Optimum replacement depth to control heave of swelling clays

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Abstract

The behavior of unsaturated swelling soils under changing of moisture content was intensively studied by many researchers since the 1950’s. Many proposed formulas and techniques were used to classify, describe and predict the swelling behavior and parameters of such type of soil. On the other hand, many techniques are used to allow structures to be founded on swelling soils without suffering any damages due to the soil heave. Replacing the swelling soil with granular mixture is one of the most famous and cheapest techniques especially in case of light structures on shallow layer of swelling soil. The aim of this research is to develop a simplified formula to estimate the heave of swelling soil considering the effect of replaced layer. The developed formula is used to estimate the required replacement depth to avoid damage due to excessive heave.

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