

Analysis of the Engineering Judgement Influence on the Selection of Geotechnical Parameters Characteristic Values

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Abstract : A characteristic value of certain geotechnical parameter results from an engineering assessment. Its selection has to be based on technical principles and standards of engineering practice. It has been shown that the results of engineering assessment of different authors for the same problem and input data are significantly dispersed. A survey was conducted in which participants had to estimate the force that causes a 10 cm displacement at the top of a axially in-situ compressed pile. Fifty experts from all over the world took part in it. The lowest estimated force value was 42% and the highest was 133% of measured force resulting from a mentioned static pile load test. These extreme values result in significantly different technical solutions to the same engineering task. In case of selecting a characteristic value of a geotechnical parameter the importance of the influence of an engineering assessment can be reduced by using statistical methods. An informative annex of Eurocode 1 prescribes the method of selecting the characteristic values of material properties. This is followed by Eurocode 7 with certain specificities linked to selecting characteristic values of geotechnical parameters. The paper shows the procedure of selecting characteristic values of a geotechnical parameter by using a statistical method with different initial conditions. The aim of the paper is to quantify an engineering assessment in the example of determining a characteristic value of a specific geotechnical parameter. It is assumed that this assessment is a random variable and that its statistical features will be determined. For this purpose, a survey research was conducted among relevant experts from the field of geotechnical engineering. Conclusively, the results of the survey and the application of statistical method were compared.

Keywords : characteristic values, engineering judgement, Eurocode 7, statistical methods

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