Test Case 10 – Atrium Space

Test Description: Atrium is a space with high ceiling, usually has the height of two or more floors. When such a space is adjacent to regular spaces, the zone boundary algorithm could be confused, thus, produce erroneous gbXML model.

Spaces / Rooms:
There are three spaces in this test model. The atrium space is named as "level_1_space_1", The name of the first-floor space is "level_1_space_2" and name of the second-floor space is "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 three spaces.
3. All the walls face to an orientation shall be named as: "[orientation]_wall_[custom index]"
4. All the other surfaces shall be named as their function, such as "interior_wall_[custom index]
5. 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.

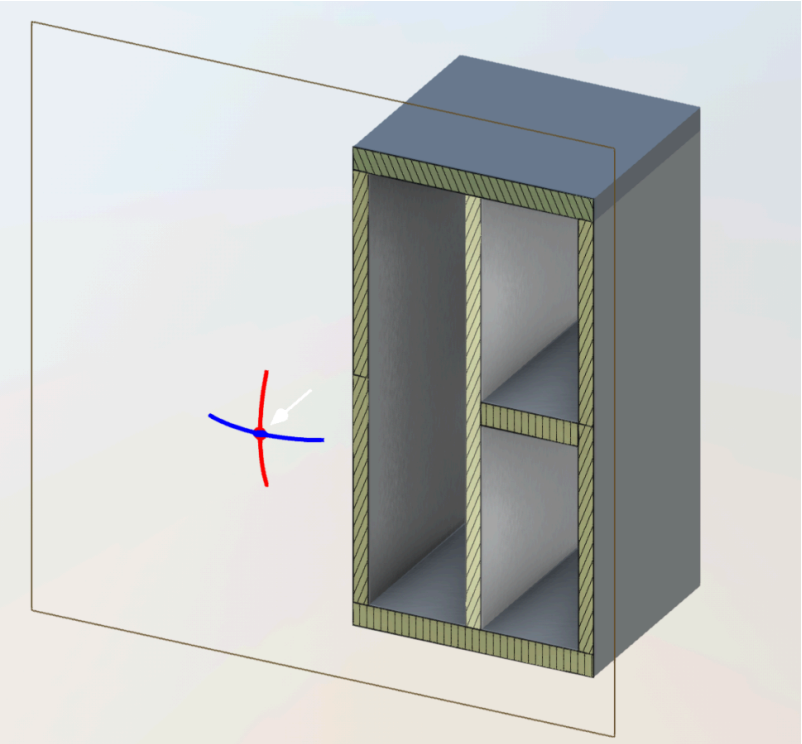

Figure 1. Isometric View

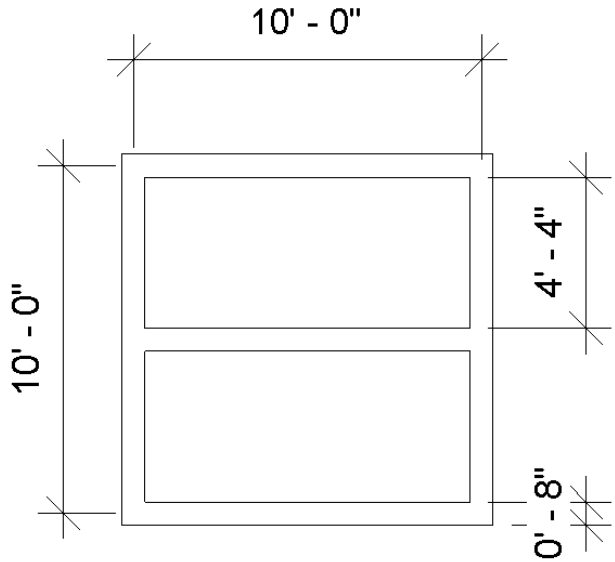

Figure 2. Floor Plan

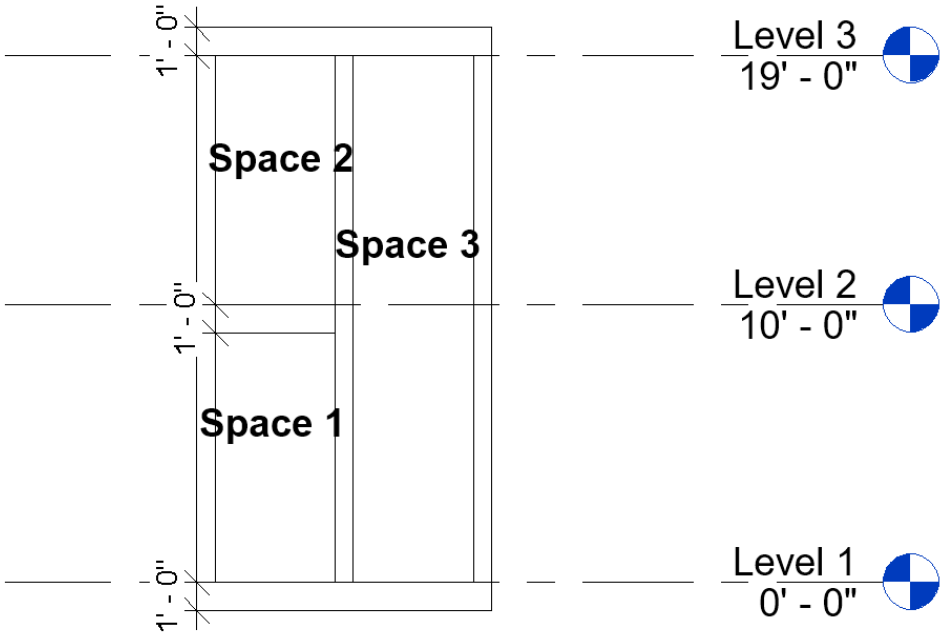

Figure 3. Elevation

Expected Outcome:

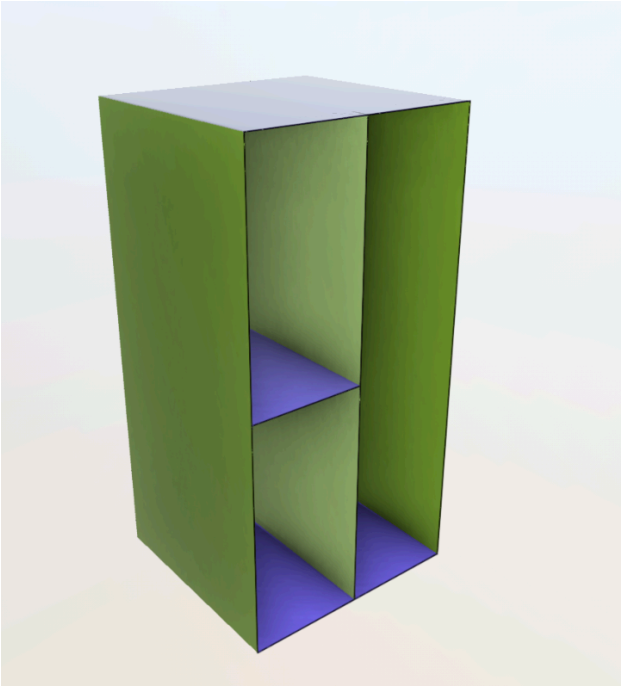

Figure 4. Expected outcome of the model

Common Outcomes and Test Results:

The atrium space could lead to various errors. For example, Figure 5 illustrates the atrium space has a lower height (about 1') than the regular space. Another example shows missing surfaces in both atrium and its adjacent spaces.

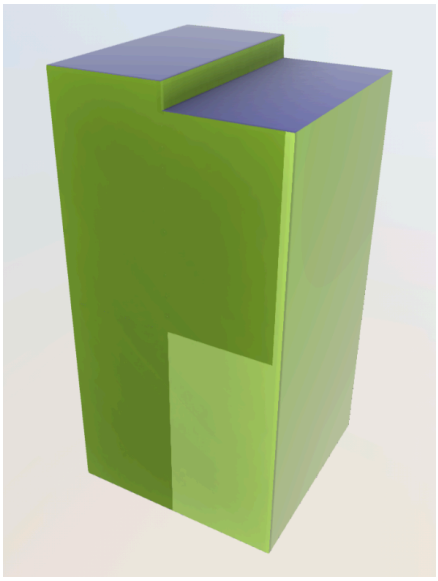

Figure 5. Un-leveled spaces

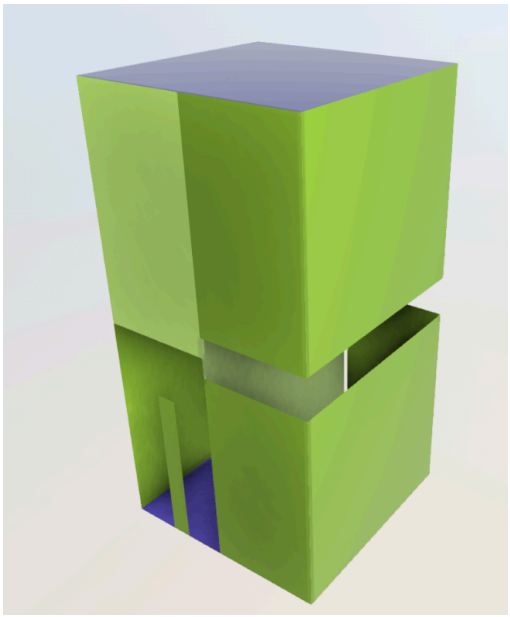

Figure 6. Missing surfaces