gbXML Geometry Benchmark Tests
Test Case #7 - Single Gabled Roof

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 #7) is a simple two-zone model (an occupied zone and an attic zone) that tests the ability of the CAD/BIM tool to create roof geometry. Roofs are regions that often have several complex folds, sloping in multiple directions.

This test is one of a series of roof tests. It has a steeply-sloped gabled roof that slopes in multiple directions.

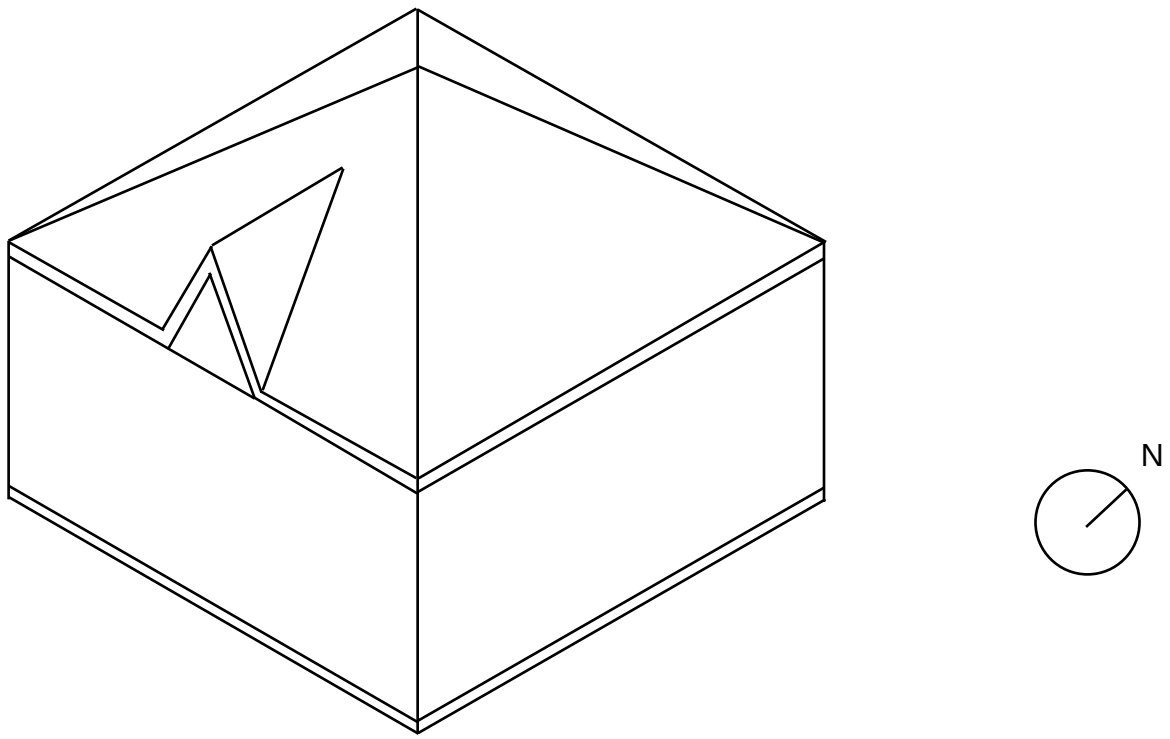

Figure 1: 3D Axonometric Cutaway View

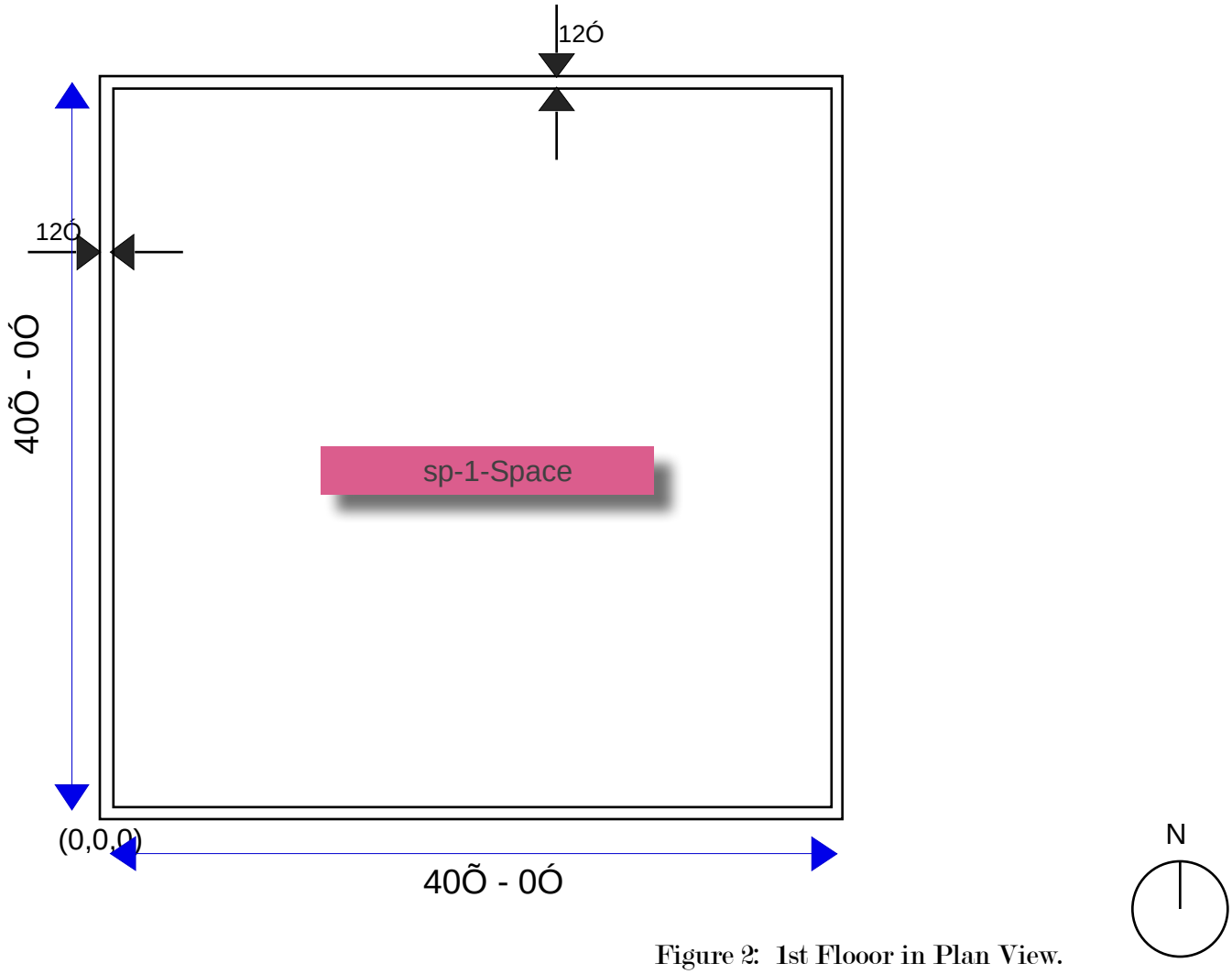

Figure 2: 1st Flooor in Plan View.

The test consists of a simple square base with the lower left corner at the origin of the BIM/CAD reference plane. All walls are 1 foot (12" thick) and drawn with the dimensions shown.

Section showing Basic Volume Relationships

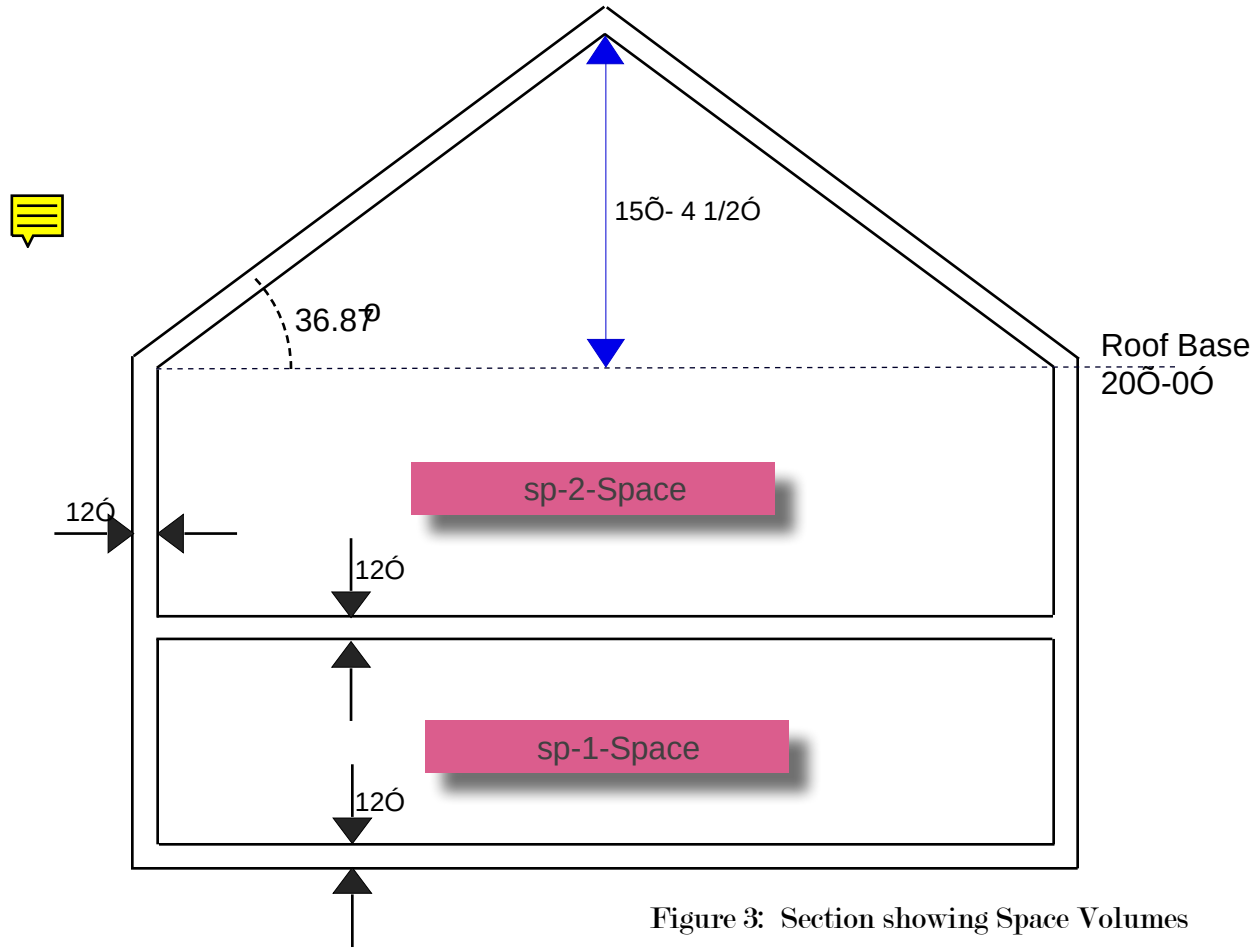

Figure 3: Section showing Space Volumes

The sp-2-Space is a double-height volume. The height above the roof base to the inner surface peak of the main roof is shown as 15' 4.5" in Figure 3 above.

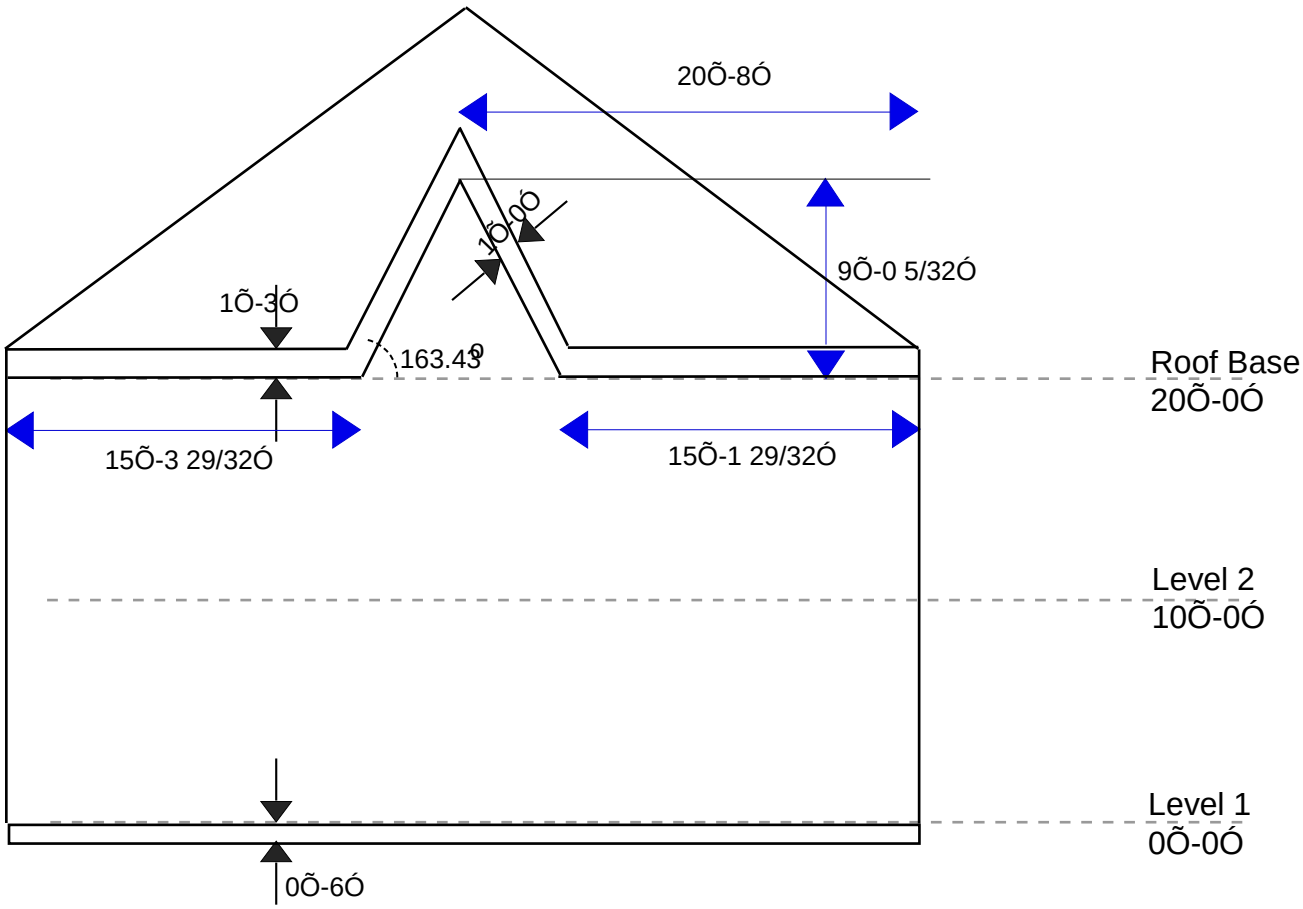

Figure 4: Section view with Dimensions

As seen in Figure 4, the dimensions are as shown. The gable peak does not coincide with the centerline of the wall. It is slightly off-center

Test #7 Common Outcomes and Test Results

The test is fairly simple. Failures usually result from improperly drawing the roof objects, which do not perfectly match the standard test case. All of the count tests and basic tests pass, but the coordinates of the roof surface polyloops and calculated areas will not perfectly match

Typical validator output in this case:

1. ***The detailed surface checks will fail for roof elements, where the height and width, or tilt and azimuth will not coincide with the standard file.***