BOUSSINESQ YÖNTEMİNE GÖRE ZEMİN GERİLME DAĞILIMI

Kaynak : Braja Das, Principles of Foundation Engineering, Seventh Edition

Sayfa : 231-232

Örnek : 5.1

Sonuç Karşılaştırması

Braja Das sonuç	Jeo Taşıma sonuç	Karşılaştırma sonucu
19,65 kN/m^2	19,658 kN/m^2	%99,9

Braja Das örneği

Example 5.1

A flexible rectangular area measures 2.5 m × 5 m in plan. It supports a load of 150 kN/m^2.

Determine the vertical stress increase due to the load at a depth of 6.25 m below the center of the rectangular area.

Solution

Refer to Figure 5.4. For this case,

$$B_1 = B_2 = \frac{2.5}{2} = 1.25 \text{ m}$$

$$L_1 = L_2 = \frac{5}{2} = 2.5 \text{ m}$$

From Eqs. (5.7) and (5.8),

$$m = \frac{B_1}{z} = \frac{B_2}{z} = \frac{1.25}{6.25} = 0.2$$

$$n = \frac{L_1}{z} = \frac{L_2}{z} = \frac{2.5}{6.25} = 0.4$$

From Table 5.2, for $m = 0.2$ and $n = 0.4$, the value of $I = 0.0328$. Thus,

$$\Delta\sigma = q_o(4I) = (150)(4)(0.0328) = \mathbf{19.68\ kN/m^2}$$

Alternate Solution

From Eq. (5.10),

$$\Delta\sigma = q_o I_c$$

$$m_1 = \frac{L}{B} = \frac{5}{2.5} = 2$$

$$n_1 = \frac{z}{\left(\frac{B}{2}\right)} = \frac{6.25}{\left(\frac{2.5}{2}\right)} = 5$$

From Table 5.3, for $m_1 = 2$ and $n_1 = 5$, the value of $I_c = 0.131$. Thus,

$$\Delta\sigma = (150)(0.131) = \mathbf{19.65\ kN/m^2}$$

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Jeo Taşıma sonuç örneği