Test Case 17 – Curved Wall

Test Description: Curved wall is an attractive design element in buildings. It can be functioned as exterior wall, partitions and even ceilings. However, such shapes have long been a problem in the BIM to gbXML. The test case exames the BIM software capabilities on exporting an curved exterior wall into gbXML.

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 is 10' height and 10' wide.
2. The radius is 5'.
3. The wall thickness is 8"
4. The both thicknesses of roof and slab on grade are 1'.
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 and the curve space dimensions.
Figure 3 shows the elevation view to indicate positions and dimensions of the slab floor, roof or ceiling elements.

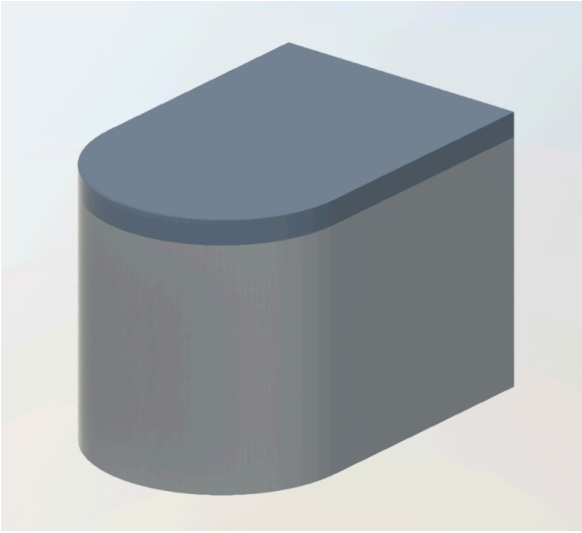

Figure 1. Isometric View

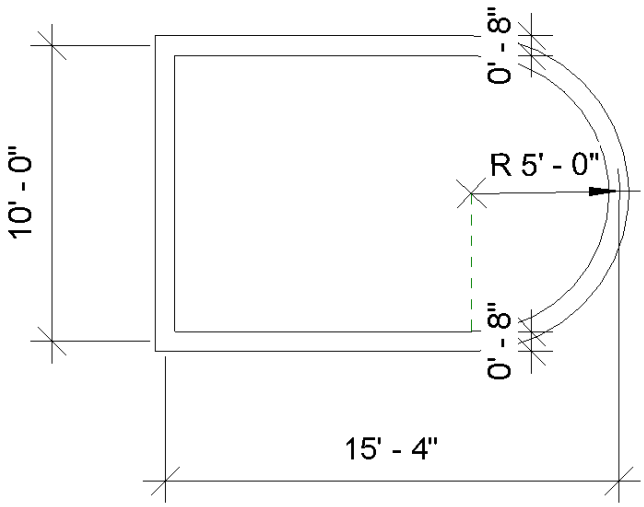

Figure 2. Floor Plan

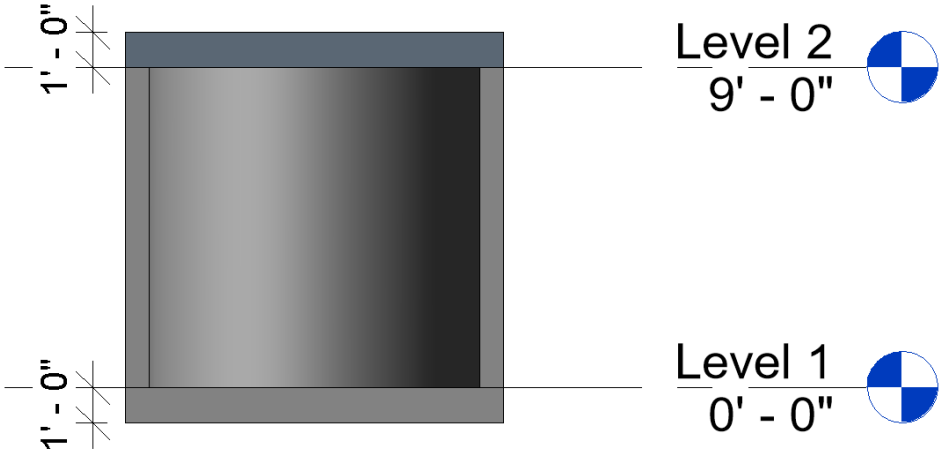

Figure 3. Elevation

Expected Outcome:
The exported gbXML should have a height of 10’ and width of 10’ with the 5’ radius for the curved space. Also, all the surfaces are successfully generated with no gaps in between or within.

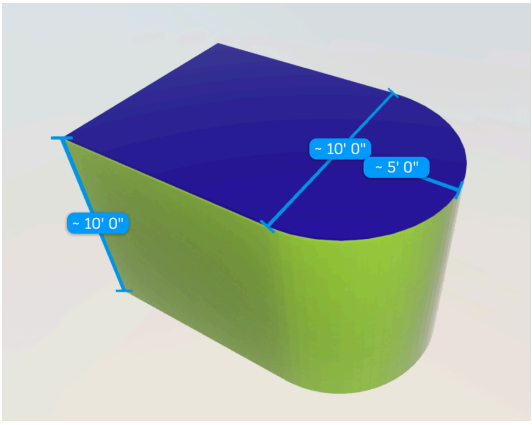

Figure 4. Exported gbXML model

Common Outcomes and Test Results:

Many errors could occur when exporting a curved wall into gbXML. Two exmpales are shown below.

1. Surfaces miss corners. In this example, surfaces at the edge of the curved wall shows missing corners.

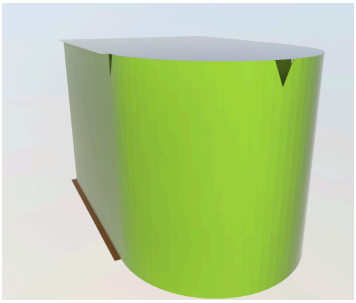

Figure 5. Surfaces miss corners.

2. Space is not enclosed. In this example, gaps can be seen between wall surfaces and roofs as well as slabs.

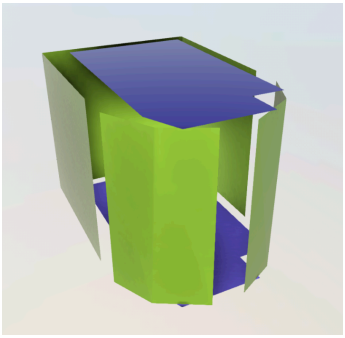

Figure 6. Space is not enclosed.