

Masterarbeit

Topic:

Comprehensive Laboratory Investigation of Various Sampling Techniques for Sensitive Lacustrine Clay in Rosenheim

Description:

The lacustrine clay in Rosenheim is a structurally sensitive subsoil with low bearing capacity, presenting significant challenges for construction and soil characterization. This master thesis is part of the ongoing SEBRO project, currently underway in the Kolbermoor region of Rosenheim (southeast of Munich). The overarching goal of this study is to thoroughly investigate the behavior and properties of the clay in different states, specifically comparing undisturbed samples obtained through field sampling techniques with fully disturbed remolded samples. This research aims to evaluate the geotechnical properties of these samples, focusing on compressibility and shear strength. Understanding these properties is essential for developing effective construction techniques in such challenging environments.



Figure: Laboratory tests equipment for cohesive soils a) Fall Cone test b) Vane Shear test

In this study, to minimize disturbance of field samples, two sampling techniques—Osterberg sampler and Rotary Core Drilling sampler—will be employed. The primary aim of this study is to compare the results from these less-disturbed samples with remolded (fully disturbed) samples, and then compare both sets of results with field investigation findings. To achieve this aim, Fall

Cone and Vane Shear tests will be conducted to determine the undrained shear strength and consistency of the soil samples, providing a comparative analysis with in-situ shear strength. Another objective of this study is to determine the compressibility and consolidation properties of this sensitive soil. Oedometer tests will be conducted to determine the consolidation and creep coefficients. Additionally, non-destructive tests using P-RATs in conventional Oedometer tests will measure shear wave velocity, aiding in the evaluation of sample quality through comparison with Cross-Hole measurements from field investigations. Finally, new quantitative findings are obtained and elaborated, revealing previously largely unknown characteristics of the lacustrine clay in Rosenheim, or those based solely on practical experience. The results from these investigations are then discussed, analyzed, and compared with existing literature data.

Scope of work:

- Determination of the compressibility and stiffness parameters of lacustrine clay
- Determination of undrained shear strength of lacustrine clay
- Evaluation of sample quality using the results of the laboratory tests compared with the field investigation results

Prerequisites:

- Interest in working with laboratory tests such as vane shear tests and Fall Cone tests
- Interest in working with laboratory tests such as Oedometer tests with seismic wave techniques in different sample qualities

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Ausgegeben an:

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