

Test Case 14 – Roof overhang

Test Description: Typically, a roof will have overhangs for various functions, such as roof ventilation and rainwater controls. Overhangs also provide shading to the walls under them. Therefore, it is critical to model overhangs in performance analysis. This test case will demonstrate how overhang can be modeled in the gbXML as well as helps the software developer to test the gbXML export function regarding roof overhangs.

Spaces / Rooms:

There is one space in this test model named as “level_1_space_1”.

Special Considerations:

1. The model is 10' x 10' x 10'.
2. The dimensions are taken from the center lines.
3. The roof dimension is 12'8" x 12'8".
4. All the walls face to an orientation shall be named as: “[orientation]_wall_[custom index]”
5. All the other surfaces shall be named as their function, such as “interior_wall_[custom index]”
6. The custom index is an index to differentiate the same type surfaces. The tester can decide how to label the custom index.

Guideline for creating the BIM model:

Figure 1 shows a 3-dimensional isometric view of this test model.

Figure 2 shows a typical floor plan to indicate dimensions and directions of the space, with wall thickness. The dashed line represents the profile of the shading of the roof.

Figure 3 shows a typical section view to indicate positions and dimensions of the slab floor, the height of the roof and the ceiling element.

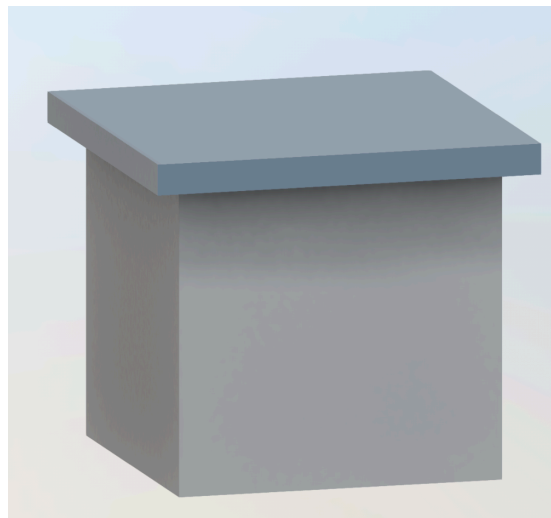


Figure 1. Isometric View

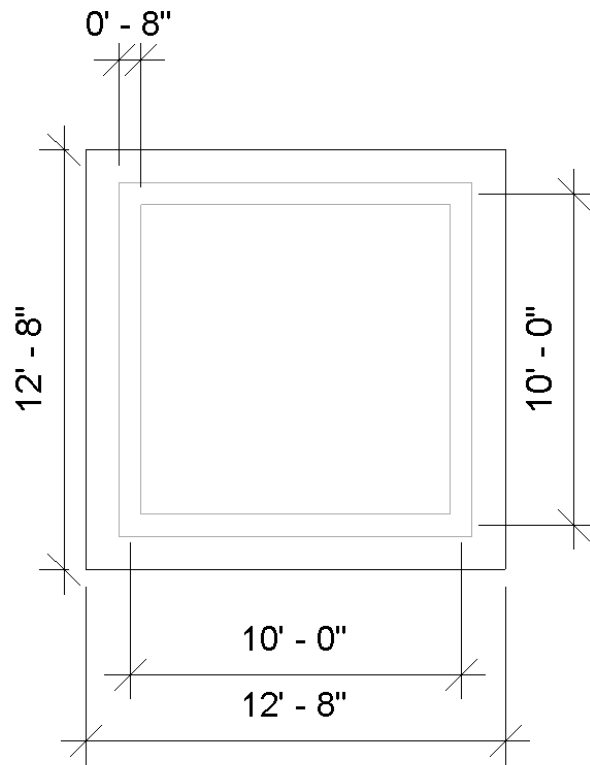


Figure 2. Floor and Ceiling Plan View

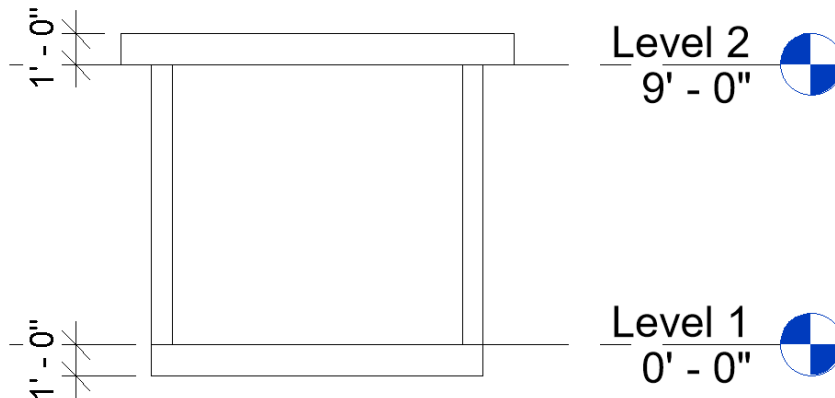


Figure 3. Section View

Expected Outcomes:

In BIM model, the roof has a 1' overhang at every orientation. In the exported gbXML, using middle lines as the room boundary, the model should be 10'x10'x10' and the roof overhang should be translated as a shade surface and its depth should be 1'4" (Figure 4).

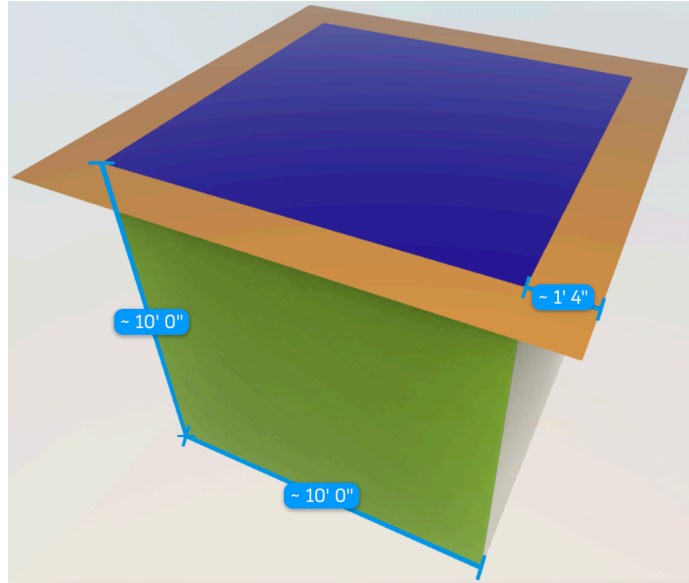


Figure 4. Exported gbXML model

Common Outcomes and Test Results:

Two issues could raise in exporting overhangs. One is the overhang surface type. The software should be capable of cutting the roof structure into two surfaces – one is the actual roof, and the other is the overhang. Overhang surface type should be defined as shade.

The other common issue is the overhang dimension. As the walls are shrinking by its thickness, the length and width of the overhang should holds, thus resulting an increased overhang depth.