

Test Case #12 – Concave Space

Test Description: Most space in buildings are rectangular, and they can be successfully exported into a gbXML model. However, sometimes designers design space in a concave shape, which means one of the inner angles is greater than 180 degree. These spaces could results issues in exported gbXML models. In this test case, software should successfully export a concave shape space to a gbXML model.

Spaces / Rooms:

There is only one space in this test model. It is named as “level_1_space_1”. The space shape is the same as the building shape.

Special Consideration:

1. The model dimension is detailed in Figure 1.
2. The exterior wall thickness is set to 8”.
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. Walls locates between the slab floor and the roof.

[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 south elevation view to indicate positions and dimensions of the slab floor, roof or ceiling elements.

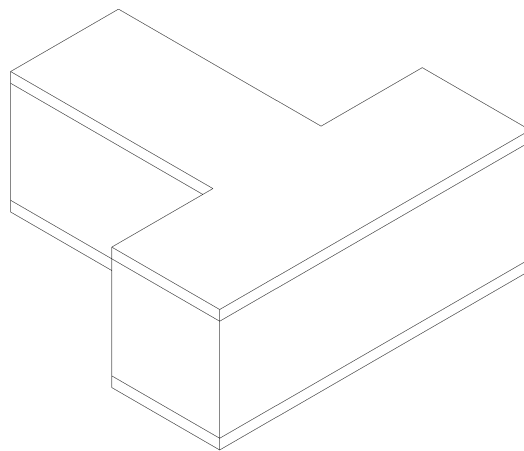


Figure 1. Isometric View

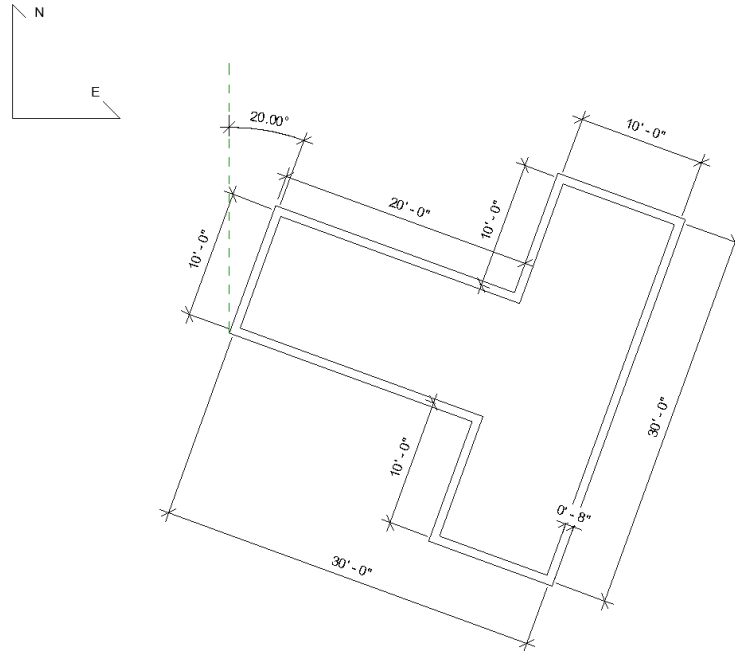


Figure 2. 1st Floor Plan (measurement is taken by center line)

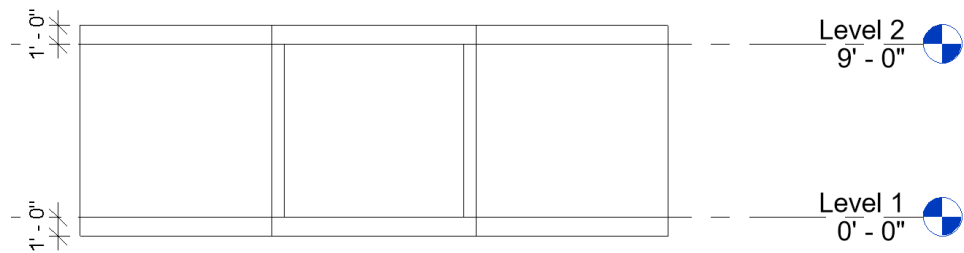


Figure 3. Elevation

Expected Outcome:

In the exported gbXML model, the T shape space should be fully enclosed and the type of every surface is correctly identified. There should no shades in this test case.

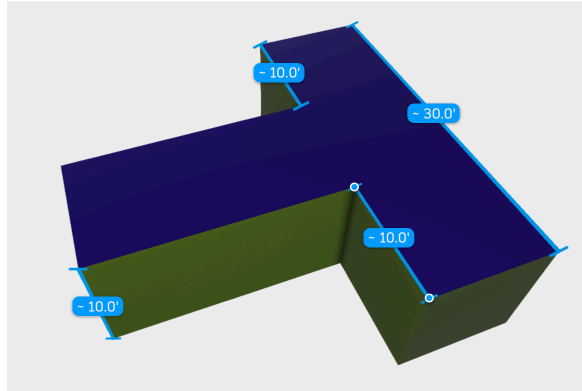


Figure 4. Exported gbXML model

Common Outcomes and Test Results:

The most common issue occurred in this test is that the roof becomes suspended in gbXML. The gap between the roof and the wall is indicated in red circles in Figure 4. This issue occurs when the model is exported based on spaces and rooms definition in the building. If the energy model of this building has been created, which means the thermal zones have been created, then the model can be exported as gbXML correctly.

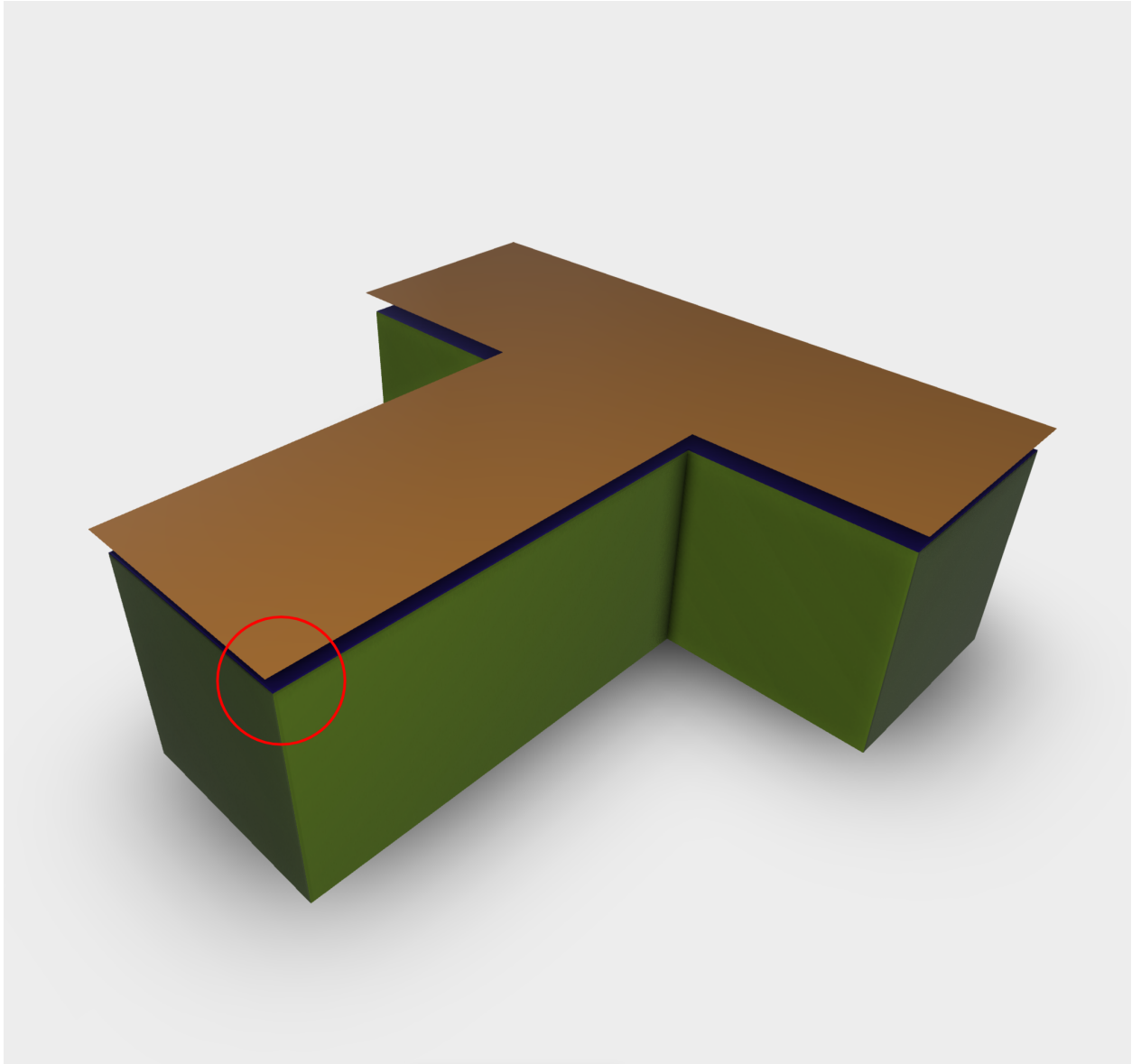


Figure 4. Common gbXML Issue