

# KOSEKI LAB.

## [Prediction of deformation and failure of ground]

Department of Human and Social Systems

<http://soil.iis.u-tokyo.ac.jp/index.htm>

Geotechnical Engineering

Civil  
engineering  
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## Development of innovative soil testing techniques

In order to make an accurate prediction of deformation and failure of ground, mechanical properties of geomaterials (e.g., sand, gravel, soft rock, improved soil and recycled soil) are investigated for a wide range of strain levels. The following soil testing techniques have been newly developed for the investigation, which are also applied to practice for designing a variety of earth structures and foundations.

### Image analysis system for cylindrical soil specimens (see below)

Stacked-ring torsional shear test apparatus: capable of conducting multiple tests on single specimen while maintaining its shape and dimensions

Large strain torsional shear test apparatus on hollow cylindrical specimen: capable of testing up to double amplitude shear strain exceeding 100%

High pressure plane strain compression test apparatus: equipped with planer observation window having a capacity of 3 MPa

3-DOF local deformation transducers: consist of vertical, horizontal and diagonal components attached on the surface of hollow cylindrical specimen

Large scale true triaxial test apparatus: for a prismatic specimen with a height of 50 cm and a cross-section of 22 times 25 cm.

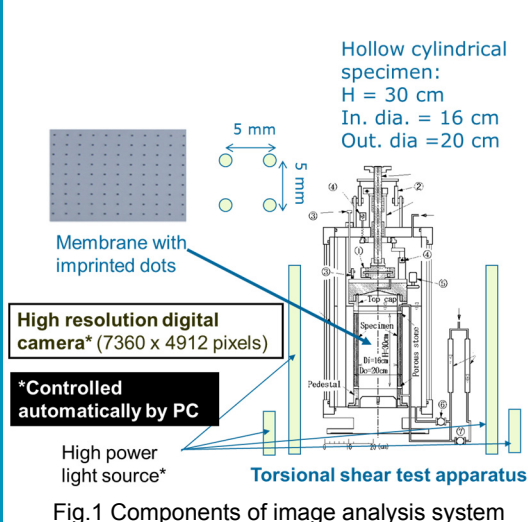


Fig.1 Components of image analysis system



Fig.2 Preparation of segregated specimen by pluviation through water

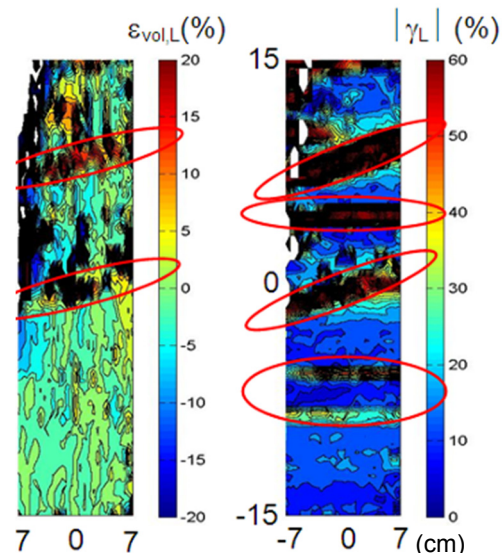


Fig.3 Typical results from image analysis  
( $\varepsilon_{vol,L}$ : local volumetric strain,  $\gamma_L$ : local shear strain)