Issariya Mongkolphitthayathorn 2006: An Analysis of Soil Behavior under Strip Footing by Finite Element Method. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Associate Professor Visharn Poopath, Ph.D. 224 pages.
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The research studied the mechanics behavior of soil under strip footing by using numerical solutions.The finite element method (FEM) was used to compute the bearing capacity, failure surface and soil behavior. Results, e.g. bearing capacity and failure surface, from FEM were used to compare with values based on general existing solutions. Case studies were characterized by foundation and soil properties. Foundation was divided by its width (B), depth to width ratio (D/B) and roughness (δ), and soil was divided by strength of soil underlying the footing.

The results of the study showed that the bearing capacity from FEM had a good agreement with general existing solutions. For clay, the results were relatively comparable with solutions by Fellenius and Hansen equations. Maximum differences were less than 15 percent. For sand foundation with D/B = 0, results were close to Terzaghi and Vesic solutions. Maximum differences were less than 40 percent. For D/B > 0, results were close to Terzaghi and Hansen solutions. Maximum differences were less than 33 percent. Results of shear failure surface for D/B of 0 were similar to Prandtl's mechanism (log spiral). For different levels of footing base, wedge failure was estimated, and results also showed that footing roughness dominated the failure of the footing, and that FEM is a good method to study continuum mechanics that show the failure mechanism of soil under any loading state.

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