

May the Force Be With You: Autodesk® Revit® Tips and Tricks

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AB122-1R Do you want to become a Revit master? In this fun and informative class, you'll learn a host of Revit tips and tricks that you can take home and use every day. Learn how to make your drawings look exactly the way you want, quickly create custom tags, share coordinates, adjust the appearance and structure of walls without having to create new wall types, create sloped walls and other sophisticated shapes, and more. Whether you're new to Revit or a seasoned veteran, you'll learn something new—guaranteed to make you even more productive.

About the Speaker:

David has more than 25 years of hands-on experience with AutoCAD® as a user, developer, author, and consultant. He is the Technical Publishing Manager with 4D Technologies/CAD Learning, 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 has taught college-level AutoCAD courses and is always a popular presenter at both Autodesk University and AUGI® CAD Camps.

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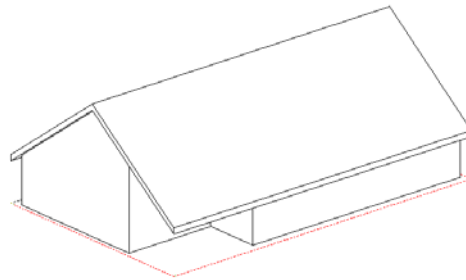
Introduction

Sure you can click your way through ribbons, palettes, 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.

Here are 20 Revit tips, in question and answer format. Although these tips are based on Revit Architecture 2011, most are applicable to other flavors and earlier versions as well.

Tip #1: 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?



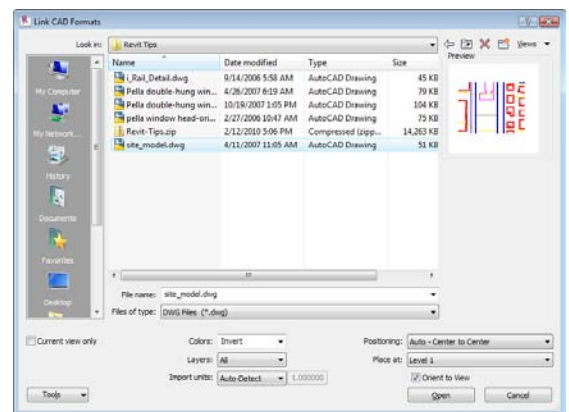
A: There are several solutions to this, but I think this is the easiest method:

1. Open the plan view of the level in which you want to see the roof line.
2. In the view properties, expand the Underlay drop-down and select the level on which the roof was created to display as an underlay. This makes the roof line visible in the plan view, but the lines appear as solid lines.
3. Select the Linework tool in the View panel on the Home ribbon. Revit displays the Modify|Linework contextual ribbon. Select the desired linetype from the Line Style type selector.
4. Click on each roof edge line to change the linetype.
5. Go back to the view properties and change the underlay back to “None.”

Tip #2: 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.

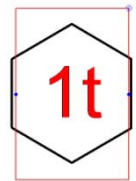


Tip #3: Tag Doors by Type/Tag Windows by Mark

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 in the Revit library.
2. When the tag opens in Revit's family editor, select the label.
3. In the Label panel of the Modify Label contextual ribbon, click Edit Label.
4. In the Edit Label dialog, select the Type Mark category parameter and add it to the label parameters and remove the Mark parameter from the label parameters. Then click OK.
5. Save the new annotation tag as a new Revit family component, giving it an appropriate name (such as Door Tag by Type Mark.rfa) and click Save.
6. To use your new tag, load it into your project.



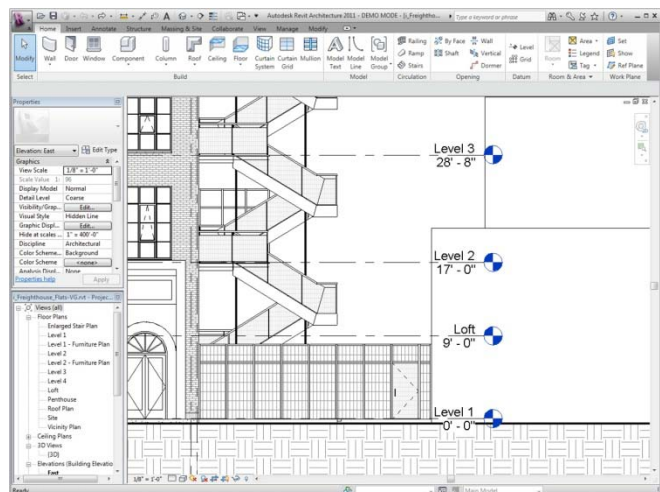
That's all there is to it.

Tip #4: 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:

In the Project Location panel of the Manage ribbon, click Coordinates>Specify Coordinates at 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 to display its properties in the Properties palette and click Edit Type. In the Type Properties dialog, under Constraints, change the Elevation Base value from Project to Shared, and click OK to close the dialog box. The elevation labels will all change to show the true (absolute) elevations.

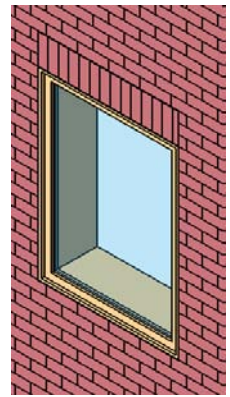


Tip #5: Splitting Faces

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. In the Geometry panel of the Modify ribbon, click Split Face.
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 Edit Mode.



You can then use the Paint tool (also located in the Geometry panel of the Modify ribbon) to apply a different material to the face of the area you split from the rest of the face.

Tip #6: 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 Home ribbon to draw lines enclosing spaces that are not separated by walls. Such “rooms” can then be scheduled and their areas calculated. Remember that you can use the Visibility/Graphics controls to hide the room separation lines.

Tip #7: Common labels for multiple rooms in Revit

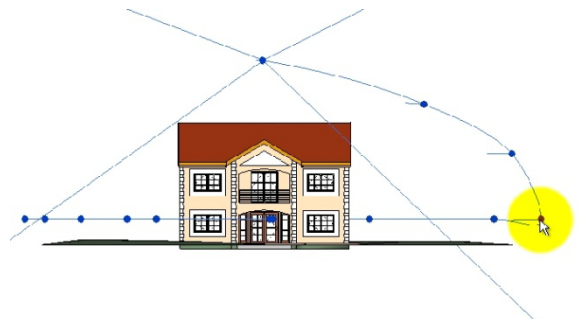
Q: Maybe a wall actually represents a movable partition. How do you place a single label for multiple rooms in Revit?

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.

Tip #8: 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 in the ribbon, 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. After moving a key point,



remember to switch back to the camera and realign it so that it remains targeted on the appropriate area in your model.

Tip #9: Creating sloped walls in Revit

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

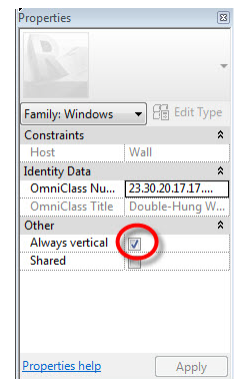
A: There are several ways to create a wall that diverts from the vertical axis. For example, you could create a curtain wall, create the wall as an in-place family, use the Wall by Face function, or use wall sweeps and reveals in the wall definition. Here's a quick method for creating a sloped wall as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

1. In the Build panel on the Home ribbon, choose Component>Model In-Place.
2. In the Family Category and Parameters dialog, choose Walls.
3. In the Name dialog, assign a name to the new wall you are creating.
4. In the Forms panel of the Home ribbon, choose Solid Sweep.
5. In the Sweep panel of the Modify|Sweep contextual ribbon, click Sketch Path and then sketch the path of the wall in plan view. Click Finish Edit Mode when done.
6. In the Sweep panel of the Modify|Sweep contextual ribbon, click Edit Profile. In the Go to View dialog box, select the view in which you will define the profile, and then click Open View.
7. Use the tools in the Draw panel to define the profile of the sloping wall. Be sure the sketch forms a closed loop. Click Finish Edit Mode when done.
8. On the Modify|Sweep contextual ribbon, click Finish Model to complete the in-place wall.

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.

A problem with “in-place” walls is that they lack the structure of standard Revit walls. To create sloped walls that include this structure, first model the shape of the wall using mass objects and then use the Wall by Face function to convert the faces of the mass into Revit walls.

Extra Tip: Remember that to ensure that windows slope to match their host walls, open the window in the Family Editor and in the Properties palette, clear the Always Vertical check box.



Tip #10: Revit's built-in calculator

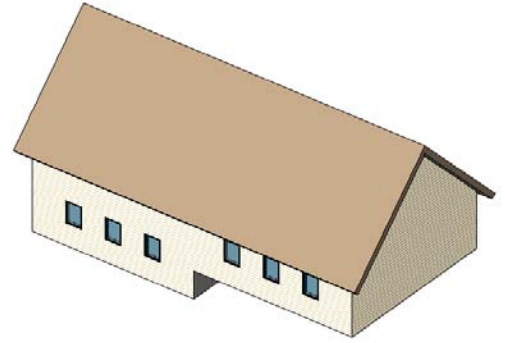
Q: Is there a way to perform calculations while entering distances and angles in Revit?

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.

Tip #11: 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 tool (found in the Create panel on the View ribbon) 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. In the Create panel on the View ribbon, expand the Plan Views split button and click Plan Region.
3. Sketch a closed loop using lines, rectangles, or polygons.
4. In the Properties palette, click Edit.
5. In the View Range dialog box, specify the primary range and view depth for the plan region. Then click OK.
6. In the ribbon, click Finish Edit Mode.

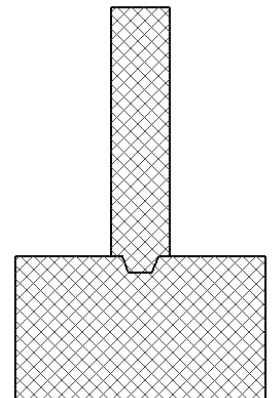
The area within the plan region will display based on the view range assigned to that region.

Remember, a plan is simply a horizontal cross section. The Plan Region tool lets you jog the horizontal cross section.

Tip #12: 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 Cut Profile tool (located in the Graphics panel of the View ribbon). 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 Cut Profile 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 Cut Profile tool.
2. On the Options bar, select either Face or Boundary Between Faces.
3. Hover over what you want to edit until it highlights, and then click to select it. Revit switches to sketch mode.
4. 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 Edit Mode. If the results are not what you wanted, you can select the cut profile and then click Edit Sketch to go back into sketch mode to make additional changes.

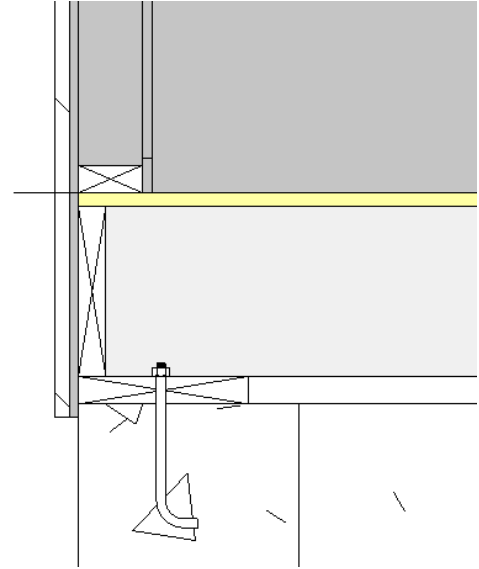
Tip #13: Modifying Revit wall assemblies

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 1/2" beyond the bottom of the wall to cover the subfloor, 2x10 floor joists, and 2x10 ledger and overlap the foundation approximately 3/4". Here's how to do this:

1. Select the wall you want to modify. Then, in the Properties palette, click Edit Type.
2. In the Type Properties dialog, under Construction, click the Structure Edit button.
3. 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.
4. 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 Instance 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.



Tip #14: 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. Create a new fascia type using the profile you just created.
4. Add the new ridge cap as a Roof Fascia.

You can add similar caps as hip caps. After adding hip caps, you may need to modify the mitering at the corners of the roof.

Tip #15: Using filters to adjust views

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

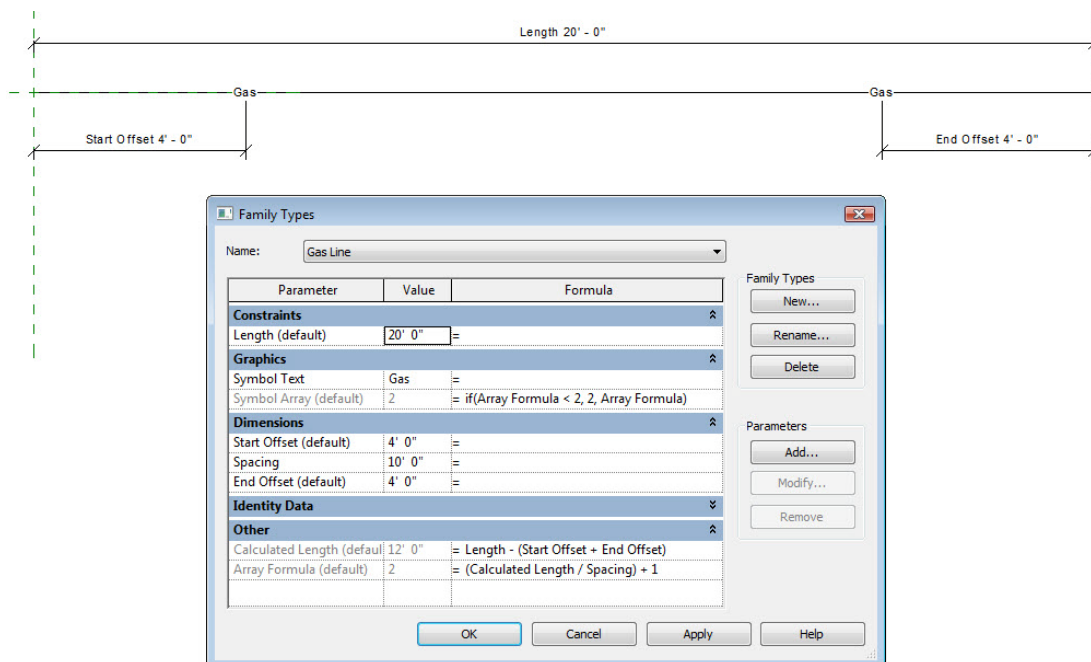
A: Yes. Perhaps the easiest way to do this is to set up view filters that display rated walls using different colors, fill patterns, or linetypes. And remember that parameters are case-sensitive.

Tip #16: Complex Linetypes

Q: Is there any way to create custom linetypes in Revit similar to those in AutoCAD that incorporate text and symbols in the linetype definition.

A: Linetypes in Revit can only consist of sequences of dashes, dots, and spaces. But you can work around this by creating a “Line Based” family. Create these using either the Generic Model line based.rft template file to create a Model Line or the Detail Component line based.rft template file to create a Detail Line. Both achieve the desired results, so the choice of template depends on your specific needs.

The “line based” family templates include a Reference Line with a Length parameter assigned to it. This is what enables you to later draw a line using this family. To create this family, I added nested annotation families, snapped to the reference line, created an array, added a starting and ending offset parameter. I then added parameters to control the array and a parameter called spacing that controls the distance between each symbol.



(Thanks to Paul Aubin for this wonderful tip.)

Tip #17: Using shortcut keys

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

A: Absolutely. If you press the ALT key, Revit displays letters and numbers associated with different commands and areas of the ribbon. You can type those letters or numbers while pressing the ALT key to start that command. So ALT+M would switch to the Modify tab.

Revit also has many keyboard shortcuts. You can see many of these shortcuts in various dialog boxes. For example, if you click Snaps (in the Settings panel of the Manage ribbon), the Snaps dialog shows the keyboard shortcuts for the various object snaps.

You can also modify the keyboard shortcuts. To do so, choose Keyboard Shortcuts in the User Interface split button (located in the Windows panel of the View ribbon) to open the Keyboard Shortcuts dialog. Complete instructions for modifying keyboard shortcuts can be found in the Revit help file.

I don't recommend memorizing all of the available shortcuts, but some worth remembering include: zoom to fit (ZF), visibility graphics (VG), and render (RR).

Tip #18: Tear-away Ribbon Panels

Q: I hate having to constantly switch ribbon tabs. Is there an easier way?

A: Yes. Individual ribbon panels can be torn away and then remain visible as a floating panels, regardless of which ribbon is active, similar to the old toolbars in AutoCAD. And when you're done using a floating ribbon panel, you can easily restore it to its original position by clicking the Return Panels to Ribbon button. The panel will return to its original position regardless of what ribbon is currently visible.



Tip #19: Adjusting Project North, True North, and Plan Orientation

Q: How can I make West be Up in my drawings? OR North is Up in my drawings but it's not "really" North. What's the difference between Project North and True North? OR How do I get my project located to match my survey?

A: Each Revit project file has its own internal coordinate system which by default is only known to the project. If your project is a stand-alone, you may be able to live with this internal system. By default, North is toward the top of the project and truly faces north.

When you first start a project, you should specify the project location using either Internet Mapping, the nearest major city, or latitude and longitude so that you can generate location-specific shadows if necessary. Note that you can add new cities to the list by editing the file SiteAndWeatherStationName.txt. (If you don't have actual survey data, Google the latitude and longitude for the city you want to add.)

If you've started modeling your project before you locate the project, you probably started modeling with the long dimension of the building running left-to-right and no regard to where True North is located. That's okay. You can rotate True North by switching to the Manage tab and in the Project Location panel, choosing Position>Rotate True North. Note that the project orientation must be set to True North in order to do this. This will change the angle for a project relative to True North. You can then specify an angle on the Options bar or rotate graphically.

You can then add a north arrow to your view. The arrow will point toward the top of the view, which is now set to true north. If you then change the project orientation back to Project North, the building will once more align with its long dimension running left-to-right, and the north arrow pointing to true north.

If you subsequently rotate project north to reorient the model in relation to the view, however, the north arrow will no longer be pointing in the proper direction. To fix this, switch

the view orientation back to True North, fix the direction of the north arrow (either rotate the existing arrow or delete it and add a new one), and then switch the view orientation back to Project North.

In terms of placing your project to match survey data, there are a number of ways to do this. If you receive a CAD file with accurate survey data, you can link the CAD file, move it under the project to match your project model, and then Acquire Coordinates from the CAD file. If you simply receive survey data for a datum point in your model, you can choose Specify Coordinates at Point (in the Position split button in the Project Location panel of the Manage ribbon; see Tip #4) to accurately locate the building.

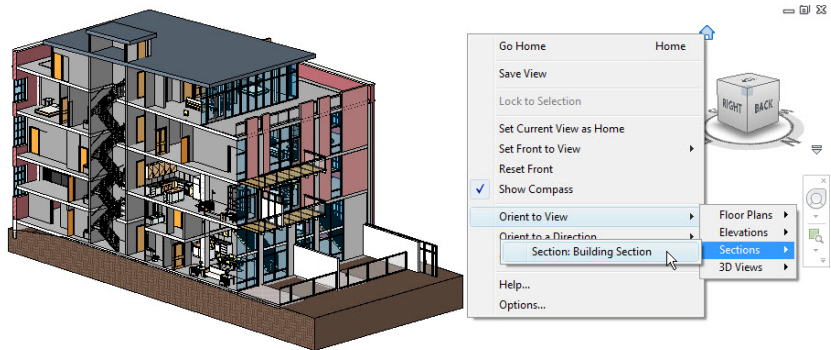
Tip #20: Using the ViewCube

Q: Constantly switching between views takes a lot of time, and then I have a bunch of views open. Is there an easier way? And how do you produce 3D sectional cutaway views?

A: The ViewCube is a tremendously useful tool in Revit. With the ViewCube, you can spend most of your time working in a 3D view as you model, instead of having to constantly switch between plan views and elevation views.

For example, you can quickly jump to an elevation view by clicking on one of the faces of the ViewCube. You can also right-click on the ViewCube and reorient the 3D view to any existing view.

You can also use the ViewCube to quickly create great 3D sectional cutaway views that cut your model exactly where you want. First, use the Section tool to create a cross section where you want to cut the model. Then, make a new 3D view and rename it. Finally, with that 3D view active, right-click on the ViewCube and reorient the view to your section view. The 3D view will match the section exactly. You can then spin the model to any angle you wish. To hide the crop box, you can select it, right-click, and choose Hide in View>Elements.



More Tips and Tricks

Do you want more tips and tricks?

- Pay attention to what Revit tells you in the alert and warning dialogs.
- Don't try to force Revit to model things that it can't quite manage. Remember that plans, sections, and elevations just need to look correct at the scale they'll be placed on your sheets.
- Don't be afraid to mix the best of Revit with the best of AutoCAD or AutoCAD for Architecture and to 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>.