

CAPACIDAD PORTANTE MEYERHOF

FACTOR DE SEGURIDAD =

3

SISTEMA DE UNIDADES =

SI

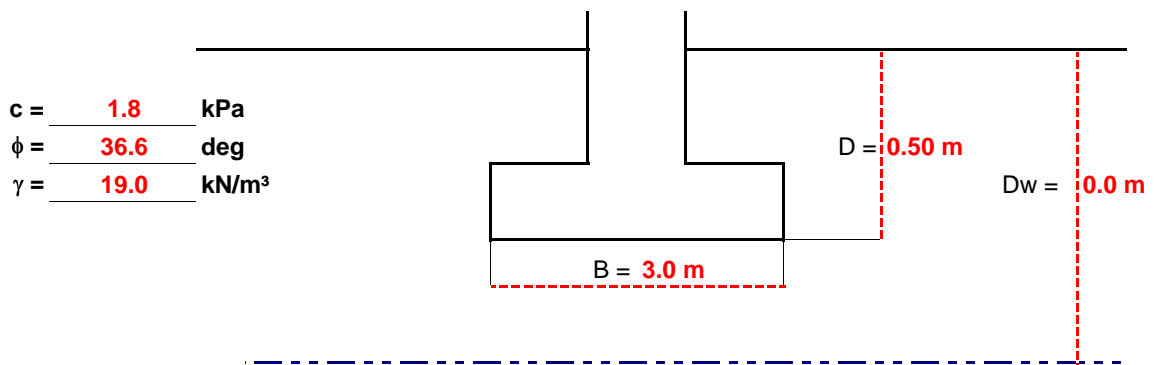
SI sistema internacional E sistema Ingles

FORMA DEL CIMIENTO =

RE

SQ, CI, CO, or RE

Longitud del cimiento = **10.00 m**



$$Q_{ult} = cN_c s_c d_c + qN_q s_q d_q + \frac{1}{2}\gamma B N_\gamma s_\gamma d_\gamma$$

$$Q_{ult} = 1.8 * 53.54 * 1.24 * 1.07 + 4.6 * 40.76 * 1.12 * 1.03 + 0.5 * 9.2 * 49.52 * 1.12 * 1.03 * 1.03$$

$$Q_{ult} = 127.12 + 216.68 + 789.78$$

$$Q_{ult} = 1133.59 \text{ kPa}$$

$$Q_{seguridad} = \frac{Q_{ult}}{FS}$$

$$Q_{seguridad} = 377.86 \text{ kPa}$$

Meyerhof Computations

Unit conversion	1	N _c =	53.54	(N _q -1)ctgφ	
γ _w =	9.8	s _c =	1.24	1+0.2*k _p *B/L	cualquier φ
φ (radians)	0.63879051	d _c =	1.07	1+0.2√k _p * D/B	cualquier φ
W _{footing}	354	N _q =	40.76	e ^{ptanφ} * tan ² (45+φ)	
γ conc	23.6	s _q =	1.12	1+0.1*k _p *B/L	φ>10 o 1 para φ=0
γ' =	9.2	d _q =	1.03	1+0.1√k _p * D/B	φ>10 o 1 para φ=0
K _p =	3.95325213	N _γ =	49.52	(N _q -1))tan(1.4φ)	
B/L =	0.3	s _γ =	1.12	igual a S _q	
D/B =	0.16666667	d _γ =	1.03	igual a d _q	
q =	σ _{zD'} =		4.6		

CAPACIDAD PORTANTE BOWLES

FACTOR DE SEGURIDAD =
SISTEMA DE UNIDADES =

3
SI

SI sistema internacional E sistema Ingles

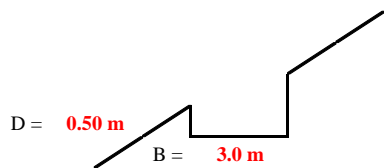
Longitud del cimiento = **10.00 m**

FORMA DEL CIMIENTO =
SQ, CI, CO, or RE

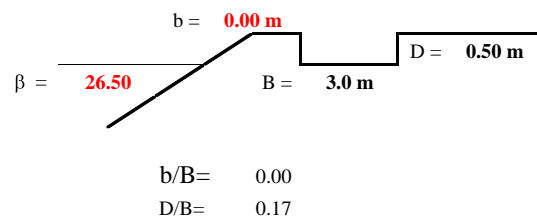
RE

c = **1.8** kPa
φ = **36.6** deg
γ = **19.00** kN/m³

CASO A



CASO B



$$q_{ult} = cN_c s_c d_c + qN_q s_q d_q + \frac{1}{2}\gamma B N_\gamma s_\gamma d_\gamma$$

$$q_{ult} = 1.8 \cdot 25 \cdot 1.24 \cdot 1.07 + 4.6 \cdot 27 \cdot 1.12 \cdot 1.03 + 0.5 \cdot 9.2 \cdot 14.92 \cdot 1.12 \cdot 1.03 \cdot 1.03$$

$$q_{ult} = 59.36 + 143.53 + 237.98$$

$$q_{ult} = 664.82$$

$$q_{seguridad} = \frac{q_{ult}}{FS}$$

$$q_{seguridad} = 221.61 \text{ kPa}$$

Meyerhof and Hasen Computations

Unit conversion	1	N _c =	25.00	Depende del angulo del talud ver tablas
γ _w =	9.8	s _c =	1.24	1+0.2*k _p *B/L cualquier φ
φ (radians)	0.64	d _c =	1.07	1+0.2*√k _p * D/B cualquier φ
W _{footing}	354	N _q =	27.00	Depende del angulo del talud ver tablas
γ conc	23.6	s _q =	1.12	1+0.1*k _p *B/L φ>10 o 1 para φ=0
γ'	9.2	d _q =	1.03	1+0.1*√k _p * D/B φ>10 o 1 para φ=0
K _p =	3.95	N _γ =	28.96	1.5(N _q -1)tanφ Hasen factor
K _{p max} =	3.0	N' _γ =	14.9	N _γ /2+N _γ /2[R+b/(2B)*(1-R)] Bowles factor
K _{p min} =	98.9	s _γ =	1.12	igual a S _q
B/L =	0.3	d _γ =	1.03	igual a d _q
D/B =	0.17			
q =	σ _{zD} =			
	4.6			
R =	K _{p max} / K _{p min}			

$$K_p = \frac{\text{sen}^2(\alpha+\phi)}{\text{sen}^2\alpha \text{sen}(\alpha-\delta) [1-\sqrt{(\text{sen}(\phi+\delta)\text{sen}(\phi-\beta))/(\text{sen}(\alpha-\delta)\text{sen}(\alpha+\beta))}]^2}$$

$$K_{p \text{ max}} = 98.9$$

$$K_{p \text{ min}} = 3.0$$

$$\alpha = 90.0$$

$$\beta = 26.5$$

$$\delta = 36.6$$

$$\phi = 36.6$$

$$R = \frac{K_{p \text{ max}}}{K_{p \text{ min}}}$$

$$R = 0.030$$

		<i>D/B = 0 b/B = 0</i>					<i>D/B = 0.75 b/B = 0</i>					<i>D/B = 1.50 b/B = 0</i>				
$\beta \downarrow$		$\emptyset=0$	10	20	30	40	0	10	20	30	40	0	10	20	30	40
0°	<i>N'c</i>	5.14	8.35	14.83	30.14	75.31	5.14	8.35	14.83	30.14	75.31	5.14	8.25	14.83	30.14	75.31
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	1.03	2.47	6.40	18.40	64.20	1.03	2.47	6.40	18.40	64.20
10°	<i>N'c</i>	4.89	7.80	13.37	26.80	64.42	5.14	8.35	14.83	30.14	75.31	5.14	8.35	14.83	30.14	75.31
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	0.92	1.95	4.43	11.16	33.94	1.03	2.47	5.85	14.13	40.81
20°	<i>N'c</i>	4.63	7.28	12.39	23.78	55.01	5.14	8.35	14.83	30.14	66.81	5.14	8.35	14.83	30.14	75.31
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	0.94	1.90	4.11	9.84	28.21	1.03	2.47	5.65	12.93	35.14
25°	<i>N'c</i>	4.51	7.02	11.82	22.38	50.80	5.14	8.35	14.83	28.76	62.18	51.4	8.35	14.83	30.14	73.57
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	0.92	1.82	3.85	9.00	25.09	1.03	2.47	5.39	12.04	31.80
30°	<i>N'c</i>	4.38	6.77	11.28	21.05	46.88	5.14	8.35	14.83	27.14	57.76	5.14	8.35	14.83	30.14	68.64
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	0.88	1.71	3.54	8.08	21.91	1.03	2.47	5.04	10.99	28.33
60°	<i>N'c</i>	3.62	5.33	8.33	14.34	28.56	4.70	6.83	10.55	17.85	34.84	5.14	8.34	12.76	21.37	41.12
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	0.37	0.63	1.17	2.36	5.52	0.62	1.04	1.83	3.52	7.80
		<i>D/B = 0 b/B = 0.75</i>					<i>D/B = 0.75 b/B = 0.75</i>					<i>D/B = 1.50 b/B = 0.75</i>				
$\beta \downarrow$		0	10	20	30	40	0	10	20	30	40	0	10	20	30	40
10°	<i>N'c</i>	5.14	8.33	14.34	28.02	66.6	5.14	8.35	14.83	30.14	75.31	5.14	8.35	14.83	30.14	75.31
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	1.03	2.34	5.34	13.47	40.83	1.03	2.47	6.4	15.79	45.45
20°	<i>N'c</i>	5.14	8.31	13.9	26.19	59.31	5.14	8.35	14.83	30.14	71.11	5.14	8.35	14.83	30.14	75.31
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	1.03	2.47	6.04	14.39	40.38	1.03	2.47	6.4	16.31	43.96
25°	<i>N'c</i>	5.14	8.29	13.69	25.36	56.11	5.14	8.35	14.83	30.14	67.49	5.14	8.35	14.83	30.14	75.31
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	1.03	2.47	6.27	14.56	40.06	1.03	2.47	6.4	16.2	42.35
30°	<i>N'c</i>	5.14	8.27	13.49	24.57	53.16	5.14	8.35	14.83	30.14	64.04	5.14	8.35	14.83	30.14	74.92
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	1.03	2.47	6.4	14.52	38.72	1.03	2.47	6.4	15.85	40.23
60°	<i>N'c</i>	5.14	7.94	12.17	20.43	39.44	5.14	8.35	14.38	23.94	45.72	5.14	8.35	14.83	27.46	52
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	1.03	2.47	5.14	10.05	22.56	1.03	2.47	4.97	9.41	20.33
		<i>D/B = 0 b/B = 0.75</i>					<i>D/B = 0.75 b/B = 0.75</i>					<i>D/B = 1.50 b/B = 0.75</i>				
$\beta \downarrow$		0	10	20	30	40	0	10	20	30	40	0	10	20	30	40
10°	<i>N'c</i>	5.14	8.35	14.83	29.24	68.78	5.14	8.35	14.83	30.14	75.31	5.14	8.35	14.83	30.14	75.31
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	1.03	2.47	6.01	15.39	47.09	1.03	2.47	6.4	17.26	49.77
20°	<i>N'c</i>	5.14	8.35	14.83	28.59	63.6	5.14	8.35	14.83	30.14	75.31	5.14	8.35	14.83	30.14	75.31
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	1.03	2.47	6.4	18.4	53.21	1.03	2.47	6.4	18.4	52.58
25°	<i>N'c</i>	5.14	8.35	14.83	28.33	61.41	5.14	8.35	14.83	30.14	72.8	5.14	8.35	14.83	30.14	75.31
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	1.03	2.47	6.4	18.40	55.2	1.03	2.47	6.4	18.4	52.97
30°	<i>N'c</i>	5.14	8.35	14.83	28.09	59.44	5.14	8.35	14.83	30.14	70.32	5.14	8.35	14.83	30.14	75.31
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	1.03	2.47	6.4	18.4	56.41	1.03	2.47	6.4	18.4	52.63
60°	<i>N'c</i>	5.14	8.35	14.83	26.52	50.32	5.14	8.35	14.83	30.03	56.6	5.14	8.35	14.83	30.14	62.88
	<i>N'q</i>	1.03	2.47	6.40	18.40	64.20	1.03	2.47	6.4	18.4	16.48	1.03	2.47	6.4	16.72	36.17

This document was created with Win2PDF available at <http://www.win2pdf.com>.
The unregistered version of Win2PDF is for evaluation or non-commercial use only.
This page will not be added after purchasing Win2PDF.