POLITECHNIKA ŚLĄSKA
WYDZIAŁ BUDOWNICTWA
KATEDRA GEOTECHNIKI

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MODEL STANU KRYTYCZNEGO GRUNTÓW PREKONSOLIDOWANYCH I JEGO ZASTOSOWANIE W GEOTECHNICE

ROZPRAWA DOKTORSKA

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Gliwice, lipiec 2012

Abstract:

The main topic of the thesis is constitutive modeling, with particular emphasis on the realistic depiction of the soil mechanics in the zone of so-called small strains.

The preliminary considerations beyond doubt the need to create a new constitutive model that takes into account, in a more adequate and comprehensive than previous attempts, a strong small strains non-linearity of overconsolidated soils. This model should realistically describe the behavior of overconsolidated soil, both in homogeneous states of stress and strain, which occurs in the soil testing , as well as in geotechnical boundary issues.

Model RU + MCC meets these expectations, thanks to precise shear modulus approximation. Equally important is a shear modulus dependence on mean stress and OCR, based on the author's experimental studies. Bulk modulus is also described realistically.

An important part of the thesis is the parametric model identifycation, respecting the criteria and methods of statistical calibration. Much attention is devoted to the consideration of experimental verification of the model. Special emphasis is a computer analysis of the various geotechnical problems whose objective is to illustrate the use of the model.