National Institute of Technology Rourkela

Synopsis Seminar

Seminar Title	: Analysis of Skirted Square Footing under Load Eccentricity and Inclination
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Venue	: Seminar Room, Civil Engineering Department
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Abstract : Weathered sand normally has a lower shear strength and generally requires additional ground improvement measures to fulfill the required bearing capacity. Additionally, the foundation can also be subjected to load eccentricity and load inclination due to the moment and horizontal forces acting on the foundation respectively. Under the combined effect of moment and horizontal load, the footing is subjected to an eccentrically inclined loading condition, which in turn reduces the ultimate bearing capacity. Along with that the footing undergoes rotation and sliding. The deformation behavior of footing under the load from the superstructure is fundamental to foundation design consideration. In this situation, skirted footing can be used as an effective and efficient option to increase the bearing capacity. Various studies have been projected on the load inclination and eccentricity on shallow foundation and their adverse effect on bearing capacity. In the current scenario, extensive research work has been undertaken to find the merit of skirted foundation in increasing the load-bearing capacity. The proposed research topic is focused on the analysis of bearing capacity of skirted shallow foundations subjected to load inclination and load eccentricity. The proposed research work is composed of an experimental investigation along with a finite element analysis. The analysis comprises comparison between the skirted footing and conventional spread footing of equal width and embedment depth. The research work is focused on learning the effect of variation in load eccentricity, load inclination angle, embedded skirt length, the relative density of sand, and footing geometry on the bearing capacity as well as settlement of the foundation. Based on the model test results, relationships have been developed to estimate the ultimate bearing capacity of a skirted footing with eccentric and inclined loading from the ultimate bearing capacity of a footing without a skirt subjected to vertical centric loading. Additionally, formulations have been presented for predicting the reduction in settlement by using skirted footings.

Key words: Skirted footing Sand Eccentric load Inclined load Finite element analysis.