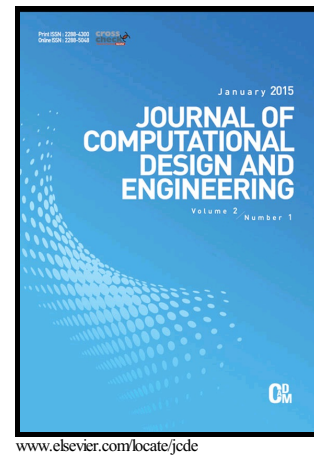


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Foundations for low cost buildings

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ABSTRACT

Attaining an economical and safe design of structures is regarded as a prerequisite for the structural engineer. The market prices of reinforcing steels have dramatically soared in recent years internationally. Therefore, the purpose of the current paper is not just reducing the ratio of reinforcing steel in the foundations for skeleton structures, but rather minimizing this ratio through choosing the most effective footing shape (folded strip footings). Folded footings have been used as an alternative to the conventional rectangular strip footings. The height of the studied model is (10)-ten floors. Two different foundation systems are used in the analysis namely; rectangular strip footings, and folded strip footings respectively. Both footing shapes will be designed as continuous footings with grid shape under the building. Comparison between the two systems is also presented regarding the concrete sections and reinforcement ratio under the same applied loads. The finite element analysis software ADINA is used in modeling and analysis of the structural and geotechnical behavior of both types of footings, with emphasis on the effect of changing the footing shape on the stresses in the footing concrete body and the underlying soils. Research results presents the internal stresses within the footing and soil domains, as well as the contact pressure distribution for a reinforced folded strip footing resting on different soil types. The influence of folding inclination angle, and soil type on the results are also studied. Results showed that folded strip footings are efficient in reducing the amount of needed reinforcements, and such efficiency in reducing the required steel reinforcement in the footings is depending on the applied footing loads, and to some degree on the

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