

Effect of Elastic Modulus Anisotropy on Foundation Behavior Reinforced with Geogrid in Sandy Soil

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Abstract : The bearing capacity of shallow foundations is one of the interesting subjects in geotechnical engineering. Soil improvement by geosynthetic reinforcements is a modern method used in different projects to improve the bearing capacity of foundations. In this paper, numerical study is adopted to investigate the effect of geogrid soil reinforcement on shallow foundation behavior resting on anisotropic sand with using a finite element limit analysis software. The effect of the ratio of horizontal elastic modulus with respect to vertical elastic modulus (EH/EV) investigates on bearing capacity of foundations. The results illustrate that in sandy soils, the anisotropic ratio of elastic modulus (EH/EV) has notable effect on bearing capacity of shallow foundations. Also, based on the results of this study, it was concluded that geogrid could be used as soil reinforcement elements to improve the bearing of sandy soils and reduce its settlement possible remarkably.

Keywords : shallow foundations, bearing capacity, numerical study, soil anisotropy, geogrid

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