



TOPIC 2

BIM FOR ARCHITECTURE

DCC50562 **BIM** COURSE MODULE

TOPIC 2

BIM FOR ARCHITECTURE

This module is prepared for the Polytechnics students for understanding of Architecture Modelling using 3D parametric tool. It is structured in step by step approach consist of the followings:

Tools and Software to Start Architectural Projects

- Opening Projects
- Start New Projects
- Saving Projects

Visualization of 3D Model

- Visualization
- Rendering

Architectural Elements

- Creating Walls
- Creating Curtain Walls
- Creating Stacked Walls
- Modelling Floors, Ceilings, and Roofs
- Placing Doors and Windows
- Creating Openings
- Creating Stairs and Railing

Prepared by:
Norliza binti Mohd Noor (PUO)

ORGANIZING ARCHITECTURE PROJECT



Source: dormakaba.com

*Using BIM **authoring tools**, architects can create a digital **3D model** of the building, allowing them to see a **representation** of what it will look like and how it will operate.*



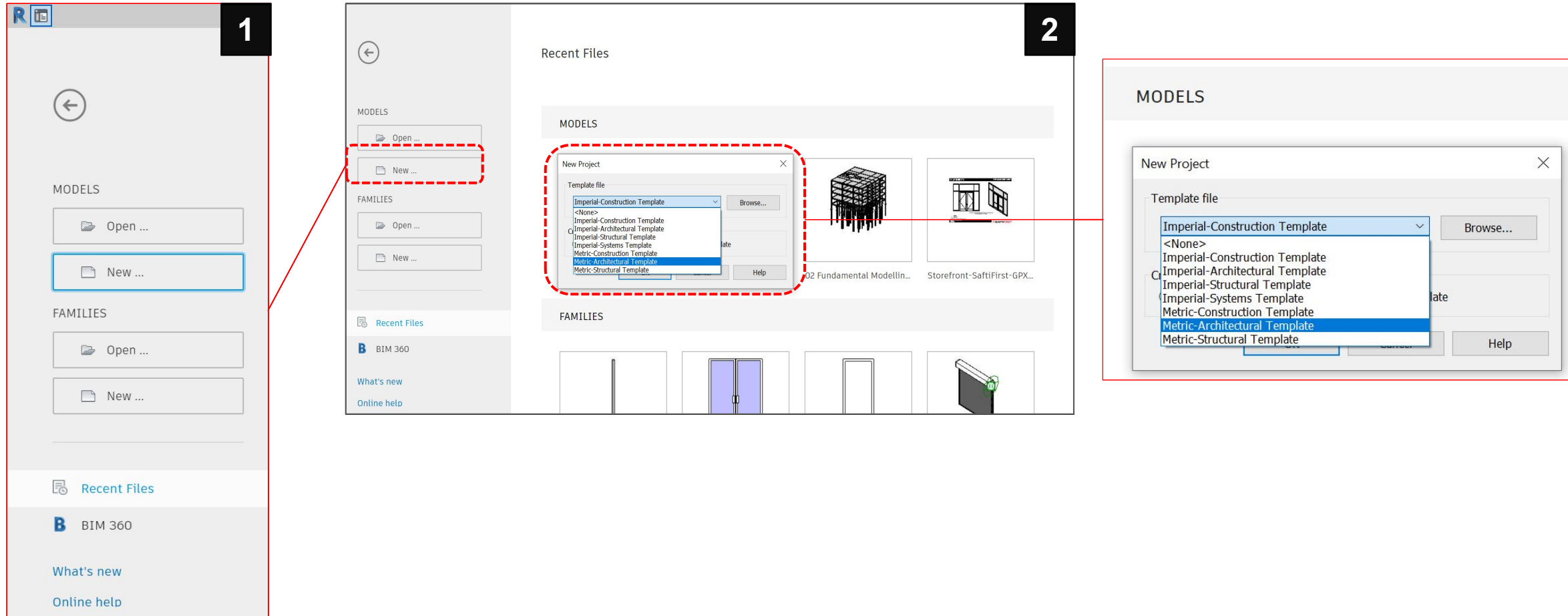
TOOLS AND SOFTWARE TO START ARCHITECTURE PROJECT

OPENING PROJECTS

BIM authoring tools used is Autodesk Revit



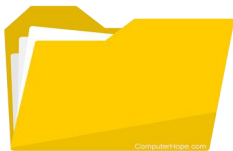
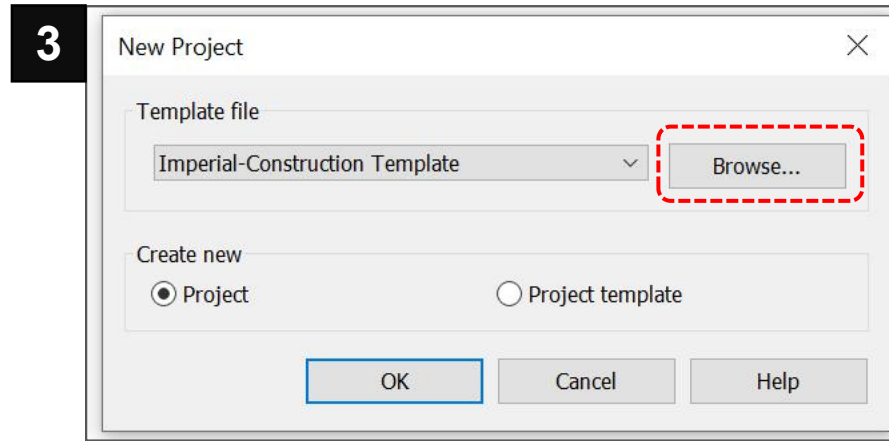
START NEW PROJECTS



1. Click “New project”

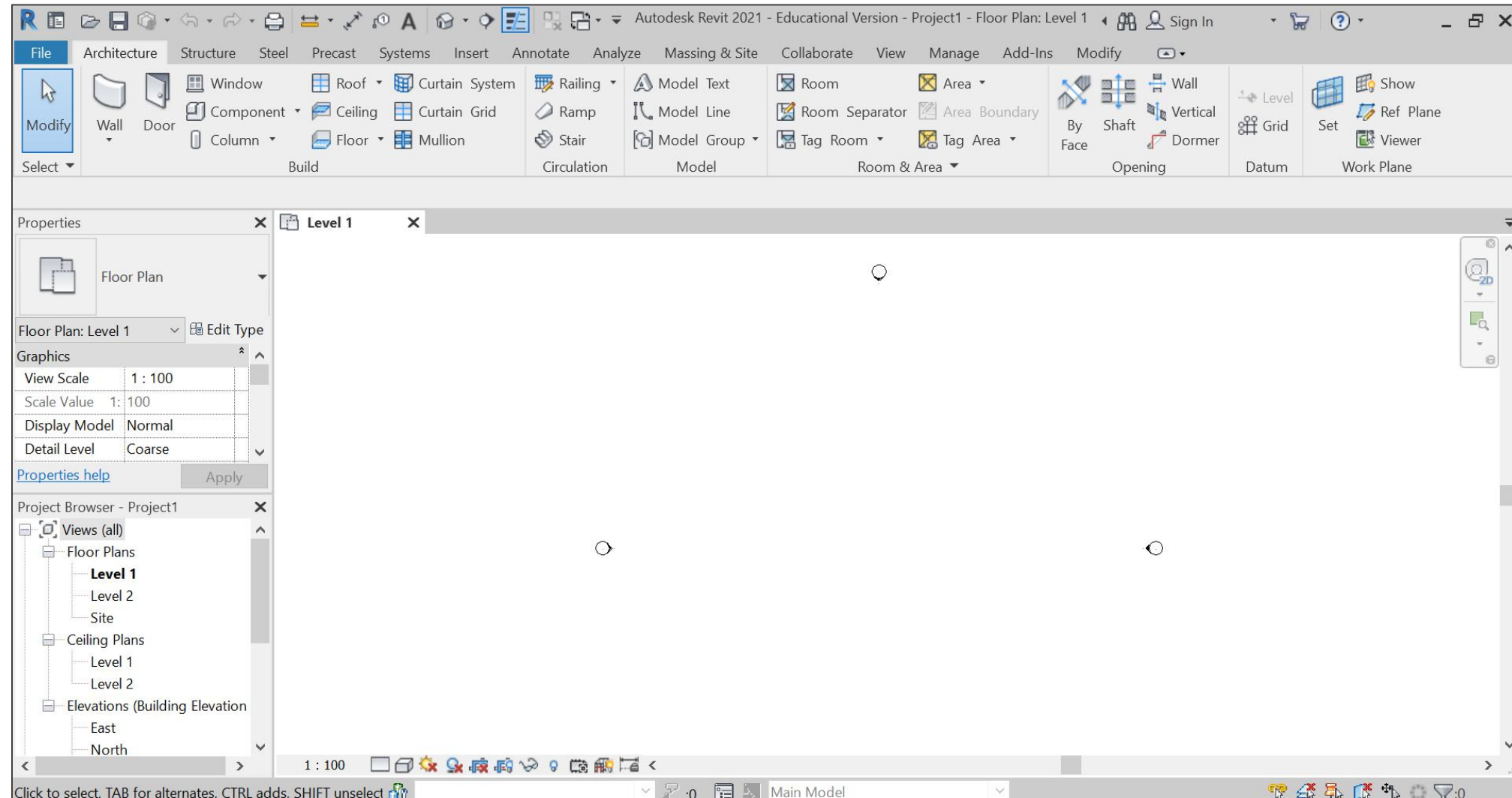
2. Select drop down and click “Metric Architecture Templates”, then click “OK”

3. Browse **DefaultMetric**, if template not in existing list.



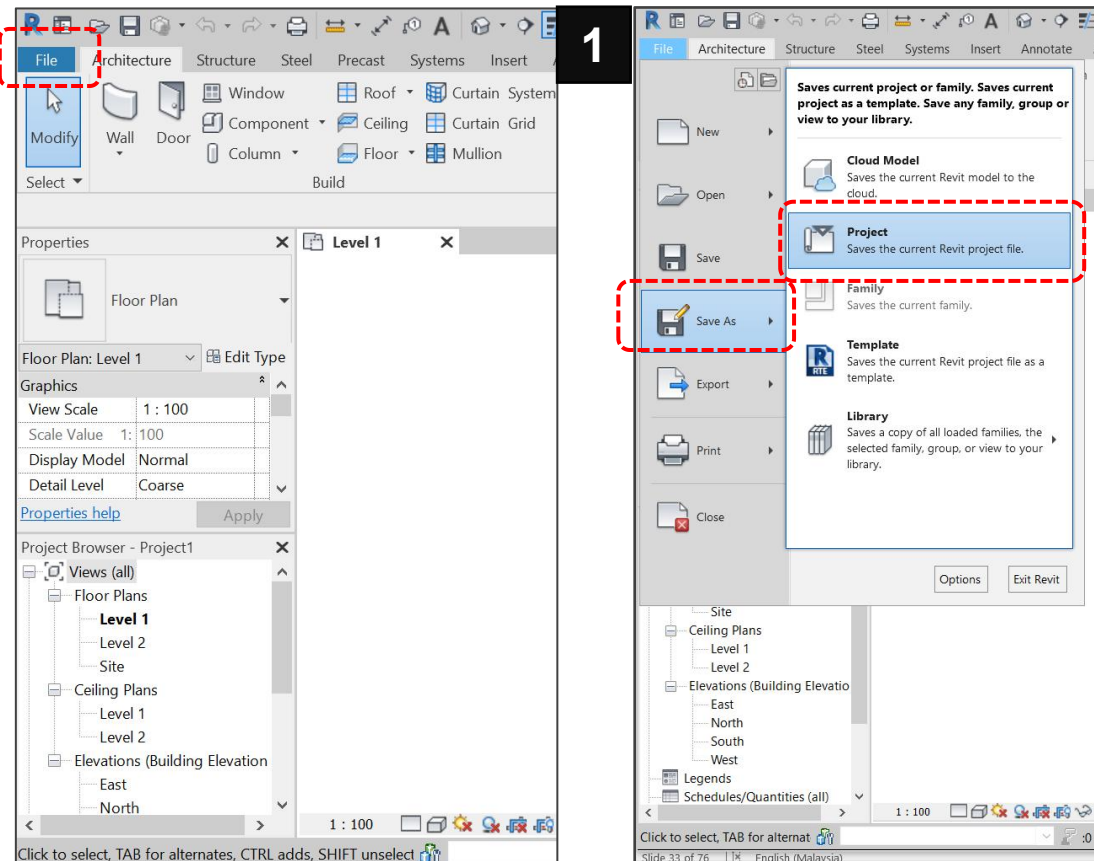
C:\ProgramData\Autodesk\RVT **2021**\Templates\English\DefaultMetric



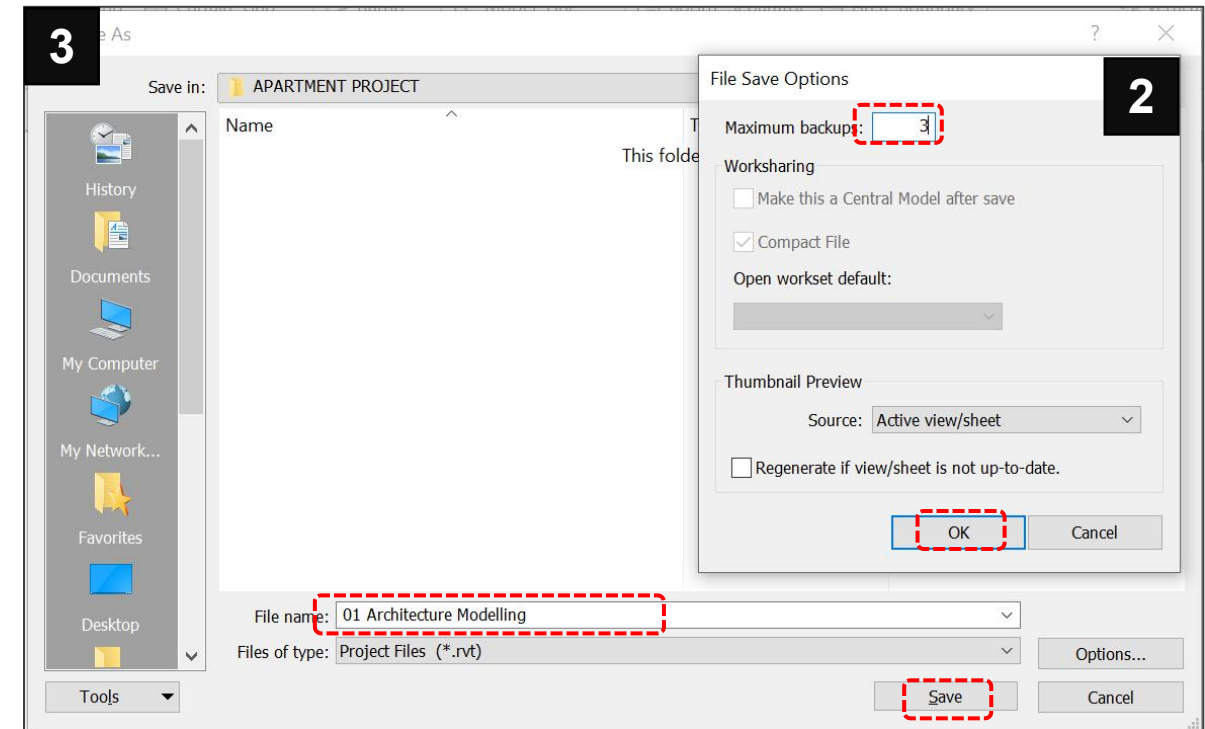


Template Interface View

SAVING PROJECTS



1. To save the project, click on the “File Tab”, select “Save As”, then select “Project”.



2. Click “Options”, enter the value “(1 to 3)” on Maximum Backup and click “OK”.

3. Change File name to “(According to Project Name)”, Files of type to Project Files (*.rvt) and click “Save”.

The image features a minimalist design with three vertical bars on the left side: a light gray bar, a dark gray bar, and another light gray bar. Two horizontal arrow shapes point to the right. The top arrow is a mustard yellow color and is partially obscured by the vertical bars. The bottom arrow is a dark olive green color and is also partially obscured by the vertical bars. The text 'ARCHITECTURE ELEMENTS' is written in white, bold, uppercase letters on the dark olive green arrow.

ARCHITECTURE ELEMENTS

SYSTEM & HOSTED FAMILIES (.rfa)

System Family

- Can be found only within a Revit model
- Cannot be stored in a separate location
- Can only be modified through its Element Properties

Eg:

Walls

Floors

Roofs

Ceilings

Stairs

Ramps

Shafts

Rooms

Schedules

Text and Dimensions

Views

Hosted / Loaded Family

- Is inserted similarly to a block
- Is stored in an external directory
- Is hosted by a system family, a level, or a reference plane

Eg:

Doors

Windows

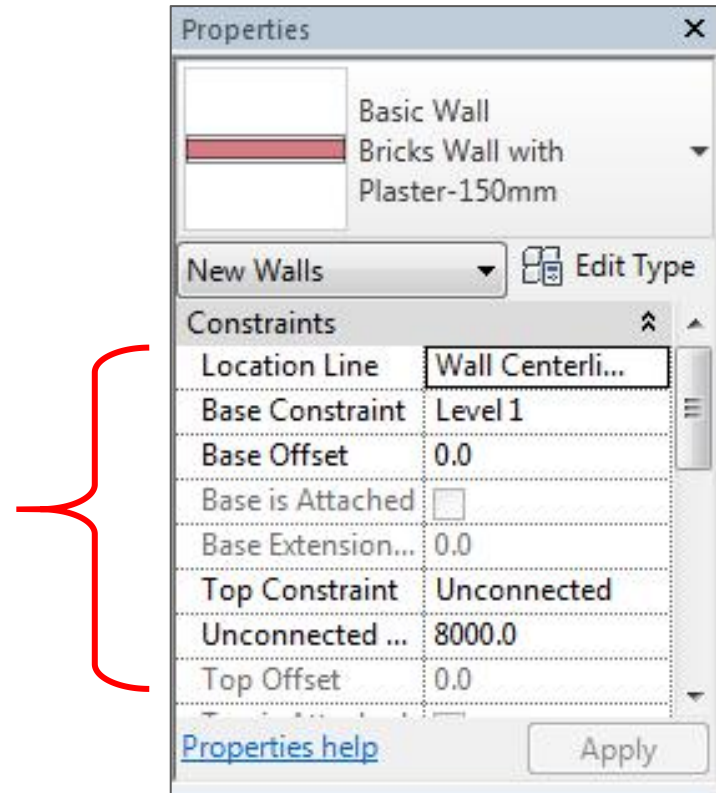
Wall sconce

Furniture

ELEMENT PROPERTIES

Instance Properties

- Items that you can edit immediately or called **parameters**
- Will change **only the object being added** to the model at this time
- Will change **only that item** you have **selected**

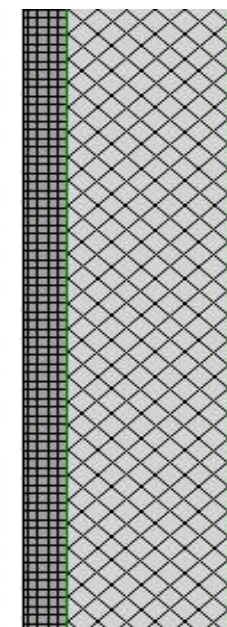
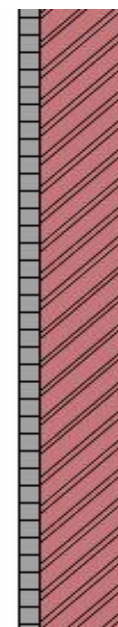
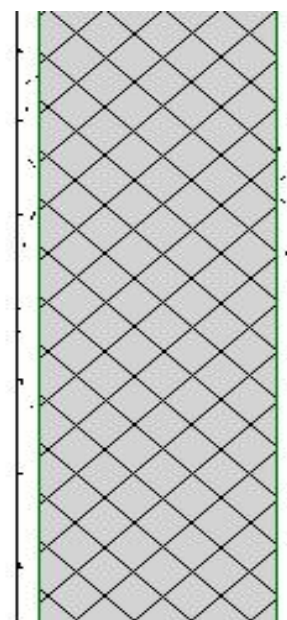
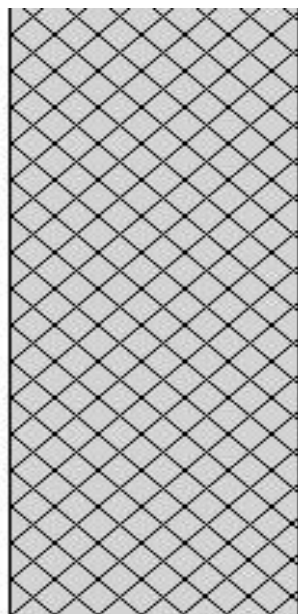
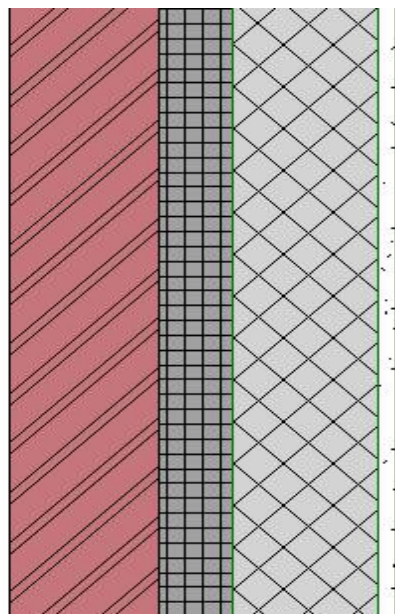


Type Properties

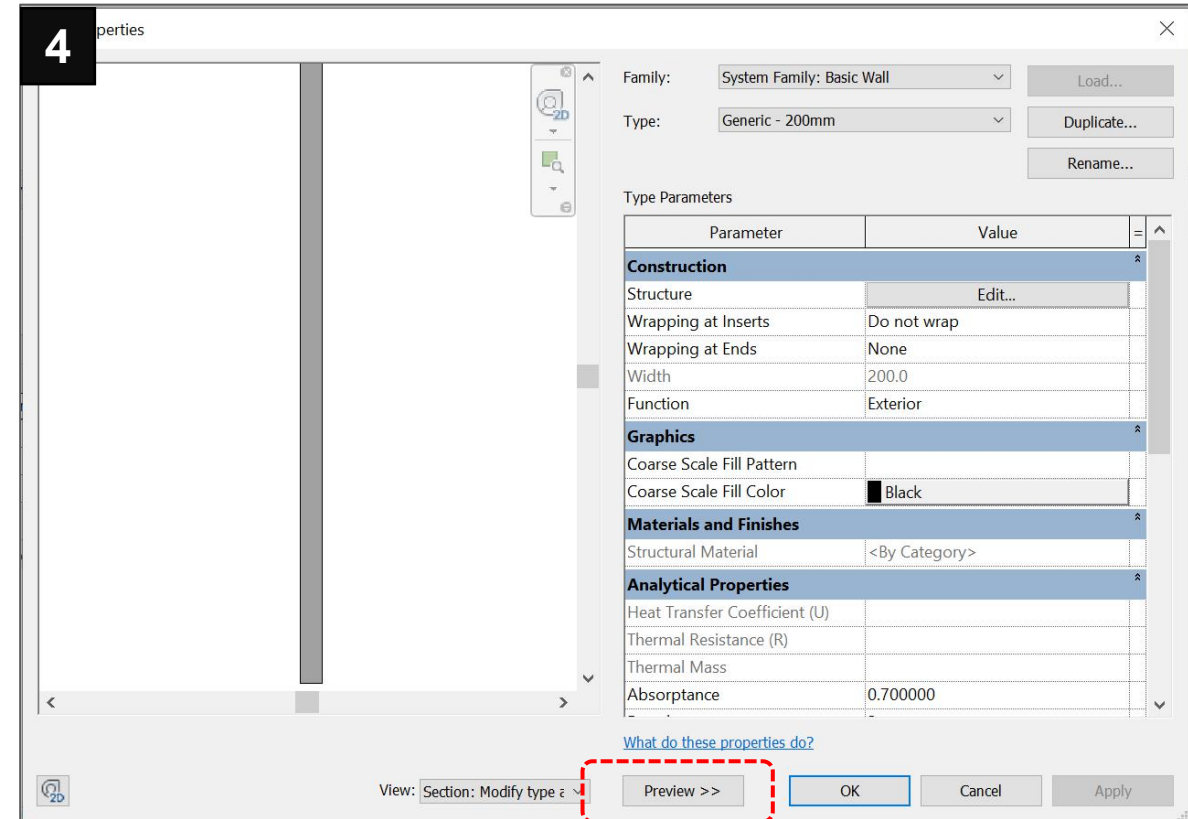
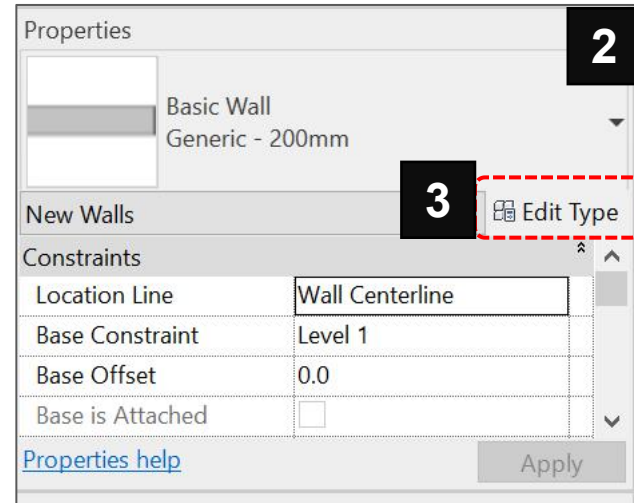
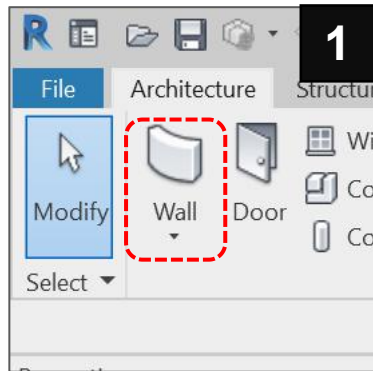
- When edited, will alter every item of that type in the entire model
- To access, click the '**Edit Type**' button
- Can either make a new type by
- '**Duplicate**' or edit the existing type

BASIC WALL

(EXISTING / CUSTOMIZE)



CREATING WALL - **Basic Wall** *(Using Existing Type)*



1. On the **Architecture tab** in the ribbon, click the **Wall tool**.

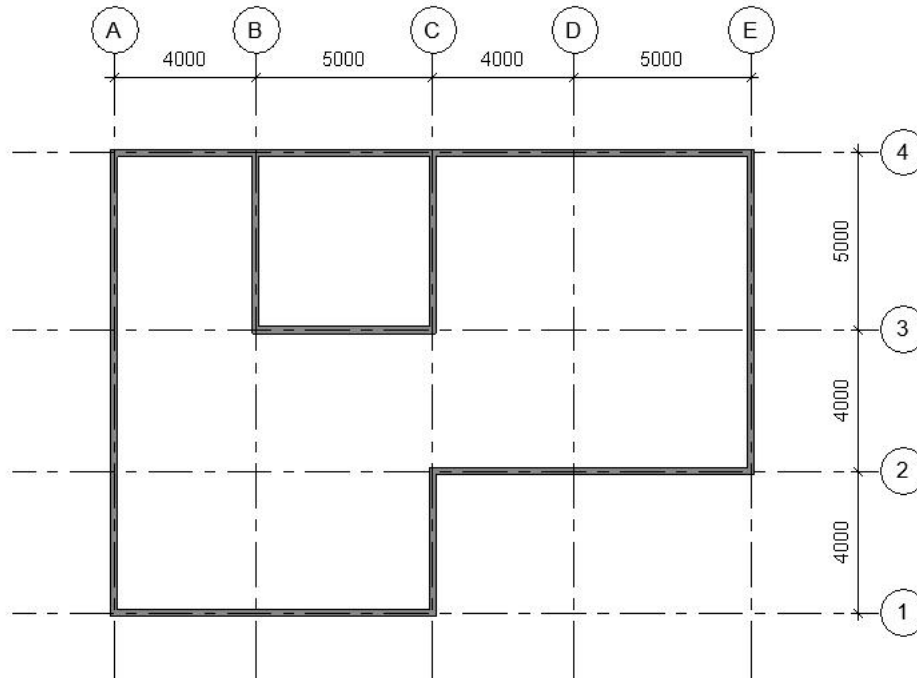
2. In the **Type Selector** at the top of the **Properties palette**, select the **Basic Wall - 200 mm** Generic wall type.

3. Click **Edit Type** just below the Type Selector.

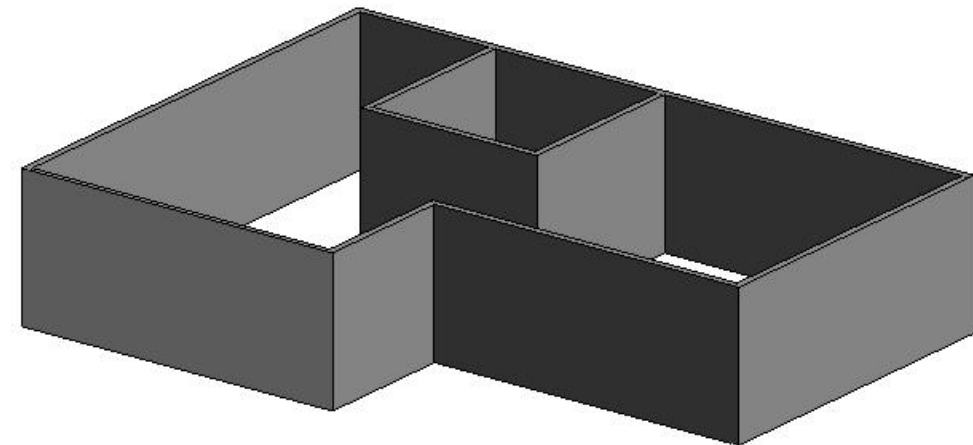
4. Click the **Preview** button at the **lower left** in the Type Properties dialog to see a graphic sample of the wall type.

CREATING WALL - **Basic Wall** (*Using Existing Type*)

EXERCISE 1 : Creating Basic Wall - Generic 200mm. Height 4000mm.

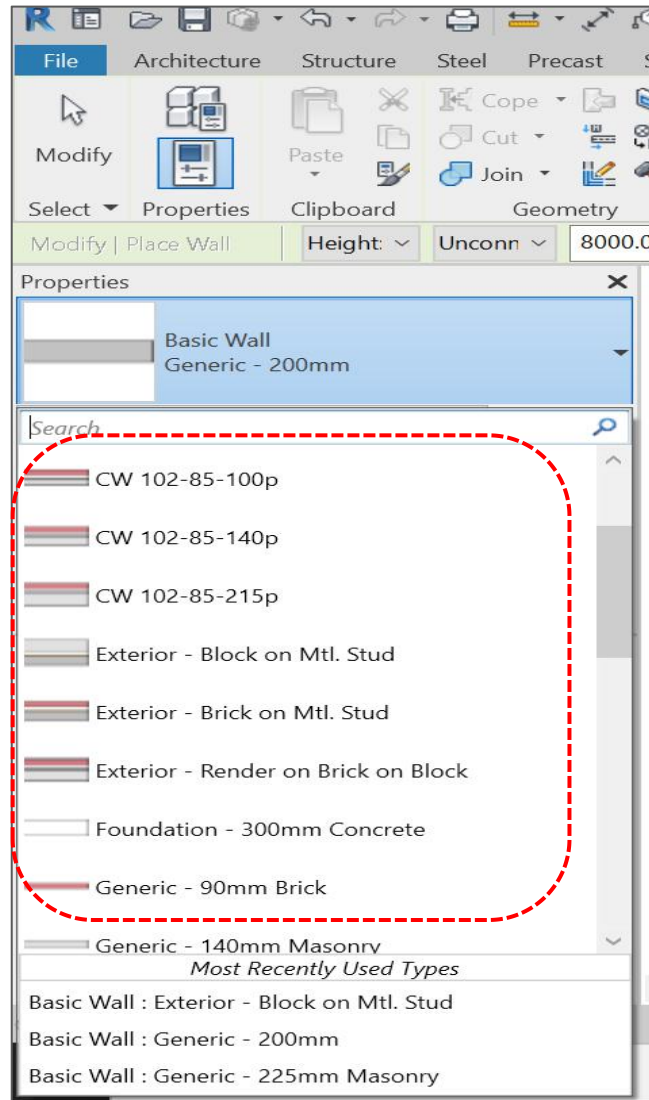


Plan View

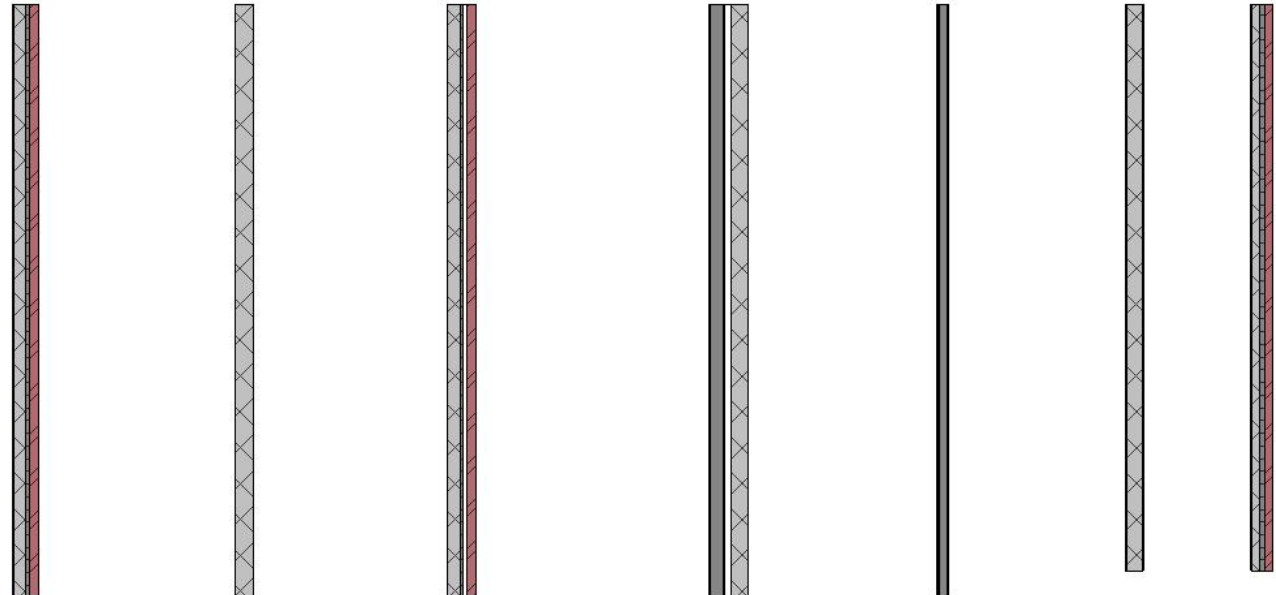


3D View (*Shaded Visual Style*)

CREATING WALL - Basic Wall (Using Existing Type)



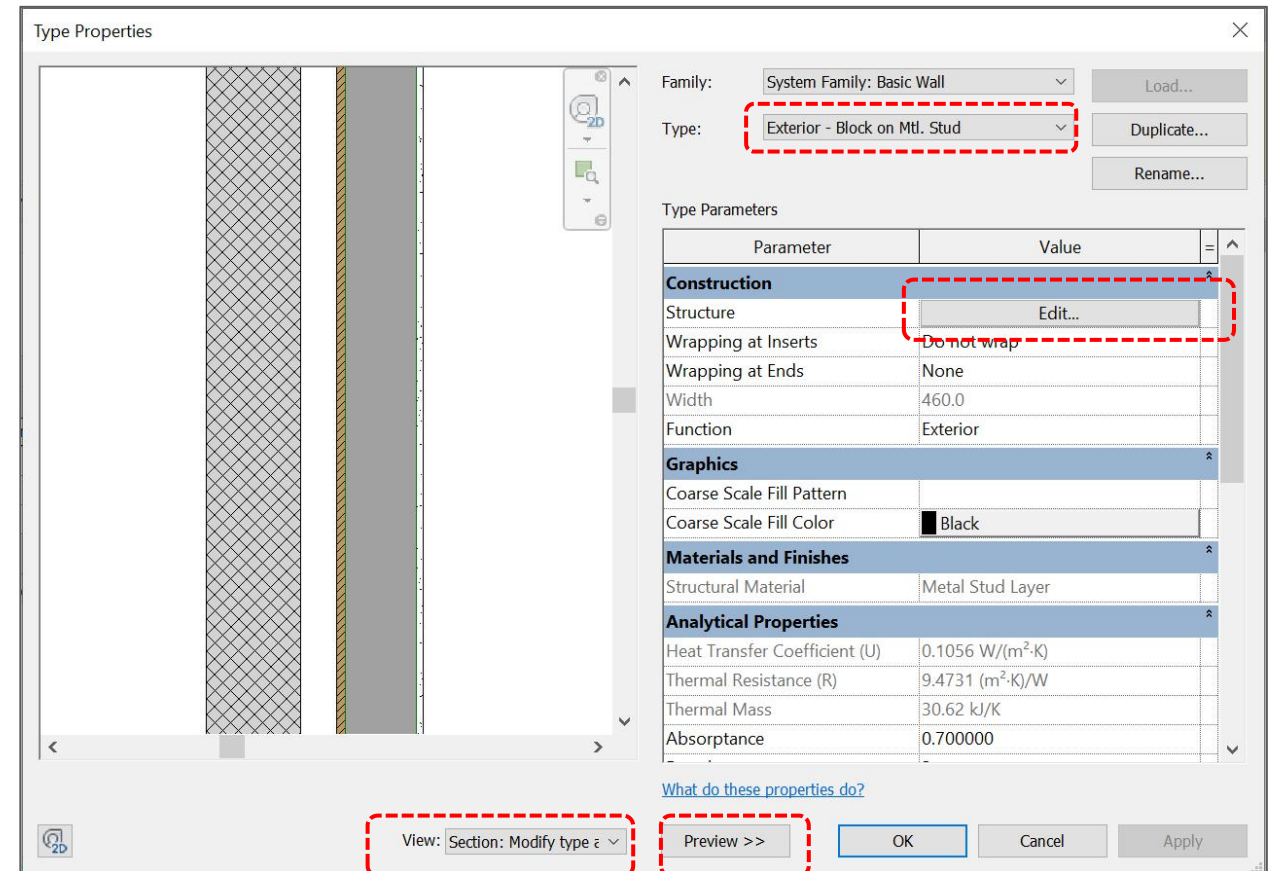
Others basic wall can be choose by scroll down from existing listing in **Properties Palette**



CREATING WALL - **Basic Wall** *(Using Existing Type)*

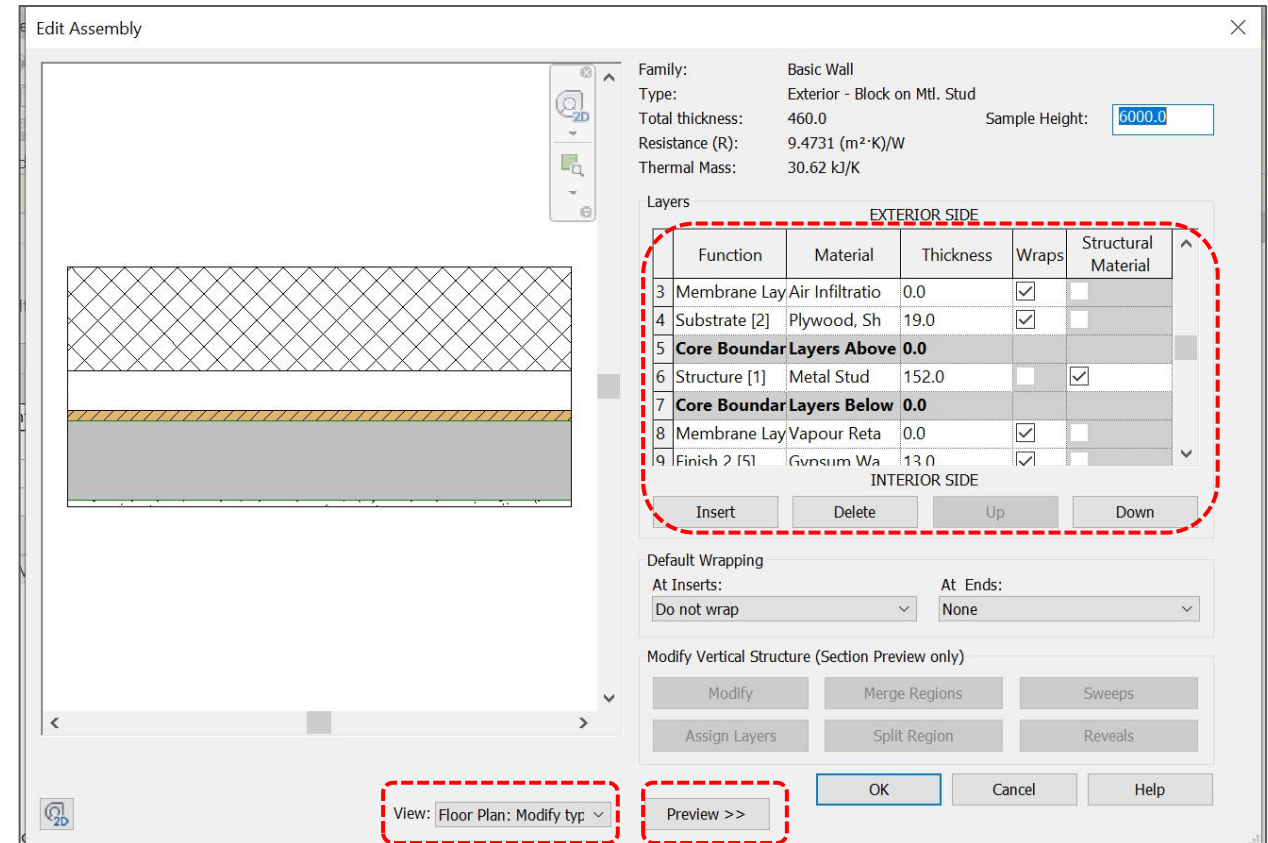
Basic wall also can be modified to contain far more structural detail or namely as Compound Wall (consists several layer):

1. Open **Wall Type Properties** dialog, go to the **Type** drop-down.
2. **For example**: Select the wall type **Exterior - Block On Mtl. Stud**
3. **Preview** graphic sample of the wall type.
4. Click the **Edit** button in the **Structure** parameter.



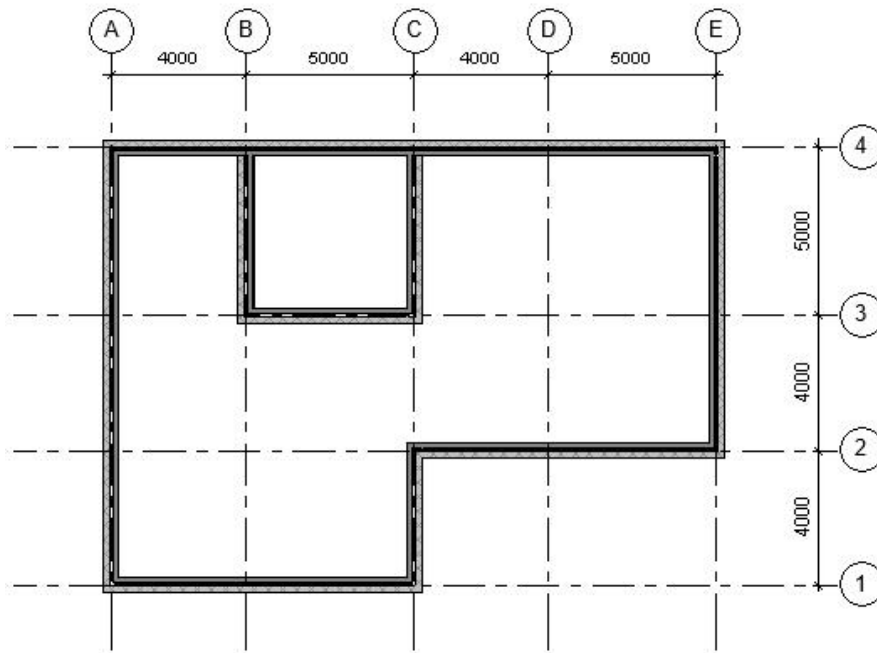
CREATING WALL - **Basic Wall** *(Using Existing Type)*

5. All **Material** and **Thickness** can be modified in Layers listing.
6. Can be **Insert** new layer if needed.
7. In the **Preview** pane, switch to the **Floor Plan**
8. Zoom into the top of the wall sample shown in the preview.

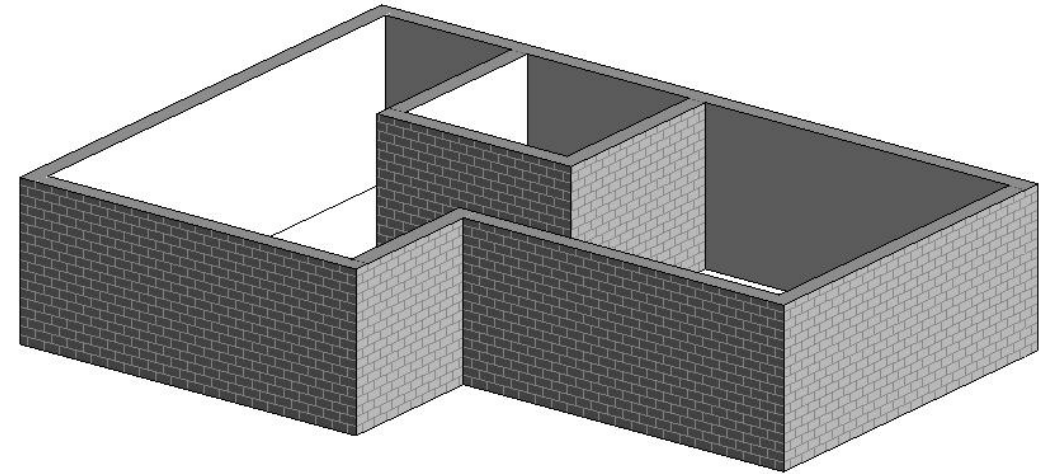


CREATING WALL - **Basic Wall** (*Using Existing Type*)

EXERCISE 2 : Creating Basic Wall/ Existing Compound Wall- Exterior - Block On Mtl. Stud



Plan View

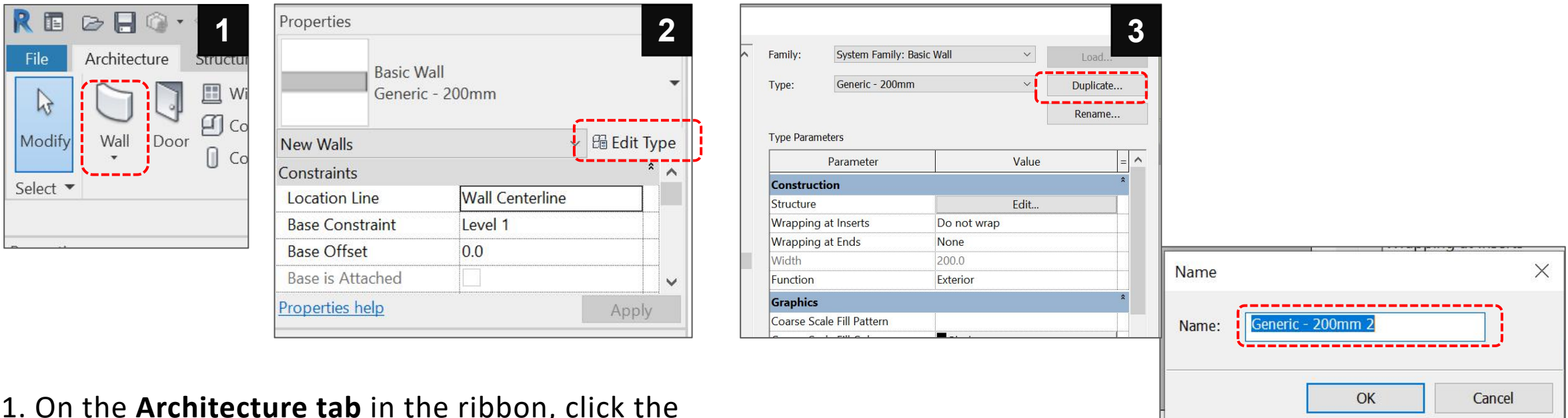


3D View (*Shaded Visual Style*)

CREATING WALL - **Basic Wall** (*Customize Type*)

Modified existing wall to **New Wall** (*Not provided*):

Example: Create new basic wall - **Concrete Wall 150mm** (*Concrete 120mm with 15mm plaster both sides*)



The image displays three sequential screenshots from the Revit software interface, illustrating the process of creating a new wall type.

1 The first screenshot shows the **Architecture** tab in the ribbon. The **Wall** tool is highlighted with a red dashed box.

2 The second screenshot shows the **Properties** panel. The **Basic Wall** type is selected. The **Edit Type** button is highlighted with a red dashed box.

3 The third screenshot shows the **Type Properties** dialog box. The **Duplicate...** button is highlighted with a red dashed box. Below it, the **Name** field is highlighted with a red dashed box, showing the text **Generic - 200mm 2**.

1. On the **Architecture tab** in the ribbon, click the **Wall tool**.

2. Click **Edit Type** just below the Type Selector.

3. Click **Duplicate** and name it as **Concrete Wall 150mm**. Then click **OK**

CREATING WALL - Basic Wall *(Customize Type)*

- Insert at **Description: Concrete 120mm with 15mm plaster both sides**

4 System Family: Basic Wall Load...

Type: Concrete Wall 150mm Duplicate... Rename...

Type Parameters

Parameter	Value
Thermal Resistance (R)	
Thermal Mass	
Absorptance	0.700000
Roughness	3
Identity Data	
Type Image	
Keynote	
Model	
Manufacturer	
Type Comments	
URL	
Description	Concrete 120mm with 15mm plaster both sides
Assembly Description	
Assembly Code	
Type Mark	
Fire Rating	
Cost	

5 System Family: Basic Wall Load...

Type: Concrete Wall 150mm Duplicate... Rename...

Type Parameters

Parameter	Value
Construction	
Structure	Edit...
Wrapping at Inserts	Do not wrap
Wrapping at Ends	None

- At **Structure Parameter** click **Edit**.

CREATING WALL - Basic Wall (Customize Type)

6

Layers					
EXTERIOR SIDE					
	Function	Material	Thickness	Wraps	Structural Material
1	Core Boundary	Layers Above Wrap	0.0		
2	Finish 1 [4]	<By Category>	0.0	☐	☐
3	Finish 1 [4]	<By Category>	0.0	☐	☐
4	Structure [1]	<By Category>	200.0	☐	☒
5	Core Boundary	Layers Below Wrap	0.0		

Function

1 Finish 1 [4]

2 Structure [1]

3 Substrate [2]

4 Thermal/Air Layer [3]

5 Finish 1 [4]

6 Finish 2 [5]

7 Membrane Layer

INTERIOR SIDE

Insert
Delete
Up
Down

7

Layers					
EXTERIOR SIDE					
	Function	Material	Thickness	Wraps	Structural Material
1	Finish 1 [4]	<By Category>	15.0	☒	☐
2	Core Boundary	Layers Above Wrap	0.0		
3	Structure [1]	<By Category>	120.0	☐	☒
4	Core Boundary	Layers Below Wrap	0.0		
5	Finish 1 [4]	<By Category>	15	☒	☐

INTERIOR SIDE

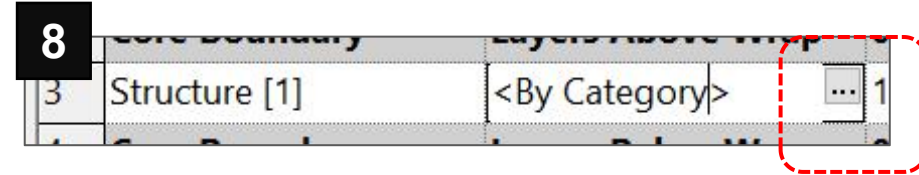
Insert
Delete
Up
Down

6. In the **Edit Assembly** dialog box, insert **2 new layers** and scroll down to change it **Function** as **Finish 1 [4]**.

Select Finish layer , then click **Up** or **Down** button to locate each layer above and below **Core Boundary**.

7. Enter value **120** for **Thickness** of **Structure** and **15** for **Finish 1[4]**, then click **By Category** for each layer to change **Material**.

CREATING WALL - **Basic Wall** *(Customize Type)*

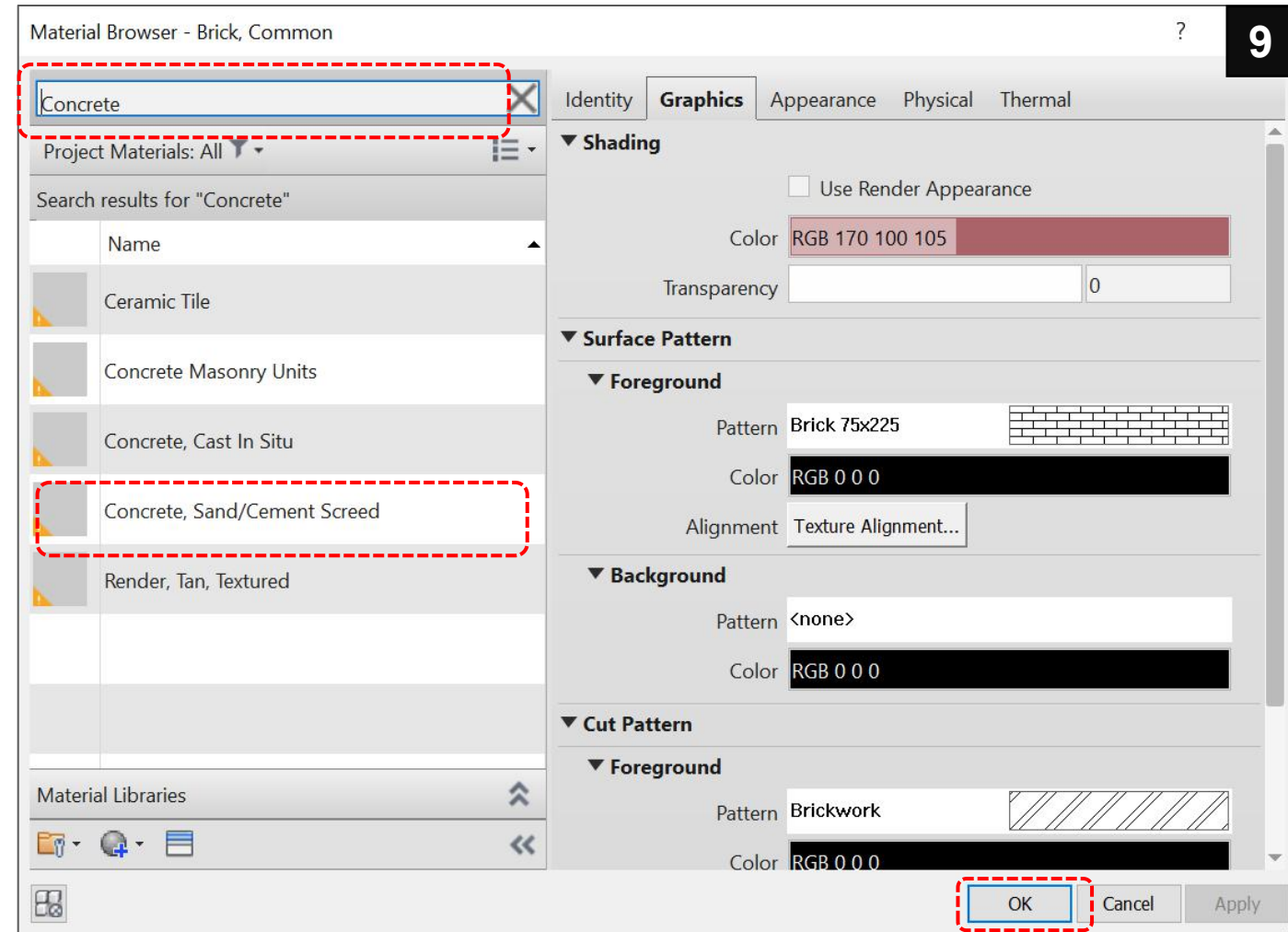


8. Click 3 dots to change a **Material**.

9. In **Material Browser** dialog box, search material name : **Concrete**. Then choose **Concrete, Sand/Cement Sand** as material. Then click, **OK**.

10. Repeat step 9 & 10 to change material for Finish 1[4]. Search material as **Plaster**.

11. Material for Finish 1 [4]: **Gypsum Wall Board**.



CREATING WALL - Basic Wall *(Customize Type)*

13. Once all layers are created, click **OK**.

Layers					
EXTERIOR SIDE					
	Function	Material	Thickness	Wraps	Structural Material
1	Finish 1 [4]	Gypsum Wall Board	15.0	☒	☐
2	Core Boundary	Layers Above Wrap	0.0		
3	Structure [1]	Concrete, Sand/Cem	120.0	☐	☒
4	Core Boundary	Layers Below Wrap	0.0		
5	Finish 1 [4]	Gypsum Wall Board	15.0	☒	☐

14. Then, click **OK** in **Properties dialog box**.

15. Wall Type created is ready to use.

Family: System Family: Basic Wall
Type: Concrete Wall 150mm

Load
Duplicate...
Rename...

14

Type Parameters

Parameter	Value
Construction	
Structure	Edit...
Wrapping at Inserts	Do not wrap
Wrapping at Ends	None
Width	150.0
Function	Exterior
Graphics	
Coarse Scale Fill Pattern	
Coarse Scale Fill Color	Black
Materials and Finishes	
Structural Material	Concrete, Sand/Cement Screed
Analytical Properties	
Heat Transfer Coefficient (U)	6.2159 W/(m ² ·K)
Thermal Resistance (R)	0.1609 (m ² ·K)/W
Thermal Mass	19.42 kJ/K
Absorptance	0.700000

[What do these properties do?](#)

Preview >>

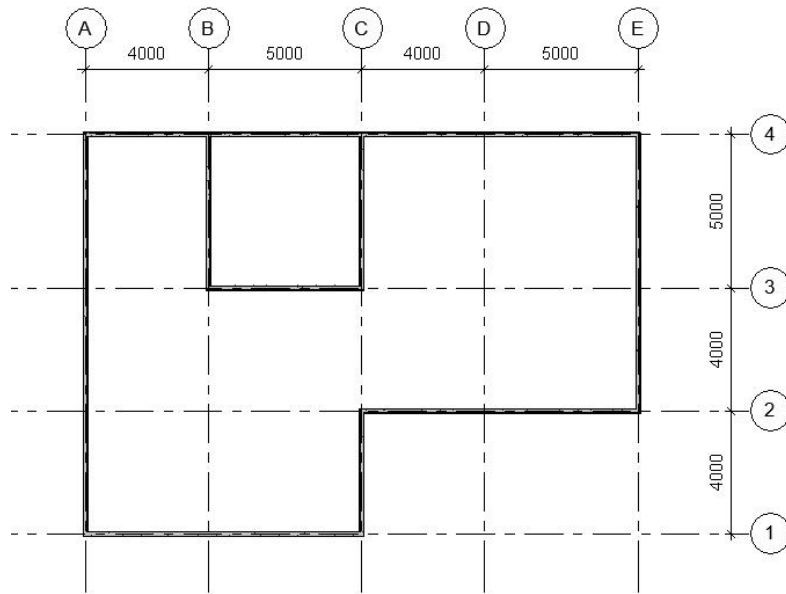
OK

Cancel

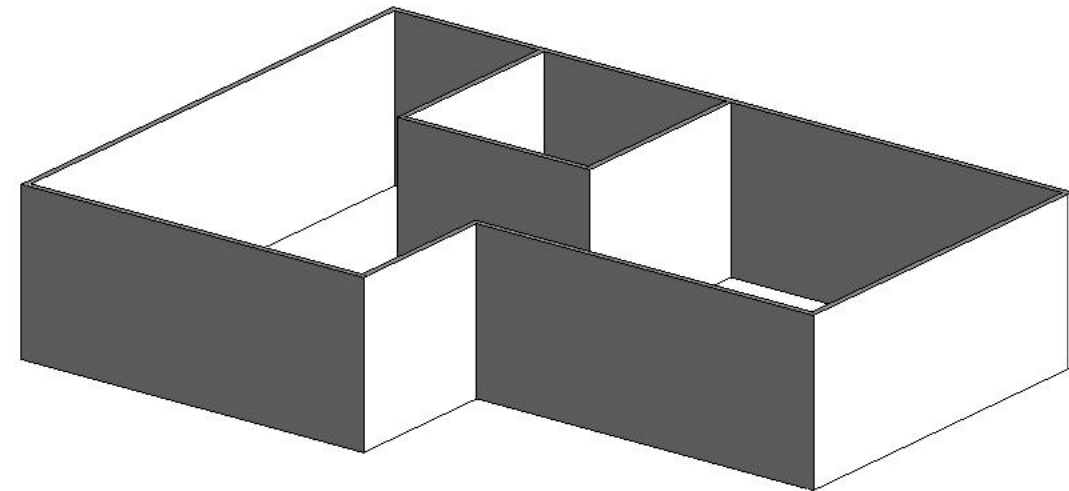
Apply

CREATING WALL - Basic Wall *(Customize Type)*

EXERCISE 3 : Creating New Basic Wall - Concrete 150mm (Concrete 120mm with 15mm plaster both sides)



Plan View



3D View *(Shaded Visual Style)*



CURTAIN WALL

Curtain walls are more **complex** than basic walls or stacked walls. They consist of **four elements**: a simple wall-segment definition, curtain grids, panels, and mullions.

Curtain wall types can be **completely instance** based (allowing each to vary) or can be **driven entirely** by the wall type properties that **set grid spacing, panels, and mullion types** for interior and border conditions.



Mullion

Curtain
Panel

Curtain Grid

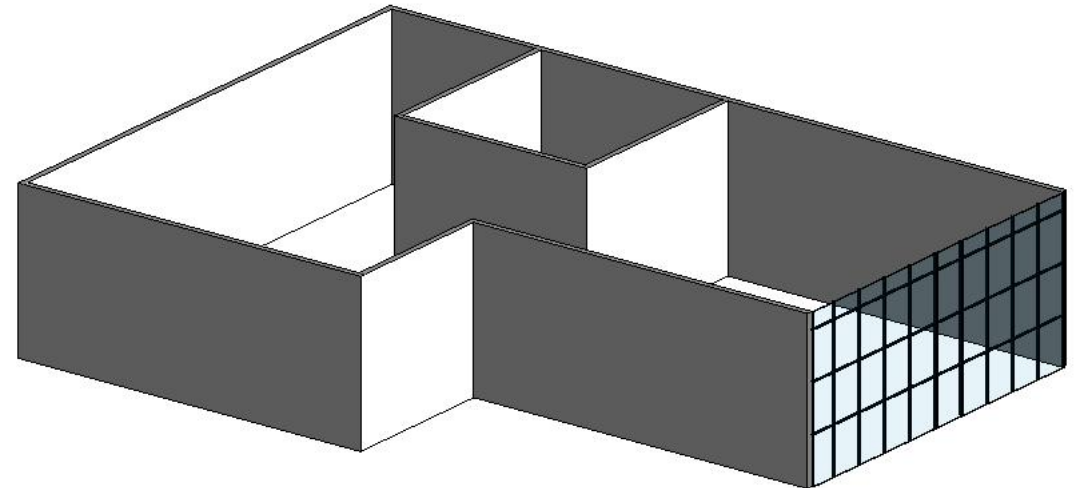
CREATING WALL - **Curtain Wall** *(Using Specific Layout Dimensions)*

EXAMPLE 1:

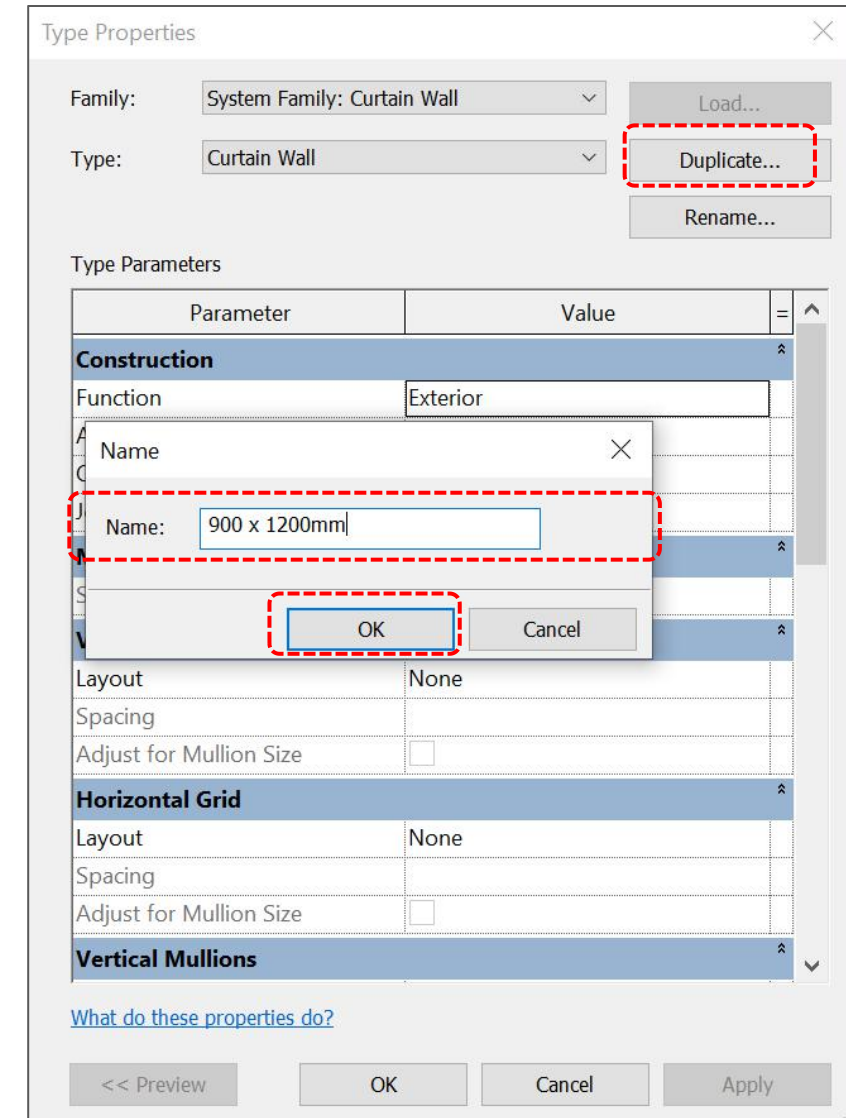
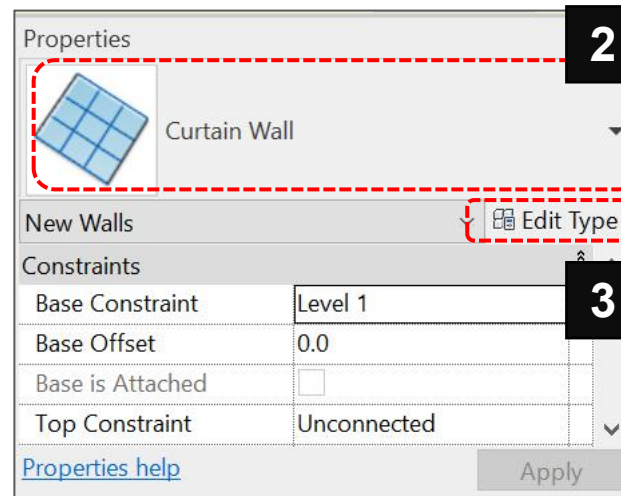
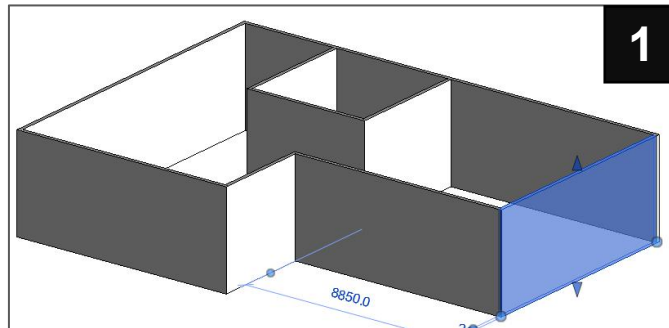
By using previous model, create **Curtain Wall** using specific layout dimensions at selected wall as shown in figure.

Curtain Grid : **900mm x 1200mm**

Vertical and Horizontal Mullions :
Rectangular Mullion : 30mm Square



CREATING WALL - **Curtain Wall** *(Using Specific Layout Dimensions)*

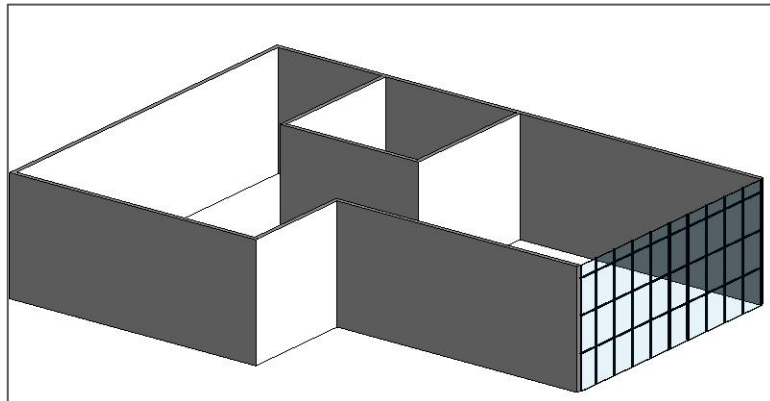


Steps:

1. Select **Wall** as shown in figure.
2. In the **Type Selector** at the top of the **Properties palette**, select the **Curtain Wall** type.
3. Click **Edit Type** just below the Type Selector.
4. Click **Duplicate** and name it as **900 x 1200mm**. Then, click **OK**.

CREATING WALL - **Curtain Wall** *(Using Specific Layout Dimensions)*

5. At **Vertical and Horizontal Grid** layout, select **Fixed Distance** and insert **Spacing** values as shown.
6. At Interior type for **Vertical and Horizontal Mullions**, select **Rectangular Mullion: 30mm square**.
7. Then click , **OK**. A result as shown in figure.



Type Properties

Family: System Family: Curtain Wall Load...

Type: 900 x 1200mm Duplicate... Rename...

Type Parameters

Parameter	Value	=	^
Materials and Finishes			
Structural Material			
Vertical Grid			
Layout	Fixed Distance		
Spacing	900.0		
Adjust for Mullion Size	☒		
Horizontal Grid			
Layout	Fixed Distance		
Spacing	1200.0		
Adjust for Mullion Size	☒		
Vertical Mullions			
Interior Type	Rectangular Mullion : 30mm Square		
Border 1 Type	None		
Border 2 Type	None		
Horizontal Mullions			
Interior Type	Rectangular Mullion : 30mm Square		
Border 1 Type	None		
Border 2 Type	None		
Identity Data			

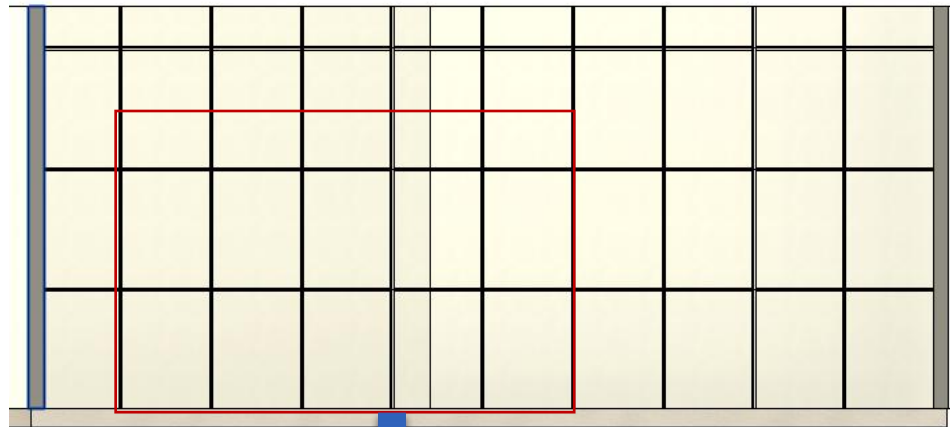
[What do these properties do?](#)

<< Preview OK Cancel Apply

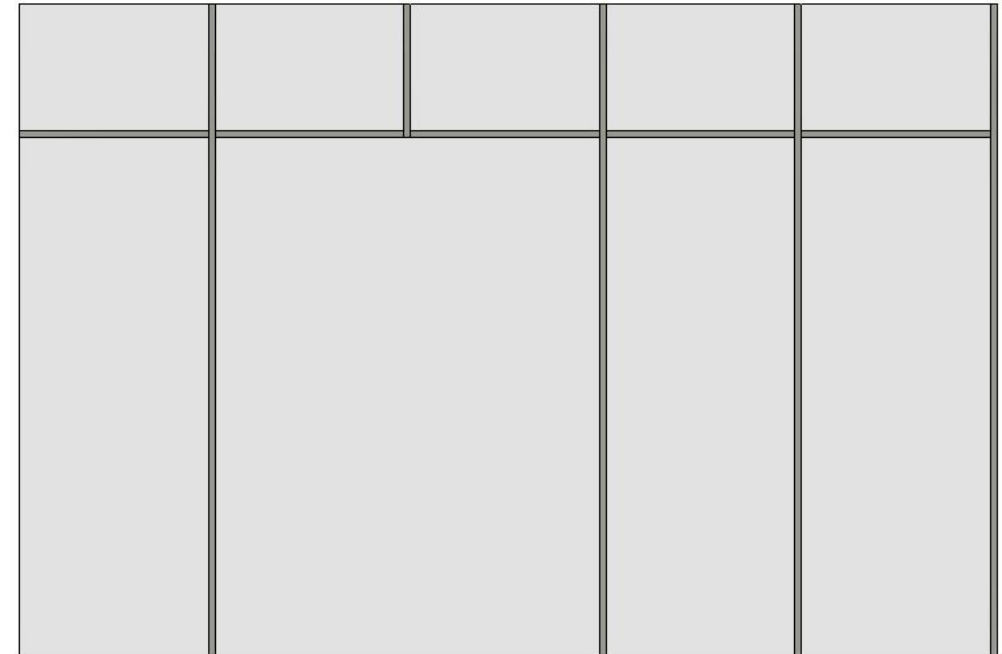
CREATING WALL - **Curtain Wall** *(Customize Type)*

EXAMPLE 2:

Modified Curtain Wall was created in **Example 1** to new layout as shown.



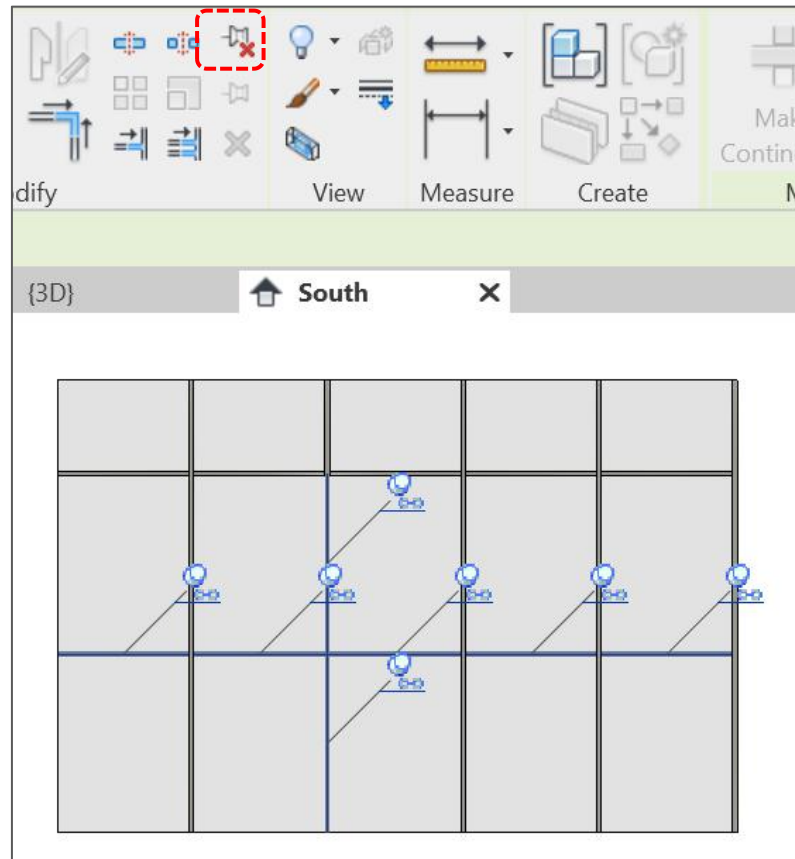
East-Elevation



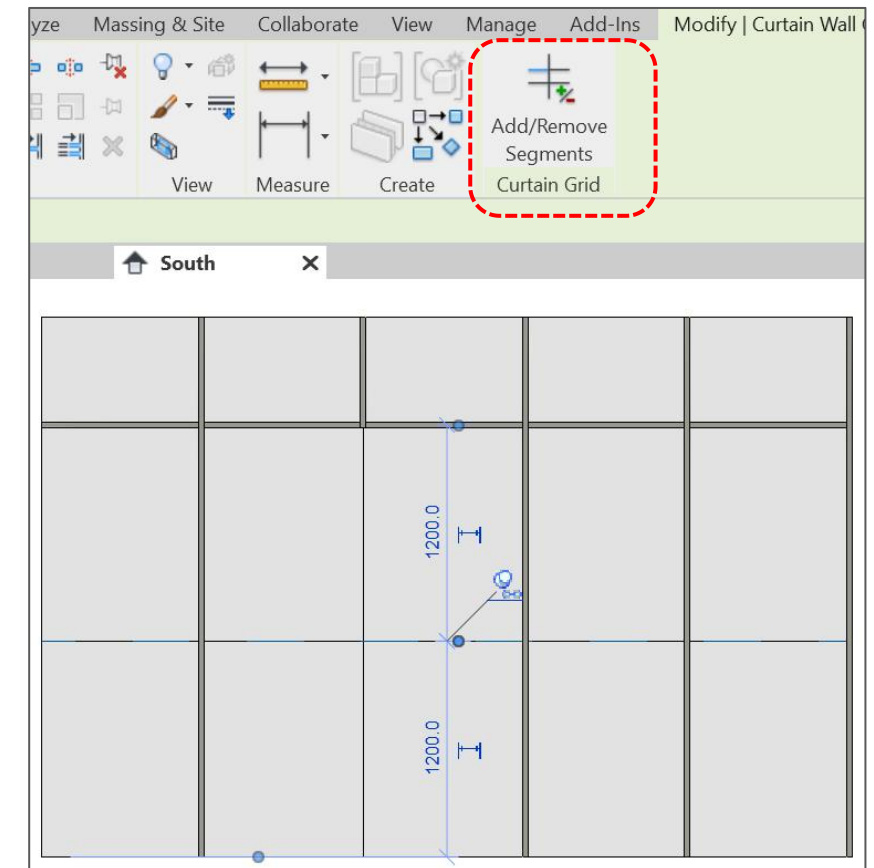
CREATING WALL - **Curtain Wall** *(Customize Type)*

STEPS:

1. Select all mullions to delete. Then click, **Unpin**.

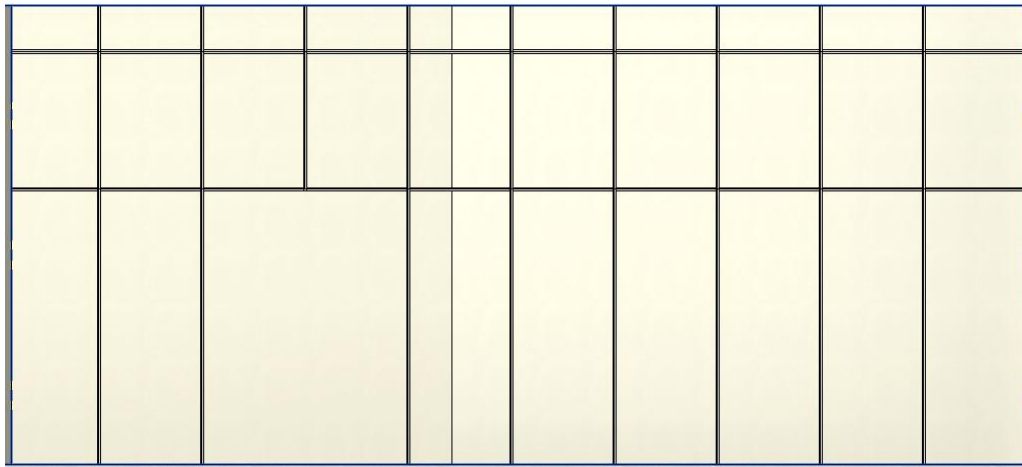


2. Select **Curtain Grid** as shown and click icon **Add/Remove Segments**. Then click all curtain grid to delete.

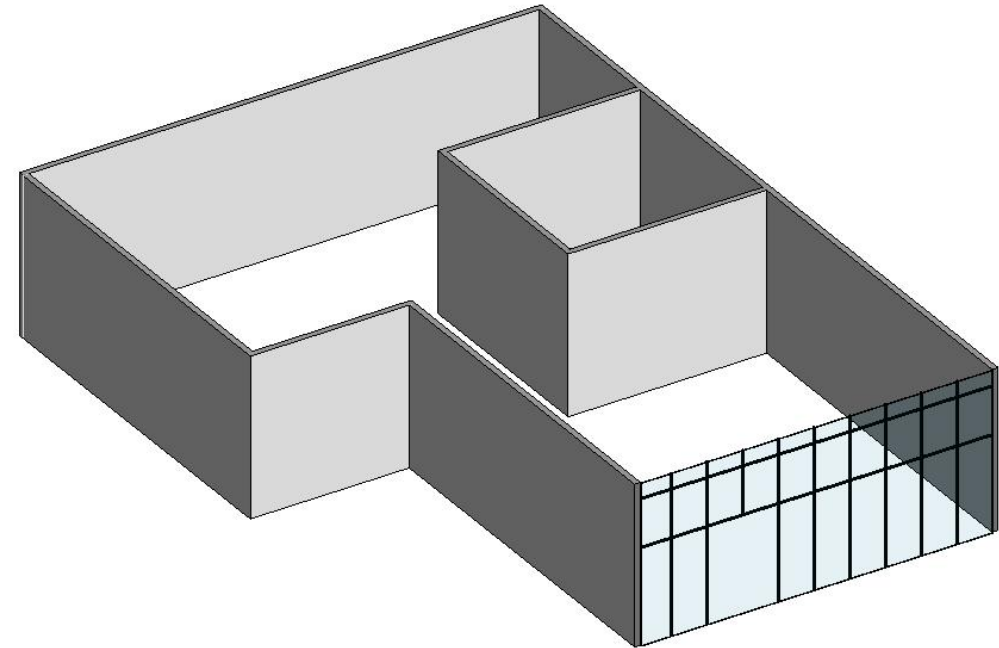


CREATING WALL - **Curtain Wall** *(Customize Type)*

3. **New** curtain wall created as shown.



East-Elevation View

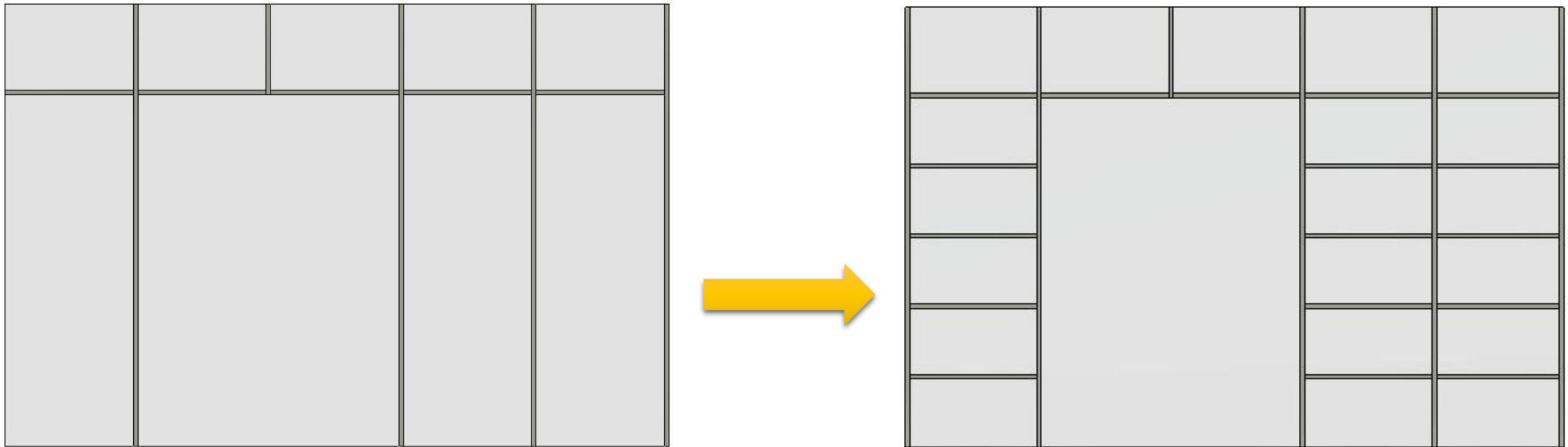


3D View (Shaded Visual Style)

CREATING WALL - **Curtain Wall** *(Customize Type)*

EXAMPLE 3:

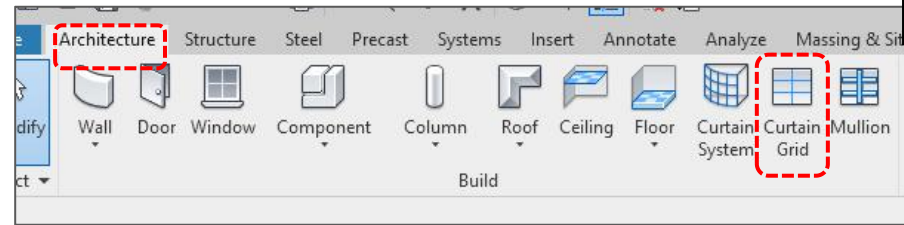
Modified Curtain Wall was created in **Example 2** to new layout as shown.



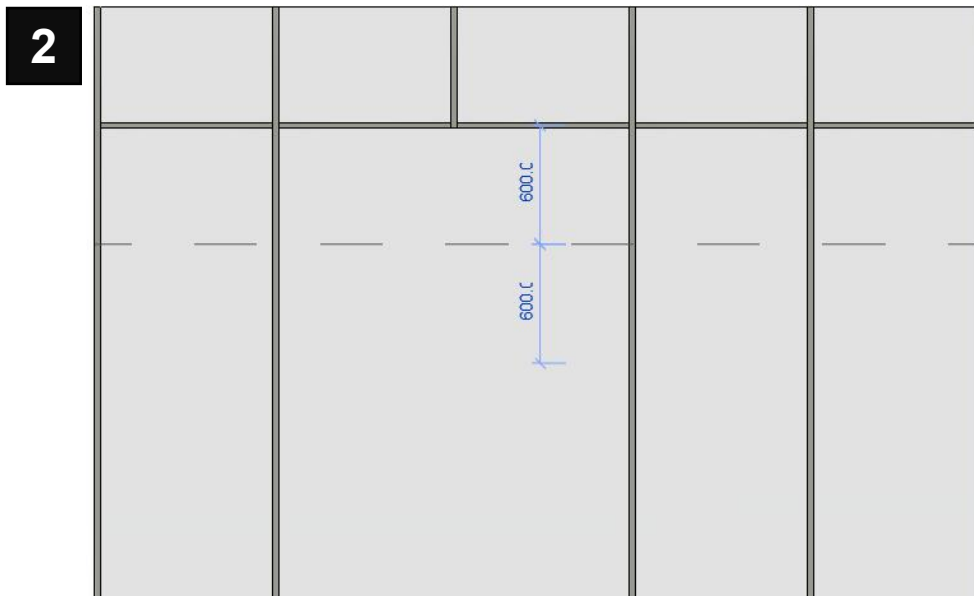
CREATING WALL - **Curtain Wall** *(Customize Type)*

STEPS:

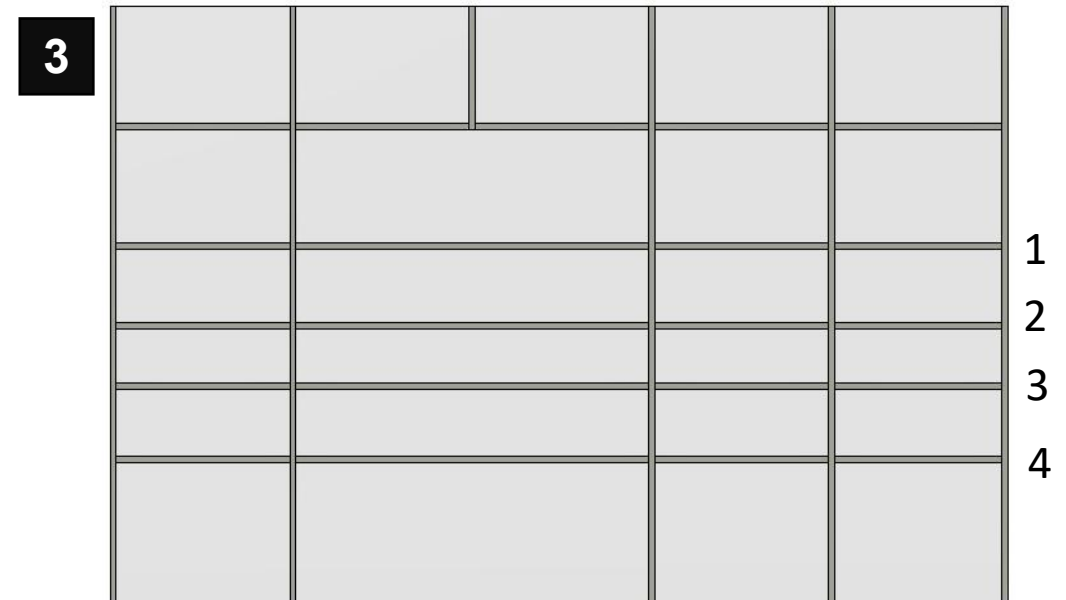
1. In **Architecture** Tab, click **Curtain Grid**.



2. Place cursor at **curtain plane** until view **grid line** as shown in below figure. Then click.

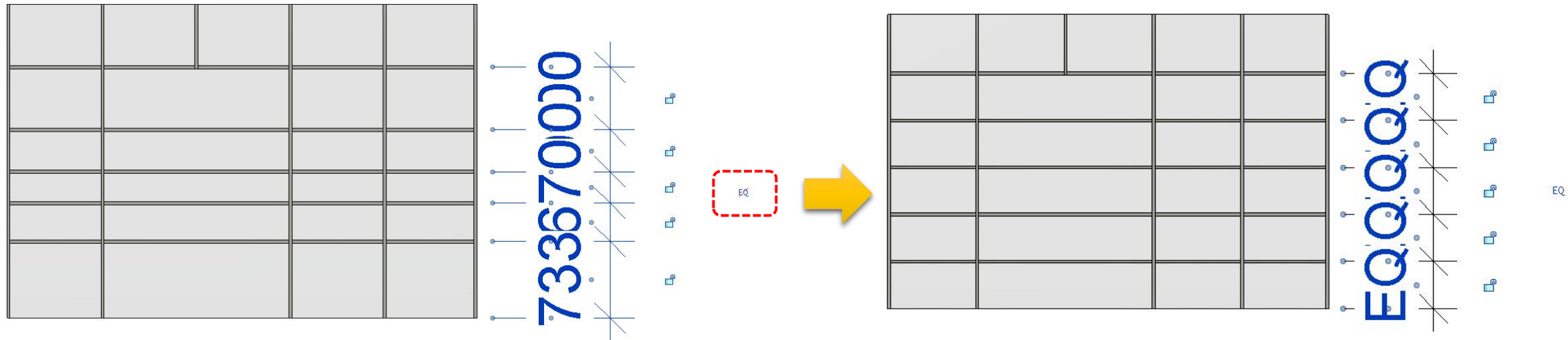
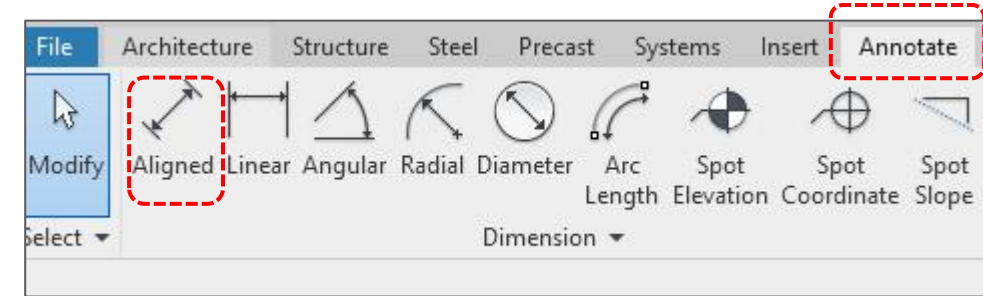


3. Repeat **step 2** until finish by added **4 new horizontal grid** as shown in below figure.



CREATING WALL - Curtain Wall (Customize Type)

- At **Annotate** tab, click **Aligned** dimension to Equal Horizontal Grids distance.
- Using **Align**, click all center of horizontal grid lines. Then click  symbol.

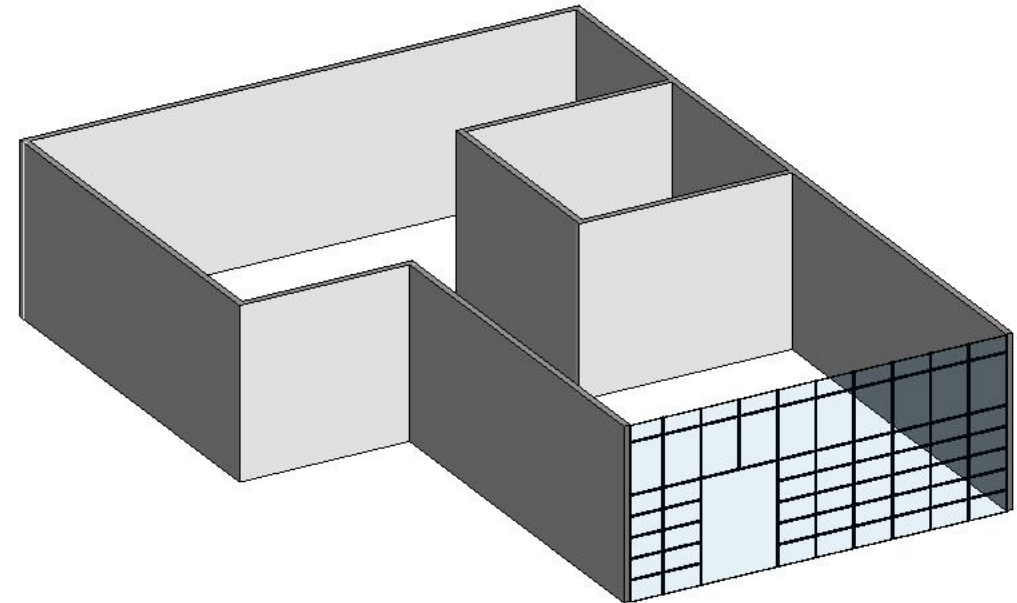


CREATING WALL - **Curtain Wall** (*Customize Type*)

6. Follow **steps 1 & 2** in **Example 2** to delete/remove unnecessary mullions and grids.
7. Final curtain Wall layout as shown in figure.



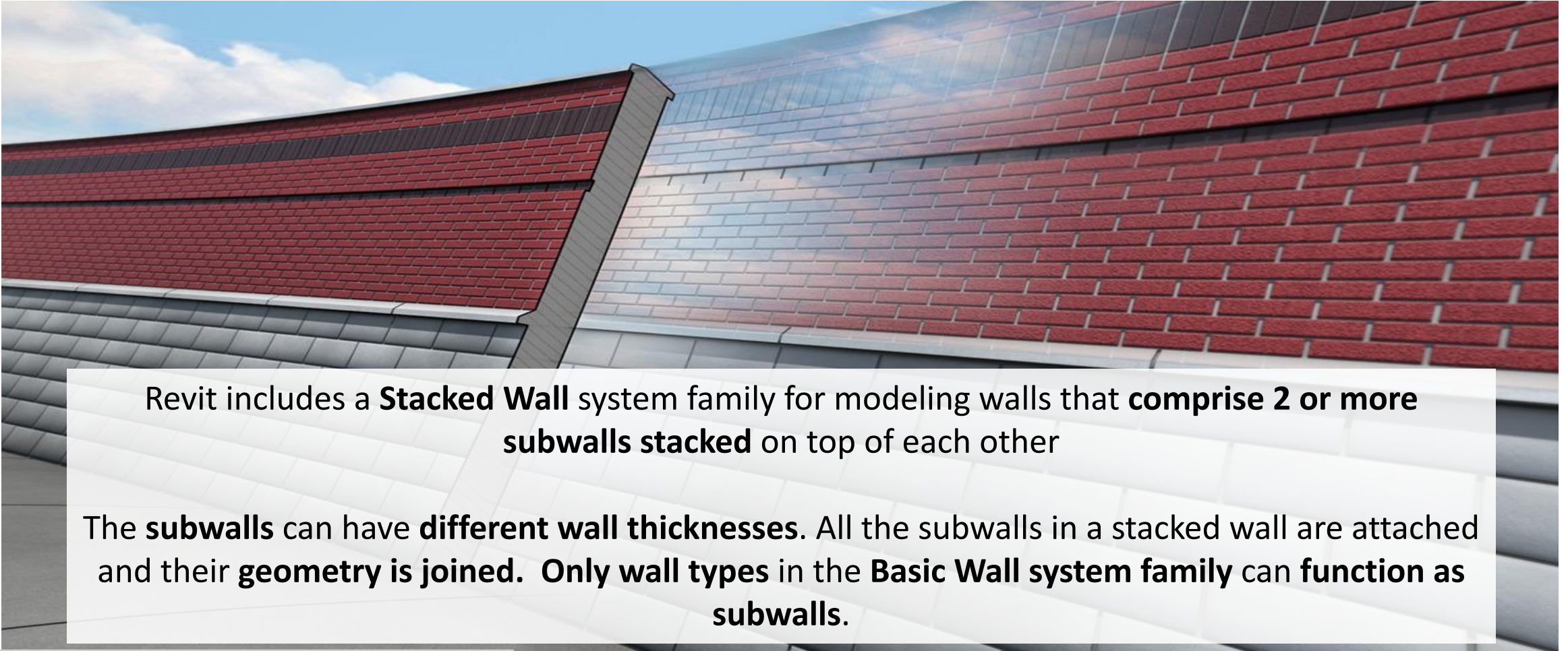
East-Elevation View



3D View (*Shaded Visual Style*)

STACKED WALL

(EXISTING / CUSTOMIZE)



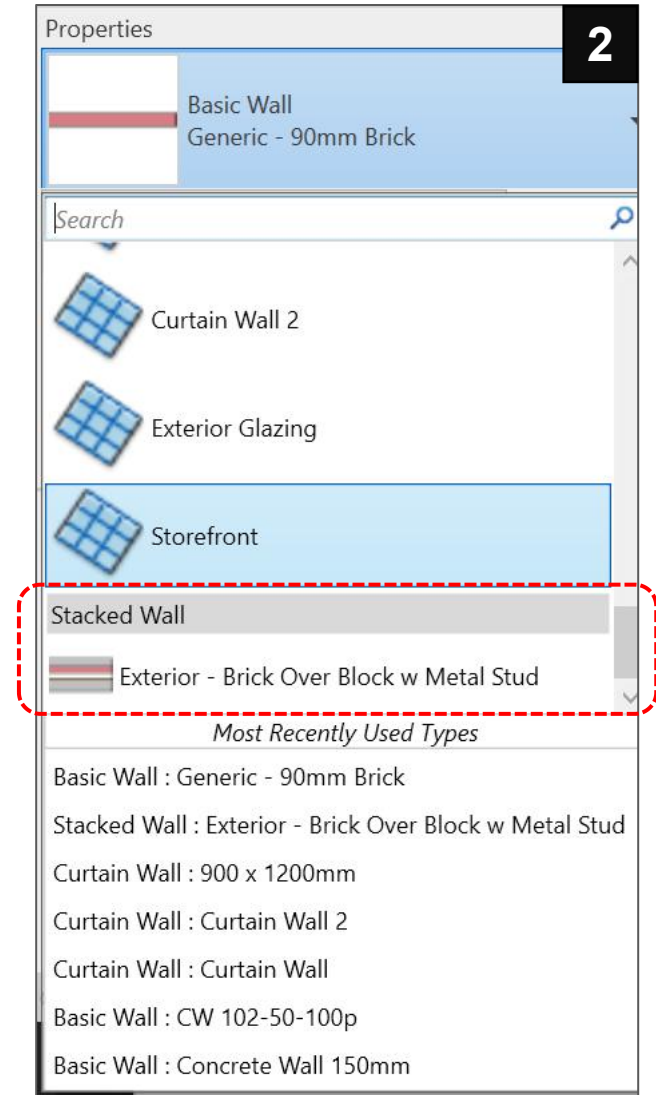
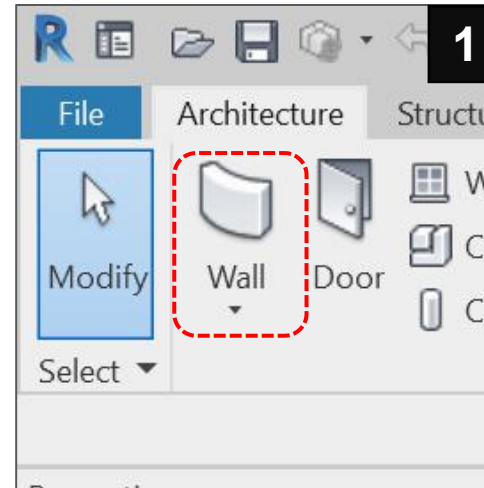
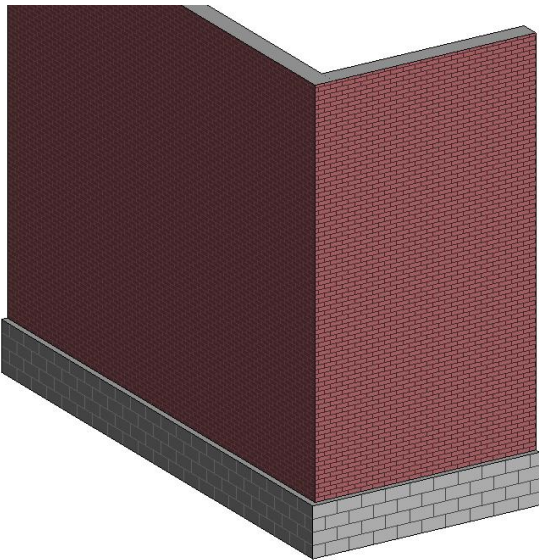
Revit includes a **Stacked Wall** system family for modeling walls that **comprise 2 or more subwalls stacked** on top of each other

The **subwalls** can have **different wall thicknesses**. All the subwalls in a stacked wall are attached and their **geometry is joined**. **Only wall types** in the **Basic Wall system family** can function as subwalls.

CREATING WALL - **Stacked Wall** *(Using Existing Type)*

EXAMPLE 1:

Curtain Wall creating using existing stacked wall



STEPS:

1. On the **Architecture tab** in the ribbon, click the **Wall tool**.
2. In the **Type Selector** at the top of the **Properties palette**, scroll down and select the **Stacked Wall - Exterior Brick Over Block w Metal Stud**.

CREATING WALL - **Stacked Wall** (*Customize Type*)

For new stacked wall, can be **use existing basic wall** or **create new basic wall** according to specification of project.

Example 2: Create new **Stacked Wall** type.

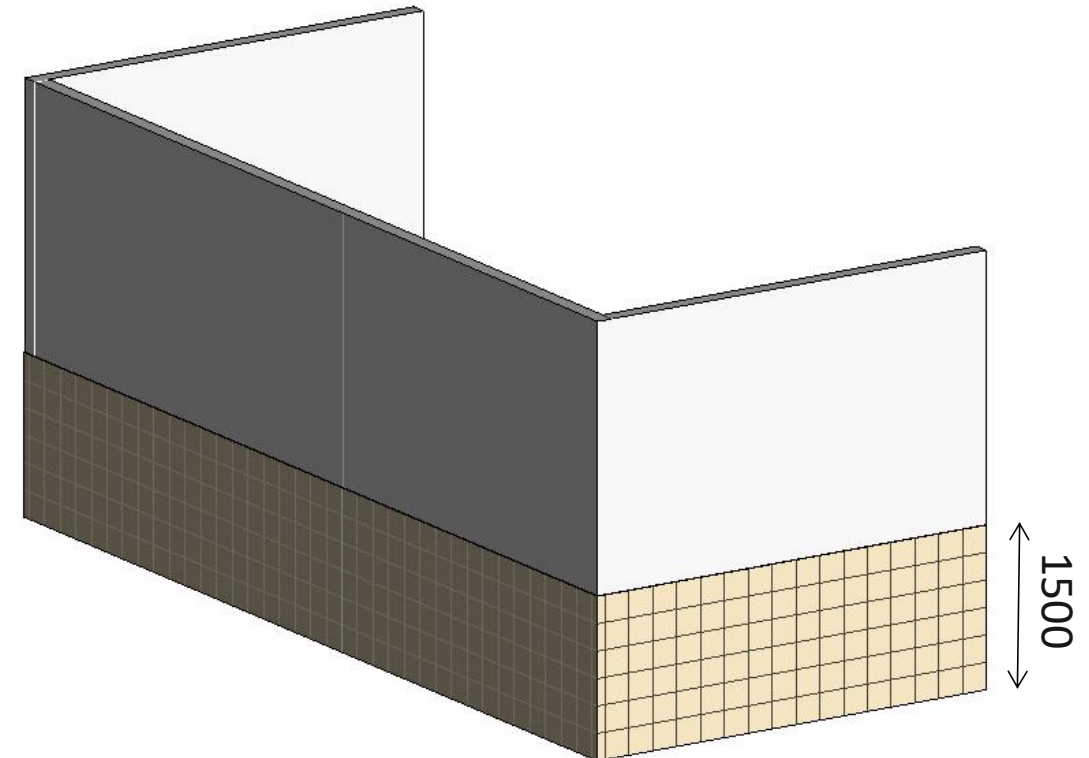
Type: Concrete Over Concrete w Tiles

Concrete 120mm with
15mm plaster both
sides

Concrete 120mm with
15mm plaster both
sides and one side tiles

Note:

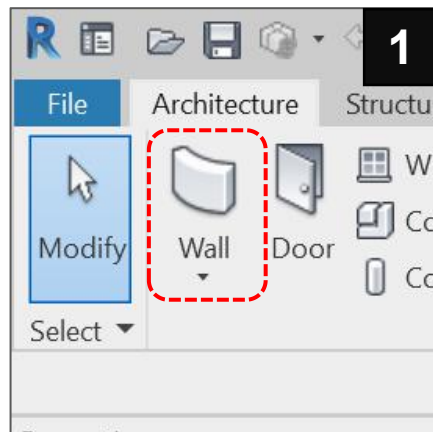
**This two Basic Wall
must be create before
combine as a Stacked
Wall. Refer creating
steps in Basic Wall
notes.**



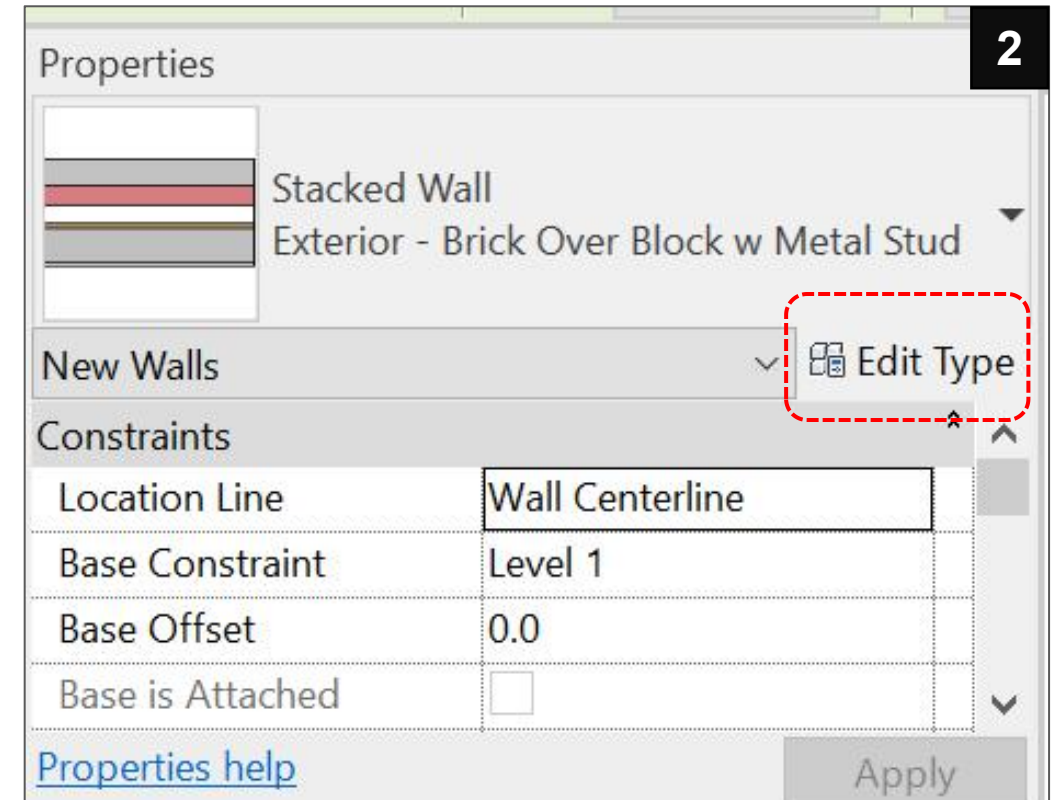
CREATING WALL - **Stacked Wall** (*Customize Type*)

Steps:

1. On the **Architecture** tab in the ribbon, click the **Wall** tool.

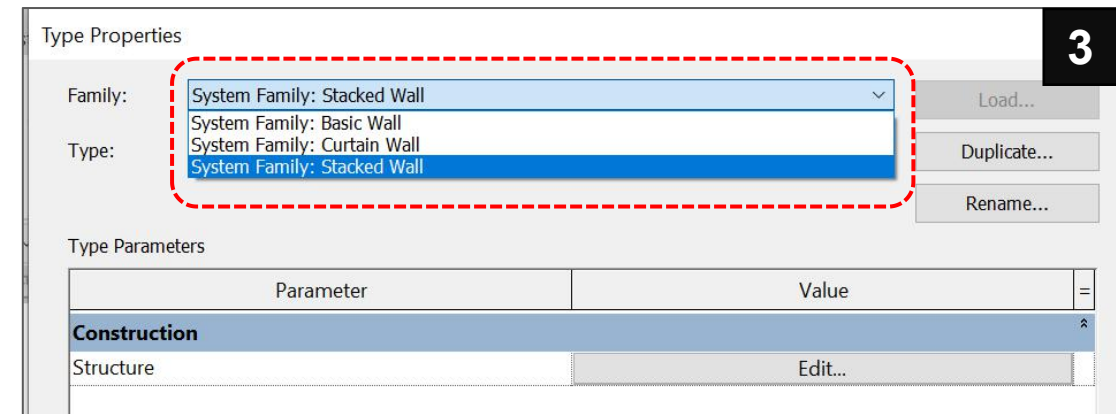


2. Then click **Edit Type** in Properties palette.



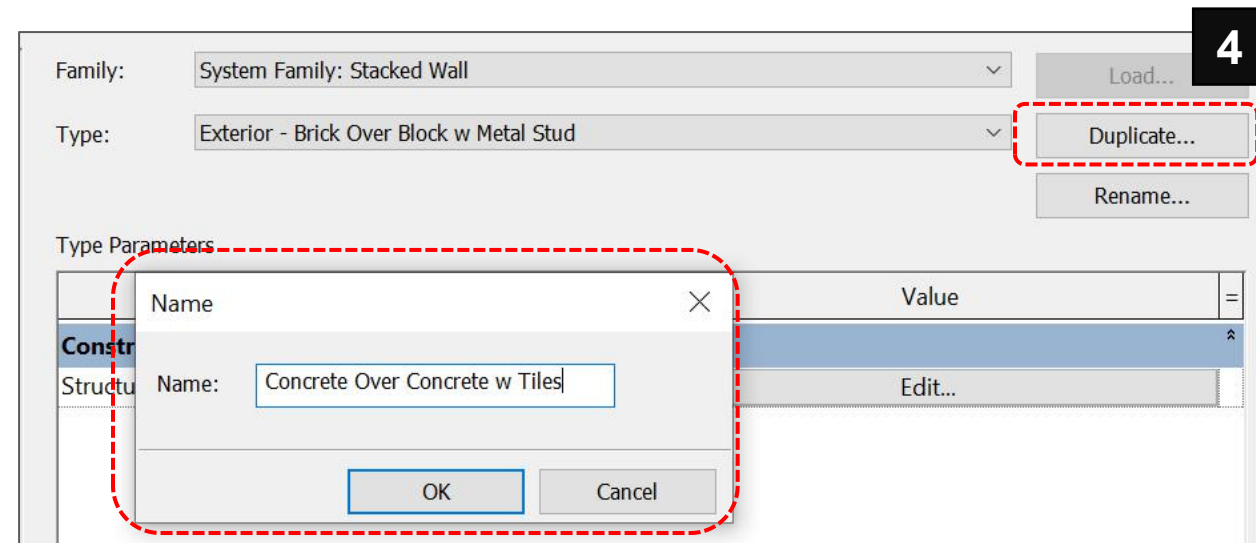
CREATING WALL - **Stacked Wall** (*Customize Type*)

3. Drop down **Family Type**, and click **System Family: Stacked Wall**.



4. Click **Duplicate** and **Name** it as **Concrete over Concrete w Tiles**.

Then click , **OK**.

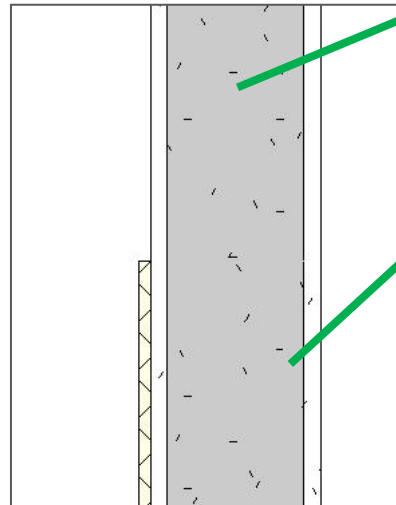


CREATING WALL - **Stacked Wall** *(Customize Type)*

5. On Structure parameter, click Edit.

Type Parameters	
Parameter	Value
Construction	
Structure	Edit...

6. Then, click and change **Type name** and **Height** as according to project need. Click **OK**.

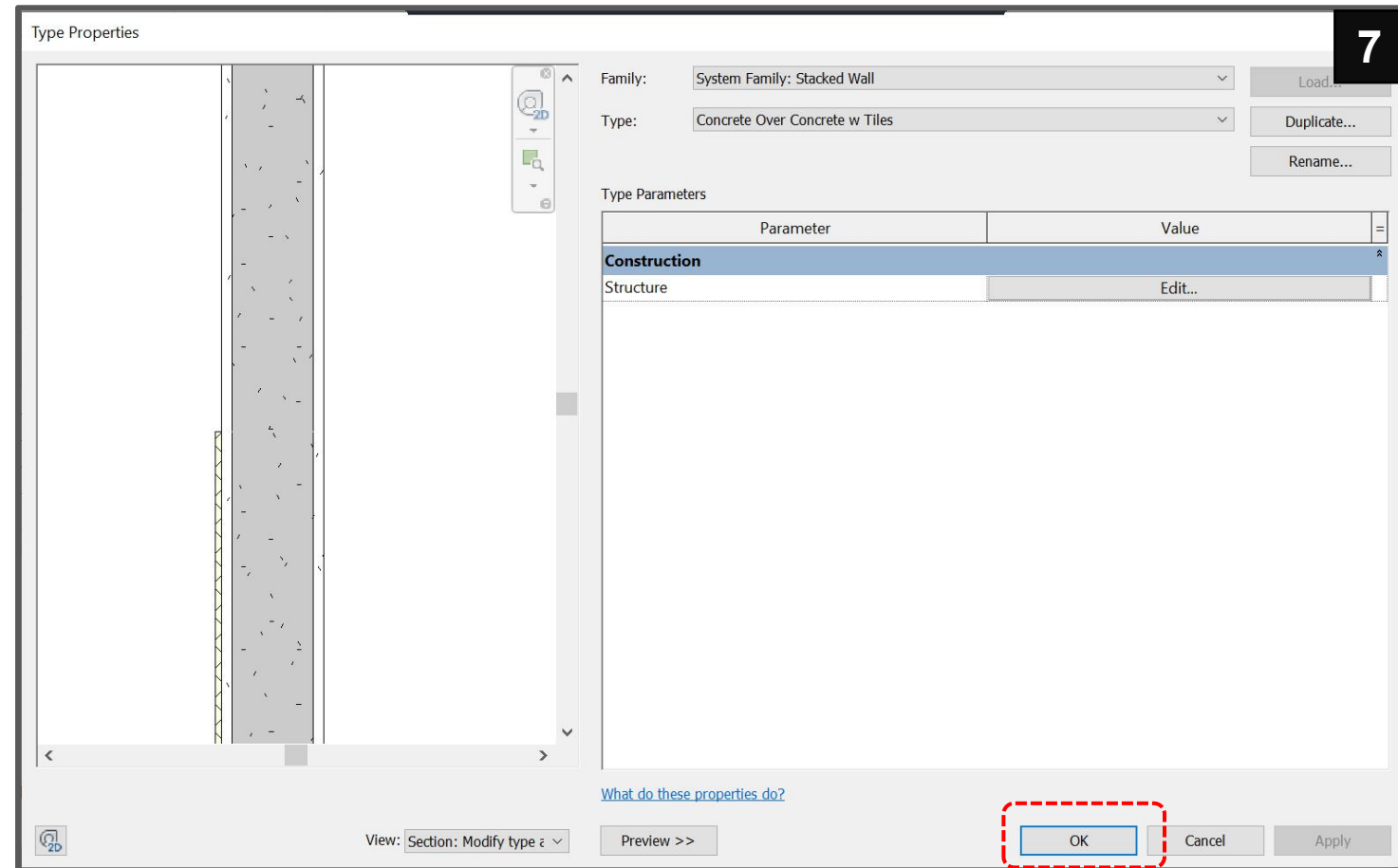


Types					
	Name	Height	Offset	Top	Base
1	Concrete Wall 150mm	Variable	0.0	0.0	0.0
2	Concrete Wall 150mm with Tiles	1500.0	0.0	0.0	0.0

CREATING WALL - **Stacked Wall** *(Customize Type)*

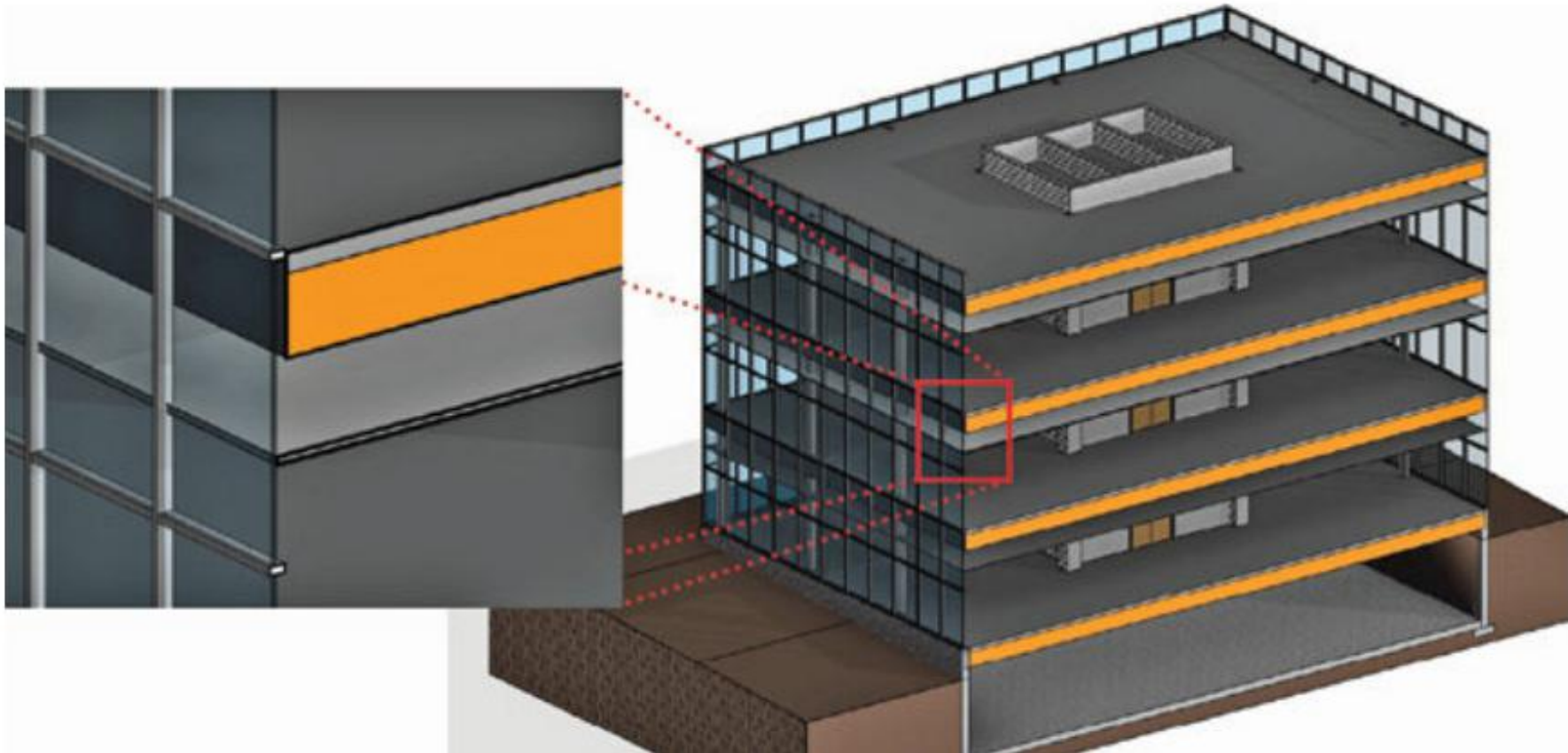
7. After that, on **Type Properties**, click **OK**.

8. New Type Stacked Wall
ready to use.



FLOORS

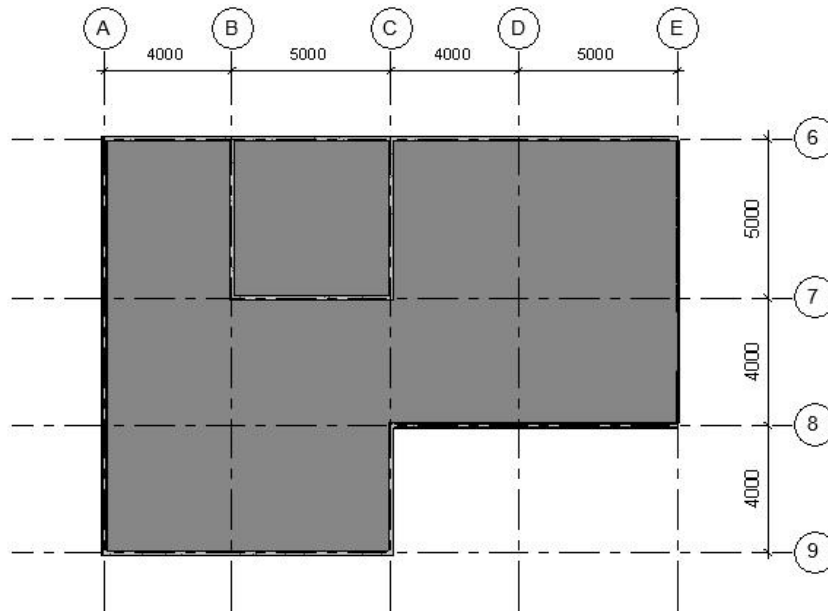
(EXISTING / CUSTOMIZE)



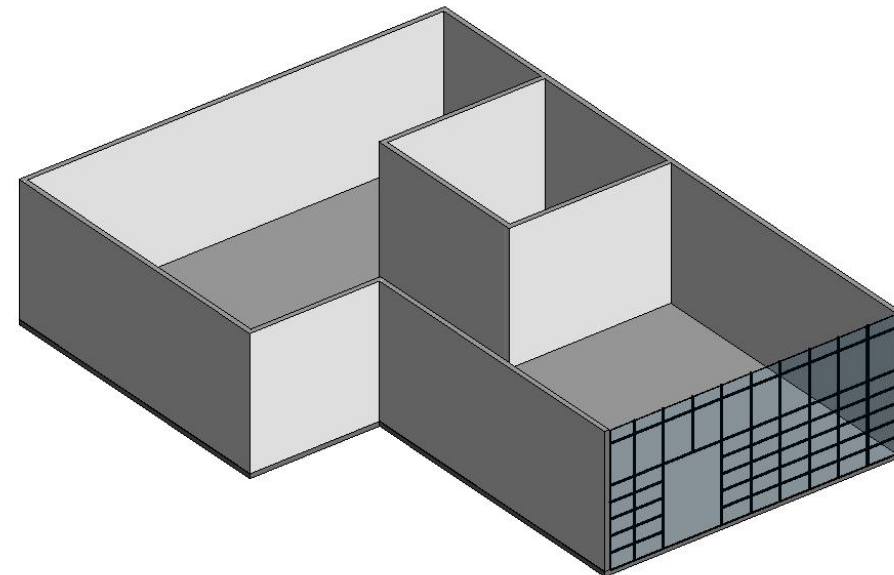
CREATING FLOOR *(Using Existing Type)*

EXAMPLE 1:

Create **Architecture Floor** for area show using existing floor type. **Eg. Floor Generic-300mm**



Plan View

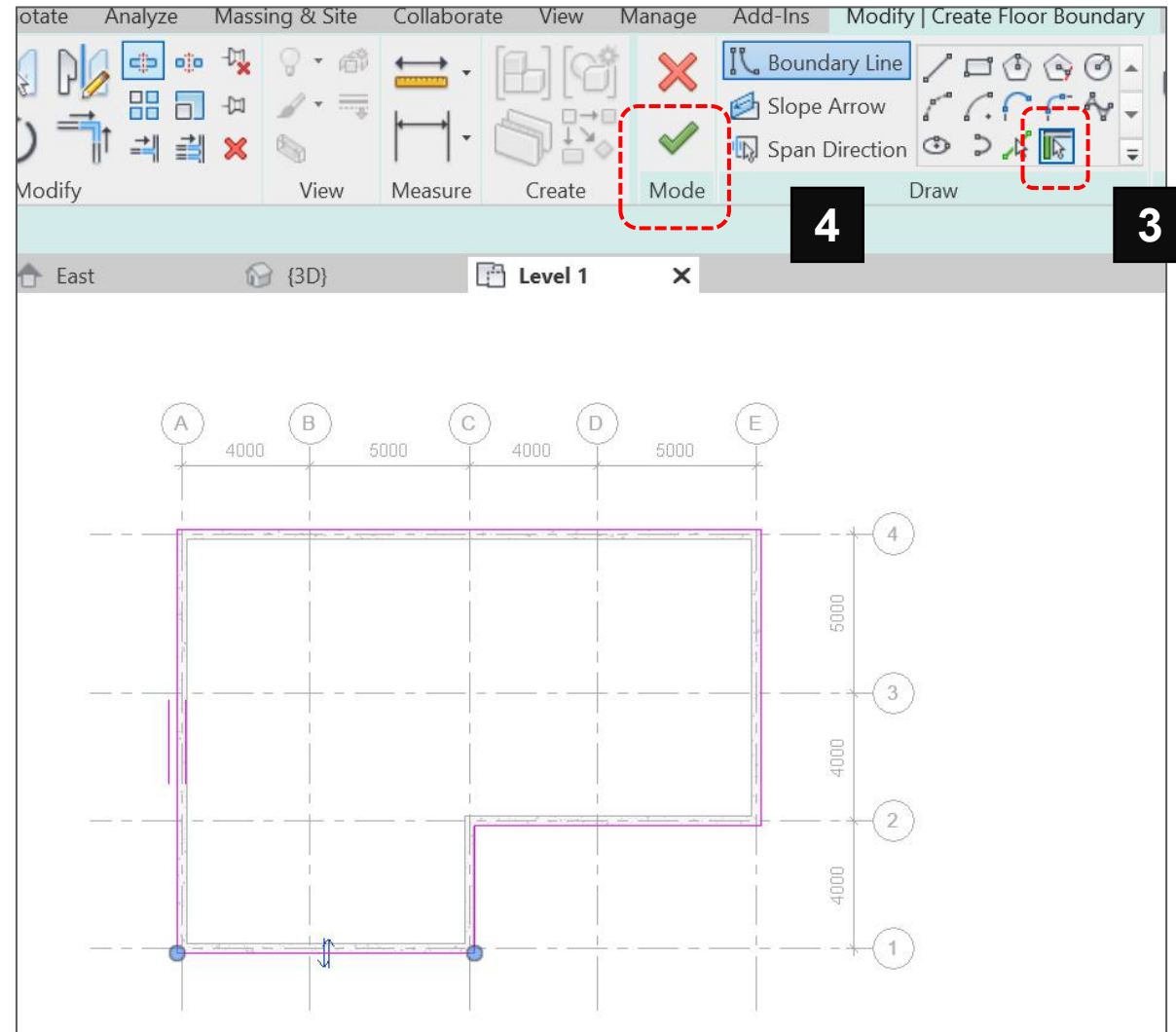
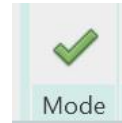


3D View *(Shaded Visual Style)*

CREATING FLOOR *(Using Existing Type)*

3. Draw the boundary using **Pick Wall Tools**. Make sure that all of the boundary lines are in closed loop.

4. Then **click Finish Edit Mode**.

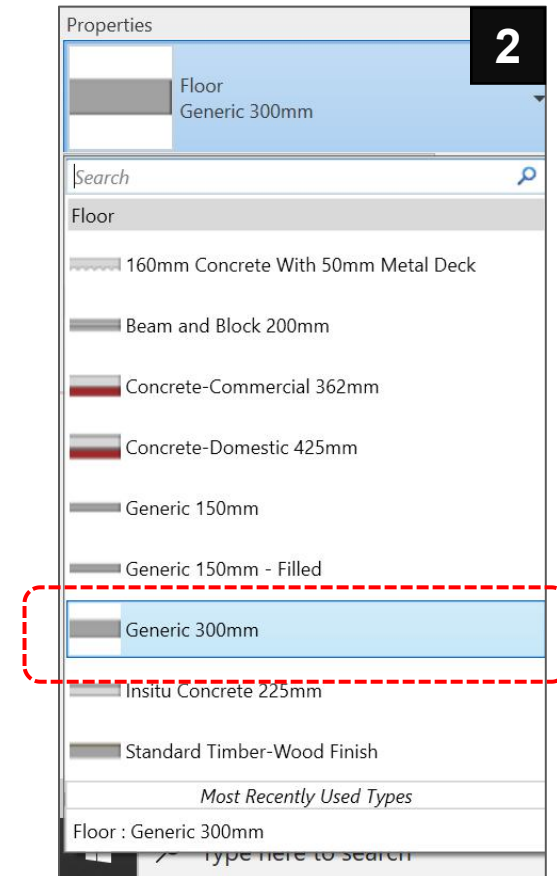
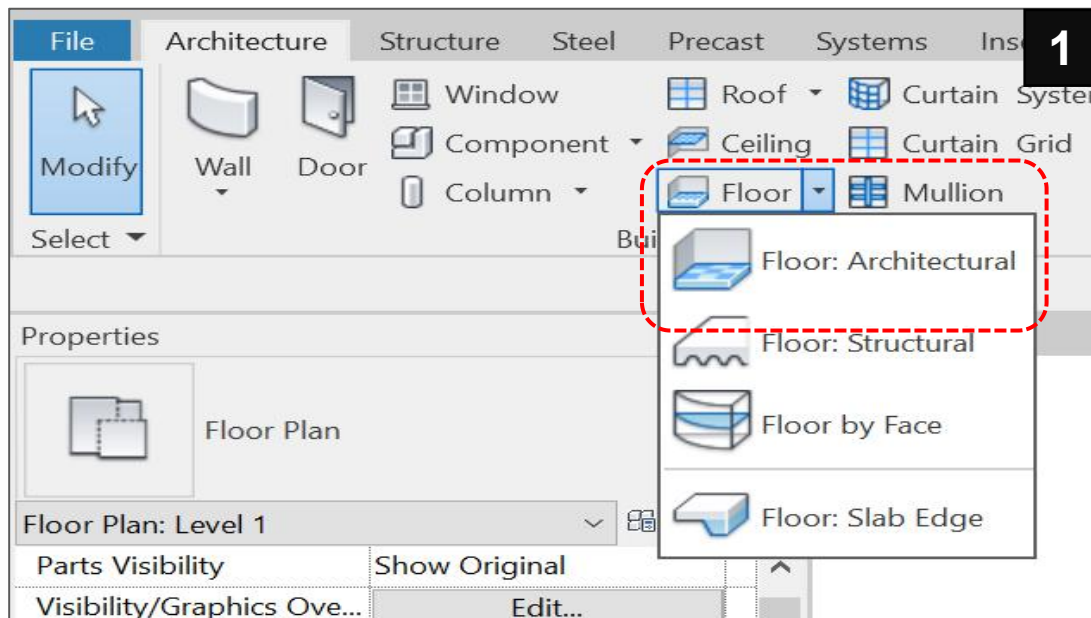


CREATING FLOOR *(Using Existing Type)*

STEPS:

1. On the **Architecture** Tab, click Floor and select **Architecture Floor**.

2. In **Type Selector** at the top of the **Properties palette**, select **Floor Generic 300mm**.

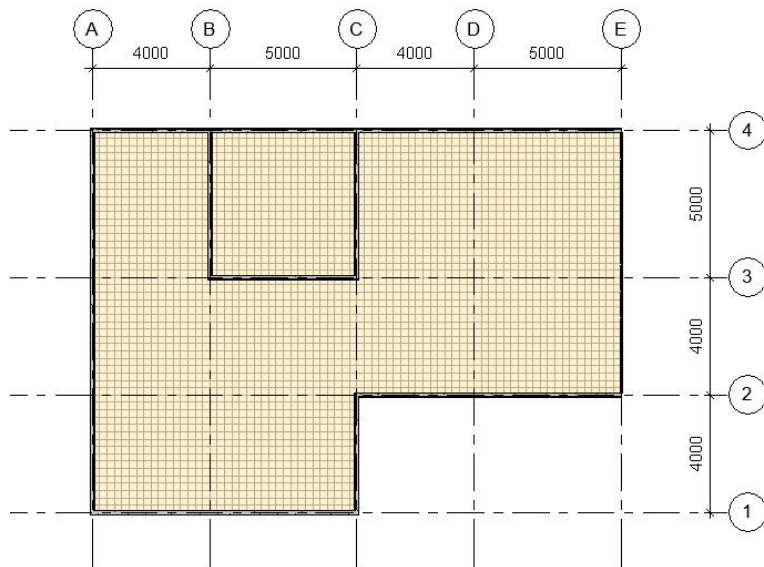


CREATING FLOOR *(Customize Type)*

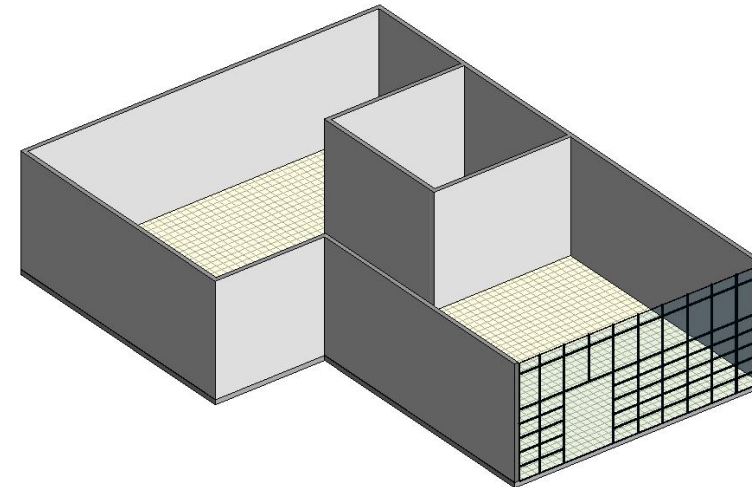
Note: Similar to the wall modelling, floor component can be change or added to create new type.

EXAMPLE 2:

Change floor in Example 1 to new Floor component type. Eg. Floor - 150mm Concrete Slab with 30mm Plaster and Ceramic Tile.



Plan View

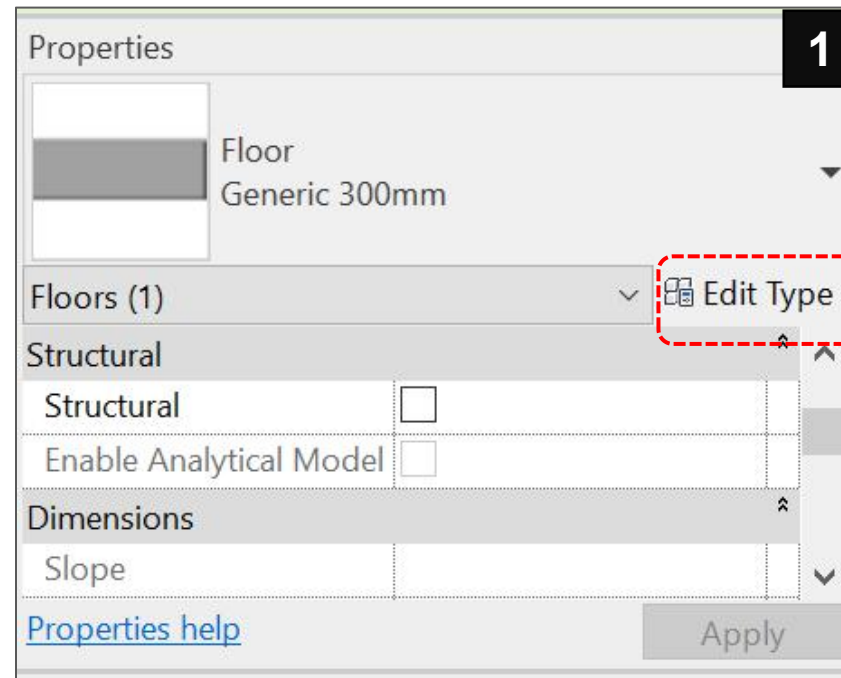


3D View *(Shaded Visual Style)*

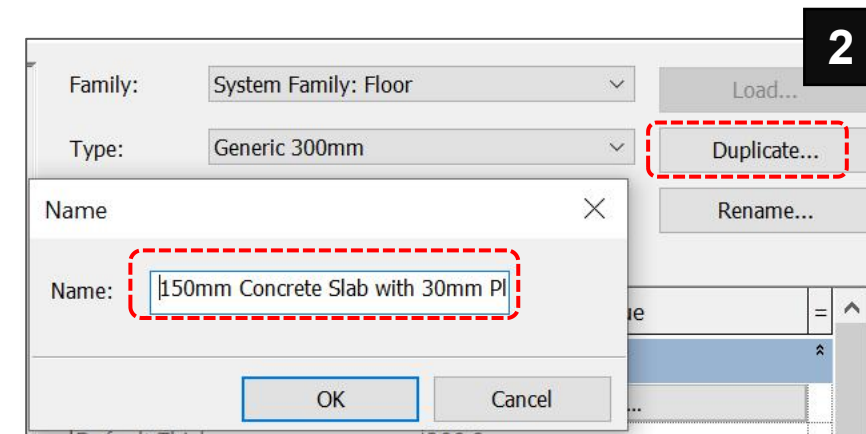
CREATING FLOOR *(Customize Type)*

STEPS:

1. Select floor was created in **Example 1**, then click **Edit Type** in **Properties Palette**.



2. Click **Duplicate** and **Name** it as **150mm Concrete Slab with 30mm Plaster and Ceramic Tile**. Then click, **OK**.



CREATING FLOOR *(Customize Type)*

3. At **Structure Parameter** click **Edit**.

Family: System Family: Floor Load... **3**

Type: 150mm Concrete Slab with 30mm Plaste Duplicate...

Rename...

Type Parameters

Parameter	Value	=	^
Construction			
Structure		Edit...	
Default Thickness	300.0		

4. Click **Insert** and enter the information as shown in Edit Assembly dialog box and click **OK**.

5. Then , click **Apply** and **OK**.

Edit Assembly **4**

Family: Floor

Type: 150mm Concrete Slab with 30mm Plaster and Ceramic tile.

Total thickness: 180.0 (Default)

Resistance (R): 0.1825 (m²·K)/W

Thermal Mass: 24.35 kJ/K

Layers

	Function	Material	Thickness	Wraps	Structural Material	Variable
1	Finish 1 [4]	Ceramic Tile	10.0	☐	☐	☐
2	Substrate [2]	Gypsum Wall Board	20.0	☐	☐	☐
3	Core Boundary	Layers Above Wrap	0.0			
4	Structure [1]	Concrete, Cast In Situ	150.0	☐	☒	☐
5	Core Boundary	Layers Below Wrap	0.0			

Insert Delete Up Down

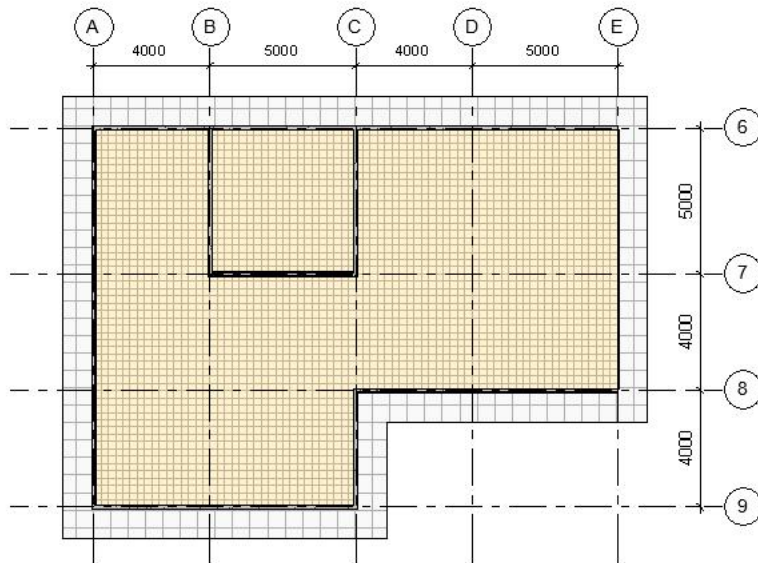
<< Preview OK Cancel Help

CREATING FLOOR *(Customize Type)*

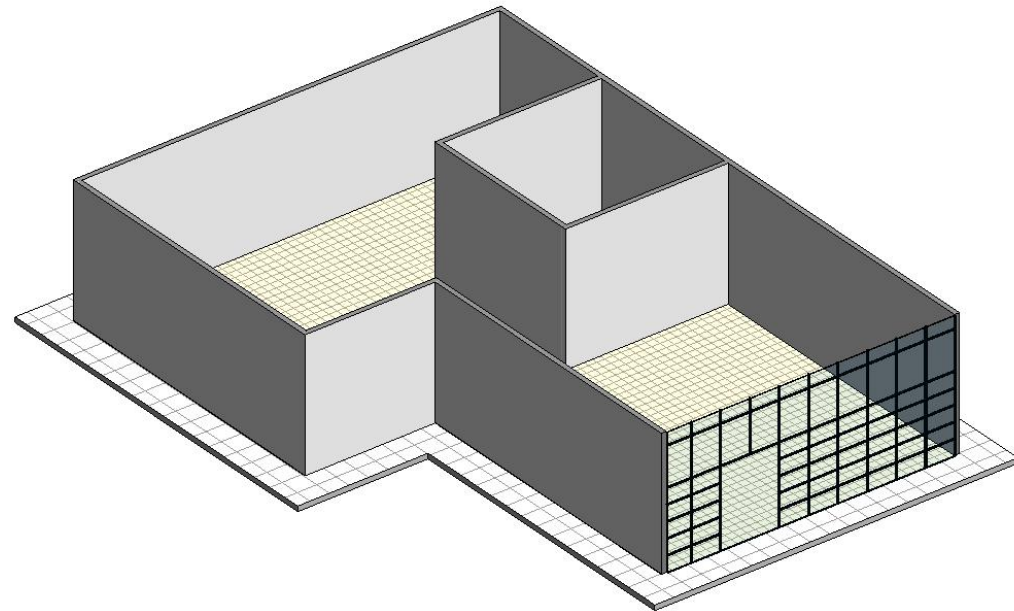
This example shows steps to create floor for **Apron / Balcony Slab / Cantilever Slab**

EXAMPLE 3:

Create Apron as shown in figure. Eg. Floor - 130mm Concrete Slab with 30mm Plaster and 600 x 600 Tile. Drop -100mm. Apron offset is 800mm.



Plan View

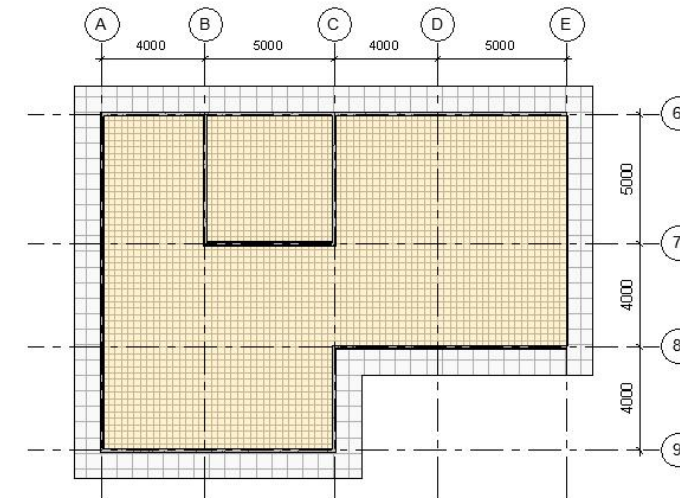
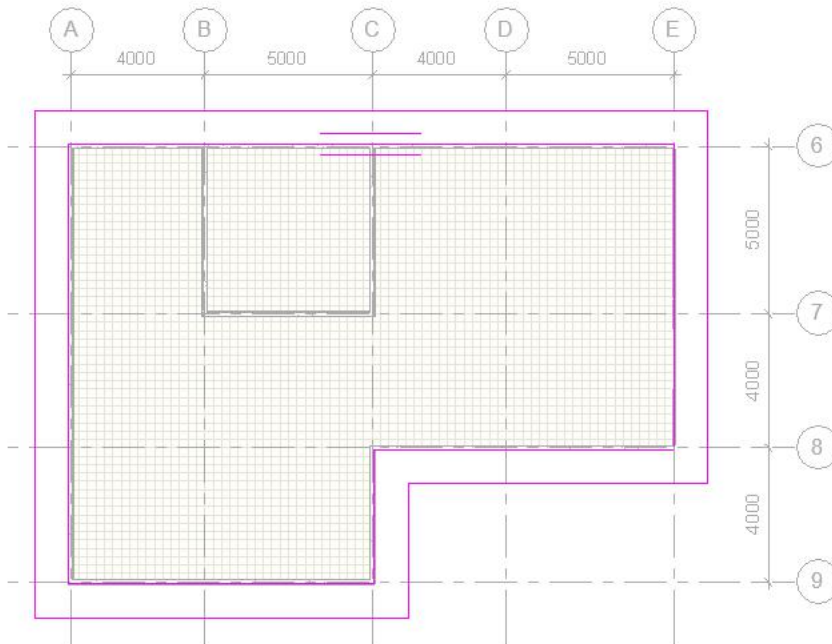


3D View *(Shaded Visual Style)*

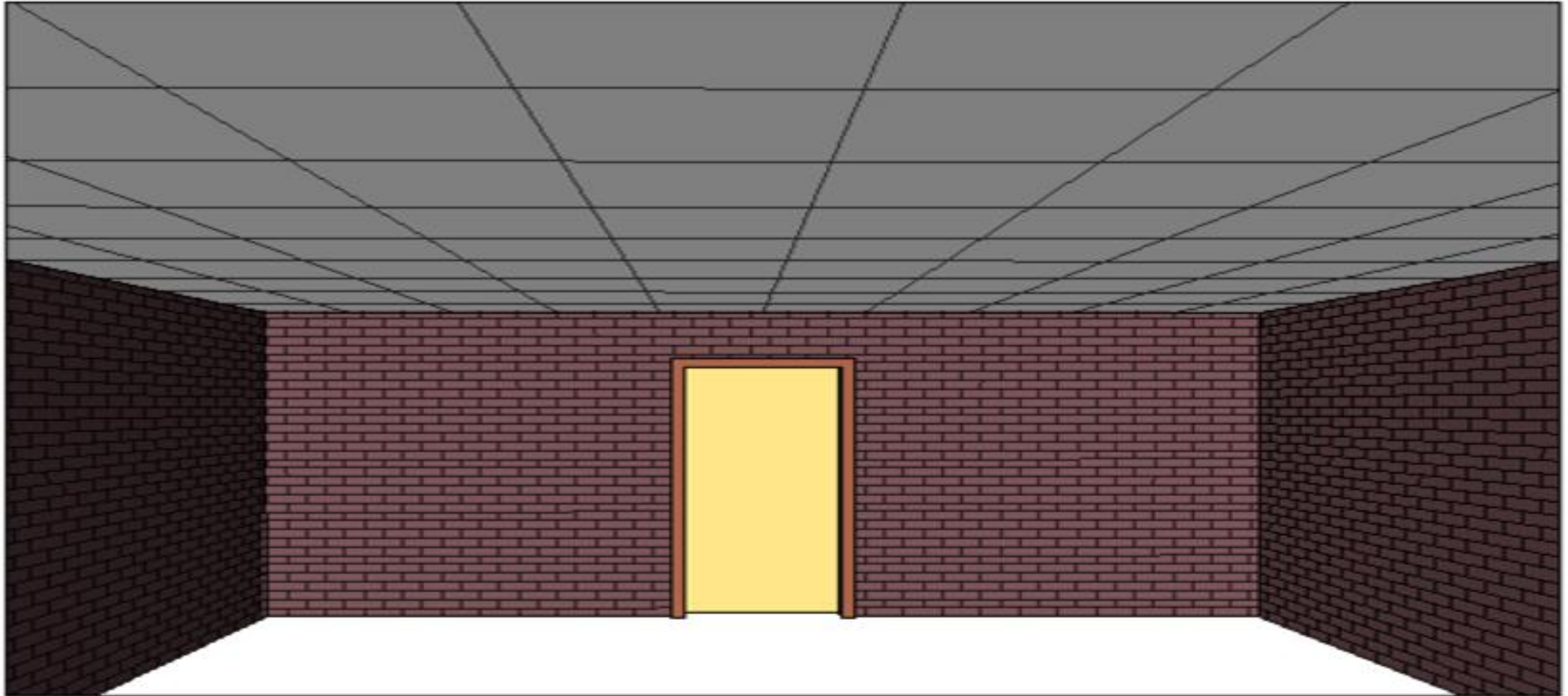
CREATING FLOOR *(Customize Type)*

STEPS:

1. Select floor was created in **Example 1**, then click **Edit Type** in **Properties Palette**. Duplicate new type regarding to information given.
2. Draw the boundary using **Pick Wall** and **Pick Line** Tools. Make sure that all of the boundary lines are in closed loop as shown in figure.
3. Then **click Finish Edit Mode**.
4. Figure shows resulting of **Apron**.



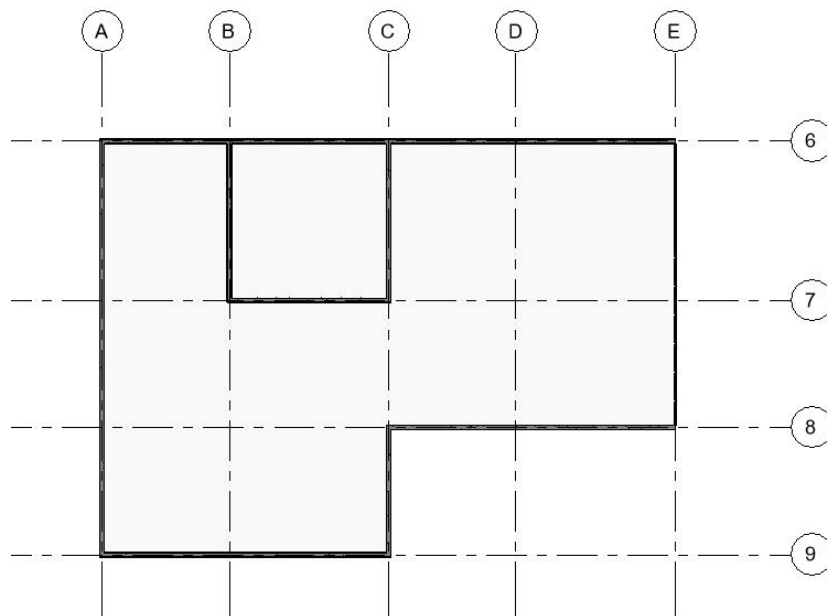
CEILINGS



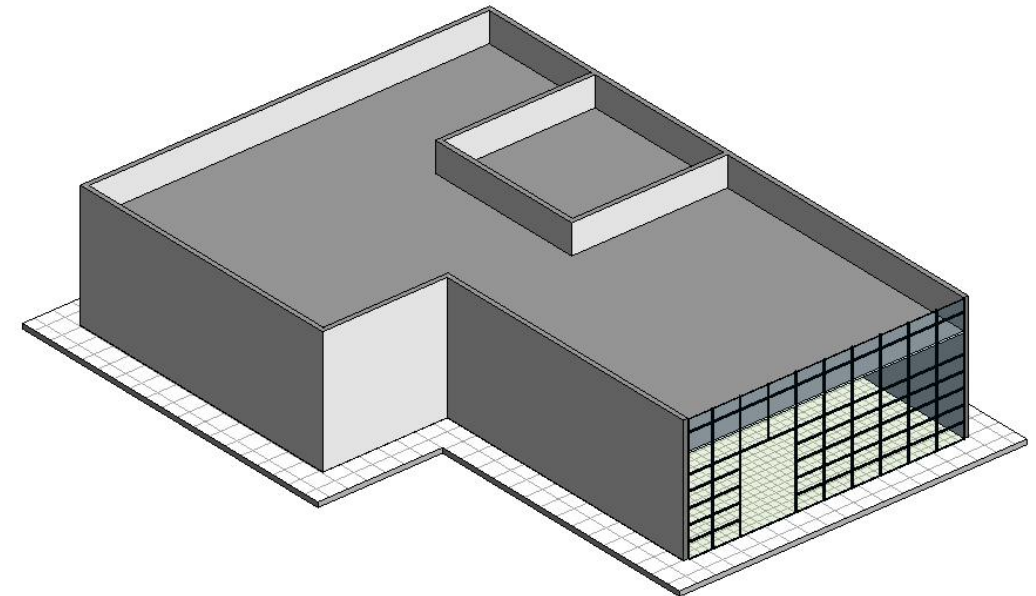
CREATING CEILING

EXAMPLE 1:

Create ceiling for shown building plan. **Eg. Compound Ceiling - Plain (Height Offset From Level is 3000mm)**



Plan View

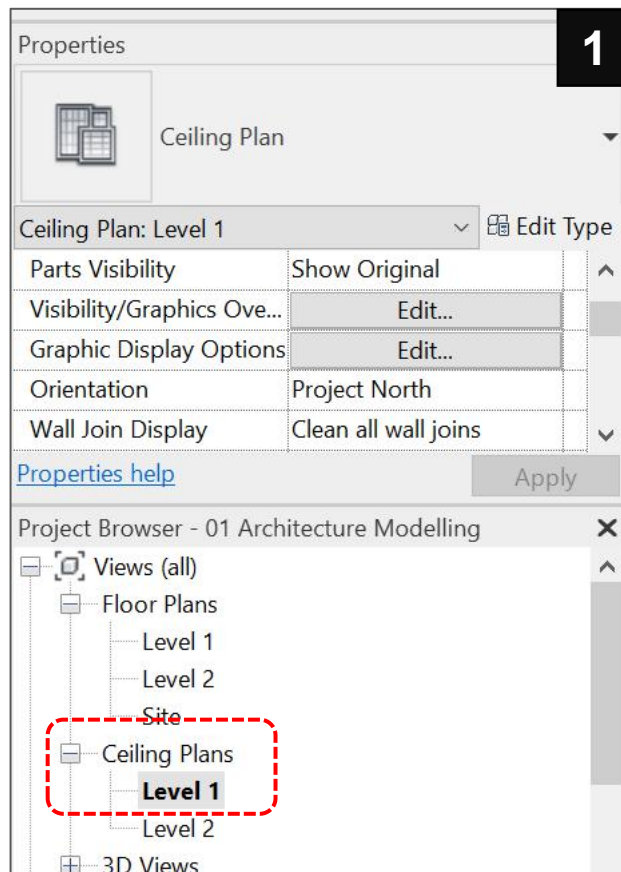


3D View (*Shaded Visual Style*)

CREATING CEILING

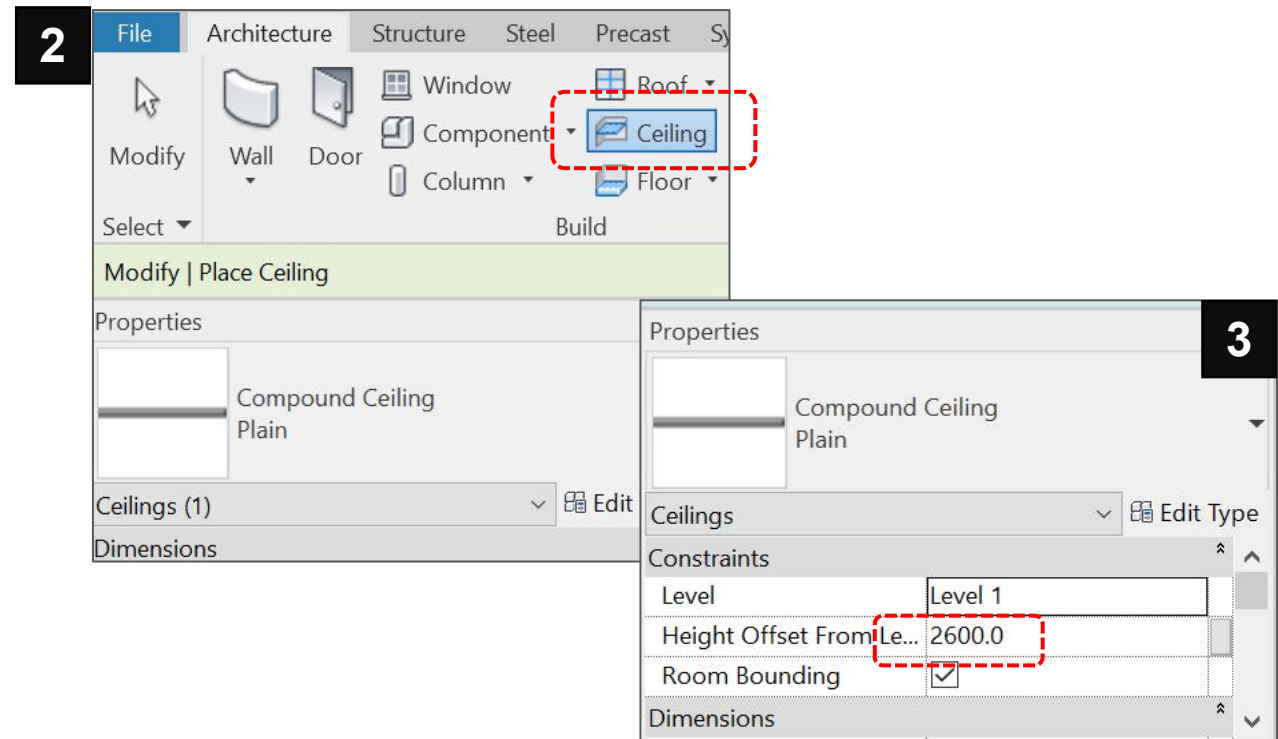
STEPS:

1. Open a ceiling plan view.



2. On the **Architecture** Tab, click **Ceiling** and use default Ceiling Type in Properties Palette - **Plain Compound Ceiling**

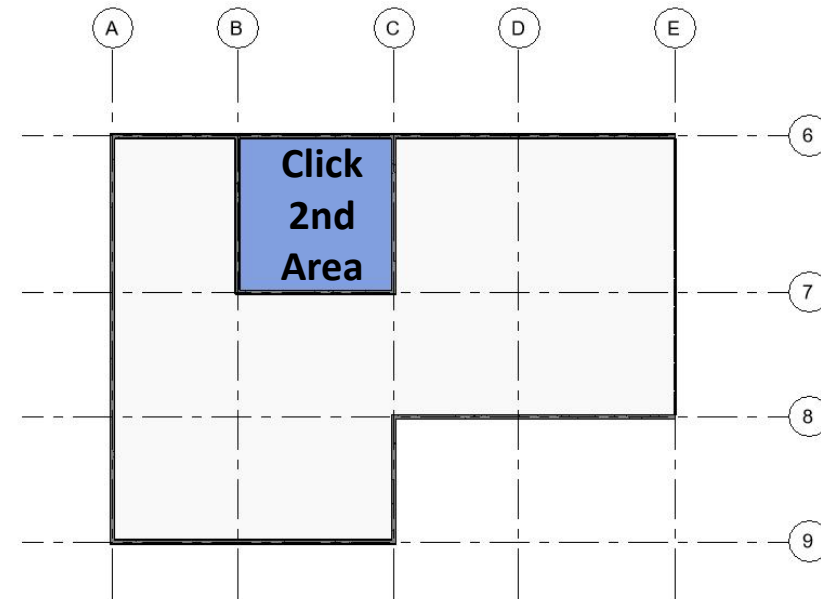
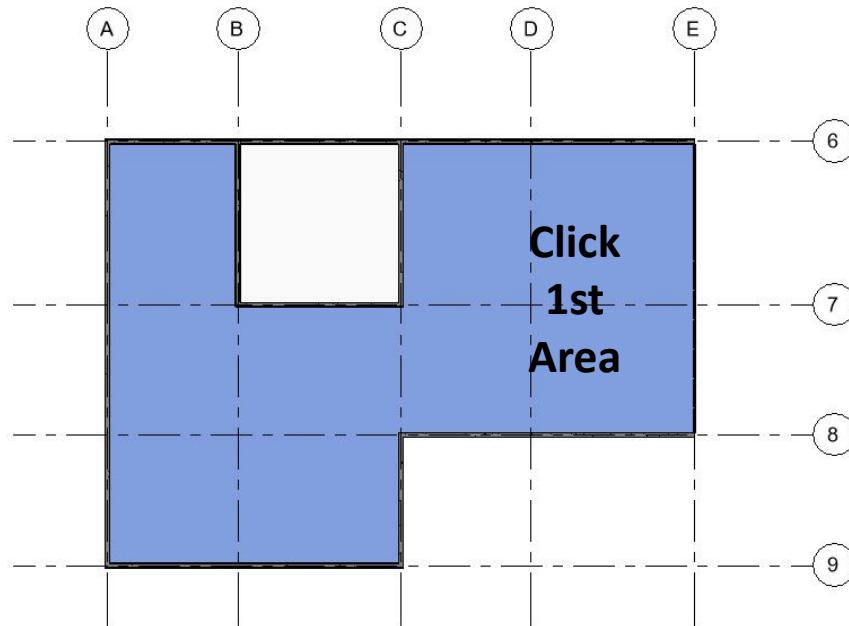
3. Ensure **Height Offset From Level** equal to **2600**



CREATING CEILING

4. Sketch Ceiling Methods:

- **Automatic Ceiling** (Default Active Tool)
- **Sketch Ceiling** (Use walls as ceiling boundaries) **Note: Method such as create floor.**

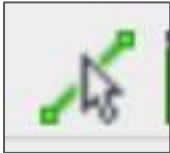


Automatic Ceiling Placing

CREATING CEILING

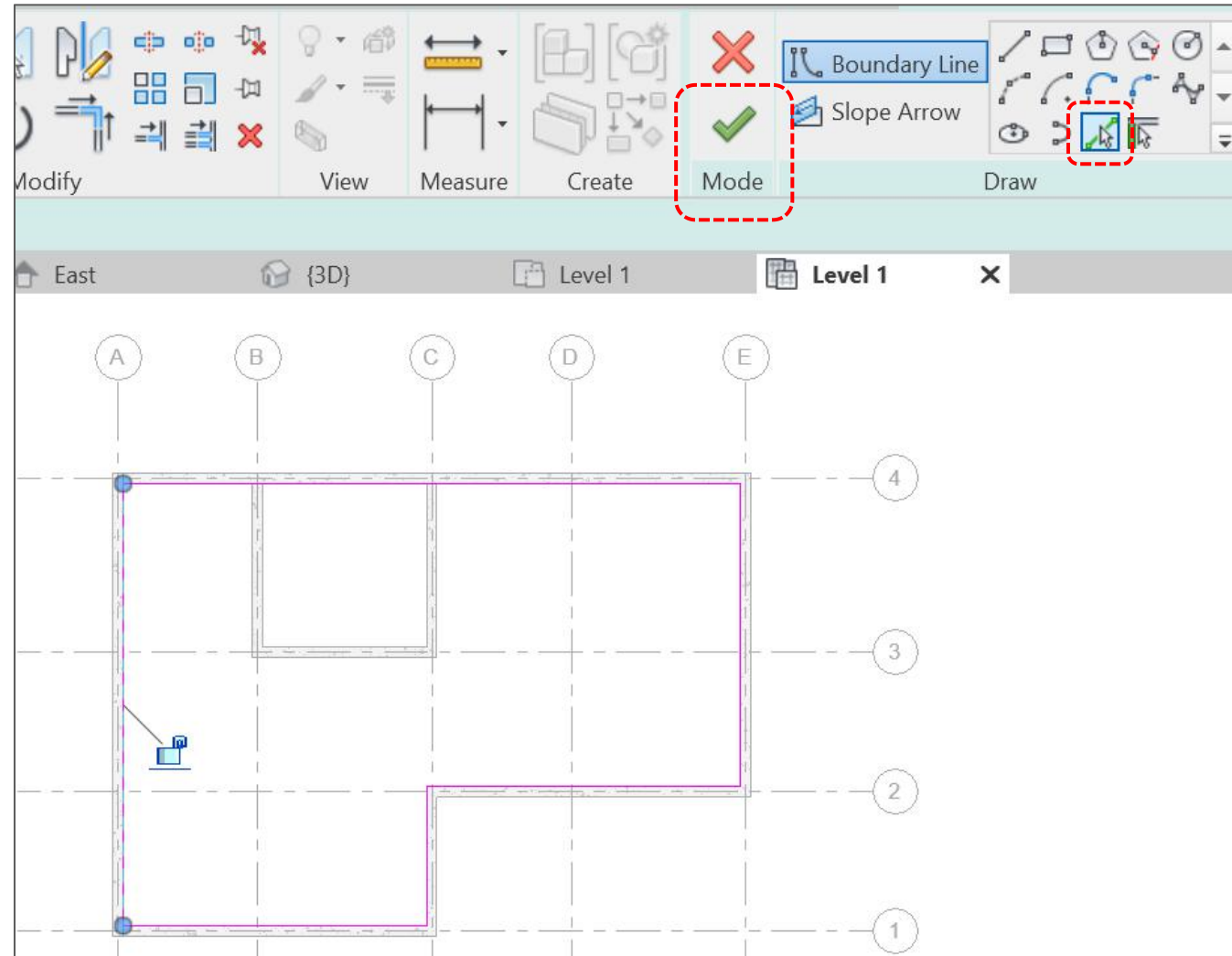
5. By Sketch Ceiling:

- Click **Pick Line Tool**,



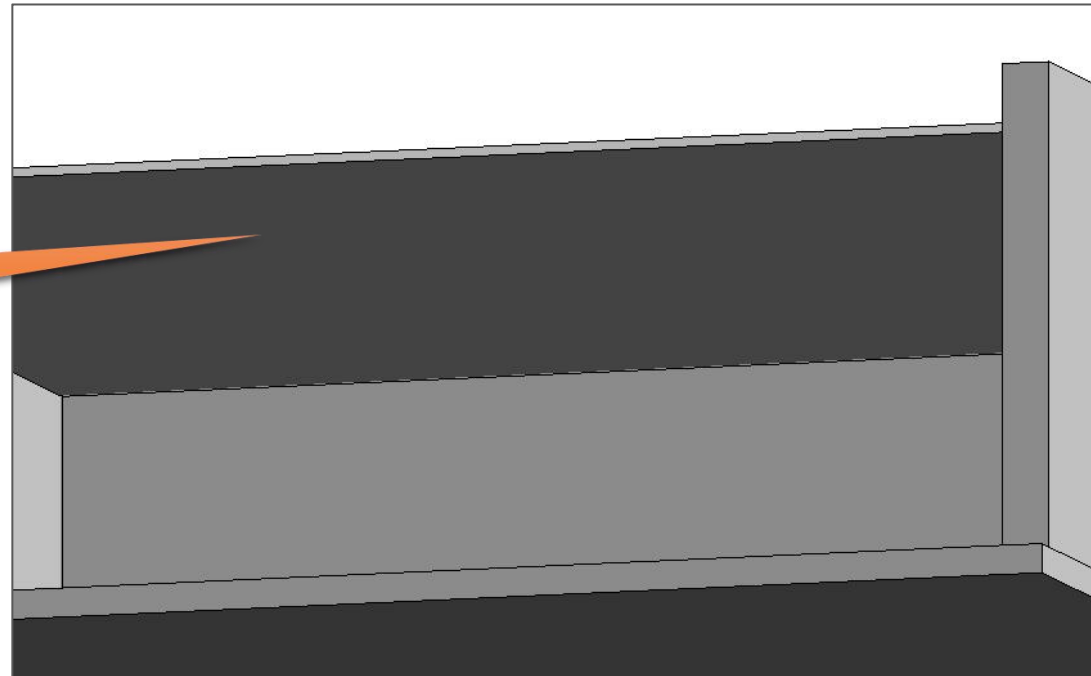
then pick inside wall lines as a boundary.

- Then **click Finish Edit Mode**.



CREATING CEILING

Ceiling
Inside View



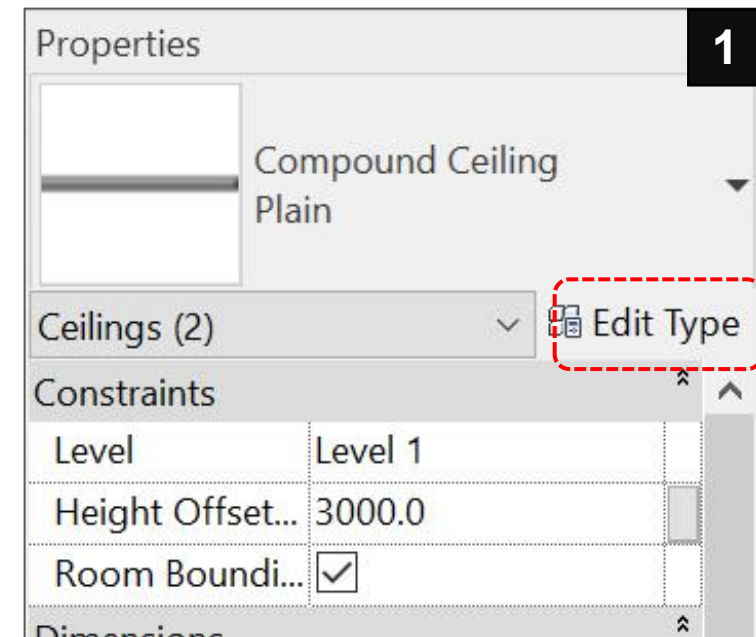
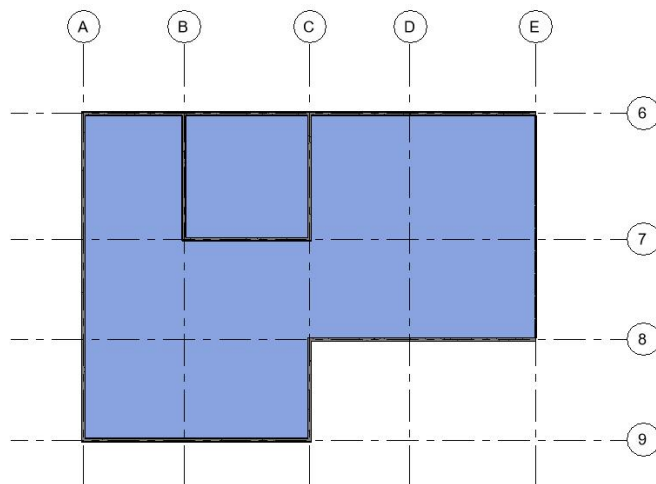
CREATING CEILING

EXAMPLE 2:

Based on plan in **Example 1**, change ceiling **Type** to **Grid System**. Eg. **Compound Ceiling - 600 x 600mm Grid** (Height Offset From Level is 3000mm)

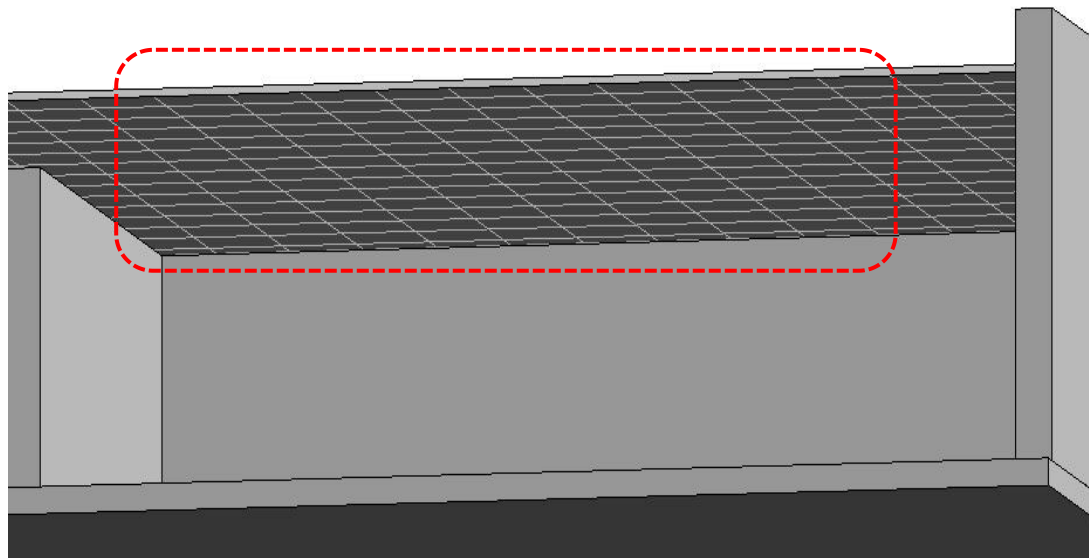
STEPS:

1. Select Ceiling was created in **Example 1**, then click **Edit Type** in **Properties Palette**.



CREATING CEILING

- Drop down ceiling **Type** in Type Properties dialog box and select **600 x 600 Grid**. Then, Click **OK**.
- Inside Ceiling view as shown in below figure.



2

Type Properties

Family: System Family: Compound Ceiling Load...

Type: Plain 600 x 600mm Grid 600 x 1200mm Grid Plain Duplicate... Rename...

Type Parameters

Parameter	Value
Construction	
Structure	Edit...
Thickness	57.0
Graphics	
Coarse Scale Fill Pattern	
Coarse Scale Fill Color	Black
Analytical Properties	
Heat Transfer Coefficient (U)	0.5499 W/(m ² ·K)
Thermal Resistance (R)	1.8185 (m ² ·K)/W
Thermal Mass	1.04 kJ/K
Absorptance	0.700000
Roughness	3
Identity Data	
Type Image	
Keynote	
Model	

[What do these properties do?](#)

<< Preview OK Cancel Apply

ROOFS



Roofs are similar to floors and ceilings because they are sketch-based elements and can be defined in generic types or with specific material assemblies. Roofs can be constructed in 4 different ways, but in this module specifically describe about 2 ways which are:

- By footprint
- By extrusion

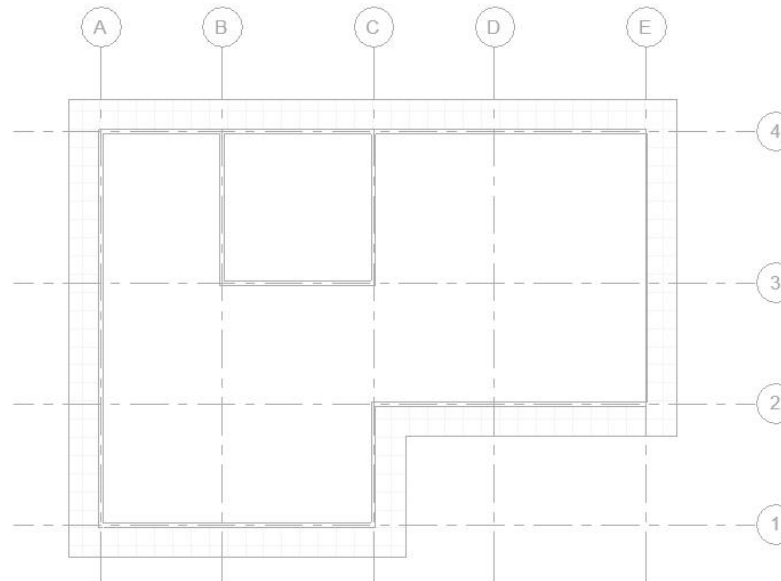
CREATING ROOFS

1. Roof by Footprint

Create any standard roof that more or less follows the shape of the footprint of the building and is a simple combination of roof pitches.

EXAMPLE 1:

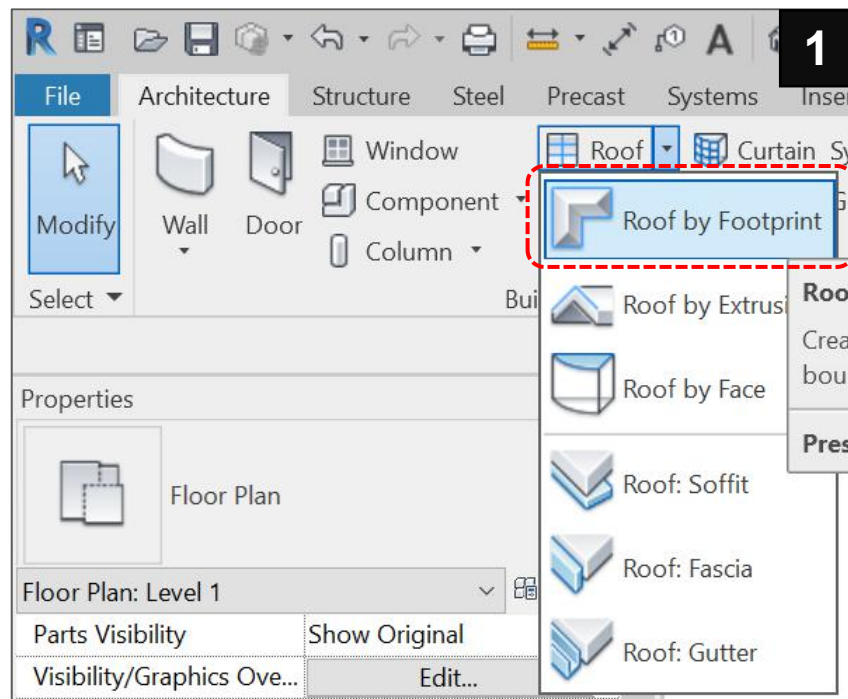
Create roof by footprint for shown building plan. **Eg. Basic Roof - Generic 125mm (Structural Material: Roof Tile)**



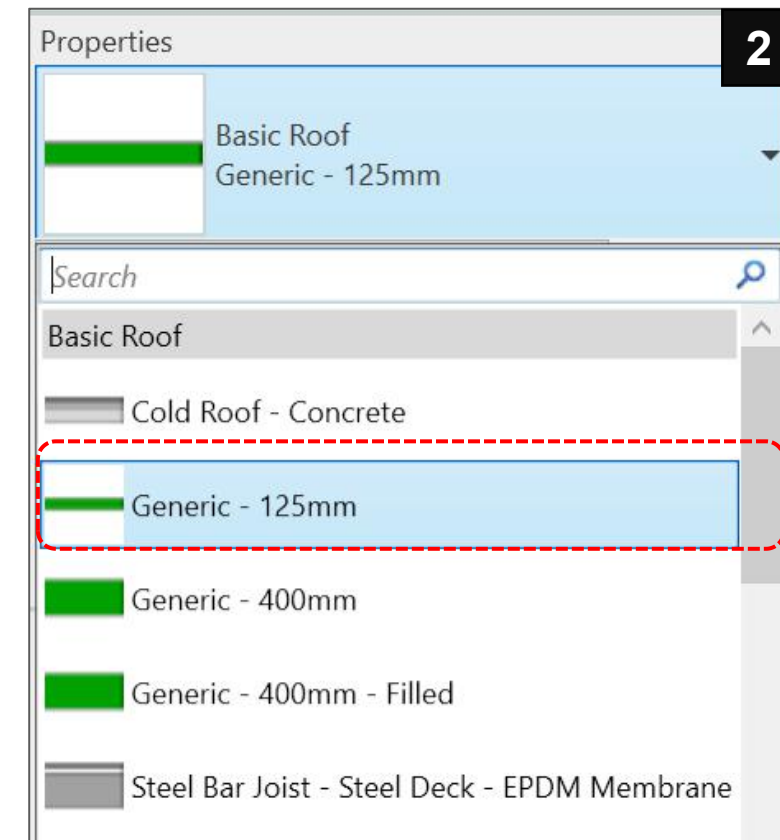
CREATING ROOFS

STEPS:

1. Select the **Architecture** tab in the ribbon and click **Roof - Roof By Footprint**.

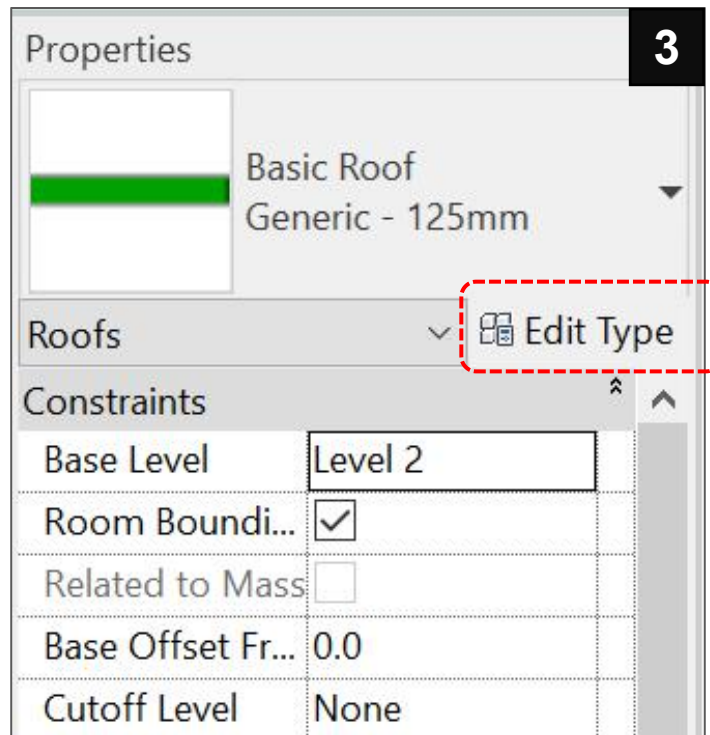


2. Select **Roof Type** from **Properties Palette**.

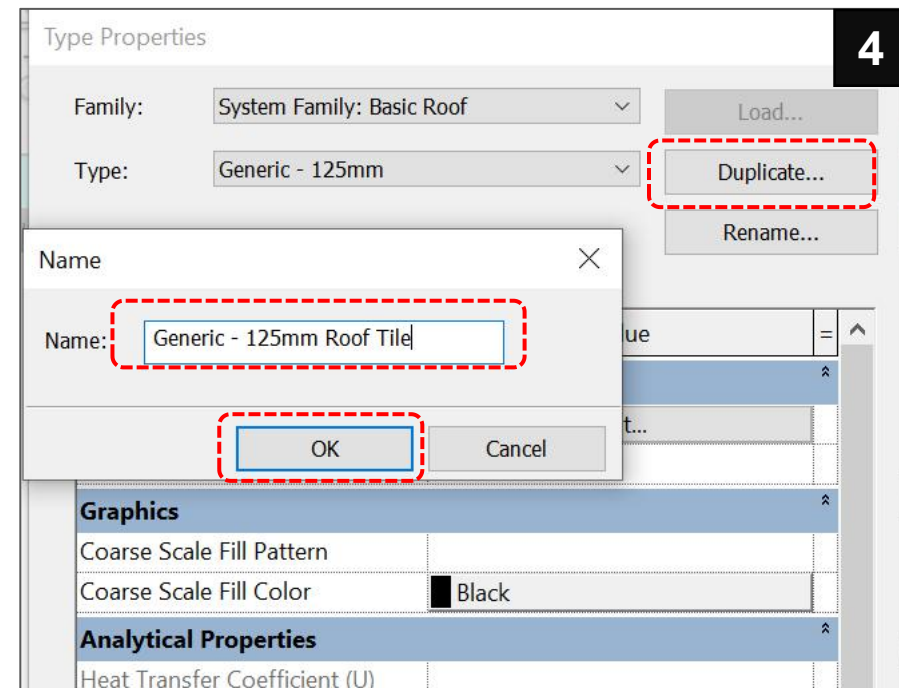


CREATING ROOFS

3. Then click **Edit Type** in Properties palette.

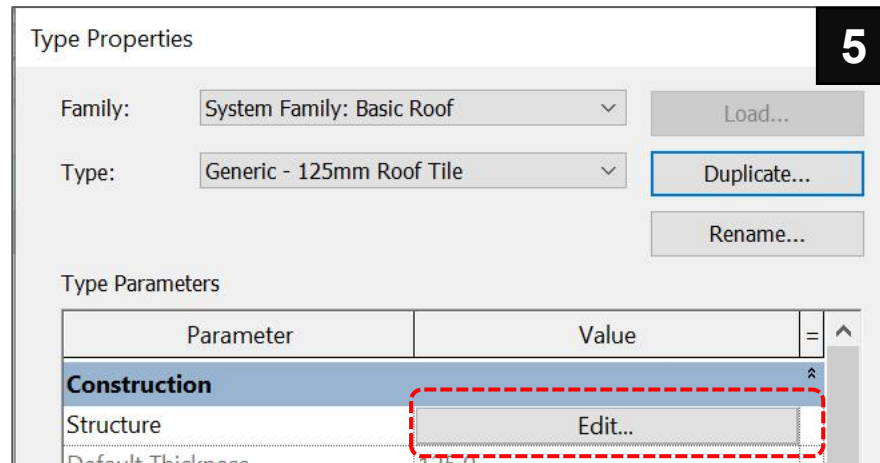


4. Crick **Duplicate** and **Name** it as **Generic - 12mm Roof Tile.**
Tile. Then click , **OK.**

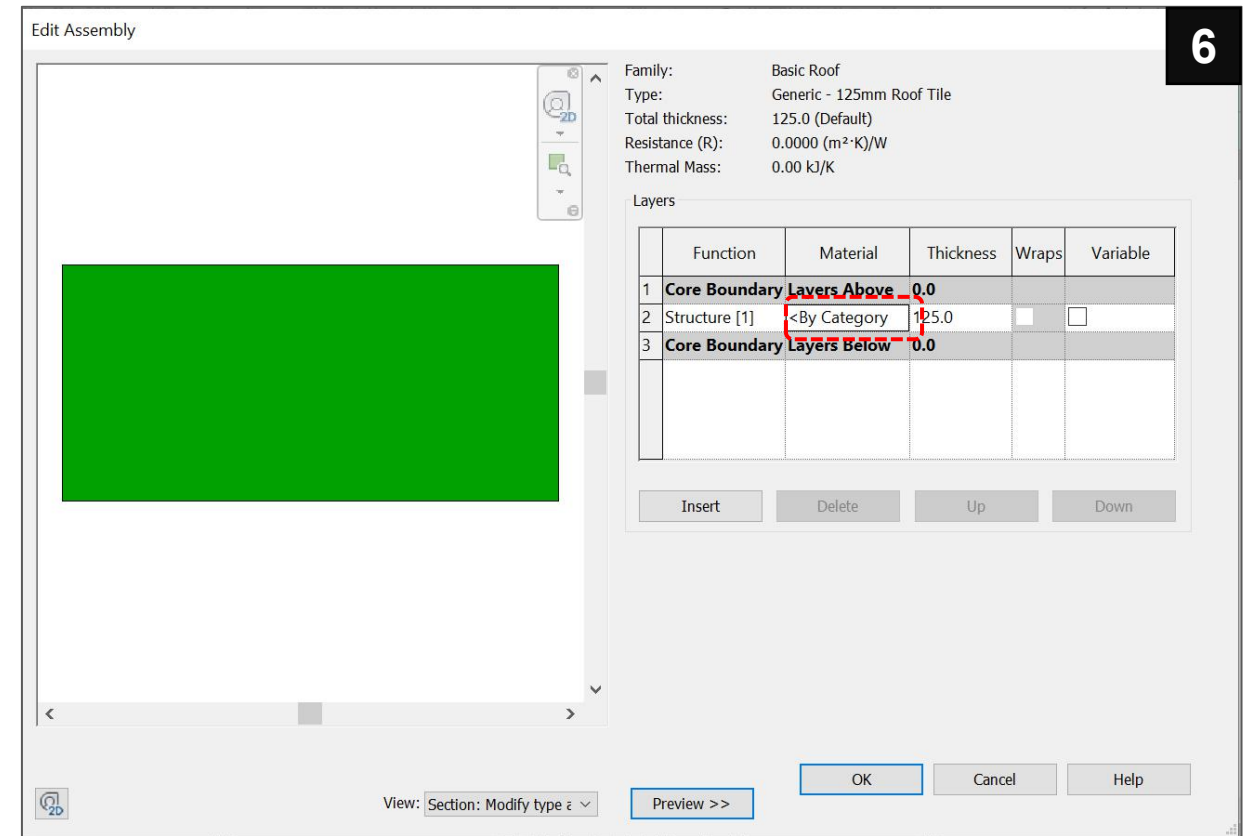


CREATING ROOFS

5. At **Structure Parameter** click **Edit**.



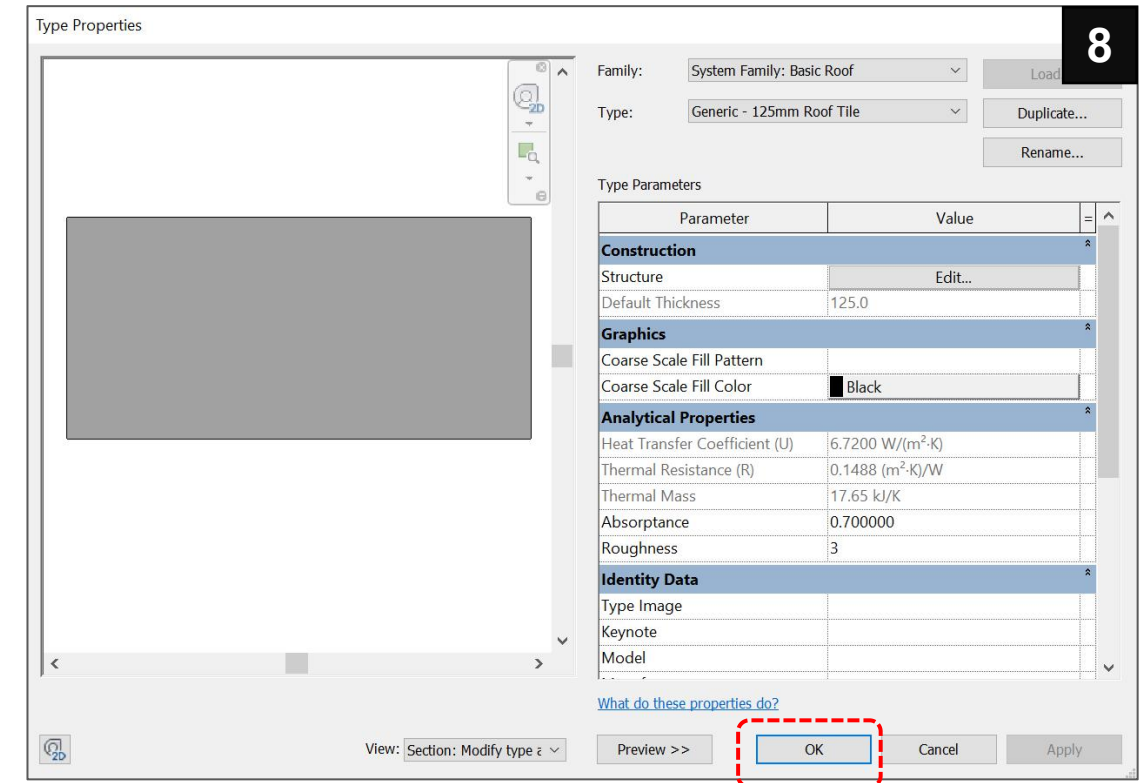
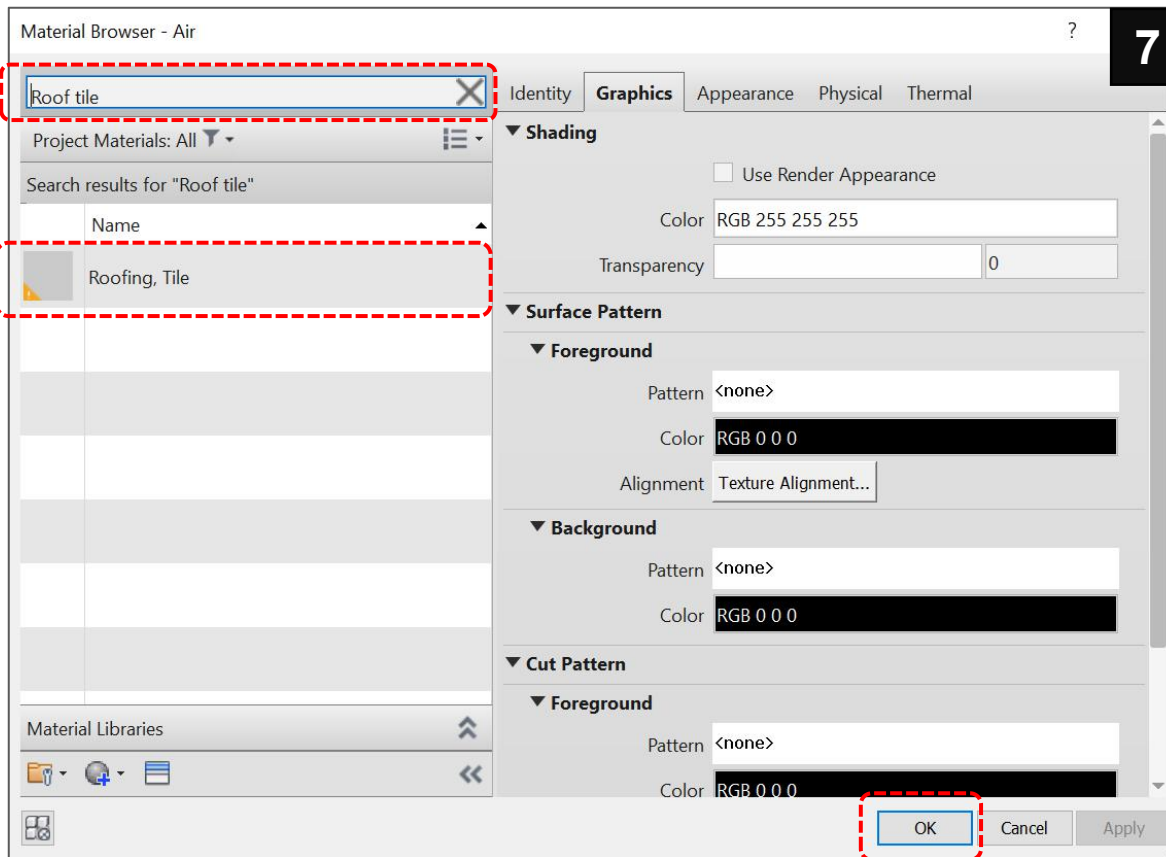
6. Click **By Category** to change material type to **Roof Tile**.



CREATING ROOFS

7. Browse , **Roof Tile** then select after that result show under **Project Material List**. Then click, **OK**.

8. Click, **OK** to finish editing.

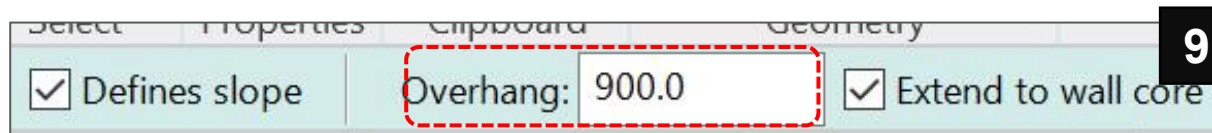
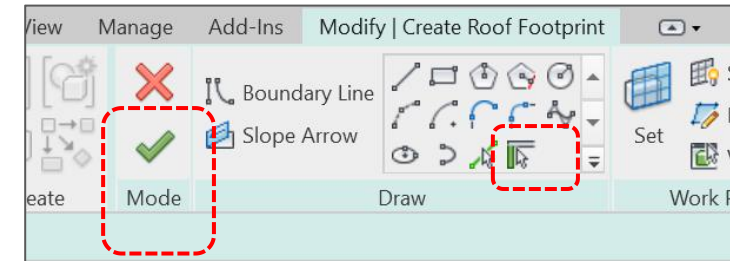


CREATING ROOFS

10

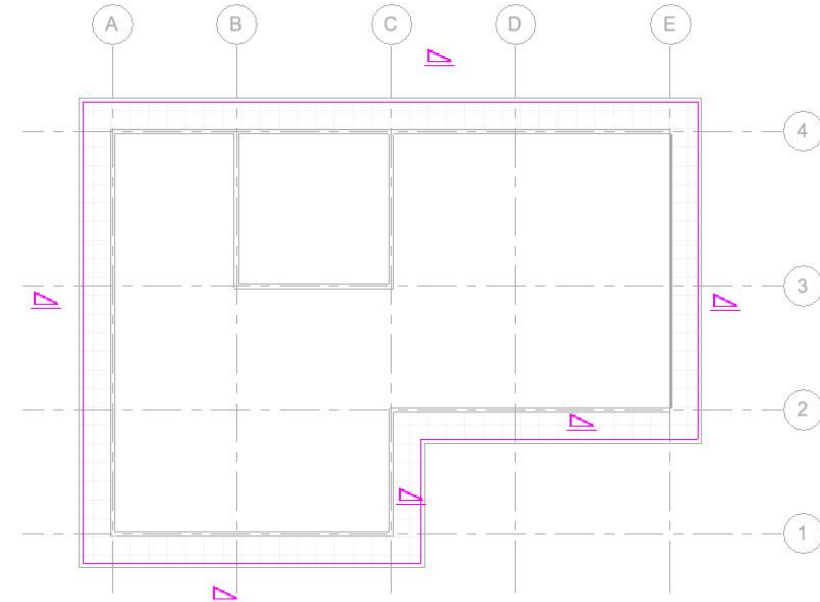
- From the **Draw** panel in the **Modify**, Create Roof Footprint tab, select the **Pick Walls** tool (*this should be the default*)

Before pick wall, set **overhang** value as **900mm**



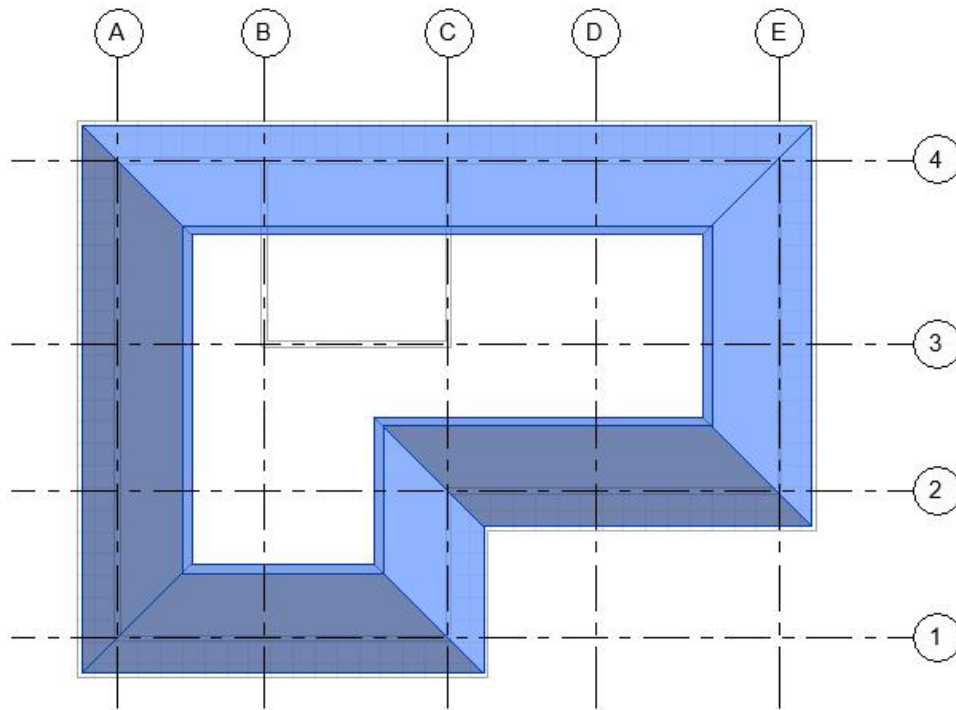
9

- Then, click **Finish Edit Mode**.

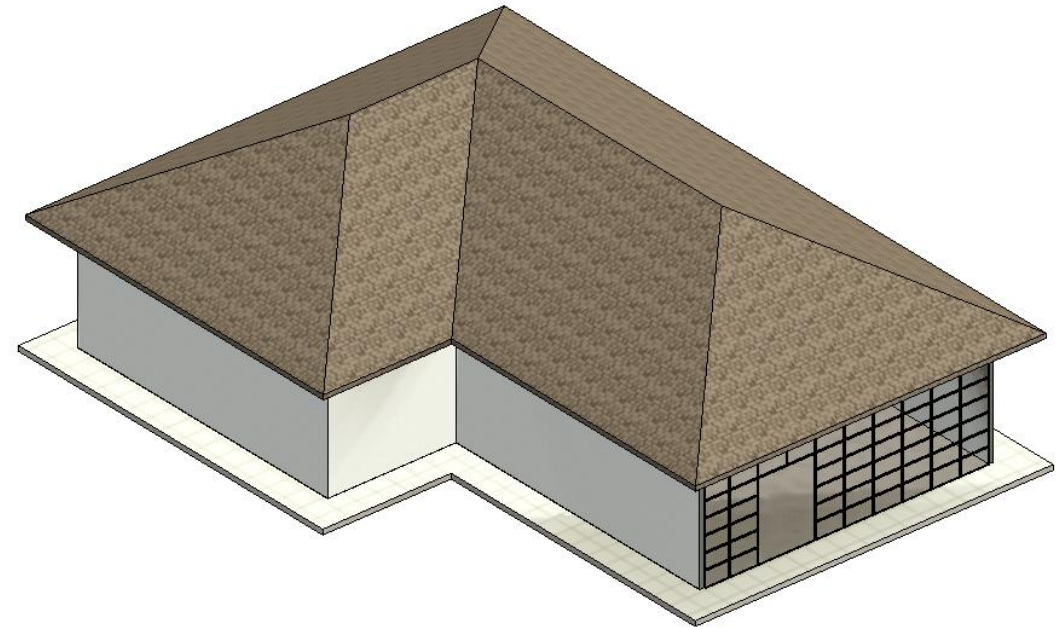


CREATING ROOFS

Roof was created using the roof-by footprint method as shown below figures.



Plan View

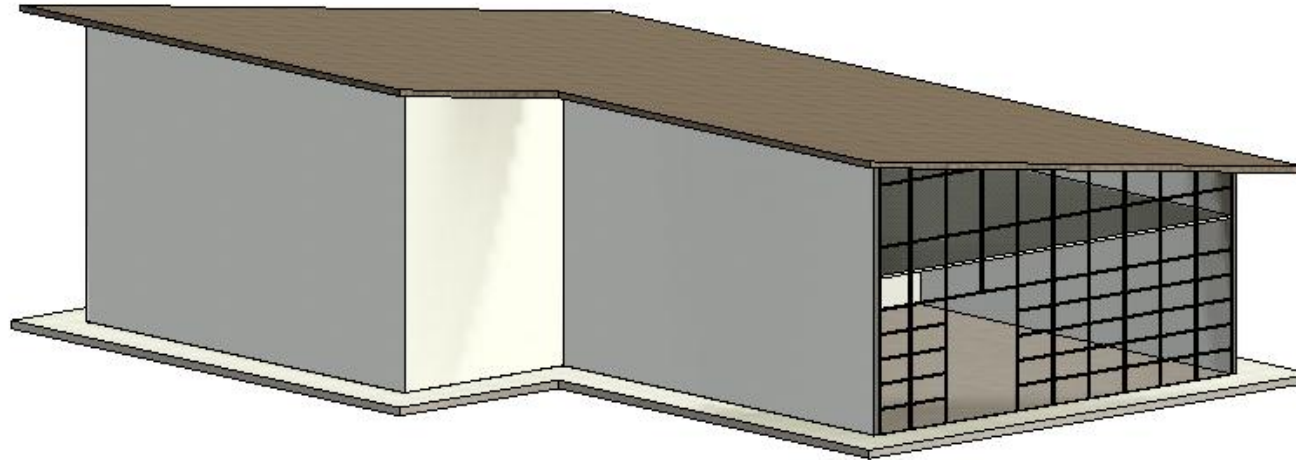


3D View (*Realistic Visual Style*)

CREATING ROOFS

EXAMPLE 2:

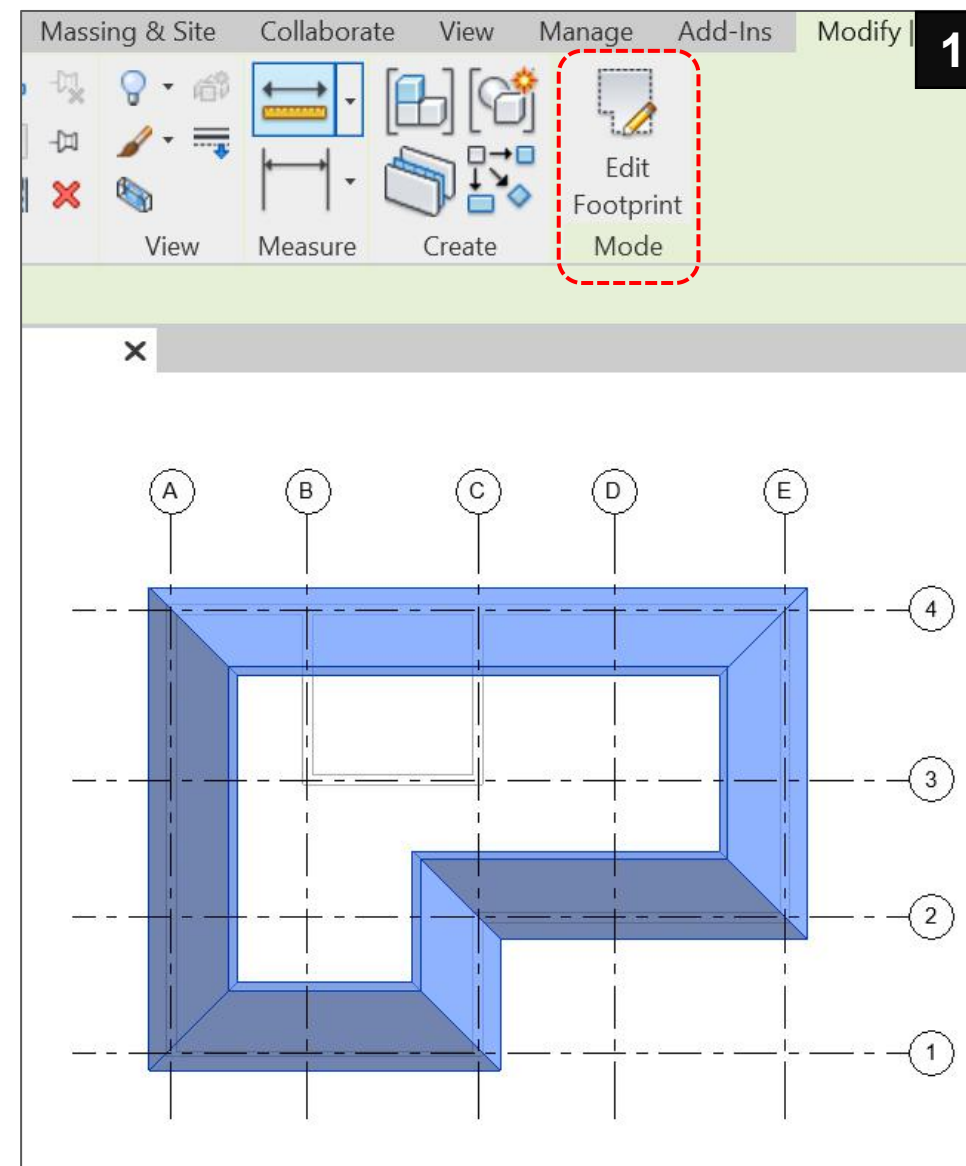
Change **Roof Footprint** in **Example 1**, to **Flat Roof** as shown in figure.



CREATING ROOFS

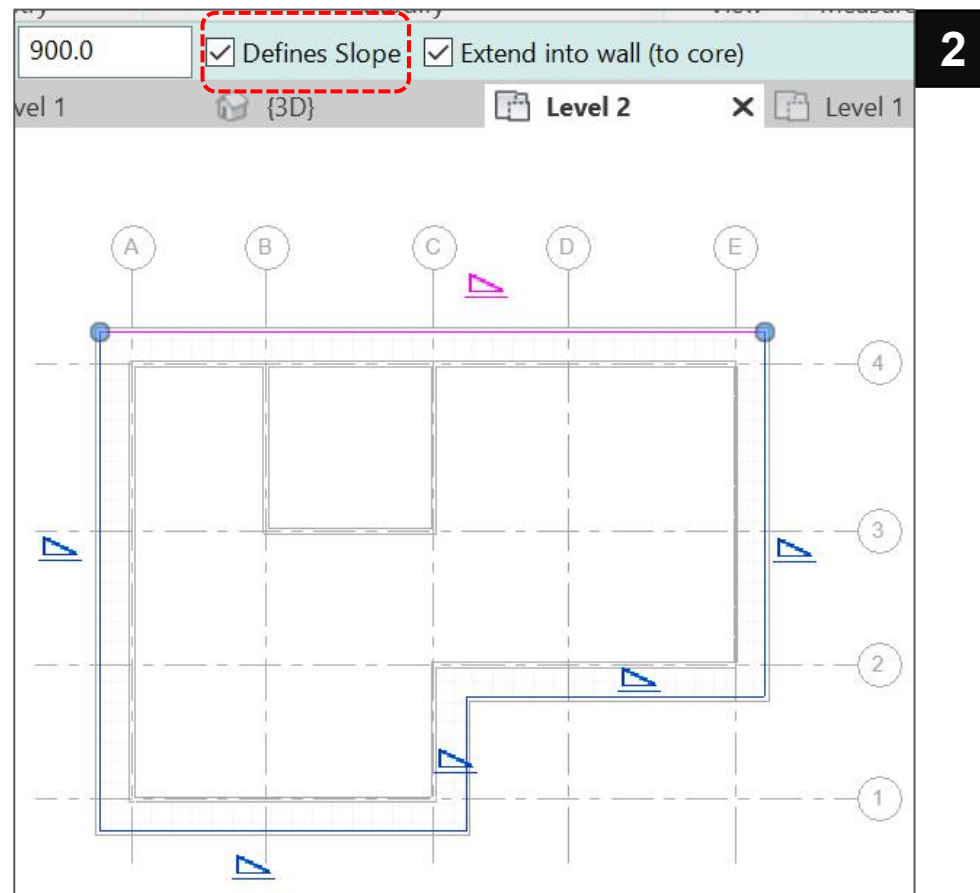
STEPS:

1. Select **Roof** in floor plan as shown figure, then click **Edit Footprint** in **Mode Panel**.

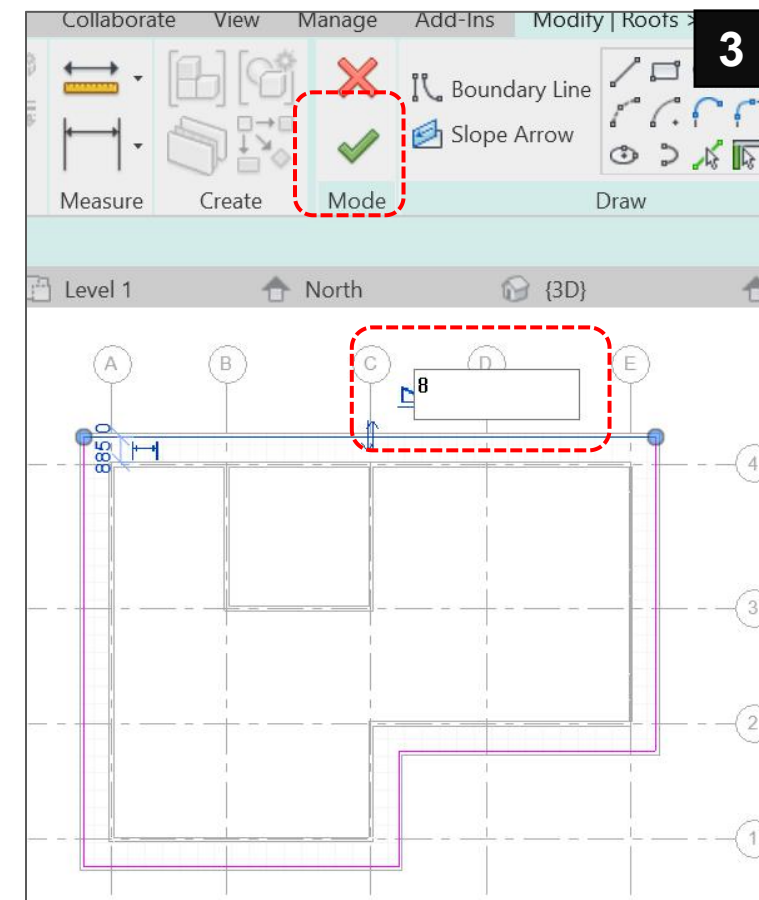


CREATING ROOFS

2. Select all boundary (except wall at the back side of building), then **Untick** at **Defines Slope** box.

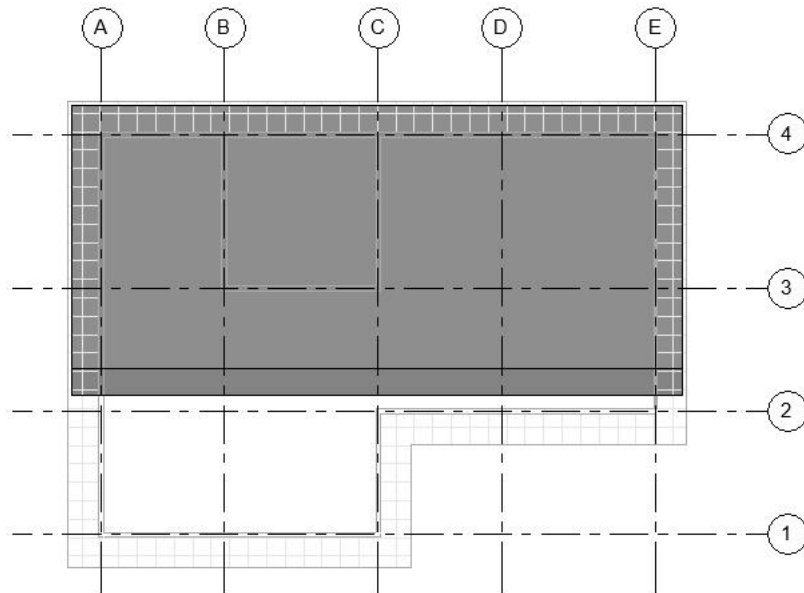


3. Click wall at the back side and **Change Slope to 8 degree**. Then, click **Finish Edit Mode**.

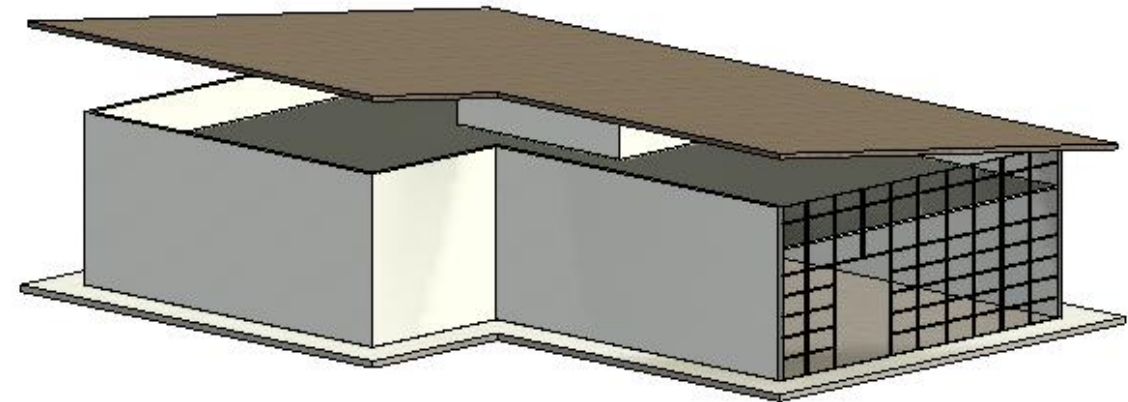


CREATING ROOF

4. Flat roof was created using the roof-by footprint method as shown below figures.



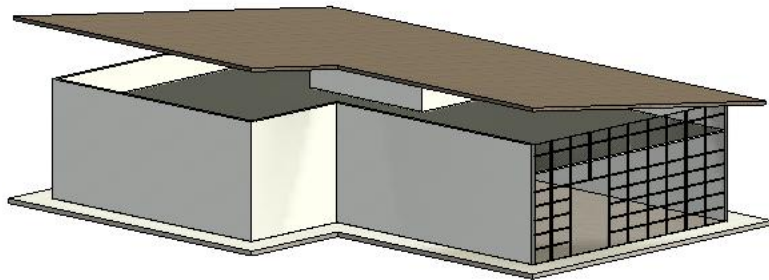
Plan View



3D View (*Realistic Visual Style*)

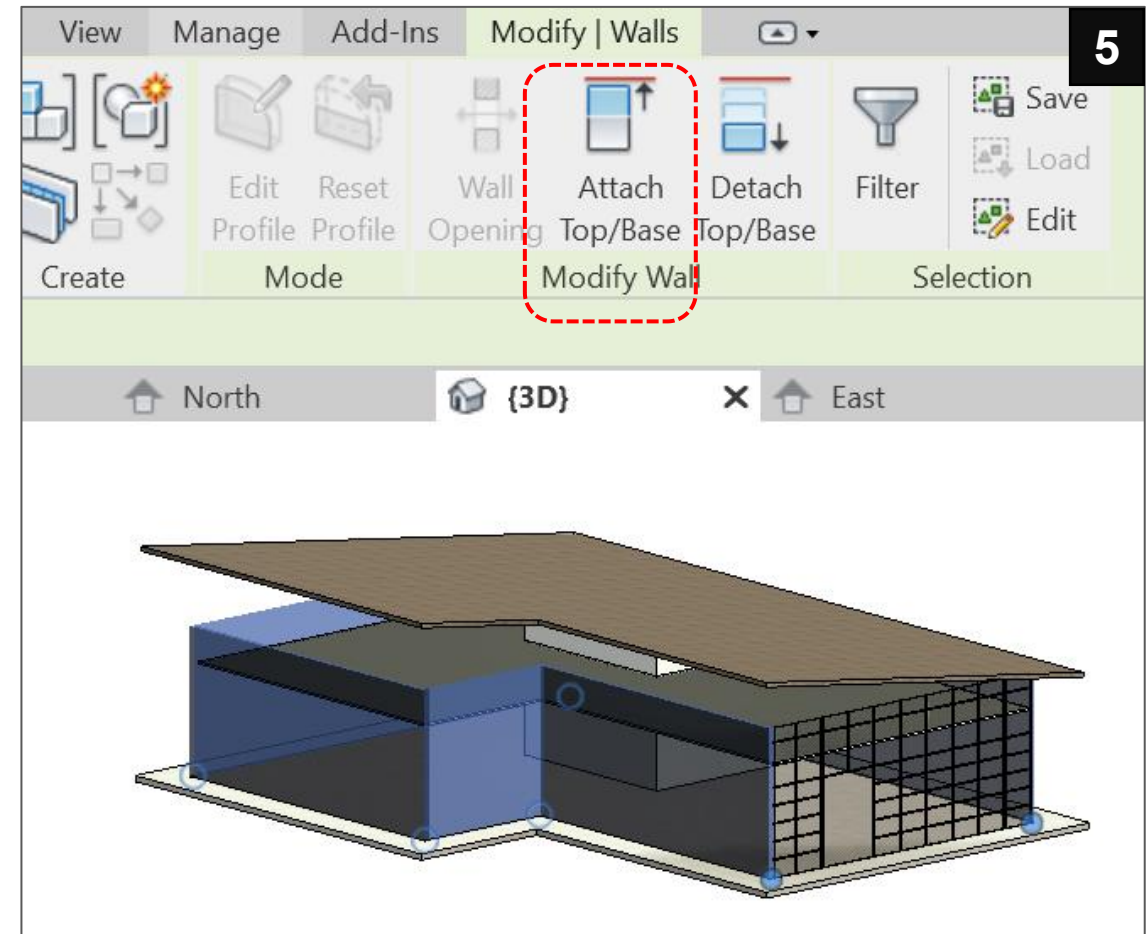
CREATING ROOFS

How to solve this situation?



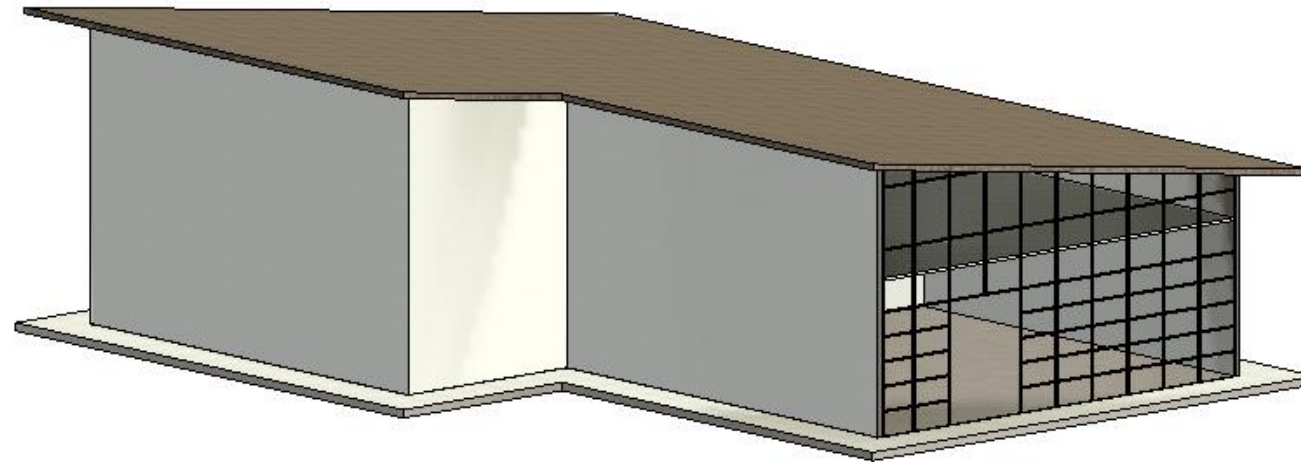
5. Wall should be attached to roof, so click all Exterior Walls and click **Attach Top/Base Tool** in **Modify Wall Mode**.

Then, click **Roof**.



CREATING ROOFS

Final view for building with Flat Roof.



3D View (*Realistic Visual Style*)

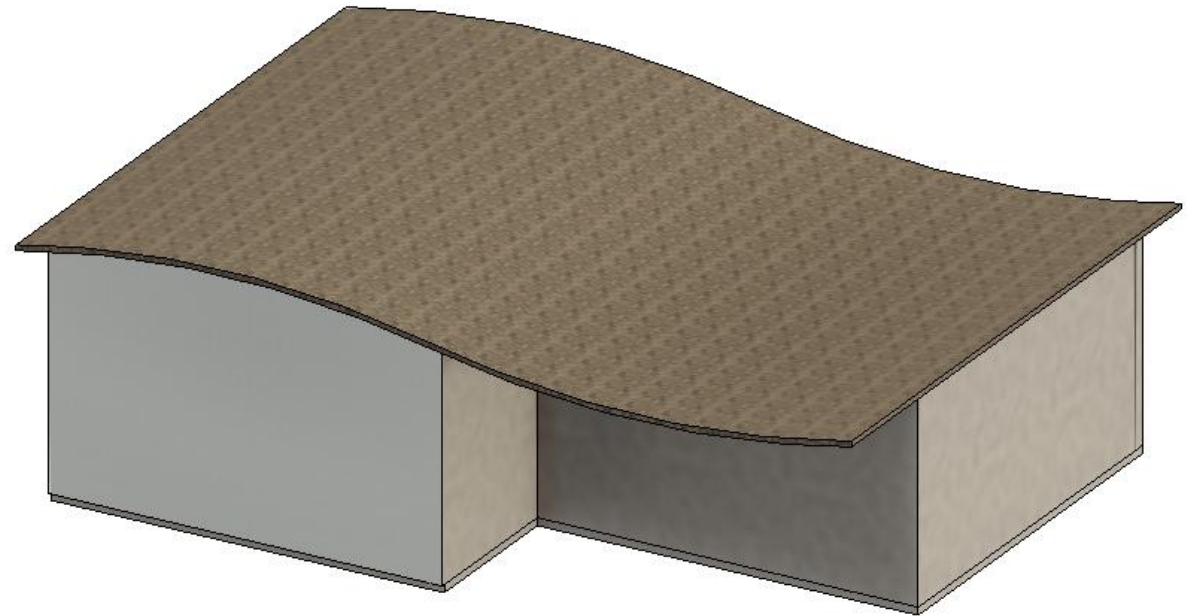
CREATING ROOFS

2. Roof by Extrusion

EXAMPLE 3:

By using building model in **Example 1**, create new roof by extrusion as shown in figure.

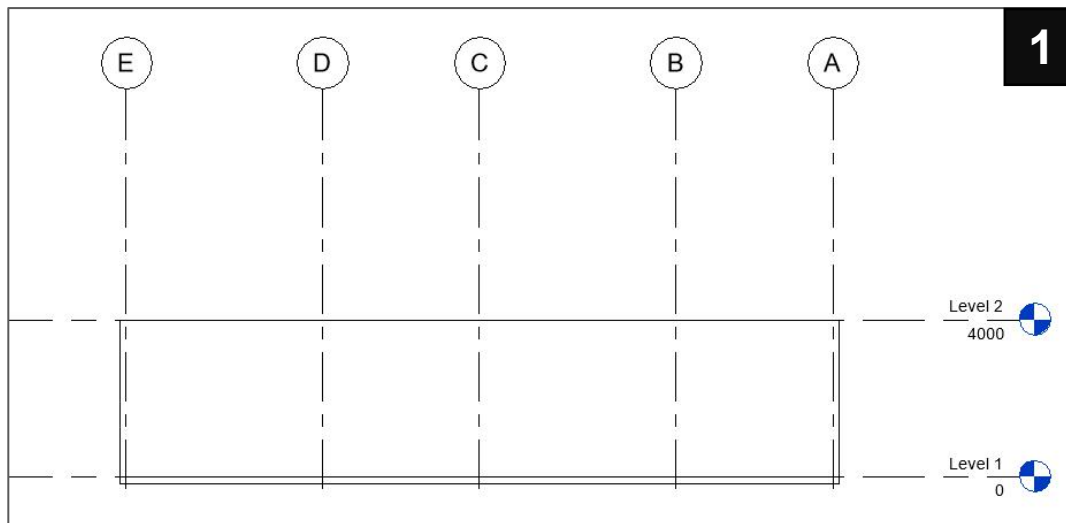
Eg. Basic Roof - Generic 125mm (Structural Material: Roof Tile)



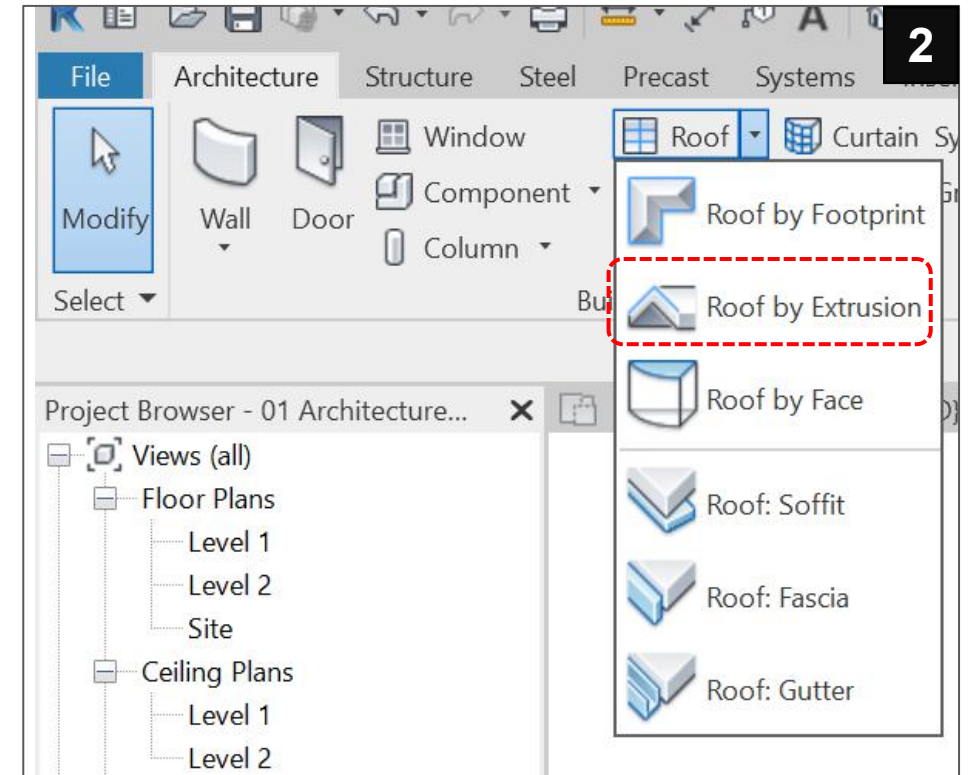
CREATING ROOFS

STEPS:

1. First step, View **North-Elevation**.

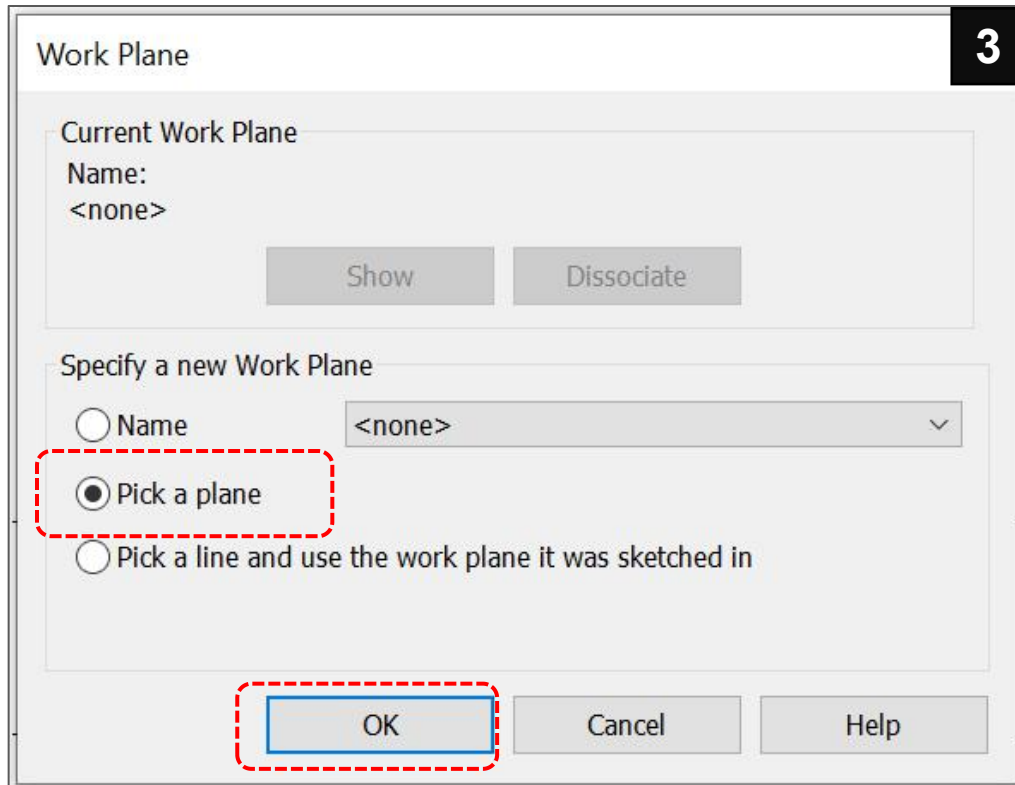


2. Select the **Architecture** tab in the ribbon and click **Roof - Roof By Extrusion**.

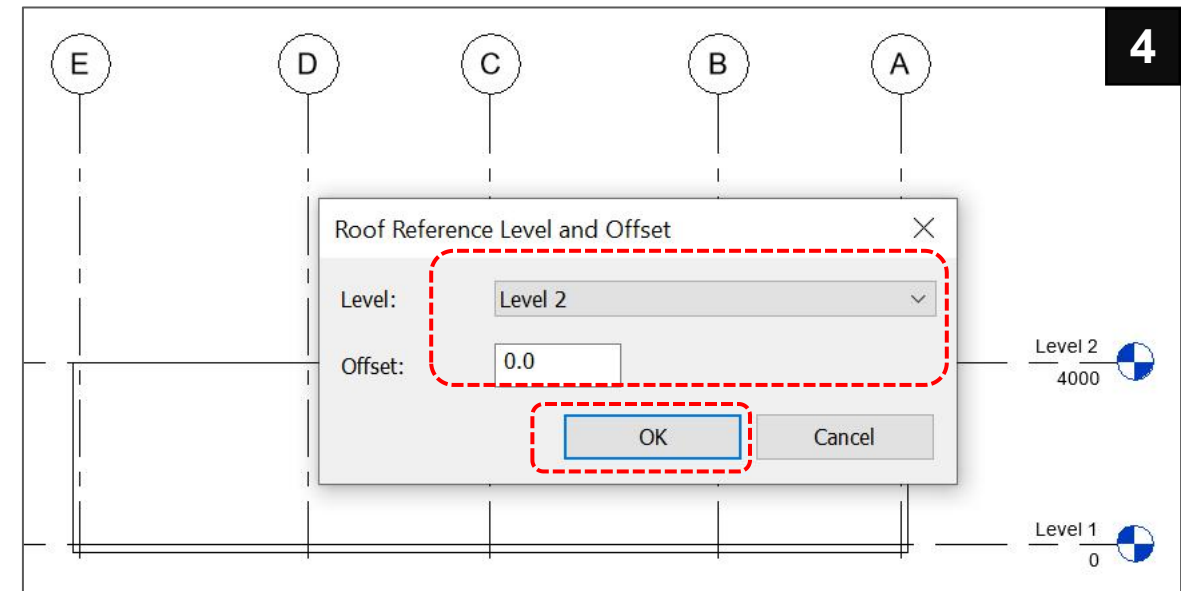


CREATING ROOFS

- At **Work Plane** dialog box, use default tick **Pick a plane**, then click **OK**

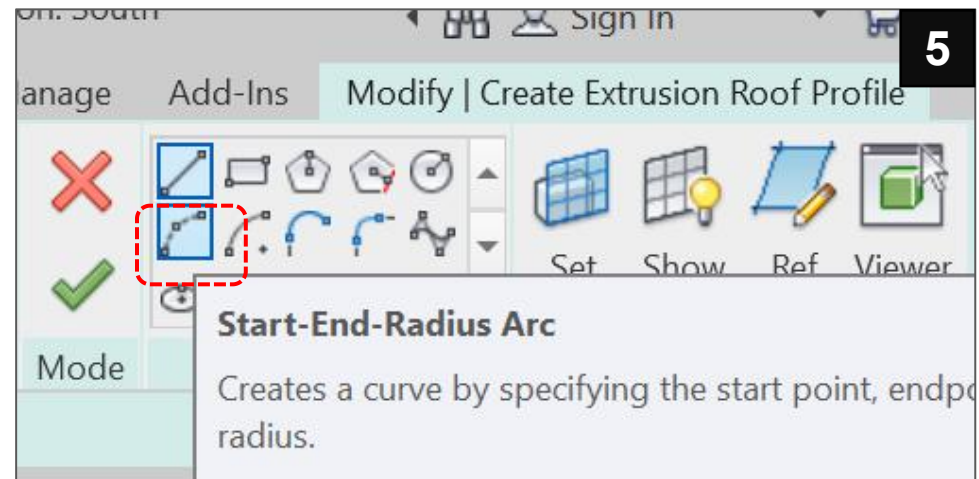


- Click at **front wall** in **North view**, and at **Roof Reference Level and Offset** dialog box ensure the information as shown in figure. Level is **Level 2** and Offset is **0.0**. Then click **OK**



CREATING ROOFS

5. To start sketch roof line, click **Start-End-Radius Arc** in **Draw Panel**.

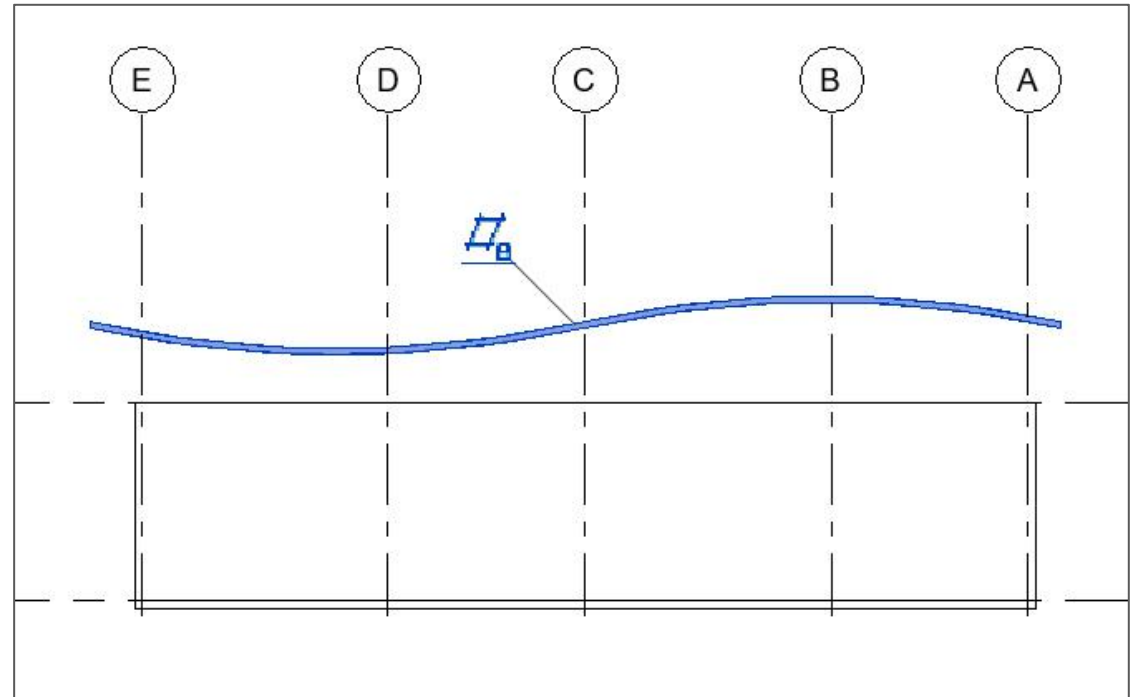
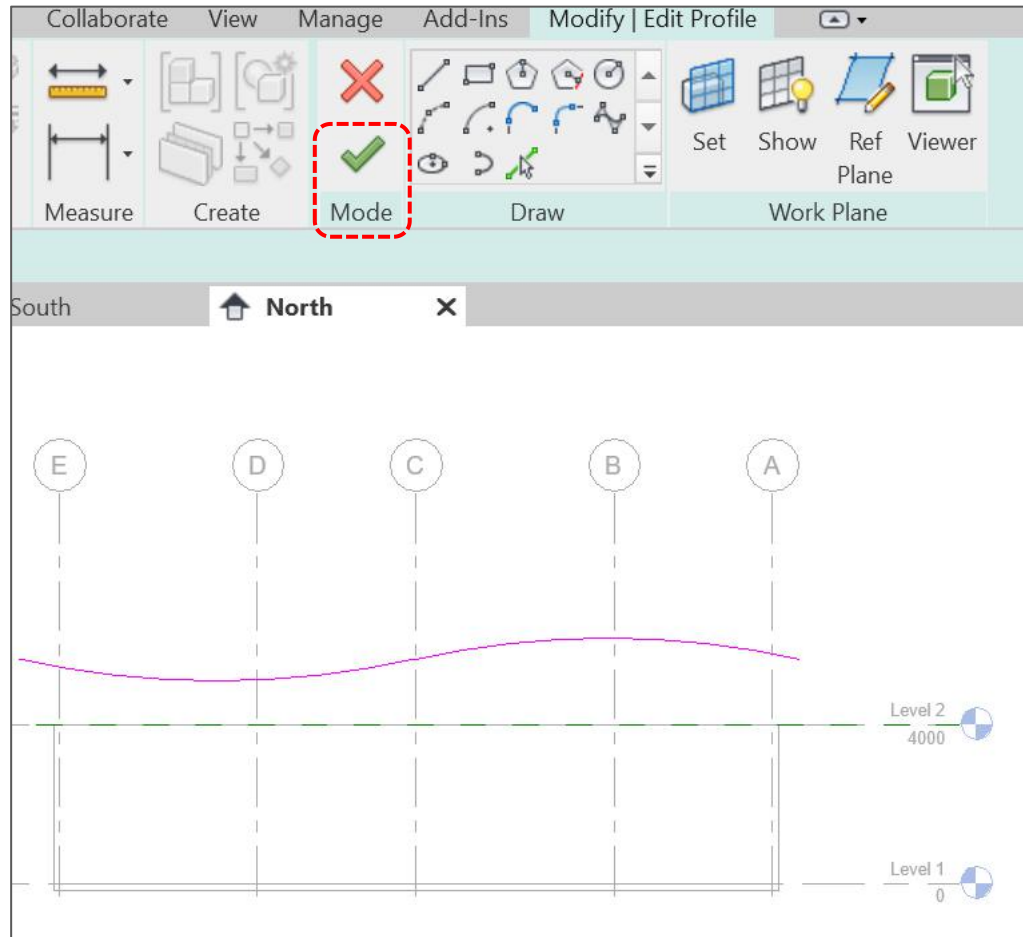


6. Then by using **25 degree of slope**, sketch roof line as shown in figure.



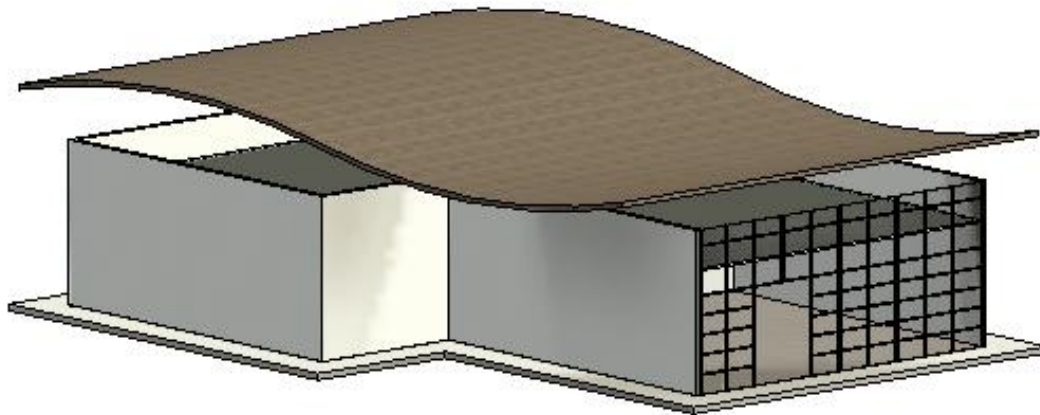
CREATING ROOFS

7. Then, click **Finish Edit Mode**.

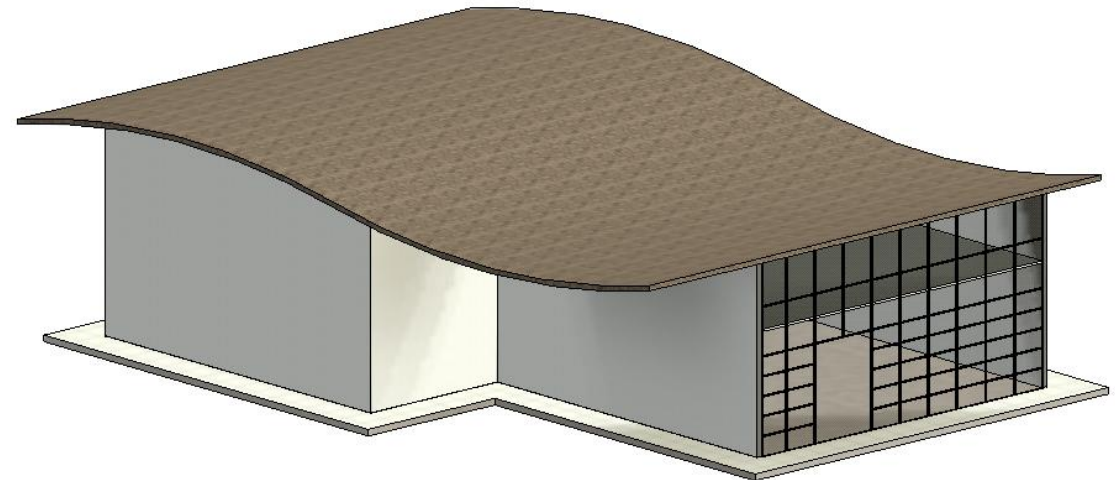


CREATING ROOFS

8. Select all exterior wall and attach to roof.
(Refer steps to attach in **Example 2**)



9. Final View of building model with Roof Extrusion as shown in figure.



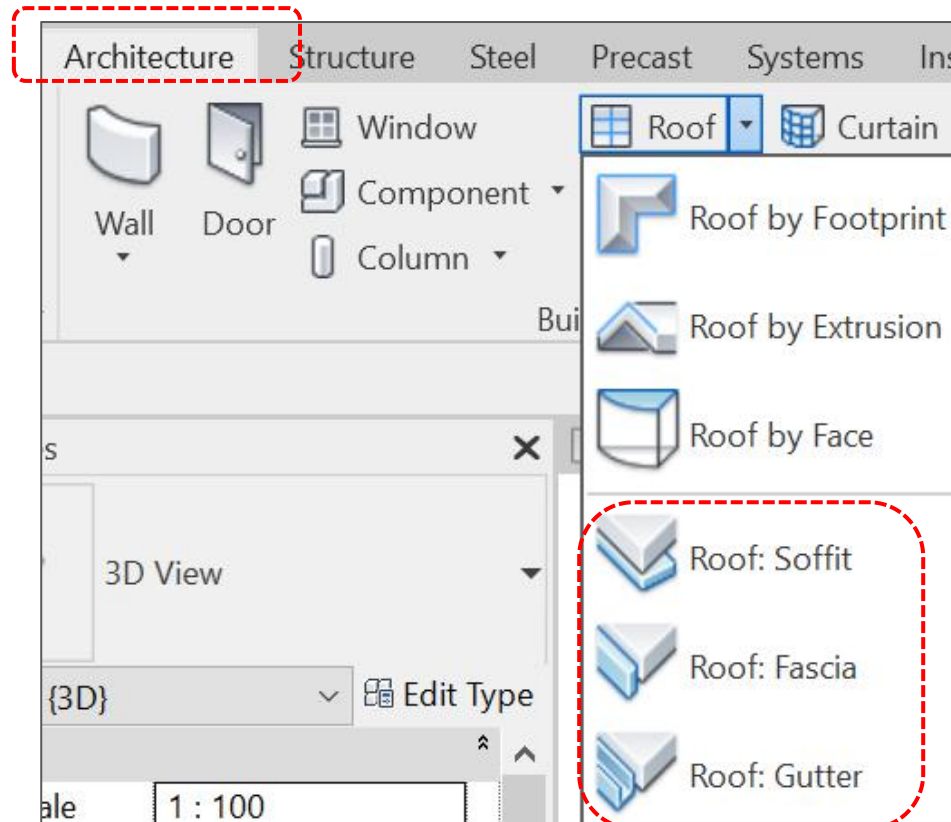
3D View (*Realistic Visual Style*)

CREATING ROOFS

Roof Fascias, Gutters and Soffits

Soffits and fascias are part of roofing system. They assist with ventilation of the attic, help secure gutter system, and add to home's exterior aesthetics.

In Revit, all this tools are provided at **Architecture Tab > Roof**.

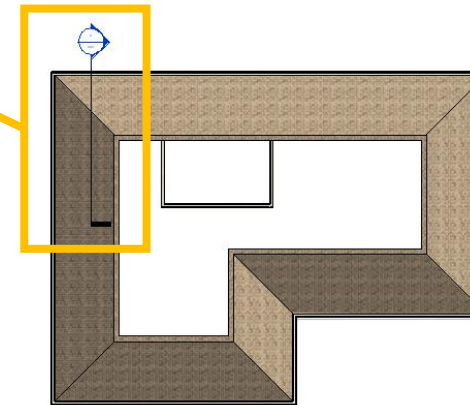
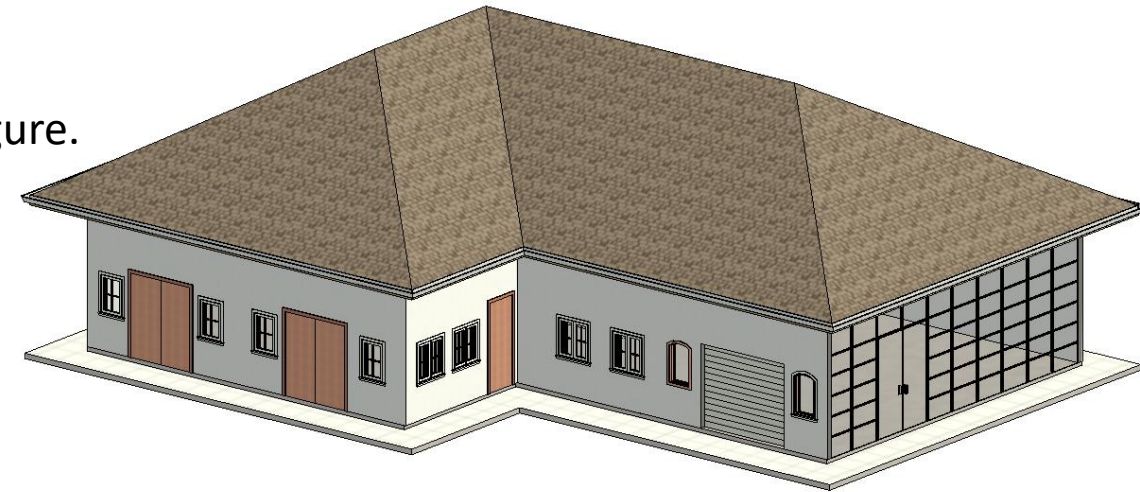
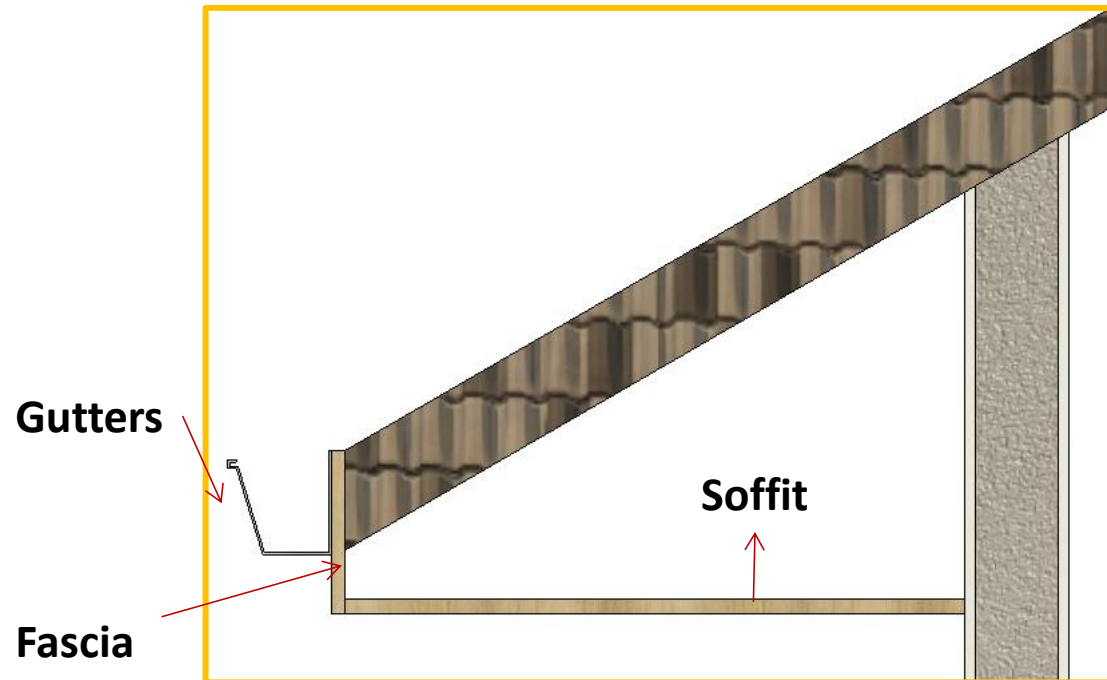


CREATING ROOFS

Roof Fascia, Gutters and Soffits

EXAMPLE:

Create **Fascias, Gutters and Soffits** at the Roof as shown in figure.



CREATING ROOFS

Create Fascia

STEPS:

1. Click **Fascia Tool** and **Edit Type** in **Properties Palette**.
2. **Duplicate Type Name** to **Fascia-Oak** and change **Profile** and **Material** as shown in figure.
(Can also use another's Profile and Material)
3. Click **OK**, and create **Fascia** at edge of roof.

Type Properties

Family: System Family: Fascia Load...

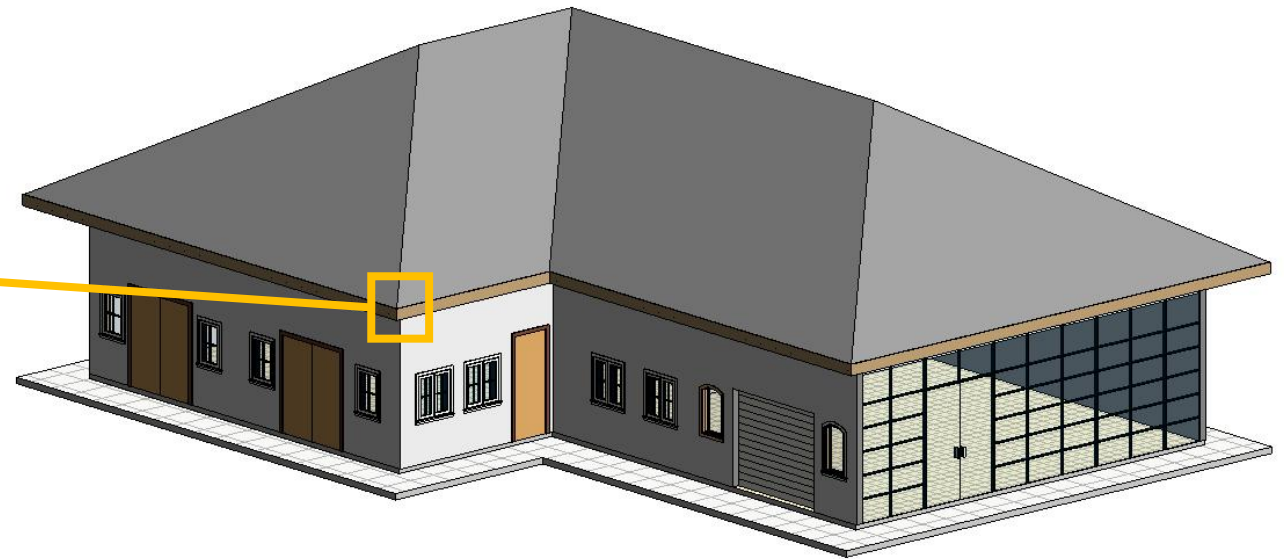
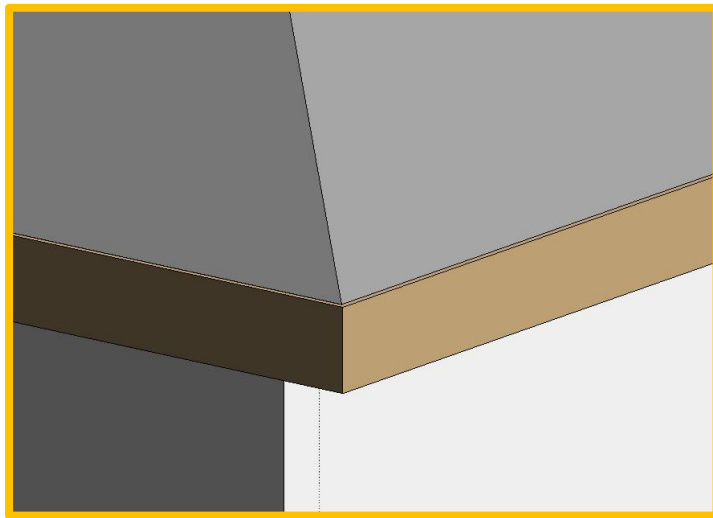
Type: Fascia- Oak Duplicate... Rename...

Type Parameters

Parameter	Value	=	^
Construction			^^
Profile	M_Fascia-Flat : 19 x 235mm		
Materials and Finishes			^^
Material	Oak		

CREATING ROOFS

4. Figure shows resulting of **Fascia** was created.



CREATING ROOFS

Create Gutter

STEPS:

1. Click **Gutter Tool** and **Edit Type** in **Properties Palette**.
2. **Duplicate Type Name** to **Gutter-Metal** and change **Profile** and **Material** as shown in figure.
(Can also use another's Profile and Material)
3. Click **OK**, and create **Gutter** on **Fascia Exterior** surface.

Type Properties

Family: System Family: Gutter Load...

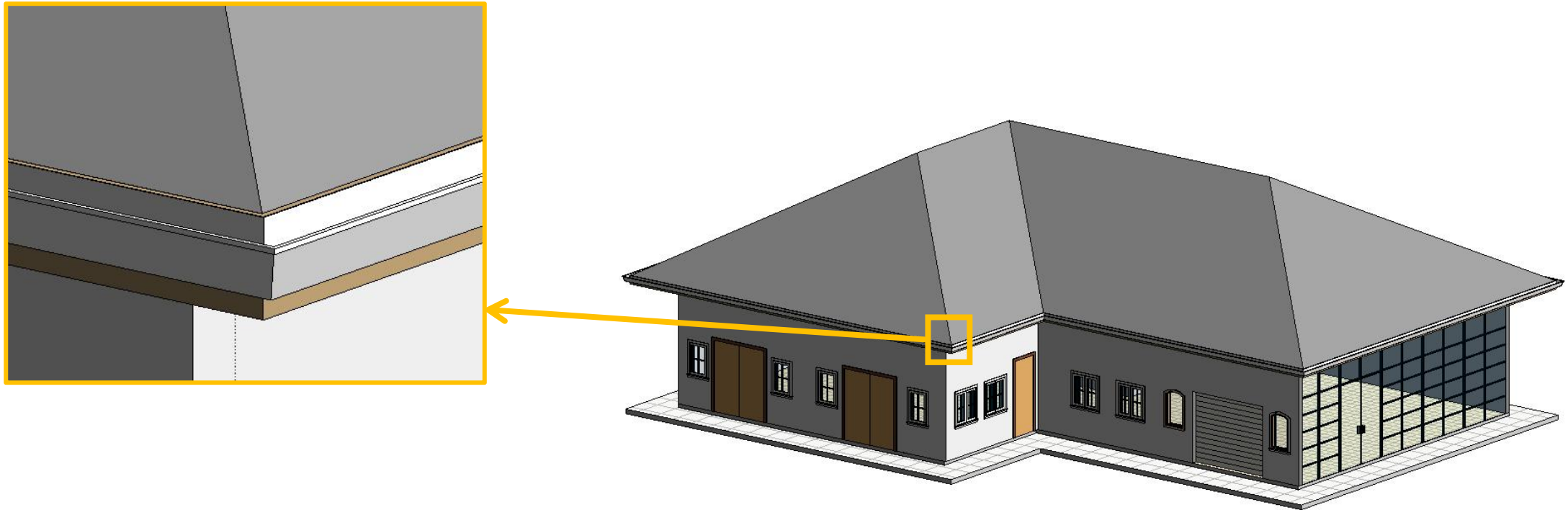
Type: Gutter- Metal Duplicate... Rename...

Type Parameters

Parameter	Value
Construction	
Profile	M_Gutter - Bevel : 150 x150mm
Materials and Finishes	
Material	Metal - Steel 43-275
Identity Data	

CREATING ROOFS

4. Figure shows resulting of **Gutter** was created.

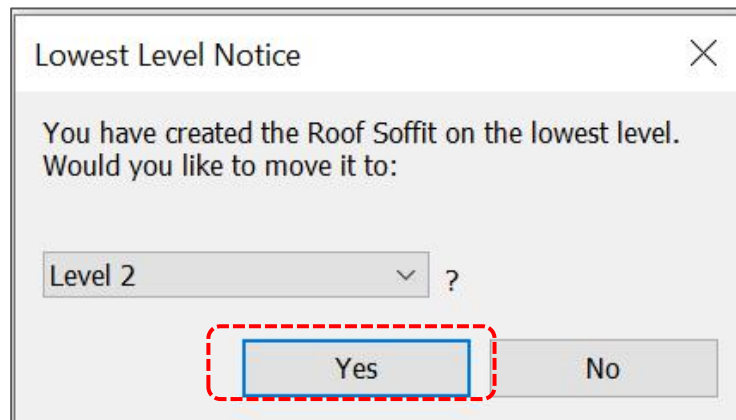
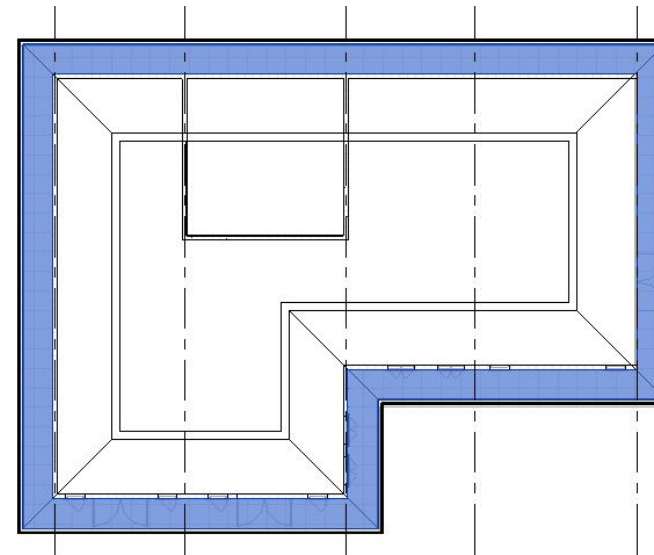
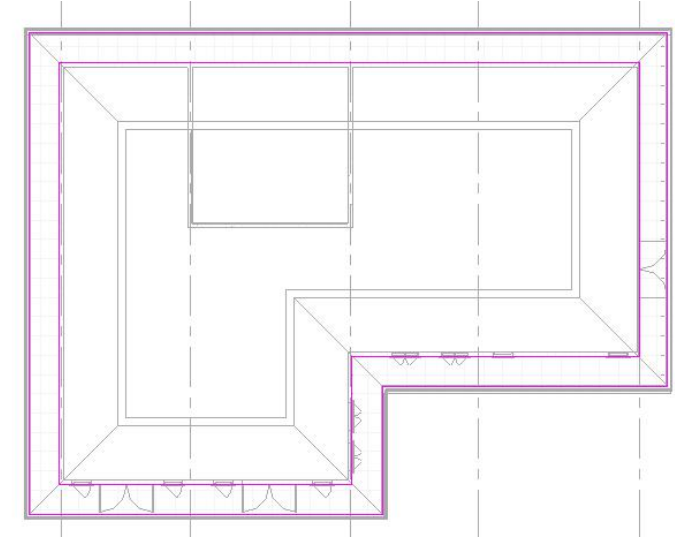


CREATING ROOFS

Create Soffit

STEPS:

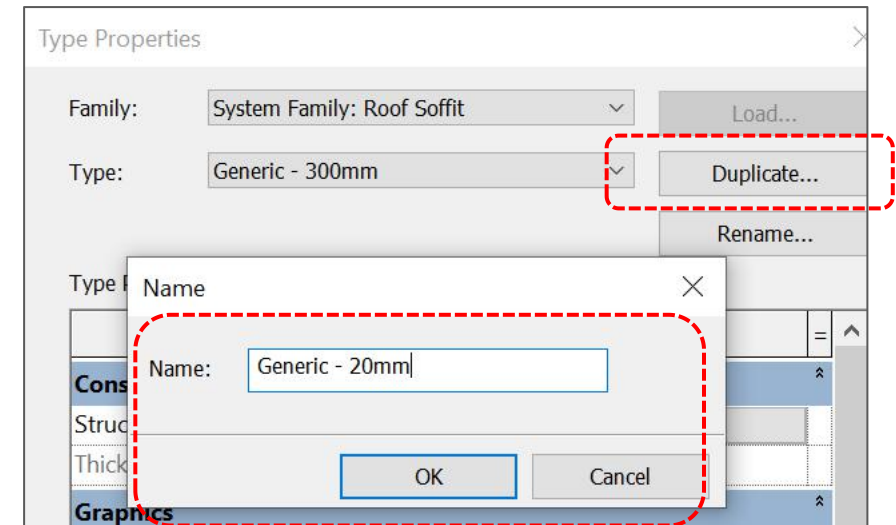
1. Click **Soffit Tool** and **YES** for **Lowest Level Notice** dialog box.
2. Select **Pick Line Tool** to set **Soffit Boundary** as shown in figure.
3. Then click **Finish Mode**.



CREATING ROOFS

Create Soffits

4. Select **Soffits** was created ,then click **Edit Type** in **Properties Palette**
5. **Duplicate Type Name to Generic - 20mm** and change **Structural Material** and **Thickness** as shown in figure.
(Can also use anothers Profile and Material)
6. Click **OK**.



Layers					
	Function	Material	Thickness	Wraps	Structural Material
1	Core Boundary	Layers Above	0.0		
2	Structure [1]	Oak ...	20.0		☒
3	Core Boundary	Layers Below	0.0		

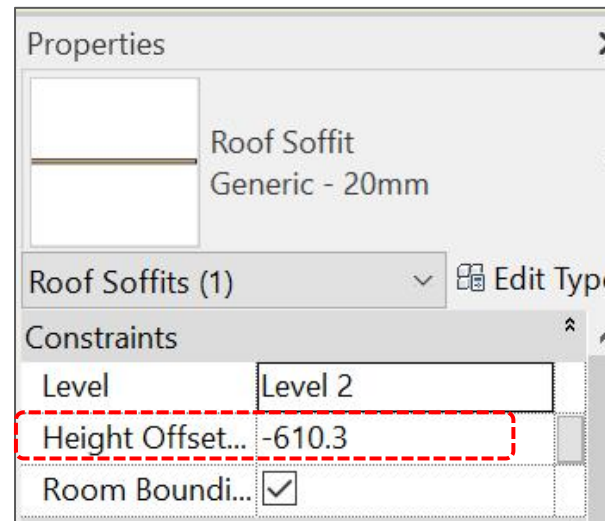
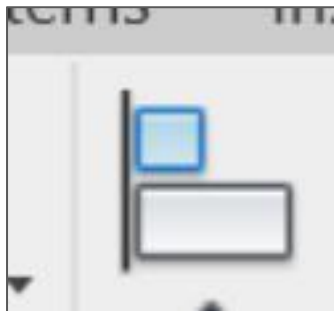
CREATING ROOFS

Create Soffits

7. **Soffits** as shown in figure must be align with **Fascia Base**.
8. There are a few step to align **Soffits** to **Fascia Base** such as use **Align Tools** in **Modify Tab** or reduce **Soffit Height Offset** in **Properties Palette**.

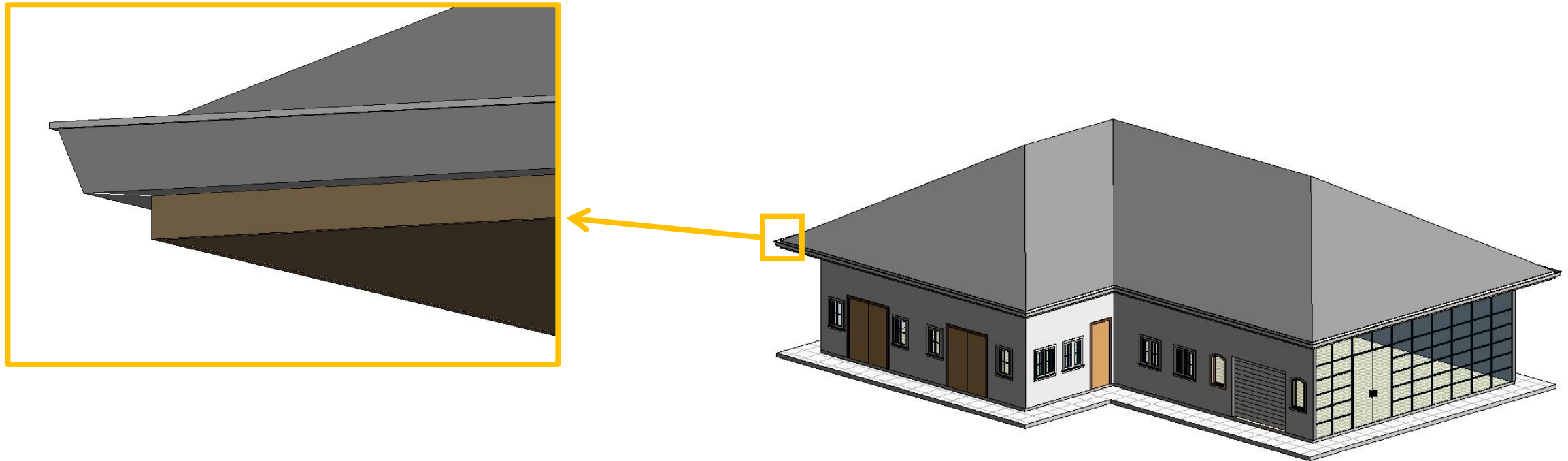


Align Tools

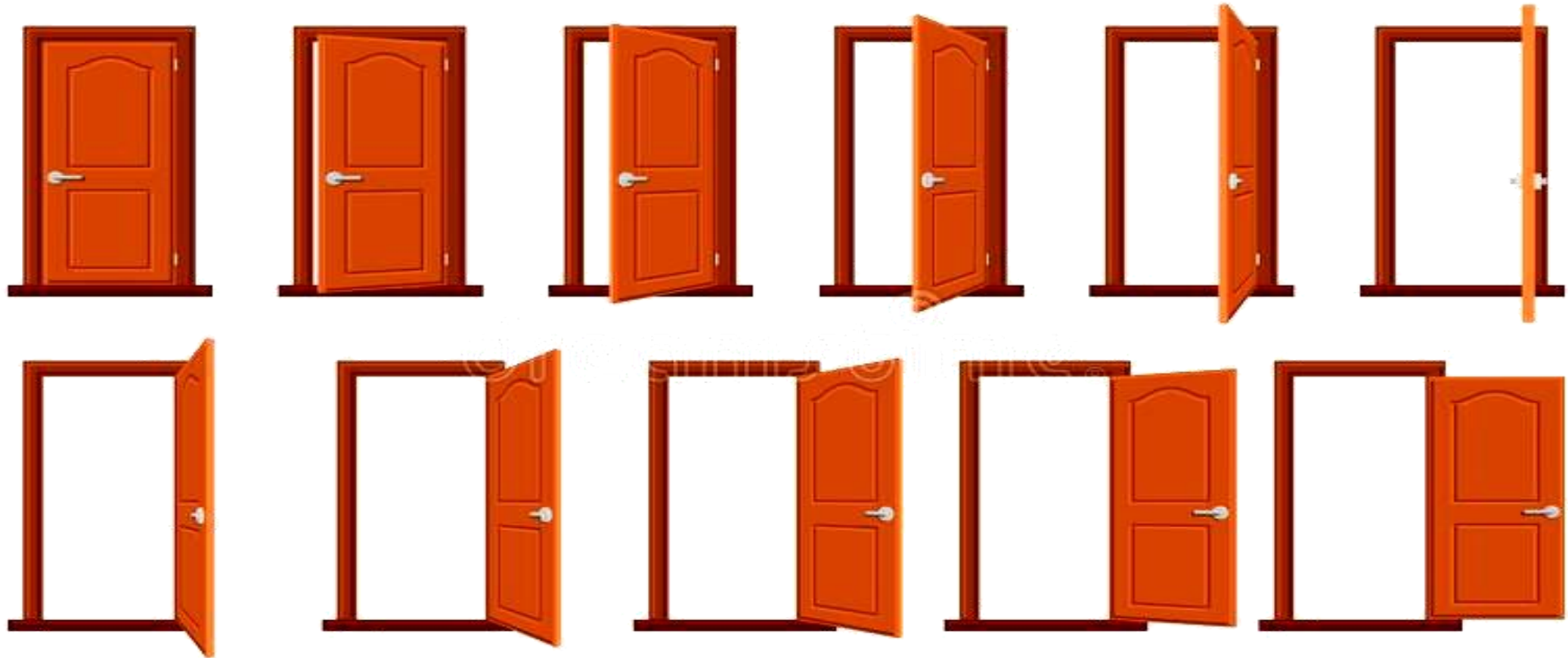


CREATING ROOFS

4. Figure shows resulting of **Soffit** was created.



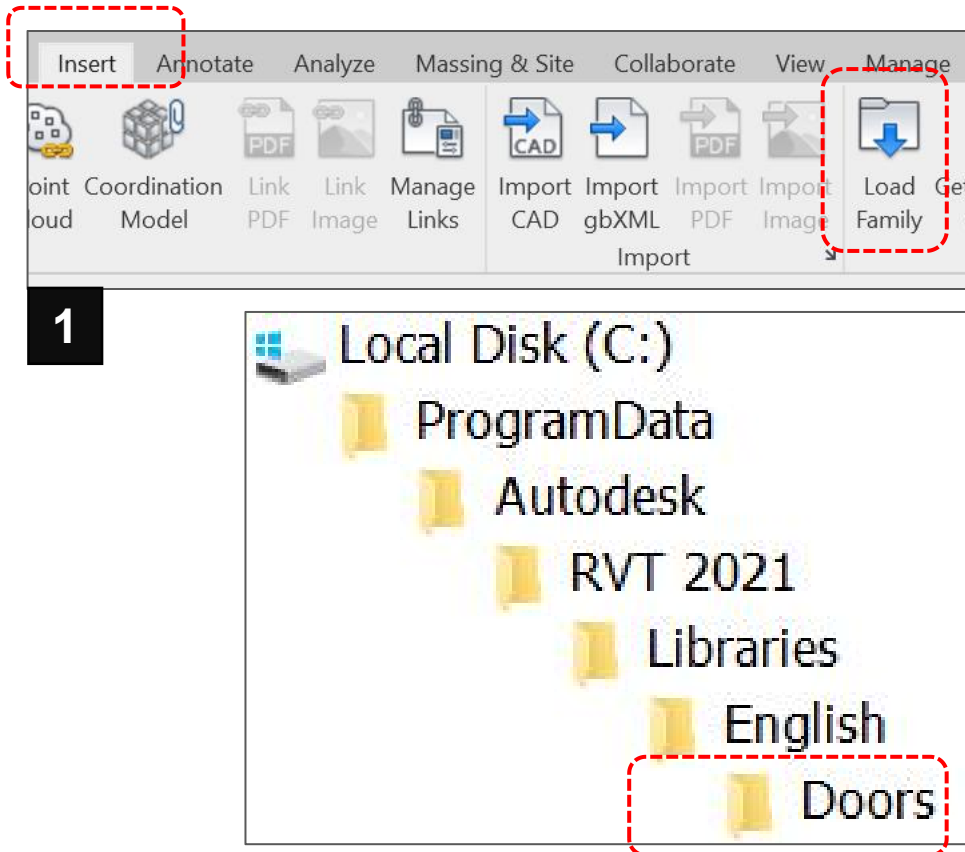
DOORS



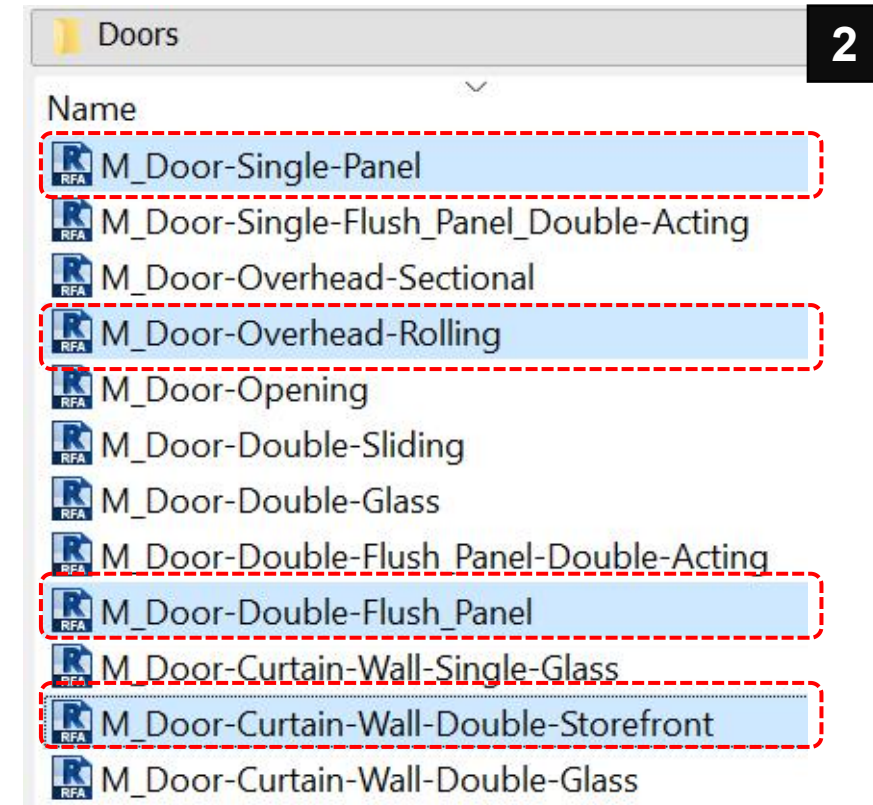
PLACING DOORS

Before placing **Doors**, load **Doors Family** from **Revit Libraries**.

1. At **Insert Tab**, click **Load Family Tool**.
Then, open **Doors** folder as shown in figures.



2. Select **Door Family** based on project need.



PLACING DOORS

3. Then, select **Door Type** based on project need or can be select all. Click **OK**.

3

Specify Types

Family:

M_Door-Single-Panel.rfa
M_Door-Overhead-Rolling.rfa
M_Door-Double-Flush_Panel.
M_Door-Curtain-Wall-Double-

Types:

Type	Width	Height
	(all) ▼	(all) ▼
750 x 2000m	750.0	2000.0
750 x 2100m	750.0	2100.0
800 x 2100m	800.0	2100.0
850 x 2000m	850.0	2000.0
850 x 2100m	850.0	2100.0
900 x 2000m	900.0	2000.0

Select one or more types on the right for each family listed on the left

OK

Cancel

Help

PLACING DOORS

EXAMPLE 1:

Placing all door types in the building model as shown in figure.

Family and Door Types:



(Provided)



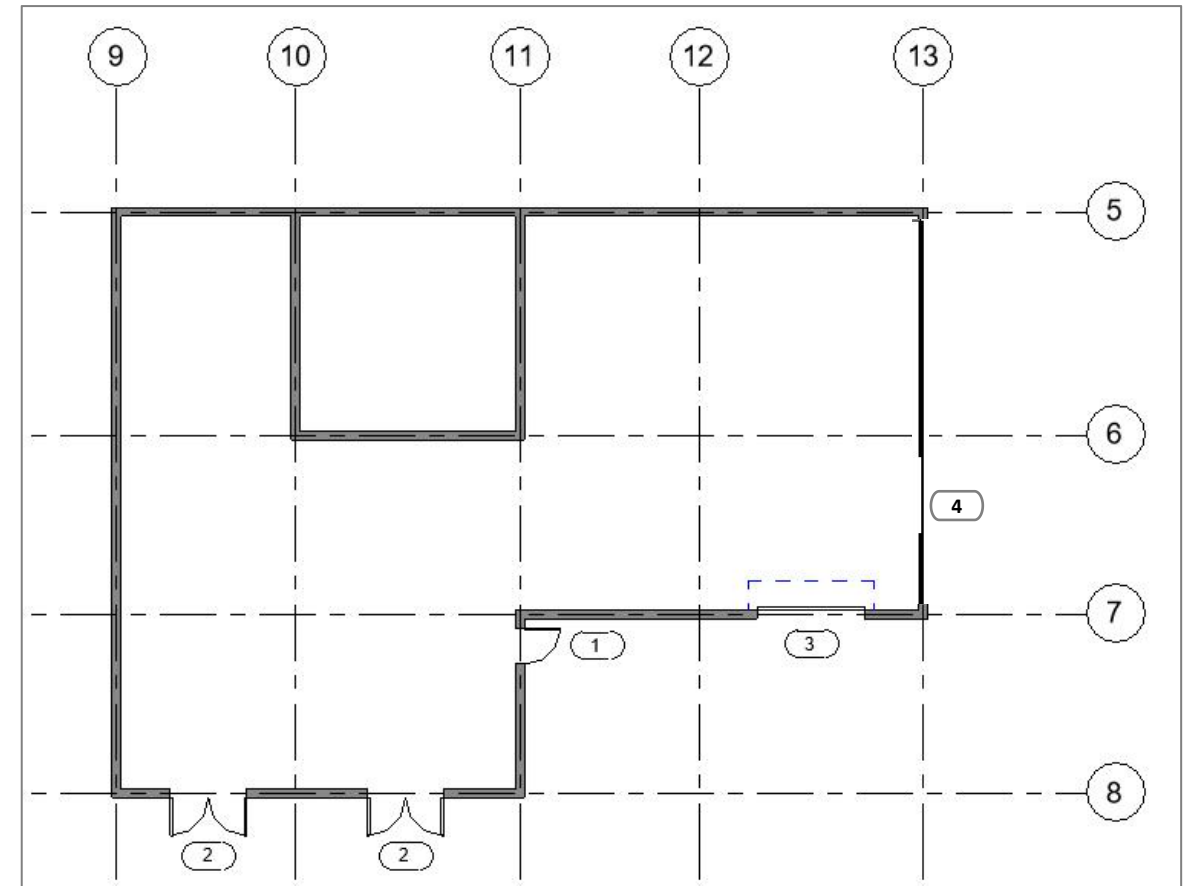
(Provided)



*(Not Provided) - Duplicate
from Default and change
dimension (width and
height) at properties palette*



(Provided)



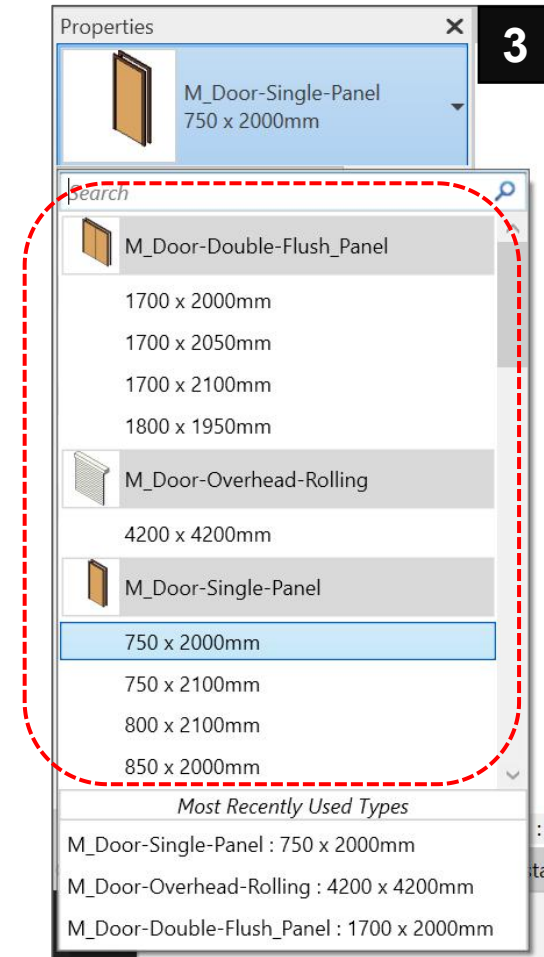
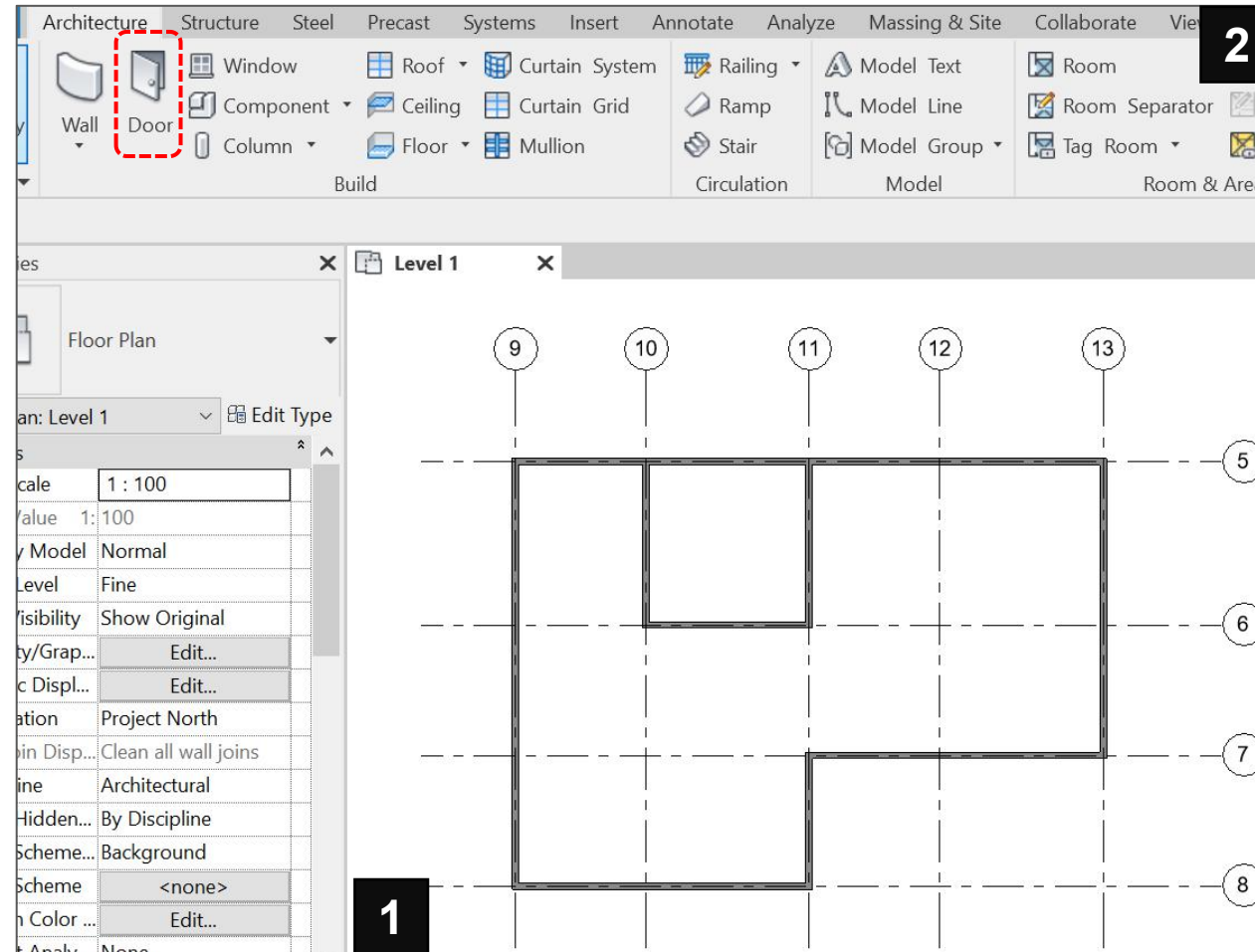
PLACING DOORS

STEPS:

1. View **Level 1 Floor Plan**.

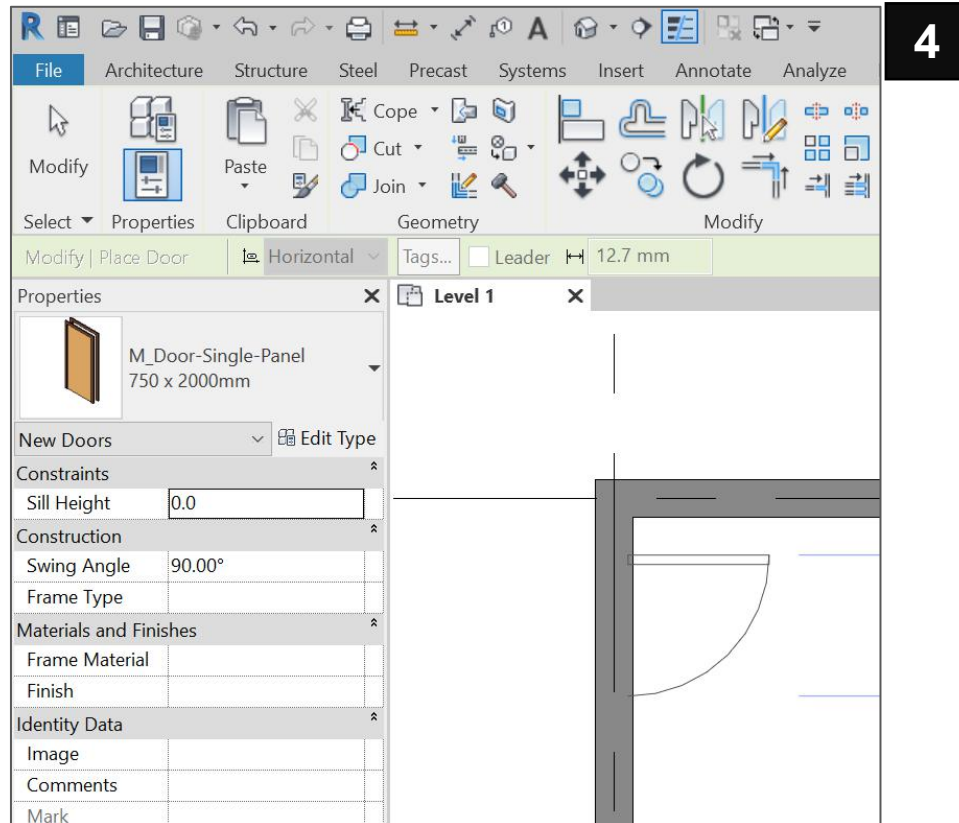
2. Select the **Architecture** tab in the ribbon and click **Door**.

3. Select **Door Type** by Drop Down **Type Selector** in **Properties Palette**

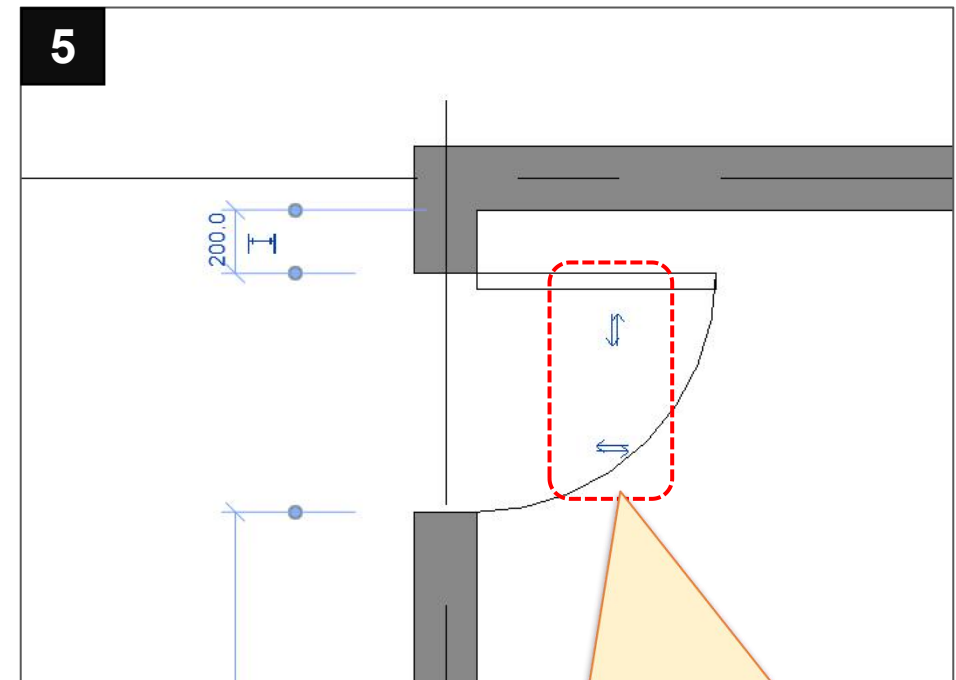


PLACING DOORS

4. Move the pointer to selected wall. Before place a door, check placement orientation, if does not match with the project need, press (spacebar at keyboard) to flip the door.



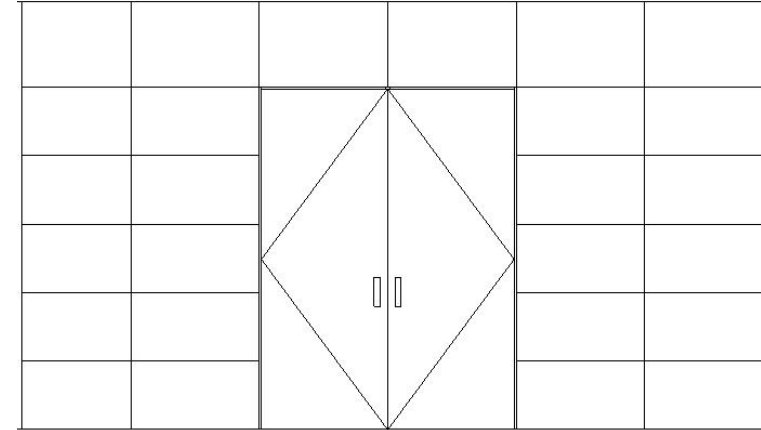
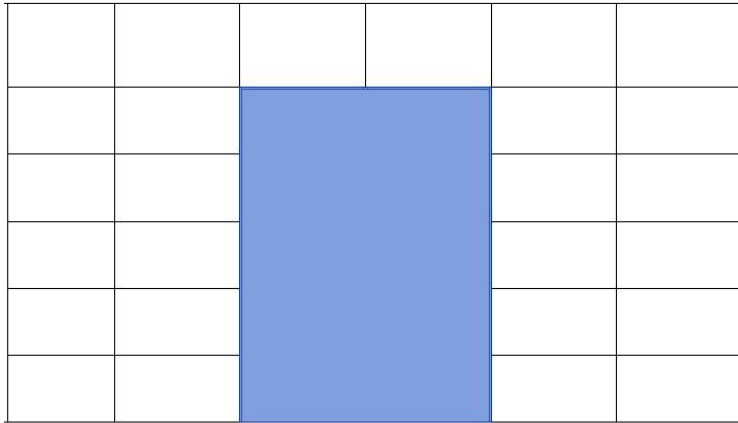
5. Then, click to place it.



Flip symbol use to flip the door after placing

PLACING DOORS

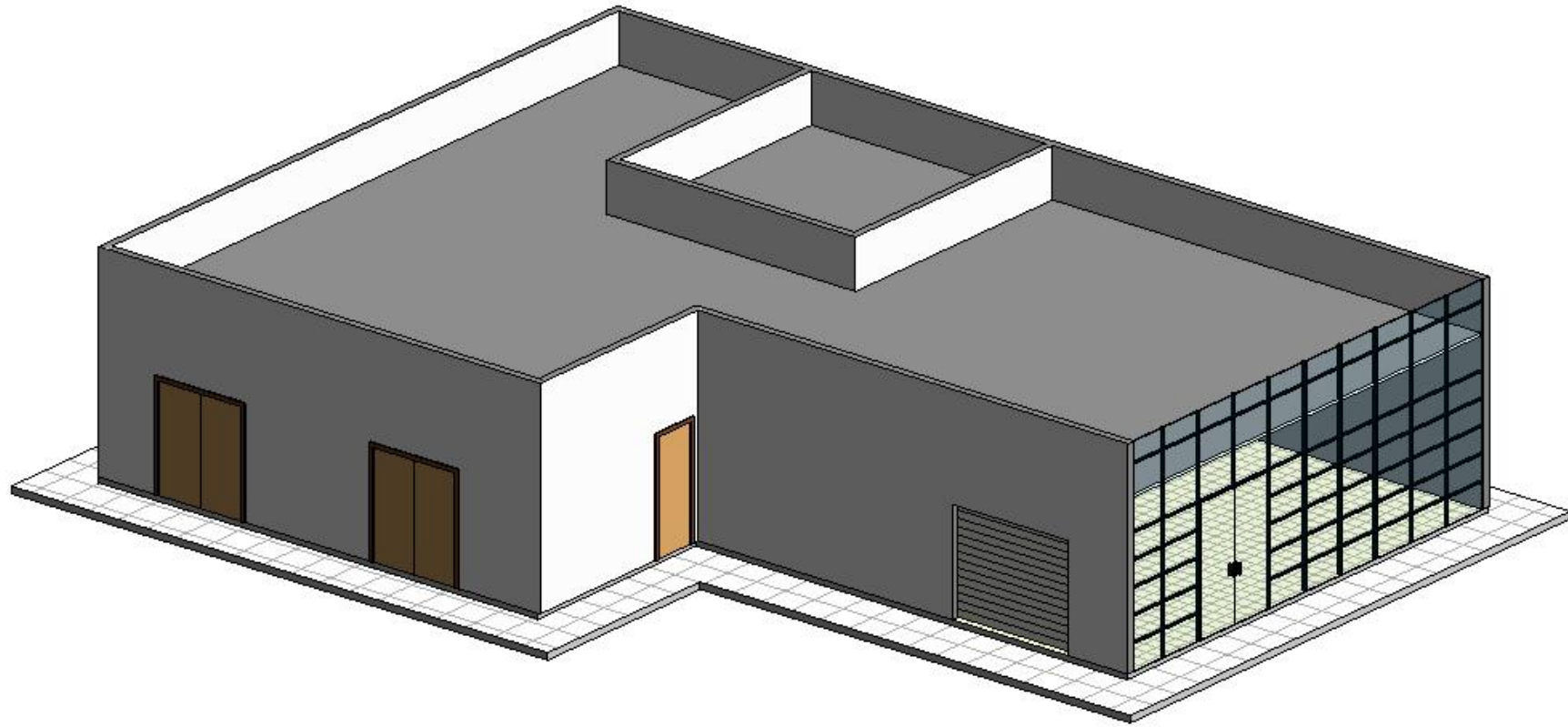
- Repeat **Steps 3 to 5**, to complete placing door **M_Door-Double-Flush Panel** and **M_Door-Overhead-Rolling** types.
- Then, open **East Elevation** View. Click selected **glass panel** by press **TAB** repeatedly.



- Go to Insert Tab, click **Load Family > Doors > M_Door-Curtain-Wall-Double-Glass**.
- At **Type Selector**, click **Edit Type**. Change Family Type to **M_Door-Curtain-Wall-Double-Glass**. Then click **OK**.

PLACING DOORS

10. Figure shows a resulting of complete **Door** placing.



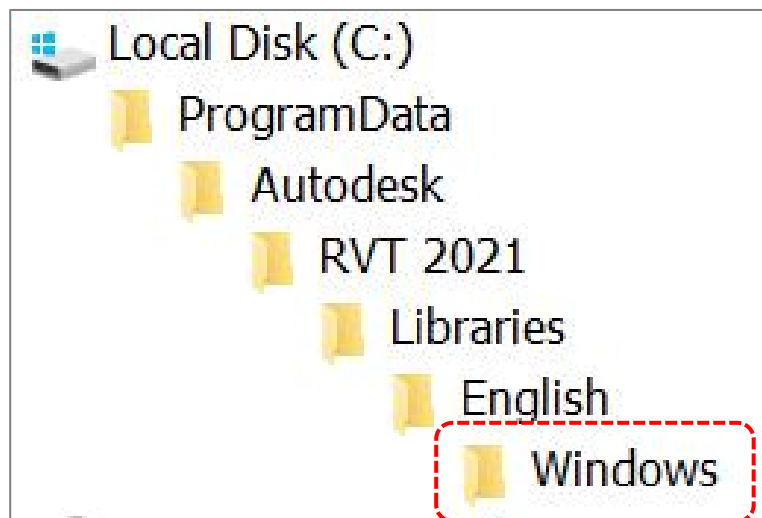
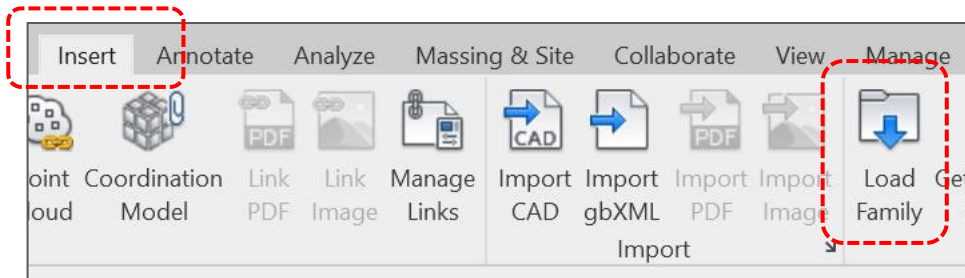
WINDOWS



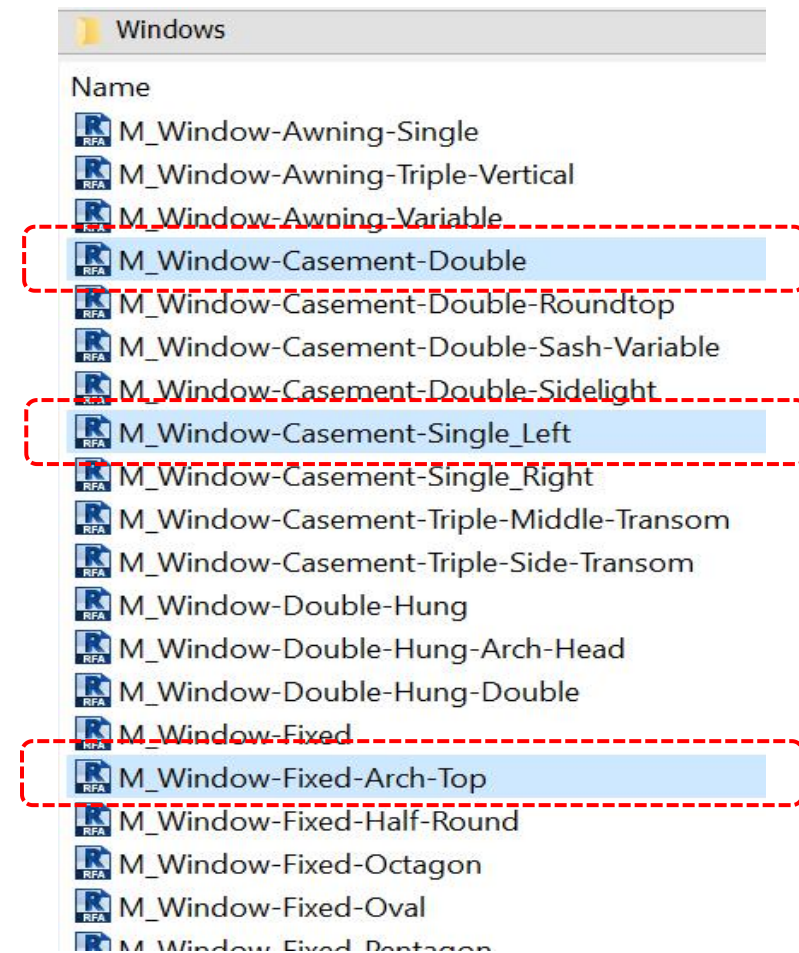
PLACING WINDOWS

Before placing **Windows**, load **Windows Family** from **Revit Libraries**.

1. At **Insert Tab**, click **Load Family Tool**.
Then, open **Windows** folder as shown in figures.



2. Select **Window Family** based on project need.



PLACING WINDOWS

3. Then, select **Windows Type** based on project need or can be select all. Click **OK**.



PLACING WINDOWS

EXAMPLE:

Placing all window types in the building model as shown in figure.

Family and Window Types:

23



M_Window-Casement-Double
850 x 900mm

(Provided)

27



M_Window-Fixed-Arch-Top
600 x 1000mm

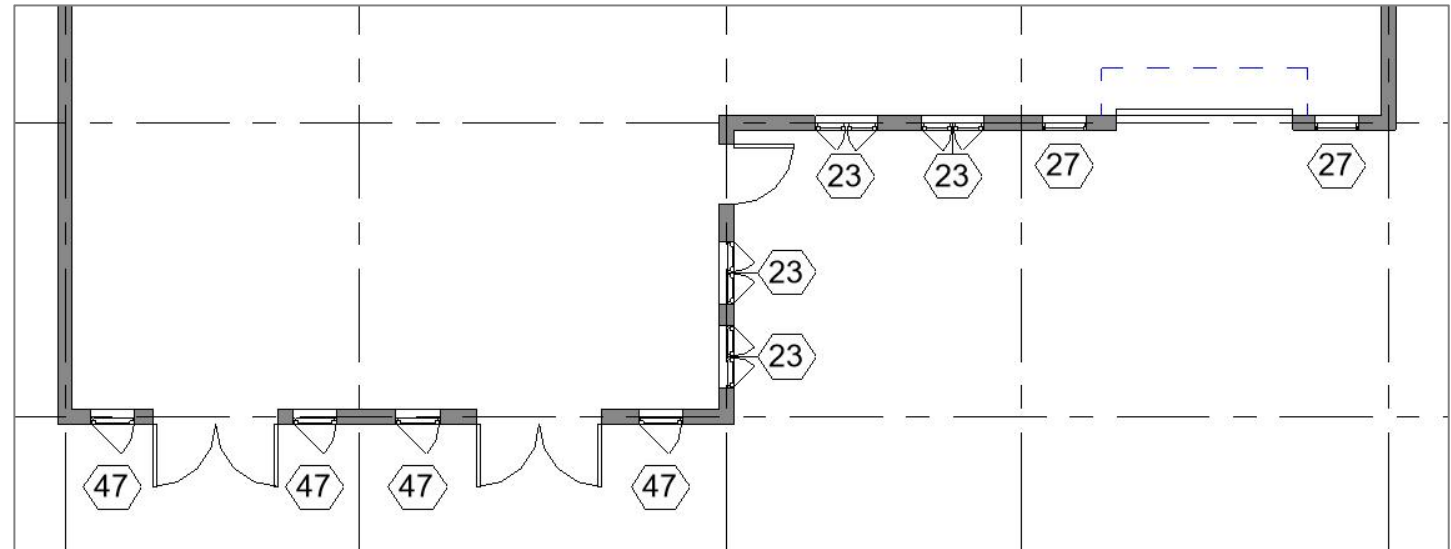
(Provided)

47



M_Window-Casement-Single_Left
600 x 900mm

(Provided)



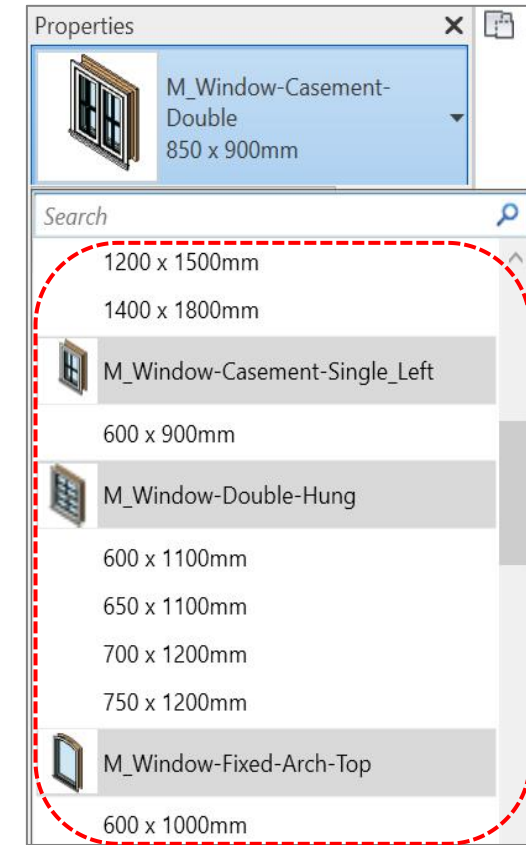
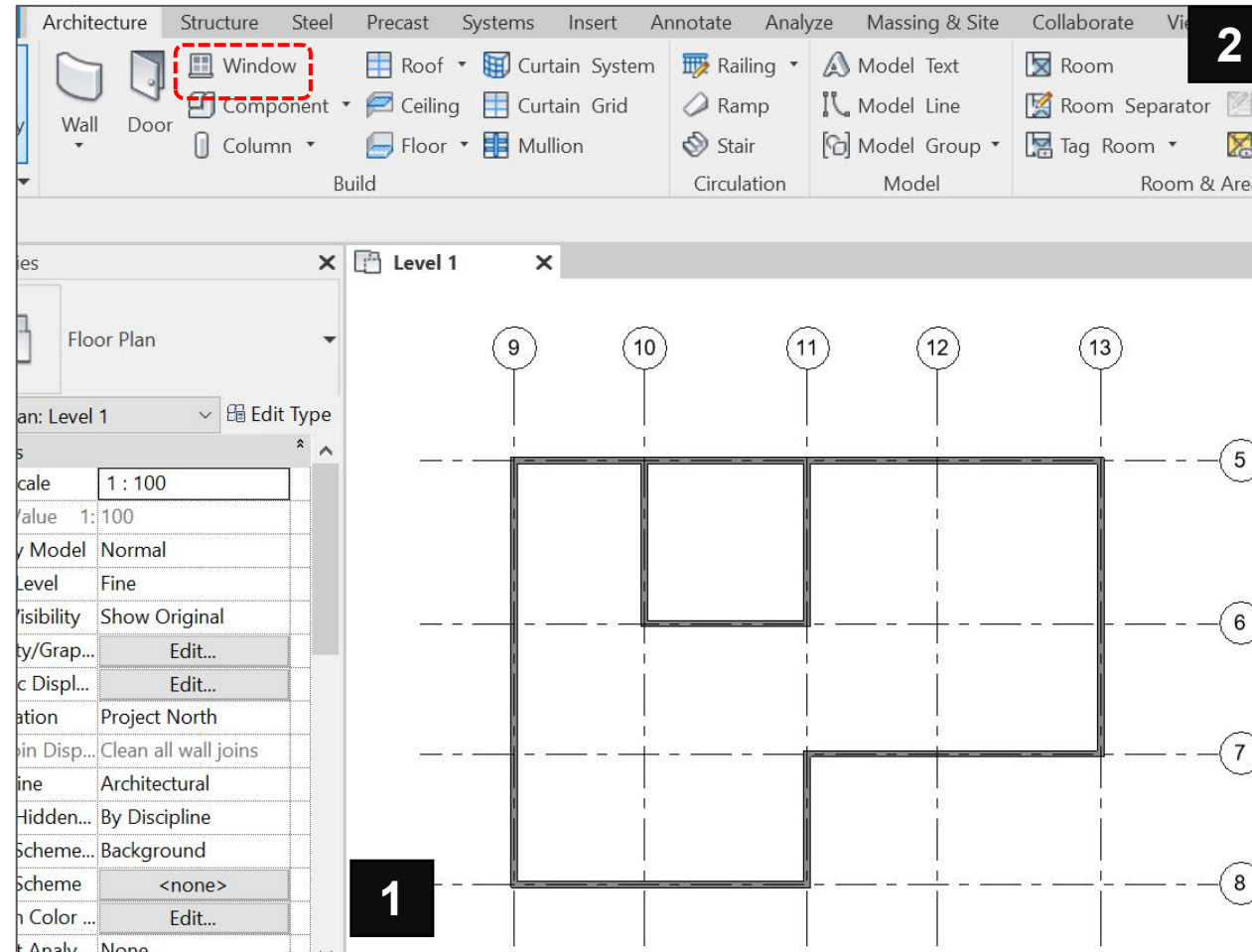
PLACING WINDOWS

STEPS:

1. View **Level 1 Floor Plan**.

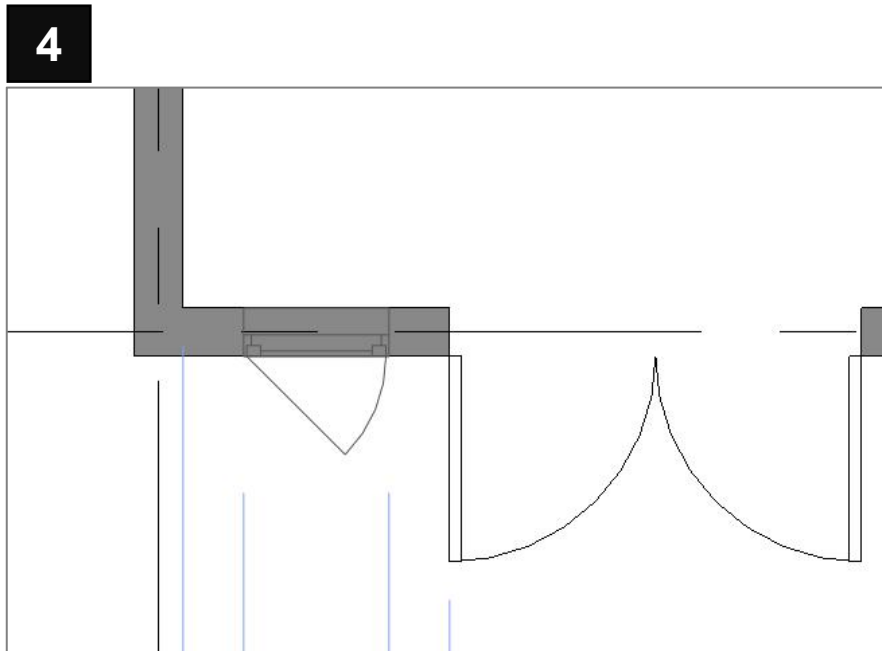
2. Select the **Architecture** tab in the ribbon and click **Window**.

3. Select **Window Type** by Drop Down Type Selector in Properties Palette

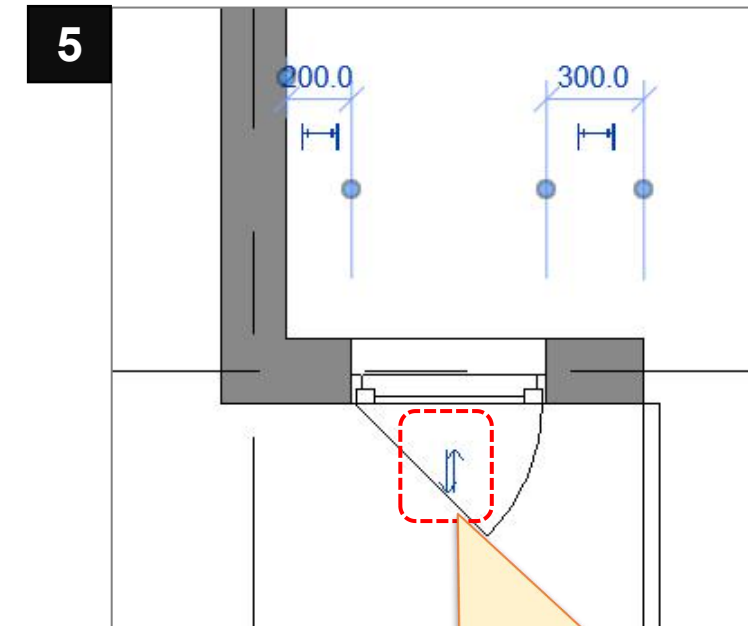


PLACING WINDOWS

4. Move the pointer to selected wall. Before place a window, check placement orientation, if does not match with the project need, press (spacebar at keyboard) to flip the window.



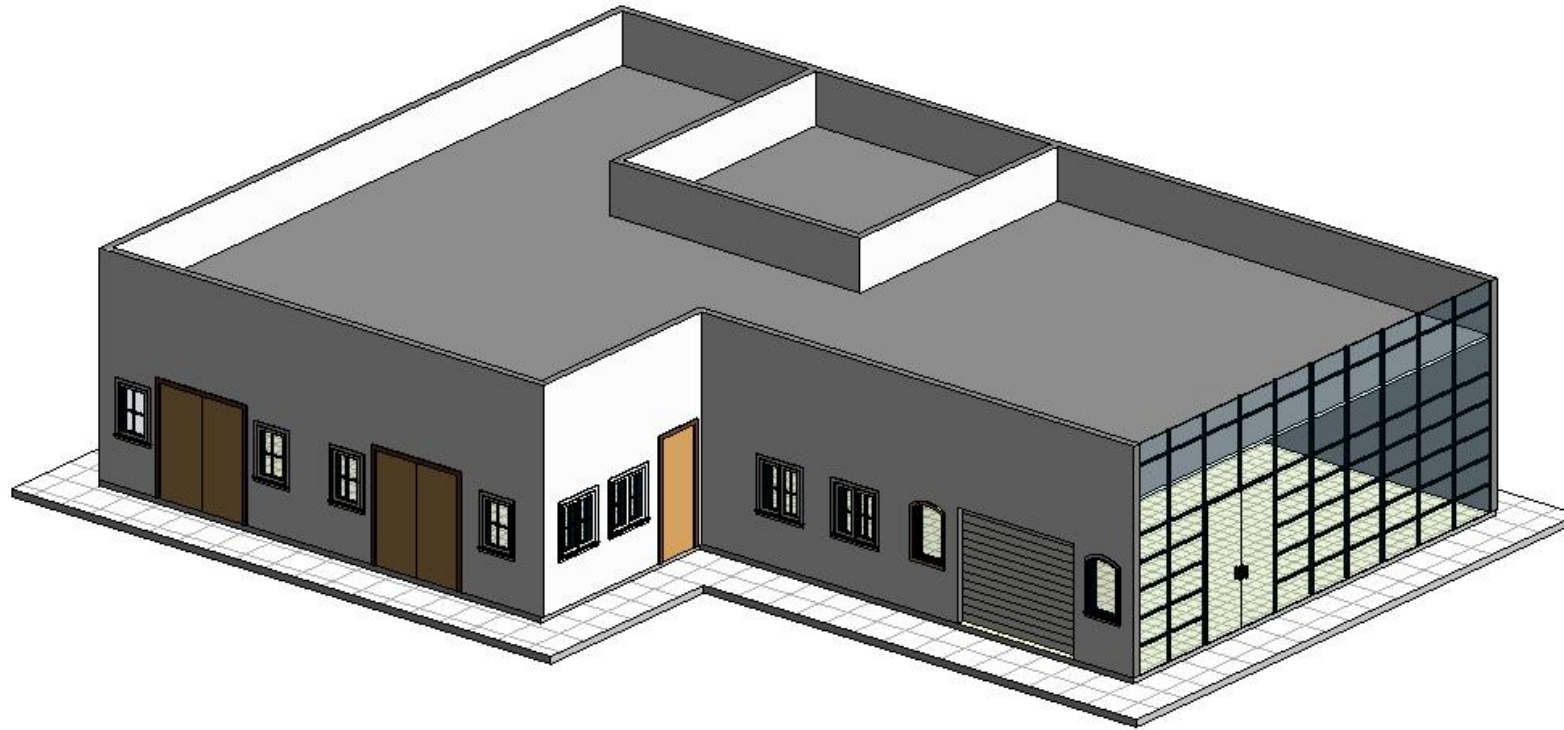
5. Then, click to place it.



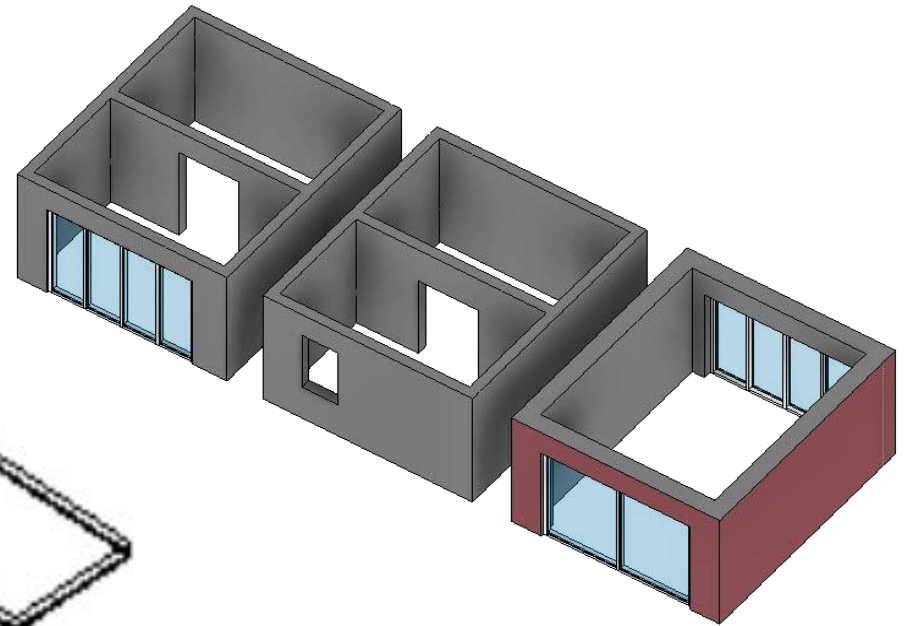
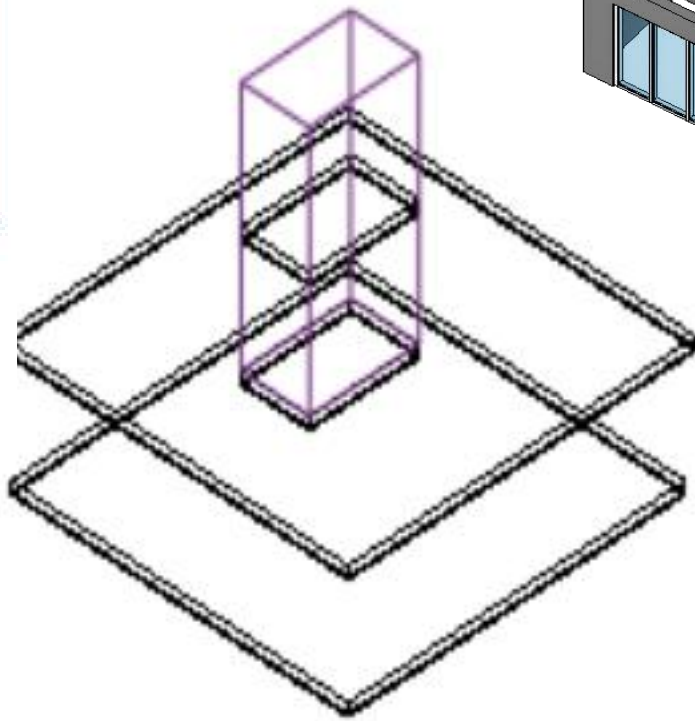
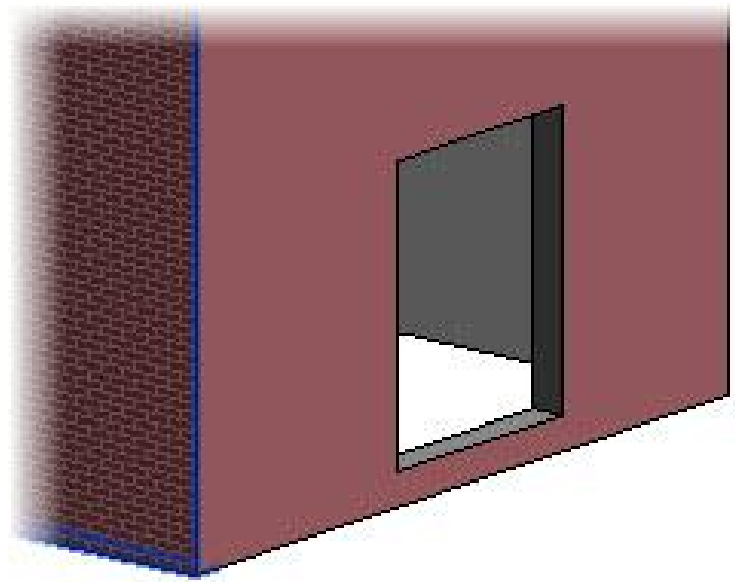
Flip symbol use to flip the window after placing

PLACING WINDOWS

6. Repeat **Steps 3 to 5**, to complete placing all windows as shown in figure.

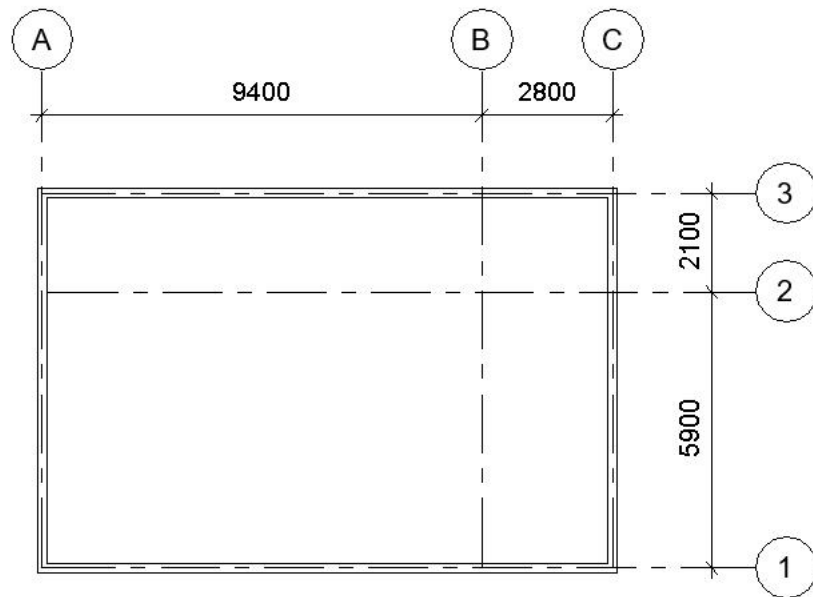


OPENING

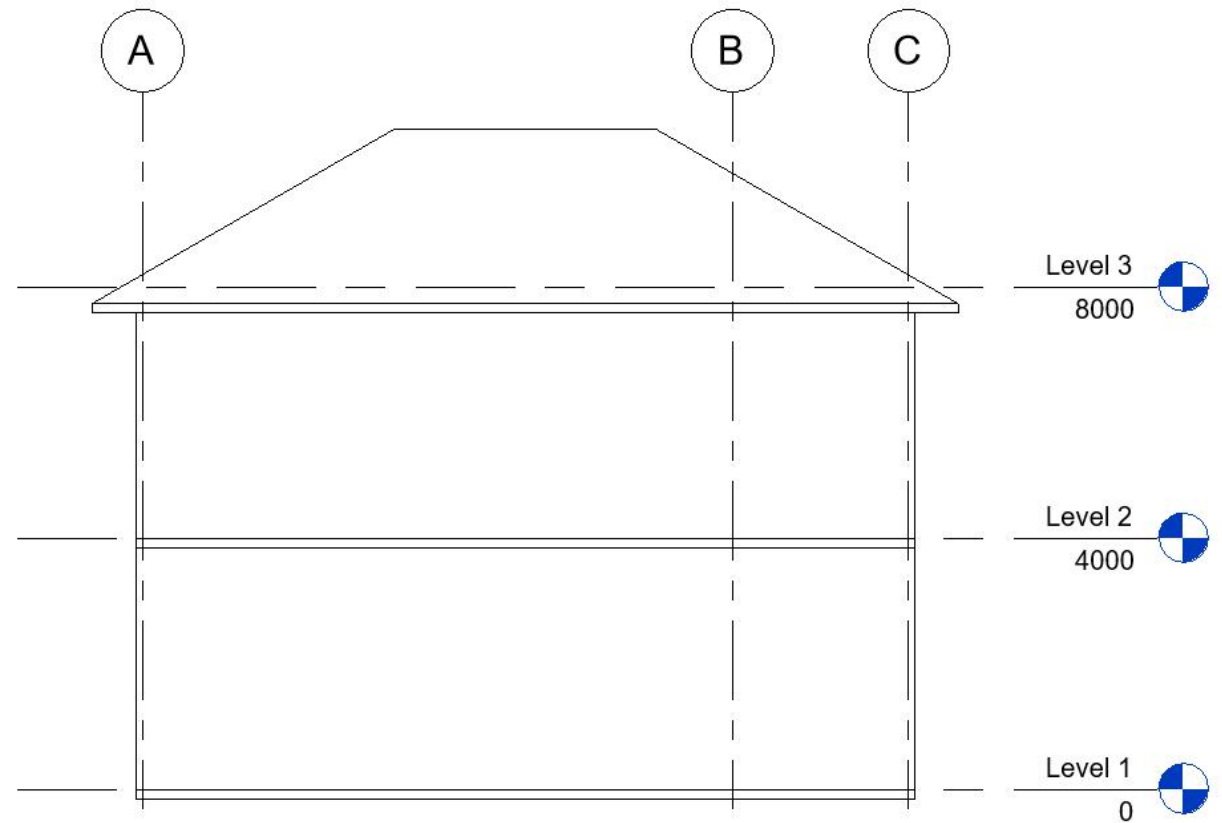


CREATING OPENING

Create **New Building Model** as shown in figure. By using this model, show example of opening such as **Wall Opening**, **Shaft**, **Vertical Opening** and **By Face Opening**.



Plan View

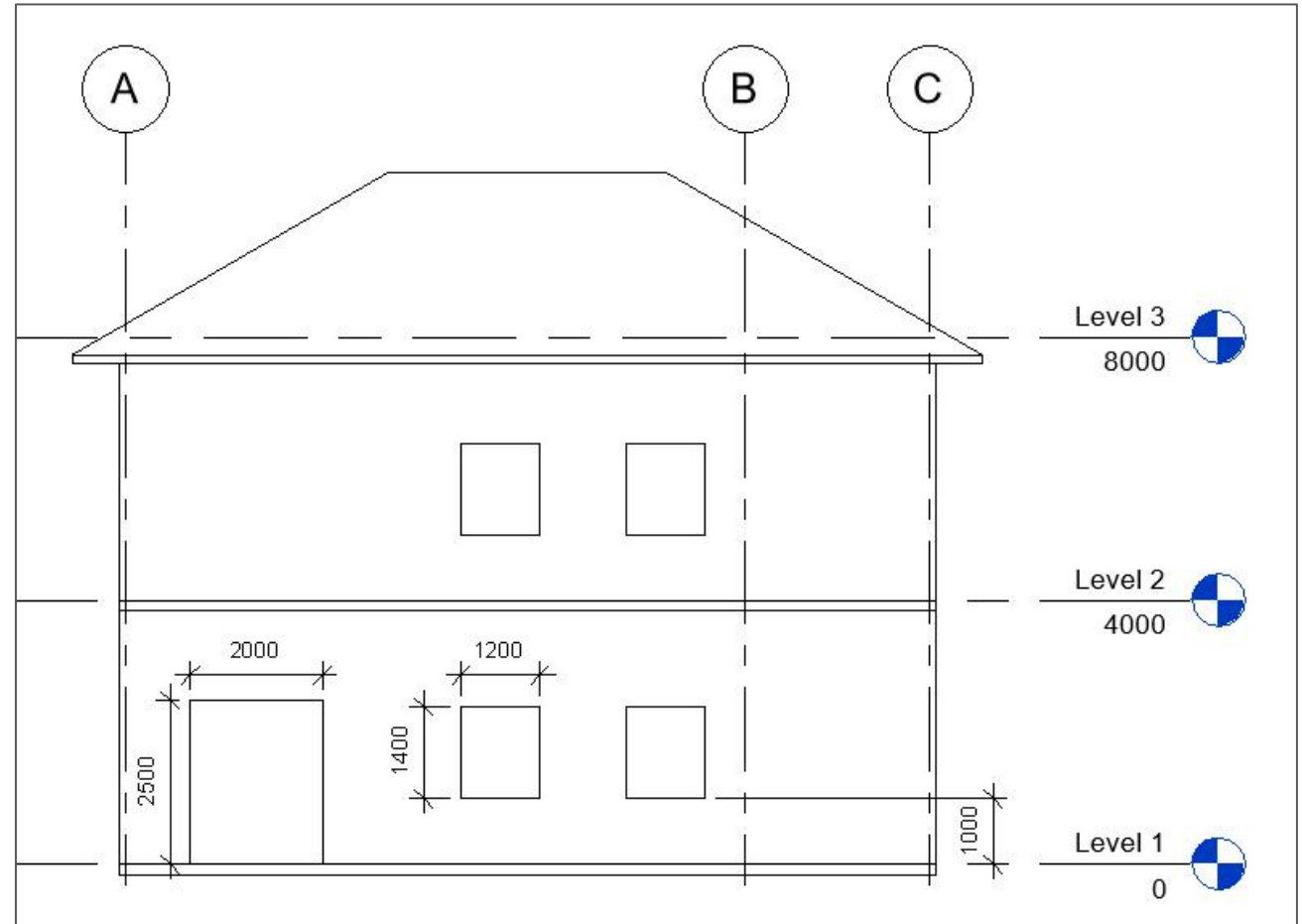


East-Elevation

CREATING OPENING-Wall

EXAMPLE 1:

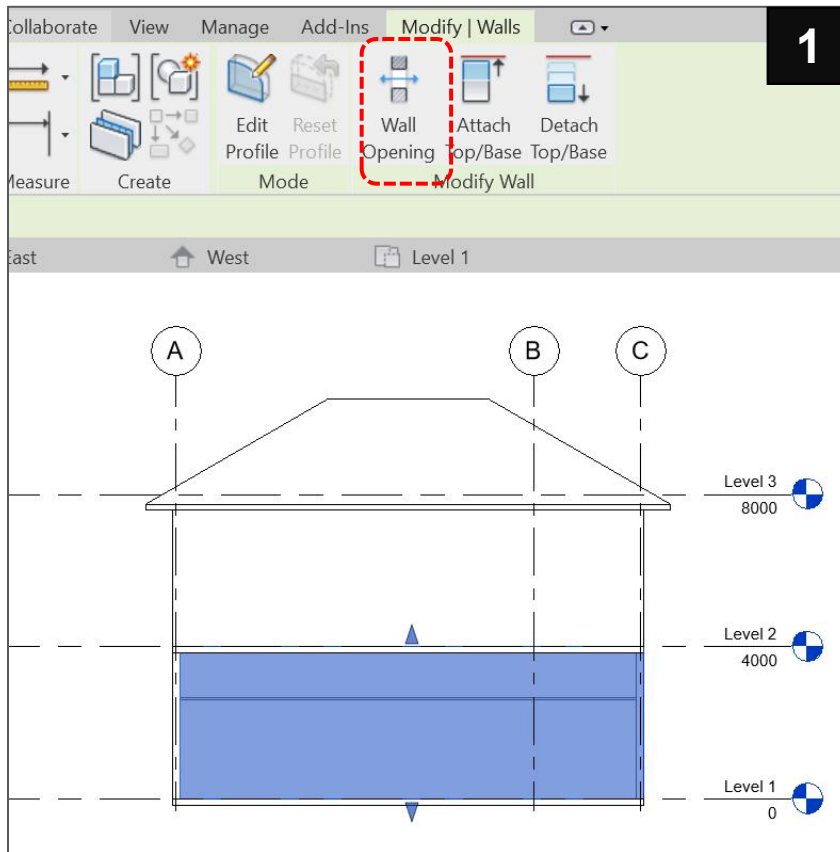
Create **Wall Opening** as shown in figure.



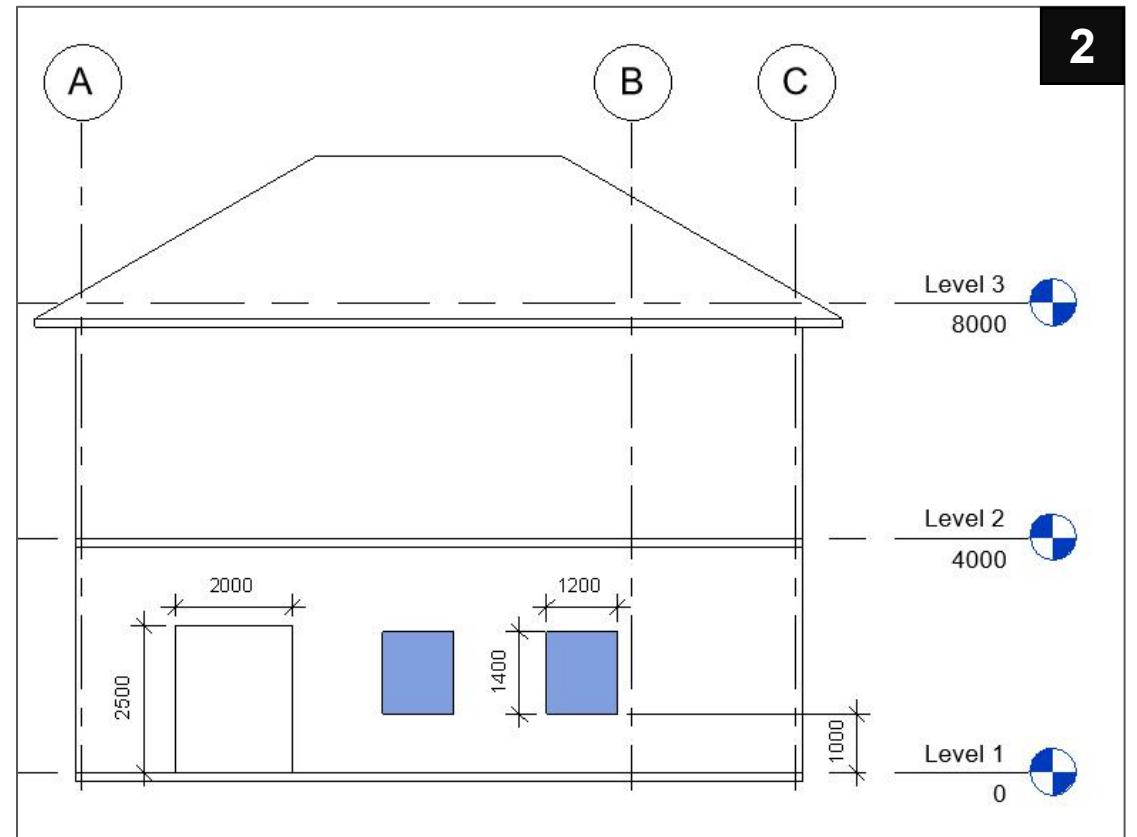
CREATING OPENING-Wall

STEPS:

1. Open **South-Elevation Plan**. Selct **Wall** to sketch and click to **Wall Opening Tool**.

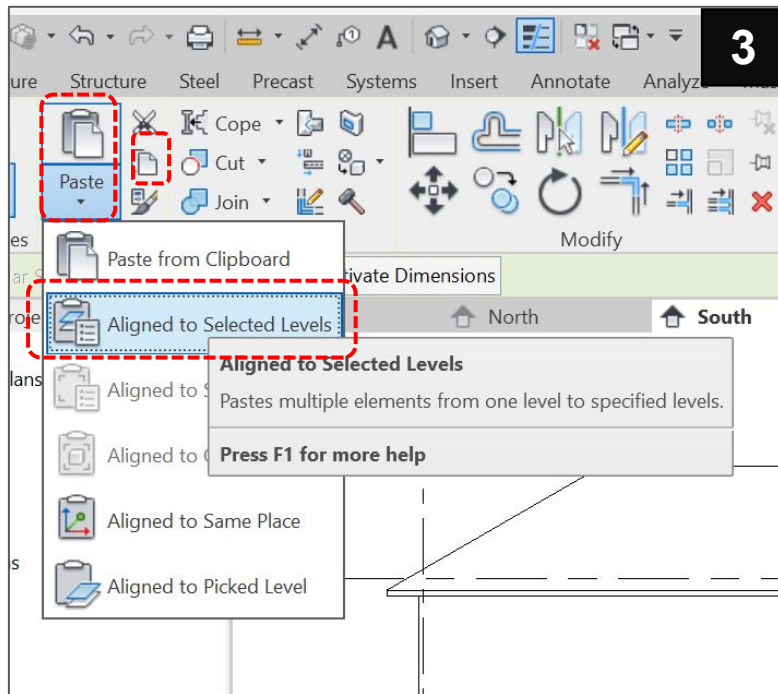


2. Pick at **Wall** and **Sketch** according to dimensions of opening. Select 2 openings as shown in figure.

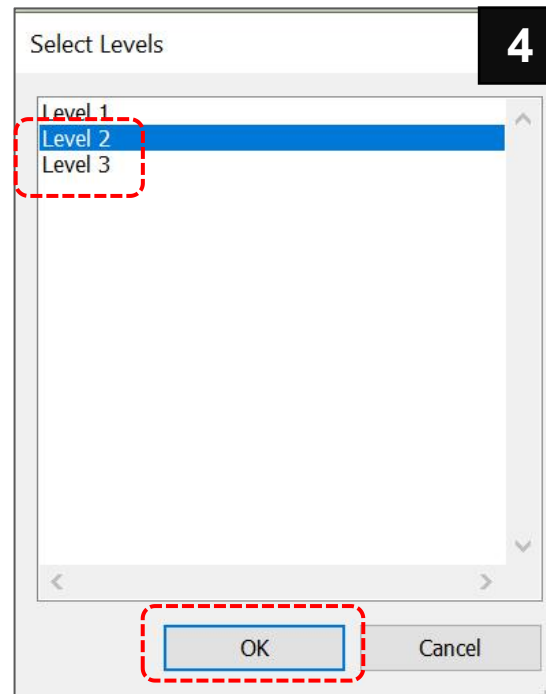


CREATING OPENING-Wall

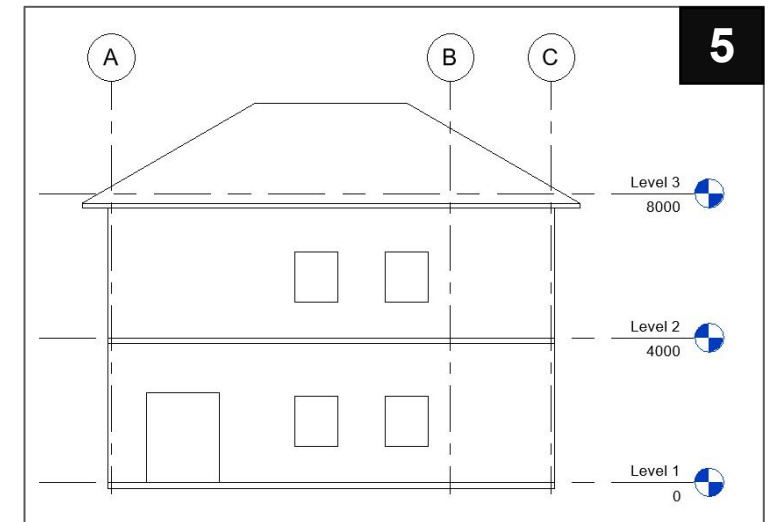
3. At **Clipboard Panel**, click **Copy** to **Clipboard** and **Drop Down Paste > Aligned To Selected Levels** .



4. Select **Level 2**, Then click **OK**.



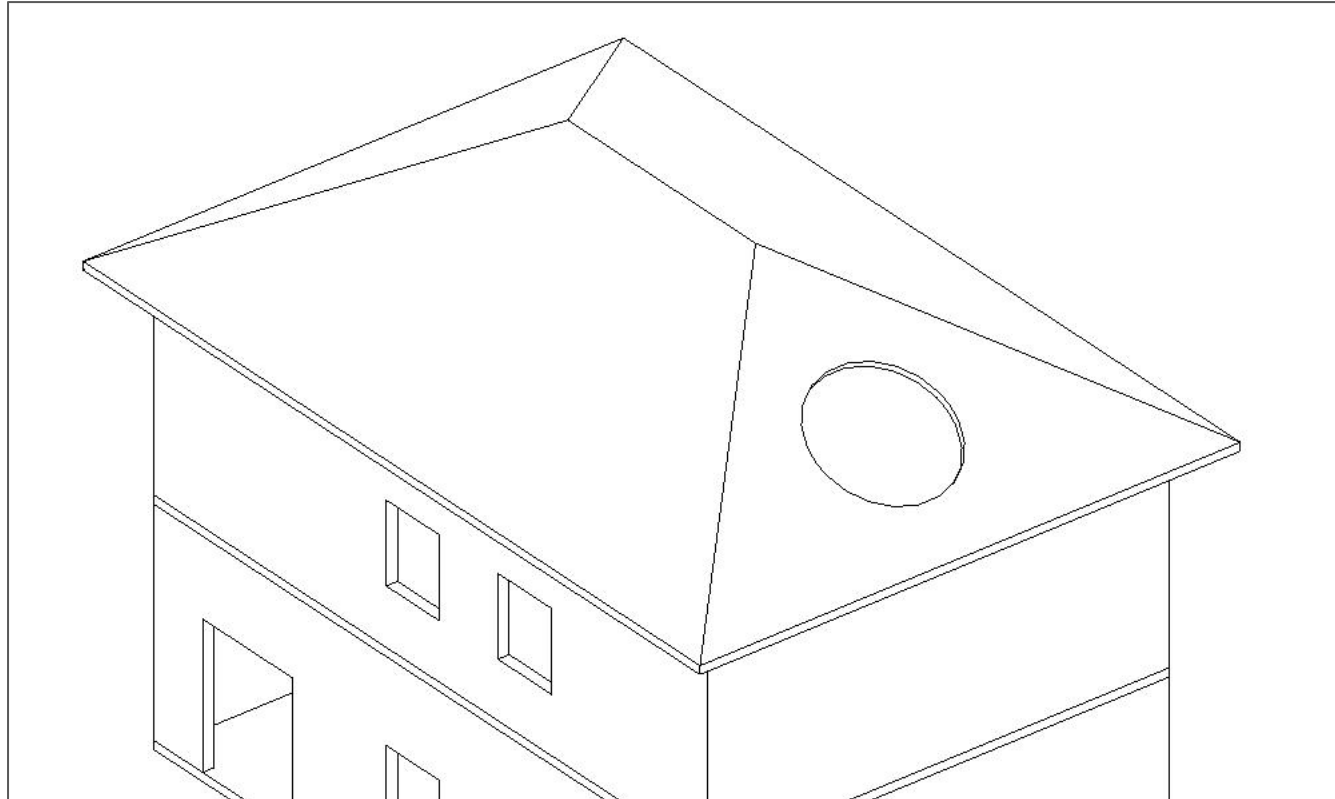
5. Figure shows the resulting of **Wall Opening**.



CREATING OPENING-By Face

EXAMPLE 2:

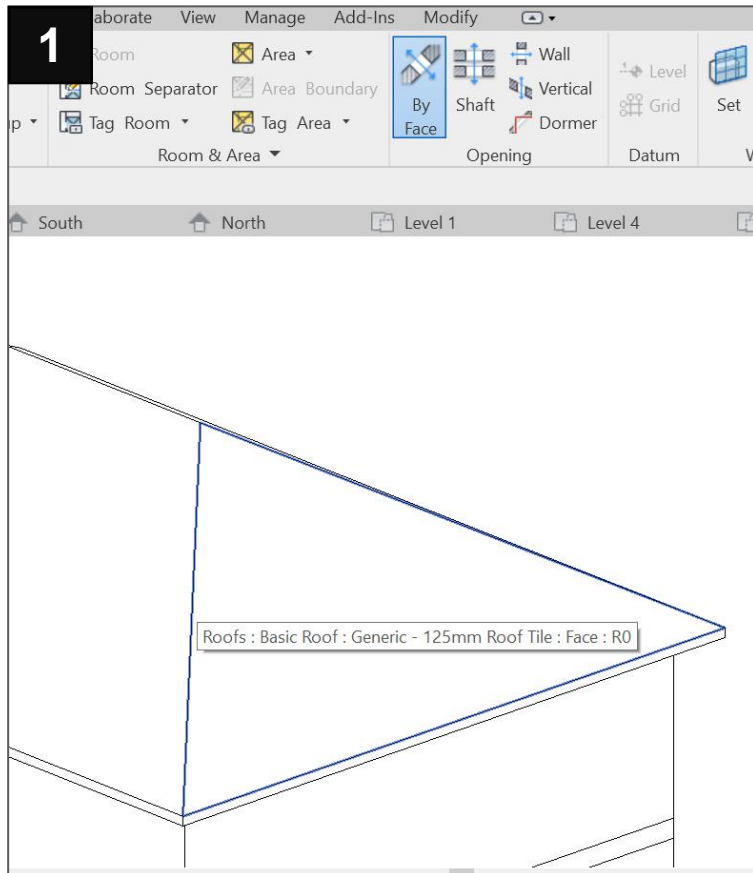
Create Hollow Circle with 1200mm Radius at Roof Surface using **By Face Opening** as shown in figure.



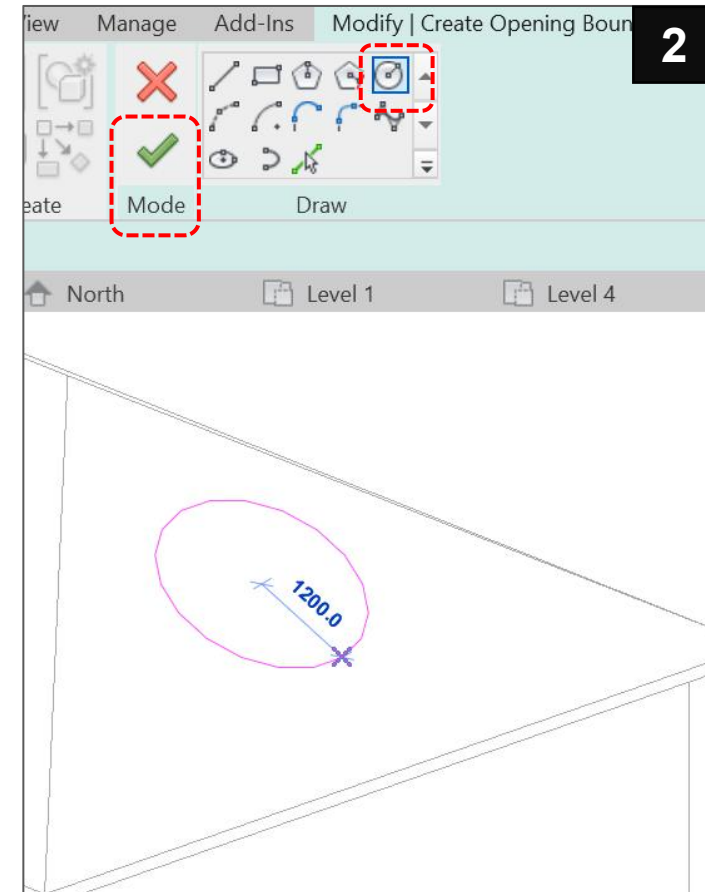
CREATING OPENING-By Face

STEPS:

1. Open **3D View Plan**. Click **By Face Tool** in **Opening Panel**. Then , click at selected **Roof Surface**.



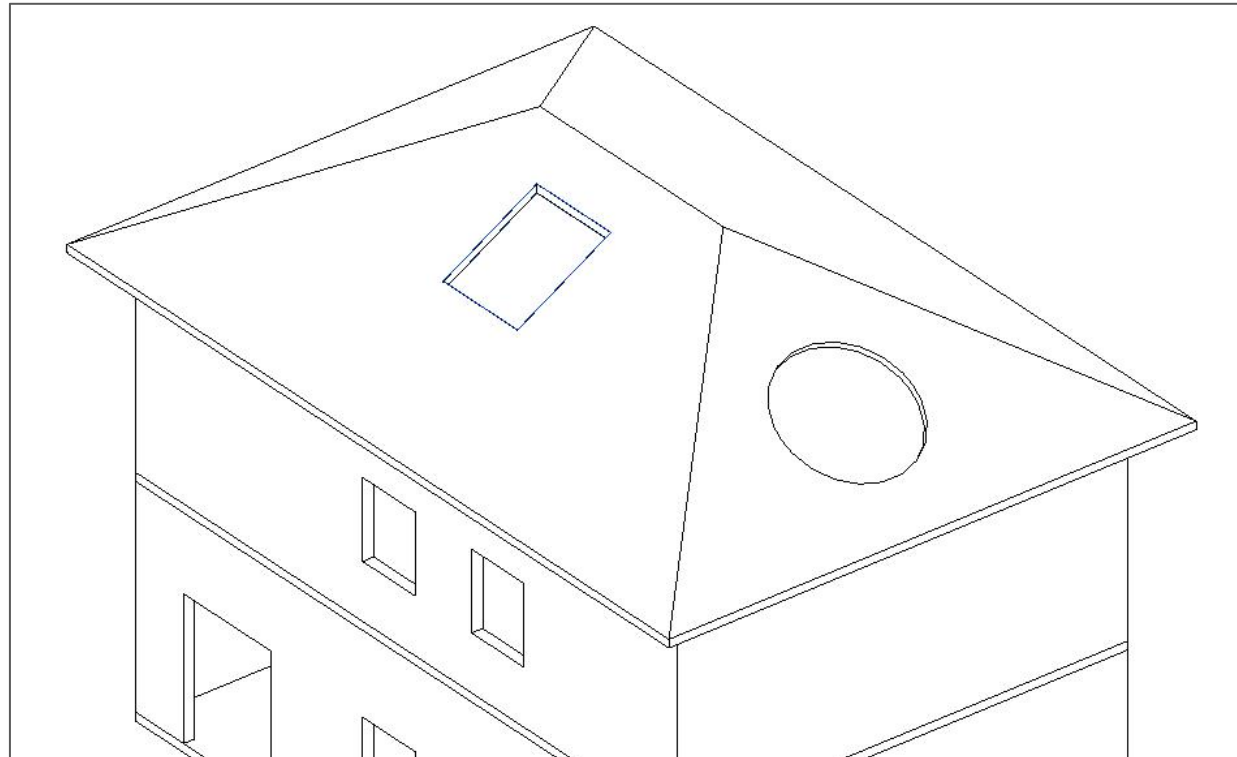
2. Click **Circle Tool** in **Draw Panel**, then draw circle at selected **Roof surface**. Then, click **Finish Mode**.



CREATING OPENING-*Vertical*

EXAMPLE 3:

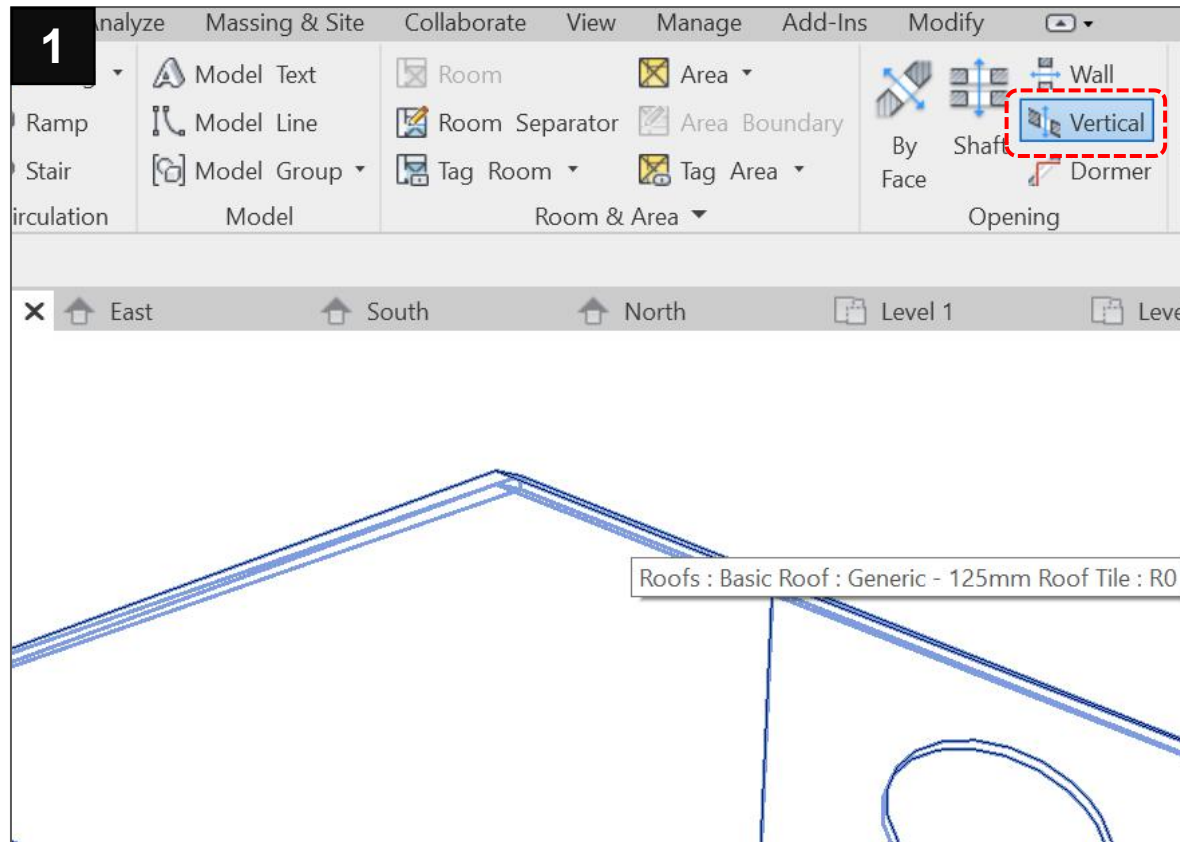
Create Hollow Rectangle with dimension (1700 x 1700mm) at Roof Surface using **Vertical Opening** as shown in figure.



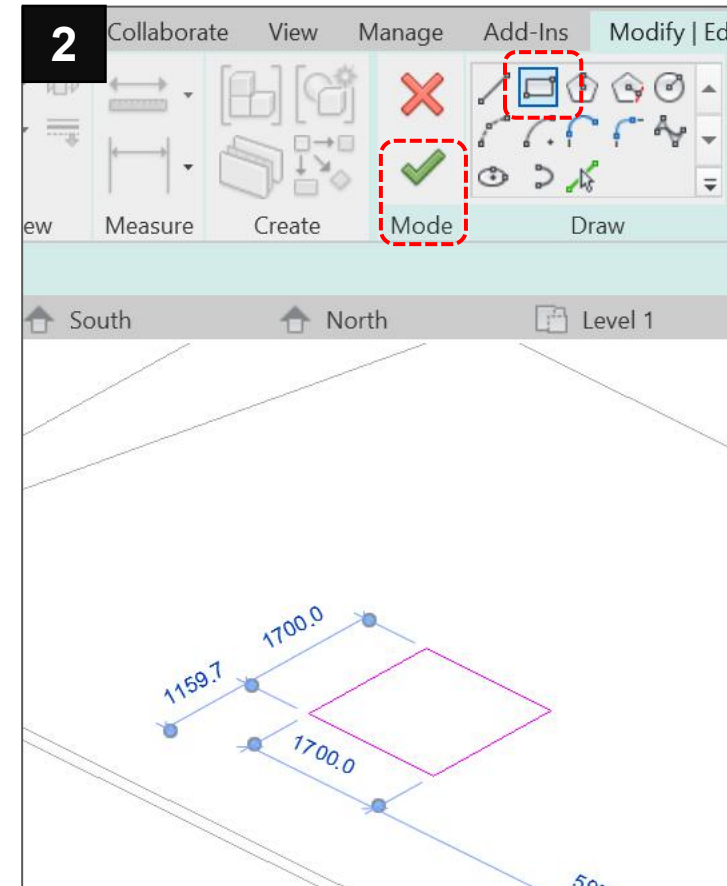
CREATING OPENING-*Vertical*

STEPS:

1. Open **3D View Plan**. Click **Vertical Tool** in **Opening Panel**. Then , click at **Roof Surface**.



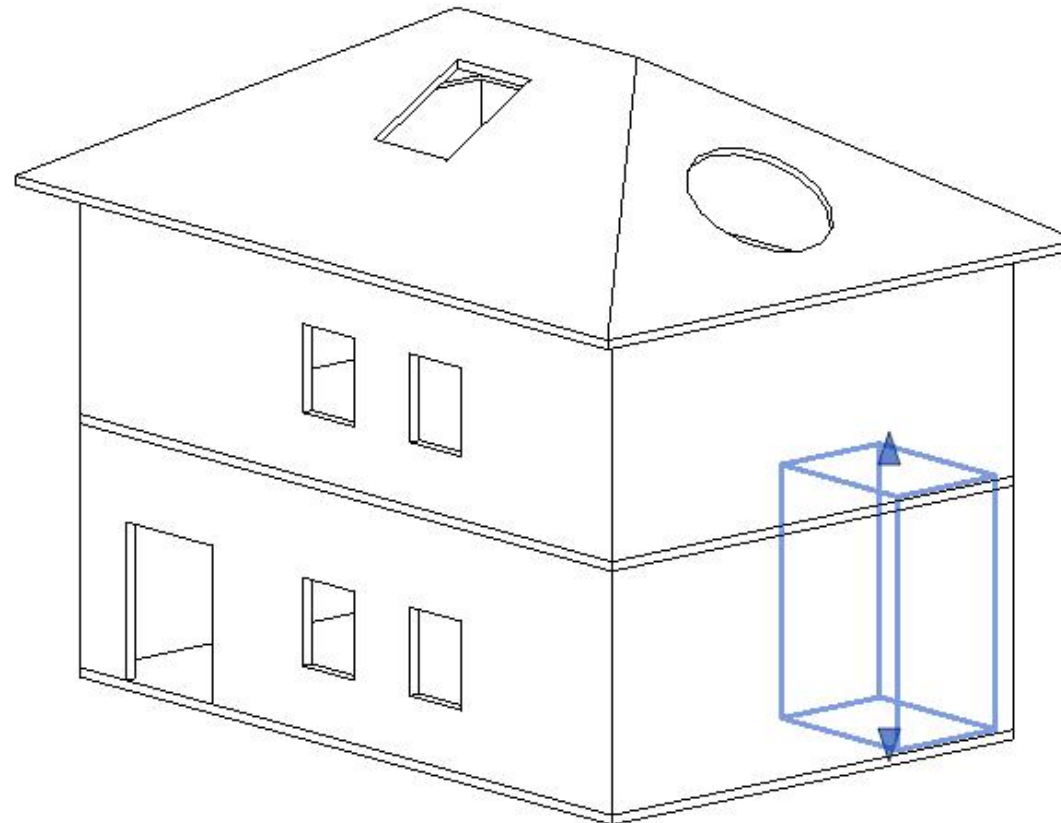
2. Click **Rectangle Tool** in **Draw Panel**, then draw square shape at selected roof surface. Then, click **Finish Mode**.



CREATING OPENING - *Shaft*

EXAMPLE 4:

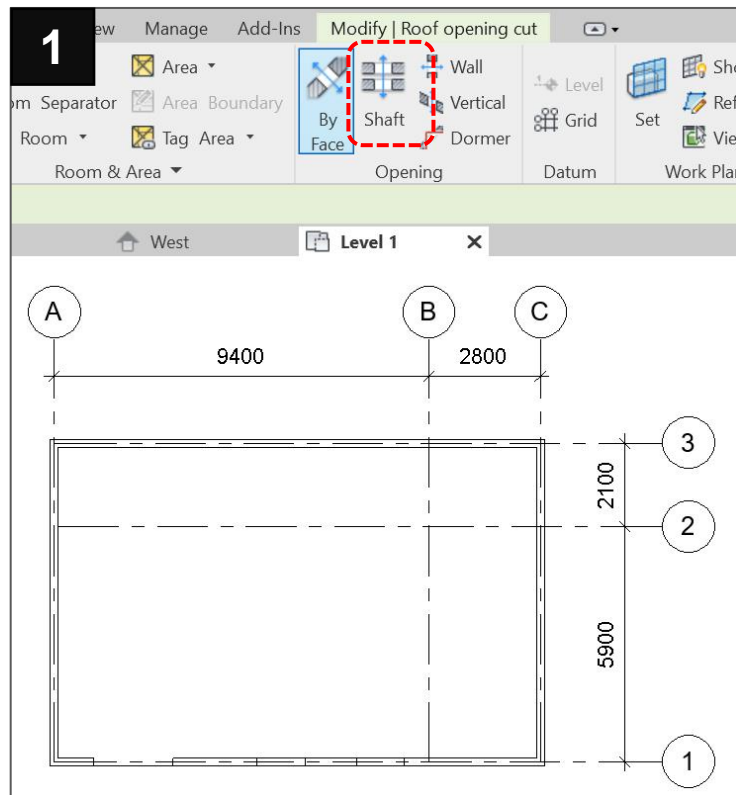
Create **Shaft** from Level 1 to Level 2 as shown in figure.



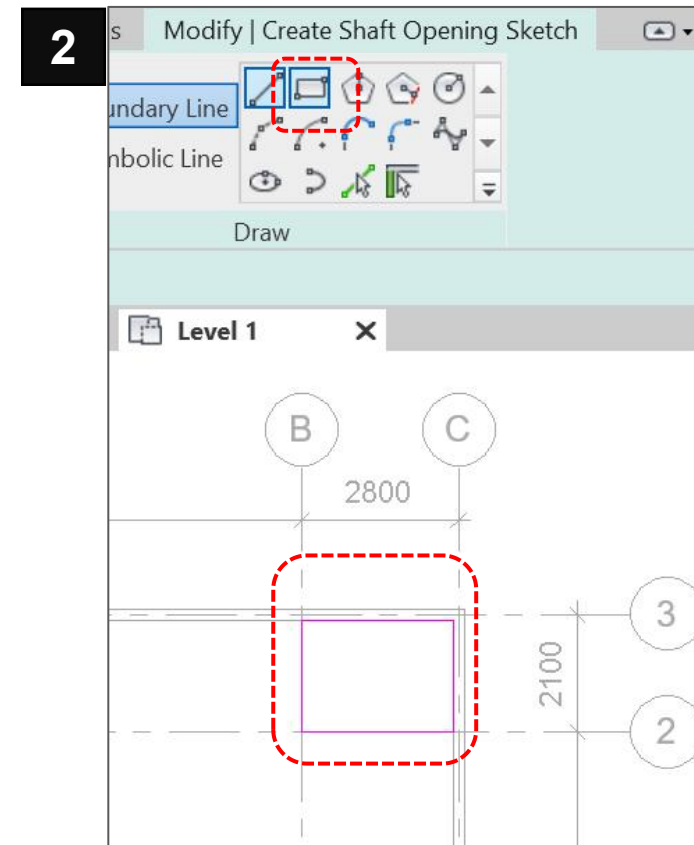
CREATING OPENING - Shaft

STEPS:

1. Open **Level 1 Floor Plan**. Click **Shaft Tool** in **Opening Panel**.



2. Click **Rectangle Tool** in **Draw Panel**, then draw rectangle shape at selected area.



CREATING OPENING - Shaft

3. Change **Base Offset** to **0.0** and **Top Constraint** to **Up to level: Level 2**. Then , click **Finish Mode**.

Properties

Shaft Openings

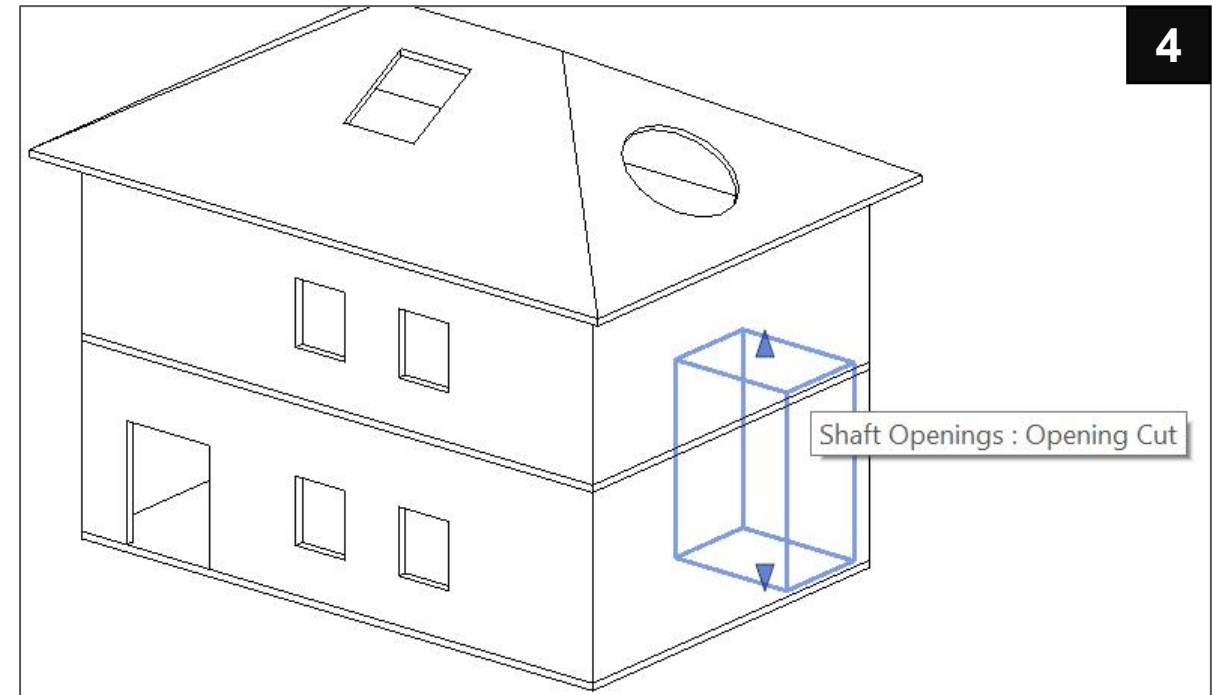
Constraints

Base Constraint	Level 1
Base Offset	0.0
Top Constraint	Up to level: Level 2
Unconnected H...	4000.0
Top Offset	0.0

Phasing

Phase Created	New Construction
Phase Demolis...	None

4. Figure shows the resulting of **Shaft Opening**.



STAIRS AND RAILING



In Revit, stair components are typically created in plan or 3D view.

Stairs are installed using individual run, landing, and support components. Use run component tools to make regular runs, such as straight, arc, circle, or roller.



Railings can be created anywhere in a project. They can be placed on stairs, ramps, floors, and roofs, but they are not hosted elements

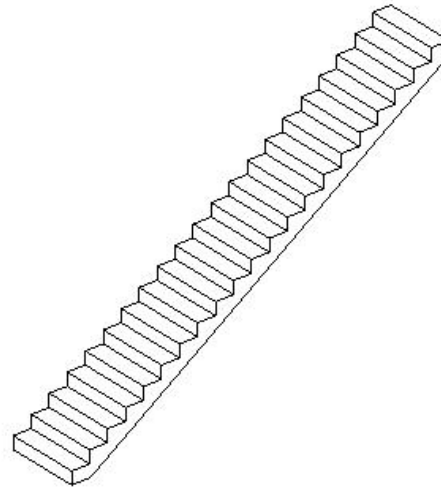
CREATING STAIRS

There are three default stair Family in Revit, which are Cast In Place, Assembled and Precast Stairs:-

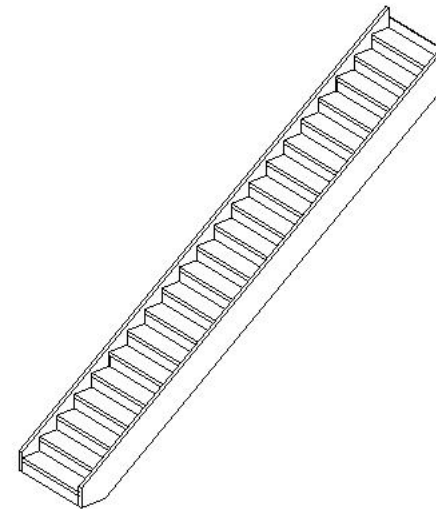
1. Straight Stair

EXAMPLE 1:

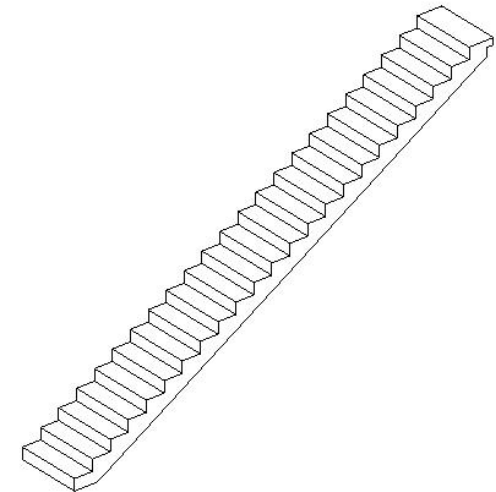
Create straight stairs as shown in figure.



Cast- In Place Stair
(Monolithic Stair)



Assembled Stair

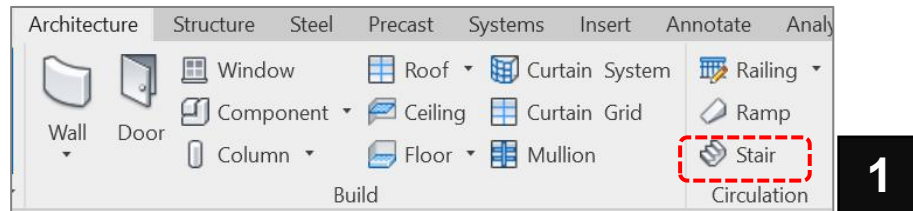


Precast Stair

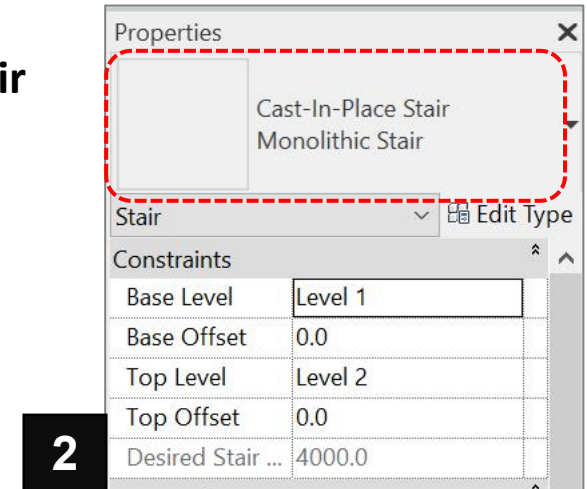
CREATING STAIRS

STEPS:

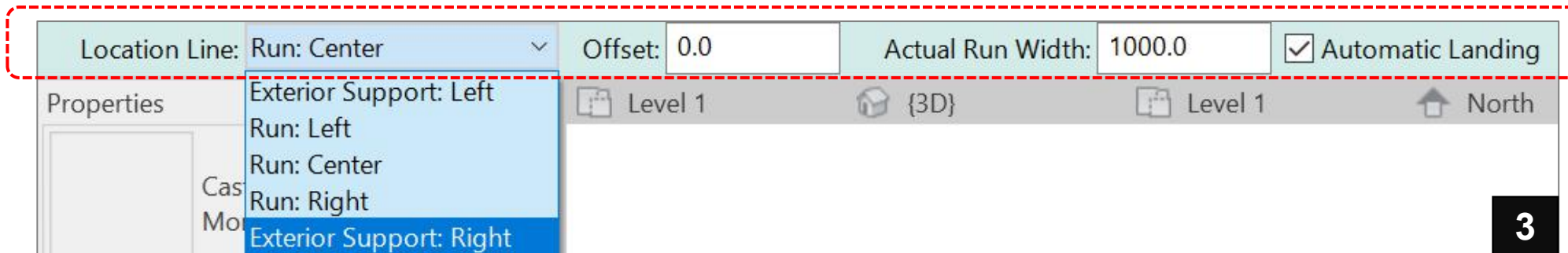
1. Open **Level 1 Floor Plan**.



2. On the **Architecture** Tab, click **Stair** and use **Cast-in Place Stair Type** in Properties Palette.

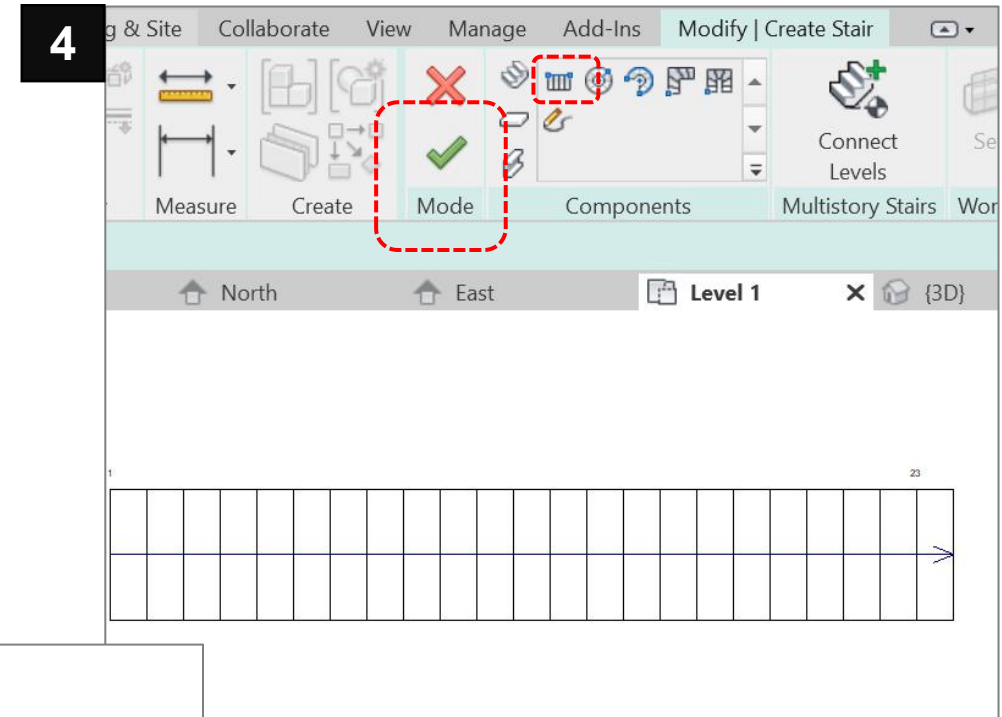
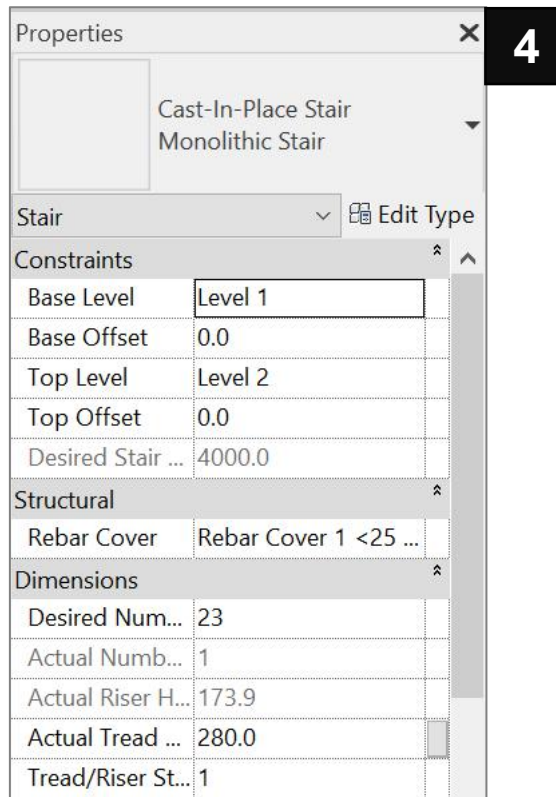


3. Before start creating a stair, setup **Location Line**, **Offset** (if necessary), **Actual Run Width** and default **Tick** for **Automatic Landing**.



CREATING STAIRS

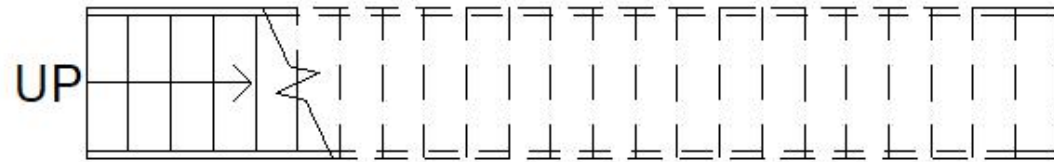
4. By use default information in **Properties Palette**, and default component, click and drag **Straight** stair. Then click **Finish Mode**.



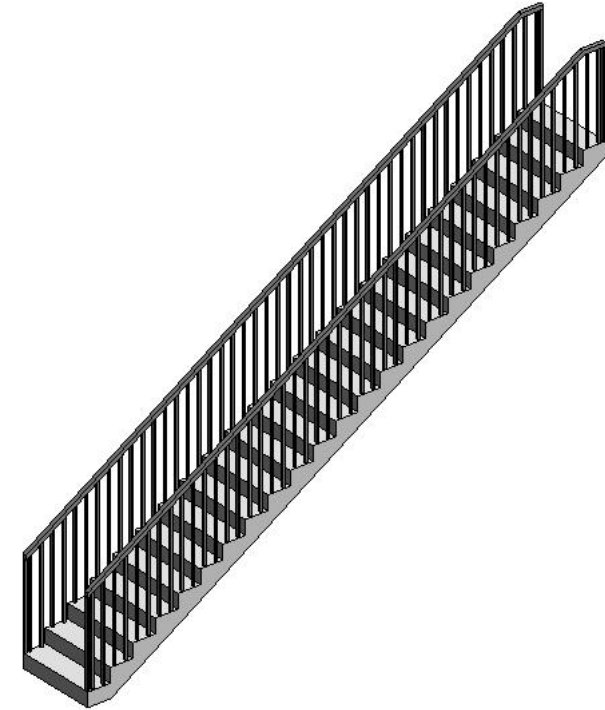
CREATING STAIRS

5. Figure shows a resulting of **Straight Stair** created.

Note: Stair automatically created with railing



Plan View



3D View (Shaded Visual Style)

6. Repeat all steps to create other **Stair Familys and Types**.

CREATING STAIRS

There are three default stair Family in Revit, which are Cast In Place, Assembled and Precast Stairs:-

2. U-Shape Stair

EXAMPLE 2:

Create **U-Shape Stairs** as shown in figure.



Cast- In Place Stair
(Monolithic Stair)



Assembled Stair

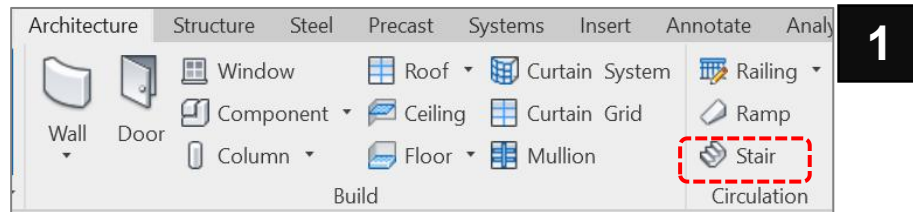


Precast Stair

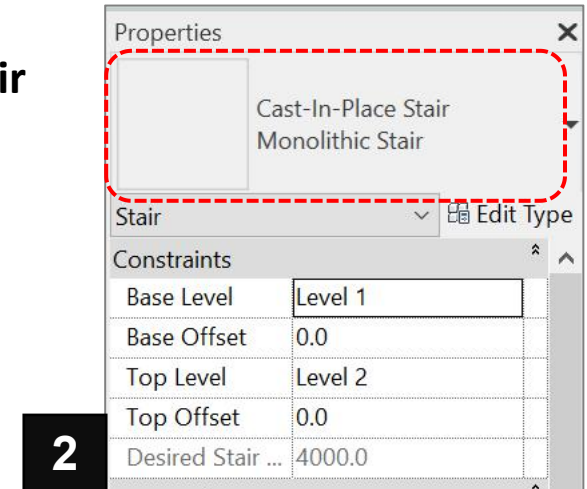
CREATING STAIRS

STEPS:

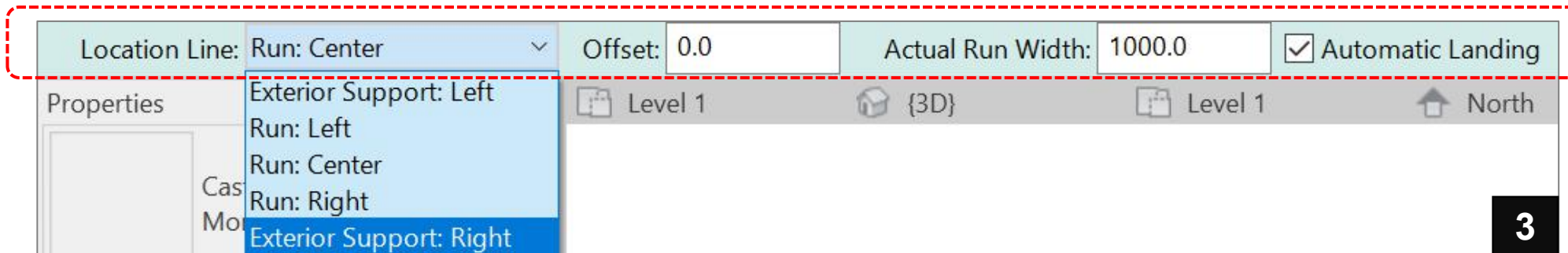
1. Open **Level 1 Floor Plan**.



2. On the **Architecture** Tab, click **Stair** and use **Cast-in Place Stair Type** in Properties Palette.

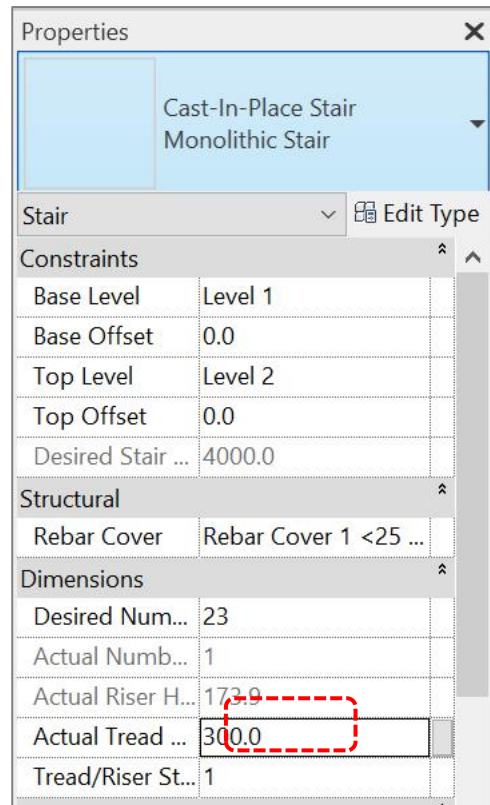


3. Before start creating a stair, setup **Location Line**, **Offset** (if necessary), **Actual Run Width** and default **Tick** for **Automatic Landing**.

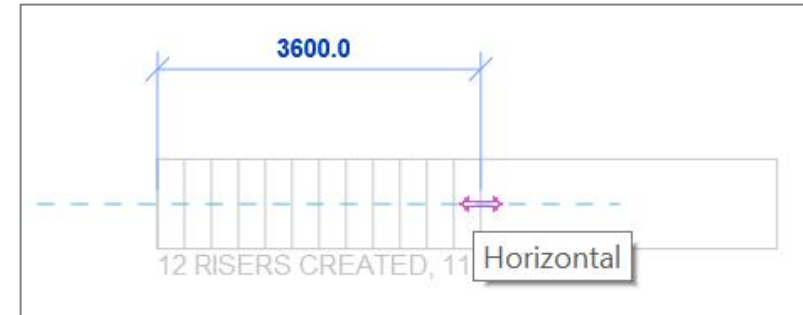


CREATING STAIRS

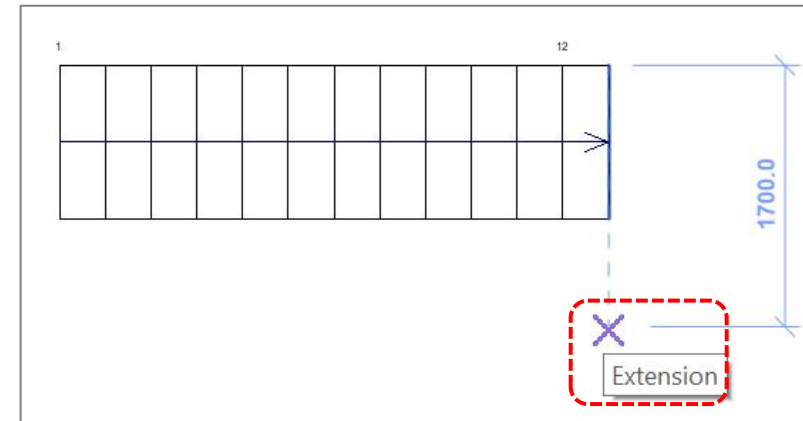
4. At **Properties Palette** change **Actual Tread** to **300**. Then **Enter**.



5. **Click and Drag** for **12 risers** and click.



6. Then, move cursor until reach **Extension Point** (Based on design) and click.

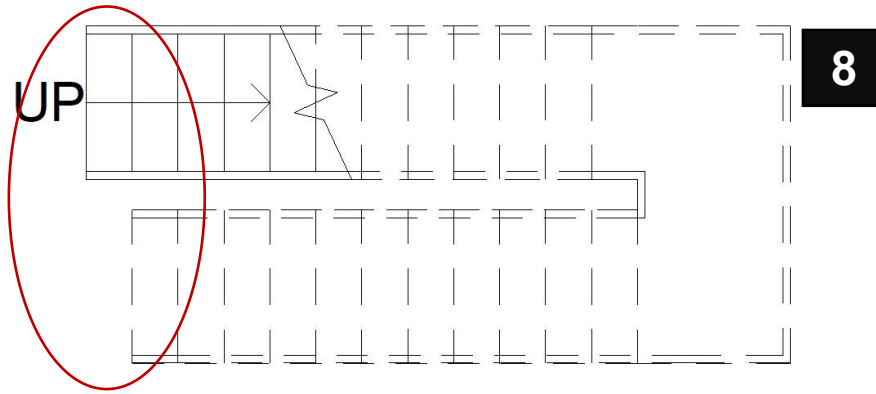


7. After that, continue Drag the rest **11 risers** until finish.



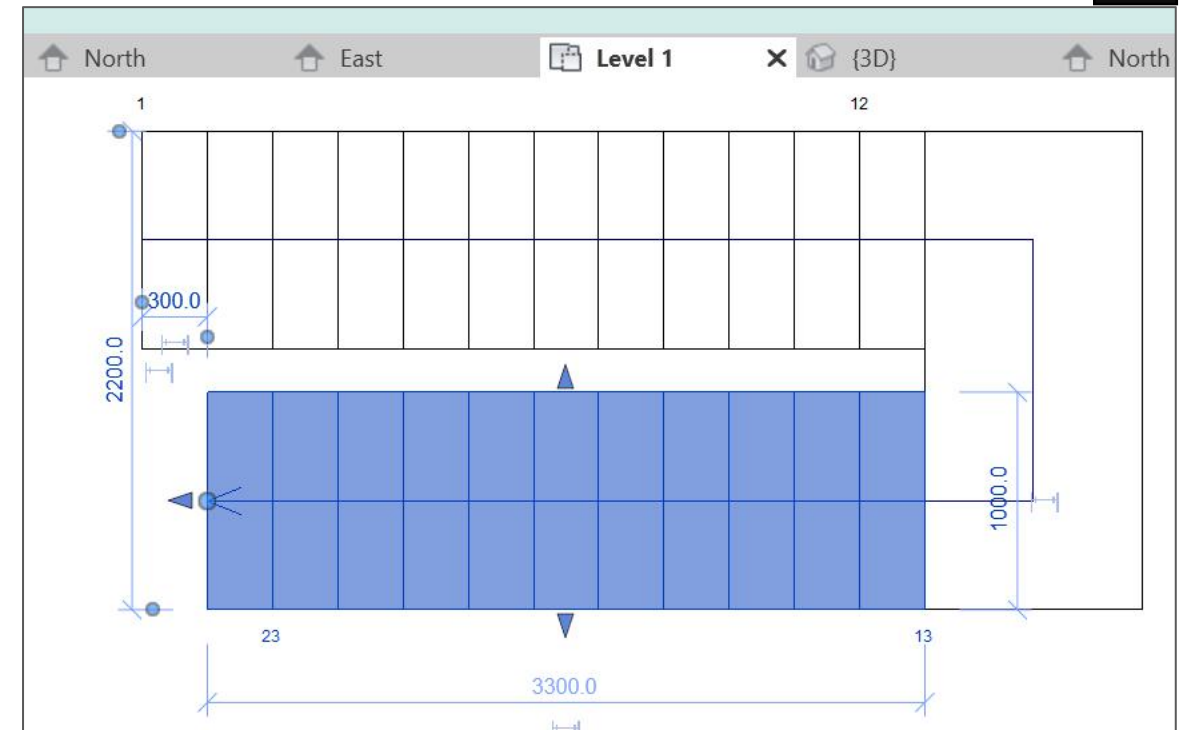
CREATING STAIRS

8. Figure shows a resulting of **U-Shape Stair** was created.



Can be align ending stair with starting, by edit upper staircase.

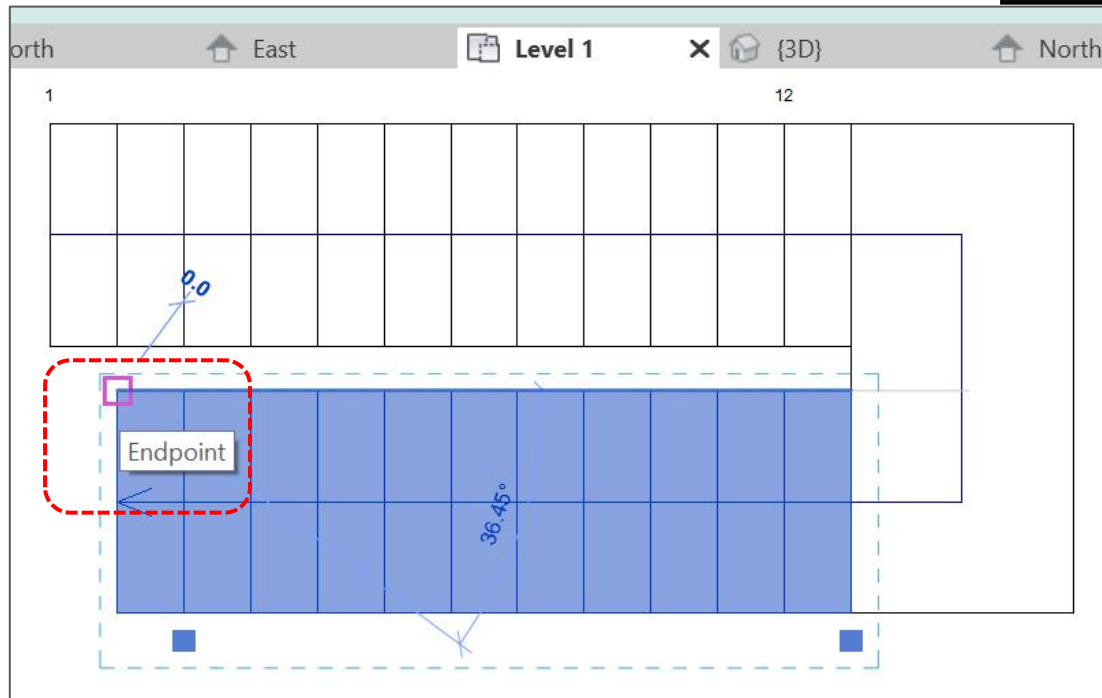
9. Before click **Finish Mode**, move cursor at stair as shown in figure.



CREATING STAIRS

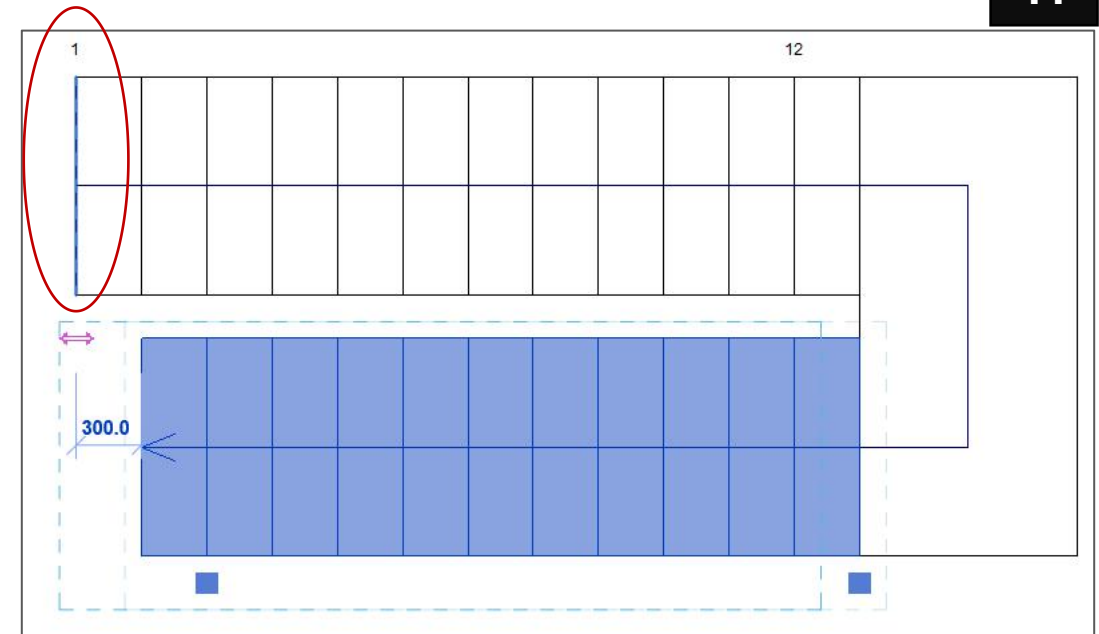
10. Then, select **Move** Tool and move selected area by click at **Endpoint** as shown in figure.

10



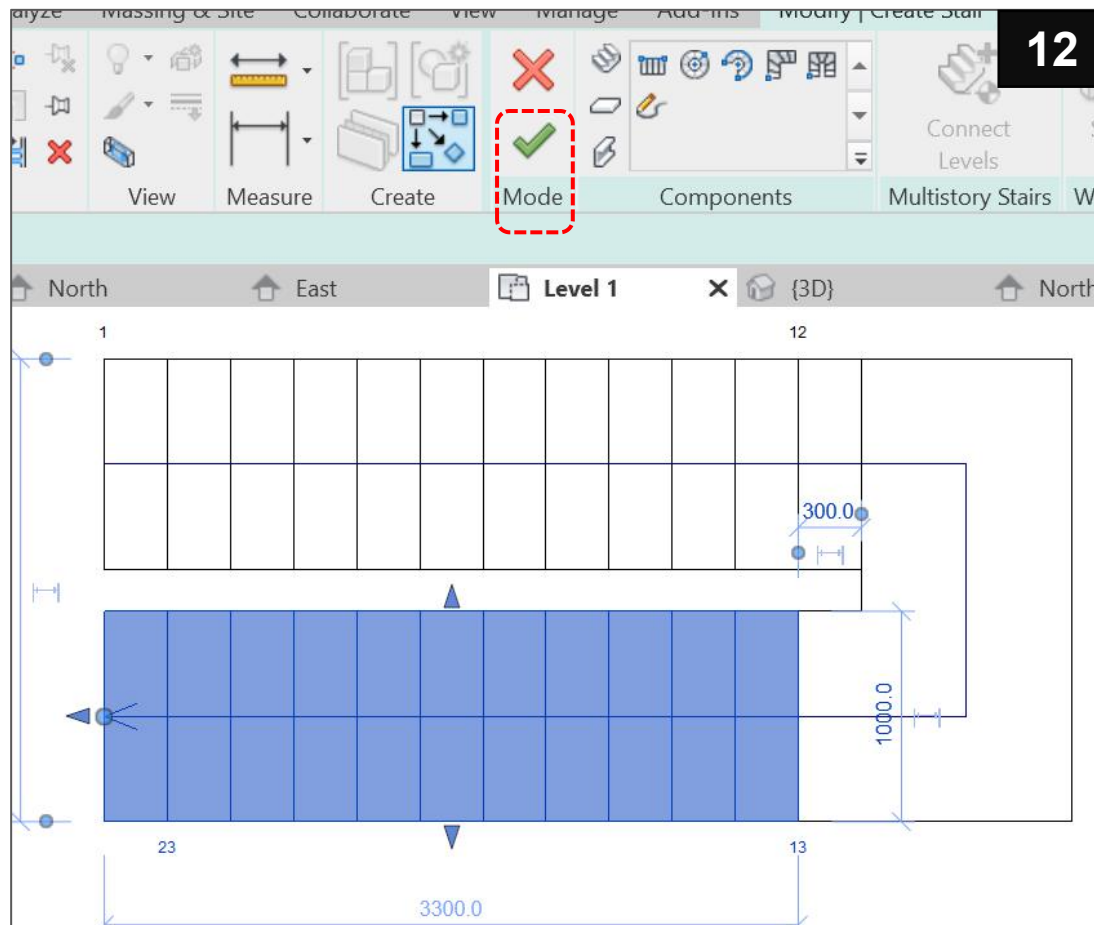
11. **Move** to selected line as shown in figure. Then click.

11

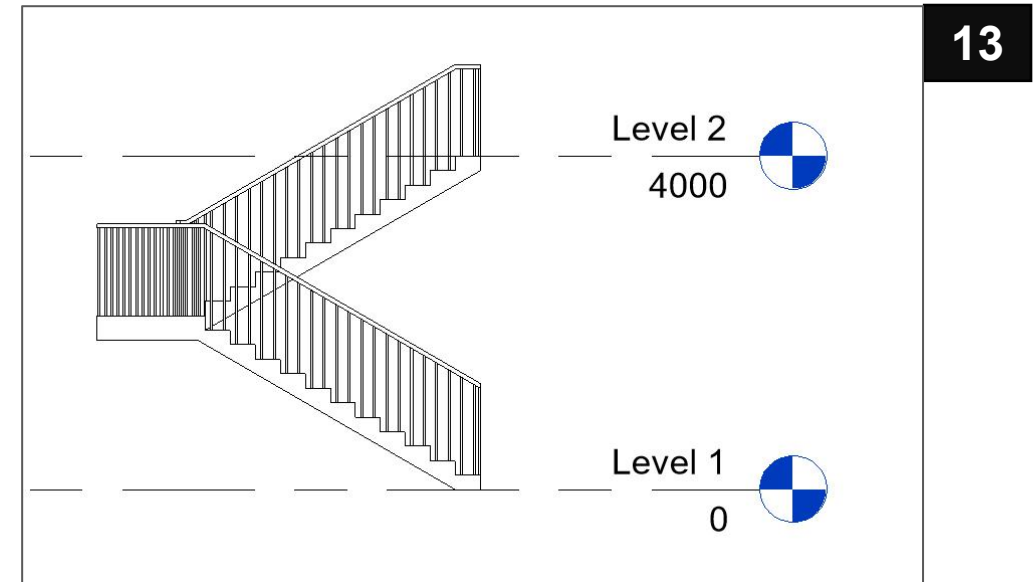


CREATING STAIRS

12. Figure shows **Editing** stair. Then, click **Finish Mode**.



13. Figure shows a resulting of **Straight Stair** created in **North-Elevation**.

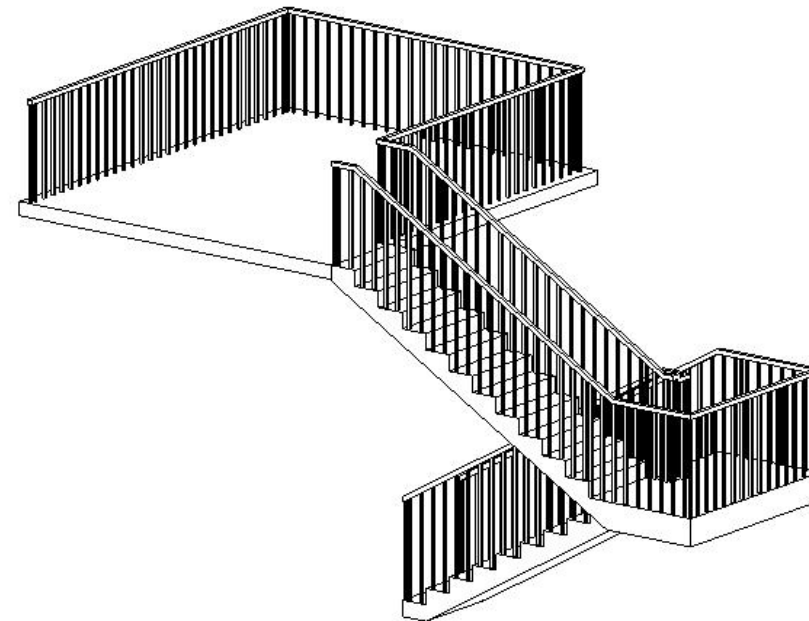
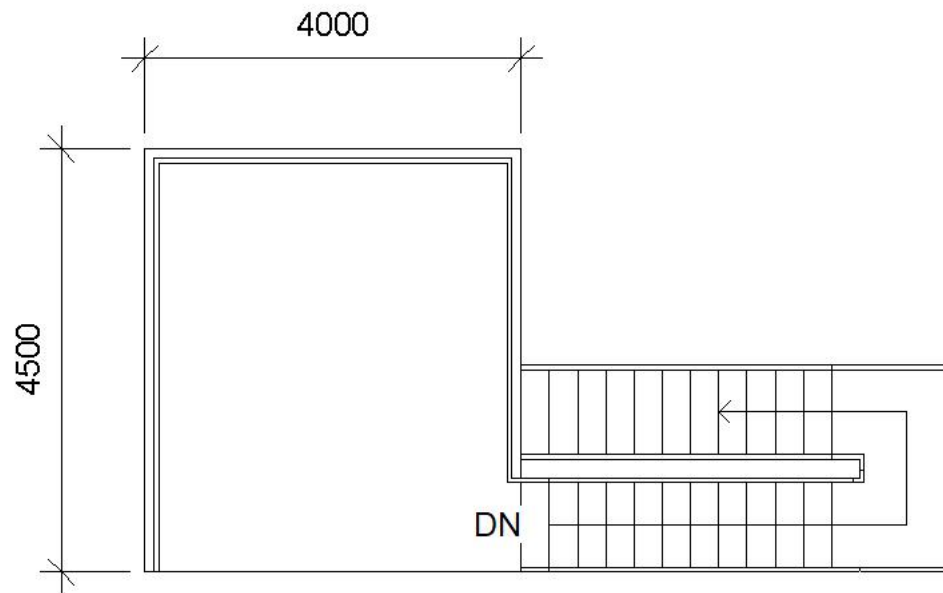


14. Repeat all steps to create others **Stair Family**.

CREATING RAILING

EXAMPLE:

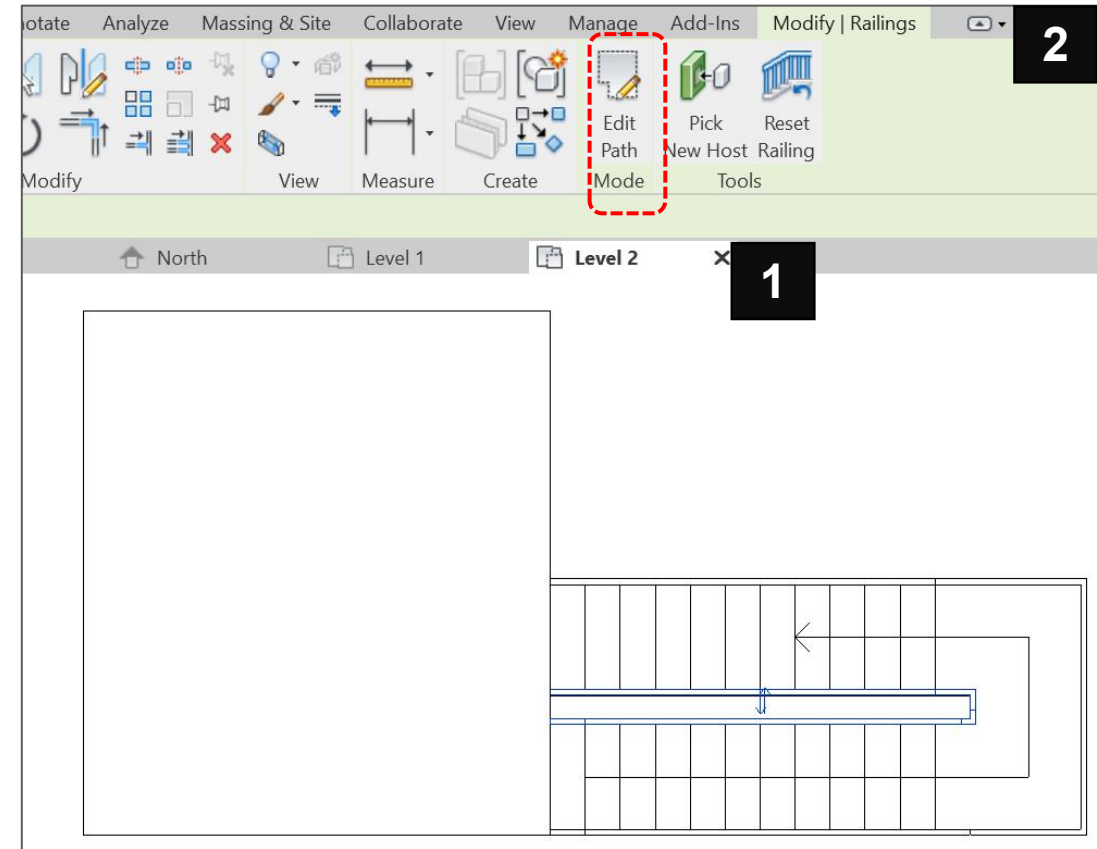
Create **Railing** at **100mm** edge of floor was attached with stair as shown in figure. Then change the **Railing Type** to **900mm Pipe** and **Glass Panel-Bottom Fill**.



CREATING RAILING

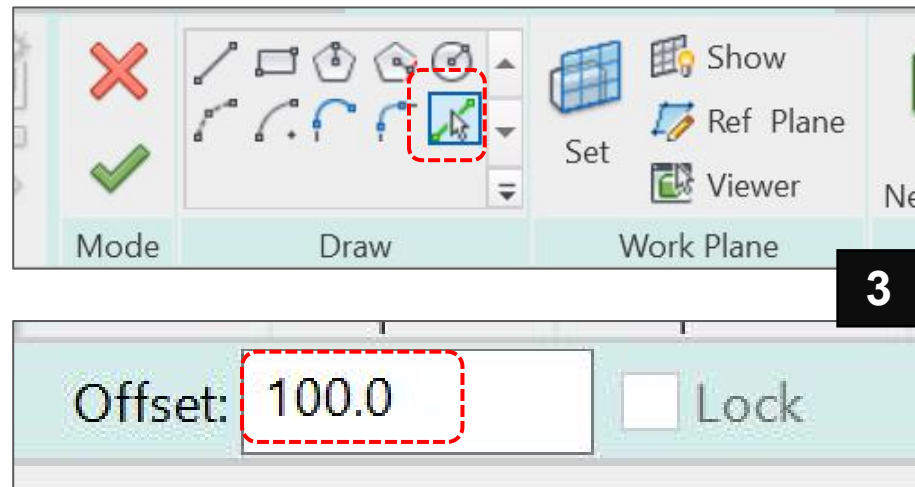
STEPS:

1. Open **Level 2 Floor Plan** and create floor as needed
(Refer Floor Creating Topic)
2. Select railing at stair (as shown in figure) and click **Edit Path** at **Mode Panel**.

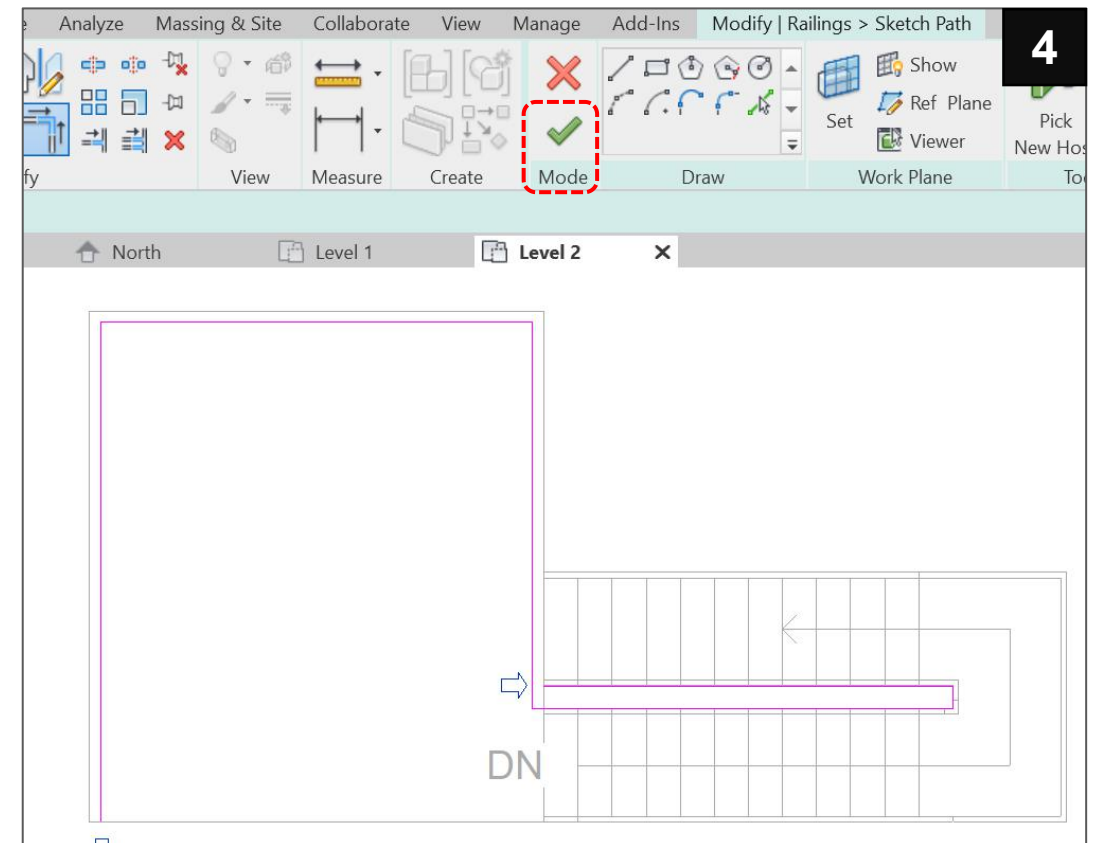


CREATING RAILING

3. Then, at **Draw Panel** select **Pick Lines** and set **100** for **Offset**.

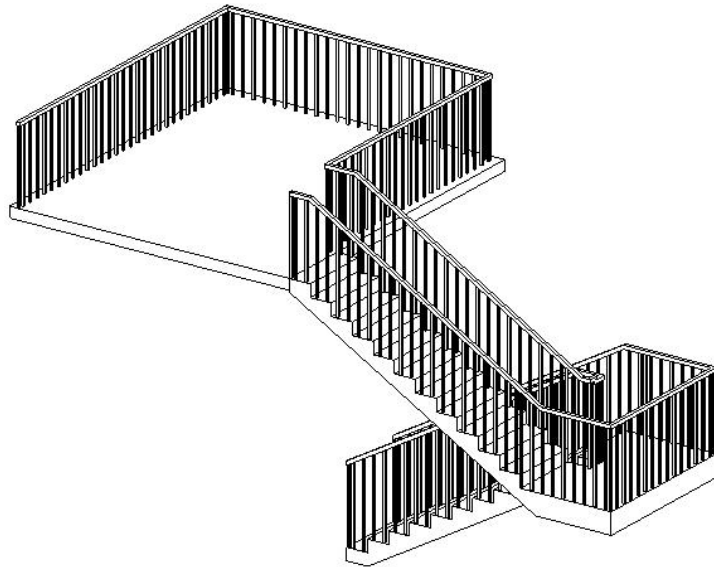


4. Create path for railing as shown in figure. Then click **Finish Mode**.

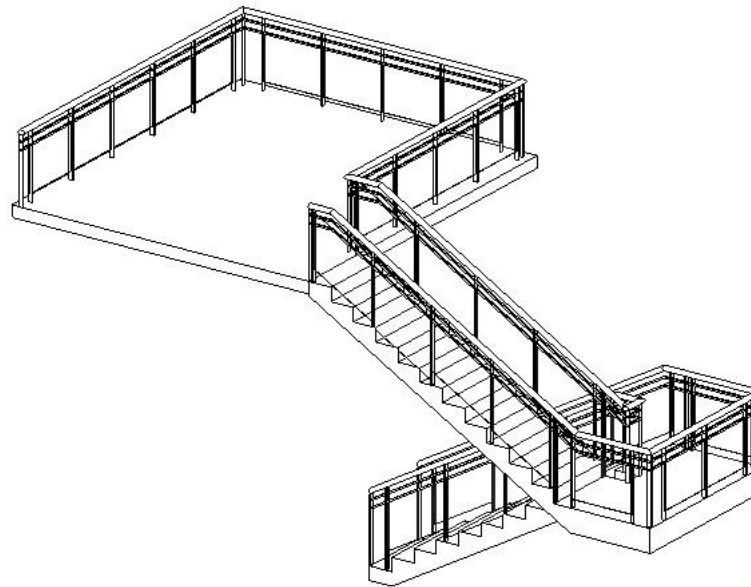


CREATING RAILING

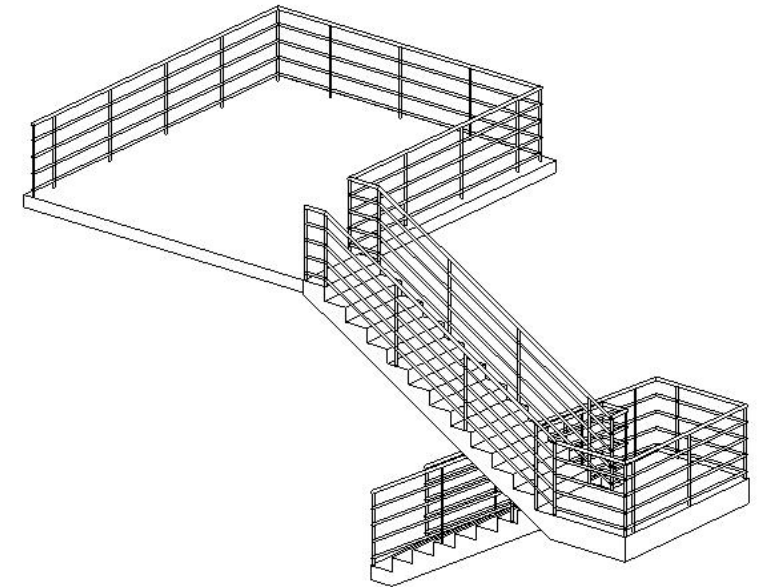
5. Figure shows a resulting of **Railing** was created.



1100mm (Default)

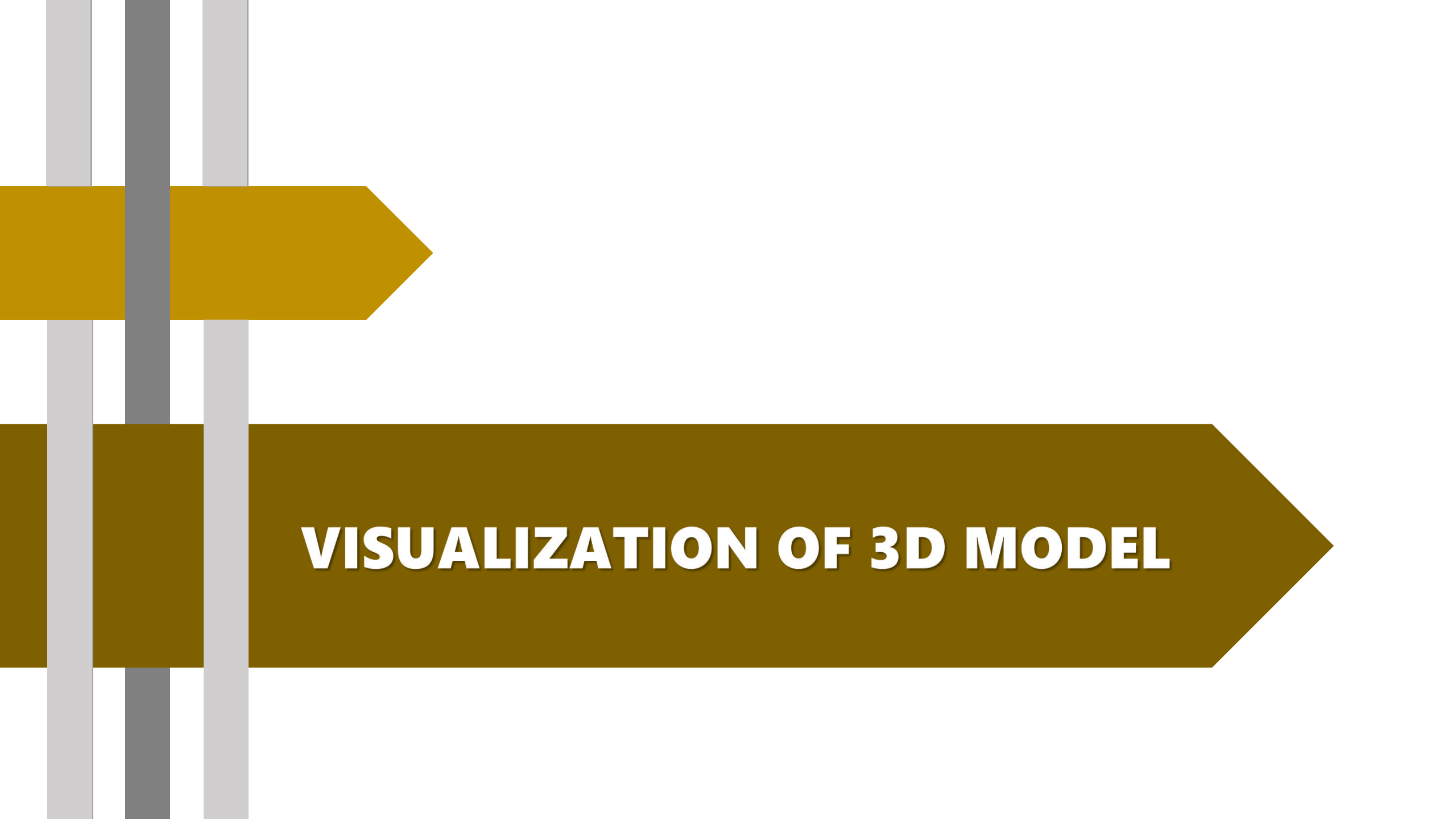


Glass Panel - Bottom Fill



900mm Pipe

3D View (Hidden Line Visual Style)

The image features a decorative graphic on the left side consisting of three vertical bars of different shades of gray. Overlaid on these bars are two horizontal arrows pointing to the right. The top arrow is a lighter mustard yellow color, and the bottom arrow is a darker olive green color. The text 'VISUALIZATION OF 3D MODEL' is written in white, bold, uppercase letters on the olive green arrow.

VISUALIZATION OF 3D MODEL

VISUALIZATION



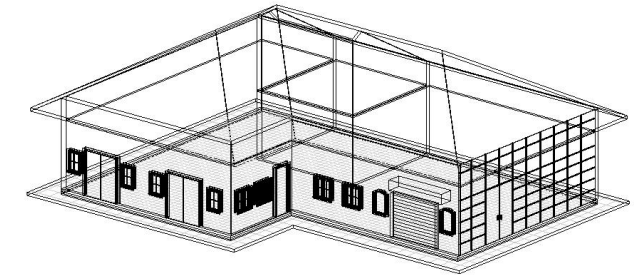
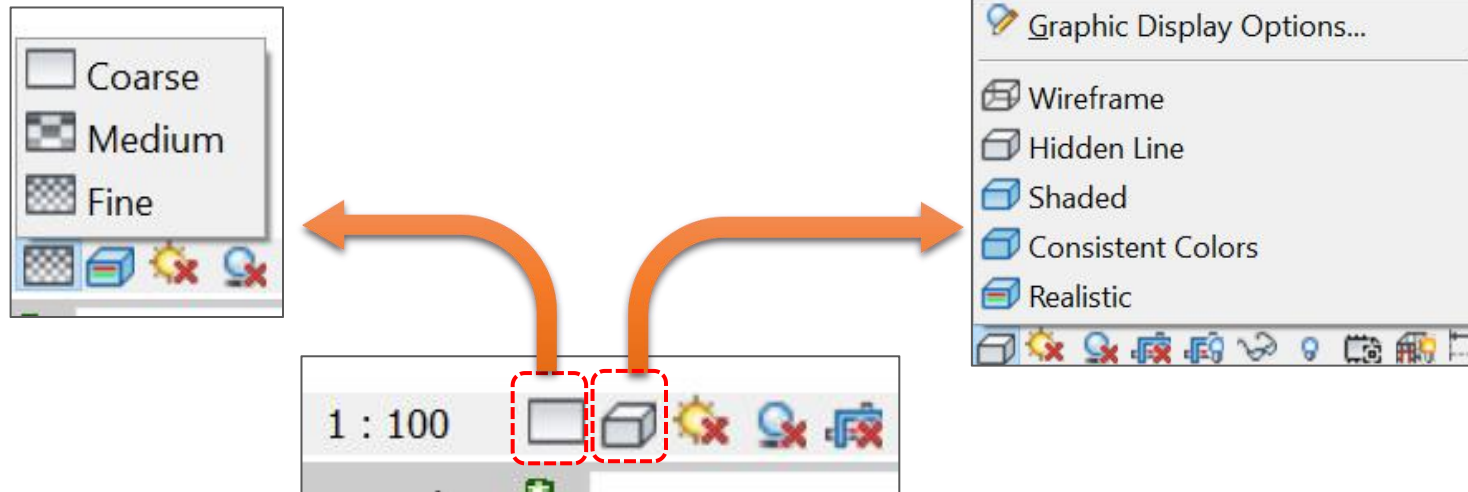
“You have to be able to create good visuals and graphics to facilitate communication,” says Harlan Brumm, Autodesk product manager for Revit.

“Good visualization is about conveying design intent. Working with high-quality graphics features is an important way for professionals to create compelling visuals and save time and effort.”

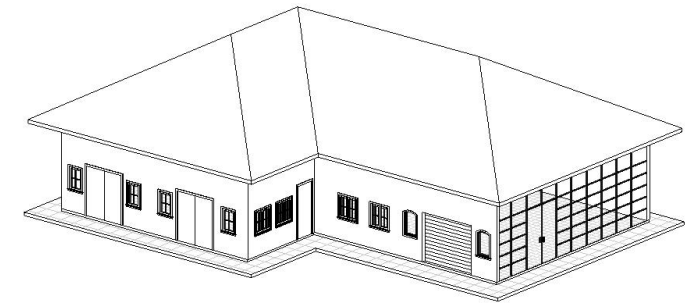
By Lainie Ransom :October 8, 2019

VISUALIZATION (Visual Styles)

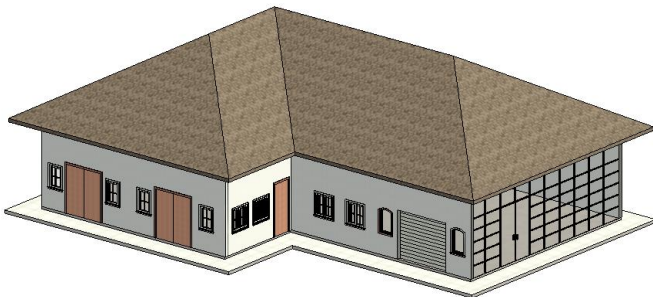
Select **Visual Style** to change **Instant Graphic Display** and match with **Detail Level**



Wireframe



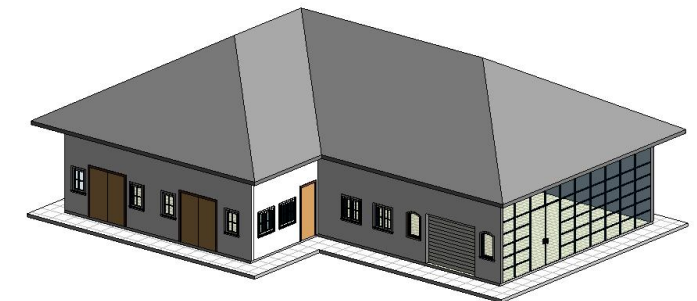
Hidden Line



Realistic



Consistent Colors

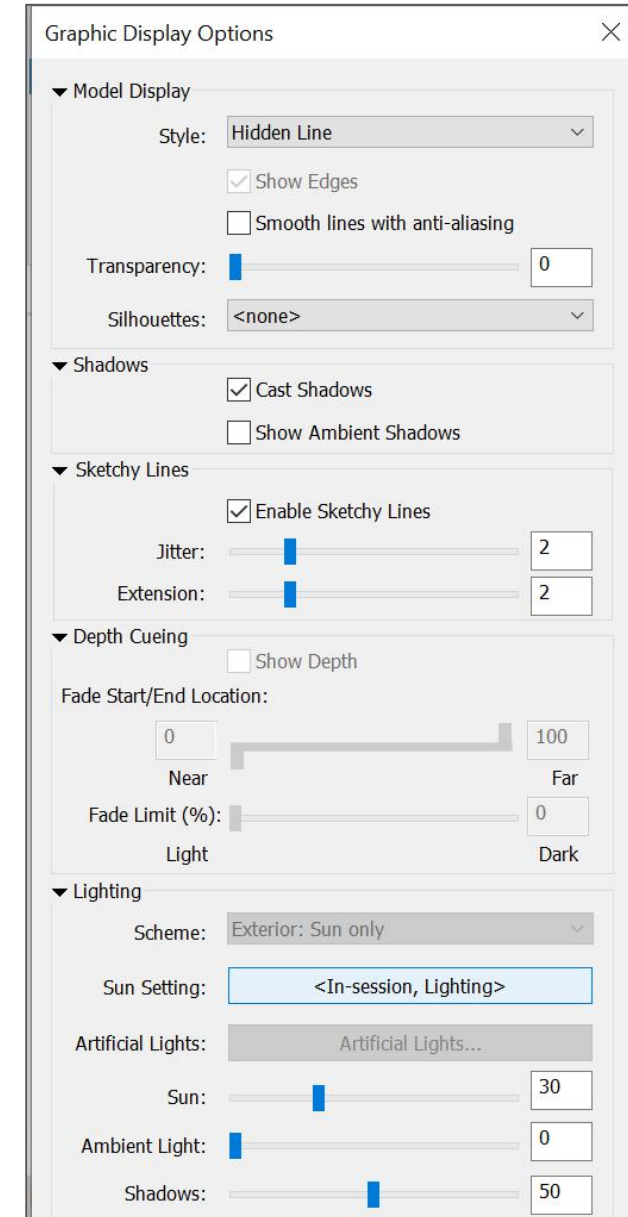
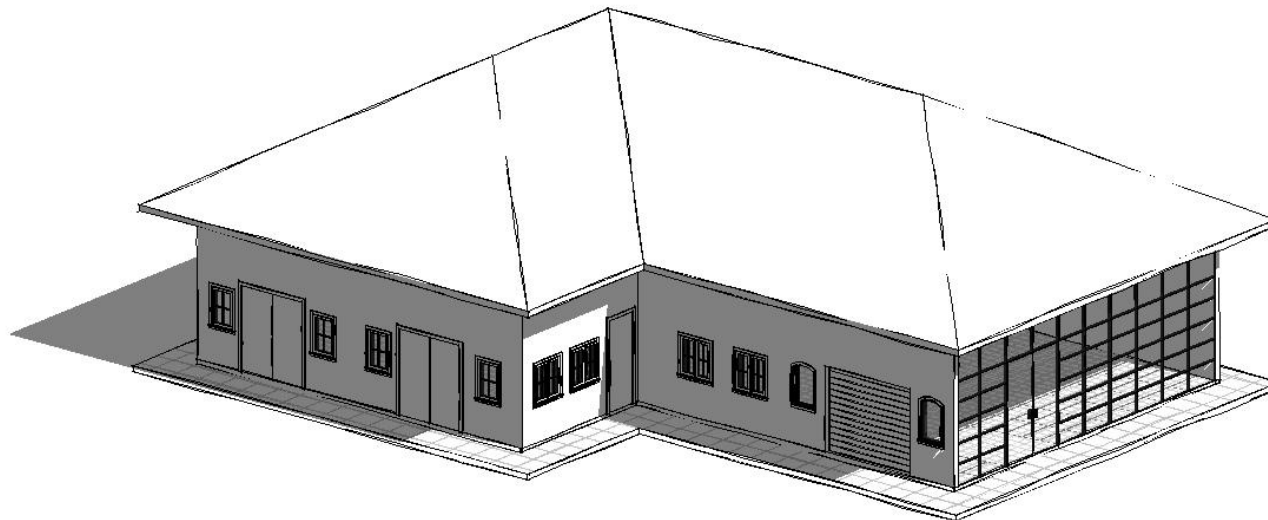
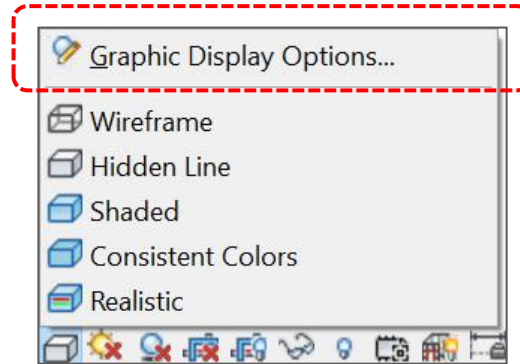


Shaded

VISUALIZATION (Visual Style)

For various of **Visual Style Effect**, it can be change in **Graphic Displays Options**

Eg. As shown in figure.



VISUALIZATION (3D Perspective Views)

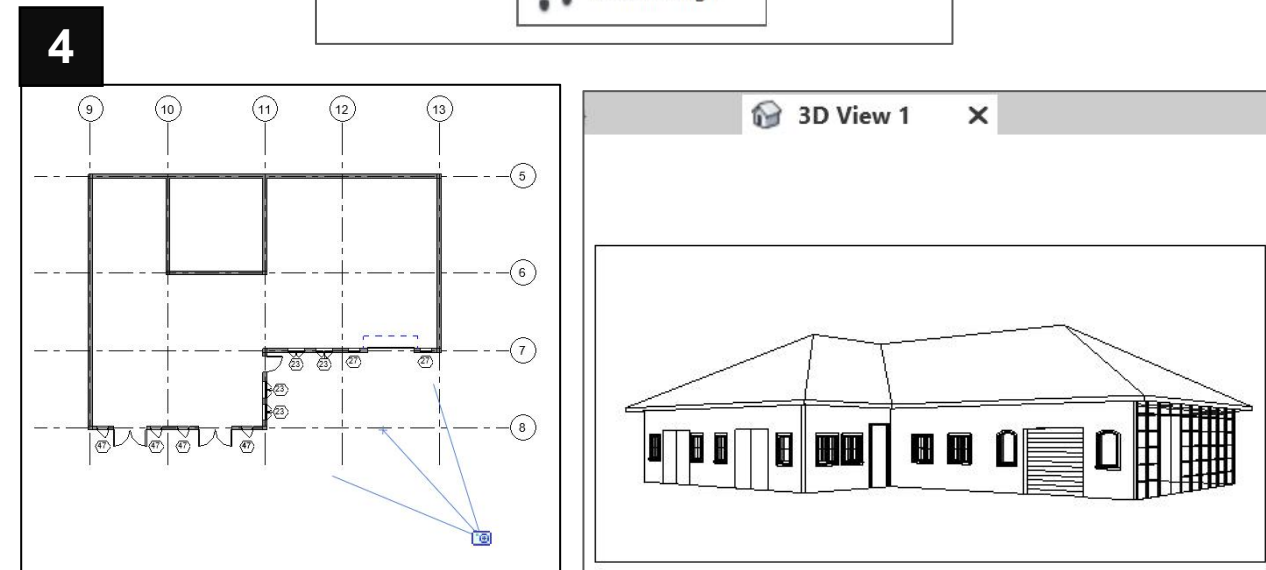
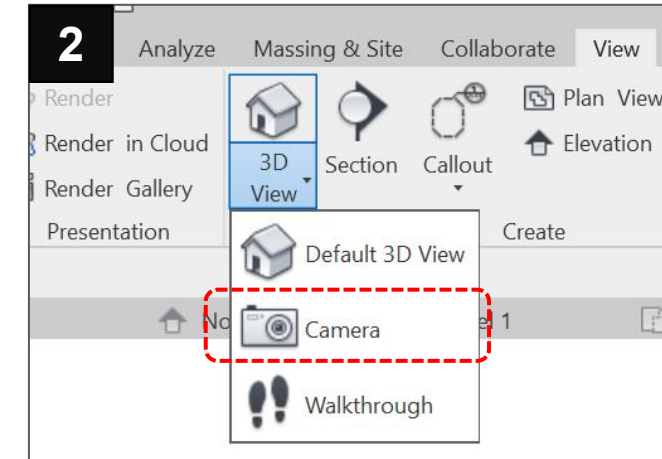
To create a **Perspective View**:

1. Open a plan, section, or elevation view.
2. Click **View tab**. Create panel **3D View** drop-down **Camera**.

Note: If you clear the Perspective option on the Options Bar, the view that is created is an orthographic 3D view and not a perspective view.

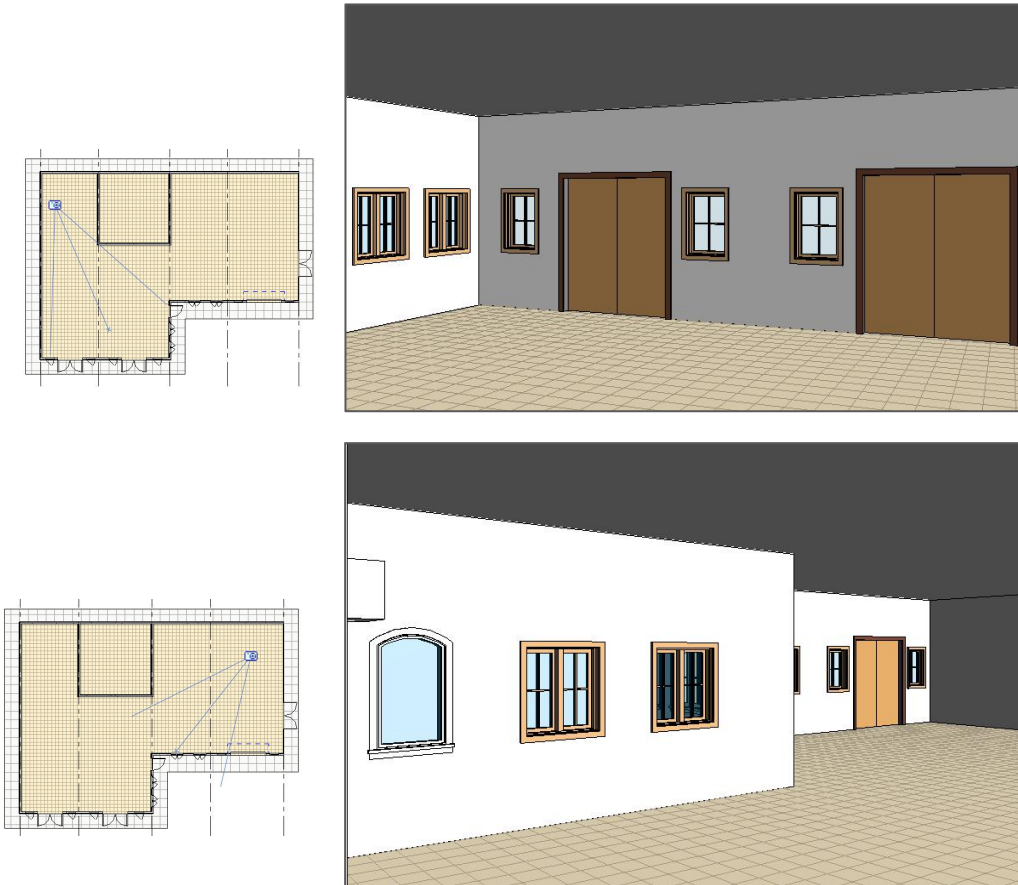
3. Click in the drawing area to place the camera.
4. Drag the cursor to the desired target and click to place it.

*Revit creates a perspective 3D view and assigns a name to the view: 3D View1, 3D View2, and so on. To rename the view, in the Project Browser right-click it, and select **Rename**.*

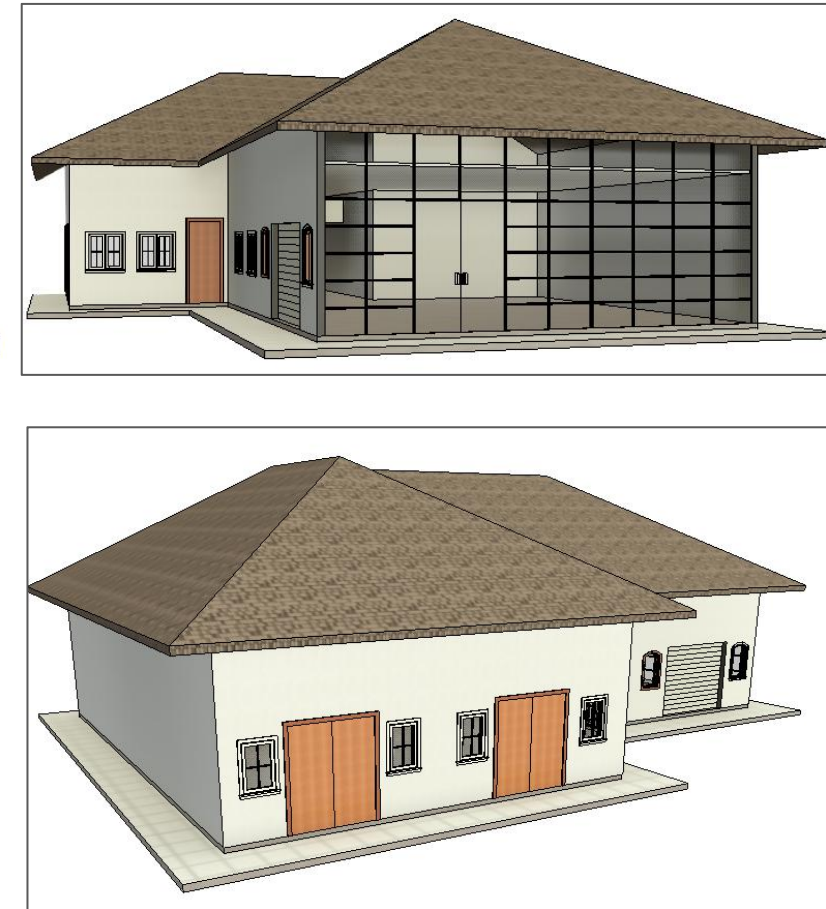


VISUALIZATION (3D Perspective Views)

Interior Perspective View



Exterior Perspective View



RENDERING



RENDERING

Rendering is a process to View 3D Model in various style and quality of graphic. For present a design to clients or share it with team members, render the model using one of the following methods:

- ❖ Use the Realistic visual style, which displays realistic materials and textures within Revit in real-time.

- ❖ Render the model to create a photorealistic image.

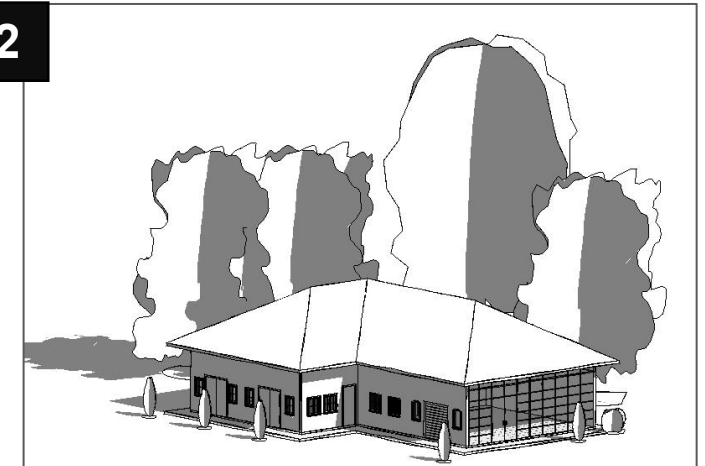
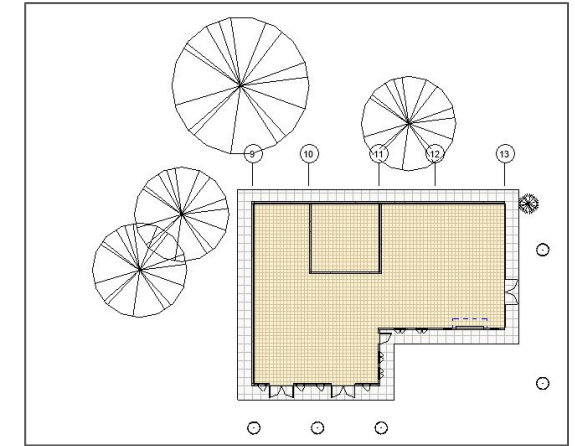
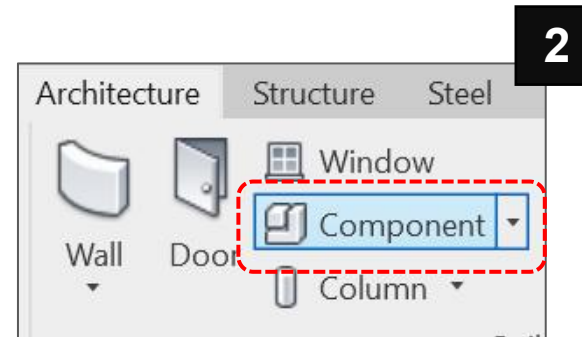
As an alternative, 3D view can be export and use another software application to render the image.

RENDERING

How to Render?

Rendering Steps In Revit:

1. Create a **3D view** of the building model (**Interior or Exterior**) or use currently **3D View** was created.
2. For Rendering purpose, placing a planting or any components (if necessary). Eg: **Insert>Load Family>Planting**.
At **Architecture Tab**, select **Place a Components**.



RENDERING

- Specify render appearances for **Materials**, and apply materials to model elements.

Eg. Edit Wall Exterior Finish to Wall Paint.

Steps:

- Select **Brick Wall**. Then click **Edit Type** at **Properties Palette > Edit Structure>** Click **Gypsum Wall Board** as shown in figure.



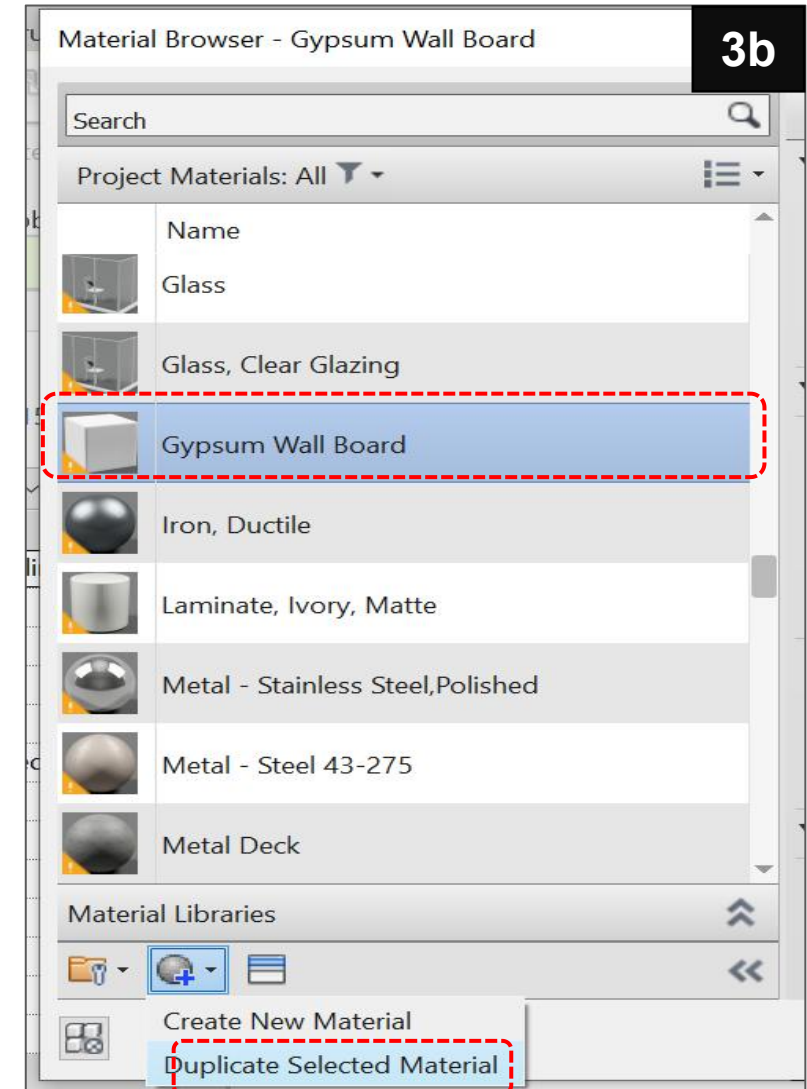
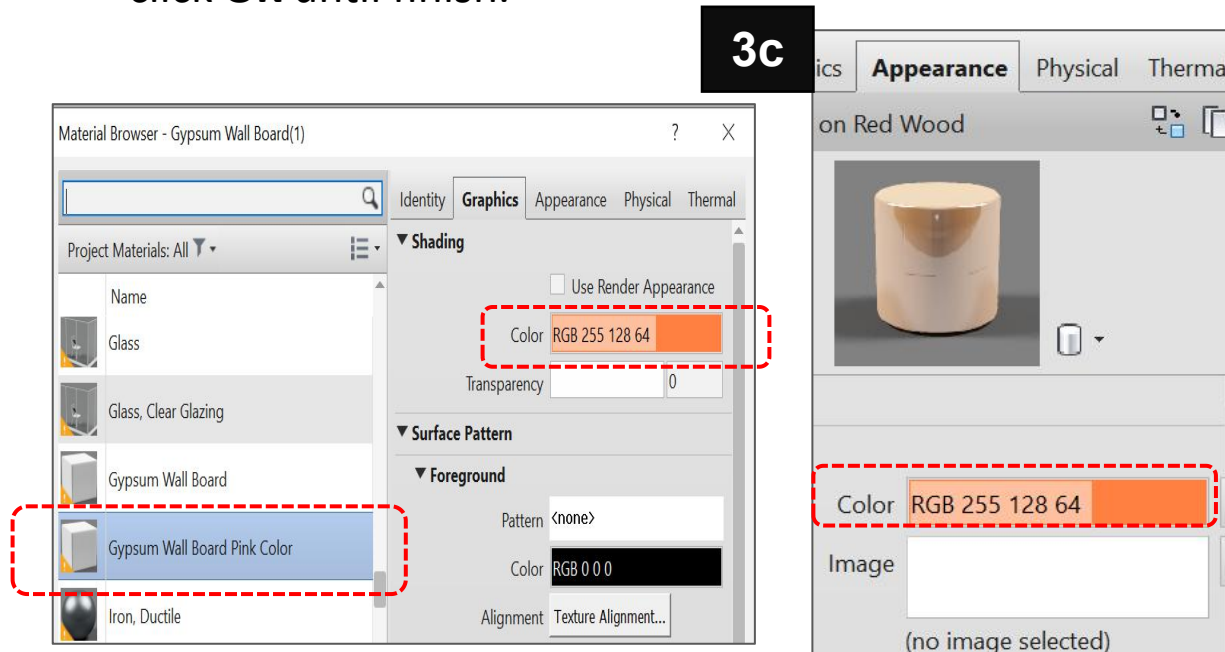
3a

Layers					
EXTERIOR SIDE					
	Function	Material	Thickness	Wraps	Structural Material
1	Finish 1 [4]	Gypsum Wall ...	15.0	☒	☐
2	Core Boundary	Layers Above	0.0		
3	Structure [1]	Concrete, San	120.0	☐	☒
4	Core Boundary	Layers Below	0.0		
5	Finish 1 [4]	Gypsum Wall	15.0	☒	☐

RENDERING

Steps:

- (b) Rename Duplicate Material : **Gypsum Wall Board Color**.
- (c) Change Color as shown in **Graphics** and at **Appearance** Tab. Then click **OK** until finish.



RENDERING

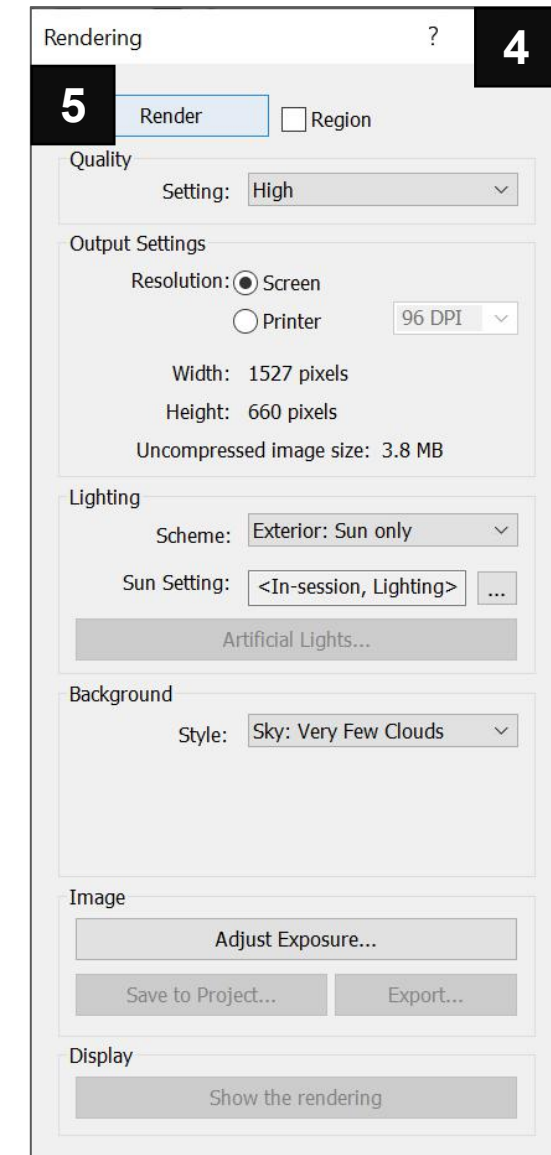
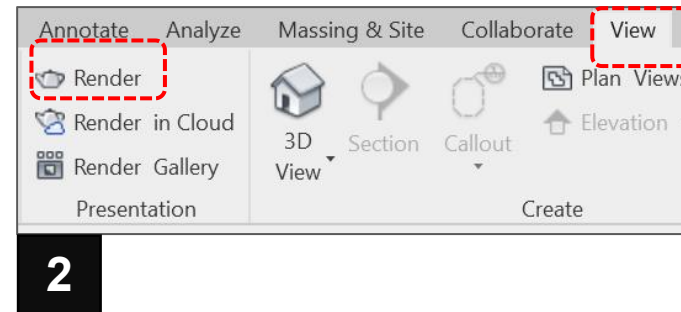
Figure shows resulting image **Before** and **After** change **Material Properties : Gypsum Wall Board** to **Gypsum Wall Board Color** .



RENDERING

Setting for Rendering:

1. Open image to **Render**
2. At **View Tab**, click **Render Tool**.
3. Define **lighting** for the building model.
4. Define render settings.
5. Then, **Render** the **image**.



RENDERING

Figure shows resulting image **Before** and **After** Rendering.



BEFORE Rendering



AFTER Rendering

REFERENCES

Duell R. et al.,(2015). Autodesk® Revit® Architecture Essentials 2015. John Wiley & Sons, Inc., Indianapolis, Indiana.

Fundamental Modelling of Architecture Version 2 (2019). Training Module TBMA. Construction Industry Development Board Malaysia. Kuala Lumpur.

Revit Support and Learning (2021). Retrieved from:

<https://knowledge.autodesk.com/support/revit/learn-explore>. Autodesk.

Yori R.et al., (2020). Mastering Autodesk® Revit® 2020. John Wiley & Sons, Inc.tart

DCC50562 **BIM** COURSE MODULE



THANK YOU