Parameters for Heave Prediction by Oedometer Tests

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ABSTRACT

This paper describes a methodology to determine the constitutive parameters needed for prediction of heave using oedometer test data. Heave prediction using an effective stress based approach utilizes data from the oedometer test. An important constitutive parameter used in that method is the heave index, CH. The parameter CH is the ratio of the percent swell observed in the oedometer test to the vertical stress applied to the sample when it was inundated, i.e. the inundation pressure. This paper outlines methodology for determination of CH using oedometer test results obtained using reconstituted Pierre shale samples from both consolidation-swell (CS) tests, performed according to the ASTM D 4546 Method A procedure, and constant volume (CV) tests, performed according to the ASTM D 4546 Method C procedure. Most commonly, however, test result data from only one type of test is available, usually the CS test. Therefore, it is useful to establish a relationship between the parameters determined in the CS test and the CV test so that data from only one type of test is necessary. This paper outlines a proposed methodology for correlating test results from CS and CV tests and presents results of a laboratory investigation to assess values of parameters needed in the relationship between swelling pressure from consolidation swell tests and constant volume oedometer tests.

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