

Course challenge exercise: Finish the model

Finish creating the model of a house. Add walls and curtain walls to the rear of the property. Add a flat roof and glazed skylight roofs. Create a new wall type containing a new material and apply it to existing walls. Add a railing to the stairs and edit its path. Place rooms in the model, create a room schedule, and add a color scheme to views.

Learning Objectives:

- Add walls, curtain walls, a roof, and skylight to a model.
- Create a wall type with a new material.
- Apply a railing to stairs and edit its path.
- Place rooms, create a room schedule, and add a color scheme to views.

Complete the required activities:

Open the accompanying file ***House-Project.rvt***.

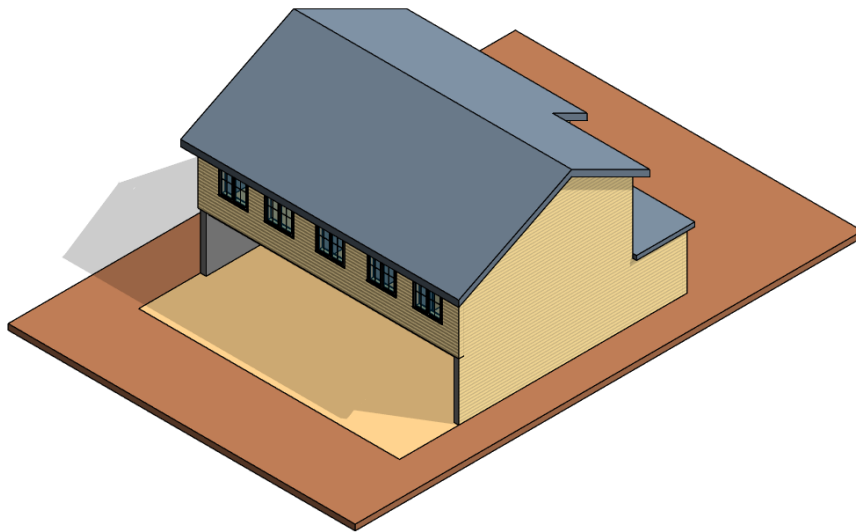


Figure 1. *House-Project.rvt*

Task 1: Create the wall, curtain walls, and roof

1. Create the Level 1 rear extension as per the drawings below.



Figure 2. 3D view of rear extension.

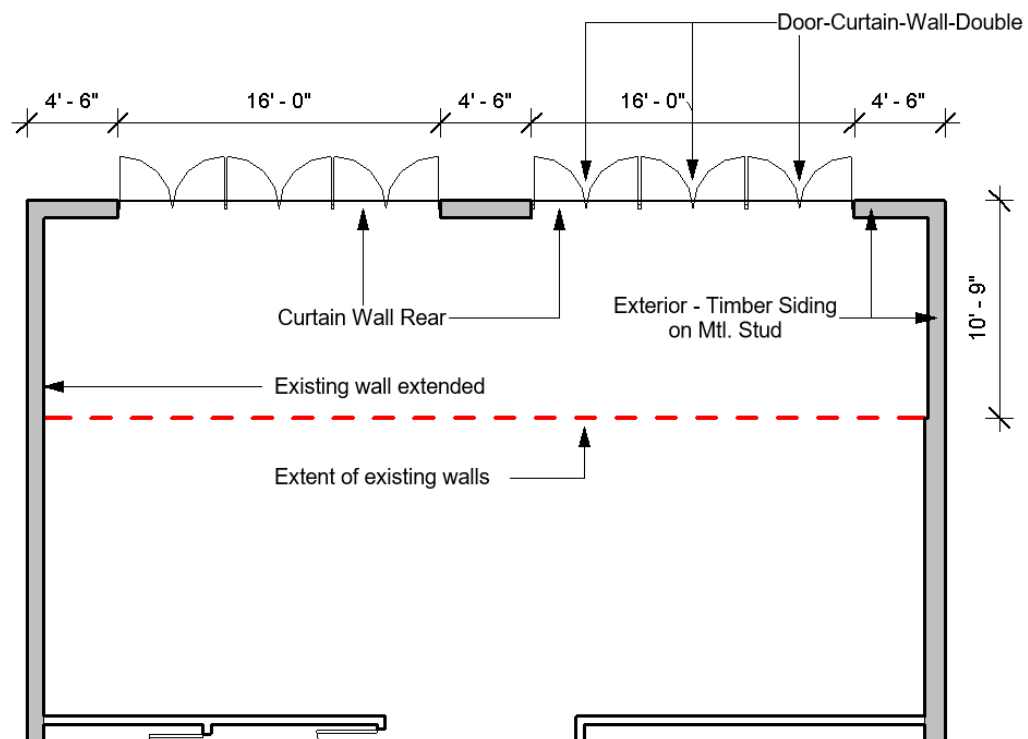


Figure 3. Level 1 plan of rear extension.

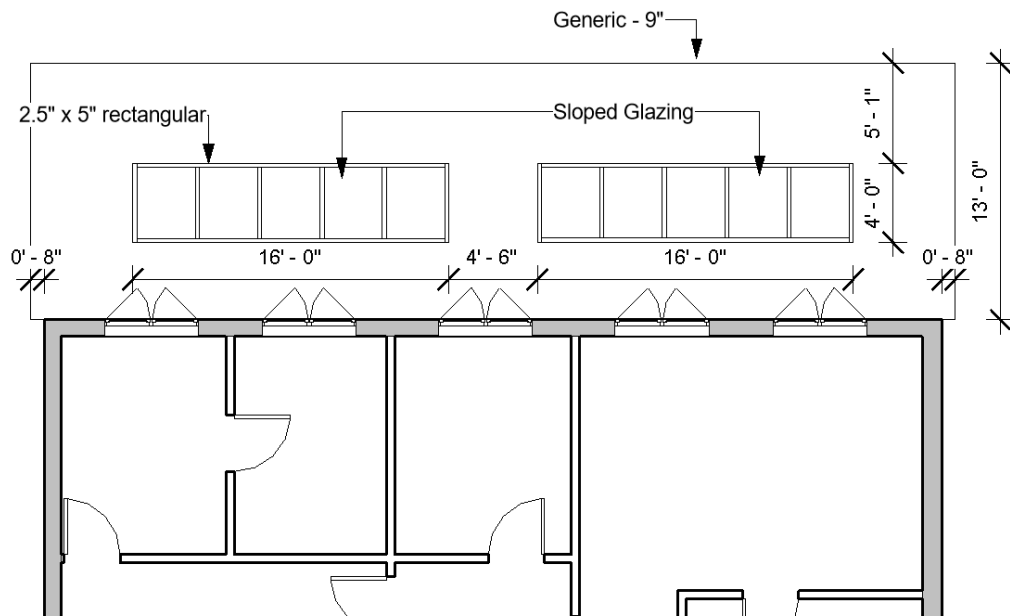


Figure 4. Level 2 plan showing roof of rear extension.

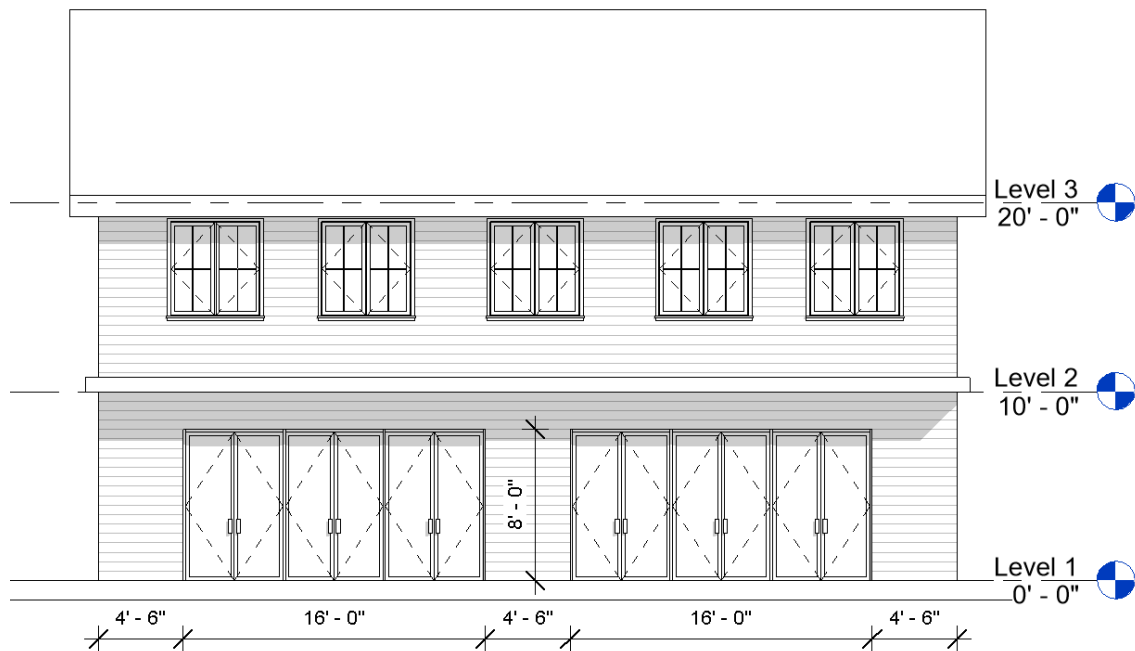


Figure 5. Elevation of rear extension.

2. The walls should be the Exterior - Timber Siding on Mtl. Stud wall type. The existing floor can be used to align the exterior finish face of the new walls.
3. The roof should be the Generic – 9" roof type.
4. The glazed skylights should be the Sloped Glazing roof type.
5. The curtain walls should be a new type, named Curtain Wall Rear with a vertical grid spacing of Minimum 5 feet. The door type Door-Curtain-Wall-Double should be used as panels in the curtain walls. These curtain walls should be embedded into the basic walls.
6. The mullion type 1.5" x 2.5" rectangular should be applied to the curtain walls.
7. The mullion type 2.5" x 5" rectangular should be applied to the Sloped Glazing roof type.

Task 2: Create the new wall type

1. Create a new wall type to replace the Generic – 12" wall types placed in the model.
2. The new wall type should be named **Exterior – Stone on Mtl. Stud**. With the wall layers as per the image below.

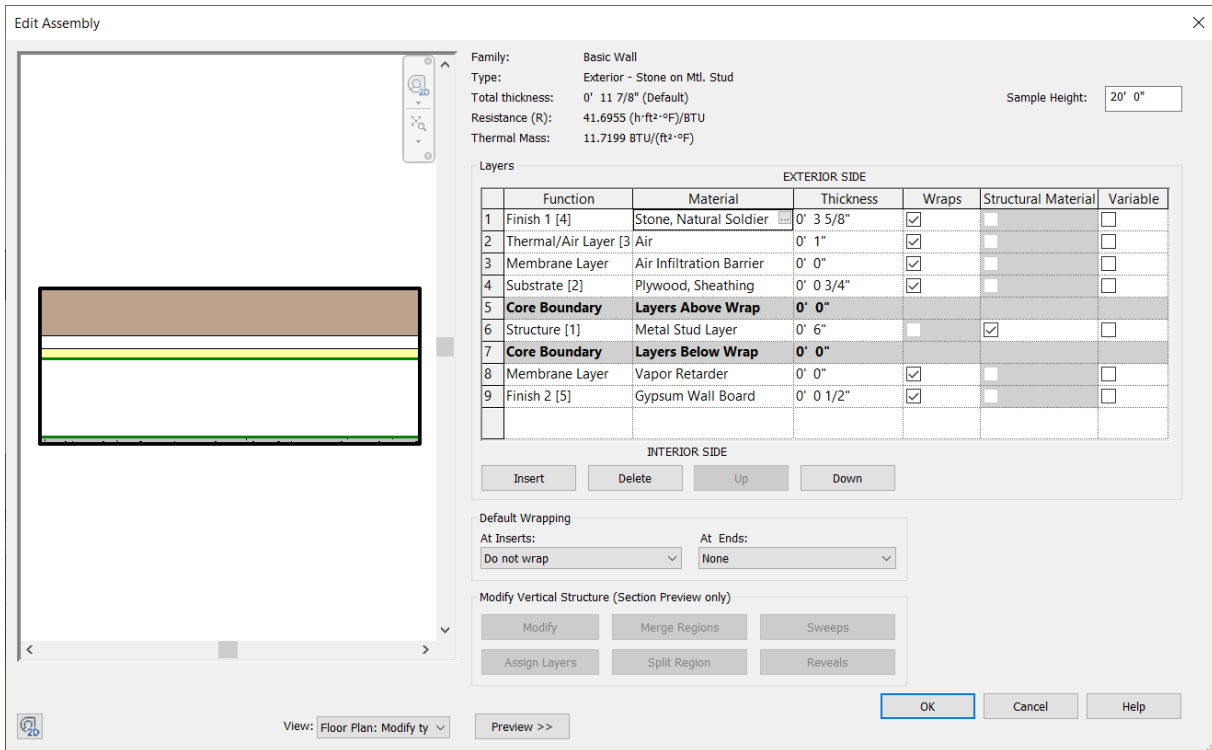


Figure 6. Wall Assembly layers for **Exterior – Stone on Mtl. Stud** wall type.

3. The Stone, Natural Soldier material will need to be loaded from the AEC Material Library.

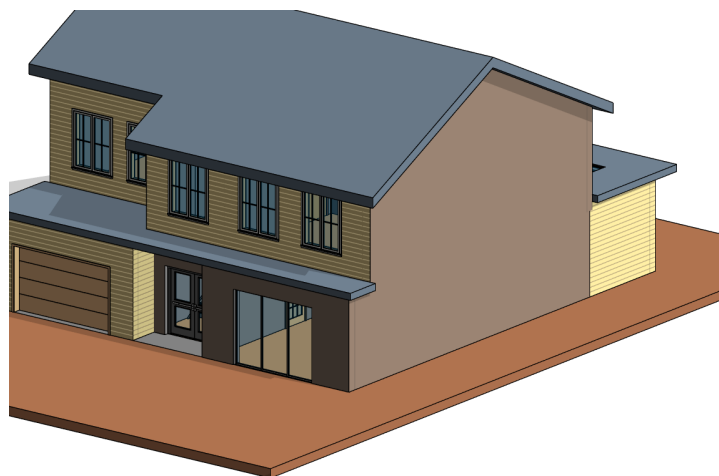


Figure 7. Location of wall replaced with **Exterior – Stone on Mtl. Stud** wall type.

Task 3: Add a railing and edit its path

1. Add a railing to the stairs on the right side as you ascend the stairs. The railing must return around the stairwell as shown in the image below.

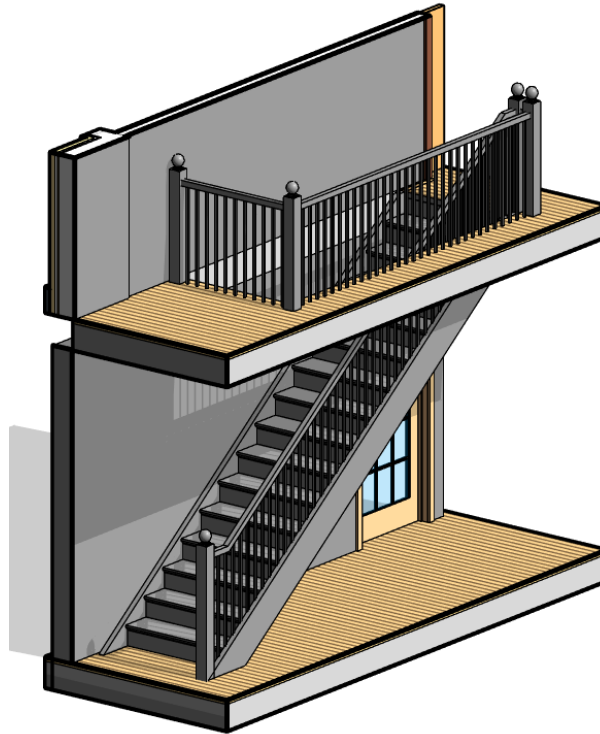


Figure 8. Railing hosted by stairs and returning around stairwell.

2. The railing must be the **Handrail – Rectangular with Posts** type.
3. Edit the railing type properties and assign the **Post – Square w Ball: 4 1/4"** to the Start, Corner, and End post in the baluster placement.

☐ Use Baluster Per Tread On Stairs Balusters Per Tread: 2 Baluster Family: Baluster - Square : 3/4

Posts

	Name	Baluster Family	Base	Base offset	Top	Top offset	Spac
1	Start Post	Post - Square w Ball : 4 1/4"	Host	-0' 2"	Top Rail E	0' 2"	0' 1"
2	Corner Pos	Post - Square w Ball : 4 1/4"	Host	0' 0"	Top Rail E	0' 2"	0' 0"
3	End Post	Post - Square w Ball : 4 1/4"	Host	0' 0"	Top Rail E	0' 2"	0' 1"

Corner Posts At: Angles Greater Than Angle: 45.00°

<< Preview OK Cancel Apply Help

Figure 9. Assign the post family to the Baluster Placement settings.

4. The railing path should be as shown in the image below.

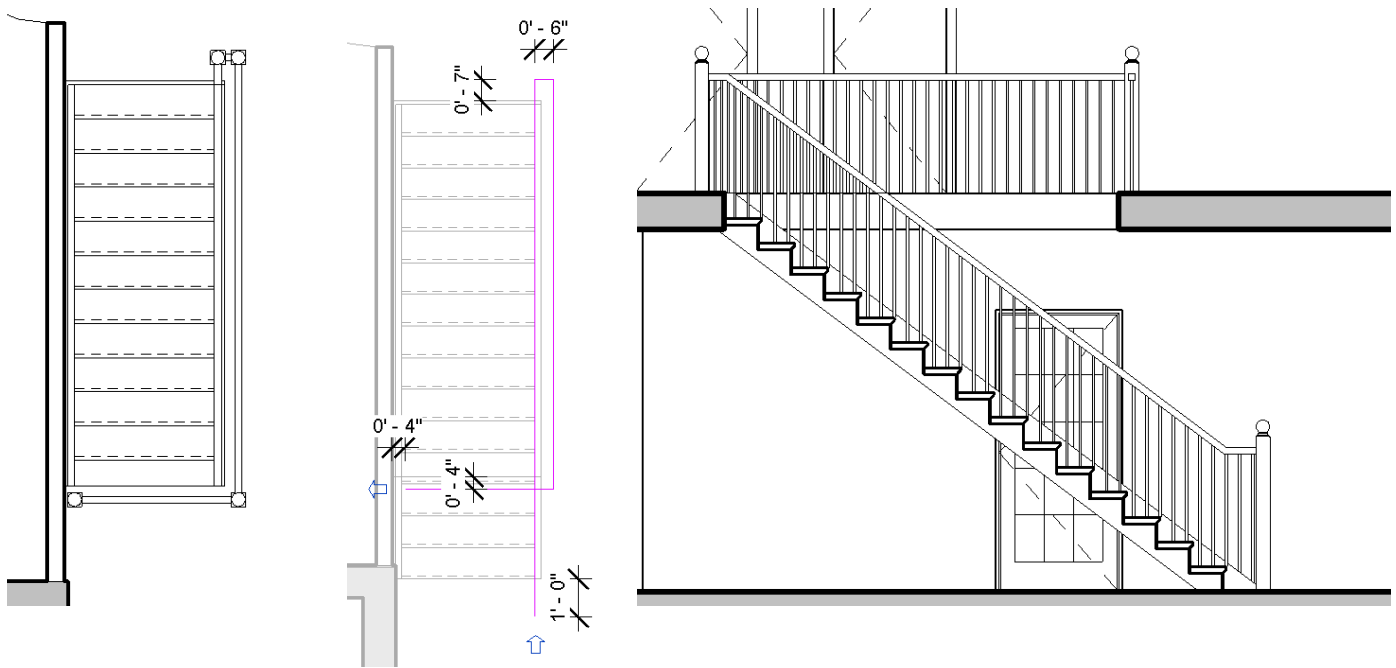


Figure 10. Railing path layout.

Task 4: Add rooms, create a room schedule, and apply a color scheme

1. Place rooms into Level 1 and Level 2 and name the rooms as shown in the image below.
2. Add room separator lines as required.

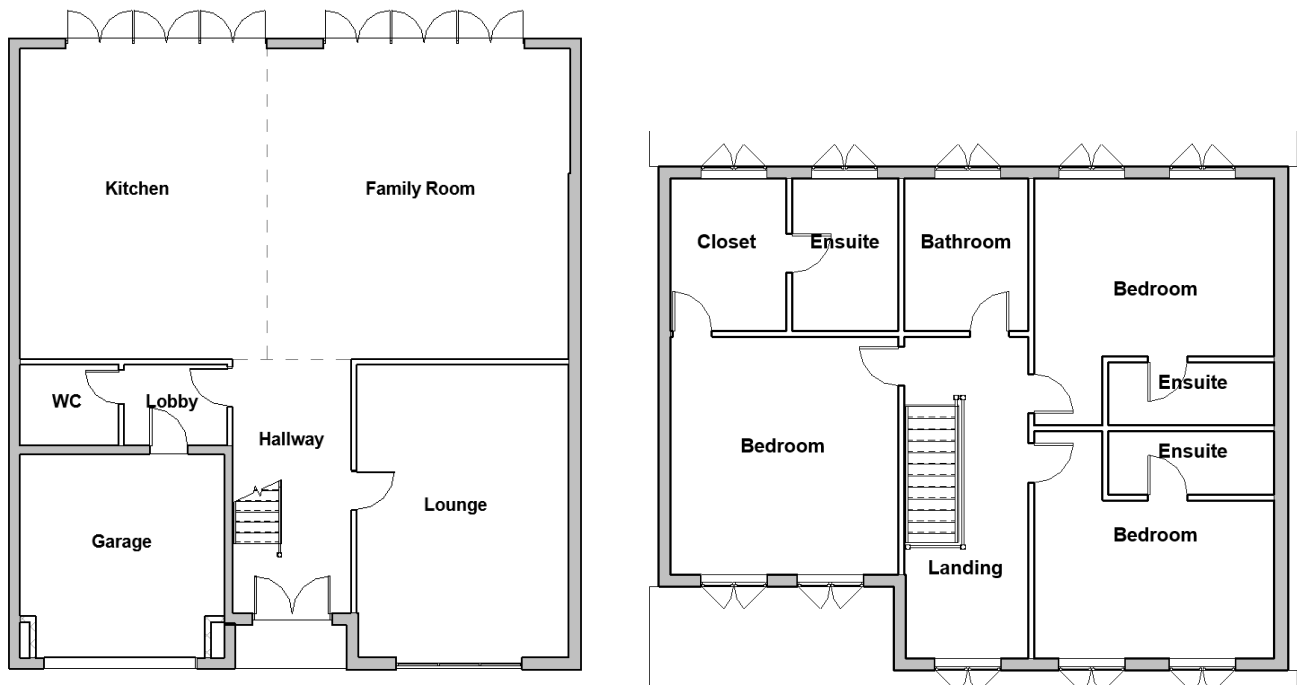


Figure 11. Rooms placed on Level 1 and Level 2.

3. Create a room schedule with the fields Level, Name, and Area.
4. Sort by Level and then by name. Group by level.
5. Display Grand totals and set the Area field to calculate totals.
6. Hide the Level column.

<Room Schedule>	
A	B
Name	Area
Level 1	
Family Room	594 SF
Garage	254 SF
Hallway	191 SF
Kitchen	485 SF
Lobby	53 SF
Lounge	393 SF
WC	51 SF
Level 1: 7	2021 SF
Level 2	
Bathroom	99 SF
Bedroom	284 SF
Bedroom	248 SF
Bedroom	223 SF
Closet	92 SF
Ensuite	55 SF
Ensuite	55 SF
Ensuite	85 SF
Landing	208 SF
Level 2: 9	1349 SF
Grand total: 16	3371 SF

7. Apply a color scheme and color fill legend to the Level 1 and Level 2 plan views.
8. The color scheme should color Rooms by Name



Figure 12. Color scheme applied to Level 1 and Level 2 plan views.

This exercise should be completed in 50 minutes.

Assessment Criteria

The completed exercise is available for comparison in the file **House-Project-finished.rvt**.

Task 1: Create the wall, curtain walls, and roof (40%)

Check the object types used for the rear extension. (20% total, -3% for each incorrect type)

- The walls should be the Exterior - Timber Siding on Mtl. Stud wall type.
- The basic roof should be the Generic – 9" roof type.
- The glazed skylights should be the Sloped Glazing roof type.
- The curtain walls should be a new type, named Curtain Wall Rear
 - The Curtain Wall Rear type should have a vertical grid spacing of Minimum 5 feet.
- The door type Door-Curtain-Wall-Double should be used as panels in the curtain walls.
- The mullion type 1.5" x 2.5" rectangular should be applied to the curtain walls.
- The mullion type 2.5" x 5" rectangular should be applied to the Sloped Glazing roof type.

Dimensional accuracy. (20% total, -3% for each inaccurate object)

- Exterior face of walls should align with the edge of the floor slab, with a base constraint of Level 1 and a top constraint of Level 2

- Curtain wall should be positioned as per the images, their unconnected height should equal 8 feet.
- The flat roof should match the dimensions in the images, vertical openings should be placed to create the skylight opening.
- The skylight roofs should fill the opening in the flat roof.

Task 2: Create the new wall type (15% total)

- Check the new wall type Exterior – Stone on Mtl. Stud has been created as required, compare against the House-Project-finished.rvt file for make up of the layers and material. (10%)
- Check that all the Generic -12" walls have been replaced with the new wall type. (5%)

Task 3: Add a railing and edit its path (15% total)

- Visually check the handrail has been placed and hosted on the stairs. (10%)
- Check the railing type properties to ensure the Post – Square w Ball: 4 1/4" type family has been applied to the Start, Corner and End post parameter in the Baluster Placement settings. (5%)

Task 4: Add rooms, create a room schedule, and apply a color scheme (30% total)

- Check that rooms have been placed and named as per the image in the exercise. (10%)
- Check that room separator lines have been placed to divide the Kitchen, Family Room and Hallway. (5%)
- Open the Room Schedule view to check the Level, Name and Area fields are present, along with the required sorting and grouping. (10%)
- Visually check that color schemes and color fill legends have been applied to the Level 1 and Level 2 floor plan views. (5%)