**Test Case 3 Text**

This test (Test Case #3) can be explained first using the cutaway axonometric view in Figure 1 (the roof and the east exterior wall has been removed for clarity).

The test geometry consists of a double height space sharing an adjacent interior wall with four (4) single height spaces. It is expected that the user has defined this interior wall as a single wall in the CAD or BIM tool, and the wall is broken up into four separate interior walls by the tool. In addition, this test ensures that single floor plate separating sp-2-Space and sp-3-Space from sp-5-Space and sp-6-Space is broken into two interior floors/ceilings in the gbXML representation (interior floors/ceilings are the same thing in gbXML) to establish the correct neighboring relationships.

It is very important that the space names in your certification file must adhere to the naming convention shown in Figures 1, 2, 3, and 4. If the spaces are not named appropriately, then the validator software will not be able to achieve a Passing Score.

The remaining figures show actual coordinates and dimensions, where the dimensions are drawn at the centerline of the surface, per gbXML convention. Dimensions in the east-west direction are the X-dimension, and in the north-south are the Y-dimension. Z is in the final direction (up and down), as shown in Figure 4.

Figure 2 shows a plan view of the first floor, at a height of 3’ above height z=0.

Figure 3 shows a plan view of the second floor, at a height of 16’ above height z=0. Use the x-axis (east-west) dimensions in Figure 2 as a reference, as these have been removed from Figure 3 for brevity.

Figure 4 shows a section cut through the four single height spaces, where the section cut positions the user at the western side of the building looking east. The cut takes place at x=—20’.

Using these four images, it should be possible to reconstruct this test case in the vendor tool of choice and submit this test case to gbXML for validation towards Level 1 or 2 certification.

**Test Case 6 Text**

This test (Test Case #6) can be explained first using the axonometric view in Figure 1.

The test geometry consists of 4 single height spaces where one (1) of the spaces shares an adjacent interior wall with three (3) identical single height spaces. The typical use case would be one where the user has defined the one (1) space (i.e. - Space\_0\_0) first as a standalone zone and then draws (in no particular order) the other three (3). When exported to gbXML, it is expected that the single wall separating Space\_0\_0 from the others is broken into five (5) separate walls, three (3) of which are interior walls and two (2) of which are exterior walls, as indicated in Figure 3. In addition, this test ensures that the remaining surfaces are properly assigned to their respective wall, floor, or roof surface type.

It should be noted that there are windows (Openings in gbXML terminology) that should be drawn for this test. The absolute position of the windows is not critical, but the overall area should be approximately 95% of the wall area.

It is very important that the space names in your certification file must adhere to the naming convention shown in Figures 1, 2, and 3. If the spaces are not named appropriately, then the validator software will not be able to achieve a Passing Score.

The remaining figures can be used to find actual coordinates and dimensions, where the dimensions are drawn at the centerline of the surface, per gbXML convention. Dimensions in the east-west direction are the X-dimension, and in the north-south are the Y-dimension. Z is in the final direction (up and down), as shown in Figure 3.

Please note that dimensions are in meters that these surfaces have no inherent thickness, which is common for a certain subset of geometry creation tools. If you are having trouble drawing a figure such as this in your CAD or BIM tool because of restrictions preventing zero thickness, please contact gbXML for assistance if the validator software is not passing your test.

Figure 2 shows a plan view of the first floor, at a height of 3m above height z=0.

Figure 3 shows a section cut through the three single height spaces, where the section cut positions the user at the eastern side of the building looking west. The cut takes place at x=20m.

Using these three images, it should be possible to reconstruct this test case in the vendor tool of choice and submit this test case to gbXML for validation towards Level 1 or 2 certification.

**Test Case 8 Text**

This test (Test Case #8) can be explained first using axonometric view in Figure 1. It is a large space that consists of a sloped slab on grade and an unusual roof geometry. It has been revealed that many tools have poor volume calculators and also fail to capture slab on grade elements when the floor is sloped. This test is particularly testing to make sure that when the tool exports to gbXML the floor area for the slab on grade is accounted, and also that the volume is properly calculated within a reasonable tolerance. Note that part of the walls are below grade. These walls have been drawn separately from the above grade walls and called out explicitly in this test. It is expected that this explicit declaration can be captured by the BIM tool. It is not expected that the below-grade walls will be created on export automatically if the user only draws a single wall. See Test Case 5 for an example where this is the case.

The test geometry consists of a single volume broken into three separate zones (shown in Figure 3), as might be typical of a large single volume space such as an auditorium where the space has been split up for load calculation purposes. Note that Openings of surfaceType Air have been added between sp-1-Occupied\_Auditorium and sp-2-Unoccupied\_Auditorium and sp-2-Unoccupied\_Auditorium and sp-3-Roof\_Void, respectively. It is expected that the user has defined something indicating that the volume is open, but that a zone boundary should exist. There are several mechanisms available to do this in CAD or BIM tools. When translated to gbXML, it is expected that the interface of these space boundaries consist of surfaces of type ceiling/interior floor (same thing in gbXML) with an Opening of type Air. It is very important that the space names in your certification file must adhere to the naming convention shown in Figures 1, 2, and 3. If the spaces are not named appropriately, then the validator software will not be able to achieve a Passing Score.

The remaining figures show actual coordinates and dimensions, where the dimensions are drawn at the centerline of the surface, per gbXML convention. Dimensions in the east-west direction are the X-dimension, and in the north-south are the Y-dimension. Z is in the final direction (up and down), as shown in Figure 4.

Figure 2 shows a plan view of the first floor, at a height of 3’ above height z=0. Since all of the coordinates for each zone are the same (with the exception of the z-height) this figure can be used in conjunction with Figure 3 to deduce the dimensions of each space.

Figure 3 shows a section cut through the four single height spaces, where the section cut positions the user at the southern side of the building looking north. The cut takes place at y=30’.

Using these three images, it should be possible to reconstruct this test case in the vendor tool of choice and submit this test case to gbXML for validation towards Level 1 or 2 certification.

**Test Case 12 Text**

This test (Test Case #12) is a variant of another test (Test Case #6) and like other tests can be explained first using the axonometric view in Figure 1.

The test geometry consists of five (5) spaces. A comparison to Test Case #6 will reveal that the conditions on the first floor and the test outcomes are expected to be the same: where one (1) of the spaces shares an adjacent interior wall with three (3) identical single height spaces. The typical use case would be one where the user has defined the one (1) space (i.e. - Space\_0\_0) first as a standalone zone and then draws (in no particular order) the other three (3). When exported to gbXML, it is expected that the single wall separating Space\_0\_0 from the others is broken into five (5) separate walls, three (3) of which are interior walls and two (2) of which are exterior walls, as indicated in Figure 3. In addition, this test ensures that the remaining surfaces are properly assigned to their respective wall, floor, or roof surface type.

However, in addition, a new story has been added and a fifth space has been stacked on top of Space\_0\_0. When exported to gbXML, the expectation is that the roof of Space\_0\_0 will be broken up into three (3) separate surfaces automatically, two (2) of which will remain roof surface types and one (1) of which that will become a ceiling/interior floor (same thing in gbXML) separating Space\_0\_0 and Space\_4\_0.

It should be noted that there are no windows in this test, though windows appear in related Test Case #6.

It is very important that the space names in your certification file must adhere to the naming convention shown in Figures 1, 2, 3, and 4. If the spaces are not named appropriately, then the validator software will not be able to achieve a Passing Score.

The remaining figures can be used to find actual coordinates and dimensions, where the dimensions are drawn at the centerline of the surface, per gbXML convention. Dimensions in the east-west direction are the X-dimension, and in the north-south are the Y-dimension. Z is in the final direction (up and down), as shown in Figure 4.

Please note that dimensions are in meters that these surfaces have no inherent thickness, which is common for a certain subset of geometry creation tools. If you are having trouble drawing a figure such as this in your CAD or BIM tool because of restrictions preventing zero thickness, please contact gbXML for assistance if the validator software is not passing your test.

Figure 2 shows a plan view of the first floor, at a height of 3m above height z=0.

Figure 3 shows a plan view of the second floor, at a height of 3m above height z=10.

Figure 4 shows a section cut through the three single height spaces, where the section cut positions the user at the eastern side of the building looking west. The cut takes place at x=20m.

Using these four images and one additional piece of information…Space\_4\_0 has a height of 7m, it should be possible to reconstruct this test case in the vendor tool of choice and submit this test case to gbXML for validation towards Level 1 or 2 certification.