K.S.R.M. COLLEGE OF ENGINEERING

(UGC-AUTONOMOUS)

Kadapa,Andhra Pradesh, India– 516 003

Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu.

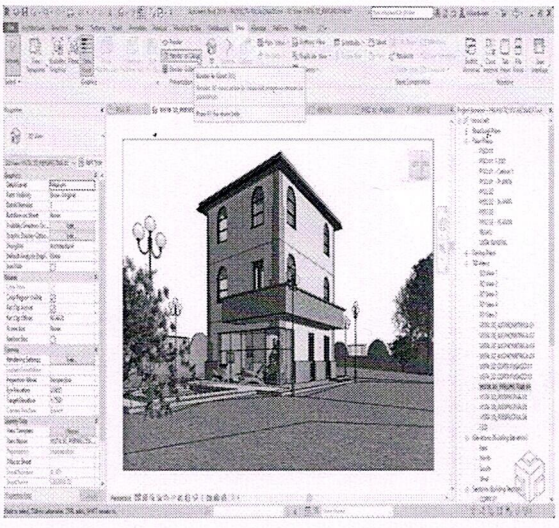
An ISO 14001:2004 & 9001: 2015 Certified Institution

Department of Civil Engineering

Certification Course

On

Architectural Modeling using REVIT



Course Instructor:

Miss M. Pravalika

Technical Skill Trainer,

APSSDC Team

Course Coordinator:

Sri P. Pavan Kumar and Miss V Sai Neeraja,

Assistant Professors, Civil Engg. Dept., KSRMCE

Date: 06/04/2022 to 12/04/2022

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Lr./KSRMCE/CE/2021-22/

Date: 02.04.2022

To

The Principal,
K.S.R.M. College of Engineering,
Kadapa.

Sub: KSRMCE - (Civil Engineering Department) Permission to conduct a Certification course on **"Architectural Modeling Using Revit"**–Req –Reg.

Respected Sir,

It is being brought to your kind notice that, With reference to the cited, the Civil Engineering Department is planning to conduct a Certification course on **"Architectural Modeling Using Revit"** for B.Tech students from 6th to 12th April 2022 at 9 AM- 4 PM. In this regard I kindly request you to grant permission to conduct the certification course.

Thanking you Sir,

Forwarded to principal sir

Yours Faithfully

P. Pavan Kumar,
Assistant professor,
Dept. of CE

Permitted
V. S. S. Murty

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Cr./KSRMCE/CE/AY2021-2022 Date: 04-04-2022

Circular

All the B. Tech students of KSRMCE are here by informed that Department of Civil Engineering is going to conduct a Certification course on **"Architectural Modeling Using Revit"** from 6th to 12th April 2022 at 9 AM - 4 PM. Interested students may register their names with the coordinators P. Pavan Kumar, Assistant Professor and Miss. V. Sai Neeraja, Assistant Professor on or before 5th April 2022.

Resource Person:

Ms. M. Pravallika,

Technical Skill trainer,

APSSDC.

Coordinators

Mr. P. Pavan Kumar, Assistant Professor in CED

Miss. V. Sai Neeraja, Assistant Professor in CED

HoD-CE

Cc to:

IQAC for information

Registration form for "Certification course on Architectural Modeling using REVIT"

Course Instructor: Miss M. Pravalika, Technical Skill Trainer, APSSDC Team

Course Coordinator: Sri P. Pavan Kumar and Miss V Sai Neeraja, Assistant Professors, Civil Engg. Dept., KSRMCE

Date: 06/04/2022 to 12/04/2022

reddysrinu@ksrmce.ac.in Switch account

Your email will be recorded when you submit this form

* Required

Roll No. *

Your answer

Name of the student *

Your answer

Branch *

Your answer

Submit

Clear form

Never submit passwords through Google Forms.

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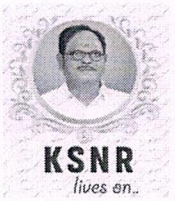


Department of Civil Engineering

Name of the Event: Certification course on "Architectural Modeling Using REVIT"

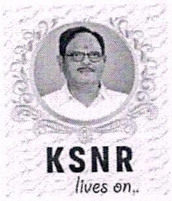
List of Participants

Sl.N0.	Roll No.	Name of the student	Branch
1	199Y1A0109	Dirasantha Chennakeshava	CIVIL
2	199Y1A0110	G.Mahamad Javid	CIVIL
3	199Y1A0115	H Faheem	CIVIL
4	199Y1A0116	Janapati Venkata Sai	CIVIL
5	199Y1A0131	M.Harsha Vardhan	CIVIL
6	199Y1A0153	Shaik Imran	CIVIL
7	199Y1A0157	Shaik.Mustan	CIVIL
8	199Y1A0159	S. Venkata Sai Pavan	CIVIL
9	199Y1A0162	Syed Mohammed Junaid	CIVIL
10	199Y1A0169	Varadhigandla Sreenivasulu	CIVIL
11	209Y5A0104	B Surendra	CIVIL
12	209Y5A0116	D Sivanityam	CIVIL
13	209Y5A0122	Giddaluru Santhosh	CIVIL
14	209Y5A0132	Kodivalasa Jyothi Sujatha	CIVIL
15	209Y5A0137	L.Dwarakanath Reddy	CIVIL
16	209Y5A0139	Maduru Venkata Naveen Kumar	CIVIL
17	209Y5A0143	M Ganesh	CIVIL
18	209Y5A0146	M. Kiran Kumar Reddy	CIVIL
19	209Y5A0153	Nimmakayala Sowjanya	CIVIL
20	209Y5A0156	Paidepalli Asma	CIVIL
21	209Y5A0159	Pesala Ajay Kumar	CIVIL
22	209Y5A0168	R.Mabujan	CIVIL
23	209Y5A0179	Ummadi Venkata Teja	CIVIL
24	209Y5A0181	V.Gayathri	CIVIL
25	209Y5A0188	Yenumula Venugopal	CIVIL

Co-ordinators **HOD (Civil)** **Principal**

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
(Autonomous)
KADAPA 516 003. (A.P.)

PRINCIPAL
K.S.R.M. COLLEGE OF ENGINEERING
KADAPA - 516 003. (A.P.)



Syllabus of Certification Course

Course Name: Architectural Modeling Using REVIT

Table of Contents

Textbooks:

1. Atefe Makhmalbaf (2022), Building Information Modeling using Revit for Architects and Engineers, Mavs Open Press.
2. Revit Essentials for Architecture by Paul F. Aubin, https://paulaubin.com/books/revit-essentials-for-architecture/.

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Department of Civil Engineering

Certification course on "**Architectural Modeling Using REVIT**"

Date	Timing	Course Instructor	Topic to be covered
06/04/2022	9 AM to 12 PM	Miss. M. Pravalika Technical Skill Trainer, APSSDC	Introduction to Building Information Modeling, Revit Architecture Introduction
06/04/2022	1 PM to 4 PM	Miss. M. Pravalika Technical Skill Trainer APSSDC	User Inter Face, Setting of Units & Working with Elevation Views, Placing Walls, Doors & windows
07/04/2022	9 AM to 12 PM	Miss. M. Pravalika Technical Skill Trainer APSSDC	Editing of Walls, Doors & Windows, Properties Palette, Managing Views by Project Browser
07/04/2022	1 PM to 4 PM	Miss. M. Pravalika Technical Skill Trainer APSSDC	Placing of Family Files (Components), Modify Tools, Roof & Types of Roofs
08/04/2022	9 AM to 12 PM	Miss. M. Pravalika Technical Skill Trainer APSSDC	Floor & Types of Floors, Ceiling
08/04/2022	1 PM to 4 PM	Miss. M. Pravalika Technical Skill Trainer APSSDC	Explain about Curtain wall, Creating Section Views
09/04/2022	9 AM to 12 PM	Miss. M. Pravalika Technical Skill Trainer APSSDC	Different Types of Openings, Staircase
09/04/2022	1 PM to 4 PM	Miss. M. Pravalika Technical Skill Trainer APSSDC	Ramp, Railing, Annotations, Model Text
11/04/2022	9 AM to 12 PM	Miss. M. Pravalika Technical Skill Trainer APSSDC	3-D Views
11/04/2022	1 PM to 4 PM	Miss. M. Pravalika Technical Skill Trainer APSSDC	Paint, Creating New Materials
12/04/2022	9 AM to 12 PM	Miss. M. Pravalika Technical Skill Trainer APSSDC	Massing & Site, Schedules, Page Layout
12/04/2022	1 PM to 4 PM	Miss. M. Pravalika Technical Skill Trainer APSSDC	Documentation, Project Submission

Instructor: P. Pravalika

Coordinators:

K.S.R.M. COLLEGE OF ENGINEERING

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Department of Civil Engineering

Attendance sheet of Certification Course on Architectural Modeling Using REVIT

Sl. No.	Student Roll No.	Student Name	06/04 FN	06/04 AN	07/04 FN	07/04 AN	08/04 FN	08/04 AN	09/04 FN	09/04 AN	10/04 FN	10/04 AN	11/04 FN	11/04 AN	12/04 FN	12/04 AN
1	199Y1A0109	Dirasantha Chennakeshava														
2	199Y1A0110	G.Mahamad Javid														
3	199Y1A0115	H Faheem														
4	199Y1A0116	Janapati Venkata Sai														
5	199Y1A0131	M.Harsha Vardhan														
6	199Y1A0153	Shaik Imran														
7	199Y1A0157	Shaik.Mustan														
8	199Y1A0159	S. Venkata Sai Pavan														
9	199Y1A0162	Syed Mohammed Junaid														
10	199Y1A0169	Varadhigandla Sreenivasulu														

11	209Y5A0104	B Surendra	
12	209Y5A0116	D Sivanityam	
13	209Y5A0122	Giddaluru Santhosh	
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15	209Y5A0137	L.Dwarakanath Reddy	
16	209Y5A0139	Maduru Venkata Naveen Kumar	
17	209Y5A0143	M Ganesh	
18	209Y5A0146	M. Kiran Kumar Reddy	
19	209Y5A0153	Nimmakayala Sowjanya	
20	209Y5A0156	Paidepalli Asma	
21	209Y5A0159	Pesala Ajay Kumar	
22	209Y5A0168	R.Mabujan	
23	209Y5A0179	Ummadi Venkata Teja	
24	209Y5A0181	V.Gayathri	
25	209Y5A0188	Yenumula Venugopal	

Coordinators

HoD-Civil Engg.

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
(Autonomous)
KADAPA 516 003. (A.P.)

K.S.R.M. COLLEGE OF ENGINEERING

(UGC-AUTONOMOUS)

Kadapa, Andhra Pradesh, India- 516 003

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DEPARTMENT OF CIVIL ENGINEERING

KSNR
lives on..

under the governance of APSSDC in association with CRI, KSRMCE

Skill AP
APSSDC

One week certification course

on

Architectural Modeling using REVIT

Resource person

Miss M Pravalika
Technical Skill Trainer
APSSDC Team

CRI Lab

Starts: 06-04-2022

09.00 AM - 04.00 PM

Coordinators: Sri P Pavan Kumar, Miss V Sai Neeraja

Dr. N Amaranatha Reddy	Prof. V S S Murthy	Dr. K Chandra Obul Reddy	Smt. K Rajeswari	Sri K Madan Mohan Reddy	Sri K Raja Mohan Reddy
HOD	Principal	Management Director	Correspondent Secretary, Treasurer	Vice Chairman	Chairman

ksrmceofficial | www.ksrmce.ac.in | 8143731980, 857697569

ACTIVITY REPORT

One week Certification Course

On

"Architectural Modeling using REVIT"

06th April, 2022 to 12th April, 2022

Target Group	:	**VI SEM Students**
Details of Participants	:	**25 Students**
Co-Ordinator(s)	:	**Sri. P. Pavan Kumar and Miss V Sai Neeraja**
Organizing Department	:	**Civil Engineering**
Venue	:	**CRI Lab, KSRMCE**

REVIT is a BIM tool developed by Autodesk used for special Designs, Modelling, Visualization, and Documentation. BIM (Building Information Modelling) is a process to plan, design, construct and manage a project based on the intelligent prototype developed to advanced constructions and coordination through the modelling during the project life cycle. The present certification course was arranged to enhance the knowledge on AutoDesk REVIT software to students and give exposure from skilled trainers. The main theme of this certification course is to expose the scope of REVIT to students and to enhance their knowledge.

The Certification course was arranges by Department of Civil Engineering for the B.Tech. IIIrd year students. The venue was CRI lab, PG Block, KSRMCE. The course was planned for six days from 06th to 12th April, 2022. Each day Certification course was organized as two sessions, morning section from 9 AM to 12 PM and Evening session form 1 PM to 4 PM. All the sessions were hosted by Dr. Amaranatha Reddy (HOD), Sri. P. Pavan Kumar and Miss V Sai Neeraja. A total of 25 students of Department of Civil Engineering were actively participated in the Certification course.

Picture:

The photograph taken during the course is given below:

Co-ordinators

HOD-CE

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
(Autonomous)
KADAPA 516 003. (A.P.)

Andhra Pradesh State Skill Development Corporation (APSSDC)

(Department of Skills Development & Training, Govt. of Andhra Pradesh)

Skill AP
APSSDC

Certificate of Participation

Cert.No. REVIT/STP/2655

Regd Id : 209Y5A0116

This is to certify that Mr./Ms./Mrs. D Sivanityam

of KSRM College of Engineering has successfully

participated Training Program on Architectural Modelling Using Revit

held from 06-04-2022 to 12-04-2022

Principal (or) HOD

Dr. Ravi K Gujjula
Chief General Manager (Technical)
APSSDC

Sri S. Satyanarayana, IAS
Managing Director
APSSDC

Andhra Pradesh State Skill Development Corporation (APSSDC)

(Department of Skills Development & Training, Govt. of Andhra Pradesh)

Skill AP
APSSDC

Certificate of Participation

Cert.No. REVIT/STP/2644

Regd Id : 199Y1A0109

This is to certify that Mr./Ms./Mrs.....Dirasantha Chennakeshava.....

of .....KSRM College of Engineering..... has successfully

participated Training Program on .....Architectural Modelling Using Revit.....

held from .....06-04-2022.....to .....12-04-2022.....

Principal (or) HOD

Dr. Ravi K Gujjula
Chief General Manager (Technical)
APSSDC

Sri S. Satyanarayana, IAS
Managing Director
APSSDC

Andhra Pradesh State Skill Development Corporation (APSSDC)

(Department of Skills Development & Training, Govt. of Andhra Pradesh)

Skill AP
APSSDC

Certificate of Participation

Cert.No. REVIT/STP/2659

Regd Id : 209Y5A0139

This is to certify that Mr./Ms./Mrs.....Maduru Venkata Naveen Kumar.....

of .....KSRM College of Engineering..... has successfully

participated Training Program on .....Architectural Modelling Using Revit.....

held from .....06-04-2022.....to .....12-04-2022.....

Principal (or) HOD

Dr. Ravi K Gujjula
Chief General Manager (Technical)
APSSDC

Sri S. Satyanarayana, IAS
Managing Director
APSSDC

Andhra Pradesh State Skill Development Corporation (APSSDC)

(Department of Skills Development & Training, Govt. of Andhra Pradesh)

Skill AP
APSSDC

Certificate of Participation

Cert.No. REVIT/STP/2662

Regd Id : 209Y5A0153

This is to certify that Mr./Ms./Mrs.....Nimmakayala Sowjanya.....

of .....KSRM College of Engineering..... has successfully

participated Training Program on .....Architectural Modelling Using Revit.....

held from .....06-04-2022.....to .....12-04-2022.....

Principal (or) HOD

Dr. Ravi K Gujjula
Chief General Manager (Technical)
APSSDC

Sri S. Satyanarayana, IAS
Managing Director
APSSDC

Feedback form for "Certification course on Architectural Modeling using REVIT"

reddysrinu@ksrmce.ac.in Switch account

Your email will be recorded when you submit this form

* Required

Name of The Student *

Your answer

Roll. No. *

Your answer

Trainee Communication Skills *

- ○ Excellent
- ○ Good
- ○ Fair
- ○ Poor

Content delivered by the trainee *

- ◯ Excellent
- ◯ Good
- ◯ Fair
- ◯ Poor

Weather the Course is improved your knowledge *

- ◯ Yes
- ◯ No

Is the lecture hours sufficient? *

- ◯ Yes
- ◯ No

Rate the entire course? *

1-Low, 5-High

- 1 ◯
- 2 ◯
- 3 ◯
- 4 ◯
- 5 ◯

Submit

Clear fo

Department of Civil Engineering

Feedback of students on Certification Course on "Architectural Modeling Using REVIT"

Sl. No.	Roll. No.	Name of The Student	Trainee Communication Skills	Content delivered by the trainee	Weather the Course is improved your knowledge	Is the lecture hours sufficient?	Rate the entire course?
1	199Y1A0109	Dirasantha Chennakeshava	Excellent	Excellent	Yes	Yes	5
2	199Y1A0110	G.Mahamad Javid	Excellent	Excellent	Yes	Yes	5
3	199Y1A0115	H Faheem	Good	Excellent	Yes	Yes	5
4	199Y1A0116	Janapati Venkata Sai	Excellent	Excellent	Yes	Yes	5
5	199Y1A0131	M.Harsha Vardhan	Excellent	Excellent	Yes	Yes	5
6	199Y1A0153	Shaik Imran	Excellent	Excellent	Yes	Yes	5
7	199Y1A0157	Shaik.Mustan	Excellent	Excellent	Yes	Yes	5
8	199Y1A0159	S. Venkata Sai Pavan	Excellent	Excellent	Yes	Yes	5
9	199Y1A0162	Syed Mohammed Junaid	Excellent	Excellent	Yes	Yes	5
10	199Y1A0169	Varadhigandla Sreenivasulu	Excellent	Excellent	Yes	Yes	5
11	209Y5A0104	B Surendra	Excellent	Good	Yes	Yes	4
12	209Y5A0116	D Sivanityam	Excellent	Excellent	Yes	Yes	5
13	209Y5A0122	Giddaluru Santhosh	Excellent	Excellent	Yes	No	5
14	209Y5A0132	Kodivalasa Jyothi Sujatha	Excellent	Excellent	Yes	Yes	5
15	209Y5A0137	L.Dwarakanath Reddy	Excellent	Excellent	Yes	Yes	5
16	209Y5A0139	Maduru Venkata Naveen Kumar	Excellent	Excellent	Yes	Yes	5

17	209Y5A0143	M Ganesh	Excellent	Excellent	Yes	Yes	5
18	209Y5A0146	M. Kiran Kumar Reddy	Excellent	Excellent	Yes	Yes	5
19	209Y5A0153	Nimmakayala Sowjanya	Excellent	Good	Yes	Yes	4
20	209Y5A0156	Paidepalli Asma	Excellent	Excellent	Yes	Yes	5
21	209Y5A0159	Pesala Ajay Kumar	Excellent	Excellent	Yes	Yes	5
22	209Y5A0168	R.Mabujan	Excellent	Excellent	Yes	Yes	5
23	209Y5A0179	Ummadi Venkata Teja	Excellent	Excellent	Yes	Yes	5
24	209Y5A0181	V.Gayathri	Excellent	Excellent	Yes	Yes	5
25	209Y5A0188	Yenumula Venugopal	Excellent	Excellent	Yes	Yes	5

Coordinators

HoD-Civil Engg.

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
(Autonomous)
KADAPA 516 003. (A.P.)

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
Certificate Course Architectural Modeling using REVIT
Marks Award List

S.No	Roll Number	Name of the Student	Marks Obtained
1	199Y1A0109	Dirasantha Chennakeshava	14
2	199Y1A0110	G.Mahamad Javid	19
3	199Y1A0115	H Faheem	17
4	199Y1A0116	Janapati Venkata Sai	18
5	199Y1A0131	M.Harsha Vardhan	17
6	199Y1A0153	Shaik Imran	8
7	199Y1A0157	Shaik.Mustan	19
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13	209Y5A0122	Giddaluru Santhosh	11
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21	209Y5A0159	Pesala Ajay Kumar	15
22	209Y5A0168	R.Mabujan	17
23	209Y5A0179	Ummadi Venkata Teja	7
24	209Y5A0181	V.Gayathri	18
25	209Y5A0188	Yenumula Venugopal	16

Coordinator

HoD

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
(Autonomous)
KADAPA - 516 003. (A.P.)

17/20

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
Certificate Course on Architectural Modeling using REVIT
Assessment Test

Name of the Student: M. Harsha vardhan **Reg. Number:** 199Y1A0131

Time: 20 Min **(Objective Questions)** **Max. Marks: 20**

Note: Answer the following Questions and each question carries **one** mark.

1	What is Revit primarily used for in the field of architecture?				[D] ✓
	A) 2D drafting	B) 3D gaming	C) Spreadsheet calculations	D) Building information modeling (BIM)	
2	In Revit, what is a "Family"?				[D] ✓
	A) Group of architects working together	B) A representation of a building	C) A type of 3D visualization	D) A parametric building component	
3	What does "BIM" stand for in the context of architectural software?				[B] ✓
	A) Basic Imaging Model	B) Building Information Modeling	C) Beautiful Illustration Method	D) Blueprint Information Management	
4	What is the purpose of "Levels" in Revit?				[C] ✓
	A) To define the number of floors in a building	B) To set the building's structural load	C) To define horizontal planes in a building	D) To control the lighting in a room	
5	What does the term "Parametric" mean in the context of Revit?				[C] ✗
	A) A type of architectural style	B) The process of creating visual effects	C) A modeling technique without constraints	D) Design elements that are driven by relationships and rules	
6	Which Revit tool is used for creating walls, doors, windows, and other building elements?				[D] ✓
	A) Sketch tool	B) Paintbrush tool	C) Line tool	D) Create tool	
7	In Revit, what is a "View" used for?				[C] ✓
	A) Changing the color scheme of the model	B) Exporting the model to other software	C) Displaying a specific portion of the model	D) Generating cost estimates for construction	
8	What is the purpose of "Families" in Revit?				[D] ✓
	A) To represent groups of architects	B) To organize project files	C) To manage project schedules	D) To define reusable building components	
9	Which feature in Revit helps ensure that changes made in one view are automatically reflected in all related views?				[A] ✓
	A) View Templates	B) Styles	C) Filters	D) Renderings	
10	Which Revit tool allows you to create 3D models by extruding 2D shapes?				[A] ✓

	A) Extrude tool	B) Convert tool	C) Build tool	D) Extend tool	
11	What is a "Sheet" in Revit used for?				
	A) A virtual workspace for collaborating	B) A tool for sketching rough ideas	C) A printed or digital representation of a drawing	D) A tool for managing building components	[C]
12	What is the primary purpose of using "Tags" in Revit?				
	A) To label elements in a drawing	B) To create 3D models	C) To apply textures to surfaces	D) To generate construction schedules	[A]
13	What is the purpose of the "Project Browser" in Revit?				
	A) To browse the internet for design inspiration	B) To access project management software	C) To manage project files and views	D) To connect to cloud storage services	[C]
14	What does the "Render" tool in Revit allow you to do?				
	A) Organize project files	B) Export models to other formats	C) Create visualizations of the building's appearance	D) Generate cost estimates for construction	[C]
15	In Revit, what is a "Curtain Wall"?				
	A) A wall with curtains for privacy	B) A type of window treatment	C) A decorative architectural element	D) An exterior wall system with glass panels	[D]
16	How can you adjust the visibility of objects in different views using Revit's "Visibility Graphics" tool?				
	A) By resizing objects	B) By changing the materials of objects	C) By controlling the visibility of categories and elements	D) By creating new objects	[C]
17	Which tool in Revit is used for creating a 3D view of the building's exterior?				
	A) Elevation tool	B) Section tool	C) Floor Plan tool	D) Perspective tool	[A]
18	What is the purpose of "Worksets" in a collaborative Revit environment?				
	A) To create backups of project files	B) To manage project schedules	C) To organize project teams	D) To enable multiple users to work on different parts of the project simultaneously	[D]
19	Which Revit feature allows you to adjust the materials and finishes of building components?				
	A) Material Library	B) Material Painter	C) Color Picker	D) Texture Tool	[B]
20	How can you add dimensions and annotations to a drawing in Revit?				
	A) Using the Text tool	B) Using the Line tool	C) Using the Dimension tool	D) Using the Paint tool	[C]

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K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
Certificate Course on Architectural Modeling using REVIT
Assessment Test

Name of the Student: D. Chennakesava **Reg. Number:** 19911A0109

Time: 20 Min **(Objective Questions)** **Max. Marks: 20**

Note: Answer the following Questions and each question carries **one** mark.

1	What is Revit primarily used for in the field of architecture?				[D]
	A) 2D drafting	B) 3D gaming	C) Spreadsheet calculations	D) Building information modeling (BIM)	
2	In Revit, what is a "Family"?				[A]
	A) Group of architects working together	B) A representation of a building	C) A type of 3D visualization	D) A parametric building component	
3	What does "BIM" stand for in the context of architectural software?				[B]
	A) Basic Imaging Model	B) Building Information Modeling	C) Beautiful Illustration Method	D) Blueprint Information Management	
4	What is the purpose of "Levels" in Revit?				[A]
	A) To define the number of floors in a building	B) To set the building's structural load	C) To define horizontal planes in a building	D) To control the lighting in a room	
5	What does the term "Parametric" mean in the context of Revit?				[D]
	A) A type of architectural style	B) The process of creating visual effects	C) A modeling technique without constraints	D) Design elements that are driven by relationships and rules	
6	Which Revit tool is used for creating walls, doors, windows, and other building elements?				[D]
	A) Sketch tool	B) Paintbrush tool	C) Line tool	D) Create tool	
7	In Revit, what is a "View" used for?				[A]
	A) Changing the color scheme of the model	B) Exporting the model to other software	C) Displaying a specific portion of the model	D) Generating cost estimates for construction	
8	What is the purpose of "Families" in Revit?				[A]
	A) To represent groups of architects	B) To organize project files	C) To manage project schedules	D) To define reusable building components	
9	Which feature in Revit helps ensure that changes made in one view are automatically reflected in all related views?				[A]
	A) View Templates	B) Styles	C) Filters	D) Renderings	
10	Which Revit tool allows you to create 3D models by extruding 2D shapes?				[C]

	A) Extrude tool	B) Convert tool	C) Build tool	D) Extend tool	
11	What is a "Sheet" in Revit used for?				
	A) A virtual workspace for collaborating	B) A tool for sketching rough ideas	C) A printed or digital representation of a drawing	D) A tool for managing building components	[C]
12	What is the primary purpose of using "Tags" in Revit?				
	A) To label elements in a drawing	B) To create 3D models	C) To apply textures to surfaces	D) To generate construction schedules	[A]
13	What is the purpose of the "Project Browser" in Revit?				
	A) To browse the internet for design inspiration	B) To access project management software	C) To manage project files and views	D) To connect to cloud storage services	[C]
14	What does the "Render" tool in Revit allow you to do?				
	A) Organize project files	B) Export models to other formats	C) Create visualizations of the building's appearance	D) Generate cost estimates for construction	[C]
15	In Revit, what is a "Curtain Wall"?				
	A) A wall with curtains for privacy	B) A type of window treatment	C) A decorative architectural element	D) An exterior wall system with glass panels	[D]
16	How can you adjust the visibility of objects in different views using Revit's "Visibility Graphics" tool?				
	A) By resizing objects	B) By changing the materials of objects	C) By controlling the visibility of categories and elements	D) By creating new objects	[C]
17	Which tool in Revit is used for creating a 3D view of the building's exterior?				
	A) Elevation tool	B) Section tool	C) Floor Plan tool	D) Perspective tool	[A]
18	What is the purpose of "Worksets" in a collaborative Revit environment?				
	A) To create backups of project files	B) To manage project schedules	C) To organize project teams	D) To enable multiple users to work on different parts of the project simultaneously	[D]
19	Which Revit feature allows you to adjust the materials and finishes of building components?				
	A) Material Library	B) Material Painter	C) Color Picker	D) Texture Tool	[B]
20	How can you add dimensions and annotations to a drawing in Revit?				
	A) Using the Text tool	B) Using the Line tool	C) Using the Dimension tool	D) Using the Paint tool	[C]

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Certificate Course on Architectural Modeling using REVIT
Assessment Test

Name of the Student: J. Venkata Sai **Reg. Number:** 19Y1A0116

Time: 20 Min **(Objective Questions)** **Max. Marks: 20**

Note: Answer the following Questions and each question carries **one** mark.

1	What is Revit primarily used for in the field of architecture?				[A]
	A) 2D drafting	B) 3D gaming	C) Spreadsheet calculations	D) Building information modeling (BIM)	
2	In Revit, what is a "Family"?				[D]
	A) Group of architects working together	B) A representation of a building	C) A type of 3D visualization	D) A parametric building component	
3	What does "BIM" stand for in the context of architectural software?				[B]
	A) Basic Imaging Model	B) Building Information Modeling	C) Beautiful Illustration Method	D) Blueprint Information Management	
4	What is the purpose of "Levels" in Revit?				[C]
	A) To define the number of floors in a building	B) To set the building's structural load	C) To define horizontal planes in a building	D) To control the lighting in a room	
5	What does the term "Parametric" mean in the context of Revit?				[D]
	A) A type of architectural style	B) The process of creating visual effects	C) A modeling technique without constraints	D) Design elements that are driven by relationships and rules	
6	Which Revit tool is used for creating walls, doors, windows, and other building elements?				[D]
	A) Sketch tool	B) Paintbrush tool	C) Line tool	D) Create tool	
7	In Revit, what is a "View" used for?				[C]
	A) Changing the color scheme of the model	B) Exporting the model to other software	C) Displaying a specific portion of the model	D) Generating cost estimates for construction	
8	What is the purpose of "Families" in Revit?				[D]
	A) To represent groups of architects	B) To organize project files	C) To manage project schedules	D) To define reusable building components	
9	Which feature in Revit helps ensure that changes made in one view are automatically reflected in all related views?				[A]
	A) View Templates	B) Styles	C) Filters	D) Renderings	
10	Which Revit tool allows you to create 3D models by extruding 2D shapes?				[A]

	A) Extrude tool	B) Convert tool	C) Build tool	D) Extend tool	
11	What is a "Sheet" in Revit used for?				
	A) A virtual workspace for collaborating	B) A tool for sketching rough ideas	C) A printed or digital representation of a drawing	D) A tool for managing building components	[C]
12	What is the primary purpose of using "Tags" in Revit?				
	A) To label elements in a drawing	B) To create 3D models	C) To apply textures to surfaces	D) To generate construction schedules	[A]
13	What is the purpose of the "Project Browser" in Revit?				
	A) To browse the internet for design inspiration	B) To access project management software	C) To manage project files and views	D) To connect to cloud storage services	[C]
14	What does the "Render" tool in Revit allow you to do?				
	A) Organize project files	B) Export models to other formats	C) Create visualizations of the building's appearance	D) Generate cost estimates for construction	[C]
15	In Revit, what is a "Curtain Wall"?				
	A) A wall with curtains for privacy	B) A type of window treatment	C) A decorative architectural element	D) An exterior wall system with glass panels	[D]
16	How can you adjust the visibility of objects in different views using Revit's "Visibility Graphics" tool?				
	A) By resizing objects	B) By changing the materials of objects	C) By controlling the visibility of categories and elements	D) By creating new objects	[C]
17	Which tool in Revit is used for creating a 3D view of the building's exterior?				
	A) Elevation tool	B) Section tool	C) Floor Plan tool	D) Perspective tool	[A]
18	What is the purpose of "Worksets" in a collaborative Revit environment?				
	A) To create backups of project files	B) To manage project schedules	C) To organize project teams	D) To enable multiple users to work on different parts of the project simultaneously	[D]
19	Which Revit feature allows you to adjust the materials and finishes of building components?				
	A) Material Library	B) Material Painter	C) Color Picker	D) Texture Tool	[B]
20	How can you add dimensions and annotations to a drawing in Revit?				
	A) Using the Text tool	B) Using the Line tool	C) Using the Dimension tool	D) Using the Paint tool	[A]

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Assessment Test

Name of the Student: G. Javid **Reg. Number:** 199Y1A0110

Time: 20 Min **(Objective Questions)** **Max. Marks: 20**

Note: Answer the following Questions and each question carries **one** mark.

1	What is Revit primarily used for in the field of architecture?				[D]
	A) 2D drafting	B) 3D gaming	C) Spreadsheet calculations	D) Building information modeling (BIM)	
2	In Revit, what is a "Family"?				[D]
	A) Group of architects working together	B) A representation of a building	C) A type of 3D visualization	D) A parametric building component	
3	What does "BIM" stand for in the context of architectural software?				[B]
	A) Basic Imaging Model	B) Building Information Modeling	C) Beautiful Illustration Method	D) Blueprint Information Management	
4	What is the purpose of "Levels" in Revit?				[C]
	A) To define the number of floors in a building	B) To set the building's structural load	C) To define horizontal planes in a building	D) To control the lighting in a room	
5	What does the term "Parametric" mean in the context of Revit?				[D]
	A) A type of architectural style	B) The process of creating visual effects	C) A modeling technique without constraints	D) Design elements that are driven by relationships and rules	
6	Which Revit tool is used for creating walls, doors, windows, and other building elements?				[D]
	A) Sketch tool	B) Paintbrush tool	C) Line tool	D) Create tool	
7	In Revit, what is a "View" used for?				[C]
	A) Changing the color scheme of the model	B) Exporting the model to other software	C) Displaying a specific portion of the model	D) Generating cost estimates for construction	
8	What is the purpose of "Families" in Revit?				[A] X
	A) To represent groups of architects	B) To organize project files	C) To manage project schedules	D) To define reusable building components	
9	Which feature in Revit helps ensure that changes made in one view are automatically reflected in all related views?				[A]
	A) View Templates	B) Styles	C) Filters	D) Renderings	
10	Which Revit tool allows you to create 3D models by extruding 2D shapes?				[A]

	A) Extrude tool	B) Convert tool	C) Build tool	D) Extend tool	
11	What is a "Sheet" in Revit used for?				
	A) A virtual workspace for collaborating	B) A tool for sketching rough ideas	C) A printed or digital representation of a drawing	D) A tool for managing building components	[C]
12	What is the primary purpose of using "Tags" in Revit?				
	A) To label elements in a drawing	B) To create 3D models	C) To apply textures to surfaces	D) To generate construction schedules	[A]
13	What is the purpose of the "Project Browser" in Revit?				
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14	What does the "Render" tool in Revit allow you to do?				
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15	In Revit, what is a "Curtain Wall"?				
	A) A wall with curtains for privacy	B) A type of window treatment	C) A decorative architectural element	D) An exterior wall system with glass panels	[D]
16	How can you adjust the visibility of objects in different views using Revit's "Visibility Graphics" tool?				
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17	Which tool in Revit is used for creating a 3D view of the building's exterior?				
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18	What is the purpose of "Worksets" in a collaborative Revit environment?				
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19	Which Revit feature allows you to adjust the materials and finishes of building components?				
	A) Material Library	B) Material Painter	C) Color Picker	D) Texture Tool	[B]
20	How can you add dimensions and annotations to a drawing in Revit?				
	A) Using the Text tool	B) Using the Line tool	C) Using the Dimension tool	D) Using the Paint tool	[ ]

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Name of the Student: H. Faheem **Reg. Number:** 19991A0115

Time: 20 Min **(Objective Questions)** **Max. Marks: 20**

Note: Answer the following Questions and each question carries **one** mark.

1	What is Revit primarily used for in the field of architecture?				[D]
	A) 2D drafting	B) 3D gaming	C) Spreadsheet calculations	D) Building information modeling (BIM)	
2	In Revit, what is a "Family"?				[D] X
	A) Group of architects working together	B) A representation of a building	C) A type of 3D visualization	D) A parametric building component	
3	What does "BIM" stand for in the context of architectural software?				[B]
	A) Basic Imaging Model	B) Building Information Modeling	C) Beautiful Illustration Method	D) Blueprint Information Management	
4	What is the purpose of "Levels" in Revit?				[C]
	A) To define the number of floors in a building	B) To set the building's structural load	C) To define horizontal planes in a building	D) To control the lighting in a room	
5	What does the term "Parametric" mean in the context of Revit?				[A] X
	A) A type of architectural style	B) The process of creating visual effects	C) A modeling technique without constraints	D) Design elements that are driven by relationships and rules	
6	Which Revit tool is used for creating walls, doors, windows, and other building elements?				[D]
	A) Sketch tool	B) Paintbrush tool	C) Line tool	D) Create tool	
7	In Revit, what is a "View" used for?				[C]
	A) Changing the color scheme of the model	B) Exporting the model to other software	C) Displaying a specific portion of the model	D) Generating cost estimates for construction	
8	What is the purpose of "Families" in Revit?				[D]
	A) To represent groups of architects	B) To organize project files	C) To manage project schedules	D) To define reusable building components	
9	Which feature in Revit helps ensure that changes made in one view are automatically reflected in all related views?				[A]
	A) View Templates	B) Styles	C) Filters	D) Renderings	
10	Which Revit tool allows you to create 3D models by extruding 2D shapes?				[A]

	A) Extrude tool	B) Convert tool	C) Build tool	D) Extend tool	
11	What is a "Sheet" in Revit used for?				
	A) A virtual workspace for collaborating	B) A tool for sketching rough ideas	C) A printed or digital representation of a drawing	D) A tool for managing building components	[C]
12	What is the primary purpose of using "Tags" in Revit?				
	A) To label elements in a drawing	B) To create 3D models	C) To apply textures to surfaces	D) To generate construction schedules	[A] X
13	What is the purpose of the "Project Browser" in Revit?				
	A) To browse the internet for design inspiration	B) To access project management software	C) To manage project files and views	D) To connect to cloud storage services	[C]
14	What does the "Render" tool in Revit allow you to do?				
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15	In Revit, what is a "Curtain Wall"?				
	A) A wall with curtains for privacy	B) A type of window treatment	C) A decorative architectural element	D) An exterior wall system with glass panels	[D]
16	How can you adjust the visibility of objects in different views using Revit's "Visibility Graphics" tool?				
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	A) Material Library	B) Material Painter	C) Color Picker	D) Texture Tool	[B]
20	How can you add dimensions and annotations to a drawing in Revit?				
	A) Using the Text tool	B) Using the Line tool	C) Using the Dimension tool	D) Using the Paint tool	[C]

⇨ In the "Open" dialog box, browse to the *Chapter02* folder.

⇨ Double-click *Chapter02.rvt* to open the project. You can also select it and then click the Open button.

The project will open in displaying a sheet with an overhead 3D view.

The dataset for this chapter provided courtesy of Mark Schmieding, FAIA.

GETTING ACQUAINTED WITH THE PROJECT

For this tutorial, we will explore a series of sheet views included in the project. A sheet view is a special kind of view that emulates a sheet of paper from which drawing sets can be printed to output devices. Sheet views typically include a title block which contains project and drawing information. Revit remembers the last view that was open when the project was saved. In this case, it is a three-dimensional aerial view of this small one-floor project for a youth center. It includes offices, exam and counseling rooms, a multipurpose room, and media rooms. Let's take a closer look (see Figure 2.10).

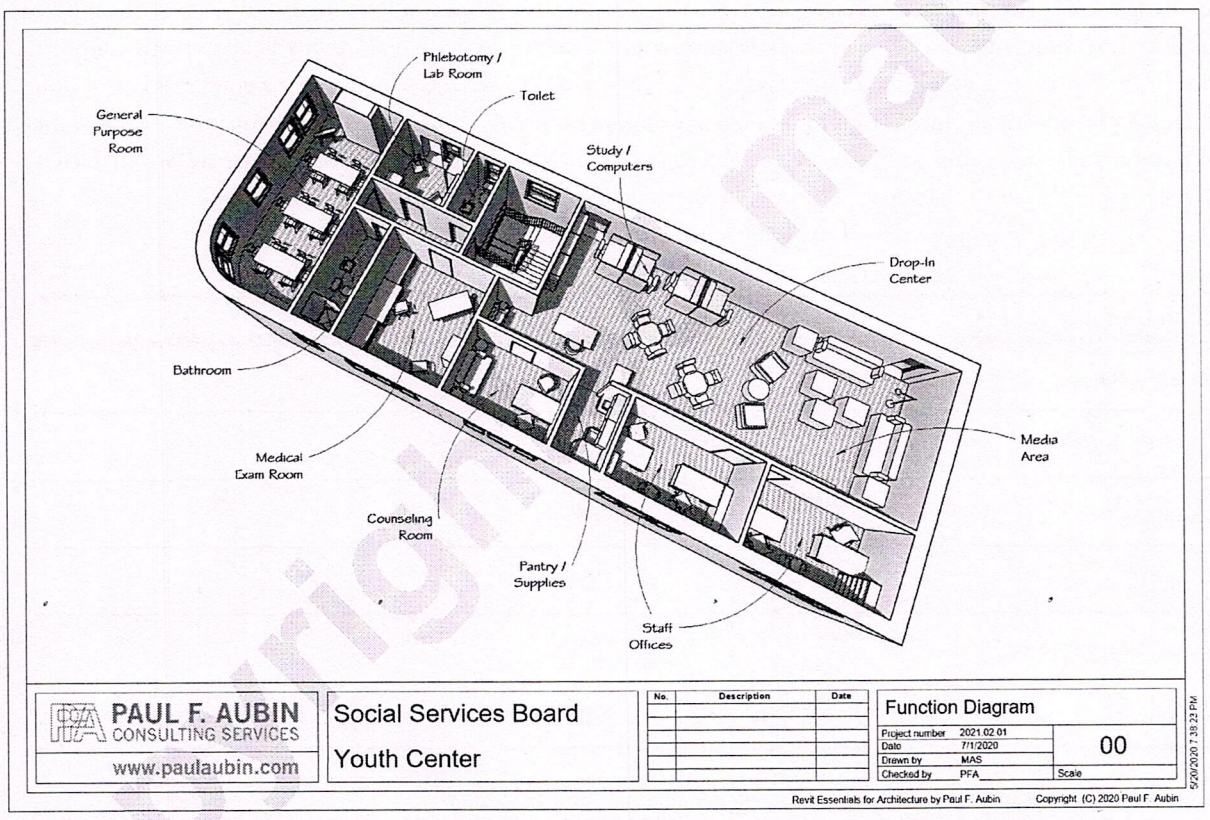

FIGURE 2.10 *The Youth Center dataset shown from the "Function Diagram" sheet*

VIEW NAVIGATION

You can use the wheel on your mouse to zoom in and out in any view. You can hold the wheel in and drag to pan the screen. If you are working on a laptop and don't have a wheel mouse, you can use the commands on the Navigation Bar (located by default in the upper right corner of the view window) to navigate in any view. Depending on the kind of view active on screen, you will have access to differing tools on the Navigation Bar (see Figure 2.11). Among these are the Steering Wheel, the Zoom pop-up, and the ViewCube. The ViewCube and 3D steering wheel appear in 3D views.

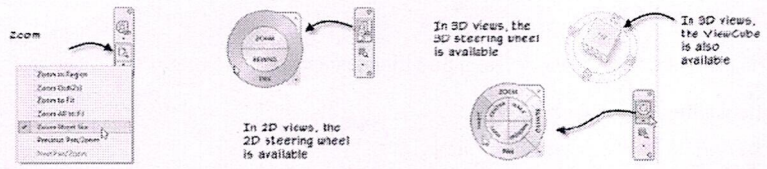

FIGURE 2.11 *Zoom the sheet to Sheet Size and pan around to see it as it will print. Pan with the wheel mouse or the steering wheel*

> **NOTE:** Revit includes 3D connexion device support. If you have one of these devices connected to your computer, you can use it to navigate in 2D and 3D views. Additional icons will appear on the Navigation Bar indicating that the device is detected and available for use in Revit. Learn more at: 3dconnexion.com.

The zoom pop-up offers many ways to zoom the current window. Most of these commands will be available in all kinds of views, like: **Zoom To Fit** (which fits the screen to the extent of the model) and: **Zoom In Region** (which allows you to drag a rectangular region on screen to magnify that area). We also have the handy: **Zoom Sheet Size** available. This command zooms a view to a size comparable on screen to the actual size it will appear when printed. Since Revit displays line weights and other graphics accurately on screen, this can give you a good preview of how the sheet will look when printed (with today's high resolution monitors, this is a good approximation). Each of the zoom commands has a command shortcut that you can execute via the keyboard. These shortcuts are two characters and you simply type both characters in succession to execute the appropriate command. For example, to issue Zoom to Fit, you can simply type: ZF. All of the zoom shortcuts are shown in Table 2.D.

TABLE 2.D *Keyboard shortcuts for Zoom commands*

Zoom Command	Keyboard Shortcut
Zoom in Region	ZR
Zoom Out (2x)	ZO
Zoom to Fit	ZF
Zoom All to Fit	ZA
Zoom Sheet Size	ZS
Previous Pan/Zoom	ZP

1. From the Zoom pop-up on the Navigation Bar, choose: **Zoom in Region.**

   You can also type ZR to issue this command. If Zoom in Region is already selected (a checkmark appears next to it) then simply click the zoom icon to execute the command.

⇨ Drag a rectangular region around the upper left corner of the drawing.

2. Hold in the wheel on the mouse and drag around to pan the model.

   If you prefer, you can use the scroll bars instead.

The image you see on screen is the view named: *Large Overview*. It is in the *3D Views* branch of the Project Browser. It has been added to the current sheet and displays in a "Viewport".

3. Zoom back out. The easiest way is to choose: **Zoom to Fit** from the Zoom pop-up menu (shortcut: ZF).

The Steering Wheel offers an alternative to wheel mouse navigation with such commands as dynamic zoom and pan. Click the Steering Wheel icon to make it appear. In this case, since we have a sheet active, only the two-dimensional commands will appear. (This is true even though a 3D view is placed on the sheet; the sheet itself is still two-dimensional).

4. Click on the Steering Wheel icon (the tool tip will read "2D Wheel").

Each function works the same way. Place your mouse on the area of the wheel for the function you want. It will highlight as your cursor passes over it. You are also simultaneously moving the wheel around the screen with the movement of your mouse, so it takes some practice. Click and drag with the mouse to begin the function. For example, if you wish to zoom, move the wheel to the area of the screen that you wish to center your zoom on, move the pointer over the Zoom part of the wheel, click and hold down the mouse and begin to drag. Dragging up zooms in, dragging down zooms out. Varying the speed of your dragging varies the speed of the zooming. Release the mouse button to stop zooming and make the wheel reappear to change functions. Pan works the same way except that panning occurs in the direction that you drag (see Figure 2.12).

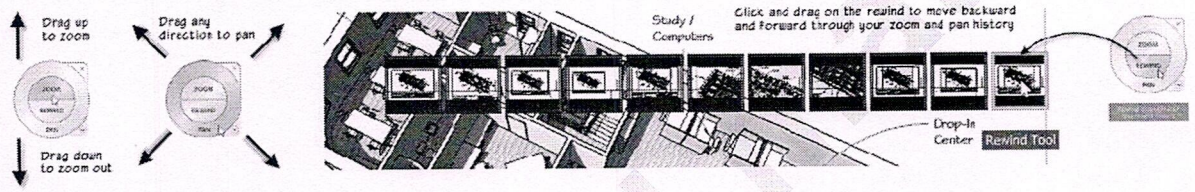

FIGURE 2.12 *Steering wheels offer many view navigation functions. Drag on the part of the wheel labeled for the function you want to use*

As you perform several zooms and pans, they are stored in memory. You can use the Rewind function to back up through previous zooms and pans in a visual way. Move your mouse pointer over the Rewind function, click and hold down. A ribbon of thumbnail previews will appear, each representing a previous zoom or pan. Drag to the left to highlight previous zooms and pans, drag back to the right to move forward. Release the mouse to stop rewinding or forwarding. When you are done with the wheel, click the small close box ("X") in the upper right corner of the wheel or press ESC.

5. When finished experimenting with Steering Wheel, close it to continue.

UNDERSTANDING SCREEN TOOL TIPS

You can get feedback on the elements onscreen as your mouse passes over them.

1. Zoom to Fit. (In addition to the methods already covered, you can right-click to access common zoom commands like Zoom to Fit.

⇨ Move your mouse pointer into the middle of the screen and pause it there—pause over the drawing, (not a text note).

Do not click the mouse.

Notice how a rectangular border highlights around the 3D image. As you pause the mouse, an onscreen tool tip should appear as well. In this case, this tip will read: Viewports : Viewport : No Title (see Figure 2.13).

> **NOTE:** The same information appears in the status line at the bottom left corner of the Revit interface.

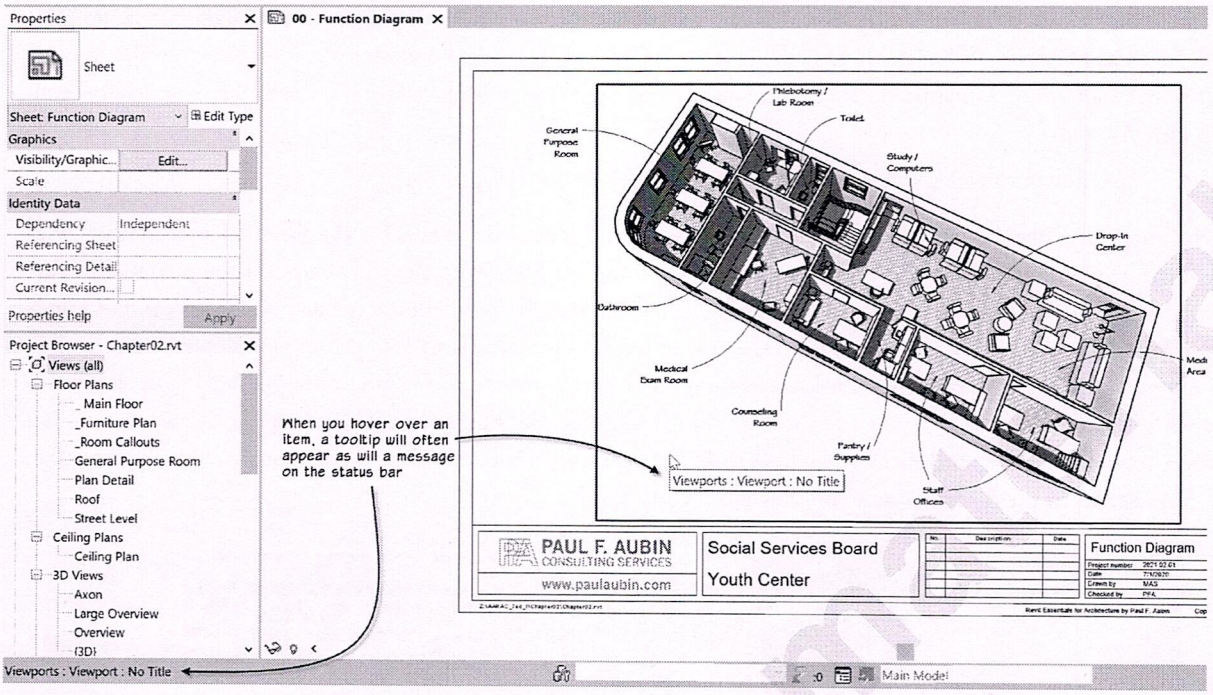

FIGURE 2.13 *Tool Tips will indicate the element category, family, and type*

The tool tip conveys three bits of information about the element highlighted—its **Category : Family name: Type name**. So, in this case, the element category is "Viewports," the family is "Viewport" and the type is "No Title."

2. Now hover the pointer over a piece of text but do not click.

This is called "Pre-highlighting." The tool tip for a piece of text will read—Text Notes : Text : 3D Notes. Here, Text Notes is the category, Text is the family and 3D Notes is the type. Since the 3D view is a viewport containing one of our project views, you do not see the elements within the model pre-highlighting. However, you can choose to "Activate" the viewport and that will give you access to the building model elements shown within the view. Editing them from a viewport is no different than opening the view from the Project Browser and editing them there; the results are the same view either way. Let's take a look.

3. Pre-highlight the viewport, and then click to select it this time.

⇨ On the Modify | Viewports ribbon, click the Activate View button (you can double-click inside the viewport as well).

Notice that the sheet title block and the text labels have grayed out. While they are still visible, this graying effect indicates that they are currently inactive and that you are now working inside the viewport.

4. Move the mouse around the model.

Notice that the elements within the model now pre-highlight.

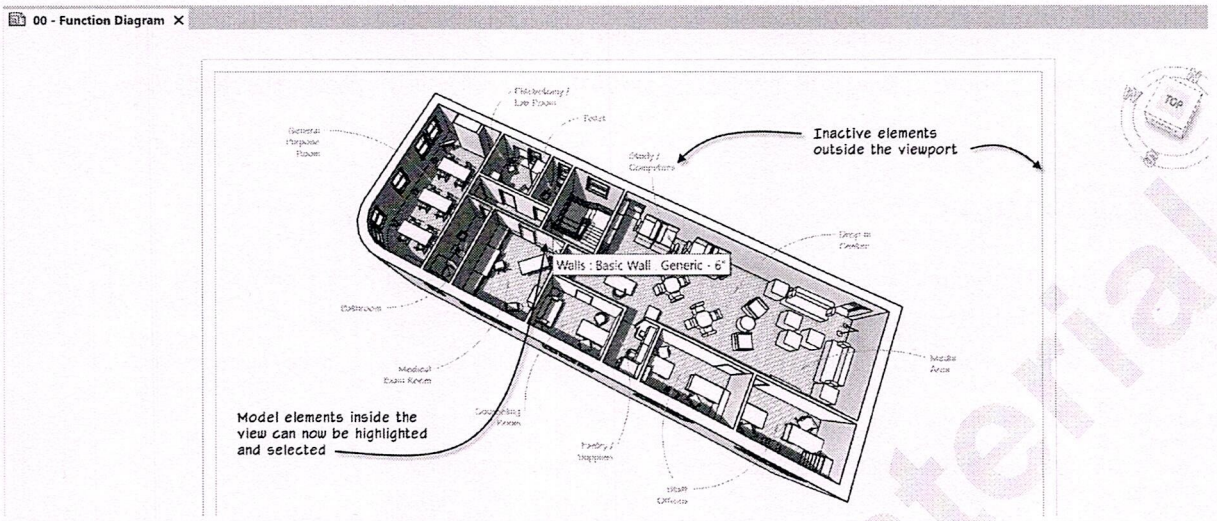

FIGURE 2.14 *Once the viewport is activated, you can pre-highlight the elements in the model*

We will not actually edit any model objects in this view but do take notice of the tool tips. The interior partitions, for example, display as: Walls : Basic Wall : Generic - 6". The category is: Walls, the family is: Basic Wall and the type is: Generic - 6" (see Figure 2.14).

> Feel free to select objects if you like, but don't edit anything. If you accidentally move or change an element, click the undo icon on the Quick Access Toolbar (QAT) at the top left corner of the Revit interface. Or press CTRL + Z.

You may also notice that with the three-dimensional view now active, in addition to the Navigation Bar, the ViewCube is also displayed. The ViewCube is a 3D navigational tool available in all Autodesk products. Clicking on any of the labeled sides of the cube will orient the view to that direction such as top, front, or right. There are also several active regions between faces that will orient the view at an angle between the two adjacent faces. For example, click the edge between front and right to orient the view to the southeast. Click the corner between three faces to orient the view to an axonometric orientation. You can also click and drag any edge of the cube to orbit the model in real-time. Feel free to experiment with the ViewCube to get the hang of it (see Figure 2.15).

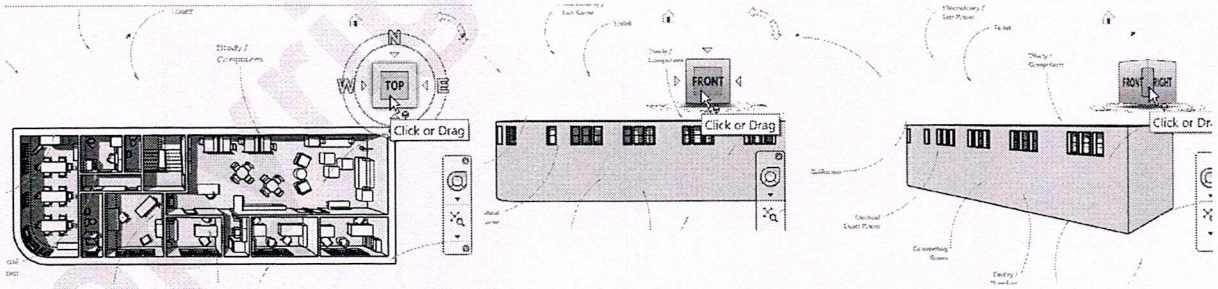

FIGURE 2.15 *Three-dimensional views show the ViewCube. Use it to quickly reorient the 3D view*

In addition to the ViewCube, the Steering Wheel has more options in a three-dimensional view. You can orbit the view, change the center of rotation, move the vantage point up and down, and walk and look around the model. Consult the online help for more information on these options and the many ways you can customize the Steering Wheels to suit your preferences.

5. Feel free to experiment with the ViewCube and the 3D Steering Wheel in this 3D view.

⇨ Before continuing, reset the view back to its original state.

To do this, click the Steering Wheel, and then use the Rewind tool or right-click on the Steering Wheel and choose: **Undo View Orientation Changes.**

6. When you are done exploring in the model, right-click in the Viewport again and choose: **Deactivate View.**

This returns you to the sheet and the elements in the view are no longer selectable.

VIEWS AND DETAILING

Earlier we discussed how model and annotation elements were handled in distinct ways. Continuing in this file, let's explore the difference between model and view-specific/annotation elements a bit further.

1. On the Project Browser, beneath the *Views (all)* branch, double-click to open the: *_Main Floor* plan view.

This is the basic floor plan view for this project.

2. On the Project Browser, double-click to open the *_Room Callouts* plan view.

This plan is very similar to the *_Main Floor* view except that it also includes callouts around the General Purpose Room on the left and some elevation and section markers. A sheet has been provided showing each of these views.

3. On the Project Browser, beneath the *Sheets (all)* branch, double-click to open the *05 – Room Callout* sheet view.

Notice how the only visual difference here is that the plan appears on a title block sheet in this view.

4. On the Project Browser, double-click to open the *02 – Floor Plan* sheet view.

This is the sheet presentation of the *_Main Floor* plan view. In other words, this sheet composes the *_Main Floor* plan view on a title block for printing. You can easily see which views appear on a sheet in the Project Browser.

5. On the Project Browser, beneath the *Sheets* branch, expand the tree (click the small plus (+) sign) beneath the *01 – Shaded Plan* sheet.

⇨ Double-click the sheet to open it (see Figure 2.16).

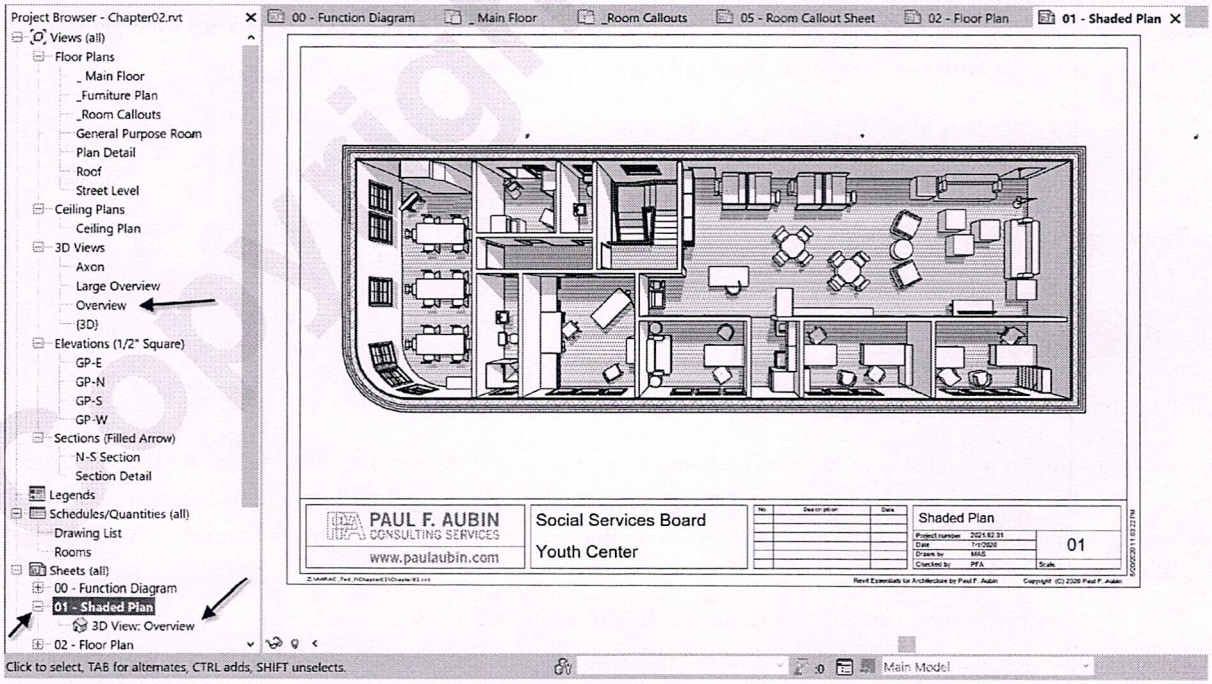

FIGURE 2.16 *Expand the sheet entries in the Project Browser to see the views they contain*

This provides an easy way to see which views are inserted on sheets. Another useful tool (noted above) gives us a way to see which views have not yet been placed on sheets.

6. On the Project Browser, scroll to the top and select the *Views (all)* branch.

⇨ On the Properties palette, from the Type Selector (drop down list at the top), choose: **not on sheets** (similar to Figure 2.9 above).

Notice that the list of views on the Project Browser now shows only those views that are not yet assigned to a sheet. In this project, there are only a couple views not placed on sheets. Expand each sub-group to see.

7. Make sure that "Views (not on sheets)" is selected, and then on the Properties palette, change back to: **all**.

This sets the default browser organization back to showing all views regardless of their placement on sheets.

8. On the Project Browser, double-click to return to the *_Main Floor* plan view. Or just click its tab if it is still open.

Suppose that we needed to create another floor plan that was similar to this one, but that was to convey a different type of information on the printed sheet or that we were planning to use simply as a convenient place in which to edit the model with no intention of adding it to a sheet. To achieve either goal, we simply duplicate an existing view.

9. On the Project Browser, right-click the *_Main Floor* plan view and choose: **Duplicate View > Duplicate**.

A new floor plan view named: *_Main Floor Copy 1* will appear and become active. Notice that none of the room labels or dimensions were copied in this operation. This might be useful if you were creating a "working" view. A "working" view is intended as a view in which you manipulate the model only and do not plan to add to a sheet for printing. Bear in mind that nothing prevents the working view from being used on a sheet; rather it is simply not intended for that purpose by our project team. If we want to duplicate the view, including the tags and dimensions, we choose a different command.

10. On the Project Browser, right-click the original *_Main Floor* plan view again and choose: **Duplicate View > Duplicate with Detailing.**

> **NOTE:** "Duplicate with Detailing" is short for "Duplicate with view-specific detailing elements and annotation elements." Remember that the "detailing" is being copied, while the model elements are simply being viewed.

A new floor plan view named: *_Main Floor Copy 2* will appear and become active. Notice that this copy includes copies of the room tags and dimensions.

⇨ Right-click *_Main Floor Copy 2* and choose: **Rename.**

⇨ Type: **Area Diagram** and then press ENTER.

11. With the CTRL key held down, select each of the dimensions in the view (five total).

⇨ Press the DELETE key.

We do not need dimensions for the new view we are creating. However, there is no way to duplicate only the room tags and not the dimensions, so simply deleting them achieves the desired result. But the critical thing to remember here is that the dimensions still exist in the original *_Main Floor* view. We only deleted the copied ones here.

12. On the Annotate tab of the ribbon, on the Color Fill panel, click the Color Fill Legend tool.

A small square with a tag will appear attached to the cursor.

⇨ Click a point above the plan to place the Color Scheme Legend.

⇨ In the dialog that appears, for Space Type, choose: Rooms and then click OK.

As you can see, the Scheme 1 color scheme color codes each room based on its name. The legend itself is currently overlapping the plan. To make it fit better, we can resize and/or move it.

13. Click on the Color Fill Legend and then drag the small round Control at the bottom up to make the legend two columns (see Figure 2.17).

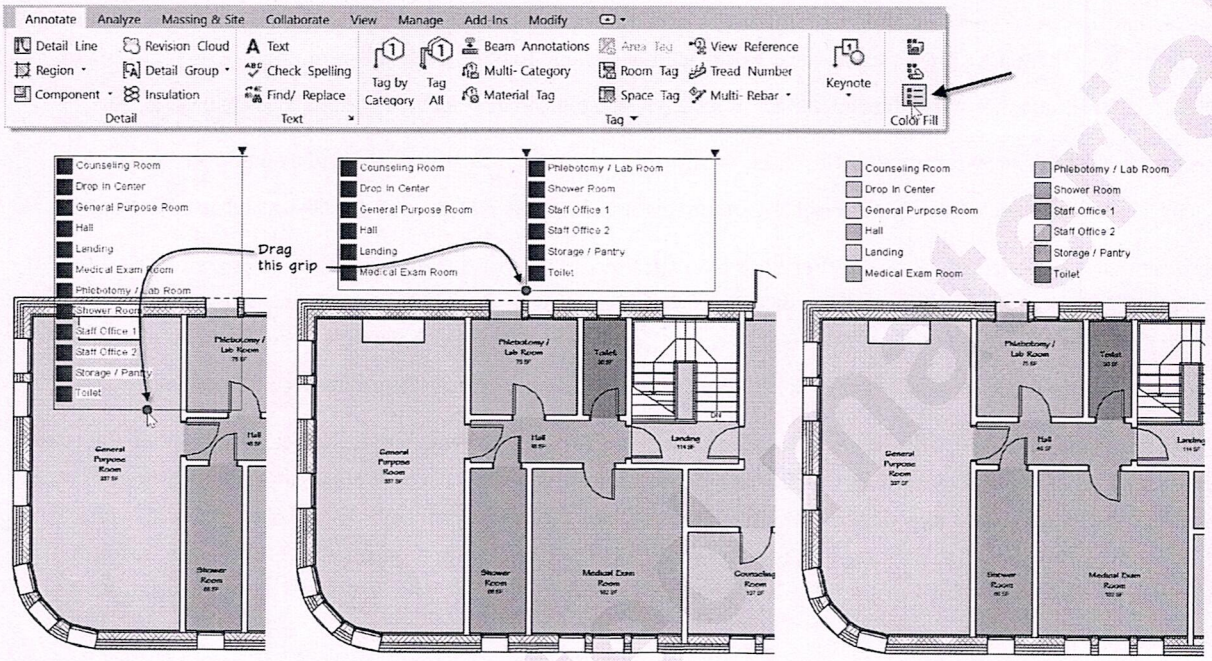

FIGURE 2.17 *Create a Legend for the new shaded plan and then resize the legend*

14. On the Project Browser, double-click to open the *04 – Area Diagram* sheet view.

A sheet appears on screen, which does not yet have a drawing on it. Let's add our new shaded plan to this sheet.

⇨ On the Project Browser, right-click the 04 – Area Diagram sheet and choose: **Add View.**

⇨ From the "Views" dialog, choose: **Floor Plan: Area Diagram** view and then click the Add View to Sheet button.

⇨ Click to place the view on the sheet.

Notice that the view is a little too big for the sheet. We can adjust the scale of the view and it will update automatically on the sheet.

15. On the Project Browser, select the: *Area Diagram* view.

⇨ On the Properties palette, from the View Scale list, choose: **1/8"=1'-0"** (see Figure 2.18).

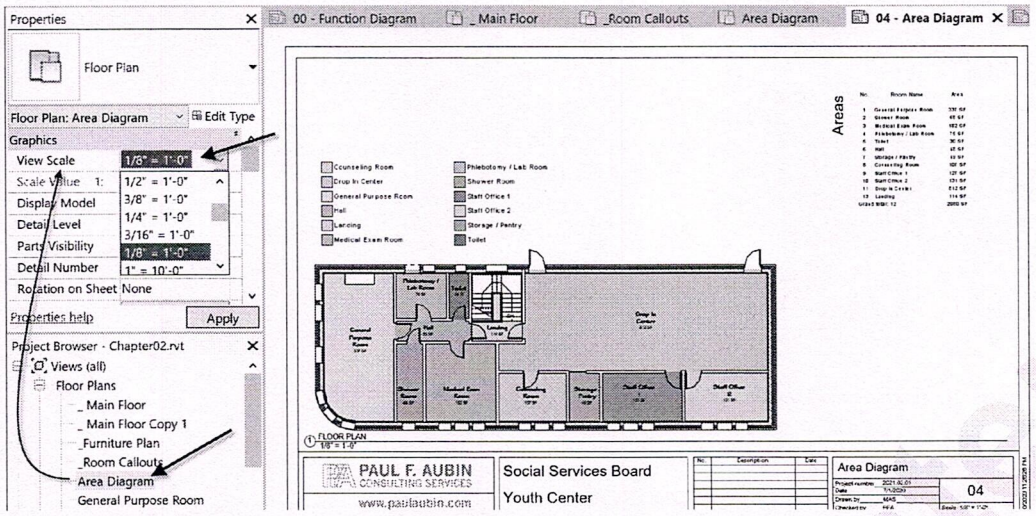

FIGURE 2.18 *Change the scale of the view*

You should see the change on the sheet immediately. If necessary, you can move the viewport around to make a nicer composition on the sheet.

You should also look at the *_Furniture Plan* floor plan view and the *03– Layout Plan* sheet next. In this view and sheet, you will notice that the plan is displayed with furniture. Therefore, creating plans with and without detailing (text and other annotation) is not the only way to vary the specifics of what we see. We can also control the visibility of each type of element in any Revit view. The visibility settings are a parameter of the view itself. This is how we can choose to display the furniture in the *_Furniture Plan* view and not display it in the *_Main Floor* view. On the View tab of the ribbon, on the Graphics panel, you can choose the Visibility/ Graphics tool (VG). This will display a dialog listing all element categories and enables you to turn on and off these categories within the current view. While we will discuss the specifics of this process in later chapters, the important point for this exercise is that this sort of control is possible and extremely useful. If you wish to explore the "Visibility/Graphics Overrides" dialog, please feel free to do so. Simply undo your changes before continuing with the lesson.

EDIT IN ANY VIEW

Perhaps the most powerful feature of Revit is the ability to edit in any view and see the results instantly in all views.

1. On the Project Browser, double-click to open the *06 – General Purpose Room* sheet view. Then on the View tab, on the Windows panel, click the Close Inactive button.

This closes all the other tabs. As you can see from this simple exercise, it is easy to end up with many open view tabs. Using this tool every so often helps keep a tidy workspace and preserves computer resources. The 06 sheet we have open shows a plan and four interior elevations. All these views show the General Purpose Room.

2. Select the plan view on the left, right-click and choose: **Activate View** (or double-click on the viewport).
3. On the Architecture tab of the ribbon click the Window tool.

⇨ Click a point on the exterior wall on the left to add a new window (see Figure 2.19).

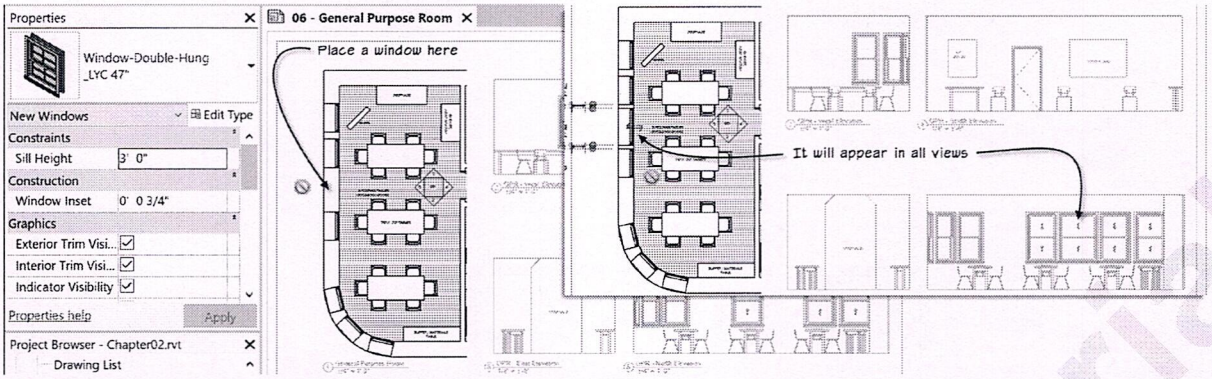

FIGURE 2.19 *Add a window and it appears in all appropriate views automatically*

Notice that the window appears immediately in the north elevation (detail 5 on the sheet).

4. Right-click in the plan view again and choose: **Deactivate View**.

EXPLORE A DETAIL VIEW

As we have noted above, a detail view is a little different than the other views. Typically it will include a live view of the model—usually a callout of some part of a section or plan—and various types of annotation and other graphical embellishments drawn on top. One such detail view has been included in this sample dataset.

1. On the Project Browser, expand (click the plus [+] sign) the *07 – Building Details* sheet view.

   Beneath this sheet is a listing of three views that are already placed on the sheet.

⇨ Beneath the *07 – Building Details* sheet view entry, double-click to open the: *Section: Section Detail* view.

2. Pre-highlight some of the elements in this view (see Figure 2.20).

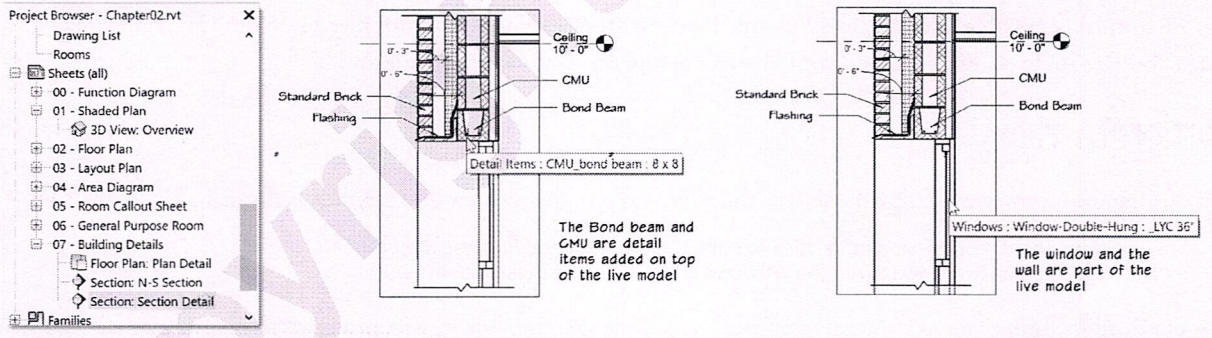

FIGURE 2.20 *Explore a detail view—Note the combination of detail and model elements*

Notice that the detail view contains both model elements (which would appear in all views) and detail elements (which appear only in this view). Even though the detail elements represent items like concrete blocks, brick, flashing, and bond beams, the level of detail required in a construction detail is much higher than that required in nearly any other view. Therefore, these types of items are typically drawn as detail elements on top of the model view geometry to keep overhead low and reduce the amount of time and effort required to build your overall model. An even easier way to see this is to change the way the model displays on the Properties palette.

3. Make sure that nothing is selected (press ESC). On the Properties palette, next to Display Model, choose: **Halftone**.

   Notice how the elements that are parts of the 3D model now display grayed out.

⇨ Set it to: **Do not display** next.

This time the model disappears and only the detailing remains.

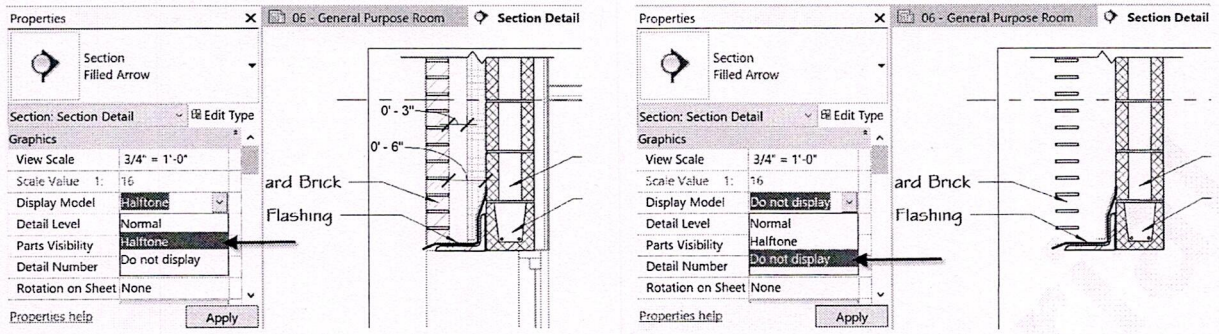

FIGURE 2.21 *Change the display properties of detailing to see the difference between model and detailing more clearly*

Complete coverage of the detailing procedure can be found in Chapter 12. Continue to explore in this dataset as much as you wish to get a better feel of how the various elements and views in a Revit project interact. Close Revit when you are finished exploring. You do not need to save the file.

CREATE A UNIQUE ELEMENT

The first floor existing conditions plan is nearly finished. We still need to add the fireplace in the living room and stairs in the middle of the plan. While it would be possible (and maybe preferable) to create a fireplace family in the Family Editor and save it in our library for use in any project, this would only make sense if we used the same fireplace design often. If you design a lot of homes that use the same fireplace, this is exactly what you should do. Refer to techniques in Chapter 11 to learn how to create a loadable component family. In this case, we will create the precise fireplace we need for this project directly in-place. This is called an "In-Place Family."

IMPORTANT: In-place families are not designed to be moved, copied, rotated, etc. They are meant to be used only once. If you need to use it more than once within this project or in a different project, a regular loadable component family should be created in the Family Editor, saved to a library and then loaded into your project as needed. The Family Editor will be explored in detail in Chapter 11.

CREATE AN IN-PLACE FAMILY

To get started, we will create a new in-place family and assign it to a predefined category. Revit has a long list of predefined categories. Categories are at the top of the hierarchy discussed in the "Families & Types" topic on page 47 in Chapter 2.

1. Zoom in on the middle of the right vertical exterior wall. This is where our fireplace will go.
2. On the Architecture tab, click the drop down button on the Component tool and choose: **Model In-Place.**

⇨ In the "Family Category and Parameters" dialog, choose: **Generic Models**, and then click OK (see Figure 4.59).

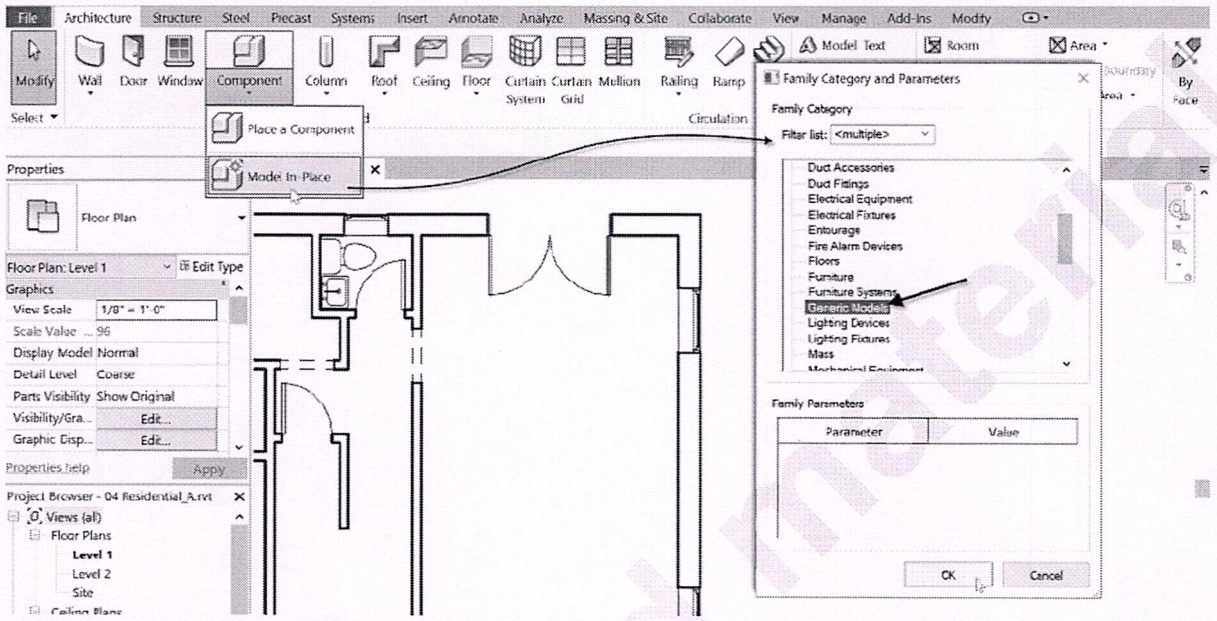

FIGURE 4.59 *Create an in-place family and choose its category*

> **NOTE:** Modeling in-place is not available in Revit LT. If you are using LT, you can create an actual component family and load it instead. From the File menu, choose: **New > Family**. Then choose the *Generic Model.rft* [*Metric Generic Model.rft*] template from the list and then click Open. Add the reference planes as noted below, but instead of measuring them from the existing walls, place them so that the rectangular space they describe is centered on the two reference planes already in the template. Build the rest of the family following the same steps indicated. Save the file when finished as: **Fireplace** and then load it into the project and place it where indicated in the figures below. A version of this family is provided in the *Chapter04\Complete* folder called: *Fireplace for LT.rfa*.

The family category list is a fixed list built into the software. When you create a family, you must assign it one of these categories. The family you create will inherit the characteristics of the category to which it is assigned. In general, when choosing a category, try to select the one that most closely matches the actual object that you are creating. The Construction Specifications Institute (CSI) spec section for fireplaces is Division 10—Specialties (10300 Fireplaces and Stoves), which would tempt us to choose "Specialty Equipment." However, your choice of category does impart certain behaviors to your family. Specialty Equipment is intended more for free-standing equipment items and does not have a "cut" representation. Items like 10340 Manufactured Exterior Specialties, 10500 Lockers or 10670 Storage Shelving are all examples of things that would work well in the Specialty Equipment category. Items in Revit that are "cuttable" interact with the cut plane of floor plan and section views and show bold when cut and lighter when viewed in projection. Since we will want our fireplace to interact with the wall and appear bolder when cut in plan, we need a category that supports cutting.

We get this cutting behavior because we chose the "Generic Models" category above. This is sort of a "catch all" category. You typically choose Generic Models when the item you are modeling does not fit neatly into any of the

other categories. Generic Models does not impart any specialized parameters that might be available from other more descriptive categories, but aside from the need for interaction with the cut plane, our existing fireplace has no other specialized needs. So Generic Model will work OK here.

⇨ In the "Name" dialog, type: **Existing Fireplace** and then click OK.

You are now in "In-Place family editing" mode. The model will gray out but remain visible for reference. The ribbon tabs will change showing a collection of In-Place family editing tools instead of the usual tools. Take a look at the Create tab for example(see Figure 4.60).

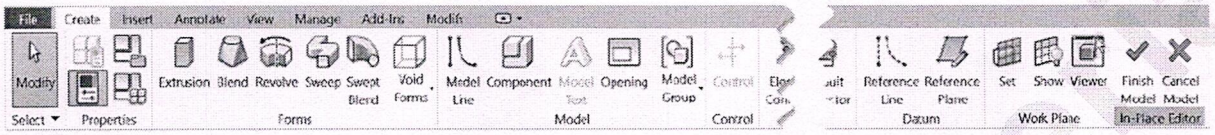

FIGURE 4.60 *The Family Editor mode is enabled when you create a new in-place family*

The Create tab includes many family editing tools. You can create solid and void forms, insert Components, or add connectors. Simply click on the other tabs to access these tools as normal. Note that several tools like walls, doors, and floors are not available in family editing mode. You cannot place (nest) a system family within another family. Also notice that the "In-Place Editor" panel with its Finish and Cancel buttons appears on the right side of the ribbon in all tabs.

ADDING REFERENCE PLANES

When you construct complex geometry, it is often useful to have guidelines to assist in locating elements. Reference planes are used for this purpose in families. You sketch a reference plane like the way you sketch walls or lines. You can snap and constrain other elements to reference planes, making them useful tools for design layout. You can add reference planes in any orthographic view of the model. (Reference planes do not show in 3D.) In this example, we will add them within our In-Place family. When you add them in this way, the reference planes will become part of the In-Place family and will be visible only when editing the In-Place family.

1. On the Create tab, on the Datum panel, click the Reference Plane tool. (Do not click Reference Line; make sure you click Reference Plane).
2. Click a point inside the large room on the right near the exterior wall, just above the lower window.

⇨ Move the pointer horizontally to the right past the exterior wall and then click outside.

The exact locations of either click are not critical so long as you draw horizontally and above the window. A small reference plane (green dashed line with round blue handles at the ends) will appear.

⇨ Edit the Temporary Dimension from the bottom horizontal wall to: **7'-11" [2400]** (see the left side of Figure 4.61).

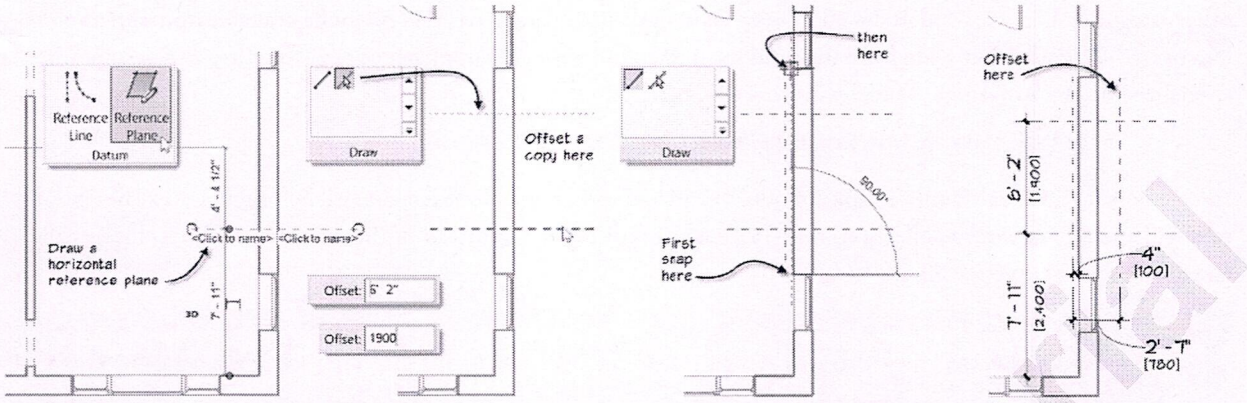

FIGURE 4.61 *Create two horizontal and two vertical reference planes to frame out the fireplace footprint (dimensions for reference only)*

3. On the Modify | Place Reference Plane tab, on the Draw panel click the Pick Lines icon.

⇨ On the Options Bar, in the Offset field, type: **6'-2" [1900]**.

⇨ Pre-highlight the first reference plane and move the mouse so that the offset line appears above.

4. Click to create the new reference plane (second panel from the left in Figure 4.61).

Now we'll repeat the process to create two more vertical reference planes. These will frame out the rectangular footprint of the fireplace.

5. On the Draw panel, switch back to the Line icon, and then type: **4" [100]** in the Offset field.

⇨ Snap to the endpoint of the lower window on the inside edge of the wall.

⇨ Snap to the endpoint of the upper window on the inside edge of the wall (third from the left in Figure 4.61).

TIP: The start and end points suggested will make the first reference plane fall to the inside of the house and the second to the outside. If you click the points in the wrong order, do not cancel, simply tap the SPACEBAR to flip the line.

6. Switch back to the Pick Lines tool and then change the Offset to: **2'-7" [780]**.

⇨ Offset the reference plane you just drew to the outside of the house (see the right side of Figure 4.61).

We now have four reference planes that we can use to guide the creation of our fire-place's form. This is common best practice. Complete details on the use of reference planes in families will be discussed in Chapter 11.

CREATE A SOLID FORM

Using our reference planes as a guide, let's create the overall mass of the fireplace.

1. On the Create tab, on the Forms panel, click the Extrusion tool (see the top of Figure 4.62).

⇨ On the Options Bar, in the "Depth" field, type: **9'-0" [2750]**. (Be sure to set the Depth and not the Offset—Item 1 in Figure 4.62.)

2. On the Draw panel, for the sketch shape, click the Rectangle icon (see item 2 in Figure 4.62).

⇨ Snap to the intersection of two of the reference planes and then snap to an opposite intersection to define the rectangular shape (see items 3 and 4 in Figure 4.62).

⇨ Close all four padlocks (see item 5 in Figure 4.62).

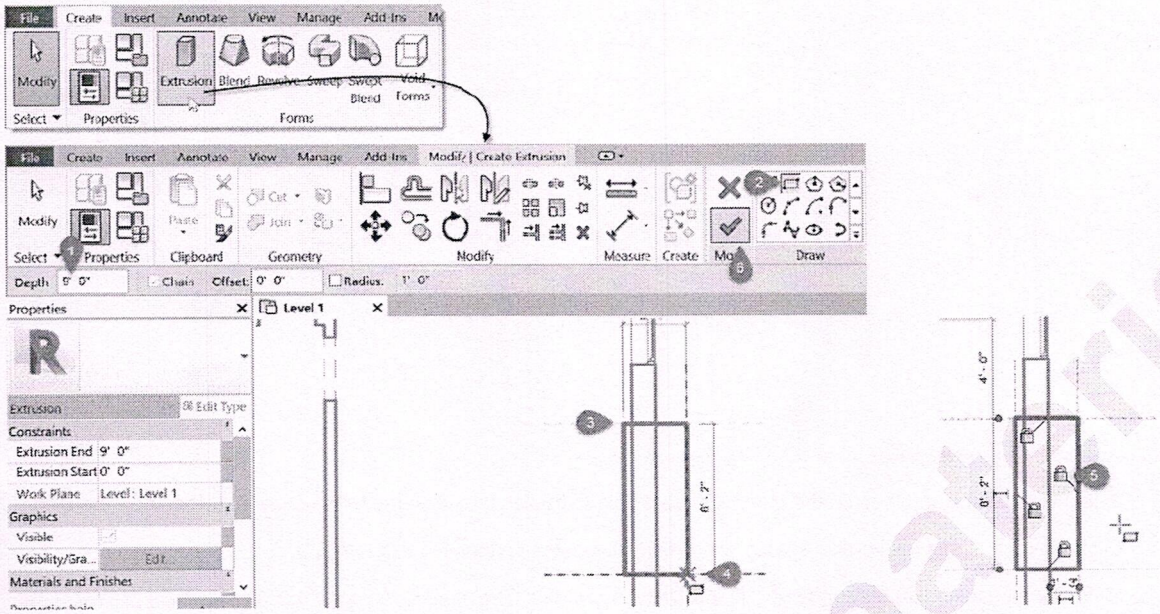

FIGURE 4.62 *Sketch the overall shape of the extrusion*

3. On the Modify | Create Extrusion tab, on the Mode panel, click the Finish button (large green checkmark) (see item 6 in Figure 4.62).

This gives us our basic fireplace mass. We now need to carve out the firebox.

CREATE A VOID FORM

Using the same basic process, we can create a Void form that will carve away from the solid form in our family giving us the firebox opening.

1. On the Create tab, click the Void Forms drop down button and then choose: **Void Extrusion**.

   The Modify | Create Void Extrusion tab will appear with the same Sketch tools as before.

⇨ On the Options Bar, in the "Depth" field type: **4'-0" [1200]**.

2. On the Draw panel, click the Pick Lines icon.

⇨ Click the left vertical edge of the solid extrusion (see panel 1 in Figure 4.63).

A magenta sketch line will appear directly on top of this edge.

3. On the Options Bar, change the Offset value to: **1'-0" [300]**.

⇨ Highlight the right edge of the solid extrusion and move the mouse slightly until the dashed line is within the fireplace structure. When it is, click to create a magenta sketch line (see panel 2 in Figure 4.63).

4. Change the Offset value to: **0** (zero).

⇨ On the Draw panel, click the Line icon.

5. Using the temporary dimensions as a guide, click the first point on the left edge a bit down from the top corner and draw it down and to the right at a 20° angle (see panel 3 in Figure 4.63).

⇨ Click the Modify tool or press the ESC key twice.

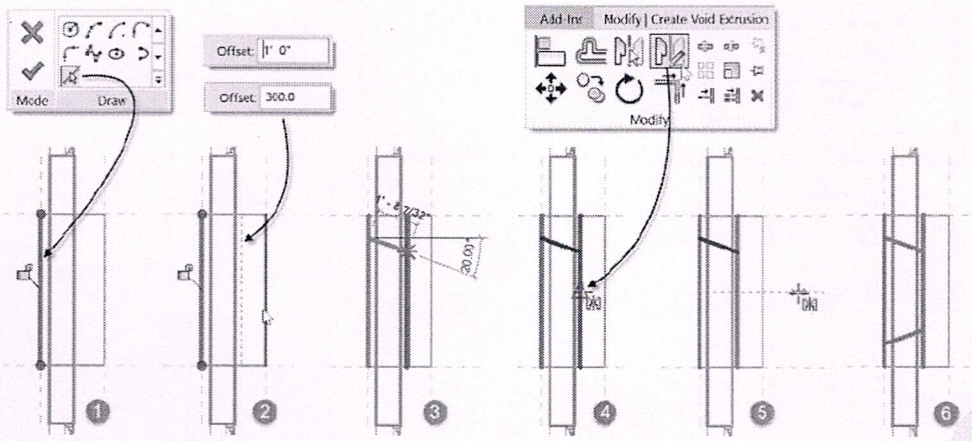

FIGURE 4.63 *Sketch lines to form the firebox shape*

6. Select the 20° line and then on the Modify | Create Void Extrusion tab, click the Mirror Draw Axis tool (or press DM).

⇨ Click the midpoint of the vertical sketch line already drawn (see panel 4 in Figure 4.63).

⇨ Move the mouse horizontally and click the finish the mirror line (see panel 5 in Figure 4.63).

The result is shown in panel 6. Now we will use the Trim/Extend to Corner tool (the same one we used for walls at the start of the chapter) to clean up the sketch.

7. On the Modify tab, click the Trim/Extend to Corner tool (or Type TR).

⇨ Trim all four corners to make an enclosed shape (see Figure 4.64).

REMEMBER: Select the portion of the sketch line that you wish to keep.

8. Click the Modify tool or press the ESC key to finish trimming.

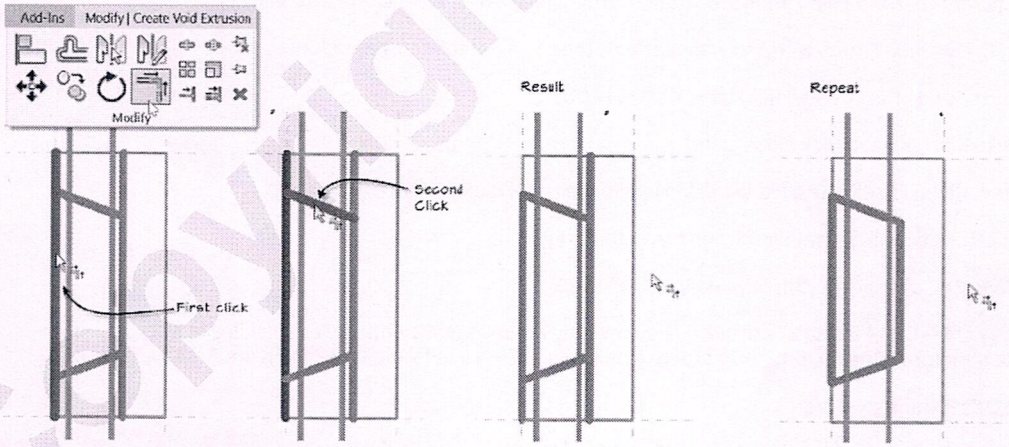

FIGURE 4.64 *Edit the sketch lines to finalize the shape*

9. On the Mode panel, click the Finish Edit Mode button.

While the void is still selected, it will appear solid. However, when you deselect, it will cut away from the previously drawn solid to form the fireplace shape.

10. Click in empty space to deselect the element.

11. On the In-Place Editor panel, click the Finish Model button (big green checkmark).

This completes the editing of our family and returns us to the project editor mode.

JOIN THE FIREPLACE WITH THE WALL

The Fireplace family is finished but it overlaps the wall. Let's fix this.

1. On the Modify tab, click the Split tool (or type SL).

⇨ On the Options Bar, place a checkmark in the "Delete Inner Segment" check box.

2. Split the exterior vertical wall on both sides of the fireplace (see Figure 4.65).

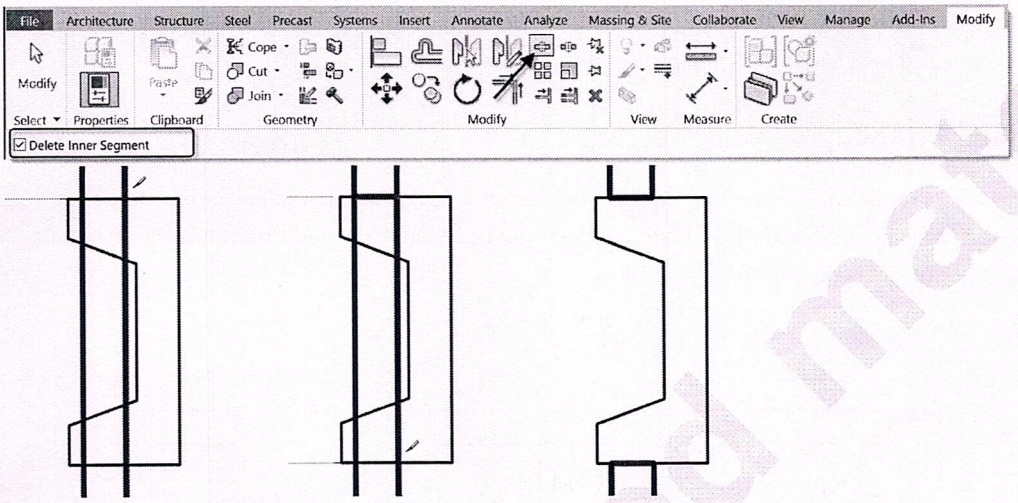

FIGURE 4.65 *Split the exterior wall*

3. Click the Modify tool or press the ESC key twice.

This is close to what we want but let's make one more edit.

4. On the Modify tab, on the Geometry panel, click the Join tool (see the top of Figure 4.65).

⇨ Click one of the exterior walls (the ones we just split).

⇨ Then click the Fireplace to join them (see Figure 4:66).

TIP: Remember to watch the Status Bar for detailed prompts.

5. Repeat for the other wall. Pick the wall then the fireplace.

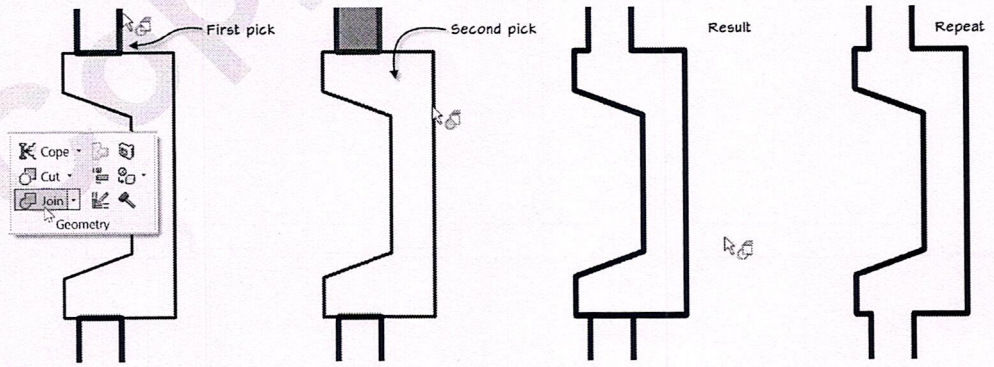

FIGURE 4.66 *Use Join Geometry to join the walls to the Fireplace*

6. Click the Modify tool or press the ESC key twice to cancel the Join command.
7. On the QAT, click the Default 3D view icon.

⇨ Use the techniques covered above and orbit the model around so that you can see the Fireplace.

We modeled the fireplace a bit too short. However, for now we will leave this alone. In later chapters we will address the height of the fireplace as well as how it changes width on the second floor. The fireplace could also use a mantel and a hearth. However, because there will be no new work done in the living room of this project and therefore no sections or elevations are needed of the fireplace, that extra level of detail is unnecessary for this tutorial. What we have created works well for the floor plan. If you wish to try it anyway for the practice, feel free. Select the fireplace, and then on the Modify | Generic Models tab, click the Edit In-Place button. This will return you to the in-place family editor where you can add these accoutrements using additional solids.

RESET THE CURRENT PHASE

Congratulations! Our work on residential project first floor existing conditions layout is complete for now (see Figure 4.67). We still need to add the Stairs to this model. However, Stairs will be covered in a dedicated chapter. Therefore, we will save our layout without the Stairs for now.

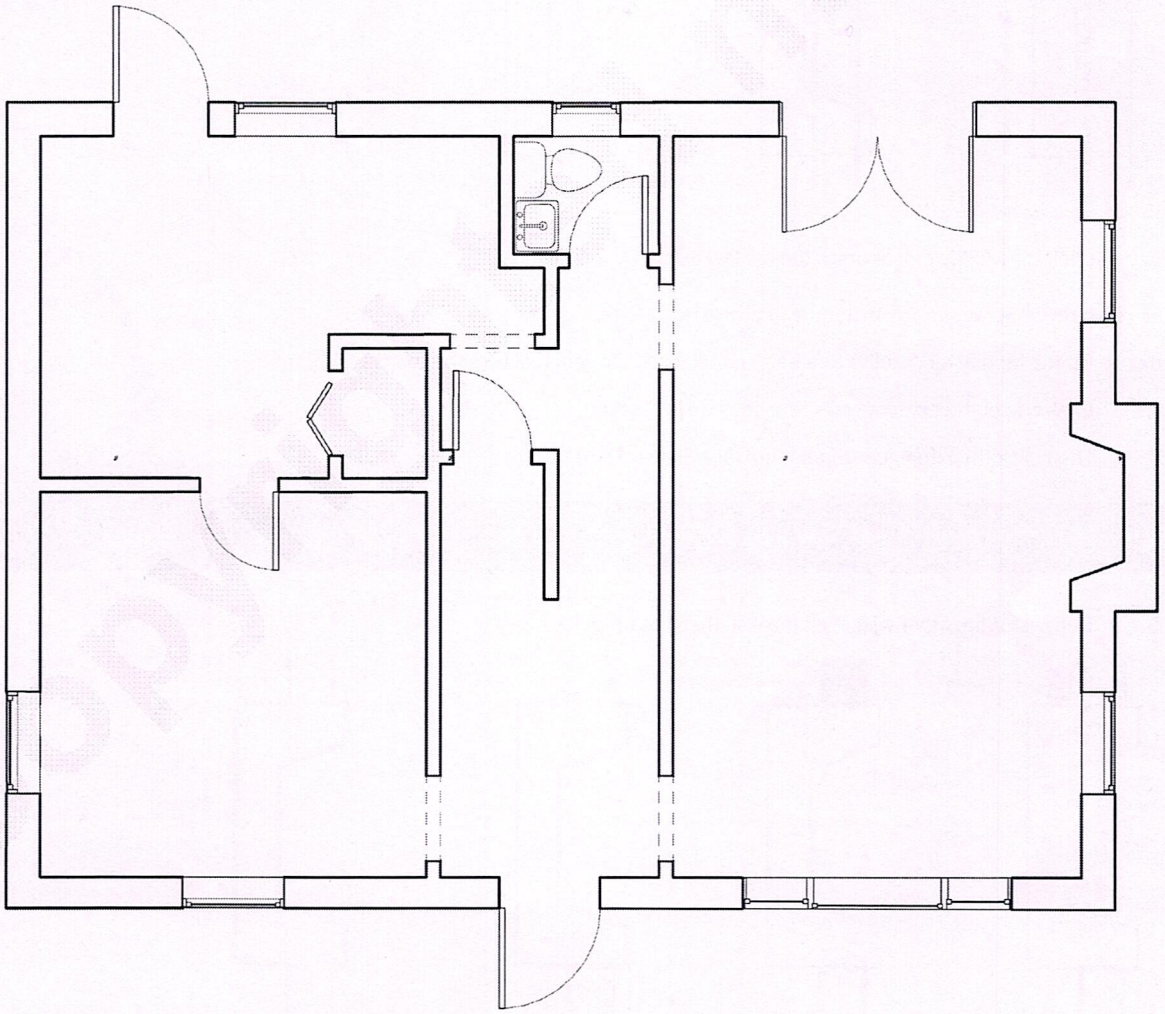

FIGURE 4.67 *The final first floor existing conditions layout*

CREATE A SHEET LIST

Revit makes it easy to create a list of all the drawing sheets in our project. A sheet list will resemble the other schedules that we already have, and it can even be placed on a sheet as a sheet index. Furthermore, it can be used to help us create and edit the sheets in our project. Let's create a sheet list and then use it to add more sheets.

1. On the Project Browser, right-click on the *Schedules/Quantities* branch and choose: **New Sheet List**.

⇨ In the "Sheet List Properties" dialog, select Sheet Number and then click the Add parameter icon in the middle.

⇨ Add additional fields like Sheet Name, Drawn by, Checked by, Sheet Issue Date and Guide Grid.

TIP: As an alternative to clicking the Add icon, simply double-click the field you want to add.

2. Click the Sorting/Grouping tab.

⇨ For Sort by, choose: **Sheet Number** and then click OK.

Fields like drawn by, checked by, and other similar text fields must be edited individually on each sheet. However, one of the benefits of the Sheet List schedule is that you can edit those values directly in the table, which is usually more efficient than doing them individually. Another key advantage to the Sheet List Schedule is that we can use it to create Sheets. Think of it as queuing up list of available sheets, complete with pertinent information filled in and ready to add to the project.

3. On the Modify Schedule/Quantities tab, on the Rows panel, click the Insert Data Row button.

A new row will appear in the Schedule. It will automatically number as sheet A102. Using this method, you can create several "placeholder" sheets and fill in their values in the other columns of the Schedule.

⇨ For the name of A102, begin typing: **Floor Plans**. After the first letter or two, Revit will guess the name from your previously input values. You can keep typing, or just choose from the mini pop-up (see Figure 5.46).

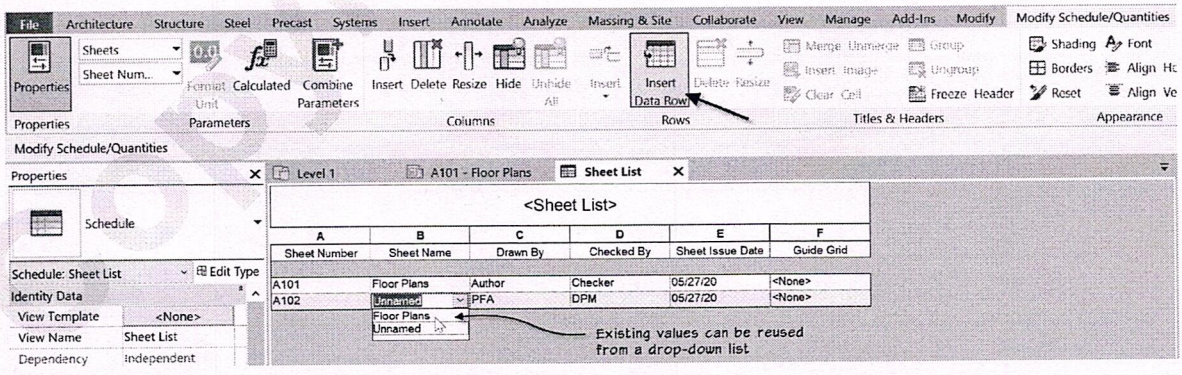

FIGURE 5.46 *Create a drawing list and use Insert Data Row to add a placeholder sheet*

⇨ You can input your own initials in the "Drawn By" and "Checked By" fields and input a date for sheet issuance if you like.

Using Table 5.A, we'll set up the rest of the floor and ceiling plan sheets.

CREATE THE REMAINING FLOOR PLAN SHEETS

Let's create the remaining floor plan sheets.

1. On the Project Browser, select the *Level 2* floor plan.

⇨ On the Properties palette, change the "Title on Sheet" parameter to: **Second Floor Plan**.

⇨ Repeat this process for each view listed in Table 5.A.

TIP: If you prefer to input the Title on Sheet parameter in a schedule, try making a View List. The process is the same as adding a Sheet List and you can you add the Title on Sheet parameter field to the View List. This will enable you to quickly edit it from the Schedule.

2. Repeating the process outlined above, in the Sheet List Schedule, click the Insert Data Row button for each of the sheets listed in the "Drag to Sheet" column of Table 5.A below.

⇨ Each time you click, check the number in the Sheet Number column and edit as necessary. They will number in sequence, so with a little strategy, you can reduce the amount of renumbering you have to do.

3. Using the values in the table, fill in the sheet names (and other fields if desired).

TIP: To reuse existing values in the Schedule, click the drop down arrow in the text field.

TABLE 5.A *Titles on Sheets for Plan Views*

View Name	Title on Sheet	Drag to Sheet
Floor Plan Views		
Level 2	Second Floor Plan	A102 – Floor Plans
Level 3	Third Floor Plan	A103 – Floor Plans
Level 4	Fourth Floor Plan	A104 – Floor Plans
Roof	Roof Plan	A105 – Roof Plan
Site Plan	Architectural Site Plan	A100 – Architectural Site Plan
Ceiling Plan Views		
Level 1	First Floor Reflected Ceiling Plan	A111 – Reflected Ceiling Plans
Level 2	Second Floor Reflected Ceiling Plan	A112 – Reflected Ceiling Plans
Level 3	Third Floor Reflected Ceiling Plan	A113 – Reflected Ceiling Plans
Level 4	Fourth Floor Reflected Ceiling Plan	A114 – Reflected Ceiling Plans

NOTE: The sheet numbers suggested here are based on the US National CAD Standard recommendations. If you prefer a different sheet numbering scheme, feel free to use it instead.

TIP: If you want to quickly input the Drawn By and Checked By fields, you can make the Sheet List schedule the active tab, then on the Properties palette, click the Edit button next to Sorting/Grouping. In the "Schedule Properties" dialog that appears, set the Sort by to (none) and uncheck "Itemize every instance." When you click OK, you will have a single line item in the schedule. Edit the values for Drawn by and Checked by. Do not edit any other fields as when the schedule is configured this way, you are editing ALL sheets at once. When you are finished, return to Sorting/Grouping and reset to Sort by Number and turn itemize every instance back on.

CREATING SHEET VIEWS FROM PLACEHOLDER SHEETS

We now have nine new placeholder sheets in our sheet list, but if you look at the Project Browser, we still have just the one sheet. The purpose of adding placeholder sheets is that it allows you to configure a list of standard sheets and to input all the fields before you need the sheet in the set. Another useful purpose of placeholder sheets is to allow the addition of consultant sheets to the sheet list without having those sheet views listed in your Project Browser. When you are ready, you simply add a new sheet as we did before, but this time we will be able to choose from the list of available placeholder sheets.

If it is not already, open the Sheet List schedule.

NOTE: On the Modify Schedules/Quantities tab, on the Filter Placeholder Sheets tab, there are three buttons. The default one is: Show. This shows both placeholder and actual sheets in the list. The Hide button hides the placeholders showing only the actual sheets in the list and the Isolate button does the opposite. Try these out before continuing if you wish.

1. On the Modify Schedules/Quantities tab, click the New Sheet button.

   This is the same as right-clicking the *Sheets (all)* branch on the Project Browser as we did above.

   Notice the list of placeholder sheets at the bottom.

2. Select A100 in the list. Hold down the SHIFT key and then select A114 and then click OK (see Figure 5.47).

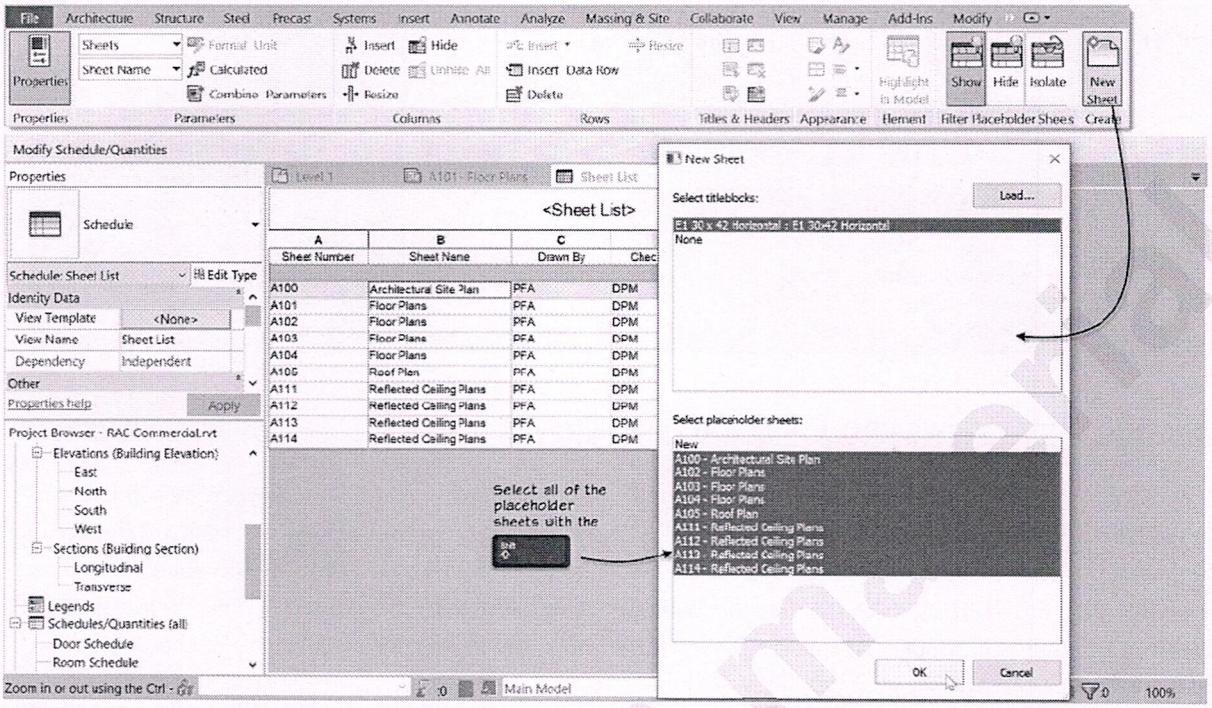

FIGURE 5.47 *Create several sheets at once using placeholder sheets*

Nine new sheets will appear on the Project Browser ready for you to drag and drop views. Zooming in on the title blocks will reveal that all the data input in the Schedule is already filled into the appropriate fields. Now that we have all our plan sheets created, let's add the views to them.

Right now, we will simply drag the views onto the appropriate sheets and place them in approximately the same location. Once we have the Structural Grids in Chapter 6, we can adjust the position of the manually placed views to make sure that they all align with one another using the Guide Grid feature. With the Guide Grid feature you can overlay a grid on top of a title block sheet and use it to keep similar views lined up across multiple sheets. But since it requires the column grids, we will wait till Chapter 6 to explore that feature.

3. Using Table 5.A above as a guide, drag each of the floor and ceiling plan views onto their respective sheets.

⇨ Place each one in the same general area on the sheet.

> **NOTE:** If you are working in the Metric files, the scale of the *Site* plan should be changed before adding to the sheet. To do this, open the *Site* plan view, scroll down and click the button next to View Template and then in the dialog that appears, change the scale to: **1:200**.

4. Save the project.

EDIT VIEW RANGE

Before we complete the stair tower roof, let's adjust the roof plan a little. The primary view range only displays elements at the Roof level to the cut plane. This is the default behavior. And as we noted previously, the new roof does not display in the *Roof* plan currently because it is above the cut plane.

1. On the Project Browser, double-click to open the *Roof* plan view (or just click its tab if you left it open).

⇨ Make sure that you have no objects selected, then on the Properties palette, edit the View Range (or press VR).

2. Change offsets of both the Primary Range Bottom and the View Depth to: **-1'-0" [-300]**.

⇨ Change the Offset of the Cut Plane and the Top to: **20'-0" [6000]** and then click OK.

These adjustments give a generous range for the geometry on the roof and allow some flexibility in future edits. Notice that the core roof now displays in the plan view.

> **NOTE:** With the settings this way, we do not have a plan that shows the upper level of the stair tower. If you wish to create such a plan, make a duplicate of your *Roof* plan before making the previous edit.

USING SHAPE EDITING TOOLS

The final exercise in this chapter will be to add drainage sloping to the commercial project flat roof. To accomplish this, we will look at the third and final way that you can apply slope to a Roof: Shape Editing tools. When you have a flat roof or floor element in your model (no edges sloped and no slope arrows), you will see the Shape Editing panel on the Modify | Roofs tab of the ribbon when the roof or floor is selected. If even one edge of the roof or floor is set to slope defining, the tools will not appear (see Figure 9.52).

Please note that if you are using Revit LT, you will not have access to the shape editing tools. Please skip this topic.

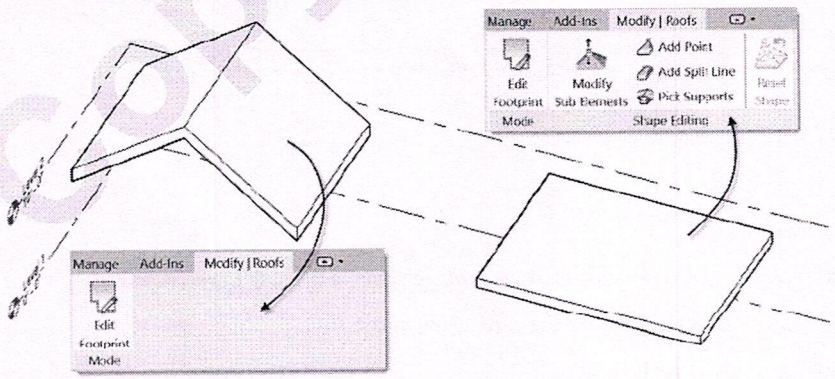

FIGURE 9.52 *Roofs or floors with no sloping edges in their sketch have access to the shape editing tools*

Continue in the *Roof* plan view.

1. Select the flat roof element. (Use the TAB key as necessary.)

   Notice the collection of Shape Editing tools appears on the ribbon as shown on the left side of Figure 9.52.

Moving left to right, the tools are as follows:

Modify Sub-Elements—This tool can be used to adjust the height of any points or edges of the shape edited element.

Add Point—Use this tool to add points to the surface of the roof or floor. Each point has a height that you can adjust to either a negative or positive offset from the roof or floor level. The roof form will conform to the shape of the edited points.

Add Split Line—This tool adds elevation changes using lines instead of points. Like the Draw Point tool, each line has a height that you can adjust to either a negative or positive offset from the roof or floor level. You can also edit the height of the line's endpoints independently.

Pick Supports—If you have structural supports set at accurate levels, you can use them to indicate the level changes of the roof or floor.

Reset Shape—The button (grayed out in Figure 9.52) is used to remove all edits and return the shape of the roof or floor to flat with no slopes.

We'll perform a simple edit to our roof's surface using a few split lines and points.

2. On the Shape Editing panel, click the Add Split Line tool.

This enables a special shape editing mode which is like other sketch modes but has some unique features as well. The main difference is that there is no finish edit mode and cancel buttons. To exit this mode, simply click the Modify tool as you would any other command. The existing edge of the roof outlines in a dashed green line. New points or lines you add will be blue. Gray lines appear when required. They are auto-calculated from the other lines and points. These turn out to be trickiest part of using these tools. If you want to avoid many unnecessary gray lines that make the shape of the roof overly complex, you need to be strategic with your use of split lines and points.

3. Click a point at the intersection of Grid 2 and the vertical green line on the left.

⇨ Draw straight across along Grid 2 and snap to the opposite green line on the right (see the left side of Figure 9.53).

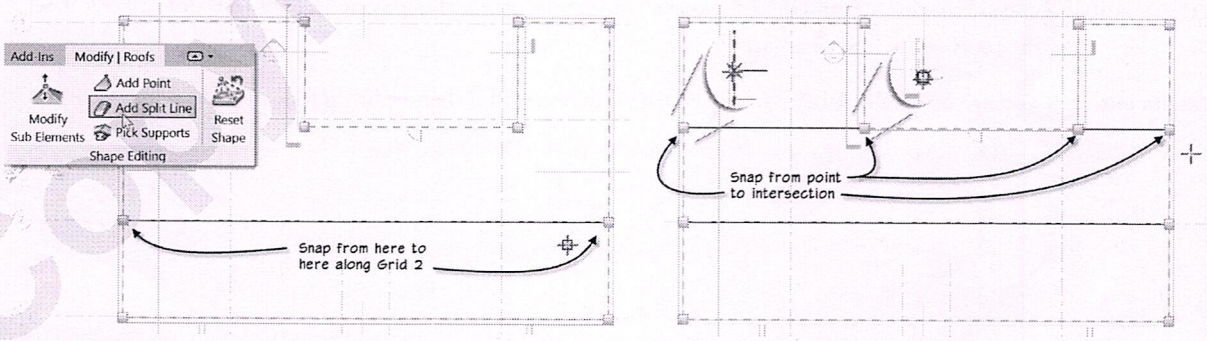

FIGURE 9.53 *Add split lines to divide the roof into three zones*

4. Remaining in the Split Line tool, click the green corner point at the lower left side of the stair tower area.

⇨ Draw horizontally to the left and snap at the intersection of the vertical green line.

⇨ Repeat on the other side (see the right side of Figure 9.53).

This divides the roof into three horizontal bands, with the top band being separated into two sections by the stair core in the middle. Let's slope each of these areas.

5. On the Shape Editing panel, click the Modify Sub Elements tool.

⇨ Select the horizontal dashed green line at the bottom of the plan (along Grid 1).

A temporary dimension will appear at the midpoint.

⇨ Click in this temporary dimension and input: **6" [150]** and the press ENTER (see the left side of Figure 9.54).

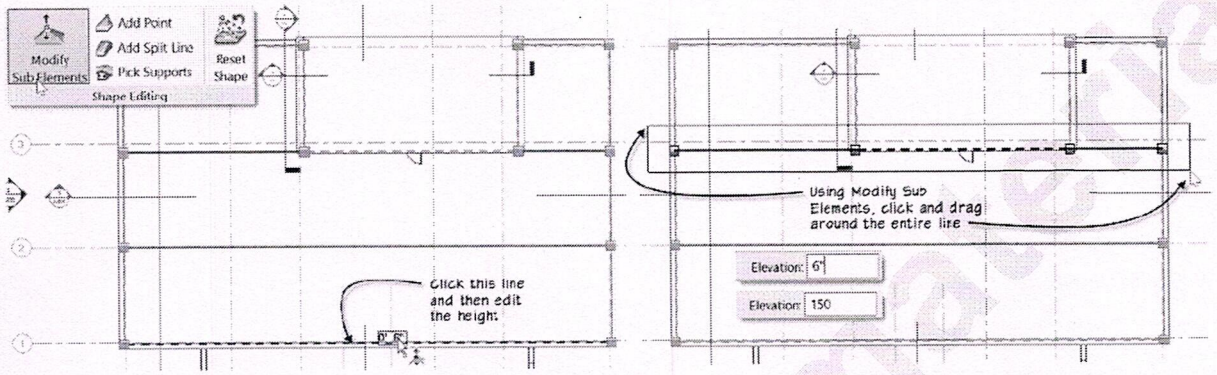

FIGURE 9.54 *Edit the height of the split lines*

6. Remaining in the Modify Sub Elements tool, drag a selection window around all three lines near Grid 3 (two blue and one green).

⇨ On the Options bar, change the Elevation to: **6" [150]** and then press ENTER.

Alternatively you can do the two blues lines one at a time. The green will end up in the same spot once you change both blue ones.

If you want to see the results of this change, you can create a section running vertically cutting through all three zones. When you do, you will see the roof has a slight zig-zag shape to it now (see Figure 9.55).

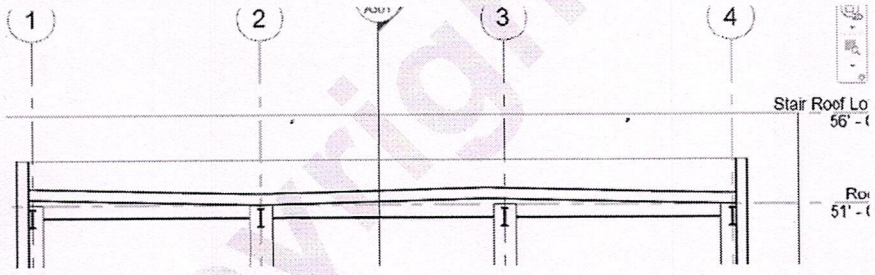

FIGURE 9.55 *View the results of the Modify Sub Elements edits in a new section*

To Ensure we have proper drainage, let's add some crickets to the roof. This can be done by adding and editing additional points and split lines.

Continue in the *Roof* plan view.

7. On the Architecture tab, on the Work Plane panel, click the Reference Plane button (or press RP).

⇨ On the Draw panel, click the Pick Lines tool. On the Options Bar, set the Offset to: **7'-0" [2100]**.

⇨ Offset two reference planes from Grid 2, one above it and one below and then click the Modify tool or press ESC twice to finish.

8. Select the roof again. (Clicking on the split line is the easiest way to select it).

⇨ On the Shape Editing panel, click the Add Split Line button.

⇨ Snap to the intersection of Grid C and the reference plane and draw to the intersection of the other reference plane.

⇨ Repeat at Grid E (see Figure 9.56).

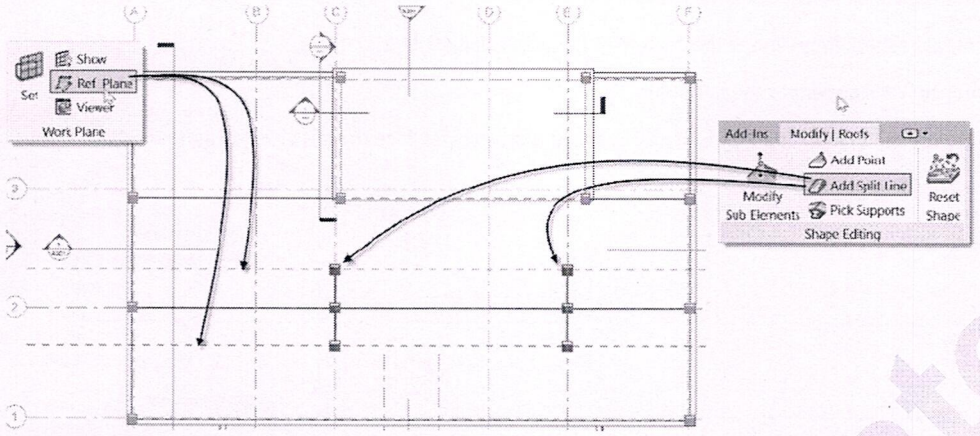

FIGURE 9.56 *Add split lines for crickets*

9. On the Shape Editing panel, click the Add Point button.

⇨ Snap to the midpoints of each of the three blue segments along Grid 2.

⇨ Repeat at each location shown on the left side of Figure 9.57. Snap to midpoints at all locations.

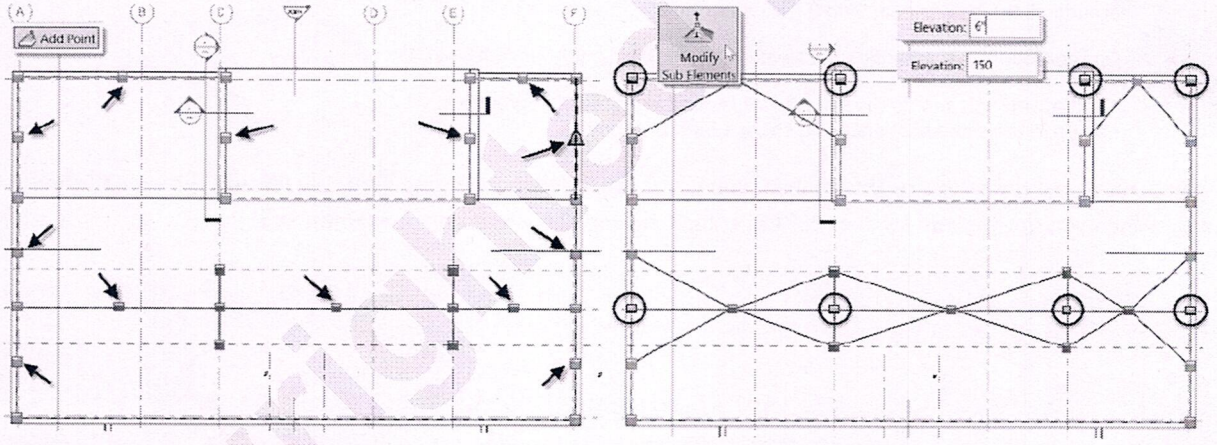

FIGURE 9.57 *Add points at several midpoints*

10. On the Shape Editing panel, click the Modify Sub-Elements button.

⇨ Select each point circled on the right side of Figure 9.57 and edit the Elevation to: **6" [150]**.

As you make these edits, you will see gray lines appearing automatically as the shape of the roof adjusts.

Changing views will terminate the sub-element editing mode. You can also click the Modify tool first if you prefer. Notice that the roof now displays the edges of the ridges and valleys for the sloping planes (see Figure 9.58).

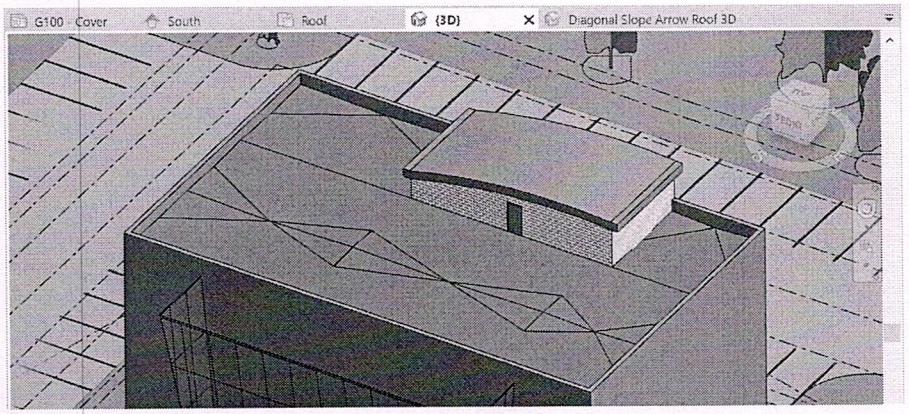

FIGURE 9.58 *Study the results in 3D*

ADJUSTING SLOPE

When designing a flat roof, there is often a minimum slope required by code for drainage. While we cannot input this directly in the shape editing tools, we can use a simple technique to measure the slope that results from our edits and then make appropriate adjustments.

1. Return to the *Roof* plan.
2. On the Annotate tab, on the Dimension panel, click the Spot Slope tool.

⇨ Move your mouse around the various surfaces of the roof.

The spot slope annotation symbol will appear on your cursor and will read the slope of each surface as you mouse over them. Use this moussing technique for quick measurements or click to place the permanent annotations in the view.

3. Click to place one or more spot slope symbols.

⇨ On the ribbon, click the Modify tool or press the ESC key twice.

If you discover a slope that is too shallow, simply select the roof, click the Modify Sub Elements button and then adjust the height of some of the points or lines to adjust the slope. You will get immediate feedback from the annotation as you make changes to the heights of the lines or points. In some cases, you may need to add new points or lines to achieve positive drainage at all points on the roof.

USING VARIABLE THICKNESS LAYERS

The default behavior in the sub-element editing mode is for the entire roof slab to be affected by the slope. If you prefer, you can edit the structure of the roof type applied to the roof element and make one of its material layer thicknesses variable. When doing so, the bottom surface of the roof will remain flat, while the top surface slopes according to the split lines and elevation points added above. This is an effective way to represent tapered rigid insulation in the construction (see the next few steps). The best way to see these sometimes subtle variations is in a section view. Let's use the one we created earlier.

1. On the Project Browser, locate Section 1.

⇨ Right-click it and choose: **Rename.** Call it: **Section at Roof**. Stretch the bottom of the crop region up so that it only shows us the roof, cropping out the levels below.

Take a close look at the roof element. Notice that both the top and bottom surfaces are sloped (maintaining a uniform thickness). We can designate one of the layers in the roof type structure as a variable thickness. When doing so, the

bottom layers will remain flat, the variable layer will have a flat bottom and sloping top surface, and any layers on top of the variable one will follow the slope (with uniform thickness).

2. Select the roof.

⇨ On the Properties palette, click the Edit Type button.

3. Click the Edit button next to Structure.

⇨ Place a checkmark in the "Variable" column next to layer 2 and then click OK two times (see Figure 9.59).

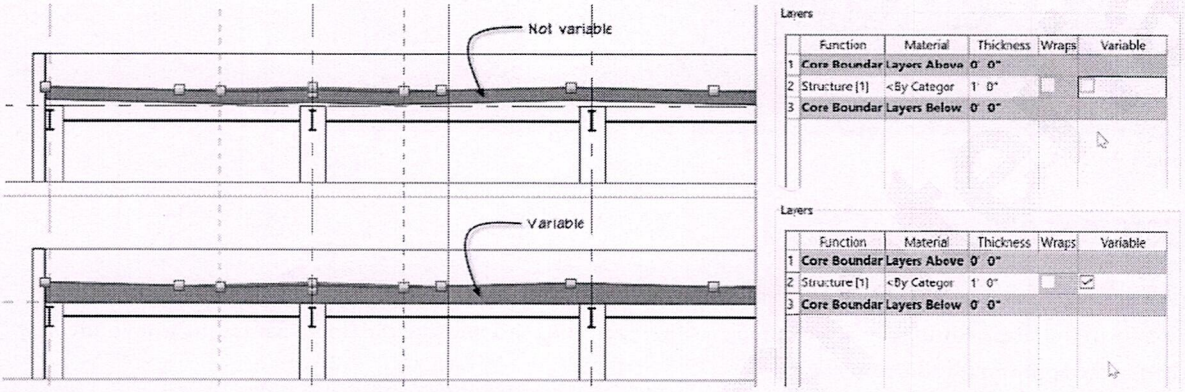

FIGURE 9.59 *Comparing the roof with and without a variable thickness layer*

Currently we are using a Generic type with only a single layer. To appreciate fully the effect of a variable component, we should assign a complex roof type.

4. With the roof still selected, from the Type Selector, choose: **Steel Truss - Insulation on Metal Deck - EPDM [Steel Bar Joist -Steel Deck -EPDM Membrane]**.

5. Edit the "Type Properties" again and then click the Edit button next to Structure.

⇨ Place a checkmark in the "Variable" column next to layer 2 (the insulation this time) and then click OK two times.

Now that we have a more detailed structure in place you can see that we have effectively represented tapered insulation and the support structure beneath it remains level. However, this roof type's lowest layer is meant to represent the steel bar joists. This means that the entire roof structure sits too high in the model.

6. Select the roof, and on the Properties palette, in the "Base Offset From Level" field, type: **-1'-4" [-400]** (see Figure 9.60).

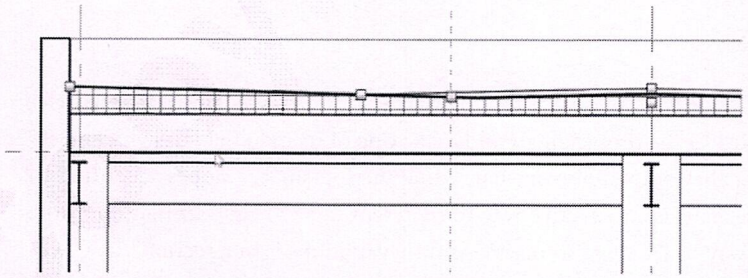

FIGURE 9.60 *Move the roof element down with a negative offset from the level*

Feel free to study the model in other views and experiment further with the roofs and floor slabs.

7. Save and Close the commercial project file.

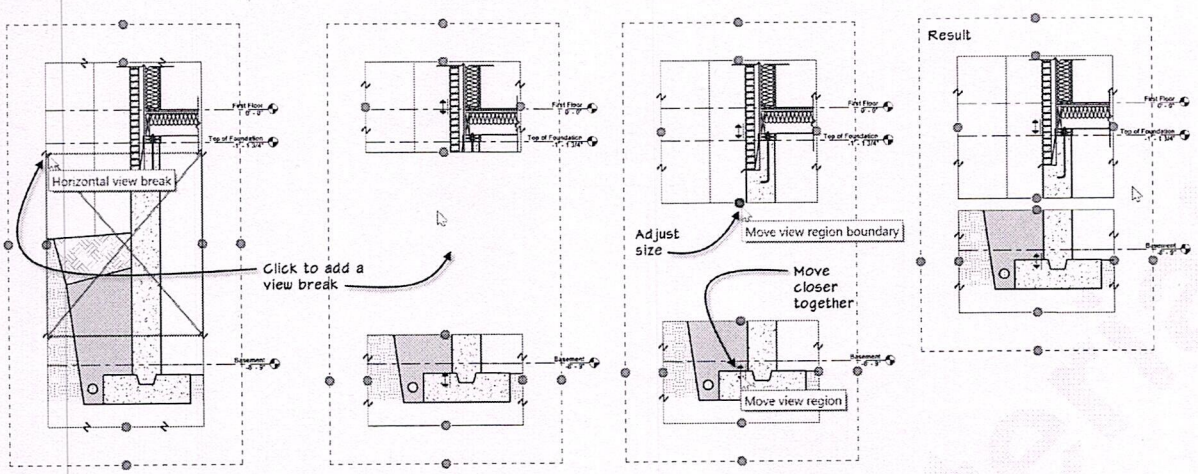

FIGURE 12.22 *View break controls allow you to crop out the middle portion of the section*

2. Click one of the view break controls on a vertical edge (there are four total; you can pick any one) of the crop boundary.

The view splits into two separate crop regions with a large gap in the middle. A blue arrow control handle appears in the middle of each view break region. We can use these to move the two portions closer together. Notice that along the vertical edges of each of the two new crop boundaries the same types of control handles appear. You can continue to break them into additional sub-views as necessary. But all breaks must be along the same direction as the first one—vertical in this case. In this example two is enough so we will not break it any further. However, we need to adjust the top view break so we can see the entire anchor bolt.

3. Using the blue dot control handle at the bottom of the upper view break, drag the edge down a bit to show all the anchor bolt.

⇨ Click on the view break control (in the middle) of the bottom view break and drag it up so the crop region is a little below the upper crop boundary (see the right side of Figure 12.22).

If you continue to drag so that you overlap the two view breaks, they will join back into one. This is how you "remove" the break.

CAUTION: Be sure to move the portions of the view breaks with the control arrow in the middle. Do not drag the edge of the crop region. Doing so will move the area of the callout in both this view and the referring *Longitudinal* section view.

Although the sub-views are truncated and closer together, distances are dimensionally correct. Look at the level lines to the right of the views and note that the heights are unchanged. If we were to add a dimension from the *First Floor* to the *Basement*, it should read a distance of: 8'-9" [3540]. Let's try it out to see.

4. On the Annotate tab, on the Dimension panel, click the Aligned tool.

⇨ Add a dimension between the First Floor level and the Basement level.

⇨ Move to the left crop region boundary and click next to it (in the white space) to place the dimension string (see Figure 12.23).

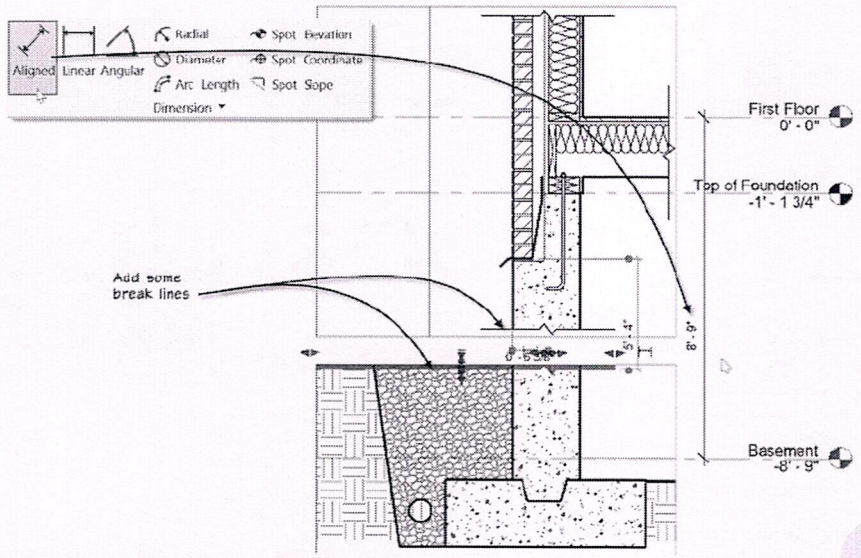

FIGURE 12.23 *Dimensions display true distances across view breaks*

As you can see, applying a view break is a graphical convention only and has no impact on the dimensional accuracy of the model being displayed in each portion of the crop boundary.

5. On the ribbon, click the Modify tool or press the ESC key twice.
6. Add Break Line detail components on the foundation wall at the break between the two halves of the detail.
7. Save the project.