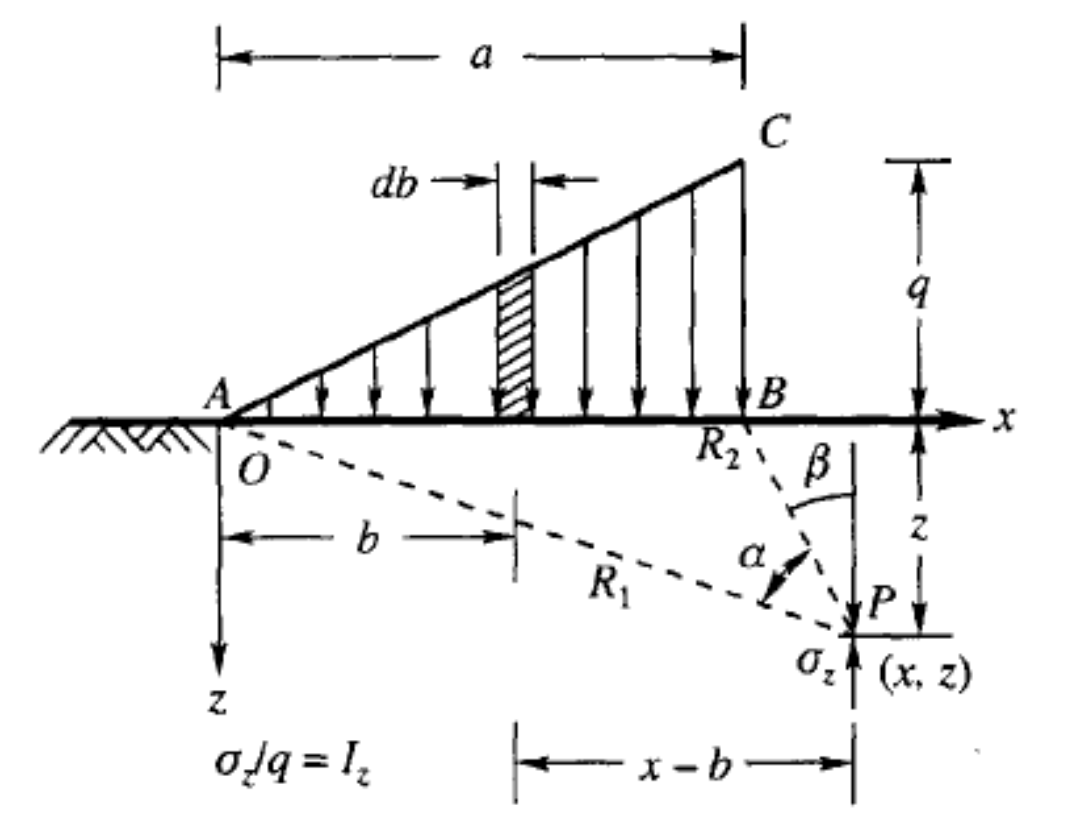
BEBAN TIMBUNAN

BEBAN MERATA SEGITIGA



$$\sigma_z = \frac{q}{2\pi}\left(\frac{2x}{a}\alpha - \sin 2\beta\right) = qI_z$$

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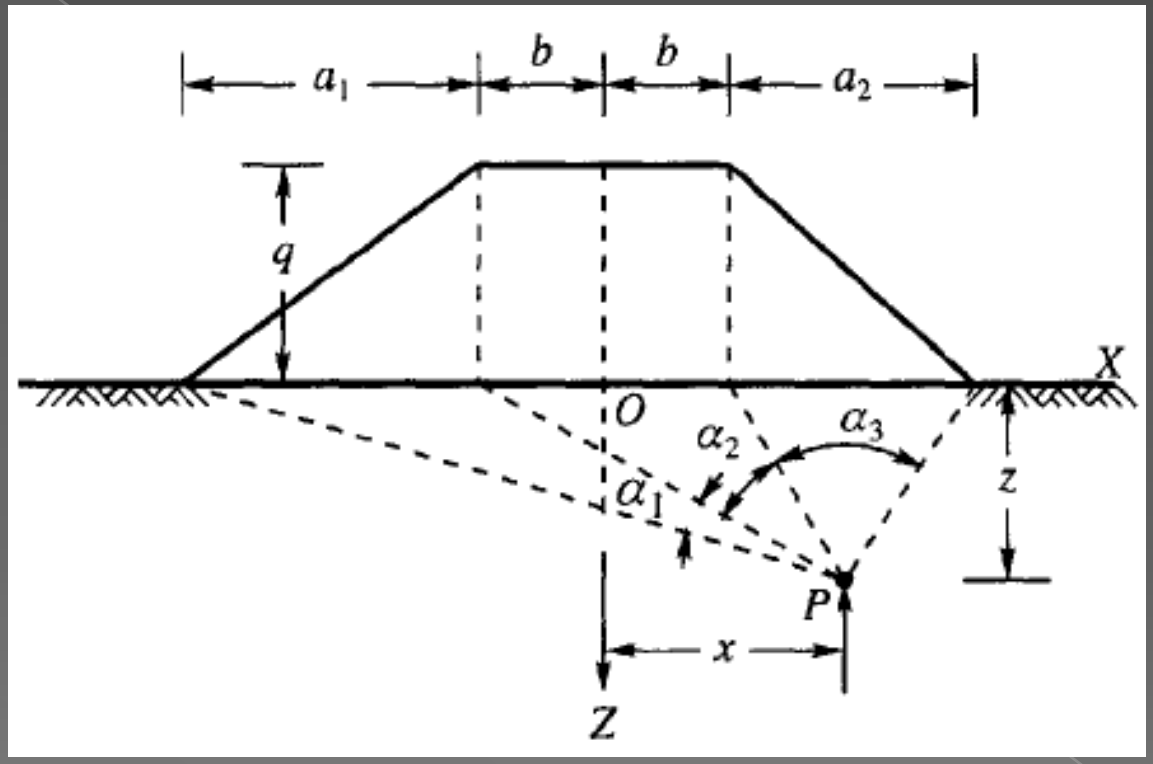

$$\sigma_z = \frac{q}{\pi}\left[(\alpha_1 + \alpha_2 + \alpha_3) + \frac{b}{a_1}(\alpha_1 + R\alpha_3) + \frac{x}{a_1}(\alpha_1 - R\alpha_3)\right]$$

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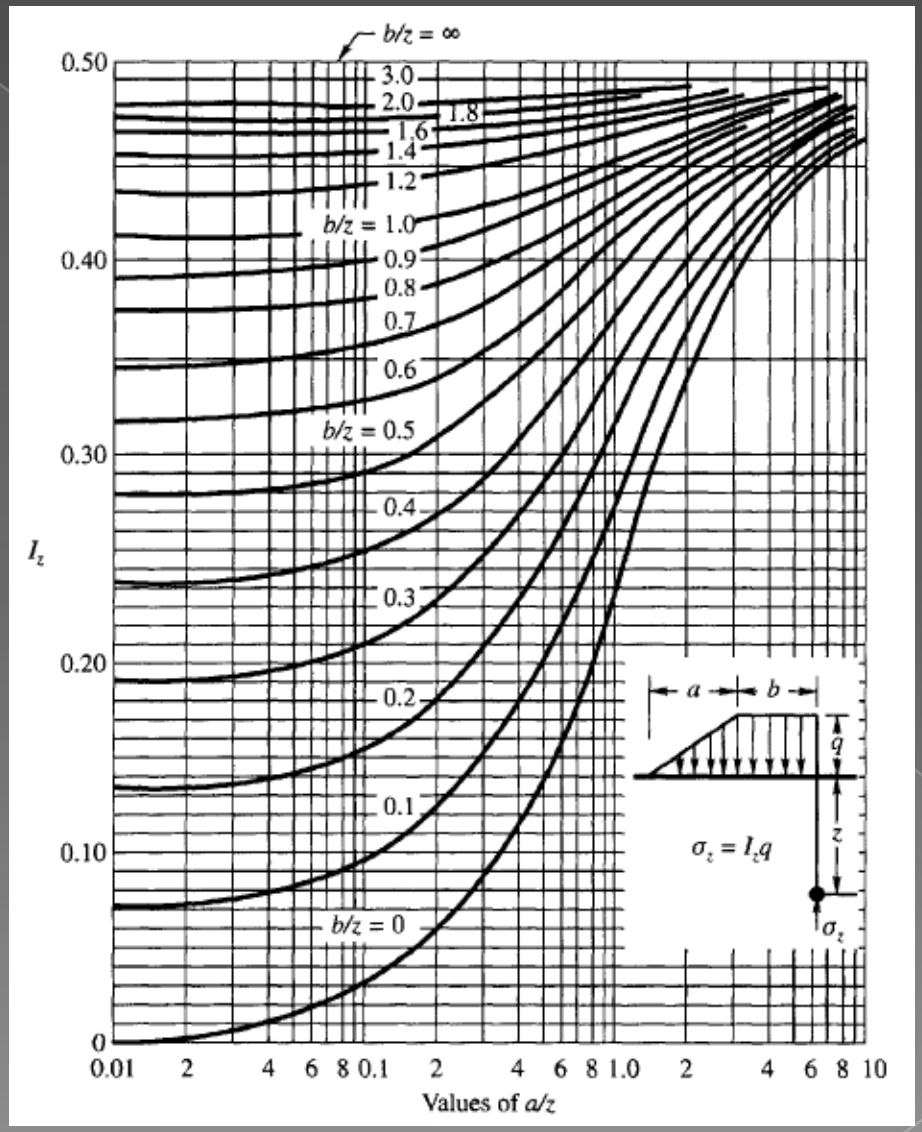

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- Contoh

A 3 m high embankment is to be constructed as shown in Fig. Ex. 6. 11. If the unit weight of soil used in the embankment is 19. 0 kN/m^3, calculate the vertical stress due to the embankment loading at points P_1, P_2, and P_3.

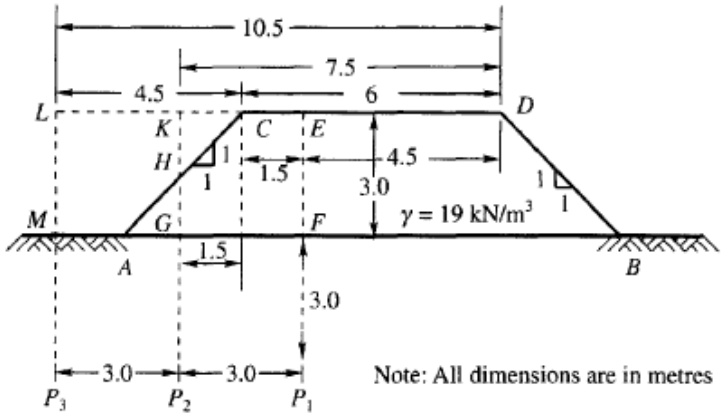

Figure Ex. 6.11 Vertical stresses at P_1, P_2 & P_3

Solution

$q = \gamma H = 19 \times 3 = 57$ kN/m^2, $z = 3$ m

The embankment is divided into blocks as shown in Fig. Ex. 6.11 for making use of the graph given in Fig. 6. 15. The calculations are arranged as follows:

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Solution

$q = \gamma H = 19 \times 3 = 57$ kN/m^2, $z = 3$ m

The embankment is divided into blocks as shown in Fig. Ex. 6.11 for making use of the graph given in Fig. 6. 15. The calculations are arranged as follows:

Point	Block	b (m)	a (m)	b/z	a/z	I
P_1	*ACEF*	1.5	3	0.5	1	0.39
	EDBF	4.5	3	1.5	1	0.477
P_2	*AGH*	0	1.5	0	0.5	0.15
	GKDB	7.5	3	2.5	1.0	0.493
	HKC	0	1.5	0	0.5	0.15
P_3	*MLDB*	10.5	3.0	3.5	1.0	0.498
	MACL	1.5	3.0	0.5	1.0	0.39

Stress Distribution in Soils due to Surface Loads

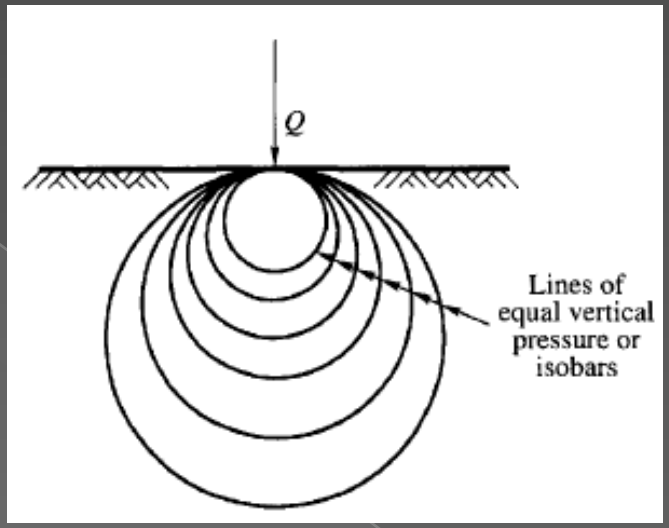
Vertical stress σ_z

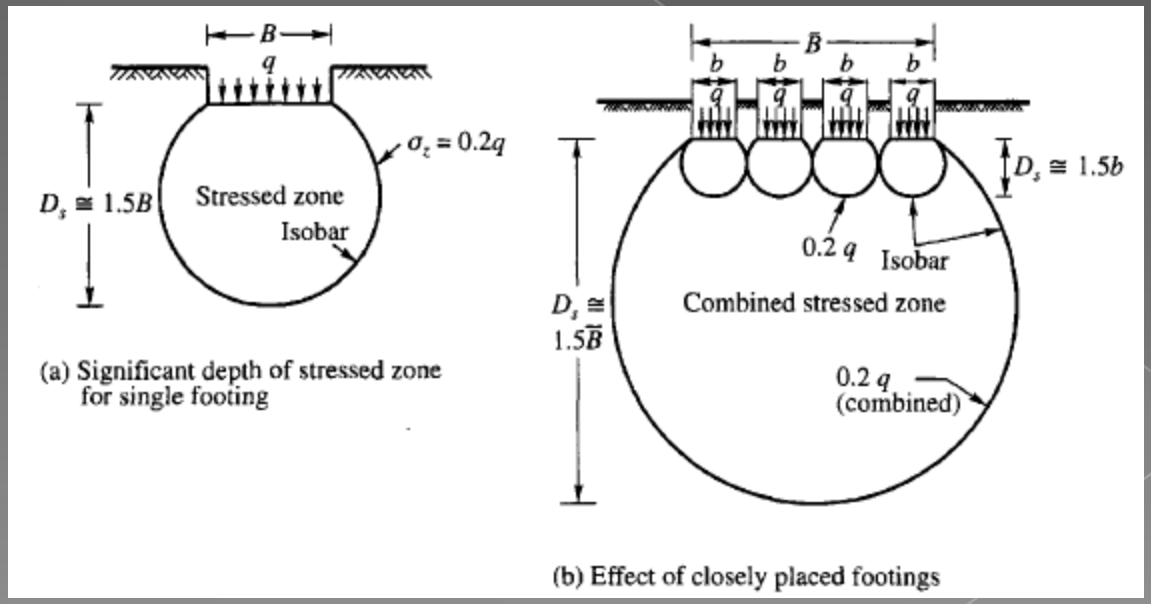
At point P_1, σ_z = $(0.39 + 0.477) \times 57 = 49.4$ kN/m^2

At point P_2, σ_z = $0.15 \times (57/2) + 0.493 \times 57 - 0.15 \times (57/2) = 28.1$ kN/m^2

At point P_3, σ_z = $(0.498 - 0.39)\ 57 = 6.2$ kN/m^2

METODE GRAFIS UNTUK PONDASI





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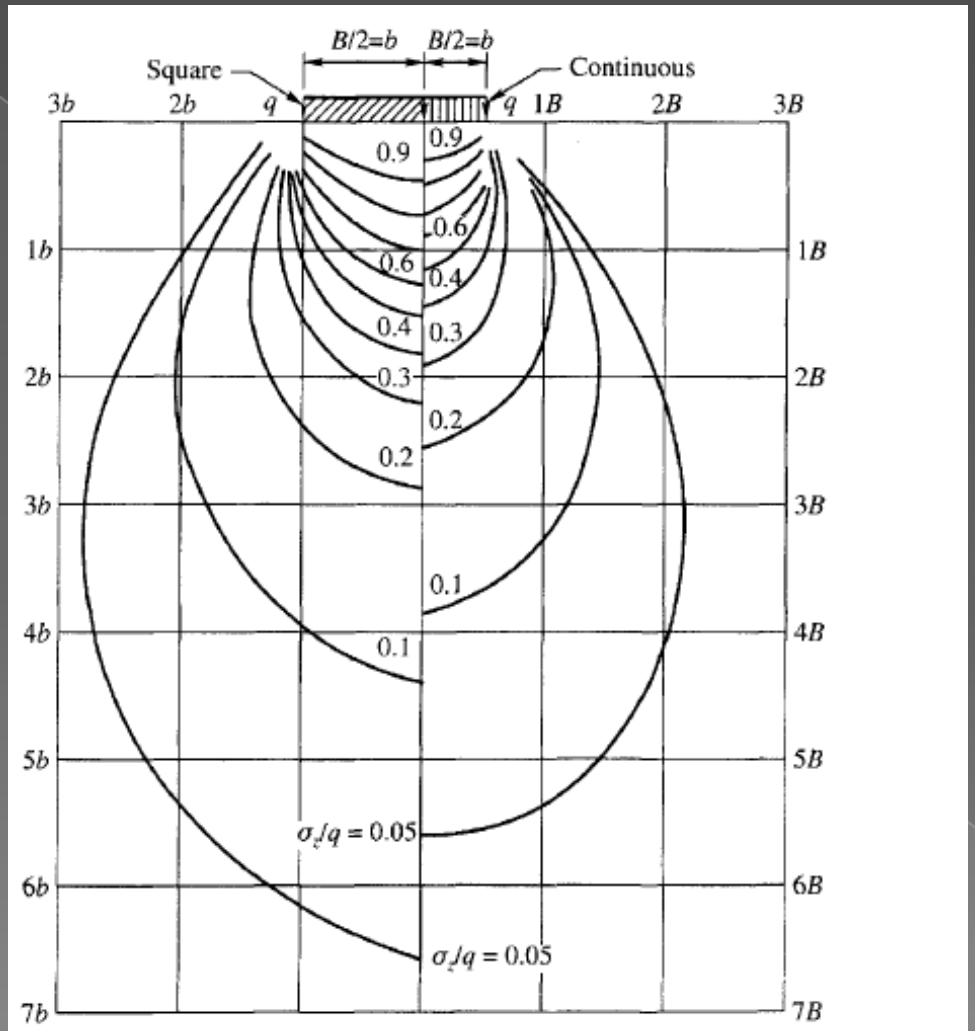

21 Pressure isobars based on Boussinesq equation for square and continuous footings

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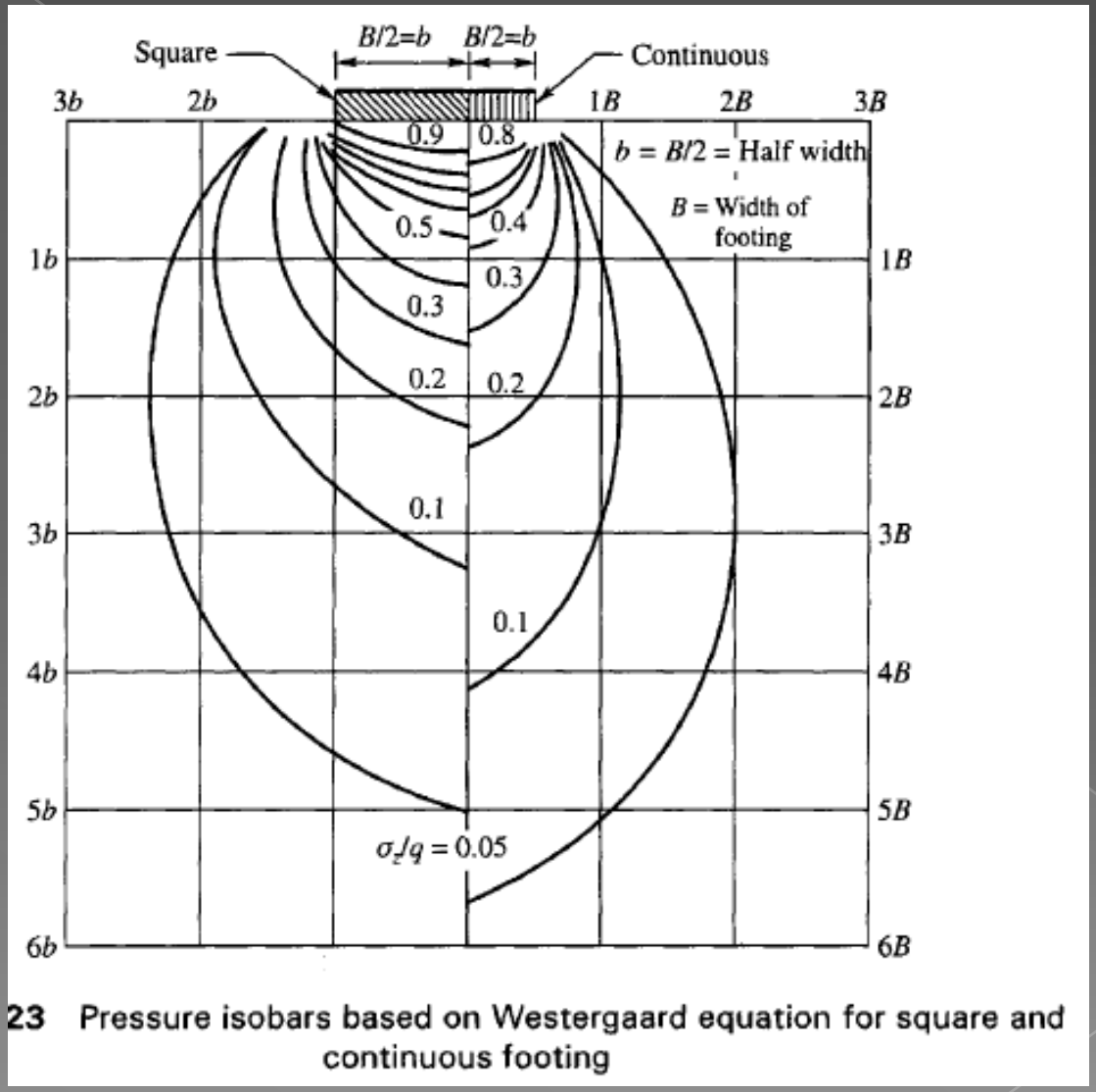

23 Pressure isobars based on Westergaard equation for square and continuous footing

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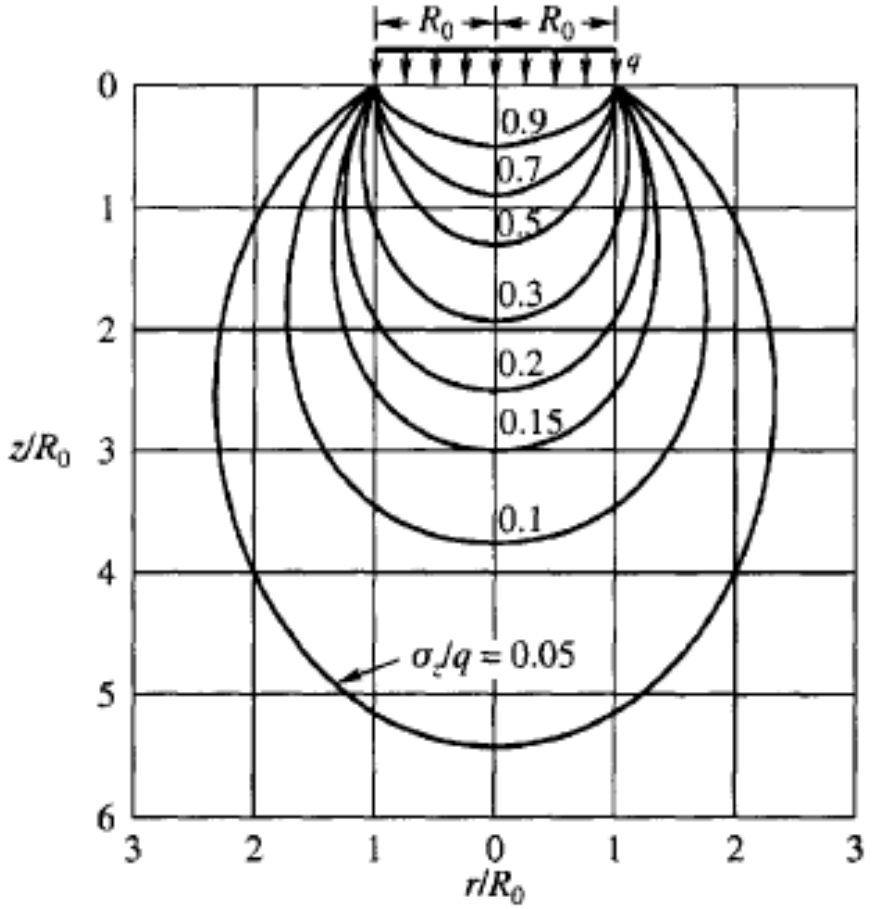

Pressure isobars based on Boussinesq equation for uniformly loaded circular footings

BEBAN TIMBUNAN TAK HINGGA

- $\sigma_z = \gamma \times h$