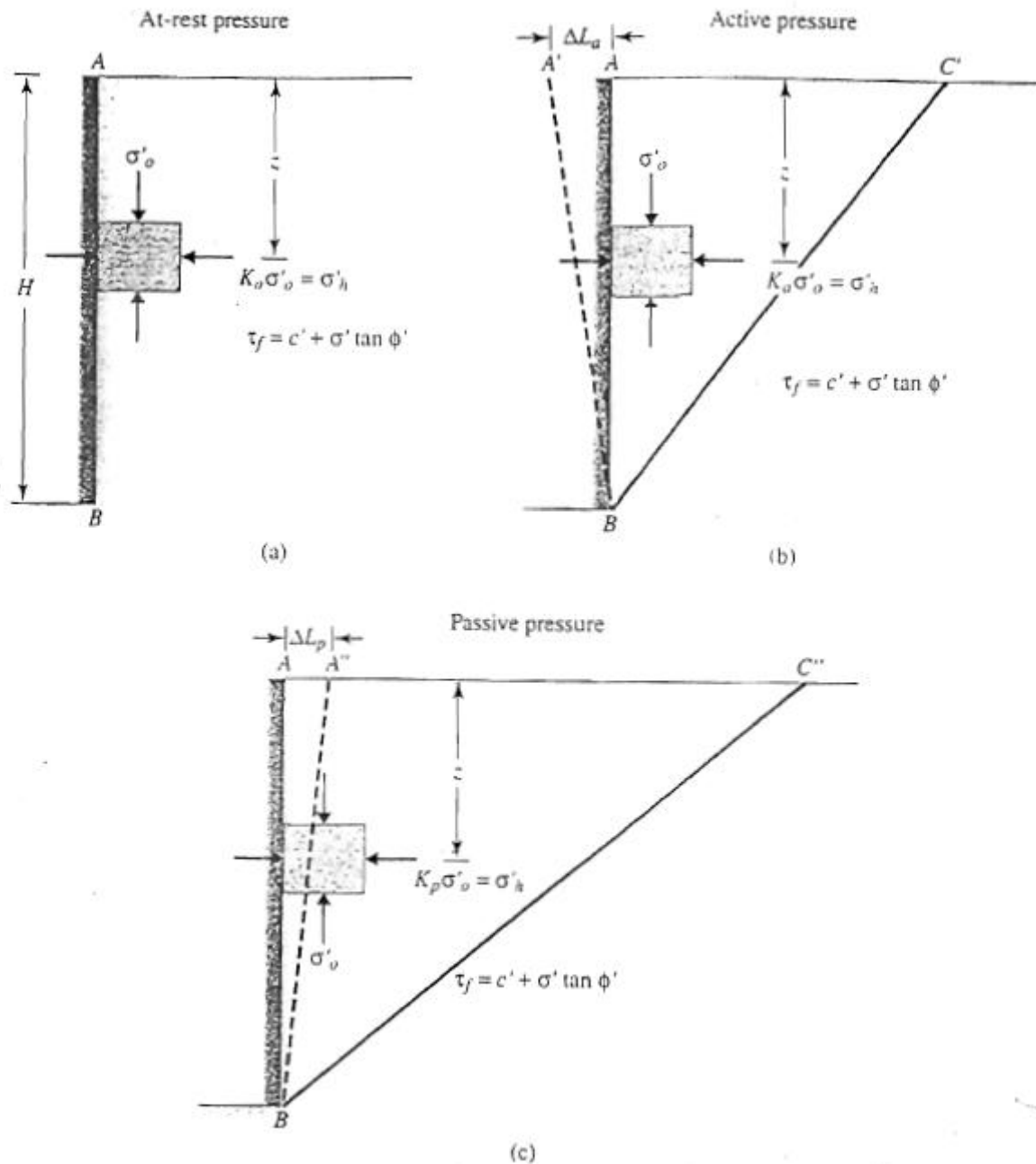


Ch.8: Lateral Earth pressure

- At Rest, Active, and Passive Pressure:

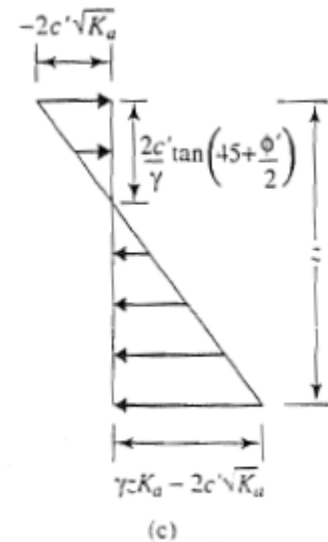
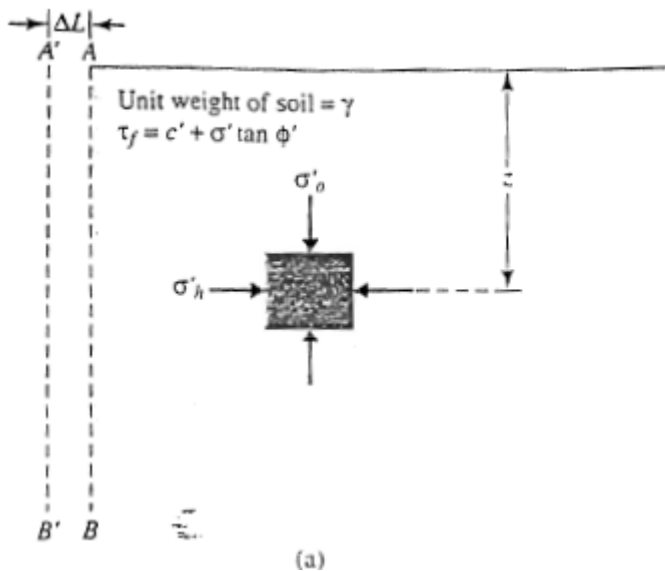


Definition of at-rest, active, and passive pressures (Note: Wall AB is frictionless)

2-Rankine's Active and Passive Earth Pressures:

Pressures:

- Active State:

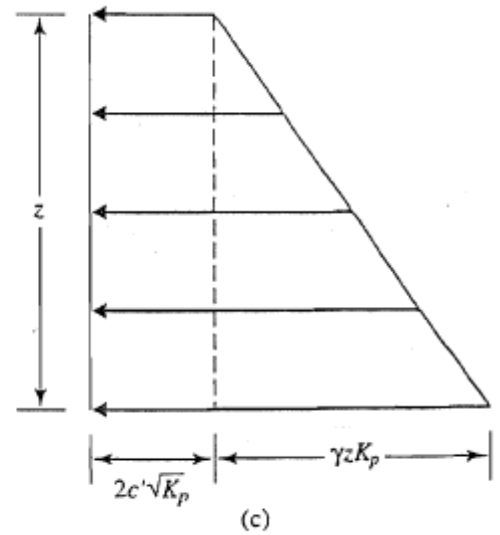
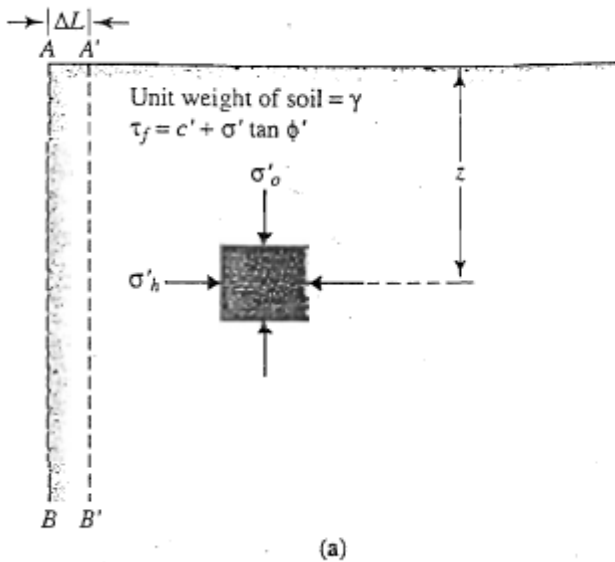


$$K_a = \frac{\sigma'_a}{\sigma'_o} = \tan^2 \left(45 - \frac{\phi'}{2} \right)$$

$$\sigma'_a = \gamma z \tan^2 \left(45 - \frac{\phi'}{2} \right) - 2c' \tan \left(45 - \frac{\phi'}{2} \right)$$

$$\sigma'_a = \gamma z K_a - 2c' \sqrt{K_a}$$

- Passive State:

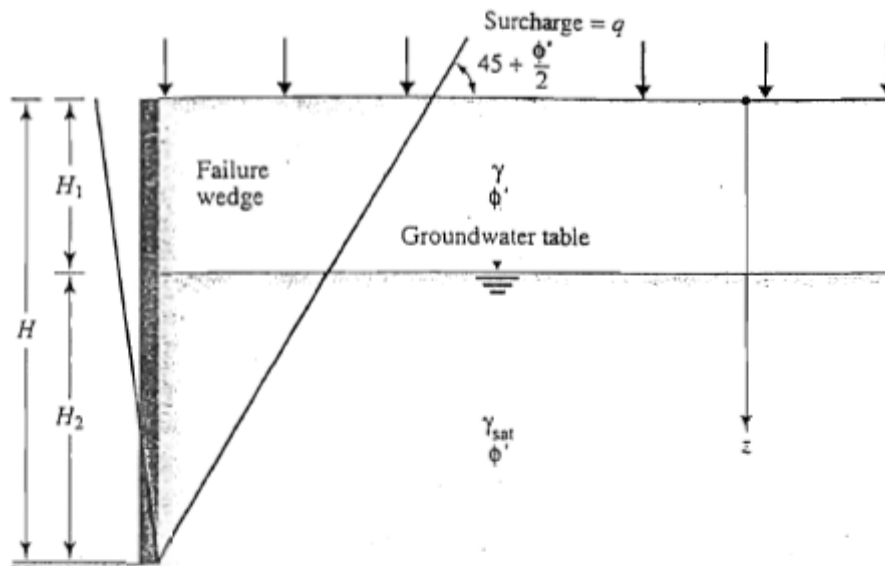


$$K_p = \frac{\sigma'_p}{\sigma'_o} = \tan^2 \left(45 + \frac{\phi'}{2} \right)$$

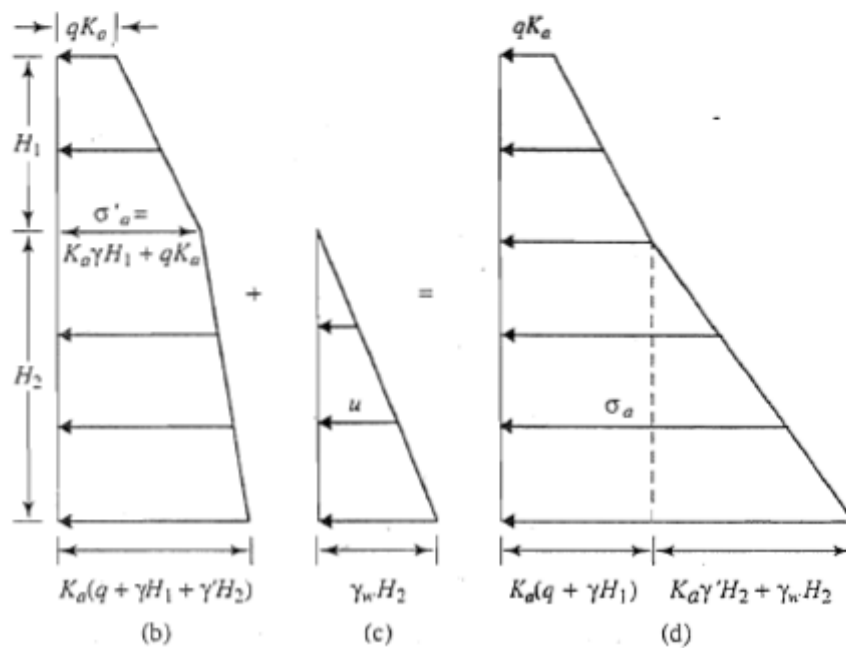
$$\sigma'_p = \gamma z \tan^2 \left(45 + \frac{\phi'}{2} \right) + 2c' \tan \left(45 + \frac{\phi'}{2} \right)$$

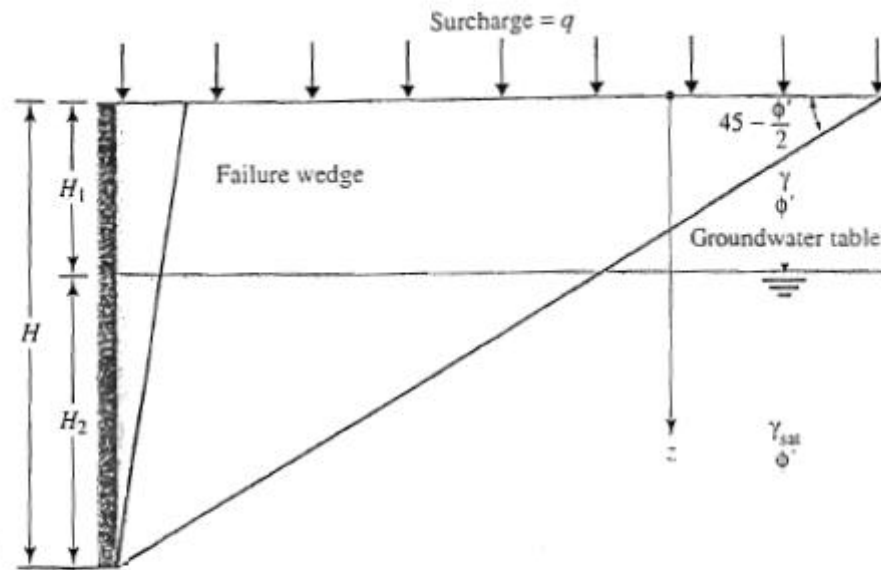
$$\sigma'_p = \gamma z K_p + 2c' \sqrt{K_p}$$

Diagrams for Lateral Earth Pressure Distribution against Retaining Walls



(a)





(a)

