

Effect of Contaminants on the Behavior of Shallow Foundations

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Abstract : leakage of contamination from fuel or oil reservoirs can alter the geotechnical properties of the soil under their foundation and finally affect their performance in their service life. This article investigates the behavior of shallow foundations on the soil contaminated with diesel and kerosene using the Plaxis Tunnel3D V1.2 software. The information required for the numerical modeling in the paper was obtained from a similar experimental study. The present study seeks to compare the behavior of square foundations on sandy soil without contamination and the soil contaminated with different percentages of diesel and crude oil. The study was conducted on a small square foundation. The depth of the contamination was assumed constant, and the soil was evaluated with four different percentages of both contaminants. The results of analyses were plotted and assessed in the form of load-displacement curves for the foundation. The results indicate reduced bearing capacity of the foundation with the rise in the contamination percentage.

Keywords : bearing capacity, contaminated soils, shallow foundations, 3D numerical analysis

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