عنوان مقاله:

Numerical Modeling of the Effect of Geocell Elements' Dimensions on Behavior of Circular Footings

نویسنده:

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خلاصه مقاله:

Use of auxiliary elements in refining and betterment of engineering properties of soil have gained attention since a long time ago. Nowadays the effectiveness and capability of the soil reinforcing technique for giving proper practical solutions in various projects have resulted in this technique quickly gaining a place in geotechnical engineering. In this paper, the results of laboratory studies on such characteristics as width and height of the geocell element on load-bearing capacity and settlement of footings have been modelled numerically. It should be noted that the laboratory studies have been carried out in the uniaxial apparatus and analytical studies have been carried out utilizing the finite element software ABAQUS 6.11. by investigating the results it can be seen that in the case of using a geocell while settlement in the reinforced footing – with geocell – is only 1.15 times more than the non-reinforced footing. Furthermore when the increase in load-bearing capacity of the footing has a significant importance, the best scenario is increasing the height of the geocell element. But when the footing's settlement is of significant importance, we can have more effective results by changing the width of the geocell element. By comparing the results from numerical and laboratory studies, an appropriate agreement is observed and in all cases the analytical studies have more conservative results compared to the results from laboratory studies.

کلمات کلیدی:

Geocell, Soil Refining, Load-Bearing Capacity of Footings, Numerical and Laboratory Studies

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