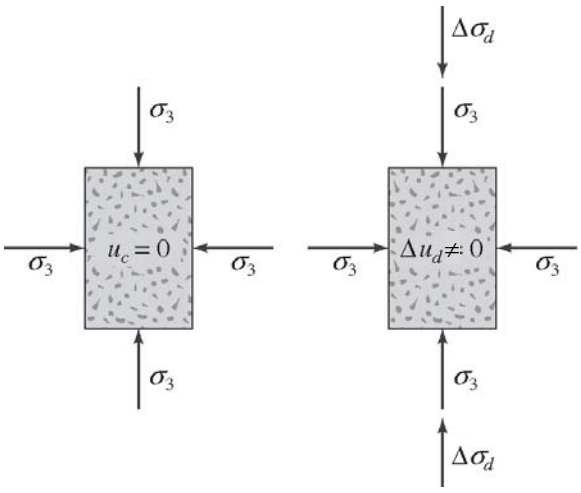
Shear Strength

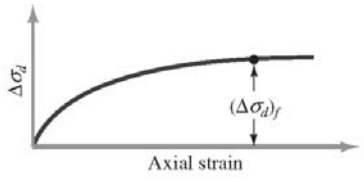
(continued)

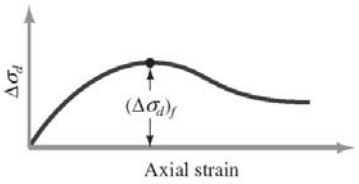
Consolidated-Undrained Test



Stress-Strain Behavior

CD TEST

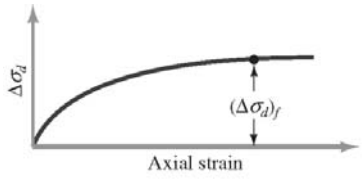


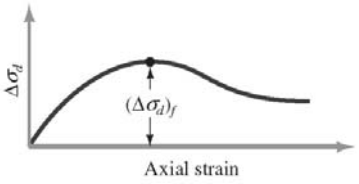


LOOSE SAND OR NC CLAY

DENSE SAND OR OC CLAY

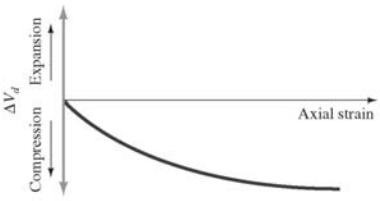
CU TEST

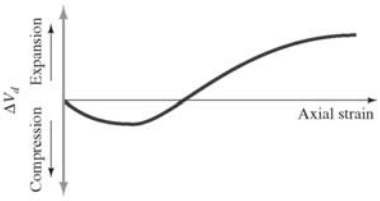




Volume Change Behavior

CD TEST

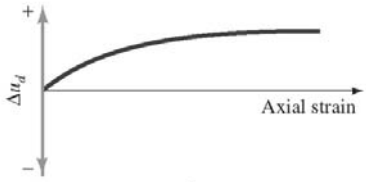


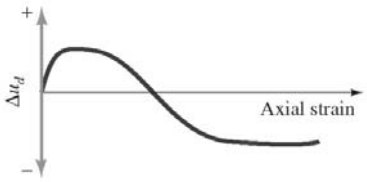


LOOSE SAND OR NC CLAY

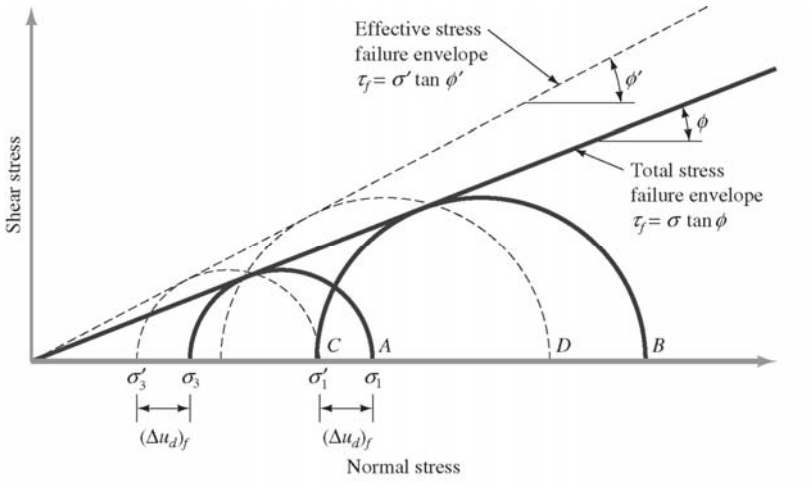
DENSE SAND OR OC CLAY

CU TEST

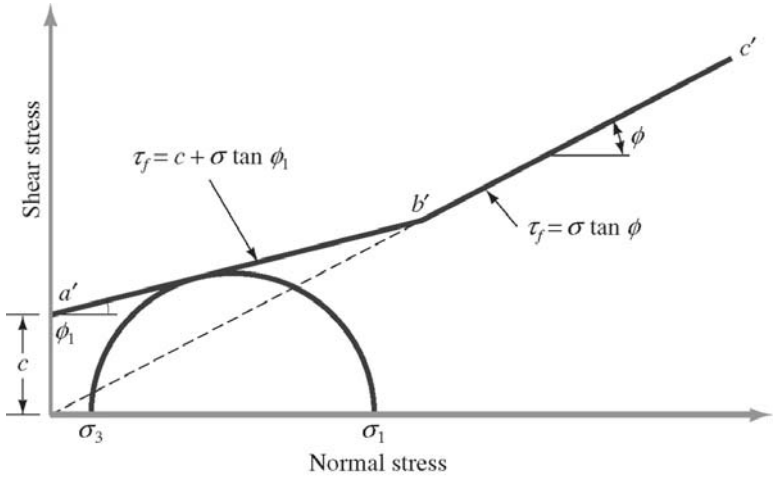




Consolidated-Undrained Test



Consolidated-Undrained Test



Skempton's Pore Pressure Parameter

$$\overline{A} = \frac{\Delta u_d}{\Delta \sigma_d}$$

$$\overline{A}_f = \frac{(\Delta u_d)_f}{(\Delta \sigma_d)_f}$$

Example

Example 10.5

A consolidated-undrained test on a normally consolidated clay yielded the following results:

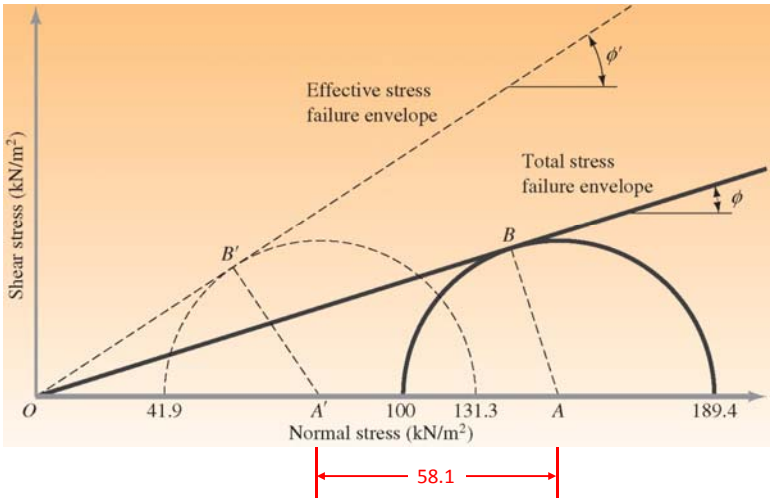
$\sigma_3 = 100 \text{ kN/m}^2$

deviator stress, $(\Delta\sigma_d)_f = 89.4 \text{ kN/m}^2$

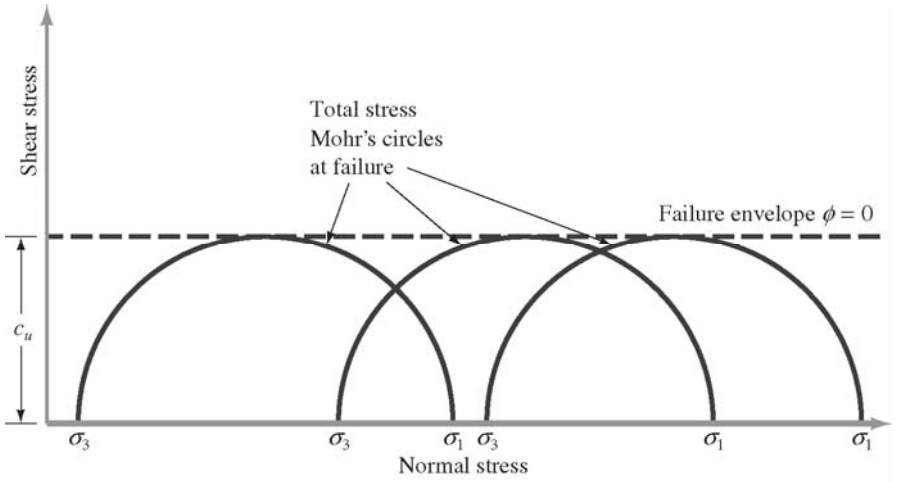
pore pressure, $(\Delta u_d)_f = 58.1 \text{ kN/m}^2$

Calculate the consolidated-undrained friction angle and the drained friction angle.

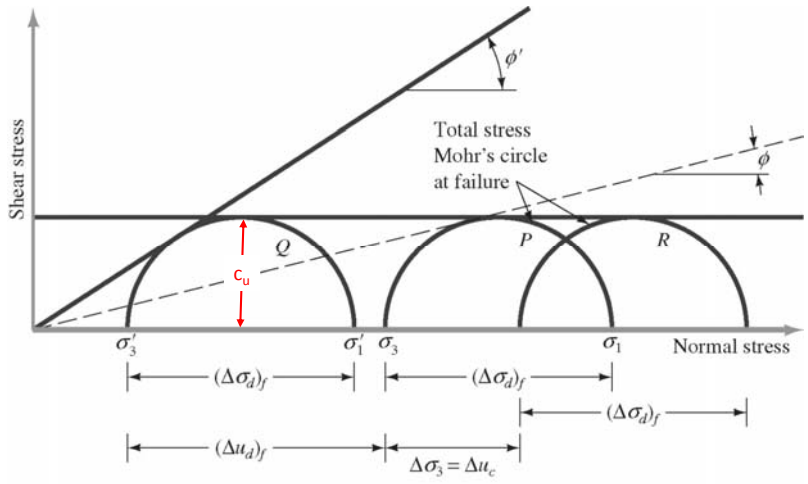
Example



Unconsolidated-Undrained Test

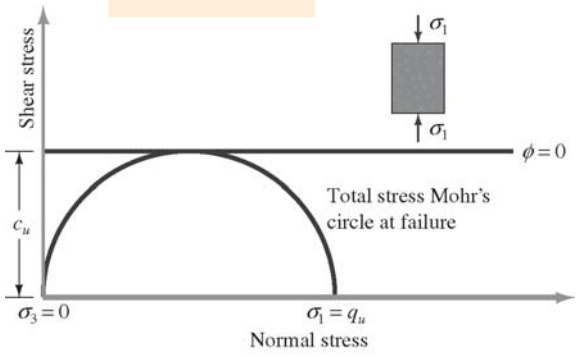


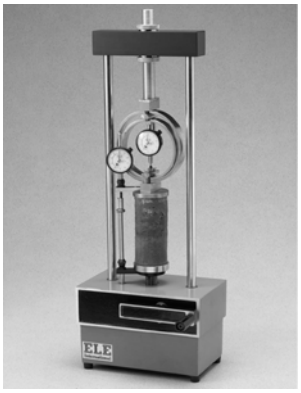
The $\phi = 0$ Concept



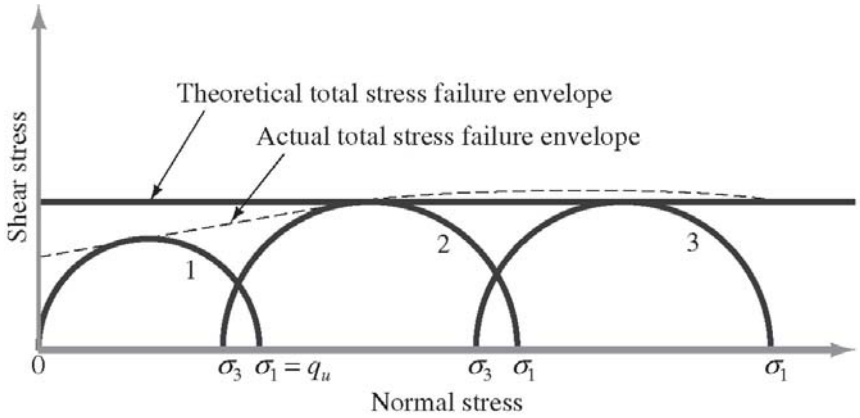
Unconfined Compression Test

$$\tau_f = \frac{\sigma_1}{2} = \frac{q_u}{2} = c_u$$





Unconfined Compression Test



Unconfined Compression Test

Table 10.3 General relationship of consistency and unconfined compression strength of clays

Consistency	q_u (kN/m^2)
Very soft	0–25
Soft	25–50
Medium	50–100
Stiff	100–200
Very stiff	200–400
Hard	>400