gbXML Geometry Benchmark Tests
Test Case #5 - Single Basement Walls Above and Below Grade

Introduction

Geometry benchmark tests help to ensure that, as building geometry produced by building designers becomes more complex, the geometry produced for energy and heating and cooling loads analysis maintains the integrity of information that is required for a proper and detailed analysis.

gbXML.org maintains this battery of benchmark tests for vendors and other interested parties to ensure compliance with gbXML.org's standards for geometry accuracy and completeness. These tests are prescriptive and serve as marks of excellence that identify the ability of a technology to translate geometry properly from its native format to gbXML

Test #5 Instructions and Requirements

Space Name	*Your file*
sp-1-Space	*confirmed* ☐
sp-2-Space	*confirmed* ☐

Table 1

This test (Test Case #5) is a single zone on top of a basement. The basement consists of a set of four simple continuous walls that start below grade and their height extends above grade. In this case, 0'0" in the z-direction is the demarcator between above and below grade.

The basement walls, though drawn as continuous walls in the CAD or BIM environment, should be broken into two different wall types in gbXML, one that is above grade and one that is below grade.

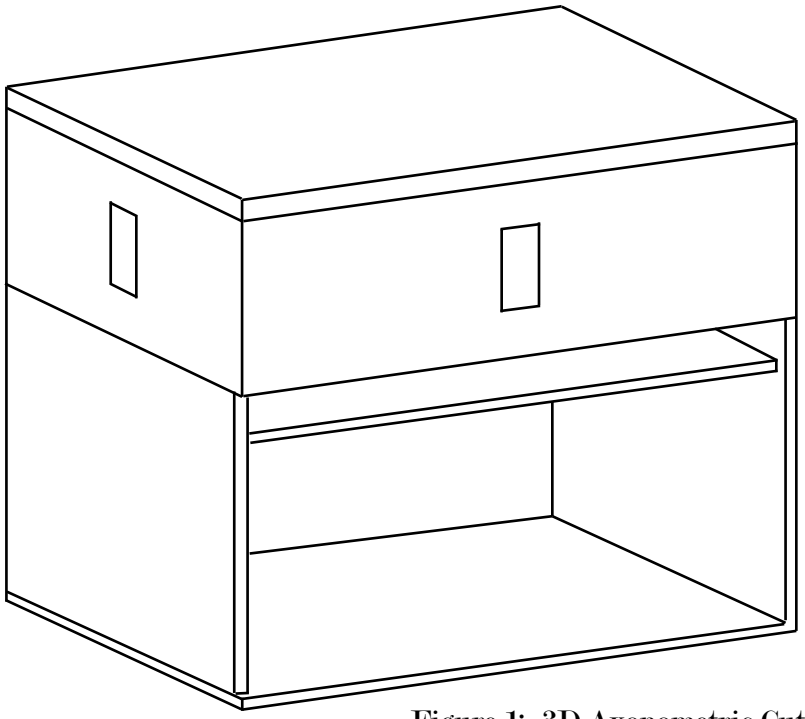

Figure 1: 3D Axonometric Cutaway View

Basement Level Drawing Instructions and Dimensions

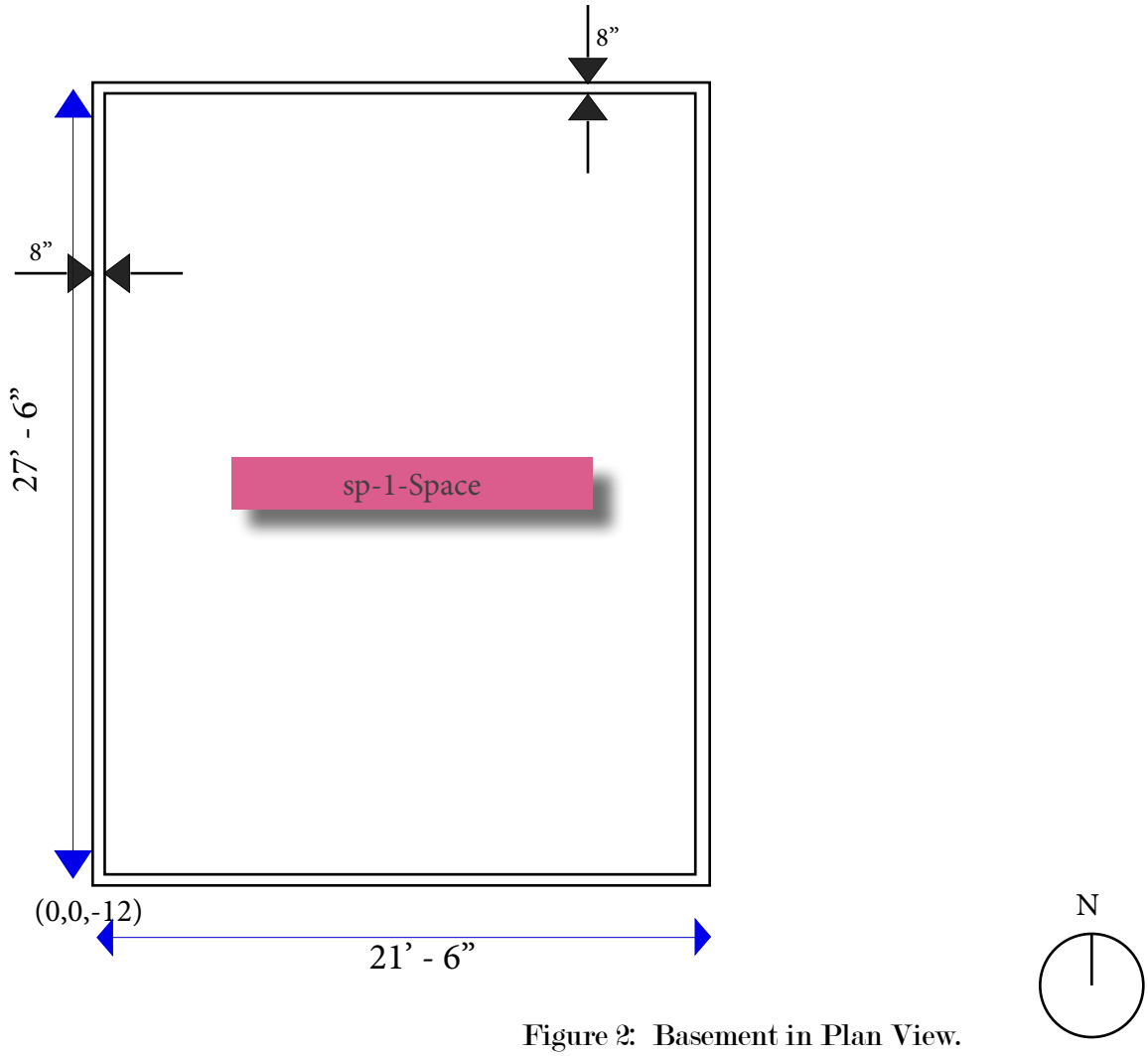

Figure 2: Basement in Plan View.

The basement walls are 8” in total thickness. Dimensions in blue are from centerline to centerline of the walls. The lower left hand corner is at the X-Y origin (0,0) but is 12 feet below ground. Therefore the origin is (0,0,-12).

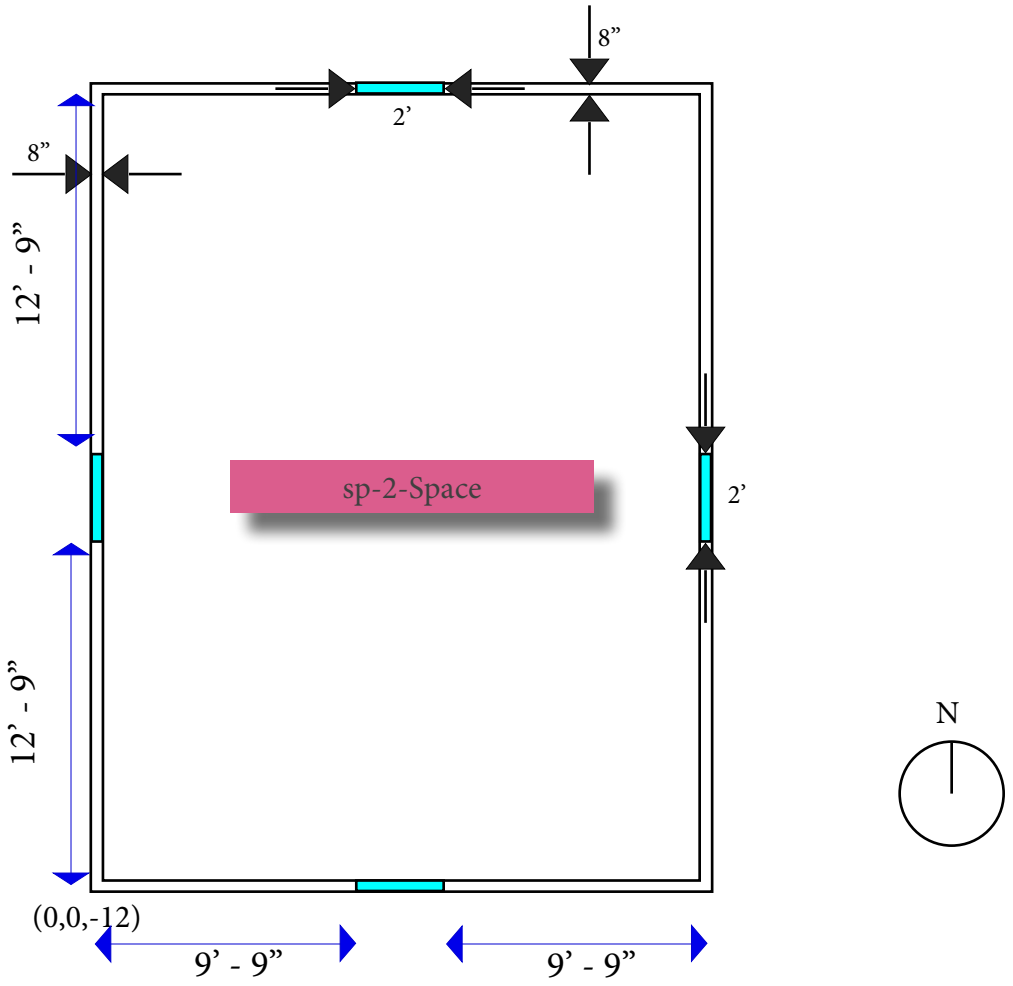

Figure 3: First Floor in Plan View.

The Level 1 space has the same dimensions as the basement, with walls that are the same thickness. 2’ wide windows are placed in the middle of each wall in the respective x or y direction.

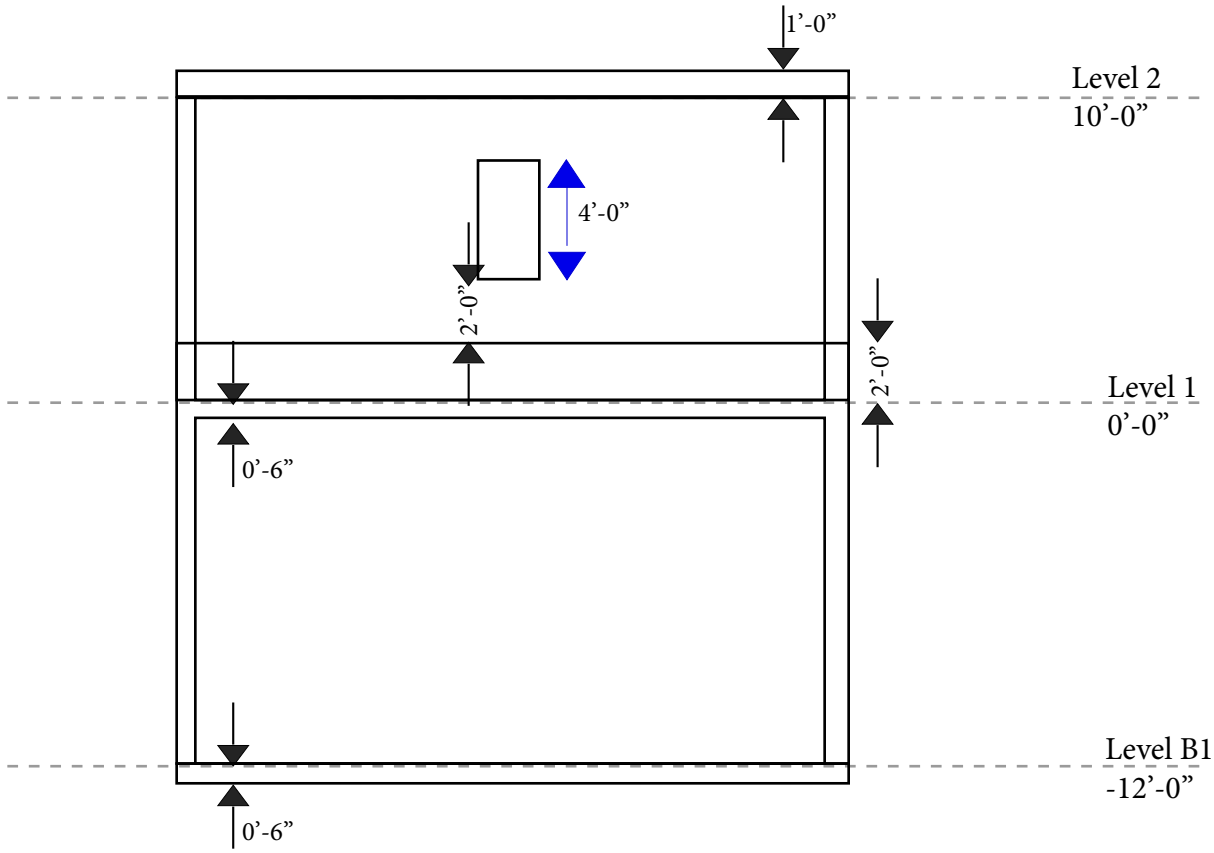

Figure 4: Section view with Dimensions

As seen in Figure 4, the dimensions are as shown. One interesting thing to note is the 2’-0” stub of basement wall above Level 1. This wall will become a separate wall though the basement wall has been drawn as a continuous object in the BIM or CAD environment. The window dimensions, slab thickness, and roof thickness are also shown.

The only issue with this test could be the failure of the CAD or BIM tool to break the wall into below grade and above grade components

Typical validator output in this case:

1. ***The Exterior Wall Surface Count Test and the Underground Wall Count Test would fail***

It may also occur that the windows have not been defined as operable but fixed in your file.

Typical validator output in this case:

1. ***The Fixed Windows Count Test and Operable Windows Count Test would fail.***