# Revit Architecture 2009

## Tips and Tricks for Revit Architecture Users

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S4-3

**Course Summary:**

Want to become a more proficient Revit user? Our Revit evangelist will share a host of quick and easy tips and tricks guaranteed to improve your productivity, whether you're using Revit Architecture, Revit Structure, or Revit MEP. We'll look at working with imported CAD files, creating custom Revit components, creating sloped walls, using little-known built-in features, and generally show you lots of ways to make Revit do what you want it to do. Whether you're new to Revit or a seasoned user, you'll learn something new that will immediately make you more productive.

**Instructor:**

David has more than 25 years of hands-on experience with AutoCAD as a user, developer, author and consultant. He is an applications engineer with The PPI Group, a contributing editor to *Desktop Engineering* magazine, the former publisher and editor-in-chief of *CADCAMNet* and *Engineering Automation Report*, the former senior editor of *CADalyst* magazine, and the author of more than a dozen books on AutoCAD. A licensed architect, David was also one of the earliest AutoCAD third-party software developers, creating numerous AutoCAD add-on programs. As an industry consultant, David has worked with many companies including Autodesk. He teaches college-level AutoCAD courses and is always a popular presenter at Autodesk University.

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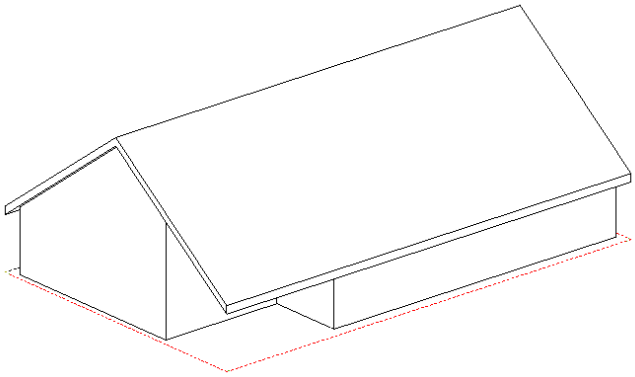
# Introduction

Sure you can click your way through menus and dialog boxes, but as any truly proficient user of any program will tell you, one of the keys to becoming a power user is to find ways of getting things done faster, with the fewest number of clicks and picks. The following collection of tips is designed to help you achieve that goal—in Revit.

We'll get through as many of these as we can, and if time allows, offer some new tips specific to Revit 2009.

## Making Roof Lines Visible in Floor Plans

**Q:** How do you make a roof overhang appear as a hidden line in a floor plan for a level below the roof?



**A:** There are several solutions to this, but I think this is the easiest method:

1. In the plan view of the level in which you want to see the roof line, display the Element Properties dialog box for the view.
2. In the Graphics area, in the Underlay drop-down, select the level on which the roof was created to display as an underlay, and then click OK to close the Element Properties dialog. This makes the roof line visible in the plan view, but the lines appear as solid lines.
3. Select the Linework tool on the Tools toolbar. Then, select the desired linetype from the Type Selector drop-down.
4. Click on each roof edge line to change the linetype.
5. Go back to the Element Properties dialog box for the view and change the underlay back to "None."

## Working with Imported CAD Files

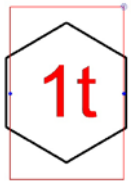
**Q:** Why is it that sometimes when you import a CAD file for use within a drafting view, you can't select the file and move it to the foreground or background?

**A:** When importing a CAD file (such as an AutoCAD drawing) for use within a drafting view, in order for the file to be visible in the drawing view it should be imported or linked to the Current View Only. If you do this, you will be able to move it to the foreground or background by selecting it and then choosing the desired option on the Options bar. When importing a CAD file to use as the basis of a site plan or topo, however, be sure the Current View Only check box is NOT selected. Otherwise you won't be able to select the drawing for use in creating a topo surface.

## Tag Doors by Type/Tag Windows by Mark

**Q:** How do you tag doors by Type rather than by Mark; or tag windows by Mark rather than by Type?

**A:** The information that appears in a door or window tag, as well as the appearance of the tag itself, is determined by the Revit annotation family object used to tag the door or window. By default, door tags appear as an oval with the Mark (door number) centered in the tag, while window tags appear as a hexagon with the window Type centered in the tag. In order to tag doors so that the Type appears in the tag rather than the Mark, or to tag windows so that the Mark appears in the tag rather than the type, you need to load a different annotation family component and use it instead. It just so happens that Revit Architecture comes with an alternate window tag that does just this. For doors, you'll need to create a new tag that uses the Type rather than the Mark. But this is quite easy to accomplish.



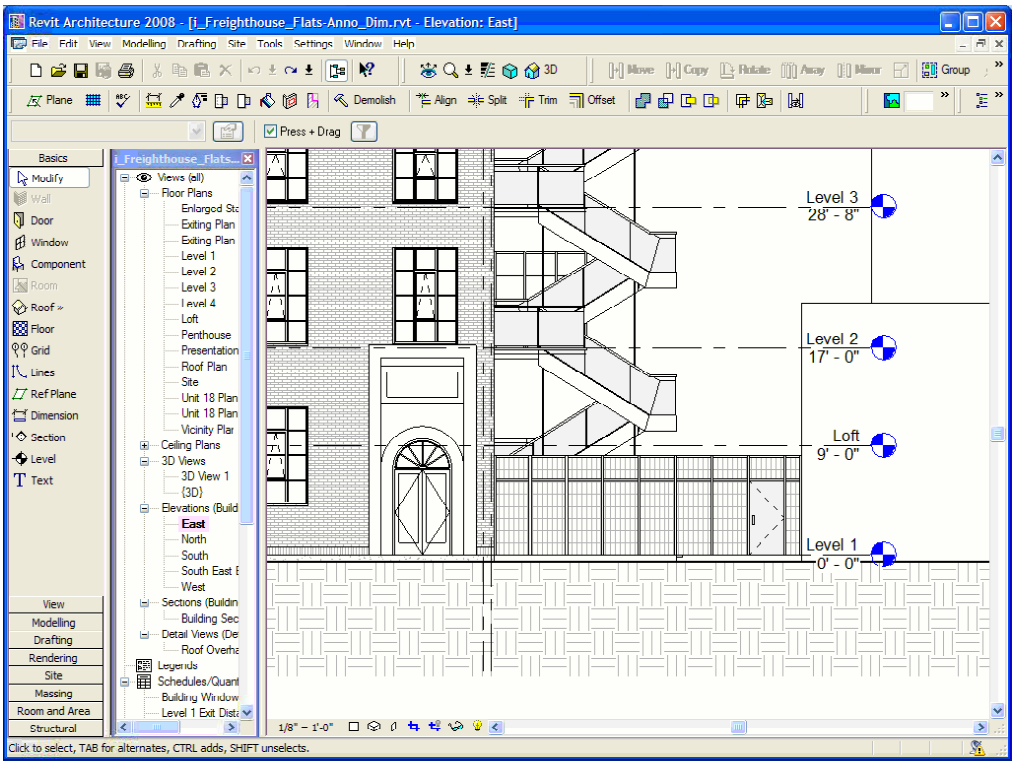

1. Open the existing door tag by selecting File>Open and then navigate to the library folder in which the tag is stored.
2. When the tag opens in Revit's family editor, select the label.
3. On the Options bar, click the Select Parameter button.
4. In the Select Parameter dialog, select the parameter you want to assign for he label. For example, to create a door tag that labels the door using the Type rather than the Mark, select Type Mark. In the Value field, enter a value to represent the label within the family editor environment. Then click OK.
5. Select File>Save As and give your new tag an appropriate name (such as Door Tag by Type.rfa) and click Save. Then close the family editor.
6. To use your new tag, load it into your project (File>Load From Library>Load Family).

That's all there is to it.

## Absolute and relative elevations in Revit projects.

**Q:** How do you set the zero level in a project and display absolute elevation levels?

**A:** First, set the true project elevation by doing the following:
Click Tools>Shared Coordinates>Specify Coordinates at a Point. Click a fixed point in your project (in a view that shows the elevation), and in the shared coordinates dialog, enter the known elevation (the number). Then, in a view showing the elevation (such as an elevation view), select the level label, right-click, and select Element Properties from the shortcut menu. In the Element Properties dialog, click Edit/New. Finally, under Constraints, change the Elevation Base value from Project to Shared, and click OK to close all the dialog boxes. The elevation labels will all change to show the true (absolute) elevations.

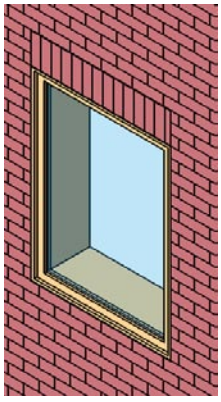



## Splitting Faces

**Q:** How do you split a façade into multiple colored faces?

**A:** You can use Split Face on any non-family instance. The Split Face command splits the selected face of the element; it does not change the structure of the element. After splitting the face, you can use the Paint command to apply a different material to this section of the face.
For example, to split a wall to apply a different paint color around a window, you can do the following:

1. Click Tools>Split Face (or click  on the Tools toolbar).
2. Place the cursor on the element face to highlight it. You may need to press TAB to select the desired face.
3. Click to select the face.
4. Sketch the face area to split. Note that the sketch must form a closed loop inside the selected face, or an open loop that ends on the boundary of the face.
5. Click Finish Sketch in the Design Bar.



You can then use the Paint command to apply a different material to the face of the area you split from the rest of the face.

## Schedule areas of non-closed spaces in Revit

**Q:** How do you schedule areas of non-closed spaces?

**A:** Use the Room Separation tool on the Room and Area panel in the Design Bar to draw lines enclosing spaces that are not separated by walls. Such “rooms” can then be scheduled and their areas calculated.

## Common labels for multiple rooms in Revit

**Q:** How do you place a single label for multiple rooms in Revit?

**A:** If you want a group of rooms to appear as a single room in Revit, modify the element properties of the walls that should not actually separate the rooms, so that they are no longer Room Bounding. Revit will then ignore those walls when placing Rooms. Note, however, that if you later go back and make any of these walls Room Bounding, the Rooms and room tags that you previously placed will apply only to one of the rooms.

## Changing the focal length of a Revit camera

**Q:** What is the default focal length of a camera in Revit and how do you change it?

**A:** A camera inserted into a Revit project has a default field of view of 50-degrees, which is the 35mm camera equivalent of approximately 39mm. Unlike AutoCAD, you can’t control the focal length of the lens, but you can change the field of view by changing the crop region of the resulting 3D view.

## Changing the eye level height in a Revit walkthrough

**Q:** How do you change the eye level height in a Revit 3D walkthrough?

**A:** When you initially create the walkthrough, Revit assigns one global eye level height for all of the keyframes. After initially creating the walkthrough path, however, select the walkthrough, switch to an Elevation view, and on the Options bar, click Edit Walkthrough. Then, on the Options bar, from the Controls drop-down, select Path. You can then move the individual key points of the walkthrough, including changing their elevation.

## Creating sloped walls in Revit

**Q:** How do you create a sloped wall in Revit?

**A:** There are several ways to create a wall that diverts from the vertical axis. For example, you could create a curtain wall, create the wall as an in-place family, use the Wall by Face function, or use wall sweeps and reveals in the wall definition. Here's a quick method, creating a sloped wall as an in-place family using a solid sweep:

1. On the Modeling panel of the Design bar, click Create and then choose Walls from the Family Category and Parameters dialog box. Assign a name to the new wall you are creating.
2. In the Family panel of the Design bar, click Solid Form > Solid Sweep.
3. On the Sketch panel, click Sketch 2D Path and then sketch the path of the wall in plan view. When finished, click Finish Path.
4. On the Sketch panel, click Sketch Profile. In the Go to View dialog box, select the view in which you will define the profile, and then click Open View.
5. Use the Sketch tools to define the profile of the sloping wall. Be sure the sketch forms a closed loop. When finished, click Finish Profile.
6. On the Sketch panel, click Finish Sweep. Then click Finish Family.

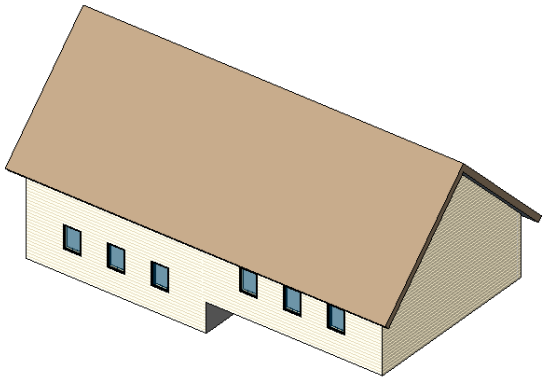
The wall now behaves like any other wall, including the ability to host doors and windows, although windows and doors inserted into sloped portions of walls may not align with the wall and may therefore need to be modified.

## Revit's built-in calculator

**Q:** Is there a way to perform calculations while entering distances and angles in Revit?

**A:** Yes. Revit actually has a built-in calculator that you can use at any time while entering distances or parameters. To use this "hidden" feature in Revit, simply preface the distance or parameter you are entering with an equal sign (=), and then enter the formula. You can use any standard arithmetic formula. For example, to create a wall half of 32'-6 7/8", enter the distance as =32'6 7/8 / 2.

## Plan regions



**Q:** Is there a way to show multiple levels within one floor plan view? This would be very useful for showing split level plans, or showing the roof of a portion of a building that is several stories below the level of the current plan view.

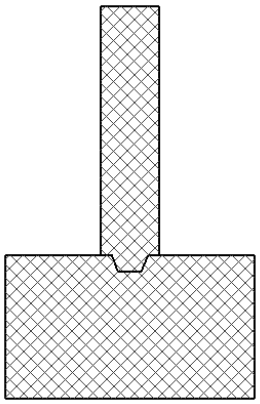
**A:** Yes. This is exactly the purpose of Revit's Plan Region command. The Plan Region command (found on the View panel of the Design bar) lets you sketch a closed region that has its own View Range controls separate from those of the rest of the plan view.

1. Open a plan view.
2. On the View panel, click Plan Region (or select View>New>Plan Region).
3. Sketch a closed loop using lines, rectangles, or polygons.
4. On the Design bar, click Region Properties.
5. In the Element Properties dialog, under Extents, for View Range click Edit.
6. In the View Range dialog box, specify the primary range and view depth for the plan region. Then click OK to close all of the dialog boxes.
7. In the Design Bar, click Finish Sketch.

The area within the plan region will display based on the view range assigned to that region.

## Modifying cut boundaries

**Q:** Is there a way to change the linework that Revit creates when you cut cross sections?



**A:** Yes. This is exactly the purpose for the Edit Cut Profiles tool (located on the Tools toolbar). For example, when you create a cross section through a building with a sloped roof, Revit shows a basic junction between the top of the wall and the roof, but that junction probably doesn't look exactly the way it should. You can use the Edit Cut Profiles tool to modify the appearance of this junction. Note that you aren't actually changing the model, just altering its appearance in the particular view. Here's how it works:

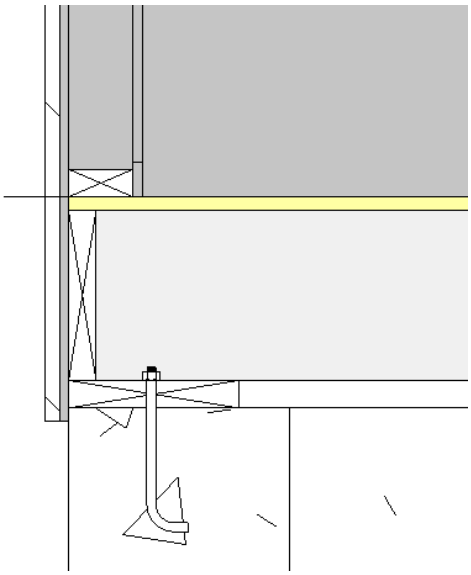
1. After creating the section, click the Edit Cut Profiles tool.
2. Hover over the roof until it highlights, and then click to select it. Revit switches to sketch mode.

3. Using the sketch tools, sketch the change you wish to make to the profile. Note that the lines you sketch must connect to the original profile. You can also control what gets added or subtracted from the original profile by controlling which side of the lines you wish to keep. When finished, click Finish Sketch. If the results are not what you wanted, you can select the cut profile and then click Edit on the Options bar to go back into sketch mode to make additional changes.

## Modifying Revit wall assemblies

**Q:** Is there a way to have a portion (one or more layers) in a compound wall extend beyond the bottom or top of the wall? For example, I'd like to have the sheathing and siding extend beyond the sill plate extend down to cover the floor joists?

**A:** This can definitely be done. The key to making this work is to modify the structure of the wall in a section view. You must also unlock the constraints that normally cause all of the layers to end at the bottom of the wall. For example, we want the sheathing and siding to extend 1'-0 ½" beyond the bottom of the wall to cover the subfloor, 2x10 floor joists, and 2x10 ledger and overlap the foundation approximately ¾". Here's how to do this:



1. Select the wall you want to modify, right-click, and select Element Properties to display the Element Properties dialog box.
2. In the Element Properties dialog box, click Edit/New.
3. In the Type Properties dialog, under Construction, click the Structure Edit button.
4. In the Edit Assembly dialog box, make sure the preview is turned on and switch to a section view. Zoom in to the bottom of the wall.
5. Click Modify and then select the bottom of the layer you want to be able to extend (for example, the clapboard siding). Once selected, click to unlock the padlock icon. Repeat this step for any other layers you want to be able to modify. When finished, click OK to close all of the dialog boxes.

After making this change to the wall assembly, you can modify the bottom of an instance of the wall by displaying a section view and clicking on the wall. You will notice new grips at the bottom of the wall that allow you to offset the bottom of the wall. In addition, if you display the Element Properties for the wall, you will notice that you can specify a Base Extension Distance to set the distance that the layers extend beyond the bottom of the wall.

## Changing the number of Backup files created

**Q:** How can you change the number of Backup files Revit creates?

**A:** In the SaveAs dialog box, click the Options button. Then, in the File Save Options dialog, you can change the maximum number of backups Revit maintains.

## Adding new locations to the list of cities

**Q:** Revit includes a list of major cities, making it vary easy to create solar studies. But is there any way for me to add additional locations to Revit's list?

**A:** Absolutely, although the method changes in Revit 2009 from what you had to do in earlier versions. In Revit 2009, you can simply edit a text file containing a list of locations. In earlier versions you have to change the list that AccuRender uses, and the method is not obvious:

1. On the Rendering tab of the Design bar, click Settings.
2. In the Scene Selection dialog, define and name a scene if you have not done so already.
3. In the Render Scene Settings dialog, ensure that the Use Sun and Shadow Settings From View option is not selected, and then click the Sun button.
4. In the Sun and Sky Settings dialog, on the Solar Angles tab, select By Date, Time, and Place from the Specify Solar Angle drop-down. Then click on the Place tab.
5. On the Place tab, right-click in the Cities list and select Add from the shortcut menu.
6. In the Edit City dialog, fill in all of the pertinent information and then click OK.

## Creating a roof ridge cap

**Q:** How can you create a ridge cap for a roof in Revit?

**A:** There are probably several different methods, but one of the most direct ways to accomplish this is to create a fascia profile (a section view of the ridge cap) and then apply that profile as a fascia. Because of the variations in slope, you would need a different profile for each roof slope (although there may be solutions to this problem as well). Here's a quick step-by-step:

1. Open the family editor using a profile family and create a profile for the ridge cap.
2. Save the profile and load it into the project in which you want to place the ridge cap.
3. On the Modeling tab, select Host Sweep>Roof Fascia

## Manipulating views

**Q:** Is there a faster way to manipulate views than using the pull-down menu or toolbar buttons?

**A:** Yes. If you've got a wheel-mouse, remember to use the middle mouse button for pan (press down and drag), zoom (roll the wheel), and orbit (hold down the Shift key while pressing the roller wheel and dragging).

## Using filters to adjust views

**Q:** Is there an easy way to indicate fire ratings of walls in plan views?

**A:** Yes. Perhaps the easiest way to do this is to set up view filters that display rated walls using different colors, fill patterns, or linetypes.

## Quickly jumping between views

**Q:** Is there a way to quickly jump to other views?

**A:** Yes. Remember that you can double-click on the callout of any section, elevation, or detail to immediately jump to that view. And since the datum level symbol is also tied to the floor levels (except for reference levels), double-clicking on a level datum symbol immediately jumps to its level view.

## Quickly hiding elements

**Q:** Is there a way to quickly hide elements?

**A:** Yes. You can right-click on an element and then select Hide from the shortcut menu to permanently hide the element.

## Using shortcut keys

**Q:** I'm used to typing in AutoCAD. Can I type in Revit to get things done more quickly?

**A:** Absolutely. Revit shows many of its two-letter keyboard shortcuts right in the pull-down menus. I don't recommend memorizing all of these, but you should remember to use the keyboard shortcuts for zoom to fit (ZF), visibility graphics (VG), view properties (VP), and element properties (PR). Also remember that there are two-letter shortcuts for the various object snaps. (See the Tools>Snaps dialog box for a complete list.)

## Previous selection set

**Q:** AutoCAD remembers the previous selection set. Is there anything similar in Revit?

**A:** Yes. The Ctrl+left-arrow keyboard combination reselects the previous objects, as long as you haven't already selected anything new or clicked in a dialog box.

### Quick Delete

**Q:** Is there an easier way to delete objects other than selecting them and then pressing the Delete key (or right-clicking)?

**A:** Yes. If you hold down the Delete key, Revit will then immediately delete each object you select while the Delete key is depressed.

### Using view templates

**Q:** Is there a fast way to change the settings of one or more views to match those I've already set up for another view?

**A:** Yes. That's the purpose for view templates. After getting one view looking just the way you want, you can save its settings as a view template. You can then select one or more views in the project browser and apply a view template to all of them at once. And remember that view templates are even more powerful in Revit 2009, because you can select which properties of the view template you want to apply.

## More Tips and Tricks

Do you want more tips and tricks?

- How about paying more attention to what Revit tells you?
- Are there better ways to work with building masses?
- Keep your models as simple as possible for as long as possible.
- Don't try to force Revit to model things that it can't quite manage.
- Split large projects into several smaller linked projects.
- Don't be afraid to mix the best of Revit with the best of AutoCAD or AutoCAD for Architecture.
- Use other tools in conjunction with Revit.

I am always looking for more Revit tips and tricks. Please share your best Revit tips and tricks with me. Contact me at david@dscohn.com.

And watch my Revit blog for more Revit Tips & Tricks: http://revit-up.blogspot.com.