

# SOIL MECHANICS

## CIVIL ENGINEERING VIRTUAL LABORATORY

### EXPERIMENT: 10

### TRIAXIAL TEST

#### THEORY:

Triaxial test is more reliable because we can measure both drained and untrained shear strength.

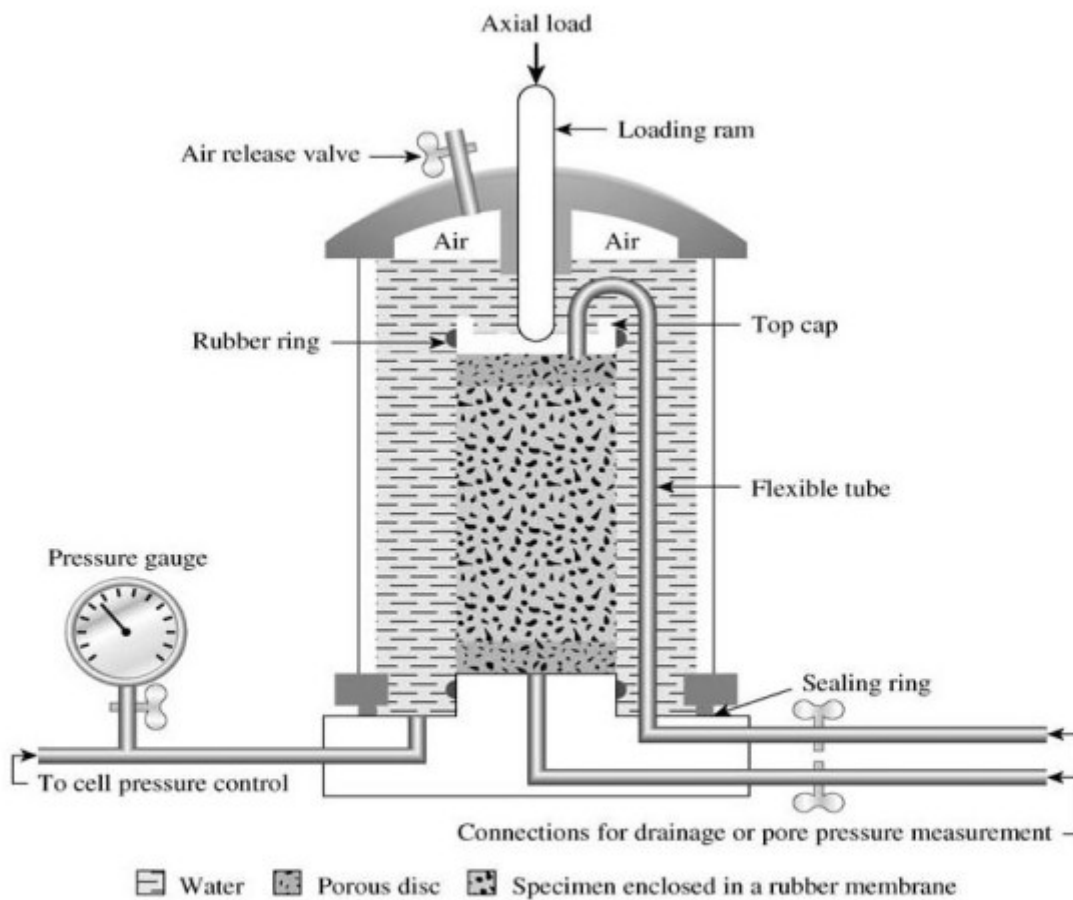


Diagram of triaxial test equipment

Generally 1.4" diameter (3" tall) or 2.8" diameter (6" tall) specimen is used. Specimen is encased by a thin rubber membrane and set into a plastic cylindrical chamber. Cell pressure is applied in the chamber (which represents  $\sigma_3'$ ) by pressurizing the cell fluid (generally water).

Vertical stress is increased by loading the specimen (by raising the platen in strain controlled test and by adding loads directly in stress controlled test, but strain controlled test is more common) until shear failure occurs. Total vertical stress, which is  $\sigma_1'$  is equal to the sum of  $\sigma_3'$  and deviator stress ( $\sigma_d$ ). Measurement of  $\sigma_d$ , axial deformation, pore pressure, and sample volume change are recorded.

Depending on the nature of loading and drainage condition, triaxial tests are conducted in three different ways:

- i. UU Triaxial test
- ii. CU Triaxial test
- iii. CD Triaxial test