

Behavior of mortarless wall subjected to in-plane combine loading

ABSTRACT

The ability of mortarless wall to restrain/sustain lateral load become important aspect to be consider in the design of wall. Therefore, this paper presents analyses of mortarless wall subjected to in-plane combined loading using finite element programs. The developed 2D finite element program is used in this research. The finite element models are developed based on micro modelling approach where each constituent of masonry (block and dry joint) connected each other by joints at their actual position. Eight noded isoparametric plane element and six noded zero thickness isoparametric interface element are used to represent block unit and dry joint respectively. The developed models are analysed under nonlinear environment. The most relevant results concern the strength response of the dry joint masonry walls subjected to in-plane combined compressive and shear loading. The results of finite element analysis compared with corresponding experimental results and its show good agreement. Parametric study also performed to consider the important parameters that effect the design of wall under combined loading. Significant features of the structural behaviour, ultimate capacity and observed failure mechanisms are addressed and discussed.

Keyword: In-plane loading; Interface element; Mortarless; Pre-compressive load; Shear strength