BEHAVIOR OF THE SHALLOW FOUNDATIONS UNDER THE SEISMIC LOADING BY NUMERICAL METHODS

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Keywords: Shallow Foundations, Seismic Load, Dynamic Bearing Capacity, Dynamic Settlement, Numerical Methods

In this paper, various research studies of FLAC and PLAXIS software has been studied for numerical analysis of shallow foundations. Comparison of dynamic settlement caused by the earthquake on the effect of various soil parameters such as angle of internal friction, density, Poisson's ratio, modulus of elasticity and the overhead carried.

Results from previous analyses show that the overhead in comparison of the other mentioned parameters have more effect on the dynamic settlement of foundations. The increase of friction angle, Poisson's ratio and modulus of elasticity, dynamic settlement will be reduced. Among the above parameters, the surface density has little influence on the dynamic settlement.

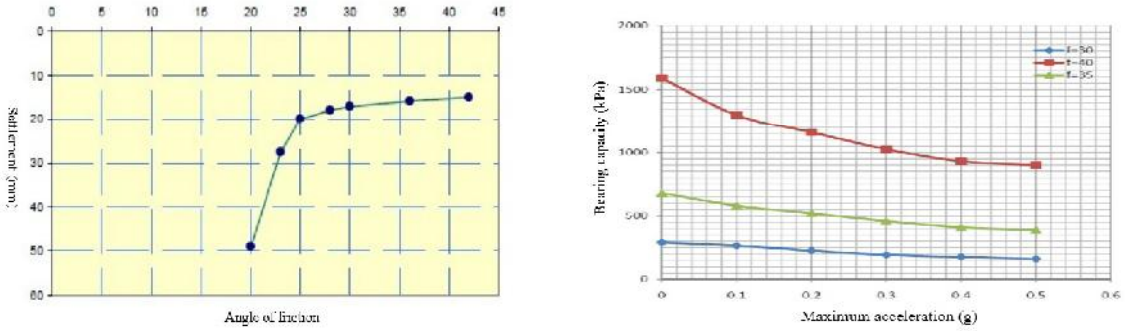
The theoretical investigation was carried out for examining below foundation failure surface and determine the load limit, the ratio of the reduction of the bearing capacity coefficients were considered and accordingly charts to determine the coefficients in dynamic bearing capacity N_{cE}, N_{qE} and $N_{\gamma E}$ offered by the friction angle (Sarma and Iossifelis, 1990; Budhu and Al-karni, 1993; Soubra, 1993; Kumar and Mohan Rao, 2002 and Askari et al., 2005).

The shaking table test and its results are realistic ways of proposing current theories and verify newly proposed theory. Maugeri et al., (2000); Knappett et al., (2006); Shirato et al., (2008) conducted shaking table tests on shallow foundations.

Another way to analyze these issues is the use of numerical methods. Using these methods have increased because of the complicated and advanced software and powerful computers in solving geotechnical problems.

A glimpse of the numerical analysis presented in the study of dynamic bearing capacity of shallow foundation analysis on the effects of changing various parameters included three elements: soil, earthquake and topside presented.

In Figure 1a are plotted effect of the angle of internal friction in the settlement the dynamic of the soil under the vertical component of earthquake acceleration (Masumi et al., 2008). Changes in seismic bearing capacity under various maximum accelerations for different soil friction angles are shown in Figure 1b (Barkhordari et al., 2011).



(a) (b)

Figure 1. a) Effect of the angle of internal friction in the settlement the dynamic of the soil under the vertical component of earthquake acceleration (Masumi et al., 2008), b) Changes in seismic bearing capacity under various maximum acceleration for different soil friction angles (Barkhordari et al., 2011)

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