

Test Case 16 – Shaft Openings

Test Description: It is typical to find a service shaft in a commercial building. These shafts offer the ability to route various utilities such as air ducts to the roof units. The space is usually unconditioned and runs vertically from bottom to the top.

Spaces / Rooms:

There are two spaces in this test model. One space is located at the first floor, named as “level_1_space_1”. The other one is located at the second floor, named as “level_2_space_1”.

Special Consideration:

1. The model is 10’ x 10’ x 21’ (including floor and roof thickness, using center line)
2. The model has two stories and each story is one space.
3. The structure floor, roof and slab on grade have thickness of 1’.
4. Wall thickness is 8”.
5. All the walls face to an orientation shall be named as: “[orientation]_wall_[custom index]”
6. All the other surfaces shall be named as their function, such as “interior_wall_[custom index]”
7. The custom index is an index to differentiate the same type surfaces. The tester can decide how to label the custom index.

Description of Test 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, which are important for the gbXML space and surface definitions.

[Figure 3](#) shows the elevation view to indicate positions and dimensions of the slab floor, roof or ceiling elements.

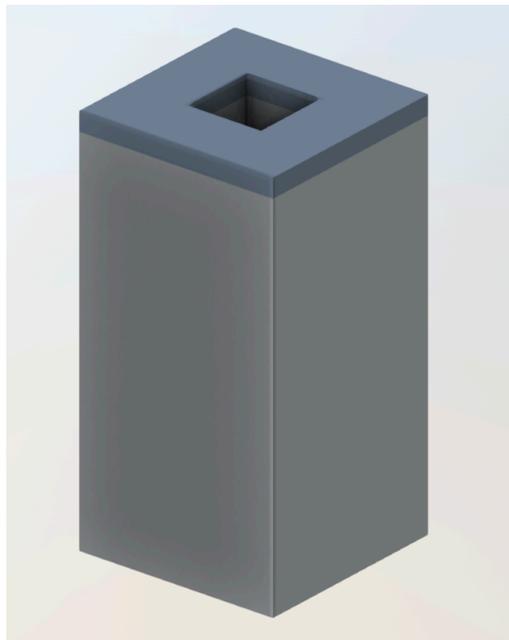


Figure 1. Isometric View

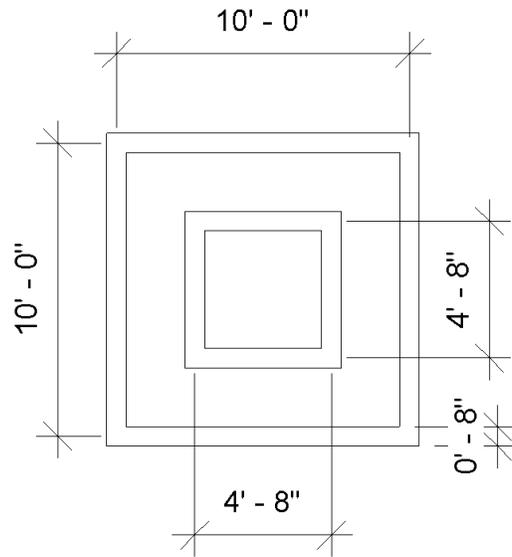


Figure 2. Floor Plan

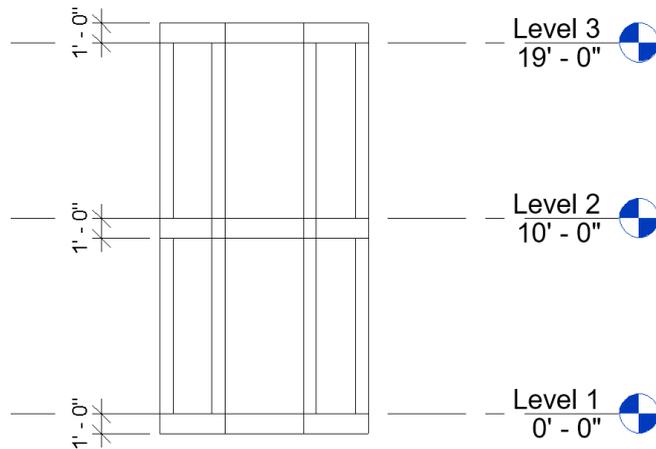


Figure 3. Elevation

Expected Outcome:

The dimension of the gbXML model is in 10'x10'x20'. The shaft should be located in the middle of the building with a dimension of 4'8" x 4'8". In addition, the shaft should be tightly enclosed by wall surfaces. Figure 4 shows the exported gbXML model.

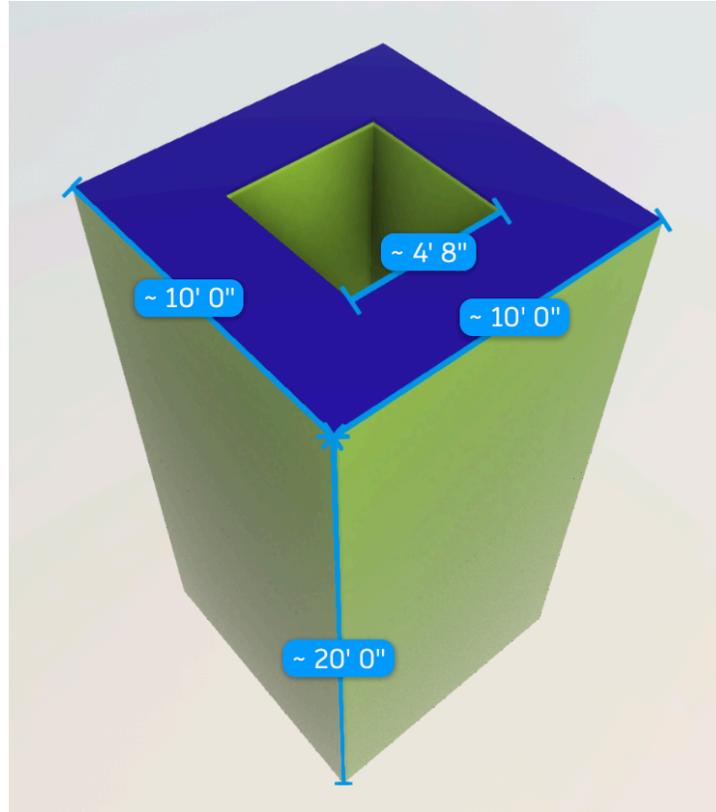


Figure 4. Exported gbXML model

Common Outcomes and Test Results:

It is common to find the shaft openings are not properly handled in the export function (Figure 5), thus results in failed gbXML models. Gaps between walls, roof and floors can be found in those cases (Figure 5)

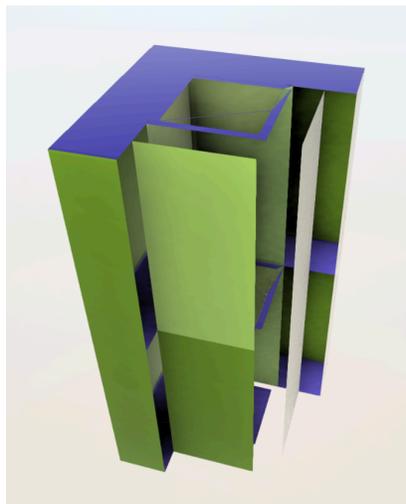


Figure 5. Exported curtain wall is smaller than the BIM model