PART I

Starting the Flow

Get ready to elevate your SketchUp skills and design workflow to the highest radical extremes of efficiency. *The SketchUp Workflow for Architecture* contains tips, tricks, and strategies for modeling in SketchUp, as well as methods to leverage SketchUp and LayOut during every step of the design process. Let's start with a few tips on how to get the most out of this book, how BIM plays a part in the SketchUp workflow, and how to effectively manage a PROJECT folder.

Chapter 1
Introduction

This book is the missing set of standards for SketchUp and LayOut. *The SketchUp Workflow for Architecture* provides a flexible, clear set of rules for organizing any type of building project in SketchUp: renovation, new construction, residential, commercial, high-rise, low-rise, industrial. It is up to the user to process these techniques and strategies, and then apply them to projects. In this chapter you will pick up a few tips on how to best absorb the information and get the most out of this book.

This book covers advanced concepts performed with advanced operations. These are not workarounds; rather they are clever ways to use SketchUp to expedite the design process. With *The SketchUp Workflow for Architecture* and some practice, you will be able to:

- ☑ Speak knowledgeably about Building Information Modeling (BIM).
- ☑ Organize and manage PROJECT folders in an efficient manner.
- ☑ Effectively use the Modeling tools and organization containers in SketchUp.
- ☑ Create and customize a timesaving SketchUp template.
- ☑ Tailor the SketchUp modeling environment to fit your professional needs.
- ☑ Create and organize collections for materials, components, styles, and templates.
- ☑ Find, install, and utilize valuable ruby scripts.
- ☑ Fully understand the value of LayOut and its dynamic links to SketchUp and other insertable content.

- ☑ Tailor the LayOut drafting environment to fit your professional needs.
- ☑ Create and organize collections for scrapbooks and title blocks.
- ☑ Create site plans and topographic surveys using Google Earth terrain and aerial imagery.
- ☑ Find or create building context models around a specific site.
- ☑ Efficiently document existing buildings and create extremely accurate as-built drawings using SketchUp Pro and LayOut.
- ☑ Transition a design model into an accurate 3D model.
- ☑ Create inspiring LayOut presentations that accurately represent your designs.
- ☑ Accurately model and organize various types of buildings in SketchUp Pro.
- ☑ Prepare, render, and post-process convincing photorealistic images.
- ☑ Extract information from SketchUp and LayOut in useful formats for use in other CAD programs.
- ☑ Compile and draft construction documents using SketchUp Pro and LayOut.

THE WORKFLOW

The term "workflow" loosely describes the collection of tools designers use and the order in which they use those tools to produce a final design. Designers use many different tools and software to produce their final products, which are typically new, built environments; some of many initial products are construction documents.

Many different workflows can be used to design and create construction documents; however, the best workflows minimize the use of several different softwares because something is always lost during translation between programs.

The workflow explained in this book uses SketchUp and LayOut for every phase of the design process. You can use other programs to supplement SketchUp, but SketchUp Pro and LayOut are at the core of this process. For example, you could use an image editor to post-process exports and modify textures, but you will simply be using the image editor to complement SketchUp. As another example, you could use a spreadsheet program for schedules, but keep all of your drafting in SketchUp and LayOut.

This workflow is not a regimented design process; you can adapt all or part of it and use the organizational and design tips. The process of moving from sketches to construction documents is expedited by *The SketchUp Workflow for Architecture* (Figure 1.1).
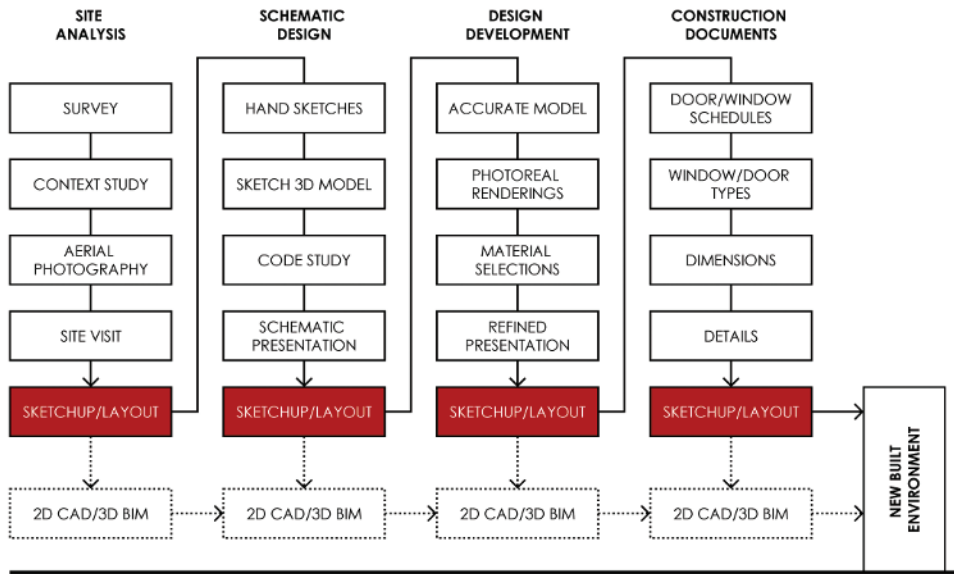
Figure 1.1 The SketchUp Workflow for Architecture

The evolution of a client's vision to an actual building involves many small steps and phases. There is no right or wrong way to produce a design, but there are critics out there who will judge your designs. The most important audiences, however, are your clients. The more time you spend on the design, the better. *The SketchUp Workflow for Architecture* is focused on design and will ultimately provide more time for you to explore real designs in three dimensions.

WHO SHOULD READ THIS BOOK?

Anyone interested in mastering SketchUp will benefit greatly from this book—architects, landscape architects, designers, interior designers, contractors. Large firms, one-man-shows, and every office size in between can benefit from this book. If you are using SketchUp to design built space, you should practice *The SketchUp Workflow for Architecture*. Most sizable firms already have a design workflow with 3D Building Information Modeling (BIM) software and standards in place. BIM is excellent for huge projects with extensive scheduling and square footage, but does it really help on the

smaller projects? For large firms, *The SketchUp Workflow for Architecture* will fit in where a bloated, over-featured software suite is not necessary. The techniques in this book give you the freedom to simplify your model by including only the building information you need to get the project done on time.

On the other end of the spectrum is the one-man-show looking to cut overhead. When compared to other popular design and documentation programs available on the market, this workflow is very inexpensive. By adding a few plugins to SketchUp Pro, you'll have full capability to efficiently design, draft, render, analyze, and document any project.

Anyone who reads this book will take away excellent organization and problem-solving strategies for SketchUp. The techniques presented will help any designer create more engaging and accurate 3D models that are easily shared across several platforms.

WHAT'S IN THIS BOOK?

The advanced concepts and operations covered in this book are organized into four separate and distinct parts.

Part I: Start the Flow

Part I takes care of some administrative tasks and disclaimers common in an instructional software book. In Part I, you will learn the benefits of using SketchUp Pro and LayOut, and you will be introduced to the power of this system. Also, you will be exposed to a new way of thinking about BIM. Part I wraps up by explaining folder and file organization techniques that will help keep your projects running smoothly.

Part II: SketchUp

In Part II you will learn the basic, intermediate, and advanced SketchUp skills necessary to complete the exercises in this book. You will also tune your SketchUp environment for professional use. You will learn to create utility styles and scenes, custom layers, and ultimately your own custom default template. Even if you are an experienced SketchUp user, you will benefit from the refresher and most likely will develop a new understanding of the old features.

Part III: LayOut

Part III is an "everything you need to know" guide for LayOut. At times, this section may read more like a manual than a tutorial because it explains every menu, dialog, and setting you will come across in LayOut. It also contains tutorials for creating custom scrapbooks and templates. Study this part closely even if you have used LayOut previously. The skills you learn in Part III will make you a fast and effective LayOut draftsman.

Part IV: The Architectural Design Process

The traditional architectural design process consists of five major phases: schematic design, design development, construction documents, bidding and negotiations, and construction administration. The design process presented in Part IV has been whittled down to four main phases: site analysis (SA), schematic design (SD), design development (DD), and construction documents (CD).

Although they are very important steps in the design process, this book will not directly address construction administration (CA), or bidding and negotiation (BN). SketchUp can be used for cost estimating, but does not typically play a major role in negotiating numbers with a contractor. SketchUp can also play a role in CA, but the skills you will learn in the other four phases can be easily applied to the construction administration phase.

WHAT ARE THE PREREQUISITES?

This is an extremely advanced book. It assumes that you are already familiar with many of the tools and basic functions in SketchUp, including groups, components, edges, surfaces, dividing surfaces, styles, layers, and scenes. You also need to know and understand basic computer terms and concepts such as right-click, left-click, windows, files, folders, drop-down menus, zipped, unzip, extract, etc.

To make the most of this book, you should have some experience with SketchUp, but even if you don't you can still benefit. You don't have to have any experience with LayOut. Parts II and III cover the essential skills you'll need to complete the advanced exercises in Part IV.

The following resources will help you make the most of this book.

☑ SketchUp 101 is an excellent class to help you get over the initial SketchUp learning curve; it is offered for free at **www.suexch.com**. The topics covered in SketchUp 101 include creating geometry, modifying geometry, and inference locking. It includes two building exercises that pull everything together.

☑ SketchUp 201 is a commercially available class that covers the next level of intermediate concepts; it is available at **www.suexch.com**. The topics covered include: groups, components, layers, scenes, styles, layout, geomodeling, and general model organization.

These classes are helpful, but they are not required to utilize *The SketchUp Workflow for Architecture*. Everything you need is included in this book.

FREE SKETCHUP OR SKETCHUP PRO?

The free version of SketchUp is for hobbyists; it is intended for the weekend warrior designing a deck or a student working on a school project. The free version has been stripped of many capabilities that are needed to create professional presentations; it lacks exporters for 3D models and can't create high-resolution images or animations, features that professionals need.

SketchUp Pro contains everything a professional needs to create engaging and precise presentations that accurately represent their designs. Using the Pro version, you can present and explain 3D designs in LayOut (2D page-creation software included with SketchUp Pro), use several export options to share work (including `.dwg` format), and create HD animations and high-resolution renderings. Figure 1.6 compares the features of SketchUp and SketchUp Pro.

SketchUp 𝟾+1

Intuitive and fun to use

- Re-imagine your living space
- Model buildings for Google Earth
- Use SketchUp for free

SketchUp Pro 𝟾+1
with LayOut

Powerful, fast, and accurate

- Build precise 3D models on the fly
- Exchange files with other software
- Create compelling 2D design documents
- Generate reports, PDFs, and more

Figure 1.6 Features of SketchUp and SketchUp Pro

ONLINE CONTENT

Many of the exercises in this book require digital files to illustrate certain points in the tutorials. You can download all of the class files for the entire book at **http://www.suexch .com/TSWFA**. Once you have downloaded the file, extract the folder and all contents to your desktop or an appropriate project folder (or to the TEMP folder, see Chapter 3, "Project Management").

Additional models, case studies, title blocks, scrapbooks, project models, and a discussion forum for professional users are available at **www.suexch.com**. This site complements this book and expands on advanced topics.

MENTAL PREPARATION

SketchUp is fast, fun, and intuitive—but only after a lot of practice! SketchUp is not easy. SketchUp marketing has done an excellent job of publicizing the simple use of SketchUp. It is extremely approachable in that you can open the program, click on the Line tool, and start drawing. Shortly after you create your first surface, the Push/Pull tool will enable you to quickly generate massive amounts of 3D geometry. However, once you start modeling with these simple tools, you'll quickly have more questions than answers. This lack of knowledge coupled with the desire to perform advanced operations can cause frustration.

Mentally prepare yourself to learn this software and the workflow presented in this book. Push aside any preconceived notions of "3D for everyone." Ignore your colleague's comments about SketchUp being easy to learn, simple to use, and not nearly as powerful as other 3D programs. SketchUp is similar to other CAD programs in that you need to spend a significant amount of time learning to use it in order to fully leverage it. Accept the fact that any program is easy to open and play with; but to fully understand any 3D application, including SketchUp, you'll need to fully invest your time, patience, and effort.

SKETCHUP PORTFOLIO

The examples in Figures 1.7 through 1.17 are just some of the types of models and documents you can create using SketchUp.

Figure 1.7 SketchUp Pro and LayOut have the full capability to produce large sets of construction documents. Office Remodel designed by Bill Morgan, Morgan Design Associates; SketchUp model and drawings by Michael Brightman

Figure 1.8 Create a winter scene by lightening and desaturating texture images. Timbercreek at Okemo House. Designed by Bensonwood Homes; model built by Michael Brightman

Figure 1.9 SketchUp is as precise as many other CAD programs, precise enough to create as-built 3D models like the one shown. Denver Loft 3D as-built model; space measured and model built by Michael Brightman

Figure 1.10 Exterior perspective. "Greenness" concept house design by Phil Lehn, Lehn Design Collaborative; model built by Michael Brightman

Figure 1.11 Modeling a house inside and out lets you fully explore the interactions of plan and elevation. "Greenness" concept house. Designed by Lehn Design; model built by Michael Brightman

Figure 1.12 Building a SketchUp model of a "model home" costs drastically less than building the real thing. "The Monticello" digital spec house. Designed by Luxury Builders; model built by Michael Brightman

Figure 1.13 By layering 2D and 3D elements, you can make expansive sites look convincing without overloading your machine. "Sterling Pointe" at Winter Park, Colorado. Designed by Wintergreen Homes LLC; model built by Michael Brightman

Figure 1.14 Timbercreek at Okemo spec house. Designed by Bensonwood Homes; model built by Michael Brightman

Figure 1.15 This lobby model was built in SketchUp and rendered in Twilight Render to add lights, soft shadows, and reflections. Design by Carol Freeman, Freeman Architecture; SketchUp model and photorealistic rendering by Michael Brightman
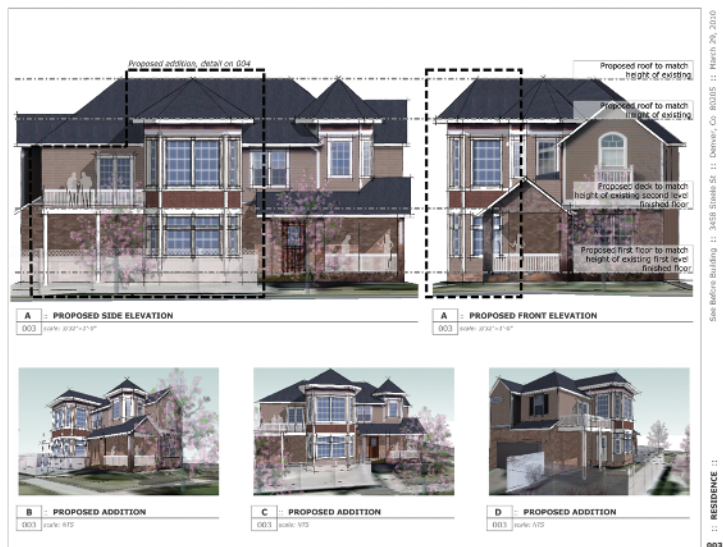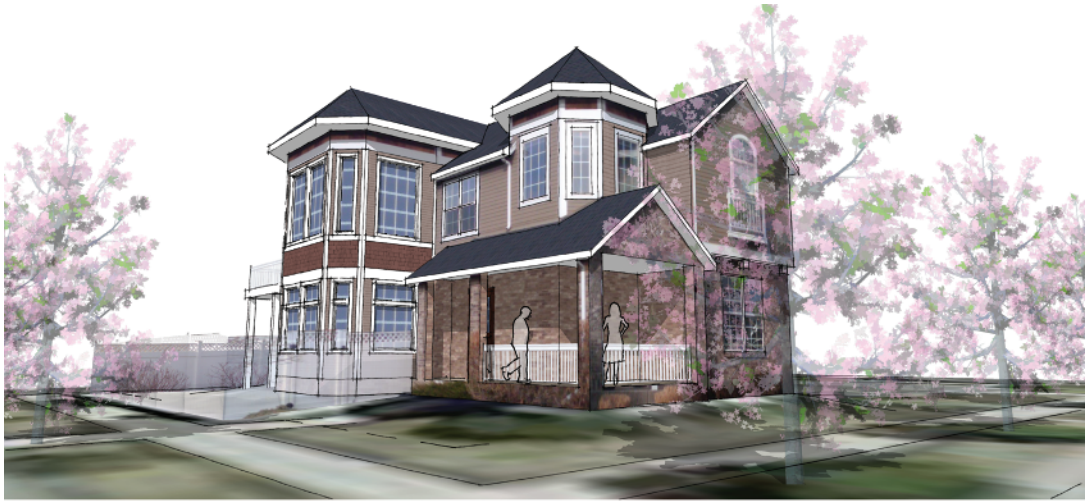
Figure 1.16 Use LayOut to turn 3D SketchUp models into 2D descriptive annotated plans. Unit plan designed by Stephen Levin, Helix Architecture; SketchUp model and drawings completed by Michael Brightman

Figure 1.17 By combining geomodeling techniques and accurate modeling strategies, you can quickly and accurately communicate realistic design possibilities. Proposed Lowry House addition. Design and model completed by Michael Brightman

CHAPTER POINTS

☑ Become familiar with SketchUp 101, SketchUp 201, and additional online content at **www.suexch.com**.

☑ Mentally prepare yourself for a rewarding challenge while completing the exercises in this book.

☑ The workflow presented in this book centers around SketchUp Pro and LayOut, but it also recognizes that many other software packages complement the design process.

☑ *The SketchUp Workflow for Architecture* is not a rigid system. It can be changed or abandoned at any stage of the design process. This workflow can be used in parts or its entirety.