ELASTIC SETTLEMENT
OF CIRCULAR GEOMETRIES
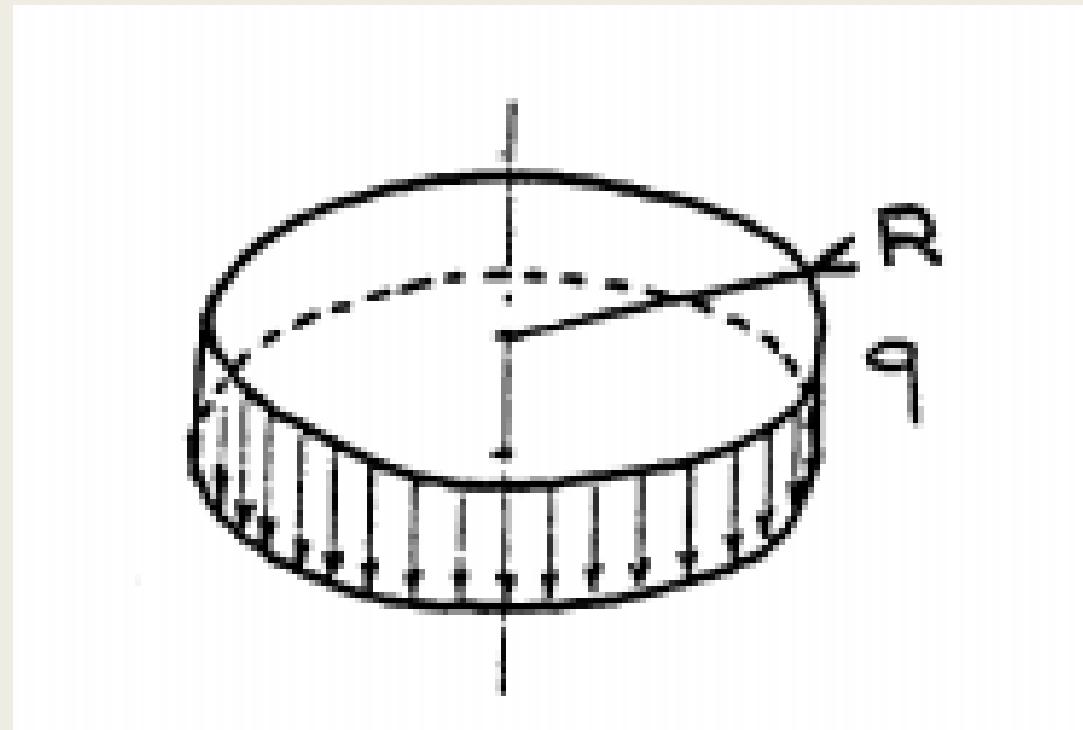
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$$S = \sum \left(\frac{\Delta \sigma i}{Ei}\right) Hi$$

Excess of Stress determined from Osterberg charts

Layer Height

Deformation Modulus

Excess of stress in the middle of each layer Δσi :

$$\Delta\sigma = I \times q$$

$$I = 1 - \left(\frac{1}{1+\left(\frac{R}{z}\right)^2}\right)^{2/3}$$

Example :

Tank caracterstics :
- Diameter = 39 m
- Applied load = 98 Kpa

Layer	Height(m)	E_{def} (KPa)
Sand	6	9000
Clay	2.3	64000
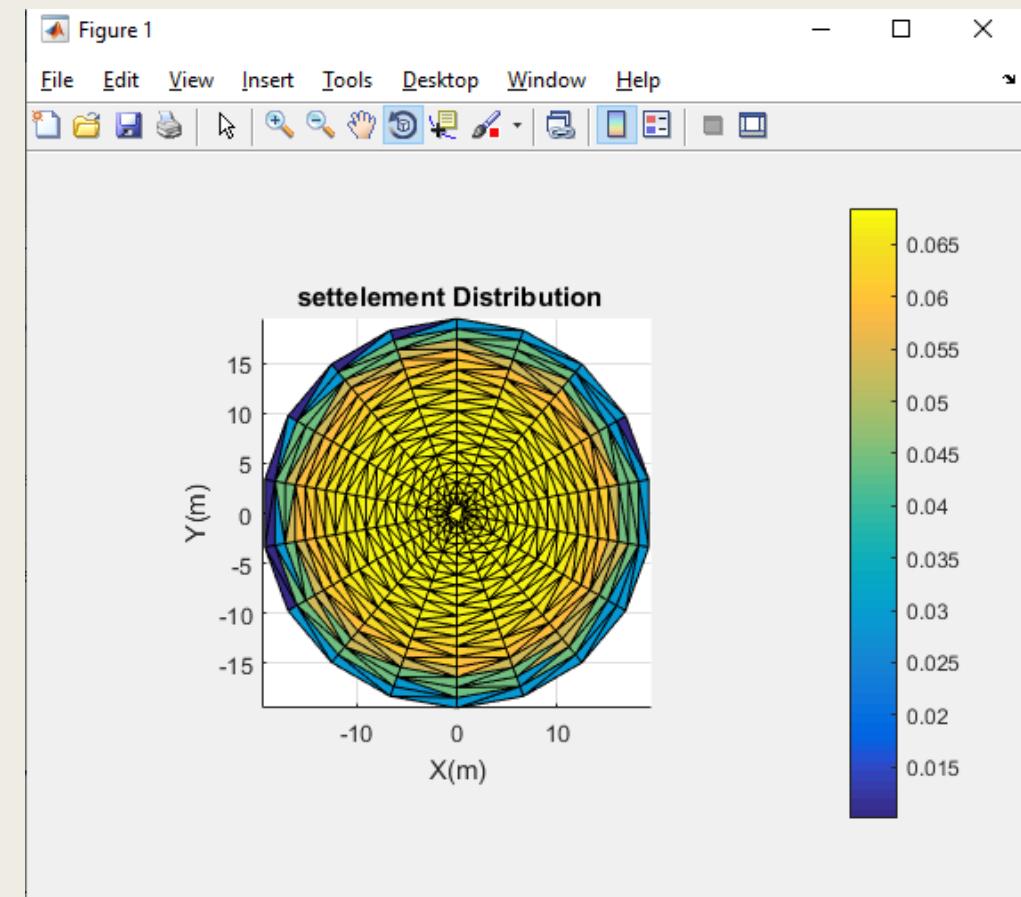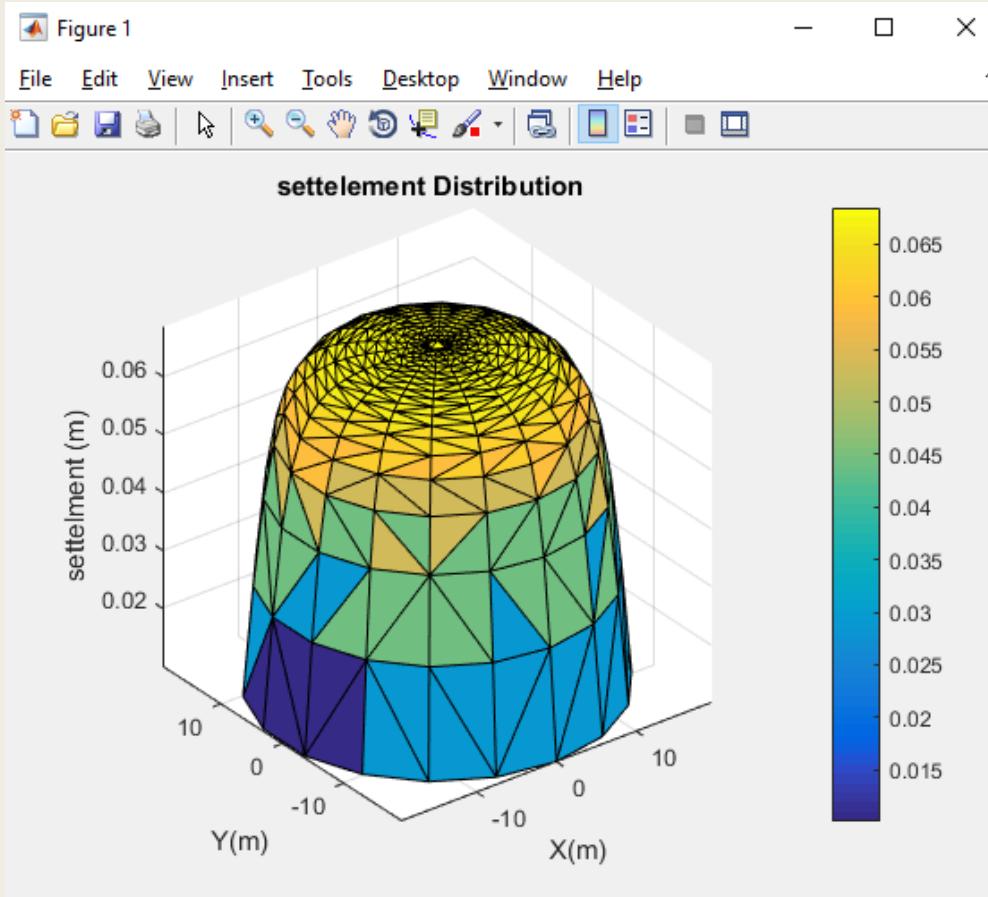
Short-Term Settlement :

Layer	Height (m)	I	Δσ(KPa)	Settlement (m)
Sand	6	0.99	97	0.064
Clay	2.3	0.95	93	0.0033
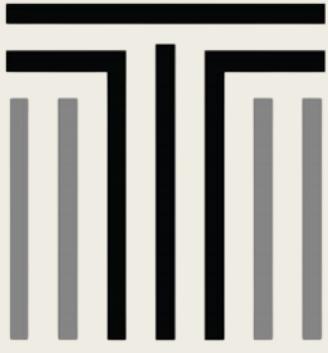
$$\text{Sct} = \sum \frac{\Delta\sigma}{E} \times H = 6,73 \text{ cm}$$

Settlement distribution:

(By Coestta1.0)

For more details click here

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