The Essentials and Beyond

This file contains summaries for each chapter in *Autodesk Revit Architecture 2015 Essentials* (Sybex, 2014, ISBN 978-1-118-87095-2), plus additional exercises that readers can use to extend their skills beyond the instruction in the chapters.

**Chapter 1: Introducing the Autodesk Revit Architecture Interface**

The Autodesk® Revit® Architecture interface is organized in a logical manner that enforces repetition and therefore increases predictability. Almost every command can be executed by selecting a view from the Project Browser, choosing a tool from the ribbon, specifying settings in the Options Bar, and then placing an element in the drawing window. Although we cover only the most basic tools in the exercises, you’ll be able to apply what you learn in this chapter to the many exercises exploring other tools in subsequent chapters.

**Additional Exercises**

- Use the Window and Door tools to place some hosted elements in the walls.
- Create copies of these elements on other levels using the Copy/Paste Align tool from the Modify tab.
- Experiment with various ways to organize the Revit Architecture interface that support your preferred working method. Try tilting windows and undocking the Properties palette or the Project Browser.
Place Furniture, like desks, in the model using the Component button on the Architecture tab.

Try a radial array of furniture by changing the Array tool settings in the Options Bar.

Chapter 2: Walls and Curtain Walls

Creating complex wall conditions is possible but takes time and patience. In more complex conditions, walls can also be embedded into other walls. But for an essential understanding of Revit Architecture, this is a great start; you’ll create walls of many types, add hosted elements, and even edit their profiles.

Additional Exercises

Create the following curtain wall condition. Note that the mullions are angled. You’ll need to modify the Type, Instance, and Grid Layout properties to come up with the most flexible solution.

The curved wall in the next graphic has a complex star-shaped opening that is being filled by another curved wall that is star-shaped (and fits exactly inside
that opening). You can’t create nonrectilinear openings in curved walls with the Wall Opening tool. You’ll need to use an in-place family.

If you get stuck, both of these walls are in the sample project (bc01-Walls-and-Curtain-Walls.rvt) available from the book’s web page: http://www.sybex.com/go/revit2015essentials.

Chapter 3: Floors, Roofs, and Ceilings

In this chapter, you’ll learn to create floors, lay out roofs, and add ceilings.

Additional Exercises

▶ Create a mass and intersecting levels, and then create mass floors from those levels. Use the mass floors to create floors using the Floor By Face tool.
▶ Modify the mass from the previous exercise, and update the floors created with the Floor By Face tool.
▶ Create a shaft opening, and intersect it with all the floors created by the Floor By Face tool from the previous exercise.
▶ Create a roof or floor, and then use the Shape Editing tools to model slopes for drainage.
Chapter 4: Stairs, Ramps, and Railings

You can use the default stairs, railing, and ramp tools to create the vast majority of standard conditions during your early design processes. Because this book is about “getting started,” we don’t want to get too far ahead of ourselves. One day at a time!

Additional Exercises

- Try to create any of the stair configurations shown in the following graphics. Everything you need is in the default Architectural template file; you won’t have to load any external content. Just create and modify new stair types.

- The stair in the first graphic is actually two separate stairs that share half a landing, but they appear to be a single stair that splits at the landing. They’re a combination of straight and curved sections. In some cases, you’ll need to sketch boundary and riser locations manually as well as reconfigure railing sketches.
Chapter 5: Adding Families

Adding families to your project is easily done either by using the default family library that is provided with Revit Architecture or by creating your own. Now that you have a better understanding of how families work and the different family types, you can create a host of new elements for any project.

Additional Exercises

- Open a Generic model template. Modify the family category. What are some of the categories for which you cannot change the Generic model?
- Try loading other types of content, such as different window and door types. Tag these objects, and observe the difference in behavior.
- Locate all the instances of a particular family type by using Select All Instances.
- Try using Copy/Paste to transfer system families and component families between projects. Observe the differences in behavior.
Chapter 6: Modifying Families

Rather than starting from scratch, it’s often faster to find a family or element close to what you need and modify it. You’ll learn how to edit the view display and detail level, as well as change the family category and modify family geometry.

Additional Exercises

- Select another family, and modify its level of detail so the appropriate geometry is displayed at the right scale and detail level in the project environment.
- Explain how you would modify a family from face-based or hosted to one that is not.
- Explain how you would modify a family that is not face-based or hosted to one that is.
- Nest a family into another family, and select the Shared option. Verify that this nested family schedules when placed in the project.
- Add a new subcategory to a family, and assign geometry to the category. From the project environment, compare the visibility options under the main category (Doors, Furniture, Specialty Equipment, and so forth) of this family before and after the family is loaded into a project.

Chapter 7: Schematic Design

Ultimately, masses can be used to host relationships to real building elements that would otherwise be nearly impossible to maintain. Mass floors can be used to control the extents of real floors. Many times, this will allow you to change the location of many slab edges at once by changing the mass and then updating the floors within that mass.

Masses can also host walls, curtain walls, and roofs. This allows you to create (and modify) complex design forms that would be nearly impracticable to assemble bit by bit. The idea is that you’re working from general to specific: Get
the big ideas down first (as masses), and then go back and assign real building elements to those faces to build the building.

But keep in mind that it’s unlikely you’ll be able to use only one mass to host all your building elements. You may need one mass to host floors and control slab edges, another to host roofs, and even another to host walls and curtain wall systems. Don’t be afraid to use overlapping masses in these situations to control different host elements. More specific control often requires overlapping masses. But for initial design/programming purposes, using a single mass to resolve gross floor areas is often sufficient.

**Additional Exercises**

- Try FormIt on your mobile device, or on the web to do some early stage modeling and massing. Use levels and shadows to study how your building will behave. Follow the steps in the book to bring this model into Revit.
- After you’ve created your mass and mass floors, use the Floor By Face tool to assign real floors to the mass floors.
- Modify the mass and remake the geometric floors that you created in the previous item.
- Experiment with walls and curtain walls by using the Wall By Face and Curtain System tools to assign walls to the face of the mass.
- Modify the mass and remake the walls and curtain walls created in the previous item.
- Explain what you would do if you wanted to control floors and walls with a mass but the floors and the walls didn’t always align. For example, what would you do if the floors were set back or deviated from the face of the mass?

**Chapter 8: Rooms and Color Fill Plans**

There’s a lot of wonderful functionality with regard to rooms, room tags, and color fills that we aren’t able to cover in this brief chapter. Instead, we focus on typical uses to get you up to speed so you can be confident and productive as quickly as possible.
Additional Exercises

- Create a single room, and add a room and a room tag. Now add a wall across the middle of the room. Which side of the room contains the space of the room? What denotes the origin of the room?
- Create a room color fill that uses black-and-white patterns rather than color. Why might this be useful?
- Create a room tag that displays information not visible in the default tag (such as Department).
- Create a color fill in your own project template.

Chapter 9: Materials, Visualization, Rendering

In this chapter, you’ll learn how to render and create presentation graphics in elevation and 3D views. Using these techniques, you can visualize your model in interesting ways for presentations, for working out a detail, or for communicating construction methods.

Additional Exercises

- Use the 3D view called Kitchen to practice rendering with artificial lights. Make sure to set the light scheme in the Rendering dialog box to a setting that includes artificial lights. Using exposure control is very helpful with interior renderings.
- Place some entourage in the house. Entourage people and plants are loaded into the project and can be placed by using the Component button (look for RPC Male and Female). Note that you cannot place this content in a perspective view.
- Try using the View property called Section Box to limit the number of model elements in a view. This is one of the best ways to see inside your model in a 3D view. You can also render with Section Box active.
- Use the Region button next to the Render button to render a smaller portion of the entire view. This is useful for a fast test of a small section of the rendering you’re working on.
Chapter 10: Worksharing

Worksets are straightforward once you understand the basics. Larger projects will require more granular workset assignments, but the principles are the same.

Additional Exercises

▶ Use the Exercise 10.4 model from Chapter 10 with a friend or co-worker to access the same project at the same time.

▶ Link a Revit Architecture project into a file that has worksharing enabled. Assign the linked file to a workset, and then practice opening and closing the workset. What happens to the linked file?

▶ Create a workset named Entourage, and make it not visible by default. Use this workset for elements that are useful for visualization but not documentation.

▶ Practice locking the datum (levels and grids) by making the workset editable to you and not relinquishing it. Others will be able to graphically adjust the end points, but they won’t be able to move or delete the datum.

Chapter 11: Details and Annotations

The process of embellishing a model to reflect the design intent and detailing gets easier with practice. Remember that you won’t have all the geometry you need in the 3D model to show the level of detail you’ll need for full documentation. By embellishing the callouts and sections with additional information, you can quickly add the detailed information you need to show.

Additional Exercises

▶ You need to detail the window-head condition for a full set of documents. Using the section you’ve already created from the Chapter 11 exercises, create a detail view of the window head; then, using the same tools and workflow demonstrated in this chapter, add a similar level of detail to the condition. You can reuse a number of the elements—such as keynotes and some of the filled regions—from
the previous detail, making this effort a bit quicker. Don’t be afraid to copy and paste filled regions or other elements from one detail to another.

▶ Add additional detail to the window family by including some CAD details. Replicate the same level of detail in the head condition. You can reuse the information in the sill to expedite the process.

**Chapter 12: Drawing Sets**

In this chapter, you’ll learn how to quantify the elements in the model by using schedules. You’ll use the same Schedule tool to create a standard window schedule, a room schedule, and a sheet list. You’ll also learn how to place views onto sheets and print them.

**Additional Exercises**

▶ Create a door schedule, and add the following fields:
  ▶ Mark
  ▶ Type
  ▶ Width
  ▶ Height
  ▶ Thickness
  ▶ Material
  ▶ Finish
  ▶ Comments

▶ Lay out this new schedule on sheet G000; be sure to align it with the schedules you already placed on that sheet. Change the schedule’s Sorting/Grouping options by including the Count field and toggling the Itemize Every Instance setting. Observe the differences in scheduling every door compared to using a rolled-up schedule showing only individual door types and how many of each exist in the project.
Chapter 13: Workflow and Site Modeling

This chapter focuses on understanding some essential but atypical things about Revit Architecture and a BIM workflow. We discuss how you can best transition from a 2D CAD environment to a Revit Architecture BIM workflow and how to incorporate some of the lesser-used (but just as important) tools such as site work and building pads. We also discuss how to manage the Revit Architecture file itself. Good file management will help to ensure that your Revit Architecture projects are quick and responsive. Using Revit Architecture means understanding BIM as a workflow and process at all levels in your office and at all phases on your project. Being prepared for a process change as well as a software change will help you become successful as you move into BIM.

Additional Exercises

▶ Diagram your project or office’s historical workflow using CAD or hand drafting. Consider the hours used in each phase of the project and the number of staff members needed to complete a given phase. Track your first Revit Architecture project so you can compare the two.

▶ Revit Architecture is a great tool, but it is also one of many that you will use in your projects. Discuss with your design teams how they would like to transition from design tools (such as Trimble SketchUp and trace paper) to Revit Architecture.

Chapter 14: Repeating Objects, Best Practices, and Quick Tips

Whew! You’ve made it to the end! You should know enough by this point to be valuable to your project teams and ready to start your first Revit Architecture project. In this chapter, you’ll learn some of the tips and tricks that seasoned users employ every day. High-fives all around! While you bask in the glow of your new knowledge, you might be wondering, “Where do I go from here?”
If you're looking for additional resources beyond what we've listed, join the larger Revit Architecture community.

▶ Check out the Revit Forum and AUGI. Many a Revit Architecture user has found helpful hints there.

▶ If you truly learned from what you read here and want to take the next step, we recommend the Mastering Revit book series, which you can find at www.sybex.com/go/masteringrevit2015, www.amazon.com, or wherever fine Revit Architecture books are sold.