

Metric

Attila G. Horvath



**AutoCAD<sup>®</sup>**  
**Architecture 2015**

# My First Project

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Step-By-Step Tutorial

More Than 950 Pictures

With Glossary





**AutoCAD Architecture 2015**  
**Step-by-Step Tutorial**  
**My First Project**  
(Metric Version)

**by Attila G. Horvath**

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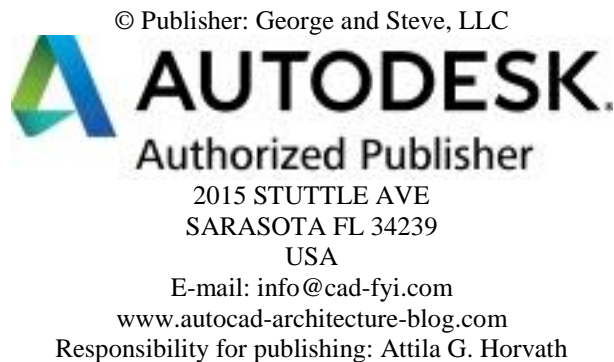
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**ATTENTION!** Making sample building of tutorial two drawings are necessary, which can be downloaded from <http://autocad-architecture-blog.com/ebook-extra-materials> web-site, and located at ACA2015-ExtraMaterials library can be unpacked. The two drawings are Sub-Structure-Metric.dwg and Layout-Metric.dwg.

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## **Glossary**



## About the Author



Attila G. Horvath is an Architect, Interior Design and Computer Engineer. He has been working with AutoCAD and its architectural version since 1991.

During these years he gained widespread experience in 3D processing, visualization, gathering volumes and clash detection, as well as interior designing. These experiences allowed him to participate in design projects ranging from shopping centers, residential complexes, car showrooms, airports, resort hotels to tropicariums. He also followed with attention these projects, which provided him with useful elements for further works.

Attila has been an Authorized AutoCAD Architecture Instructor since 2008 and teaching AutoCAD Architecture software to future architects at the Department of Architectural Representation of Budapest University of Technology and Economics in Hungary. He also took part in creating various tutorial materials for architecture students. Currently he is working as a CAD Manager; presenting the actual use of CAD programs to his clients, the staff of various design offices.

Attila is Author of numerous professional articles and has been writing his own blog for many years. He is member and Vice President of the Association of Hungarian Architecture Desktop Users. He became an Autodesk Authorized Author in 2012. This abundant professional experience of more than 20 years lead him to write the book "My First Project", presenting the use of AutoCAD Architecture software and operating system via actual, real-life situations. He believes that confident knowledge can be achieved by practicing as much as possible - thus his book aiming to be a very strong basic material for anyone who wants to acquire this practical knowledge with AutoCAD Architecture.

## Some words about the 2015 version

The greatest novelty of the 2015 version is the alteration of the user interface. This is an advantage compared to the previous versions of the program.

AutoCAD 2015 offers a modern dark themed interface that includes the Ribbon, Status Bar, and Palettes. Although we were all used to looking at dark writing on white paper looking at a computer screen is different. The way it is a light source, shining in your eyes. The new dark theme interface combined with the traditional dark model space helps reduce eye strain by dimming the lights and minimizing the contrast between the drawing area and surrounding tools.

When you start AutoCAD 2015 before you open any drawings, one of the first things you'll notice is the New Tab. The New Tab contains two sliding content pages: Learn and Create.

The Create page is displayed by default and serves as a launch pad where you can access files, product updates and online community. It's divided into three columns.

The Learn page provides tools to help you learn AutoCAD 2015. It's divided into three columns: What's New, Getting Started Videos, and Tips and Online Resources. These are all great resources for getting up to speed on AutoCAD 2015 whether you're a new user or an AutoCAD veteran.

You will start your work from the Create page. After that in the framework of the tutorial I will show you how to use the novelties.

I will raise your attention every time you start using any of the 2015 novelties. Not all of them will fit in the tutorial but you may find a description or news about all novelties on my website.

Check the novelties of AutoCAD 2015 and AutoCAD Architecture 2015 on the following link:

<http://autocad-architecture-blog.com/autocad-architecture-2015/>

## Chapter 1 – Preface

Learning to use AutoCAD software is similar to learning a new language. Sometimes when you say something to somebody in a foreign language, you exactly know and understand it but maybe your partner does not. The intention was clear but the execution was not. It is the same with AutoCAD. Although learning AutoCAD is not an easy style, you will have fun learning this exciting technology, even though sometimes you will not understand why the program does not run or freeze. Your intention was obvious and clear, only command prompt was not correct, or the approach was wrong. Please do not give it up in such a situation! I promise you will sit back satisfied drinking a good glass of cold beer!

**NOTE:** You will find several links in the book. These are short links, referring to the *autocad-architecture-blog.com* website, where you can have further information on the old and new versions of the program.



**Section 1 - How to Use This Book**

**Section 2 - Needed Drawings**

**Section 3 - Introduction of Sample**

**Section 4 - Terms Used in the Book and Sign Conventions**

## Section 1 - How to Use This Book

This book contains a comprehensive introduction to the methods, philosophy and procedures of AutoCAD Architecture 2015. The primary audience for this book are current AutoCAD users, however if beginners do the exercises and chapters related to each other, they will have an overall picture of program's operation and use; and at the end of the book will have sufficient experience to confidently use of the AutoCAD 2015. Using of the book requires a base AutoCAD and PC knowledge and practice.

This book shows the mindset of the program, through a sample from beginning to end, and technique of its using. In doing so, however, the book does not attempt to be an entire fledged model in every respect, and documentation development. Rather, the intention is to introduce the functions of AutoCAD Architecture 2015 software.

The desired end result - another order of importance, by other means - in some places it would be easier to produce, but in this case the book could show less possibilities of the program.

The described exercises assume that the reader continuously performs them from the beginning and gradually practices the handling techniques of the program. After some time the detailed explanation (like which mouse button to click and where) will decrease.

## Section 2 - Needed Drawings

**ATTENTION!** Creating sample building of tutorial two drawings are necessary, which can be downloaded from <http://autocad-architecture-blog.com/ebook-extra-materials> web-site, and located at ACA2015-ExtraMaterials library can be unpacked.

The two drawings are Sub-Structure-Metric.dwg and Layout-Metric.dwg.

## Section 3 - Introduction of Sample

The exercises are based on a two-storey house plan. The original plans can be found at [www.freegreen.com](http://www.freegreen.com). The exercises - with the consent of the page - sometimes changed, sometimes simplified and do not fully cover the initial design work.



The exercises described in this book process a relatively small building, but try to use a wide range of program features. Nevertheless, the AutoCAD® Architecture 2015 software has many tools, and objects have a lot of skills that the sample does not use.

The exercises carried out two-three times provide a good basis for confident usage of the software and for knowledge of the logic used by the program.

## Section 4 - Terms Used in the Book and Sign Conventions

Below treatments of technical elements are described, which are frequently mentioned in the exercises of the Textbook.

### 1. Basic Mouse Techniques

The following terms will be used to clarify the instructions for use of the mouse.

(Left-)Click	Quickly press and release the left mouse button.
Right-Click	Quickly press and release the right mouse button.
Double-Click	Rapidly click the left mouse button twice.
Click in	Click inside of any kind of element, object to set something in it.
Click on	Click anywhere on any kind of element or object to open it.
Drag	Press and hold down the left mouse button while you move the mouse.
Select	Position the mouse pointer/draw cursor over an item and click the left mouse button.

In AutoCAD the main management tool is the left mouse button. Thus, clicking always means with the left mouse button click in or specify a point.

If the right mouse button is to click, it is always indicated separately.

The right mouse button click - if an object is selected – is a typical way to display the context menu. If there is no pre-selection of an object, clicking the right mouse button is equal press **ENTER**. See chapter 2.7.

### 2. ... select or choose... (icons, menu items)

Selecting or choosing an icon or menu item means clicking with left mouse button on it. It is a typical way of starting commands.

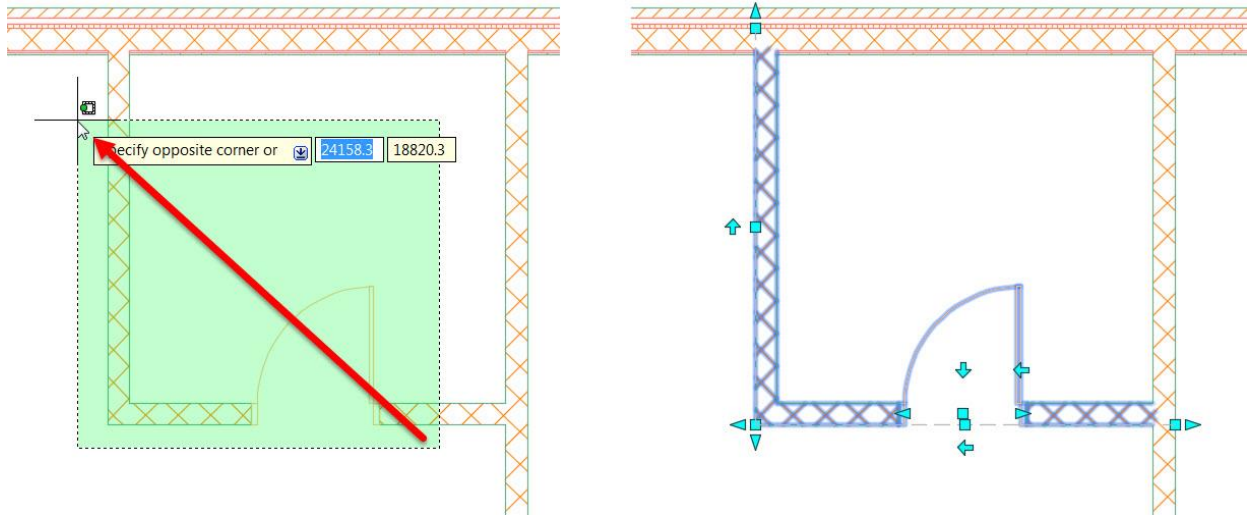
### 3. ... select... (objects, drawing elements)

Selection in AutoCAD could be only one element selection or more elements could be selected at the same time.

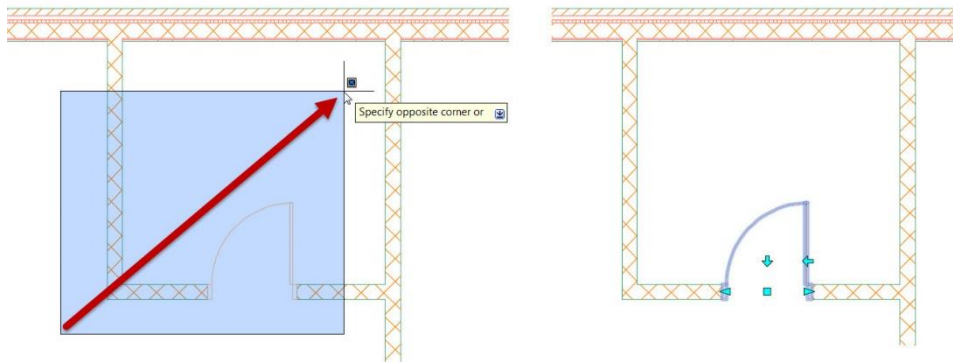
Selecting an element is to move cursor above its contour or internal line and click with left mouse button. More elements could be selected one by one, but it is better to use the so-called **Window selection**, means selected all objects completely inside a rectangle defined by two points.

Click the left mouse button on an empty field and the program begins to draw a selection box. Drag the cursor to the left or right, and specify the opposite corner point of the selection window.

Dragging the cursor from right to left AutoCAD draws a so-called **Crossing selection** that has dashed contour, and in AutoCAD 2015 its fill color is light green in default mode. Crossing selection select all objects within its borders or which are sectioned by the window contour.



Dragging cursor from the left to the right, AutoCAD draws a **Window Selection** with continuous contour, and in AutoCAD 2015 its fill color is light blue in default mode. The Window Selection selects only those objects which are fully inside in the window.

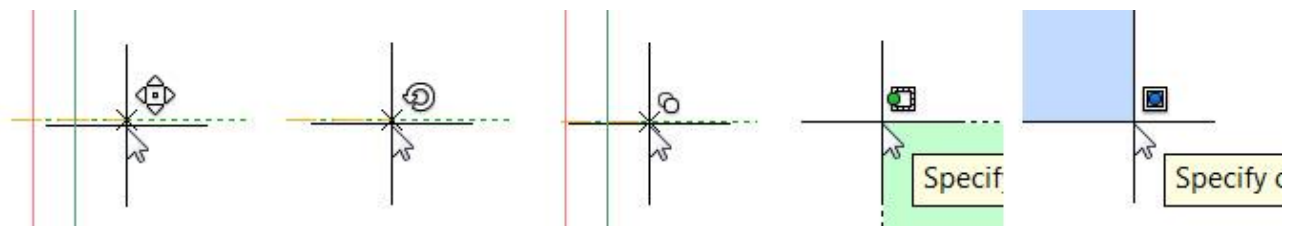


In most cases selection in AutoCAD is a recursive operation, after a selection operation program will initiate new selections until you indicate by pressing ENTER to finish selection operation. Then the commands run will continue.

**You can take back from the objects already selected** if any kind of selections (single, crossing, window) is done **by pressing SHIFT button**.

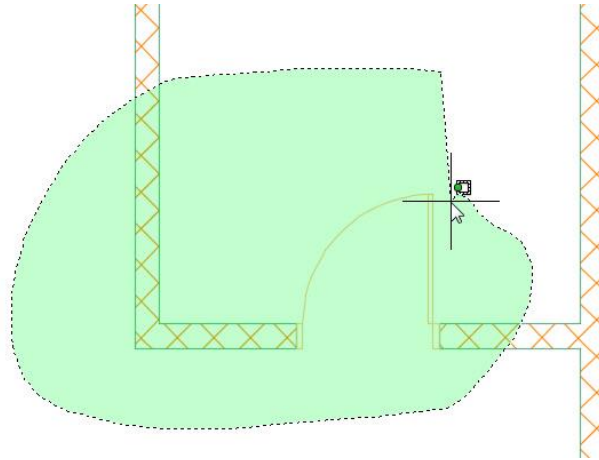
### 2015 New Feature!

It is one of the novelties that you can see next to Crosshair what you are actually doing. Move, Copy, Rotate, etc. Same with Selection. You can see that you use either Window selection or Crossing selection.



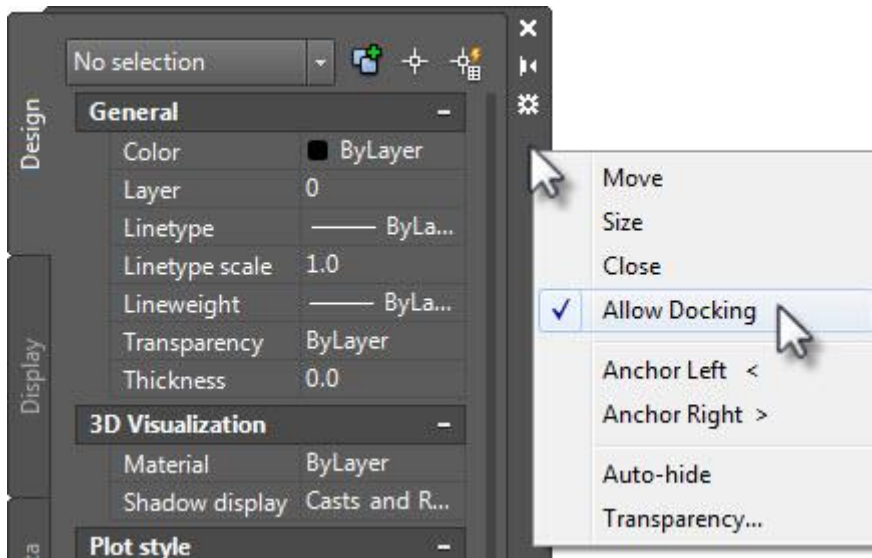
### 2015 New Feature!

Another novelty is Lasso selection. Lasso selection is a new way to select objects. You click in a blank area and drag around objects. Release the mouse button when you're done. Anything that crosses the lasso boundary is selected.



### 4. ... click with right mouse button ... above (icon) object...

Typically this mode displays local menus. To show short-cut menus, enter or return, click the right mouse button.



### 5. ... Snap Mode Off/On

Automatic tracking point, other name Object Snap Mode helps that on object's special points - typically on the ENDpoint, INTERsection, PERpendicular and NEAREST point – we can specify a point, as an insertion point, or as a start or end point for specifying distance. Object Snap Mode can be turned on or off by pressing **F3 functional tab**, even during a command performing. Setting mode of 'searched' special points can be found in the book exercises.

### 6. ... ORTHO Mode Off/On

When ORTHO MODE is turned on, the cursor can move only horizontally or vertically relative to the UCS and the current grid rotation angle. Horizontal is defined as being parallel to the X axis of the UCS and vertical as being parallel to the Y axis.

Ortho Mode is used when you specify an angle or distance by means of two points using a pointing device. In Ortho Mode, cursor movement is constrained to the horizontal or vertical direction relative to the User Coordinate System.

Operating mode can be turned on or off by pressing **F8 functional tab**, even during a command performing.

## 7. Typographical conventions


The following special treatment of characters and fonts in the textual content help you to understand the meaning of words or sentences in AutoCAD 2015.

*Italic*                      *Command prompts.*

**Bold**                      **Important and highlighted parts of the text.**

Tips, notes, and cautions given in the book help you identify and remember important concepts, commands, procedures, and tricks used by professionals that would otherwise be discovered only after much experience.

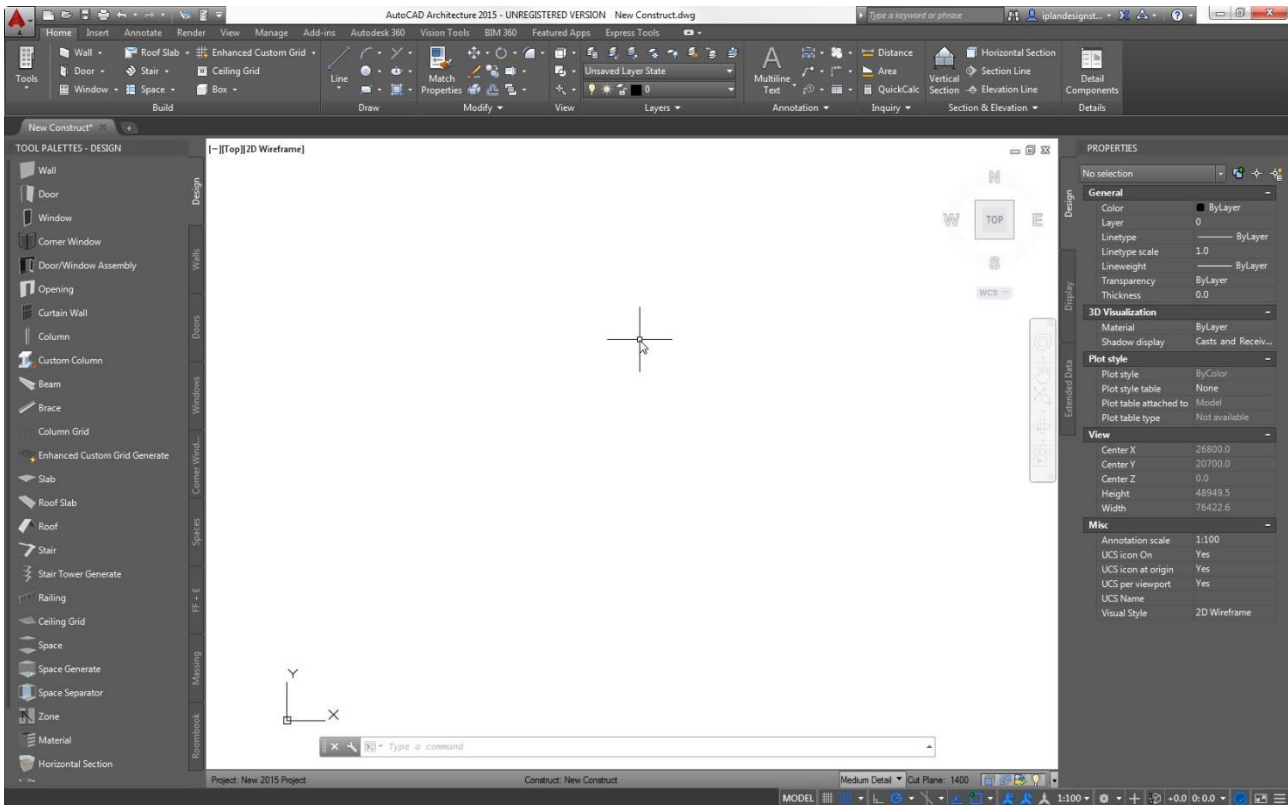
## 8. Save

Although during exercises you are always warned to save your drawing, it is recommended you to do it very often in your work. It is possible to set the automatic saving even in every minute but it is better if user controls it by himself by clicking on the **Save**  button or pressing **Ctrl+S**. In case of bigger drawing using the Automatic save can take for a few seconds which inhibits the work.



## Chapter 2 – Organizing your workspace

Before starting the exercises, organize your workspace just like in the below figure.



### Section 1 - Change the Background of Drawing Window

### Section 2 - Setting of the Most Used Palettes

### Section 3 - View Cube, Navigation Bar and Viewport Controls

### Section 4 - Making Special Snaps Active

### Section 5 – To Allow Dynamic Input

### Section 6 - Setting Used Units

### Section 7 - Right-Click Customization

### Section 8 - Displaying Layout and Model Tabs

### Section 9 - Changing Appearance of Toggles in Application Status Bar


### Section 10 - File Tabs

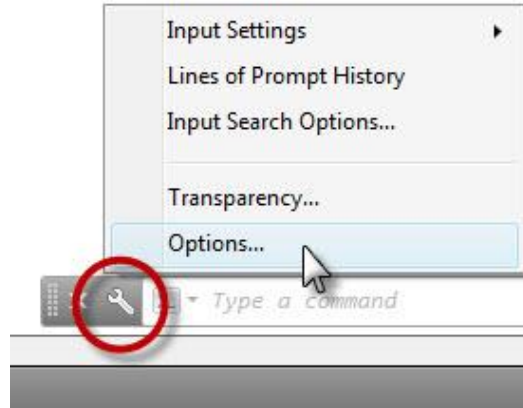
### Section 11 - Command line search - Architecture styles

## Section 1 - Change the Background of Drawing Window

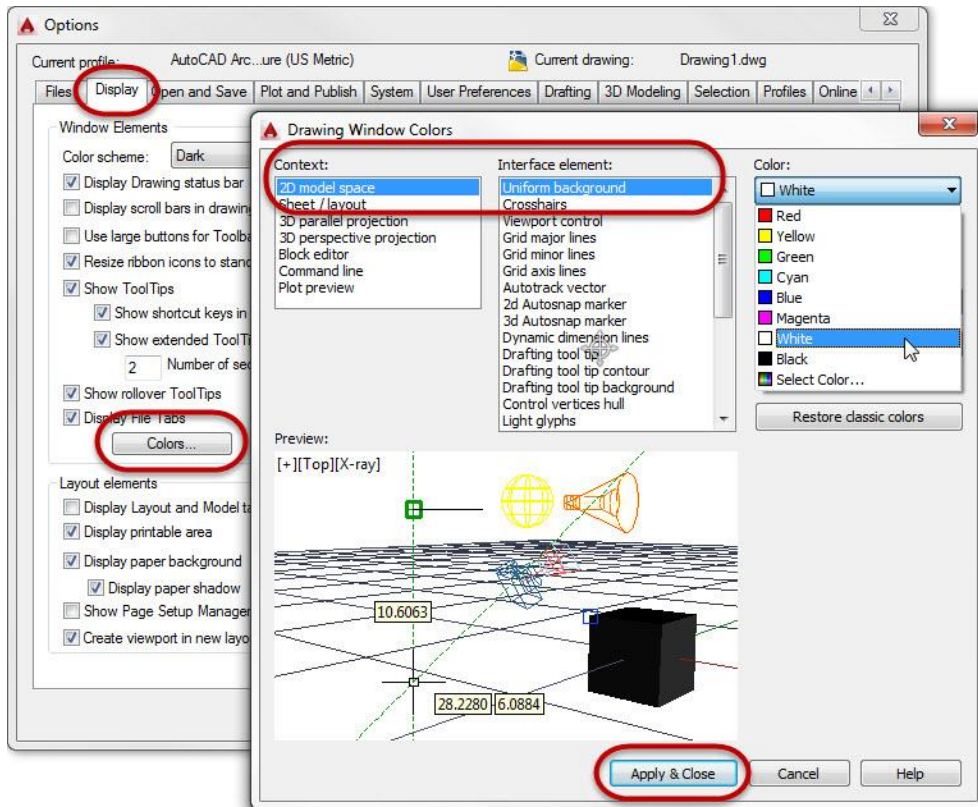
**NOTE:** For better vision of the figures, the color of the drawing window was changed to white, and the GRID (F7) was turned off.

Although the color of the objects was set to dark background, if somebody would like to change the color of the drawing window background, he can do it in the following place.

Click on the **Customize** icon  next to the Command line and then the **Options** from the flyout in order to open the panel.

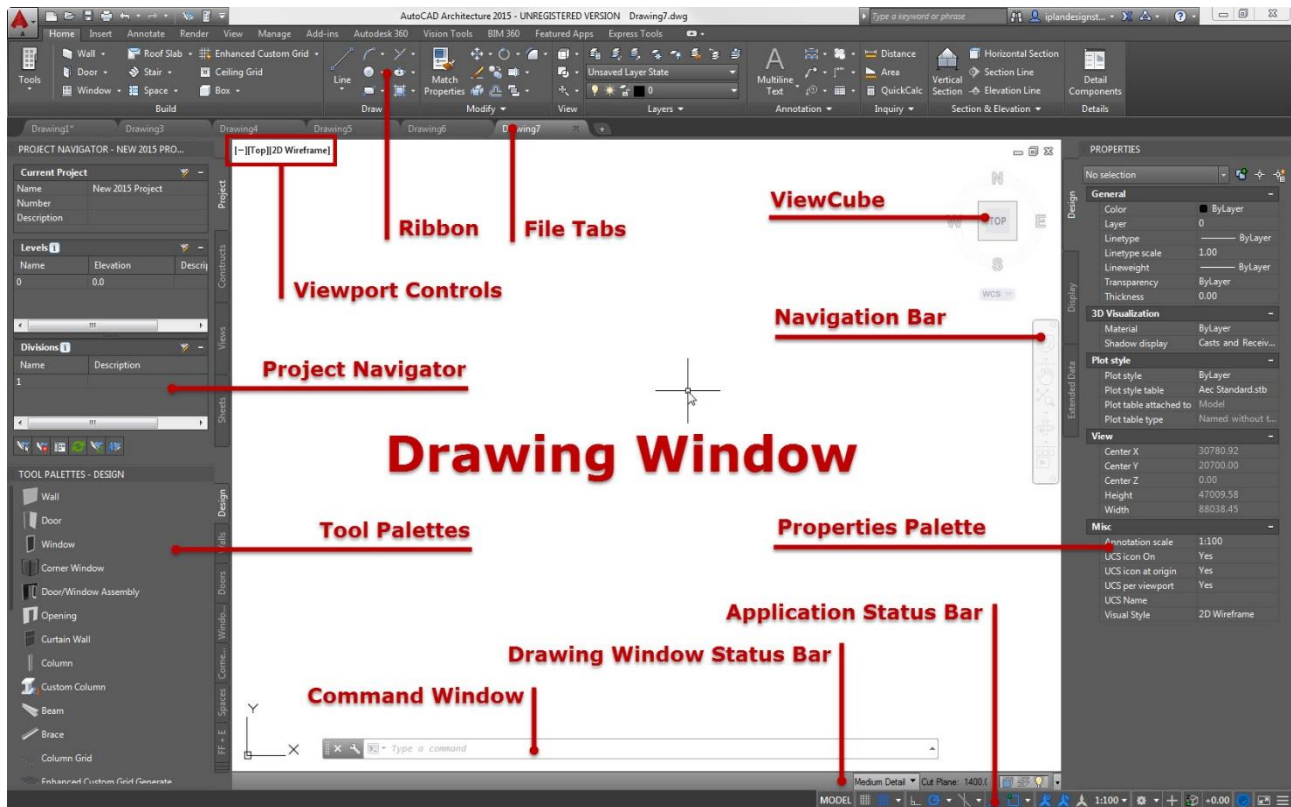


On displaying **Options** panel, go to the **Display** tab and by clicking on the **Colors** button open the **Drawing Window Colors** panel. You can see here in the first field which **Context** is active. In the second field you can choose the **Interface element** that you would like to change. Choose the **Uniform background** to set its color to desired values, and then using the **Apply & Close** button close the panel, and finally also close Options panel.



## Section 2 - Setting of the Most Used Palettes

Dock the Tool Palettes to the left side and the Properties palette to the right side.



### Drawing window

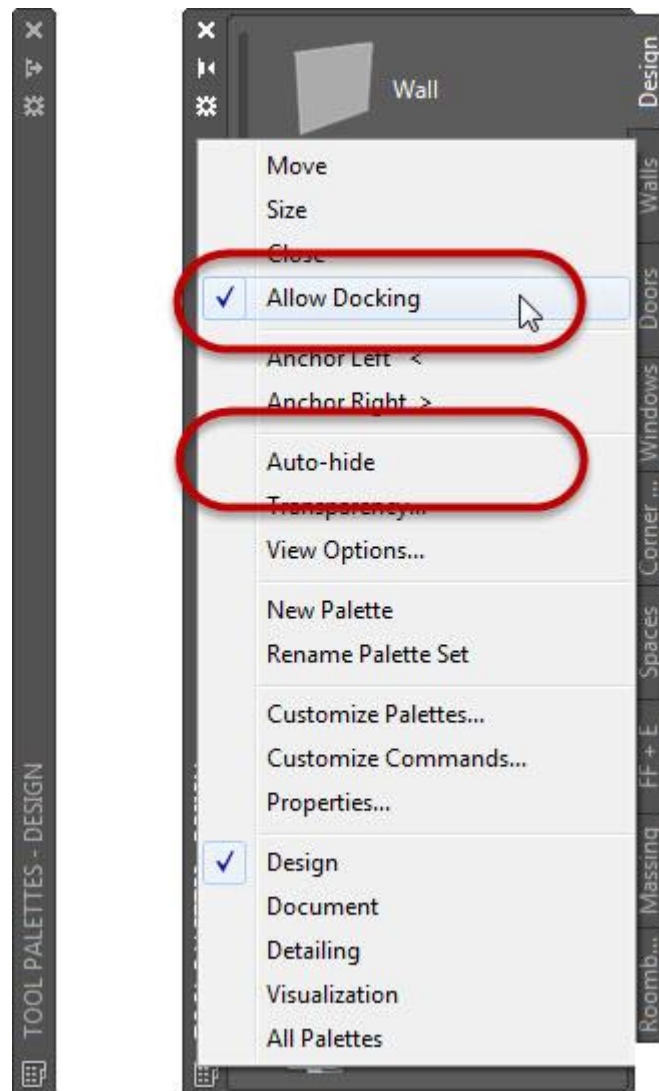
- File Tabs
- View Cube
- Navigation Bar
- Properties Palette
- Drawing Window Status Bar
- Command Window
- Application Status Bar
- Tool Palette
- Project Navigator
- Viewport Controls
- Ribbon

If the above two palettes are in „hidden” mode or not hidden but in „floating” mode according to the next figure, right-click on the title bar of the palettes and check the drop-up menu if there is a check mark next to the „**Allow Docking**” menu item.

If there is not, click on the menu item, and then try to dock the palette on the left or right side of the screen.

Press the **Ctrl+1** key pair many times one after the other to check, or to practice how to hide and to display the Properties palette.

Repeat it by pressing **Ctrl+3** key pair to hide or to display the TOOL PALETTES.



## Section 3 - View Cube, Navigation Bar and Viewport Controls

Sometimes during your work the visual style and the view of your drawing will be alternated. Three tools will be used.

One of these can be found in the upper left corner of the drawing area, called **Viewport Controls**, and consists of three labels.

**[-][Top][2D Wireframe]**

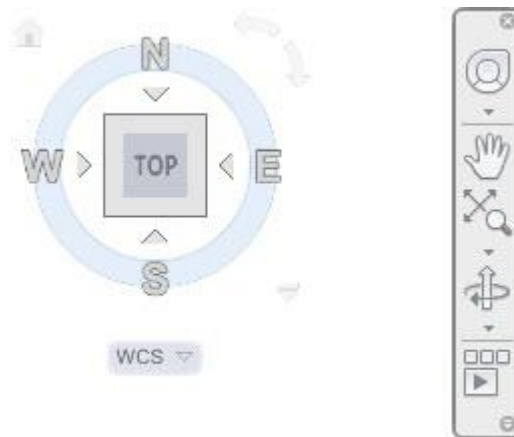
Click - (minus) to display options, changing the viewport configuration, or controlling the display of navigation tools.

Click TOP to choose between several standard and custom views.

Click 2D Wireframe to choose one of the several visual styles. Most of the other visual styles are used for 3D visualization.


The second tool is the **ViewCube** situated in the upper right corner of the drawing area. The ViewCube is a 3D navigation tool and appears when the 3D graphics system is enabled and allows you to switch between standard and isometric views. If it is not shown use the Ribbon menu View tab > Windows panel > User Interface > ViewCube route to be shown again.

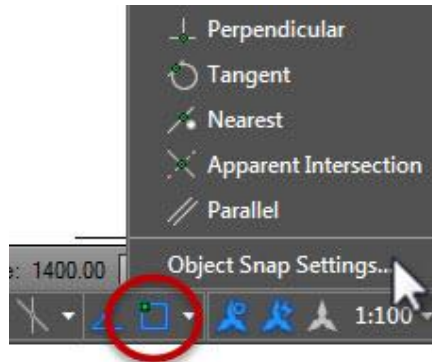
The third is the **Navigation Bar**; basically it is situated vertically under the ViewCube. From here other navigation tools can be reached, like the Pan, the Zoom tools and the Orbit tools. If there is not, it can be displayed already described in the ViewCube.



## Section 4 - Making Special Snaps Active

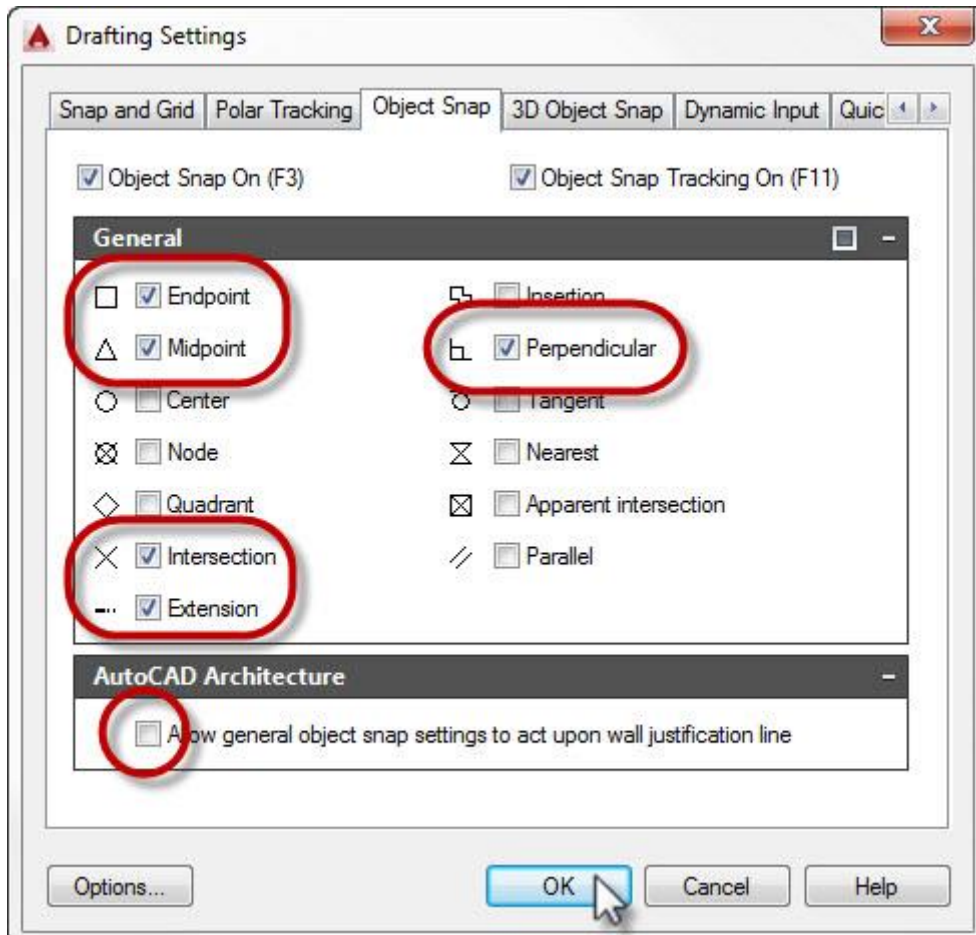
In the work you often need to find special points of objects, like ENDpoints, MIDpoints, INTERsection and PERpendicular.

1. Right-Click above the **OSNAP** toggle  below the status bar of the AutoCAD window, and choose from the drop-up menu **Object Snap Settings....**



2. Pay attention that in the displaying dialog box only in figure shown toggles are turned on.

**ATTENTION!** Pay attention to the **Allow general object snap settings to act upon wall justification line** toggle is turned off.



3. Press **OK** to close the dialog box.

**ATTENTION!** Later on you will continuously need the function to find special points of the editorial work.

However, there will be editing steps, when now set automatically grip (Object Snap Mode) interferes your work. As a typical case, when an object's start point, insertion point, etc... does not go to the specified place, because the automatic ENDpoint, INTersection or PERpendicular "pulls on" the point or the object.

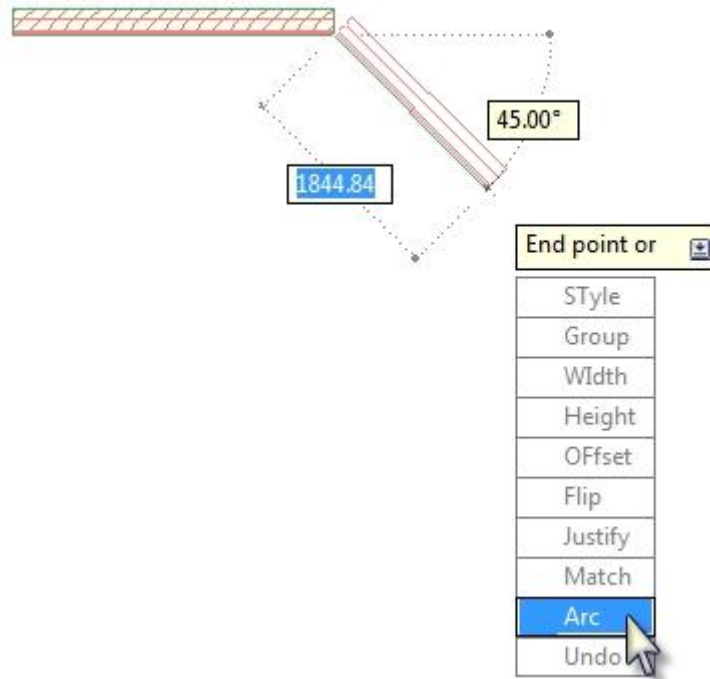
In this case, the simplest, if using F3 function key the object snap mode is temporarily **turned off**, and then when it is needed again, it is also **switched back** by pressing the **F3**.

**TIP:** If the OSNAP is on and you cannot safely specify the desired object snap, it is recommended to use **SHIFT + Right-Click**. Then the necessary object snap can be chosen from a list. In this case, all others will be turned off for only specifying one point and only just selected one will be active. After clicking, original status will be restored at once. This works even when the OSNAP is off, but temporarily you want to use the object snap while specifying a point.


## Section 5 – To Allow Dynamic Input

The new versions of AutoCAD Architecture ensure to type dynamic input in editing operations (e.g.: for the length of the next wall segment), and ensure not to display prompts and options of each commands (only) at the command window, but next to the crosshair, as well (the latter are in a drop-down menu).

In the following operation mode will be turned to ‘fully utilization’.




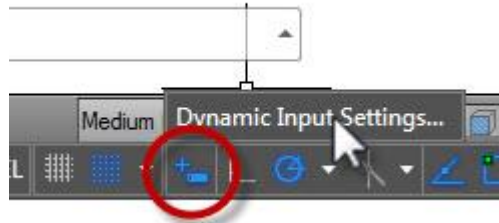
### 2015 New Feature!

NOTE: It can happen that after the program installation the DYN toggle will not be seen on the Application Status Bar. In this case you click on the Customization Icon  (right bottom corner of the program) on the Application Status Bar and switch on the Dynamic Input switch in the appearing list.

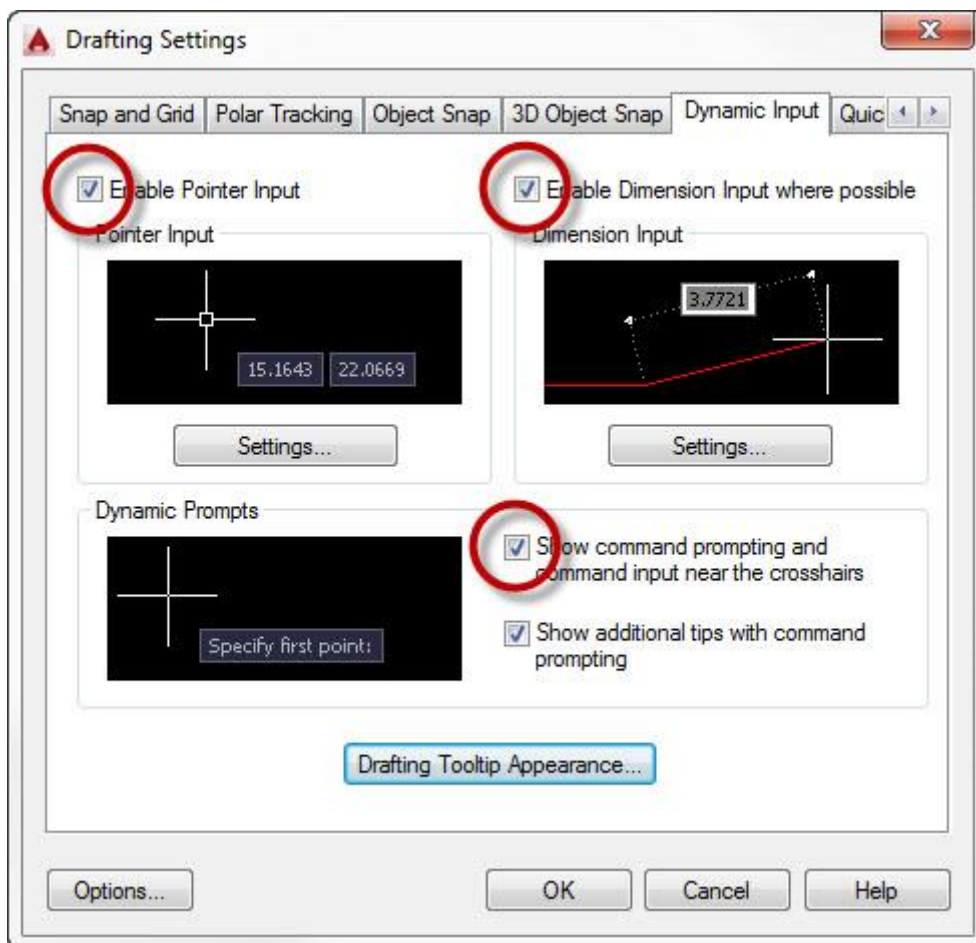





1. Right-click above the **DYN** toggle  on the down AutoCAD status bar and choose the **Dynamic Input Settings...** from the drop-up menu.

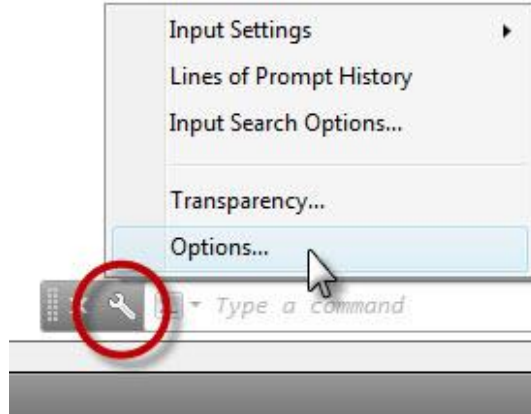


- 2. Ensure that in the displayed dialog box toggles shown in figure are turned on.
- 3. Press **OK** and exit the panel.
- 4. Pay attention that the **DYN (F12)** toggle is turned on.

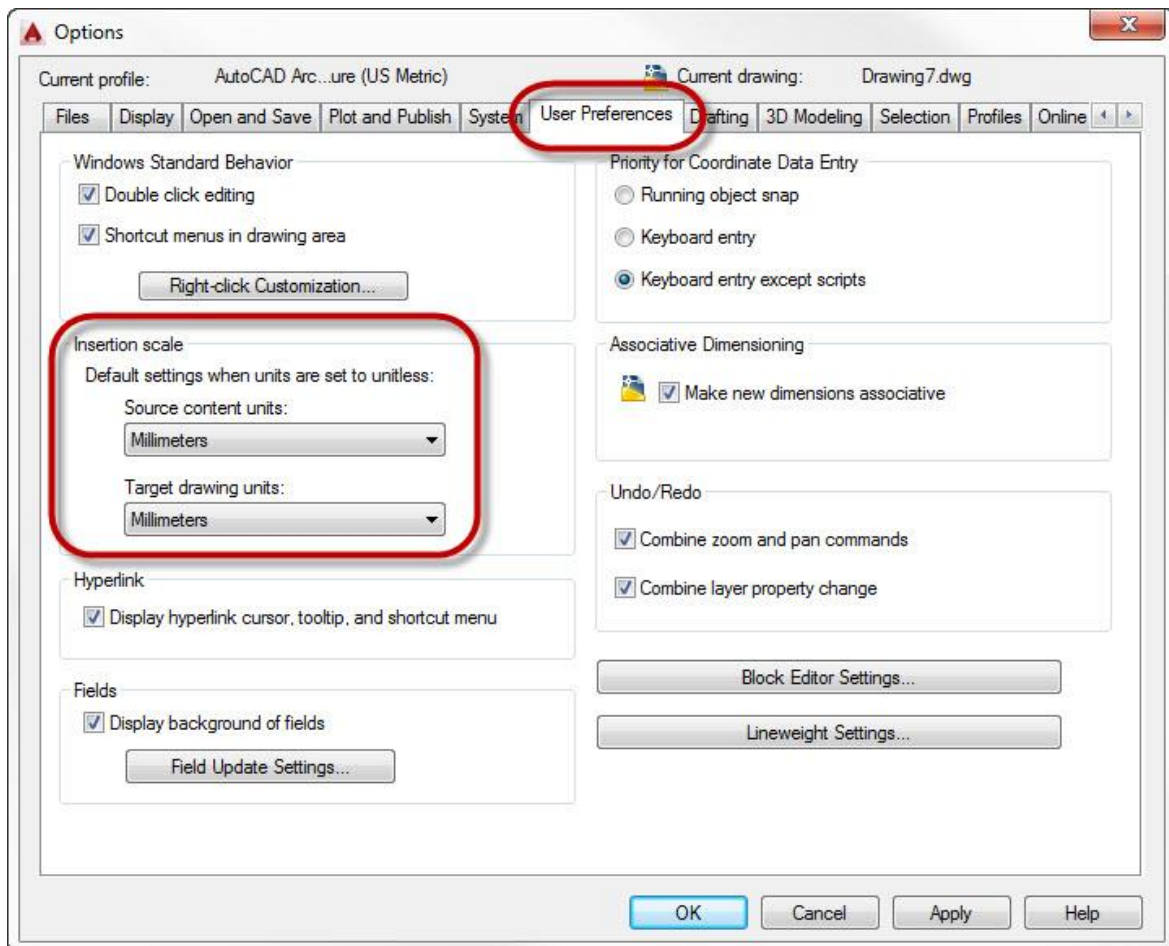


## Section 6 - Setting Used Units

Click on the **Customize** icon  next to the Command Window, and then click on the **Options...** to open the panel.



For good operation of ACA 2015 is important to set parameter value of both **Source content units**, and **Target drawing units** to **Millimeters** on the **Options** panel **User Preferences** tab, in the **Insertion scale** field.



Without this setting the **Xref drawings coming from Project Navigator with Drag and Drop techniques** will be displayed in incorrect size and unit.

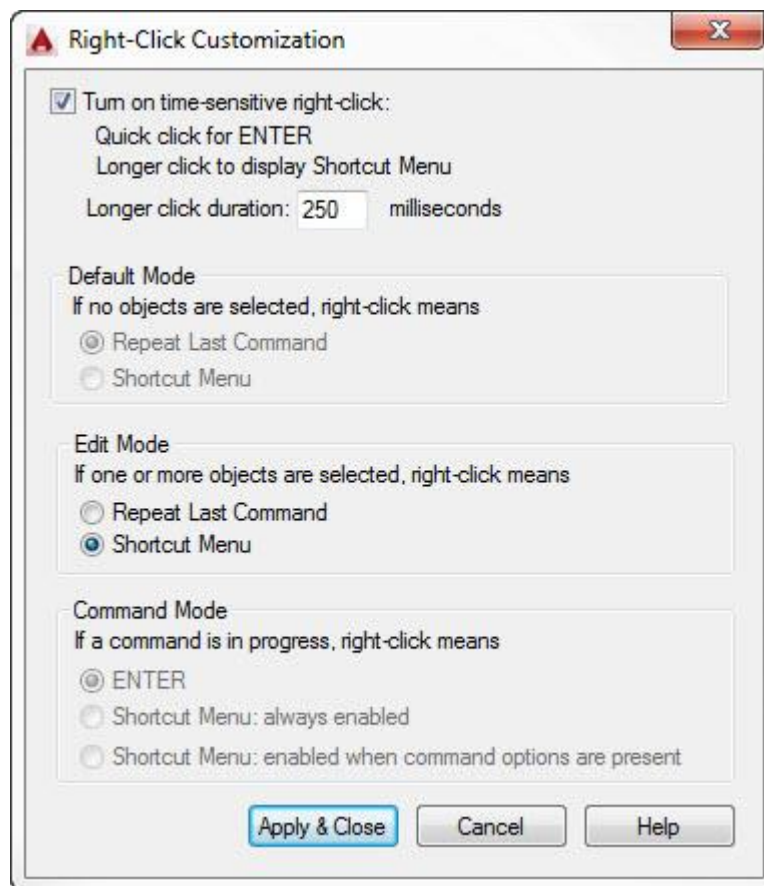
Do not close the Options panel, the next settings will be made here as well.

## Section 7 - Right-Click Customization

In order to see the same result whenever you do these exercises, it is necessary to customize the operation of the right button of the mouse.

Stay on the User Preferences tab, open the **Right-Click Customization** panel and make the necessary settings according to the figure. Turn on the **Turn on time-sensitive right-click** toggle in the end, because the Default Mode and the Command Mode will become inactive.

Close the panel with the **Apply & Close**, then close the Options panel by pressing **OK**.



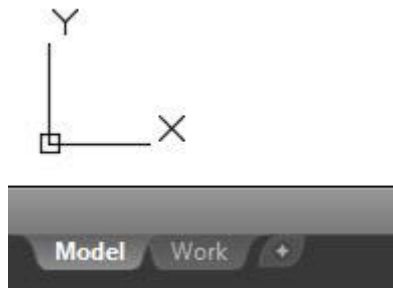
It means that using the right mouse button not a menu will drop up but in command mode the first click is equivalent to pressing **Enter**.

**NOTE:** Pressing **ENTER** term is used many times in this book. With these settings it is suitable and more comfortable to use the right mouse button instead of **ENTER**; so you needn't release the mouse during your work. In fact, if someone has a better hand, he may also use the SPACE button, it will result the same.

**NOTE:** The Shortcut menu has different names, like flyout, pop-up menu and drop-up menu used in this book.

## Section 8 - Displaying Layout and Model Tabs

At the former AutoCAD Model space and Paper space Layout tabs were lined down in the editing window shown in down figure.

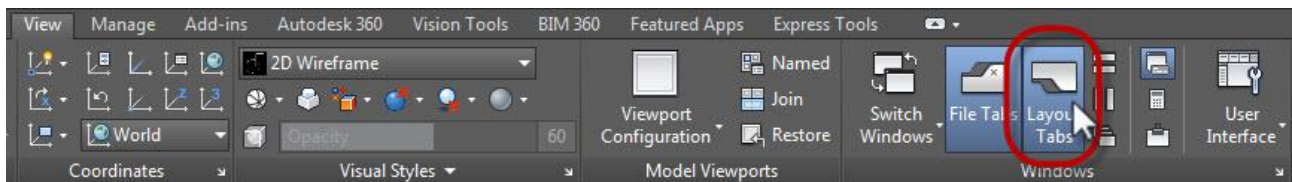


In new version these tabs were hidden, replacing them one icon displays down on the application status bar, with them their displays are controlled. The old method is more expressive, so now turn back the old mode.

### 2015 New Feature!

As from the 2015 version you can switch on and off the Layout and the Model Tabs as follows:

1. Change the Ribbon to View tab. Find the **Layout Tabs** switch on the Window panel and switch it on.




2. The Layout tabs will be displayed traditional way at the bottom of the editing window.
3. If you want to use the new method again, go to the previous place and switch it off.

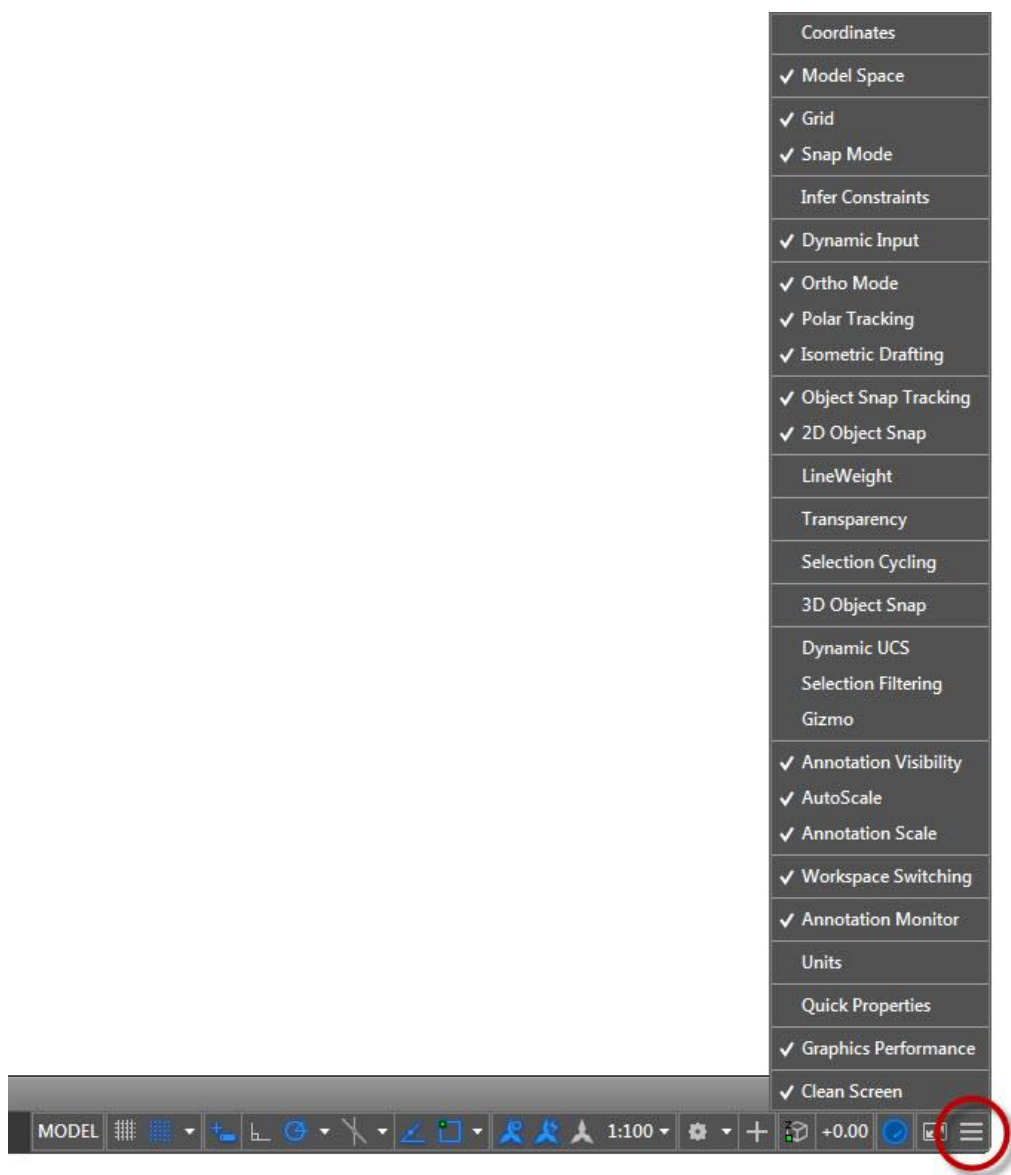
## Section 9 - Setting of Application Status Bar Toggles

In the former AutoCAD status changes in the Application Status Bar were available in text form, namely in shortened form. From the 2009 version these status change toggles – because of space saving - can be displayed in icon forms, as well.

### 2015 New Feature!

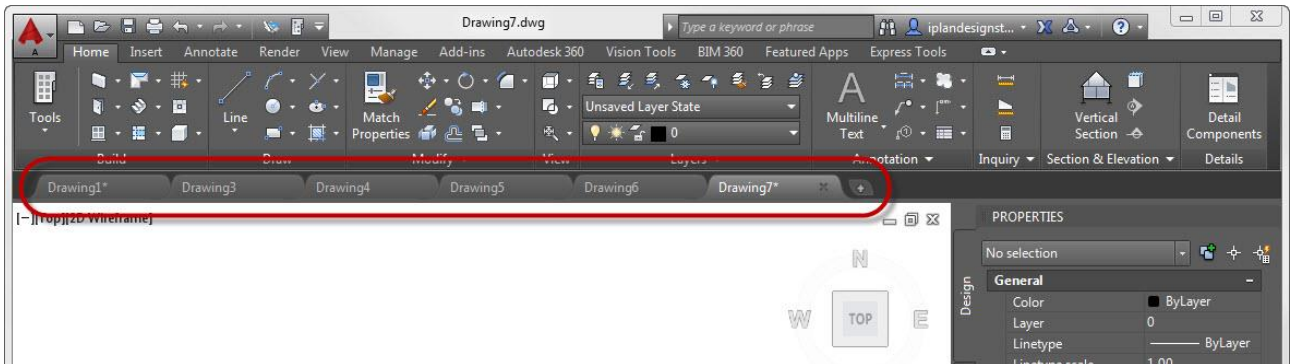
As from the 2015 version the toggles are moved to the right side of the application, and they cannot be set to text format any longer. Not all toggles can be seen at the starting point.

If you want to set the visibility of the toggles, you click on the Customization icon  at the bottom right corner, and you can set it in the appearing list.

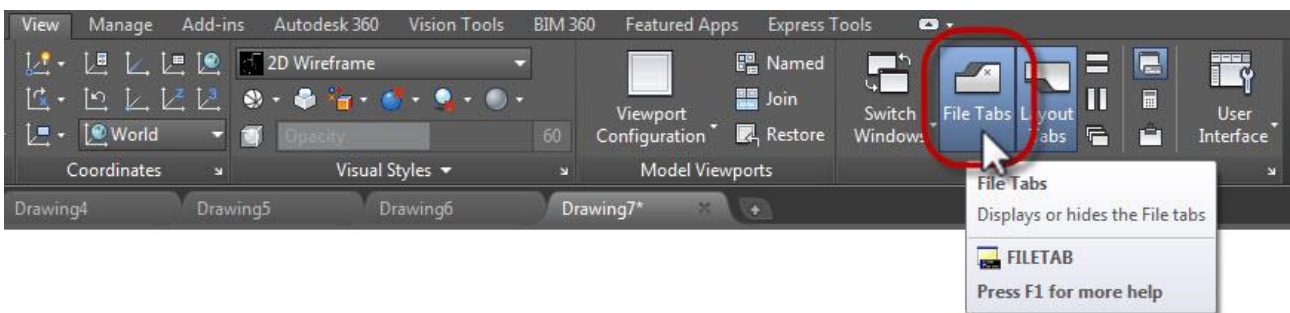


## Section 10 - File Tabs

The New Drawing File Tabs in AutoCAD 2015 provide easy access to your open drawings. Each open file is displayed as a tab on the top of your AutoCAD window. Select to make them active.



You can control the displays of the Drawing Tabs if you go to the View ribbon tab and then you will see the Windows panel and control for File Tabs, you can turn them off and on any time.

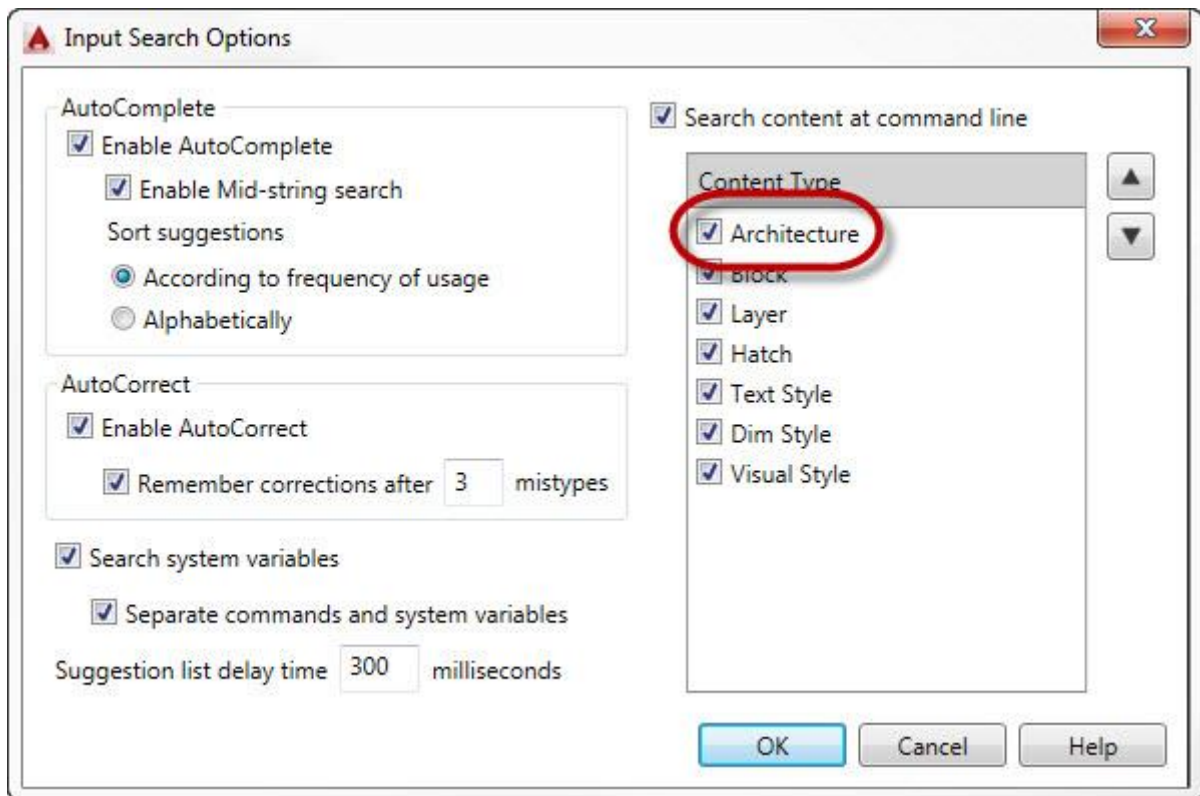


**NOTE:** More information about File Tabs can be found on the following link: <http://bit.ly/15VJEtW>

## Section 11 - Command line search — Architecture styles

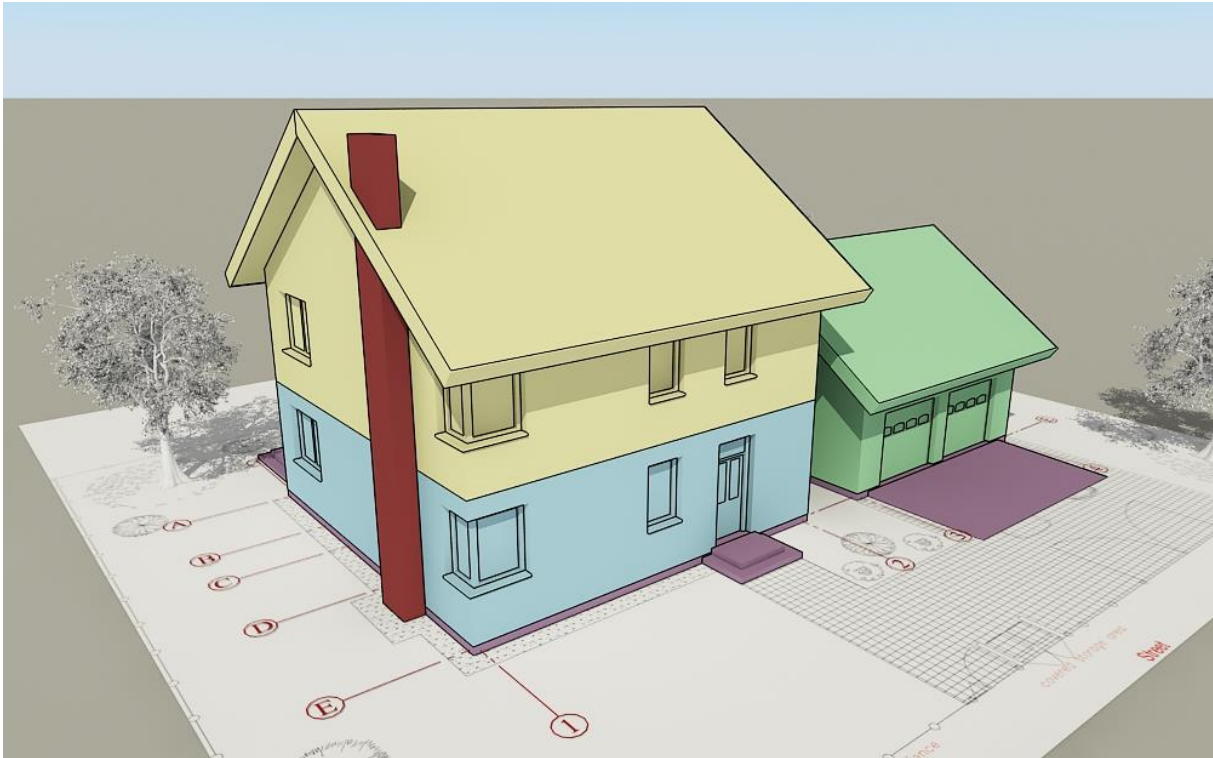
AutoCAD 2015 has added more features to the Command Line search, and also extended it to allow faster and easier access to all architecture styles in a drawing.

To customize the search features on the left of the Command Line, you simply select the wrench icon and choose Input Search Options. Select Architecture in the Input Search Options, Content Type dialogue box. Once this is checked, type in any part of styling on the Command Line, this place list of all the styles that contain that word.



**NOTE:** More information about Command line search can be found on the following link: <http://bit.ly/13Op66U> and <http://bit.ly/18Kq2hL>

## Chapter 3 - Starting Tutorial Project



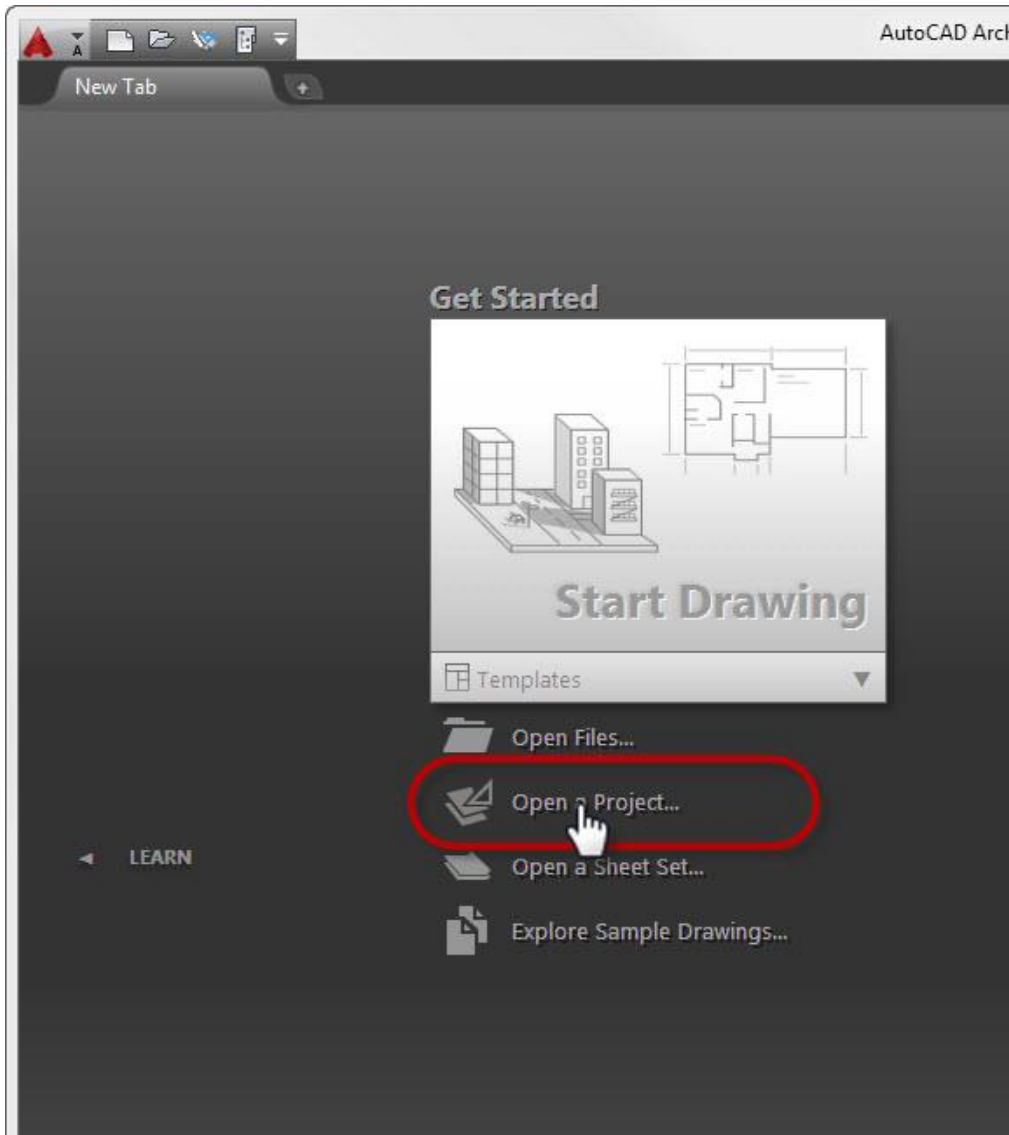
In this work section planning the project of the sample building will be created, starting data will be filled in, and then the levels and the divisions of the future building will be defined.

**NOTE:** For better review the colors of the **drawing window** were changed from dark grey to white. It can be done on the Options panel, Display tab **Colors...** button.

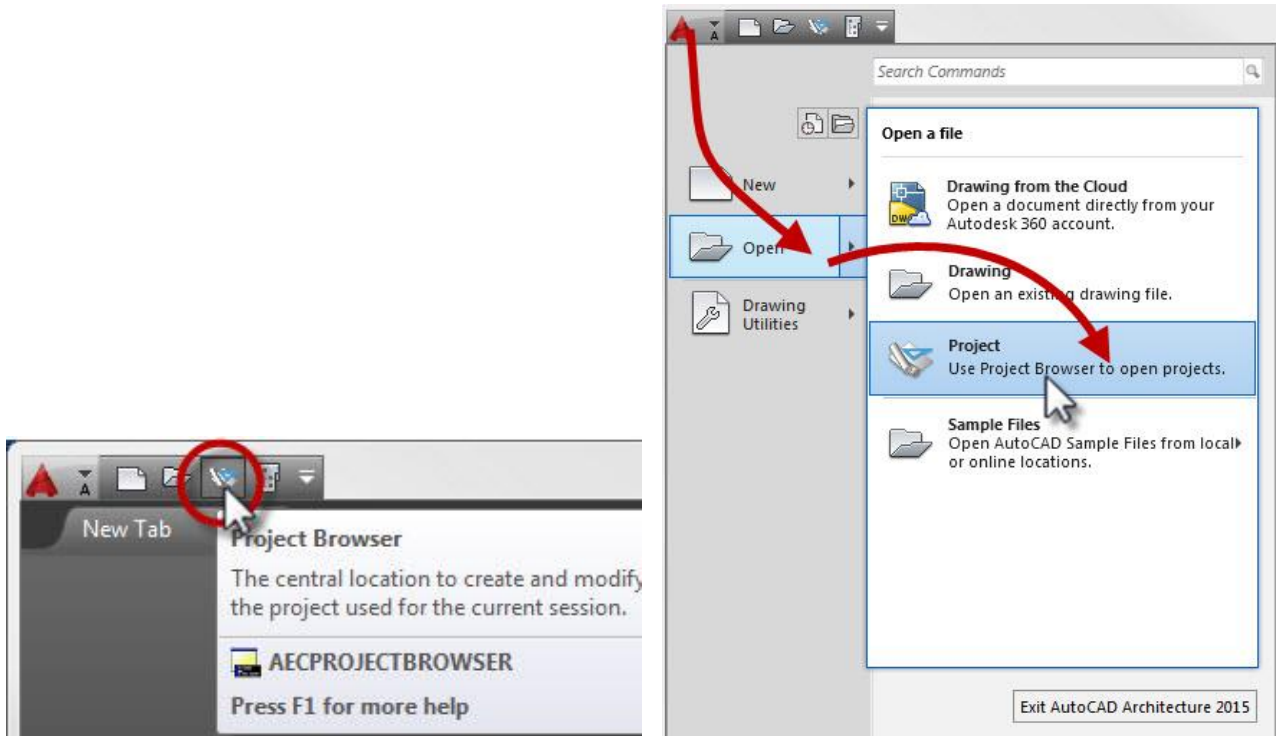


## Section 1 - Creating Project and Making it Active

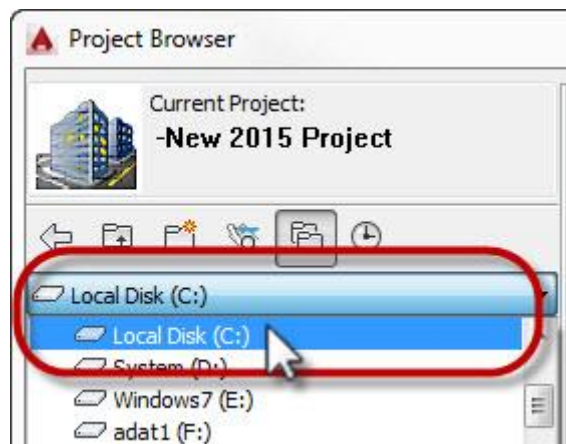
1. First time when you start the program, you will meet the novelty of the 2015 version, called **New Tab**. Here, please search the **Open a Project...** tab in the **Get Started** column and you can start the **Project Browser** with it.



NOTE: The **Project Browser** can start from the Quick Access Toolbar, but you can reach it also from the **Application menu**, then **Open** and **Project** line. If the Project Navigator is open, the start icon of the Project Browser is in its lower icon line.



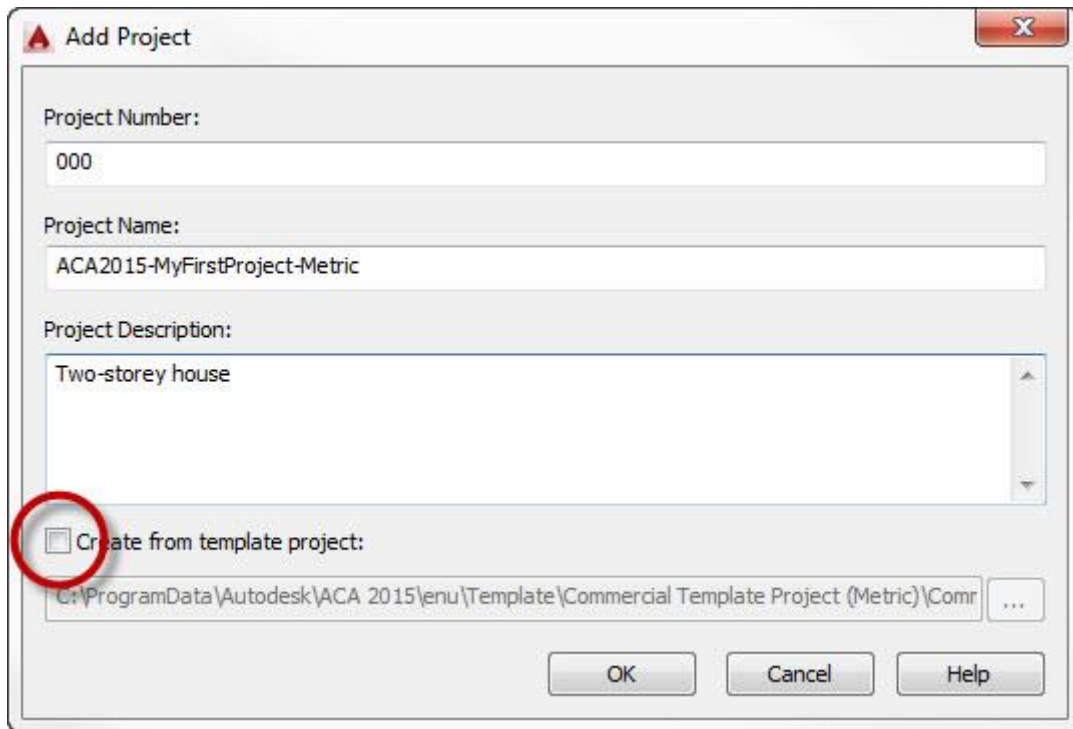
2. At the top left side of displaying **Project Browser** panel position to the **Local Disk (C)** library, to the root directory of the C:\drive.



3. Click on the **New Project** icon at the lower left corner.



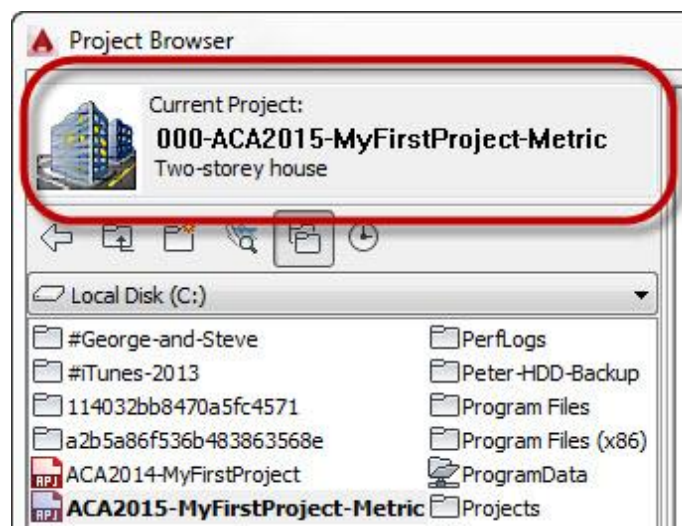
4. On the displaying **Add Project** panel fill in the following data: Project Number: **000**, Project Name: **ACA2015-MyFirstProject-Metric**, Project Description: **Two-storey house**



5. Check if the **Create from template project:** checkbox is turned off.

6. Click **OK** button and accept the set data.

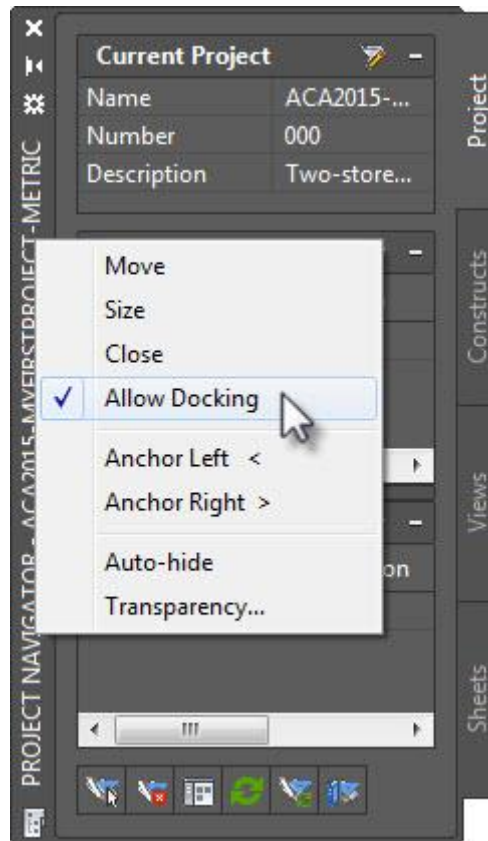
7. At **the top left** of the Project Browser panel check if the new project is the current project.



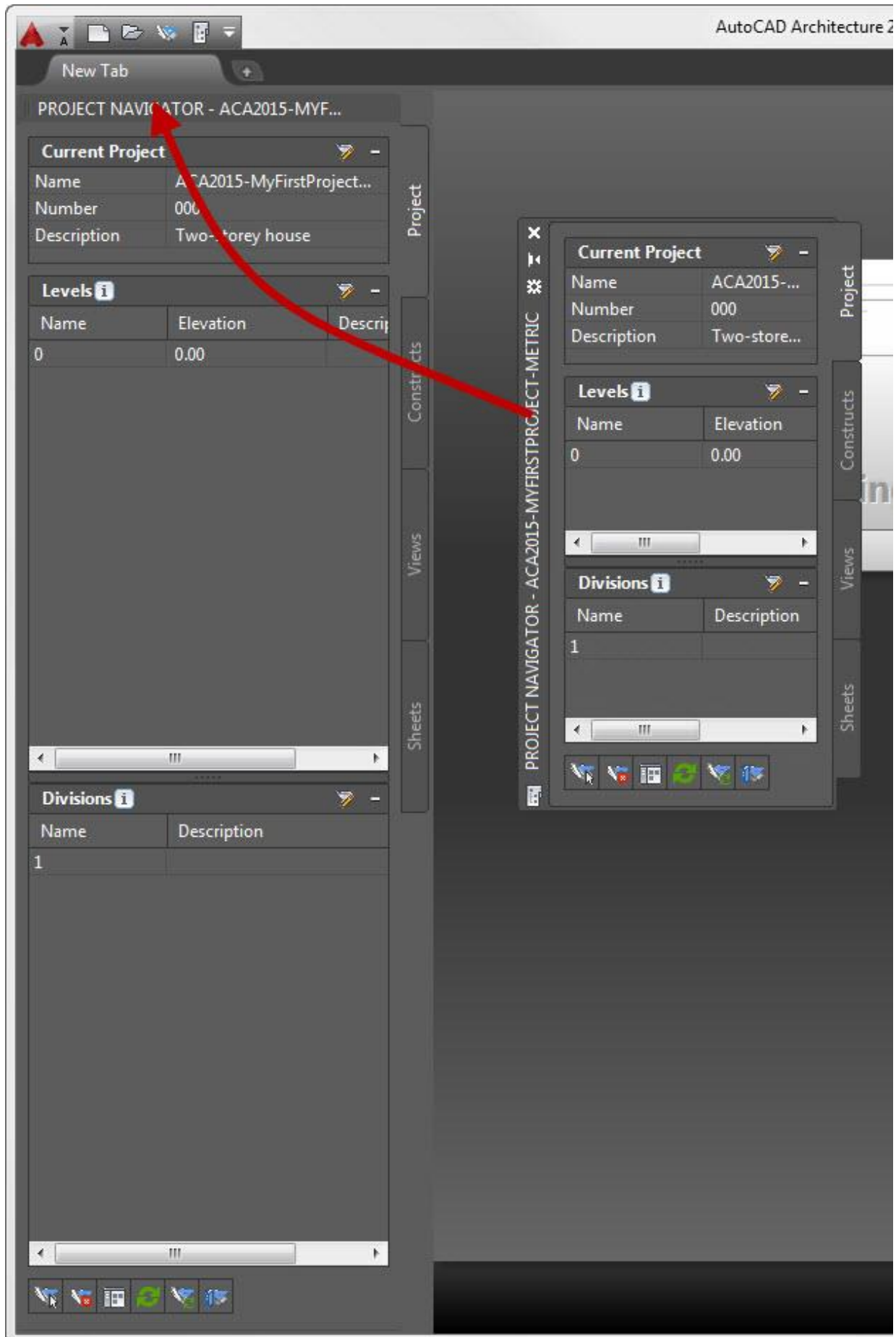
8. Click on the **CLOSE** button, and the Project Browser panel will disappear.

9. The **Project Navigator** palette will appear in floating mode.

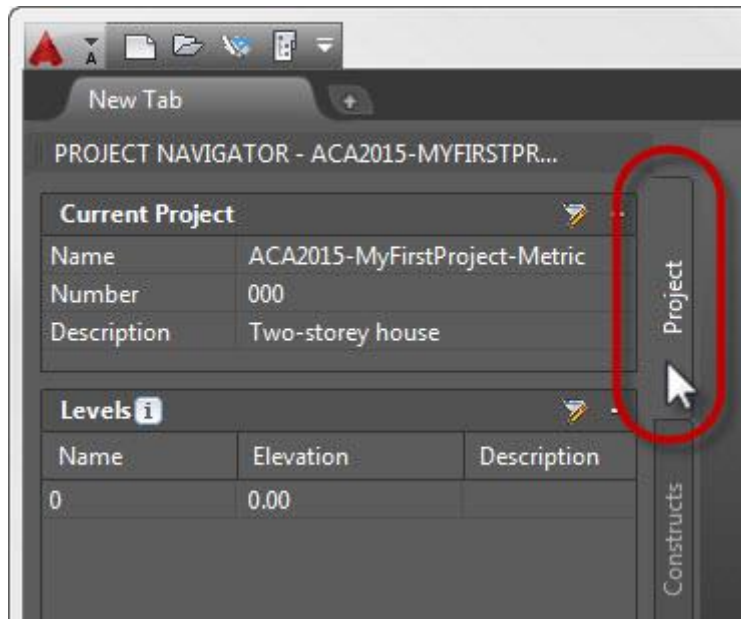
10. Click with right mouse button on the title bar of the Project Navigator, and then in the flyout **turn on the Allow Docking**.



11. Drag the Project Navigator palette and dock it to the left side.

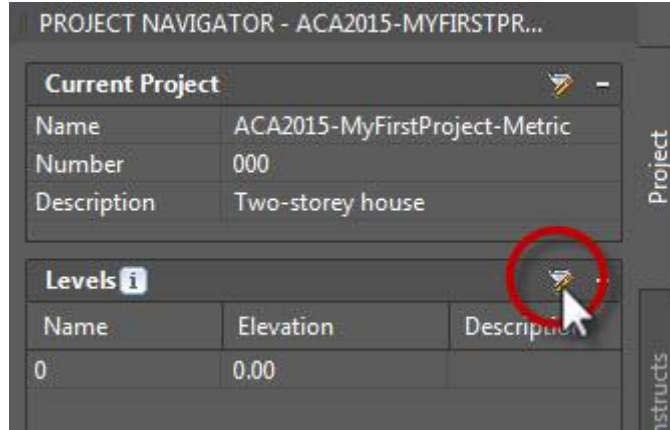


12. Turn to the **Project** tab on full height popped Project Navigator palette, if you are not there.

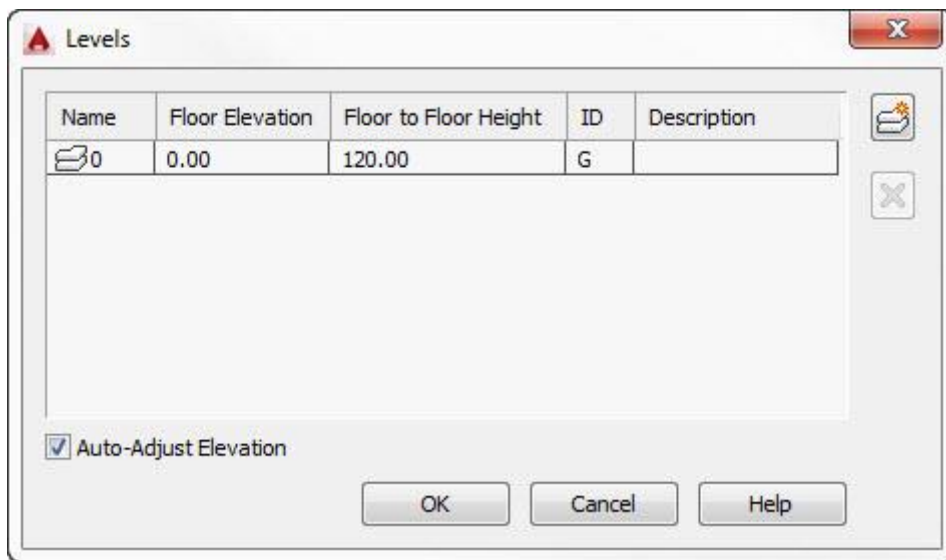


## Section 2 - Setting Necessary Levels

1. On the Project tab of the Project Navigator palette click on the **Edit Levels** icon in the title bar of the **Levels** section.

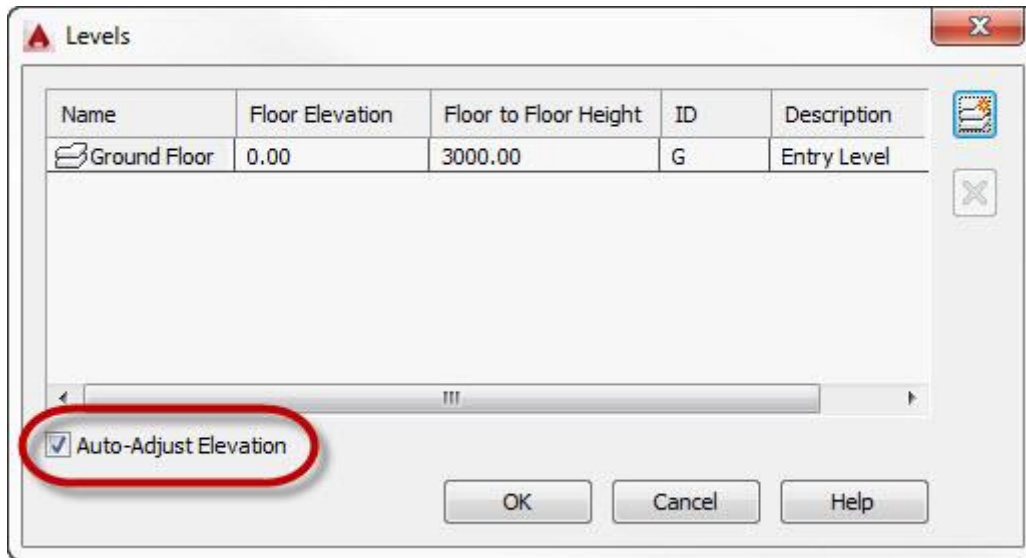


2. **Levels** named panel displays with the following content.



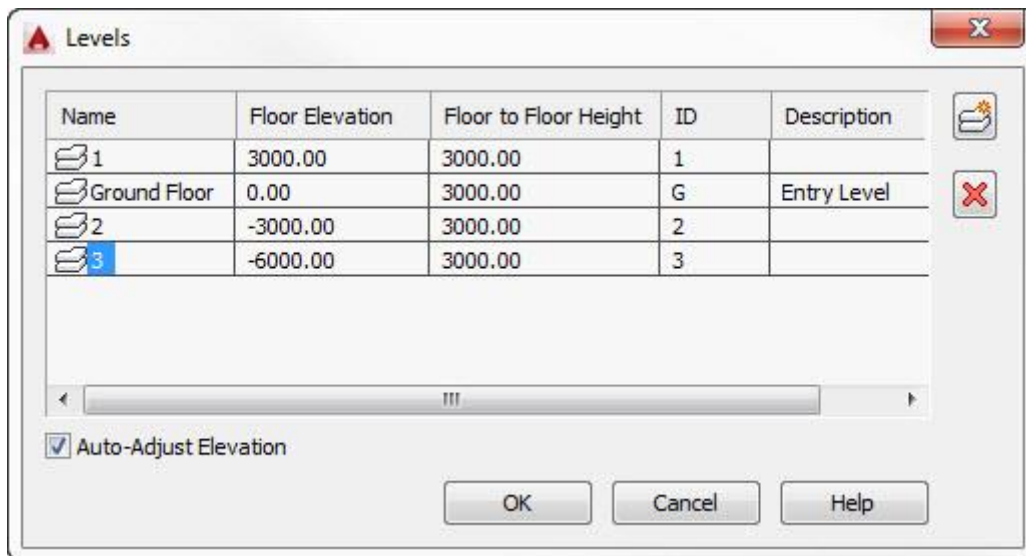
3. Override the data of the only existed level according to the values shown in figure.

4. Make sure that the **Auto-Adjust Elevation** checkbox is turned on in this panel.



5. Click on the level name with the right mouse button and select from the pop-up menu the **Add Level Above** option. Then click on the same level with the right button, select the **Add Level Below** option, and then below the new level insert a new level again.

**NOTE:** Using the Add Level toggle in all cases a new level can be inserted above the marked level.

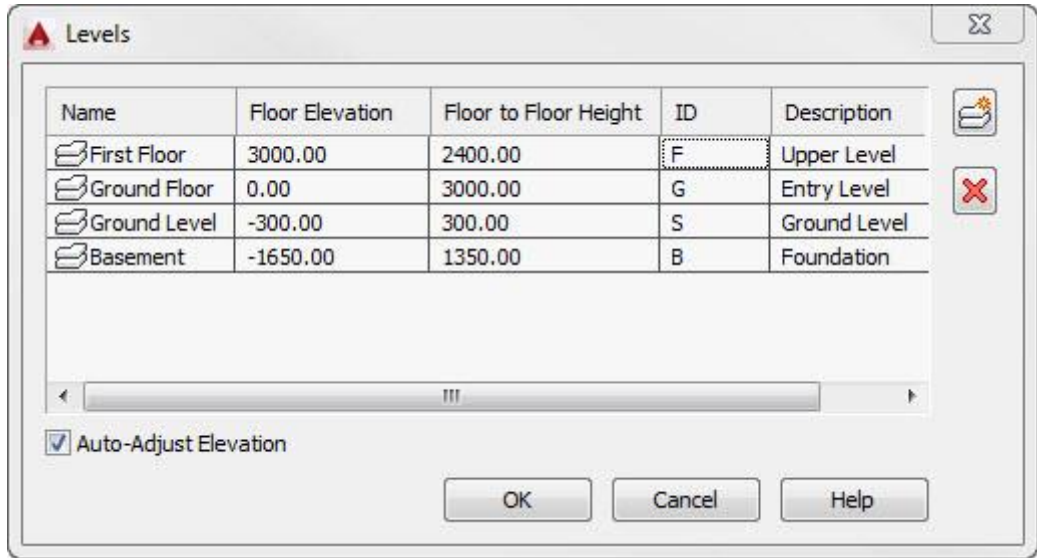


6. Override the data of **Levels** according to the data shown in figure.

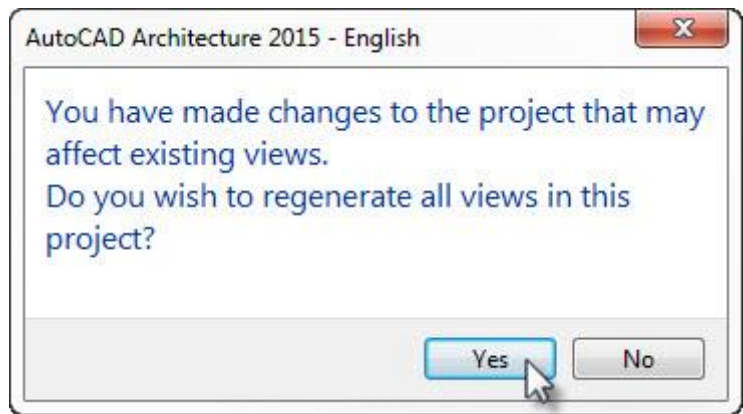
**TIP:** The Auto-Adjust Elevation is on; it is recommended you to write data from the bottom to the top. First fill the Basement Floor Elevation data, and then fill the Floor to Floor Height. Then the next level can come and so on.

7. If you finish rewriting data, click **OK** to close the panel.

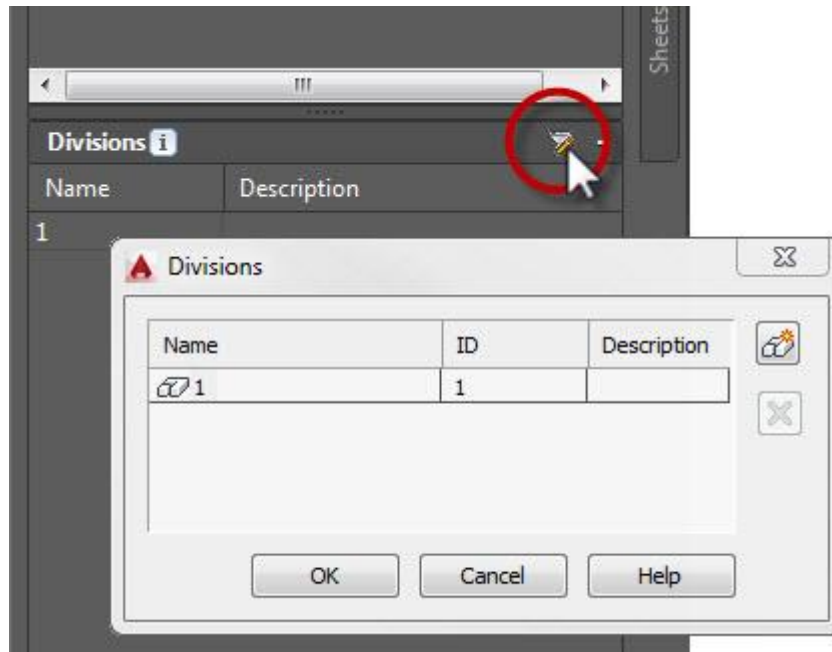




8. After closing the panel, another panel will display, which warns to the possible effects of modifying levels. Clicking on the **Yes** button, accept that it drives the modifications to the needed drawings. (Otherwise such ones not yet exist.)

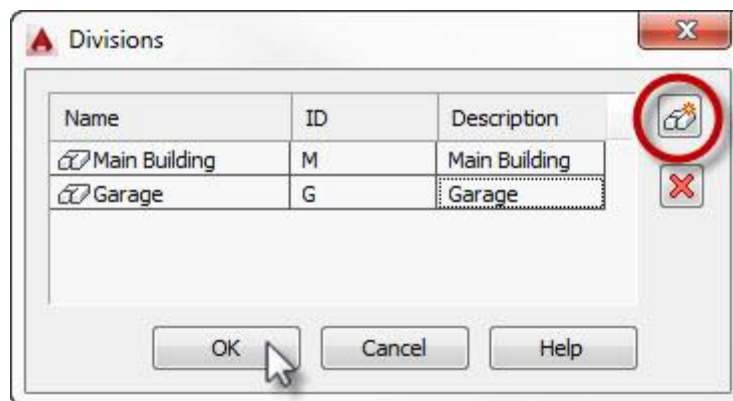


9. On the same Project tab, in the title bar of the **Divisions** section display the **Divisions panel** using the **Edit Divisions** toggle.



10. On the **Divisions** panel override **the name and the data of the Division** shown in the figure and then clicking on the **Add Divisions** toggle, give a new division to it and rename it shown in the figure, as well.

11. Exit the panel by using **OK** button.



## Chapter 4 – Overview of Planned Building



**South-West View**



**North-West View**



**South Elevation**



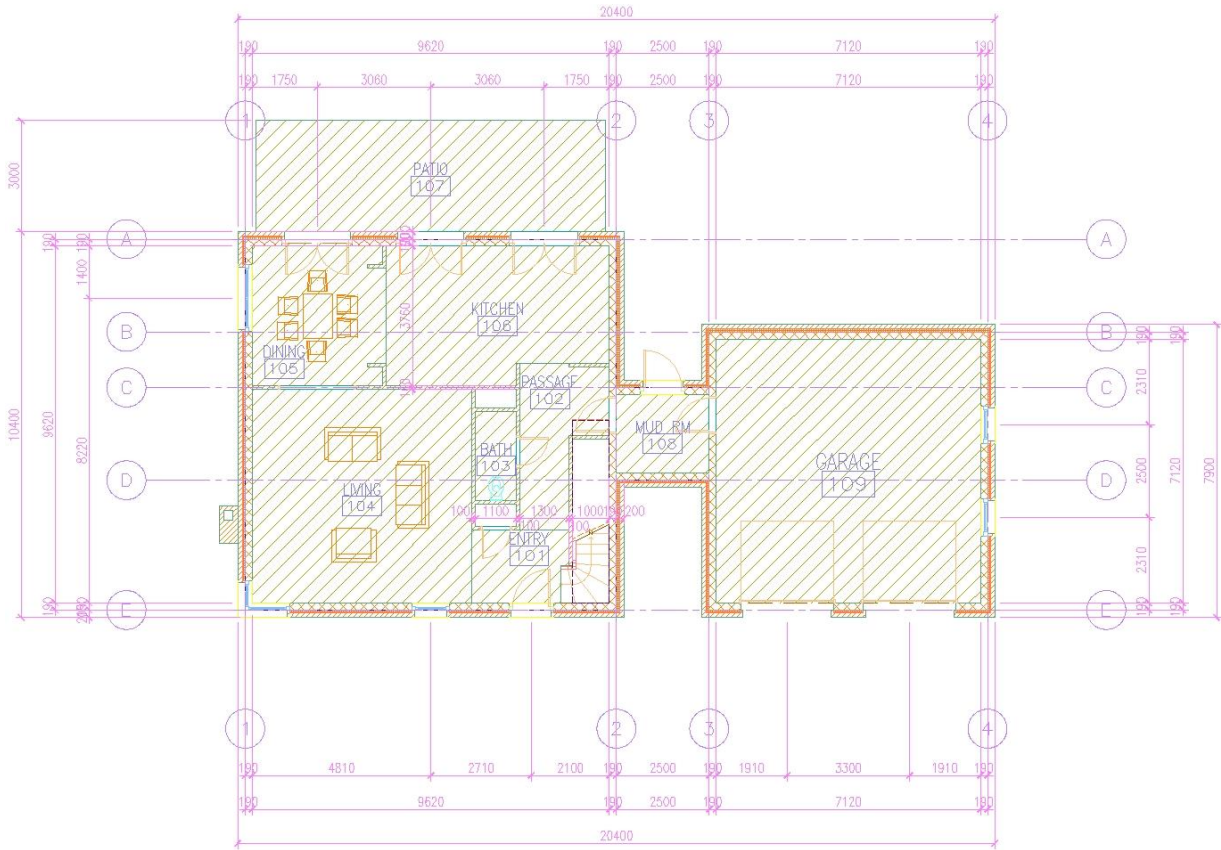
**West Elevation**



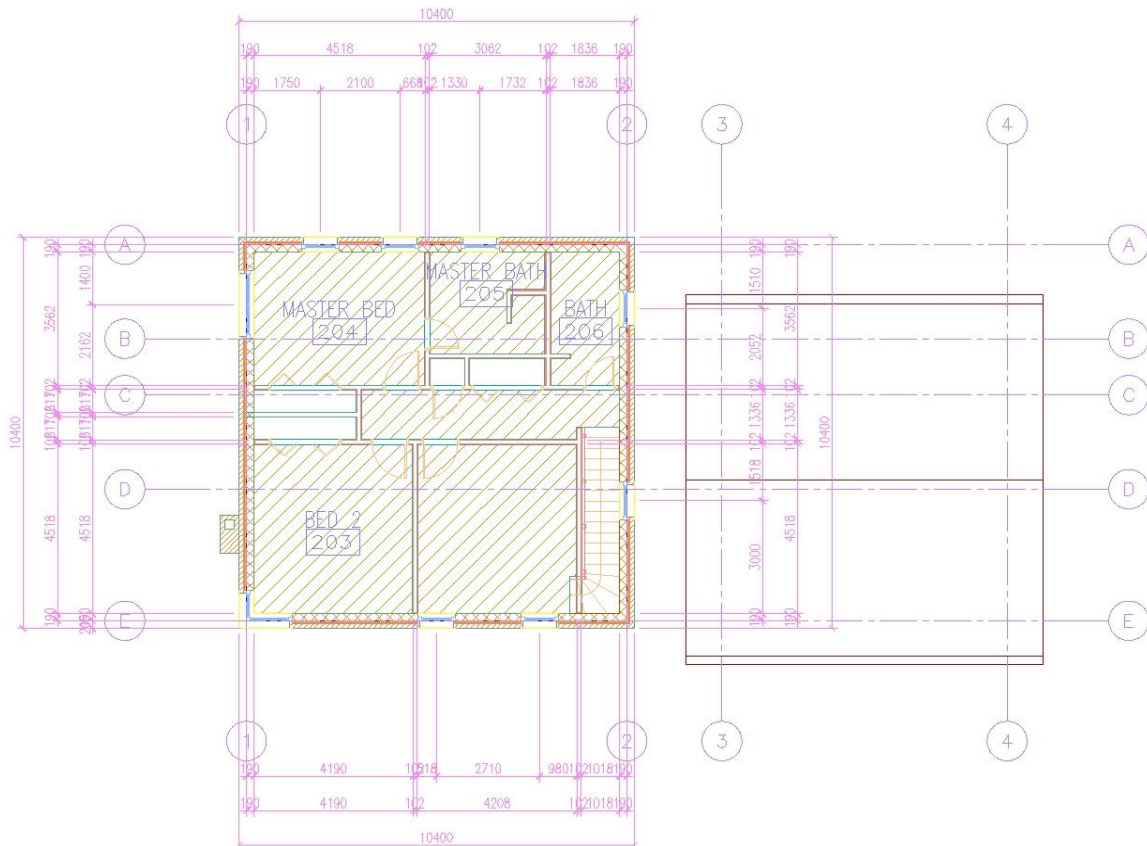
**East Elevation**



**North Elevation**



Entry Level Floor Plan



Upper Level Floor Plan