

Vertical stress in a semi-infinite mass due to enbankment loading

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Das (2018) provided a simple method to obtain the vertical stress due to enbankment loading. This can be done by the method of superposition.

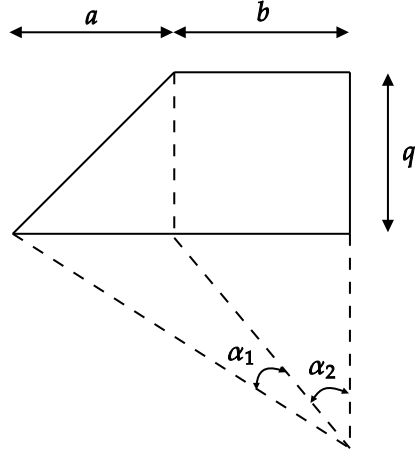


Figure 1: Vertical stress due to enbankment loading

The stress at A due to enbankment loading is:

$$\sigma_z = \frac{q}{\pi} \left[\left(\frac{a+b}{a} \right) (\alpha_1 + \alpha_2) - \frac{b}{a} \alpha_2 \right] \quad (1)$$

or

$$\sigma_z = I_3 q \quad (2)$$

where

$$I_3 = \frac{1}{\pi} \left[\left(\frac{a+b}{a} \right) (\alpha_1 + \alpha_2) - \frac{b}{a} \alpha_2 \right] = \frac{1}{\pi} f \left(\frac{a}{z}, \frac{b}{z} \right) \quad (3)$$