

Wall With Opening Verification Report

BSYIGMACAD v1.3.6 benchmark evidence package documenting comparison against extracted published reference cases.

Reference Case

J2G masonry shear wall with central opening under 0.30 MPa compression

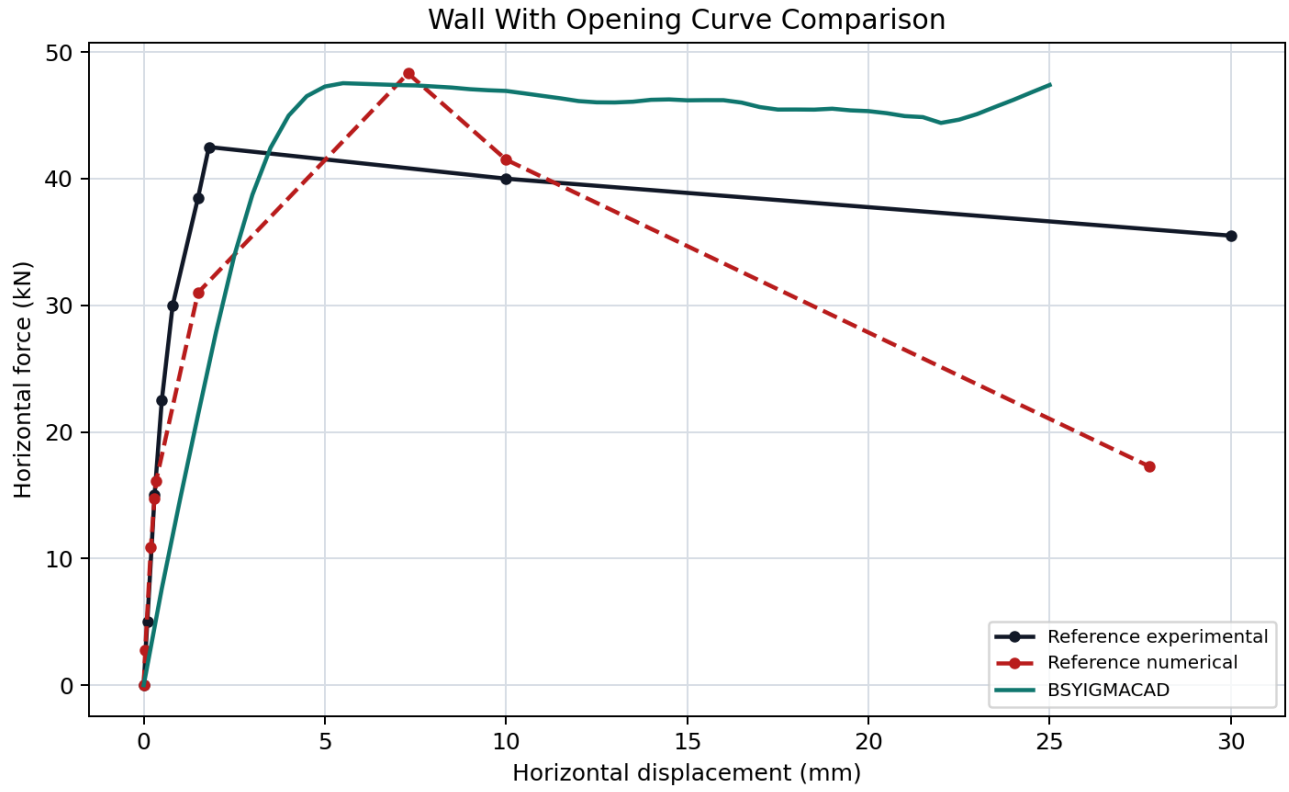
Lourenco, P. B. (1996). Computational Strategies for Masonry Structures. PhD thesis, Delft University of Technology.

Result Summary

Default opening-wall output is compared against extracted calibrated J2G load-displacement and published visual evidence.

Metric	Value	Unit
BSYIGMACAD peak	47.540	kN
BSYIGMACAD peak displacement/strain	5.500	mm
Reference experimental peak	42.500	kN
Reference numerical peak	48.320	kN
Peak error vs experimental	11.86	%
Peak error vs reference numerical	-1.61	%
RMSE vs experimental key points	12.697	kN
RMSE vs reference numerical key points	12.114	kN

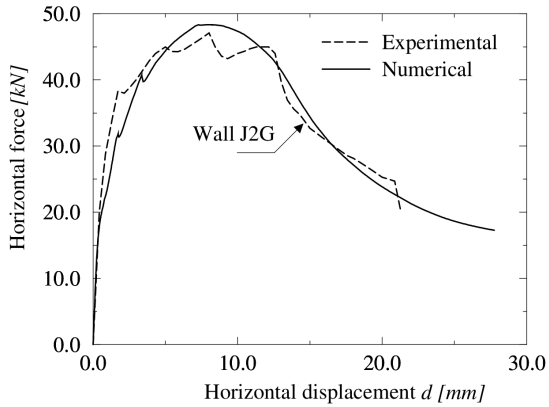
Curve Comparison



Visual Evidence

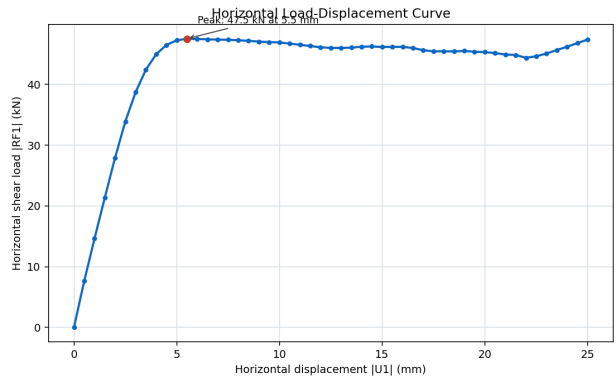
Reference excerpt

c.



4.29 Wall J2G. Load-displacement diagram for new analysis.

BSYIGMACAD output



Reference excerpt

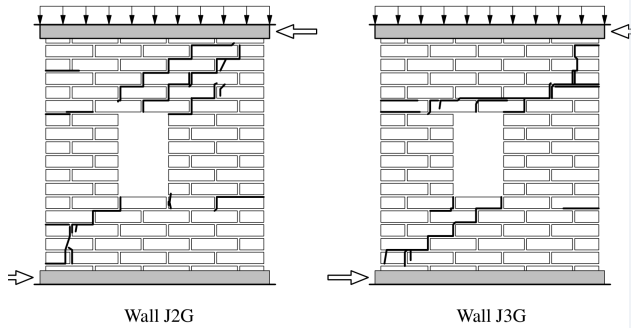
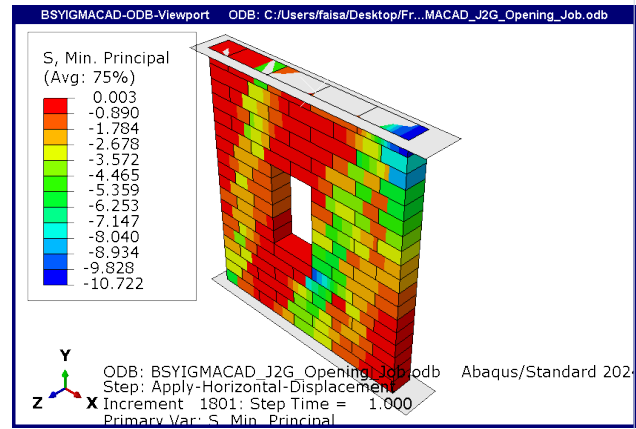


Figure 4.23 Walls JG. Experimental crack patterns for different tests.

BSYIGMACAD output



Reference excerpt

bottom and top of the wall begin to crush, the previous diagonal cracks become inactive. Finally, a complete collapse mechanism is formed with the failure of the small piers in bending, i.e. crushing of the compressed toes and extended horizontal tensile cracks, see Figure 4.27. The failure mode shows good agreement with the four hinge model of Figure 4.22d.

Figure 4.28 shows the distribution of minimum principal stresses for two other loading stages, of which one at peak load. These figures confirm that failure is governed by all modes of the composite interface model. Initially, two large compressive struts are formed, see Figure 4.28a. For higher loads, the diagonal cracks through the middle of

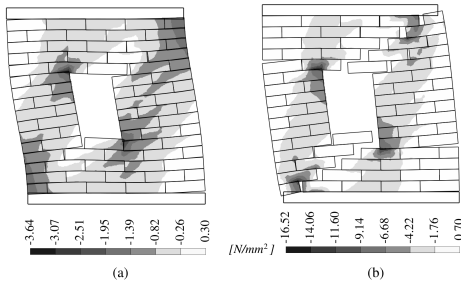
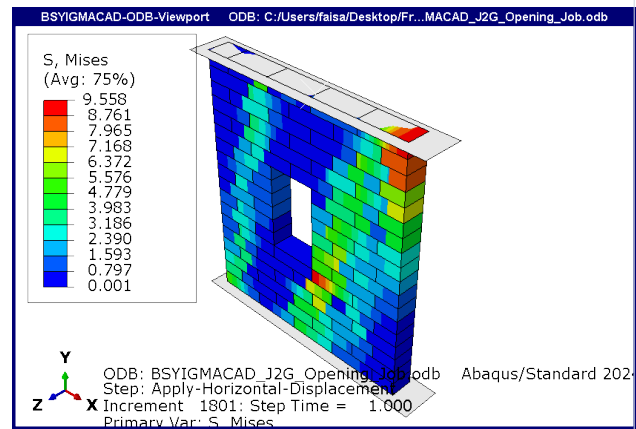
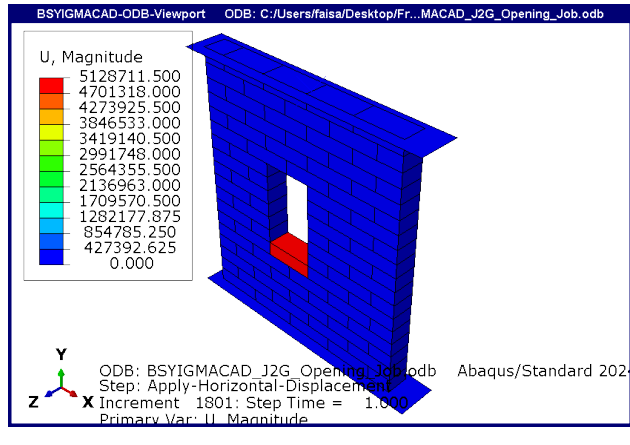


Figure 4.28 Walls JG. Minimum principal stresses at a displacement (a) 0.5 [mm] and (b) 5.4 [mm] (peak).

BSYIGMACAD output



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