

Following correlations are calculated for: N60=34 @ 2.13 m; Corrected SPT N1(60)~58 after Peck and Bazaraa, 1969

Table i : Input data and assumptions.

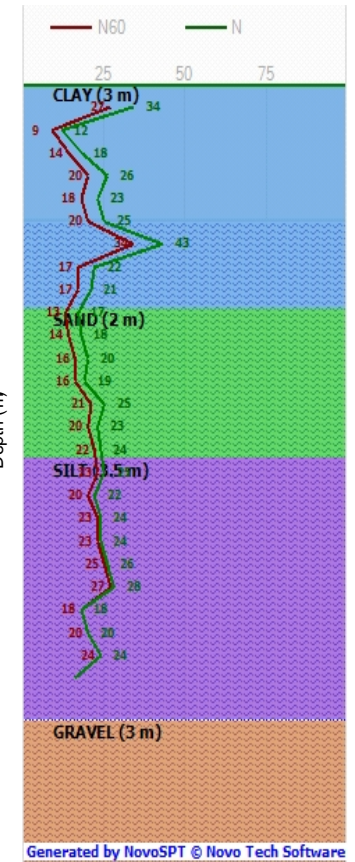
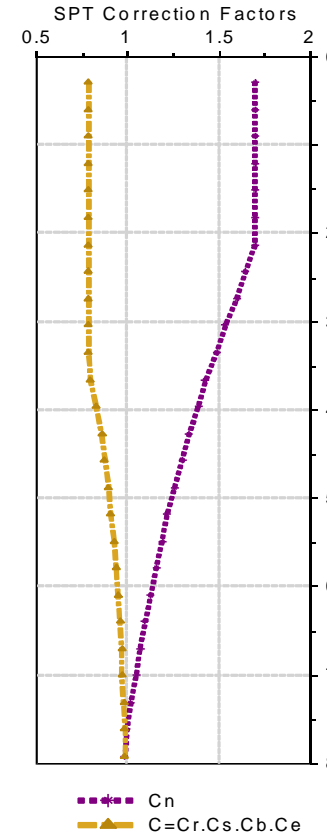
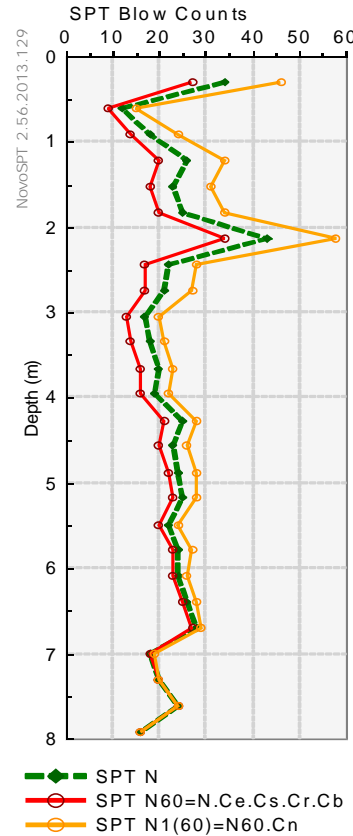
Input Parameter	Value
Footing B (m):	0.6
Footing L (m):	0.9
Footing Df (m):	0.6
Footing P (kPa):	100
Safety Factor FoS	3
Apply Groundwater Cor	No
Groundwater Level (m)	1.8
Pile Length	2.13
Pile Diameter (m):	0.3

Table ii : Soil layers from existing ground.

Thickness (m)	Unit Weight (kN/m ³)	Soil Type	D50 (mm)	OCR
3	16.5	Clay	3.8	18.7
2	17.5	Sand	1.03	1
3.5	17	Silt	0.033	1
3	19.5	Gravel	34	1

Table iii : In-situ SPT test results.

Depth (m)	SPT Blow Counts (N)	N60	Cn	C	N1(60)
0.3	34	27	1.7	0.79	46
0.61	12	9	1.7	0.79	15
0.91	18	14	1.7	0.79	24
1.22	26	20	1.7	0.79	34
1.52	23	18	1.7	0.79	31
1.83	25	20	1.7	0.79	34
2.13	43	34	1.7	0.79	58
2.44	22	17	1.65	0.79	28
2.74	21	17	1.6	0.79	27
3.05	17	13	1.54	0.79	20
3.35	18	14	1.49	0.79	21
3.66	20	16	1.43	0.8	23
3.96	19	16	1.39	0.83	22
4.27	25	21	1.34	0.86	28
4.57	23	20	1.3	0.88	26
4.88	24	22	1.26	0.9	28
5.18	25	23	1.22	0.91	28
5.49	22	20	1.19	0.93	24
5.79	24	23	1.16	0.94	27
6.1	24	23	1.13	0.95	26
6.4	26	25	1.1	0.96	28
6.71	28	27	1.07	0.97	29
7.01	18	18	1.05	0.97	19
7.32	20	20	1.02	0.98	20
7.62	24	24	1	0.99	24
7.92	16	16	0.99	0.99	16



Young's Modulus (Es) MPa		Clay	Silt	Sand	Grvl	Comments	Ref#	Var.
Ghahramani and Behpoor, 1989	4.2	*				Saturated clays, N60<25	7	N60
Papadopoulos, 1992	34.6	~	~	~	~	Sands	25	N60
Skempton, 1986	47.1	~	~	~	~			N60
Stroud, 1988	~ 16.9 to 67.7	~	~	~	~	Weak rocks	47	N60

List of 31 correlations for ::Friction Angle::

Friction Angle deg		Clay	Silt	Sand	Grvl	Comments	Ref#	Var.
Ayuthaya	43	~	~	~	~		24	N60
Ayuthaya	45	~	~	~	~		24	N1(60)
Chonburi	42.2	~	~	~	~		24	N60
Chonburi	45	~	~	~	~		24	N1(60)
Hatanaka and Uchida, 1996	45	~	~	~	~		2	N1(60)
Hatanaka and Uchida, 1996	45	~	~	~	~		30,51	N1(60)
Hatanaka and Uchida, 1996	45	~	~	~	~		25	N1(60)
JRA, 1990	37.5	~	~	~	~	for N60>5 , Fi<=45	4	N60
Kampengsen	43.5	~	~	~	~		24	N60
Kampengsen	45	~	~	~	~		24	N1(60)
Meyerhof, 1959	40.5	~	~	~	~	Dr from Yoshida, 1988		N60
Ohsaki et al., 1959 and Kishida, 1967	41	~	~	~	~		4	N60
Peck et al., 1953	30.2	~	~	~	~		4	N60
Peck, Hanson and Thornburn, 1974	37.1	~	~	~	~	is not recommended for shallow depths (less than 1 to 2 metres)	2,51	N1(60)
Schmertmann, 1975	45	~	~	~	~	also recommended by Kulhawy and Mayne, 1990	51	N60
Shioi and Fukui, 1954	33.1	~	~	~	~	in general	1	N70
Shioi and Fukui, 1954	37.9	~	~	~	~	for roads and bridges	1	N70
Shioi and Fukui, 1954	37.4	~	~	~	~	for buildings	1	N70
Wolff, 1989	42.6	~	~	~	~	an approximation based on Peck et al., 1974	30	N1(60)
Wolff, 1989	36.6	~	~	~	~	an approximation based on Peck et al., 1974	63	N60

List of 10 correlations for ::Relative Density (Dr) of Sand::

Relative Density (Dr) of Sand %		Clay	Silt	Sand	Grvl	Comments	Ref#	Var.
---------------------------------	--	------	------	------	------	----------	------	------

List of 25 correlations for ::Undrained Shear Strength (Su) of Clay/Silt::

Undrained Shear Strength (Su) of Clay/Silt kPa		Clay	Silt	Sand	Grvl	Comments	Ref#	Var.
Ajayi and Baloqun, 1988	121.3	*					39	N60
Bowles, 1988	84.7	*					54	N60
Decourt, 1989	355.6	*				from triaxial UU tests	47	N60
Ghahramani and Behpoor, 1989	187.5	*				based on over 100 data in Iran, N60<25	7	N60
Hara et al., 1974	366.3	*					30,51	N60
Hatef and Keshavarz, 2004	180.9	*				based on 482 SPT and unconfined compression tests in Shiraz City (Iran)	89	N60
Hettiarachchi and Brown, 2009	138.8	*				based on several SPT test in US	63,72	N60
Japanese Road Association	-	*				valid for N60<5	9	N60

List of 25 correlations for ::Undrained Shear Strength (Su) of Clay/Silt:: (... continued)

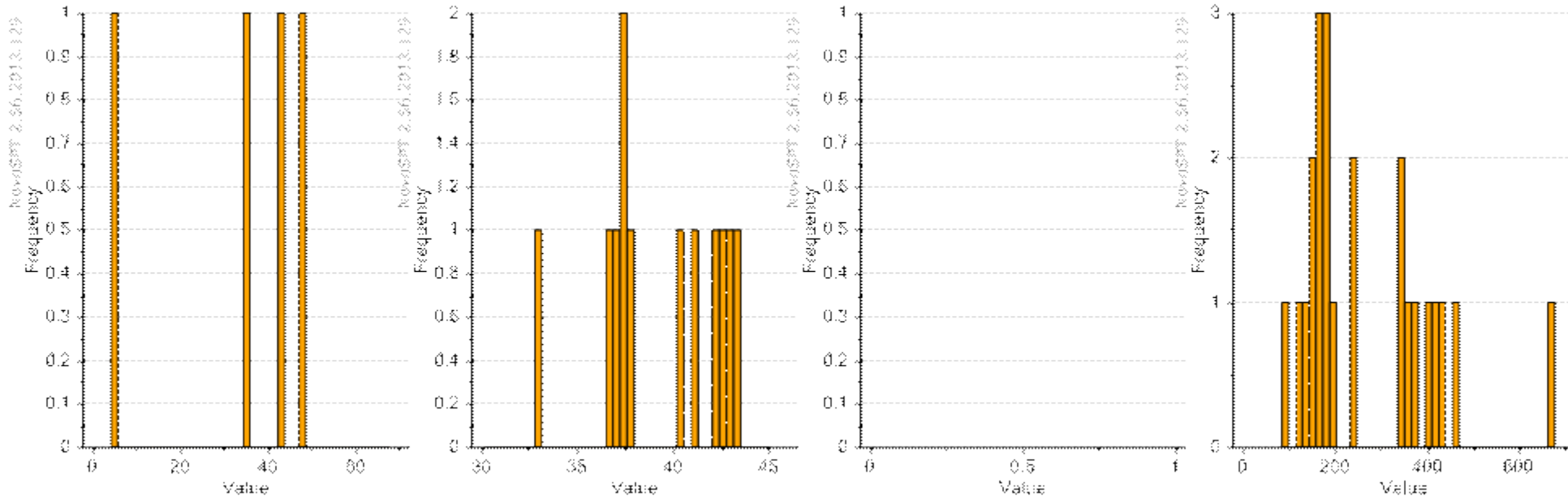
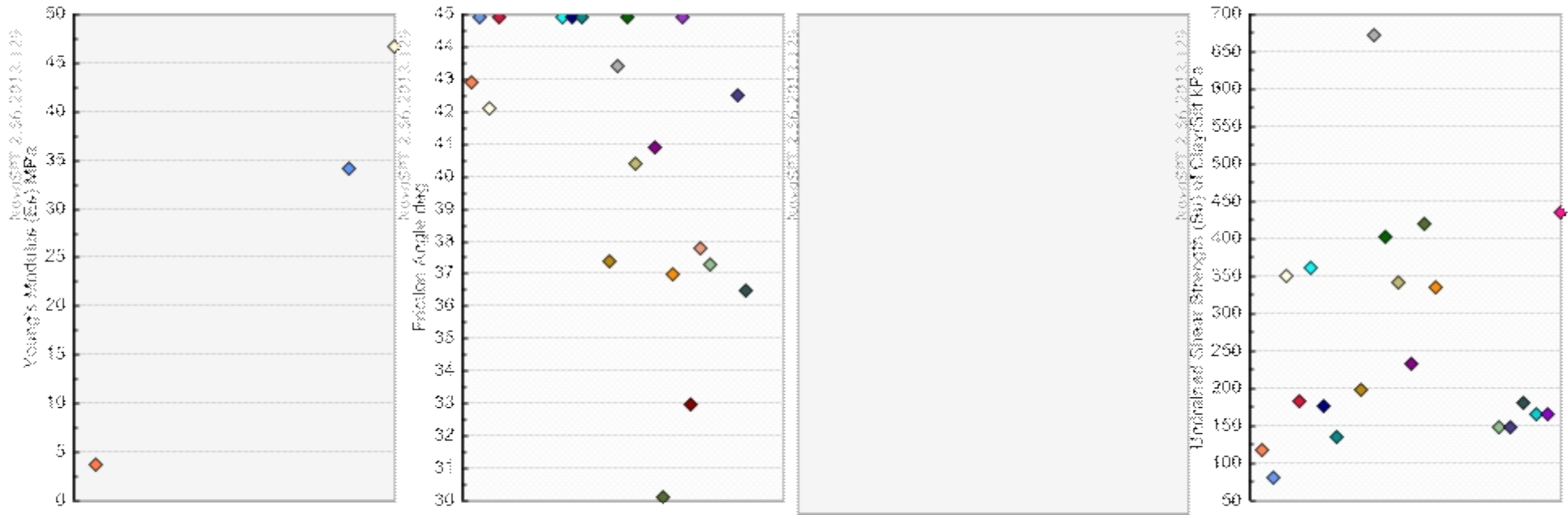
Undrained Shear Strength (Su) of Clay/Silt kPa	Clay	Silt	Sand	Grvl	Comments	Ref#	Var.
Kulhawy and Mayne, 1990	203.2	*				30	N60
Meyerhof, 1956	677.2	*				8	N60
Nixon, 1982	406.4	*				72	N60
Peck et al., 1974	345.4	*					N1(60)
Reese, Touma and O'Neill, 1976	237	*				8	N60
Sanglerat, 1972	423.3	*				72	N60
Sanglerat, 1972	338.6	*				72	N60
Sowers, 1979	~ 155.2 to 338.62	*			Lean clays (CL)		N60
Sowers, 1979	~ 338.62 to 583.84	*			Fat clays (CH)		N60
Stroud and Butler, 1975	~ 135.45 to 203.17	*			valid for N60>5	8	N60
Stroud, 1974	152.4	*			Insensitive overconsolidated clays	47	N60
Stroud, 1989	152.4	*			PI=15 %	55	N60
Stroud, 1989	186.2	*			PI=50 %	55	N60
Stroud, 1989	169.3	~	~	~	for insensitive weak rock with N60<200		N60
Tavares, 1988	169.3	*			for clays in Brazil	39	N60
Terzaghi and Peck, 1967	440.2	*				8	N60

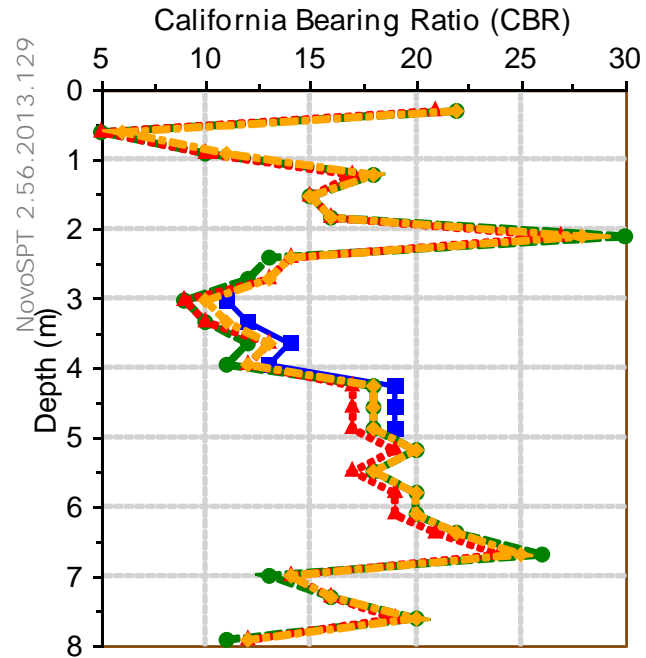
List of 74 correlations for ::Shear Wave Velocity (Vs)::

Shear Wave Velocity (Vs) m/s	Clay	Silt	Sand	Grvl	Comments	Ref#	Var.
Akin, Kramer and Topal, 2011	120	*			for all alluvial soils	71	N60
Akin, Kramer and Topal, 2011	153	*			for all alluvial clays	71	N60
Akin, Kramer and Topal, 2011	205	*			for all Pliocene soils	71	N60
Akin, Kramer and Topal, 2011	199	*			for all Pliocene clays	71	N60
Anbazhagan and Sitharam, 2008	395	~	~	~	based on 162 data points in Bangalore	43,50	N1(60)
Andrés Alfaro, 2007	471	~	~	~	function of N60	49	N60
Andrés Alfaro, 2007	381	~	~	~	function of N60 and depth	49	N60
Athanasopoulos, 1995	463	*			for all soils	57	N60
Athanasopoulos, 1995	465	*			for clays	57	N60
Baziar, Fallah, Razeghi and Khorasani, 1998	378	*			for all soils in Iran (function of depth)	58	N1(60)
Fujiwara, 1972	361	*			for all soils	57	N60
Hasancebi and Ulusay, 2007	315	*			for all soils	57	N60
Hasancebi and Ulusay, 2007	291	*			for clays	57	N60
Imai and Tonouchi, 1982	283	*			for all soils	57,69	N67
Imai and Yoshimura, 1970	243	*			for all soils	57,49	N60
Imai and Yoshimura, 1975	293	~	~	~	from 192 samples	31	N60
Imai et al., 1975	299	*			for all soils	57	N60
Imai, 1977	298	*			for Quaternary and Pleistocene alluvium	57,69	N60
Imai, 1977	224	*			for clays	57	N60
Iyisan	317	*			for all soils	13,57	N60
Jafari et al., 1997	439	*			for all soils	57,35	N60

List of 74 correlations for ::Shear Wave Velocity (Vs):: (... continued)

Shear Wave Velocity (Vs) m/s		Clay	Silt	Sand	Grvl	Comments	Ref#	Var.
Jafari, Shafiee and Razmkhah, 2002	353	*				Clayey soils in Tehran (uses N60)	35	N60
Jafari, Shafiee and Razmkhah, 2002	379	*				Fine-grained soils in Tehran (uses N60)	35	N60
Jinan, 1987	237	*				for soft Holocene deposits	57,69	N60
JRA, 1980	323	*				for clays	40	N60
Kanai et al., 1966	157	*				for all soils	57	N60
Kiku et al., 2001	208	*				for all soils	57,69	N60
Lee, 1990	430	*				for clays	57	N60
Lee, 1992	327	*				for clays	69	N60
Maheswari, Boominathan and Dodagoudar, 2008	276	*				for all soils	73	N60
Naresh Bellana, 2009	277	*				for all soils	70	N60
Naresh Bellana, 2009	307	*				for clays	70	N60
National Center for Research on Earthquake Eng. (NCEE)	265E	~	~	~	~	200 boreholes in Taiwan, function of Z and N	56	N1(60)
Ohba and Toriuma, 1970	250	~	~	~	~	for all soils	49,57,70	N60
Ohsaki and Iwazaki, 1973	322	*				for all soils	57	N60
Ohta and Goto, 1978	97	*				for Holocene clays	34	N60
Ohta and Goto, 1978	127	*				for Pleistocene clays	34	N60
Pitilakis, 1999	343	*				for alluvium material	69	N60
Seed and Idriss, 1981	357	*				for all soils	57	N60
Sisman, 1995	259	*				for all soils	57,69	N1(60)
Tamura and Yamazaki, 2002	258	~	~	~	~	function of depth		N1(60)
Tomio Inazaki, 2006	336	~	~	~	~	Public Works Research Institute of Japan	36	N60
Ulugergerli and Uyanik, 2004	~ 77 to 488	*			*	Clay, slit and gravel in western Turkey	31	N60
Unal Dikmen (Ankara University), 2008	282	*				for all soils	57	N60
Unal Dikmen (Ankara University), 2008	308	*				for clays	57	N60
Yokota et al., 1991	313	*				for all soils		N60





- Ese et al., 1995 (aggregate base course)
- Kleyn, 1975
- ▲ Livneh et al., 1992 (granular and cohesive)
- ◆ Webster et al., 1992 (various soil types)