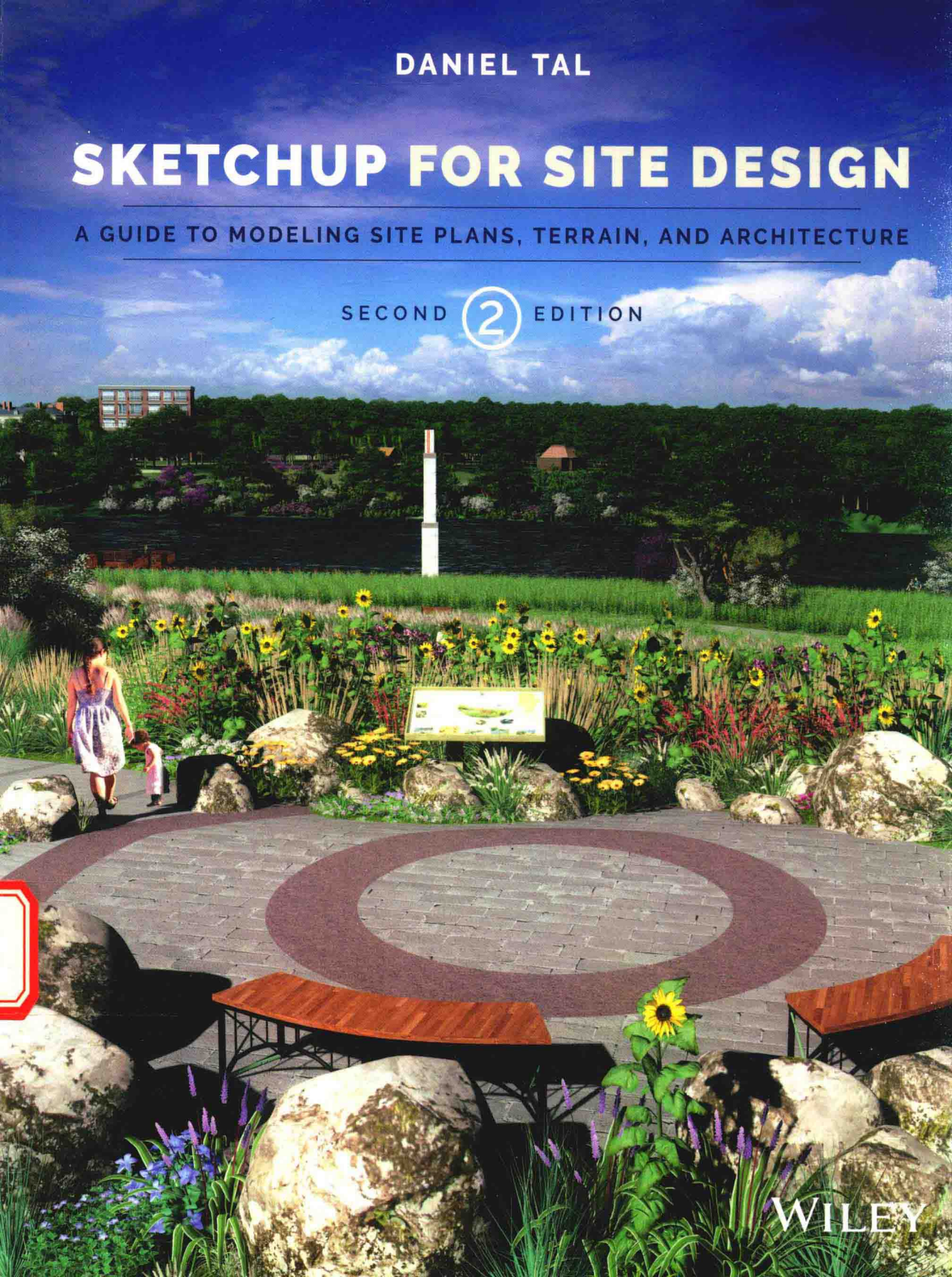
DANIEL TAL

SKETCHUP FOR SITE DESIGN

A GUIDE TO MODELING SITE PLANS, TERRAIN, AND ARCHITECTURE

SECOND 2 EDITION



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SketchUp for Site Design

A Guide to Modeling Site Plans, Terrain, and Architecture

Second Edition

Daniel Tal, ASLA

WILEY

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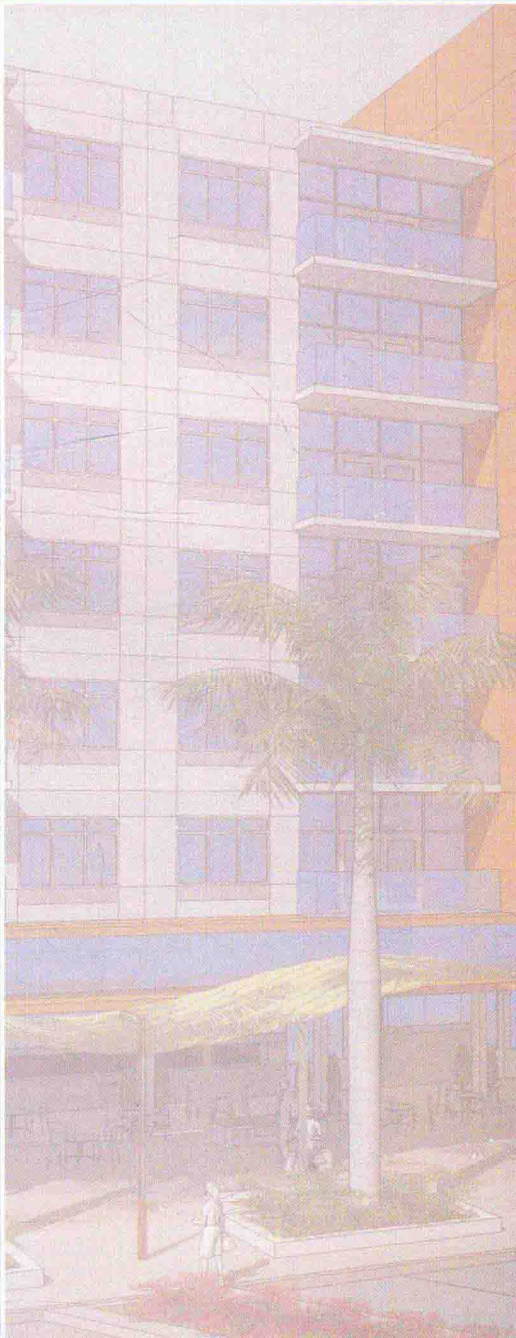
PART

1

Introduction to SketchUp



CHAPTER 1

How to Use This Book

Welcome to the second edition of *SketchUp for Site Design*. This book describes SketchUp Process Modeling, a methodology for working with SketchUp. This approach provides a step-by-step road map that will show you how to use the tools and functions to construct expressive models of exterior spaces and architecture.

The process addresses three main areas of instruction: drafting, modeling order, and organization. Mastering these skills will allow you to create models that are highly detailed and articulate, easy to work with, optimized for computer performance, and organized.

Figs. 1-1 through 1-3 and Figs. 1-8 through 1-13 are examples of site plans and architectural projects created using SketchUp Process Modeling.

Fig. 1-1: Model of park overlook (SketchUp model rendered in Lumion)

Fig. 1-2: Cherry Hills residence, Colorado (SketchUp model rendered in Lumion)

Fig. 1-3: Cherry Hills residence bridge crossing (SketchUp model rendered in Lumion)

The book contents and tutorials were designed to work with all versions of SketchUp. Readers are strongly encouraged to download the free version of SketchUp, called SketchUp Make, from SketchUp's website (www.sketchup.com).

What's New in the Second Edition?

SketchUp has undergone a number of changes since the first edition of *SketchUp for Site Design* was published in August of 2009. Mainly, Trimble purchased SketchUp from Google. The new ownership has proven a positive outcome for SketchUp with a boost to staff and development resources. As a result, SketchUp has added a number of new features and improved performance.

SketchUp for Site Design has aged well with SketchUp. The original manuscript was written to focus on processes and methods over tools and menus. The processes are still valid, as are the many tutorials found in this book. In this regard, the second edition has remained unchanged.

However, given the changes to the software, *SketchUp for Site Design* contains updated content and includes two new chapters:

Chapter 5, "Ruby Scripts," has been retitled "SketchUp Extensions." This completely rewritten chapter provides a concise and clear overview of must-use custom apps (tools) for SketchUp.

Chapter 15, "Sandbox Architecture," has been replaced with "Digital Elevation Modeling." This chapter reviews how to generate and model on imported terrain and contour files, and it fits with the natural progression of Part 3, "Terrain Modeling."

Updated tool tips and processes are included throughout the various tutorials. Primarily, the updates focus on how to use extensions or apps as part of the grading, terrain, and CAD-to-SketchUp workflow.

www.danieltal.com

There is a subscription website that includes free resources (and free sign-up) to accompany this book. This book stands on its own; however, the resources available at www.danieltal.com are an excellent supplement. You do not need to become a member at DanielTal.com to learn and apply the skills and processes.

The website is mentioned in several chapters, usually to indicate where additional tutorials can be found that expand on the book's content. The website includes a link to the author's second book, *Rendering in SketchUp,* and downloadable component models. DanielTal.com has tutorial topics on site modeling, animations, extensions, terrain modeling, and more.

Who Can Use This Book?

Both beginners and advanced SketchUp users can benefit from this book. It is partitioned into four parts, starting with a basic explanation of SketchUp tools and functions. It transitions into more complex and detailed methods that incorporate terrain, AutoCAD, and the creation of complex forms. This provides a holistic approach for all levels of SketchUp users.

Even if you are a proficient SketchUp modeler, the methods and tips discussed here will help you better organize your models, use more sophisticated tools (**extensions**), and represent your ideas. Every tutorial in this book was vetted by two independent landscape architects: Carol McClanahan and Natalie Vaughn. Both professionals used the tutorials to learn SketchUp; neither of them had any prior experience using the software. In the course of their review, they discovered common user errors and software problems. Based on their comments, tutorials were clarified, added, or removed.

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This book focuses on the tools and functions used to model site plans, outdoor areas, and architecture. The material includes sections devoted to modeling terrain and integrating AutoCAD and SketchUp. This book is devoted to achieving specific modeling results; however, it does not cover everything that SketchUp is capable of doing.

Learning Tutorials

SketchUp Process Modeling is best learned by doing. Step-by-step tutorials are included to illustrate how concepts work. The tutorials allow you to check your progress by comparing your results with those in the book. Completing these tutorials more than once will make it easier for you to master the presented concepts as they guide you along a gradual learning curve.

Downloadable Tutorial Models

Free downloadable SketchUp models are provided for you to use in tandem with the tutorials. The available models are listed at the beginning of each tutorial. To perform some of the tutorials, you will need to download the models. Some available model names will be provided in an image caption unrelated to a tutorial. Viewing the models in tandem with this book will help you understand the concepts being discussed. Part 1 of the book (Chapters 1 through 5) has no downloadable models.

To download the chapter tutorials or caption models, use the following procedure:

1. Open up SketchUp and select File ➢ 3D Warehouse ➢ Get Models.
2. The 3D Warehouse browser will open in SketchUp (see Fig. 1-4).
3. Search for the models in the browser and insert them directly into SketchUp.

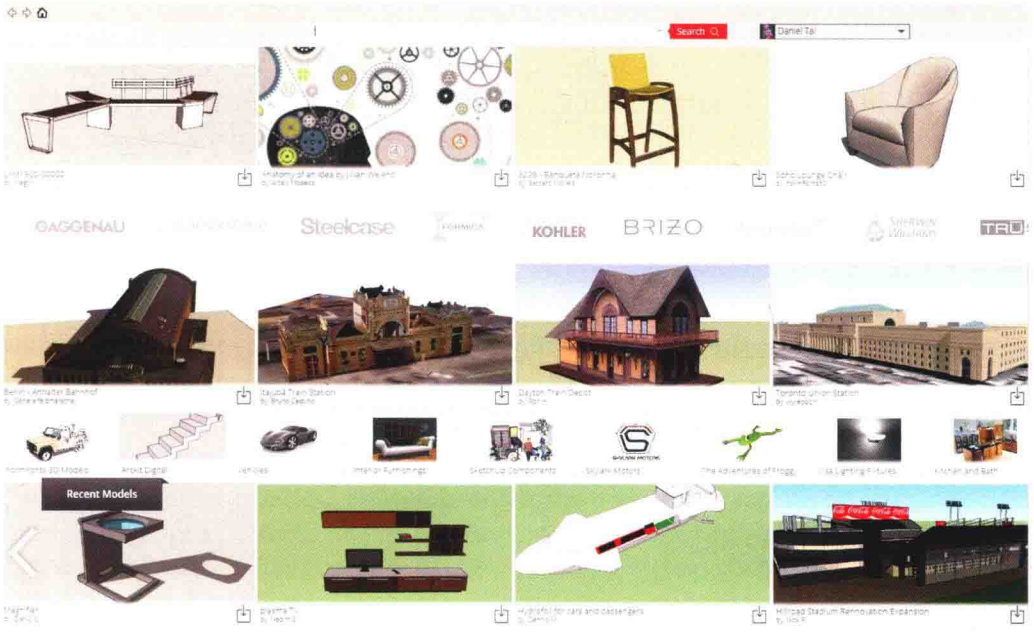

Fig. 1-4: 3D Warehouse contains all the tutorial and reference models found in this book.

The models for this book are part of 3D Warehouse Collections. The model collections correspond to the various parts (Part 2, Part 3, and Part 4) of the book.

You can find the tutorial and caption models by performing a search on the 3D Warehouse home page (Fig. 1-5). Directly to the left of the Search button, select the pull-down menu by clicking the downward arrow. From the menu, select Search For Collections. To find a model for a particular chapter, search by the part number of the appropriate chapter, as shown in Table 1-1.

Table 1-1: Search Terms for Models

Search Term	Will Bring All the Models For
SPM Part 2	Chapters in Part 2
SPM Part 3	Chapters in Part 3
SPM Part 4	Chapters in Part 4

Fig. 1-5: To find the tutorial models, use the Search bar with Collections selected.

The models are further organized by their names. The chapter number will appear at the start of the model name, and the model names correspond to the model titles given in this book for any given tutorial (Fig. 1-6, Fig. 1-7).

If needed, you can search 3D Warehouse using the author's name, Daniel Tal, and all the book models will be displayed.

Two types of models are provided for this book at 3D Warehouse. The first type includes models to be used as part of a tutorial. Most (but not all) of these are for Part 3, "Terrain Modeling." The other models are "check" models. You can compare your results or caption models to these "checks" after you complete the corresponding tutorial in the text.

Save the models to your hard drive for easy access. If needed, you can redo any of the tutorials.

Downloadable Pre-Made Components

In addition to the tutorial models, you will need the SketchUp models called components. Chapter 3, "Components and Groups," provides detailed instructions on how to download and use these models, which are found on 3D Warehouse and at www.danieltal.com.

The Four Parts

The book is divided into four parts and ordered in a linear progression; each part and chapter builds on the previous sections.

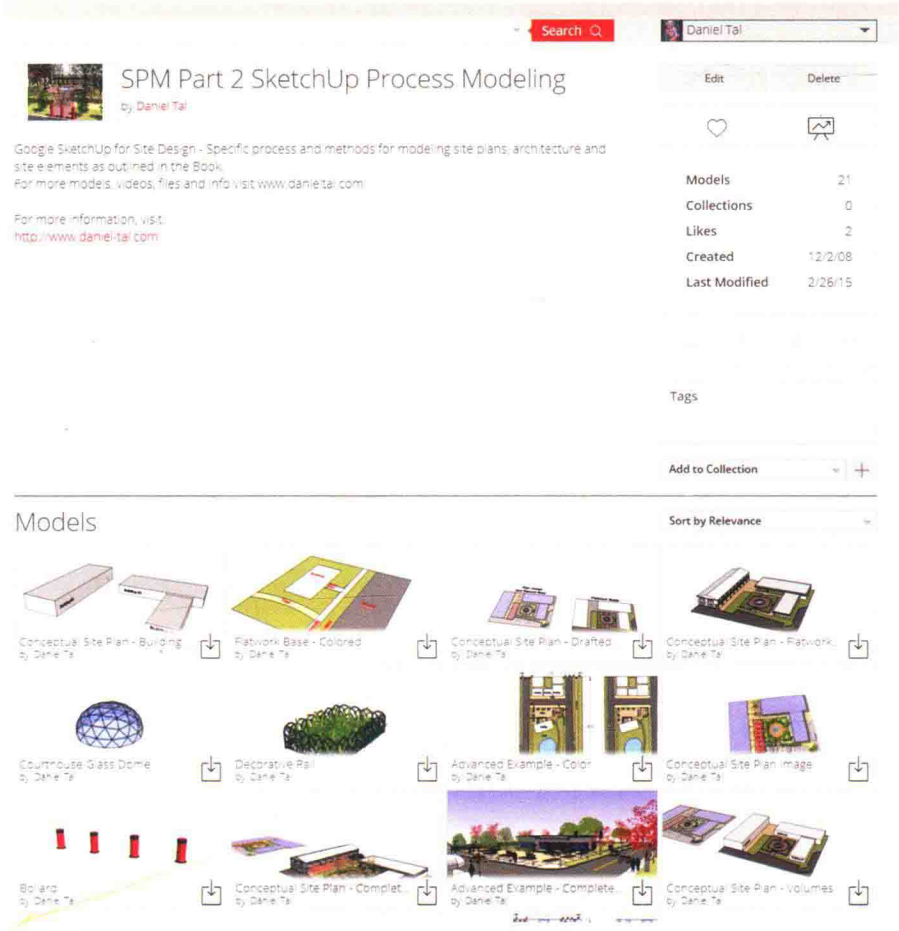

Fig. 1-6: Part 2 models for this book

No matter what your level of expertise, you should follow this linear progression. If you are an advanced user, you may want to skim the material, but you'll need to become familiar with the terminology and procedures outlined for SketchUp Process Modeling. You'll need to understand them for later parts of the book.

Part 1: Introduction to SketchUp

Chapter 2, "SketchUp Basics," reviews how SketchUp works and introduces its basic tools and functions. Chapter 3, "Components and Groups," introduces components and groups. Chapter 4, "Problem Solving," discusses how to best use SketchUp to problem-solve models and how to best problem-solve SketchUp when it performs in unexpected ways. Chapter 5, "SketchUp Extensions," introduces readers to Extensions, custom tools that make working with SketchUp easier.

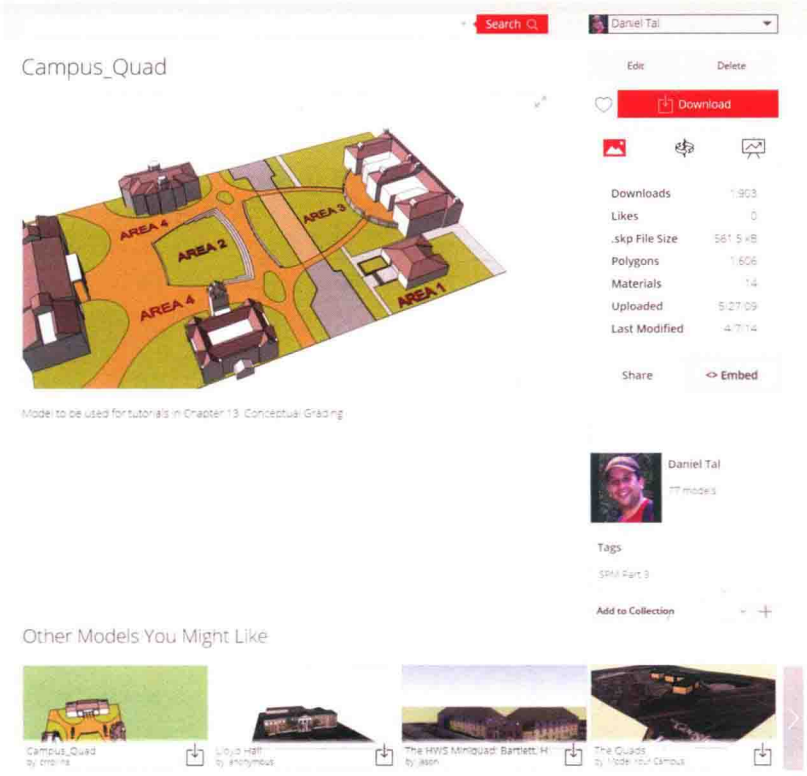

Fig. 1-7: 3D Warehouse view of Conceptual 3D Grading tutorial model for Chapter 13

Fig. 1-8: Rain garden model completed in SketchUp

Fig. 1-9: Bridge and site model (SketchUp model rendered in Lumion)

Part 2: Introduction to SketchUp Process Modeling

SketchUp Process Modeling provides a road map for how best to accomplish specific goals in SketchUp. Chapter 6, "Introduction to SketchUp Process Modeling," introduces SketchUp Process Modeling through a tutorial modeling a site plan that includes a building, walks, trees, lawns, and trails.

Chapter 7, "Detailed Site Plan Modeling," applies the method as a modeling exercise utilizing a scanned and imported hand-drawn site plan. Chapter 8, "Custom Site Furnishings," provides a series of tutorials to create custom site objects. Chapter 9, "Custom Architecture," reviews how to model basic buildings and building elements such as windows and doors.

Chapter 10, "Arranging and Presenting the Model," unifies Chapters 7, 8, and 9 and shows users how to combine all the elements into a single model. Chapter 11, "Architectural Tutorial," completes SketchUp Process Modeling with a tutorial of a detailed and complex building model.

Part 3: Terrain Modeling

The Sandbox and terrain extensions are powerful and easy-to-use tools that can create complex and organic forms. Chapter 12, "Introduction to the Terrain Tools," introduces readers to the Sandbox tools and associated extensions in a series of simple diagrams.

Chapter 13, "SketchUp Conceptual Grading," demonstrates how the Sandbox tools can create conceptual terrain and grading. Chapter 14, "Complex Canopies," utilizes the Sandbox tools to create complex canopies and tensile structures. Chapter 15, "Digital Elevation Modeling," reveals how to apply the terrain tools to a complete terrain site model.

Fig. 1-10: Complete streets concept and park plaza (SketchUp model rendered in Lumion)

Fig. 1-11: River walk, Cedar Rapids, Iowa (SketchUp model rendered in Lumion)

Part 4: AutoCAD to SketchUp

Many SketchUp users, depending on their professions, utilize Computer Aided Design (CAD) software when drawing site plans and buildings. Part 4 details a specific method for efficiently and quickly converting an AutoCAD file into a 3D model.

Chapter 16, "Overview of AutoCAD to SketchUp," is an overview of the general AutoCAD-to-SketchUp conversion method. Chapter 17, "Organizing AutoCAD," provides a detailed procedure for organizing AutoCAD files for import into SketchUp.

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