

Proyecto: Agua Potable de Esmeraldas
Cálculo de bloques de anclaje - Codos 90°, 45°, 22.5° y 11.25°

The required bearing block area is $A_b = hb = \frac{T}{S_b}$

Then, for a horizontal bend, $b = \frac{2 S_f PA \sin(\Theta / 2)}{h S_b}$

Where:

S_f = safety factor (usually 1.5 for thrust block design)

P = maximum system pressure (kg/cm²)

A = cross-section area of the pipe (cm²)

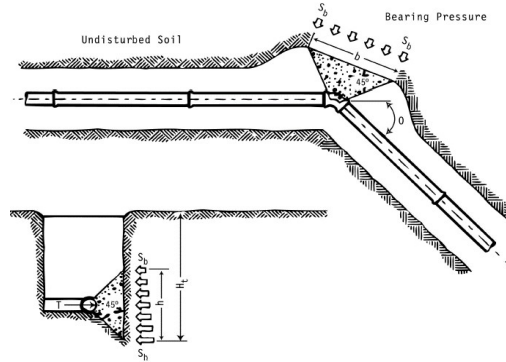
Θ = angle of the bend (°)

S_b = bearing strength of the soil (kg/m²)

T = thrust force (kg)

b = block width (m)

h = block height (m)



- S_f = 1.50 Factor de seguridad
- P = 25.00 kg/cm² (2.5 MPa) Presión de prueba
- S_b = 1.00 kg/cm² (1 MPa) Capacidad portante del suelo

Ø Tubería 2.5 Mpa		Dim. Calc.						Dimensiones del anclaje			Volumen litros	b/h	T Actuante kg	T Bloque kg	T Blo/T Act
Ø Nominal	Ø Interior	Area Int.	b = Ancho	h = Alto	d = Profundidad	Ø Codo	Θ	- b - Ancho	- h - Alto	- d - Profundidad					
100	100	78.54	64.08	65.00	32.04	100	90	65	65	35	49.29	1.0	4,165.20	4,225.00	1.01
150	150	176.71	98.65	95.00	49.32	150	90	100	95	50	158.33	1.1	9,371.71	9,500.00	1.01
200	200	314.16	138.84	120.00	69.42	200	90	140	120	70	392.00	1.2	16,660.81	16,800.00	1.01
250	250	490.87	173.55	150.00	86.78	250	90	175	150	90	787.50	1.2	26,032.52	26,250.00	1.01
300	300	706.86	234.29	160.00	117.15	300	90	240	160	120	1,536.00	1.5	37,486.82	38,400.00	1.02
350	350	962.11	275.80	185.00	137.90	350	90	285	185	145	2,548.38	1.5	51,023.73	52,725.00	1.03
400	400	1,256.64	317.35	210.00	158.67	400	90	320	210	160	3,584.00	1.5	66,643.24	67,200.00	1.01
100	100	78.54	50.09	45.00	25.05	100	45	50	45	25	18.75	1.1	2,254.19	2,250.00	1.00
150	150	176.71	72.46	70.00	36.23	150	45	75	70	40	70.00	1.1	5,071.93	5,250.00	1.04
200	200	314.16	100.19	90.00	50.09	200	45	100	90	50	150.00	1.1	9,016.77	9,000.00	1.00
250	250	490.87	122.51	115.00	61.26	250	45	125	115	65	311.46	1.1	14,088.70	14,375.00	1.02
300	300	706.86	144.91	140.00	72.46	300	45	145	140	75	507.50	1.0	20,287.72	20,300.00	1.00
350	350	962.11	172.59	160.00	86.29	350	45	175	160	90	840.00	1.1	27,613.85	28,000.00	1.01
400	400	1,256.64	200.37	180.00	100.19	400	45	200	180	100	1,200.00	1.1	36,067.06	36,000.00	1.00
100	100	78.54	38.31	30.00	19.15	100	22.5	40	30	20	8.00	1.3	1,149.18	1,200.00	1.04
150	150	176.71	57.46	45.00	28.73	150	22.5	60	45	30	27.00	1.3	2,585.65	2,700.00	1.04
200	200	314.16	76.61	60.00	38.31	200	22.5	80	60	40	64.00	1.3	4,596.71	4,800.00	1.04
250	250	490.87	95.76	75.00	47.88	250	22.5	100	75	50	125.00	1.3	7,182.36	7,500.00	1.04
300	300	706.86	121.68	85.00	60.84	300	22.5	125	85	65	230.21	1.5	10,342.59	10,625.00	1.03

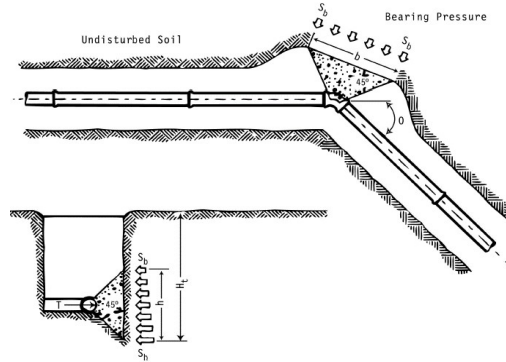
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350	350	962.11	134.07	105.00	67.04	350	22.5	135	105	70	330.75	1.3	14,077.42	14,175.00	1.01	
400	400	1,256.64	153.22	120.00	76.61	400	22.5	155	120	80	496.00	1.3	18,386.83	18,600.00	1.01	
100	100	78.54	28.87	20.00	14.43	100	11.25	30	20	15	3.00	1.5	577.37	600.00	1.04	
150	150	176.71	43.30	30.00	21.65	150	11.25	45	30	25	11.25	1.5	1,299.08	1,350.00	1.04	
200	200	314.16	57.74	40.00	28.87	200	11.25	60	40	30	24.00	1.5	2,309.47	2,400.00	1.04	
250	250	490.87	72.17	50.00	36.09	250	11.25	75	50	40	50.00	1.5	3,608.55	3,750.00	1.04	
300	300	706.86	86.61	60.00	43.30	300	11.25	90	60	45	81.00	1.5	5,196.32	5,400.00	1.04	
350	350	962.11	94.30	75.00	47.15	350	11.25	95	75	50	118.75	1.3	7,072.77	7,125.00	1.01	
400	400	1,256.64	108.68	85.00	54.34	400	11.25	110	85	55	171.42	1.3	9,237.90	9,350.00	1.01	

Esmeraldas, enero de 2018
 OCC