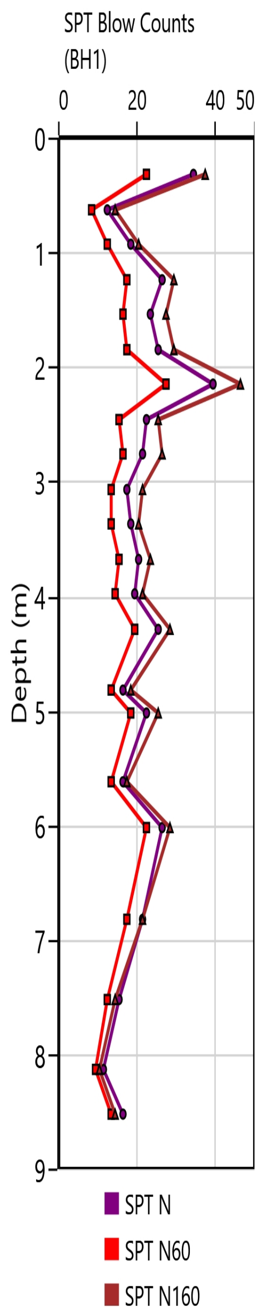
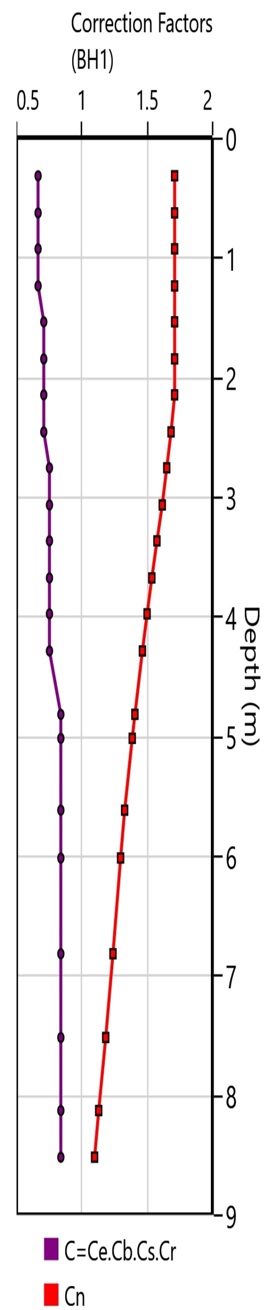
Project:	**Job No. :**	**Location:**	**Client:**
Sample project	123456	Sample location	Sample Client

Borehole:	BH1	**Overburden correction:**	Tokimatsu and Yoshimi (1983)
B(m) = L(m):	1.50	**Ce:**	1.00
FS:	3	**Cb:**	1.05
Allowable settlement (mm):	25.00	**Cs:**	0.83
Groundwater level (m):	1.50	**Apply water level correction:**	False

Thickness(m)	Unit weight (kPa)	Soil type	OCR	Cu
3.00	16.50	Fine	1.00	1.00
2.60	18.70	Fine	1.00	1.00
1.60	17.50	Fine	0.50	0.50
2.00	21.00	Coarse	1.00	1.00

Depth(m)	N	Cr	C = Cs.Cb.Cr.Ce	Cn	N60	(N1)60
0.30	34	0.75	0.65	1.70	22	37
0.61	12	0.75	0.65	1.70	8	14
0.91	18	0.75	0.65	1.70	12	20
1.22	26	0.75	0.65	1.70	17	29
1.52	23	0.80	0.70	1.70	16	27
1.83	25	0.80	0.70	1.70	17	29
2.13	39	0.80	0.70	1.70	27	46
2.44	22	0.80	0.70	1.67	15	25
2.74	21	0.85	0.74	1.64	16	26
3.05	17	0.85	0.74	1.60	13	21
3.35	18	0.85	0.74	1.56	13	20
3.66	20	0.85	0.74	1.53	15	23
3.96	19	0.85	0.74	1.49	14	21
4.27	25	0.85	0.74	1.45	19	28
4.80	16	0.95	0.83	1.40	13	18
5.00	22	0.95	0.83	1.37	18	25
5.60	16	0.95	0.83	1.32	13	17
6.00	26	0.95	0.83	1.29	22	28
6.80	21	0.95	0.83	1.23	17	21
7.50	15	0.95	0.83	1.17	12	14
8.11	11	0.95	0.83	1.12	9	10
8.50	16	0.95	0.83	1.09	13	14





Parameter	Reference	Value	Note	Formula
Overburden correction factor (Cn)	Gibbs & Holtz (1959)	1.70	Unit of effective stress psi Effective stress (psi) = 3.61	$Cn = \frac{50}{(10+\sigma'_{v0})}$
	Bazaraa (1967)	1.70	Unit of effective stress in ksf Effective stress (ksf) = 0.52	$(\sigma'_{v0} \leq 1.5) \Rightarrow Cn = (\frac{4}{1+2\sigma'_{v0}}), (\sigma'_{v0} > 1.5) \Rightarrow Cn = (\frac{4}{3.25+0.5\sigma'_{v0}})$
	Peck et al. (1974)	1.46	Unit of effective stress in kg/cm2 Effective stress (kg/cm2) = 0.25	$Cn = 0.77log_{10}\left(\frac{20}{\sigma'_{v0}}\right)$
	Seed (1976)	1.70	Unit of effective stress in kg/cm2 Effective stress (kg/cm2) = 0.25	$Cn = 1 - 1.25log_{10}(\sigma'_{v0})$
	Tokimatsu &Yoshimi (1983)	1.70	Unit of effective stress in kg/cm2 Effective stress (kg/cm2) = 0.25	$Cn = \frac{1.7}{(0.7+\sigma'_{v0})}$
	Liao & Whitman (1986)	1.70	Unit of effective stress in kg/cm2 Effective stress (kg/cm2) = 0.25	$Cn = (\frac{1}{\sigma'_{v0}})^{0.5}$
	Skempton (1986)	1.60	Unit of effective stress in kg/cm2 Effective stress (kg/cm2) = 0.25	$Cn = (\frac{2}{1+\sigma'_{v0}})(NCMediumLooseFineSands)$
	Skempton (1986)	1.33	Unit of effective stress in kg/cm2 Effective stress (kg/cm2) = 0.25	$Cn = (\frac{3}{2+\sigma'_{v0}})(NCDenseCoarseSand)$
	Skempton (1986)	1.70	Unit of effective stress in kg/cm2 Effective stress (kg/cm2) = 0.25	$Cn = (\frac{1.7}{0.7+\sigma'_{v0}})(OCFineSands)$
Allowable Bearing Capacity (kPa)	Teng (1969)	403.20	Based on shear failure criteria (FS = 3) N = Average corrected spt blow count (Gibbz and Holtz 1948) to 1B depth below footing B(m) = 1.50 N = 31 Rw = 0.99 R'w = 0.50	$Qa(kPa) = 0.1570464(2N^2BR_w + 6(100 + N^2)D_fR'_w)/FS$
	Meyerhof Method	544.22	Based on shear failure criteria (FS = 3) B(m) = 1.50 N = Average uncorrected spt blow count to 1.5B depth below footing N = 23 CW1 = 0.50 CW2 = 0.99	$Qa(kPa) = 314.0928(NB/10(C_{w1} + C_{w2}D_f/B))/FS$
	General Terzaghi formula	924.70	Based on shear failure criteria (FS = 3) B(m) = 1.50 Friction angle (Hatanaka and Uchida 1996) = 40.49 Nq (Bowels 1986) = 68.71 Nγ (Hansen 1970) = 86.71	$Qa(kPa) = (\overline{q}N_q + 0.5B\gamma N_\gamma)/FS$
	Terzaghi and Peck (1948)	264.01	Based on allowable settlement (25.00mm) B(m) = 1.50 N = Average uncorrected spt blow count to 1B depth below footing N = 26 Cw = 1.49 Cd = 0.75	$(B <= 1.22) \Rightarrow Qa(kPa) = 0.4713\frac{NS_e}{C_wC_d}, (B > 1.22) \Rightarrow Qa(kPa) = 0.3142\frac{NS_e}{C_wC_d}\left(\frac{3.28B+1}{3.28B}\right)^2$
	Modified Meyerhof (1965)	786.46	Based on allowable settlement (25.00mm) B(m) = 1.50 N = Average uncorrected spt blow count to 1B depth below footing N = 26 Cd = 1.33	$(B <= 1.22) \Rightarrow Qa(kPa) = 0.9426NS_eC_d, (B > 1.22) \Rightarrow Qa(kPa) = 0.6283NS_eC_d\left(\frac{3.28B+1}{3.28B}\right)^2$
	Anagnostopoulos et al. (1991)	968.47	Based on allowable settlement (25.00mm) B(m) = 1.50 N = Average uncorrected spt blow count to 1B depth below footing N = 26	$Qa(kPa) = \left(\frac{SN^{1.2}}{2.37B^{0.7}}\right)^{1/0.87}$
	Burland and Burbidge (1985)	1,350.84	Based on allowable settlement (25.00mm) B(m) = 1.50 N = Average corrected spt blow count to 1.4*Br*(B/Br)^0.75 depth below footing Br = 0.3m N = 31	$Qa(kPa) = \frac{SN^{1.4}}{1.706B^{0.7}}$
Undrained Shear Strength (su) (kPa)	Hara et al. (1974)	277.23	Japanese cohesive soils	$Su(kPa) = 29(N)^{0.72}$
	Reese et al. (1976)	146.83	Stiff clays in Houston	$Su(kPa) = (N/15) * 95.76$
	Tavares (1988)	138.00	Guabirotuba clay	$Su(kPa) = 6N, N > 20andN < 30$
	Ajayi & Balogun (1988)	106.17	Tropical soil	$Su(kPa) = 1.39N + 74.2$

Parameter	Reference	Value	Note	Formula
Undrained Shear Strength (su) (kPa)	Decourt (1989)	287.50	Sao paulo Over-consolidated clay	$Su(kPa) = 12.5N$
	Decourt (1989)	240.00	Sao paulo Over-consolidated clay	$Su(kPa) = 15N_{60}$
	Nevels & Laguros (1993)	166.99	Clay and soft shale	$Su(kPa) = (0.059 * N + 0.2) * 107.25$
	Sivrikaya & Togrol (2006)	124.80	Clays – Turkey (CH)	$Su(kPa) = 7.8N_{60}$
	Sivrikaya & Togrol (2006)	85.60	Clays – Turkey (CL)	$Su(kPa) = 5.35N_{60}$
	Nassaji & Kalantari (2011)	51.20	Iran clay	$Su(kPa) = 2.1N_{60} + 17.6$
	Cangir & Dipova (2017)	129.40	Silty clays – Turkey	$Su(kPa) = 6.932N_{70}$
	Balachandran et al. (2017)	133.12	Stiff glacial till in Canada	$Su(kPa) = 5.35N_{60}$
	White et al. (2019)	131.10	London Clay	$Su(kPa) = 5.7N$
Unconfined Compressive Strength (qu) (kPa)	Terzaghi & Peck (1967)	287.50	Fine-grained	$q_u(kPa) = 12.5N$
	Golder (1961)	308.34	Clay	$q_u(kPa) = (N/8) * 107.25$
	Sanglerat (1972)	575.00	Clay	$q_u(kPa) = 25N$
	Sanglerat (1972)	460.00	Silty clay	$q_u(kPa) = 25N$
	Sowers (1979)	575.00	Highly plastic clay	$q_u(kPa) = 25N$
	Sowers (1979)	345.00	Medium plastic clay	$q_u(kPa) = 25N$
	Sowers (1979)	172.50	Low plasticity clay	$q_u(kPa) = 7.5N$
	Nixon (1982)	552.00	Clay	$q_u(kPa) = 25N$
	Sarac & Popovic (1982)	1,225.00	Clay	$Su(kPa) = 1.39N + 74.2$
	Sambhandharaksa & Pitupakorn (1985)	309.11	CH Bangkok clay	$q_u(kPa) = (1.37N) * 9.81$
	Sambhandharaksa & Pitupakorn (1985)	234.66	CL Bangkok clay	$q_u(kPa) = (1.37N) * 9.81$
	Behpoor & Ghahramani (1989)	345.00	CL and CL-ML	$q_u(kPa) = 25N$
	Kulhawy & Mayne (1990)	554.46	Fine-grained	$q_u(kPa) = 58N^{0.72}$
	Serajuddin & Chowdhury (1996)	328.90	Bangladesh clays (LL<=35)	$q_u(kPa) = 12.5N$
	Serajuddin & Chowdhury (1996)	388.70	Bangladesh clays (36<LL<50)	$q_u(kPa) = 12.5N$
	Serajuddin & Chowdhury (1996)	409.40	Bangladesh clays (LL>50)	$q_u(kPa) = 12.5N$
	Sivrikaya & Togrol (2002)	217.60	CH	$q_u(kPa) = 13.6N_{60}$
	Sivrikaya & Togrol (2002)	156.80	CL	$q_u(kPa) = 9.8N_{60}$
	Sivrikaya & Togrol (2002)	137.60	Fine-grained	$q_u(kPa) = 9.8N_{60}$
Pressuremeter Modulus (Ep) (kg/cm2)	Nayak (1979)	177.10	Clay	$E_p(kg/cm2) = 7.7N$
	Ohya et al. (1982)	345.00	Clayey soil	$E_p(kg/cm2) = 15N$
	Jones & Rust (1989)	375.25	Residual soil	$E_p(kg/cm2) = (1.6N) * 10.197$
	Yagiz et al. (2008)	109.86	Sandy silty clay	$E_p(kg/cm2) = (388.7N + 4554) * 0.010197$
	Bozbey & Togrol (2010)	117.55	Clayey soils – Istanbul	$E_p(kg/cm2) = (1.61(N_{60})^{0.71}) * 10.197$
	Kayabasi (2012)	140.96	Clayey soils – Turkey	$E_p(kg/cm2) = (0.285(N_{60})^{1.4}) * 10.197$
	Agan & Algin (2014)	52.92	Clayey soils – Turkey	$E_p(kg/cm2) = (2.22 + 0.0029(N_{60})^{2.5}) * 10.197$

Parameter	Reference	Value	Note	Formula
Elastic Modulus (Vs) (m/s)	Jinan (1985)	241.81	Shanghai	$V_s(m/s) = 121(N+0.27)^{0.22}$
	Lee (1992)	153.56	Taipei basin (D = depth in meters)	$V_s(m/s) = 84.5(N)^{0.22}(D+1)^{0.246}$
	Kalteziotis et al. (1992)	308.77	Cohesive Greece	$V_s(m/s) = 76.5(N)^{0.445}$
	Pitilakis et al. (1999)	253.37	Silts	$V_s(m/s) = 145(N)^{0.178}$
	Pitilakis et al. (1999)	308.75	Clays	$V_s(m/s) = 132(N)^{0.271}$
	Jafari et al. (2002)	246.01	Silts	$V_s(m/s) = 22(N)^{0.770}$
	Jafari et al. (2002)	266.33	Clays	$V_s(m/s) = 22(N)^{0.770}$
	Hasancebi & Ulusay (2007)	207.58	Clays	$V_s(m/s) = 107.69(N_{60})^{0.237}$
	Dikmen (2009)	198.19	Clay	$V_s(m/s) = 22(N)^{0.770}$
	Dikmen (2009)	185.51	Silt	$V_s(m/s) = 22(N)^{0.770}$
	Uma Maheswari et al. (2010)	274.38	Clay	$V_s(m/s) = 76.5(N)^{0.445}$
	Tsiambaos & Sabatakakis (2011)	275.50	Clay	$V_s(m/s) = 112.2(N_{60})^{0.324}$
	Tsiambaos & Sabatakakis (2011)	247.71	Silt	$V_s(m/s) = 88.8(N_{60})^{0.370}$
	Fatehnia et al. (2015)	234.68	Clay	$V_s(m/s) = 76.5(N)^{0.445}$
	Kirar et al. (2016)	309.79	Clay	$V_s(m/s) = 76.5(N)^{0.445}$
Shear Modulus (Gmax) (MPa)	Ohsaki & Iwasaki (1973)	134.68	Clay	$G_{max}(MPa) = 14(N)^{0.722}$
	Hara et al. (1974)	128.32	Clay	$G_{max}(MPa) = 15.8(N)^{0.668}$
	Ohba and Toriumi (1970)	83.56	Alluvial sand and clay	$G_{max}(MPa) = 13.73(N)^{0.71}$
	Imai and Tonouchi (1982)	140.24	Diluvial clay	$G_{max}(MPa) = 24.61(N)^{0.555}$
	Imai and Tonouchi (1982)	115.77	Alluvial clay	$G_{max}(MPa) = 24.61(N)^{0.555}$