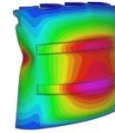


Date: February 2021  
Client: Brickworks



David Beneke Consulting  
Finite Element Analysis for Engineering

## TWO-WAY BREEZE BLOCK MASONRY WALLS MAXIMUM WALL HEIGHT DERIVATION

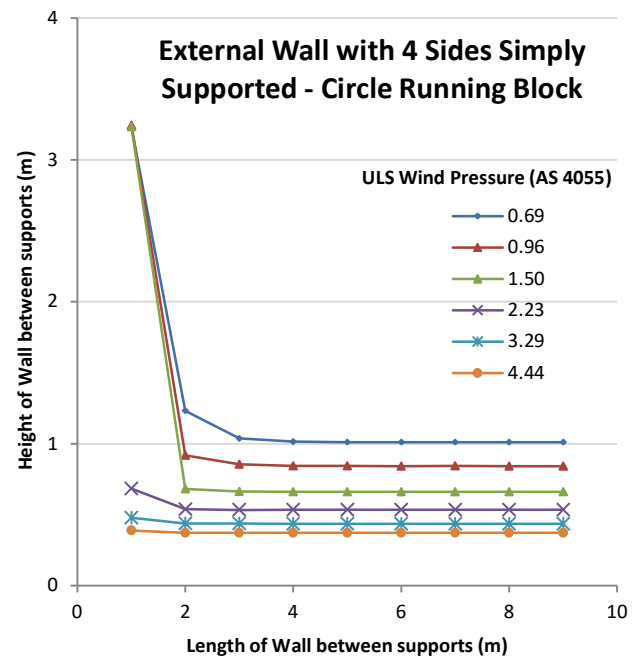


### Project Description:

David Beneke Consulting was commissioned by Brickworks to assist in the investigations into the structural capacity of two-way spanning breeze block masonry walls. The objective of the project was to develop a general design spreadsheet which specifies the maximum wall height as a function of the wall length for different wind regions in Australia, ultimate wind pressures and support conditions following AS 3700-2018.

The design covered wall lengths ranging from 1 to 9 metres in 1 metre increments for eight breeze block types. The design can be applied for six different wind regions N1 to N6 (AS 4055-2012) and six gradations of ultimate wind pressures (AS/NZS 1170.2-2011) ranging from 0.5 kPa to 3.0 kPa in 0.5 kPa increments for both internal and external walls.

The designed support conditions included both simply-supported and free-end support cases at the edges of a wall. Part of the scope involved derivation of interpolation functions for the moment and deflection coefficient of the two way spanning walls following "Theory of Plates and Shells" (Timoshenko and Woinowsky-Krieger, 1959), which helped to determine the ultimate and serviceability limit states of these walls.



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