Daniel John Stine, AIA, IES, CSI, CDT

Design Integration Using Autodesk® Revit® 2023

Architecture, Structure and MEP

SDC PUBLICATIONS
Better Textbooks. Lower Prices.
www.SDCpublications.com

ACCESS CODE
UNIQUE CODE INSIDE

Visit the following websites to learn more about this book:

Table of Contents

1.		**Getting Started with Autodesk Revit 2023**	
	1-1	What is Revit 2023?	1-1
	1-2	Overview of the Revit User Interface	1-11
	1-3	Open, Save and Close a Revit Project	1-26
	1-4	Creating a New Project	1-31
	1-5	Using Zoom and Pan to View Your Drawings	1-33
	1-6	Using Revit's Help System	1-38
	1-7	Introduction to Autodesk A360	1-41
		Self-Exam & Review Questions	1-47
2.		**Quick Start: Small Office**	
	2-1	Walls, Grids and Dimensions	2-1
	2-2	Doors	2-18
	2-3	Windows	2-25
	2-4	Roof	2-28
	2-5	Annotation, Room Tags & Schedules	2-33
	2-6	Printing	2-38
		Self-Exam & Review Questions	2-41
3.		**Revit Basics: Overview of Linework and Modify Tools**	
	3-1	Lines and Shapes	3-1
	3-2	Snaps	3-15
	3-3	Edit Tools	3-20
	3-4	Annotations	3-33
		Self-Exam & Review Questions	3-37
4.		**Revit Basics: Drawing 2D Architectural Objects**	
	4-1	Sketching Rectilinear Objects	4-1
	4-2	Sketching Objects with Curves	4-11
		Self-Exam & Review Questions	4-29
5.		**Floor Plans**	
	5-1	Project Setup	5-1
	5-2	Exterior Walls	5-10
	5-3	Interior Walls	5-24
	5-4	Doors, Windows and Curtain Walls	5-40
		Self-Exam & Review Questions	5-66
6.		**Roof, Floors & Ceilings**	
	6-1	Introduction to the Roof Tool	6-2
	6-2	Law Office Roof	6-17
	6-3	Floor Systems	6-25
	6-4	Ceiling Systems	6-37
		Self-Exam & Review Questions	6-49
7.		**Vertical Circulation**	
	7-1	Introduction to Stairs and Railings	7-1
	7-2	Stair by Component	7-14
	7-3	Introduction to Railings	7-27
	7-4	Ramps and Sloped Floors	7-51
	7-5	Elevators	7-59
	7-6	Utilitarian Stairs and Railings	7-61
	7-7	Open Stair and Railings	7-72
		Self-Exam & Review Questions	7-86
8.		**Structural System**	
	8-1	Introduction to Revit Structure	8-1
	8-2	Creating Views and Loading Content	8-8
	8-3	Grids, Columns and Beams	8-20
	8-4	Floors and Bar Joist Layout	8-42
	8-5	Foundations and Footings	8-56
	8-6	Structural Annotation and Tags	8-69
		Self-Exam & Review Questions	8-77

9.		**Annotation**	
	9-1	Text	9-2
	9-2	Dimensions	9-16
	9-3	Tagging	9-31
	9-4	Shared Parameters	9-39
	9-5	Keynoting	9-46
		Self-Exam & Review Questions	9-55
10.		**Elevations, Sections and Details**	
	10-1	Exterior Elevations	10-1
	10-2	Interior Elevations	10-12
	10-3	Building Sections	10-17
	10-4	Wall Sections	10-27
	10-5	Details	10-37
		Self-Exam & Review Questions	10-62
11.		**Interior Design**	
	11-1	Toilet Room Layouts	11-2
	11-2	Cabinets	11-15
	11-3	Furniture	11-24
	11-4	Column Furring and Interior Curtain Wall	11-30
		Self-Exam & Review Questions	11-37
12.		**Schedules**	
	12-1	Rooms, Room Tags & Door Tags	12-1
	12-2	Generate a Door Schedule	12-12
	12-3	Generate a Room Finish Schedule	12-17
	12-4	Creating a Graphical Column Schedule	12-25
		Self-Exam & Review Questions	12-28
13.		**Mechanical System**	
	13-1	Introduction to Revit's Mechanical & Plumbing Tools	13-1
	13-2	Creating Views and Loading Content	13-8
	13-3	Placing Air Terminals and the Air Handling Unit (AHU)	13-17
	13-4	VAV Boxes, MEP Systems & Ductwork	13-26
	13-5	Plumbing Layout	13-38
		Self-Exam & Review Questions	13-46
14.		**Electrical System**	
	14-1	Introduction to Revit MEP – Electrical	14-1
	14-2	Creating Views and Loading Content	14-2
	14-3	Panelboard, Power Devices and MEP Systems	14-6
	14-4	Light Fixture and Light Switch Layout	14-18
	14-5	Systems Layout	14-30
		Self-Exam & Review Questions	14-32
15.		**Site and Renderings**	
	15-1	Site Tools	15-1
	15-2	Creating an Exterior Rendering	15-10
	15-3	Rendering an Isometric in Section	15-28
	15-4	Creating an Interior Rendering	15-31
	15-5	Adding People to the Rendering	15-36
		Self-Exam & Review Questions	15-40
16.		**Construction Documents Set**	
	16-1	Setting Up a Sheet	16-1
	16-2	Sheet Index	16-13
	16-3	Printing a Set of Drawings	16-17
		Self-Exam & Review Questions	16-24
17.		**Introduction to Phasing and Worksharing**	
	17-1	Introduction to Phasing	17-1
	17-2	Introduction to Worksharing	17-10
	17-3	Phasing Exercise	17-23
	17-4	Worksharing Exercise	17-35
		Self-Exam & Review Questions	17-46

18. Introduction to Revit Content Creation

18-1	Basic Family Concepts	18-1
18-2	The Box: Creating the Geometry	18-13
18-3	The Box: Adding Parameters	18-29
18-4	The Box: Formulas and Materials	18-45
18-5	The Box: Family Types and Categories	18-59
	Self-Exam & Review Questions	18-66

Appendix A: **Autodesk User Certification Exam Introduction**

Index

Exclusive Online Content:

Instructions for download on inside front cover of book

Bonus Chapters

19. Introduction to Computers for CAD/BIM Users

19-1	Computer Basics: Terms and Functions	19-1
19-2	Overview of the Windows User Interface	19-18
19-3	File Management Introduction	19-30
	Self-Exam & Review Questions	19-48

Appendix B: **Finding Missing Elements in Revit** 22 *pages* B-1

Appendix C: **Roof Study Workbook – Draft Edition** *89 pages*

	Introduction	C-1
	Roof Slopes and Styles	C-3
	Roof Styles *(with bonus Revit material)*	C-7
	Roof Plan Study	C-31
	Roof Plan Layout Exercises	C-64

Appendix D: **Rooms and Spaces; Revit's Unbuilt Elements** *10 pages* D-1

Appendix E**: Lighting Design in Revit using ElumTools** *46 pages* E-1

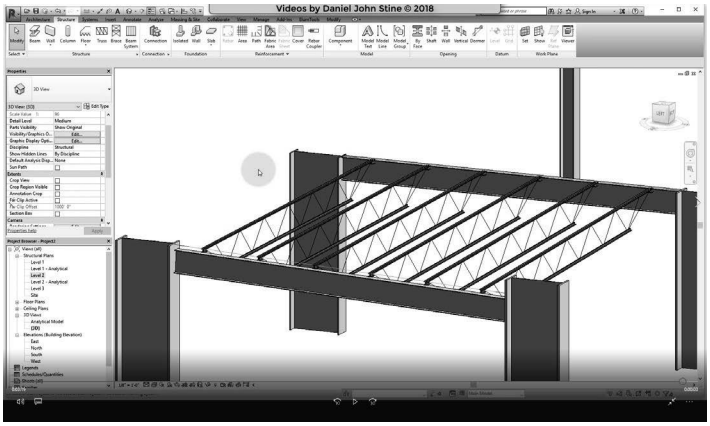
Appendix F**: Introduction to working with 3D PDF** *11 pages* F-1

Appendix G: **Building Performance Analysis in Revit 2023 and Insight** *44 pages* G-1

Appendix H: **Introduction to Multi-Story Stairs** H-1

Bonus Videos

This book comes with several short videos, approximately 3-5 minutes long, which can be watched in order while working through this book. The full index of video titles can be found on the next page.



These videos are supplementary and not required to complete the exercises in this book. Rather, the videos are intended to cover many of the fundamental Revit topics in a different context to help the reader better understand this important material. A few videos cover intermediate topics, such as the sloped "cloud" ceiling shown in the image to the right.

Bonus Videos Index:

1 User Interface
- 1-1 Introduction
- 1-2 File Tab
- 1-3 Ribbon and QAT
- 1-4 Properties and Type Selector
- 1-5 Drawing Area
- 1-6 Status Bar

2 Walls
- 2-1 Introduction
- 2-2 Wall Types
- 2-3 Wall Placement Settings
- 2-4 Wall Height
- 2-5 Creating New Wall Types
- 2-6 Sloped Walls

3 Doors and Windows
- 3-1 Introduction
- 3-2 Placing Doors
- 3-3 Placing Windows
- 3-4 Managing Loaded Content
- 3-5 Repositioning Doors and Windows

4 Stairs
- 4-1 Introduction
- 4-2 Railings

5 Roofs
- 5-1 Introduction
- 5-2 Hip Roof
- 5-3 Gable Roof
- 5-4 Shed Roof
- 5-5 Flat Roof
- 5-6 Roof Fascia
- 5-7 Roof Gutters
- 5-8 Roof Openings

6 Floors
- 6-1 Introduction
- 6-2 Floor Placement Settings
- 6-3 Floor Openings
- 6-4 Sloped Floor

7 Ceilings
- 7-1 Introduction
- 7-2 Ceiling Placement Settings
- 7-3 Sloped Ceiling

8 Elevations
- 8-1 Introduction
- 8-2 Exterior Elevations
- 8-3 Interior Elevations

9 Sections
- 9-1 Introduction

10 Schedules
- 10-1 Introduction

11 Rendering
- 11-1 Introduction

12 Design Options
- 12-1 Introduction

13 Sheets and Sheet Lists
- 13-1 Introduction

14 Worksharing Introduction
- 14-1 Introduction
- 14-2 Worksharing Project Setup
- 14-3 Creating a Local File
- 14-4 Troubleshooting

15 Phasing
- 15-1 Introduction
- 15-2 Phase Project Setup
- 15-3 Phasing View Settings
- 15-4 Phasing Element Settings

16 Sweeps and Reveals
- 16-1 Introduction
- 16-2 Sweeps
- 16-3 Reveals
- 16-4 New Profiles

17 Structural
- 17-1 Introduction
- 17-2 Grids
- 17-3 Columns
- 17-4 Beams
- 17-5 Beam Systems
- 17-6 Floors & Metal Deck
- 17-7 Foundations & Footings

18 Mechanical
- 18-1 Introduction
- 18-2 Air Terminals
- 18-3 Mechanical Equipment
- 18-4 Ductwork
- 18-5 Plumbing

19 Electrical
- 19-1 Introduction
- 19-2 Electrical Settings
- 19-3 Receptacles
- 19-4 Light Fixtures
- 19-5 Power Panels
- 19-6 Circuiting