



An Empirical Method for Predicting Foundation Heave Rate in Expansive Soil

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ABSTRACT

Predicted values for free-field heave and foundation movement are basic parameters for the design of foundation systems for buildings sited on expansive soil. Current design procedures generally incorporate only the maximum predicted heave that will occur at a site. This can introduce an impractical design situation when the depth of potential heave and the associated heave is large. Under some site conditions, the design life of the structure may be less than the time required for the entire amount of predicted heave to occur. In such cases, it is desired to consider the rate of heave and the amount of heave to be expected at the end of the design life.

This paper presents a methodology for extending observed heave data accumulated over a period of time in order to predict the progression of heave with time. The methodology incorporates curve fitting of survey data to a hyperbolic function. The method of analysis is validated and demonstrated using actual data accumulated over a period of several years on a large building that was constructed with a drilled pier foundation. The results show that in that case future movement of the foundation could be accurately predicted.

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