Cyclic Direct Simple Shear Testing Of A Beaufort Sea Clay

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Variable Direction Dynamic Cyclic Simple Shear Testing Introduction to Electro-Mechanical Dynamic Cyclic Simple Shear DSS Demonstration.wmv

Multi Direction Dynamic Cyclic Simple Shear*GDS' Electromechanical Dynamic Cyclic Simple Shear Device (EMDCSS) Installation \u0026 Training Video* **Cyclic simple shear test by GCTS in June 28** Géotechnique Letters: Simple Shear Tests on Peat - Test 3 Setting up a Dynamic Simple Shear Test *Partially Saturated Sand Test in Cyclic Simple Shear Liquefaction Box* ~~Direct shear test~~ ~~CE 326 Mod 12.9b Triaxial Shear Test~~ ~~Direct Shear Test~~ ~~Weld Details: The Good, The Bad and The Ugly~~ Bolted Connection - Bolt Shear CEEN 341 - Lab 8 - Direct Shear Test on Sand

Cyclic triaxial test

DIRECT SHEAR TEST (SHEAR BOX TEST) ?????? ???? ???????*DIRECT SHEAR TEST* ~~Direct Shear test~~ Carleton University - CIVE 3208 Lab 6: Direct Shear Test *12-shear box test Shear Strength of a Threaded Fastener - Fastening Theory Part 5* ~~2015 Seed Lecture - Evaluation of Soil Liquefaction- How Far Have We Come in the Past 30 Years?~~ ~~What's new in the 2020 edition of AWS D1.1, Structural Welding Code — Steel~~ ~~CEEN 545 - Lecture 18 - Dynamic Soil Properties (Part I)~~ **Geodynamics - Lecture 5.5: Pure and simple shear** *Features \u0026 Benefits of the EMDCSS* Géotechnique Letters: Simple Shear Tests on Peat - Test 4 ~~Lap Shear Doesn't Measure Shear~~ *6 Double Shear* **Cyclic Direct Simple Shear Testing**
The cyclic simple shear is a plane strain device. The shear strain is induced by horizontal movement at the bottom of the sample relative to the top. The diameter of the sample remains constant, therefore any change in volume can only be as a result of vertical movement of the top platen.

Cyclic simple shear , Soil mechanics testing equipment ...
Its aim is to highlight how fabric and layered structure influence the undrained cyclic response of sandy soils from Christchurch in Direct Simple Shear (DSS) conditions. This will be achieved by performing comparative tests on undisturbed specimens, collected with the Gel-Push and Dames & Moore samplers, and on specimens of the same soils prepared in the laboratory using the technique of water sedimentation.

Undrained cyclic direct simple shear testing of ...
The GDS Electromechanical Dynamic Cyclic Simple Shear Device (EMDCSS) is for simple shear testing, which can be upgraded to direct shear. It is capable of carrying out dynamic cyclic tests from small strain (0.005% shear strain amplitude) to large strain (10% shear strain amplitude), as well as extremely accurate quasi-static testing.

GDS Electro-Mechanical Dynamic Cyclic Simple Shear ...
The constant volume condition is equivalent to the undrained condition for fully saturated specimens. Cyclic direct simple shear testing with truly undrained conditions (restricting pore water flow from and into the specimen) can be performed using some simple shear devices, but is beyond the scope of this standard. 2.

ASTM D8296 - 19 Standard Test Method for Consolidated ...
Firstly, I have tried to simulate cyclic simple shear test from Shahnazari & Towhata (2002), Fig. 5, on Toyoura Sand. It is in the range of medium strains, up to 3%. The simulation looks really good (see attached pdf file). The sample contracts systematically with cycles thus the stiffness increases as per the experiment.

Cyclic simple shear test simulation with hypoplasticity ...
The cyclic testing of a Triaxial specimen can lead to the determination of the modulus and damping properties. The process, in this case, involves testing of either multiple specimens at different cyclic load or deformation or the same specimen with a progressively increased cyclic load or deformation.

Introduction to Cyclic (Dynamic) Triaxial Testing
BACKGROUND The NGI direct simple shear (DSS) apparatus was developed in the 1960's by Landva and Bjerrum and has since then been extensively used both at NGI and by others throughout the world. Simple shear testing is relevant and useful in the investigation of stress-strain-strength relationships for a range of soil types.

Direct simple shear test - DSS
the cyclic direct simple shear (CDSS) test in this study suggest a failure surface model in which the horizontal direction do- minates, as shown in the figure. The present work is a follow-up study of Ryu and Kim (2015) and Ko et al. (2017). It evalua tes the effects of the average and cyclic shear stresses on the dynamic shear behavior considering

CYCLIC SHEAR BEHAVIOR CHARACTERISTICS OF MARINE SILTY SAND
The ShearTrac II-DSS CY system is a universal shear system capable of performing the consolidation, static and cyclic direct simple shear phases under full automatic control. This system is of the type developed at NGI in the mid 1960's. The DSS test generates a fairly homogeneous state of shear stress throughout the specimen, which provides initial stress condition, stress path, and deformation configuration that models numerous field loading conditions more closely than any other strength ...

FULLY-AUTOMATED CYCLIC SIMPLE SHEAR SYSTEM - Advanced Soil ...
DSS tests were chosen in this study as this type of tests is generally preferred in offshore geotechnical site investigation due to the efficiency of sample size and as shear strength from...

(PDF) A review of undrained strength in direct simple shear.
The ShearTrac II cyclic direct simple shear (CDSS) system is a universal shear system capable of performing the consolidation, static and cyclic direct simple shear phases under full automatic control.

Cyclic Direct Simple Shear, Cyclic DSS Test Equipment ...
The constant volume condition is equivalent to the undrained condition for fully saturated specimens. Cyclic direct simple shear testing with truly undrained conditions (restricting pore water flow from and into the specimen) can be performed using some simple shear devices, but is beyond the scope of this standard. 2

ASTM D8296 - 19 - Standard Test Method for Consolidated ...
Unmatched automation from test start to finish - 2 to 32 times faster results and labor time savings of 30% to 95% vs. manual testing Flexible design - perform additional testing on the same platform and save money and space in your lab Full test control and remote monitoring allows you to take your testing on the go - view real-time results, check test quality, and change parameters

Geotechnical Testing Equipment for Soils, Rock ...
A large-size Cyclic Simple Shear (CSS) device was utilized to perform monotonic and cyclic shear tests on mixtures of either subrounded 9 mm Pea Gravel or angular 8 mm Crushed Limestone (CLS8) with subrounded Ottawa C109 sand.

Monotonic and cyclic simple shear response of gravel-sand ...
Variable Direction Dynamic Cyclic Simple Shear Product Code : VDDCSS The VDCSS (Also known as Bi-directional) allows direct simple shear to be performed in two directions, rather than the standard single direction. This is achieved by having a secondary shear actuator that acts at 90 degrees to the primary actuator.

Variable Direction Dynamic Cyclic Simple Shear / VDDCSS ...
Static testing – triaxial stress path, direct simple shear, ring shear, constant rate of strain consolidation; Dynamic testing – resonant column, torsional shear, cyclic triaxial, cyclic direct simple shear, pulse velocity; Extrusion and preparation of up to 6-inch diameter undisturbed samples;

Laboratory testing of soil and rocks | Fugro
FIG. 3. Simple shear results, Cyclic, a n= 100 kPa, Initial Dr= 84% as soil container. First, the results of monotonic tests between the medium dense sand and the ALO cloth #600 are presented in Fig. 2 for both direct shear and simple shear types. The tests are conducted under a constant normal stress, cr . n• of

Simple Shear Versus Direct Shear Tests on Interfaces ...
Most cyclic direct simple shear tests can only apply shear stress in one horizontal direction. However, this innovative device includes three perpendicular servomechanical actuators which can control vertical and two horizontal forces on a cylindrical soil sample.

Advanced Testing - Civil and Environmental Engineering ...
Constant volume direct simple shear testing is one of the most common tests used to characterize the cyclic response of earth materials. It is especially used to assess liquefaction susceptibility...

Using a sequential procedure of cyclic and postcyclic direct simple shear tests, the stiffness degradation characteristics of nonplastic silt are studied during and immediately after cyclic loading by direct simple shear (DSS) tests. The results from cyclic and postcyclic DSS tests were interpreted using methods modified from those adopted for cyclic and postcyclic triaxial tests. In particular, the effect of initial static shear stress (ISSS) on postcyclic behavior is considered for nonplastic silt. The findings obtained from the sequential DSS testing on nonplastic silt are: (i) during cyclic loading the tendency of the stiffness to decrease with increasing normalized pore pressure is different for plastic and nonplastic silts, (ii) since the relation between equivalent stiffness ratio and single amplitude shear strain for nonplastic silt does not filt the Hardin-Drnevich Model, new modified relation is needed, (iii) the larger the ISSS is, the faster the decrease in stiffness ratio becomes, and (iv) the decrease of stiffness ratio for nonplatic silt is less marked than that for plastic silt when plotted against the normalized pore pressure after cyclic load.

Chiang Mai province is located in northern part of Thailand, wherein low to medium earthquake can occur. Therefore, this research aims to present an assessment of dynamic properties of Chiang Mai sand using cyclic direct simple shear test. Two of the most important parameters of dynamic properties in any dynamic analysis related to soils are shear modulus and damping ratio. The monotonic direct simple shear apparatus, which is developed at Norwegian Geotechnical Institute by Bjerrum and Landva, is modified to cyclic direct simple shear so as to be able to determine dynamic properties of Chiang Mai sand. Drained (constant normal stress) tests are carried out with saturated sand sample reconstituted by water pluviation method, which can closely replicate the in-situ fabric of natural sand deposits. In this study, relative density, vertical stresses, shear strain amplitude, and frequency are varied to observe their effect on sand dynamic properties. It can be concluded from the testing results that shear modulus and damping values mainly depend on vertical stress and shear strain. Shear modulus decreases with increasing shear strain amplitude. Oppositely, it increases with increasing vertical stress. The value of hysteretic damping increases with increasing shear strain amplitude. In contrast, when damping ratio decreases with increasing values of vertical stress. The experimental results of present study compared with previous investigations are found to be in fair agreement. All in all, this research is the first work focused on dynamic properties of Chiang Mai sand, which gives great distribution to the calculation of ground response during an earthquake. It also facilitates the following researchers who want to conduct further research on advanced soil laboratory testing about cyclic soil response in Chiang Mai as well as in Thailand.

This dissertation describes the development of a new multi-directional direct simple shear testing device, the Texas A & M Multi-directional Direct Simple Shear (TAMU-MDSS), for testing marine soil samples under conditions, which simulate, at the element level, the state of stress acting within a submarine slope under dynamic loading. Prototype testing and an experimental program to characterize the response of marine clays to complex loading conditions are presented. The work is divided into four major components: 1) Equipment Development: Design and construction of a prototype multi-directional direct simple shear testing device (TAMU-MDSS) that addresses the limitations of previous devices. 2) Support systems: selection of control software, development of data acquisition system and design of back pressure systems for direct pore pressure measurements. 3) Prototype Testing: performance of the TAMU MDSS system and testing of strain-control and stress-control capabilities. 4) Experimental Testing: characterize the response of marine clays to monotonic, dynamic and random loads. The two-directional monotonic, cyclic, circular and figure-8 tests demonstrated the undrained shear strength increases with increasing initial shear stress, (i.e, slope), for shearing in the same direction (equivalent to downhill). The strength decreases for shearing in the direction opposite to the initial stress (shearing uphill). The response is as brittle for shearing in the same direction as the shear stress applied during consolidation initial shear stress and ductile for shearing opposite to initial shear stress. These findings have important implications for the stability of the slope, predicting that forces acting downward in the slope direction will need to mobilize less strain to reach peak strength and initiate failure. This information provides insight into the behavior of marine soils under complex loading conditions, and provides high quality laboratory data for use in constitutive and finite element model development for analysis of submarine slopes.

The results of 36 cyclic strain-controlled direct simple shear tests on a low-plasticity compacted clay are presented and analyzed. The tests were conducted in a Marshall Silver-type device, which utilizes the Norwegian Geotechnical Institute (NGI) type of short cylinder specimen confined in a wire-reinforced rubber membrane. Three degrees of compaction achieved by the modified compaction test are encompassed: (1) below the optimum moisture content, (2) at the optimum, and (3) above the optimum. All specimens were sheared under the same vertical consolidation stress. In each test the cyclic shear strain amplitude, ?c, was controlled, i.e., the cyclic tests were strain controlled. The range of ?c was between 0.008 and 4.6%. The test results show a very consistent behavior of the clay at all three moisture contents. At small cyclic shear strains below ?c ? 0.1%, the stress-strain behavior is slightly nonlinear, i.e., close to linearly elastic, and the vertical settlement is negligible. In some tests such nondestructive behavior was recorded up to ?c ? 0.2%, showing that for the clay tested, the volumetric threshold shear strain, ?tv, ranges between 0.1 and 0.2%. At ?c larger than ?tv the cyclic stress-strain behavior becomes nonlinear and a continuous settlement with the number of cycles, N, occurs. The results do not show a clear relation between the rate of settlement with N and the degree of the compaction and moisture content. For different moisture contents, similar settlements were obtained for given ?c and N. The study also shows how to arrange the specimen setup and measuring system to eliminate the effect of the simple shear apparatus compliance. In such an arrangement very small shear strains can be applied and successfully measured.

This book is one of the best-known and most respected books in geotechnical engineering. In its third edition, it presents both theoretical and practical knowledge of soil mechanics in engineering. It features expanded coverage of vibration problems, mechanics of drainage, passive earth pressure, and consolidation.