

# ELASTIC SETTLEMENT OF EMBANKMENTS



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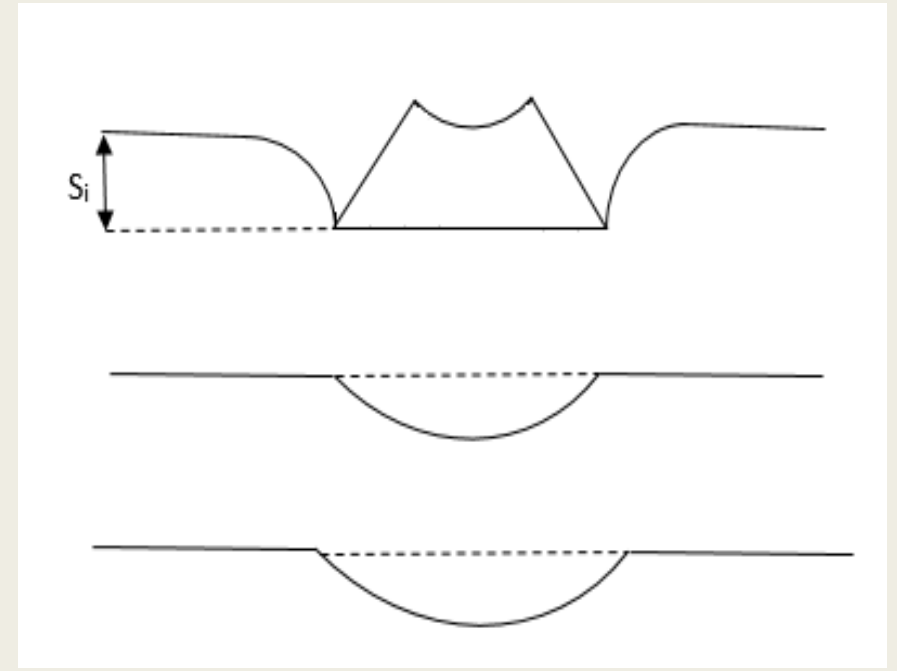
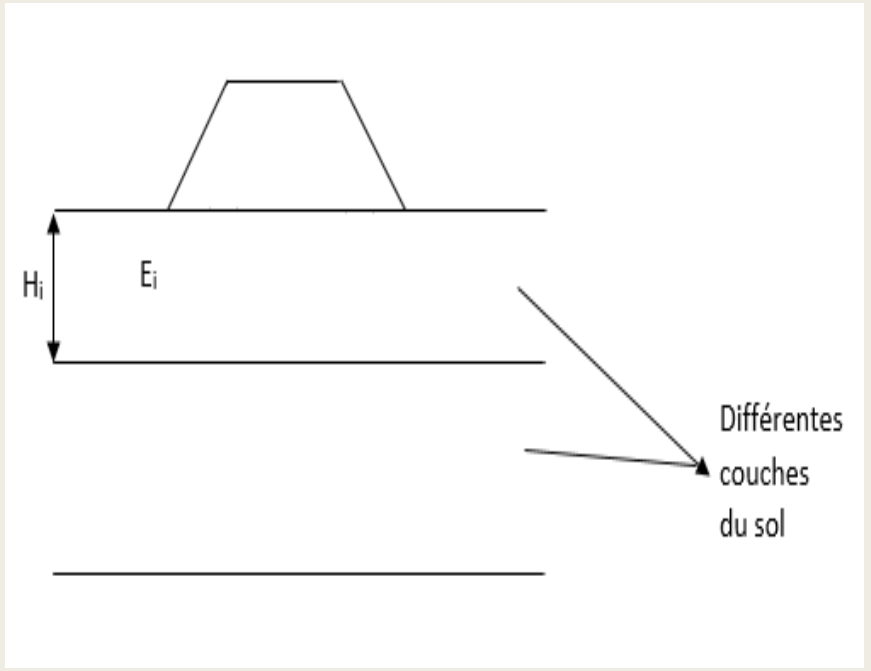
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Excess of Stress determined from Osterberg charts

$$S = \sum \left( \frac{\Delta\sigma_i}{E_i} \right) H_i$$

Layer Height

Deformation Modulus



Excess of stress in the middle of each layer

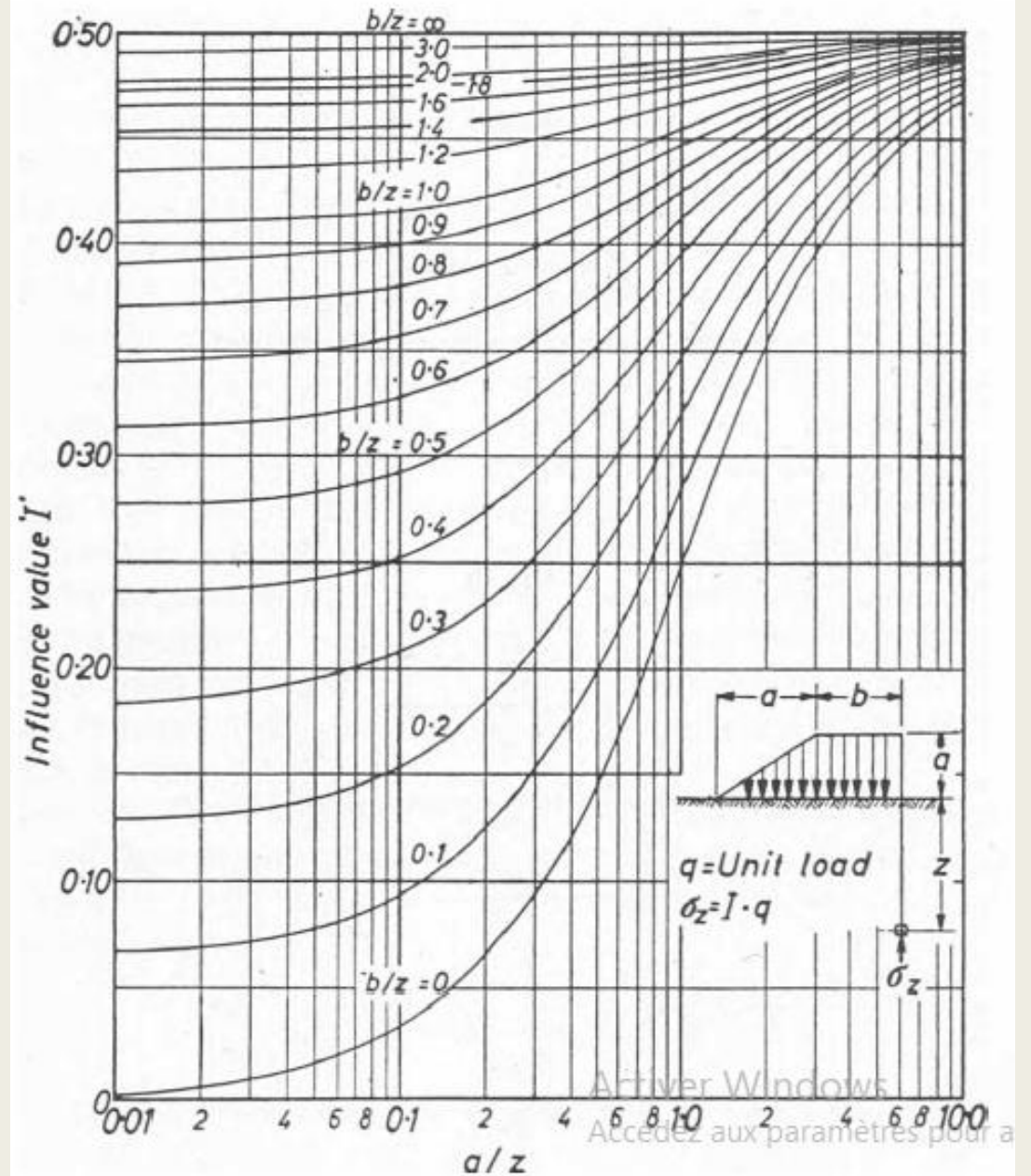
$\Delta\sigma_i$  :

$$\Delta\sigma = 2 \times l \times q$$



Influencing factor determined from Osterberg Charts by  
calculating for each layer the ratios  
B1/z et B2/z

# Osterberg Charts



# Example :

| Layer | Height(m) | E(MPa) |
|-------|-----------|--------|
| Clay  | 11        | 1.6    |
| Sand  | 3         | 21     |
| Clay  | 18        | 2      |
| Sand  | 26        | 26     |

# Short-Term Settlement :

| Layer | H (m) | E(Mpa) | I     | $\Delta\sigma$ (Kpa) | Settlement (m) |
|-------|-------|--------|-------|----------------------|----------------|
| Clay  | 11    | 1.6    | 0.49  | 78.4                 | 0.539          |
| Sand  | 3     | 21     | 0.466 | 74.56                | 0.106          |
| Clay  | 18    | 2      | 0.39  | 62.4                 | 0.56           |
| Clay  | 26    | 26     | 0.26  | 41.6                 | 0.04           |

$$S_{ct} = \sum \frac{\Delta\sigma}{E} \times H = 115.28 \text{ cm}$$



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