Job No: 3388

REPORT ON
GEOTECHNICAL INVESTIGATION WORK FOR
2 x 660MW COAL BASED STPP AT ENNORE SEZ
AT ASH DYKE OF NCTPS, CHENNAI,
TAMILNADU

VOLUME 2
(***Borelogs, Field & Laboratory Test Results, Graphs, Charts etc.***)

Client:

M/s, Bharat Heavy Electricals Limited
Power Sector - Southern Region
690, Annasalai, Nandanam,
Chennai - 600035

Foundation Consultants:

C. E. Testing Company Pvt. Limited
An ISO 9001, 14001& OHSAS 18001 Certified Company
NABL Accredited Laboratory
124A, N.S.C. Bose Road : Kolkata - 700 092
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February – 2015

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PART I: ALL FIELD TESTS RESULTS

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 22/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.1

Co-ordinates E=2800.000 N=4678.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 26/12/14
Completion Date : 27/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.407 m.
Water Struck At :
Standing Water Level : 0.70 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m							
Very soft, greyish brown, silty clay with kankars.					0	DS-1	0.50
1.45m		0	0	0		SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
					1		
		0	0	1		SPT-2	3.00-3.45
Very loose, deep grey, silty sand / sandy silt.						*UDS-2	4.00-4.45
					1		
		0	1	0		SPT-3	5.00-5.45
						*UDS-3	6.00-6.45
6.45m					3		
		0	1	2		SPT-4	7.00-7.45
						UDS-4	8.00-8.45
Very loose to loose, brownish grey, silty sand / sandy silt with steel grey patches.					10		
		3	5	5		SPT-5	9.00-9.45
						*UDS-5	10.00-10.45
11.00m						DS-2	11.00
					23		
		8	11	12		SPT-6	11.50-11.95
Very stiff, light greenish grey, silty clay / clayey silt.						DS-3	12.50
						*UDS-6	13.00-13.45
						DS-4	14.00
14.50m					31		
		9	14	17		SPT-7	14.50-14.95
						DS-5	15.50
						*UDS-7	16.00-16.45
						DS-6	17.00
Medium dense to dense, light yellowish grey, silty sand / sandy silt.					15		
		5	6	9		SPT-8	17.50-17.95
						DS-7	18.50
						UDS-8	19.00-19.45
						DS-8	20.00
Dense, light brownish yellow, silty sand / sandy silt. Obs. steel grey patches. 20.50m					40		
		13	18	22		SPT-9	20.50-20.95
21.50m						DS-9	21.50

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Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

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BORE LOG DATA SHEET

BORE HOLE NO.1

Co-ordinates E=2800.000 N=4678.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 26/12/14
Completion Date : 27/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.407 m.
Water Struck At :
Standing Water Level : 0.70 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
Dense, light brownish yellow, silty sand / sandy silt. Obs. steel grey patches.	21.50m / 22.00m	17	20	25	45	SPT-10	22.00-22.45
						DS-10	23.00
Very dense, yellowish brown, silty sand.		18	22	30	52	SPT-11	23.50-23.95
						DS-11	24.50
		20	27	31	58	SPT-12	25.00-25.45
	26.00m					DS-12	26.00
Hard, brownish grey, silty clay with sand mixture. Obs. steel grey patches, yellowish spots.		18	22	33	55	SPT-13	26.50-26.95
						DS-13	27.50
		18	21	30	51	SPT-14	28.00-28.45
						DS-14	29.00
		17	21	29	50	SPT-15	29.50-29.95
						DS-15	30.50
	31.00m	31	33	35	68	SPT-16	31.00-31.45
						DS-16	32.00
Very dense, light yellow, silty sand.		37	40	41	81	SPT-17	32.50-32.95
						DS-17	33.50
	34.00m	30	39	45	84	SPT-18	34.00-34.45
						DS-18	35.00
Very dense, light brownish yellow, silty sand.		35	45	50	95	SPT-19	35.50-35.95
						DS-19	36.50
	37.00m	28	30	31	61	SPT-20	37.00-37.45
						DS-20	38.00
Hard, brownish yellow, silty clay / clayey silt with traces of sand.		27	29	31	60	SPT-21	38.50-38.95
						DS-21	39.50
	40.45m	26	31	32	63	SPT-22	40.00-40.45

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 12/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.2

Co-ordinates E=3374.000 N=4500.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 24/12/14
Completion Date : 25/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.39 m.
Water Struck At :
Standing Water Level : 0.8 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m							
Very soft, brownish grey, silty clay with kankars.					0	DS-1	0.50
1.45m		0	0	0		SPT-1	1.00-1.45
						UDS-1	2.00-2.45
Very loose, deep grey, clayey silty sand.		0	0	1	1	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
5.45m		0	1	1	2	SPT-3	5.00-5.45
						*UDS-3	6.00-6.45
Very loose, brownish grey, silty sand / sandy silt with steel grey patches		0	1	2	3	SPT-4	7.00-7.45
						*UDS-4	8.00-8.45
9.00m		4	5	6	11	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
Medium dense, light greenish grey, silty sand with traces of clay binder.						DS-2	11.00
11.45m		5	9	14	23	SPT-6	11.45-11.90
						DS-3	12.50
						*UDS-6	13.00-13.45
						DS-4	14.00
		5	7	11	18	SPT-7	14.50-14.95
Medium, light greenish grey, silty sand / sandy silt.						DS-5	15.50
						UDS-7	16.00-16.45
						DS-6	17.00
17.50m		11	14	17	31	SPT-8	17.50-17.95
						DS-7	18.50
Dense to very dense, light yellowish grey, silty sand / sandy silt with steel grey patches.						UDS-8	19.00-19.45
						DS-8	20.00
21.00m		15	16	20	36	SPT-9	20.50-20.95

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Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 12/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.2

Co-ordinates E=3374.000 N=4500.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 24/12/14
Completion Date : 25/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.39 m.
Water Struck At :
Standing Water Level : 0.8 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)			SAMPLES Ref. No	SAMPLES Depth (m)
21.00m						
Dense to very dense, light yellowish grey, silty sand / sandy silt with steel grey patches.		19	25	30 (55)	DS-9	21.50
					SPT-10	22.00-22.45
					DS-10	23.00
23.50m		31	37	42 (79)	SPT-11	23.50-23.95
Very dense, brownish yellow, silty sand.					DS-11	24.50
		35	38	40 (78)	SPT-12	25.00-25.45
					DS-12	26.00
26.50m		27	31	45 (76)	SPT-13	26.50-26.95
Very dense, light yellowish grey, silty sand / sandy silt. Obs. reddish spot.					DS-13	27.50
		25	31	38 (69)	SPT-14	28.00-28.45
					DS-14	29.00
29.50m		18	22	27 (49)	SPT-15	29.50-29.95
Dense, light yellowish grey, silty sand with traces of clay binder.					DS-15	30.50
31.00m		15	20	24 (44)	SPT-16	31.00-31.45
Hard, steel grey, silty clay / clayey silt with fine sand mixture.					DS-16	32.00
		17	19	32 (51)	SPT-17	32.50-32.95
					DS-17	33.50
34.00m		25	39	33 (72)	SPT-18	34.00-34.45
Very dense, yellowish grey, silty sand / sandy silt.					DS-18	35.00
		22	23	55 (78)	SPT-19	35.50-35.95
					DS-19	36.50
37.00m		25	32	50 (85)	SPT-20	37.00-37.45
Hard, deep brown, silty clay / clayey silt with coarse sand mixture.					DS-20	38.00
38.50m		27	31	55 (86)	SPT-21	38.50-38.95
Hard, deep brown, silty clay.					DS-21	39.50
		17	22	47 (69)	SPT-22	40.00-40.45
40.45m						

N.B. – '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

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BORE LOG DATA SHEET

BORE HOLE NO.3

Co-ordinates E=3737.000 N=4156.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 21/12/14
Completion Date : 23/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.454 m.
Water Struck At :
Standing Water Level : 0.85 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m Very soft, brownish grey, silty clay with moorum.						DS-1	0.50
1.00m		0	0	0	0	SPT-1	1.00-1.45
Very loose, dark grey, clayey silty sand.						UDS-1	2.00-2.45
		0	0	0	0	SPT-2	3.00-3.45
4.00m						*UDS-2	4.00-4.45
Very loose, brownish grey, clayey sandy silt with steel grey patches.		0	0	1	1	SPT-3	5.00-5.45
						*UDS-3	6.00-6.45
7.45m		0	1	2	3	SPT-4	7.00-7.45
						*UDS-4	8.00-8.45
		2	5	7	12	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
Medium dense, light greenish grey, silty sand.						DS-2	11.00
		4	10	14	24	SPT-6	11.45-11.90
						DS-3	12.50
						*UDS-6	13.00-13.45
14.00m						DS-4	14.00
Very stiff, light greenish grey, silty clay with high % of fine sand mixture.		8	10	17	27	SPT-7	14.50-14.95
						DS-5	15.50
16.00m						UDS-7	16.00-16.45
Hard, greenish grey, silty clay / clayey silt with sand mixture.						DS-6	17.00
		14	15	22	37	SPT-8	17.50-17.95
18.50m						DS-7	18.50
						UDS-8	19.00-19.45
Dense to very dense, light yellowish grey, silty sand with steel grey patches.						DS-8	20.00
		10	17	20	37	SPT-9	20.50-20.95
21.00m							

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Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

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BORE LOG DATA SHEET

BORE HOLE NO.3

Co-ordinates E=3737.000 N=4156.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 21/12/14
Completion Date : 23/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.454 m.
Water Struck At :
Standing Water Level : 0.85 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)			SAMPLES Ref. No	SAMPLES Depth (m)
21.00m					DS-9	21.50
Dense to very dense, light yellowish grey, silty sand with steel grey patches.		33	46	50 (96)	SPT-10	22.00-22.45
					DS-10	23.00
23.45m		31	37	48 (85)	SPT-11	23.45-23.90
					DS-11	24.50
Very dense, light brownish yellow, silty sand.		25	40	43 (83)	SPT-12	25.00-25.45
					DS-12	26.00
		22	40	51 (91)	SPT-13	26.50-26.95
					DS-13	27.50
28.00m		23	45	45 (90)	SPT-14	28.00-28.45
					DS-14	29.00
Very dense, light greyish yellow, silty coarse sand.		23	54	43 (97)	SPT-15	29.50-29.95
					DS-15	30.50
		25	43	48 (91)	SPT-16	31.00-31.45
					DS-16	32.00
32.50m		32	38	47 (85)	SPT-17	32.50-32.95
Very dense, brownish yellow, silty fine sand.					DS-17	33.50
34.00m		15	24	28 (52)	SPT-18	34.00-34.45
					DS-18	35.00
Hard, deep brownish grey, silty clay. Obs. yellow patches.		13	18	25 (43)	SPT-19	35.50-35.95
					DS-19	36.50
37.00m		32	38	50 (88)	SPT-20	37.00-37.45
					DS-20	38.00
Very dense, greyish yellow, silty sand / sandy silt with grey patches. Obs. greyish brown silty clay (SPT-22).		28	23	55 (78)	SPT-21	38.50-38.95
					DS-21	39.50
40.55m		12	32	42 (74)	SPT-22	40.10-40.55

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 05/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.4

Co-ordinates E=(-)3627.000 N=3567.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 19/12/14
Completion Date : 20/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.525 m.
Water Struck At :
Standing Water Level : 1.0 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)					SAMPLES Ref. No	SAMPLES Depth (m)
0.00m								
Filled up soil consists of reddish brown, moorum.							DS-1	0.50
0.70m						0		
		0	0	0			SPT-1	1.00-1.45
Very soft, brownish grey, silty clay with traces of kankars.							*UDS-1	2.00-2.45
3.00m						1		
		0	0	1			SPT-2	3.00-3.45
							*UDS-2	4.00-4.45
						0		
		0	0	0			SPT-3	5.00-5.45
Very loose, deep grey, clayey silty sand.							*UDS-3	6.00-6.45
						2		
		0	0	1	1		SPT-4	7.00-7.45
							*UDS-4	8.00-8.45
8.50m						4		
		2	2	2			SPT-5	9.00-9.45
							UDS-5	10.00-10.45
							DS-2	11.00
Loose, light greenish grey, sandy silt / silty sand.						10		
		3	3	7			SPT-6	11.45-11.90
							DS-3	12.50
							*UDS-6	13.00-13.45
14.00m							DS-4	14.00
						27		
		9	11	16			SPT-7	14.45-14.90
Medium dense, light greenish grey, sandy silt / silty sand.							DS-5	15.50
							UDS-7	16.00-16.45
							DS-6	17.00
17.50m						31		
		11	15	16			SPT-8	17.45-17.90
Hard, greenish grey, silty clay / clayey silt with sand mixture.							DS-7	18.50
19.00m							UDS-8	19.00-19.45
		13					DS-8	20.00
Dense to very dense, brownish grey, silty coarse sand.						39		
			15	24			SPT-9	20.50-20.95
21.00m								

BH-4/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

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BORE LOG DATA SHEET

BORE HOLE NO.4

Co-ordinates E=(-)3627.000 N=3567.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 19/12/14
Completion Date : 20/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.525 m.
Water Struck At :
Standing Water Level : 1.0 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)			SAMPLES	
					Ref. No	Depth (m)
21.00m					DS-9	21.50
		16	18	25 (43)	SPT-10	22.00-22.45
					DS-10	23.00
Dense to very dense, brownish grey, silty coarse sand.		16	26	38 (64)	SPT-11	23.50-23.95
					DS-11	24.50
		17	27	40 (67)	SPT-12	25.00-25.45
					DS-12	26.00
26.50m		14	21	27 (48)	SPT-13	26.50-26.95
					DS-13	27.50
Hard, brownish grey, silty clay.		14	20	29 (49)	SPT-14	28.00-28.45
					DS-14	29.00
29.50m		13	20	25 (45)	SPT-15	29.50-29.95
					DS-15	30.50
Dense to very dense, brownish yellow, silty coarse sand. Obs. steel grey patches.		15	24	27 (51)	SPT-16	31.00-31.45
					DS-16	32.00
32.50m		13	33	45 (78)	SPT-17	32.50-32.95
					DS-17	33.50
Very dense, brownish grey, silty coarse sand.		16	30	41 (71)	SPT-18	34.00-34.45
					DS-18	35.00
35.50m		11	20	30 (50)	SPT-19	35.50-35.95
					DS-19	36.50
Very dense, brownish grey, silty coarse sand with clay binder. Obs. reddish spot.		13	20	34 (54)	SPT-20	37.00-37.45
					DS-20	38.00
38.50m		20	33	45 (78)	SPT-21	38.50-38.95
					DS-21	39.50
Very dense, brownish grey, silty sand with clay lamination. Obs. silty clay in SPT-22.		26	35	40 (75)	SPT-22	40.00-40.45
40.45m						

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 05/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.5

Co-ordinates E=(-)3681.000 N=2973.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	1

Commencement Date : 16/12/14
Completion Date : 18/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.857 m.
Water Struck At :
Standing Water Level : 1.1 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)					SAMPLES Ref. No	SAMPLES Depth (m)
0.00m								
Filled up soil consists of reddish brown, moorum & stone pieces.		4	9	9		18	DS-1	0.50
1.50m							SPT-1	1.00-1.45
							WS-1	1.10
							*UDS-1	2.00-2.45
		0	0	0	0	0	SPT-2	3.00-3.45
							*UDS-2	4.00-4.45
Very loose to loose, yellowish brown to light grey, clayey silty sand.		0	0	1		1	SPT-3	5.00-5.45
							UDS-3	6.00-6.45
		2	4	5		9	SPT-4	7.00-7.45
							UDS-4	8.00-8.45
9.00m		4	6	8		14	SPT-5	9.00-9.45
							*UDS-5	10.00-10.45
Medium dense, light greenish grey, silty sand / sandy silt.							DS-2	11.00
		5	11	14		25	SPT-6	11.50-11.95
12.50m							DS-3	12.50
							*UDS-6	13.00-13.45
Dense, light greenish grey, silty sand / sandy silt.		8	14	18		32	SPT-7	14.50-14.95
							DS-4	15.50
							UDS-7	16.00-16.45
17.00m							DS-5	17.00
		14	17	19		36	SPT-8	17.50-17.95
Hard, light grey, silty clay / clayey silt with laminated fine sand mixture.							DS-6	18.50
							UDS-8	19.00-19.45
20.00m							DS-7	20.00
Dense to very dense, yellowish brown, silty sand with traces of laminated clay binders.		17	21	24		45	SPT-9	20.50-20.95
21.00m								

BH-5/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 05/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.5

Co-ordinates E=(-)3681.000 N=2973.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	1

Commencement Date : 16/12/14
Completion Date : 18/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.857 m.
Water Struck At :
Standing Water Level : 1.1 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
			DS-8	21.50
		15 20 33 — 53	SPT-10	22.00-22.45
			DS-9	23.00
Dense to very dense, yellowish brown, silty sand with traces of laminated clay binders.		25 38 45 — 83	SPT-11	23.50-23.95
			DS-10	24.50
		19 29 38 — 67	SPT-12	25.00-25.45
21.00m.				
			DS-11	26.00
		12 16 24 — 40	SPT-13	26.50-26.95
			DS-12	27.50
		11 20 25 — 45	SPT-14	28.00-28.45
Hard, brownish grey, silty clay / clayey silt with whitish grey / steel grey patches & laminated sand mixture.			DS-13	29.00
		19 23 26 — 49	SPT-15	29.50-29.95
			DS-14	30.50
		15 25 32 — 57	SPT-16	31.00-31.45
			DS-15	32.00
		26 37 47 — 84	SPT-17	32.50-32.95
26.00m.				
			DS-16	33.50
		24 39 48 — 87	SPT-18	34.00-34.45
			DS-17	35.00
		31 44 53 — 97	SPT-19	35.50-35.95
Very dense, yellowish brown, silty sand. Obs. clay binder.			DS-18	36.50
		35 52 50 — >100	SPT-20	37.00-37.40
		10.0 cm Penth.		
			DS-19	38.00
		37 47 50 — >100	SPT-21	38.50-38.90
		10.0 cm Penth.		
			DS-20	39.50
		43 56 50 — >100	SPT-22	40.10-40.49
40.49m.		9.0 cm Pentn.		

N.B. – '*' means sample could not be recovered.

BH-5/Sheet-2

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 30/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.6

Co-ordinates E=(-)3181.000 N=3041.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 13/01/15
Completion Date : 14/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.731 m.
Water Struck At :
Standing Water Level : 0.80 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	Depth (m)
0.00m							
Filled up soil consists of light grey, fly ash.		0	0	0	0	DS-1	0.50
						SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
3.00m					2		
Very soft, greyish brown, silty clay.		0	1	1		SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
		1	1	2	3	SPT-3	5.00-5.45
						UDS-3	6.00-6.45
7.00m					1		
Very soft, dark grey, silty clay with fine sand mixture.		0	0	1		SPT-4	7.00-7.45
						UDS-4	8.00-8.45
		0	0	1	1	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
						DS-2	11.00
11.50m					8		
Loose, whitish grey to greenish grey, silty sand with clay binder.		3	4	4		SPT-6	11.50-11.95
12.50m						DS-3	12.50
						UDS-6	13.00-13.45
						DS-4	14.00
Medium dense, whitish grey to greenish grey, silty sand with clay binder.		6	8	12	20	SPT-7	14.50-14.95
						DS-5	15.50
						*UDS-7	16.00-16.45
						DS-6	17.00
17.50m					22		
Very stiff, light yellow, silty sandy clay.		4	8	14		SPT-8	17.50-17.95
						DS-7	18.50
						*UDS-8	19.00-19.45
						DS-8	20.00
20.50m					37		
Dense, greyish yellow, silty sand.		9	18	19		SPT-9	20.50-20.95
21.50m						DS-9	21.50

BH-6/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 30/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.6

Co-ordinates E=(-)3181.000 N=3041.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 13/01/15
Completion Date : 14/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.731 m.
Water Struck At :
Standing Water Level : 0.80 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	Depth (m)
21.50m					42		
		11	20	22		SPT-10	22.00-22.45
						DS-10	23.00
					36		
		12	17	19		SPT-11	23.50-23.95
						DS-11	24.50
					46		
Dense, greyish yellow, silty sand.		14	22	24		SPT-12	25.00-25.45
						DS-12	26.00
					40		
		14	22	18		SPT-13	26.50-26.95
						DS-13	27.50
					41		
		10	15	26		SPT-14	28.00-28.45
						DS-14	29.00
29.50m					37		
		7	14	23		SPT-15	29.50-29.95
						DS-15	30.50
Hard, light grey, silty clay.					32		
		10	13	19		SPT-16	31.00-31.45
32.00m						DS-16	32.00
					88		
		35	42	46		SPT-17	32.50-32.95
						DS-17	33.50
					89		
		32	41	48		SPT-18	34.00-34.45
						DS-18	35.00
Very dense, light greyish yellow, silty coarse sand.					93		
		34	42	51		SPT-19	35.50-35.95
						DS-19	36.50
					87		
		28	39	48		SPT-20	37.00-37.45
						DS-20	38.00
38.50m					91		
		31	45	46		SPT-21	38.50-38.95
						DS-21	39.50
Very dense, reddish to greyish yellow, silty coarse sand. Obs. gravels.					95		
40.45m		25	47	48		SPT-22	40.00-40.45

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 04/12/2014 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.7

Co-ordinates E=(-)2359.000 N=4273.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 23/11/14
Completion Date : 28/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.33 m.
Water Struck At :
Standing Water Level : 0.50 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m Filled up soil consists of light grey, fly ash.						DS-1	0.50
0.80m		0	0	0	0	SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
Very losoe, brownish grey, silty sand with clay binder.		0	0	0	0	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
5.45m		0	0	1	1	SPT-3	5.00-5.45
						UDS-3	6.00-6.45
Stiff, light grey to greyish brown, silty clay with high % of sand.		3	5	9	14	SPT-4	7.00-7.45
8.00m						UDS-4	8.00-8.45
Loose, steel grey, clayey silt with coarse sand to fine sand. Obs. kanakrs & gravels.		2	3	4	7	SPT-5	9.00-9.45
10.00m						UDS-5	10.00-10.45
						DS-2	11.00
Medium dense, pinkish grey, sandy silt with clay binders / clayey silty sand.		3	7	11	18	SPT-6	11.50-11.95
						DS-3	12.50
13.00m						UDS-6	13.00-13.45
						DS-4	14.00
		7	12	18	30	SPT-7	14.50-14.95
Dense, brownish grey, silty sand.						DS-5	15.50
						UDS-7	16.00-16.45
						DS-6	17.00
17.50m					40		
		12	18	22		SPT-8	17.50-17.95
						DS-7	18.50
Hard, brownish grey, clayey silt with high % of sand.						UDS-8	19.00-19.45
						DS-8	20.00
20.50m							

BH-7/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 04/12/2014 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.7

Co-ordinates E=(-)2359.000 N=4273.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 23/11/14
Completion Date : 28/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.33 m.
Water Struck At :
Standing Water Level : 0.50 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	Depth (m)
Hard, brownish grey, clayey silt with high % of sand. 20.50m – 21.00m		8	13	18	31	SPT-9	20.50-20.95
						DS-9	21.50
		10	13	16	29	SPT-10	22.00-22.45
						DS-10	23.00
Dense, brownish grey, silty medium sand.		10	14	19	33	SPT-11	23.50-23.95
						DS-11	24.50
		13	17	22	39	SPT-12	25.00-25.45
26.00m						DS-12	26.00
		25	57	68	>100	SPT-13	26.50-26.95
						DS-13	27.50
		25	30	37	67	SPT-14	28.00-28.45
						DS-14	29.00
		22	27	35	62	SPT-15	29.50-29.95
Hard, brownish grey, silty clay / clayey silt. Obs. deep brown spot & kankars.						DS-15	30.50
		13	21	27	48	SPT-16	31.00-31.45
						DS-16	32.00
		12	23	27	50	SPT-17	32.50-32.95
						DS-17	33.50
		13	27	39	66	SPT-18	34.00-34.45
35.00m						DS-18	35.00
		17	31	43	74	SPT-19	35.50-35.95
						DS-19	36.50
Hard, light grey, silty clay / clayey silt with laminated sand. Obs. brownish spot.		17	33	48	81	SPT-20	37.00-37.45
						DS-20	38.00
		16	38	44	82	SPT-21	38.50-38.95
39.00m						DS-21	39.50
Very dense, yellowish grey, silty coarse sand. Obs. clay binder.							
		41	65		>100	SPT-22	40.05-40.26
40.26m							
N.B. – '*' means sample could not be recovered.		6.0 cm Penth.					

BH-7/Sheet-2

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 04/12/2014 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.8

Co-ordinates E=(-)1953.000 N=8894.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	16	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	16
Vane (V)		Disturbed (DS)	15
		Water Sample (WS)	0

Commencement Date : 28/11/14
Completion Date : 30/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.00 m.
Water Struck At :
Standing Water Level : 0.48 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Filled up soil consists of light brown to light grey, fly ash.		0 0 0 (0)	DS-1	0.50
			SPT-1	1.00-1.45
2.00m			*UDS-1	2.00-2.45
Very loose, deep grey, clayey sand.		0 0 0 (0)	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
		0 0 0 (0)	SPT-3	5.00-5.45
			UDS-3	6.00-6.45
6.50m				
Very soft, light grey, silty clay with sand mixture.		0 0 0 (0)	SPT-4	7.00-7.45
			UDS-4	8.00-8.45
		0 0 0 (0)	SPT-5	9.00-9.45
9.50m				
Deep grey, clayey silty sand.			UDS-5	10.00-10.45
			DS-2	11.00
11.50m		3 7 9 (16)	SPT-6	11.50-11.95
Medium dense, pinkish grey, sandy silt / silty sand. Obs. clay binders.			DS-3	12.50
			UDS-6	13.00-13.45
			DS-4	14.00
14.50m		4 7 10 (17)	SPT-7	14.50-14.95
Medium dense, steel grey, silty fine sand with clay lamination.			DS-5	15.50
15.75m				

BH-8/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 04/12/2014 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.8

Co-ordinates E=(-)1953.000 N=8894.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	16	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	16
Vane (V)		Disturbed (DS)	15
		Water Sample (WS)	0

Commencement Date : 28/11/14
Completion Date : 30/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.00 m.
Water Struck At :
Standing Water Level : 0.48 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
15.75m				
Medium dense, steel grey, silty fine sand with clay lamination.			*UDS-7	16.00-16.45
			DS-6	17.00
17.50m		5 9 12 — 21	SPT-8	17.50-17.95
Medium dense, light brownish grey, silty medium sand. Obs. kankars.			DS-7	18.50
			*UDS-8	19.00-19.45
20.00m			DS-8	20.00
		13 25 36 — 61	SPT-9	20.50-20.95
			DS-9	21.50
Dense to very dense, brownish grey, silty coarse sand. Obs. clay binders & kankars.		12 20 24 — 44	SPT-10	22.00-22.45
			DS-10	23.00
		12 27 36 — 63	SPT-11	23.50-23.95
24.50m			DS-11	24.50
		16 34 42 — 76	SPT-12	25.00-25.45
Very dense, steel grey, silty coarse sand. Obs. kankars.			DS-12	26.00
		22 63 54 — >100 (5.0 cm Pentn.)	SPT-13	26.50-26.85
27.50m			DS-13	27.50
		26 65 52 — >100 (5.0 cm Pentn.)	SPT-14	28.00-28.35
			DS-14	29.00
Hard, light brownish grey, silty clay / clayey silt. Obs. micasists.		52 54 — >100 (3.0 cm Pentn.)	SPT-15	29.50-29.68
			DS-15	30.50
N.B. - '*' means sample could not be recovered.		31 75 54 — >100 (2.0 cm Pentn.)	SPT-16	31.00-31.32
31.32m				

BH-8/Sheet-2

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 22/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.9

Co-ordinates E=(-)1876.000 N=3315.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	1

Commencement Date : 28/12/14
Completion Date : 01/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.409 m.
Water Struck At :
Standing Water Level : 0.60 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.			N	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of brownish grey, silty clay with moourm.						DS-1	0.50
						WS-1	0.60
1.00m.		0	1	1	2	SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
		0	0	1	1	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
Very soft to soft, light brownish grey to deep grey, silty clay.		0	0	0	0	SPT-3	5.00-5.45
						UDS-3	6.00-6.45
		0	1	0	1	SPT-4	7.00-7.45
8.00m.						UDS-4	8.00-8.45
		0	1	2	3	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
Soft to medium, deep grey, silty clay with high % of sand mixture.						DS-2	11.00
		2	3	5	8	SPT-6	11.50-11.95
						DS-3	12.50
13.00m.						UDS-6	13.00-13.45
						DS-4	14.00
		7	7	10	17	SPT-7	14.50-14.95
						DS-5	15.50
Medium dense, deep grey, silty sand. Obs. traces of clay.						UDS-7	16.00-16.45
						DS-6	17.00
		6	8	11	19	SPT-8	17.50-17.95
						DS-7	18.50
						UDS-8	19.00-19.45
20.00m.						DS-8	20.00
Dense to very dense, yellowish grey, silty sand with traces of clay. 20.80m.		15	17	24	41	SPT-9	20.50-20.95

BH-9/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 22/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.9

Co-ordinates E=(-)1876.000 N=3315.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	1

Commencement Date : 28/12/14
Completion Date : 01/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.409 m.
Water Struck At :
Standing Water Level : 0.60 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
20.80m				
			DS-9	21.50
		17 19 25 (44)	SPT-10	22.00-22.45
			DS-10	23.00
		22 25 27 (52)	SPT-11	23.50-23.95
Dense to very dense, yellowish grey, silty sand with traces of clay.			DS-11	24.50
		21 27 32 (59)	SPT-12	25.00-25.45
			DS-12	26.00
		23 29 38 (67)	SPT-13	26.50-26.95
			DS-13	27.50
28.00m		15 23 32 (55)	SPT-14	28.00-28.45
			DS-14	29.00
Hard, brownish grey, silty clay with yellow patches.		17 25 37 (62)	SPT-15	29.50-29.95
			DS-15	30.50
31.00m		19 24 35 (59)	SPT-16	31.00-31.45
			DS-16	32.00
Very dense, brownish yellow, silty sand / sandy silt.		21 33 37 (70)	SPT-17	32.50-32.95
			DS-17	33.50
34.00m		24 37 42 (79)	SPT-18	34.00-34.45
			DS-18	35.00
		25 40 48 (88)	SPT-19	35.50-35.95
			DS-19	36.50
Very dense, light brownish grey, silty sand.		27 43 47 (90)	SPT-20	37.00-37.45
			DS-20	38.00
		23 47 58 (>100)	SPT-21	38.50-38.95
			DS-21	39.50
40.45m		31 44 57 (>100)	SPT-22	40.00-40.45

N.B. - '*' means sample could not be recovered.

BH-9/Sheet-2

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 22/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.10

Co-ordinates E=(-)2120.000 N=3037.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 02/01/15
Completion Date : 03/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.931 m.
Water Struck At :
Standing Water Level : 0.60 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m							
Filled up soil consists of brownish grey, silty clay with moorum.						DS-1	0.50
1.00m		0	1	0	1	SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
Very soft to soft, light brownish grey to deep grey, silty clay.		1	1	1	2	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
		0	1	1	2	SPT-3	5.00-5.45
6.45m						UDS-3	6.00-6.45
		0	1	2	3	SPT-4	7.00-7.45
Soft to medium, deep grey, silty clay with sand mixture.						UDS-4	8.00-8.45
		1	2	4	6	SPT-5	9.00-9.45
10.00m						UDS-5	10.00-10.45
						DS-2	11.00
		2	5	8	13	SPT-6	11.50-11.95
						DS-3	12.50
Stiff to very stiff, deep grey, silty clay with traces of sand mixture.						*UDS-6	13.00-13.45
						DS-4	14.00
		3	6	10	16	SPT-7	14.50-14.95
						DS-5	15.50
						*UDS-7	16.00-16.45
						DS-6	17.00
17.50m		7	10	14	24	SPT-8	17.50-17.95
Very stiff, light greenish grey, clayey silt with sand.						DS-7	18.50
20.50m						UDS-8	19.00-19.45
Dense, light yellowish grey, silty sand with traces of clay binder.						DS-8	20.00
20.50m							

BH-10/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 22/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.10

Co-ordinates E=(-)2120.000 N=3037.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 02/01/15
Completion Date : 03/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.931 m.
Water Struck At :
Standing Water Level : 0.60 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)			SAMPLES Ref. No	SAMPLES Depth (m)
20.50m						
Dense, light yellowish grey, silty sand with traces of clay binder.		15	19	24 (43)	SPT-9	20.50-20.95
					DS-9	21.50
		15	21	25 (46)	SPT-10	22.00-22.45
					DS-10	23.00
23.50m						
Very dense, light brownish grey, silty sand.		17	23	29 (52)	SPT-11	23.50-23.95
					DS-11	24.50
		19	27	33 (60)	SPT-12	25.00-25.45
					DS-12	26.00
26.50m						
Very dense, light brownish grey, silty sand with traces of clay.		19	32	37 (69)	SPT-13	26.50-26.95
					DS-13	27.50
		16	29	34 (63)	SPT-14	28.00-28.45
					DS-14	29.00
29.50m						
Hard, steel grey, silty clay. Obs. brownish patches.		14	23	29 (52)	SPT-15	29.50-29.95
					DS-15	30.50
		15	21	26 (47)	SPT-16	31.00-31.45
					DS-16	32.00
32.50m						
Very dense, steel grey, silty sand.		23	35	40 (75)	SPT-17	32.50-32.95
					DS-17	33.50
		21	33	39 (72)	SPT-18	34.00-34.45
					DS-18	35.00
		22	31	38 (69)	SPT-19	35.50-35.95
					DS-19	36.50
		25	37	48 (85)	SPT-20	37.00-37.45
					DS-20	38.00
		28	53	50 (>100) 8.0 cm Pentn.	SPT-21	38.50-38.88
					DS-21	39.50
40.45m		26	42	51 (93)	SPT-22	40.00-40.45

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.11

Co-ordinates E=(-)2596.000 N=3167.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	1

Commencement Date : 21/01/15
Completion Date : 23/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.083 m.
Water Struck At :
Standing Water Level : 0.71 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m							
Filled up soil consists with kankar & moorum.						DS-1	0.50
					5	WS-1	0.71
		2	2	3		SPT-1	1.00-1.45
1.45m							
Very soft / soft, brownish grey, silty clay. Obs. kankars.						UDS-1	2.00-2.45
					2		
		0	1	1		SPT-2	3.00-3.45
3.45m							
Soft to medium, yellowish brown, silty clay with kankars & sand mixture.						*UDS-2	4.00-4.45
					4		
		1	2	2		SPT-3	5.00-5.45
5.45m							
						*UDS-3	6.00-6.45
					5		
Loose, deep grey, clayey silty sand.		1	3	2		SPT-4	7.00-7.45
						*UDS-4	8.00-8.45
					9		
9.45m		3	5	4		SPT-5	9.00-9.45
						UDS-5	10.00-10.45
						DS-2	11.00
					16		
Medium dense, clayey silty sand.		4	8	8		SPT-6	11.50-11.95
						DS-3	12.50
						UDS-6	13.00-13.45
						DS-4	14.00
14.50m					19		
		5	9	10		SPT-7	14.50-14.95
						DS-5	15.50
						*UDS-7	16.00-16.45
						DS-6	17.00
					29		
Very stiff, light greenish grey, silty clay / clayey silt with sand mixture.		11	11	18		SPT-8	17.50-17.95
						DS-7	18.50
						*UDS-8	19.00-19.45
						DS-8	20.00
					29		
21.00m		12	15	14		SPT-9	20.50-20.95

BH-11/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai.			CETEST
Job No : 3388	Created by : Chandrani	Created on : 11/02/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.11

Co-ordinates E=(-)2596.000 N=3167.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	1

Commencement Date : 21/01/15
Completion Date : 23/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.083 m.
Water Struck At :
Standing Water Level : 0.71 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
Very stiff, light greenish grey, silty clay / clayey silt with sand mixture. 21.00m 21.50m						DS-9	21.50
		15	19	28	47	SPT-10	22.00-22.45
						DS-10	23.00
Dense, yellowish brown, silty sand / sandy silt with clay binder.		10	16	19	35	SPT-11	23.50-23.95
						DS-11	24.50
25.00m		16	28	33	61	SPT-12	25.00-25.45
Hard, brownish grey, silty clay wtih sand mixture.						DS-12	26.00
26.50m		29	41	48	89	SPT-13	26.50-26.95
						DS-13	27.50
Very dense, yellowish grey, silty fine sand.		30	42	49	91	SPT-14	28.00-28.45
						DS-14	29.00
29.50m		20	24	27	51	SPT-15	29.50-29.95
						DS-15	30.50
Very dense, brownish yellow, silty sand with clay binder.		27	29	42	71	SPT-16	31.00-31.45
						DS-16	32.00
32.50m		30	33	41	74	SPT-17	32.50-32.95
						DS-17	33.50
		28	32	30	62	SPT-18	34.00-34.45
						DS-18	35.00
Hard, brownish grey, silty clay. Obs. yellow patches.		12	14	18	32	SPT-19	35.50-35.95
						DS-19	36.50
		15	20	25	45	SPT-20	37.00-37.45
						DS-20	38.00
38.50m		19	32	35	67	SPT-21	38.50-38.95
Very dense, light yellow, silty fine sand.						DS-21	39.50
		18	25	39	64	SPT-22	40.05-40.50
40.50m							

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.12

Co-ordinates E=(-)2507.411 N=3081.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 24/01/15
Completion Date : 26/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.838 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)			SAMPLES Ref. No	SAMPLES Depth (m)
0.00m						
Medium, brownish grey, silty clay with moorum & kankars.		2	2	3	DS-1	0.50
					SPT-1	1.00-1.45
					*UDS-1	2.00-2.45
3.00m						
Very loose, light grey, clayey silty sand.		1	1	2	SPT-2	3.00-3.45
					*UDS-2	4.00-4.45
5.00m						
Medium, deep grey, silty clay.		2	2	3	SPT-3	5.00-5.45
					UDS-3	6.00-6.45
		1	3	2	SPT-4	7.00-7.45
					*UDS-4	8.00-8.45
9.00m						
Medium dense, light greenish grey / steel grey, silty sand / sandy silt.		4	5	5	SPT-5	9.00-9.45
					UDS-5	10.00-10.45
					DS-2	11.00
		4	6	7	SPT-6	11.50-11.95
					DS-3	12.50
					UDS-6	13.00-13.45
					DS-4	14.00
14.50m						
Medium dense, light greenish grey, silty fine sand.		5	7	12	SPT-7	14.50-14.95
					DS-5	15.50
					*UDS-7	16.00-16.45
					DS-6	17.00
		11	10	15	SPT-8	17.50-17.95
					DS-7	18.50
					*UDS-8	19.00-19.45
20.00m					DS-8	20.00
Dense to very dense, light grey, light yellow, silty sand.		15	21	25	SPT-9	20.50-20.95
21.00m						

N-VALUE scale: 5, 3, 5, 5, 10, 13, 19, 25, 46

BH-12/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.12

Co-ordinates E=(-)2507.411 N=3081.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 24/01/15
Completion Date : 26/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.838 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)			SAMPLES Ref. No	SAMPLES Depth (m)
21.00m					DS-9	21.50
Dense to very dense, light grey, light yellow, silty sand.		16 22 30		52	SPT-10	22.00-22.45
					DS-10	23.00
		17 28 33		61	SPT-11	23.50-23.95
					DS-11	24.50
25.00m		19 22 30		52	SPT-12	25.00-25.45
Hard, light greyish yellow, silty clay / clayey silt with sand mixture.					DS-12	26.00
		22 23 32		55	SPT-13	26.50-26.95
					DS-13	27.50
28.00m		17 20 22		42	SPT-14	28.00-28.45
Hard, deep bownish grey, silty clay with yellow patches.					DS-14	29.00
		26 28 25		53	SPT-15	29.50-29.95
					DS-15	30.50
31.00m		16 18 25		43	SPT-16	31.00-31.45
Hard, yellowish brown, silty clay / clayey silt. Obs. reddish spot & kankars.					DS-16	32.00
32.50m		17 23 31		54	SPT-17	32.50-32.95
Very dense, brownish grey, silty sand with clay binder. Obs. yellow patches.					DS-17	33.50
34.00m		25 30 37		67	SPT-18	34.00-34.45
Very dense, light yellow, silty sand.					DS-18	35.00
		26 55 50		>100	SPT-19	35.50-35.85
			5.0 cm Pentn.		DS-19	36.50
37.00m		31 44 45		89	SPT-20	37.00-37.45
Very dense, yellowish brown, silty coarse sand. Obs. deep yellow, silty fine sand as pocket.					DS-20	38.00
38.50m		36 42 47		89	SPT-21	38.50-38.95
Very dense, deep grey, silty sand with clay binder.					DS-21	39.50
		16 29 32		61	SPT-22	40.00-40.45
40.45m						

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 22/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.13

Co-ordinates E=(-)2435.000 N=2974.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 04/01/15
Completion Date : 05/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.853 m.
Water Struck At :
Standing Water Level : 0.55 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m. Filled up soil consists of brownish grey, silty clay with moorum.						DS-1	0.50
1.00m.		1	1	1	2	SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
Very soft, light brownish grey to deep grey, silty clay.		1	0	1	1	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
		0	1	1	2	SPT-3	5.00-5.45
6.45m.						UDS-3	6.00-6.45
Medium, deep grey, silty clay with sand mixture.		1	2	2	4	SPT-4	7.00-7.45
						UDS-4	8.00-8.45
9.00m.		2	5	7	12	SPT-5	9.00-9.45
Stiff, dark grey, silty clay with sand mixture.						UDS-5	10.00-10.45
						DS-2	11.00
11.50m.		9	14	21	35	SPT-6	11.50-11.95
Dense, light brownish grey to steel grey, silty sand.						DS-3	12.50
						*UDS-6	13.00-13.45
						DS-4	14.00
		7	10	13	23	SPT-7	14.50-14.95
						DS-5	15.50
						UDS-7	16.00-16.45
						DS-6	17.00
		14	18	23	41	SPT-8	17.50-17.95
						DS-7	18.50
						*UDS-8	19.00-19.45
						DS-8	20.00
20.75m.		12	17	25	42	SPT-9	20.50-20.95

BH-13/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 22/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.13

Co-ordinates E=(-)2435.000 N=2974.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 04/01/15
Completion Date : 05/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.853 m.
Water Struck At :
Standing Water Level : 0.55 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
20.75m							
Dense, light brownish grey to steel grey, silty sand.						DS-9	21.50
22.00m		13	19	27	46	SPT-10	22.00-22.45
						DS-10	23.00
Dense to very dens, light brownish grey, silty sand with traces of kankars.		15	22	29	51	SPT-11	23.50-23.95
						DS-11	24.50
25.00m		12	19	26	45	SPT-12	25.00-25.45
						DS-12	26.00
Hard, light brownish grey, silty clay.		13	20	27	47	SPT-13	26.50-26.95
						DS-13	27.50
28.00m		16	25	33	58	SPT-14	28.00-28.45
						DS-14	29.00
Hard, light brownish grey, silty clay with traces of sand.		19	26	35	61	SPT-15	29.50-29.95
						DS-15	30.50
		17	24	37	61	SPT-16	31.00-31.45
						DS-16	32.00
32.50m		22	35	38	73	SPT-17	32.50-32.95
						DS-17	33.50
		25	38	45	83	SPT-18	34.00-34.45
						DS-18	35.00
		27	39	49	88	SPT-19	35.50-35.95
Very dense, light brownish grey, silty sand. Obs. traces of clay binder.						DS-19	36.50
		29	42	51	93	SPT-20	37.00-37.45
						DS-20	38.00
		31	41	54	95	SPT-21	38.50-38.95
						DS-21	39.50
		30	45	57	>100	SPT-22	40.00-40.45
40.45m							
N.B. - '*' means sample could not be recovered.							

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.14

Co-ordinates E=(-)2446.114 N=2873.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 27/01/15
Completion Date : 28/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.838 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	Depth (m)
0.00m							
Deep brown, silty clay / clayey silt.						DS-1	0.50
1.00m		1	2	2	4	SPT-1	1.00-1.45
Soft to medium, yellowish brown, silty clay. Obs. steel grey patches.						UDS-1	2.00-2.45
		0	1	2	3	SPT-2	3.00-3.45
4.00m						*UDS-2	4.00-4.45
		1	1	2	3	SPT-3	5.00-5.45
						UDS-3	6.00-6.45
Very loose to loose deep grey, silty sand.		1	2	2	4	SPT-4	7.00-7.45
						*UDS-4	8.00-8.45
		3	3	4	7	SPT-5	9.00-9.45
10.00m						*UDS-5	10.00-10.45
						DS-2	11.00
		7	10	11	21	SPT-6	11.50-11.95
Medium dense, light greenish grey, silty fine sand.						DS-3	12.50
						*UDS-6	13.00-13.45
						DS-4	14.00
14.50m		9	12	19	31	SPT-7	14.50-14.95
						DS-5	15.50
Dense, light greenish grey, silty fine sand.						UDS-7	16.00-16.45
						DS-6	17.00
17.50m		12	17	19	36	SPT-8	17.50-17.95
						DS-7	18.50
Hard, light greenish grey, silty clay / clayey silt.						*UDS-8	19.00-19.45
						DS-8	20.00
		10	15	20	35	SPT-9	20.50-20.95
21.00m							

BH-14/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.14

Co-ordinates E=(-)2446.114 N=2873.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 27/01/15
Completion Date : 28/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.838 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
21.00m Hard, light greenish grey, silty clay / clayey silt. 21.50m		13	17	19	36	DS-9	21.50
						SPT-10	22.00-22.45
						DS-10	23.00
Hard, light greenish grey, silty clay with reddish patches.		10	23	25	48	SPT-11	23.50-23.95
						DS-11	24.50
		15	21	27	48	SPT-12	25.00-25.45
26.00m						DS-12	26.00
Hard, light brownish yellow, silty clay / clayey silt with steel grey patches. Obs. light yellow, silty sand in SPT-14 cutting shoe.		12	26	29	55	SPT-13	26.50-26.95
						DS-13	27.50
		16	23	35	58	SPT-14	28.00-28.45
						DS-14	29.00
29.50m		14	21	25	46	SPT-15	29.50-29.95
Hard, light brownish grey, silty clay with yellow patches.						DS-15	30.50
		27	25	28	53	SPT-16	31.00-31.45
32.00m						DS-16	32.00
Hard, yellowish brown, silty clay with sand mixture.		24	30	35	65	SPT-17	32.50-32.95
33.50m						DS-17	33.50
		27	33	40	73	SPT-18	34.00-34.45
Very dense, light brownish yellow, silty sand.						DS-18	35.00
		30	36	42	78	SPT-19	35.50-35.95
						DS-19	36.50
37.00m		32	39	48	87	SPT-20	37.00-37.45
						DS-20	38.00
Very dense, light yellow, silty sand.		33	38	55	93	SPT-21	38.50-38.95
						DS-21	39.50
		35	43	52	>100	SPT-22	40.00-40.35
40.35m					5.0 cm Pentn.		

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.15

Co-ordinates E=(-)2408.524 N=2756.123

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 28/01/15
Completion Date : 29/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.891 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m							
Very soft, brownish grey, silty clay.		1	1	1	2	DS-1	0.50
						SPT-1	1.00-1.45
						UDS-1	2.00-2.45
3.00m							
Very loose, light brownish grey, silty clayey sand.		0	0	0	0	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
		0	1	0	1	SPT-3	5.00-5.45
						UDS-3	6.00-6.45
7.00m							
Stiff, dark grey, silty clay.		4	6	6	12	SPT-4	7.00-7.45
						UDS-4	8.00-8.45
9.00m							
Medium dense, light greenish grey, clayey silty sand.		6	9	13	22	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
						DS-2	11.00
		9	14	19	33	SPT-6	11.50-11.95
						DS-3	12.50
						*UDS-6	13.00-13.45
						DS-4	14.00
14.50m							
Medium dense, light greenish / yellowish grey, silty sand.		5	10	12	22	SPT-7	14.50-14.95
						DS-5	15.50
						*UDS-7	16.00-16.45
						DS-6	17.00
17.50m							
Hard, light yellowish grey, silty clay / clayey silt with sand mixture.		10	15	16	31	SPT-8	17.50-17.95
						DS-7	18.50
						*UDS-8	19.00-19.45
20.00m						DS-8	20.00
Dense, brownish grey, silty clayey fine sand.		12	16	18	34	SPT-9	20.50-20.95
21.00m							

BH-15/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.15

Co-ordinates E=(-)2408.524 N=2756.123

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 28/01/15
Completion Date : 29/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.891 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
21.00m							
Dense, brownish grey, silty clayey fine sand.						DS-9	21.50
22.00m		10	17	20	37	SPT-10	22.00-22.45
						DS-10	23.00
Dense, light greyish yellow, silty clayey sand. Obs. steel grey patches.		13	18	14	32	SPT-11	23.50-23.95
						DS-11	24.50
25.00m		11	15	19	34	SPT-12	25.00-25.45
						DS-12	26.00
Dense, light whitish grey, silty sand.		15	21	23	44	SPT-13	26.50-26.95
						DS-13	27.50
28.00m		16	19	25	44	SPT-14	28.00-28.45
						DS-14	29.00
		18	26	30	56	SPT-15	29.50-29.95
						DS-15	30.50
		24	42	50	92	SPT-16	31.00-31.45
						DS-16	32.00
Dense to very dense, light brownish grey, silty coarse sand.		22	40	52	92	SPT-17	32.50-32.95
						DS-17	33.50
		21	39	56	95	SPT-18	34.50-34.95
						DS-18	35.00
		18	35	46	81	SPT-19	35.50-35.95
						DS-19	36.50
		23	40	49	89	SPT-20	37.00-37.45
38.00m						DS-20	38.00
		24	38	45	83	SPT-21	38.50-38.95
Very dense, brownish grey / yellowish grey, silty coarse sand. Obs. broken gravels pieces.						DS-21	39.50
		31	49	52	>100	SPT-22	40.00-40.45
40.45m							

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.16

Co-ordinates E=(-)2328.524 N=2654.231

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 24/01/15
Completion Date : 27/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.915 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m							
Very soft, brownish grey, silty clay.		0	0	0	0	DS-1	0.50
						SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
3.00m		0	0	0	0	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
Very soft, dark grey, silty clay / clayey silt.		0	0	0	0	SPT-3	5.00-5.45
						*UDS-3	6.00-6.45
7.00m		2	2	3	5	SPT-4	7.00-7.45
Loose, dark grey, silty clayey coarse sand. Obs. traces of kankars.						UDS-4	8.00-8.45
9.00m		2	3	4	7	SPT-5	9.00-9.45
Loose, light greenish grey, silty sand.						*UDS-5	10.00-10.45
						DS-2	11.00
11.50m		6	8	11	19	SPT-6	11.50-11.95
						DS-3	12.50
						*UDS-6	13.00-13.45
						DS-4	14.00
Medium dense, whitish grey, silty sand. Obs. brown patches.		4	10	14	24	SPT-7	14.50-14.95
						DS-5	15.50
						*UDS-7	16.00-16.45
						DS-6	17.00
17.95m		7	11	12	23	SPT-8	17.50-17.95
						DS-7	18.50
Dense, light yellowish grey, silty clayey sand.						*UDS-8	19.00-19.45
						DS-8	20.00
21.00m		10	15	18	33	SPT-9	20.50-20.95

BH-16/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.16

Co-ordinates E=(-)2328.524 N=2654.231

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 24/01/15
Completion Date : 27/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.915 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
21.00m							
					29	DS-9	21.50
		9	13	16		SPT-10	22.00-22.45
						DS-10	23.00
Dense, light yellowish grey, silty clayey sand.					35		
		11	16	19		SPT-11	23.50-23.95
						DS-11	24.50
					33		
		10	12	21		SPT-12	25.00-25.45
26.00m						DS-12	26.00
					67		
		17	28	39		SPT-13	26.50-26.95
						DS-13	27.50
					69		
		20	31	38		SPT-14	28.00-28.45
Very dense, greyish yellow, silty coarse sand. Obs. traces of kankars.						DS-14	29.00
					95		
		25	38	57		SPT-15	29.50-29.95
						DS-15	30.50
					84		
		27	35	49		SPT-16	31.00-31.45
32.00m						DS-16	32.00
					66		
		27	30	36		SPT-17	32.50-32.95
						DS-17	33.50
					75		
		26	35	40		SPT-18	34.00-34.45
Vrey dense, yellowish grey, silty coarse sand.						DS-18	35.00
					71		
		21	33	38		SPT-19	35.50-35.95
						DS-19	36.50
					79		
		25	37	42		SPT-20	37.00-37.45
						DS-20	38.00
38.50m					>100		
		19	55	61		SPT-21	38.50-38.95
Very dense, whitish grey to yellowish grey, fine silty sand.						DS-21	39.50
					89		
40.45m		35	38	51		SPT-22	40.00-40.45

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.17

Co-ordinates E=(-)2344.182 N=2536.638

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 28/01/15
Completion Date : 29/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.884 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m							
Soft, light brownish grey, silty clay.		2	2	2	4	DS-1	0.50
						SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
2.50m							
Very loose, light grey, clayey silty sand.		0	1	1	2	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
4.50m							
Very loose, deep grey, clayey silty sand.		0	0	1	1	SPT-3	5.00-5.45
						UDS-3	6.00-6.45
		0	1	1	2	SPT-4	7.00-7.45
						UDS-4	8.00-8.45
		1	2	2	4	SPT-5	9.00-9.45
						*UDS-5	10.00-10.45
11.00m						DS-2	11.00
Medium dense, light grey, clayey silty sand.		5	7	12	19	SPT-6	11.50-11.95
						DS-3	12.50
13.00m						UDS-6	13.00-13.45
						DS-4	14.00
Medium dense, light greenish grey, clayey silty sand.		9	12	17	29	SPT-7	14.50-14.95
						DS-5	15.50
						*UDS-7	16.00-16.45
17.00m						DS-6	17.00
Medium dense, light yellowish grey, clayey silty sand. Obs. steel grey patches.		8	10	11	21	SPT-8	17.50-17.95
						DS-7	18.50
						UDS-8	19.00-19.45
20.00m						DS-8	20.00
Dense, light brownish grey, clayey sand.		10	14	21	35	SPT-9	20.50-20.95
21.00m							

BH-17/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.17

Co-ordinates E=(-)2344.182 N=2536.638

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 28/01/15
Completion Date : 29/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.884 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
21.00m / 21.50m Dense, light brownish grey, clayey sand.		16 21 30 — 51	DS-9	21.50
			SPT-10	22.00-22.45
			DS-10	23.00
Hard, light brownish grey, sandy silty clay.		14 21 27 — 48	SPT-11	23.50-23.95
24.50m			DS-11	24.50
		12 17 25 — 42	SPT-12	25.00-25.45
			DS-12	26.00
Dense, light brownish grey, clayey silty sand. Obs. yellow patches.		13 18 23 — 41	SPT-13	26.50-26.95
			DS-13	27.50
28.00m		22 34 41 — 75	SPT-14	28.00-28.45
			DS-14	29.00
Very dense, steel grey, clayey silty sand.		23 36 43 — 79	SPT-15	29.50-29.95
			DS-15	30.50
31.00m		26 43 47 — 90	SPT-16	31.00-31.45
			DS-16	32.00
		27 40 46 — 86	SPT-17	32.50-32.95
Very dense, light brownish grey, silty sand.			DS-17	33.50
		24 45 48 — 93	SPT-18	34.00-34.45
			DS-18	35.00
		28 42 57 — 99	SPT-19	35.50-35.95
36.50m			DS-19	36.50
		38 84 50 — >100 (5.0 cm Pentn.)	SPT-20	37.00-37.35
			DS-20	38.00
Very dense, light brownish grey, silty sand. Obs. traces of kankars & gravels.		40 88 50 — >100 (5.0 cm Pentn.)	SPT-21	38.50-38.85
			DS-21	39.50
40.45m		42 86 50 — >100 (15.0 cm Pentn.)	SPT-22	40.00-40.45

N.B. – '*' means sample could not be recovered.

BH-17/Sheet-2

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.18

Co-ordinates E=(-)2253.000 N=2460.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 26/01/15
Completion Date : 27/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.427 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m							
Loose, light brownish grey, clayey silty sand.		2	3	3	6	DS-1	0.50
						SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
2.50m							
Very soft, deep grey, silty clay / clayey silt with sand.		0	0	0	0	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
		0	0	1	1	SPT-3	5.00-5.45
						UDS-3	6.00-6.45
		0	1	2	3	SPT-4	7.00-7.45
8.00m							
Very loose, light grey, clayey silty sand.		1	2	2	4	UDS-4	8.00-8.45
						SPT-5	9.00-9.45
						*UDS-5	10.00-10.45
11.00m						DS-2	11.00
Loose, light whitish grey, clayey silty sand.		2	3	4	7	SPT-6	11.50-11.95
						DS-3	12.50
						UDS-6	13.00-13.45
						DS-4	14.00
14.50m							
Very dense, light greenish grey, silty sand.		15	25	32	57	SPT-7	14.50-14.95
						DS-5	15.50
						UDS-7	16.00-16.45
17.00m						DS-6	17.00
Medium dense, light brownish grey, clayey silty sand.		7	9	15	24	SPT-8	17.50-17.95
						DS-7	18.50
						UDS-8	19.00-19.45
20.00m						DS-8	20.00
Hard, light greenish grey, sandy silty clay. Obs. yellow patches.		15	30	56	86	SPT-9	20.50-20.95
21.00m							

BH-18/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.18

Co-ordinates E=(-)2253.000 N=2460.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 26/01/15
Completion Date : 27/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.427 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
			DS-9	21.50
		15 27 50 5 — 82	SPT-10	22.00-22.45
			DS-10	23.00
		15 24 50 — 74	SPT-11	23.00-23.45
21.00m. Hard, light greenish grey, sandy silty clay. Obs. yellow patches.				
24.50m.			DS-11	24.50
		16 28 30 — 58	SPT-12	25.00-25.45
			DS-12	26.00
Very dense, light grey, silty clayey sand. Obs. brown spots.		17 30 29 — 59	SPT-13	26.50-26.95
			DS-13	27.50
28.00m.		23 36 40 — 76	SPT-14	28.00-28.45
			DS-14	29.00
		26 40 42 — 82	SPT-15	29.50-29.95
			DS-15	30.50
		25 41 60 — >100	SPT-16	31.00-31.45
			DS-16	32.00
		24 40 63 — >100	SPT-17	32.50-32.95
			DS-17	33.50
Very dense, light brownish grey, silty sand.		25 37 52 — 89	SPT-18	34.00-34.45
			DS-18	35.00
		24 34 50 — 84	SPT-19	35.50-35.95
			DS-19	36.00
		50 79 50 5.0 cm Pentn. — >100	SPT-20	37.00-37.35
			DS-20	38.00
		56 86 50 5.0 cm Pentn. — >100	SPT-21	38.50-38.85
			DS-21	39.50
40.35m.		55 89 50 5.0 cm Pentn. — >100	SPT-22	40.00-40.35

N.B. – '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.19

Co-ordinates E=(-)2168.000 N=2375.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 24/01/15
Completion Date : 25/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.143 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m							
Soft, brownish grey, silty clay.						DS-1	0.50
1.00m					3		
		2	2	1		SPT-1	1.00-1.45
Very loose, light brownish grey, clayey silty sand.						*UDS-1	2.00-2.45
3.00m					0		
		0	0	0		SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
					0		
		0	0	0		SPT-3	5.00-5.45
Very loose, deep grey, clayey silty sand. Obs. clay pocket in UDS-04.						UDS-3	6.00-6.45
					1		
		0	0	1		SPT-4	7.00-7.45
						UDS-4	8.00-8.45
9.00m					3		
		0	1	2		SPT-5	9.00-9.45
Very loose, light grey, clayey silty sand.						UDS-5	10.00-10.45
						DS-2	11.00
11.50m					24		
		5	11	13		SPT-6	11.50-11.95
						DS-3	12.50
Medium dense, light greenish grey, silty sand.						*UDS-6	13.00-13.45
						DS-4	14.00
14.50m					50		
		13	21	29		SPT-7	14.50-14.95
						DS-5	15.50
						*UDS-7	16.00-16.45
					53		
Very dense, light brownish grey, clayey silty sand.		16	20	33		DS-6	17.00
						SPT-8	17.50-17.95
						DS-7	18.50
						*UDS-8	19.00-19.45
20.00m						DS-8	20.00
					35		
Hard, light grey, silty clay / clayey silt with sand.		9	14	21		SPT-9	20.50-20.95
21.00m							

BH-19/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.19

Co-ordinates E=(-)2168.000 N=2375.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 24/01/15
Completion Date : 25/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.143 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES Ref. No	SAMPLES Depth (m)
21.00m							
Hard, light grey, silty clay / clayey silt with sand.		21	33	40	73	DS-9	21.50
						SPT-10	22.00-22.45
						DS-10	23.00
23.50m					40		
		12	15	25		SPT-11	23.50-23.95
Dense, light grey, silty sand.						DS-11	24.50
25.00m					42		
		12	18	24		SPT-12	25.00-25.45
Hard, light brownish grey, silty clay.						DS-12	26.00
					60		
		20	24	36		SPT-13	26.50-26.95
27.50m						DS-13	27.50
					68		
		20	26	42		SPT-14	28.00-28.45
						DS-14	29.00
					95		
		24	40	55		SPT-15	29.50-29.95
Very dense, light brownish grey, clayey silty coarse sand.						DS-15	30.50
					>100		
		23	44	63		SPT-16	31.00-31.45
						DS-16	32.00
					>100		
		23	39	63		SPT-17	32.50-32.95
						DS-17	33.50
34.00m					87		
		25	34	53		SPT-18	34.00-34.45
						DS-18	35.00
					97		
		21	40	57		SPT-19	35.50-35.95
						DS-19	36.50
Very dense, light brownish grey, silty sand.					92		
		24	42	50		SPT-20	37.00-37.45
						DS-20	38.00
					92		
		27	36	56		SPT-21	38.50-38.95
						DS-21	39.50
					91		
40.45m		25	39	52		SPT-22	40.00-40.45

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.20

Co-ordinates E=(-)2095.000 N=2288.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	19	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	19
Vane (V)		Disturbed (DS)	18
		Water Sample (WS)	0

Commencement Date : 22/01/15
Completion Date : 23/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.78 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m							
Very soft, brownish grey, silty clay.						DS-1	0.50
1.00m		2	1	1	2	SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
Very loose, light brownish grey, clayey silty sand.		0	0	0	0	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
5.00m		0	0	0	0	SPT-3	5.00-5.45
						UDS-3	6.00-6.45
Very loose, dark grey, clayey silty sand.		0	0	1	1	SPT-4	7.00-7.45
						UDS-4	8.00-8.45
9.00m		5	9	18	27	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
						DS-2	11.00
Medium dense, light greenish grey, clayey silty sand.		8	11	14	25	SPT-6	11.50-11.95
						DS-3	12.50
						UDS-6	13.00-13.45
14.00m						DS-4	14.00
		8	10	11	21	SPT-7	14.50-14.95
Medium dense, light whitish grey, silty sand. Obs. yellow patches.						DS-5	15.50
						*UDS-7	16.00-16.45
17.00m						DS-6	17.00
Medium dense, light grey, clayey silty sand. Obs. yellow spots.		7	9	10	19	SPT-8	17.50-17.95
18.00m							

BH-20/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.20

Co-ordinates E=(-)2095.000 N=2288.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	19	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	19
Vane (V)		Disturbed (DS)	18
		Water Sample (WS)	0

Commencement Date : 22/01/15
Completion Date : 23/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.78 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
			DS-7	18.50
Medium dense, light grey, clayey silty sand. Obs. yellow spots.			*UDS-8	19.00-19.45
18.00m			DS-8	20.00
		10 0 0 0 44/19 25	SPT-9	20.50-20.95
Hard, grey, sandy silty clay.			DS-9	21.50
20.00m		11 0 0 0 51/21 30	SPT-10	22.00-22.45
			DS-10	23.00
		11 0 0 0 54/23 31	SPT-11	23.50-23.95
			DS-11	24.50
		13 0 0 0 41/17 24	SPT-12	25.00-25.45
Very dense to dense, light brownish grey, clayey silty sand.			DS-12	26.00
		14 0 0 0 45/18 27	SPT-13	26.50-26.95
			DS-13	27.50
		15 0 0 0 47/21 26	SPT-14	28.00-28.45
			DS-14	29.00
		15 0 0 0 48/20 28	SPT-15	29.50-29.95
30.50m			DS-15	30.50
		35 0 0 45 >100/50 7	SPT-16	31.00-31.45
			DS-16	32.00
		36 0 0 47 >100/30 30	SPT-17	32.50-32.95
Very dense, light brownish grey, silty sand.			DS-17	33.50
		43 50/5.0 cm 50 0 0 Pentn.	SPT-18	34.00-34.35
			DS-18	35.00
N.B. - '*' means sample could not be recovered.		45 50/5.0 cm 50 0 0 Pentn.	SPT-19	35.50-35.85
35.85m				

BH-20/Sheet-2

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 28/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.21

Co-ordinates E=(-)2036.000 N=2182.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 20/01/15
Completion Date : 21/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.243 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m Very loose, clayey silty sand with reddish & brownish yellow patches.						DS-1	0.50
1.00m		2	1	1	2	SPT-1	1.00-1.45
						UDS-1	2.00-2.45
Very loose to loose, grey to deep grey, clayey silty sand.		0	0	0	0	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
		0	0	0	0	SPT-3	5.00-5.45
						*UDS-3	6.00-6.45
7.00m		1	3	4	7	SPT-4	7.00-7.45
Loose, light greenish grey, clayey silty sand.						UDS-4	8.00-8.45
8.45m		5	11	19	30	SPT-5	9.00-9.45
Very stiff, steel grey, silty clay with sand mixture.						UDS-5	10.00-10.45
11.00m						DS-2	11.00
		8	11	14	25	SPT-6	11.50-11.95
Medium dense, light greenish grey, clayey silty sand. Obs. yellow spots.						DS-3	12.50
						*UDS-6	13.00-13.45
						DS-4	14.00
14.50m		8	10	11	21	SPT-7	14.50-14.95
Medium dense, light yellowish grey, clayey silty sand.						DS-5	15.50
						*UDS-7	16.00-16.45
						DS-6	17.00
17.50m		7	9	10	19	SPT-8	17.50-17.95
Medium dense, light brownish grey, clayey silty sand.						DS-7	18.50
						*UDS-8	19.00-19.45
Dense to very dense, light brownish grey, clayey silty sand. Obs. yellow & red spots.						DS-8	20.00
20.50m		10	19	25	44	SPT-9	20.50-20.95
21.00m							

BH-21/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 28/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.21

Co-ordinates E=(-)2036.000 N=2182.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 20/01/15
Completion Date : 21/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 7.243 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	Depth (m)
21.00m						DS-9	21.50
		11	21	30	51	SPT-10	22.00-22.45
						DS-10	23.00
		12	23	31	54	SPT-11	23.50-23.95
Dense to very dense, light brownish grey, clayey silty sand. Obs. yellow & red spots.						DS-11	24.50
		14	25	40	65	SPT-12	25.00-25.45
						DS-12	26.00
		16	24	43	67	SPT-13	26.50-26.95
27.50m						DS-13	27.50
		15	23	32	55	SPT-14	28.00-28.45
Dense to very dense, light whitish grey, silty sand.						DS-14	29.00
		14	21	26	47	SPT-15	29.50-29.95
						DS-15	30.50
30.80m							
		29	42	45	87	SPT-16	31.00-31.45
						DS-16	32.00
Very dense, light brownish grey, silty sand.		32	47	52	99	SPT-17	32.50-32.95
						DS-17	33.50
34.00m					52		
		13	24	28		SPT-18	34.00-34.45
Hard, light brownish grey, silty clay.						DS-18	35.00
35.50m					65		
		14	32	33		SPT-19	35.50-35.95
						DS-19	36.50
					>100		
		30	50	57		SPT-20	37.00-37.45
Very dense, light whitish grey, silty sand. Obs. yellow spots.						DS-20	38.00
					>100		
		33	52	60		SPT-21	38.50-38.95
						DS-21	39.50
					>100		
40.45m		32	50	52		SPT-22	40.00-40.45

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.22

Co-ordinates E=(-)1967.000 N=2061.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	1

Commencement Date : 18/01/15
Completion Date : 19/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.599 m.
Water Struck At :
Standing Water Level : 0.35 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES Ref. No	Depth (m)
0.00m						WS-1	0.35
Filled up soil consists of silty clayey reddish brown moorum.						DS-1	0.50
		2	1	1	2	SPT-1	1.00-1.45
2.00m						UDS-1	2.00-2.45
Loose, deep grey, silty sand.		1	1	1	2	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
		0	0	1	1	SPT-3	5.00-5.45
6.00m						UDS-3	6.00-6.45
Very soft, deep grey, silty clay.		0	1	1	2	SPT-4	7.00-7.45
						UDS-4	8.00-8.45
9.00m		6	12	16	28	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
						DS-2	11.00
Medium dense to dense, light greenish grey, clayey silty sand.		13	17	23	40	SPT-6	11.50-11.95
						DS-3	12.50
						UDS-6	13.00-13.45
14.00m						DS-4	14.00
		7	11	16	27	SPT-7	14.50-14.95
						DS-5	15.50
Medium dense, light greenish grey, silty sand.						UDS-7	16.00-16.45
						DS-6	17.00
		6	12	17	29	SPT-8	17.50-17.95
18.50m						DS-7	18.50
						UDS-8	19.00-19.45
Dense, light yellowish grey, silty sand.						DS-8	20.00
		10	17	28	45	SPT-9	20.50-20.95
21.00m							

BH-22/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.22

Co-ordinates E=(-)1967.000 N=2061.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	1

Commencement Date : 18/01/15
Completion Date : 19/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.599 m.
Water Struck At :
Standing Water Level : 0.35 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)		SAMPLES	
				Ref. No	Depth (m)
21.00m					
Dense, light yellowish grey, silty sand.				DS-9	21.50
21.50m		12 22 28	50	SPT-10	22.00-22.45
				DS-10	23.00
		13 23 29	52	SPT-11	23.50-23.95
				DS-11	24.50
		17 25 34	59	SPT-12	25.00-25.45
				DS-12	26.00
		21 29 39	68	SPT-13	26.50-26.95
Very dense, brownish yellow, silty medium sand.				DS-13	27.50
		19 30 36	66	SPT-14	28.00-28.45
				DS-14	29.00
		19 32 35	67	SPT-15	29.50-29.95
				DS-15	30.50
		21 35 47	82	SPT-16	31.00-31.45
				DS-16	32.00
32.50m			>100		
Very dense, yellowish grey, silty sand. Obs. traces of kankars & gravels.		24 54 69		SPT-17	32.50-32.95
33.50m				DS-17	33.50
		25 42 53	95	SPT-18	34.00-34.45
Hard, steel grey, sandy silty clay with traces of kankars.				DS-18	35.00
		27 89 50 5.0 cm Pentn.	>100	SPT-19	35.50-35.85
36.50m				DS-19	36.50
		25 59 71	>100	SPT-20	37.00-37.45
				DS-20	38.00
Very dens, yellowish grey, silty sand.		29 49 63	>100	SPT-21	38.50-38.95
				DS-21	39.50
		35 60 50 15.0 cm Pentn.	>100	SPT-22	40.00-40.45
40.45m					

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.23

Co-ordinates E=(-)219.000 N=1293.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	15	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	15
Vane (V)		Disturbed (DS)	14
		Water Sample (WS)	0

Commencement Date : 26/01/15
Completion Date : 27/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 10.345 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)			SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.						
Filled up soil consists of yellowish brown, silty sand.					DS-1	0.50
1.00m.		6	9	11 (20)	SPT-1	1.00-1.45
					*UDS-1	2.00-2.45
		7	10	14 (24)	SPT-2	3.00-3.45
					*UDS-2	4.00-4.45
Medium dense to dense, light yellowish grey to steel grey, silty sand.		8	10	15 (25)	SPT-3	5.00-5.45
					*UDS-3	6.00-6.45
		10	14	19 (33)	SPT-4	7.00-7.45
					*UDS-4	8.00-8.45
8.50m.						
		3	5	5 (10)	SPT-5	9.00-9.45
					UDS-5	10.00-10.45
					DS-2	11.00
Loose to medium dense, deep grey, clayey silty sand.		4	5	6 (11)	SPT-6	11.50-11.95
					DS-3	12.50
					UDS-6	13.00-13.45
					DS-4	14.00
		6	8	10 (18)	SPT-7	14.50-14.95
15.00m.						

BH-23/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.23

Co-ordinates E=(-)219.000 N=1293.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	15	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	15
Vane (V)		Disturbed (DS)	14
		Water Sample (WS)	0

Commencement Date : 26/01/15
Completion Date : 27/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 10.345 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
15.00m				
Loose to medium dense, deep grey, clayey silty sand. 15.50m			DS-5	15.50
			UDS-7	16.00-16.45
			DS-6	17.00
Dense, light greenish grey, silty sand.		11 18 23 — 41	SPT-8	17.50-17.95
			DS-7	18.50
			*UDS-8	19.00-19.45
20.00m			DS-8	20.00
		30 42 49 — 91	SPT-9	20.50-20.95
			DS-9	21.50
Very dense, light yellowish / greenish grey, silty sand.		14 24 32 — 56	SPT-10	22.00-22.45
			DS-10	23.00
		17 25 34 — 59	SPT-11	23.50-23.95
24.50m			DS-11	24.50
		33 51 57 — >100	SPT-12	25.00-25.45
			DS-12	26.00
Very dense, light greenish grey / steel grey, silty sand.		42 55 50 — >100 (10.0 cm Penth.)	SPT-13	26.50-26.90
			DS-13	27.50
		39 52 50 — >100 (10.0 cm Pentn.)	SPT-14	28.00-28.40
			DS-14	29.00
N.B. - '*' means sample could not be recovered.		36 66 50 — >100 (8.0 cm Pentn.)	SPT-15	29.50-29.88
29.88m				

BH-23/Sheet-2

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.24

Co-ordinates E=(-)209.000 N=1177.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	15	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	15
Vane (V)		Disturbed (DS)	14
		Water Sample (WS)	0

Commencement Date : 25/01/15
Completion Date : 25/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 10.192 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)			SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.						
Deep brownish yellow, silty sand.					DS-1	0.50
1.00m.		5	7	9 (16)	SPT-1	1.00-1.45
					*UDS-1	2.00-2.45
		7	10	12 (22)	SPT-2	3.00-3.45
					*UDS-2	4.00-4.45
Medium dense, grey to steel grey, silty sand.		8	11	14 (25)	SPT-3	5.00-5.45
					*UDS-3	6.00-6.45
		8	12	16 (28)	SPT-4	7.00-7.45
					*UDS-4	8.00-8.45
8.50m.						
		3	4	4 (8)	SPT-5	9.00-9.45
Medium, deep grey, silty clay.					UDS-5	10.00-10.45
					DS-2	11.00
11.50m.						
		6	9	16 (25)	SPT-6	11.50-11.95
					DS-3	12.50
Medium dense, deep grey, clayey silty sand.					UDS-6	13.00-13.45
14.00m.					DS-4	14.00
		13	16	22 (38)	SPT-7	14.50-14.95
Dense, deep grey, clayey silty sand.					DS-5	15.50
16.00m.						

BH-24/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.24

Co-ordinates E=(-)209.000 N=1177.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	15	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	15
Vane (V)		Disturbed (DS)	14
		Water Sample (WS)	0

Commencement Date : 25/01/15
Completion Date : 25/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 10.192 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
16.00m.				
Dense, deep grey, clayey silty sand.			UDS-7	16.00-16.45
17.00m.			DS-6	17.00
		16 20 26 — 46	SPT-8	17.50-17.95
			DS-7	18.50
Dense to very dense, light greenish yellowish grey, silty sand.			*UDS-8	19.00-19.45
			DS-8	20.00
		18 26 29 — 55	SPT-9	20.50-20.95
21.50m.			DS-9	21.50
		31 37 44 — 81	SPT-10	22.00-22.45
			DS-10	23.00
		28 39 47 — 86	SPT-11	23.50-23.95
			DS-11	24.50
		29 48 65 — >100	SPT-12	25.00-25.45
Very dense, yellowish grey, silty sand.			DS-12	26.00
		31 69 50 — >100 (10.0 cm Penetn.)	SPT-13	26.50-26.90
			DS-13	27.50
		34 71 50 — >100 (10.0 cm Penetn.)	SPT-14	28.00-28.40
			DS-14	29.00
29.88m.		39 76 50 — >100 (8.0 cm Penetn.)	SPT-15	29.50-29.88

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.25

Co-ordinates E=(-)124.000 N=1092.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	16	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	16
Vane (V)		Disturbed (DS)	15
		Water Sample (WS)	1

Commencement Date : 24/01/15
Completion Date : 24/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 10.282 m.
Water Struck At :
Standing Water Level : 2.90 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				Ref. No	Depth (m)
0.00m							
Filled up soil consists of brownish yellow, silty sand.						DS-1	0.50
1.00m		6	11	16	27	SPT-1	1.00-1.45
Medium dense, brownish yellow, silty sand.						*UDS-1	2.00-2.45
2.50m						WS-1	2.90
		10	17	23	40	SPT-2	3.00-3.45
Medium dense, steel grey, silty sand.						*UDS-2	4.00-4.45
		12	20	23	43	SPT-3	5.00-5.45
6.00m						*UDS-3	6.00-6.45
Dense, steel grey, silty sand.		7	13	16	29	SPT-4	7.00-7.45
						*UDS-4	8.00-8.45
8.50m		5	7	10	17	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
						DS-2	11.00
		6	8	12	20	SPT-6	11.50-11.95
Medium dense, deep brown / light greenish grey, clayey silty sand.						DS-3	12.50
						UDS-6	13.00-13.45
						DS-4	14.00
		5	7	9	16	SPT-7	14.50-14.95
						DS-5	15.50
16.00m							

BH-25/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.25

Co-ordinates E=(-)124.000 N=1092.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	16	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	16
Vane (V)		Disturbed (DS)	15
		Water Sample (WS)	1

Commencement Date : 24/01/15
Completion Date : 24/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 10.282 m.
Water Struck At :
Standing Water Level : 2.90 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
16.00m. Medium dense, deep brown / light greenish grey, clayey silty sand.			UDS-7	16.00-16.45
17.00m.			DS-6	17.00
		13 19 23 — 42	SPT-8	17.50-17.95
			DS-7	18.50
			*UDS-8	19.00-19.45
Dense, light greenish grey, silty sand.			DS-8	20.00
		14 18 23 — 41	SPT-9	20.50-20.95
			DS-9	21.50
		16 21 25 — 46	SPT-10	22.00-22.45
			DS-10	23.00
23.50m.		33 51 50 — >100 (10.0 cm Penth.)	SPT-11	23.50-23.90
Very dense, steel grey to grey, silty sand.			DS-11	24.50
		22 30 39 — 69	SPT-12	25.00-25.45
26.00m.			DS-12	26.00
		29 62 50 — >100 (10.0 cm Penth.)	SPT-13	26.50-26.90
			DS-13	27.50
		36 60 50 — >100 (8.0 cm Penth.)	SPT-14	28.00-28.38
Very dense, steel grey, silty sand. Obs. greyish patches.			DS-14	29.00
		32 61 50 — >100 (10.0 cm Penth.)	SPT-15	29.50-29.90
			DS-15	30.50
		33 66 50 — >100 (10.0 cm Penth.)	SPT-16	31.00-31.40
31.40m.				

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 28/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.26

Co-ordinates E=(-)24.000 N=1054.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 21/01/15
Completion Date : 22/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.79 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m							
Filled up soil consists of brownish yellow, silty sand & stone chips & kankars.						DS-1	0.50
1.00m		17	26	31	57	SPT-1	1.00-1.45
Very dense, brownish yellow, silty sand with traces of kankars.						*UDS-1	2.00-2.45
3.00m		8	16	17	33	SPT-2	3.00-3.45
Dense, steel grey, silty sand. Obs. brownish patches.						*UDS-2	4.00-4.45
5.00m		9	14	19	33	SPT-3	5.00-5.45
Dense, grey, silty sand.						*UDS-3	6.00-6.45
7.00m		6	12	15	27	SPT-4	7.00-7.45
Medium dense, brownish yellow, silty sand.						*UDS-4	8.00-8.45
9.00m		3	5	7	12	SPT-5	9.00-9.45
Medium dense, deep grey, clayey sand.						UDS-5	10.00-10.45
10.00m						DS-2	11.00
		2	6	9	15	SPT-6	11.50-11.95
Medium dense, deep brownish grey, clayey silty sand.						DS-3	12.50
						UDS-6	13.00-13.45
						DS-4	14.00
		4	7	10	17	SPT-7	14.50-14.95
15.50m						DS-5	15.50
						UDS-7	16.00-16.45
						DS-6	17.00
		12	16	17	33	SPT-8	17.50-17.95
Dense, light greenish grey to steel grey, silty sand. Obs. clay pocket in SPT-04.						DS-7	18.50
						*UDS-8	19.00-19.45
						DS-8	20.00
		10	18	22	40	SPT-9	20.50-20.95
21.00m							

BH-26/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 28/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.26

Co-ordinates E=(-)24.000 N=1054.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 21/01/15
Completion Date : 22/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.79 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
Dense, light greenish grey to steel grey, silty sand. Obs. clay pocket in SPT-04.		13 16 19 — 35	DS-9	21.50
			SPT-10	22.00-22.45
			DS-10	23.00
Dense, steel grey, silty sand with traces of clay lamination. Obs. greyish patches.		12 19 23 — 42	SPT-11	23.50-23.95
			DS-11	24.50
		22 29 37 — 66	SPT-12	25.00-25.45
			DS-12	26.00
Very dense, yellowish grey, silty medium to coarse sand.		53 71 50 — >100 (15.0 cm Penth.)	SPT-13	26.50-26.95
			DS-13	27.50
Hard, light yellowish grey, silty clay.		19 23 29 — 52	SPT-14	28.00-28.45
			DS-14	29.00
		35 69 50 — >100 (15.0 cm Penth.)	SPT-15	29.50-29.95
			DS-15	30.50
		31 55 50 — >100 (10.0 cm Penth.)	SPT-16	31.00-31.40
			DS-16	32.00
		34 49 63 — >100	SPT-17	32.50-32.95
			DS-17	33.50
		28 51 59 — >100	SPT-18	34.00-34.45
Very dense, yellowish grey, silty sand.			DS-18	35.00
		26 52 63 — >100	SPT-19	35.50-35.95
			DS-19	36.50
		38 55 50 — >100 (10.0 cm Pentn.)	SPT-20	37.00-37.40
			DS-20	38.00
		31 50 50 — >100 (8.0 cm Pentn.)	SPT-21	38.50-38.88
			DS-21	39.50
		36 75 50 — >100 (5.0 cm Pentn.)	SPT-22	40.00-40.35

21.00m
21.50m
25.00m
28.00m
29.00m
40.45m

N.B. – '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai.			CETEST
Job No : 3388	Created by : Chandrani	Created on : 11/02/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.27

Co-ordinates E=44.466 N=1027.945

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	18	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	18
Vane (V)		Disturbed (DS)	17
		Water Sample (WS)	0

Commencement Date : 22/01/15
Completion Date : 23/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 10.226 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)			N	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m							
Filled up soil consists of brownish yellow, silty sand.						DS-1	0.50
1.00m		5	10	17	27	SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
Medium dense to dense, brownish yellow, silty sand.		8	13	21	34	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
5.00m		3	5	6	11	SPT-3	5.00-5.45
						UDS-3	6.00-6.45
Medium dense to loose, steel grey, silty sand.		3	4	5	9	SPT-4	7.00-7.45
						*UDS-4	8.00-8.45
9.00m		4	6	9	15	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
						DS-2	11.00
Medium dense, deep brownish grey to light greenish grey, clayey silty sand.		6	9	15	24	SPT-6	11.50-11.95
						DS-3	12.50
						UDS-6	13.00-13.45
14.00m						DS-4	14.00
		10	15	20	35	SPT-7	14.50-14.95
						DS-5	15.50
Dense, light greenish grey to steel grey, silty sand.						UDS-7	16.00-16.45
						DS-6	17.00
		15	17	28	45	SPT-8	17.50-17.95
18.00m							

BH-27/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 11/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.27

Co-ordinates E=44.466 N=1027.945

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	18	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	18
Vane (V)		Disturbed (DS)	17
		Water Sample (WS)	0

Commencement Date : 22/01/15
Completion Date : 23/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 10.226 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
18.00m				
Dense, light greenish grey to steel grey, silty sand.			DS-7	18.50
			*UDS-8	19.00-19.45
			DS-8	20.00
20.50m		16 20 25 — 45	SPT-9	20.50-20.95
			DS-9	21.50
Dense, steel grey, silty sand. Obs. greyish patches.		14 19 23 — 42	SPT-10	22.00-22.45
			DS-10	23.00
		15 21 26 — 47	SPT-11	23.50-23.95
24.50m			DS-11	24.50
		23 33 42 — 75	SPT-12	25.00-25.45
Very dense, yellowish grey, silty coarse sand.			DS-12	26.00
		54 69 60 — >100 (5.0 cm Pentn.)	SPT-13	26.50-26.85
27.50m			DS-13	27.50
Hard, brownish yellow, silty clay.		18 27 30 — 57	SPT-14	28.00-28.45
29.00m			DS-14	29.00
		42 76 50 — >100 (8.0 cm Pentn.)	SPT-15	29.50-29.88
			DS-15	30.50
Very dense, yellowish grey, silty sand.		35 71 50 — >100 (10.0 cm Penth.)	SPT-16	31.00-31.40
			DS-16	32.00
		33 65 50 — >100 (10.0 cm Penth.)	SPT-17	32.50-32.90
			DS-17	33.50
34.35m		43 72 50 — >100 (5.0 cm Pentn.)	SPT-18	34.00-34.35

N.B. - '*' means sample could not be recovered.

BH-27/Sheet-2

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 10/12/2014 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.28

Co-ordinates E=(-)2560.000 N=4061.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 01/12/14
Completion Date : 02/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.081 m.
Water Struck At :
Standing Water Level : 0.55 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.							
Filled up soil consists of light grey, fly ash.		0	0	0	0	DS-1	0.50
						SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
3.45m.		0	0	0	0	SPT-2	3.00-3.45
Very soft, deep grey, silty clay / clayey silt with sand.						UDS-2	4.00-4.45
		0	0	1	1	SPT-3	5.00-5.45
						UDS-3	6.00-6.45
8.00m.		0	1	1	2	SPT-4	7.00-7.45
Medium, brownish grey to steel grey, silty clay with sand mixture.						UDS-4	8.00-8.45
		2	3	3	6	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
11.50m.						DS-2	11.00
Medium, steel grey, silty sand with clay mixture.		2	3	5	8	SPT-6	11.50-11.95
						DS-3	12.50
						UDS-6	13.00-13.45
14.50m.						DS-4	14.00
Medium dense, yellowish grey, silty fine sand. Obs. clay lamination.		4	6	9	15	SPT-7	14.50-14.95
						DS-5	15.50
						UDS-7	16.00-16.45
17.50m.						DS-6	17.00
Hard, yellowish grey, clayey silt with fine sand mixture.		7	17	23	40	SPT-8	17.50-17.95
						DS-7	18.50
						UDS-8	19.00-19.45
20.50m.						DS-8	20.00

BH-28/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 10/12/2014 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.28

Co-ordinates E=(-)2560.000 N=4061.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 01/12/14
Completion Date : 02/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.081 m.
Water Struck At :
Standing Water Level : 0.55 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
20.50m.		15	18	25	43	SPT-9	20.50-20.95
						DS-9	21.50
		11	20	27	47	SPT-10	22.00-22.45
						DS-10	23.00
Dense to very dense, brownish to yellowish grey, silty sand with traces of clay binders.		12	22	27	49	SPT-11	23.50-23.95
						DS-11	24.50
		16	25	31	56	SPT-12	25.00-25.45
						DS-12	26.00
26.50m.		18	33	44	77	SPT-13	26.50-26.95
						DS-13	27.50
		16	28	33	61	SPT-14	28.00-28.45
						DS-14	29.00
Hard, brownish grey, silty clay with traces of sand mixture.		12	22	34	56	SPT-15	29.50-29.95
						DS-15	30.50
		21	39	45	84	SPT-16	31.00-31.45
						DS-16	32.00
32.50m.		16	26	38	64	SPT-17	32.50-32.95
						DS-17	33.50
		16	27	38	65	SPT-18	34.00-34.45
Very dense, brownish grey, silty sand.						DS-18	35.00
		18	27	41	68	SPT-19	35.50-35.95
						DS-19	36.50
		19	28	44	72	SPT-20	37.00-37.45
37.50m.						DS-20	38.00
		22	46	52	98	SPT-21	38.50-38.95
Very dense, yellowish grey, silty mediun to coarse sand. Obs. clay laminated.						DS-21	39.50
		36	47	52	>100	SPT-22	40.00-40.41
40.41m.					11.0 cm		
N.B. - '*' means sample could not be recovered.					Penth.		

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 12/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.29

Co-ordinates E=2487.000 N=4132.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 26/12/14
Completion Date : 28/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.494 m.
Water Struck At :
Standing Water Level : 0.75 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m							
Filled up soil consists of light grey, fly ash.		0	0	0	0	DS-1	0.50
						SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
2.50m							
Very soft, brownish grey, silty clay / clayey silt with sand mixture.		0	0	1	1	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
5.00m							
Very soft, deep grey, silty clay / clayey silt with sand mixture.		0	1	0	1	SPT-3	5.00-5.45
						*UDS-3	6.00-6.45
		0	1	1	2	SPT-4	7.00-7.45
						UDS-4	8.00-8.45
9.00m							
Loose, light greenish grey, silty sand / sandy silt.		0	3	4	7	SPT-5	9.00-9.45
						*UDS-5	10.00-10.45
11.00m						DS-2	11.00
Medium dense, light greenish grey, silty sand / sandy silt.		4	7	8	15	SPT-6	11.50-11.95
						DS-3	12.50
						*UDS-6	13.00-13.45
						DS-4	14.00
14.50m							
Very stiff, light greenish grey, silty clay / clayey silt.		7	9	15	24	SPT-7	14.50-14.95
						DS-5	15.50
						*UDS-7	16.00-16.45
						DS-6	17.00
17.50m							
Very stiff, yellowish grey, silty clay / clayey silt with sand mixture & steel grey patches.		9	12	16	28	SPT-8	17.50-17.95
						DS-7	18.50
						UDS-8	19.00-19.45
						DS-8	20.00
Very dense, light yellowish grey, silty sand / sandy silt. 20.50m		18	25	35	60	SPT-9	20.50-20.95
21.00m							

BH-29/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 12/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.29

Co-ordinates E=2487.000 N=4132.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 26/12/14
Completion Date : 28/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.494 m.
Water Struck At :
Standing Water Level : 0.75 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
21.00m							
Very dense, light yellowish grey, silty sand / sandy silt.		19	24	33	57	DS-9	21.50
						SPT-10	22.00-22.45
		21	37	39	76	DS-10	23.00
						SPT-11	23.50-23.95
						DS-11	24.50
25.00m		15	27	37	64	SPT-12	25.00-25.45
Hard, light steel grey / light grey, silty clay with traces of sand mixture.						DS-12	26.00
		16	31	40	71	SPT-13	26.50-26.95
						DS-13	27.50
		17	31	43	74	SPT-14	28.00-28.45
						DS-14	29.00
		19	33	43	76	SPT-15	29.50-29.95
						DS-15	30.50
31.00m		15	23	32	55	SPT-16	31.00-31.45
Hard, brownish grey, silty clay / clayey silt with sand mixture. Obs. yellow patches.						DS-16	32.00
		17	22	35	57	SPT-17	32.50-32.95
						DS-17	33.50
34.00m		20	22	39	61	SPT-18	34.00-34.45
Hard, steel grey, silty clay / clayey silt. Obs. yellow patches.						DS-18	35.00
		22	23	32	55	SPT-19	35.50-35.95
						DS-19	36.50
37.00m		25	28	30	58	SPT-20	37.00-37.45
Hard, deep brown, silty clay. Obs. reddish spot, yellow patches.						DS-20	38.00
38.50m		24	27	29	56	SPT-21	38.50-38.95
Hard, brownish grey, silty clay with traces of sand mixture. Obs. yellow patches.						DS-21	39.50
40.45m		27	29	35	64	SPT-22	40.00-40.45

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 22/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.30

Co-ordinates E =(-)2622.000 N=4182.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	1

Commencement Date : 28/12/14
Completion Date : 04/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.074 m.
Water Struck At :
Standing Water Level : 0.65 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.							
Filled up soil consists of light grey, fly ash.		0	0	0	0	DS-1 WS-1 SPT-1	0.50 0.65 1.00-1.45
						*UDS-1	2.00-2.45
2.50m.							
Very loose, deep grey, silty sand / sandy silt.		0	0	0	0	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
		0	0	1	1	SPT-3	5.00-5.45
						*UDS-3	6.00-6.45
7.00m.							
Very loose, brownish grey, silty sand / sandy silt. Obs. steel grey patches.		0	1	2	3	SPT-4	7.00-7.45
						UDS-4	8.00-8.45
9.45m.		0	3	5	8	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
						DS-2	11.00
		5	6	8	14	SPT-6	11.50-11.95
						DS-3	12.50
						*UDS-6	13.00-13.45
						DS-4	14.00
Medium dense, light greenish grey, silty sand / sandy silt.		9	11	16	27	SPT-7	14.50-14.95
						DS-5	15.50
						UDS-7	16.00-16.45
						DS-6	17.00
		12	12	17	29	SPT-8	17.50-17.95
						DS-7	18.50
						UDS-8	19.00-19.45
20.00m.						DS-8	20.00
Dense to very dense, light yellowish grey, silty sand.		18	20	27	47	SPT-9	20.50-20.95
20.75m.							

BH-30/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 22/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.30

Co-ordinates E =(-)2622.000 N=4182.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	1

Commencement Date : 28/12/14
Completion Date : 04/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.074 m.
Water Struck At :
Standing Water Level : 0.65 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	Depth (m)
20.75m							
Dense to very dense, light yellowish grey, silty sand.		20	22	35	57	DS-9	21.50
						SPT-10	22.00-22.45
						DS-10	23.00
23.50m		22	21	37	58	SPT-11	23.50-23.95
Very dense, yellowish grey, silty fine sand.						DS-11	24.50
		15	26	36	62	SPT-12	25.00-25.45
						DS-12	26.00
26.50m		20	25	37	62	SPT-13	26.50-26.95
						DS-13	27.50
		20	21	35	56	SPT-14	28.00-28.45
						DS-14	29.00
Hard, whitish grey, silty clay with yellow patches.		22	35	32	67	SPT-15	29.50-29.95
						DS-15	30.50
		19	30	39	69	SPT-16	31.00-31.45
						DS-16	32.00
32.50m		23	29	31	60	SPT-17	32.50-32.95
						DS-17	33.50
Hard, deep brownish grey, silty clay with yellow patches & sand mixture.		25	28	37	65	SPT-18	34.00-34.45
						DS-18	35.00
35.50m		18	33	39	72	SPT-19	35.50-35.95
						DS-19	36.50
Hard, brownish grey, silty clay with sand mixture as pocket.		19	33	43	76	SPT-20	37.00-37.45
						DS-20	38.00
38.50m		24	36	47	83	SPT-21	38.50-38.95
						DS-21	39.50
Hard, yellowish grey, silty clay with sand mixture.		25	39	48	87	SPT-22	40.00-40.45
40.45m							
N.B. - '*' means sample could not be recovered.							

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 12/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.31

Co-ordinates E=(-)3244.000 N=3980.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 24/12/14
Completion Date : 25/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.264 m.
Water Struck At :
Standing Water Level : 0.6 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.			N	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m							
Filled up soil consists of light grey, fly ash.		0	1	1	2	DS-1	0.50
						SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
3.00m		0	1	0	1	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
Very loose, light brownish grey to deep grey, sandy silt / silty sand with traces of clay binder.		0	0	0	0	SPT-3	5.00-5.45
						*UDS-3	6.00-6.45
		0	1	2	3	SPT-4	7.00-7.45
						UDS-4	8.00-8.45
9.45m		1	2	2	4	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
Medium dense, deep grey, clayey silty sand.						DS-2	11.00
		1	5	8	13	SPT-6	11.50-11.95
						DS-3	12.50
13.00m						UDS-6	13.00-13.45
						DS-4	14.00
		7	13	17	30	SPT-7	14.50-14.95
						DS-5	15.50
						*UDS-7	16.00-16.45
Dense, light greenish grey, silty sand.						DS-6	17.00
		9	13	19	32	SPT-8	17.50-17.95
						DS-7	18.50
						UDS-8	19.00-19.45
						DS-8	20.00
Very dense, brownish grey, silty sand. 20.50m					50		
Obs. traces of clay. 21.00m		13	22	28		SPT-9	20.50-20.95

BH-31/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 12/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.31

Co-ordinates E=(-)3244.000 N=3980.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 24/12/14
Completion Date : 25/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.264 m.
Water Struck At :
Standing Water Level : 0.6 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	Depth (m)
						DS-9	21.50
21.00m		19	22	31	53	SPT-10	22.00-22.45
Very dense, brownish grey, silty sand. Obs. traces of clay.						DS-10	23.00
		21	24	33	57	SPT-11	23.50-23.95
						DS-11	24.50
25.00m		17	22	31	53	SPT-12	25.00-25.45
						DS-12	26.00
		19	21	30	51	SPT-13	26.50-26.95
Hard, light brownish grey, silty clay. Obs. steel grey patches.						DS-13	27.50
		17	23	29	52	SPT-14	28.00-28.45
						DS-14	29.00
		19	24	31	55	SPT-15	29.50-29.95
						DS-15	30.50
31.00m		18	29	35	64	SPT-16	31.00-31.45
						DS-16	32.00
Hard, brownish grey, silty clay. Obs. steel grey patches & sand mixture.		19	29	38	67	SPT-17	32.50-32.95
						DS-17	33.50
34.00m		21	32	42	74	SPT-18	34.00-34.45
						DS-18	35.00
		21	34	43	77	SPT-19	35.50-35.95
						DS-19	36.50
Very dense, steel grey, silty sand with traces of clay. Obs. light brownish patches.		25	40	48	88	SPT-20	37.00-37.45
						DS-20	38.00
		26	36	53	89	SPT-21	38.50-38.95
						DS-21	39.50
40.45m		19	29	45	74	SPT-22	40.00-40.45

N.B. - '*' means sample could not be recovered.

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 22/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.32

Co-ordinates E=(-)2864.000 N=4300.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 04/01/15
Completion Date : 05/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.892 m.
Water Struck At :
Standing Water Level : 0.75 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	Depth (m)
0.00m							
						DS-1	0.50
					0		
Filled up soil consists of light grey, fly ash.		0	0	0		SPT-1	1.00-1.45
						*UDS-1	2.00-2.45
					0		
3.45m		0	0	0		SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
					1		
		0	1	0		SPT-3	5.00-5.45
						*UDS-3	6.00-6.45
Very loose, deep grey, silty sand / sandy silt.					2		
		0	1	1		SPT-4	7.00-7.45
						*UDS-4	8.00-8.45
					7		
		0	3	4		SPT-5	9.00-9.45
9.50m							
						UDS-5	10.00-10.45
						DS-2	11.00
					15		
		4	7	8		SPT-6	11.50-11.95
Medium dense, light greenish grey, silty sand.						DS-3	12.50
						*UDS-6	13.00-13.45
						DS-4	14.00
14.50m					24		
		7	10	14		SPT-7	14.50-14.95
Medium dense, light greenish grey, silty fine sand.						DS-5	15.50
16.00m							
						UDS-7	16.00-16.45
Brownish grey, silty sand. Obs. steel grey patches.						DS-6	17.00
					29		
17.50m		9	13	16		SPT-8	17.50-17.95
						DS-7	18.50
Medium dense, greenish grey, silty fine sand.						UDS-8	19.00-19.45
						DS-8	20.00
20.00m					53		
Very dense, greenish grey, silty fine sand.		18	22	31		SPT-9	20.50-20.95
20.75m							

BH-32/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 22/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.32

Co-ordinates E=(-)2864.000 N=4300.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 04/01/15
Completion Date : 05/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.892 m.
Water Struck At :
Standing Water Level : 0.75 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES Ref. No	SAMPLES Depth (m)
20.75m							
Very dense, greenish grey, silty fine sand.						DS-9	21.50
21.50m					66		
		22	30	36		SPT-10	22.00-22.45
						DS-10	23.00
					81		
		21	36	45		SPT-11	23.50-23.95
						DS-11	24.50
Very dense, whitish grey, silty sand / sandy silt.					84		
		25	37	47		SPT-12	25.00-25.45
						DS-12	26.00
					72		
		23	32	40		SPT-13	26.50-26.95
						DS-13	27.50
28.00m					76		
		22	28	48		SPT-14	28.00-28.45
						DS-14	29.00
Hard, brownish grey, silty clay with kankars mixture.					84		
		20	34	50		SPT-15	29.50-29.95
						DS-15	30.50
31.00m					79		
		30	37	42		SPT-16	31.00-31.45
						DS-16	32.00
					94		
		37	41	53		SPT-17	32.50-32.95
Very dense, yellowish brown, silty sand. Obs. steel grey patches.						DS-17	33.50
					85		
		31	38	47		SPT-18	34.00-34.45
						DS-18	35.00
35.50m					85		
		25	39	46		SPT-19	35.50-35.95
						DS-19	36.50
					78		
		27	31	47		SPT-20	37.00-37.45
						DS-20	38.00
Very dense, yellowish brown, silty sand with clay lamination					82		
		22	37	45		SPT-21	38.50-38.95
						DS-21	39.50
					76		
40.45m		21	33	43		SPT-22	40.00-40.45

N.B. - '*' means sample could not be recovered.

BH-32/Sheet-2

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 28/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.33

Co-ordinates E=(-)2917.000 N=4176.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 16/01/15
Completion Date : 18/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.746 m.
Water Struck At :
Standing Water Level : 0.45 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m							
Filled up soil consists of light grey, fly ash.		0	0	0	0	DS-1	0.50
						SPT-1	1.00-1.45
						UDS-1	2.00-2.45
2.50m							
Very loose to loose, light brownish grey to deep grey, clayey silty sand.		0	0	1	1	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
		1	1	1	2	SPT-3	5.00-5.45
						UDS-3	6.00-6.45
		2	4	4	8	SPT-4	7.00-7.45
						UDS-4	8.00-8.45
9.00m							
Medium dense, light grey, clayey silty sand. Obs. brownish patches.		4	5	8	13	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
						DS-2	11.00
		6	9	10	19	SPT-6	11.50-11.95
12.50m						DS-3	12.50
						UDS-6	13.00-13.45
						DS-4	14.00
Dense, light greenish grey, clayey silty sand.		12	13	22	35	SPT-7	14.50-14.95
						DS-5	15.50
						UDS-7	16.00-16.45
						DS-6	17.00
17.50m					42		
		13	19	23		SPT-8	17.50-17.95
Dense, light yellowish grey, clayey silty sand.						DS-7	18.50
						UDS-8	19.00-19.45
						DS-8	20.00
20.50m					68		
Very dense, light yellowish grey, silty coarse sand.		21	32	36		SPT-9	20.50-20.95
21.00m							

BH-33/Sheet-1

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 28/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.33

Co-ordinates E=(-)2917.000 N=4176.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 16/01/15
Completion Date : 18/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 8.746 m.
Water Struck At :
Standing Water Level : 0.45 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.		SAMPLES Ref. No	Depth (m)
21.00m.				DS-9	21.50
		24 32 39	71	SPT-10	22.00-22.45
				DS-10	23.00
Very dense, light yellowish grey, silty coarse sand.		26 30 42	72	SPT-11	23.50-23.95
				DS-11	24.50
		29 39 46	85	SPT-12	25.00-25.45
				DS-12	26.00
26.50m.		13 28 35	63	SPT-13	26.50-26.95
				DS-13	27.50
Hard, light brownish grey, silty clay.		12 26 32	58	SPT-14	28.00-28.45
				DS-14	29.00
		21 27 34	61	SPT-15	29.50-29.95
30.50m.				DS-15	30.50
		25 31 37	68	SPT-16	31.00-31.45
				DS-16	32.00
		26 34 41	75	SPT-17	32.50-32.95
				DS-17	33.50
		28 38 48	86	SPT-18	34.00-34.45
				DS-18	35.00
Very dense, light brownish grey, silty sand.		32 42 51	93	SPT-19	35.50-35.95
				DS-19	36.50
		27 39 49	88	SPT-20	37.00-37.45
				DS-20	38.00
		25 41 56	97	SPT-21	38.50-38.95
				DS-21	39.50
		35 53 50	>100	SPT-22	40.00-40.40
40.45m.		10.0 cm Penth.			

BH-33/Sheet-2

Project : Geotech. Inv. Work for 2x660MW Coal Based STPP at Ash Dyke of NCTPS, Chennai. CETEST

Job No : 3388 | Created by : Chandrani | Created on : 13/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.34

Co-ordinates E=(-)3065.000 N=4073.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	8
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	1

Commencement Date : 17/02/14
Completion Date : 19/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 9.222 m.
Water Struck At :
Standing Water Level : 0.55 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m							
Filled up soil consists of light grey, fly ash.		0	0	1	1	DS-1 WS-1 SPT-1	0.50 0.55 1.00-1.45
						*UDS-1	2.00-2.45
3.00m		0	0	0	0	SPT-2	3.00-3.45
						*UDS-2	4.00-4.45
Very soft, deep grey, sandy silty clay.		0	0	1	1	SPT-3	5.00-5.45
						*UDS-3	6.00-6.45
		0	2	2	4	SPT-4	7.00-7.45
						UDS-4	8.00-8.45
8.45m		2	5	8	13	SPT-5	9.00-9.45
						UDS-5	10.00-10.45
Medium dense, deep grey to light grey, clayey silty sand.						DS-2	11.00
		5	7	12	19	SPT-6	11.50-11.95
						DS-3	12.50
13.00m						UDS-6	13.00-13.45
						DS-4	14.00
Medium dense to dense, light greenish grey, silty fine sand.		7	11	15	26	SPT-7	14.50-14.95
						DS-5	15.50
						UDS-7	16.00-16.45
17.00m						DS-6	17.00
		7	13	18	31	SPT-8	17.50-17.95
						DS-7	18.50
Dense, light yellowish grey, silty sand. Obs. traces of clay.						UDS-8	19.00-19.45
						DS-8	20.00
21.00m		9	16	21	37	SPT-9	20.50-20.95

BH-34/Sheet-1

CONTENTS

1.00.0 SCOPE

1.01.0 This specification covers the installation of driven cast-in-situ compaction piles. It also covers test to be carried out on the virgin as well as improved ground.

2.00.00 GENERAL REQUIREMENT

2.01.00 This specification covers the technical requirements for compaction piles.

2.02.00 The work shall include supplying and providing necessary materials, mobilization of all necessary equipments providing necessary engineering supervision through qualified and technical personnel, skilled and unskilled labour etc as required to carry out the complete compaction piles works including necessary testing and submission of records as per schedule.

2.03.00 All works shall be executed as per the specification to the satisfaction of the Engineer.

2.04.00 The design of detachable pile shoe shall be furnished for approval by BHEL / BSEB customer consultancy along with this specification.

2.05.00 It is essential that all equipments and instruments are properly calibrated both at commencement and immediately after the completion of tests so that they represent true values.

2.06.00 The coordinates and position of compaction piles as shall be as per the approved drawings. All the required survey instruments shall provide at site to the satisfaction of the Engineer so that the work can be carried out accurately according to specification and drawings.

2.07.00 The quality of compaction piles work including quality of sand and gravel used shall be approved at Site before use.

3.00.00 MATERIALS

3.01.00 GENERAL

All materials viz stone aggregate and sand shall conform to IS: 383. Sand and stone aggregate mix of 1 (sand): 2 (stone aggregate with size 50 mm and down) shall be used. For quality of materials refer to Cl 5.05.01

4.00.00 COMPACTION PILES INSTALLATION

Installation of compaction piles shall be as per procedure outlined elsewhere in the specification, relevant drawings and as per the direction of the Engineer.

4.01.00 EQUIPMENT AND ACCESSORIES

4.01.01 The equipment and accessories for installation of driven cast-in-situ compaction piles shall be with Driven Piling Rig of suitable capacity to suit the installation procedure mentioned below. These shall be of standard type and shall have the approval of the Engineer.

4.01.02 Among the commonly used plants, tools and accessories, there exists a large Variety; suitability of which depends on the subsoil conditions, manner of Operations etc. Brief definitions of some commonly used equipment are given below.

Dolly: A cushion of hardwood or some suitable material placed on the top of the casing to receive the blows of the hammer.

Drop hammer (or Monkey): Hammer, ram or monkey raised by a winch and allowed to fall under gravity. Minimum weight of hammer to be adopted shall not be less than 4 MT.

Pile frame (or Pile rig) : A movable steel structure for deriving the casing for compaction piles in the correct position and alignment by means of a hammer operating in the guides or (leaders) of the frame.

4.01.03 The list and details of equipment and accessories proposed to be used for the job shall be submitted.

4.02.00 INSTALLATION PROCEDURE

4.02.01 Drive a 500 mm/550mm / 600 mm diameter M.S. casing pipe with detachable shoe (flat or conical) at the bottom using a monkey/hammer at the desired locations as shown in the construction drawings. The depth of driving the casing shall be as shown in the drawing. The height of free fall of the monkey shall be at least 1 m during driving the casing.

4.02.02 Fill the casing pipe for 800 mm depth with desired back fill material as specified elsewhere in the specification.

4.02.03 Withdraw/lift the casing pipe for about 800 mm from the bottom.

4.02.04 After withdrawal/lifting the casing for about 800 mm, the backfill material inside the hole shall be thoroughly compacted using dynamic compaction method so as to achieve maximum compaction. Dynamic compaction may be done using a tamper/hammer operating inside the hole. The base diameter of tamper/hammer may be about 300 to 550 mm and the weight of tamper/hammer shall be at least 500 kg. The minimum height of fall of the hammer during compaction shall be 750 mm. To achieve the desired compaction of backfill material for 800 mm depth, about 15 to 20 blows are required with a hammer of 500 kg.

4.02.05 Once the first layer is compacted, fill the casing pipe for another 800 mm height with the desired backfill material and the procedure mentioned above shall be repeated so as to achieve maximum compaction.

4.02.06 After achieving the compaction of 2nd layer, repeat the procedure as mentioned above layer wise till the compaction piles are installed up to the existing ground level.

4.02.07 While installing a large group of compaction piles, the sequence of installation shall be from the centre to the periphery or one side to the other for avoiding possibility of damaging the neighboring compaction piles and heaving of soil.

4.02.08 Centre to centre spacing of compaction piles shall be as per the relevant drawing.

4.03.00 CONTROL OF POSITION AND ALIGNMENT

4.03.01 Compaction piles shall be installed as accurately vertical as possible.

4.04.00 ADJACENT STRUCTURES

4.04.01 When working near existing structures care shall be taken to avoid any damage to such structures.

4.05.00 Reference of Compaction piles Installation

4.05.01 Each compaction piles shall be identified with a reference number.

4.06.00 Rejection and Replacement of Defective Compaction piles

4.06.01 The Engineer reserves the right to reject any compaction piles which in his opinion is defective on account of position, alignment, quality of workmanship and materials etc. Compaction piles that are defective shall be left in place as judged convenient by the Engineer without affecting the performance of adjacent compaction piles. The Bidder shall install additional compaction piles to substitute the defective compaction piles as per the directions of the Engineer at no extra cost to BHEL.

4.07.00 Recording of Compaction piles Data

4.07.01 The Bidder shall record all the information during installation of compaction piles. Typical data sheet for recording pile data shall be as shown in Annexure-D of IS: 15284, Part I. On completion of each compaction piles installation, compaction piles record in triplicate shall be submitted to Engineer.

5.00.00 TESTING AND QUALITY ASSURANCE

5.01.00 Facilities required for testing of compaction piles in field should be provided by the Bidder. The Bidder shall carry out all testing in accordance with the relevant Indian Standards and as per this Specification. Where no specific testing procedure is mentioned the tests shall be carried out as per the prevalent accepted engineering

practice and as per the directions of the Engineer. Tests shall be done in the presence of the Engineer or his authorized representative. In case the Engineer requires additional tests, the same shall be arranged by BHEL.

5.02.00 All inspection and testing records shall be maintained which shall be made available to the Engineer.

5.03.00 Materials found unsuitable for acceptance shall be removed and replaced. The work done by this unsuitable material shall be redone as per specification requirements & and to the satisfaction of the Engineer.

5.04.00 Quality Assurance Programme

a) The installation procedure mentioned above shall be followed and any deviations in the same shall be brought to the notice of the Engineer. This shall also include setting up of a testing laboratory, arrangement of testing apparatus/equipment, deployment of qualified/experienced manpower, etc. The testing apparatus/equipment installed in the field laboratory shall be calibrated/ corrected by the qualified persons as frequently as possible to give accurate testing results.

b) Frequency of sampling and testing, etc. and Acceptance Criteria are given in Table - 1. The testing shall be done at field, laboratory or any other laboratory approved by the Engineer. However, the testing frequencies set forth are the desirable minimum and the Engineer shall have the full authority to call for tests as frequently as he may deem necessary to satisfy himself that the materials and works comply with the appropriate specifications. The materials shall be tested to meet all the specified requirements before acceptance at approved laboratory. Tests indicated in the table are for cross checking at site the conformity of the materials to some of the specifications.

5.05.00 TESTING OF MATERIALS

5.05.01 Sand and other materials shall be tested for quality, strength and other properties please refer to Table -1

5.05.02 Plate load test and Dynamic penetration test on virgin and improved ground shall be conducted as per required depth and location as shown in the relevant drawings.

5.05.03 The acceptance criteria shall be as mentioned in Table-1.

5.06.00 TESTING FOR POSITION AND ALIGNMENT

5.06.01 Each compaction piles shall be checked for its position and alignment as per relevant drawings.

6.00.00 FIELD TESTS

The following tests shall be carried out as per relevant Indian Standards or as directed by Engineer.

6.01.00 DYNAMIC CONE PENETRATION TEST

6.01.01 The specification for the equipment and accessories required for performing the test, test procedure, field observations and reporting of results shall conform to IS:4968, Part-I. The location and depth of the test shall be as given in the drawing or as indicated by the engineer-in-charge.

6.02.00 PLATE LOAD TEST

6.02.01 The specification for equipment and accessories required for conducting the test, the test procedure, field observations and reporting of results etc shall conform to IS: 1888. The location and depth of the test shall be as given in the drawing or as indicated by the engineer-in-charge.

ANNEXURE-A

TABLE -1

FREQUENCY PLAN OF SAMPLING AND TESTING

SI. No	Type of material / work	Nature of Test/ characteristics	Method of Test & frequency	No. of test	Acceptance Criteria
1.	Compaction piles				
	a) diameter		Physical measurement	Each stone column	As per specification
	b) length				
2.	Position and Alignment	-	Survey Instrument / any Approved method	Each stone column	As per specification
3.	Stone aggregate and sand	As per IS:383	Site Lab test regularly / In approved lab on change in source		As Below
a	50 mm and down stone aggregates	Aggregate Crushing Value	In approved lab, as per IS 2386 Part-IV	One test for every 5000 m3 and at every source	as per IS 2386 Part-IV
b	50 mm and down stone aggregates	Sieve Analysis	Site Lab test regularly / In approved lab on change in source	-do-	As per Annexure-B
c	Sand	Grading of Sand	Site Lab test regularly / In approved lab on change in source	-do-	Zone-I/Zone-II/Zone-III As per IS 383 Table- 4

ANNEXURE-B

Grading Requirement of 50 mm and down stone aggregates

Sieve size, mm	Percent passing the sieve, by weight
50	100
40	35 - 70
20	0 - 10
10	0 - 5

TECHNICAL SPECIFICATION FOR
INSTALLATION OF STONE COLUMN BY VIBRO DISPLACEMENT METHOD (DRY METHOD)
FOR
2 X 660MW ENNORE SEZ STPS

CONTENTS

1.00.0 SCOPE

1.01.0 This specification covers the installation of stone column by vibro displacement method. It also covers test to be carried out on the virgin as well as improved ground.

2.00.00 GENERAL REQUIREMENT

2.01.00 This specification covers the technical requirements for stone column by vibro displacement method.

2.02.00 The work shall include supplying and providing necessary materials, mobilization of all necessary equipments providing necessary engineering supervision through qualified and technical personnel, skilled and unskilled labour etc as required to carry out the complete stone column works including necessary testing and submission of records as per schedule.

2.03.00 All works shall be executed as per the specification to the satisfaction of the Engineer.

2.04.00 The design of detachable pile shoe shall be furnished for approval by BHEL / BSEB customer consultancy along with this specification.

2.05.00 It is essential that all equipments and instruments are properly calibrated both at commencement and immediately after the completion of tests so that they represent true values.

2.06.00 The coordinates and position of stone column as shall be as per the approved drawings. All the required survey instruments shall provide at site to the satisfaction of the Engineer so that the work can be carried out accurately according to specification and drawings.

2.07.00 The quality of stone column work including quality of sand and gravel used shall be approved at Site before use.

3.00.00 MATERIALS

3.01.00 GENERAL

All materials viz stone aggregate and sand shall conform to IS: 383. Sand and stone aggregate mix of 1 (sand): 2 (stone aggregate with size 50 mm and down) shall be used. For quality of materials refer to Cl 5.05.01

4.00.00 STONE COLUMN INSTALLATION

Installation of stone column shall be as per procedure outlined elsewhere in the specification, relevant drawings and as per the direction of the Engineer.

4.01.00 EQUIPMENT AND ACCESSORIES

4.01.01 The equipment and accessories for installation of stone column shall be with using ground improvement rigs and accessories capable of installing stone columns by Vibro-displacement method (dry method) using vibro flot/vibro cat/any other suitable means to suit the installation procedure mentioned below. These shall be of standard type and shall have the approval of the Engineer.

4.02.00 INSTALLATION PROCEDURE

4.02.01 Vibro flot/vibro cat/any other suitable means is used to support the bottom feed vibrator assembly and penetration of required depth by the combined actions of vibrations and a push down thrust. No water shall be used to penetrate the vibro flot/vibro cat in any case and it shall not be allowed in any circumstances. Once the vibrator is reached to the required depth, stone shall be filled to the tip of the vibrator. The vibrator shall be removed in small steps up and down to laterally displace the stone and simultaneously compact the stone and the surrounding in-situ soil/ash.

4.02.02 Filling of stone column shall be done for 800 mm depth with desired back fill material as specified elsewhere in the specification. This process shall be repeated up to ground level, leaving a well compacted, tightly interlocked stone column surrounded by soil/ash.

4.02.03 The vibrator shall not be removed from the ground during column construction in order to maintain stability of the sides to ensure that the stone shall reach the required depth.

4.02.04 After withdrawal/lifting the vibrator for about 800 mm, the backfill material inside the hole shall be thoroughly compacted using dynamic compaction method so as to achieve maximum compaction. Dynamic compaction may be done using a suitable means operating inside the hole.

4.02.05 Once the first layer is compacted, fill the casing pipe for another 800 mm height with the desired backfill material and the procedure mentioned above shall be repeated so as to achieve maximum compaction.

4.02.06 After achieving the compaction of 2nd layer, repeat the procedure as mentioned above layer wise till the stone column are installed up to the existing ground level.

4.02.07 While installing a large group of stone column, the sequence of installation shall be from the centre to the periphery or one side to the other for avoiding possibility of damaging the neighboring stone column and heaving of soil.

4.02.08 Centre to centre spacing of stone column shall be as per the relevant drawing.

4.03.00 CONTROL OF POSITION AND ALIGNMENT

4.03.01 Stone column shall be installed as accurately vertical as possible.

4.04.00 ADJACENT STRUCTURES

4.04.01 When working near existing structures care shall be taken to avoid any damage to such structures.

4.05.00 Reference of stone column installation

4.05.01 Each stone column shall be identified with a reference number.

4.06.00 Rejection and Replacement of Defective stone column

4.06.01 The Engineer reserves the right to reject any stone column which in his opinion is defective on account of position, alignment, quality of workmanship and materials etc. Stone column that are defective shall be left in place as judged convenient by the Engineer without affecting the performance of adjacent stone column. The Bidder shall install additional stone column to substitute the defective stone column as per the directions of the Engineer at no extra cost to BHEL.

4.07.00 Recording of stone column Data

4.07.01 The Bidder shall record all the information during installation of stone column. Typical data sheet for recording pile data shall be as shown in Annexure-D of IS: 15284, Part I. On completion of each stone column installation, stone column record in triplicate shall be submitted to Engineer.

5.00.00 TESTING AND QUALITY ASSURANCE

5.01.00 Facilities required for testing of stone column in field should be provided by the Bidder. The Bidder shall carry out all testing in accordance with the relevant Indian Standards and as per this Specification. Where no specific testing procedure is mentioned the tests shall be carried out as per the prevalent accepted engineering practice and as per the directions of the Engineer. Tests shall be done in the presence of the Engineer or his authorized representative. In case the Engineer requires additional tests, the same shall be arranged by BHEL.

5.02.00 All inspection and testing records shall be maintained which shall be made available to the Engineer.

5.03.00 Materials found unsuitable for acceptance shall be removed and replaced. The work done by this unsuitable material shall be redone as per specification requirements & and to the satisfaction of the Engineer.

5.04.00 Quality Assurance Programme

a) The installation procedure mentioned above shall be followed and any deviations in the same shall be brought to the notice of the Engineer. This shall also include setting up of a testing laboratory, arrangement of testing apparatus/equipment, deployment of qualified/experienced manpower, etc. The testing apparatus/equipment installed in the field laboratory shall be calibrated/ corrected by the qualified persons as frequently as possible to give accurate testing results.

b) Frequency of sampling and testing, etc. and Acceptance Criteria are given in Table - 1. The testing shall be done at field, laboratory or any other laboratory approved by the Engineer. However, the testing frequencies set forth are the desirable minimum and the Engineer shall have the full authority to call for tests as frequently as he may deem necessary to satisfy himself that the materials and works comply with the appropriate specifications. The materials shall be tested to meet all the specified requirements before acceptance at approved laboratory. Tests indicated in the table are for cross checking at site the conformity of the materials to some of the specifications.

5.05.00 TESTING OF MATERIALS

5.05.01 Sand and other materials shall be tested for quality, strength and other properties please refer to Table -1

5.05.02 Plate load test and Dynamic penetration test on virgin and improved ground shall be conducted as per required depth and location as shown in the relevant drawings.

5.05.03 The acceptance criteria shall be as mentioned in Table-1.

5.06.00 TESTING FOR POSITION AND ALIGNMENT

5.06.01 Each stone column shall be checked for its position and alignment as per relevant drawings.

6.00.00 FIELD TESTS

The following tests shall be carried out as per relevant Indian Standards or as directed by Engineer.

6.01.00 DYNAMIC CONE PENETRATION TEST

6.01.01 The specification for the equipment and accessories required for performing the test, test procedure, field observations and reporting of results shall conform to IS:4968, Part-I. The location and depth of the test shall be as given in the drawing or as indicated by the engineer-in-charge.

6.02.00 PLATE LOAD TEST

6.02.01 The specification for equipment and accessories required for conducting the test, the test procedure, field observations and reporting of results etc shall conform to IS: 1888. The location and depth of the test shall be as given in the drawing or as indicated by the engineer-in-charge.

ANNEXURE-A

TABLE -1

FREQUENCY PLAN OF SAMPLING AND TESTING

Sl. No	Type of material / work	Nature of Test/ characteristics	Method of Test & frequency	No. of test	Acceptance Criteria
1.	stone column				
	a) diameter		Physical measurement	Each stone column	As per specification
	b) length				
2.	Position and Alignment	-	Survey Instrument / any Approved method	Each stone column	As per specification
3.	Stone aggregate and sand	As per IS:383	Site Lab test regularly / In approved lab on change in source		As Below
a	50 mm and down stone aggregates	Aggregate Crushing Value	In approved lab, as per IS 2386 Part-IV	One test for every 5000 m3 and at every source	as per IS 2386 Part-IV
b	50 mm and down stone aggregates	Sieve Analysis	Site Lab test regularly / In approved lab on change in source	-do-	As per Annexure-B
c	Sand	Grading of Sand	Site Lab test regularly / In approved lab on change in source	-do-	Zone-I/Zone-II/Zone-III As per IS 383 Table- 4

ANNEXURE-B

Grading Requirement of 50 mm and down stone aggregates

Sieve size, mm	Percent passing the sieve, by weight
50	100
40	35 - 70
20	0 - 10
10	0 - 5