عنوان مقاله:
Masonry Panel under Point Load

محل انتشار:
دومین کنفرانس بین المللی بتن و توسعه (سال: 1384)

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خلاصه مقاله:
As a very common practical problem in design of masonry structures, an un-reinforced concrete block masonry panel subjected to an in-plane compressive concentrated load has been analysed in a semi-detail modelling by Discrete Elements Method (DEM). Discrete bodies (concrete blocks) interactions with each-other as well as boundaries are calculated under contact laws which are represented as block-mortar interface. Also, different contact law used for the embedded potential cracks in the middle of the full blocks to model the possibility of fracturing across the masonry units. Alternatively, triangular meshing of the block discrete bodies also provided a potentially crackable modelling by DEM. Using elasto-plastic material models for the full block (un-crackable) elements it resulted, however load-displacement curve well correlates with the other results, but failure pattern of the masonry panel could not be captured. This showed the insufficiency in modelling of behaviour of the masonry panel, if only nonlinearity of the materials is considered. Under provisions of potential crack modelling in the full-unit blocks, even in lack of any nonlinearity for block material, impressive results in load-displacement curve and the failure pattern obtained. This showed the effect of cracking is the dominant cause of non-linear behaviour of the masonry panel.

کلمات کلیدی:
Masonry Panel, Point Load, Discrete Element Method