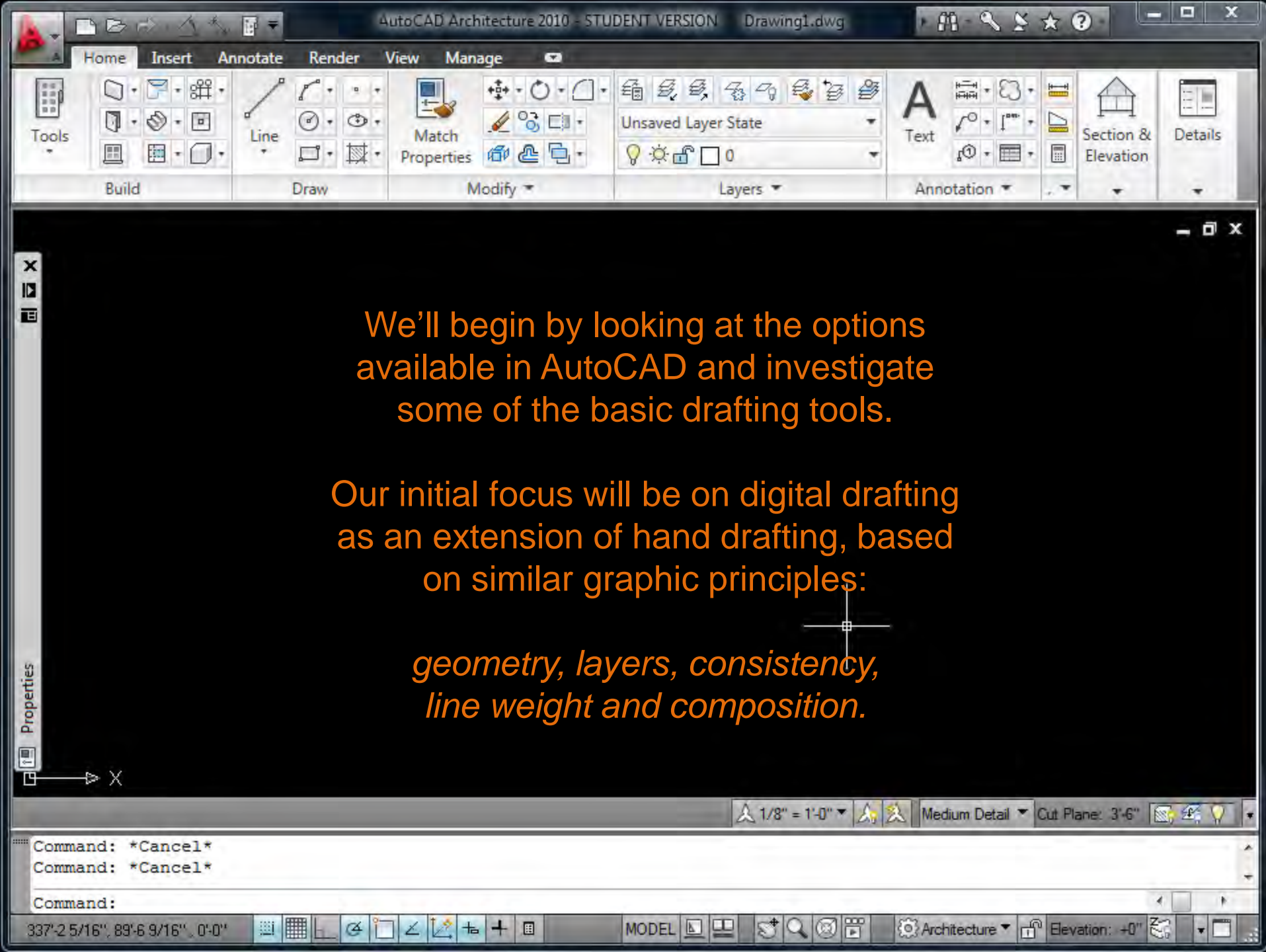


AutoCAD is the most common drafting and design software used by architecture firms, consultants and other design professionals.

Getting started with AutoCAD can be intimidating. There are many tools, each with associated options. This can make mastering the program seem daunting.

This series of tutorials will introduce you to the basics of the program, allowing you to become familiar with the interface and comfortable seeking new tools and operations on your own.

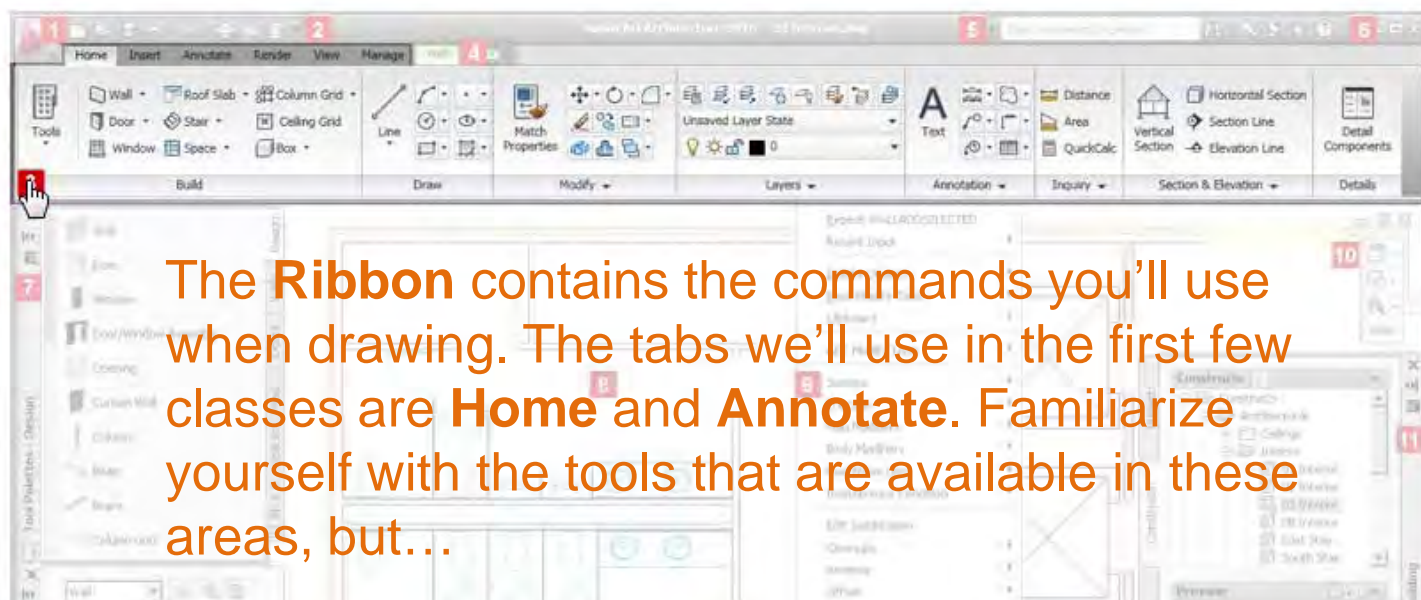
To learn more about AutoCAD on your own, go through the User Interface Overview, accessible from the Help menu.



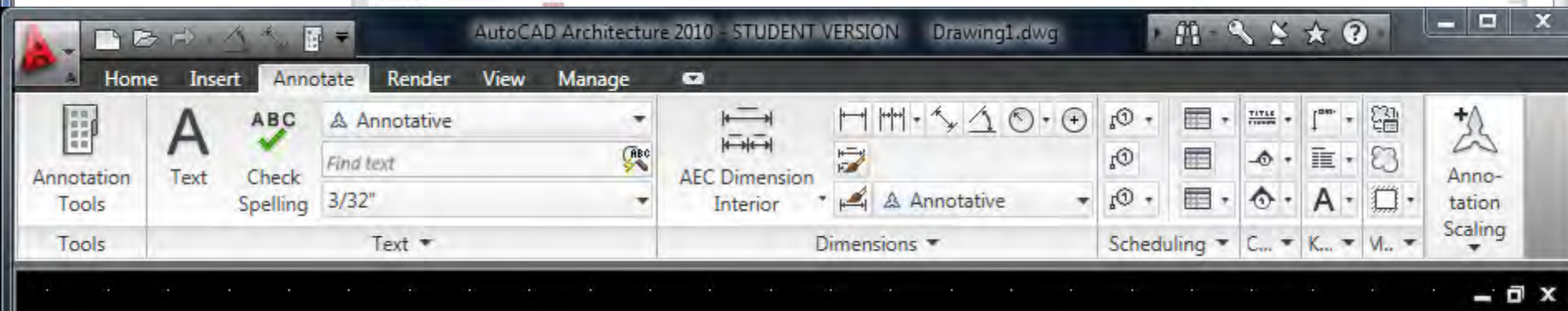
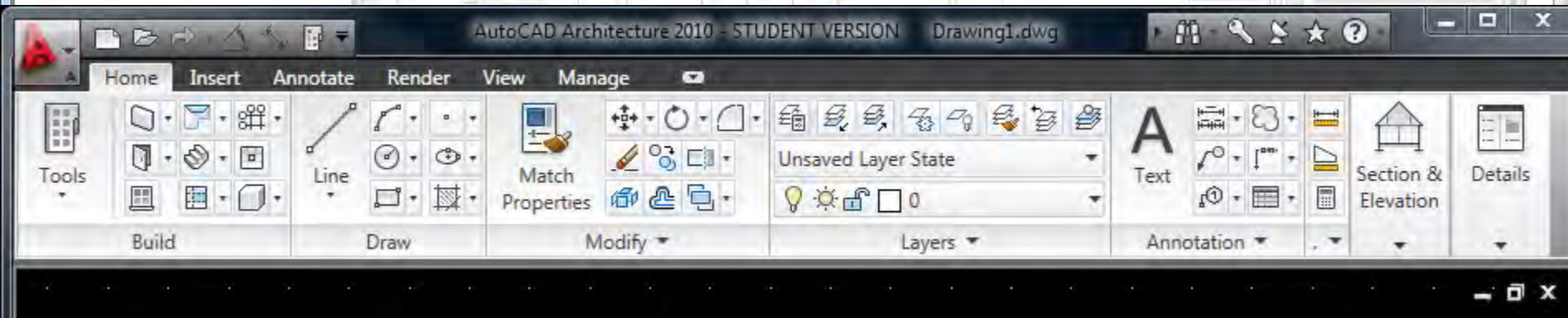
3 Ribbon

The ribbon is the central location for commands you use in the currently active drawing and projects. Commands are easily accessed through a collection of tabs and panels. Each tab contains at least 2 panels, and each panel contains multiple commands. Some panels can be expanded to access additional commands.

Click the ribbon for a close up view.



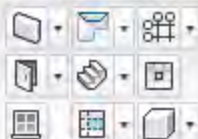
The **Ribbon** contains the commands you'll use when drawing. The tabs we'll use in the first few classes are **Home** and **Annotate**. Familiarize yourself with the tools that are available in these areas, but...



Home Insert Annotate Render View Manage



Tools



Line

Build

Match
Properties

Unsaved Layer State

0



Text

Annotation

Section &
Elevation

Details

Rectangle

Creates a rectangular polyline

With this command, you can specify the rectangle parameters (length, width, rotation) and control the type of corners (fillet, chamfer, or square).

 **RECTANG**

Press F1 for more help

... note that using the tools in this manner is not the most efficient method of drawing in AutoCAD.

Command: Specify opposite corner:

Command: e ERASE 1 found

Command:

9.11813E+02, 172'-7 7/16", 0'-0"

MODEL

Architecture

Elevation: +0"

The **Command Window** at the bottom of the screen is the preferred method for **Command Entry**.

Type **REC**, (caps or lowercase is OK), press **Enter** or **Spacebar**, read the prompt that appears: "Specify the first corner point".

To specify the point, click on the screen to begin and end the rectangle.

To repeat this command (or any other command) press the **Spacebar** or **Enter**.

Command: *Cancel*
Command: rec RECTANG

Specify first corner point or [Chamfer/Elevation/Fillet/Thickness/Width]:
Specify other corner point or [Area/Dimensions/Rotation]:
72'-4 15/16", 67'-2 5/8" ,0'-0"

Command: rec

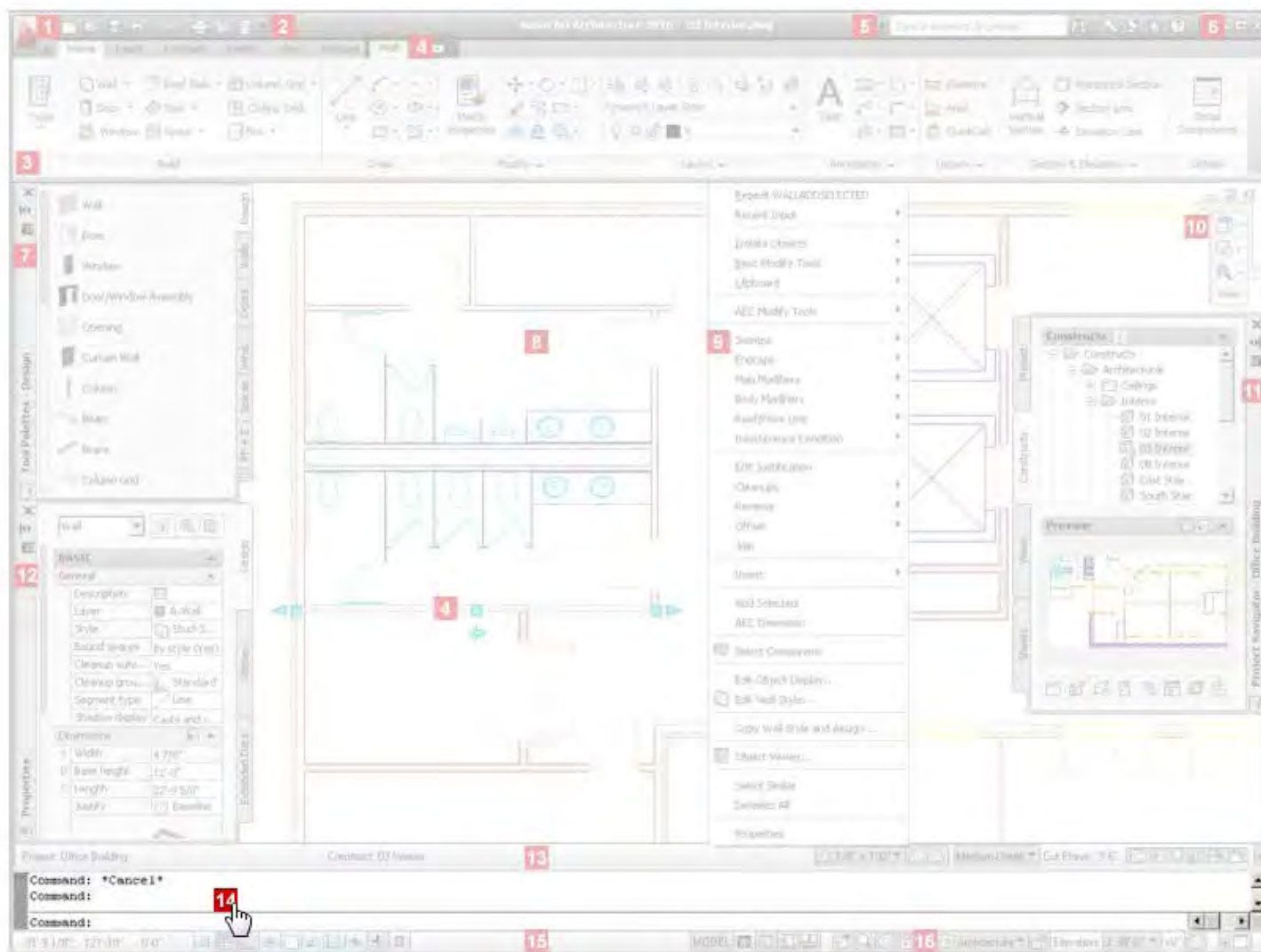
97'-1 3/4", 97'-11 1/2" ,0'-0"

Command: Specify opposite corner:
Command: e ERASE 1 found
Command: rec

97'-1 3/4", 97'-11 1/2" ,0'-0"

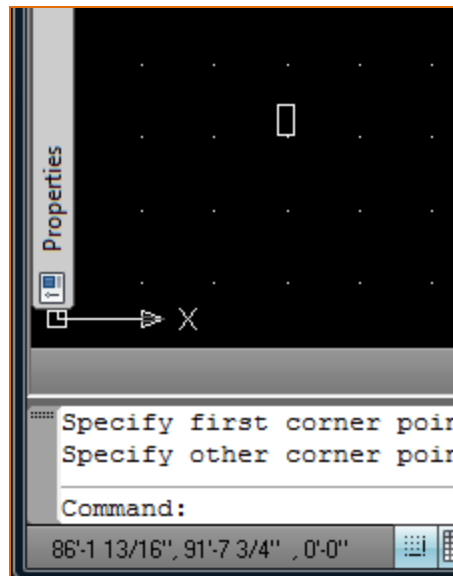
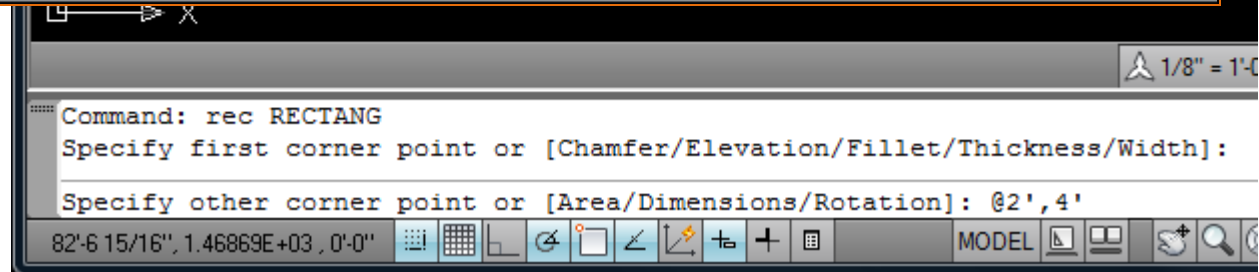
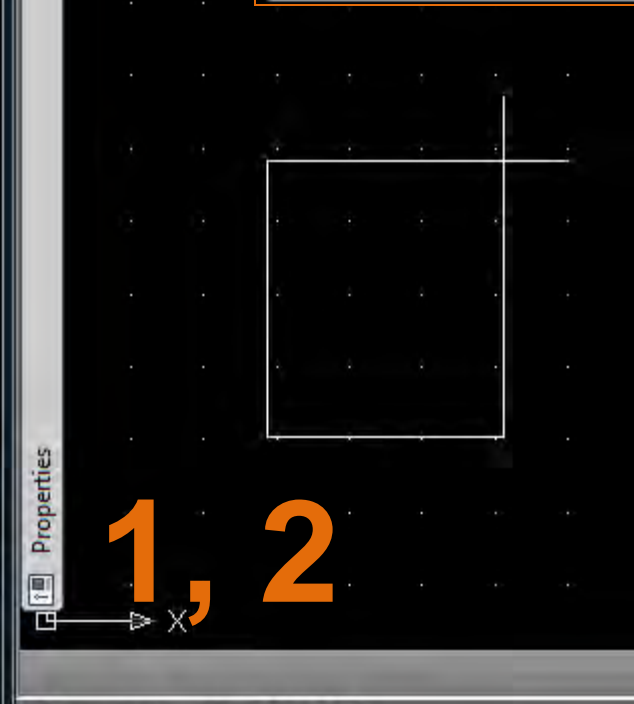
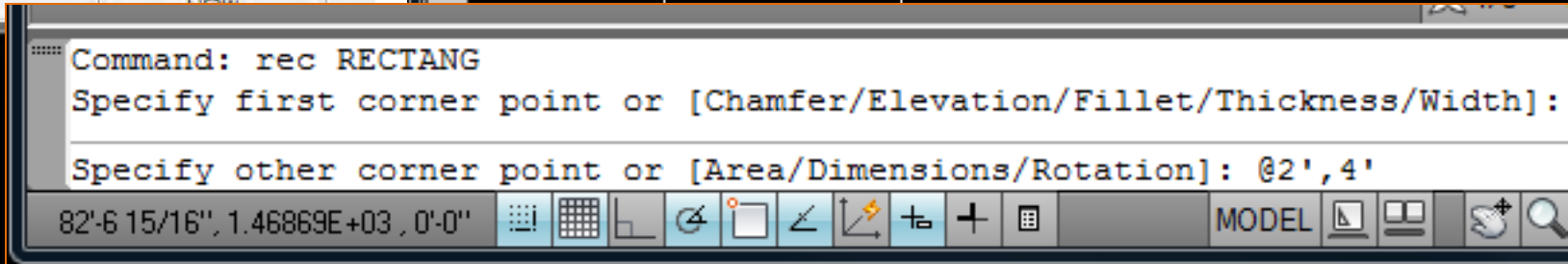
14 Command Window

The command window displays the command prompt for command entry and selection of command options.



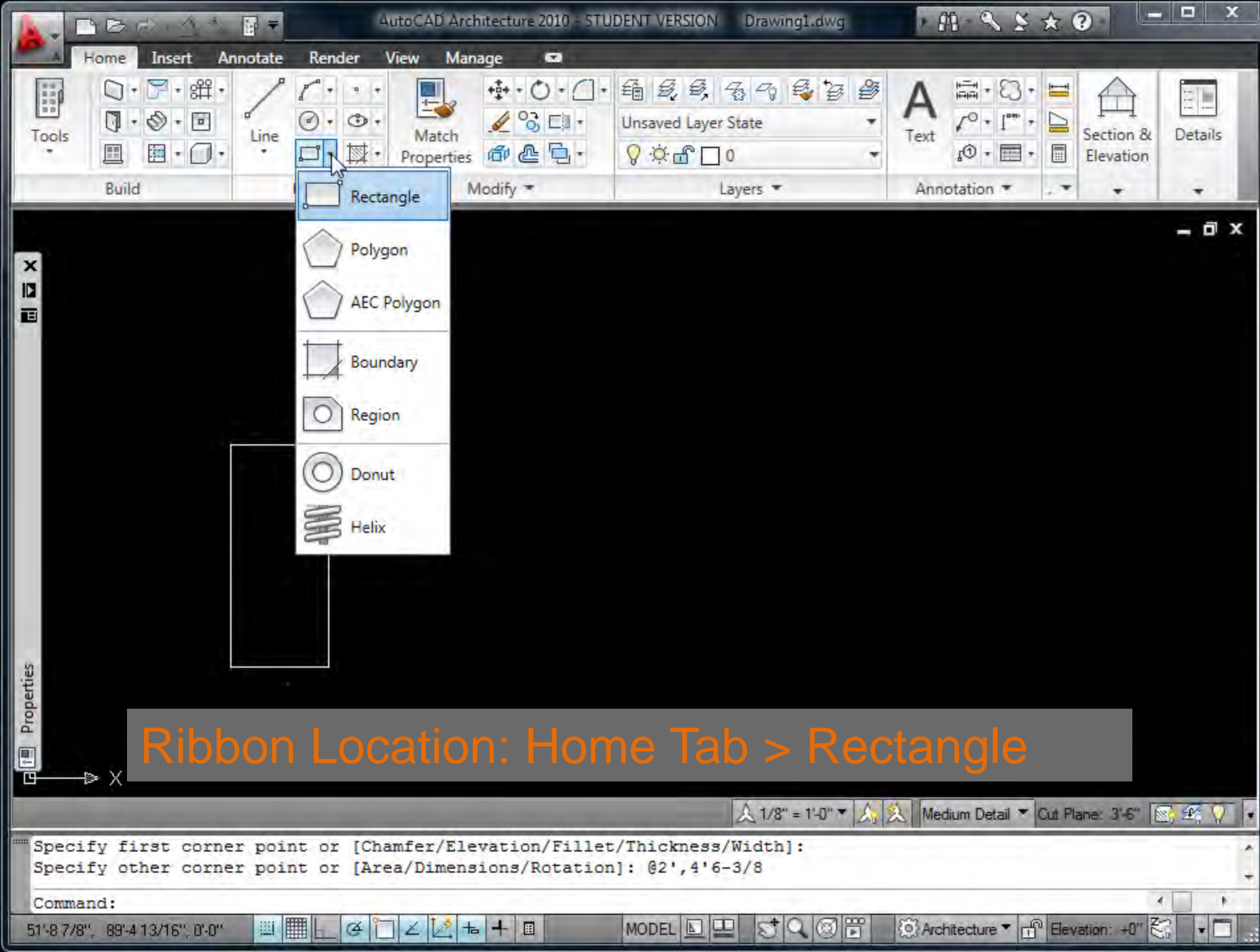
RECTANGLE COMMAND ENTRY

3

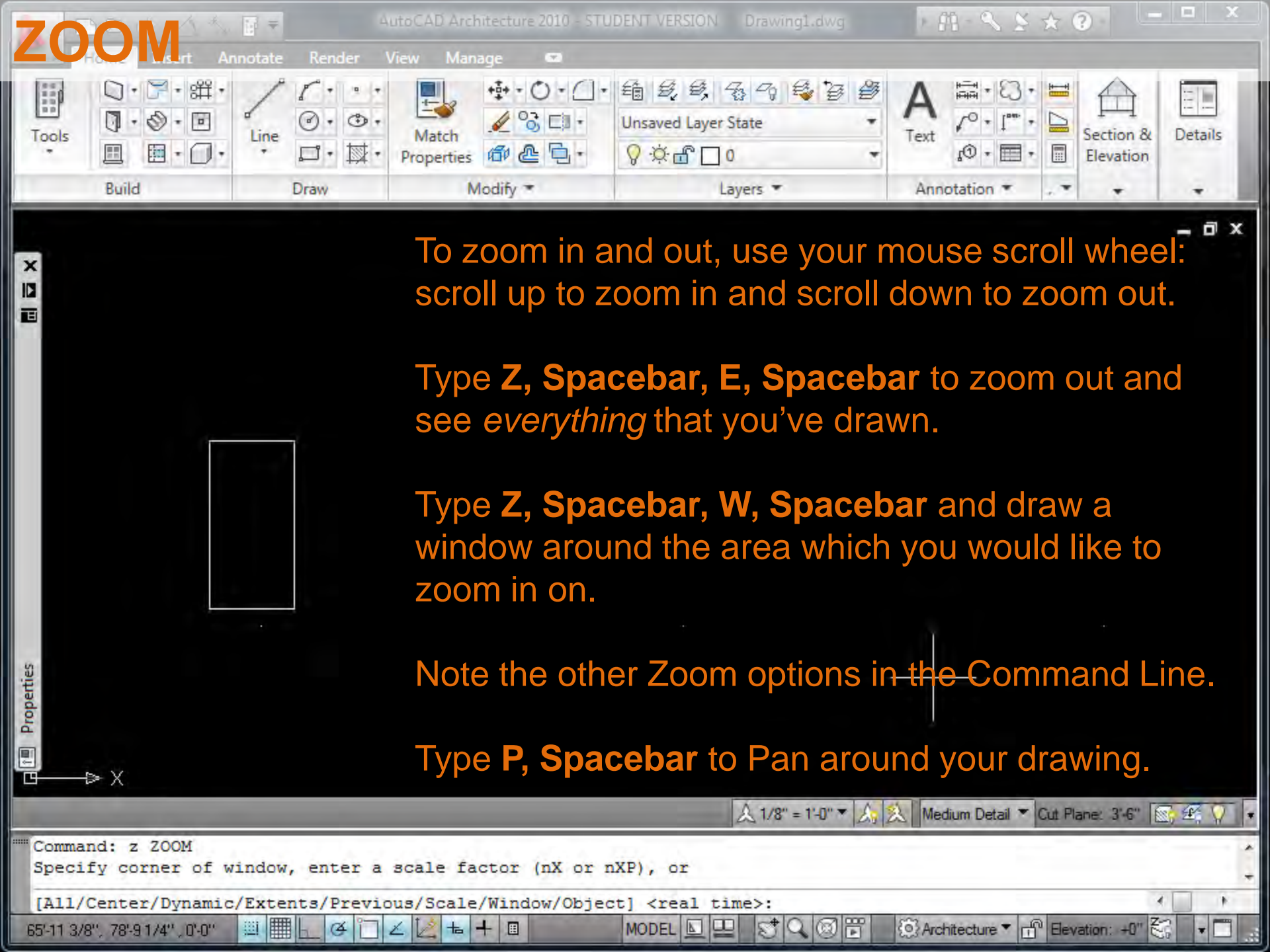


To draw a shape of specific dimensions, follow these steps:

1. Type **REC**, **Spacebar**.
2. Click *once* to locate the shape on the screen.
3. Then, enter desired dimensions in the format **@2',4'**
Press **Spacebar (or Enter)**.



Ribbon Location: Home Tab > Rectangle



ZOOM

To zoom in and out, use your mouse scroll wheel: scroll up to zoom in and scroll down to zoom out.

Type **Z, Spacebar, E, Spacebar** to zoom out and see *everything* that you've drawn.



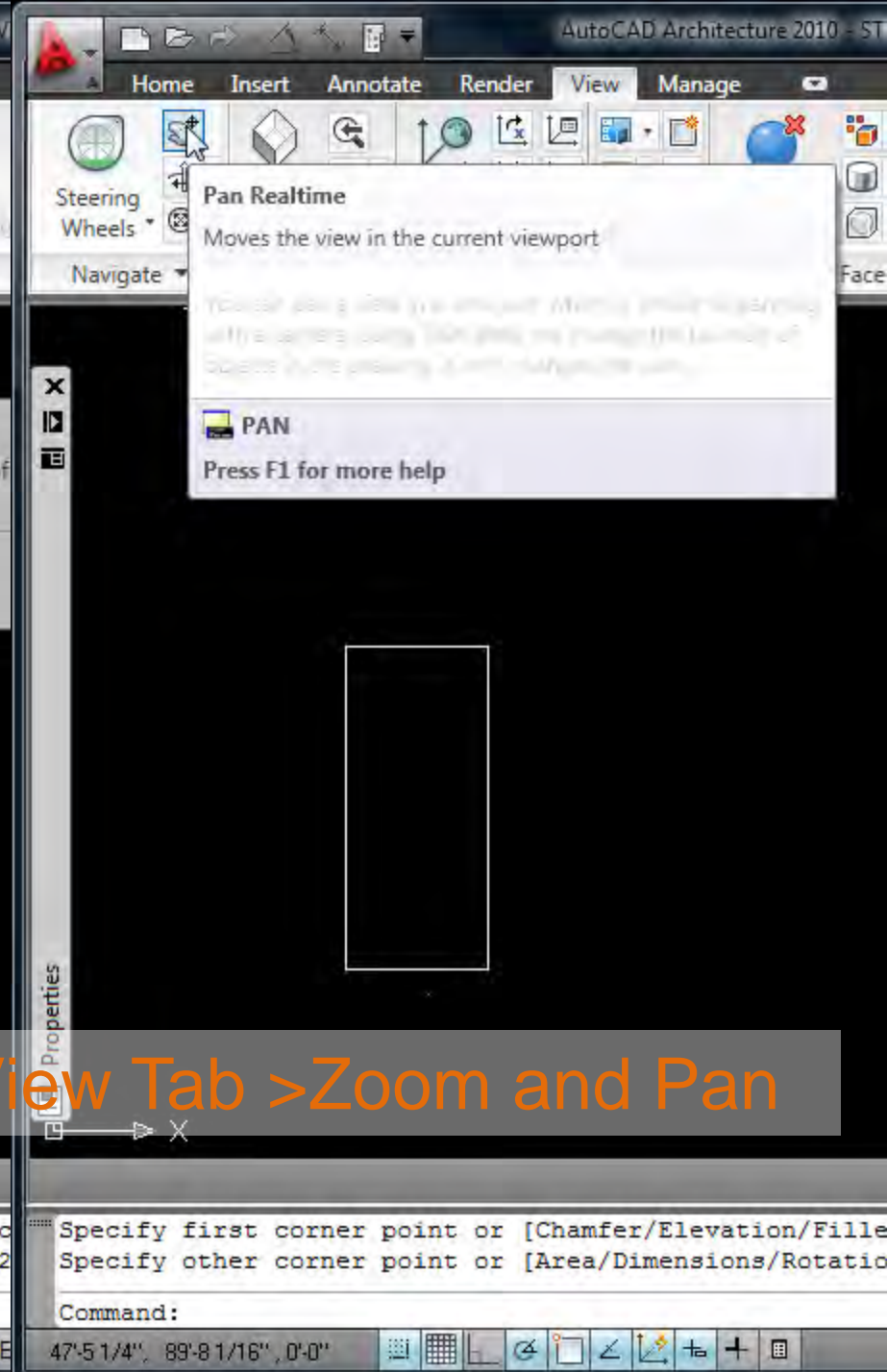
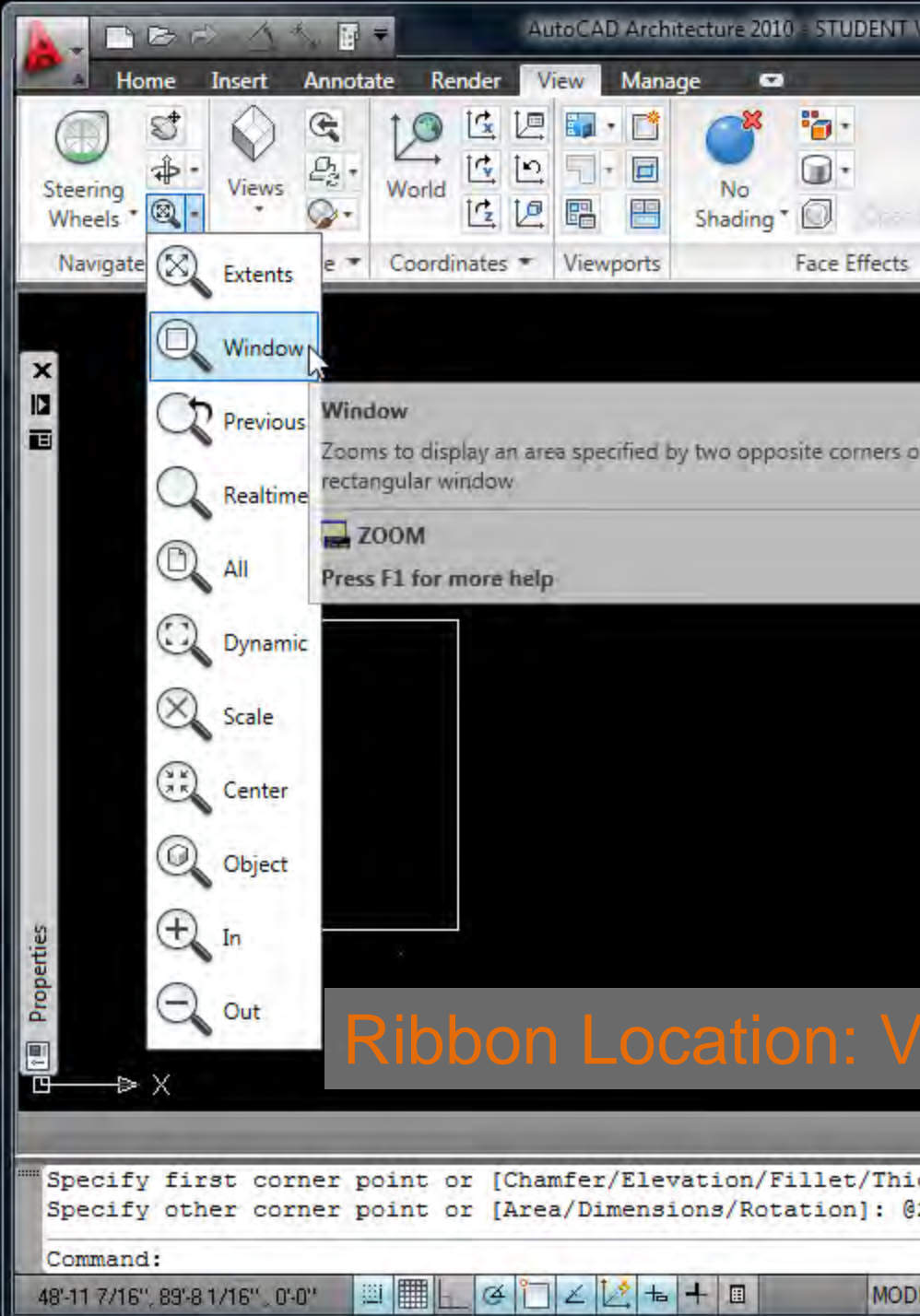
Type **Z, Spacebar, W, Spacebar** and draw a window around the area which you would like to zoom in on.

Note the other Zoom options in the Command Line.

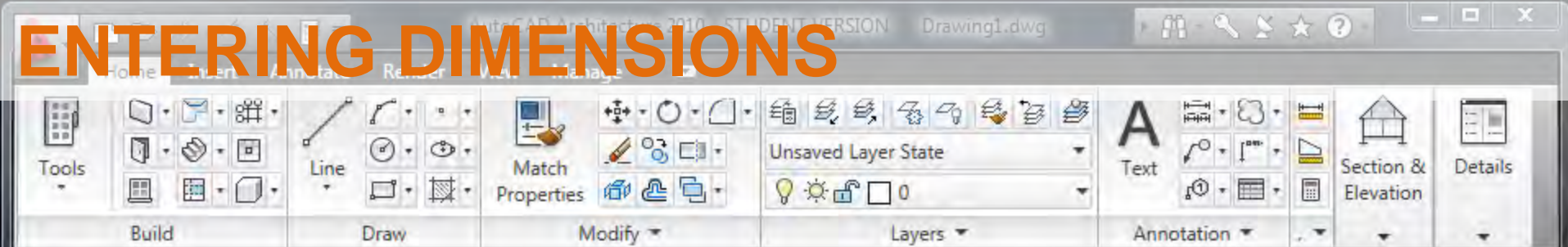
Type **P, Spacebar** to Pan around your drawing.

Command: z ZOOM
Specify corner of window, enter a scale factor (nX or nXP), or
[All/Center/Dynamic/Extents/Previous/Scale/Window/Object] <real time>:

65'-11 3/8", 78'-9 1/4", 0'-0" MODEL 1/8" = 1'-0" Medium Detail Cut Plane: 3'-6" Architecture Elevation: +0"



Ribbon Location: View Tab > Zoom and Pan

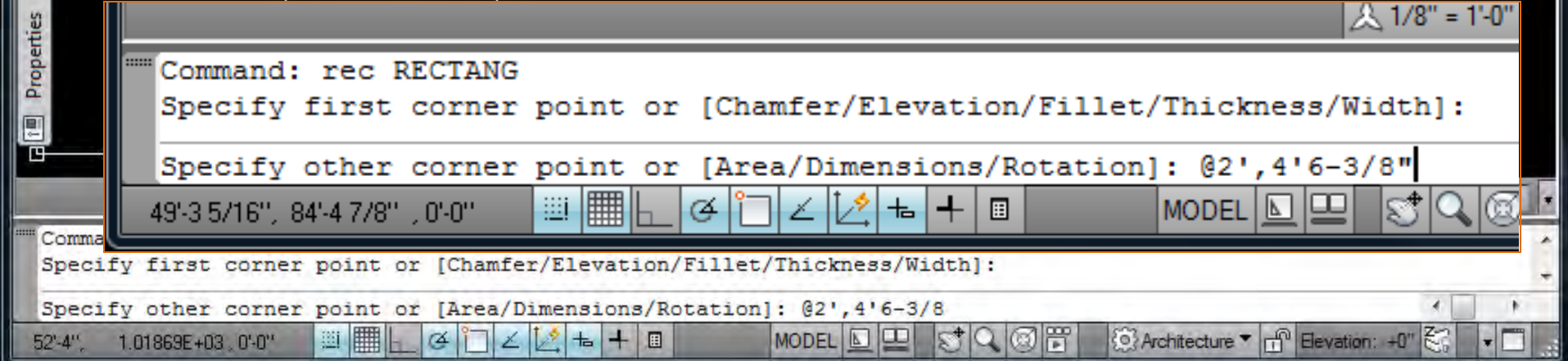


Draw a rectangle with dimensions that are not round numbers:

1. Type **REC**, **Spacebar**.
2. Click *once* to locate the shape on the screen.
3. Enter desired dimensions in the format **@2',4' 6-3/8**
4. Press **Spacebar** (or **Enter**).

' (apostrophe) = feet
" (quotes) = inches

FYI: inches are the default in AutoCAD and need not be entered.





ENTERING DIMENSIONS

Follow Command Line Prompts for other effects and cues:

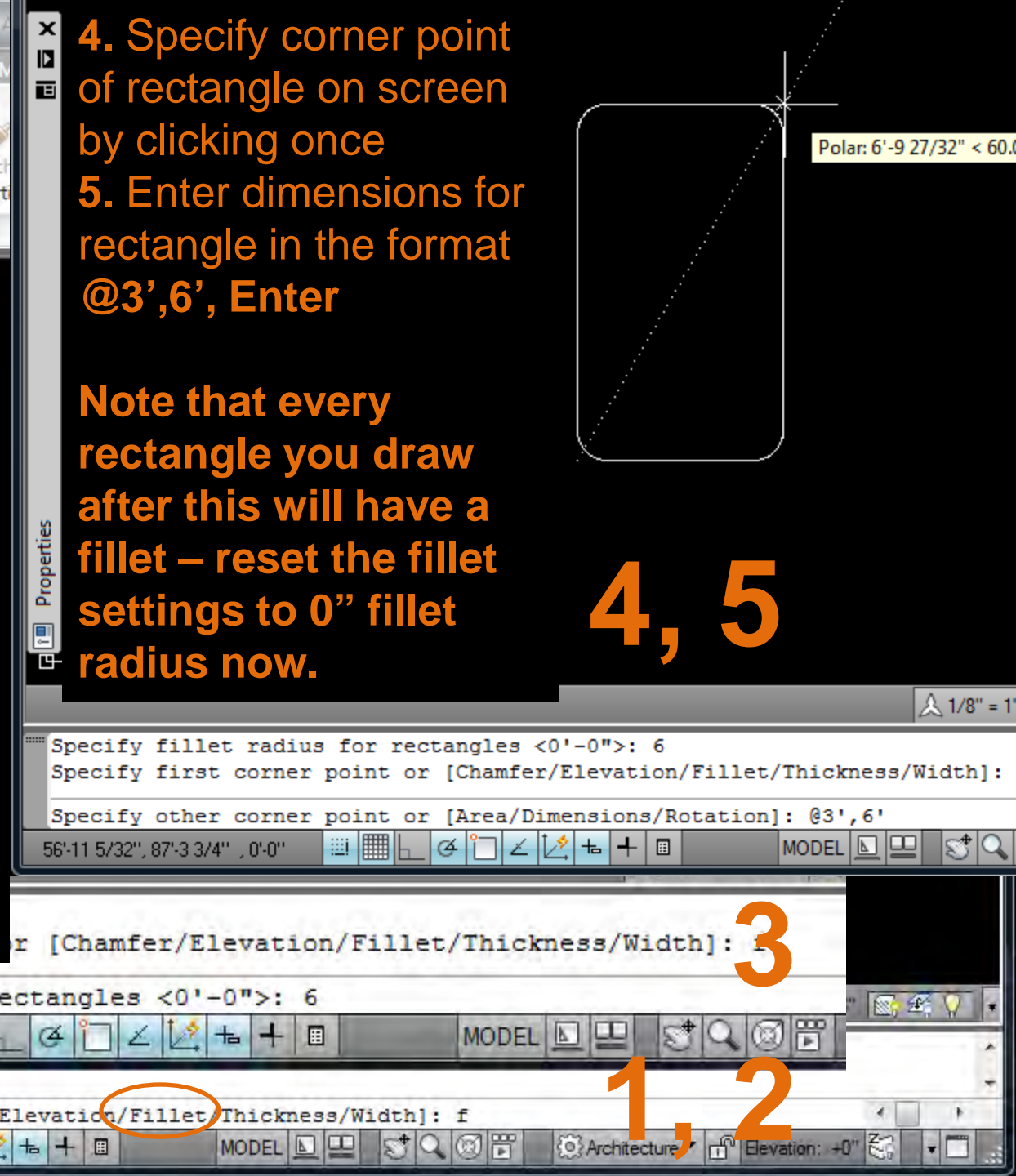
1. Type **REC**, **Spacebar**
2. Type **F** (first letter of Fillet as noted in Command Line), **Spacebar**
3. Enter dimension for fillet radius, 6, signifying 6 inches.

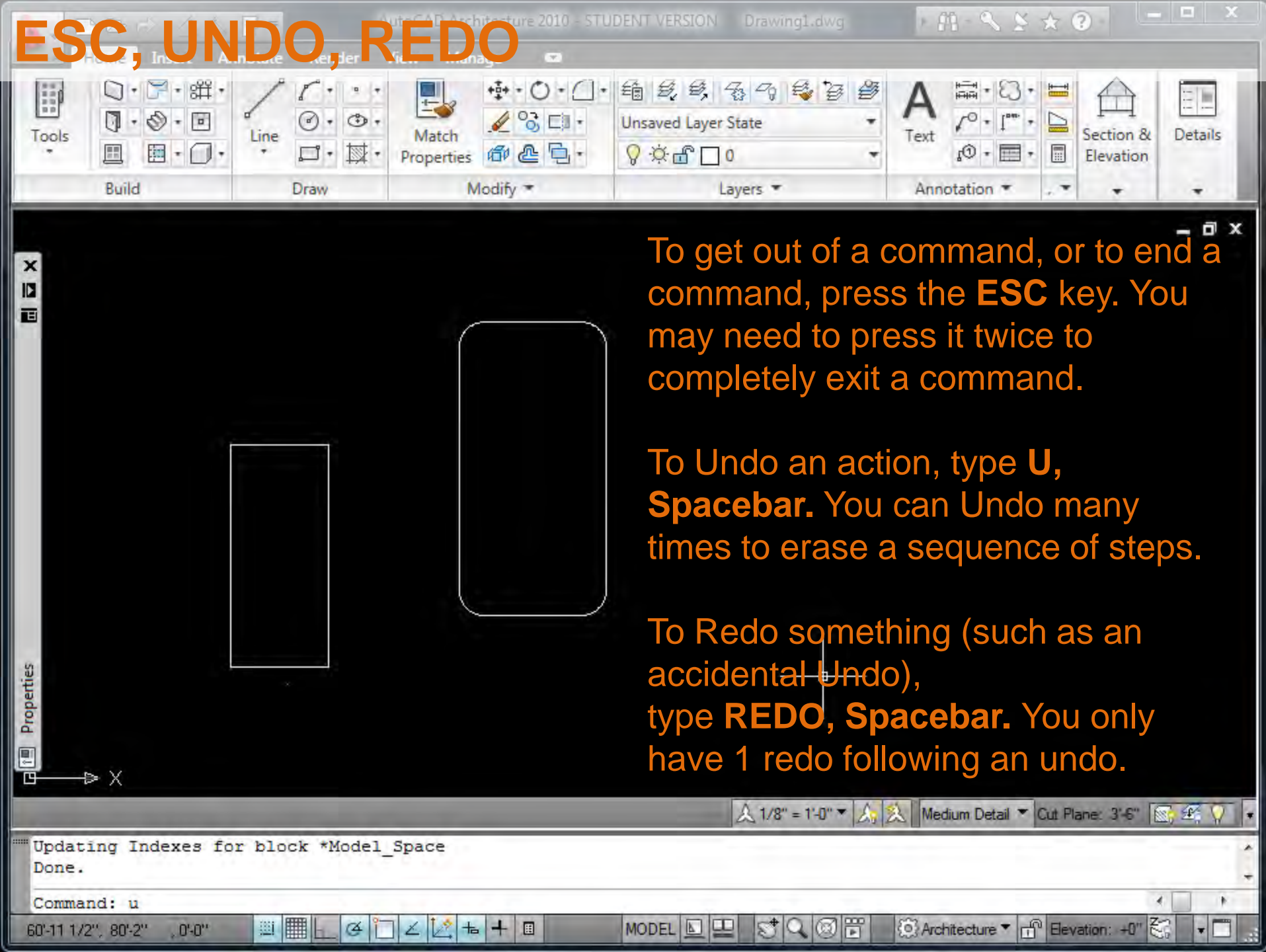
4. Specify corner point of rectangle on screen by clicking once
5. Enter dimensions for rectangle in the format **@3',6'**, **Enter**

Note that every rectangle you draw after this will have a fillet – reset the fillet settings to 0" fillet radius now.

4, 5

1, 2



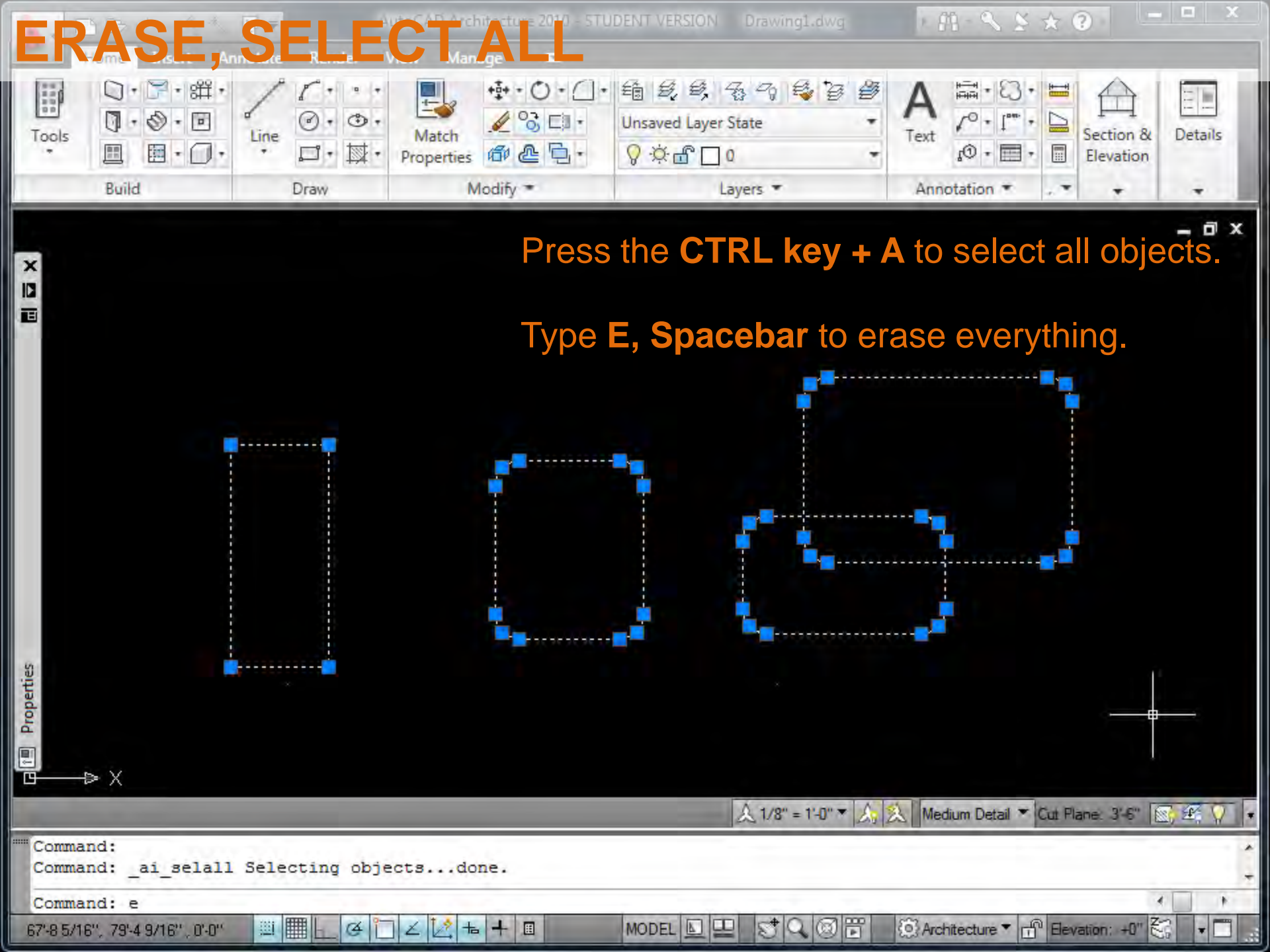


ESC, UNDO, REDO

To get out of a command, or to end a command, press the **ESC** key. You may need to press it twice to completely exit a command.

To Undo an action, type **U**, **Spacebar**. You can Undo many times to erase a sequence of steps.

To Redo something (such as an accidental Undo), type **REDO**, **Spacebar**. You only have 1 redo following an undo.

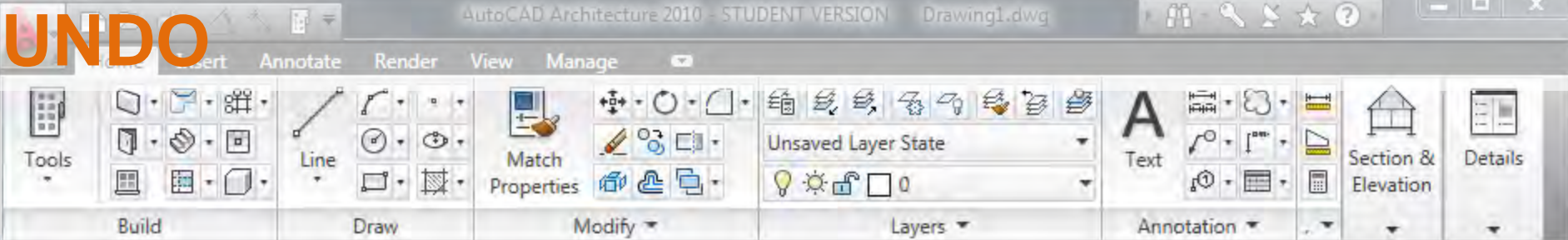


ERASE, SELECT ALL

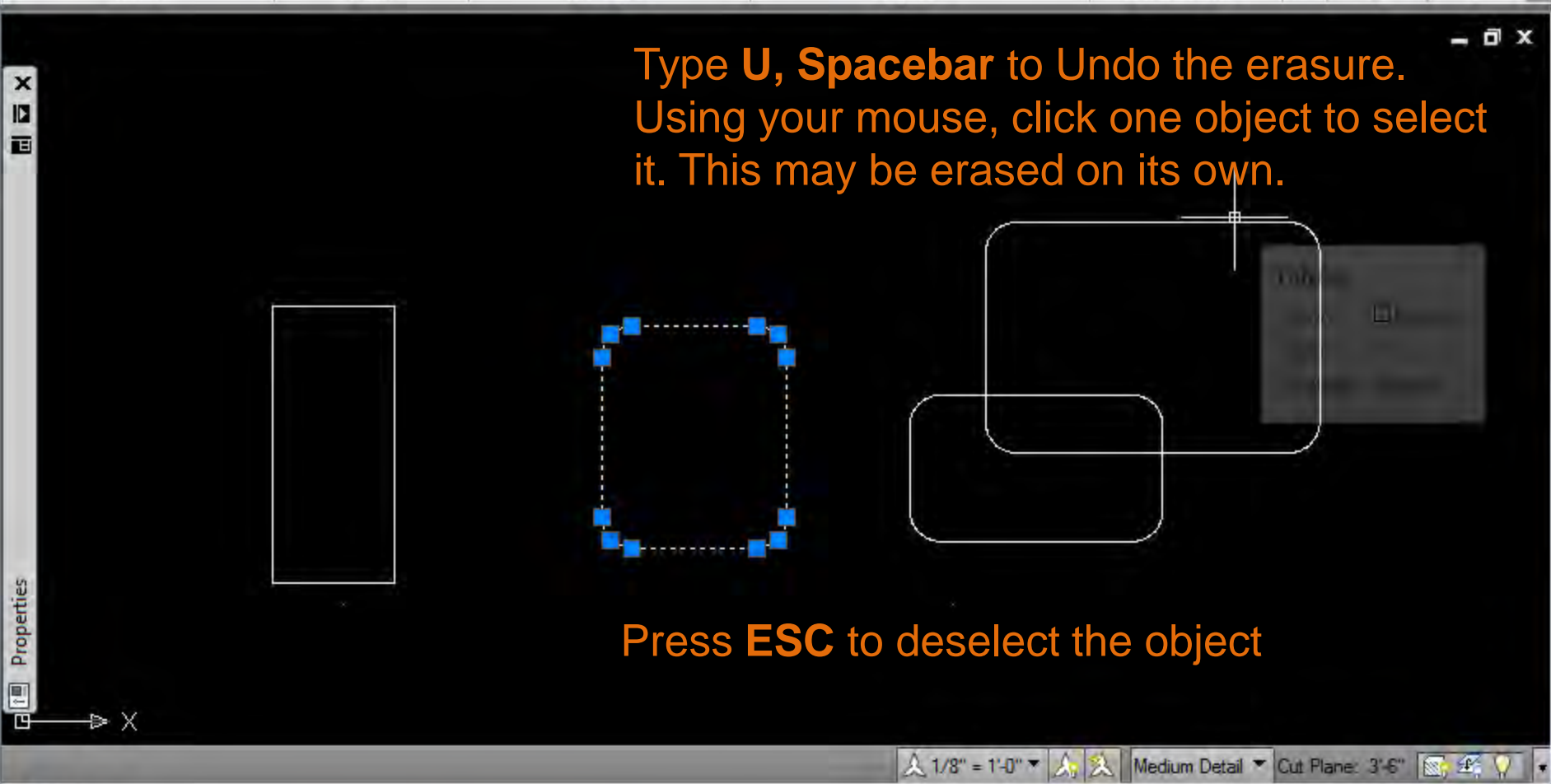
Press the **CTRL** key + **A** to select all objects.

Type **E**, **Spacebar** to erase everything.

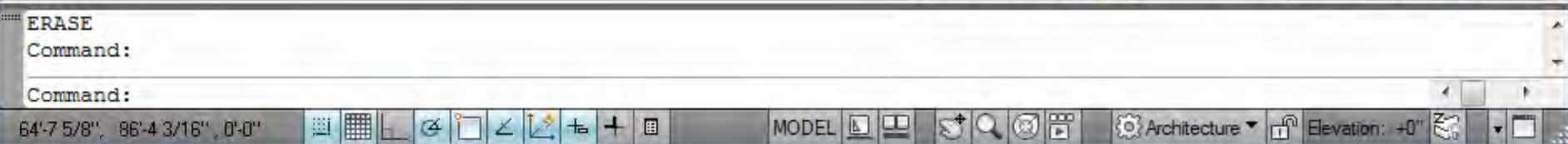
UNDO

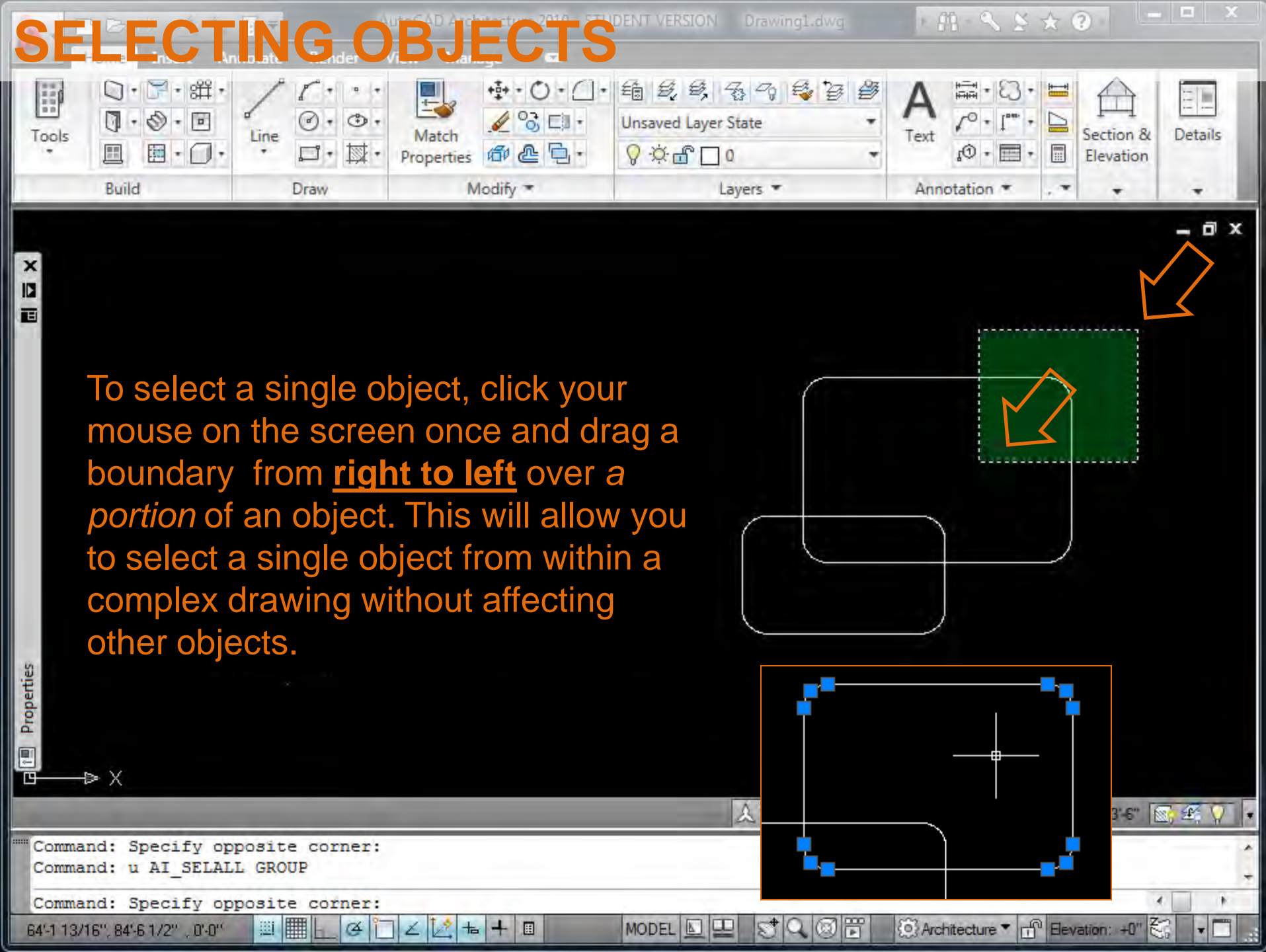


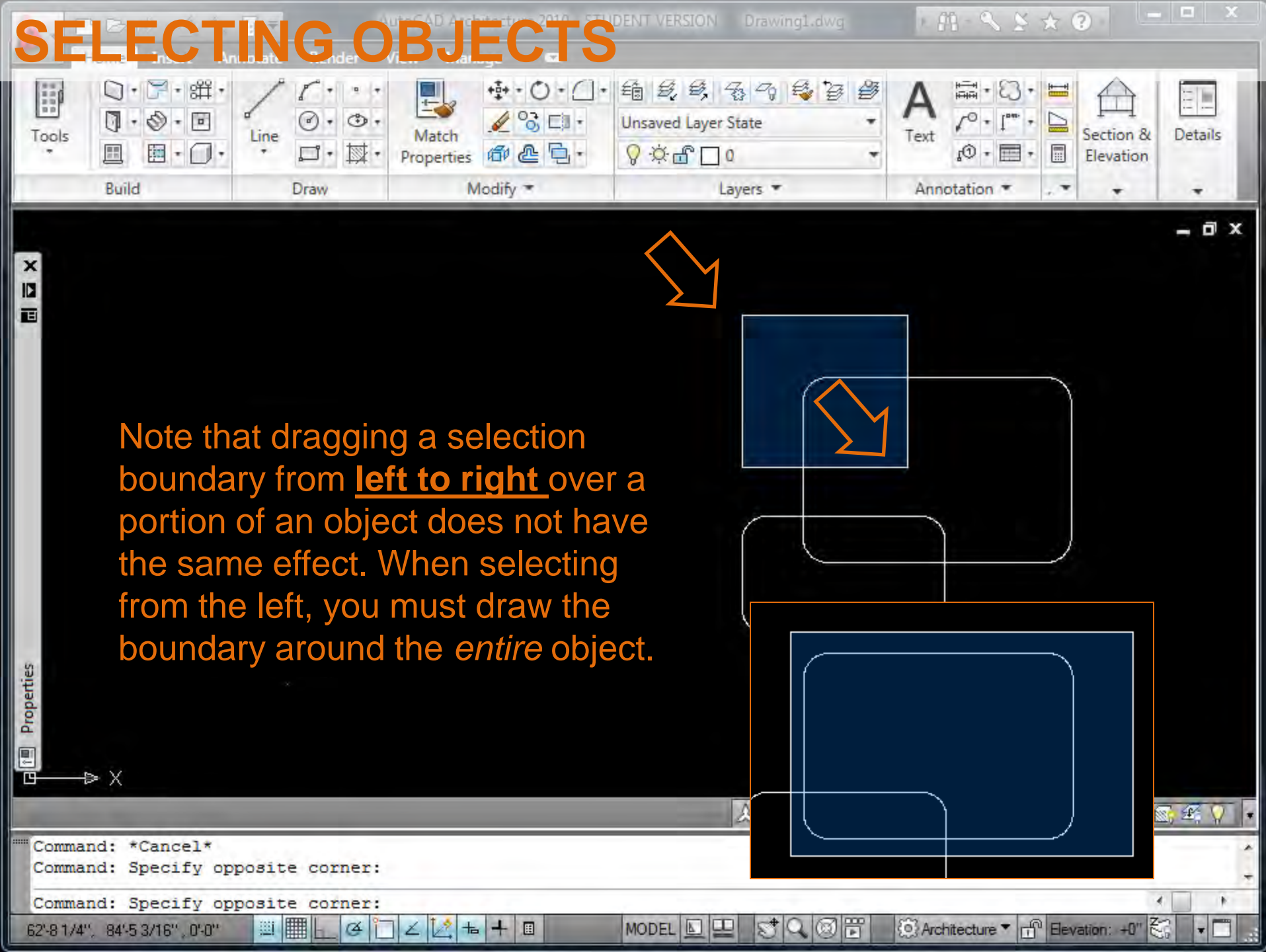
Type **U**, **Spacebar** to Undo the erasure.
Using your mouse, click one object to select it. This may be erased on its own.



Press **ESC** to deselect the object

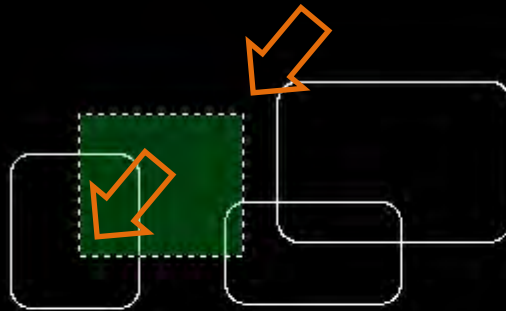






SELECTING OBJECTS

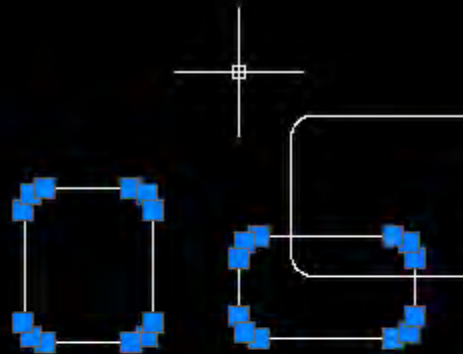
Select two objects by drawing a boundary from right to left around a portion of each object.



Press ESC or ENTER to exit, or right-click
Command: *Cancel*

Command: Specify opposite corner:

55'-10 9/16", 82'-1 15/16", 0'-0"



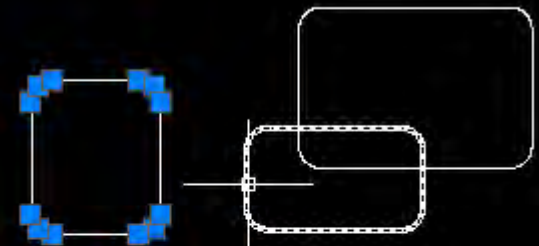
Command: *Cancel*

Command: Specify opposite corner:

Command:

59'-3 7/8", 87'-3 5/8", 0'-0"

Hold down the **SHIFT** key and click on the boundary of one object to remove it from the selection set.



Command: Specify opposite corner:
Command:

Command:

59'-4 7/16", 82'-1 3/8", 0'-0"

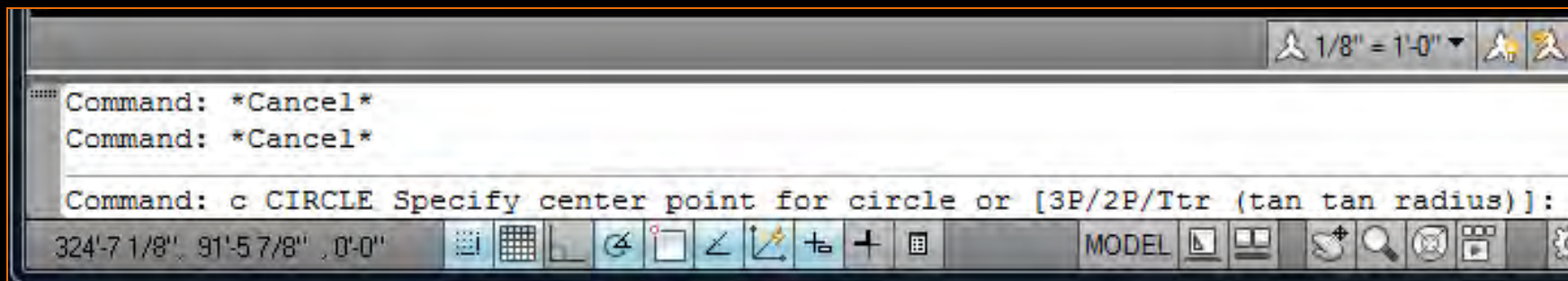
CIRCLE, COMMAND ENTRY



Type **C** to begin drawing a circle. Notice the options offered in the Command Line.

3P signifies a circle drawn about 3 reference points. Try out the options by typing in the prompt provided.

Press **ESC** if you get stuck in a command.



Command: *Cancel*
Command: *Cancel*

Command: c CIRCLE Specify center point for circle or [3P/2P/Ttr (tan tan radius)]:

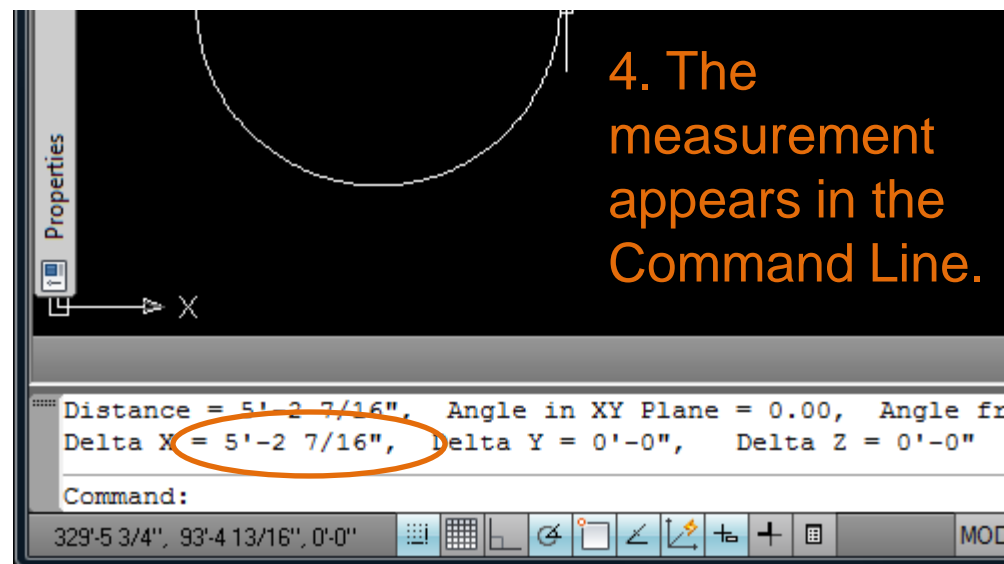
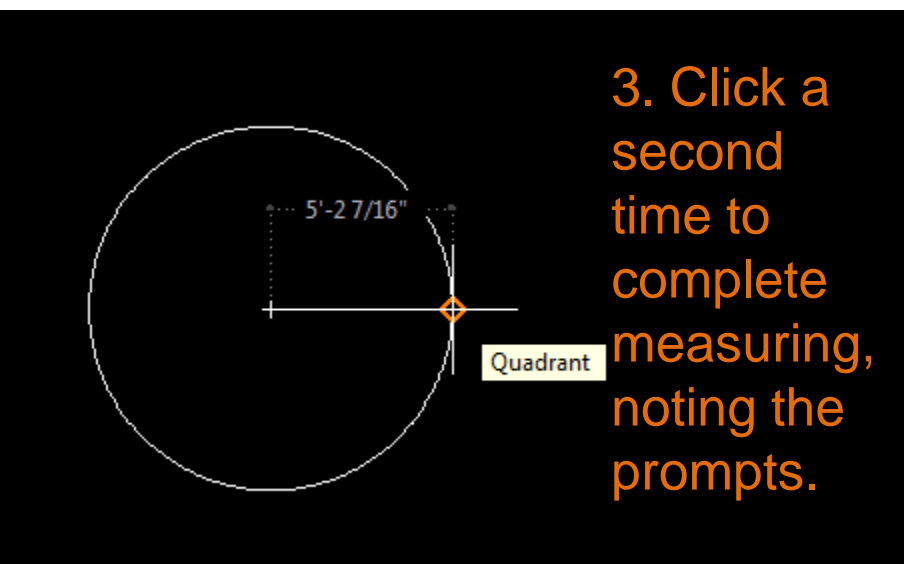
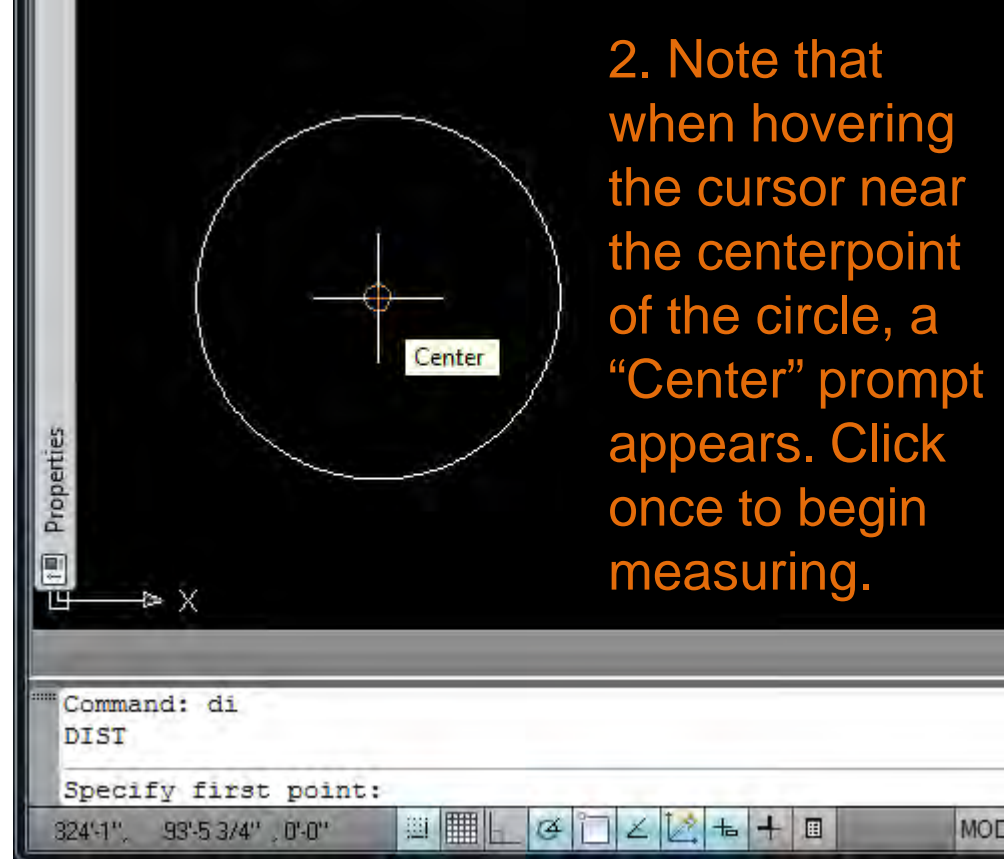
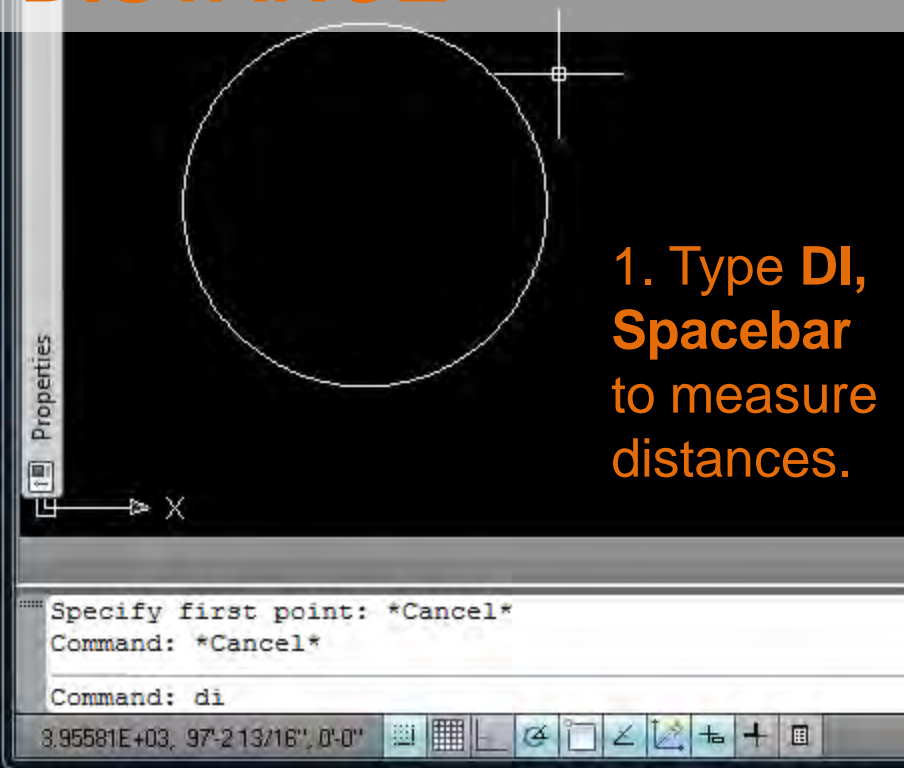
324'-7 1/8", 91'-5 7/8", 0'-0"

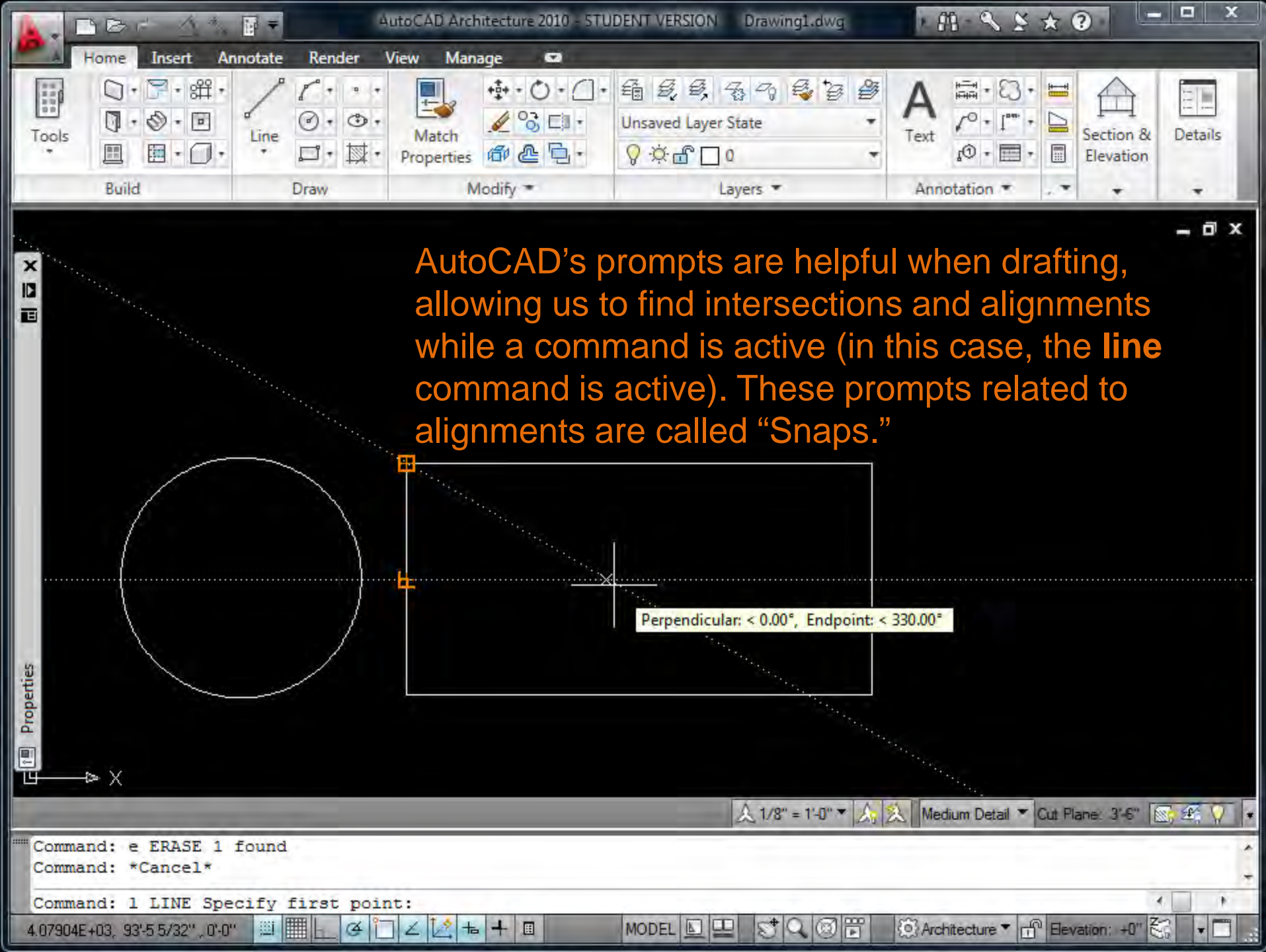
MODEL

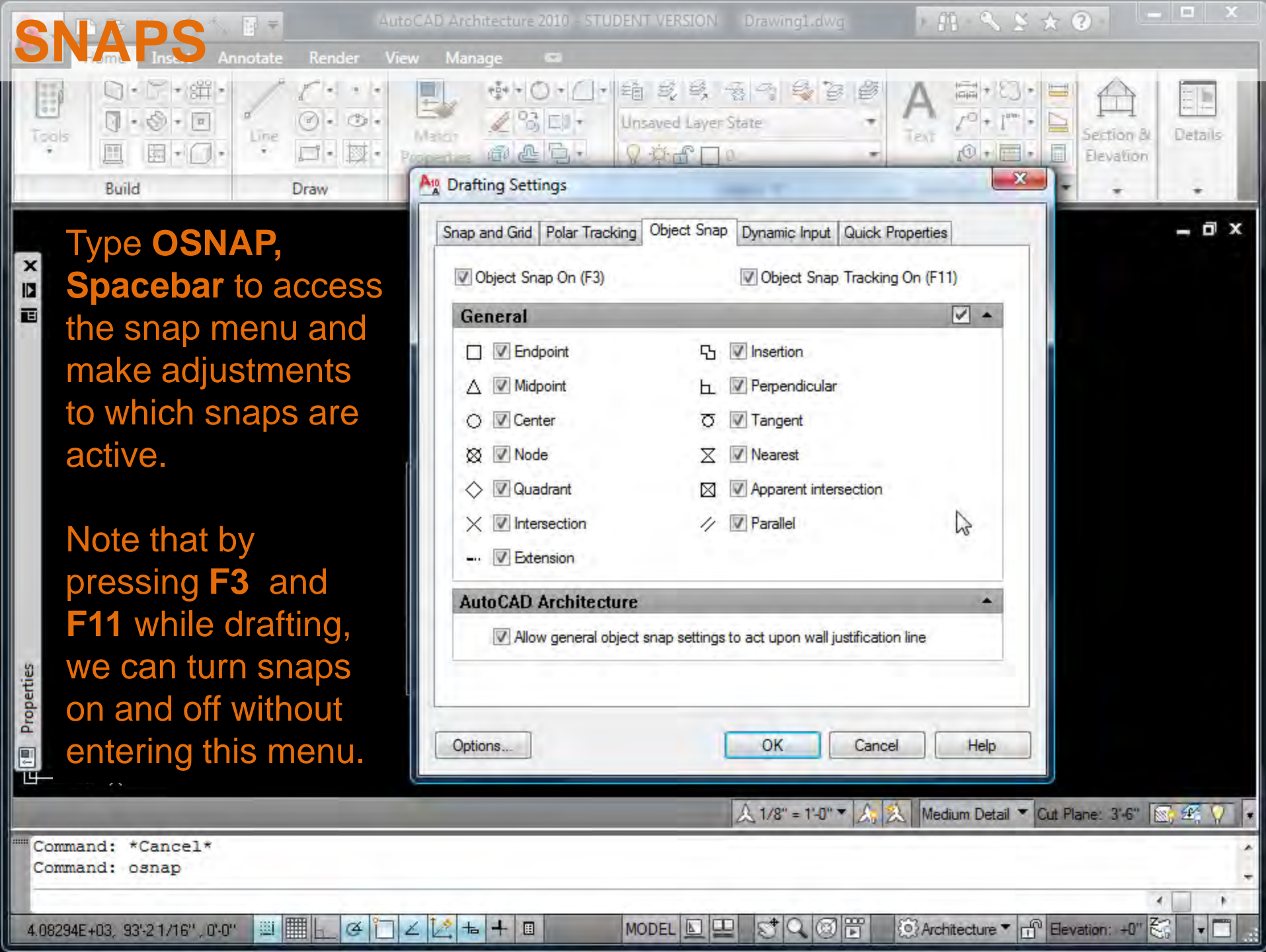
Architecture

Elevation: +0'

DISTANCE







Type **L**, **Spacebar** to activate the line command.
Hover over an existing object and note the “snap” cues that appear.

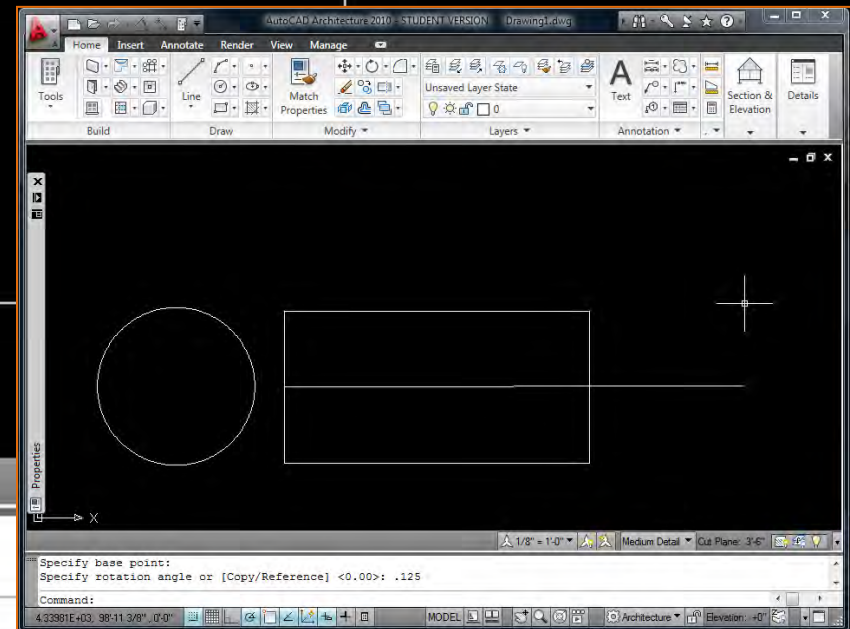
Click again on the screen to complete the line.



Specify next point or [Undo]: *Cancel*
Command: *Cancel*

Command: L LINE Specify first point:

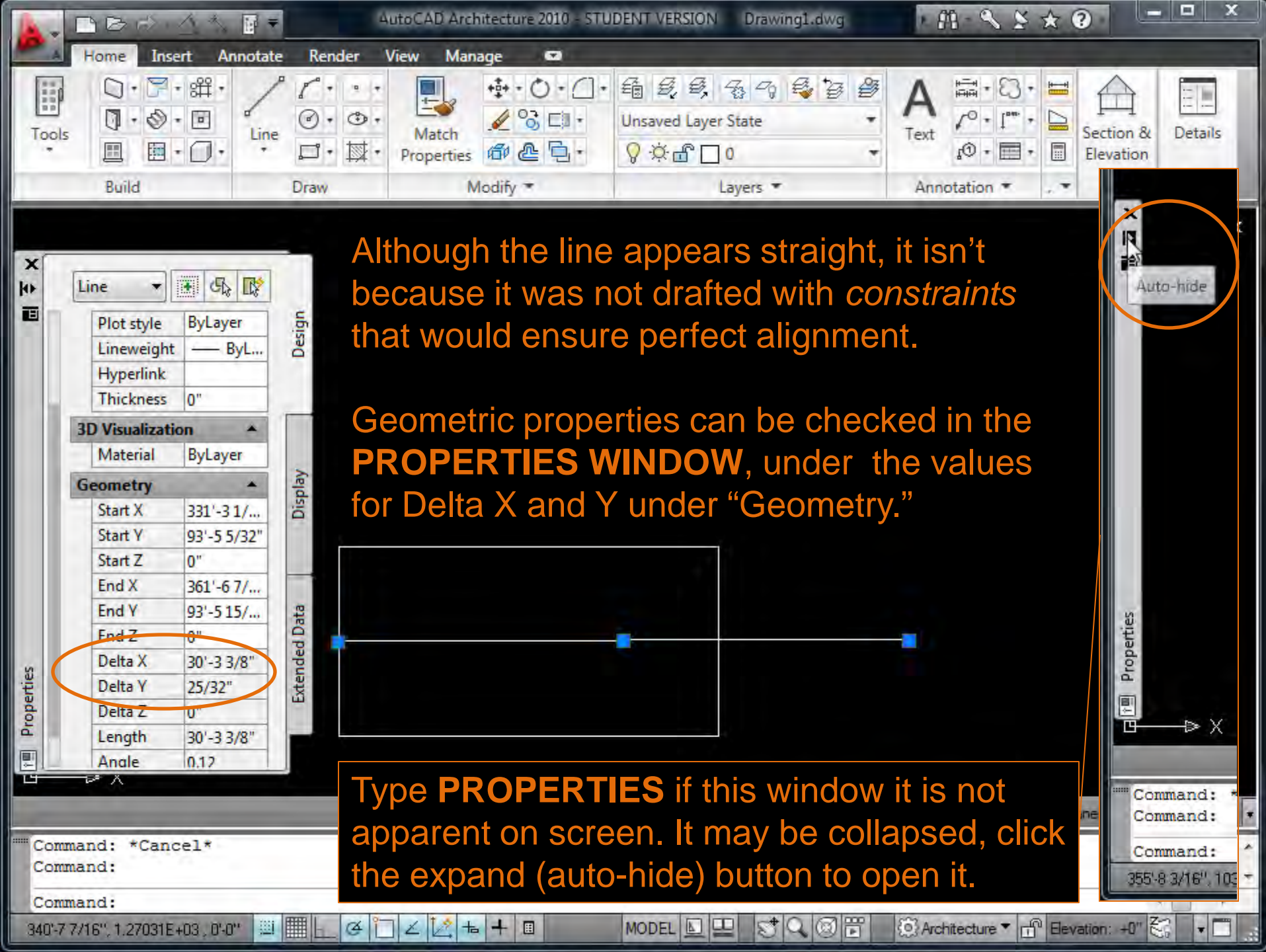
331'-3 1/16", 93'-5 5/32", 0'-0"



MODEL

Architecture

Elevation: +0'



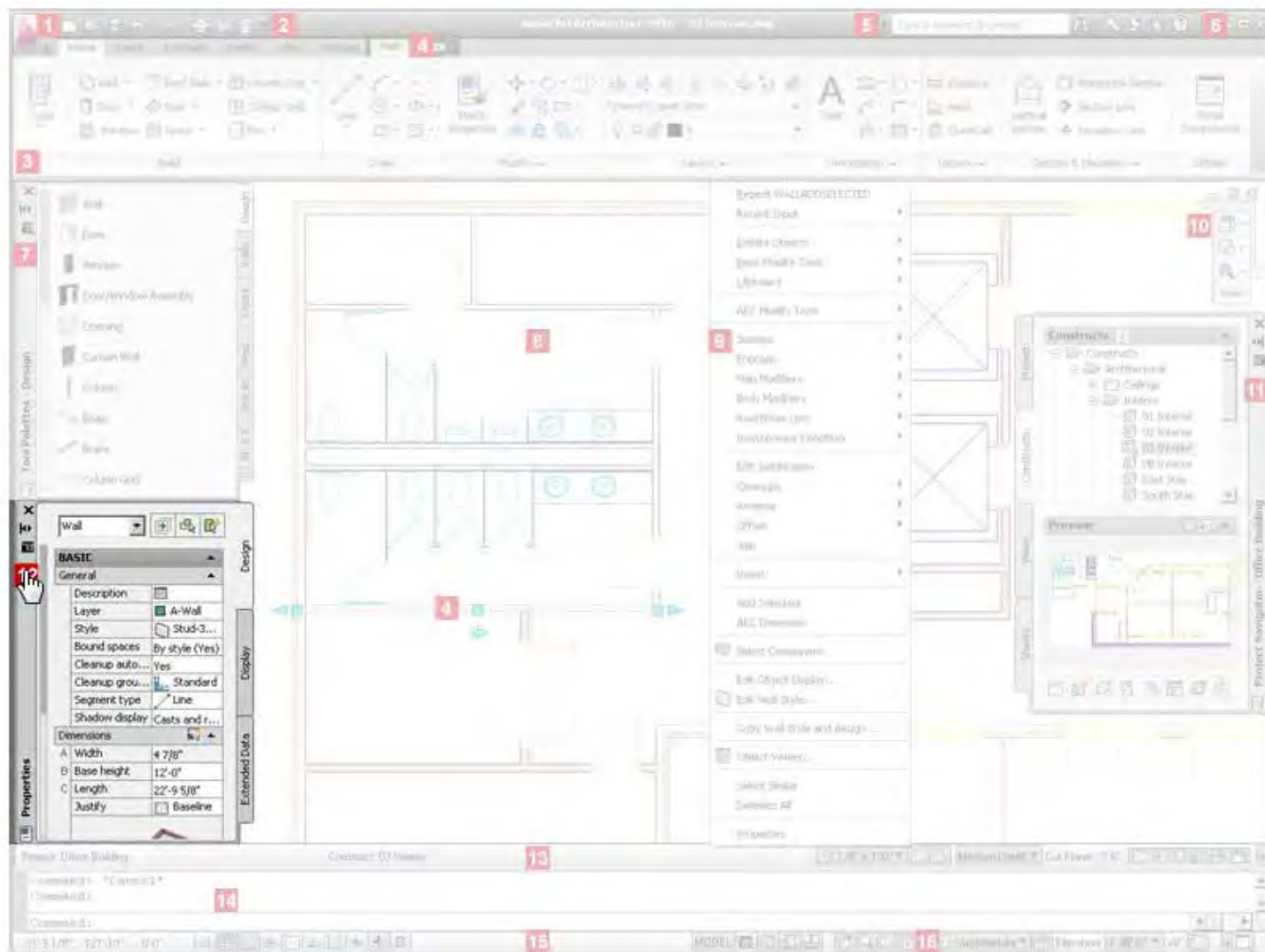
Although the line appears straight, it isn't because it was not drafted with *constraints* that would ensure perfect alignment.

Geometric properties can be checked in the **PROPERTIES WINDOW**, under the values for Delta X and Y under "Geometry."

Type **PROPERTIES** if this window it is not apparent on screen. It may be collapsed, click the expand (auto-hide) button to open it.

12 Properties Palette

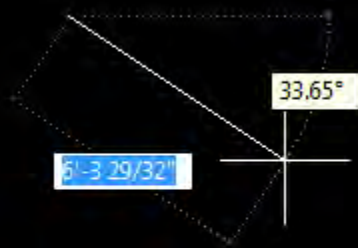
You can use the Properties palette to enter values for objects as you create them or to edit the values of existing objects that you select.



POLAR SNAP ON AND OFF (F10)

To ensure drafted lines are perfectly aligned orthogonally, constraints must be set.

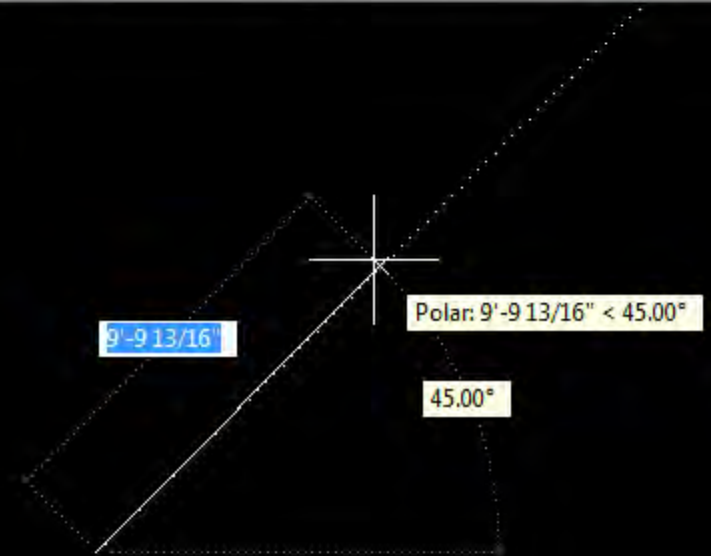
Type **L**, **Spacebar** and click once to begin drawing a line. Notice that this line can be drafted at any angle on the screen.



Command: *Cancel*
Command: 1 LINE Specify first point:
Specify next point or [Undo]:

322'-5 1/16", 118'-3 3/4", 0'-0"

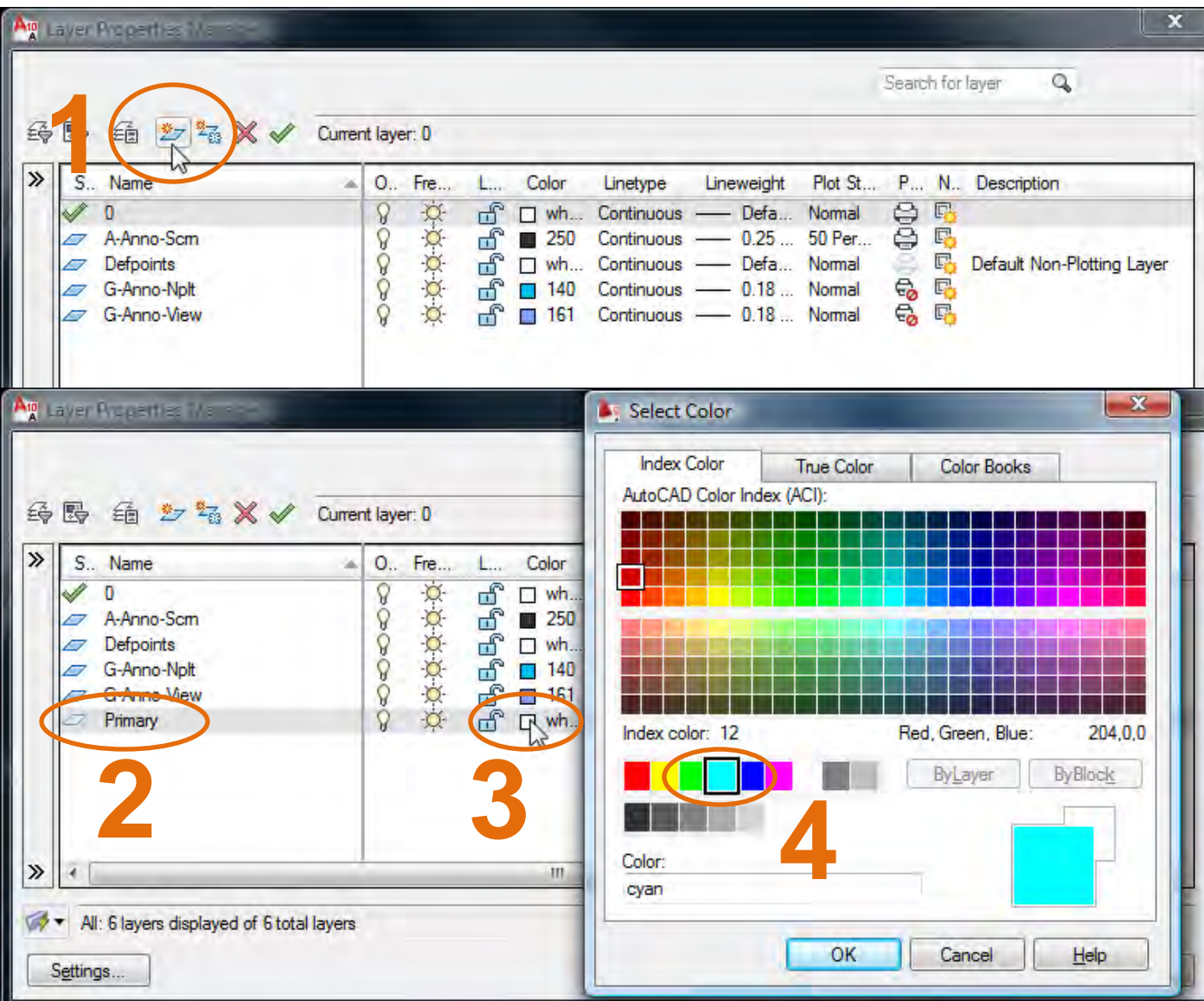
To constrain the line, press **F10**. This turns "Polar On" or "Polar Off," allowing the line to "snap" to polar angles and coordinates.



Command: *Cancel*
Command: 1 LINE Specify first point:
Specify next point or [Undo]: <Polar on>

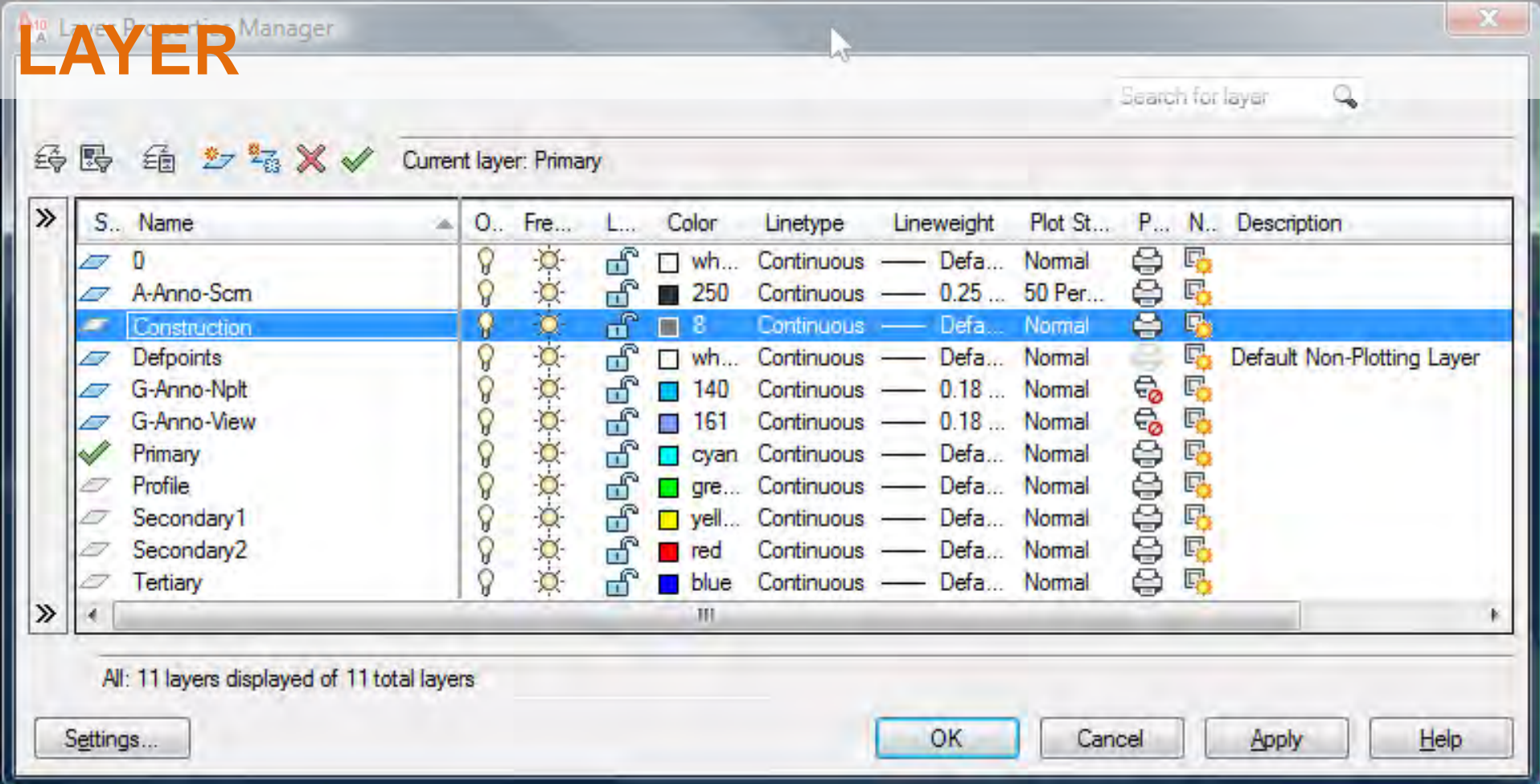
324'-1 3/16", 128'-9 1/8", 0'-0"

Just as in hand drafting, our drawings will quickly become very complex and layered and we must work with line weights to differentiate cut through elements from surface textures, foreground elements from background, etc.

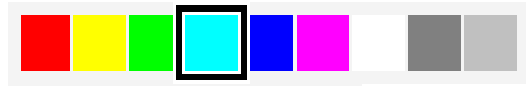


In AutoCAD we will work with color-coded Layers, each of which will signify a line weight. Type **LAYER**, Spacebar to access the menu.

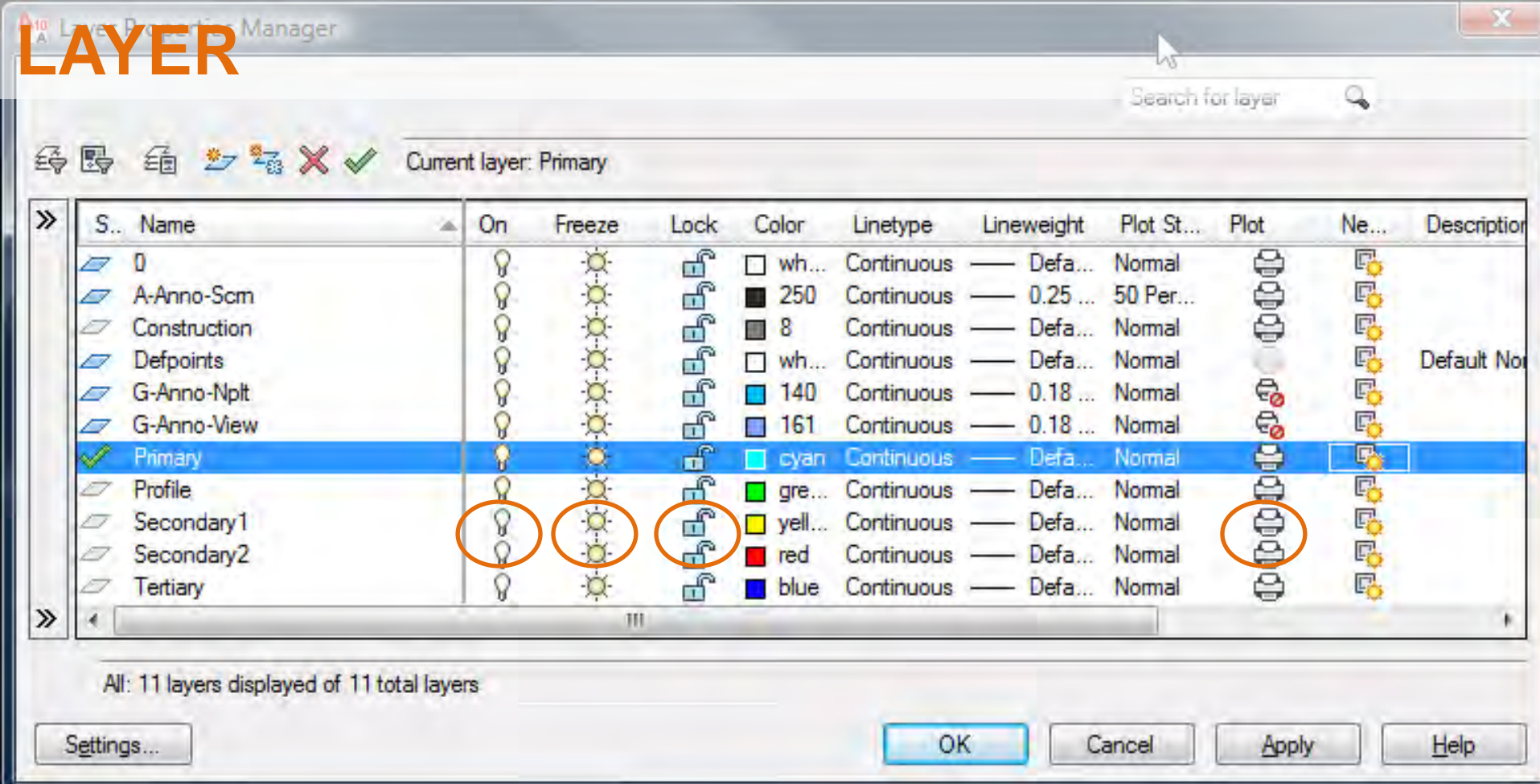
1. Add a **new layer**.
2. Name it **Primary**.
3. Select the “white” color box.
4. Select **Cyan** from the choices that appear.



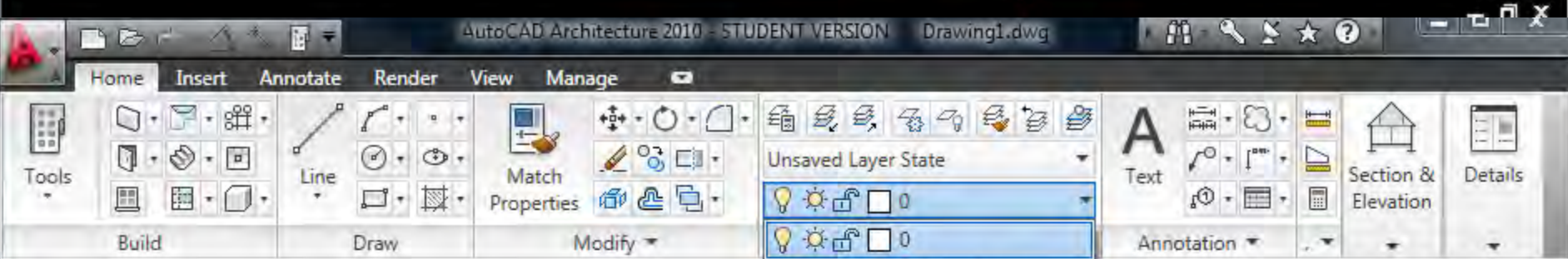
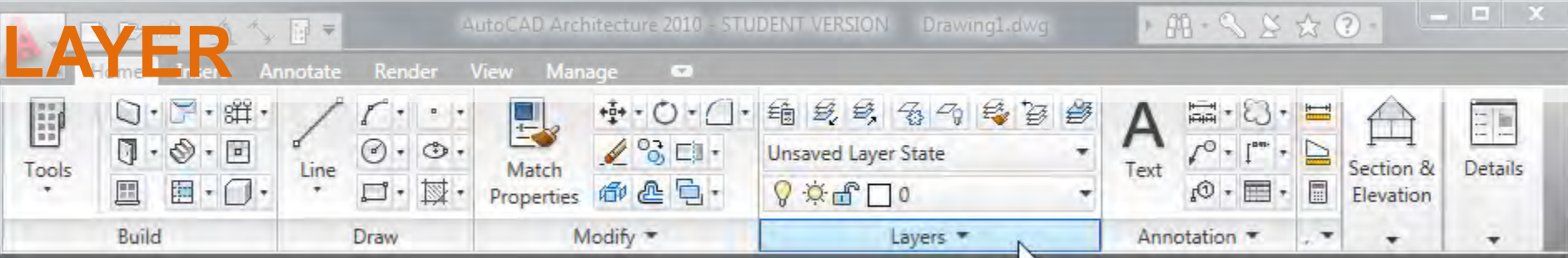
While it is tempting to select from ALL of the colors that are available, do not do this for Arch 150. Each of the 9 common colors will be linked to a pen weight in the plotter, and in the beginning this is difficult to manage.



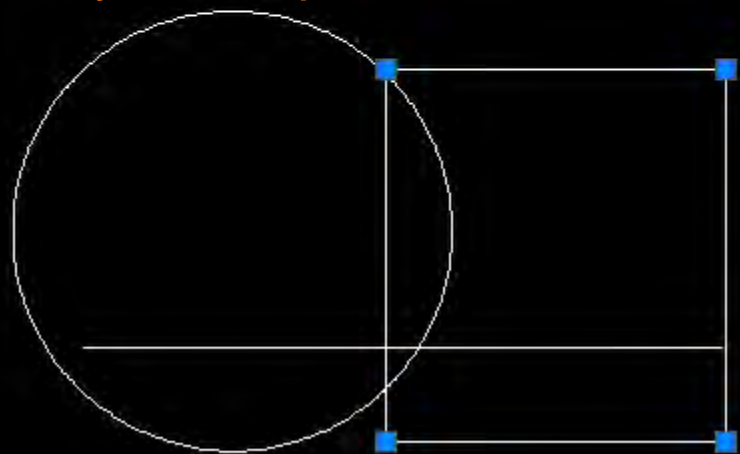
Set up 7 line weights as indicated above: Primary (Cyan), Profile (Green), Secondary 1 (Yellow), Secondary 2 (Red), Tertiary (Blue), Construction (8).



If lines do not appear on your screen, cannot be adjusted, or in the future do not plot, check the **LAYER** window first to ensure your settings for **On**, **Freeze**, **Lock** and **Plot** are correct. Try clicking these settings now to see how adjustments can be made. Note, too, that the Defpoints layer will not plot (“Default Non-Plotting Layer”) – don’t use this layer.



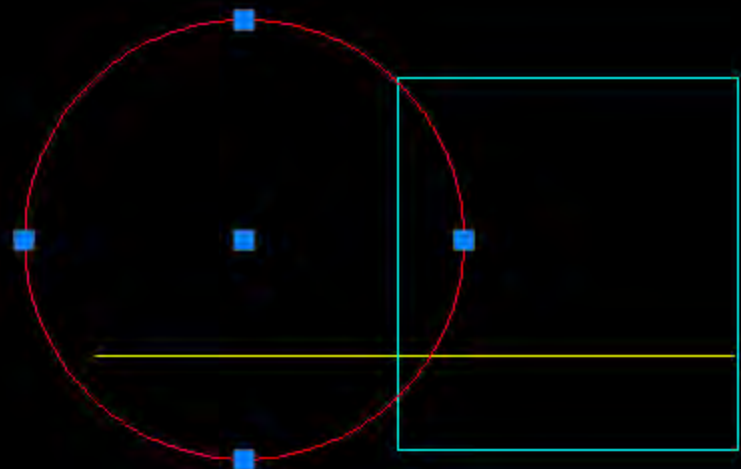
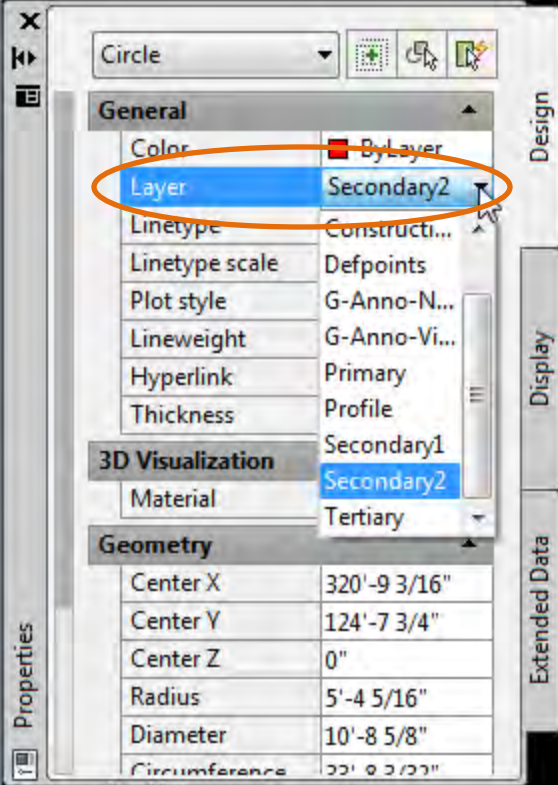
To assign an object to a Layer if it's already been drafted, access the Layers tab pulldown menu.



- Unsaved Layer State
- Lightbulb, Sun, Lock, White square, 0
- Lightbulb, Sun, Lock, White square, 0
- Lightbulb, Sun, Lock, Black square, A-Anno-Scrn
- Lightbulb, Sun, Lock, Gray square, Construction
- Lightbulb, Sun, Lock, White square, Defpoints
- Lightbulb, Sun, Lock, Blue square, G-Anno-Nplt
- Lightbulb, Sun, Lock, Purple square, G-Anno-View
- Lightbulb, Sun, Lock, Cyan square, Primary
- Lightbulb, Sun, Lock, Green square, Profile
- Lightbulb, Sun, Lock, Yellow square, Secondary1
- Lightbulb, Sun, Lock, Red square, Secondary2
- Lightbulb, Sun, Lock, Blue square, Tertiary



Layers may also be assigned in the **PROPERTIES** window. Be sure to assign the object to a Layer and not a Color.



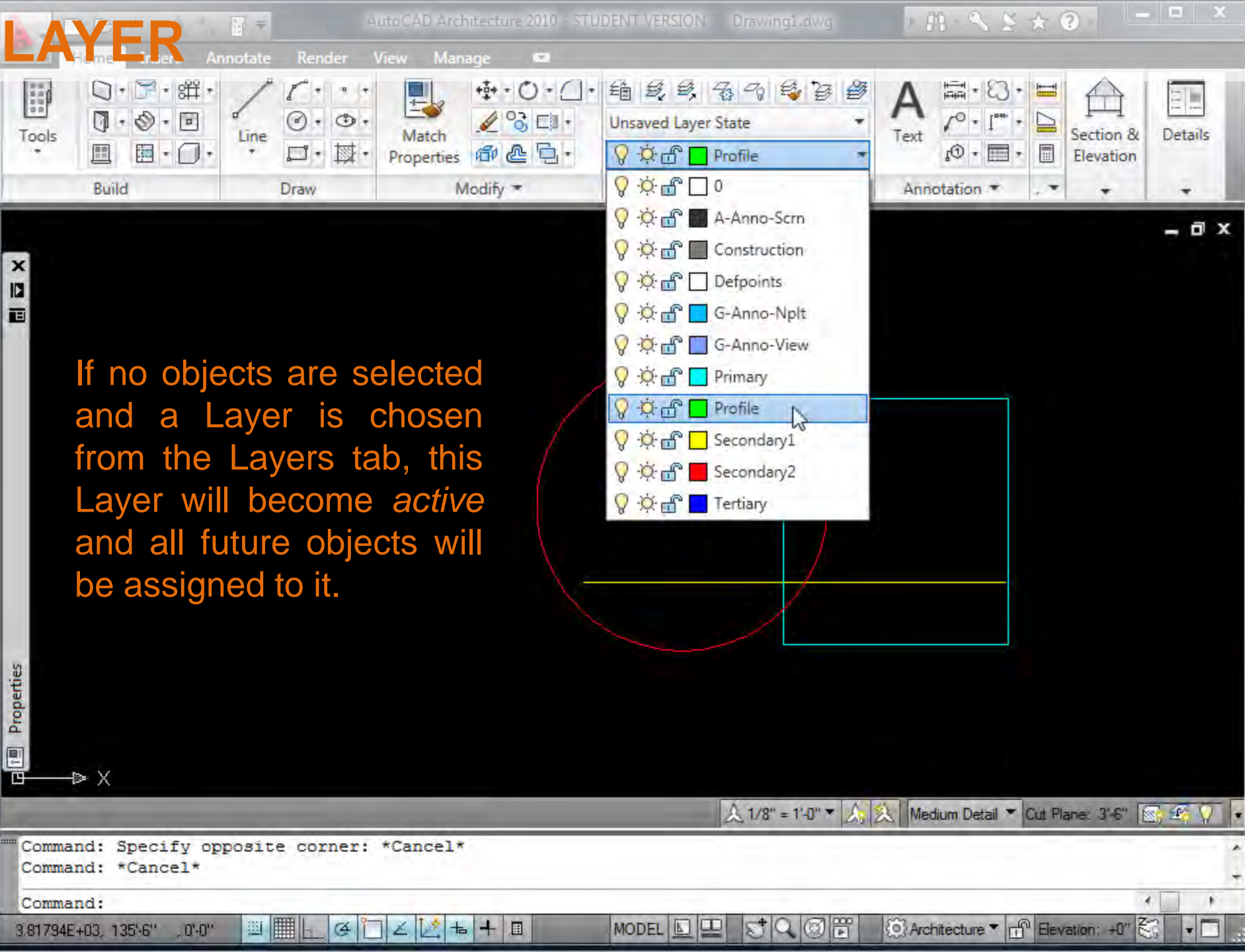
Press ESC or ENTER to exit, or right-click to display shortcut menu.

Command:

Command:

LAYER

If no objects are selected and a Layer is chosen from the Layers tab, this Layer will become *active* and all future objects will be assigned to it.



COPY, RIGHT-CLICK MOUSE BUTTON

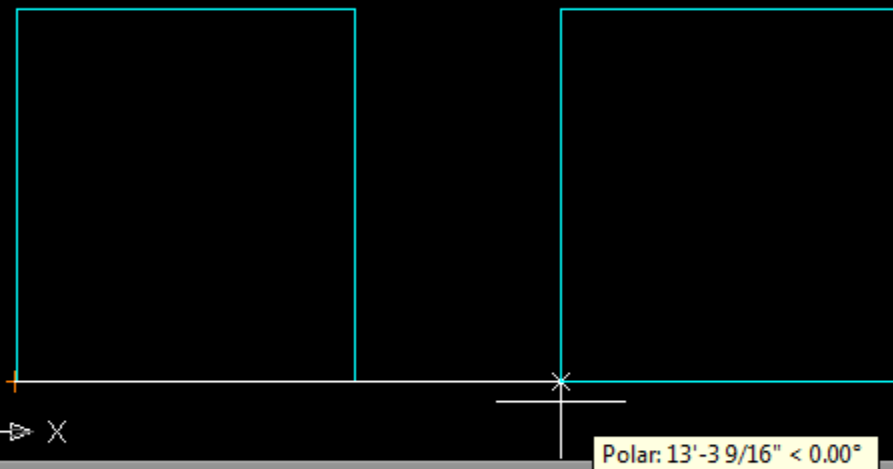
1. Type **CO**, **Spacebar** to copy an object. Note that you are prompted to select an object with a small, square cursor. Click once to select.



Command: *Cancel*
Command: co COPY
Select objects:

1

4. Type in a distance for the copy to be moved away from the base point.

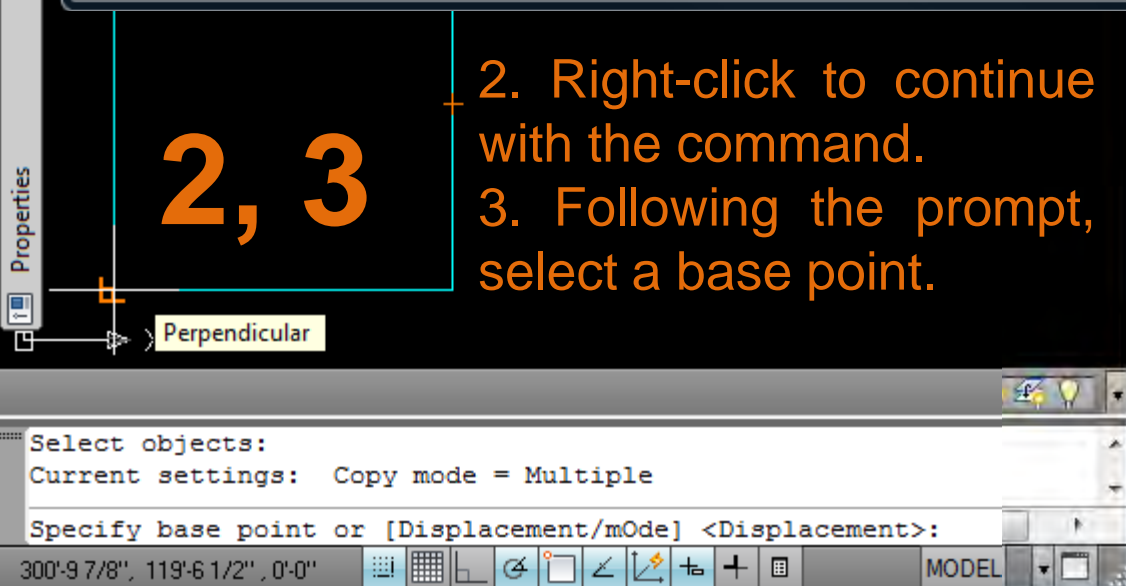


Select objects:
Current settings: Copy mode = Multiple
Specify base point or [Displacement/mOde] <Displacement>: Specify displacement>: 24

4

2, 3

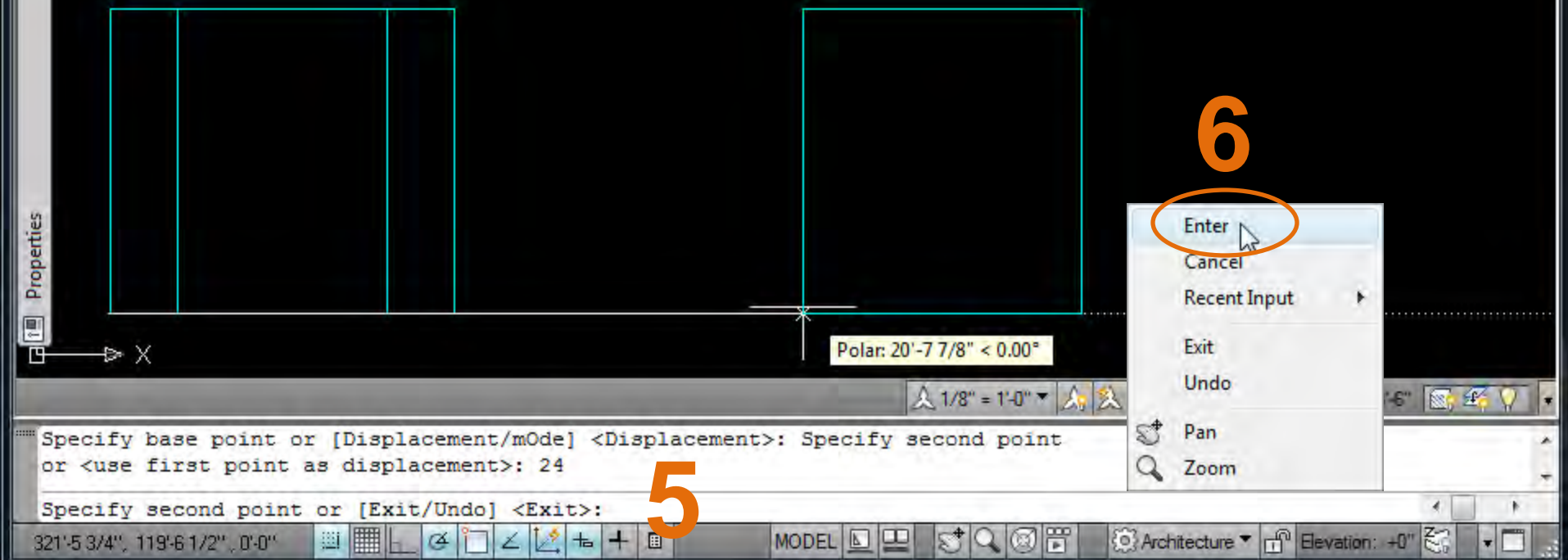
2. Right-click to continue with the command.
3. Following the prompt, select a base point.



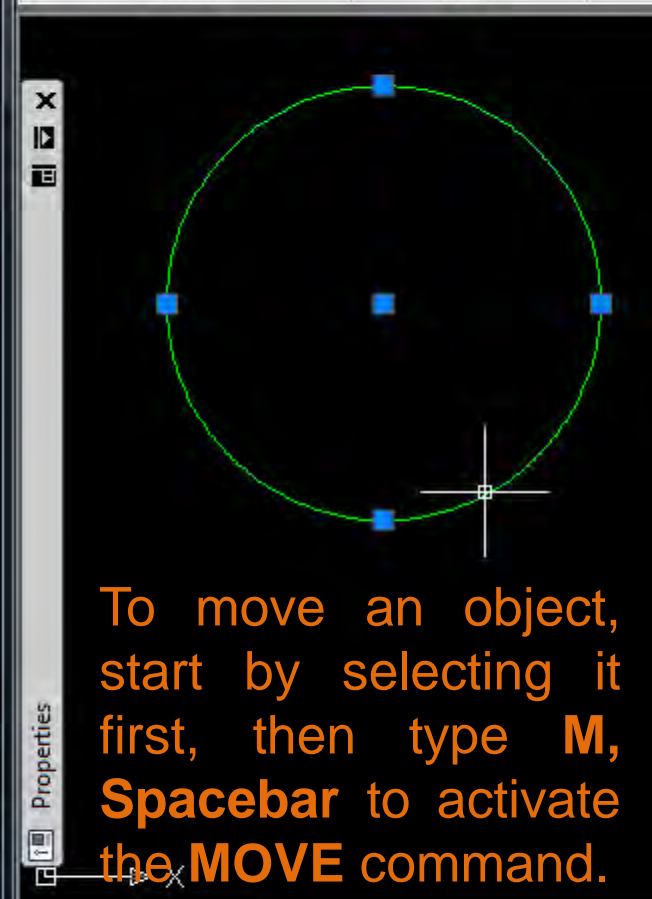
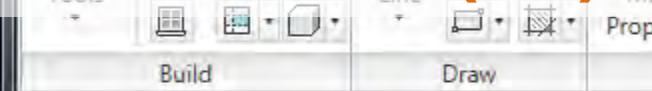
COPY, RIGHT-CLICK MOUSE BUTTON

5. Note that you can continue to make copies from the same base point by entering in additional distances.

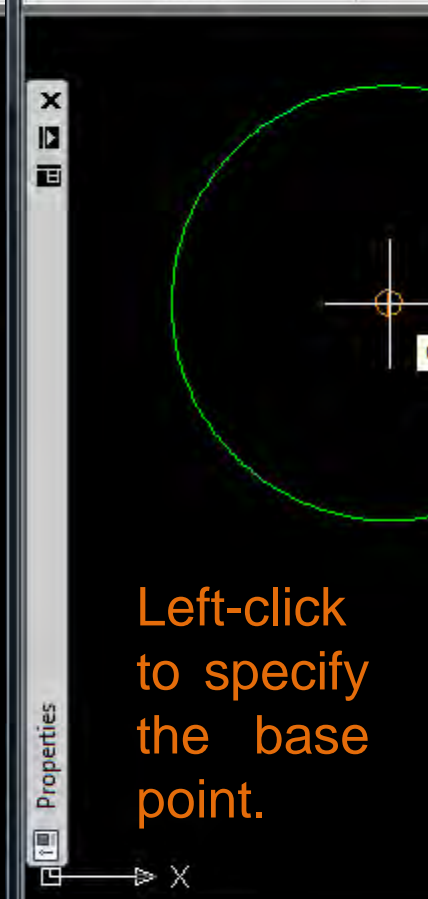
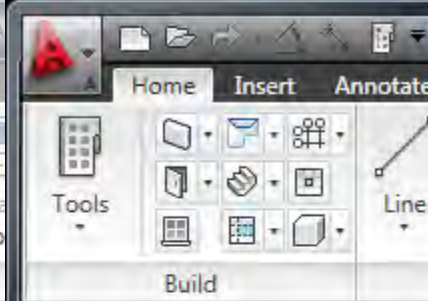
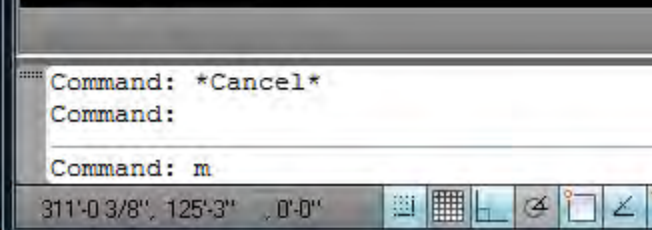
6. When you are done making copies, right-click and select **Enter** to end the command.



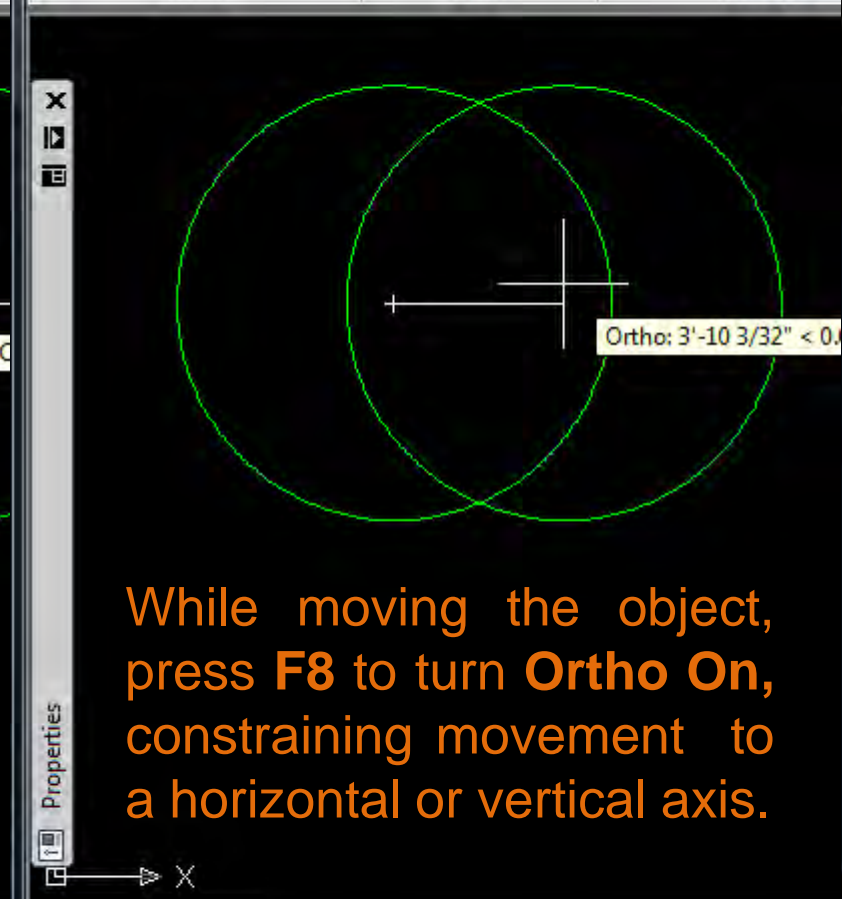
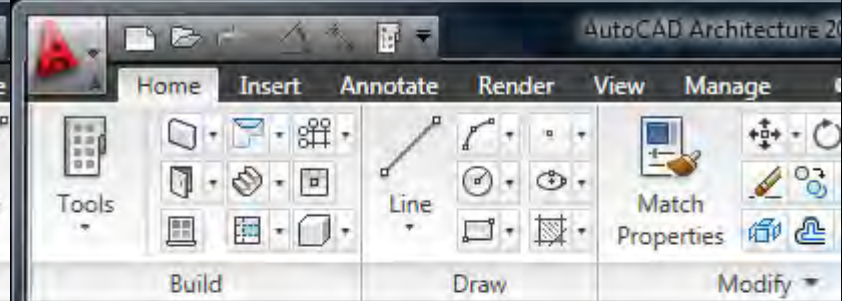
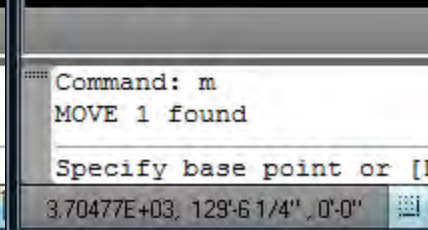
MOVE, ORTHO ON & OFF (F8)



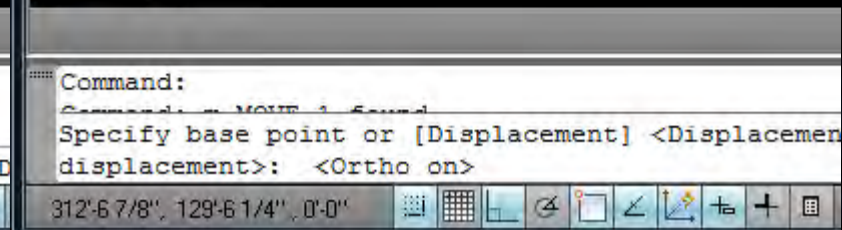
To move an object, start by selecting it first, then type **M**, **Spacebar** to activate the **MOVE** command.



Left-click to specify the base point.

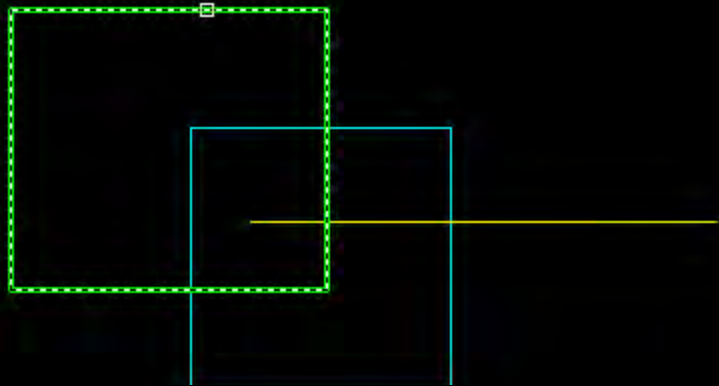


While moving the object, press **F8** to turn **Ortho On**, constraining movement to a horizontal or vertical axis.

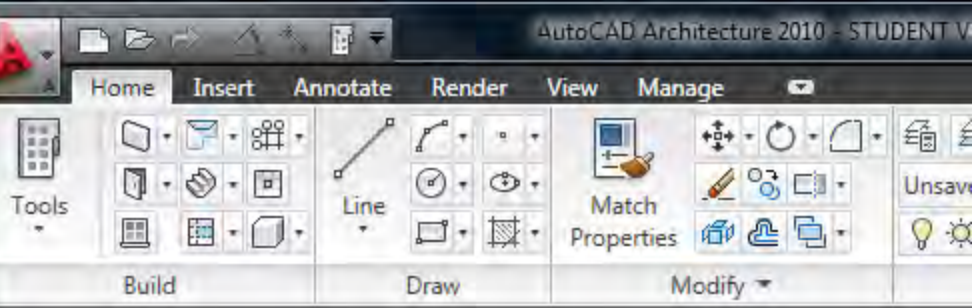


TRIM, RIGHT-CLICK

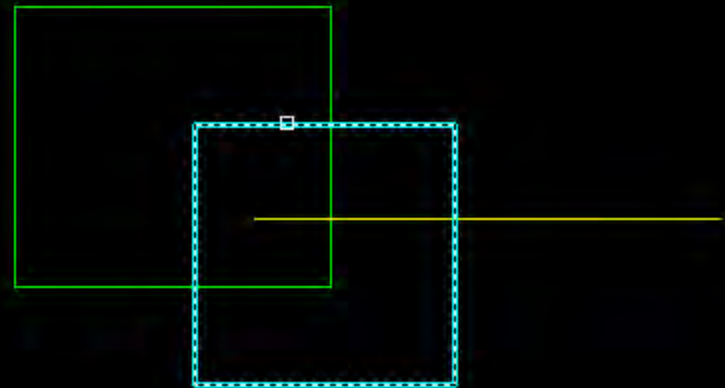
To **TRIM** an object using another object, type **TR**, **Spacebar** to activate the command.



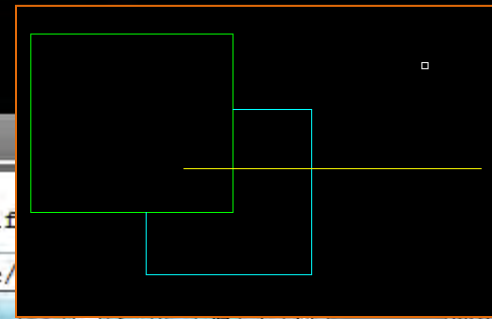
Left-click to select the object that will do the cutting, then right-click.



Left-click over the portion of the object that will be cut away.

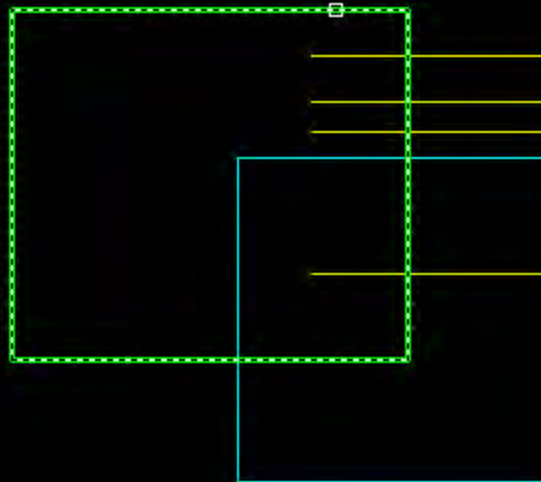


Select objects:
Select object to trim or shift
[Fence/Crossing/Project/Edge/]



TRIM, FENCE

To **TRIM** multiple objects at once, type **TR**, **Spacebar**.



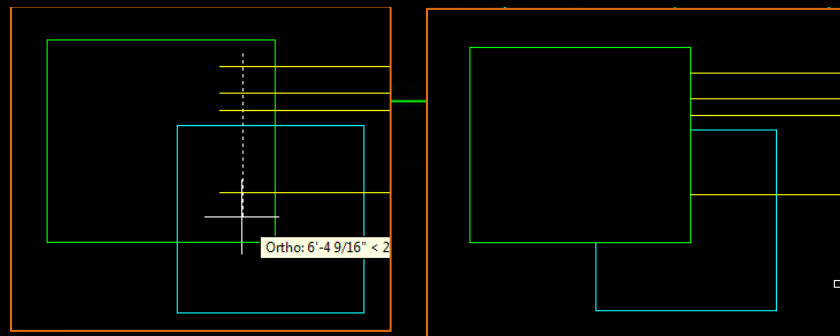
Left-click to select the object that will do the cutting, then right-click.

Current settings: Projection=UCS, Edge=None
Select cutting edges ...
Select objects or <select all>:

316'-4", 131'-5 7/16", 0'-0"

Type **F**, **Spacebar** for fence, following the prompt.

Draw a line through the objects to be cut away, left-clicking at both ends, then right-click to execute.

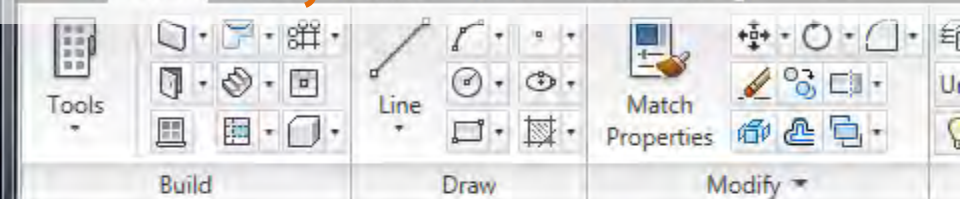


Press **ESC** to exit the command

Select objects:
Select object to trim or shift-select to extend or
[Fence/Crossing/Project/Edge/eRase/Undo]: F

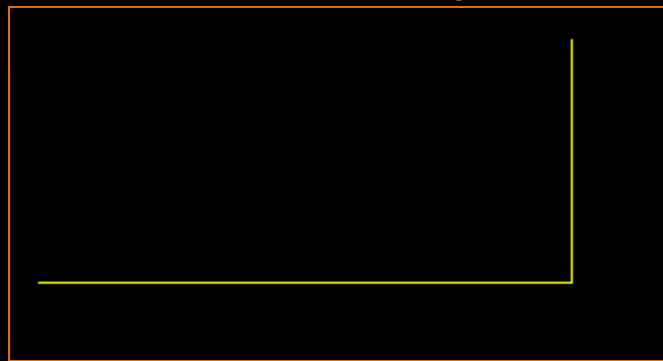
316'-7 3/4", 1.57144E+03, 0'-0"

FILLET, RADIUS

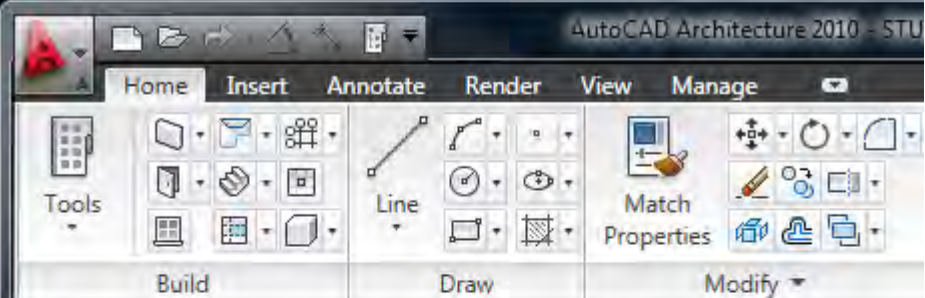


Use the **FILLET** tool to extend and join lines: type **F**, **Spacebar**.

Follow command line prompts to select the two lines to join.

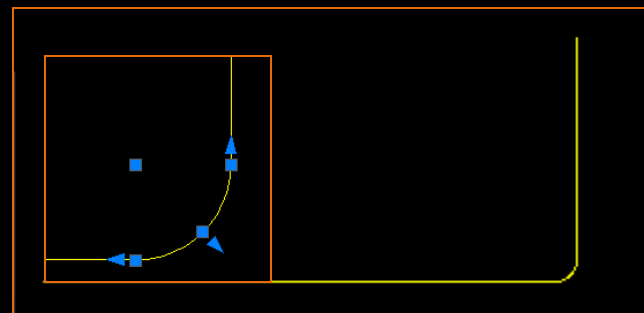


Select first object or [Undo/Polyline/Radius/Trim/Multipl
315'1-7/8",129'6-1/2",0"
Select second object or shift-select to apply corner:
3.73019E+03, 1.51106E+03, 0'-0"



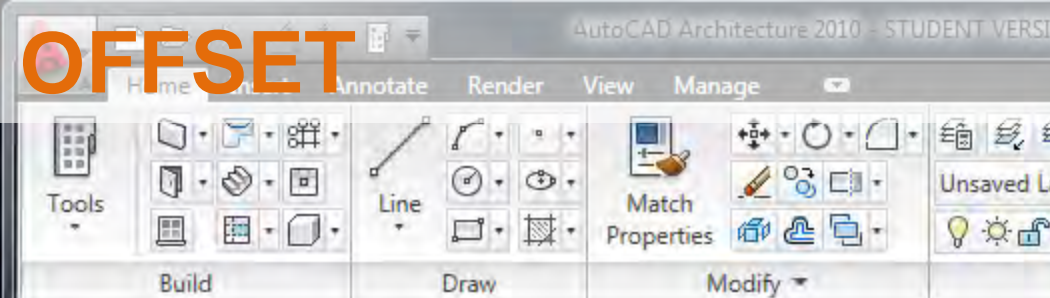
Use the **FILLET** tool to create a radius between two lines: type **F**, **Spacebar**.

Follow prompts to assign a dimension to the radius.



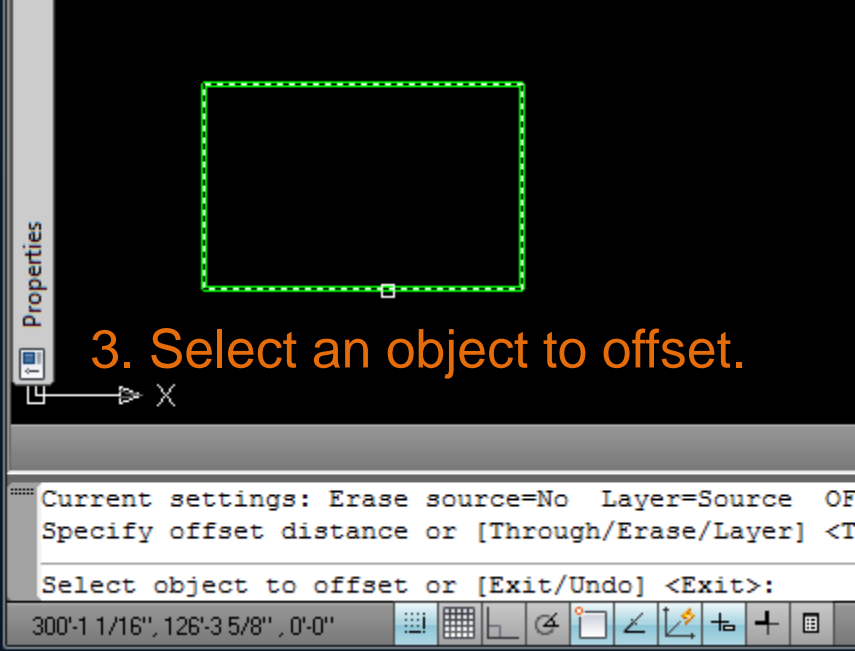
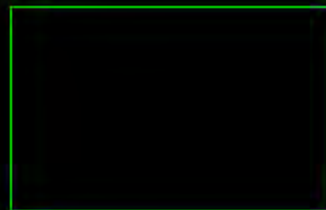
Note that the curve formed is an object on its own.

Current settings: Mode = Trim, Radius = 0"
Select first object or [Undo/Polyline/Radius/Trim/Multipl
Specify fillet radius <0">: 6
3.85581E+03, 120'-1 9/16", 0'-0"

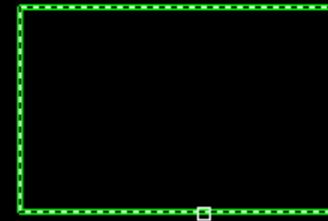


1. Type **O** to **OFFSET** an object from an original.

2. Following the prompts, enter in a distance for the offset.



3. Select an object to offset.

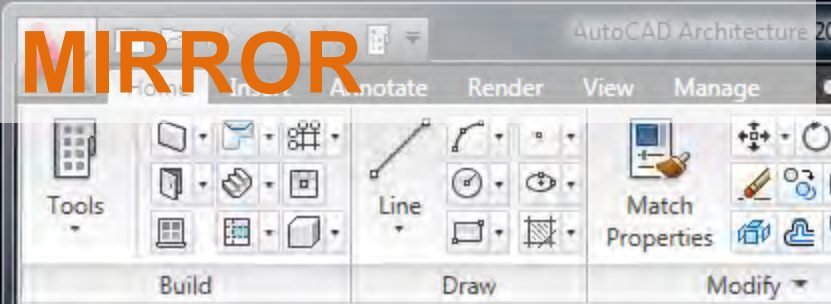


Current settings: Erase source=No Layer=Source OF
Specify offset distance or [Through/Erase/Layer] <T
Select object to offset or [Exit/Undo] <Exit>:
300'-1 1/16", 126'-3 5/8", 0'-0"



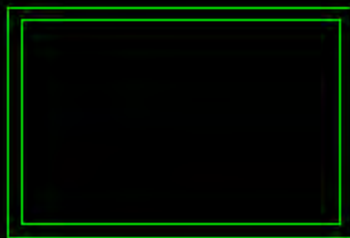
4. Click in the direction the offset object should be placed.

Command: p PAN
Press ESC or ENTER to exit, or right-click to displ
Press pick button and drag to pan.

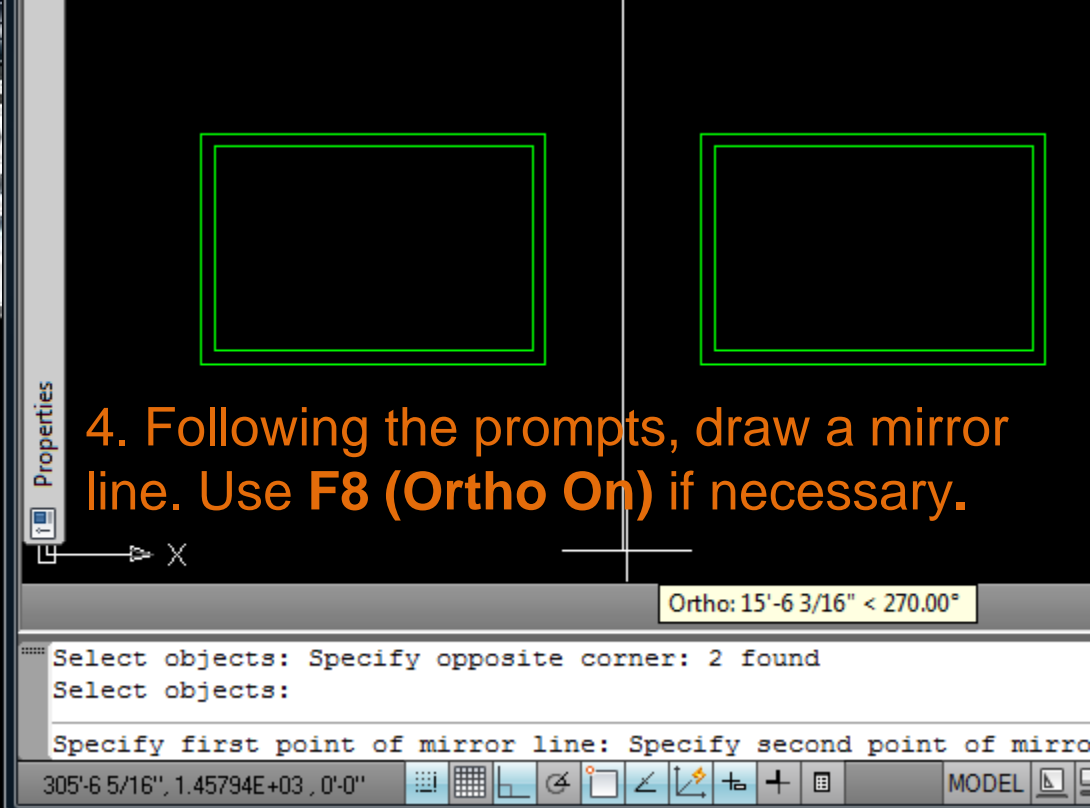


1. Type **MI** to activate the **MIRROR** command.

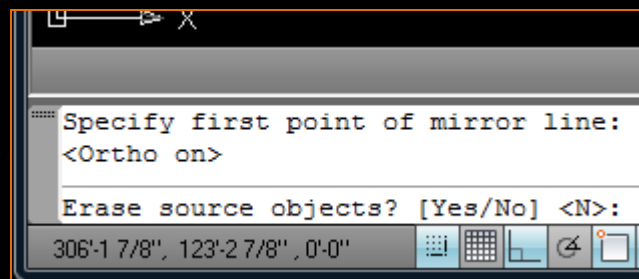
2. Following the prompts, select the object(s) to be mirrored.



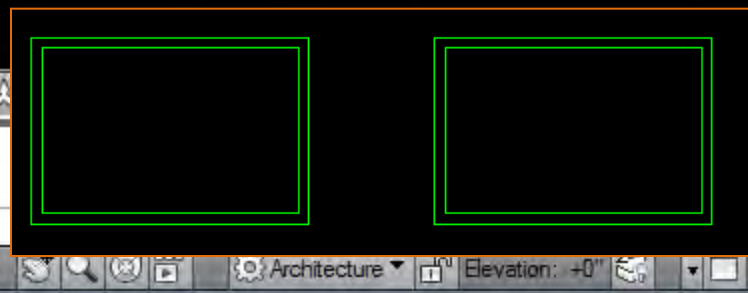
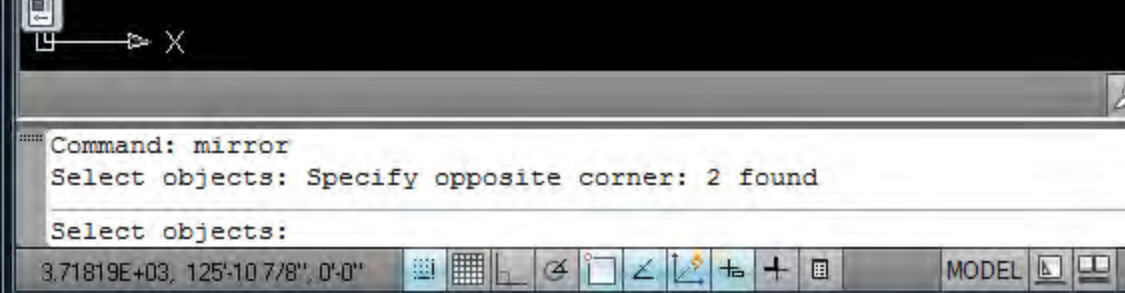
3. Right-click to continue.

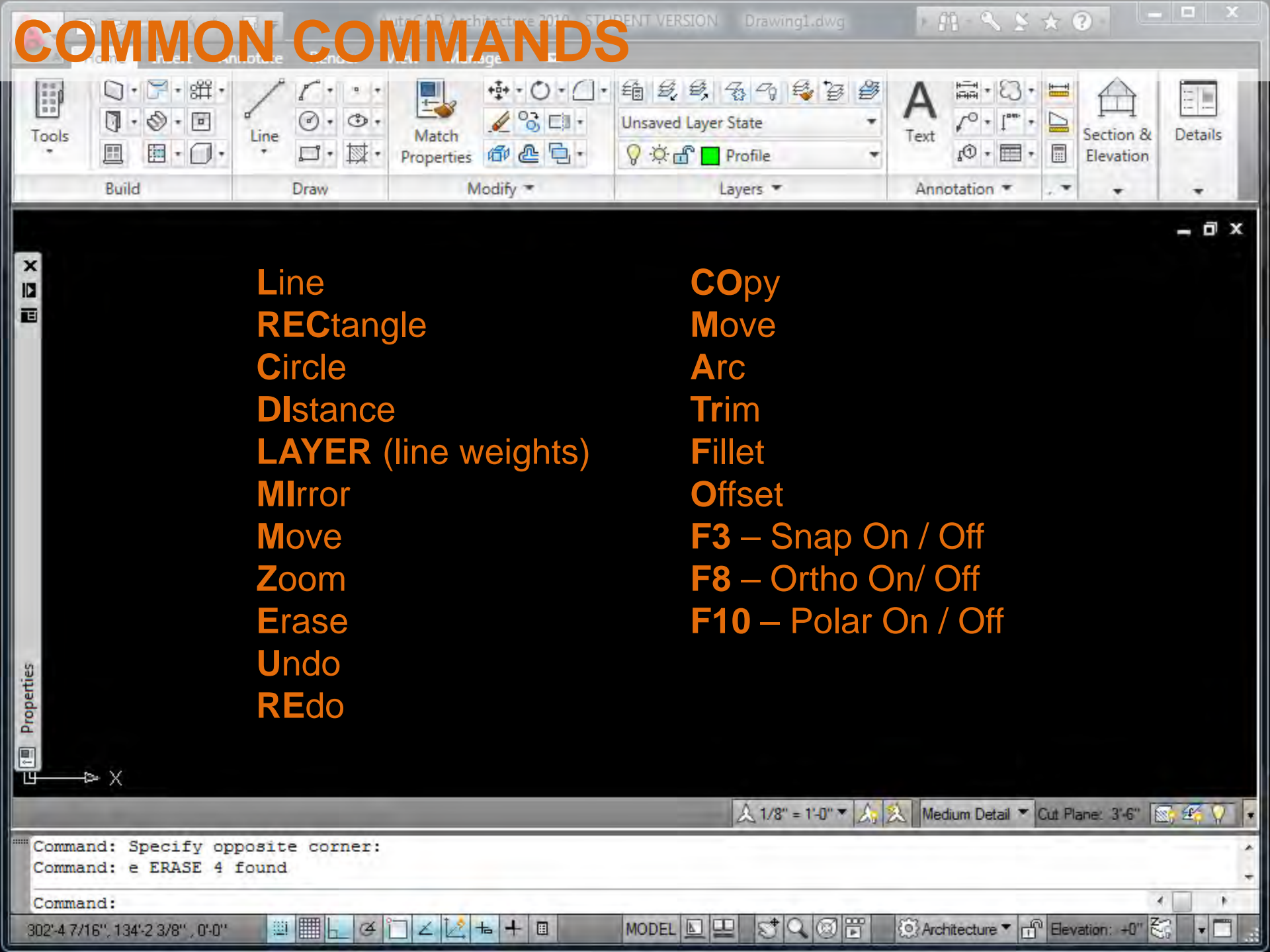


4. Following the prompts, draw a mirror line. Use **F8 (Ortho On)** if necessary.



5. Note the prompt to erase source (original).





COMMON COMMANDS

- | | |
|----------------------|----------------------|
| Line | COpy |
| REctangle | MovE |
| Circle | Arc |
| Distance | Trim |
| LAYER (line weights) | Fillet |
| Mirror | Offset |
| Move | F3 – Snap On / Off |
| Zoom | F8 – Ortho On/ Off |
| Erase | F10 – Polar On / Off |
| Undo | |
| REdo | |

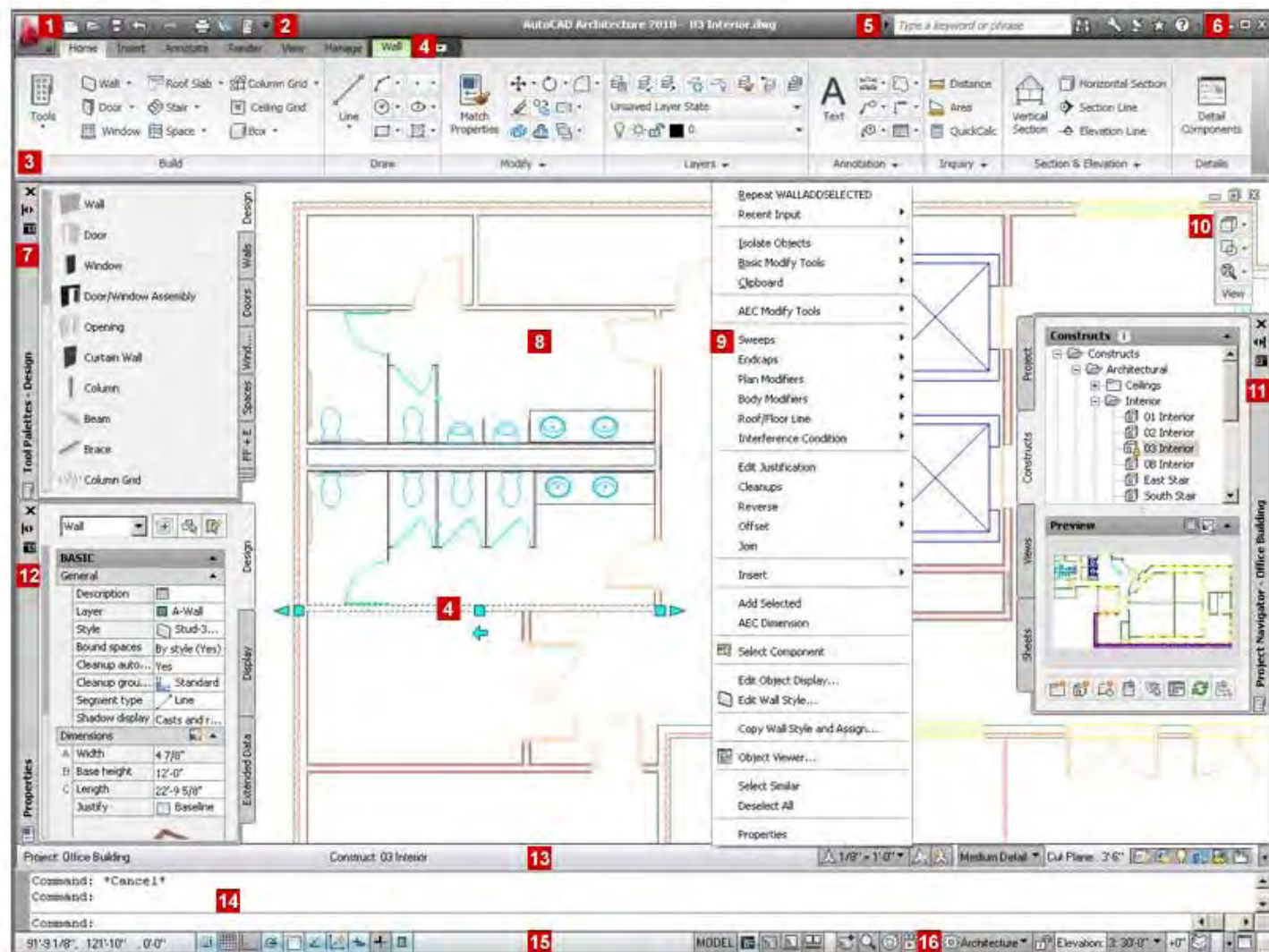
Command: Specify opposite corner:
Command: e ERASE 4 found
Command:

302'-4 7/16", 134'-2 3/8", 0'-0"

User Interface Overview

Key Features

Move the cursor over the interface >>

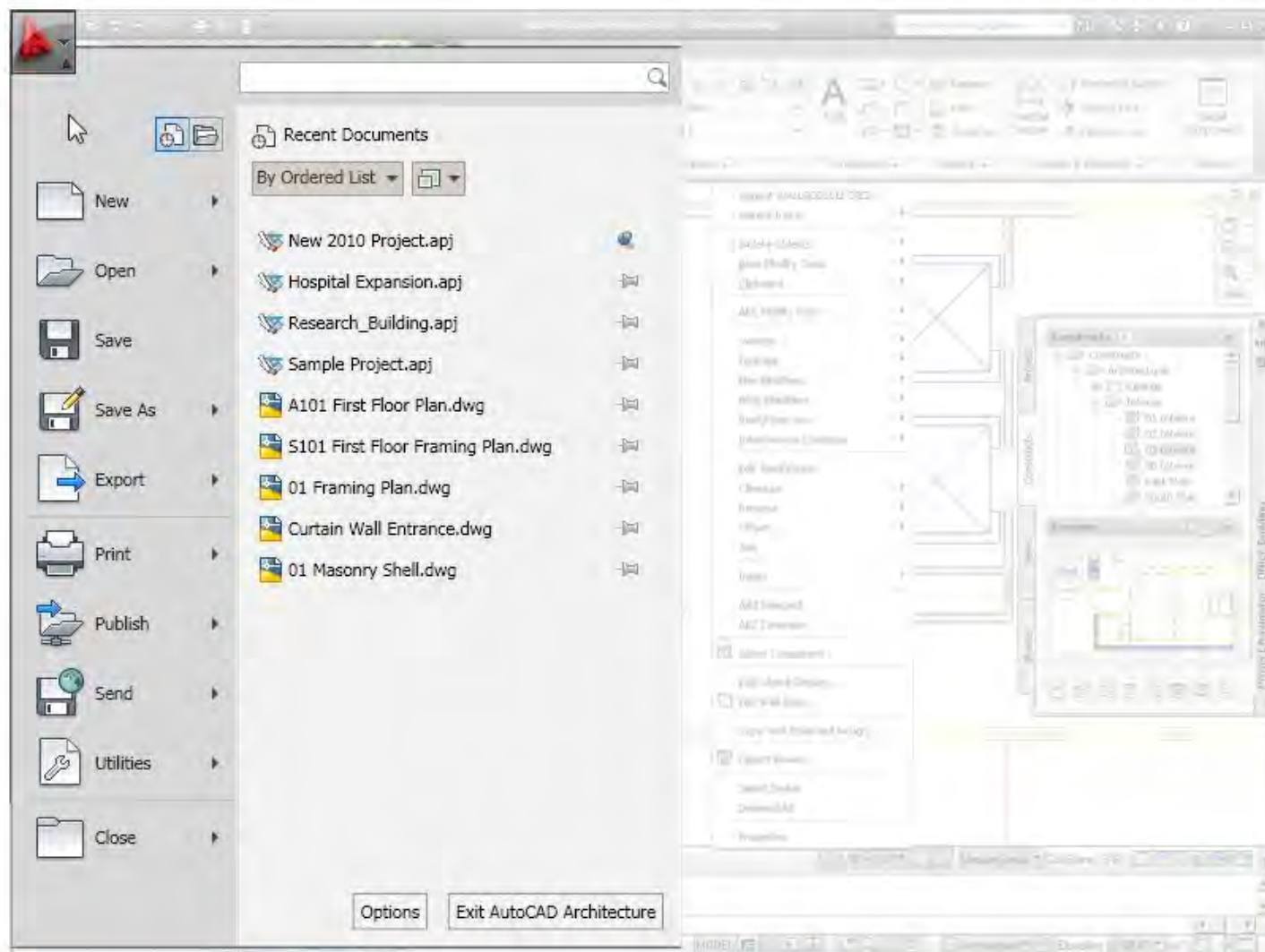


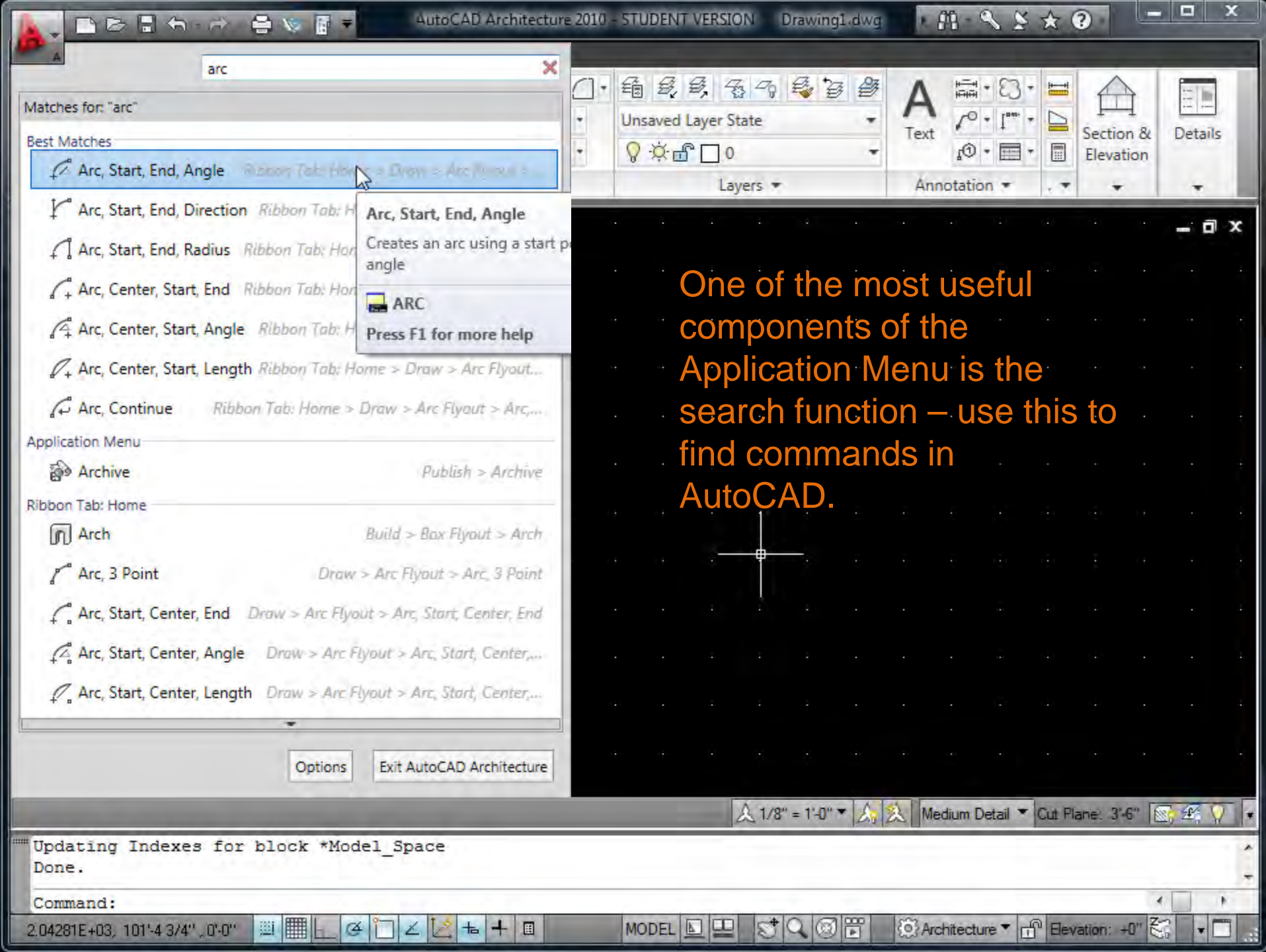
User Interface Overview

1 Application Menu

The application menu provides access to commands in the pulldown menus. You enter keywords to search for a menu item. The application menu tracks recent documents, open documents, and recent actions. Recent documents include all file types that can be opened with AutoCAD Architecture, such as DWG, DWT, APJ, and DST. You select a recent project by name and make it the current project.

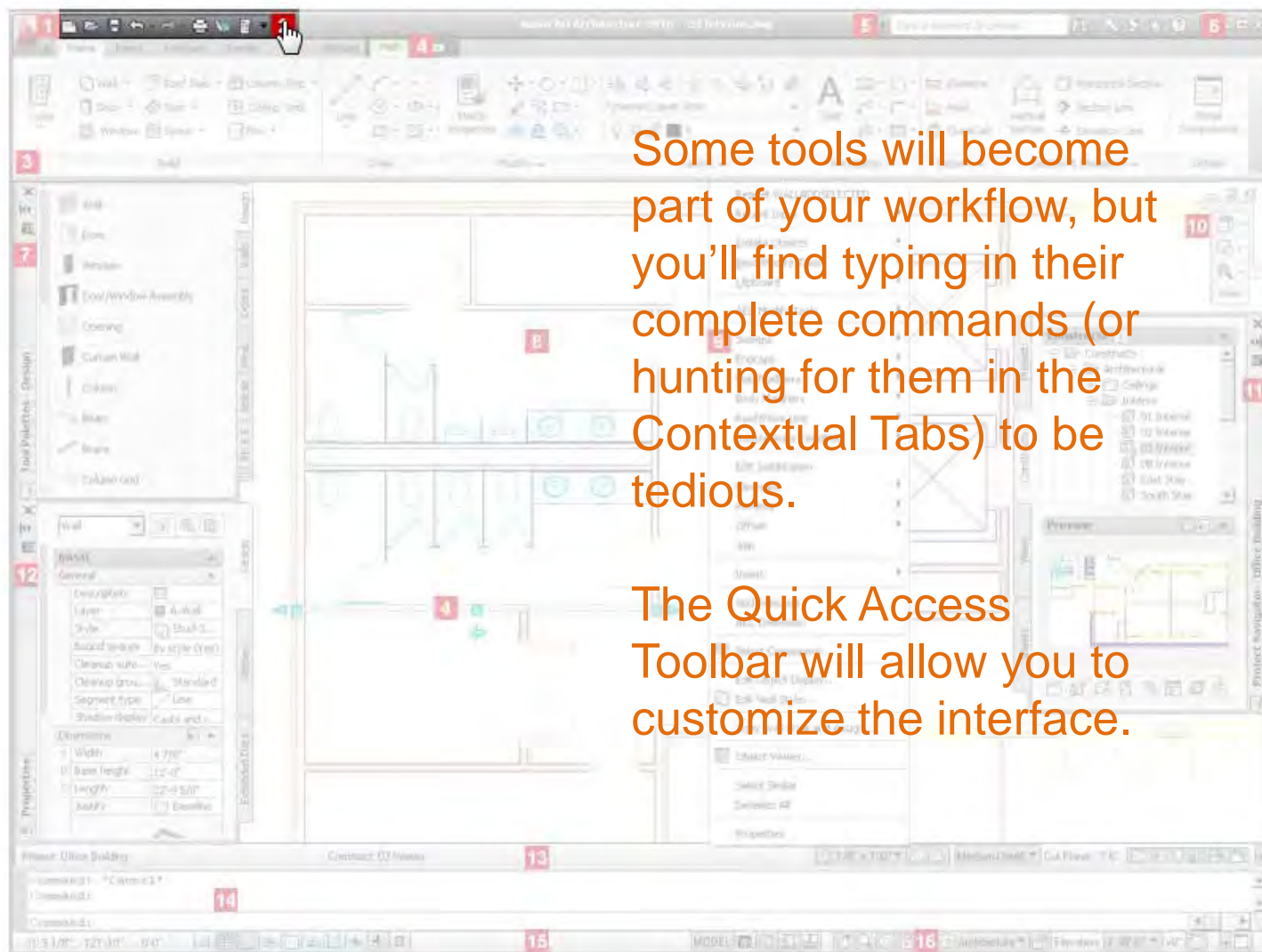
Push pins keep a file in the list of recently opened items in the application menu. On the ribbon, push pins are used to keep a ribbon panel open.





2 Quick Access Toolbar

Put your most used commands on the Quick Access toolbar. The Project Browser and the Project Navigator palette are included by default so you can easily access projects and manage project drawings. To add or remove commands, click the down arrow, and select Customize Quick Access Toolbar, or copy commands from the ribbon.



Some tools will become part of your workflow, but you'll find typing in their complete commands (or hunting for them in the Contextual Tabs) to be tedious.

The Quick Access Toolbar will allow you to customize the interface.

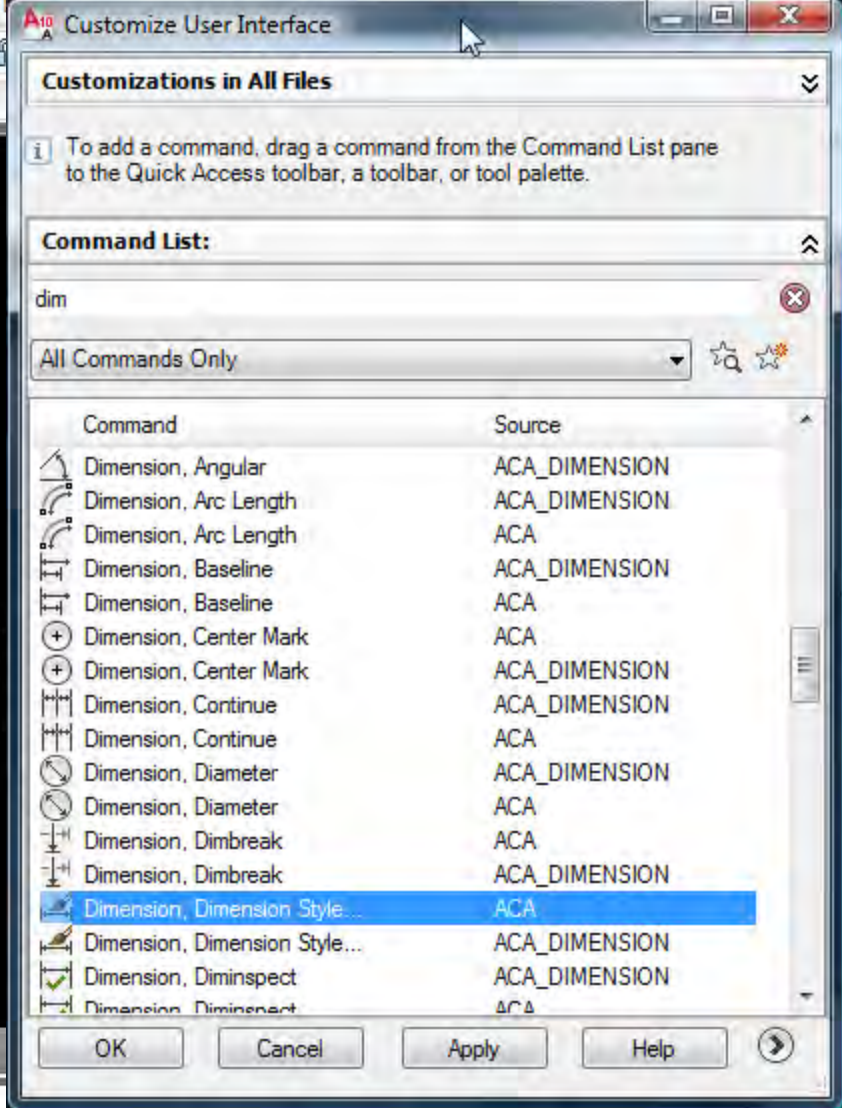
To add tools, select **More Commands** from the pulldown menu. To remove commands from the Quick Access toolbar, right-click on them and select **Remove**.

Customize Quick Access Toolbar

- ✓ New
- ✓ Open
- Save
- Undo
- ✓ Redo
- Plot
- Project Browser
- ✓ Project Navigator
- Match Properties
- Batch Plot
- Plot Preview
- Properties
- Render
- More Commands...
- Show Menu Bar
- Show Below the Ribbon

More Commands...

Press F1 for more help



- Remove from Quick Access Toolbar
- Add Separator
- Customize Quick Access Toolbar
- Show Quick Access Toolbar below the Ribbon

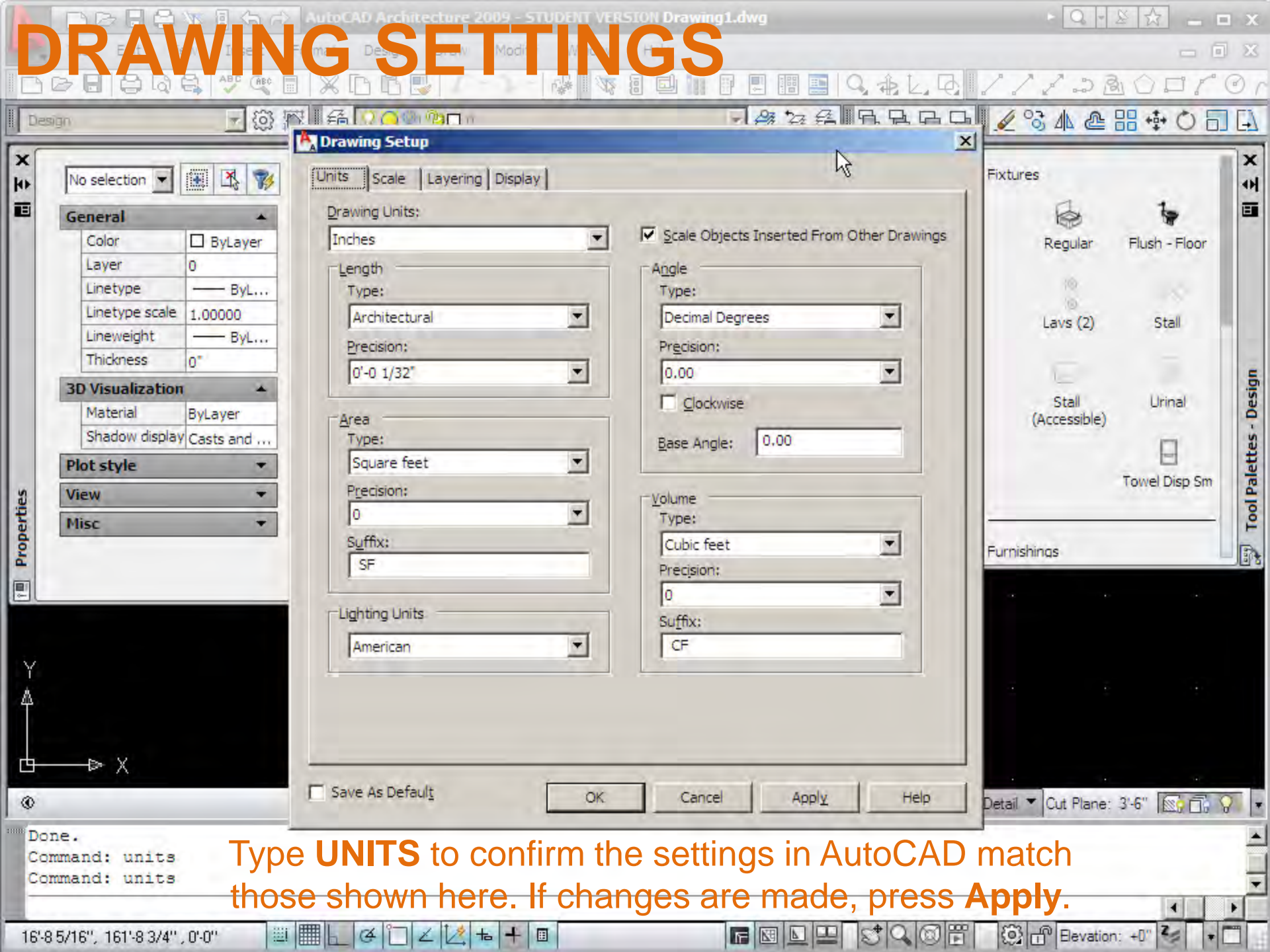
Command:

101'10" 173'0 1/8" 0'0"

MODEL

Architecture

Elevation: +0'



DRAWING SETTINGS

Drawing Setup

Units | Scale | Layering | Display

Drawing Units:
Inches

Length
Type: Architectural
Precision: 0'-0 1/32"

Angle
Type: Decimal Degrees
Precision: 0.00
☐ Clockwise
Base Angle: 0.00

Area
Type: Square feet
Precision: 0
Suffix: SF

Volume
Type: Cubic feet
Precision: 0
Suffix: CF

Lighting Units:
American

☐ Scale Objects Inserted From Other Drawings

☐ Save As Default

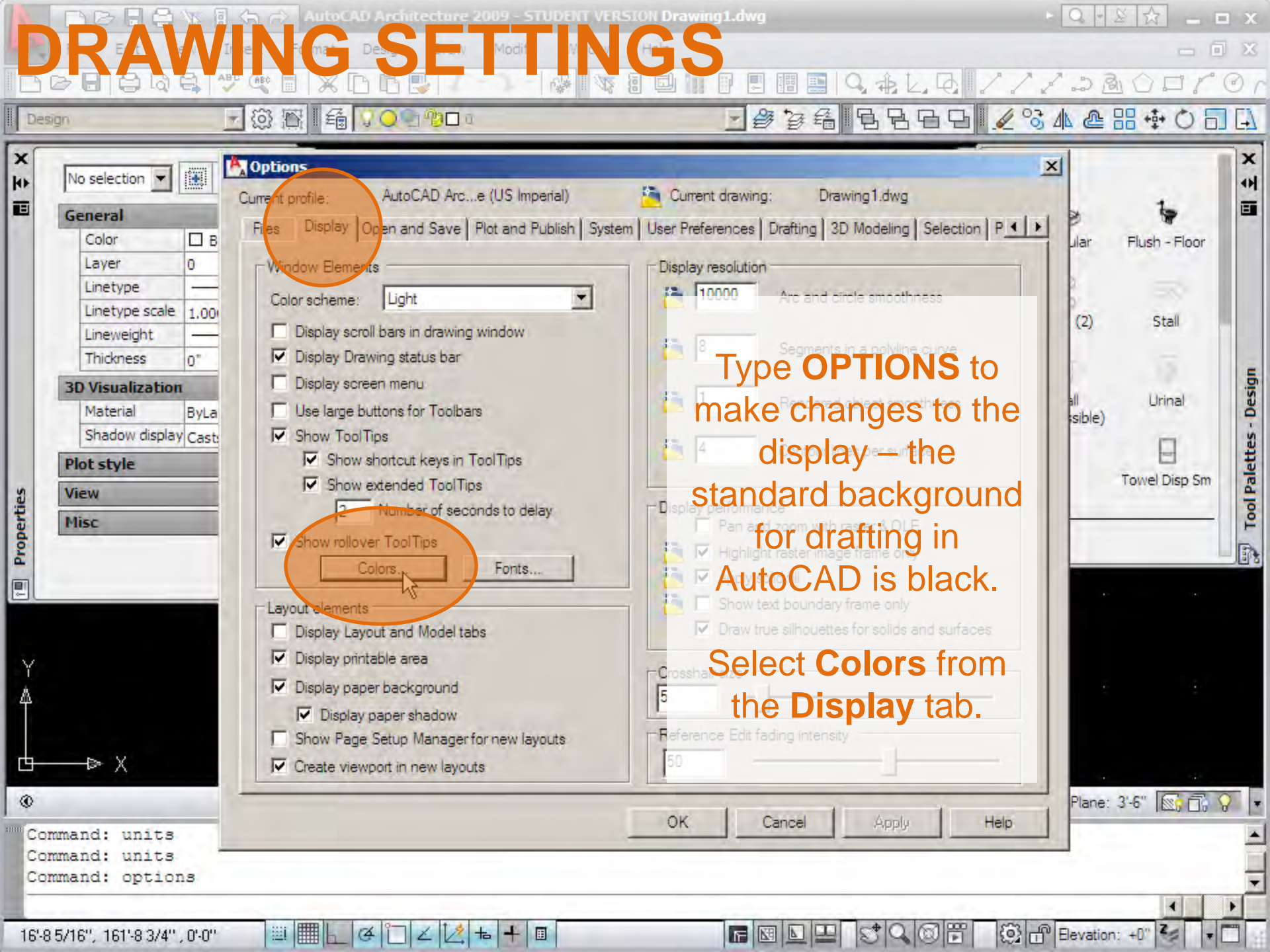
OK Cancel Apply Help

Type **UNITS** to confirm the settings in AutoCAD match those shown here. If changes are made, press **Apply**.

Done.
Command: units
Command: units

16'-8 5/16", 161'-8 3/4", 0'-0"

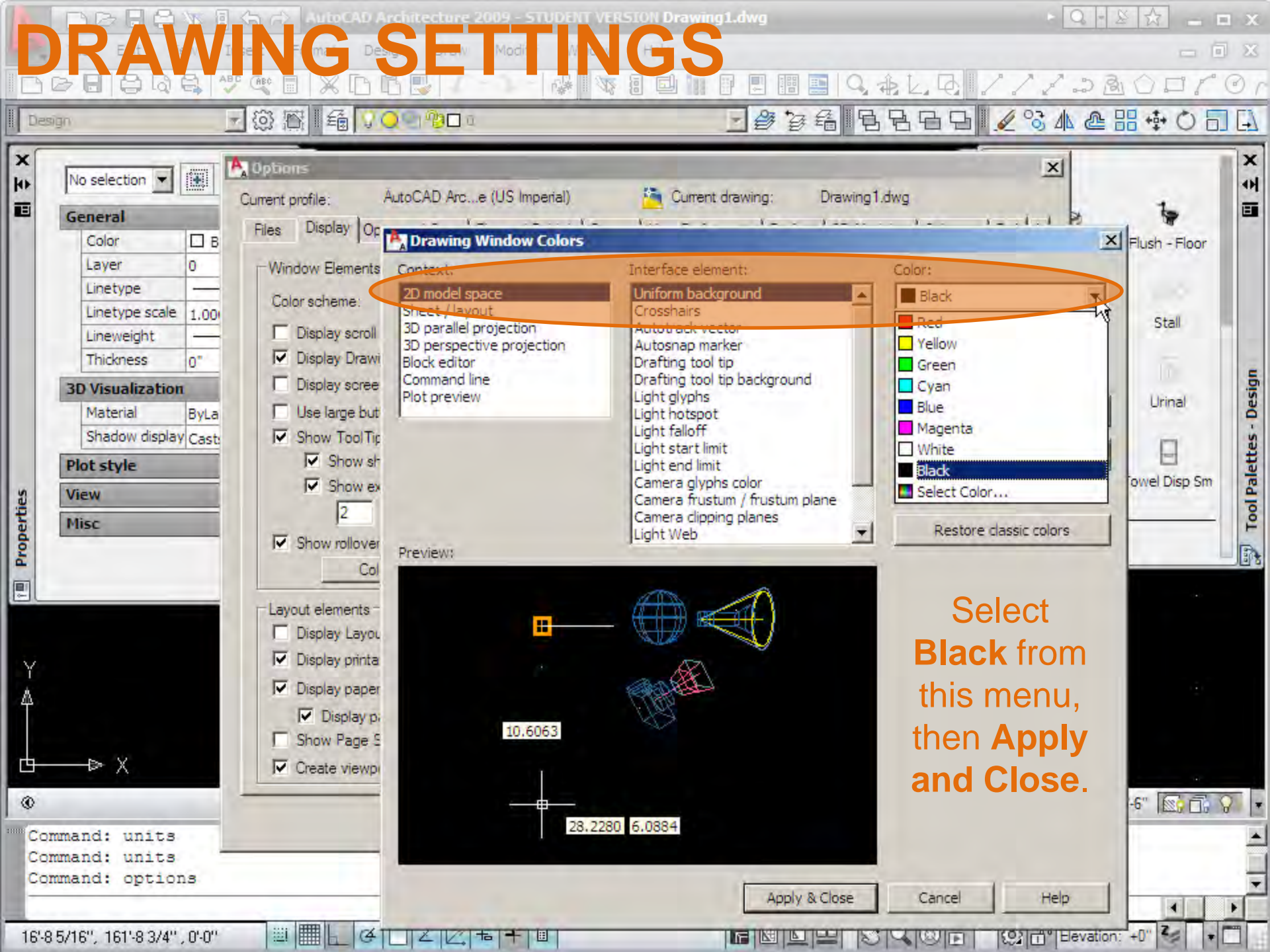
Elevation: +0'



DRAWING SETTINGS

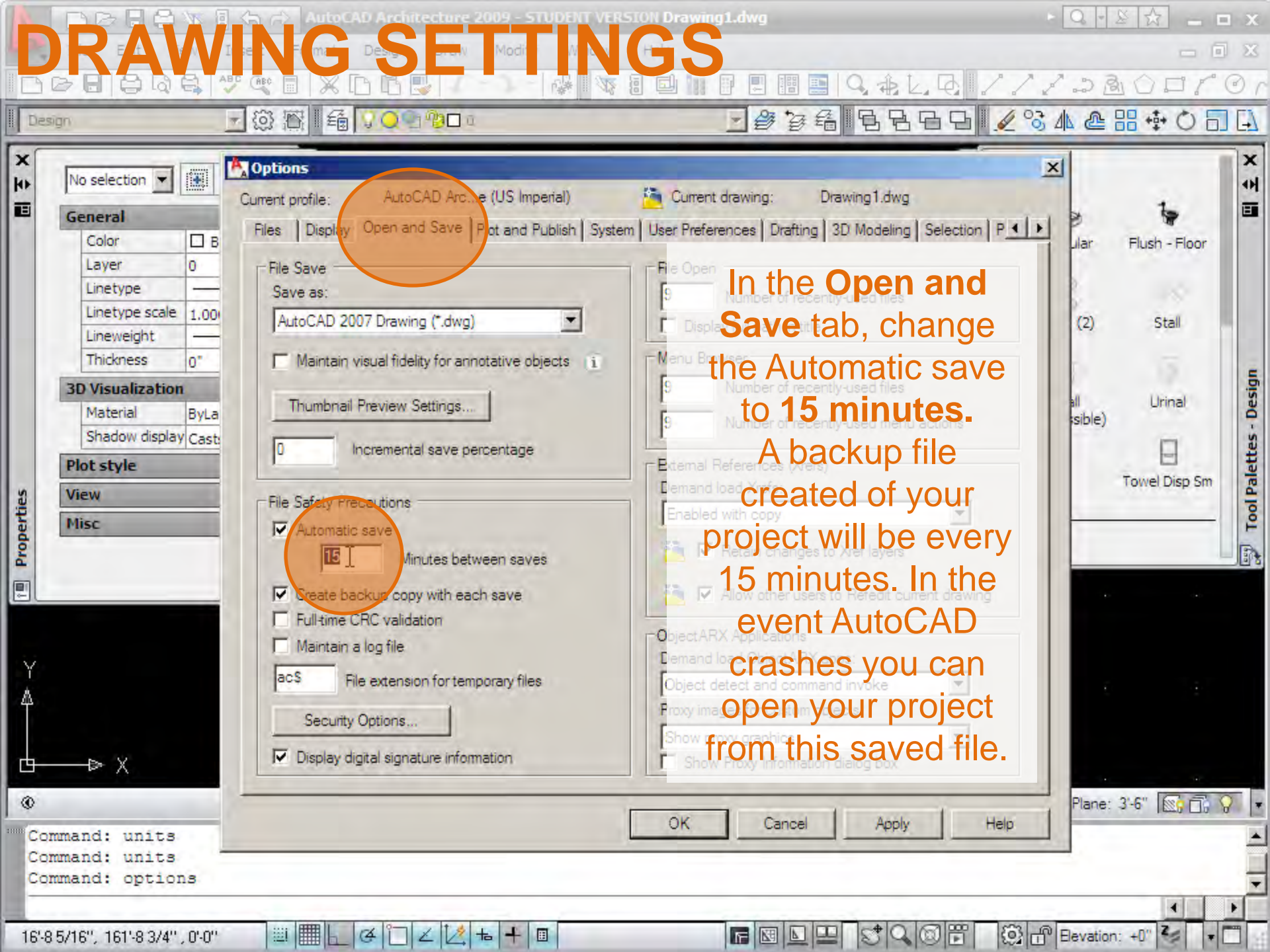
Type **OPTIONS** to make changes to the display — the standard background for drafting in AutoCAD is black.

Select **Colors** from the **Display** tab.



DRAWING SETTINGS

Select
Black from
this menu,
then **Apply**
and **Close**.



DRAWING SETTINGS

In the **Open and Save** tab, change the Automatic save to **15 minutes**. A backup file created of your project will be every 15 minutes. In the event AutoCAD crashes you can open your project from this saved file.

Command: units
Command: units
Command: options

16'-8 5/16", 161'-8 3/4", 0'-0"

Elevation: +0'

