

If it is DTEXT, a single line dialogue box will appear. Change the letters in this line.

If it is MTEXT, the “Text Formatting” dialogue box will appear with the text in it - change what you want and then select OK on the dialogue box. You can change style, height, color, etc. in the “Text Formatting” dialogue box.

To change the appearance of all text entered in the same text style throughout the drawing, simply change the definition of that text "style" by selecting from the pull-down menu "Format" then "Text Style..." and then change one of the six variables: Font Name, Height, Effects, Width Factor, and/or Oblique Angle then pick the "Apply" button, and then the "Close" button. You may have to regen the drawing to see the change.

Dimensioning standards:

Dimensions are necessary for the contractor to construct the building. There are a few rules to remember:

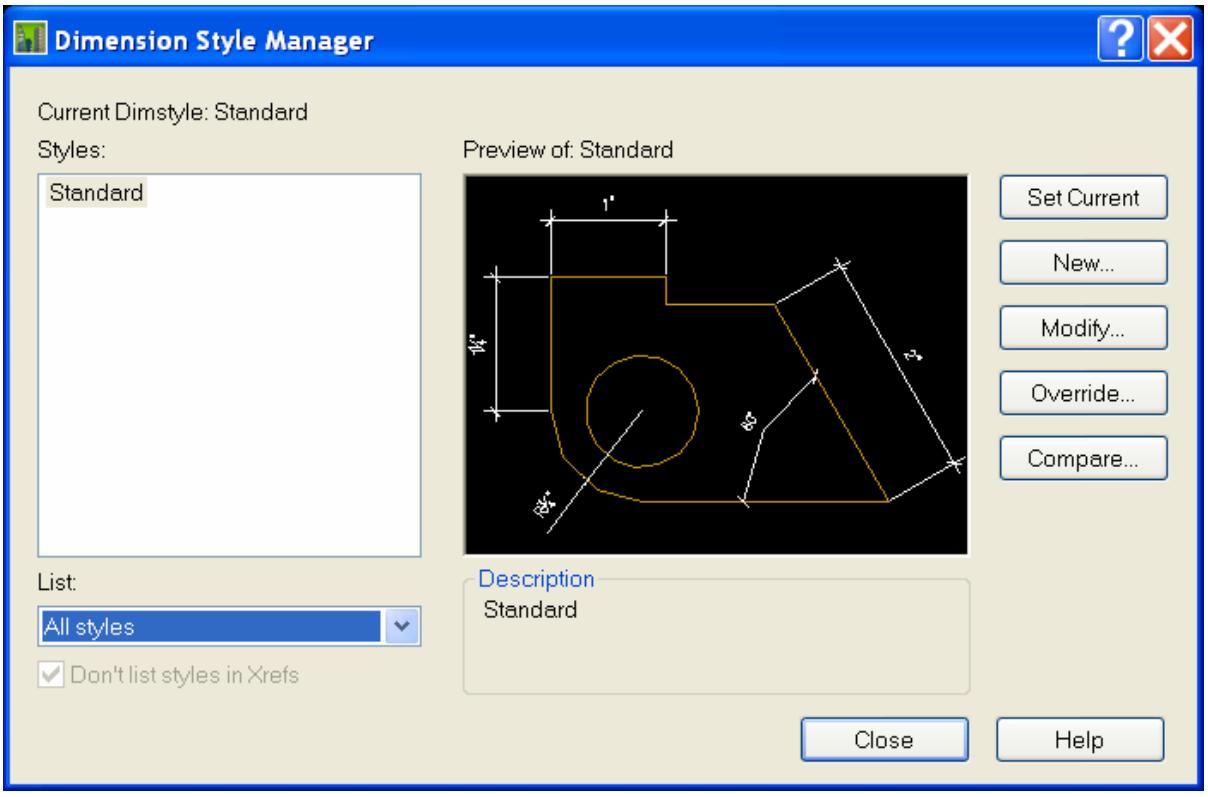
1. Dimensions should be drawn in the Layout (Paper Space)
2. Only dimension an object once, do not repeat its dimension on more than one drawing or sheet. This leads to errors.
3. Dimensions less than 12" are shown in inches only, such as 8 ½" Do not show this as 0'-8 ½" Zero feet is not expressed in standard architectural dimensioning.
4. Dimensions equal to or greater than 12" are always shown in both feet and inches with a dash separating the feet from the inches, such as 1'-0" or 12'-6"
5. Round off dimensions to the nearest 1/8" – for instance a dimension of 6 13/16" would not be used, instead it would be rounded to 6 ¾" or 6 7/8"
6. Horizontal dimensions are always placed above a horizontal dimension line and read from left to right
7. Vertical dimensions are always placed to the left of a vertical dimension line and are always read from the right side of the sheet.
8. If an object is placed on a center line of another object use a **CL** dimension symbol.
9. If an object is placed at equal dimensions along a line, use the symbol **EQ** rather than an actual number.
10. Use the bare minimum number of dimensions from which the contractor can build the building, but do not leave any out.

How to Create a Dimensioning Style:

The Triton D template has dimensioning styles already created and the “1” style set as the current style.

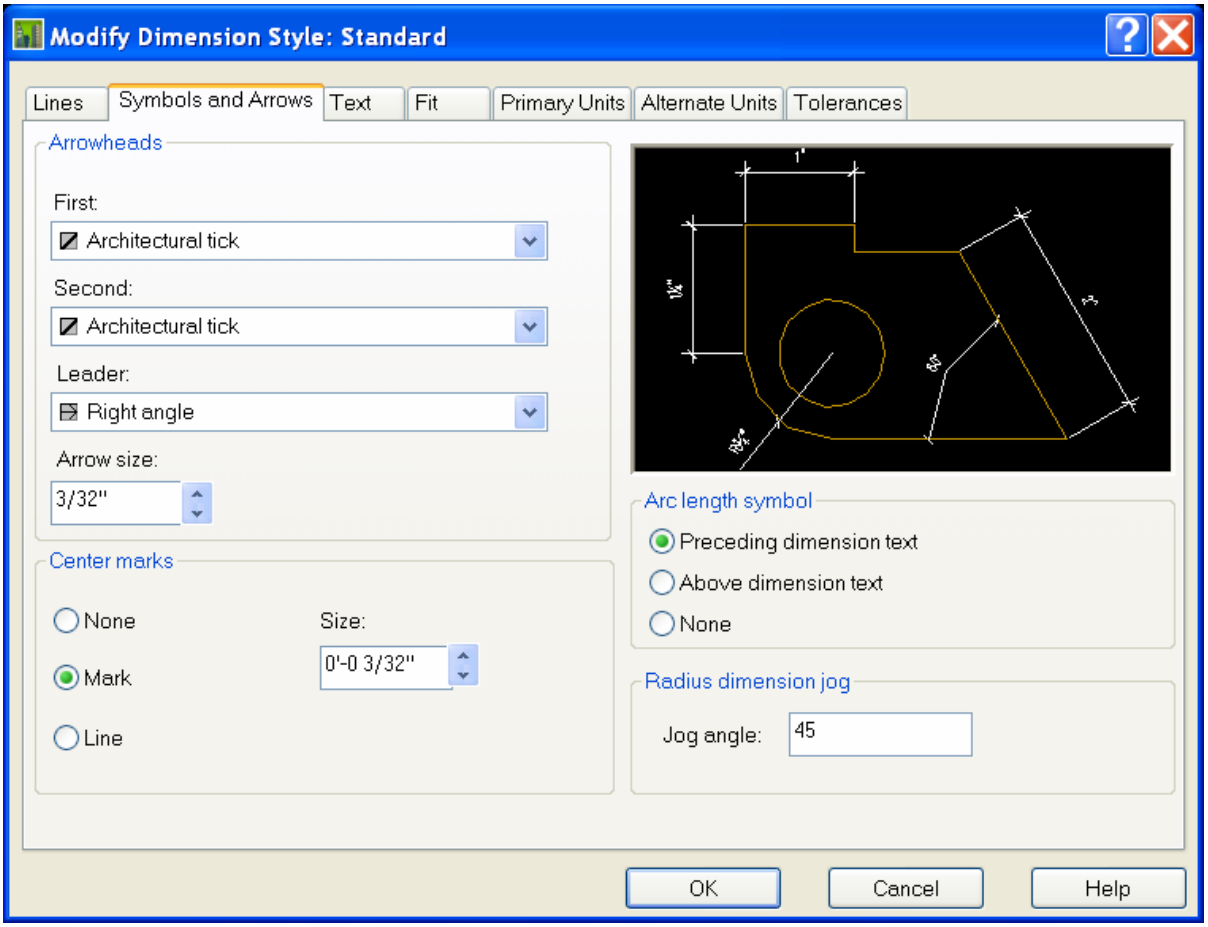
But if you were not to use a Template drawing with dimensioning styles already created, you would need to create dimensioning styles that look good. To create a new dimensioning style, click on the word ”Format" from the pull-down menu, then "Dimension Style..." The “Dimension Style Manager” dialogue box will appear on the screen:

Pick "Format" from the pull-down menu
Pick "Dimension Style..." (this brings up the “Dimension Style Manager” dialogue box).

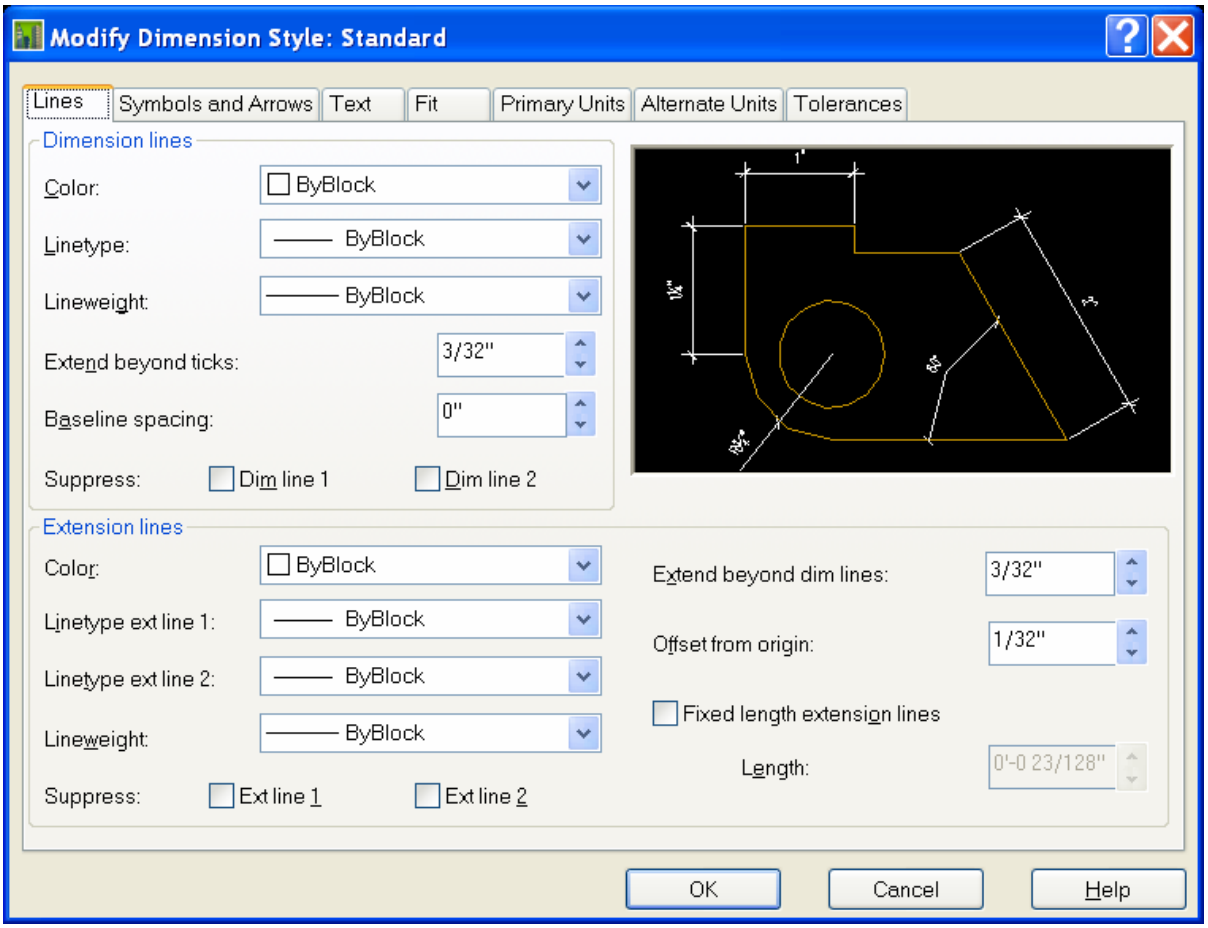


Click on the word "STANDARD" in the "Name:" box.
Click on the "New" button.
On the "New Style Name" line, type in a name for the dimension "style" you want to create. Type in **1** for the name of the new dimension style.
Pick the "Continue" button.

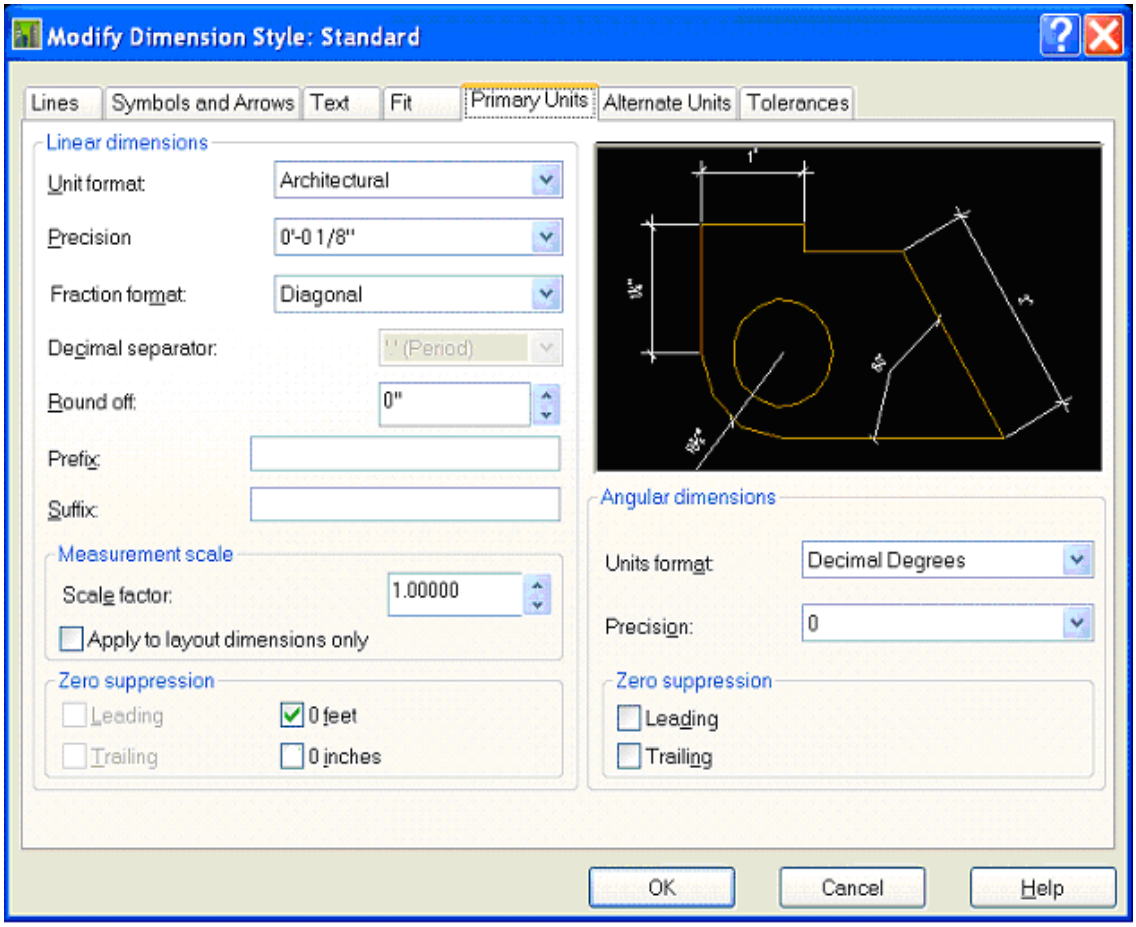
Click on the “Symbols and Arrows” tab first
In the "Arrowheads" portion of this dialogue box, select "Architectural tick"
Change leader arrowhead to "Right angle"
Change arrow size to 3/32



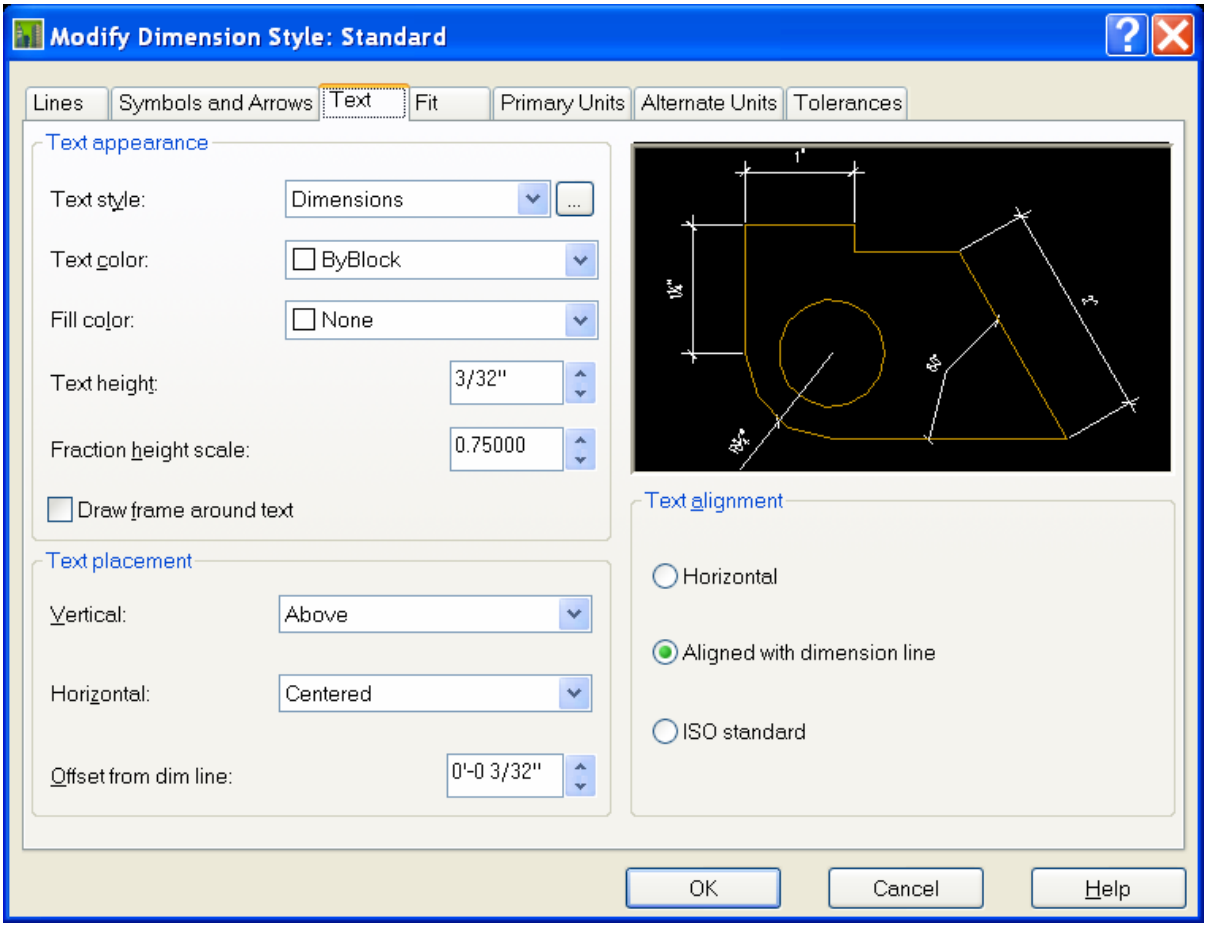
Click on the “Lines” tab
Set “Extend beyond ticks” to 3/32
Set “Baseline spacing” to 0
Set “Extend beyond dim lines” to 3/32
Set “Offset from origin” to 1/32



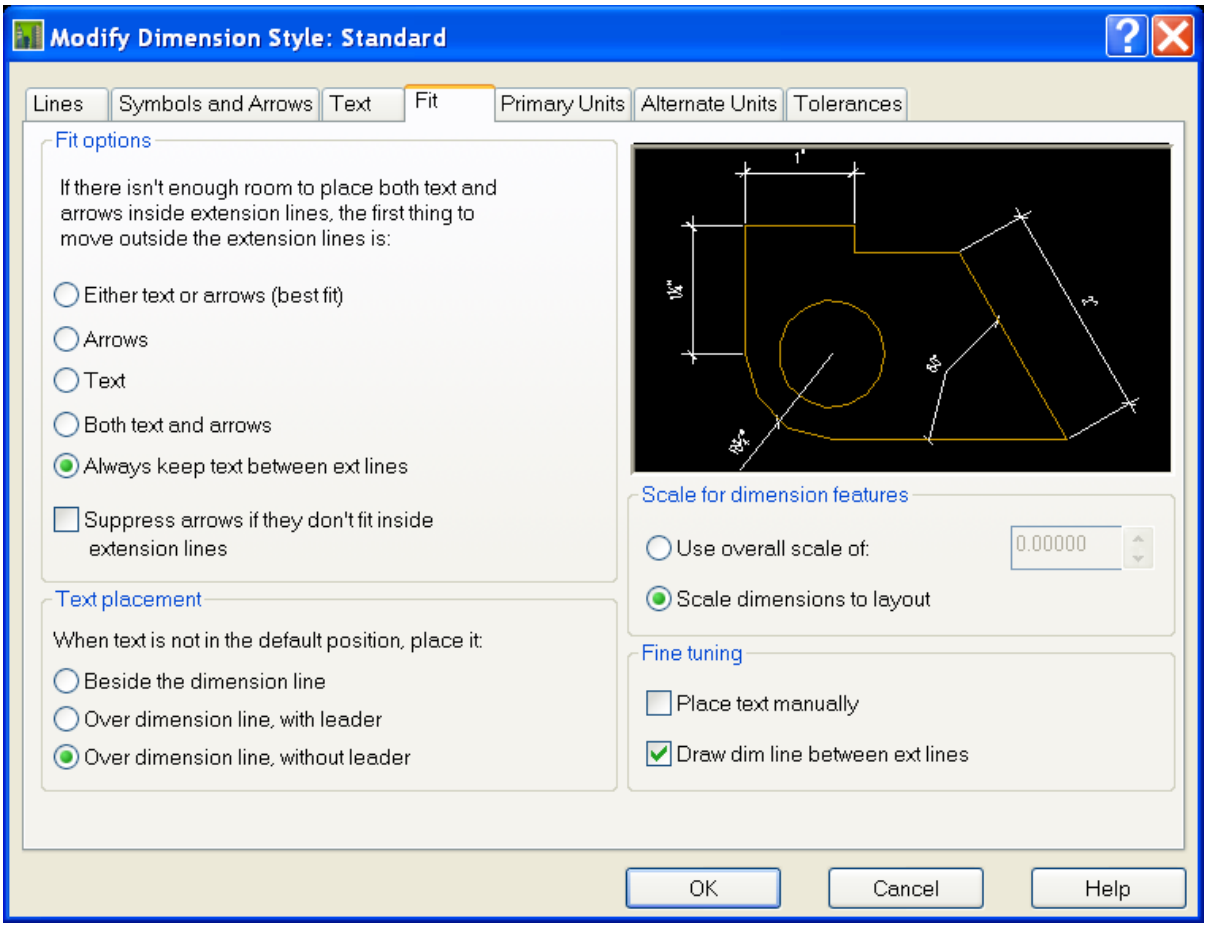
Click on the “Primary Units” tab
In the “Lineal dimensions” section set “Unit format” to Architectural, “Precision” to 0’-0 1/8”, “Fraction format” to Diagonal, and “Round off” to 0
In the “Zero suppression” section, check “0 feet” but uncheck “0 inches”
In the “Angular dimensions” section, set “Units format” to “Decimal degrees” and “Precision” to 0.00



Click on the “Text” tab
In the “Text appearance” section, set text style to “Dimensions” (Note that this assumes that you have created a text style called “Dimensions” as explained in the “Text” chapter above)
Set the text height to 3/32
Set the “Fraction height scale” to 0.75
In the “Text placement” section, select “Above” for vertical placement and “Centered” for horizontal text placement
Set “Offset from dim line” to 1/32
In the “Text alignment” section, click on the radio button “Aligned with dimension line”



Click on the “Fit” tab
In the “Fit options” section, click on the radio button “Always keep text between ext lines”
In the “Text placement” section, click on the radio button “Over dimension line without leader”
In the “Scale for dimension features” section, select the radio button “Scale dimensions to layout”
In the "Fine Tuning" section of this dialogue box, check the box "Draw dim line between ext lines"



Select “OK”
Select “Set Current”
Select “Close”

Entering Dimensions:

Turn on the "Dimension" tool bar - right-click on any other tool bar and select the "Dimension" tool bar. This has all the tools to create dimensions on it.

Set variable DIMASSOC = 2 (in Command" prompt area, type in DIMASSOC <RET> 2 <RET>)

Set the current layer to "A-ANNO-DIMS"

Select one of the Layout tabs at the bottom of the drawing (This will set the space to "Paper" space)

From the dimension tool bar select the "Linear Dimension" icon.
Snap to one of the endpoints of the line, then the other end point of the same line – (alternatively, hit a <RET> and select the line itself - AutoCAD will automatically find its endpoints)
Select a point through which the dimension line will pass
Done

To continue with a string of dimensions to the next endpoint, select the "Continue Dimension" icon
Continue picking endpoints
When done with the string, hit two <RET><RET> keys

Editing Dimensions:

If you want to edit text on a dimension, click on it and the "Modify Properties" window will display its properties. Click on the plus sign to the left of the word "Text". In the slot to the right of the "Text Override" type in the text you want to display on the dimension.

To display text with the measured dimension, type the text and then <>. The "<>" will display as the measured dimension. If you want to have multiple lines of text, type \P where you want to start a new line. Note that the P must be in upper case.

Using grips to change location of dimension lines, dimension text,
and extension line origin points:

If you select a dimension string at the Command: prompt, five grips will be placed on the dimension string, one at the insertion point of the text (at its center), one at each end of the dimension line where it crosses the extension lines, and one at the origin point of each extension line. You can make any of these grips "hot" and drag them to another location.

To change the length of a dimension line, make one of the grips at the extension line origin hot and move it parallel to the dimension line. The dimension text will always be automatically updated to read whatever the new length is.

To change the location of a dimension line itself, make one of the grips hot on the dimension line and drag it to a new location.

To change the location of the dimension text (this is a common requirement), make the grip on the dimension text hot and drag it to a new location. Note that if you drag it to a location which is near to or on the dimension line itself, a break will automatically be placed in the dimension line to allow for the text to be able to be read without interference from the dimension line crossing through it.

If you move an object in model space, or pan or zoom the drawing, dimensions might not always update themselves. If that happens, Switch to the Layout (paperspace) right click on one or more dimensions, and select “Update.”

Nota bene: you cannot dimension AEC walls in a Paper Space Layout. You can only dimension objects with “geometry” in a Paper Space Layout such as lines, polylines, blocks, arcs and circles. If you want to dimension AEC walls, you have to do it in model space. In this case, you will need to create a set of model space dimension styles, which have the following “Overall scale:” To set the scale, create a New dimension style and under the “Fit” tab, type in one the following numbers in the “Scale for dimensions features” section of the Dimension dialogue box. Select the radio button “Use overall scale of.”

1/16" = 1'-0": 192
3/32" = 1'-0": 128
1/8" = 1'-0": 96
3/16" = 1'-0": 64
1/4" = 1'-0": 48
3/8" = 1'-0": 32
1/2" = 1'-0": 24
3/4" = 1'-0": 16
1" = 1'-0": 12
1 1/2" = 1'-0": 8
3" = 1'-0" 4
Half size: 2
Full size: 1
1" = 1000'-0": 12000
1" = 500'-0": 6000
1" = 200'-0": 2400
1" = 100'-0": 1200
1" = 50'-0": 600
1" = 20'-0": 240
1" = 10'-0": 120

Personal Profiles:

A "profile" is a personalized file (*.ARG) that contains information about how you want the screen to look and where you store your drawings while you are working in AutoCAD. The file can be loaded when you begin an AutoCAD session which will restore your personal profile settings.

How to create a personal Profile:

1. Right-click in Command: Line & select "Options..." from right-click menu.

2. Click on the "Files" Tab.
    a. Click on the + sign to the left of "Support File Search Path" on the list. This will open the list of folders which are on the path of searching for files that will be inserted or externally referenced into the drawing. You can add your folder - select the "Browse" button and find your folder on the M:\ drive. The "Move Up" button will allow you to reposition the folders to make the ones at the top of the list be searched first - therefore if you have the same file name in two folders, the one in the folder at the top of the list will be found first.
    b. Click on the + sign to the left of the "Automatic Save File Location." Click on the "Browse" button and browse for the folder where you want to save your temporary save files. An automatic save will have the filename extension of ___.SV$ which is created automatically by AutoCAD and by default is saved to the folder C:\Documents and Settings\AT150\Local Settings\Temp\. These files are automatically deleted after you turn the computer off and on again, so it would be better to save them to your folder on the network drive (folder M:_Architecture\Autocad Autosave Files). Then you can keep them and always go back to them later.
    c. Click on the + sign to the left of the "Template Settings" on the list. Then click on the + sign to the left of the "Drawing Template File Location." Click the Browse button and find the folder where your TEMPLATE DRAWING file is located.
    d. Click on the + sign to the left of “Default Template File Name for QNEW” Click on the “Browse” button and browse for the preferred template file, which is at M:_Architecture\Template AutoCAD\Triton D.dwt.

3. Click on the "Display" tab.
    a. Click on the "Colors..." button. Select "Layout Tabs Background (paper). Pick Black for the color. Click Apply and Close button.
    b. Under the section labeled "Layout Elements" uncheck "Display printable area " and "Display paper background"
    c. Slide "Crosshair size" bar to 100%

d. Note that most of the choices on the right side of this tab "Display resolution" and "Display performance" have an AutoCAD blue icon to the left side of the choices. This means that you can change these variables for this session, but the permanent values are contained within the drawing you are working with. Therefore, you should make these changes in your TEMPLATE DRAWING, not in the PROFILE.
e. Uncheck “Create viewport in new layouts.”

4. Click on the "Open and Save" tab.
   a. Under the section labeled "File safety precautions" change the Automatic Save to 10 minutes between saves. This will create an automatic save with the filename extension of ___.SV$ which is created automatically by AutoCAD at 10 minute intervals and saved to your folder that you set in step 2 above.
   b. Under the File Open section, check box labeled "Display full path in title."

5. Click on the "Plot and Publish" tab.
   a. Under the section "Default plot settings for new drawings" select the radio button "Use last successful plot settings."
   b. Click on "Plot Style Table Settings..." button in lower right hand corner. Select the radio button "Use named plot styles." Select the “MONOCHROME.STB” plot style from "Default plot style table" drop-down list. Click OK.

6. Click on the "User Preferences" tab.
   a. Under the "Windows Standard Behavior" section, check box labeled "Shortcut menus in drawing area." Click the button "Right-Click Customization" and check box labeled "Turn on time-sensitive right click:"
   b. Under the “Associative Dimensioning Field,” click on “Make new dimensions associative”
   c. Click on the “Hidden Line Settings” button in the lower left hand corner of the dialogue box. Check “Display intersections.” Chick OK.
   d. Click on the “Edit Scale List” in the lower right corner. Delete all of the metric scales (such as 1:10, etc.) and the scales 1/64” = 1’-0” and 1/32” = 1’-0”. Rename the scale 6” = 1’-0” to HALF SIZE. Rename the scale 1’-0” = 1’-0” to FULL SIZE. Add the following engineering scales:
      i. 1” = 10’-0” (1 paper inch = 120 drawing inches)
      ii. 1” = 20’-0” (1 paper inch = 240 drawing inches)
      iii. 1” = 30’-0” (1 paper inch = 360 drawing inches)
      iv. 1” = 40’-0” (1 paper inch = 480 drawing inches)
      v. 1” = 50’-0” (1 paper inch = 600 drawing inches)
      vi. 1” = 100’-0” (1 paper inch = 1200 drawing inches)
      vii. 1” = 200’-0” (1 paper inch = 2400 drawing inches)

viii. 1” = 500’-0” (1 paper inch = 6000 drawing inches)

7. Click on the "Drafting" tab.
    a. Under the "AutoSnap Settings" section, check boxes labeled "Marker," "Display Autosnap Tooltip," and "Display Autosnap Aperture box."

8. Click on the "Profiles" tab.
    a. Select the "Add to List..." button. Type in a profile name that you want to create in the "Add Profile" dialogue box. Type in a description. The name of that new profile will appear in the "Available Profiles" list.
    b. Click on the newly added profile on the list and select the button "Set Current." This will make your new profile the current one.
    c. Select the "Export…" button. Browse for your folder on the M:\ drive and type in the name you want to give to your profile. It should be the same name you gave it when you added it to the list of available profiles (although it does not have to be). AutoCAD will automatically append the filename extension *.ARG to whatever name you give it when you export it. The purpose of exporting the profile is to be able to use it at another computer and at a future drawing session.

9. When you want to use this profile again in the future, right-click in Command Line and select "Options..." Select the "Profiles" tab. Select the "Import" button and find your profile (the .ARG file). Double-click on its name. This will insert the name of the profile in the "Import Profile" dialogue box. Select "Apply and Close" button. The imported profile name will now appear in the "Available Profiles" list. Click on it and then click the Set Current" button. Click OK.

Drawing Scale:

There are twelve architectural scales that are normally used for drawings:

3/32” = 1’-0”
3/16” = 1’-0”
1/8” = 1’-0” (for commercial building plans, elevations and building sections)
¼” = 1’-0” (for house plans, elevations, and building sections)
½” = 1’-0” (for kitchen and bath plans and elevations)
1” = 1’-0” (for millwork details)
3/8” = 1’-0”
¾” = 1’-0” (for wall sections)
1 ½” = 1’-0” (for building details)
3” = 1’-0” (also called “quarter size”)
Half size (for details)
Full size (for details)

There are ten scales that are normally used for site plans and civil engineering drawings:

1” = 10’-0”
1” = 20’-0”
1” = 30’-0”
1” = 40’-0”
1” = 50’-0”
1” = 60’-0”
1” = 100’-0”
1” = 200’-0”
1” = 500’-0”
1” = 1000’-0”

Drawings in Model Space are always drawn full size, but they can be plotted in a Layout to one of the standard scales. There are two ways to set a plot scale in a layout:

Method 1 – Zooming to a Plot Scale Factor in a Viewport (example for ¼” = 1’-0” scale):

1. Switch to the Layout Tab.
2. Double click inside the Viewport you want to scale.
3. Zoom to extents by clicking the mouse wheel twice
4. Type Z<RET>C<RET>
5. Pick a point in the viewport with the left button of the mouse which you want to be the center of the drawing.
6. Type 1/48XP<RET>
7. For other scales, use the following plot scale factors:

Plotted Scale of Drawing	Model Space Zoom Scale Factor
1/64" = 1'-0"	1/768XP
1/32" = 1'-0"	1/384XP
1/16" = 1'-0"	1/192XP
3/32" = 1'-0"	1/128XP
1/8" = 1'-0"	1/96XP
3/16" = 1'-0"	1/64XP
1/4" = 1'-0"	1/48XP
3/8" = 1'-0"	1/32XP
1/2" = 1'-0"	1/24XP
3/4" = 1'-0"	1/16XP
1" = 1'-0"	1/12XP
1 1/2" = 1'-0"	1/8XP
3" = 1'-0"	1/4XP
Half Size	1/2XP
Full Size	1XP
1" = 1000'-0"	1/12000XP
1" = 500'-0"	1/6000XP
1" = 400'-0"	1/4800XP
1" = 200'-0"	1/2400XP
1" = 100'-0"	1/1200XP
1" = 80'-0"	1/960XP
1" = 60'-0"	1/720XP
1" = 50'-0"	1/600XP
1" = 40'-0"	1/480XP
1" = 30'-0"	1/360XP
1" = 20'-0"	1/240XP
1" = 10'-0"	1/120XP

You can pan the drawing within the viewport to get it centered properly, but do not zoom or you will inadvertently change the plot scale factor. Once you are happy with where the object is within the viewport, lock it so you don't disturb it. To lock the viewport, first double click outside of the viewport. This will put you back into Paper Space. Click on the viewport border, then right-click. This will bring up the cursor (context sensitive) menu. Select "Display Locked," then "Yes." From now

on, you can work within the viewport by double-clicking inside of it. It is usually more convenient to work in Model Space inside of a viewport (the "Layout" tab), rather than in "pure" Model Space (the "Model" tab).

Method 2 – Scaling a Viewport (example for ¼" = 1'-0" scale):

1. Switch to the Layout Tab.
2. Click on the viewport border.
3. On the "Properties" Palette, slide down until you find "Standard Scale" Select the scale from the pull-down list that you want the viewport to be set to.
4. Double click inside the viewport and pan it so that the part of the drawing you want centered is centered.
5. Double click outside of the viewport.
6. Click on the viewport border, then right-click. This will bring up the cursor (context sensitive) menu. Select "Display Locked," then "Yes."
7. Lock the Viewport: Select "Yes" after the "Display Locked" item on the Properties Palette. From now on, you can work within the viewport by double-clicking inside of it. It is always best to work inside of the viewport

Method 3 – Using the Viewport toolbar:

1. Switch to the Layout Tab.
2. Select the layer A-ANNO-VPRT
3. Turn on the "Viewport" toolbar: Place your cursor over one of the existing toolbars and right-click; check the toolbar name "Viewports."
4. Select the "Single Viewport" icon (second from left on the toolbar).
5. Pick a point for the lower left corner of the viewport, then the upper right corner.
6. Click on the viewport (on the edge of the rectangle).
7. Select the drop-down arrow on the right side of the toolbar. This will reveal a list of scales. Pick the scale you want from this list.

Lineweight

Your drawings must exhibit a variety of line weights in every drawing as below from lightest to darkest

1. Texture and material lines, poché
2. Object lines (edge of surface, change of plane)
3. Lettering
4. Profile lines (cut through walls, doors, and windows in plan and section, edge of any surface which is adjoined by "air" in elevations and roof plans)
5. Base lines (line at ground in elevations and sections)

Linetypes

Solid lines: ***use for all visible objects***

_____ “continuous” linetype

Dashed lines: ***use for hidden objects or objects that are above the cutting plane***

__ __ __ __ __ __ __ __ “hidden” linetype
_ _ _ _ _ _ _ _ _ _ _ _ _ _ “hidden2” linetype
___ ___ ___ ___ ___ “hiddenx2” linetype

Long dash – short dash – long dash: ***use for column and beam and object centerlines***

____ _ ____ _ ____ _ ____ “center2” linetype

Long dash – two short dashes – long dash: ***use for property lines***

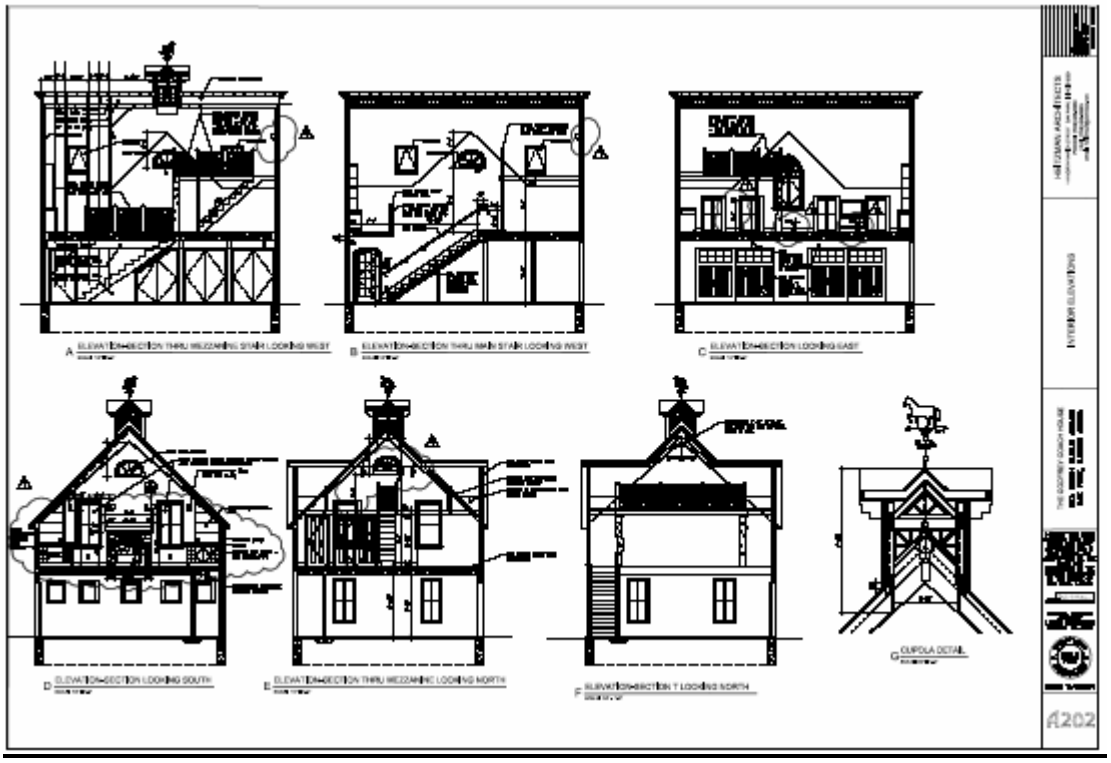
_____ _ _ _____ _ _ _____ “phantom2” linetype

Drawing Titles and North Arrows

Every drawing on a drawing sheet must have the following information centered under the drawing:

- Capitol letter to identify the drawing – start in the upper left corner of the drawing with the letter **A** and continue horizontally across. The next drawing to the right will be lettered drawing **B**. After the top line is filled, move to the next line below. The first drawing on that line will be the next letter in sequence.
- Name of the drawing
- Scale
- North arrow for plans

Sheet Titles And Sheet Numbering



Typical Drawing Sheet

Lower right hand corner of drawing sheet showing the drawing number

The following standards for sheet numbering comes from “The Uniform Drawing System” published by the Construction Specifications System Institute (CSI) in 1997 and incorporated into the National Institute of Building Sciences (NIBS) United States National CAD Standard, 2005.

1. All drawings must be assigned a sheet number. The sheet number should appear in the lower right corner of the drawing.

2. The first letter of a sheet number indicates the discipline name. Immediately after this is a three-digit number indicating the type of drawing and its sequence in the set. Thus, a typical drawing sheet number would look like this: A101. This would be the first architectural plan, usually the site plan or the basement floor plan. Sheets should be numbered consecutively within a series from 01 to 99.

3. Sheets are bound into “sets” and should be organized in the following sequence of disciplines:

C = Civil (earthworks, cut and fill, retaining walls, ponds, parking lots, streets, sidewalks, sewer and water outside of building, electrical power and lighting and telecommunications outside of building)
L = Landscape (topsoil, trees, shrubs, turf, ground cover, brick or stone paving benches, usually only outside of building)
A = Architectural
S = Structural
M = Mechanical (Heating, Ventilating and Air Conditioning)
P = Plumbing (inside building)
Q=Equipment (freezers, refrigerators, etc. - pre-manufactured items that are built-in and need to be connected to water, sewer, electricity or gas)
F = Fire Protection (fire sprinklers, standpipes, fire extinguishers)
E = Electrical (power and lighting)
T = Telecommunications (telephone, CCTV, cable TV, wired computer network, intercom, sound, security and other low-voltage equipment)
I = Interior Furnishings (furniture, sometimes carpet, and built-in custom or standard millwork and cabinets)

4. Drawings within a discipline are numbered sequentially with three-digit numbers according with the following system:

100 series: site plans, floor plans, and reflected ceiling plans, selective demolition plans – starting with A101, which is usually the site plan.

200 series: exterior elevations – starting with A201

300 series: building sections – starting with A301

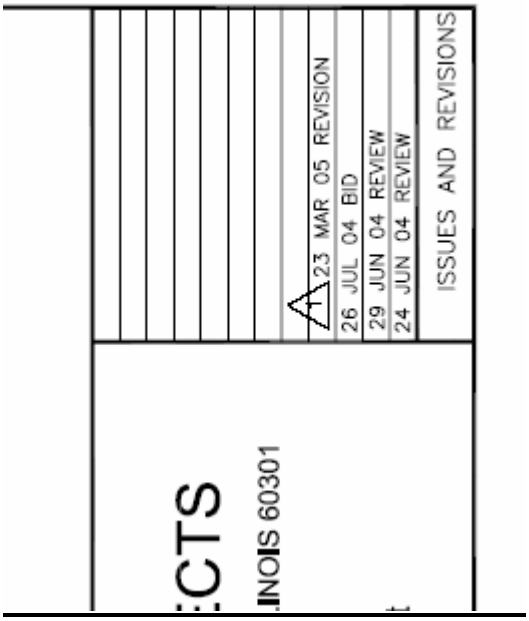
400 series: large scale "blown up" plans, elevations and wall sections – starting with A401

500 series: details and interior elevations – starting with A501

600 series: schedules (such as room finish schedules, door schedules, window schedules) and diagrams (plumbing riser diagrams, single line electrical diagrams) - on small projects, schedules and diagrams can be included on the plan sheets - starting with A601

"Issues" Date Format

From time to time, a drawing may be "issued." For instance, it could be sent to the Owner for review, sent to the building department for a permit, sent to bidders for bidding, sent to the contractor for construction, or sent to the contractor to obtain a price for a proposed revision. Whenever an issue is made, a record copy must be made of the drawing at that stage of its development for future reference if a dispute develops about what was included on the drawing at that point in time. The date of the issue is placed in the "Issues and Revisions" block in the upper right hand corner of the individual drawing. Only drawings that have been issued for a specific purpose will receive a date as shown below. Thus not every drawing in the set will have identical information in this block.

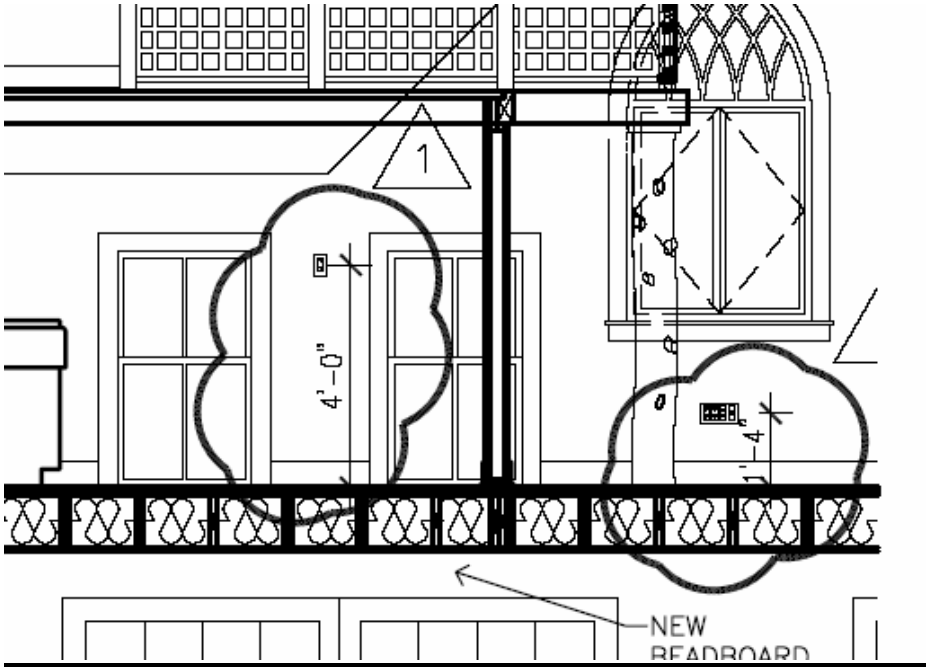


Upper right hand corner of drawing sheet:
Issues and Revisions Block

Drawing Revision Format

Drawings are revised frequently. If a drawing is revised after it is issued for construction, the part that is changed must be “clouded” with a black grease pencil on the back of the drawing (so the cloud can be easily erased when it is revised again), a small triangle with a number in it is placed next to each cloud. The number corresponds to the revision number for that sheet, and it is noted in the “Issues and Revisions” block with a date after it. The triangles with numbers in them remain on the drawing throughout its life to memorialize the approximate location of each revision, however, only the last revision’s “clouds” remain on the drawing. See the example below and above. Not every sheet in the set will have the same revision dates but may have the same revision numbers, for instance, if the plan is changed on August 1, but the elevations are not changed until October 15, the plan revisions are clouded given the revision number 1 (and dated 1 AUG 2005). When the elevations are changed, those changes are clouded and are also given the revision number 1 (and dated 15 OCT 2005). Thus every sheet has its own sequence of revision numbers possibly with different dates.

If a drawing is revised prior to when it is issued for construction, there is usually no need to “cloud” and number the changes. If a drawing is changed during the bidding period, it is not clouded but it is dated and the date recorded in the “Issues and Revisions” block as per the following example: “24 JUL 2005 Addendum No. 2”



Example of a revised drawing that has been “clouded” indicating location of revision and given a revision number in a small triangle

Elements to show in each type of drawing:

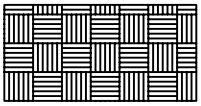
Title Sheet

Name and address of project
General Notes
Index of drawings
Material symbols
Legend of symbols
Perspective rendering of building (optional)

Note that abbreviations are not normally used in CADD drawings, with exception of the following:

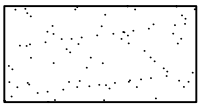
Do not use periods after abbreviations:

@: At (the rate of)
∅: Diameter
B/: Bottom of
BOT: Bottom
CFM: Cubic Feet per Minute
DN: Down
EQ: Equal
F: Farenheit
GSF: Gross Square Feet
HVAC: Heating, Ventilating and Air Conditioning
L: Angle
LF: Linear Feet
NIC: Not in Contract
NSF: Net Square Feet
OC: On Center
PSF: Pounds per Square Foot
PSI: Pounds per Square Inch
SF: Square Feet
T/: Top of
TYP: Typical
UNO: Unless Noted Otherwise
W/:With



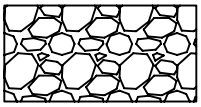
EARTH

CUSTOM PATTERN "PARQUET_UK.PAT"
SCALE 0.0005



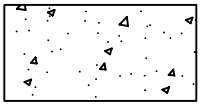
SAND

STANDARD PATTERN AR-SAND
SCALE 0.1



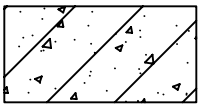
GRAVEL

CUSTOM PATTERN "SITEWORK_GRAVEL.PAT"
SCALE 0.3



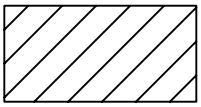
CONCRETE

STANDARD PATTERN AR-CONC
SCALE: 0.05



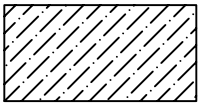
CMU

STANDARD PATTERN AR-CONC, SCALE: 0.05
+ USER-DEFINED, 45 DEGREE, 1/4" SPACING



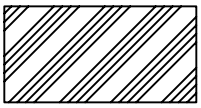
BRICK

USER-DEFINED, 45 DEGREE, 1/8" SPACING



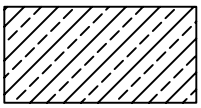
STONE

PREDEFINED, ANSI36, 0 DEGREE, SCALE 0.5



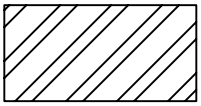
ALUMINUM

PREDEFINED, ANSI34, 0 DEGREE, SCALE 0.25



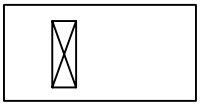
BRONZE

PREDEFINED, ANSI33, 0 DEGREE, SCALE 0.5



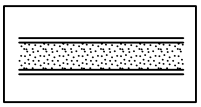
STEEL

PREDEFINED, ANSI32, 0 DEGREE, SCALE 0.5



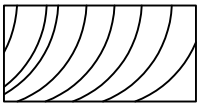
WOOD BLOCKING

DRAW AN "X" THROUGH THE PIECE OF WOOD



PLASTIC LAMINATE ON PARTICLE BOARD

CUSTOM PATTERN "GENERAL_STIPPLE.PAT"
SCALE 0.1

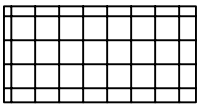


FINISHED WOOD

DRAW AN ARC AND COPY

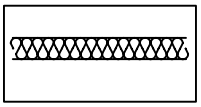
CARPET

DRAW A LINE AND COPY



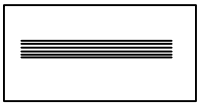
RIGID INSULATION

USER-DEFINED, 0 DEGREE, DOUBLE,
1/8" SPACING



BATT INSULATION

DRAW LINE PARALLEL WITH WALL AND CHANGE TO "BATTING" LINETYPE, SCALE WIDTH OF WALL

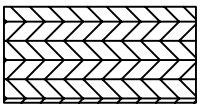


GLASS (SECTION)

DRAW A LINE AND COPY

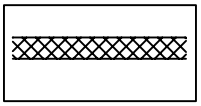
GLASS (ELEVATION)

CLEAR, NO PATTERN



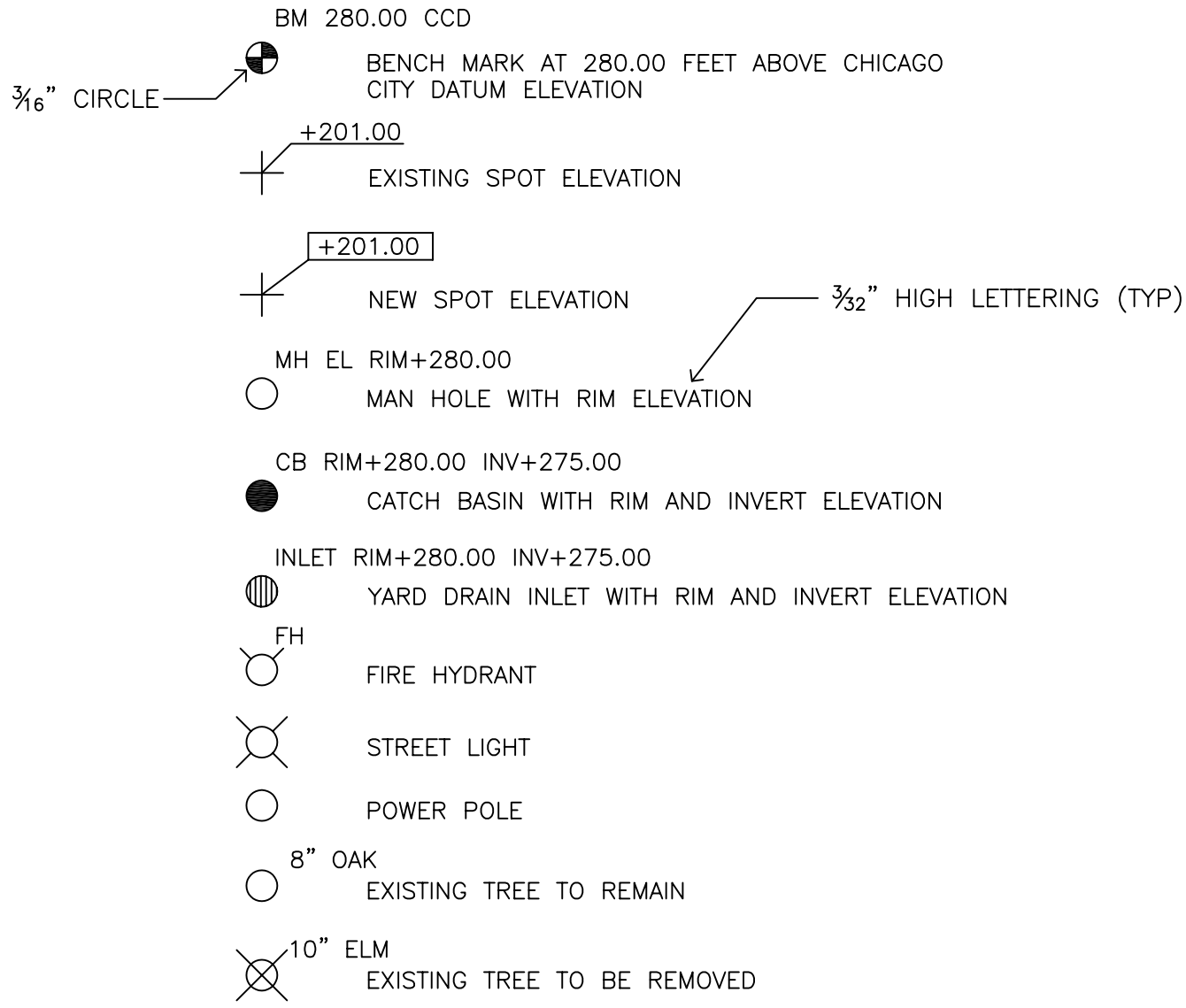
PLYWOOD

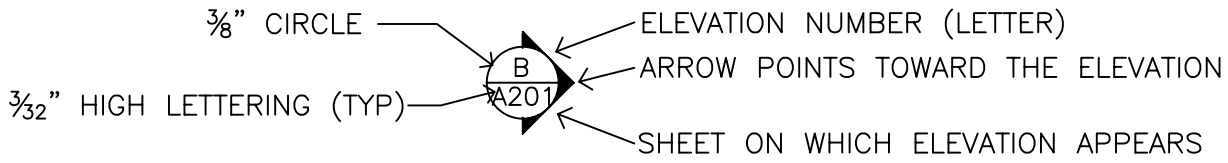
STANDARD PATTERN WOOD06
SCALE: 0.05



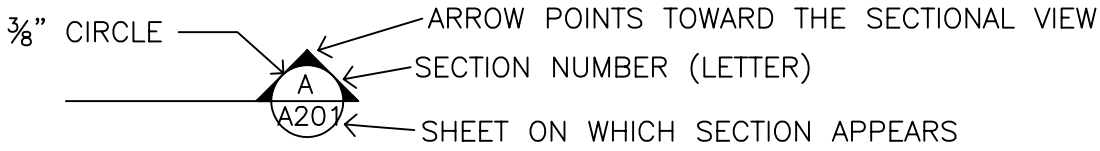
GYP BOARD PARTITION

USER-DEFINED, 45 DEGREE, DOUBLE,
3/64" SPACING

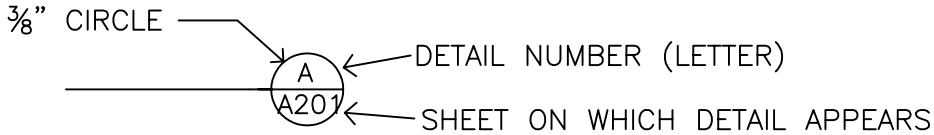

BM 280.00 CCD
BENCH MARK AT 280.00 FEET ABOVE CHICAGO CITY DATUM ELEVATION
3/16" CIRCLE
+201.00
EXISTING SPOT ELEVATION
+201.00
NEW SPOT ELEVATION
3/32" HIGH LETTERING (TYP)
MH EL RIM+280.00
MAN HOLE WITH RIM ELEVATION
CB RIM+280.00 INV+275.00
CATCH BASIN WITH RIM AND INVERT ELEVATION
INLET RIM+280.00 INV+275.00
YARD DRAIN INLET WITH RIM AND INVERT ELEVATION
FH
FIRE HYDRANT
STREET LIGHT
POWER POLE
8" OAK
EXISTING TREE TO REMAIN
10" ELM
EXISTING TREE TO BE REMOVED
W
WATER LINE
G
GAS LINE
T
TELEPHONE LINE (OVERHEAD)
T
TELEPHONE LINE (UNDERGROUND)
P
POWER LINE (OVERHEAD)
P
POWER LINE (UNDERGROUND)
S
SEWER LINE
ST
STORM SEWER LINE
PROPERTY LINE
X
X
FENCE
+205.00
EXISTING CONTOUR
+205.00
NEW CONTOUR



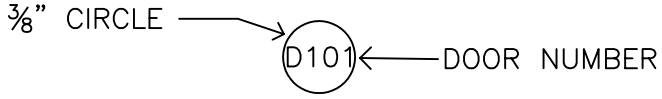
ELEVATION TARGET



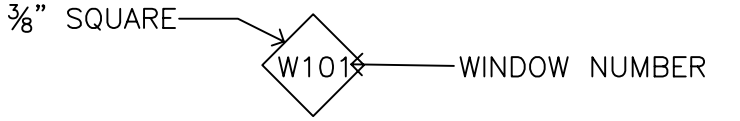
SECTION SYMBOL



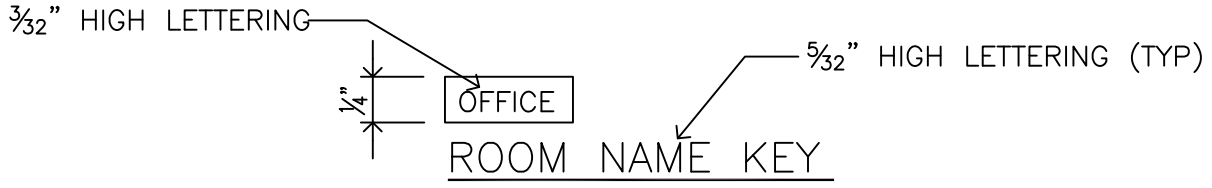
DETAIL SYMBOL



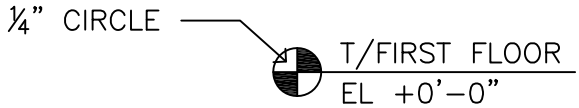
DOOR NUMBER KEY



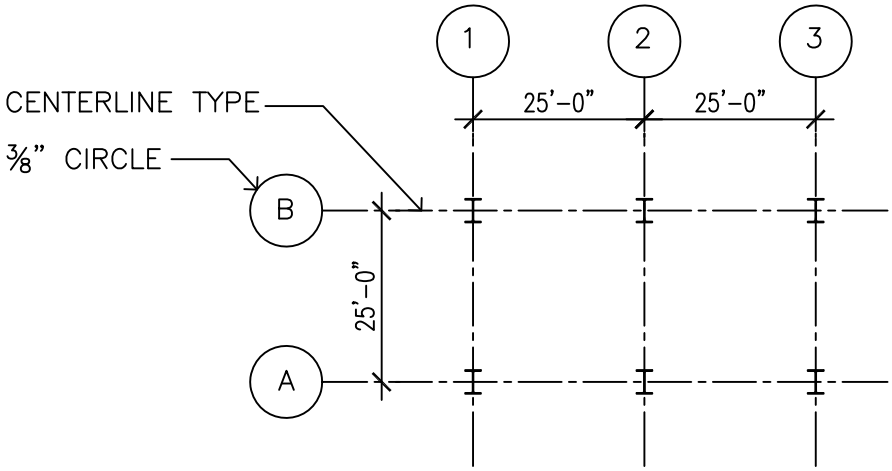
WINDOW NUMBER KEY



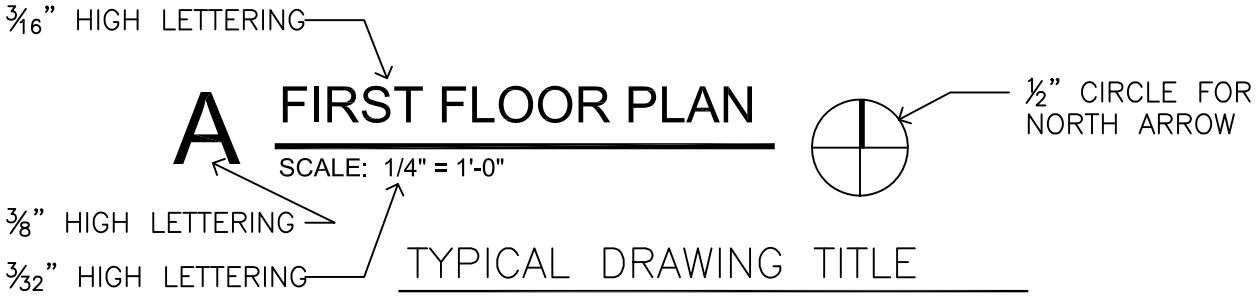
ROOM NAME KEY



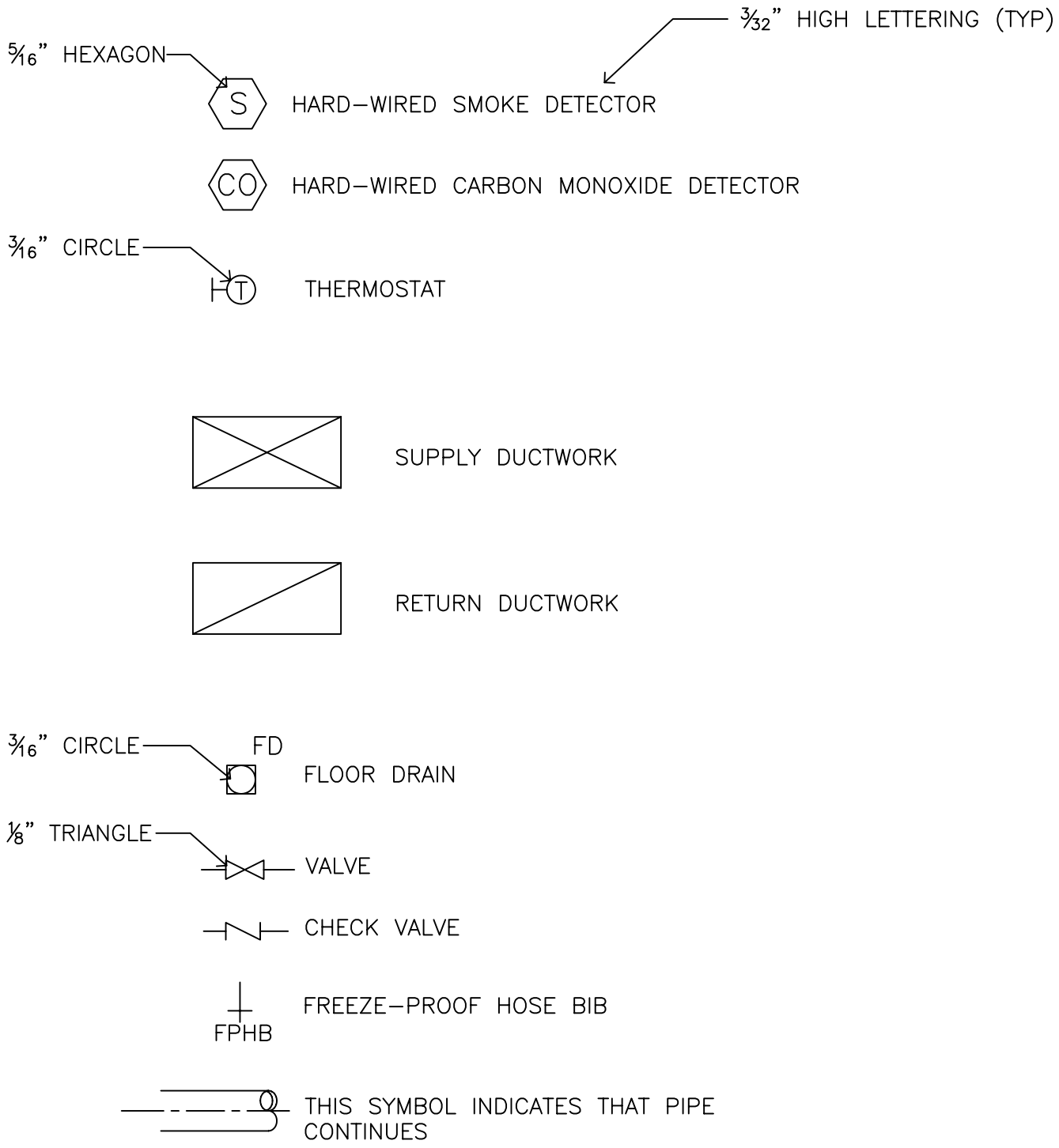
VERTICAL ELEVATION TARGET

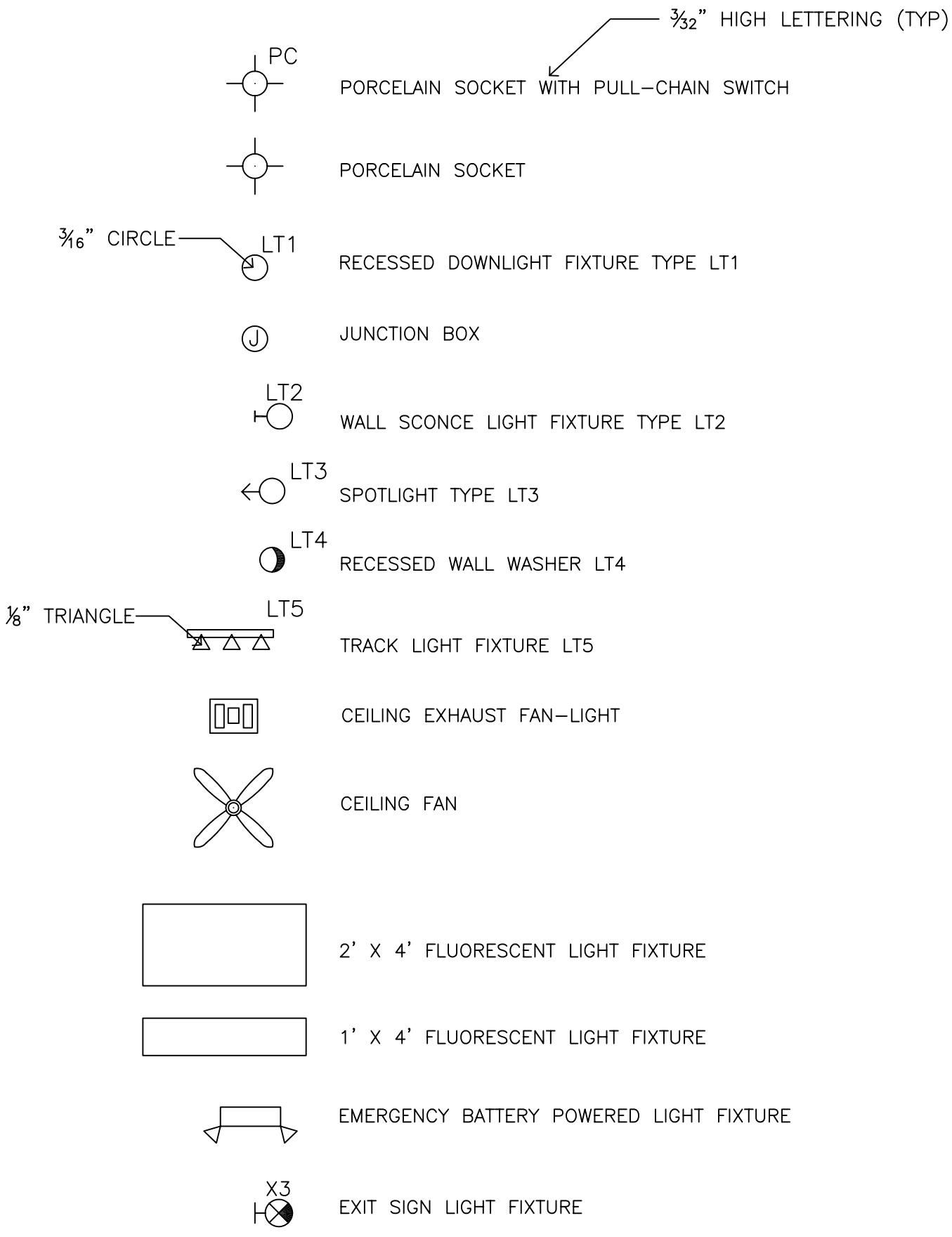


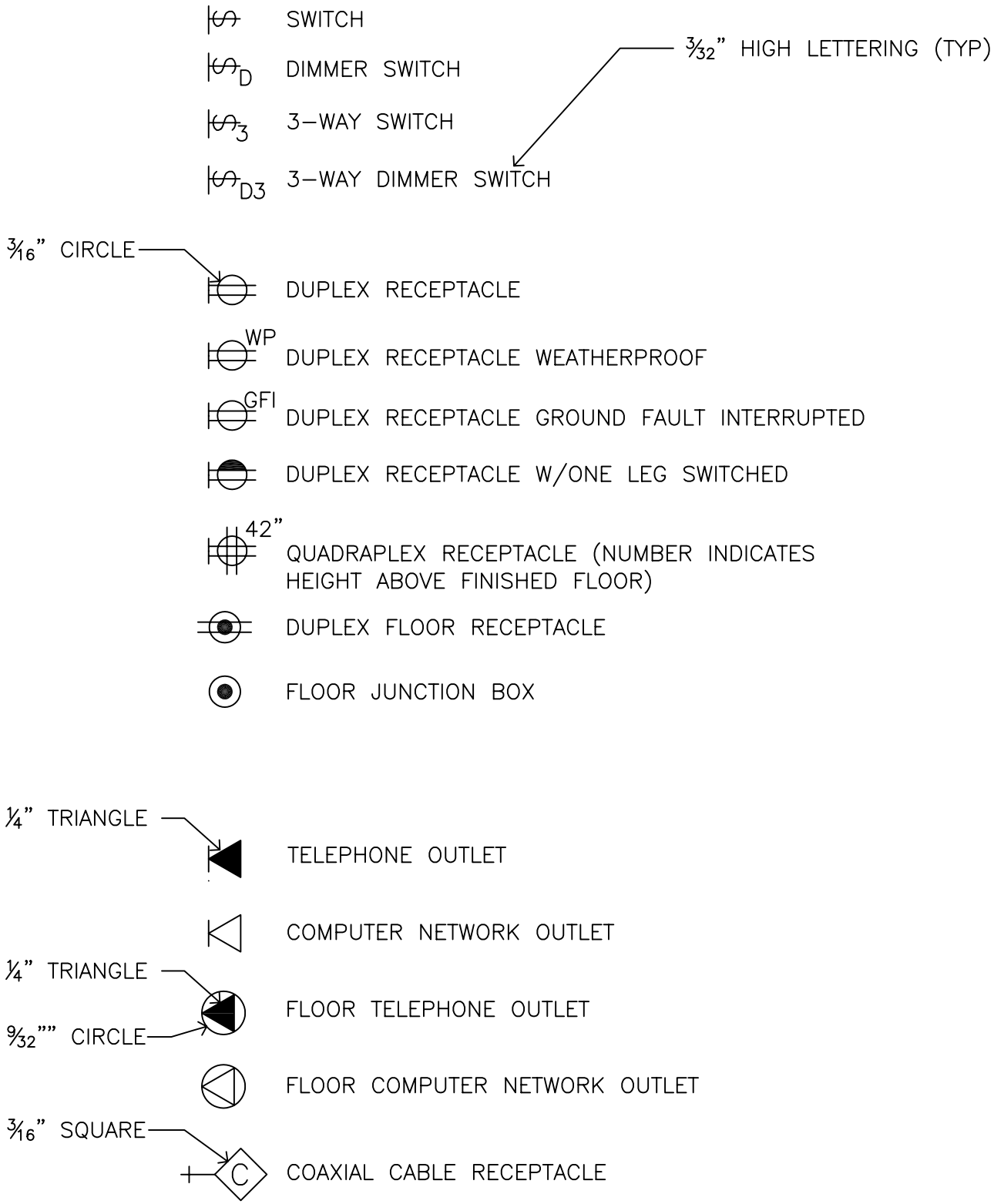
COLUMN CENTERLINES



TYPICAL DRAWING TITLE


3/32" HIGH LETTERING (TYP)
5/16" HEXAGON
S
HARD-WIRED SMOKE DETECTOR
CO
HARD-WIRED CARBON MONOXIDE DETECTOR
3/16" CIRCLE
T
THERMOSTAT
SUPPLY DUCTWORK
RETURN DUCTWORK
3/16" CIRCLE
FD
FLOOR DRAIN
1/8" TRIANGLE
VALVE
CHECK VALVE
FREEZE-PROOF HOSE BIB
FPHB
THIS SYMBOL INDICATES THAT PIPE CONTINUES


3/32" HIGH LETTERING (TYP)
PC
PORCELAIN SOCKET WITH PULL-CHAIN SWITCH
PORCELAIN SOCKET
3/16" CIRCLE
LT1
RECESSED DOWNLIGHT FIXTURE TYPE LT1
J
JUNCTION BOX
LT2
WALL SCONCE LIGHT FIXTURE TYPE LT2
LT3
SPOTLIGHT TYPE LT3
LT4
RECESSED WALL WASHER LT4
1/8" TRIANGLE
LT5
TRACK LIGHT FIXTURE LT5
CEILING EXHAUST FAN-LIGHT
CEILING FAN
2' X 4' FLUORESCENT LIGHT FIXTURE
1' X 4' FLUORESCENT LIGHT FIXTURE
EMERGENCY BATTERY POWERED LIGHT FIXTURE
X3
EXIT SIGN LIGHT FIXTURE


SWITCH
DIMMER SWITCH
3-WAY SWITCH
3-WAY DIMMER SWITCH
3/32" HIGH LETTERING (TYP)
3/16" CIRCLE
DUPLEX RECEPTACLE
WP
DUPLEX RECEPTACLE WEATHERPROOF
GFI
DUPLEX RECEPTACLE GROUND FAULT INTERRUPTED
DUPLEX RECEPTACLE W/ONE LEG SWITCHED
42"
QUADRAPLEX RECEPTACLE (NUMBER INDICATES HEIGHT ABOVE FINISHED FLOOR)
DUPLEX FLOOR RECEPTACLE
FLOOR JUNCTION BOX
1/4" TRIANGLE
TELEPHONE OUTLET
COMPUTER NETWORK OUTLET
1/4" TRIANGLE
9/32"" CIRCLE
FLOOR TELEPHONE OUTLET
FLOOR COMPUTER NETWORK OUTLET
3/16" SQUARE
C
COAXIAL CABLE RECEPTACLE

Items to Show on the Site Plan (usually at a scale 1" = 20'-0")

Property lines with dimensions and angles

Building setback lines with dimensions and angles

Easements with dimensions and angles

North arrow showing true north and "plan" north

Note that plan north should always be up throughout the drawing set – never change the north orientation of any plan in the set for convenience – it is very confusing

If the plan is very long in the north-south direction, it may fit the sheet better by rotating north so that it is to the left

Location of the bench mark and its elevation

The "bench mark" is the location from which all vertical elevations are measured – it is usually the top of a fire hydrant in the vicinity or the top of a street curb.

Outline of the building (s)

Elevation of the first floor with relation to the bench mark

First floor elevation is usually set at 0'-0" for convenience

Topographic contours

- Existing
- Cut and fill
- New

Stoops

Streets

- Existing
- Removed
- New

Sidewalks

- Existing
- Removed
- New

Driveways

Parking lots
Curb cuts

Retaining walls

Walls

Fences

Exterior steps

Slopes of hard surfaces

Air conditioner condensing unit

Trees and large shrubs
- Existing
- Removed
- New

Manholes

Catch basins

Yard drain inlets

Fire hydrants

Yard sprinkler locations

Power poles

Street lights

Signs

Lawn drain tiles

Drainage ditches

Site utilities
- Sewer, Water, Gas, Power, Telephone, Cable TV, Water Meter, Gas meter, Power meter

Items to Show on the Basement Plan (usually at a scale 1/4” = 1’-0” or for large buildings, or 1/8” = 1’-0”)

Foundation walls

Footings (show with dashed lines)

Stoop arms (show with dashed lines)

Steel beams supporting floor structure above (show with centerlines)

Steel columns

Column footings (show with dashed lines)

Interior partition walls and doors

Stairs

Furnace
- Furnace flue

Hot water heater
- Hot water heater flue

Power panel board

Floor drains

Sump pump location

Windows

Window wells

Escape window

Dimensions

Schedules:
- Room Finish Schedule
- Door Schedule
- Window Schedule

Items to Show on the Floor Plans (usually at a scale 1/4" = 1'-0" or for large buildings, 1/8" = 1'-0")

- Walls in plan
  - Walls are cut 3'-0" above floor
- Overhead objects
- Hidden objects
- Receptacles
  - Power
  - Telephone
  - Cable TV
  - Network wiring
- Hose bibs
- Floor registers
- Doors
  - Swing doors
    - Single
    - Pair
  - Bifold doors
  - Pocket doors
  - Bipass doors
  - Double-acting doors
- Windows
  - Double hung windows
  - Casement windows
  - Awning windows
  - Hopper windows
  - Sliding windows
  - Pivoting windows
  - Fixed windows
- Stairs
  - Minimum width:
    - 36" for one and two family dwellings or where serving an occupant load of 50 or less
    - 44" for all other stairs
  - Handrails:
    - On at least one side for one and two family dwellings
    - On both sides for all other stairs

Minimum Headroom: 6’-8” clear
Minimum riser height:
7 ¾” for one and two family dwellings
7” for all other buildings
Maximum tread width:
10” for one and two family dwellings
11” for all other buildings
Maximum height between landings: 12’-0”
Show direction of each stair with an arrow that points in the upward or downward direction – label arrows UP or DN

Show thicker interior walls where plumbing riser sewer or vent pipes are located (usually 2x6 walls instead of 2x4)

Fireplaces

Kitchen cabinets and appliances

Plumbing fixtures

Fireplace
Hearth
Flue

Heating registers

Slope of garage floor slab

Area drains

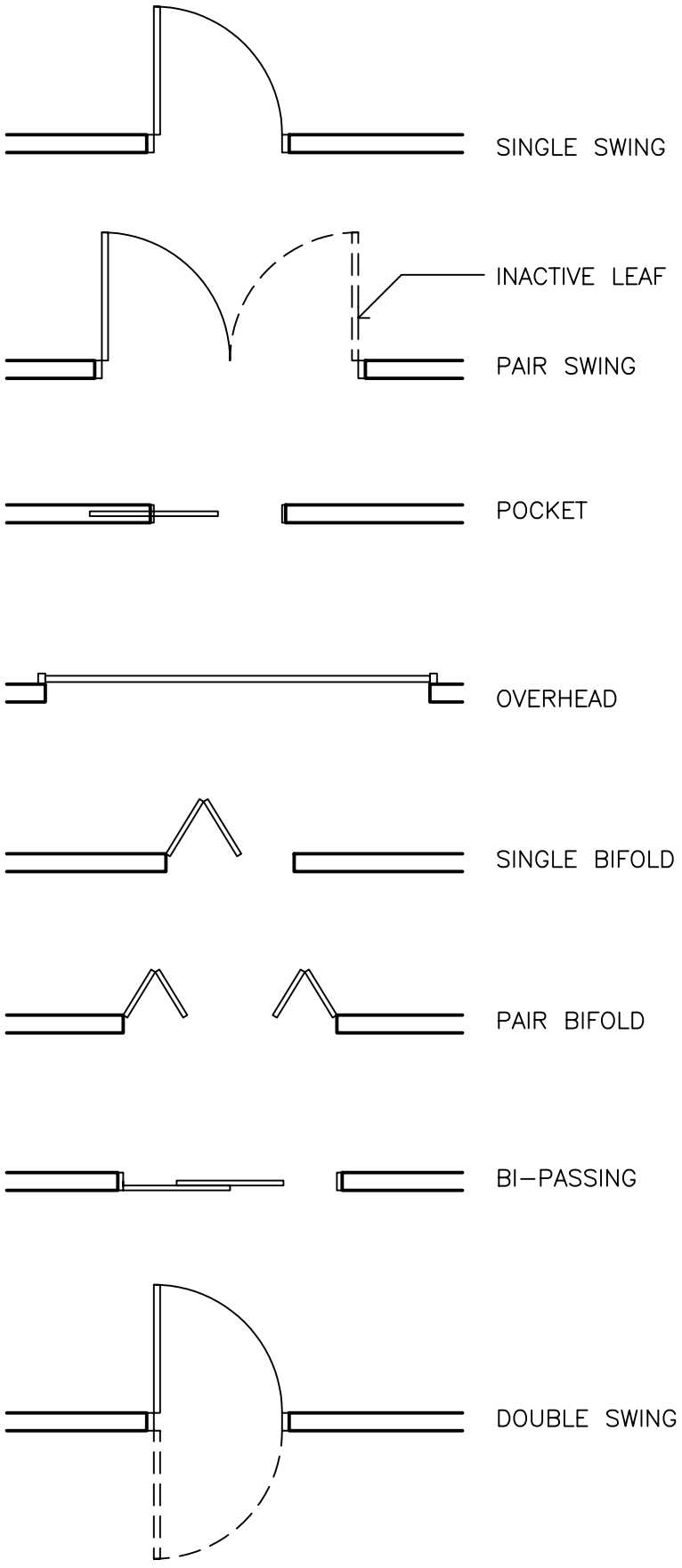
Basement window wells and drains

Downspouts

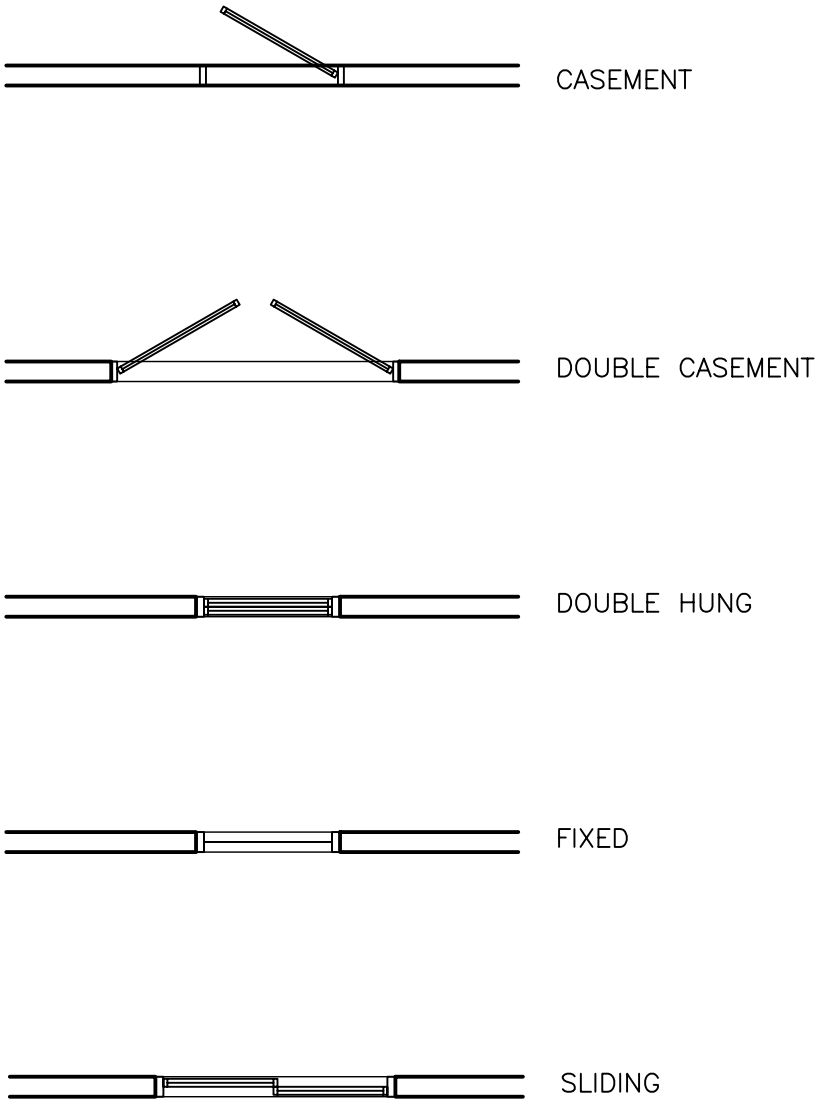
Splashblocks

Dimensions
Overall dimension
Face of finished walls
Centerlines of doors
Centerlines of windows

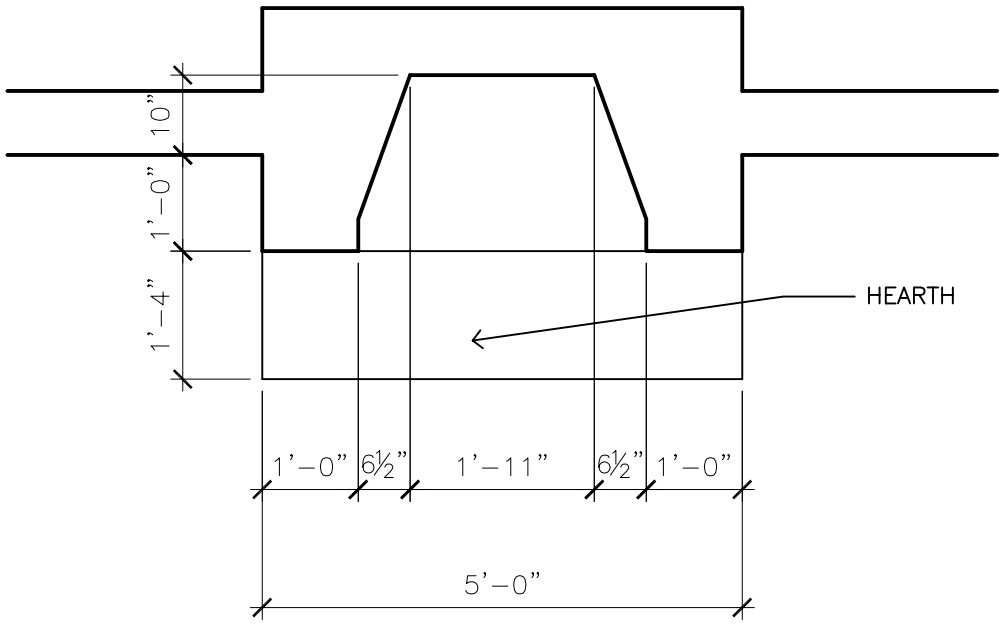
Schedules:
Room Finish Schedule
Door Schedule
Window Schedule



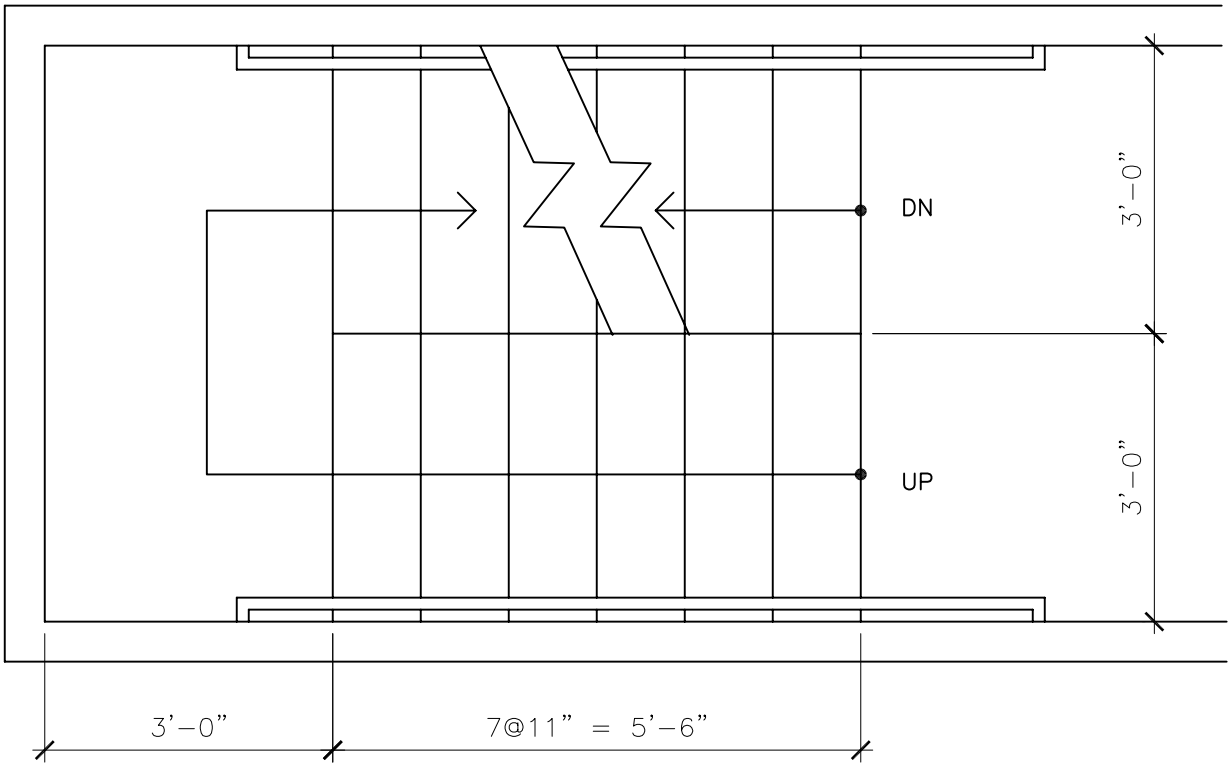
DOORS IN PLAN



WINDOWS IN PLAN



FIREPLACE IN PLAN



STAIRS IN PLAN

ROOM FINISH SCHEDULE

LEVEL	ROOM NUMBER	ROOM NAME	FLOOR	BASE	WALL	CEILING	CEILING HT	REMARKS
BASEMENT	B01	STORAGE	CONC	EXP	EXP	EXP	7'-0"	
	B02	FURNACE RM	CONC	EXP	DW	DW	7'-0"	TYPE "X" DRYWALL
1ST FLOOR	101	VESTIBULE	VCT	WOOD - S&S	DWP	DWP	10'-6"	
	102	LIVING ROOM	WOOD	WOOD - S&S	DWP	DWP	9'-0"	SEE ELEVATIONS
	103	STUDY	WOOD	WOOD - S&S	DWP	DWP	VARIES	"CATHEDRAL" CEILING
	104	KITCHEN	SHEET VINYL	WOOD - PTD	DWP	DWP	9'-0"	
	105	CLOSET #1	SHEET VINYL	WOOD - PTD	DWP	DWP	10'-6"	
	106	STAIR `	CPT	WOOD - S&S	DWP	DWP	VARIES	
2ND FLOOR	201	HALL	CPT	WOOD - S&S	DWP	DWP	8'-0"	
	202	BEDROOM #1	CPT	WOOD - S&S	DWP	DWP	8'-0"	
	203	BATHROOM	CT	CT	DWP	DWP	8'-0"	

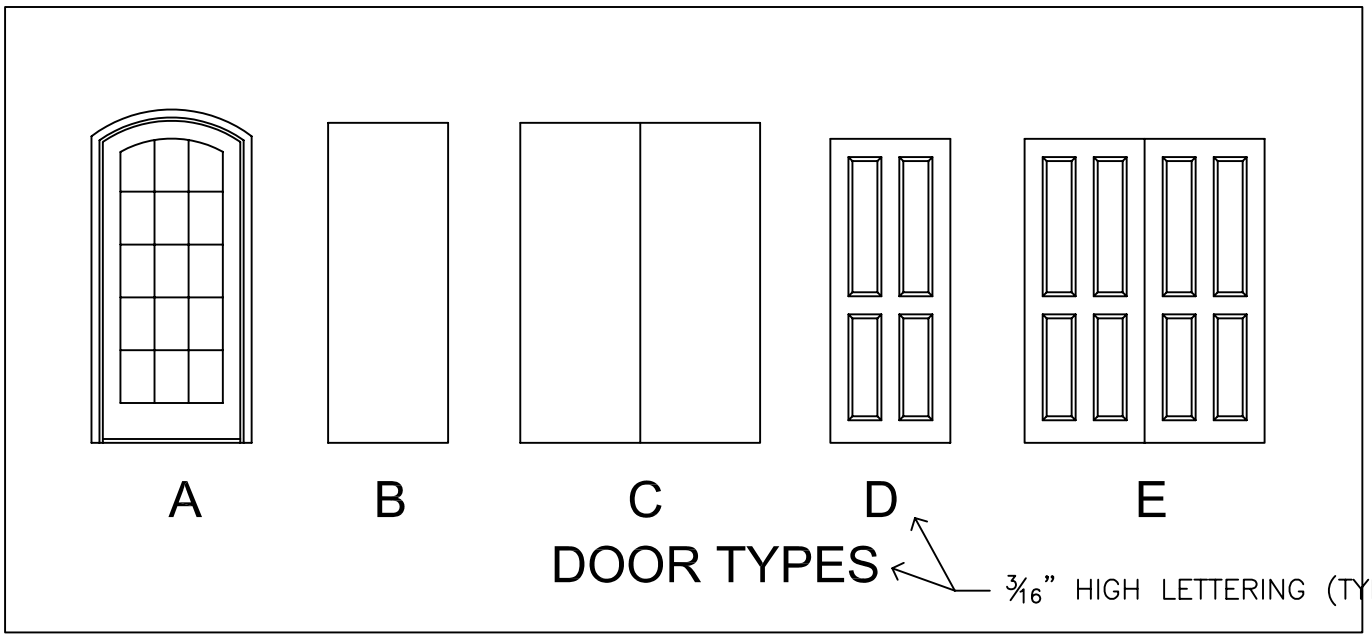
ROOM FINISH ABBREVIATIONS:
CONC: CONCRETE, SEALED
CPT: CARPET
CT: CERAMIC TILE
DW: DRYWALL, UNPAINTED
DWP: DRYWALL, PAINTED

EXP: EXPOSED CONSTRUCTION
SHEET VINYL: SHEET VINYL FLOORING OVER ½" PLYWOOD UNDERLAYMENT
VCT: VINYL COMPOSITION TILE OVER ½" PLYWOOD UNDERLAYMENT
WOOD: STRIP RED OAK, SANDED, STAINED & SEALED
WOOD-S&S: RED OAK TRIM, STAINED & SEALED

DOOR SCHEDULE

LEVEL	DOOR NO	SIZE	TYPE	DOOR MATERIAL	FRAME MATERIAL	HARDWARE	LABEL	REMARKS
BASEMENT	DB01	3'-0" x 6'-8" x 1 3/4"	A	HM-P	HM-P	SET 1		
	DB02	3'-0" x 6'-8" x 1 3/4"	A	WDSC-P	WD-P	SET 2		
	DB03	3'-0" x 6'-8" x 1 3/4"	A	WDSC-P	WD-P	SET 2		
FIRST FLOOR	D101	3'-0" x 6'-8" x 1 3/4"	B	WDSC-P/GL-T	WD-P	PREHUNG		MARVIN DOOR 3080 W/GLASS LITE GL-T
	D102	PR 3'-0" x 6'-8" x 1 3/4"	D	WDPAN-SS	WD-SS	SET 3		
	D103	3'-0" x 6'-8" x 1 3/4"	C	WDPAN-SS	WD-SS	SET 4		
	D104	BIFOLD 2'-6" x 6'-8" x 1 3/8"	E	WDHC-SS	WD-SS	SET 5		
SECOND FLOOR	D201	3'-0" x 6'-8" x 1 3/4"	C	WDPAN-P	WD-P	SET 5		
	D202	3'-0" x 6'-8" x 1 3/4"	C	WDPAN-P	WD-P	SET 5		
	D203	PR BIFOLD 2'-6" x 6'-8" x 1 3/8"	F	WDPAN-P	WD-P	SET 5		
	D204	3'-0" x 6'-8" x 1 3/4"	C	WDPAN-P	WD-P	SET7		

DOOR SCHEDULE ABBREVIATIONS:
GL-T: TEMPERED GLASS
HM-P: HOLLOW METAL, PAINTED
WD-P: POPLAR OR BIRCH WOOD, PAINTED
WD-SS: RED OAK, STAINED & SEALED
WDSC-P: SOLID CORE WOOD, PAINTED
WDSC-SS: SOLID CORE WOOD, STAINED & SEALED
WDHC-P: HOLLOW CORE WOOD, PAINTED
WDHC-SS: HOLLOW CORE WOOD, STAINED & SEALED
WDPAN-P: PANELLED WOOD, PAINTED
WDPAN-SS: PANELLED WOOD, STAINED & SEALED



THESE DOOR TYPES ARE REFERENCED TO DOOR SCHEDULE

WINDOW SCHEDULE

LEVEL	WINDOW NO.	FRAME SIZE (W X H)	WINDOW MATERIAL	OPERATION	MANUFACTURER'S NUMBER	REMARKS
BASEMENT	WB01	3'-0" X 3'-0"	WD-P	HOPPER	H-3030	
	WB02	3'-0" X 3'-0"	WD-P	HOPPER	H-3030	
	WB03	3'-0" X 4'-6""	WD-P	SLIDING	S-3046	ESCAPE WINDOW
FIRST FLOOR	W101	PR 3'-0" X 5'-0"	WD-P	CASEMENT	C-3050	
	W102	PR 3'-0" X 5'-0"	WDPAN-SS	CASEMENT	C-3050	
SECOND FLOOR	W201	3'-0" X 3'-6"	WDPAN-P	FIXED	F-3036	GL-T
	W202	3'-0" X 5'-0"	WDPAN-P	DOUBLE-HUNG	D-3050	

WINDOW SCHEDULE ABBREVIATIONS:
GL-T: TEMPERED GLASS
WD-P: WOOD, PAINTED
WD-SS: WOOD, STAINED & SEALED

Items to Show on Roof Plan (usually at a scale 1/4” = 1’-0” or for large buildings, 1/8” = 1’-0”)

Slopes

Materials

Gutters and downspouts

Parapets

Skylights
- Dimensions
- Operation

Items to Show on the Reflected Ceiling Plans (usually at a scale 1/4" = 1'-0", or for large buildings, 1/8" = 1'-0")

Lights

Switches and conduit runs

Ceiling tile pattern

Identification of ceiling changes of plane

Heads of doors

Door swings

Items to Show on the Exterior Elevations (usually at a scale 1/4" = 1'-0", or for large buildings, 1/8" = 1'-0")

Doors
- Show hinge side with dashed lines

Windows
- Show hinge side on casements, awnings, hoppers and pivoting windows
- Show arrows depicting double hung, single hung, and sliding sash direction
- Show the letter F for fixed glazing

Wall materials

Roofing materials

Change of plane

Light fixtures

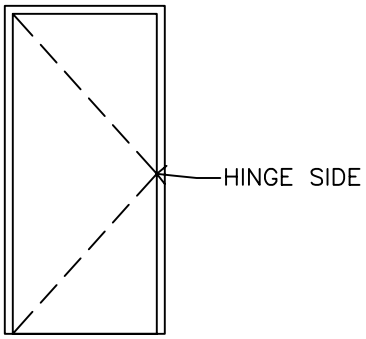
Hose bibs

Mailboxes

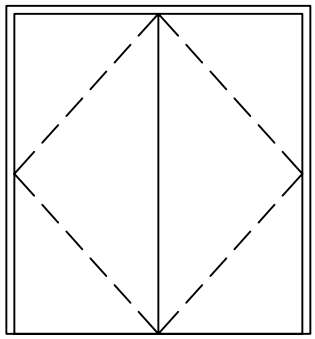
House numbers

Vertical dimensioning

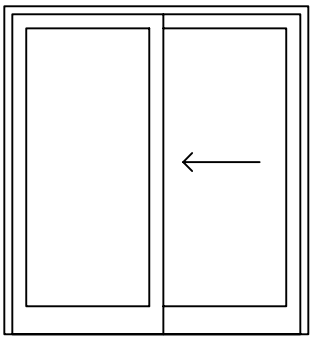
Floor elevation levels



SINGLE SWING

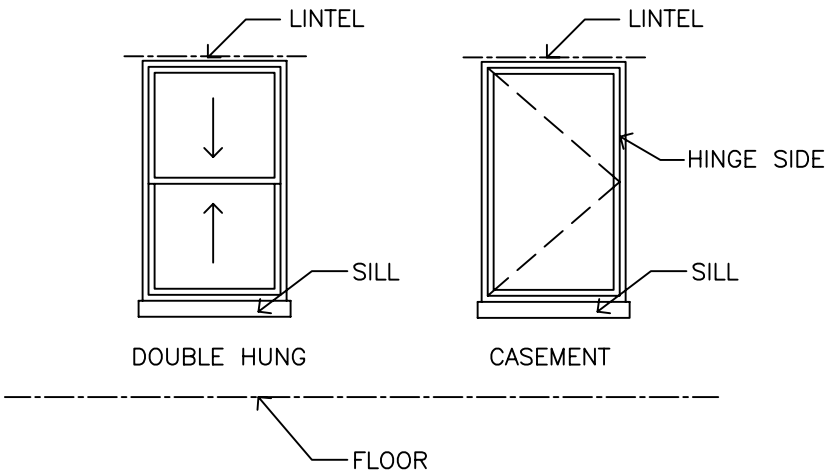


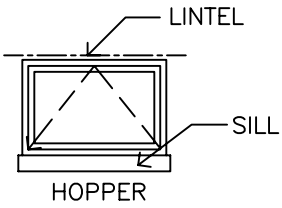
PAIR SWING

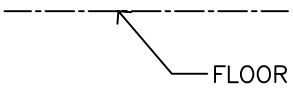


PATIO SLIDING

DOORS IN ELEVATION







WINDOWS IN ELEVATION

Items to Show on the Interior Elevations (usually at a scale of 1/4" = 1'-0")

Doors
- Show hinge side

Baseboard

Moldings
- Chair rail
- Crown molding
- Plate rail

Wainscotting

Millwork

Light fixtures

Vertical dimensioning

Items to Show in the Wall Sections (usually at a scale of 3/4" = 1'-0")

Vertical dimensions

Floor elevation marks

Materials
- Sheathing
- Exterior finish
- Interior finish
- Insulation – show minimum R-value
- Floor deck
- Finish flooring
- Baseboard
- Wall moldings
- Roof sheathing
- Roof underlayment
- Roofing
- Roof ventilation

Structural information
- Foundation and footing
- Wall structure
- Floor joists
- Ceiling joists
- Roof rafters
- Bridging
- Reinforcing bars in foundation walls

Drainage bed of gravel under concrete floor slab

Vapor retarder under concrete floor slab

Welded wire fabric mesh reinforcing in concrete floor slab

Dampproofing

Items to Show in the Details (various large scales)

Plan and Section of a fireplace (1 ½" = 1'-0")

Riser and tread of a stair (1 ½" = 1'-0")

Section detail of a lintel above a window or other opening (3" = 1'-0")

Section and plan of cabinets (1" = 1'-0")

Threshold detail (1 ½" = 1'-0")

Column cladding (3" = 1'-0")

CSI ("Construction Specifications Institute") Format for Organization of Specifications and Materials:

Division 1: General Requirements
Division 2: Existing Conditions
Division 3: Concrete
Division 4: Masonry
Division 5: Metals
Division 6: Wood, Plastics and Composites
Division 7: Thermal and Moisture Protection
Division 8: Openings
Division 9: Finishes (interior finishes)
Division 10: Specialties (for example, signs, toilet accessories)
Division 11: Equipment (for example, kitchen equipment)
Division 12: Furnishings
Division 13: Special Construction (for example, greenhouses)
Division 14: Conveying Equipment (elevators, escalators, lifts)
Division 21: Fire Suppression
Division 22: Plumbing
Division 23: Heating, Ventilating and Air Conditioning
Division 26: Electrical
Division 27: Communications
Division 28: Electronic Safety and Security
Division 31: Earthwork
Division 32: Exterior Improvements
Division 33: Utilities

Terms Commonly used in Architecture, Interior Design, and Construction Management

ACCESS PANEL - A small metal or wood door flush with a wall or ceiling surface which provides a closure over a valve or other operable device which is recessed into the wall or located above a ceiling. The access door may be keyed and lockable.

ACCESS FLOOR - Removable metal or concrete floor panels about 18" to 24" square which are supported on short steel pedestals so that wiring and ductwork may be installed, changed and maintained below the floor. The raised floor may be carpeted or tiled to create a finished floor surface.

ACOUSTICAL TILE, ACOUSTICAL PANEL - A ceiling or wall tile finishing material with an inherent property to absorb sound; usually made of mineral, fiber or insulated metal materials. Not "Acoustic Tile" or "Acoustical Board."

ACRYLIC (PAINT), ACRYLIC LATEX - A paint composed of acrylic resins, thinned with water.

ADDENDUM - Written or graphic instruments issued prior to the execution of the Contract which modify or interpret the bidding documents, including Drawings and Specifications, by additions, deletions, clarifications or corrections. Addenda will become part of the Contract Documents when the Construction Contract is executed; (plural form: "Addenda").

ADHESIVE - A sticky substance to bond one material to another. Use the term "Adhere" instead of "Glue." Do not use "Glue," "Cement," or Mastic."

ADMIXTURE - A chemical which is added to concrete to accelerate or retard the setting process or to create air bubbles in the concrete, called "accelerators," or - air entraining agents."

ADVERTISEMENT FOR BIDS - Published public notice soliciting bids for a construction project. Most frequently used to conform to legal requirements pertaining to projects to be constructed under public authority, and usually published on newspapers of general circulation in those districts from which the public funds are derived.

AGGREGATE - Any of various hard, inert materials, like sand, gravel, crushed stone, or pebbles added to cement to make concrete, mortar, or plaster.

AGREEMENT
(1) A legally enforceable promise or promises between two or among several persons.
(2) On a construction project, the document stating the essential terms of the Construction Contract which incorporate by reference the other Contract Documents.
(3) The document setting forth the terms of the Contract between the Architect and a consultant.

AIR CONDITIONING SYSTEM - The process of treating air for simultaneous control of temperature, humidity, cleanliness, and distribution.

ALKYD (PAINT) – A type of paint composed of a chemically synthesized, alkyd derived base, thinned with mineral spirits. This is the contemporary version of traditional "oil" based paints.

ALTERATION - A planned or executed change to an existing building, short of complete demolition of the building. See also DEMOLITION and SELECTIVE DEMOLITION.

ALTERNATE - Mechanism used in Bid Documents to seek separate bids for a different design than the "Base Bid" design. May be "Additive" or "Deductive" alternates.

APPROVE - The term "approved," where used in conjunction with the Architect's action on the Contractor's submittal, applications, and requests, is limited to the Architect's duties and responsibilities as stated in General and Supplementary Conditions.

APRON
(1) A finish strip applied below the stool of a window to cover the rough plaster or dry wall edge.
(2) A paved or hard packed area abutting a garage door or other opening.

AREAWAY - An uncovered space next to the fountain walls of a building, for entrance of light and air to the basement.

ARRIS - Sharp edge of a finished member.

AS-BUILT DRAWING - A drawing or print marked by the Contractor to show actual conditions of a project as constructed after construction.

ASHLAR - A rectangular pattern of stone used in a wall.

ASPHALTIC CONCRETE - This is the proper term used for paving for roads and driveways. Not "Asphalt" or "Bituminous" Concrete.

ASTRAGAL - A small molding attached to one or both meeting stiles of a double door, used to provide a tight, draft - free fit.

AWARD - The acceptance of a bid or negotiated proposal by an owner.

BACKFILL - The material (earth, gravel, or sand) used for refilling around a foundation wall.

BACKUP - The inner portion of a masonry wall, usually finished with face brick, stone ashlar, stucco, or other decorative or protective veneer on the outside.

BALUSTER - Any of a number of closely spaced vertical supports for a railing or balustrade.

BATT INSULATION - A preformed section of flexible fiberglass or mineral wool insulation with or without a vapor barrier covering on one side (either Kraft paper or aluminum foil) sized to fit snugly in a framed cavity between studs or joists.

BATTEN - A narrow strip of wood or metal used to cover vertical joints between boards or panels.

BAY - An opening in a wall; a horizontal area division of a building, usually defined as the space between two columns or piers.

BEAM - A horizontal load - supporting member of a building which directly supports a floor; may be of wood steel, or concrete; transmits load horizontally to vertical columns or bearing walls. Normally beams are larger and are spaced further apart than "joist."

BEARING WALL - A wall which supports any vertical load in a building (such as floors, roofs, joist, beams or girder) as well as its own weight.

BEARING - The area of contact between a structural member (beam, girder, footing) and its underlying support (column, bearing wall, load bearing ground).

BELT - A horizontal course of decorative stone or brick exposed to the exterior face and encircling a masonry building.

BEVELED WOOD SIDING - Horizontal wood boards of varying widths, (usually 4", 6", 8", or 10") with lower edge thicker than upper edge.

BID - A complete and signed proposal to do the construction work or designated portion thereof for the dollar amount stated in the bid.

BIDDER - One who submits a bid for a prime contract with the Owner,

as distinct from a sub - bidder who submits a bid to another bidder. Technically, a bidder is not a contractor on a specific project until a contract exists between him and the Owner.

BIDDING DOCUMENTS - The advertisement or invitation to bid, instructions to Bidders, the bid form the drawings, the specifications, and any Addenda issued prior to receipt of bids.

BLANKET INSULATION - Roll type fiberglass insulation for installation over ceilings or on wall surfaces either laid flat or secured with impaling pins.

BOARD FOOT - A unit of measure represented by a board nominally one foot long, one foot wide and one inch thick, or 144 cubic inches.

BOARD MEASURE - A system of cubic measurement for lumber; the basic unit is a board foot.

BOND - The arrangement of bricks in certain overlapping patterns to give the finished structural unit additional strength and to allow the individual elements to act together as a cohesive, integrated unit. Commonly used bonds are Running, Common, English, and Flemish bonds.

BORROWED LITE - An interior window between rooms which allows light from one room to enter another - use instead “glazed opening."

BRACE - A structural member which reinforces a column, beam, or truss.

BRACKET - A horizontally projecting support for an overhanging weight such as cornice.

BRIDGING - A method of bracing wood or steel floor joists by providing lateral members between the joists. Cross - bridging forms an "x" shape between joists. The purpose of bridging is to distribute loading to several joists.

BUDGET - The sum established by the Owner as available for the entire Project, including the construction budget, land costs, equipment costs, financing costs, compensation for professional services, contingency allowance, and other similar established or estimated costs.

BUILDING PERMIT - A permit issued by a village, town, city, county, state or federal governmental authority allowing construction of a project in accordance with approved Drawings and Specifications.

BUILDING TYPE - A classification of a building according to principal activities or uses for which it was constructed, such as housing, jail, shopping center. This is not the same as an "occupancy type" of building codes.

BUILT - UP ROOFING - roofing system used on relatively flat surfaces - hot asphalt or coal tar pitch mopped on with three to four plies of roofing felts. May be smooth surfaced, painted with fibrated aluminum paint, or graveled on top.

BUTT JOINT - The cut ends of sheet or boards placed adjacent to one another with no overlap.

BUTTRESS - An external structure usually brick or stone, built against a wall to support or reinforce it.

BY OWNER - The term "by Owner" means that work shown or described in the contract documents and labeled with this designation is not included in the General Contractor's contract, but will be completed under a separate contract with another contractor by the Owner. Coordination and scheduling of the work thus described shall be the responsibility of the General Contractor.

BY OTHERS - The term "by others" means that work shown or described in the contract documents and labeled with this designation is not included in the specific sub-trade's contract, but will be required to be done within the General Contractor's contract.

CAISSON - A deep foundation type which is constructed by boring a large diameter hole in the ground and filling it with concrete.

CAMBER - A slight upward arching given to a beam, girder, or truss to prevent sagging due to weight.

CANT STRIP - A slanted or angled board laid at roof - wall intersection or in back of a parapet, to transition from horizontal to vertical for a roof membrane.

CANTILEVER - A structural member projecting horizontally well beyond its vertical support.

CASE WALL - A partition to enclose mechanical and plumbing systems.

CASEMENT - A type of window having a sash with hinges on one side allowing the window to open. Most contemporary casement windows swing outward.

CASING - The exposed trim molding, around a door or window; may be either flat or molded.

CASING BEAD - A plaster stop - do not use for gypsum wallboard trim.

CAULK - An archaic term meaning to fill small cracks with a linseed oil and whiting compound called "caulk" which is not very flexible and will not provide a water tight joint - - use the term "seal" or "sealant" instead.

CEMENT - Portland Cement for use in concrete, grout, mortar, cement plaster and stucco.

CEMENT PLASTER - Material made from Portland cement sand and water for use on exterior walls and soffits, and on high use interior surfaces or in high humidity interior spaces. "Stucco" is cement plaster.

CERTIFICATION FOR PAYMENT - A signed statement from the Architect to the Owner confirming the amount of money due the Contractor for Work accomplished and/or materials and equipment suitably stored.

CHALKBOARD - Do not use the term "Blackboard" which is archaic since contemporary chalkboards are not normally black.

CHAMFER - To bevel or round off a right angle corner.

CHANGE ORDER - A written order to the Contractor signed by the Contractor, Owner, and the Architect, issued after the execution of the Contract, authorizing a Change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time may be changed only by Change Order.

CHIPBOARD - Incorrect term - use the term "particle board" or OSB (“Oriented Strand Board”) instead.

CLERESTORY WINDOW - A window or series of windows in a wall above the eye line, for lighting and/or ventilation of the building.

CMU - Concrete Masonry Unit - Do not use "Cement Block" or "Cinder Block."

CODES - Regulations, ordinances or statutory requirements of a village, town, city, county, state, or federal government relating to building construction, adopted and administered for the protection of the public health, safety, and welfare.

COLUMN - A vertical load - carrying structural member supporting horizontal members (beams, girders, etc.).

COMPLETE - The term "complete" means all surfaces or areas of a construction item.

CONCRETE - A mixture of Portland cement, large and small aggregate, water and admixture.

CONDUCTOR - See "down spout".

CONDUIT - A protective metal tube for electric wiring.

CONSTRUCTION DOCUMENTS - The term "Construction Documents" means the Scope of Work list and reference drawings contained within the Volume by that name.

CONSTRUCTION JOINT - A joint in concrete flatwork or walls which is necessary for stopping the pour for the day - do not use "cold joint."

CONSTRUCTION MANAGEMENT - The combined operations for the authorization, purchasing, supervision, accomplishment, and acceptance of a construction project.

CONSTRUCTION DOCUMENTS - Working Drawings and Specifications.

CONSULTANT - An individual or organization engaged by the Owner or Architect to render professional consulting services, supplementing the Architect's services. Types of consultants could be Engineers, acoustical, energy, or cost consultants.

CONTRACT DOCUMENTS - The term "Contract Documents" means all of the documents which make up the Contract between Owner and Contractor, including the Contract itself, the General and Special Conditions, the Technical Specifications, the Construction Documents (Scope of Work and Drawings), all Addenda issued prior to signing of the Contract and Change Orders issued by the Owner and agreed to by the Contractor after the signing of the Contract.

CONTRACT ADMINISTRATION - The duties and responsibilities of the Architect during the Construction Phase, which includes observation of construction, checking shop drawings, and approving pay requests.

CONTRACT DOCUMENTS - The Owner - Contractor Agreement, the Conditions of the Contract (General, Supplementary and other Conditions), the Drawings, the Specifications, and all addenda issued prior to execution of the contract.

CONTRACTOR - In construction terminology, the person or organization responsible for performing the Construction Work and identified as such in the Owner - Contractor Agreement.

CONTROL JOINT - A groove which is formed, sawed, or tooled in a concrete or masonry structure to regulate the location and the amount of cracking and separation resulting from the dimensional change of different parts of the structure, thereby avoiding the development of high stresses.

COPING - Top of a parapet, usually stone or metal, to prevent water from getting into the parapet.

COR - TEN - Proprietary name for a brand of weathering steel made by the Inland Steel Company - use the generic term "weathering steel" instead.

CORBEL - Masonry which is stepped out from each course to project from a wall.

CORNICE - A horizontal molding along the top of the wall or ceiling.

COURSE - A continuous horizontal layer of masonry.

CRAWL SPACE - An unfinished, accessible space below the first floor, generally less than full story height, but at least 1' - 6" high clear under the joists or beams.

CRICKET - A small saddle on a roof used to divert water around a chimney or other small projection (see saddle).

CRIPPLE - A short supplemental wall framing member used between the door or window header (or window sill) and sill plate.

CURB
(1) The stone or concrete edging of a side walk or paved street;
(2) The raised edge of a floor or well opening.

CURTAIN WALL - An exterior wall which encloses but does not support the structural frame of the building.

DAMPPROOFING - An impermeable coat or coats of asphalt brushed or sprayed on the foundation basement wall to prevent the passage of moisture.

DATUM - A reference elevation to which other elevations are measured.

DEAD LOAD - The part of the total building load contributed by the structural building elements and materials.

DEFLECTION - The displacement in a structural member that occurs when a load is applied to the structure.

DELETE - To take something out of the building or contract - do not confuse with "omit" which means not to install something in the first place.

DEMISING WALL - An interior wall or partition used to sub - divide tenant spaces from one another.

DEMOLITION - Removal of an entire building - see also "alteration" and "selective demolition."

DETAIL - A drawing, at a larger scale, of a part of another drawing, indicating in detail the design, location, composition and correlation of the elements and materials shown. (Usually referring to a plan detail.)

DIRECTED - Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean "directed by the Architect," "requested by the Architect," and similar phrases.

DIVISION (OF THE SPECIFICATIONS) - One of the organizational subdivisions used in the specifications and in construction information filing. The divisions applicable to buildings are as follows:

Division 1: General Requirements
Division 2: Existing Conditions
Division 3: Concrete
Division 4: Masonry
Division 5: Metals
Division 6: Wood, Plastics and Composites
Division 7: Thermal and Moisture Protection
Division 8: Openings
Division 9: Finishes (interior finishes)
Division 10: Specialties (for example, signs, toilet accessories)
Division 11: Equipment (for example, kitchen equipment)
Division 12: Furnishings
Division 13: Special Construction (for example, greenhouses)
Division 14: Conveying Equipment (elevators, escalators, lifts)
Division 21: Fire Suppression
Division 22: Plumbing
Division 23: Heating, Ventilating and Air Conditioning
Division 26: Electrical
Division 27: Communications
Division 28: Electronic Safety and Security
Division 31: Earthwork
Division 32: Exterior Improvements
Division 33: Utilities

DOUBLE HUNG WINDOW - A type of window containing two movable sash sections which slide open vertically.

DOWNSPOUT - A pipe to carry rainwater from the gutter or roof to the ground or the sewer - can be sheet metal, plastic, or other type of piping material.

DRAWING – one of the sheets of the construction documents - do not use "print," "blueprint," or "sheet"

DRIP - A projecting part of a sill or cornice that sheds rain water and protects structural parts below.

DRYWALL - Gypsum board for interior wall and ceiling finish material. The preferred generic term is “Gyp Board.”

DUCT - A rectangular or round sheet metal or fiberglass pipe used to convey warm or cooled air.

DUMBWAITER - an elevator too small for a person - used for vertically transporting food, mail, dishes, trays, etc.

EAVES - The lower or outer edge of a roof which overhangs the side wall of a building.

ELASTOMERIC - A material which is inherently rubbery for sealants, flashings, and waterproof membranes.

ELEVATION
(1) A drawing of the front, side, or rear of the building drawn to sale.
(2) The height above surface of the earth or the vertical distance from a given reference elevation.

ENGLISH BASEMENT - A basement with half its height above grade level.

EVACUATION - The removal of earth from its natural position, or the depression resulting from the removal of earth.

EXPANSION JOINT - A joint in concrete, masonry, or metal designed for movement - expansion and contraction - not a "control joint," or "construction joint."

EXPANSION SHIELD - a drilled-in lead shaft, into which a bolt is screwed, expanding the shaft tight against the hole - used for anchoring materials onto concrete or masonry surfaces.

FACADE - The front of a building.

FACE BRICK - A good grade of brick used to finished the exterior of building walls.

FASCIA
(1) Any relatively broad flat vertical surface like that on the outside of a cornice.
(2) A finishing board used to conceal rafter ends.

FEASIBILITY STUDY - A detailed investigation and analysis conducted to determine the financial, economic, technical or other advisability of a proposed project.

FEE - A term used to denote payment for a professional service, (not including compensation for reimbursable expenses, such as travel, long distance telephone calls, photo copy, printing or mailing).

FELT PAPER - Archaic term - an asphalt-impregnated sheet used as a covering for wall sheathing or used for plys of built - up roofing, usually weighing 15 lbs. per 100 square feet - use the term "building paper" for use over wall sheathing, and "ply" for roofing felts.

FENESTRATION - The design and disposition or arrangement of windows or other openings in a building wall.

FIBERBOARD - A building board of wood or other plant fibers compressed and bonded into a sheet, usually 4'-0" x 8'-0" x 1/2" thick.

FIBERGLASS - Fine spun filaments of glass made into a yarn, used in blankets as insulation; or it may by added to gypsum or concrete products to increase tensile strength. It was invented in 1938 by Russell Games Slayter of Owens-Corning as a material to be used as insulation, and is marketed by OCF Company as “Fiberglas” It is sometimes called generically "glass fiber insulation."

FILL - Soil, gravel, or sand used to equalize or raise the surface of the earth.

FINISHED FLOOR - The top or wearing surface of a floor system, of hardwood, vinyl, terrazzo, or ceramic tile.

FIRE RESISTANCE - The ability of a wall or floor assembly to maintain structural stability and act as an effective barrier to the transmission of heat for a stipulated period of time. Fire Resistance is measured in hours, such as 1hr, 2hr, 3hr, or 4hr.

FIRE STOPPING - Solid wood members placed between studs to retard the spread of flame within the framing cavity.

FIREPROOFING - The use of incombustible materials to protect steel structured membrane of a building so it can withstand a fire without losing structural integrity, for a stipulated period of time. Fireproofing is measured in hours, such as 1 hr, 2hr, 3hr, or 4hr.

FLAKE BOARD - use the term "particle board" instead.

FLAME SPREAD CLASSIFICATION - A standard measurement of the relative surface burning characteristics of a building material when tested in accordance with ASTM standard E 84. Classes are A, B, or C.

FLASHING - The strips of sheet metal, copper, lead, or tin used to cover and protect structural angles and joints, to prevent water seepage or leaks.

FLOAT FINISH - The surface of concrete finished by a continuous spreading of the material with a flat board.

FLUE - The duct or open space within a chimney through which combustion gasses and smoke are allowed to escape.

FOOTING - The projecting course at the base of a foundation wall which distributes the building load over a wider area of the soil.

FOYER - The entrance hall of a house or other building type.

FURNISH - The term "furnish" is used to mean "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations." If a person “furnishes” a product, it does not imply that that same person would install it. Use the term “PROVIDE” if you want a person to both furnish and install a product.

FURRING - The strips of wood or metal applied to wall or other surface to make it plumb or true to line, which will provide a fastening surface for a finish covering - - be more precise by using the terms "wood furring" or "metal furring."

FURRING CHANNEL - cold rolled steel channel for suspension of plaster or drywall ceilings - usually 3/4" or 1/2" deep.

GABLE - The triangular-shaped wall at the end of a building between the slopes of a roof.

GAGE - Same as the term "gauge” - measure of the thickness of metal.

GAMBREL ROOF - A ridged roof, with sides having two pitches or slopes.

GENERAL CONTRACT
(1) Under the single contract system, the Contract between the Owner and the Contractor for construction of the entire Work.
(2) Under the separate contract system, that Contract between the Owner and a Contractor for construction of architectural and structural Work.

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION - That written part of the Contract Documents which sets forth many of the rights, responsibilities and relationships of the parties involved.

GIRDER - A Horizontal load-carrying member of a building which supports a beam or beams.

GIRT - A secondary horizontal framing member extending between columns or studs to stiffen the framing system; also to provide support for the siding or sheathing.

GLAZED OPENING - glass window in an interior wall or partition - do not use the term "window," "vision panel," "light," "lite," or "borrowed light."

GRADE BEAM - A horizontal load-bearing foundation member but end - supported on piles, piers, or caissons like a standard beam; not ground-supported like a foundation wall.

GRADE - Level of the earth's surface.

GREEN – Process of selection of materials and systems that use materials that are made from renewable resources, are affordable and contain low amounts of embodied energy.

GRILLAGE - A system of beams, laid crosswise to form a foundation to evenly distribute the load.

GROSS AREA - The total enclosed floor area of all floors of a building measured from the outside surface of the exterior walls.

GROUNDS - The strips of wood or metal placed around a wall opening to establish the finished plane for plaster finish.

GROUT - A thin, fluid mortar mixture of Portland cement, fine aggregate and water used to fill small joints and cavities in masonry work - do not use mortar in place of grout.

GUARD RAIL - A protective railing around an open raised platform.

GYP BOARD - A prefabricated sheet used in drywall construction made of gypsum covered with paper which can be painted, or wall-papered – sometimes the term "drywall" is used.

GYPSUM WALLBOARD – Gyp Board or Drywall.

HANDRAIL - Single railing on wall at stair – not to be confused with the term "guard rail" which is a protective barrier at the edge of an opening.

HANGER - Any suspended structural member to which other members are attached.

HARDBOARD - manufactured flat wood panel used for interior finish material - do not use the terms "Masonite," or "pressed board."

HARDWOOD - wood obtained from deciduous trees, mainly used for finished wood trim, doors, panels, and furniture. It implies no specific wood species and could be oak, birch, ash, poplar, teak, mahogany, butternut, etc.

HEAD ROOM - The distance between the top of a finished floor or stair nosing and the lowest part of the ceiling above.

HEADER - In masonry, a brick laid across the thickness of a wall with one end toward the face of wall. In carpentry, a wood beam set at right angles to joists at a floor opening to provide a support for joist which are interrupted by the opening.

HEARTH - The floor of a fire place, and the projection of noncombustible flooring material in front of the fireplace.

HIP ROOF - A room whose four sides slope to a common point or to ridge; has no gabled ends.

HOISTWAY - shaft for elevators and dumbwaiters.

HOLLOW METAL - break-formed sheet metal used for doors, windows and frames.

HVAC - Heating, Ventilating and Air Conditioning

IN KIND - The term "in kind" means of the same type, size, material, etc. as the existing item.

INDICATED - The term "indicated" refers to graphic representations, notes, or schedules on the Drawings, other paragraphs or schedules in the Specifications, and similar requirements in the Contract Documents. Where terms such as "shown," "noted," "scheduled" and "specified" are used, it is to help the reader locate the reference; no limitation on location is intended.

INSTALL - The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."

INSTALLER - An "Installer" is the Contractor or an entity engaged by the Contractor, either as an employee, subcontractor, or sub - subcontractor, for performance of a particular construction activity, including installation, erection, application, and similar operations.

INSULATION - Any material used to slow down the transfer of heat.

IRON – The most abundant metal in the universe and the most abundant element (symbol Fe) making up the earth (34.6%). The large amount of iron in the earth is thought to contribute toward its magnetic field. Iron is not normally found in a free state, but must be extracted from iron ore, which is found in great quantities in the Lake Superior region of the United States. Iron is not normally used by itself in construction, but iron ore is alloyed with other elements and used for making steel and the following:

CAST IRON: It is used for ornamental iron work by pouring molten iron into a mold. It is very brittle. It has high carbon content, more than 2%, and 1% to 3% silicon.

WROUGHT IRON: It is used for fences, grilles and other ornamental purposes in buildings. It is tough, malleable, ductile, and easily welded. It is the purest form of commercial iron containing very small carbon content. It is made in small pots into which iron ore is poured and covered with a thin layer of charcoal. Air is blown onto the charcoal after lighting it on fire. The heat produced melts the iron ore and adds only a small amount of carbon to the iron.

MILD STEEL: It is used in structural steel products, stainless steel and mesh. It is neither extremely brittle nor ductile. Discovered in 1856 in an attempt to mass produce wrought iron, it is the most common form of steel. It contains medium carbon content - up to 0.8%.

STEEL: A metal alloy of iron and carbon, containing up to 2.1% carbon. It has a much higher tensile strength (36,000 psi) than iron but is more brittle.

HIGH STRENGTH STEEL: Used for structural steel which are subject to extremely high loads or long spans. Contains less than 1% carbon and other added metals.

STAINLESS STEEL: Steel that contains more than 10% chromium. Used in objects in buildings that you do not want to corrode, such as exterior exposed metals or food service equipment.

JACK RAFTER - The diagonal sloping ridge rafter of a hip roof.

JALOUSIES - Adjustable glass louvers in doors or windows to regulate light and air or exclude rain.

JAMB - The side framing or finish of a doorway or window.

JOINT FILLER - Material which fills the entire depth of a joint and in itself does not form a waterproof joint - may be topped with sealant to provide water tightness.

JOIST - A horizontal closely spaced framing member supporting a floor or ceiling.

KERF - A narrow slot cut in to the face of a material such as wood or metal.

KEYSTONE - The central topmost stone or brick of an arch.

KING POST - The vertical member at the center of a triangular truss.

KNEE - A brace placed diagonally at the center of a triangular truss.

LALLY COLUMN - A steel pipe column which is encased in light-weight concrete and another steel jacket on the outside to create a prefabricated fire-rated steel column. The term has come to be a generic term for any steel pipe column, but this is improper usage. True “Lally” columns are a proprietary (patented) product invented in1933 by the Dean Lally Company in Chicago. Their name for this type of fireproofed column is the “Fire-Trol Column.”

LATH - Strips of wood (in older existing construction) or expanded metal used as base for plaster walls.

LATTICE - Any openwork panel of crossed strips, rods, or bars of wood or metal, used as a screen.

LEADER – An archaic term for "down spout."

LIEN - See "mechanic's lien".

LIGHT – See “Lite.”
LIGHTWEIGHT CONCRETE - concrete which uses lightweight aggregate such as expanded shale or clay instead of crushed stone - normally weighs about 110 pcf.

LIGHT WELL - An open area within a building or in a subsoil space around a basement window, which provides light and air.

LINTEL - A piece of wood, stone, or steel placed horizontally across the top of door and window openings to support the wall above the opening.

LITE - A window pane or section of a window sash for a single pane of glass.

LIVE LOAD - That part of the total load on structural members that is not a permanent part of the structure. it may be variable, as in the case of loads contributed by people, furniture, wind, snow or earthquake loads.

LOAD-BEARING PARTITION - A vertical structural interior wall supporting a floor or roof.

LOFT -
(1) An attic - like space below the roof of a house or barn;
(2) Any of the upper stories of a warehouse or factory,
(3) A type of apartment unit which is usually built within an old factory and which provides the occupant with large, open, high - ceiling spaces. Usually only a bathroom is enclosed and plumbing is minimal. Interiors are finished by occupant.

LOUVER - A slatted ventilator pitched to keep out fain or snow.

LVL – “Laminated Veneer Lumber” a type of “engineered wood” used for structural headers, columns and beams – it is stronger, straighter, and more uniform than typical sawn lumber and is easy to handle and use, but won't warp, twist, bow, or shrink. LVL is created by using engineering technology to laminate several layers of lumber together.

MANSARD ROOF - A roof with two slopes or pitches on each of the four sides, the lower slopes steeper than the upper.

MASONRY - Brick, concrete block, or stone. Pronounce “mas’ on ry.” Do not pronounce “mas’ on ary.”

MECHANIC'S LIEN - A legal charge on property in favor of persons supplying labor or materials for a building for the value of labor or materials supplied by them. Clear title to the claim for the labor, materials or professional services is settled through the "release of liens" which is accomplished through a form given to the owner by the contractor.

METAL - Used to denote products fabricated from thin sheet steel.

METAL LATH - Expanded metal used for plaster lath - - do not use the terms "mesh" or "chicken wire."

METAL TRIM - edge trim for gyp board - do not use the term "casing bead" which is for plaster.

MEZZANINE - An intermediary floor having less than 1/3 of the area than the floor below.

MILL CONSTRUCTION - A type of "slow-burning" construction made of heavy timber framing with members at least 3” wide, and solid planked or laminated wood floors at least 1 ½” thick. Walls are solid masonry.

MILLWORK - Doors, windows and door frames, mantels, panel work, stairways, and woodwork.

MITER - A joint formed by to pieces of material cut to meet at an angle.

MOLDING - A finishing piece to cover construction joists or edges, usually a long narrow strip of plain or curved wood; may be ornamented.

MONITOR - A raised rectangular and roofed structure on a roof having windows or louvers for ventilating or lighting the building.

MOP BASIN - Floor mounted sink for building maintenance purposes - do not use terms "slop sink" or "service sink," which are wall - mounted sinks.

MORTAR - A bonding agent in masonry work, made of lime, sand, and cement mixed with water.

MUD - A common term for joist compound products.

MULLION - Vertical framing which divides windows into major sections.

MUNTIN - The vertical or horizontal bars which divide lights (panes of glass) in a window.

NEWEL - The vertical post around which the steps of a winding staircase turn; the post at the top or bottom of a staircase, supporting the handrail or a balustrade.

NOSING - The rounded projecting edge of a stair tread or landing.

OAKUM - A loose fiber from hemp or rope, used as a backing for caulking joints in cast iron drain piping.

OFFSET - A ledge formed by a difference in the thickness of a wall.

OMIT - To leave something out by intention.

ON CENTER (O.C.) - The distance from the center of one structural member to the center of another, term used for spacing studs, joists, rafters.

OPTION - Term used in construction documents to indicate that contractor may use one of several products at his or her choice.

OSB - “Oriented Strand Board” – inexpensive wood panels made from wood chips and glue, with chips oriented in the long direction of the board – they come in 4’-0” x 8’-0” sheets usually ½” thick, but also other sizes, and are used for wall and roof sheathing.

PARAPET - An exterior low wall along the edge of a roof, balcony, ridge, or terrace.

PARGING - A coating of cement mortar (Portland cement, sand, and water mix), on a masonry wall, used to waterproof the outside surface of an exterior wall or masonry foundation.

PARQUET FLOOR - A hardwood floor laid in small rectangular or square patterns, not in long strips.

PARTY WALL - A wall built along the dividing line between adjoining buildings for their common use.

PATCH - The term "patch" means to remove any damaged or defective material within the area to be patched, and to replace it with new material, fitted in a workmanlike manner so as to provide a continuous plumb, level, and/or true to line surface, uninterrupted by flaws, defects, or blemishes.

PARTICLE BOARD - A wood and glue composite panel for sheathing, underlayment, subflooring, and substrate for veneers and plastic laminate for millwork.

PARTITION - A non - bearing wall which divides space and supports only its own weight.

PENTHOUSE - A building on the roof of a building to enclose mechanical or elevator equipment; also, an apartment on the roof of a high - rise apartment.

PERFORMANCE BOND - An insurance document purchased by the contractor from a bidding company (a "surety") which guarantees that the work will be performed in accordance with the Contract Documents.

PERMEABILITY - The property of material to permit a fluid (or gas) to pass through it; in construction, commonly refers to water vapor permeability of a sheet material or assembly and is defined as Water Vapor Permeance per unit thickness.

PERMIT - A document issued by a local, state, county, or federal governmental authority having jurisdiction to authorize specific work on a building.

PIER - A column; a foundation type shaped like a column underground, created by drilling a hole and filling it with concrete.

PILASTER - Half - column attached to or projecting from a wall.

PILE - A timber, steel, or concrete pole which is driven into the ground to serve as support for the foundation.

PITCH - The slope or incline of a roof, expressed in inches of rise per foot of length, or by the ratio of the rise to the total roof span.

PLANK - A piece of unfinished structural lumber 2 to 4 inches thick and at least 8 inches wide.

PLASTER - A mixture of gypsum, sand, and water, used as a finished surface for walls and ceilings, applied over gypsum, metal or wood lath.

PLASTIC INSULATION - Generic term for polystyrene ("Styrofoam") or urethane insulation.

PLASTIC LAMINATE - Thin sheet material of plastic composition used for finishing of interior millwork - do not use the proprietary terms "Formica," or "Melamine."

PLATE - A horizontal wood framing member which provides bearing and anchorage for wall, floor, ceiling, and roof framing.

PLENUM - An enclosed chamber for horizontal distribution of ventilation air, such as the space between a suspended finished ceiling and the floor above.

PLINTH - A square block at the base of a column, pedestal, or door casing.

PLY - A term to denote the number of thickness or layers as "3 - ply"; for roofing felt, veneers, etc.

PLYWOOD - A fabricated wood product constructed of three or more layers of veneer joined with glue, laid with grain or adjoining plies at right angles.

PORTALS - A door, gate, or entrance, especially one of imposing appearance.

POST - A vertical wood structural column.

PRESTRESSED CONCRETE - A method of giving tensile strength by stressing the reinforcing in the concrete before it sets, then releasing the tension after the concrete has hardened.

PRIMER - A first base coat of paint to seal the surface of the finished material and equalize suction differences.

PROJECT SITE - The term "Project Site" is the space available to the Contractor for performance of construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land upon which the Project is to be built.

PROJECT MANUAL - The 8 1/2" x 11" paper size bound book of written documents prepared by the Architect for a construction project, including the bidding requirements, General Conditions of the Contact and technical Specifications, used by the Contractor in bidding & building the project.

PROPRIETARY PRODUCT - A product produced by only one manufacturer to his own design, and not available from competing manufactures.

PROSCENIUM - In a theater, the front area of the stage still visible to the audience when the curtain is lower; the curtain and the opening that surrounds it.

PROVIDE - The term "provide" means "to furnish and install, complete and ready for the intended use."

PURLIN - A structural roof framing member laid horizontally across the roof beams to support a roof deck.

QUANTITY SURVEY - Detailed analysis and listing of all items of material and equipment and quantities of each necessary to construct a Project.

QUARRY TILE - Thick type of ceramic tile which is composed of fired clays and shales used for floors and bases.

QUEEN POST - Either of two vertical members of a triangular truss, each being equidistant from the apex.

QUOIN - The external corner of a building; any of the large square stones by which the corner is marked.

RABBET (ALSO REBATE) - A longitudinal channel, groove, or recess cut out of the edge or face of a member to receive another member, or one to receive a frame inserted in a door or window opening; the recess into which glass is installed in a window sash.

RACKING - Lateral stress exerted on an assembly which makes it lean to one side.

RAFTER - A closely spaced sloping framing member supporting a roof.

RAIL
(1) The cross of horizontal piece of a door, window sash, or panel.
(2) The top horizontal member of a balustrade.

RAKE - A board or molding placed along the sloping sides of a frame gable to cover the ends of the siding.

RANDOM - Without uniformity of dimension or design; e.g., masonry wall with stones placed irregularly, not in a straight course.

REBUILD - The term "rebuild" means to reconstruct a portion or portions of the building completely and properly using new or salvaged materials acceptable to the Owner and Architect.

RECORD DRAWINGS - Sometimes called "as-built" drawings, these are normally modified from the construction documents to conform to all changes made during construction.

REFINISH - To put finish back into its original condition - - do not use the terms "refurbish," "rehabilitate," "remodel," "renew," or "renovate."

REGULATION - The term "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

REINFORCEMENT - A system of steel rods or mesh cast into concrete for accepting stresses.

RELOCATE - To move an item from one location and install in another location.

REMODEL - use the term "ALTER" instead.

REPAIR - The term "repair" means to fix and restore a portion or portions of the building to a sound, acceptable state of operation and serviceability or appearance. Repairs will be expected to last approximately as long as a replacement.

REPLACE - The term "replace" means to remove an existing element or elements from the building and install a new element of like kind or a salvaged element acceptable to the Owner and Architect, completely and properly anchored to the substrate and surrounding materials; also the term can mean to provide a substitute or replacement for an item.

RESET - The term "Reset" means to remove an existing element or elements from the building and reinstall it completely and properly anchored to the substrate and surrounding materials.

RESILIENT BASE - wall base material - use this term generically instead of "vinyl base," or "rubber base."

RESILIENT FLOORING - Either tile or sheet goods for flooring material made from vinyl, rubber or cork.

RESILIENT TILE - Floor tile - use this term generically instead of "vinyl composition tile," "vinyl tile" or "rubber tile."

RETAINING WALL - A wall built to keep a bank of earth from sliding.

RIDGE - The top horizontal edge or peak of a roof.

RIGID INSULATION - High density fiberglass, plastic, or cellular glass insulation.

RISER - The vertical part of a stair step; a vertical HVAC, plumbing, or electrical run or extension.

ROLL ROOFING - A roofing material made of compressed fibers saturated with asphalt, and coated with small gravel supplied in rolls.

ROOF HATCH - Use this term instead of the archaic term "scuttle."

ROOFING FELT - See "felt paper".

RUNNER CHANNEL - Cold rolled steel channel 1/2" deep used for suspended ceiling framing.

SADDLE - A roof crossing between two adjoining roofs to the ends of the valley.

SANITARY SEWER - A sewer designed to carry sewage from bathroom, toilet room, and kitchen waste, not usually storm water.

SASH - The framework which holds the glass in a window or door.

SAWTOOTH ROOF - A roof composed of a series of single - pitch roofs whose shorter or vertical side has windows for light and air.

SCORE - To cut a surface of a material part way through with a sharp blade before braking; glass and ceramic tile are cut using this method.

SCRATCH COAT - The first coat of plaster applied to a wall, scratched or scored to provide a bond for the second coat.

SCREED
(1) A metal or wood strip placed at intervals on a wall or floor to gauge thickness of plaster or concrete.
(2) To level, as in pulling a straight edge across a concrete slab within the formwork.

SCRIBE - To score or mark along a cutting line.

SCUTTLE - A framed opening in a ceiling or roof, fitted with a lid or a cover.

SEAL COAT - A fine thin coating of asphalt paving with bituminous material to provide water resistance.

SEAL
(1) To provide sealant at a joint to make it water tight.
(2) An embossing device or stamp used by a design professional on his Drawings and Specifications as evidence of his registration in the state where the Work is to be preformed.

SEALANT - A semi - liquid or "elastomeric" water proofing material placed in a joint between materials to create a water tight joint or to fill small openings in wall or ceiling systems to prevent leakage of sound or to create a finished appearance and seal between dissimilar materials.

SEALER - A base coating of paint to seal and equalize suction differences and prevent absorption of subsequent coats.

SEAMLESS FLOORING - Sheet flooring material with joints field welded or sealed.

SECTION (DRAWING) - A drawing of a surface revealed by an imaginary plane cut through the project, or portion thereof, in such a manner as to show the composition of the surface as it would appear if the part intervening between the cut plane and the eye of the observer were removed.

SECTION (MATERIAL) - Sometimes loosely used to describe a rolled steel shape, such as "W section" - use the term "W member" instead.

SELF-EDGE - Plastic laminate edging in which the horizontal surface overlaps the vertical edge surface and is cut off flush with the vertical surface - this will expose a dark brown edge of the plastic laminate material and will be visible.

SEPTIC TANK - A covered tank in which waste matter is decomposed by natural bacterial action, draining into a drainage field.

SERVICE SINK - Wall-mounted sink for building maintenance purposes - do not use the terms "slop sink" or "mop basin."

SEWER - An underground system of pipes which carry off waste matter or storm water to a sewage treatment plant or to an area of natural drainage.

SHAKE - A shingle formed by splitting a short long into a number of tapered sections.

SHEATHING - The first covering of boards, plywood, or wallboard placed over exterior wall studding or roof rafters - not "sheeting."

SHEET FLOORING - Resilient linoleum, vinyl or rubber flooring installed wall to wall.

SHEET METAL - Usually thin steel sheets.

SHEET PILING - Planking or steel plates driven close together vertically, to form a temporary wall around an excavation.

SHIM - To build up low areas; to level or adjust height.

SHINGLE - A roofing type using tapered pieces of cedar or asphalt composition pieces nailed one overlapping the other.

SHOP DRAWINGS - Drawings, diagrams, illustrations, schedules, performance charts, brochures and other data prepared by the Contractor or any Subcontractor, manufacturer, supplier or distributor, which illustrate how specific portions of the Work will be fabricated and/or installed.

SHORING - Structural bracing used as temporary support for a building during construction.

SILL - A horizontal piece forming the bottom frame of a door or window.

SITE - Geographical location of the Project, usually defined by legal boundary lines.

SLEEPER - A strip of wood anchored to a concrete floor or nailed to subflooring and to which the finishes floor is nailed.

SLUMP - A concrete test method to evaluate water/cement ratio consistency.

SOFFIT - The undersurface of a building member, as of a cornice, arch or stairway.

SOFTWOOD - Type of lumber from conifer evergreen trees, such as pine, fir, larch, cedar, and redwood.

SOIL - Use this term instead of "earth" or "dirt."

SPAN - The horizontal clear distance between supports, as those of a bridge, or between two piers.

SPANDREL BEAM - A beam which lies in the same vertical plane as the exterior wall.

SPANDREL - A portion of an exterior wall between a window on one floor and a window on the floor above.

SPECIFICATIONS -
(1) A detailed description of requirements, composition and materials for a proposed building;
(2) Apart of the Contract Documents contained in the Project Manual consisting of written descriptions of a technical nature of materials, equipment construction systems, standards and workmanship. Under the Uniform System, the Specifications comprise sixteen Divisions.

SPRAYED FIREPROOFING - Mineral fiber composition applied to structural steel members by spraying with an applicator gun used to obtain a specific fire rating for the structure to comply with building code requirements.

SQUARE
(1) 100 Square feet of roofing surface;
(2) edges of an object which are at a right angle to each other.

STAGGER - To offset building members or fasteners in a horizontal or vertical plane in alternating sequence.

STAGING - A temporary scaffolding to support workers and materials during construction.

STANDARD - An approved criterion governing the quality of a construction material, operation, functional requirement, or method of assembly.

STICK BUILT - Constructed by means of building stud-by-stud and joist-by-joist in the field from raw materials.

STICK BUILDING - Light weight wood framed building typically used for single-family houses or small buildings. Type “V-B” construction under the International Building Code.

STILE - The upright or vertical outside piece of a sash, door, or panel.

STOCK - Standard size raw building materials or standard equipment.

STONE - Granite, marble, limestone, slate, etc., used for fabricated interior or exterior finishes.

STORM SEWER - A sewer carrying only storm water (but never sanitary waste).

STORY (A CODE TERM) - A horizontal division of a building; that portion between one floor and the floor above.

STRETCHER - A brick laid lengthwise in a wall.

STRIKE
(1) In stone setting or bricklaying, to finish a mortar joint with a stroke of the trowel, simultaneously removing extruding mortar and smoothing the surface of the mortar remaining in the joint; strike off.
(2) In door hardware terminology, a “strike” is the hole into which the latch engages when the door is closed.
(3) A legal stoppage of work on a construction site by members of a trade union to demand higher wages or benefits for their members or to protest an unfair practice by an employer.

STRINGER - The inclined structural framing member supporting the treads and risers of a stair.

STUCCO - Plaster made from Portland cement, sand, and water used as an exterior wall surface finish; usually applied over a galvanized metal lath or wood lath base.

STUD - A vertical wood or metal framing member to which sheathing and finished surfaces are nailed, as the supporting elements in walls and partitions.

SUB STRUCTURE - That part of a building structure below the ground.

SUBCONTRACTOR - A person or organization who has a direct Contract with a prime Contractor to perform a portion of the Work at the site.

SUBFLOOR - A floor laid on top of the floor joists, to which the finished floor is fastened.

SUBSOIL DRAIN - Also called a "footing drain". A perforated 4" diameter pipe which is installed on the outside of the footing surrounded by pea gravel, which allows storm water in the soil to drain into it and be carried off to the sewer system or to a sump pit inside the basement, and from there pumped out back to the gravel surface or into the sewer.

SUBSTANTIAL COMPLETION - The term "Substantial Completion" means the date on which the Architect issues a Certificate of Substantial Completion based on an inspection of the Work, by which it can be determined that the Work is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for the use for which it is intended. A Certificate of Substantial Completion may be issued for each individual building as it is completed, if this is in the Owner's best interests.

SUPERSTRUCTURE - That part of a building structure above the foundation or ground level.

SUPPLIER - A person or organization who supplies materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the site.

SURVEY - Boundary and/or topographic mapping of a site.

TACKBOARD - A bulletin board made of cork or other resilient tackable surface.

TERRA COTTA - A hard, brown - red fired, clay product, typically used as exterior ornament. Can be glazed, or unglazed.

TERRAZZO - A durable floor finish made of small chips of colored stone or marble, embedded in cement and polished in place to a high glaze.

TESTING LABORATORIES - A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

THERMAL BRIDGE - A thermally conducive area of an exterior enclosure which will allow heat to transfer from the interior of the building to the exterior at a greater rate then the other parts of the enclosure.

THERMAL BREAK - A separation between exterior and interior materials by an insulation material. Typically refers to a feature of a window wall system.

THRESHOLD - A strip of wood, stone, or metal placed beneath a door to cover a change in floor materials, to receive weather - stripping and, sometimes, an automatic door closer.

THRU - Short version of the word "Through" as used in drawings.

TOEBOARD - Raised protective edge (usually 4" high) at edges of landings, balconies, mezzanines, etc. where there is no wall or knee wall, but only a guard rail.

TOE SPACE - Recess of about 4” deep and 4” high at base of cabinets.

TONGUE AND GROOVE - A factory formed notch and mating projection on wood flooring or deck.

TOPSOIL - Soil used for planting trees, shrubs, ground cover, or grasses.

TRADES – This term references specialty workers on a construction site such as carpenters, concrete workers, iron workers, plumbers, electricians, sheet metal workers, masons, or laborers. The terms are codified by trade unions who regulate

minimum wages and working conditions for their members through a legal practice called “collective bargaining” for wages. Use of titles such as "carpentry" in the construction documents is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding trade, such as "carpenter."

TRUSS - Triangular structural framing members formed into a single plane for supporting loads over long spans, in wood or steel, or both.

TYPICAL - Means that the item referred to is repeated several times in similar circumstances and locations.

UNDERLAYMENT - A smooth, hard sheet material, such as hardboard, cement board, plywood, or particle board, placed over rougher substrates to achieve a surface suitable for application of finishes such as resilient flooring or ceramic tile.

UNDISTURBED EARTH - Soil which has not previously been excavated.

VAPOR RETARDER - A plastic sheet used to retard condensation in walls, floors, and ceilings, applied on the warm - in - winter side of the wall or ceiling structure or over the ground surface in a crawl space - do not use the term "vapor barrier."

VERMICULITE - An inorganic mineral product that expands several times its initial volume when exposed to a high temperature (about 1000 degree F).

VITRIFIED TILE - A pipe made of clay, baked hard, then glazed so it is impervious to moisture; used particularly for underground drainage.

WAINSCOT - The lower part of an interior wall when its surface finish is different from that of the upper.

WAIVER OF LINEN - An instrument by which a person or organization who has or may have a right of mechanic's lien against the property of another relinquishes such right. Waivers of linen are provided to the owner by the general contractor and his sub - contractors & suppliers, at the time a pay request is submitted.

WALL - Vertical enclosure of a building or occupancy separation, usually load bearing.

WALL BEARING CONSTRUCTION - A structural system in which the floor and roof systems are carried directly by the masonry walls rather than by structural framing system.

WALLBOARD - A manufactured fibrous compressed material cut into sheets, used for sheathing (may be particle board, hardboard, or similar product).

WARM AIR SYSTEM - A heating system in which furnace - heated air moves to living space through a series of ducts, circulated by natural convection (gravity system) or by a fan blower in the ductwork (forced system) to registers in the floor, walls or ceilings.

WATERPROOFING - A procedure to make a material impervious to water or dampness, designed to resist a head of water (water pressure). Any of the material used to waterproof - do not use the terms "roofing," "membrane," or "dampproofing."

WEATHERING STEEL - Steel designed to rust to a certain extent on its surface, then stop rusting - COR-TEN is United States Steel Corporation’s patented name for weathering steel.

WEATHERSTRIP - A thin strip of metal, felt, wood, etc., used to cover the joint between a door or window sash and the jamb, casing, or sill; to keep out air, dust, rain, etc.

WINDOW WELL - See "light well".

WOOD - Use the term for solid softwoods only, otherwise use the terms “hardwood," "plywood," or "particle board."

ZONING ORDINANCE - The control by a municipality of the use of land and buildings, the height and bulk of buildings, the density of population, the relation of a lot's building coverage to open space, the size and location of yards and setbacks, and the provision of any ancillary facilities such as parking. Zoning, established through the adoption of a municipal ordinance, is a principal instrument in implementing a master plan.

Green (Sustainable) Products and Systems

Green building materials are composed of renewable, rather than nonrenewable resources. Green materials are environmentally responsible because impacts are considered over the life of the product. Depending upon project - specific goals, an assessment of green materials may involve an evaluation of one or more of the criteria listed below.

Green building material/product selection criteria

1. Resource Efficiency can be accomplished by utilizing materials that meet the following criteria -

- **Recycled Content** - Products with identifiable recycled content, including postindustrial content with a preference for postconsumer content.
- **Natural, plentiful or renewable** - Materials harvested from sustainably managed sources and preferably have an independent certification (e.g., certified wood) and are certified by an independent third party.
- **Resource efficient manufacturing process** - Products manufactured with resource - efficient processes including reducing energy consumption, minimizing waste (recycled, recyclable and or source reduced product packaging), and reducing greenhouse gases.
- **Locally available** - Building materials, components, and systems found locally or regionally saving energy and resources in transportation to the project site.
- **Salvaged, refurbished, or remanufactured** - Includes saving a material from disposal and renovating, repairing, restoring, or generally improving the appearance, performance, quality, functionality, or value of a product.
- **Reusable or recyclable** - Select materials that can be easily dismantled and reused or recycled at the end of their useful life.
- **Recycled or recyclable product packaging** - Products enclosed in recycled content or recyclable packaging.
- **Durable** - Materials that are longer lasting or are comparable to conventional products with long life expectancies.

2. Indoor Air Quality (IAQ) is enhanced by utilizing materials that meet the following criteria:

- **Low or non - toxic** - Materials that emit few or no carcinogens, reproductive toxicants, or irritants as demonstrated by the manufacturer through appropriate testing.
- **Minimal chemical emissions** - Products that have minimal emissions of Volatile Organic Compounds (VOCs). Products that also maximize resource and energy efficiency while reducing chemical emissions.
- **Low - VOC assembly** - Materials installed with minimal VOC - producing compounds, or no - VOC mechanical attachment methods and minimal hazards.
- **Moisture resistant** - Products and systems that resist moisture or inhibit the growth of biological contaminants in buildings.
- **Healthfully maintained** - Materials, components, and systems that require only simple, non - toxic, or low - VOC methods of cleaning.
- **Systems or equipment -** Products that promote healthy IAQ by identifying indoor air pollutants or enhancing the air quality.

3. Energy Efficiency can be maximized by utilizing materials and systems that meet the following criteria -

- Materials, components, and systems that help reduce energy consumption in buildings and facilities.
- Passive design strategies can dramatically affect building energy performance. These measures include building shape and orientation, passive solar design, and the use of natural lighting.
- Develop strategies to provide natural lighting. Studies have shown that it has a positive impact on productivity and well being.
- Install high - efficiency lighting systems with advanced lighting controls. Include motion sensors tied to dimmable lighting controls. Task lighting reduces general overhead light levels.
- Use a properly sized and energy - efficient heat/cooling system in conjunction with a thermally efficient building shell. Maximize light colors for roofing and wall finish materials; install high R - value wall and ceiling insulation; and use minimal glass on east and west exposures.
- Minimize the electric loads from lighting, equipment, and appliances.
- Consider alternative energy sources such as photovoltaics and fuel cells that are now available in new products and applications. Renewable energy sources provide a great symbol of emerging technologies for the future.
- Computer modeling is an extremely useful tool in optimizing design of electrical and mechanical systems and the building shell.

4. Water Conservation can be obtained by utilizing materials and systems that meet the following criteria -

- Products and systems that help reduce water consumption in buildings and conserve water in landscaped areas.
- Design for dual plumbing to use recycled water for toilet flushing or a gray water system that recovers rainwater or other nonpotable water for site irrigation.
- Minimize wastewater by using ultra low - flush toilets, low - flow shower heads, and other water conserving fixtures.
- Use recirculating systems for centralized hot water distribution.
- Install point - of - use hot water heating systems for more distant locations.
- Use a water budget approach that schedules irrigation using the California Irrigation Management Information System data for landscaping.
- Meter the landscape separately from buildings. Use micro - irrigation (which excludes sprinklers and high - pressure sprayers) to supply water in nonturf areas.
- Use state - of - the - art irrigation controllers and self - closing nozzles on hoses.

5. Affordability can be considered when building product life - cycle costs are comparable to conventional materials or as a whole, are within a project - defined percentage of the overall budget.

Three basic steps of green product selection

Product selection can begin after the establishment of project - specific environmental goals. The environmental assessment process for building products involves three basic steps.

1. Research. This step involves gathering all technical information to be evaluated, including manufacturers' information such as Material Safety Data Sheets (MSDS), Indoor Air Quality (IAQ) test data, product warranties, source material characteristics, recycled content data, environmental statements, and durability information. In addition, this step may involve researching other environmental issues, building codes, government regulations, building industry articles, model green building product specifications, and other sources of product data. Research helps identify the full range of the project's building material options.

2. Evaluation. This step involves confirmation of the technical information, as well as filling in information gaps. For example, the evaluator may request product certifications from manufacturers to help sort out possible exaggerated environmental product claims. Evaluation and assessment is relatively simple when comparing similar types of building materials using the environmental criteria. For example, a recycled content assessment between various manufacturers of medium density fiberboard is a relatively straightforward "apples to apples" comparison. However, the evaluation process is more complex when comparing different products with the same function. Then it may become necessary to process both descriptive and quantitative forms of data.

A life cycle assessment (LCA) is an evaluation of the relative "greenness" of building materials and products. LCA addresses the impacts of a product through all of its life stages. Although rather simple in principle, this approach has been difficult and expensive in actual practice (although that appears to be changing).

One tool that uses the LCA methodology is BEES (**B**uilding for **E**nvironmental and **E**conomic **S**ustainability) software. It allows users to balance the environmental and economic performance of building products. The software was developed by the National Institute of Standards and Technology's Building and Fire Research Laboratory and can be downloaded free on their Web site. [http -//www.bfrl.nist.gov/oae/software/bees.html]

3. Selection. This step often involves the use of an evaluation matrix for scoring the project - specific environmental criteria. The total score of each product evaluation will indicate the product with the highest environmental attributes. Individual criteria included in the rating system can be weighted to accommodate project - specific goals and objectives.