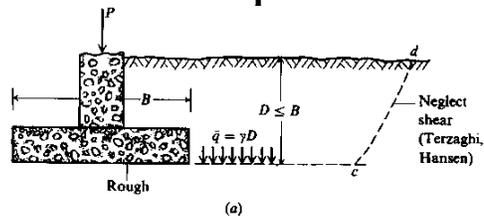


Resumen clase anterior

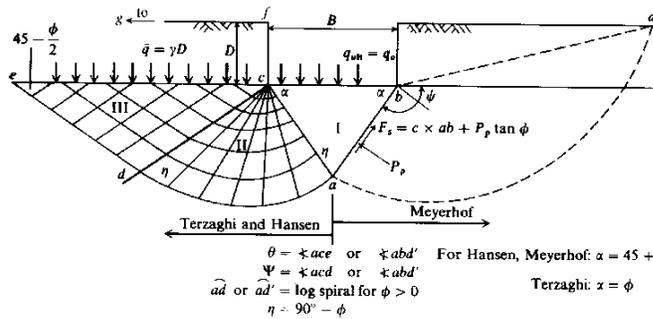
1. Fundaciones Superficiales.

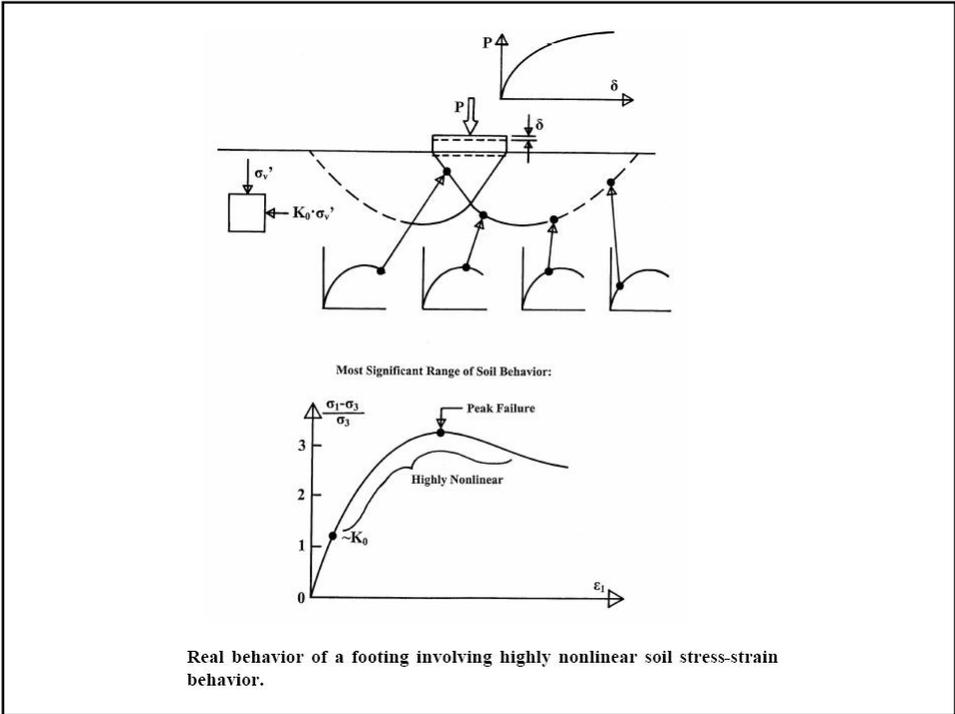
- Tipos y Usos.
- Capacidad de soporte
- Fórmula de Rotura: efecto del agua, forma de la zapata, correcciones por enterramiento, rugosidad y curvatura del sello de fundación, velocidad de aplicación de la carga, estratificación del suelo.
- Asentamientos en fundaciones superficiales: tipos de asentamientos, metodologías para la estimación de asentamientos, la constante de balastro, giros de fundación.
- Integración de los conceptos de rotura y asentamientos (giros) admisibles.
- Losas de fundación

Modelo de Terzaghi para capacidad de soporte



(Bowles, 1996)





Modelo de Terzaghi (1943)

Bearing-capacity equations by the several authors indicated

Terzaghi (1943). See Table 4-2 for typical values and for K_{py} values.

$$q_{ult} = cN_c s_c + \bar{q}N_q + 0.5\gamma B N_\gamma s_\gamma$$

$$N_q = \frac{a^2}{2 \cos^2(45 + \phi/2)}$$

$$a = e^{(0.75\pi - \phi/2) \tan \phi}$$

$$N_c = (N_q - 1) \cot \phi$$

$$N_\gamma = \frac{\tan \phi}{2} \left(\frac{K_{py}}{\cos^2 \phi} - 1 \right)$$

For: strip round square

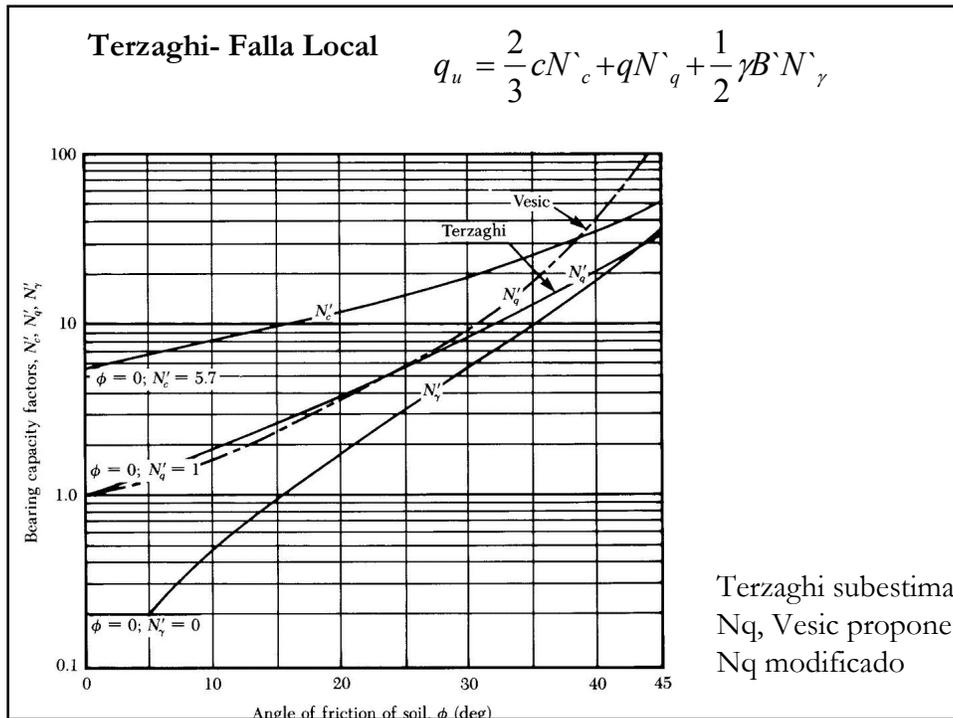
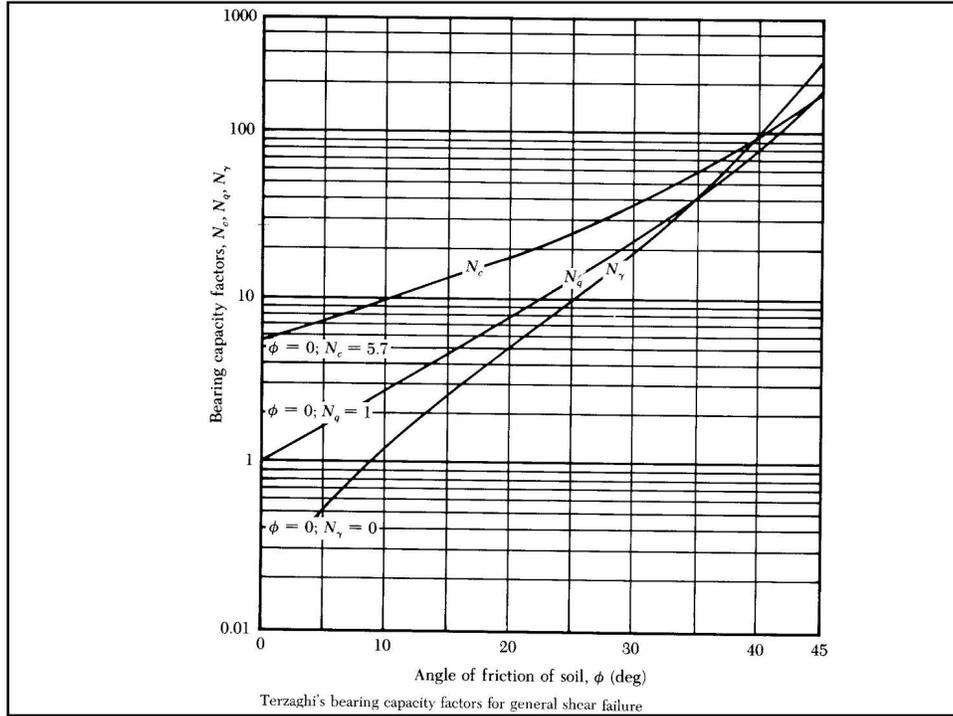
$$s_c = 1.0 \quad 1.3 \quad 1.3$$

$$s_\gamma = 1.0 \quad 0.6 \quad 0.8$$

(Despues de J. Bowles 1996)

Factores de capacidad de soporte de Terzaghi (Bowles, 1988)

ϕ°	N_q	N_c	N_γ	ϕ°	N_q	N_c	N_γ
0	1.00	5.71	0.0	28	17.81	31.61	15.7
2	1.22	6.30	0.2	30	22.46	37.16	19.7
4	1.49	6.97	0.4	32	28.52	44.04	27.9
6	1.81	7.73	0.6	34	36.50	52.64	36.0
8	2.21	8.60	0.9	35	41.44	57.75	42.4
10	2.69	9.60	1.2	36	47.16	63.53	52.0
12	3.29	10.76	1.7	38	61.55	77.50	80.0
14	4.02	12.11	2.3	40	81.27	95.66	100.4
16	4.92	13.68	3.0	42	108.75	119.67	180.0
18	6.04	15.52	3.9	44	147.74	151.95	257.0
20	7.44	17.69	4.9	45	173.29	172.29	297.5
22	9.19	20.27	5.8	46	204.19	196.22	420.0
24	11.40	23.36	7.8	48	287.85	258.29	780.1
26	14.21	27.09	11.7	50	415.15	347.51	1153.2



Otros modelos

- Meyerhof (1951, 1963)
- Hansen's (1961, 1970)
- Vesic (1973, 1975)
- Skempton (1951)

Factores de carga

ϕ	N_c	N_q	N_{γ}	N_c		
				Meyerhof	Hansen	Vesic
0	1.00	5.14	1.00	0.00	0.00	0.00
2	1.07	5.63	1.20	0.01	0.01	0.15
4	1.15	6.18	1.43	0.04	0.05	0.34
6	1.23	6.81	1.72	0.11	0.11	0.57
8	1.32	7.53	2.06	0.21	0.22	0.86
10	1.42	8.34	2.47	0.37	0.39	1.22
12	1.52	9.28	2.97	0.60	0.63	1.69
14	1.64	10.37	3.59	0.92	0.97	2.29
16	1.76	11.63	4.34	1.37	1.43	3.06
18	1.89	13.10	5.26	2.00	2.08	4.07
20	2.04	14.83	6.40	2.87	2.95	5.39
22	2.20	16.88	7.82	4.07	4.13	7.13
24	2.37	19.32	9.60	5.72	5.75	9.44
26	2.56	22.25	11.85	8.00	7.94	12.54
28	2.77	25.80	14.72	11.19	10.94	16.72
30	3.00	30.14	18.40	15.67	15.07	22.40
32	3.25	35.49	23.18	22.02	20.79	30.21
34	3.54	42.16	29.44	31.15	28.77	41.06
36	3.85	50.59	37.75	44.43	40.05	56.31
38	4.20	61.35	48.93	64.07	56.17	78.02
40	4.60	75.31	64.19	93.69	79.54	109.41
42	5.04	93.71	85.37	139.32	113.95	155.54
44	5.55	118.37	115.31	211.41	165.58	224.63
46	6.13	152.10	158.50	328.73	244.64	330.33
48	6.79	199.26	222.30	526.44	368.88	495.99
50	7.55	266.88	319.05	873.84	568.56	762.85

Capacidad de soporte en condiciones drenadas

- $D_f < B$
- Fundación rígida en comparación al suelo de fundación
- Falla de corte del tipo general
- Criterio de falla Mohr-Coulomb

