

Advanced Soil Mechanics

2 units (selection)

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Target The purpose of this lecture is to learn the critical state mechanics which is formed a theoretical base of a modern soil mechanics for clay and sand.

Outline The purpose of Advanced Soil Mechanics is to learn the critical state mechanics which is formed a theoretical base of a modern soil mechanics for clay and sand. Firstly, the results of typical experiments related to shear properties of a saturated clay are shown and a constitutive law existing at stress-strain relationship of clays are explained. Secondly, the relationship is expanded to the theory of sand and the differences between clay and sand are made clear easily. The elasto-plastic theory for soil is explained using the cam clay model and its applications to numerical analysis are explained showing new research results. Finally, the critical soil mechanics is learned through this lecture.

Style Lecture

Keyword *critical soil mechanics, cam clay model, flow rule, constitutive law for soils*

Goal Values of stress-strains and pore pressures for saturated soils in various states can be calculated by using critical state soil mechanics theory.

Schedule

1. cam clay model
2. shear properties of saturated clay
3. existence of critical state line
4. Drained and Undrained tests of normally consolidated clay
5. 3 dimensional expression of critical state line
6. existence of Roscoe Surface
7. shape of Roscoe Surface
8. behavior of overconsolidated clay
9. yield surface of Hvorslev Surface
10. the 2 and 3 dimensional complete state boundary surface
11. mechanical behavior of sands
12. equivalent consolidated pressure
13. elasto-plastic theory of saturated clay
14. cam clay model
15. state boundary equation for cam clay model
16. term-end test

Evaluation Criteria Degree of achievement for the aim is examined by the semester test and the passing mark is more than 60%.

Textbook Some prints are distributed in lectures.

Webpage <http://www.ce.tokushima-u.ac.jp/www/jiban/jiban.html>

Contents <http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216800>

Contact

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