



Intro to CAD & Working Drawings:

Technical drawings describing the project in pictorial form for the builder to execute, fully explaining what has to be done.




CMCE 1110 Construction Drawings
Professor Anderson

How a building gets built:

Standard Delivery Methods:

3 main parties involved:

1. Owner
2. Design Professional
3. Builder

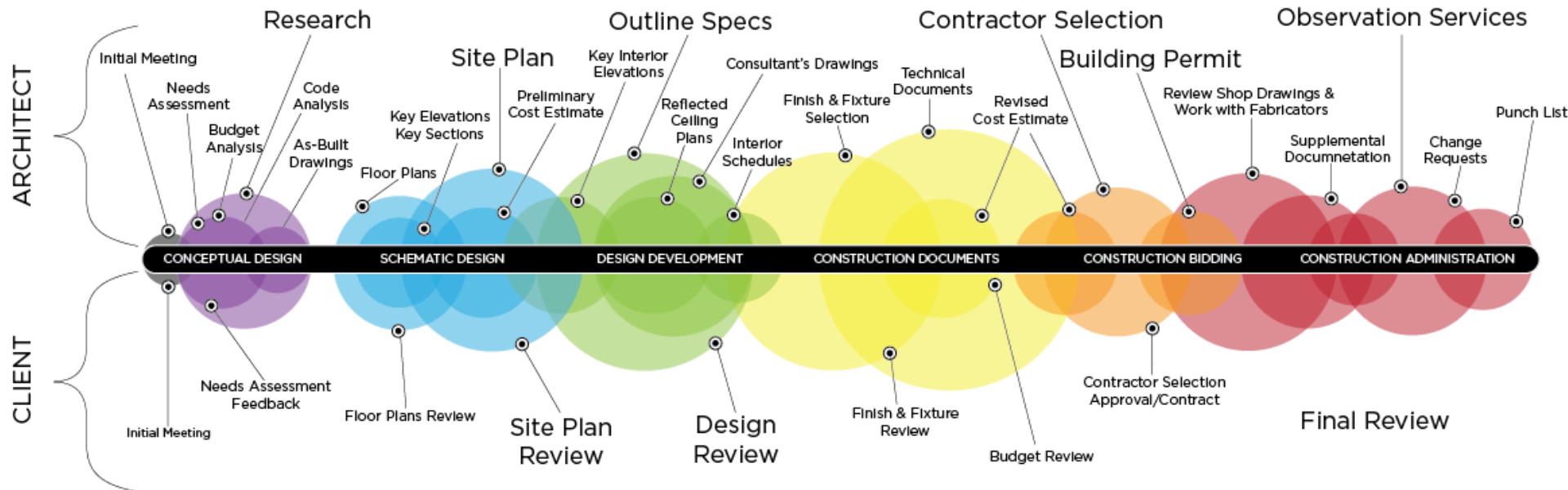
	Design-Bid-Build	CMAR	Lump Sum D-B
			
Innovation	● ● ○ ○ ○	● ● ● ○ ○	● ● ● ○ ○
Budget Control	● ● ● ○ ○	● ● ● ● ○	● ● ● ● ○
Transparency	● ● ○ ○ ○	● ● ● ● ●	● ○ ○ ○ ○
Schedule	● ● ○ ○ ○	● ● ● ○ ○	● ● ● ● ●
Design Approval	● ● ● ● ●	● ● ● ● ○	● ○ ○ ○ ○
Minimal Disputes	● ○ ○ ○ ○	● ● ● ○ ○	● ● ● ● ○

- Key Roles:

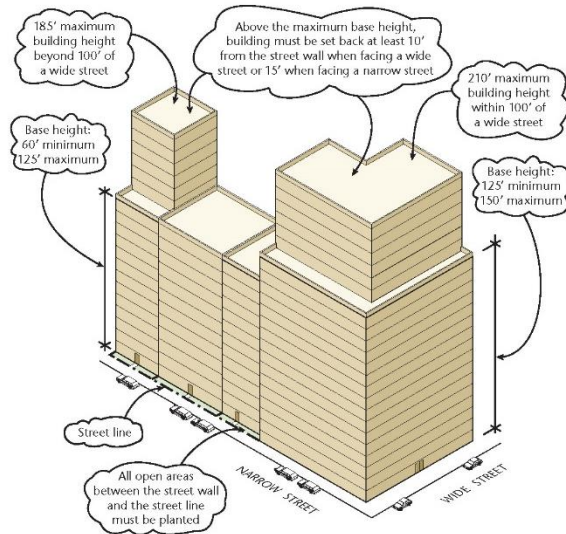
- Architect / Engineer: codes, MEP, structural
- General Contractor: responsibility for constructing the project
- Sub-Contractors: independent construction firms that specialize in a specific trade (carpenter, electrician, concrete, etc)

Project Phases:

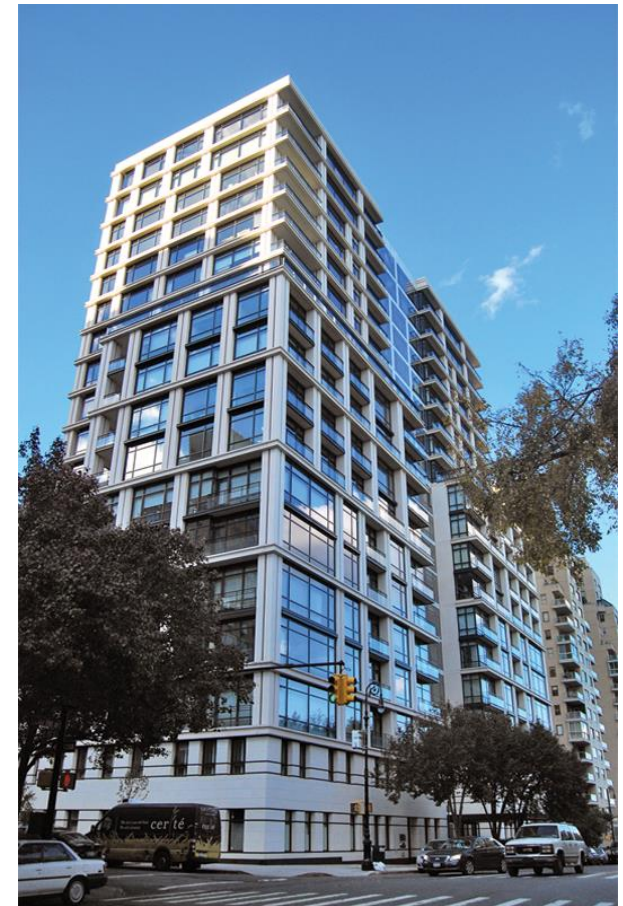
- 1. Preliminary / Schematic Design:** explore ideas for the building, code research
- 2. Design Development:** develop one design exclusively
- 3. Contract Documents:** develop to fully describe the project
 - working drawings
 - Specifications
- 4. Bid Documents:** bidding and negotiation
- 5. Construction Administration:** administer the contract documents, shop drawings and construction sketches. Architect continues to coordinate with the GC to make sure the project is built to the standards defined in the CD's



Codes & Regulations



R10 General Residence District: Quality Housing Regulations						
R10'	FAR (max)	Lot coverage (max)		Base Height (min/max)	Building Height (max)	Required Parking' (min)
		Corner Lot	Interior/Through Lot			
	Wide Street	10.0%	100%	70%	125 ft-150 ft	210 ft
Narrow Street				60 ft-125 ft	185 ft	



Building Codes & Zoning Regulations:

*Working Architectural Drawings must conform with the applicable building codes.

Building Code: laws that provide for the health, safety, and general welfare of the public.

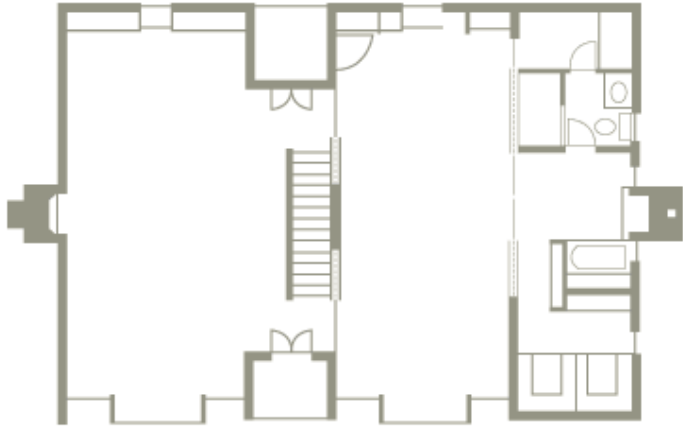
Building Permits:

Plans and specs are submitted and reviewed by building department officials to determine whether the project meets local building codes. A GC must have a building permit to begin construction on the project. Work is inspected by building officials and construction progresses.

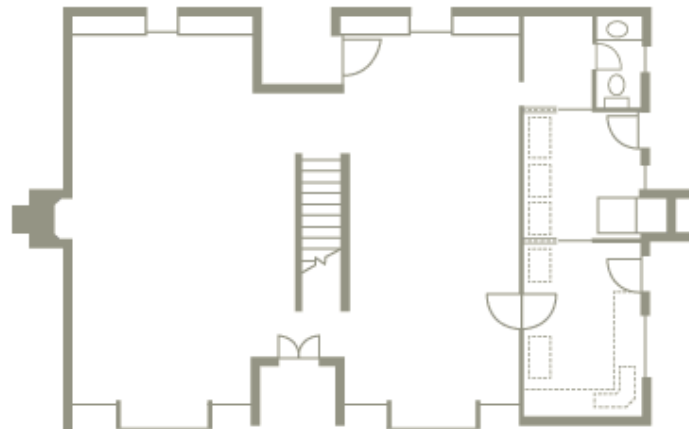
Escherick House

Louis Kahn, 1959-1961

204 Sunrise Lane, Philadelphia, PA



SECOND FLOOR PLAN

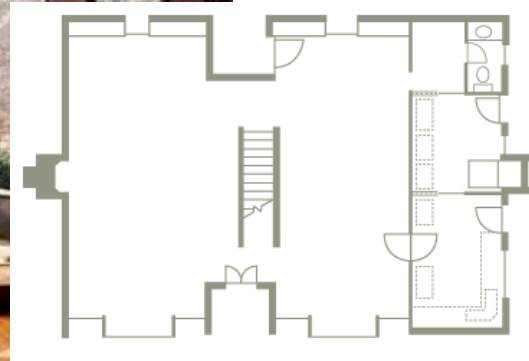


FIRST FLOOR PLAN





SECOND FLOOR PLAN



FIRST FLOOR PLAN



Intro to Auto-CAD

is a computer-aided drafting software program used to create blueprints for buildings, bridges, and computer chips, among other things...



AUTODESK®
AUTOCAD® 2017



AUTODESK®

Intro to Auto-CAD

The image displays the Autodesk AutoCAD 2017 - STUDENT VERSION interface. The top ribbon includes tabs for Home, Insert, Annotate, Parametric, View, Manage, Output, Add-ins, A360, Express Tools, Featured Apps, BIM 360, and Performance. The ribbon panels are divided into Draw, Modify, Annotation, Layers, and Block.

On the left, the 'Get Started' panel features a 'Start Drawing' button and a 'Templates' dropdown menu. Below this are links for 'Open Files...', 'Open a Sheet Set...', 'Get More Templates Online', and 'Explore Sample Drawings...'. A 'LEARN' button is also visible.

The 'Recent Documents' panel lists several files:

- xpln_00_dob_prop (Last Opened Saturday, 3:13:50 PM)
- Today's files:
 - Last First T000 (Last Opened Thursday, 12:23:58 AM)
 - CMCE 1110 Citytech_Standard (Last Opened Thursday, 12:18:17 AM)
- Last Week's files:
 - A-200.01_Building (Last Opened Sunday, 10:17:33 PM)
 - A-105.01_Floor_Plan_Bulkhead_Roof (Last Opened Sunday, 10:17:33 PM)

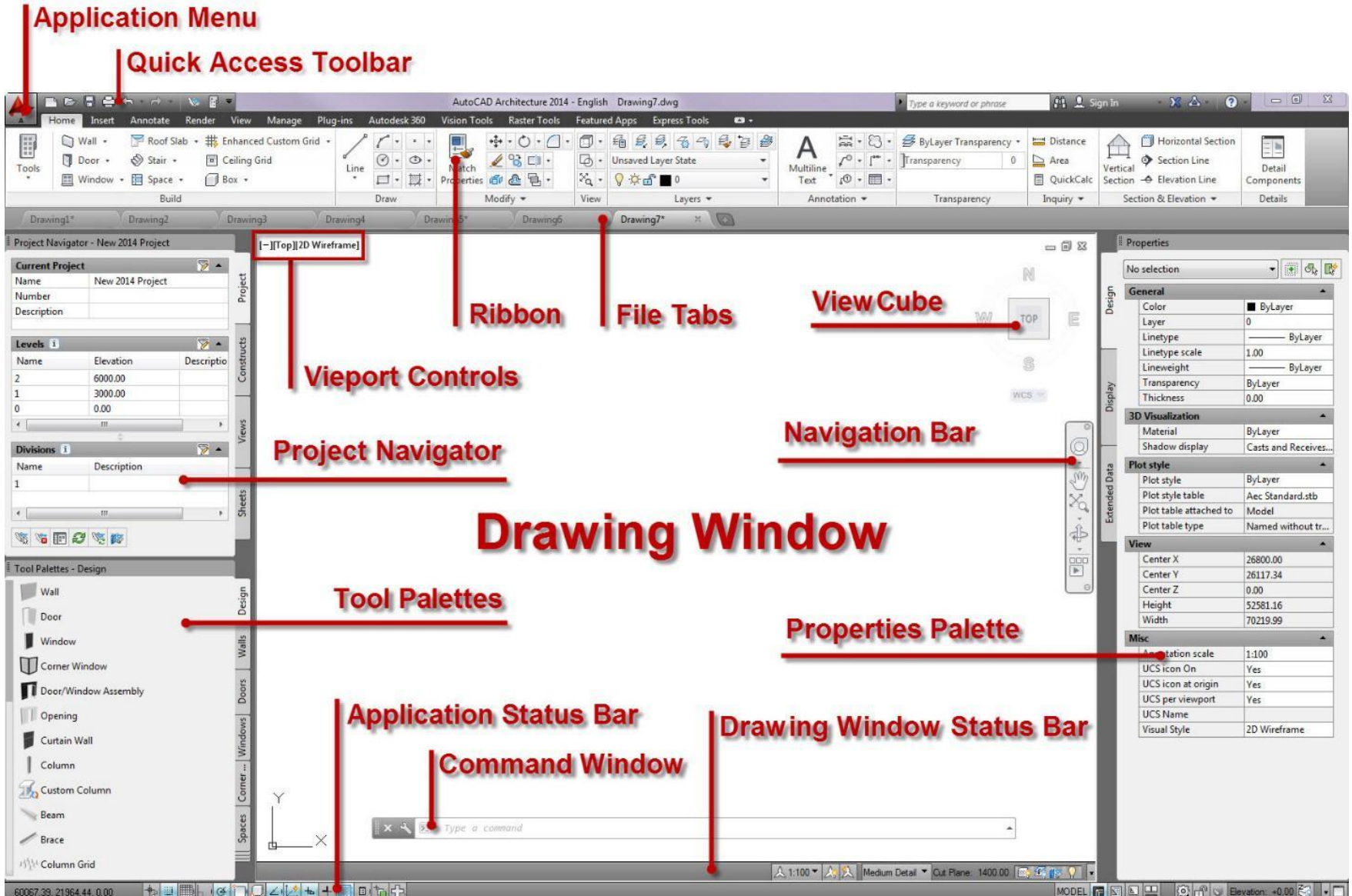
On the right, the '2D Drafting & Annotation' context menu is open, showing options: New, Open, Save, Save As, Export, Print, Publish, Send, Drawing Utilities, and Close. A 'Create a new drawing' dialog is overlaid on the 'New' option, providing details for 'Drawing' and 'Sheet Set'.

The 'Create a new drawing' dialog includes the following information:

- Drawing**: Starts a new drawing with a selected drawing template file.
- Sheet Set**: Creates a sheet set data file that manages drawing layouts, file paths, and project data.

Buttons for 'Options' and 'Exit AutoCAD' are located at the bottom of the dialog.

User Interface



Command Interface

Move (M)

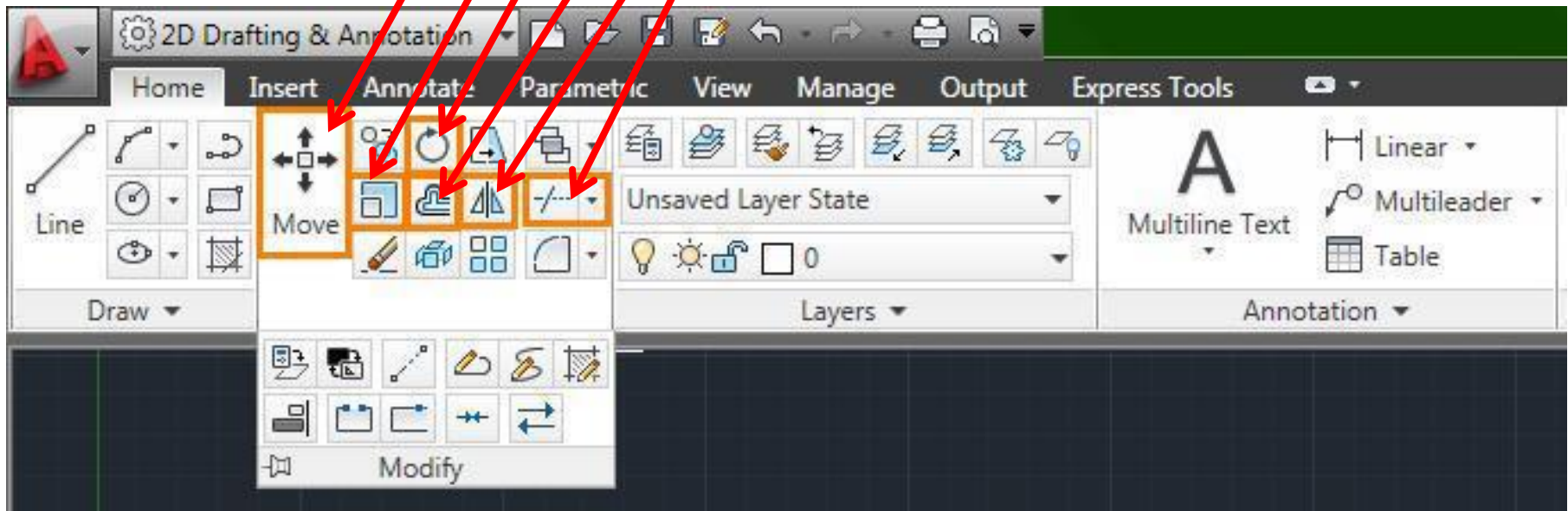
Scale (SC)

Rotate (RO)

Offset (O)

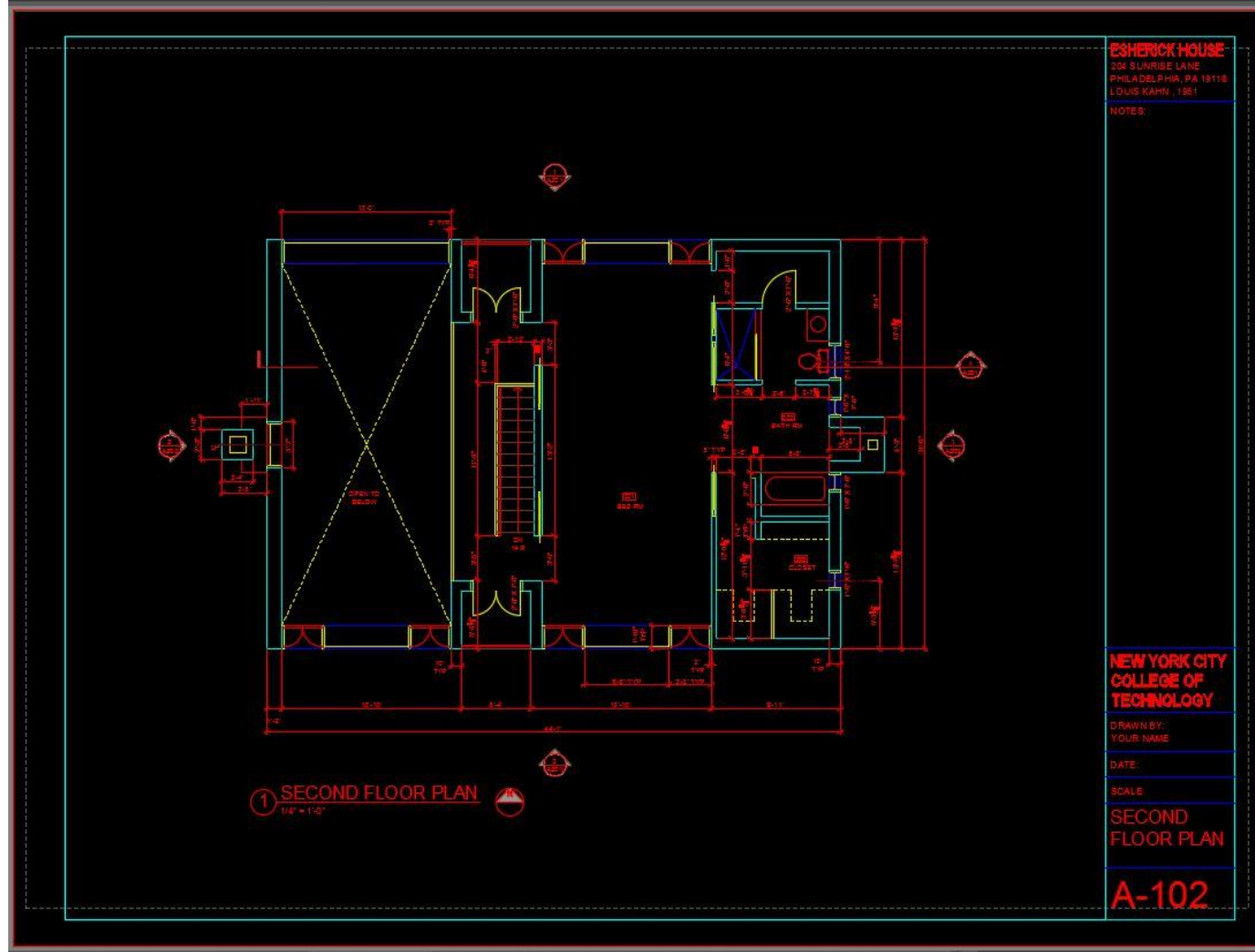
Mirror (MI)

Trim (TR)



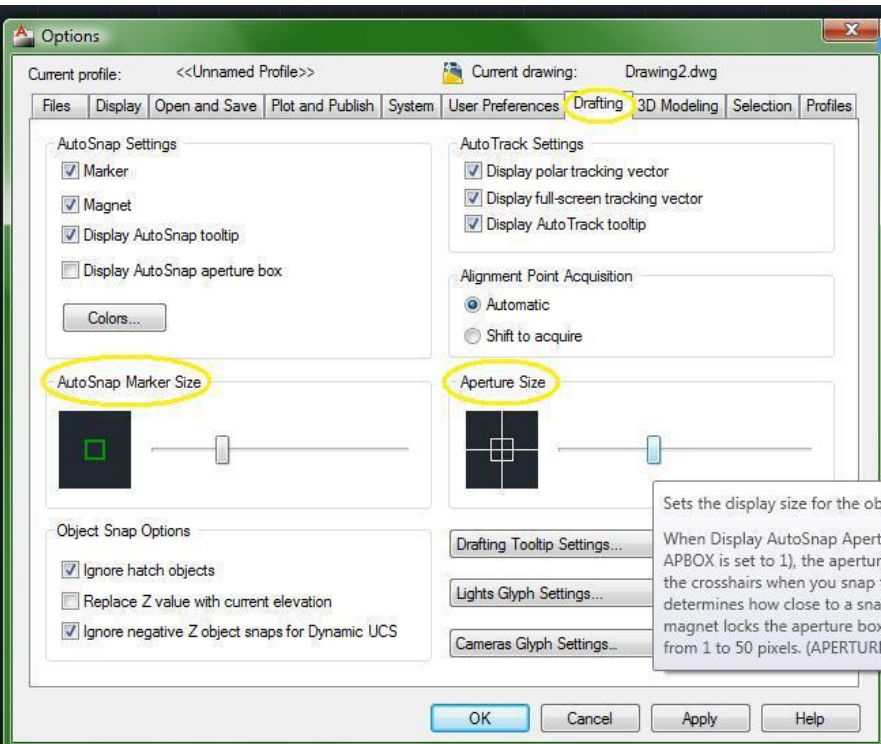
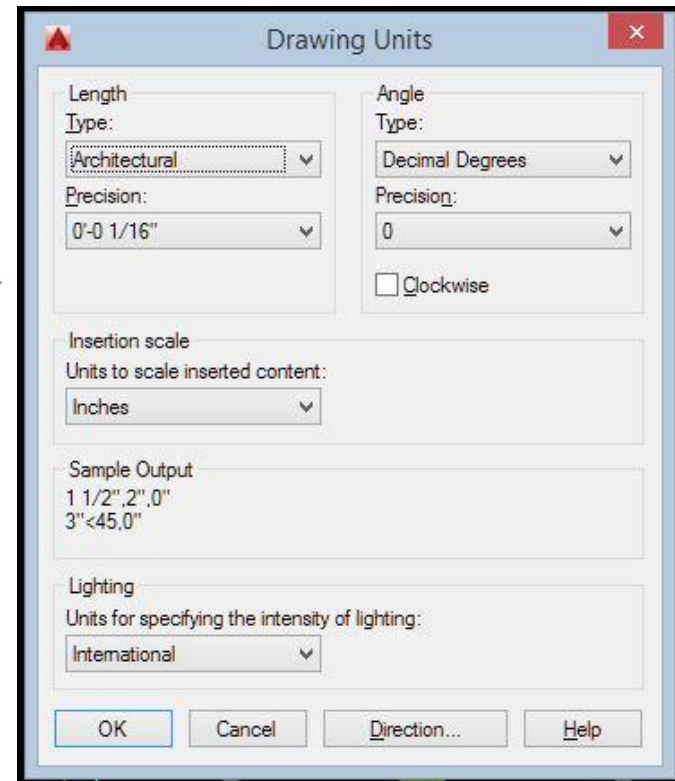
CAD Techniques

- Units
- Object Snap
- Ortho Mode
- Layers
- Copy/Paste
- Construction Lines



Getting Started

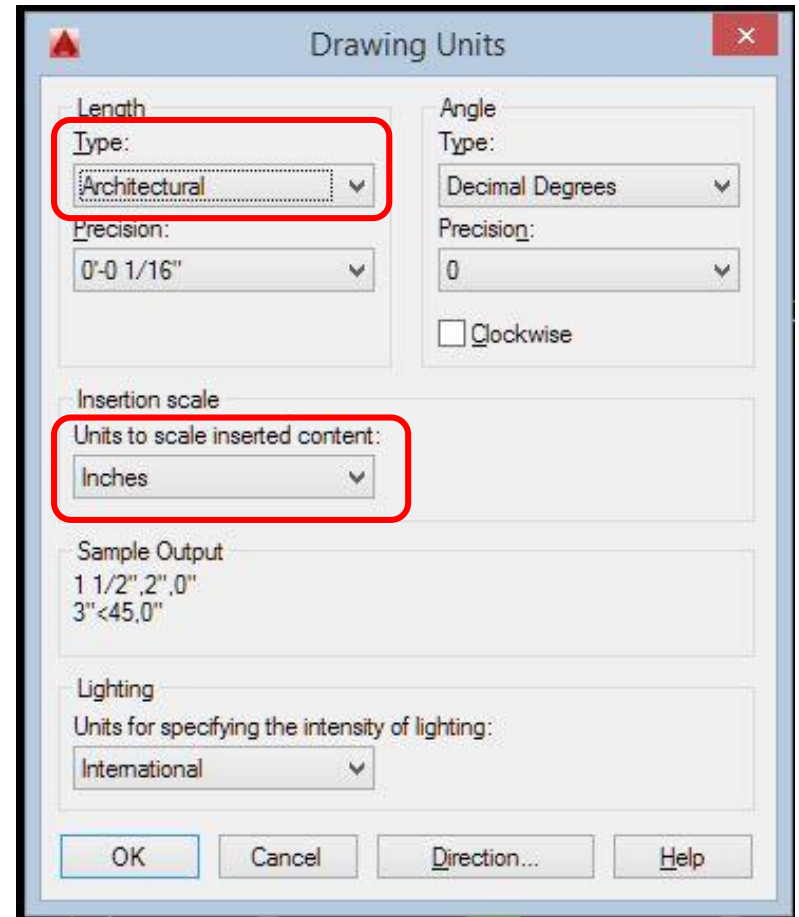
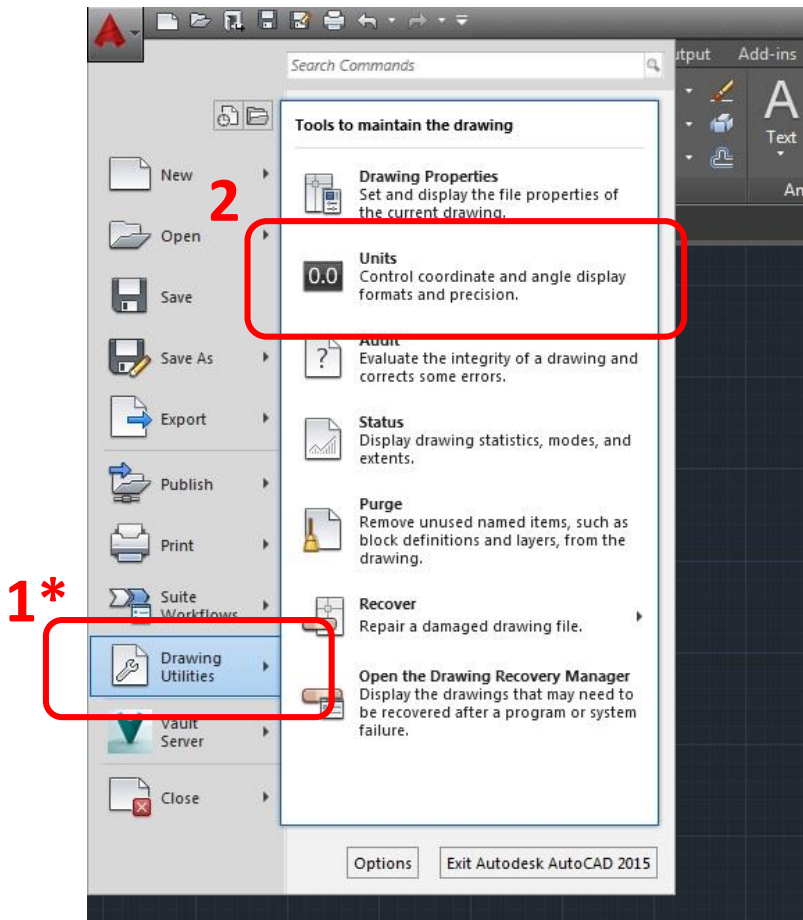
- Open a new drawing, save it!
- Check your **units**: Architectural, Inches
- You can customize your workspace with **options**
- Draft your linework in **model space**



Sets the display size for the object snap target box, in pixels.

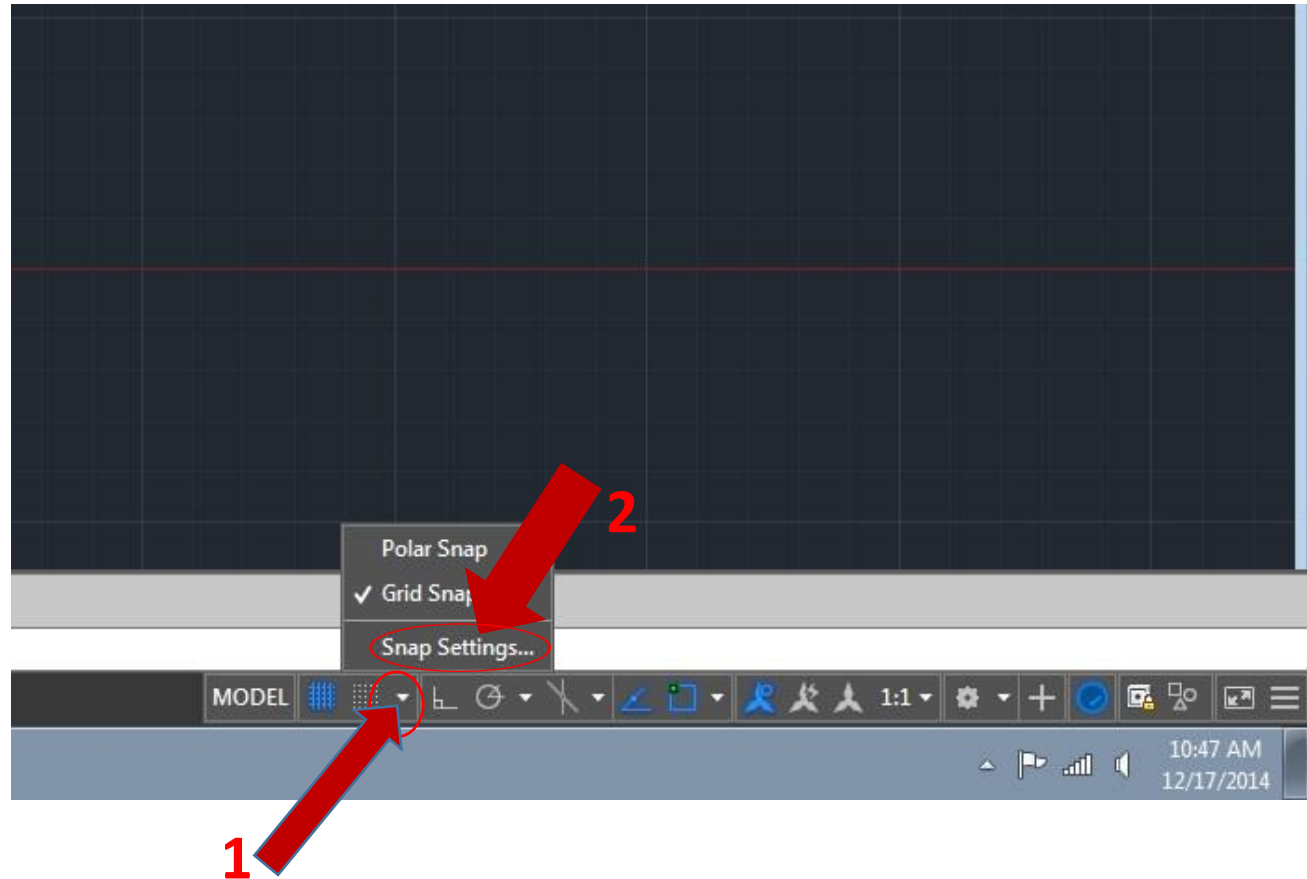
When Display AutoSnap Aperture Box is selected (or when APBOX is set to 1), the aperture box is displayed in the center of the crosshairs when you snap to an object. The aperture size determines how close to a snap point you can be before the magnet locks the aperture box to the snap point. Values range from 1 to 50 pixels. (APERTURE system variable)

Drawing Units

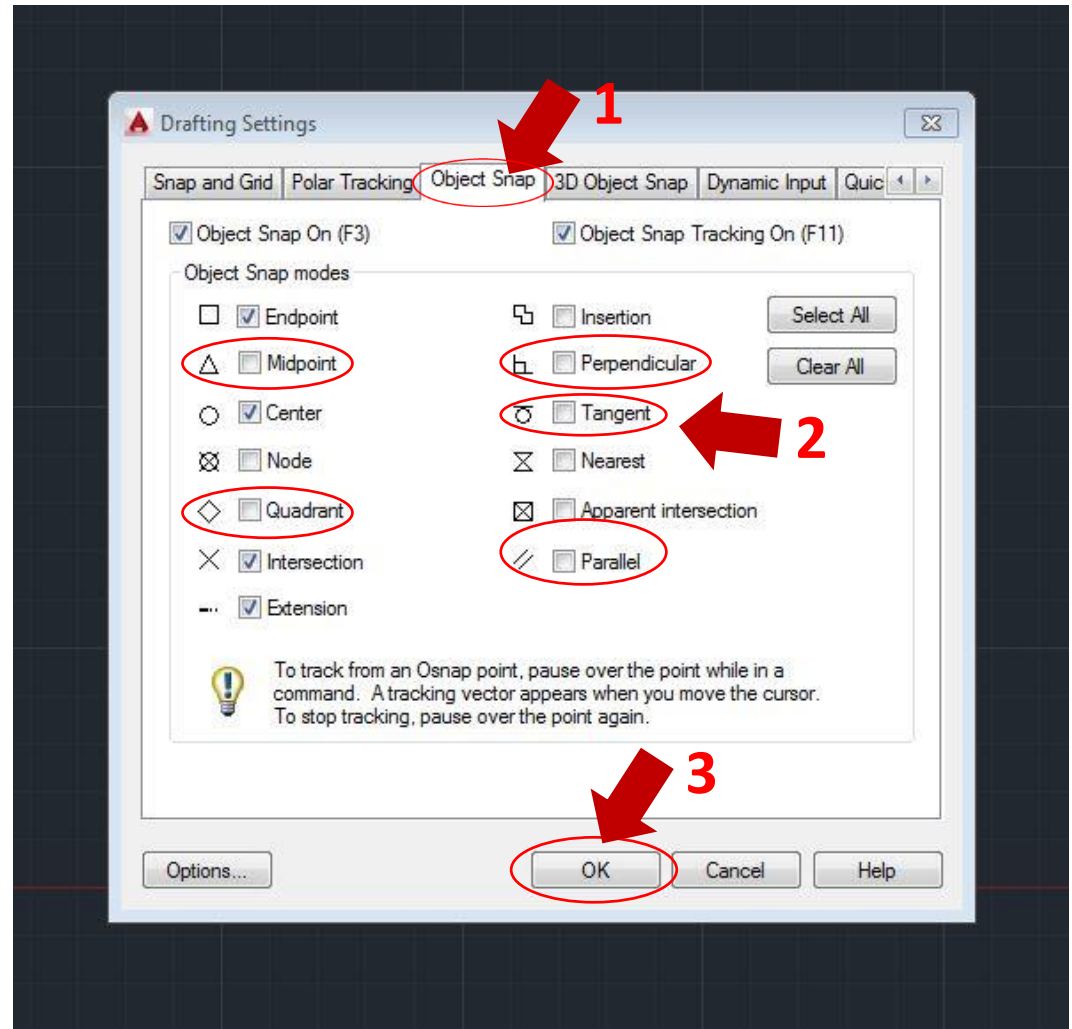


* Or type "units"

1. Click the small down arrow in the grid control area
2. Select Snap Settings

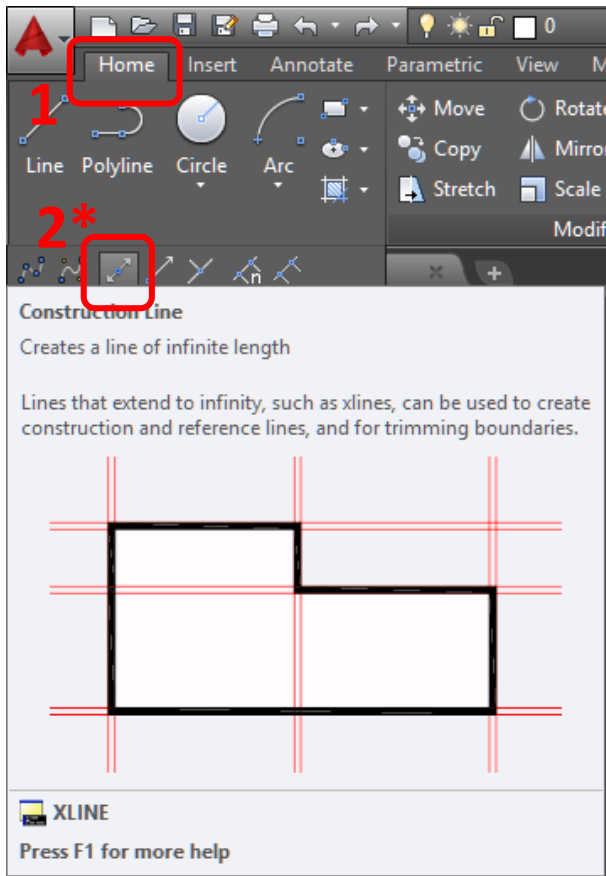


1. Click “Object Snap”
2. Check the “midpoint”, “Quadrant”, “Perpendicular”, “Tangent” and “parallel” Boxes
3. Click “Ok” when done



Construction Lines

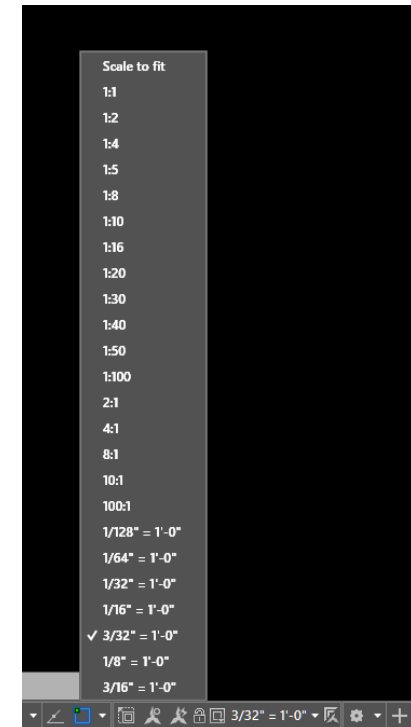
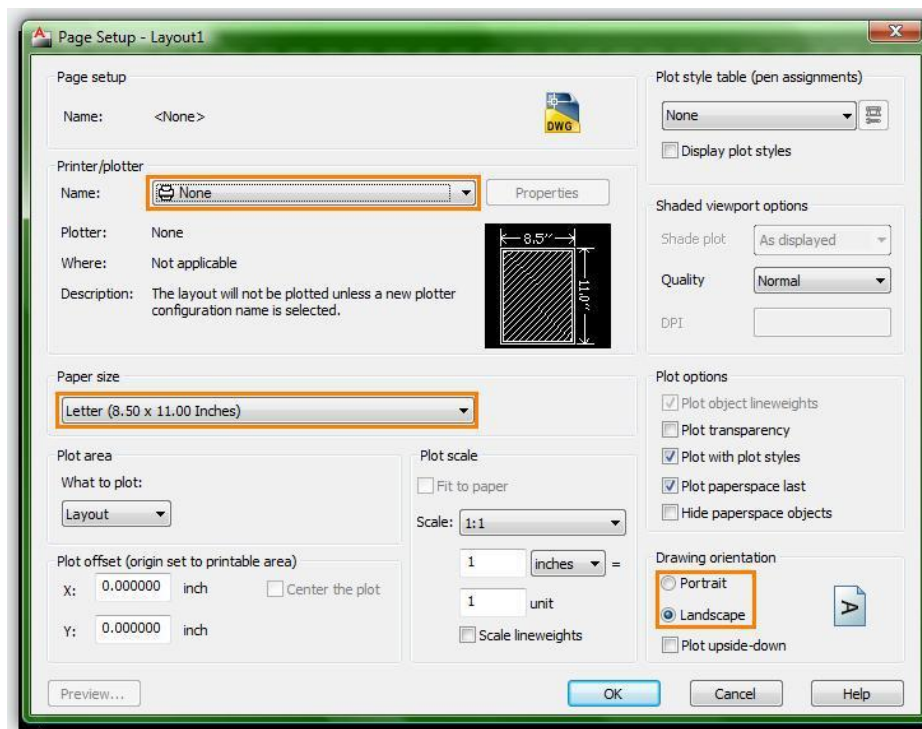
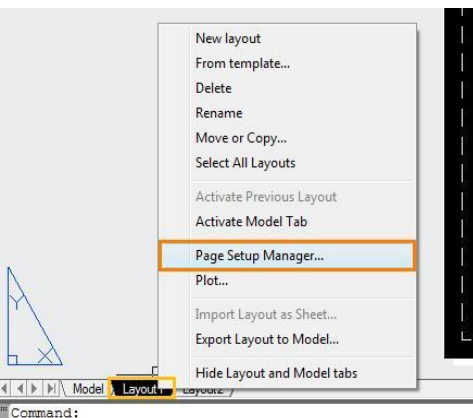
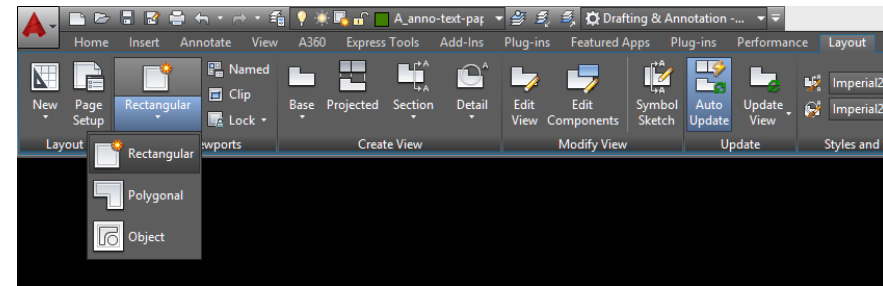
Lines that extend to infinity and can be used as guidelines.



- *or type “xl” for x-line
- then “h” for a horizontal line
- or “v” for vertical line

Sheet Setup & Viewports

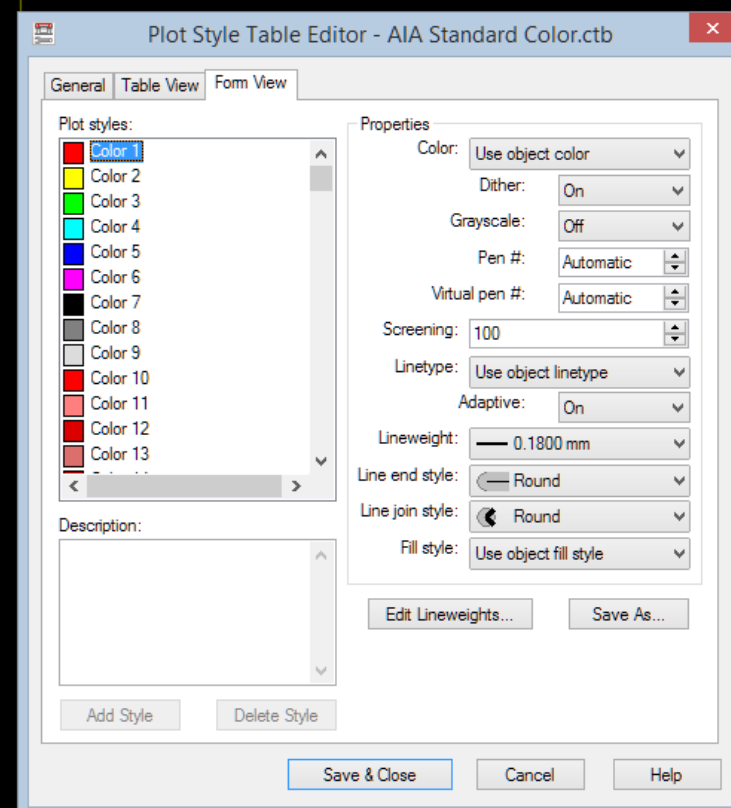
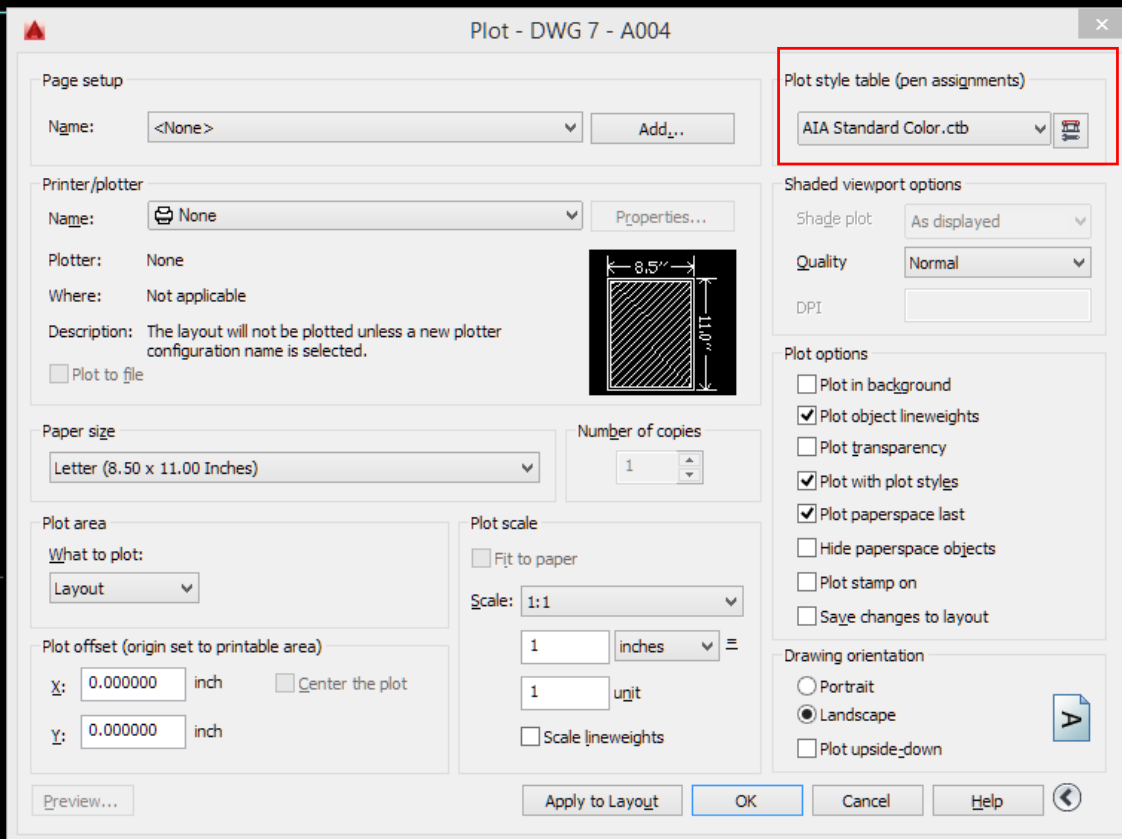
- Use the Titleblock constructed in *paper space* for the previous assignment.
- Use *Page Setup Manager* by right-clicking paper space layout tab
- *Viewports* create a view into model space at a specific scale.



Plot Styles

When *plotting* (*ctrl+p*) a drawing, a *plot style* must be chosen. Standard styles should be used (office standards). A *plot style* controls and object's plotted properties.

- CTB: color dependent
- STB: named



Assignment Specifications:

- Create a Dropbox folder “T-000”
- Upload your progress drawing at the end of this class to your Dropbox folder.
Name files: Last Name First Name – Assignment Title.
- Upload final submission *BEFORE THE START OF THE NEXT CLASS*
- Submit 8.5”x11” plot of each drawing *AT THE START OF THE NEXT CLASS*