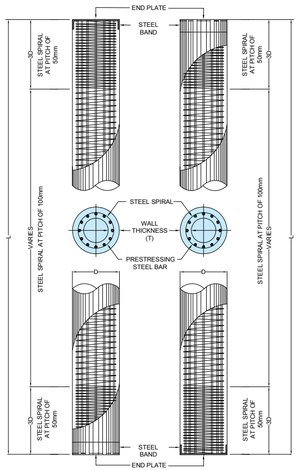
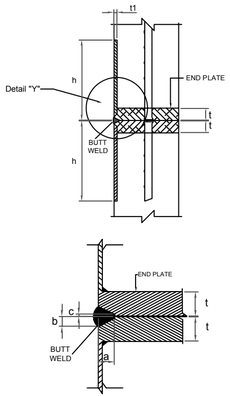
CEPCO PHC Piles

Structural Details

Reinforcement Details



Welded Joint Detail

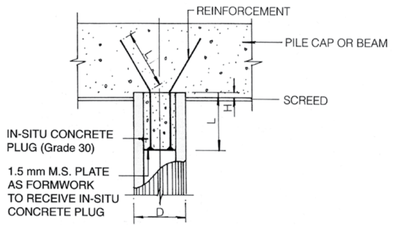


Detail 'Y'

a = EFFECTIVE THROAT THICKNESS
PLUS 2mm CORROSION ALLOWANCE

Pile Size Dia. (mm)	End Plate				Steel Band	
	Thickness (mm)	Throat (mm)		Root (mm)	Thickness (mm)	Height (mm)
	t	a	b	c	t1	h
250	12	9	5.1	1.5	1.6	50
300	12	9	5.1	1.5	1.6	50
350	12/15	9/12	5.1/6.3	1.5	1.6	50
400	15	12	6.3	1.5	1.6	50
450	15	12	6.3	1.5	1.6	75
500	16	12	6.3	1.5	1.6	75
600	16	12	6.3	1.5	2.0	75
700	19	14	8	2.0	6	150
800	19	14	8	2.0	6	150
900	19	14	8	2.0	6	150
1000	19	14	8	2.0	6	150

Typical Connection Details



Outer Dia. of Pile D (mm)	HT REINFORCEMENT DETAILS			H (mm)
	CEPCO PHC Piles			
	Diam (mm)	Numbers	L (mm)	
250	12	4	500	75
300	12	4	500	75
350	12	5	600	75
400	12	5	700	75
450	16	5	800	75
500	16	6	900	75
600	16	8	1000	75
700	20	8	1200	75
800	20	8	1400	75
900	25	10	1500	75
1000	25	10	1500	75

NOTES:-
1. The above recommendation is applicable for standard spun piles not subjected to tensile load.
2. In-situ con crete plug for marine piles has to be designed based on required loading.

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CIDB MALAYSIA

MS 1314 : PART 4 : 2004

FIRM CERTIFIED TO ISO 9001:2015 Cert. No. AR0126, AR0989 AR6089, QMS 0178 & QMS 0193

JULY 2020

CEPCO

CONCRETE ENGINEERING PRODUCTS BERHAD

Registration No. 198201008420 (88143-P)

PRESTRESSED SPUN
Concrete Piles

Structural Properties (Grade 80)

CLASS A (Effective Prestress ≥ 4.0 N/mm²)

Outer Diameter D (mm)	Wall Thickness (mm)	Length L (m)	PC Bar		Area of Concrete (cm²)	Moment of Inertia Concrete (cm⁴)	Calculated Bending Moment		*Allowable Axial Load (t)	Nominal Weight (kg/m)	Effective Prestress (N/mm²)
			Diam (mm)	Num (pcs)			Cracking (kN-m)	Ultimate (kN-m)			
300	60	6-12	7.1	6	452	35,564	21.3	34.8	87	118	4.9
350	60	6-12	7.1	6	547	61,322	28.7	40.6	106	142	4.2
400	65	6-12	7.1	8	684	102,062	43.1	61.8	132	178	4.4
450	70	6-12	7.1	10	836	159,953	60.6	86.9	161	217	4.5
500	80	6-12	7.1	12	1,056	247,058	82.3	115.9	204	274	4.3
600	90	6-12	9.0	12	1,442	497,251	149.0	222.5	276	375	5.0

CLASS B (Effective Prestress ≥ 5.0 N/mm²)

Outer Diameter D (mm)	Wall Thickness (mm)	Length L (m)	PC Bar		Area of Concrete (cm²)	Moment of Inertia Concrete (cm⁴)	Calculated Bending Moment		*Allowable Axial Load (t)	Nominal Weight (kg/m)	Effective Prestress (N/mm²)
			Diam (mm)	Num (pcs)			Cracking (kN-m)	Ultimate (kN-m)			
250	55	6-12	7.1	6	337	17,921	15.0	29.0	63	88	6.4
300	60	6-12	7.1	7	452	35,724	23.1	40.6	86	118	5.7
350	70	6-15	7.1	9	616	66,068	35.6	60.8	117	160	5.4
400	80	6-15	9.0	8	804	113,006	55.7	98.9	152	209	5.8
450	80	6-15	9.0	8	930	171,421	69.6	111.2	178	242	5.1
500	90	6-15	9.0	10	1,159	262,769	96.2	154.5	221	301	5.1
600	100	6-36	9.0	14	1,571	526,009	163.2	259.6	299	408	5.3
700	110	6-36	9.0	20	2,039	948,845	265.1	432.6	386	530	5.8
800	120	6-50	9.0	24	2,564	1,577,018	376.3	593.3	487	666	5.5
900	130	6-50	10.7	20	3,145	2,470,925	511.9	782.1	599	818	5.3
1000	140	6-50	10.7	24	3,782	3,700,120	689.1	1042.8	720	983	5.3
1200	150	6-50	10.7	36	4,948	7,205,324	1200.4	1877.1	934	1,286	6.0

CLASS C (Effective Prestress ≥ 7.0 N/mm²)

Outer Diameter D (mm)	Wall Thickness (mm)	Length L (m)	PC Bar		Area of Concrete (cm²)	Moment of Inertia Concrete (cm⁴)	Calculated Bending Moment		*Allowable Axial Load (t)	Nominal Weight (kg/m)	Effective Prestress (N/mm²)
			Diam (mm)	Num (pcs)			Cracking (kN-m)	Ultimate (kN-m)			
250	55	6-15	7.1	7	337	18,158	16.3	33.8	63	88	7.2
300	60	6-15	7.1	10	452	36,384	28.2	57.9	84	118	7.6
350	70	6-15	9.0	8	616	66,893	43.5	86.5	114	160	7.3
400	80	6-15	9.0	12	804	114,820	70.5	148.3	147	209	8.3
450	80	6-15	9.0	12	930	174,677	87.1	166.9	173	242	7.2
500	90	6-15	9.0	15	1,159	266,491	120.9	231.7	215	301	7.3
600	100	6-36	9.0	20	1,571	535,183	198.7	370.8	292	408	7.1
700	110	6-50	9.0	28	2,039	961,178	322.0	605.6	376	530	7.7
700	110	6-50	10.7	20	2,039	961,371	323.0	608.3	376	530	7.7
800	120	6-50	10.7	24	2,564	1,602,357	455.7	834.3	475	666	7.4
900	130	6-50	10.7	28	3,145	2,507,289	517.5	1095.0	585	818	7.1
1000	140	6-50	10.7	36	3,782	3,755,394	868.0	1564.3	699	983	7.5
1000	140	6-50	12.6	34	3,782	3,831,938	967.4	2051.9	688	983	8.6
1200	150	6-50	10.7	46	4,948	7,310,074	1376.5	2398.6	917	1286	7.3
1200	150	6-50	12.6	46	4,948	7,446,939	1594.9	3331.3	898	1286	8.8

Note **** In compliance with MS 1314 : Part 4 : 2004 – Precast Concrete Piles & modified to suit BS 8004 : 1986 – Code of Practice for Foundations and also BS 8110 : 1997 – Structural use of Concrete

(subject to change without prior notice)

Structural Properties (Grade 90)

CLASS A (Effective Prestress ≥ 4.0 N/mm²)

Outer Diameter D (mm)	Wall Thickness (mm)	Length L (m)	PC Bar		Area of Concrete (cm²)	Moment of Inertia Concrete (cm⁴)	Calculated Bending Moment		*Allowable Axial Load (t)	Nominal Weight (kg/m)	Effective Prestress (N/mm²)
			Diam (mm)	Num (pcs)			Cracking (kN-m)	Ultimate (kN-m)			
300	60	6-12	7.1	6	452	35,572	21.8	34.8	98	118	4.9
350	60	6-12	7.1	6	547	61,333	29.5	40.6	120	142	4.2
400	65	6-12	7.1	8	684	102,081	44.3	61.8	149	178	4.4
450	70	6-12	7.1	10	836	159,984	62.4	86.9	182	217	4.5
500	80	6-12	7.1	12	1,056	247,701	84.9	115.9	231	274	4.3
600	90	6-12	9.0	12	1,442	497,636	153.8	222.5	313	375	5.0

CLASS B (Effective Prestress ≥ 5.0 N/mm²)

Outer Diameter D (mm)	Wall Thickness (mm)	Length L (m)	PC Bar		Area of Concrete (cm²)	Moment of Inertia Concrete (cm⁴)	Calculated Bending Moment		*Allowable Axial Load (t)	Nominal Weight (kg/m)	Effective Prestress (N/mm²)
			Diam (mm)	Num (pcs)			Cracking (kN-m)	Ultimate (kN-m)			
250	55	6-12	7.1	6	337	17,925	15.3	29.0	72	88	6.4
300	60	6-12	7.1	7	452	35,733	23.7	40.6	97	118	5.7
350	70	6-15	7.1	9	616	66,195	36.6	60.8	133	160	5.4
400	80	6-15	9.0	8	804	113,242	57.1	98.9	173	209	5.8
450	80	6-15	9.0	8	930	171,458	71.5	111.2	201	242	5.1
500	90	6-15	9.0	10	1,159	262,827	98.8	154.5	251	301	5.1
600	100	6-36	9.0	14	1,571	527,019	167.7	259.6	339	408	5.3
700	110	6-36	9.0	20	2,039	952,225	271.2	432.6	438	530	5.7
800	120	6-50	9.0	24	2,564	1,580,220	386.5	593.3	552	666	5.5
900	130	6-50	10.7	20	3,145	2,475,735	526.1	782.1	679	818	5.3
1000	140	6-50	10.7	24	3,782	3,707,321	708.2	1042.8	817	983	5.3
1200	150	6-50	10.7	36	4,948	7,221,425	1231.9	1877.1	1060	1,286	6.0

CLASS C (Effective Prestress ≥ 7.0 N/mm²)

Outer Diameter D (mm)	Wall Thickness (mm)	Length L (m)	PC Bar		Area of Concrete (cm²)	Moment of Inertia Concrete (cm⁴)	Calculated Bending Moment		*Allowable Axial Load (t)	Nominal Weight (kg/m)	Effective Prestress (N/mm²)
			Diam (mm)	Num (pcs)			Cracking (kN-m)	Ultimate (kN-m)			
250	55	6-15	7.1	7	337	18,032	16.7	33.8	71	88	7.3
300	60	6-15	7.1	10	452	36,306	29.0	57.9	95	118	7.7
350	70	6-15	9.0	8	616	67,074	44.5	86.5	130	160	7.3
400	80	6-15	9.0	12	804	115,143	71.7	148.3	168	209	8.2
450	80	6-15	9.0	12	930	174,320	89.6	166.9	196	242	7.3
500	90	6-15	9.0	15	1,159	267,219	123.8	231.7	244	301	7.3
600	100	6-36	9.0	20	1,571	534,095	204.4	370.8	331	408	7.2
700	110	6-50	9.0	28	2,039	963,990	329.4	605.6	428	530	7.7
700	110	6-50	10.7	20	2,039	961,708	329.4	608.3	428	530	7.7
800	120	6-50	10.7	24	2,564	1,602,610	465.4	834.3	540	666	7.3
900	130	6-50	10.7	28	3,145	2,507,200	634.0	1095.0	664	818	7.1
1000	140	6-50	10.7	36	3,782	3,766,195	884.4	1564.3	796	983	7.5
1200	150	6-50	10.7	46	4,948	7,310,564	1406.1	2398.6	1043	1286	7.3
1200	150	6-50	12.6	46	4,948	7,447,619	1625.0	3331.3	1024	1286	8.8

Note **** In compliance with MS 1314 : Part 4 : 2004 – Precast Concrete Piles & modified to suit BS 8004 : 1986 – Code of Practice for Foundations and also BS 8110 : 1997 – Structural use of Concrete

(subject to change without prior notice)

Structural Properties (Grade 100)

CLASS A (Effective Prestress ≥ 4.0 N/mm²)

Outer Diameter D (mm)	Wall Thickness (mm)	Length L (m)	PC Bar		Area of Concrete (cm²)	Moment of Inertia Concrete (cm⁴)	Calculated Bending Moment		*Allowable Axial Load (t)	Nominal Weight (kg/m)	Effective Prestress (N/mm²)
			Diam (mm)	Num (pcs)			Cracking (kN-m)	Ultimate (kN-m)			
300	60	6-12	7.1	6	452	35,572	22.4	34.8	110	118	4.9
350	60	6-12	7.1	6	547	61,333	30.3	40.6	134	142	4.2
400	65	6-12	7.1	8	684	102,081	45.5	61.8	167	178	4.4
450	70	6-12	7.1	10	836	159,984	64.0	86.9	203	217	4.5
500	80	6-12	7.1	12	1,056	247,981	87.3	115.9	257	274	4.3
600	90	6-12	9.0	12	1,442	498,151	157.7	222.5	349	375	5.0

CLASS B (Effective Prestress ≥ 5.0 N/mm²)

Outer Diameter D (mm)	Wall Thickness (mm)	Length L (m)	PC Bar		Area of Concrete (cm²)	Moment of Inertia Concrete (cm⁴)	Calculated Bending Moment		*Allowable Axial Load (t)	Nominal Weight (kg/m)	Effective Prestress (N/mm²)
			Diam (mm)	Num (pcs)			Cracking (kN-m)	Ultimate (kN-m)			
250	55	6-12	7.1	6	337	17,897	15.7	29.0	80	88	6.5
300	60	6-12	7.1	7	452	35,797	24.3	40.6	109	118	5.7
350	70	6-15	7.1	9	616	66,282	37.5	60.8	148	160	5.4
400	80	6-15	9.0	8	804	113,403	58.5	98.9	193	209	5.8
450	80	6-15	9.0	8	930	171,953	73.5	111.2	225	242	5.1
500	90	6-15	9.0	10	1,159	263,585	101.5	154.5	280	301	5.1
600	100	6-36	9.0	14	1,571	528,450	172.2	259.6	379	408	5.3
700	110	6-36	9.0	20	2,039	952,225	277.6	432.6	490	530	5.7
800	120	6-50	9.0	24	2,564	1,580,220	395.6	593.3	617	666	5.5
900	130	6-50	10.7	20	3,145	2,475,735	538.8	782.1	759	818	5.3
1000	140	6-50	10.7	24	3,782	3,712,239	726.3	1042.8	913	983	5.3
1200	150	6-50	10.7	36	4,948	7,232,423	1261.6	1877.1	1186	1,286	6.0

CLASS C (Effective Prestress ≥ 7.0 N/mm²)

Outer Diameter D (mm)	Wall Thickness (mm)	Length L (m)	PC Bar		Area of Concrete (cm²)	Moment of Inertia Concrete (cm⁴)	Calculated Bending Moment		*Allowable Axial Load (t)	Nominal Weight (kg/m)	Effective Prestress (N/mm²)
			Diam (mm)	Num (pcs)			Cracking (kN-m)	Ultimate (kN-m)			
250	55	6-15	7.1	7	337	18,032	17.1	33.8	80	88	7.3
300	60	6-15	7.1	10	452	36,306	29.6	57.9	106	118	7.7
350	70	6-15	9.0	8	616	67,074	45.4	86.5	145	160	7.3
400	80	6-15	9.0	12	804	115,128	73.0	148.3	188	209	8.2
450	80	6-15	9.0	12	930	174,320	91.4	166.9	220	242	7.3
500	90	6-15	9.0	15	1,159	267,219	126.3	231.7	274	301	7.3
600	100	6-36	9.0	20	1,571	534,095	208.5	370.8	371	408	7.2
700	110	6-50	9.0	28	2,039	963,990	335.8	605.6	480	530	7.7
700	110	6-50	10.7	20	2,039	961,708	335.7	608.3	480	530	7.7
800	120	6-50	10.7	24	2,564	1,602,326	474.8	834.3	605	666	7.4
900	130	6-50	10.7	28	3,145	2,507,200	646.9	1095.0	744	818	7.1
1000	140	6-50	10.7	36	3,782	3,766,195	902.0	1564.3	892	983	7.5
1200	150	6-50	10.7	46	4,948	7,308,614	1434.6	2398.6	1169	1286	7.3
1200	150	6-50	12.6	46	4,948	7,444,910	1654.3	3331.3	1150	1286	8.8

Note **** In compliance with MS 1314 : Part 4 : 2004 – Precast Concrete Piles & modified to suit BS 8004 : 1986 – Code of Practice for Foundations and also BS 8110 : 1997 – Structural use of Concrete

(subject to change without prior notice)