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Performance of Roof Anchor Systems for Low-Income Housing in South Africa

Ruben van der Merwe[1], Jeffrey Mahachi[2]
University of Johannesburg, Johannesburg, South Africa
[1]201122541@uj.ac.za; [2]jmahachi@uj.ac.za

Abstract **-** The current methods for roof anchoring South African Low-Income Houses are described in the standard SANS 10400. The adequacy of these prescribed roof anchoring methods is questionable due to several recently reported failures caused by strong winds. This study investigates the performance of the prescribed roof anchoring methods through quantitative research and numerical methods, and focuses on LIH with light-weight roofs supported on single leaf masonry walls. The masonry walls comprise of solid bricks. The peak wind reaction forces that are expected to occur at the roof anchor systems were determined through a series of static analyses. Finite Element Analysis techniques were then performed to predict the capacity of the roof anchor system. The results of the research suggest that LIHs prescribed roof anchor systems constructed from solid bricks perform poorly under the expected South African strong wind climate. This study suggests further research is required to develop adequate roof anchoring methods for LIH with light-weight roofs, supported on solid brick walls and that the relevant codes be amended accordingly.

Keywords**:** Finite element analysis, low-income housing, masonry, roof anchors, wind damage