T E N D E R S P E C I F I C A T I O N

NO: BHE/PW/PUR/WNT2-CVL BOP/1574

(CIVIL AND ARCHITECTURAL WORK OF BOP)

All Civil and Architechural work BOP & Non Plant Buildings (But Not Limited to):- Civil work of all RCC Framed Buildings of BOP like praking,chlorination plant, clarified water & fire water pump house, clarified and fire water tank, CPU building, Ozone building, fire station bldg., DM Plant plant & chemical house , Neutralization pit, LDO/HFO Day tank fdns., dykes, FO Transfer pump house, LDO/HFO Pipe Corridor, FO pressuring pump house, store, CWTP,FOAM PH,Booster PH, balance civil work of remaining Pipe rack, chemical house, canteen building , fencing all types, Balance Civil foundation , Storm Water Sump, Service water tank, Storm Water Drain connecting outfall,SSF,Sewer System thrust block,road & drain ,watch tower,water harvesting well, Customer site office, CST & CST Pump House including piling, pilecap,pedestals with bolts,septic tanks and soak pits miscleneous items which are not covered under other Packages item rate.

AT

1X800 MW Thermal Power Station, Wanakbori, Distt- Kheda, Gujarat

Legible Version of Volume 1 E – Technical Specification Section-C and Section D (Part-2)

TENDER SPECIFICATIONS CONSISTS OF:

- **Notice Inviting Tender**
- **Volume 1 A - Technical Conditions of Contract,**
- **Volume 1 B - Special conditions of Contract,**
- **Volume 1 C - General conditions of Contract**
- **Volume 1 D - Forms & Procedures**
- **Volume 1 E – Technical Specification Section-C, Section D and Plot Plan AND Geo technical investigation Report**

Bharat Heavy Electricals Limited
(*A Government of India Undertaking*)
Power Sector - Western Region
345-Kingsway, Nagpur-440001

Date
Seal and Signature
Place

Job No: 3369

REPORT ON
GEOTECHNICAL INVESTIGATION WORK FOR
1 x 800MW WANAKBORI TPS,
GUJARAT.

VOLUME 1
(*Main Report with Recommendations*)

Owner:

Client :

Maharatna Company

Foundation Consultant :

March – 2015

Job No: 3369

REPORT ON
GEOTECHNICAL INVESTIGATION WORK FOR
1 x 800MW WANAKBORI TPS,
GUJARAT.

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

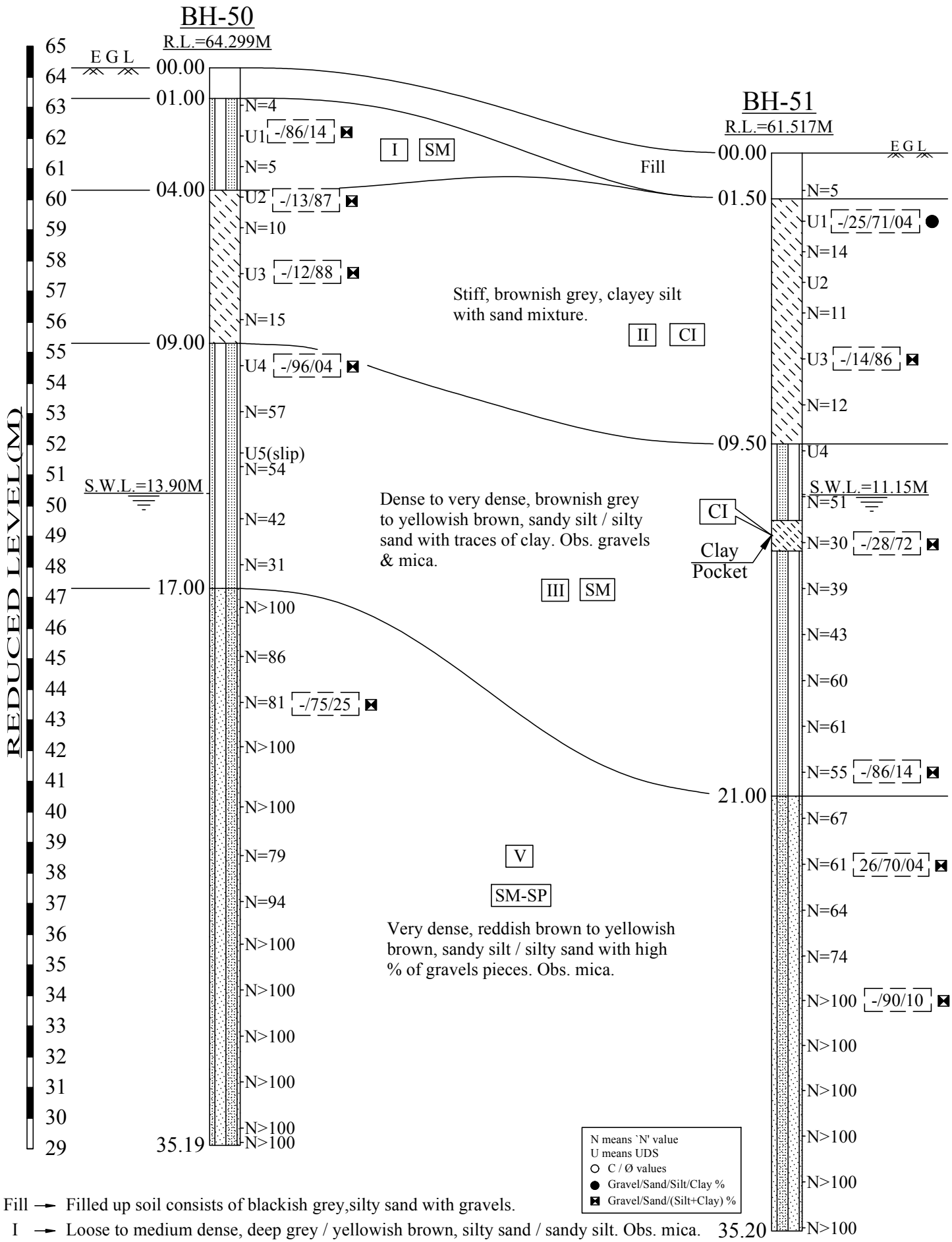
Owner:

Client :

Maharatna Company

Foundation Consultant :

March – 2015

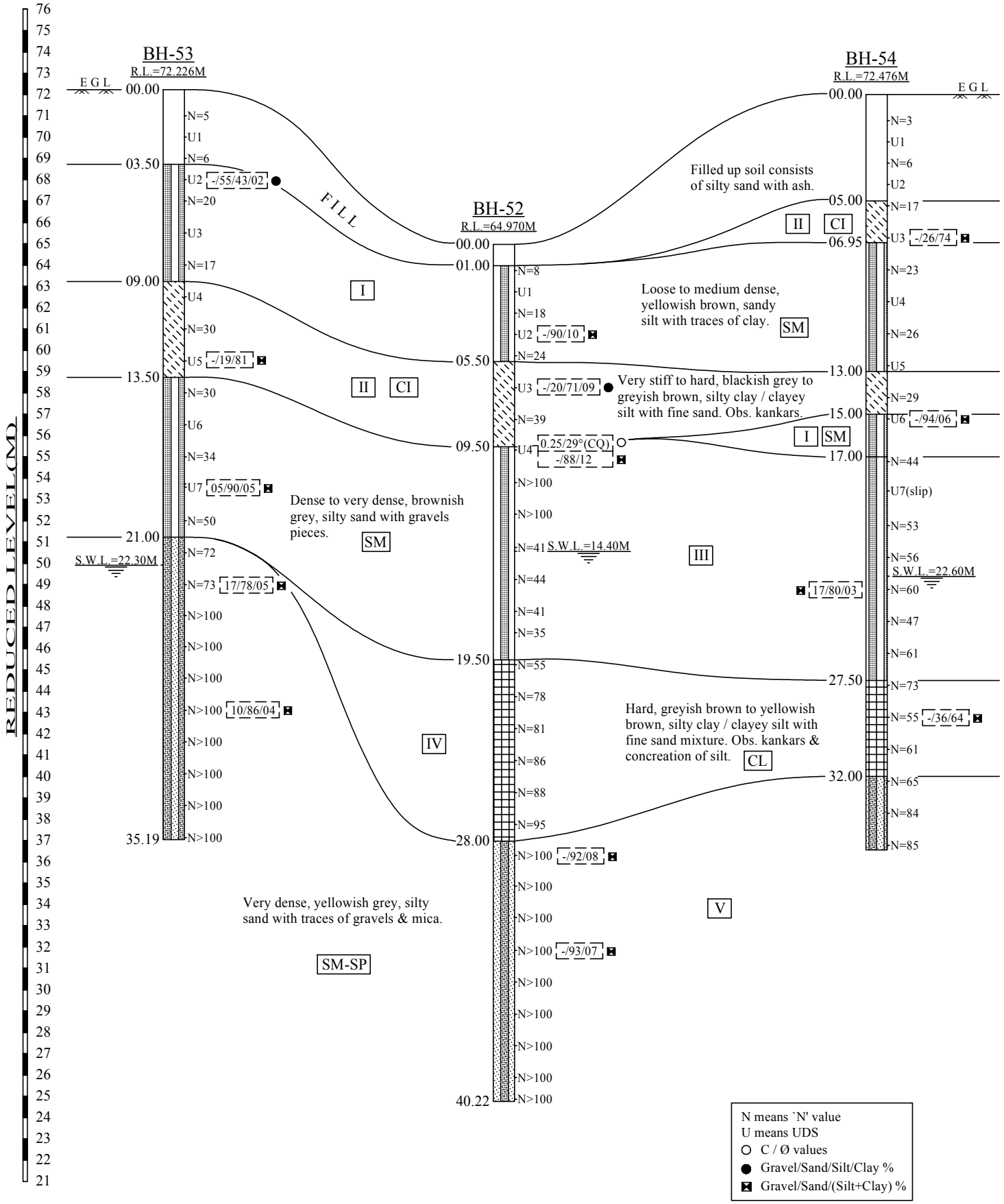


Fill → Filled up soil consists of blackish grey,silty sand with gravels.

I → Loose to medium dense, deep grey / yellowish brown, silty sand / sandy silt. Obs. mica.

(ID FAN)

FIG. 2.16 : GENERALISED SOIL PROFILE



(Chimney)

FIG. 2.17 : GENERALISED SOIL PROFILE

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 13/01/2015	Sheet No:

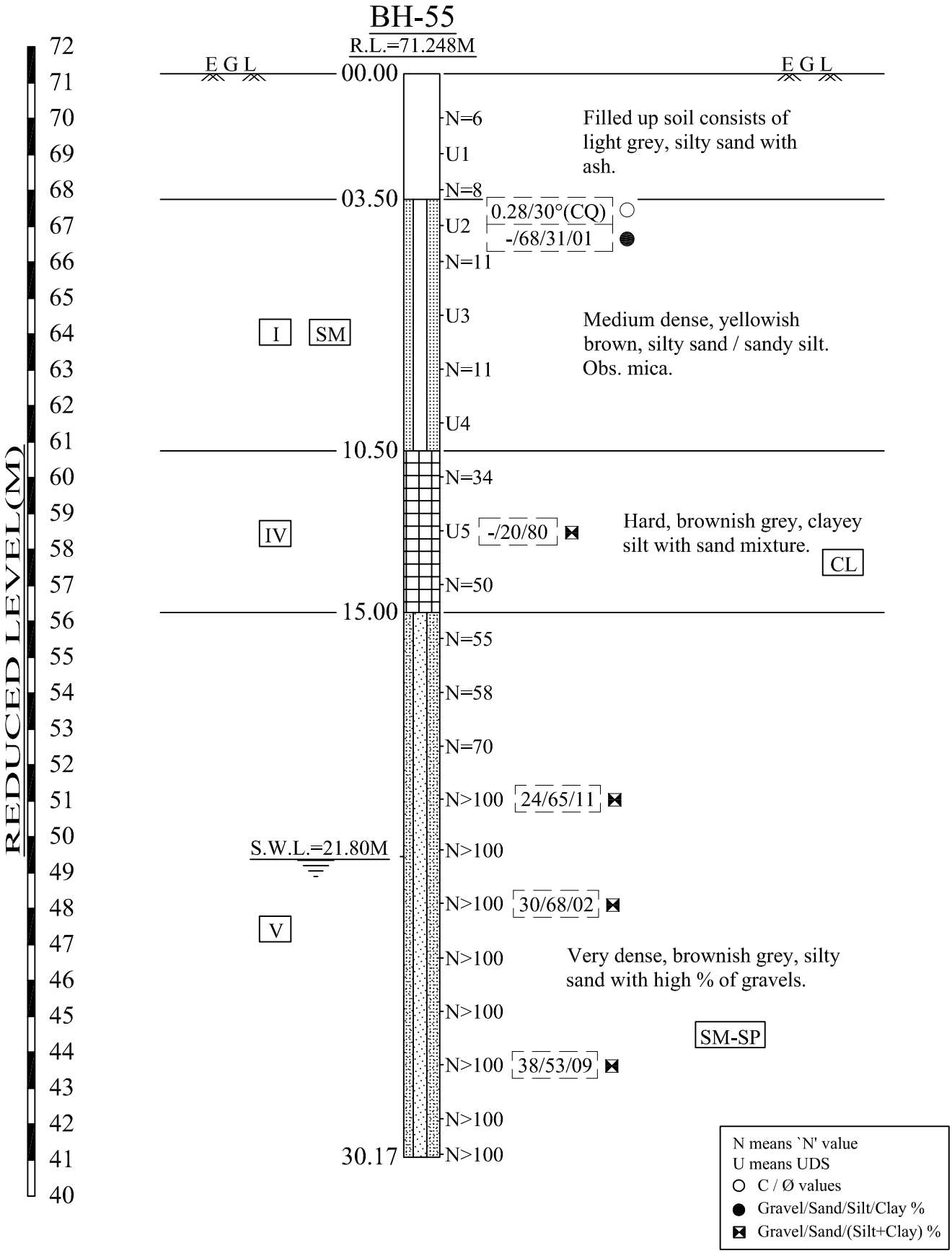


FIG. 2.18 : GENERALISED SOIL PROFILE

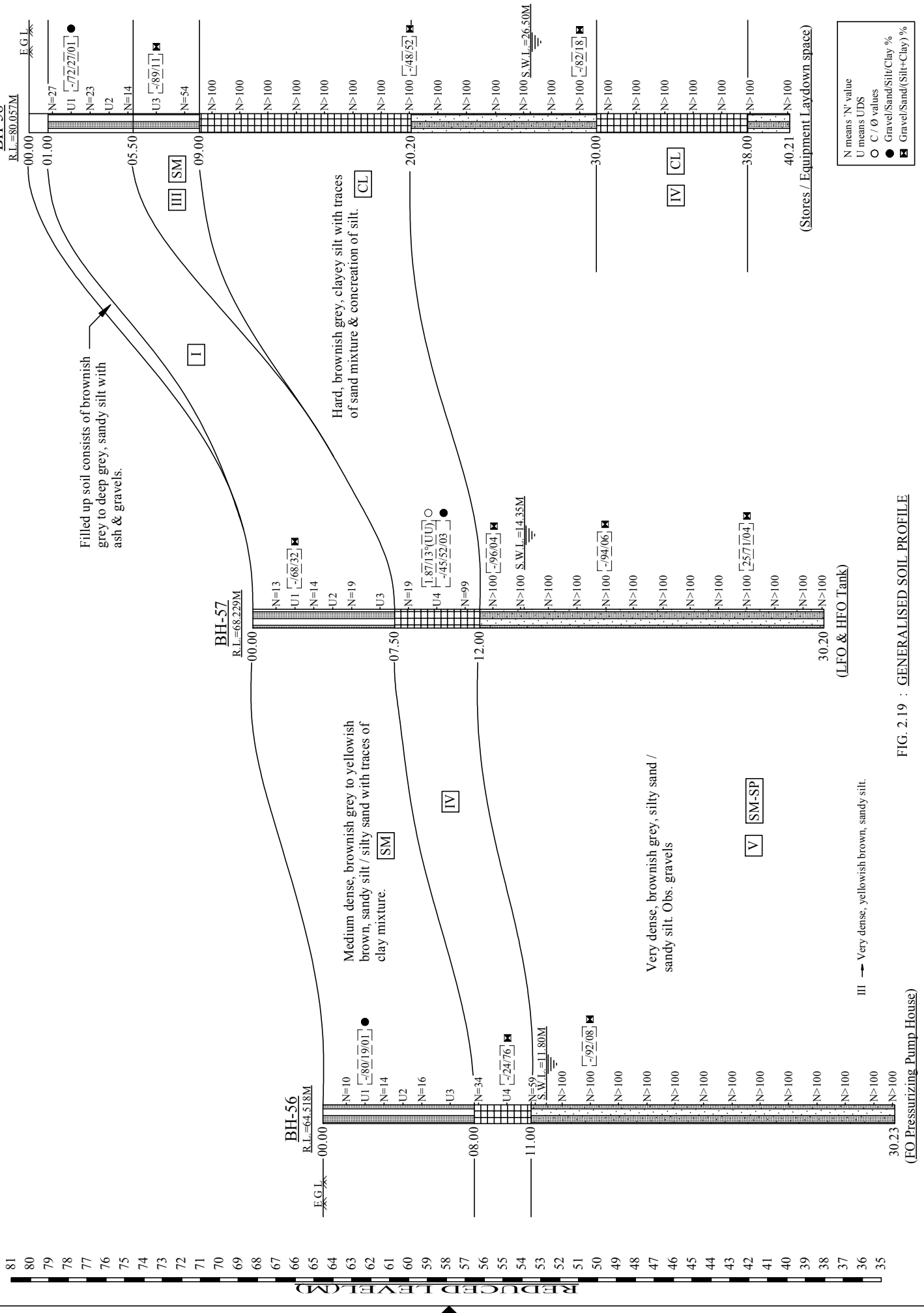
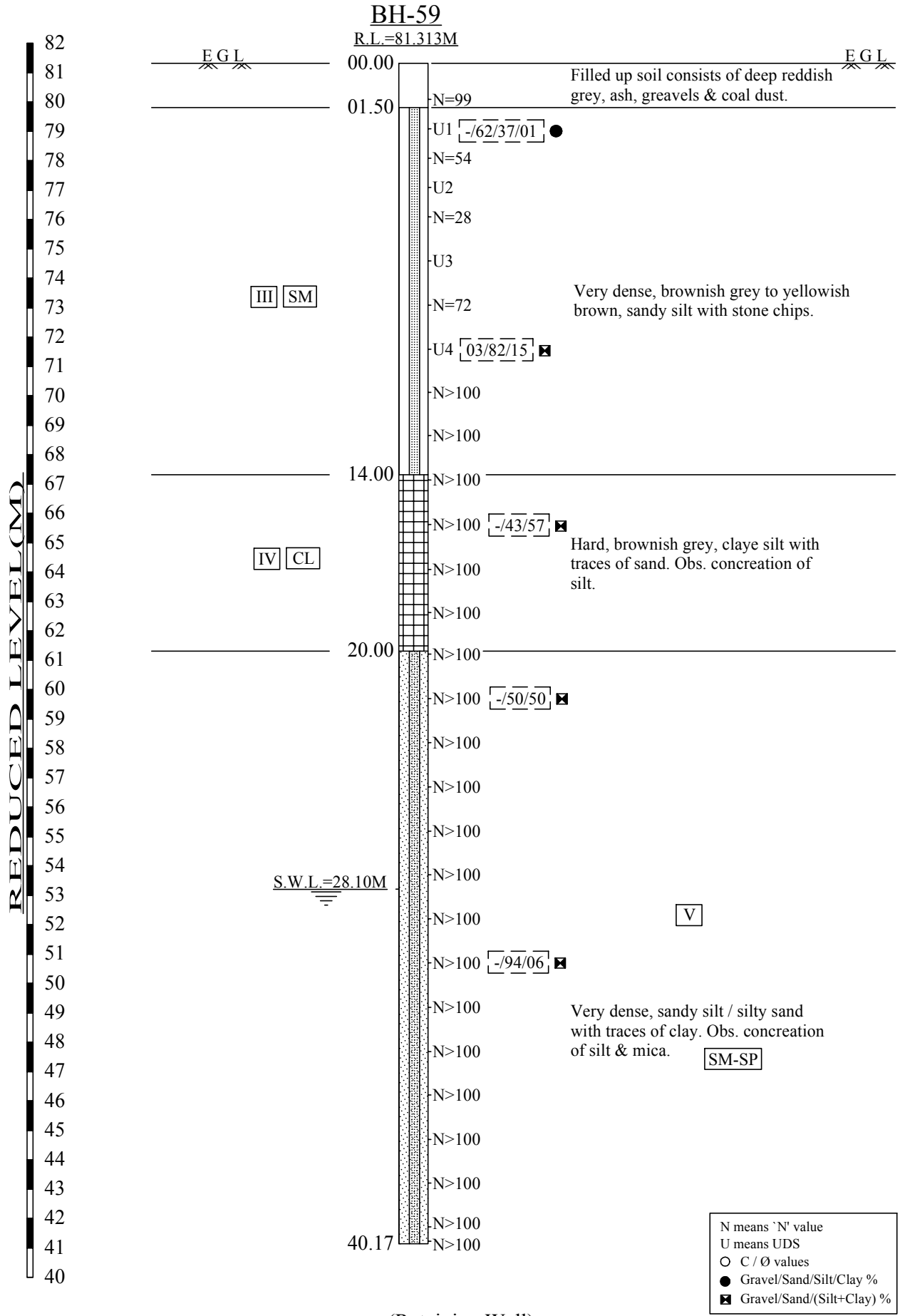


FIG. 2.19 : GENERALISED SOIL PROFILE


BH-59
R.L.=81.313M
REDUCED LEVEL(M)
82
81
80
79
78
77
76
75
74
73
72
71
70
69
68
67
66
65
64
63
62
61
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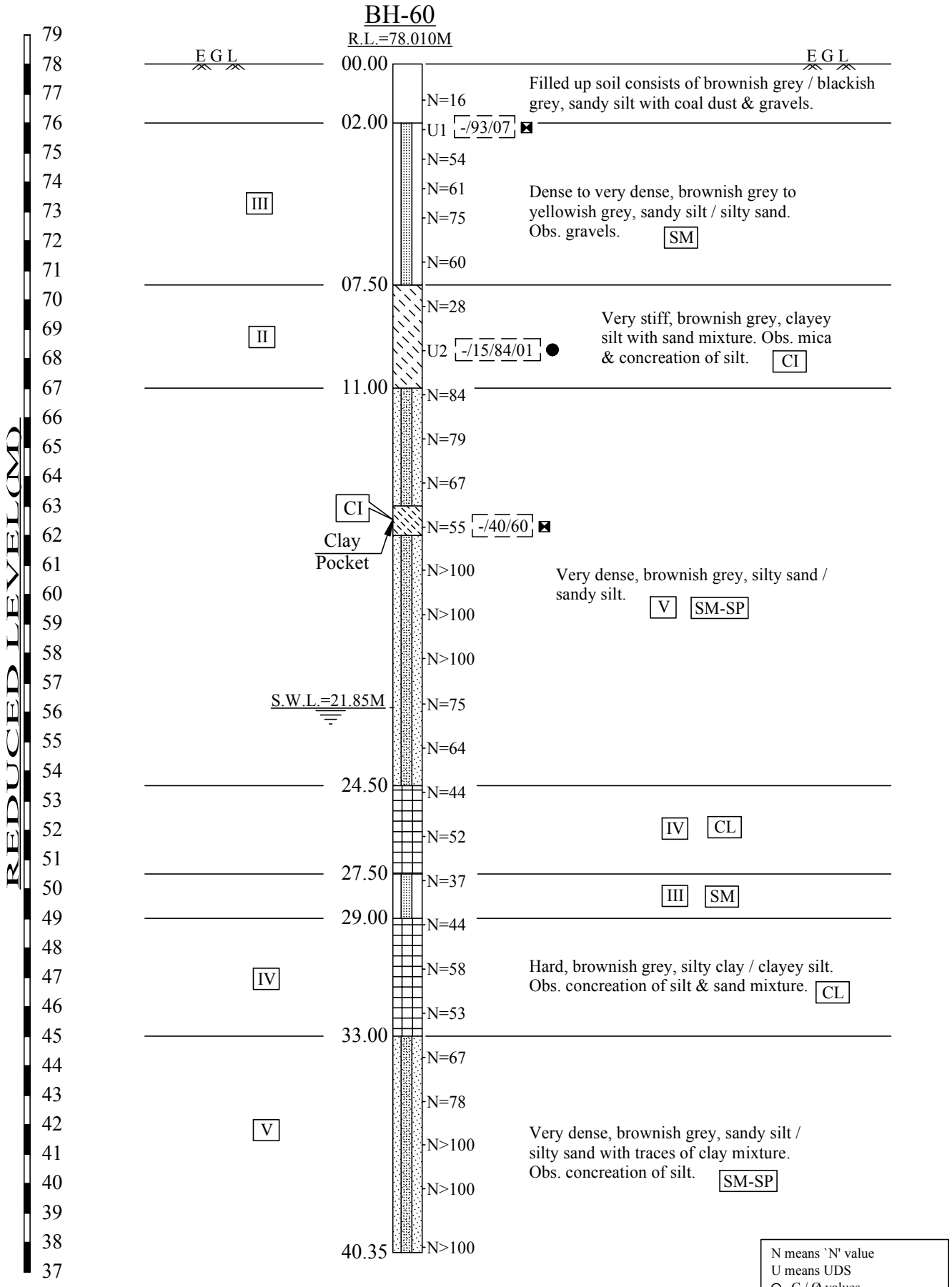
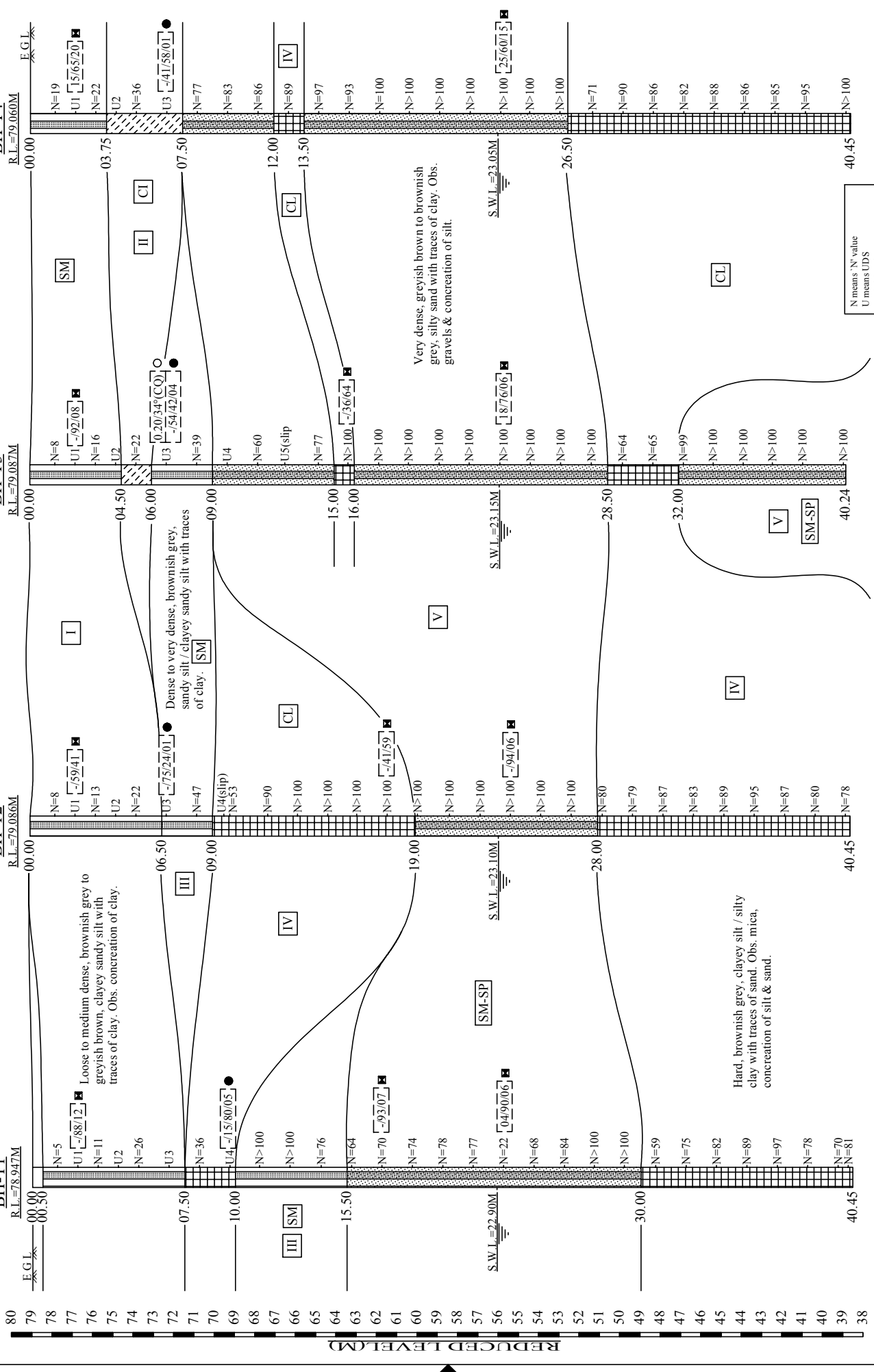
48
47
46
45
44
43
42
41
40
E G L
E G L
00.00
01.50
14.00
20.00
40.17
S.W.L.=28.10M
N=99
U1 -/62/37/01
N=54
U2
N=28
U3
N=72
U4 03/82/15
N>100
N>100
N>100



(Fo Transfer Pump House)

FIG. 2.21 : GENERALISED SOIL PROFILE

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 16 / 01 / 2015	Sheet No:



(400KV Extn. Switch Yeard)

FIG. 2.22 : GENERALISED SOIL PROFILE

4.2.3. STRATUM - IIA:

The soil in this layer consists of medium, deep grey / reddish brown / yellowish brown, silty clay / clayey silt with fine sand & kankars. The "UDS" that could be collected from this layer show the following average properties.

Bulk Density, gms/cc	1.86	Specific gravity	2.59
Dry Density, gms/cc	1.49	Liquid limit %	42
Natural Water Content %	25	Plastic Limit %	27
TRSH-UU:		**GRAIN SIZE**	
Cohesion kg/sqcm	0.68	Sand %	25
Friction angle °	28	(Silt+ Clay) %	75

4.2.4. STRATUM - II:

The soil in this layer consists of stiff to very stiff to hard, light yellowish brown to deep grey / greyish brown / brownish grey to reddish brown silty clay / clayey silt with sand mixture, kankars & mica. However, a sand pocket was observed around BH-42 & BH-49, the property of which is totally different from that of stratum-II. The "UDS" as well as SPT samples that could be collected from this layer show the following average properties.

Bulk Density, gms/cc	1.89	Void Ratio	0.651
Dry Density, gms/cc	1.55	Liquid limit %	42
Natural Water Content %	22	Plastic Limit %	24
Specific gravity	2.62	Shrinkage Limit %	18
TRSH-UU:		**DRSH-CQ:**	
Cohesion kg/sqcm	1.09	Cohesion kg/sqcm	0.25
Friction angle °	5	Friction angle °	31
Unconfined cohesion, kg/sqcm	**1.48**	**GRAIN SIZE**	
Remoulded cohesion, kg/sqcm	**1.14**	Sand %	24
SENSITIVITY, S_t	**1.30**	(Silt+ Clay) %	76

4.2.5. STRATUM - III:

This layer consists of dense to very dense, yellowish brown / brownish grey, sandy silt / silty sand with concretion of silt, mica & gravels. However, a clay pocket was observed around BH-02, 03 & 51, the property of which is totally different from that of stratum-III. The "UDS" as well as SPT samples that could be collected from this layer show the following average properties.

Bulk Density, gms/cc	1.77	Natural Water Content, %	12
Dry Density, gms/cc	1.59		
Specific gravity	2.61	**GRAIN SIZE**	
DRSH-CQ:		Gravel %	03
Cohesion kg/sqcm	0.15	Sand %	83
Friction angle °	32	(Silt+ Clay) %	14

4.2.6. STRATUM - IV:

The soil in this layer consists of hard, yellowish brown / brownish grey to greyish brown, silty clay / clayey silt with sand mixture, kankars, mica & concretion of silt. The "UDS" as well as SPT samples that could be collected from this layer show the following average properties.

Bulk Density, gms/cc	1.89	Void Ratio	0.521
Dry Density, gms/cc	1.62	Liquid limit %	34
Natural Water Content %	16	Plastic Limit %	22
Specific gravity	2.65	Shrinkage Limit %	19
TRSH-UU:		**DRSH-CQ:**	
Cohesion kg/sqcm	1.56	Cohesion kg/sqcm	0.18
Friction angle °	6	Friction angle °	34
Unconfined cohesion, kg/sqcm	**2.96***	**GRAIN SIZE**	
Remoulded cohesion, kg/sqcm	**2.52***	Sand %	34
SENSITIVITY, S_t	**1.17**	(Silt+ Clay) %	66

*** Test was done on a specific sample.**

4.2.7. STRATUM - V:

This is also a sand layer and this layer consists of very dense, light grey to brownish grey / yellowish brown silty sand with gravels, pebbles & mica. However, a clay pocket was observed around BH-06, 13, 36 & 60, the property of which is totally different from that of stratum-V. The "UDS" as well as SPT samples that could be collected from this layer show the following average properties.

Specific gravity	2.71
GRAIN SIZE	
Gravel %	17
Sand %	72
(Silt+ Clay) %	11

4.3. GRAPHICAL PRESENTATION:

The detailed Laboratory Test Results in tabular form are given in Volume-2. The back up sheets are also presented there as given in below:

1. ***Strength envelopes from Triaxial Tests.***
2. ***Normal Stress vs. Shear Stress from Direct Shear Test.***
3. ***Standard & Modified Proctor Compaction Curves.***
4. ***CBR Curves (4 days soaked).***
5. ***e-log p curves from consolidation tests.***
6. ***Grain size distribution curves for sieve and hydrometer tests.***

The consolidation test results are analysed by numerical methods and only the final output in a tabular form is given. The m_{vc} indicates the time dependent component of m_v and c_v is the co-efficient of consolidation.

4.4. VARIATION OF "N" WITH DEPTH:

The "N" values are an important governing factor in calculation of bearing capacity. The field "N" values are given in the bore logs. The corrected "N" values are given in a tabular form and also presented separately in Volume-2. The strata wise corrected "N" values are given in the following table.

Stratum No.	Corrected "N" values.		
	Average	Maximum	Minimum
Fill	18	99	3
I	15	29	3
IIA	7	7	6
1I	22	52	7
III	27	50	8
IV	71	100	32
V	45	50	12

5. DISCUSSION

5.1. PLATE LOAD TEST:

Seven nos. (7). Plate Load Tests (5 nos. routine type & 2 nos. Cyclic Type) were conducted in the site in this zone at specified depths using 600mm square plate. Load (Vs.) settlement plots is made in arithmetic scale to calculate Allowable Bearing Capacity. The calculations are presented below.

DETERMINATION OF SAFE BEARING CAPACITY:

For clayey soil, we can write, $S_p = S_f \times (B_p / B_f)$

For sandy soil, we can write, $\frac{S_p}{S_f} = \left[\frac{B_p}{B_f} \times \frac{(B_f + 30)}{(B_p + 30)}\right]^2$

PLT – 03:

B_f = Width of footing = 2m(say), B_p = Size of test plate = 0.60m

S_f = Limiting Settlement of footing = 25mm and S_p = Settlement of test plate.

Hence, $S_p = S_f \times [(B_p / B_f) \times \{(B_f + 30) / (B_p + 30)\}]^2$ = 14.69mm

From load-settlement curve, safe load = 19.00 t/sqm (considering initial correction = 1.00mm)

Based on the above data, the safe bearing capacity value for different footing size is presented below.

Test Location	Depth (M)	Recommended Safe Bearing Capacity, T/M^2							
		Foundation width = 1m		Foundation width = 2m		Foundation width = 3m		Foundation width = 4m	
		S= 25mm	S= 40mm	S= 25mm	S= 40mm	S= 25mm	S= 40mm	S= 25mm	S= 40mm
PLT-01	3.00	34	37	31	35	29	35	28	35
PLT-02	3.00	25	31	23	27	22	26	21	26
PLT-03	3.00	21	26	19	24	18	23	17	22
PLT-04	3.00	10	13	8	11	8	11	7	10
PLT-05	3.00	47	54	42	51	39	50	38	49
CPLT-01	3.00	15	20	12	17	11	16	10	16
CPLT-02	3.00	20	25	17	22	16	21	15	21

Where S = limiting settlement

SUBGRADE MODULUS:

Subgrade Modulus is obtained from Plate Load Tests as K = P/S. Where P = Plate Load corresponding to settlement S under working load. The final results values are presented in a tabular form below.

PLATE LOAD TEST NO. 01

Commenced on: 23/12/2014
Completed on: 24/12/2014
Pit size: 5.00mX5.00mX3.00m(depth)
Load on pr.guage/divn.=10Kg/sq.cm
Load on jack/divn. = 0.7091t
Plate size: 0.60mX0.60m
Load on plate/divn. = 1.97t/sq.m.
Test Type: Routine PLT

Co-ordinates:
E = 650.000M.
N = 334.000M.
RL = 64.911M.

Description of Soil :-
(EGL-0.20)m:- Brownish grey, silty sand.
(0.20-2.90)m:- Brownish grey, sandy silt.
(2.90-3.00)m:- Light blackish grey, clayey silt.

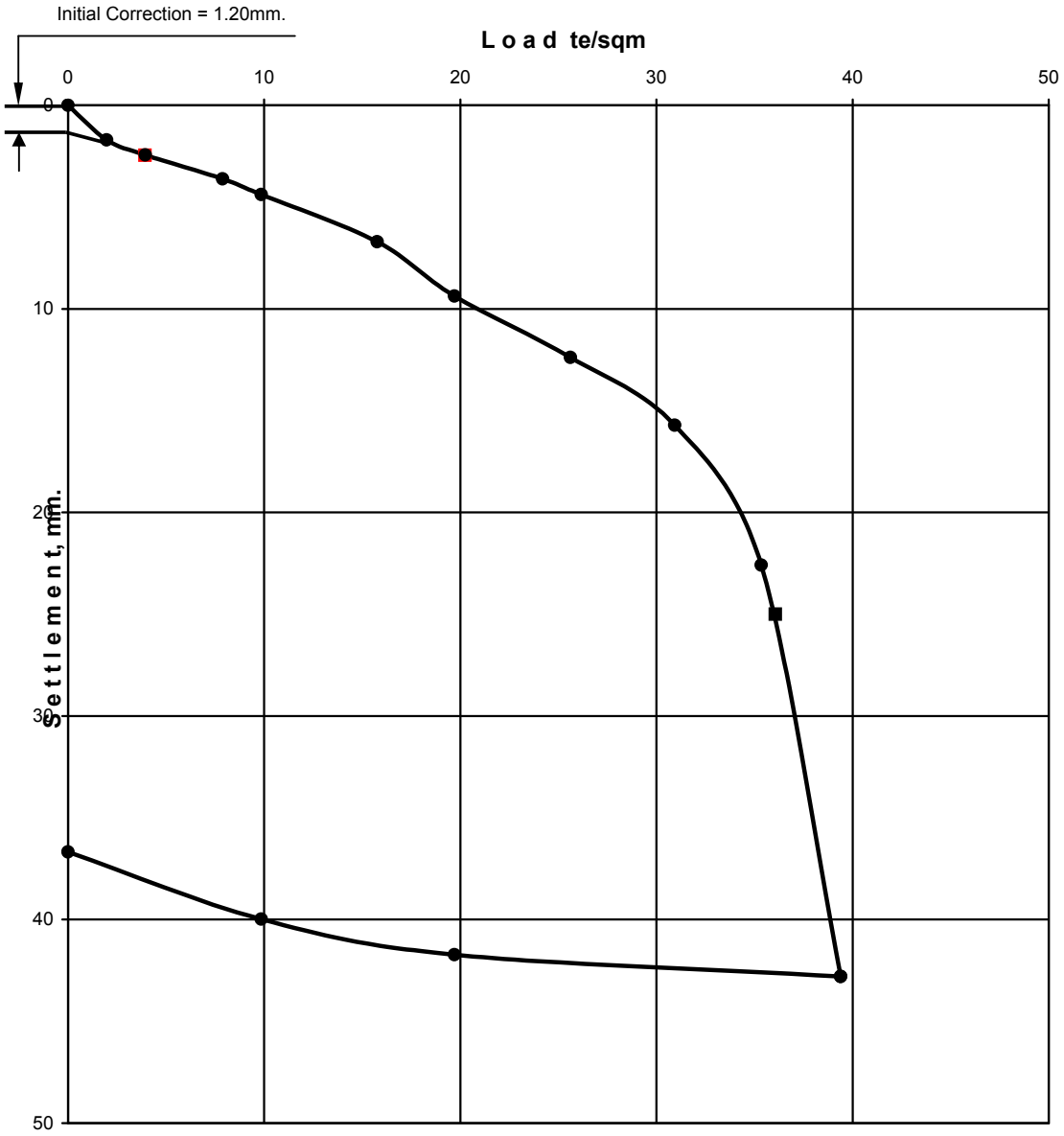


FIG. 3.1 LOAD VS SETTLEMENT GRAPH FOR PLT - 01

PLATE LOAD TEST NO. 02

Commenced on: 15/12/2014
Completed on: 16/12/2014
Pit size: 6.00mX6.00mX3.00m(depth)
Load on pr.guage/divn.=10Kg/sq.cm
Load on jack/divn. = 0.709t
Plate size: 0.60mX0.60m
Load on plate/divn. = 1.97t/sq.m.
Test Type: Routine PLT

Co-ordinates:
E = 614.000M.
N = 222.000M.
RL = 65.903M.

(EGL-0.20)m:- Brownish grey, sandy silt / silty sand.
(0.20-0.90)m:- Blackish grey, clayey silt / silty clay.

(0.90-3.00)m:- Yellowish grey / brownish grey, silty sand / sandy silt with concreation of sand.

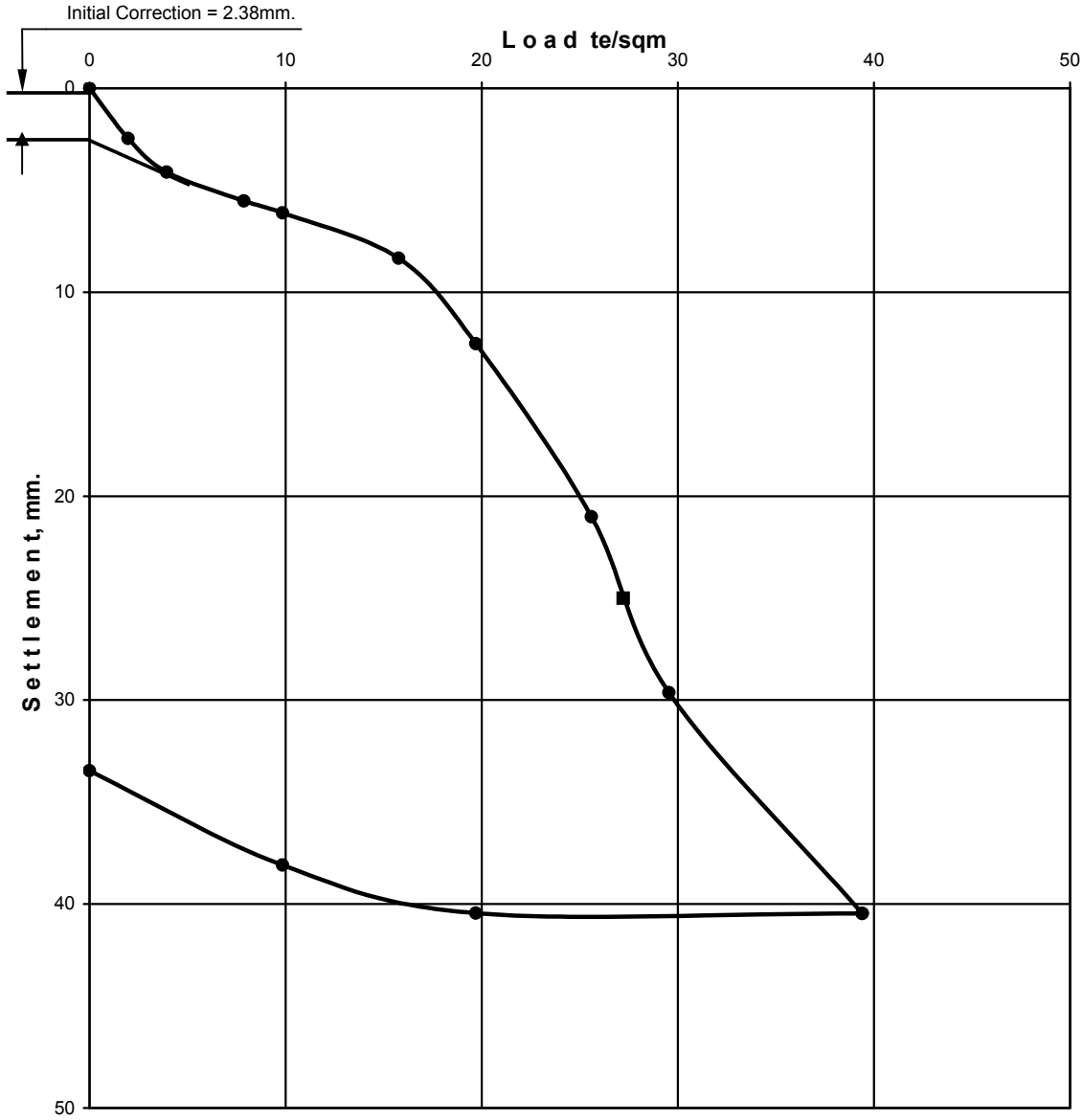


FIG. 3.2 LOAD VS SETTLEMENT GRAPH FOR PLT - 02

PLATE LOAD TEST NO.03

Commenced on: 27/11/2014
Completed on:28/11/2014
Pit size: 5.00mX5.00mX3.00m(depth)
Load on pr.guage/divn.=10Kg/sq.cm
Load on jack/divn. = 0.7091t
Plate size: 0.60mX0.60m
Load on plate/divn.=1.97t/sq.m.
Test Type: Routine PLT

Co-ordinates:
E = 569M.
N = 155M.
RL = 66.345M.

S.W.L.= Not found.

EGL-0.40m:- Filled up with ash.
0.40m-3.00m:- Yellowish grey, silty sand / sandy silt with silty clay patches.

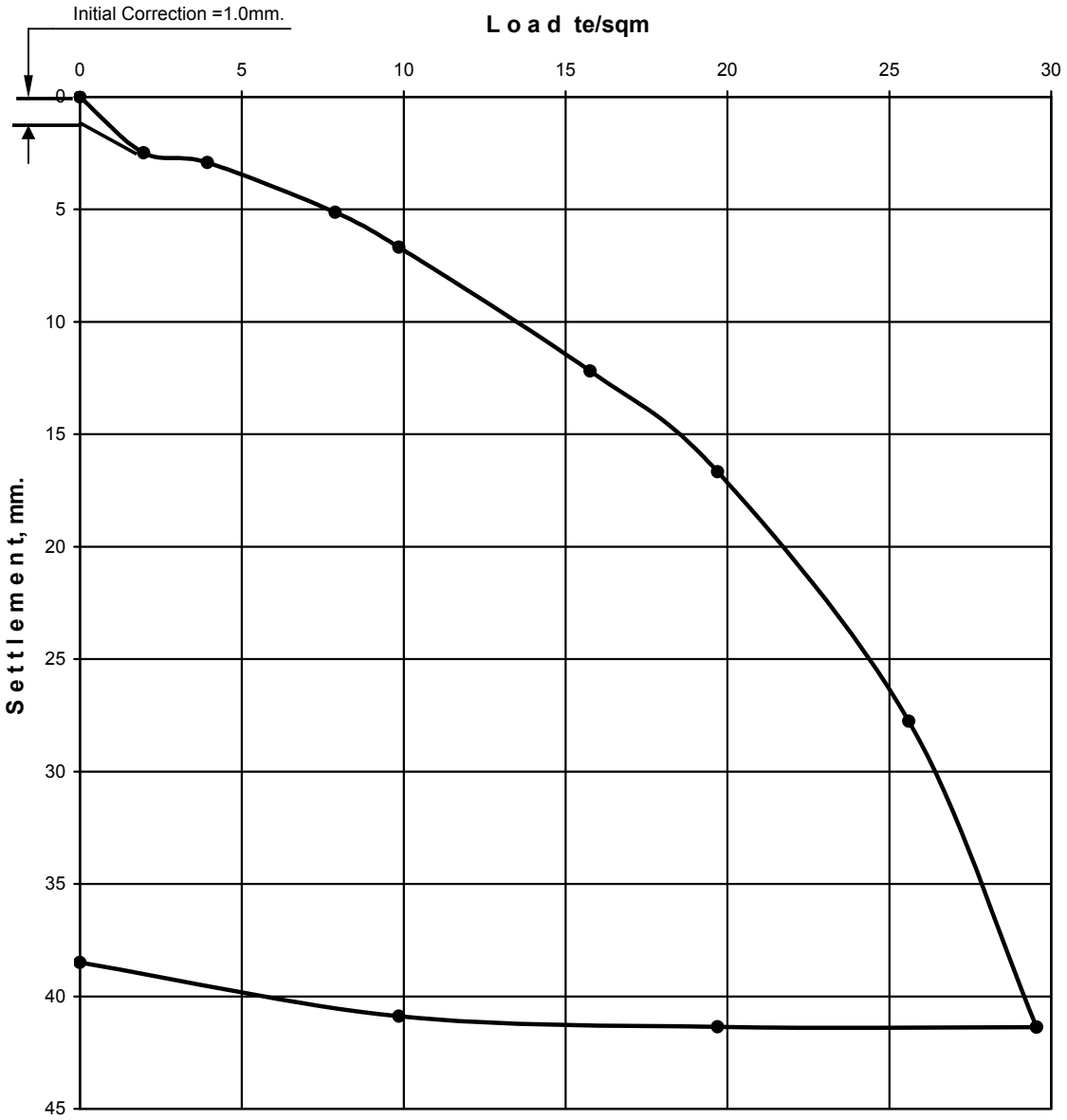


FIG. 3.3 LOAD VS SETTLEMENT GRAPH FOR PLT-03

PLATE LOAD TEST NO. 04

Commenced on: 29/12/2014
Completed on: 29/12/2014
Pit size: 5.00mX5.00mX3.00m(depth)
Load on pr.guage/divn.=10Kg/sq.cm
Load on jack/divn. = 0.7091t
Plate size: 0.60mX0.60m
Load on plate/divn. = 1.97t/sq.m.
Test Type: Routine PLT

Co-ordinates:
E = 500.000M.
N = (-)200.00M.
RL = 67.919M.

Description of Soil :-

(EGL - 3.00)m :- Light grey, ash.

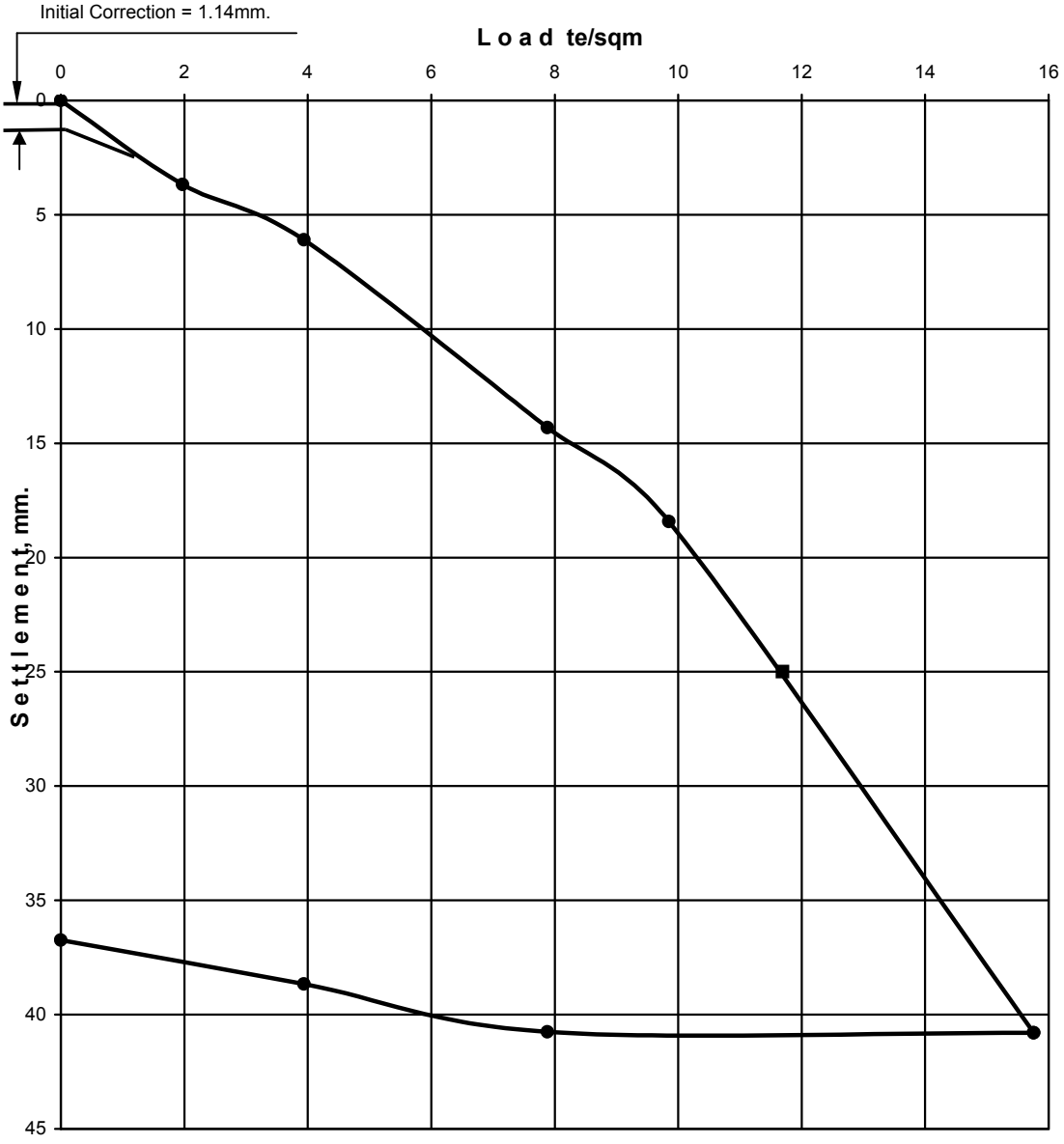


FIG. 3.4 LOAD VS SETTLEMENT GRAPH FOR PLT - 04

PLATE LOAD TEST NO.05

Commenced on: 11/11/2014
Completed on: 12/11/2014
Pit size: 3.00mX3.30mX3.30m(depth)
Load on pr.guage/divn.=10Kg/sq.cm
Load on jack/divn. = 0.7091t
Plate size: 0.45mX0.45m
Load on plate/divn. = 1.97t/sq.m.
Test Type: Routine PLT

Co-ordinates:
E = 725.000M.
N = 6.000M.
RL = 63.629M.

S.W.L.= Not found.

(EGL-0.80)m:- Top soil consists of light grey / brownish grey, ash, silty and with stone pieces.
(0.80-1.60)m:- Yellowish grey, silty sand / sandy silt.
(1.60-2.80)m:- Blackish grey, silty clay.
(2.80-3.00)m:- Brownish grey, silty clay / clayey silt with traces

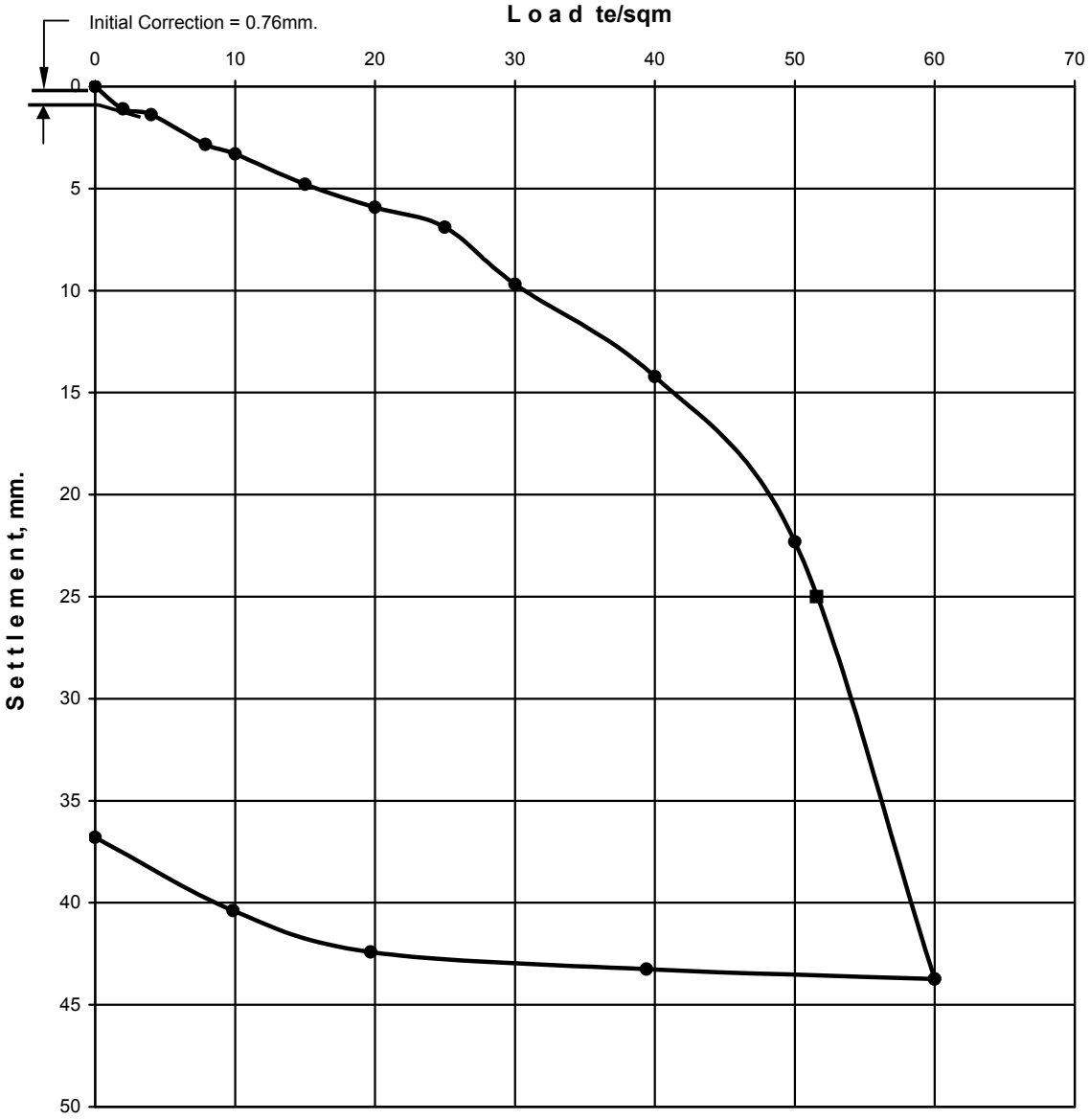


FIG. 3.5 LOAD VS SETTLEMENT GRAPH FOR PLT - 05

CYCLIC PLATE LOAD TEST NO.01

Commenced on: 21/11/2014
Completed on: 21/11/2014
Pit size: 5.00mX5.00mX3.00m(depth)
Load on pr.guage/divn. = 10Kg/sq.cm
Load on jack/divn. = 0.709t
Plate size: 0.60mX060m
Load on plate/divn. = 1.97t/sq.m.
Test Type: Cyclic PLT

Co-ordinates:
E = 615.000m.
N = (-)124.000m.
RL = 65.104m.

S.W.L. = Not Found.

(EGL-0.60)m:- Top soil consists of ash & stone pieces.
(0.60-1.80)m:- Yellowish grey, clayey silt with fine sand mixture.
(1.80-3.00)m:- Yellowish grey, sandy silt / silty sand with silty clay patches.

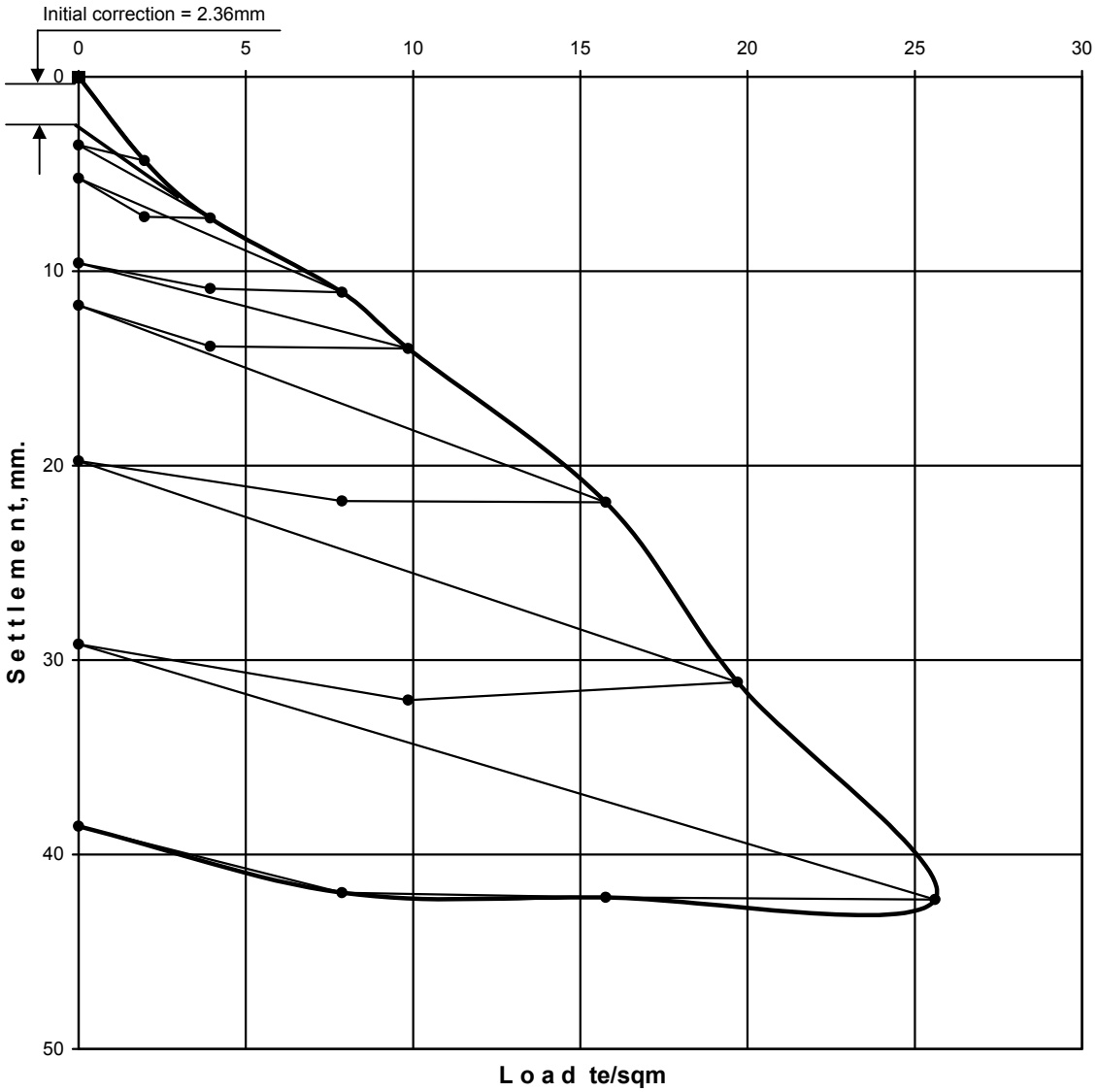


FIG.3.6 LOAD VS SETTLEMENT GRAPH FOR CPLT-01

CYCLIC PLATE LOAD TEST NO.2

Commenced on: 3/12/2014
Completed on: 3/12/2014
Pit size: 5.00mx 5.00mx3.00m(depth)
Load on pr.guage/divn.=10Kg/sq.cm
Load on jack/divn. = 0.7091te
Plate size: 0.60mX0.60m
Load on plate/divn.=1.97te/sq.m.
Test Type: Cyclic PLT

Co-ordinates:
E = 680.000M.
N = -129.000M.
RL = 64.439M.

S.W.L.= .

Description of Soil :-
(0.00m-0.20m):- Filled up with ash.
(0.20m-3.00m):- Yellowish grey, silty sand / sandy silt with laminated grey colour silty clay.

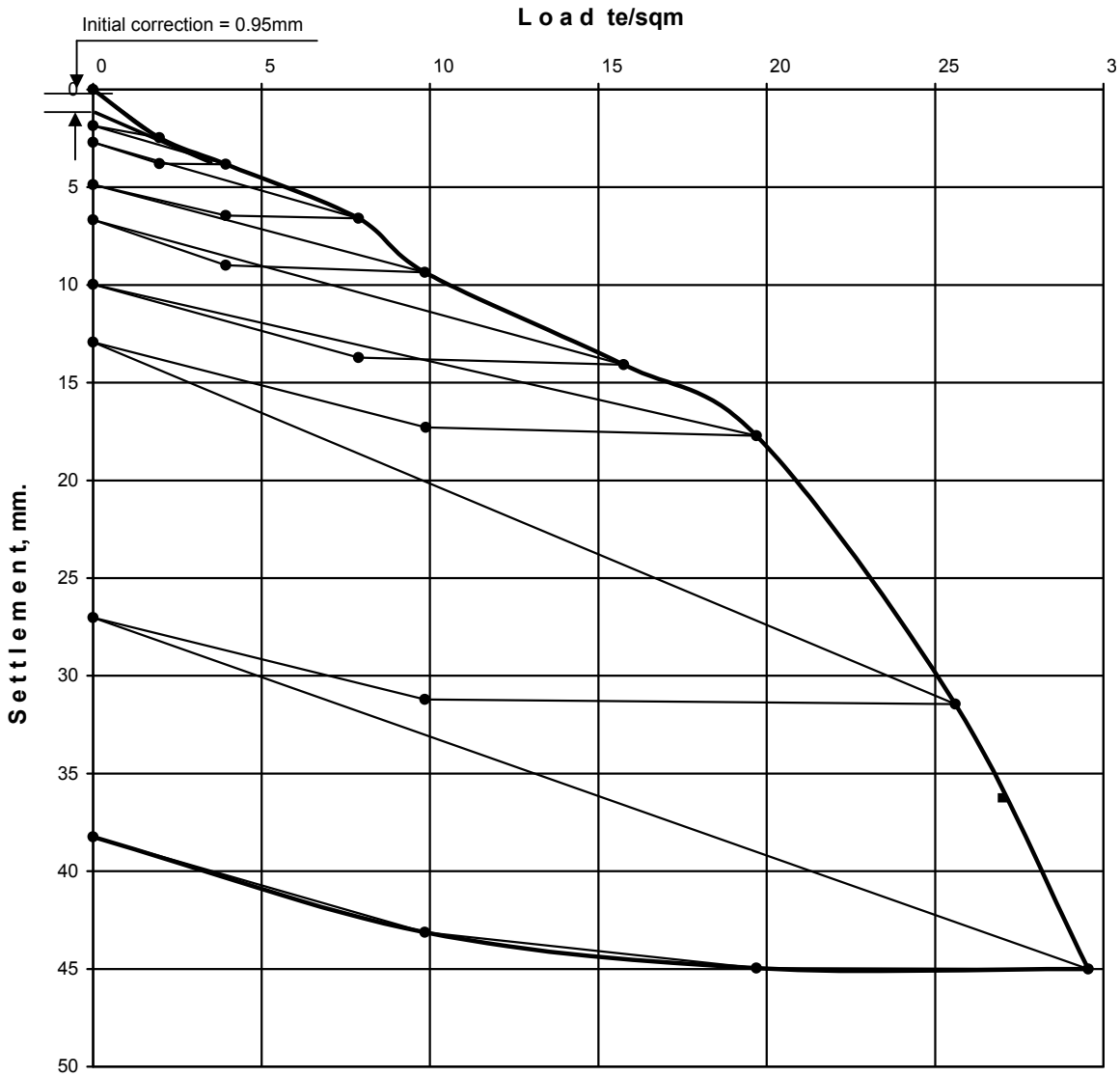


FIG. 3.7 LOAD VS SETTLEMENT GRAPH FOR CPLT-2

Test No.	Depth (M)	Subgrade Modulus for Plate as per IS 9214, Kg/cm^3	Subgrade Modulus for Plate, correcting as per IS 9214 Kg/cm^3
PLT-01	3.00	3.14	2.45
PLT-02	3.00	2.30	1.79
PLT-03	3.00	1.29	1.01
PLT-04	3.00	1.01	0.79
PLT-05	3.00	4.48	3.87
CPLT-01	3.00	1.35	1.06
CPLT-02	3.00	1.38	1.08

The Subgrade modulus value is inversely proportional to the square root of the foundation area up to a base area of 10 sqm and then remains constant. The calculated subgrade modulus values for different foundation areas are presented below.

Test No.	Depth (M)	Subgrade Modulus, (kg/cucm)			
		Foundation Area = 1 sqm	Foundation Area = 4 sqm	Foundation Area = 5 sqm	Foundation Area = 10 sqm or above
PLT-01	3.00	1.47	0.74	0.66	0.46
PLT-02	3.00	1.07	0.54	0.48	0.34
PLT-03	3.00	0.61	0.30	0.27	0.19
PLT-04	3.00	0.47	0.24	0.21	0.15
PLT-05	3.00	2.32	1.16	1.04	0.73
CPLT-01	3.00	0.64	0.32	0.28	0.20
CPLT-02	3.00	0.65	0.32	0.29	0.20

Sample Calculation of Subgrade Modulus for foundation area 5 Sq.m of PLT-05

For Plate

Safe Load, corresponding to 1.25mm settlement = 5.60 t/sqm
Subgrade Modulus for Plate, K = P/S = 5.60/1.25 = 4.48 Kg/cm^3
Since the test was conducted on 600mm square plate (i.e. smaller than 75cm dia,), corrected Subgrade Modulus as per Clause 5.1.1 & Fig.3 of IS:9214 = 4.48 / 1.28 = 3.50 Kg/cm^3
Again applying correction for plate bending, as per Clause 5.1.3 & Fig.5 of IS:9214, corrected Subgrade Modulus = 3.87 Kg/cm^3

For Foundation

Corrected Subgrade Modulus of plate = 3.87 Kg/cm^3
Area of plate = 60 x 60 sq.cm = 0.60 x 0.60 sq.m
Area of footing = 5 sq.m
Subgrade Modulus of foundation = 3.87 x $\sqrt{(0.60x0.60)/5}$ Kg/cm^3 = 1.04 Kg/cm^3

ELASTIC COMPRESSION:

This load test was of cyclic type. Here, after application of each load increment and full stabilisation of plate settlement, the applied load was reduced to zero and the settlement records were noted till full stabilisation. Thereafter, the next load increment was applied.

The elastic rebounds at these load intensities are calculated (As per IS 5249-1992, Pg-6) from the field data and are graphically presented in graph. The coefficient of elastic uniform compression, C_u is obtained as $C_u = P / S_e$ kg/cucm

CPLT- 01:

From the load vs elastic rebound plot, the slope of the trend line = C_u = (20-10)/(2.67-1.34) = 7.51 kg/cucm

Now, for a foundation size of 10 sqm (3m x 3.33m, say), the corresponding value will be,

$C_{u10sqm} = 7.51 \times \sqrt{[(0.60 \times 0.60) / 10]} = 1.42$ kg/cucm

CPLT- 02:

From the load vs elastic rebound plot, the slope of the trend line = C_u = (20-10)/(4.78 -2.41) = 4.23 kg/cucm

Now, for a foundation size of 10 sqm (3m x 3.33m, say), the corresponding value will be,

$C_{u10sqm} = 4.23 \times \sqrt{[(0.60 \times 0.60) / 10]} = 0.803$ kg/cucm

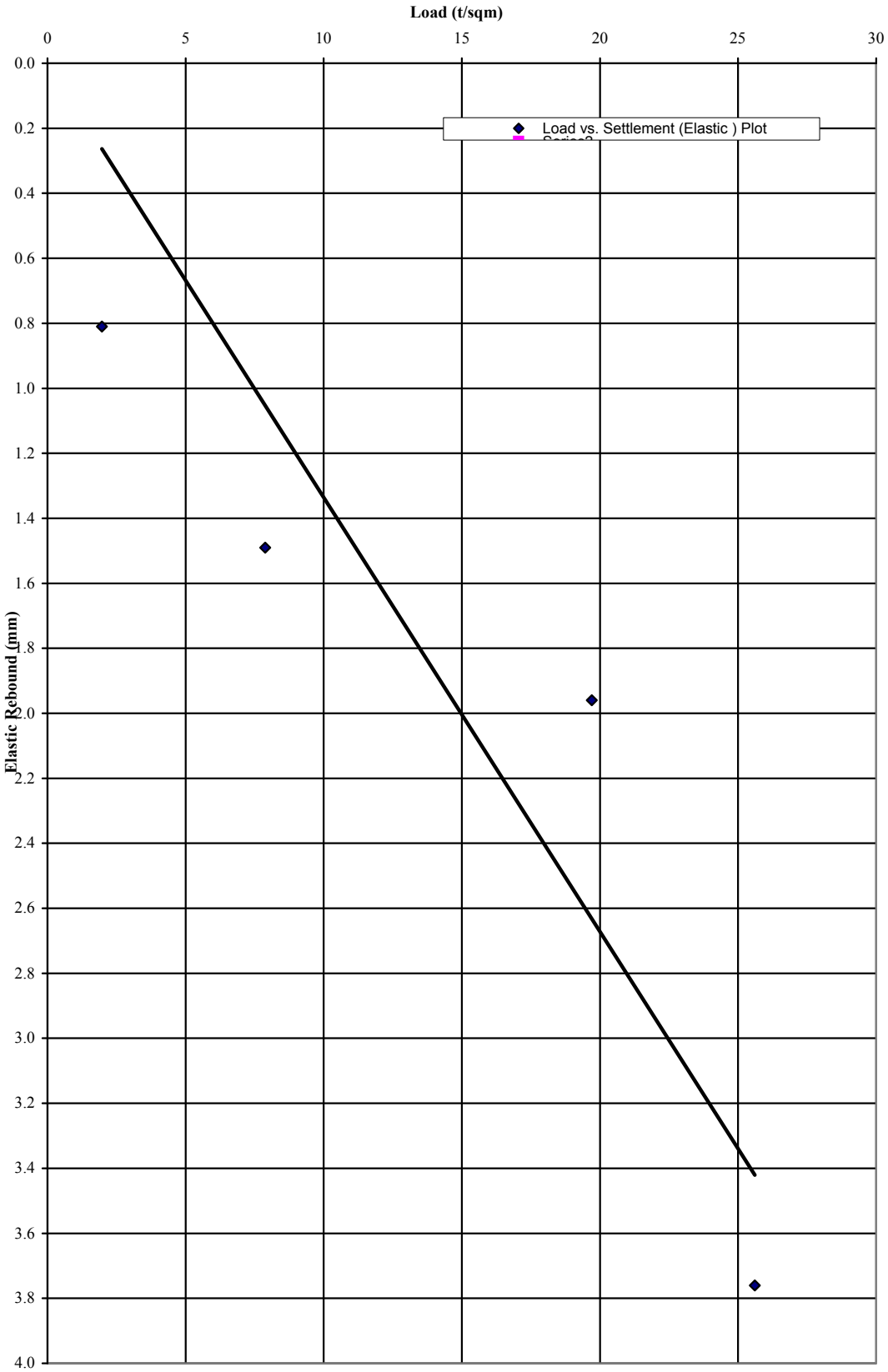


Fig. 3.8 Load Vs. Elastic Rebound Plot (CPLT-01)

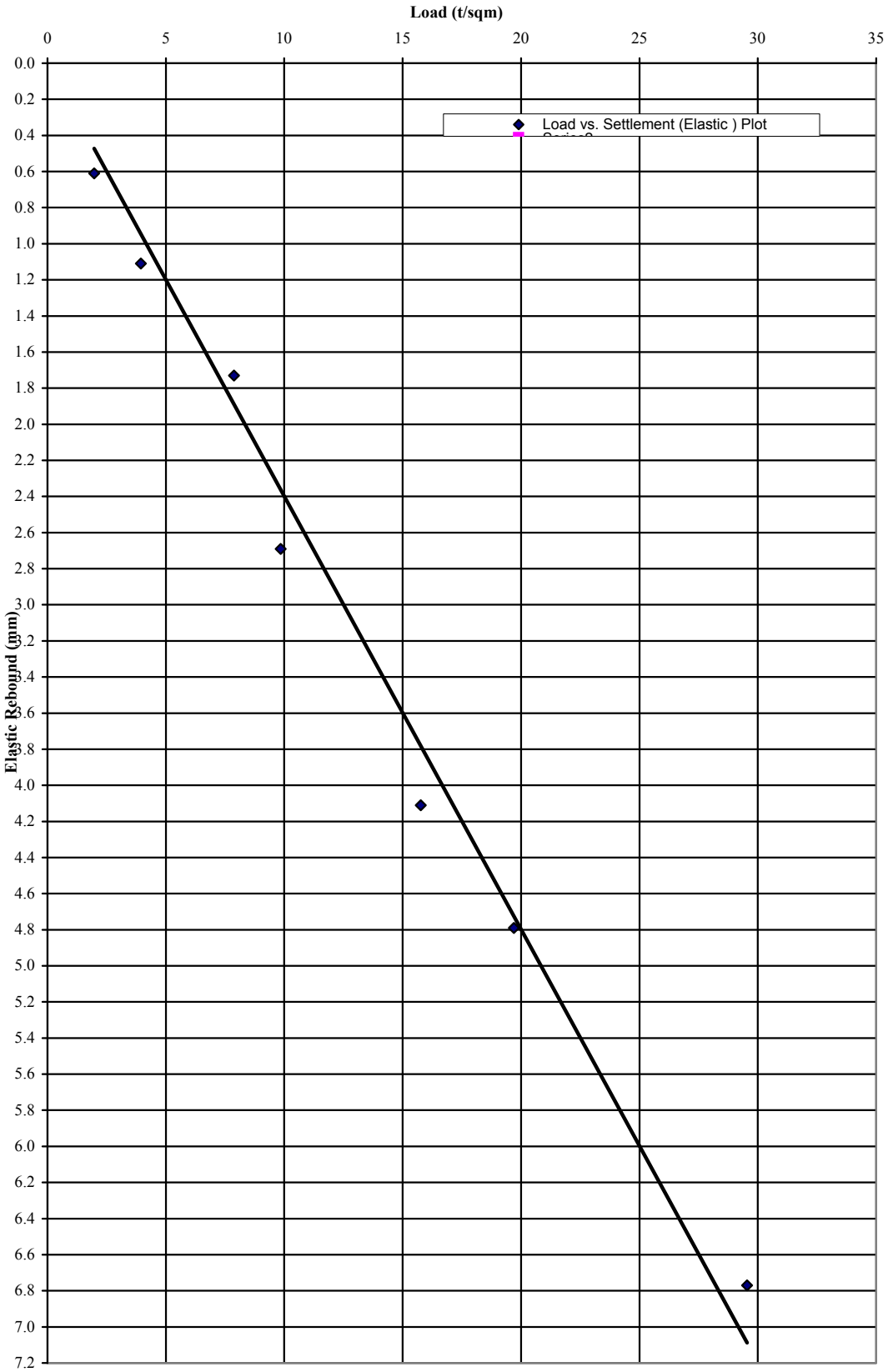


Fig. 3.9 Load Vs. Elastic Rebound Plot (CPLT-02)

5.2. DISCUSSION ON FOUNDATION SYSTEM:

The subsoil is characterised by a filled up soil followed by loose to medium dense silty sand. Then stiff / very stiff to hard clayey silt layer was found. A dense to very dense silty sand layer was observed below that. Again a hard clayey silt layer was observed there after. Underlying that, a very dense silty sand layer was struck and that continued upto the terminating depth of the boreholes.

Considering the nature of the subsoil, for major and heavily loaded structures deep foundation in form of pile is suggested.

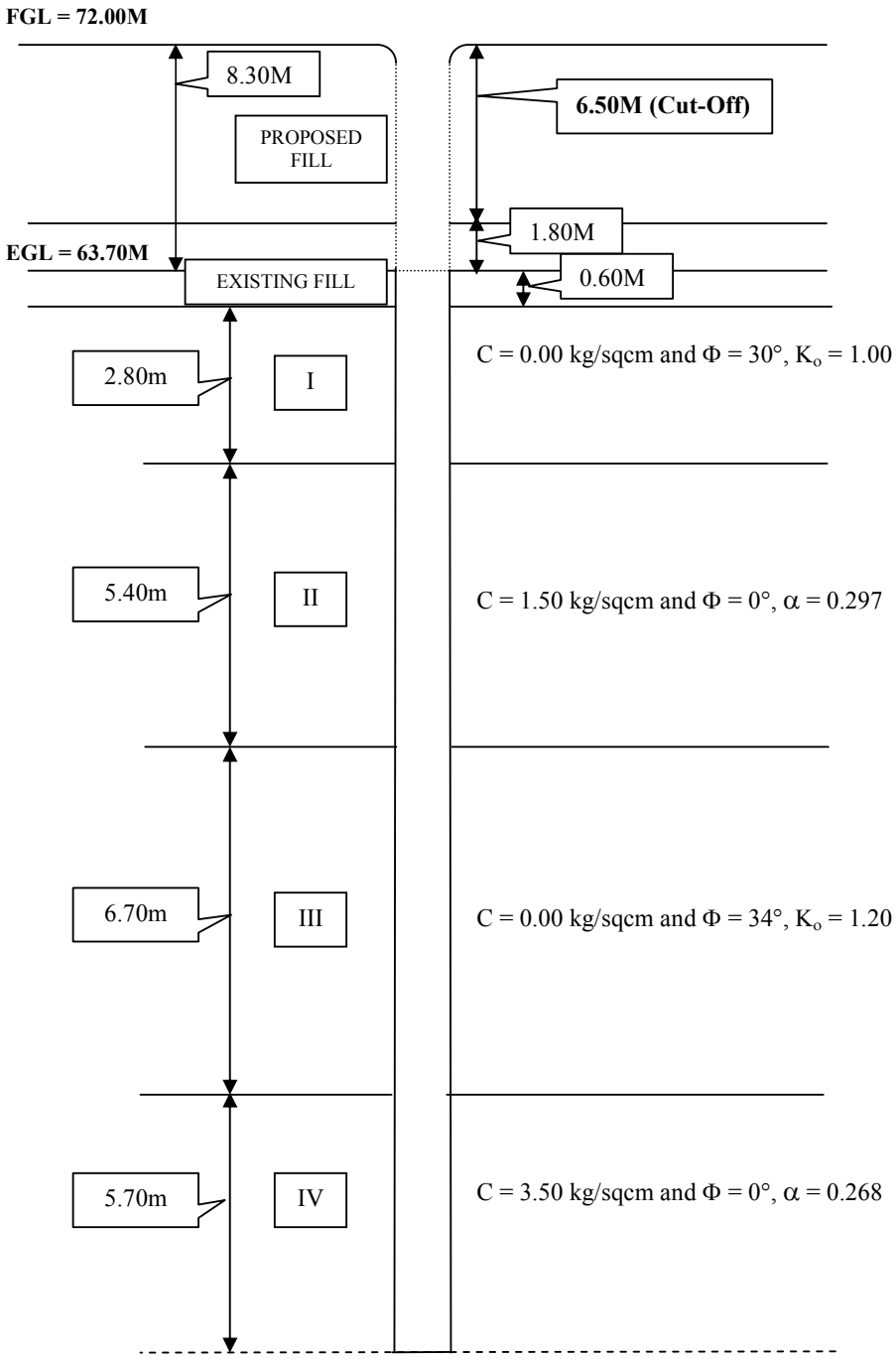
For minor & lightly loaded structures, open foundation may be used. However, this is discussed afterwards.

5.3. USE OF DEEP FOUNDATION:

Bored cast in-situ piles are suggested.

Based on the subsoil condition / desired pile capacity, several pile foundation design model are prepared and enclosed herewith.

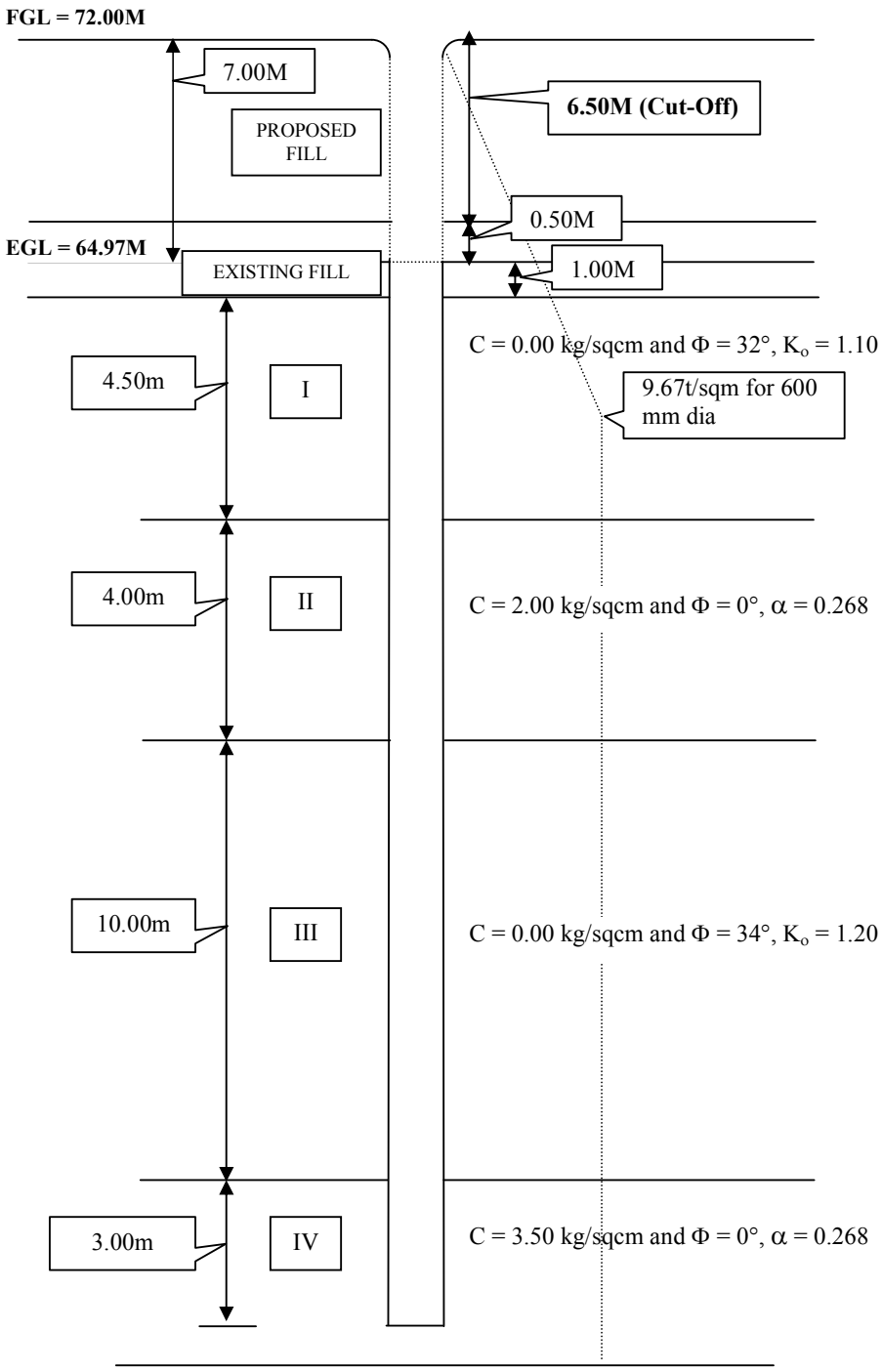
The pile capacity values (vertical, uplift & lateral) are calculated and the recommended values are presented afterwards (FGL = + 72.00M)



BORED PILE FOUNDATION DESIGN MODEL

Based on Design layer stratification around BTG Area (eg. Power House, Mill Bunker, Boiler, ESP, ID Fan Area etc.)

Not to scale



BORED PILE FOUNDATION DESIGN MODEL

(Based on Design layer stratification around Chimney area)

Not to scale

SAMPLE PILE CAPACITY CALCULATION FOR BTG AREA (600 DIA.)

Bottom depth of Pile =	29.50	m below FGL, i.e. 23m below cut off		
Cut-off Length =	6.50	m		
Diameter of Pile =	600	mm	Critical depth	17.00 D
FOS of Shaft Resistance =	2.50		Maximum OVP =	9.89 t/sqm
FOS for End Bearing =	2.50			

So, maximum Depth upto which pressure will increase = 10.20 m

Layer No.	Top Depth (M)	Bottom Depth (M)	Eff. Depth (M)	Cohesion (kg/sqcm)	Φ (Degree)	Adhesion Factor (α)	K_0	Eff. Density (gm/cc)	Mean Pressure (t/sqm)
FILL	6.50	8.30	1.80	--	--	--	--	1.00	7.40
FILL	8.30	8.90	0.60	--	--	--	--	0.80	8.54
1	8.90	11.70	2.80	0.00	30	1.000	1.00	0.85	9.63
2	11.70	17.10	5.40	1.50	0	0.297	1.00	0.90	9.89
3	17.10	23.80	6.70	0.00	34	1.000	1.20	0.90	9.89
4	23.80	29.50	5.70	3.50	0	0.268	1.00	0.90	9.89

Layer No.	Eff. Depth (M)	Effective σ_z (t/sqm)	$f_{s1} = \alpha C$	$f_{s2} = K_0\sigma_z \tan\Phi$	$fs = f_{s1} + f_{s2}$ (t/sqm)	Ultimate Shaft Resistance (T)	Safe Shaft Resistance (T)
Fill	1.80	7.40	--	--	--	--	--
Fill	0.60	8.54	--	--	--	--	--
1	2.80	9.63	0.00	5.56	5.56	29.34	11.74
2	5.40	9.89	4.45	0.00	4.45	45.29	18.12
3	6.70	9.89	0.00	8.00	8.00	101.05	40.42
4	5.70	9.89	9.37	0.00	9.37	100.63	40.25
						276.31	110.52

For End Bearing

Cohesion C=	3.5	kg/sqcm
Friction Angle =	0	°
So, Nc =	9	
Nq =	1.00	
Eff. Ovp. Pressure=p(tip)	9.89	t/sqm
q(tip) =C.Nc+p(tip).Nq=	324.89	t/sqm
Ultimate End Bearing =	91.86	T
Safe End Bearing =	36.74	T
Safe Shaft Resistance=	110.52	T
So, Total Pile Capacity =	147.27	T

Uplift Pile Capacity:

Uplift capacity = (Ultimate shaft Resistance in Vertical Capacity + self weight of pile(buoyant))/3

Uplift capacity = [276.31 + (3.1415/4) x (600/1000)2 x (29.50-6.50) x (2.5-1)]/3

= 92.103

So, Recommended Uplift Capacity = 90 ton

Calculation of "-"ve Drag

Case-1

Use C = 0.00 kg/sqcm & Φ = 30°

Hence "-" Drag = π x D x L x 0.40 x [$k_0.\sigma_z$. tanΦ]

= 3.141 x 0.600 x (8.30-6.50) x 0.40 x [[1.00] x [(8.30+6.50) x 1] x tan30°]

= 5.80 T

Case-2

Use C = 0.50 kg/sqcm & Φ = 0°

Hence "-" Drag = π x D x L x 0.40 x (α x c)

= [3.141 x 0.600 x (8.30-6.50)x 0.40 x (0.871 x 5.0)]

= 5.91 T

Considering the above 2 cases, maximum possible "-"ve drag = 5.9T

So, Recommended Pile Capacity = 140T

SAMPLE PILE CAPACITY CALCULATION FOR BTG AREA(760 DIA.)

Bottom depth of Pile =	29.50	m below FGL, i.e. 23m below cut off		
Cut-off Length =	6.50	m		
Diameter of Pile =	760	mm	Critical depth	17.00 D
FOS of Shaft Resistance =	2.50		Maximum OVP =	12.26 t/sqm
FOS for End Bearing =	2.50			

So, maximum Depth upto which pressure will increase = 12.92 m

Layer No.	Top Depth (M)	Bottom Depth (M)	Eff. Depth (M)	Cohesion (kg/sqcm)	Φ (Degree)	Adhesion Factor (α)	K_0	Eff. Density (gm/cc)	Mean Pressure (t/sqm)
FILL	6.50	8.30	1.80	--	--	--	--	1.00	7.40
FILL	8.30	8.90	0.60	--	--	--	--	0.80	8.54
1	8.90	11.70	2.80	0.00	30	1.000	1.00	0.85	9.97
2	11.70	17.10	5.40	1.50	0	0.297	1.00	0.90	12.13
3	17.10	23.80	6.70	0.00	34	1.000	1.20	0.90	12.26
4	23.80	29.50	5.70	3.50	0	0.268	1.00	0.90	12.26

Layer No.	Eff. Depth (M)	Effective σ_z (t/sqm)	$f_{s1} = \alpha C$	$f_{s2} = K_0\sigma_z\tan\Phi$	$fs = f_{s1} + f_{s2}$ (t/sqm)	Ultimate Shaft Resistance (T)	Safe Shaft Resistance (T)
Fill	1.80	7.40	--	--	--	--	--
Fill	0.60	8.54	--	--	--	--	--
1	2.80	9.97	0.00	5.76	5.76	38.48	15.39
2	5.40	12.13	4.45	0.00	4.45	57.37	22.95
3	6.70	12.26	0.00	9.92	9.92	158.72	63.49
4	5.70	12.26	9.37	0.00	9.37	127.47	50.99
						382.03	152.81

For End Bearing

Cohesion C=	3.5	kg/sqcm
Friction Angle =	0	°
So, Nc =	9	
Nq =	1.00	
Eff. Ovp. Pressure=p(tip)	12.26	t/sqm
q(tip) =C.Nc+p(tip).Nq=	327.26	t/sqm
Ultimate End Bearing =	148.46	T
Safe End Bearing =	59.38	T
Safe Shaft Resistance=	152.81	T
So, Total Pile Capacity =	212.20	T

Uplift Pile Capacity:

Uplift capacity = (Ultimate shaft Resistance in Vertical Capacity + self weight of pile(buoyant))/3

Uplift capacity = [382.03 + (3.1415/4) x (760/1000)2 x (29.50-6.50) x (2.5-1)]/3

= 127.345

So, Recommended Uplift Capacity = 125 ton

Calculation of "-"ve Drag

Case-1

Use C = 0.00 kg/sqcm & Φ = 30°

Hence "-" Drag = π x D x L x 0.40 x [$k_0.\sigma_z$. tanΦ]

= 3.141 x 0.760 x (8.30-6.50) x 0.40 x [[1.00] x [(8.30+6.50) x 1] x tan30°]

= 7.34 T

Case-2

Use C = 0.50 kg/sqcm & Φ = 0°

Hence "-" Drag = π x D x L x 0.40 x (α x c)

= [3.141 x 0.760 x (8.30-6.50) x 0.40 x (0.871 x 5.0)]

= 7.49 T

Considering the above 2 cases, maximum possible "-"ve drag = 7.49T

So, Recommended Pile Capacity = 200T

SAMPLE PILE CAPACITY CALCULATION FOR CHIMNEY AREA (600 DIA.)

Bottom depth of Pile =	29.50	m below FGL, i.e. 23m below cut off		
Cut-off Length =	6.50	m		
Diameter of Pile =	600	mm	Critical depth	17.00 D
FOS of Shaft Resistance =	2.50		Maximum OVP =	9.67 t/sqm
FOS for End Bearing =	2.50			

So, maximum Depth upto which pressure will increase = 10.20 m

Layer No.	Top Depth (M)	Bottom Depth (M)	Eff. Depth (M)	Cohesion (kg/sqcm)	Φ (Degree)	Adhesion Factor (α)	K_0	Eff. Density (gm/cc)	Mean Pressure (t/sqm)
FILL	6.50	7.00	0.50	--	--	--	--	1.00	6.75
FILL	7.00	8.00	1.00	--	--	--	--	0.80	7.40
1	8.00	12.50	4.50	0.00	32	1.000	1.10	0.85	9.21
2	12.50	16.50	4.00	2.00	0	0.268	1.00	0.90	9.67
3	16.50	26.50	10.00	0.00	34	1.000	1.20	0.90	9.67
4	26.50	29.50	3.00	3.50	0	0.268	1.00	0.90	9.67

Layer No.	Eff. Depth (M)	Effective σ_z (t/sqm)	$f_{s1} = \alpha C$	$f_{s2} = K_0\sigma_z\tan\Phi$	$fs = f_{s1} + f_{s2}$ (t/sqm)	Ultimate Shaft Resistance (T)	Safe Shaft Resistance (T)
Fill	0.50	6.75	--	--	--	--	--
Fill	1.00	7.40	--	--	--	--	--
1	4.50	9.21	0.00	6.33	6.33	53.71	21.49
2	4.00	9.67	5.35	0.00	5.35	40.35	16.14
3	10.00	9.67	0.00	7.83	7.83	147.54	59.01
4	3.00	9.67	9.37	0.00	9.37	52.96	21.19
						294.57	117.83

For End Bearing

Cohesion C=	3.5	kg/sqcm
Friction Angle =	0	°
So, Nc =	9	
Nq =	1.00	
Eff. Ovp. Pressure=p(tip)	9.67	t/sqm
q(tip) =C.Nc+p(tip).Nq=	324.67	t/sqm
Ultimate End Bearing =	91.80	T
Safe End Bearing =	36.72	T
Safe Shaft Resistance=	117.83	T
So, Total Pile Capacity =	154.55	T

Uplift Pile Capacity:

Uplift capacity = (Ultimate shaft Resistance in Vertical Capacity + self weight of pile(buoyant))/3

Uplift capacity = [185.57 + (3.1415/4) x (600/1000)2 x (29.50-6.50) x (2.5-1)]/3

= 98.190

So, Recommended Uplift Capacity = 95 ton

Calculation of "-"ve Drag

Case-1

Use C = 0.00 kg/sqcm & Φ = 30°

Hence "-" Drag = π x D x L x 0.40 x [$k_0.\sigma_z$. tanΦ]

= 3.141 x 0.600 x (7.00-6.50) x [[0.40 x [1.00] x [(7.00+6.50) x 1] x tan30°]

= 1.47 T

Case-2

Use C = 0.50 kg/sqcm & Φ = 0°

Hence "-" Drag = π x D x L x 0.40 x (α x c)

= [3.141 x 0.600 x (7.00-6.50) x 0.871 x 5.0] x 0.40

= 1.64 T

Considering the above 2 cases, maximum possible "-"ve drag = 1.60T

So, Recommended Pile Capacity = 150T

SAMPLE PILE CAPACITY CALCULATION FOR EFFLUENT TREATMENT PLANT AREA (600 DIA.)

Bottom depth of Pile =	26.50	m below FGL, i.e. 23m below cut off		
Cut-off Length =	3.50	m		
Diameter of Pile =	600	mm	Critical depth	17.00 D
FOS of Shaft Resistance =	2.50		Maximum OVP =	9.87 t/sqm
FOS for End Bearing =	2.50			

So, maximum Depth upto which pressure will increase = 10.20 m

Layer No.	Top Depth (M)	Bottom Depth (M)	Eff. Depth (M)	Cohesion (kg/sqcm)	Φ (Degree)	Adhesion Factor (α)	K_0	Eff. Density (gm/cc)	Mean Pressure (t/sqm)
FILL	3.50	8.10	4.60	--	--	--	--	1.00	5.80
FILL	8.10	8.60	0.50	--	--	--	--	0.80	8.30
2A	8.60	10.10	1.50	0.40	0	1.000	1.00	0.85	9.14
2	10.10	15.60	5.50	1.50	0	0.297	1.00	0.90	9.86
3	15.60	17.10	1.50	0.00	34	1.000	1.20	0.90	9.87
4	17.10	26.50	9.40	3.50	0	0.268	1.00	0.90	9.87

Layer No.	Eff. Depth (M)	Effective σ_z (t/sqm)	$f_{s1} = \alpha C$	$f_{s2} = K_0\sigma_z \tan\Phi$	$fs = f_{s1} + f_{s2}$ (t/sqm)	Ultimate Shaft Resistance (T)	Safe Shaft Resistance (T)
Fill	4.60	5.80	--	--	--	--	--
Fill	0.50	8.30	--	--	--	--	--
2A	1.50	9.14	4.00	0.00	4.00	11.31	4.52
2	5.50	9.86	4.45	0.00	4.45	46.13	18.45
3	1.50	9.87	0.00	7.98	7.98	22.58	9.03
4	9.40	9.87	9.37	0.00	9.37	165.95	66.38
						245.97	98.39

For End Bearing

Cohesion C=	3.5	kg/sqcm
Friction Angle =	0	°
So, Nc =	9	
Nq =	1.00	
Eff. Ovp. Pressure=p(tip)	9.87	t/sqm
q(tip) =C.Nc+p(tip).Nq=	324.87	t/sqm
Ultimate End Bearing =	91.85	T
Safe End Bearing =	36.74	T
Safe Shaft Resistance=	98.39	T
So, Total Pile Capacity =	135.13	T

Uplift Pile Capacity:

Uplift capacity = (Ultimate shaft Resistance in Vertical Capacity + self weight of pile(buoyant))/3

Uplift capacity = [185.57 + (3.1415/4) x (600/1000)2 x (29.50-6.50) x (2.5-1)]/3

= 81.990

So, Recommended Uplift Capacity = 75 ton

Calculation of "-"ve Drag

Case-1

Use C = 0.00 kg/sqcm & Φ = 30°

Hence "-" Drag = π x D x L x 0.40 x [$k_0.\sigma_z$. tanΦ]

= 3.141 x 0.760 x (8.1-3.50) x [[0.40 x [1.00] x [(8.10+3.50) x 1] x tan30°]

= 11.61 T

Case-2

Use C = 0.50 kg/sqcm & Φ = 0°

Hence "-" Drag = π x D x L x 0.40 x (α x c)

= [3.141 x 0.760 x (8.1-3.50) x 0.871 x 5.0] x 0.40

= 15.10 T

Considering the above 2 cases, maximum possible "-"ve drag = 15.10T

So, Recommended Pile Capacity = 115T

SAMPLE PILE CAPACITY CALCULATION FOR CW PIPE CORRIDOR AREA(450 DIA.)

Bottom depth of Pile =	16.50	m below FGL, i.e. 13m below cut off		
Cut-off Length =	3.50	m		
Diameter of Pile =	450	mm	Critical depth	17.00 D
FOS of Shaft Resistance =	2.50		Max unit friction on shaft f_s	13 t/sqm
FOS for End Bearing =	2.50		Maximum q(tip) =	500 t/sqm
So, maximum Depth upto which pressure will increase =	7.65	m	Maximum OVP =	7.18 t/sqm

Layer No.	Top Depth (M)	Bottom Depth (M)	Eff. Depth (M)	Cohesion (kg/sqcm)	Φ (Degree)	Adhesion Factor (α)	K_0	Eff. Density (gm/cc)	Mean Pressure (t/sqm)
FILL	3.50	4.50	1.00	--	--	--	--	1.00	4.00
1	4.50	10.50	6.00	0.00	30	1.000	1.00	0.85	6.47
4	10.50	13.50	3.00	2.50	0	0.268	1.00	0.90	7.18
5	13.50	32.00	3.00	0.00	35	1.000	1.25	0.90	7.18

Layer No.	Eff. Depth (M)	Effective σ_z (t/sqm)	$f_{s1} = \alpha C$	$f_{s2} = K_0\sigma_z\tan\Phi$	$fs = f_{s1} + f_{s2}$ (t/sqm)	Ultimate Shaft Resistance (T)	Safe Shaft Resistance (T)
Fill	1.00	4.00	--	--	--	--	--
1	6.00	6.47	0.00	3.74	3.74	31.71	12.68
4	3.00	7.18	6.69	0.00	6.69	28.37	11.35
5	3.00	7.18	0.00	6.28	6.28	26.64	10.66
						86.73	34.69

For End Bearing

Cohesion C=	0	kg/sqcm
Friction Angle =	35	°
So, Nc =	81	
Nq =	51.42	
Eff. Ovp. Pressure=p(tip)	7.18	t/sqm
q(tip) =C.Nc+p(tip).Nq=	369.04	t/sqm
Ultimate End Bearing =	58.69	T
Safe End Bearing =	23.48	T
Safe Shaft Resistance=	34.69	T
So, Total Pile Capacity =	58.17	T

Uplift Pile Capacity:

Uplift capacity = (Ultimate shaft Resistance in Vertical Capacity + self weight of pile(buoyant))/3

Uplift capacity = [185.57 + (3.1415/4) x (600/1000)2 x (29.50-6.50) x (2.5-1)]/3

= 28.908

So, Recommended Uplift Capacity = 25 ton

Calculation of "-"ve Drag

Case-1

Use C = 0.00 kg/sqcm & Φ = 30°

Hence "-" Drag = π x D x L x 0.40 x [$k_0.\sigma_z$. tanΦ]

= 3.141 x 0.450 x (4.50-3.50) x [[0.40 x [1.00] x [(4.50+3.50) x 1] x tan30°]

= 1.31 T

Case-2

Use C = 0.50 kg/sqcm & Φ = 0°

Hence "-" Drag = π x D x L x 0.40 x (α x c)

= [3.141 x 0.450 x (4.50-3.50) x 0.871 x 5.0] x 0.40

= 2.46 T

Considering the above 2 cases, maximum possible "-"ve drag = 2.46T

So, Recommended Pile Capacity = 55T

5.3.2. DETERMINATION OF VERTICAL PILE CAPACITY (BORED CAST IN-SITU PILE):

With reference to the above, the pile capacity values for various pile diameter are calculated and presented below. A sample pile capacity calculations is presented in a separate sheet.

Foundation Location	Length of pile below cut off level (M)	Pile Diameter (mm)	Recommended Vertical Pile Capacity, (T)
Chimney Area	23m (cut off =6.50)	600	150
BTG Area	23m (cut off =6.50)	600	140
		760	200
Switch Yard cont. room & Switch Yard Area and Transformer Yard Area	23m (cut off =3.50)	600	140
Effluent Treatment Plant Area	23m (cut off =3.50)	600	115
Guard Pond, Air Washers, Space For Dm Plant, DMW Stg.Tanks, Chem. House etc., Side stream Filtration Plant, Clarified Water PH & FWPH , LFO & HFO Tank, IA/SA/MRS Compressor House Area	23m (cut off =3.50)	600	150
CW Gas Chlorination Plant, DG Set, Service & Technical Bldg., FO Pressuring Pump House Area	23m (cut off =3.50)	600	130
CW Pipe Corridor Area	13m (cut off =3.50)	450	55
Pipe Rack Area	13m (cut off =3.50)	450	30

Note: Pile capacity shall be confirmed by conducting Pile Load Test as per IS: 2911, Part-IV.

5.3.3. DETERMINATION OF UPLIFT PILE CAPACITY (BORED CAST IN-SITU PILE):

With reference to the above, the uplift pile capacity values for various pile diameter are calculated and presented below.

Foundation Location	Length of pile below cut off level (M)	Pile Diameter (mm)	Recommended Uplift Pile Capacity, (T)
Chimney Area	23m (cut off =6.50)	600	95
BTG Area	23m (cut off =6.50)	600	90
		760	125
Switch Yard cont. room & Switch Yard Area and Transformer Yard Area	23m (cut off =3.50)	600	90
Effluent Treatment Plant Area	23m (cut off =3.50)	600	75
Guard Pond, Air Washers, Space For Dm Plant, DMW Stg.Tanks, Chem. House etc., Side stream Filtration Plant, Clarified Water PH & FWPH , LFO & HFO Tank, IA/SA/MRS Compressor House Area	23m (cut off =3.50)	600	85
CW Gas Chlorination Plant, DG Set, Service & Technical Bldg., FO Pressuring Pump House Area	23m (cut off =3.50)	600	80
CW Pipe Corridor Area	13m (cut off =3.50)	450	25
Pipe Rack Area	13m (cut off =3.50)	450	20

5.3.4. LATERAL PILE CAPACITY (AROUND BTG AREA):

Refer to IS : 2911 (Part I/Sec 2) - 2010, Appendix - C

Constant Factor, η_h = 0.20 kg/cucm corresponding to "N" value = 13 [Assuming Submerged Sand]

$T = [EI/\eta_h]^{1/5}$

Now, $I = 0.64 \times 10^6$ cm^4 [for 600mm dia pile]

$E = 5000 \times (f_{ck})^{0.5} = 5000 \times (25)^{0.5} = 25000$ N/sqmm $= 2.50 \times 10^5$ kg/sqcm

Hence, T = 238.81 cm

From Graph (Fig.4), L_f = 2.18 x T = 520.60 cm [Assuming Fixed Head Piles in Sands]

Pile Head deflection, Y = H x L_f^3 / 12EI = 0.7393mm for 1T load

So, for 5mm horizontal deflection, H = 6.76T, say 6.70T

Similarly, for 760 dia pile, H = 9.80T.

Foundation Location	Length of pile below cut off level (M)	Pile Diameter (mm)	Recommended Lateral Pile Capacity, (T)
Chimney Area	23m (cut off =6.50)	600	7.00
BTG Area	23m (cut off =6.50)	600	6.70
		760	9.80
Switch Yard cont. room & Switch Yard Area and Transformer Yard Area	23m (cut off =3.50)	600	6.70
Effluent Treatment Plant Area	23m (cut off =3.50)	600	5.40
Guard Pond, Air Washers, Space For Dm Plant, DMW Stg.Tanks, Chem. House etc., Side stream Filtration Plant, Clarified Water PH & FWPH , LFO & HFO Tank, IA/SA/MRS Compressor House Area	23m (cut off =3.50)	600	7.00
CW Gas Chlorination Plant, DG Set, Service & Technical Bldg., FO Pressuring Pump House Area	23m (cut off =3.50)	600	5.40
CW Pipe Corridor Area	13m (cut off =3.50)	450	3.40
Pipe Rack Area	13m (cut off =3.50)	450	3.40

5.4. USE OF OPEN FOUNDATION:

For minor and lightly loaded structures, open foundation can be used. The determination of bearing capacity is presented below.

Determination of Bearing Capacity (around Chimney area):

Place the foundation 1.00m below existing ground level.

Use average "N" = 17

Correcting for Overburden Pressure & Dilatancy, Corrected "N" = 16

Hence, use C = 0 kg/sqcm & Φ = 32°

Stratum-I:

Average corrected 'N' = 16

Treating the sand to be silty sand, E_s = 3 x (N+6) = 66 kg/sqcm

Treating the sand to be normally consolidated sand, E_s = 5 x (N+15) = 155 kg/sqcm

Considering the above, let us use E_s = 110 kg/sqcm

Use Geological Factor, G = 1.00 & μ = 0.25

[Refer to "Foundation Analysis and Design", 5th Edition, by J.E.Bowles, pp. No. 316, Table:5-6]

Stratum-II:

"N" value in this layer = 39, use C = 2.00 kg/sqcm

We know, E_s = 4.4 x N = 4.4 x 39 = 171.60 kg/sqcm

[Ref. to "History of Soil penetration testing" by B. B. Broms & N. Flodin in "Penetration Testing 1988", ISPOT-1: vol.1, p – 185]

Undrained Young's modulus, E_u = 500C = 1000 kg/sqcm

Again, $1/E_s = 1/E_u + 1/E_d$ giving drained young's modulus, E_d = 207.15 kg/sqcm

Now, we have, $E_d = E_u/3$ = 333.33 kg/sqcm

[Refer to "Cone Penetration Testing" by A.C.Meigh, pp. No. – 53]

Considering the above, let us use E_d = 270 kg/sqcm

From E_d, $m_{vc} = 1/G.E_d$ = 0.0074 sqcm/kg [Geological Factor, G = 0.50 & μ = 0.35]

Again from SPT "N", m_{vc} = 1/5N = 0.0051 sqcm/kg

[Refer to "Standard Penetration Test, State-of-the-art-Report" by Ivan K. Nixon in "Penetration testing 1" Edited by A.Verrujt, F.L.beringen & E.H.De Leeuw, pp. No. 11]

So, use design m_{vc} = [0.0074 + 0.0051]/2 = 0.0063 sqcm/kg

Stratum-III:

Average corrected 'N' = 29

Treating the sand to be silty sand, E_s = 3 x (N+6) = 105 kg/sqcm

Treating the sand to be normally consolidated sand, E_s = 5 x (N+15) = 220 kg/sqcm

Considering the above, let us use E_s = 160 kg/sqcm

Use Geological Factor, G = 1.00 & μ = 0.25

Bearing Capacity Calculation:

Use depth of foundation = 1.00m below EGL & size of footing = 3m x 4.5m (assumed)

The foundation falls inside sand layer.

The Net Ultimate Bearing Capacity is given as:

$$q_{nu} = C.N_c.S_c.D_c + q.N_q.S_q.D_q + 0.5\gamma.B.N_\gamma.S_\gamma.D_\gamma - q$$

Where,

N_c, N_q and N_γ are bearing capacity factors,
S_c, S_q and S_γ are shape factors,
D_c, D_q and D_γ are depth factors,

And

C = Cohesion
q = Overburden pressure,
B = Width of foundation,
γ = Effective density below foundation.

Considering general shear failure

Cohesion, C = 0.00 t/sqm

Using ϕ = 32 degree, the bearing capacity factors are:

N_c = 35.49
N_q = 23.18
N_γ = 30.21

Use,

Depth of Foundation = D_f = 1 M below EGL
Width of Foundation = B = 3 M
Length of Foundation = L = 4.5 M

Overburden Pressure = q =1.000 (Depth) x 0.90 (Submerged density) = 0.90 t/sqm (assuming water table is flushing with the ground)

The Shape factors are [IS:6403 - 1981]

S_c = 1.13 S_q = 1.13 S_γ = 0.73

The Depth factors are [IS:6403 - 1981]

D_c = 1.12 D_q = 1.06 D_γ = 1.06

Computed Net Ultimate Bearing Capacity = 55.87 t/sqm

Using a factor of safety of 2.5, Net Safe Bearing Capacity = 22.35 t/sqm

Considering local shear failure

$\phi = 32°$, $\Phi' = \tan^{-1}(2/3 \tan\Phi) \approx 22°$

Computed Net Ultimate Bearing Capacity = 14.88 t/sqm

Using a factor of safety of 2.5, Net Safe Bearing Capacity = 5.95 t/sqm

Therefore, interpolated SBC = [5.95 + {(32-28) / (36-28)} x (22.35-5.95)] = 14.15 t/sqm.

The above bearing capacity should be checked against settlement criteria and this is shown below.

For 3m x 4.5m Isolated footing

Settlement Analysis

A) General Data:

Width of foundation =	3.0	m
Length of foundation =	4.5	m
Depth of foundation =	1.0	m
Net Base Pressure =	1.4	kg/sqcm

B) Subsoil Properties:

Layer - I			**Layer - II**		
Young's Modulus =	110	kg/sqcm	Young's Modulus =	1000	kg/sqcm
Poisson Ratio, μ =	0.25		Poisson Ratio, μ =	0.35	
Top of Stratum =	0.00	m	Top of Stratum =	5.50	m
End of Stratum =	5.50	m	End of Stratum =	7.00	m
Geological factor, G =	1.00		Geological factor, G =	0.50	
m_{vc} =	0.0000	sqcm/kg	m_{vc} =	0.0063	sqcm/kg

C) Calculation of Immediate Settlement:

Settlement at center

M = L' / B' =	1.500		
N = H / B' =	3.000		
I_1 =	0.393		
I_2 =	0.068		
$I_s = I_1 + \{(1-2\mu) / (1-\mu)\} I_2$ =		0.438	
Immediate settlement S_i =		3.134	cm
$[q_o \times B' \times (1-\mu^2) \times m \times I_s] / E_s$			

Settlement at center

M = L' / B' =	1.200		
N = H / B' =	0.400		
I_1 =	0.031		
I_2 =	0.069		
$I_s = I_1 + \{(1-2\mu) / (1-\mu)\} I_2$ =		0.062	
Immediate settlement S_i =		0.023	cm
$[q_o \times B' \times (1-\mu^2) \times m \times I_s] / E_s$			

Settlement at corner

M = L' / B' =	1.50		
N = H / B' =	1.500		
I_1 =	0.220189		
I_2 =	0.096223		
$I_s = I_1 + \{(1-2\mu) / (1-\mu)\} I_2$ =		0.284	
Immediate settlement S_i =		1.018	cm

Settlement at corner

M = L' / B' =	1.20		
N = H / B' =	0.200		
I_1 =	0.008		
I_2 =	0.042		
$I_s = I_1 + \{(1-2\mu) / (1-\mu)\} I_2$ =		0.027	
Immediate settlement S_i =		0.005	cm

Average S_i for Stratum I= 20.76 mm

Total immediate settlement = 20.90 mm

Average S_i for Stratum II= 0.14 mm

(for both the layer)

D) Calculation of Consolidation Settlement:

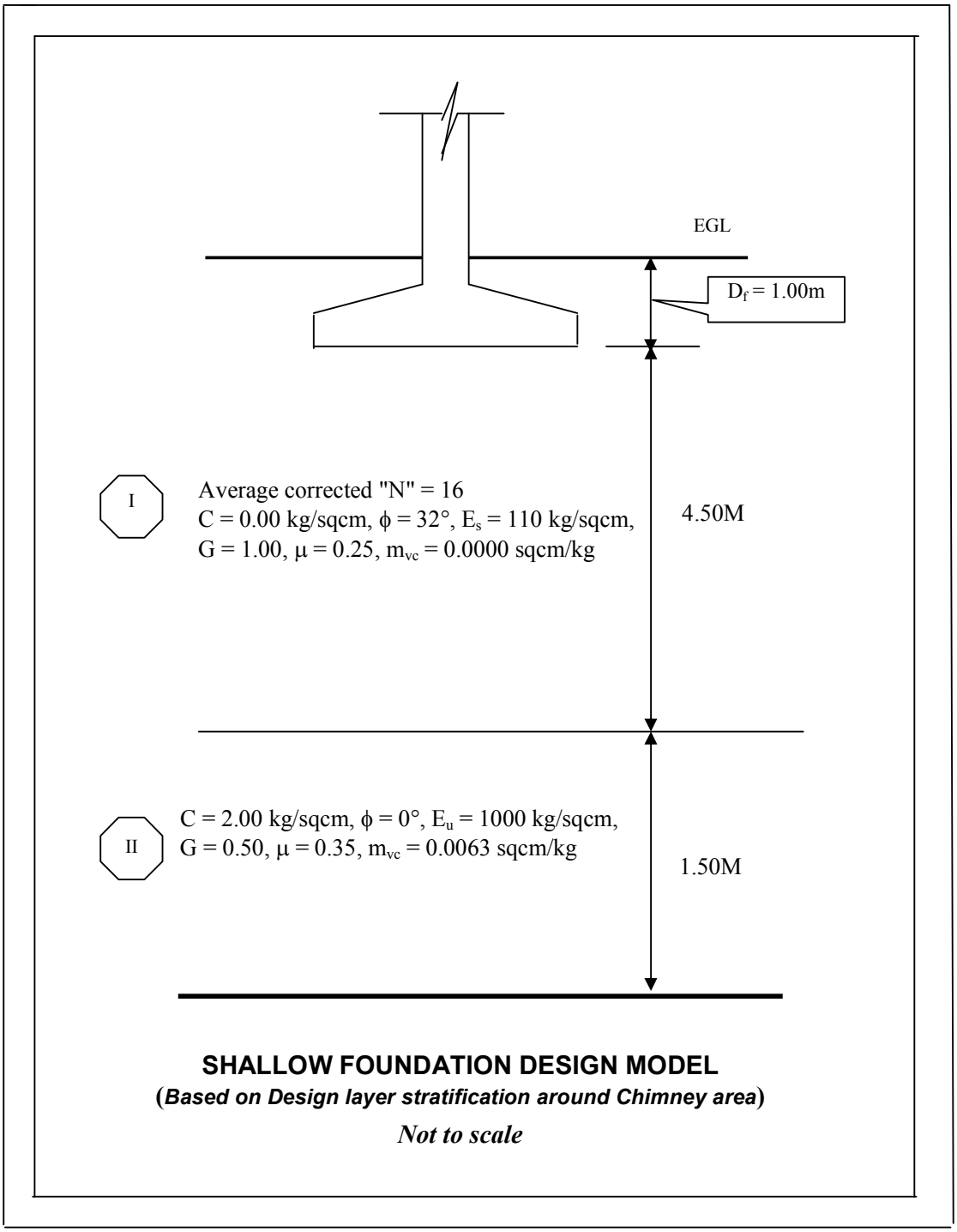
Strata	From (M)	To (M)	Thickness (M)	Mid depth (M)	Δ P (kg/sqcm)	m_{vc}, sqcm/kg	G	S_c (cm)
Layer - II	5.50	6.25	0.75	4.88	0.26	0.0063	0.50	0.06
	6.25	7.00	0.75	5.63	0.22	0.0063	0.50	0.05

Hence, Total Consolidation Settlement = 1.12 mm

So, Total Settlement = 22.02 mm

Foxe's Depth correction Factor = 0.93

Corrected total settlement = 20.46 mm



SHALLOW FOUNDATION DESIGN MODEL

(***Based on Design layer stratification around Chimney area***)

Not to scale

Based on the above, following bearing capacity values are recommended.

A) Recommendation on bearing Capacity for foundations where EGL is below FGL (Area required Filling)

Foundation Location	D_f below EGL (M)	Width of Foundation (m)	NSBC (t/sqm)	NABC (t/sqm)		
				S=25mm	S=40mm	S=75mm
BTG / Chimney Area	Upto 1.50	Upto 6	--	5		
	2	Up to 2	11.78	10	10	--
		3-4	13.85	12	12	--
		5	15.07	11	15	--
		>6	16.34	--	16	16
	3	Up to 2	17.28	16	16	--
		3-4	18.54	18	18	--
		5	19.61	14	18	--
		>6	20.77	--	20	20
Switch Yard Control Room & Switch Yard, Transformer Yard	1	Up to 2	6.92	6	6	--
		3-4	9.47	9	9	--
		5	10.79	8	10	--
		>6	12.12	--	12	12
	2	Up to 2	11.78	10	10	--
		3-4	13.85	12	12	--
		5	15.07	11	15	--
		>6	16.34	--	16	16
	3	Up to 2	17.28	16	16	--
		3-4	18.54	18	18	--
		5	19.61	14	18	--
		>6	20.77	--	20	20
Effluent Treatment Plant	1	Upto 2	10.31	10	10	--
		3-4	9.84	7	11	--
		5	9.75	6	10	--
		>6	9.69	--	9	9
	2	Up to 2	43.85	12	12	--
		3-4	39.47	8	12	--
		5	38.60	7	10	--
		>6	38.02	--	10	10
	3	Up to 2	45.62	20	20	--
		3-4	40.37	16	18	--
		5	39.32	15	18	--
		>6	38.62	--	18	18
Guard Pond, Air Washers, Space For Dm Plant, DMW Stg.Tanks, Chem. House etc., Side stream Filtration Plant, Clarified Water PH & FWPH , LFO & HFO Tank, IA/SA/MRS Compressor House Area	1	Up to 2	6.92	6	6	--
		3-4	9.47	5	8	--
		5	10.79	5	8	--
		>6	12.12	--	9	12
	2	Up to 2	11.78	10	10	--
		3-4	13.85	7	11	--
		5	15.07	6	10	--
		>6	16.34	--	12	16
	3	Up to 2	17.28	14	16	--
		3-4	18.54	9	14	--
		5	19.61	8	13	--
		>6	20.77	--	15	20

Foundation Location	D_f below EGL (M)	Width of Foundation (m)	NSBC (t/sqm)	NABC (t/sqm)		
				S=25mm	S=40mm	S=75mm
CW Gas Chlorination Plant, DG Set, Service & Technical Bldg., FO Pressuring Pump House, CW Pipe Corridor Area	1	Upto 2	6.92	6	6	--
		3-4	9.47	5	8	--
		5	10.79	5	8	--
		>6	12.12	--	6	9
	2	Up to 2	11.78	10	10	--
		3-4	13.85	6	10	--
		5	15.07	5	9	--
		>6	16.34	--	10	16
	3	Up to 2	17.28	14	22	--
		3-4	18.54	8	13	--
		5	19.61	7	11	--
		>6	20.77	--	12	20
400 KV Extn. Switch Yard	1	Upto 2	6.92	6	6	--
		3-4	8.17	6	8	--
		5	10.79	6	10	--
		>6	12.12	--	10	12
	2	Up to 2	11.78	10	11	--
		3-4	12.71	7	11	--
		5	15.07	6	10	--
		>6	16.34	--	12	16
	3	Up to 2	17.28	15	17	--
		3-4	17.67	9	14	--
		5	19.61	8	13	--
		>6	20.77	--	15	20

B) Recommendation on bearing Capacity for foundations where EGL is above FGL (Area required Cutting)

Foundation Location	D_f below FGL (M)	Width of Foundation (m)	NSBC (t/sqm)	NABC (t/sqm)		
				S=25mm	S=40mm	S=75mm
Natural Draft Cooling Tower (NDCT)	1m	Upto 2	10.00	10	10	--
		3-4	14.15	14	14	--
		5	18.93	16	18	--
		>6	21.36	20	20	20
	2m	Up to 2	19.89	18	18	--
		3-4	21.63	20	20	--
		5	25.98	22	25	--
		>6	28.30	28	28	28
	3m	Up to 2	29.01	28	28	--
		3-4	29.84	28	28	--
		5	32.79	30	30	--
		>6	32.21	30	30	30
	4 -5m	Up to 2	114.46	45	45	--
		3-4	98.14	45	45	--
		5	94.87	42	45	--
		>6	92.69	42	45	45

Foundation Location	D_f below FGL (M)	Width of Foundation (m)	NSBC (t/sqm)	NABC (t/sqm)		
				S=25mm	S=40mm	S=75mm
Store, Retaining Wall & Equipment Laydown Space	1m	Up to 2	89.83	35	40	--
		3-4	85.75	32	38	--
		5	84.93	30	35	--
		>6	84.39	--	35	40
	2m	Up to 2	98.04	40	40	--
		3-4	89.88	38	38	--
		5	88.24	35	35	--
		>6	87.16	--	35	40
	3m	Up to 2	106.25	45	45	--
		3-4	94.01	40	40	--
		5	91.56	38	38	--
		>6	89.92	--	40	45
FO Transfer Pump House	1-2m	Upto 2	25.80	25	25	--
		3-4	36.66	35	35	--
		5	37.87	35	35	--
		>6	37.41	--	35	35
	3m	Upto 2	45.62	45	45	--
		3-4	40.37	40	40	--
		5	39.32	38	38	--
		>6	38.62	--	38	38
Space for service water pumps, New clarifier pumps, CW chlorination Plant Area	1m	Upto 2	10.00	10	10	--
		3-4	14.15	10	14	--
		5	18.93	9	14	--
		>6	21.36	--	16	20
	2m	Up to 2	19.89	18	18	--
		3-4	21.63	12	18	--
		5	25.98	10	16	--
		>6	28.30	--	18	28
	3m	Up to 2	29.01	26	28	--
		3-4	29.84	14	22	--
		5	33.46	12	18	--
		>6	35.60	--	20	35

Note:

1. NSBC = Net Safe Bearing Capacity
2. NABC = Net Allowable Bearing Capacity
3. S = Limiting Settlement.

5.5. STATIC CONE PENETRATION TESTS:

Total seventeen (17) nos. SCP Tests were conducted at the proposed site up to a maximum depth of about 13m below existing ground level. Using the SCPT results, the average properties of the soil is calculated and presented in separate sheet in volume-2. The average strength properties as obtained from SCPT are summarised below.

SCPT No.	Layer No.	Average Properties	
		C (kg/sqcm)	Φ (°)
SCPT – 1 to 17	I	0.00	38
	II	1.50	0
	III	0.00	38
	IV	4.06	0

5.6. SWELLING CHARACTERISTICS:

The swelling pressure and Free Swell Index tests were performed on a few samples and the test results are presented at the end of this report. The average swelling pressure and Free Swelling Index as found from the tests are 0.38kg/sqcm & 14.63% respectively. Thus, the subsoil has low swelling characteristics. So, no problem with respect to the swelling of the subsoil is anticipated.

5.7. PERCOLATION TESTS:

Percolation tests were conducted in different trial pits. The test results are presented below.

Test Locations	Type of Test	Depth of Test (M)	Permeability (cm/sec)
TP-01	Falling Head	3.00	3.909×10^{-6}
TP-03	Falling Head	3.00	4.241×10^{-6}
TP-04	Falling Head	3.00	1.875×10^{-6}
TP-08	Falling Head	3.00	1.330×10^{-6}

5.8. FIELD PERMEABILITY TESTS:

Field permeability tests were conducted in four bore holes. The test results are presented below.

Test Locations	Type of Test	Depth of Test (M)	Permeability (cm/sec)
BH-02	Falling Head	1.40 – 2.00	7.737×10^{-6}
	Falling Head	2.80 – 3.50	1.172×10^{-6}
BH-10	Falling Head	1.45 – 2.00	5.401×10^{-6}
	Falling Head	2.90 – 3.50	5.132×10^{-6}
BH-31	Falling Head	1.30 – 2.00	2.588×10^{-5}
	Falling Head	2.80 – 3.50	7.311×10^{-6}
BH-53	Falling Head	1.40 – 2.00	4.079×10^{-4}
	Falling Head	2.90 – 3.50	3.414×10^{-4}

5.9. CHEMICAL TESTS:

Chemical tests were performed on a few soil & water samples for determining the pH value, Sulphate, Chloride etc. The results are given in a tabular form below:

CHEMICAL TEST RESULTS ON SOIL SAMPLES: -

BH / UDS No.	Depth (M)	pH value	Sulphate (%) as SO_3	Chloride as Cl %	Carbonate as %	Nitrate as %	Organic Matters %
06/02	4.00	6.27	0.050	0.01849	0.12	0.004	0.3442
11/01	2.00	7.80	BDL*	0.01851	0.30	0.008	0.6732

BH / UDS No.	Depth (M)	pH value	Sulphate (%) as SO_3	Chloride as Cl %	Carbonate as %	Nitrate as %	Organic Matters %
11/02	4.00	8.22	BDL*	0.01994	0.40	0.002	0.1292
16/01	2.00	6.65	0.050	0.01991	0.16	0.010	0.2884
23/03	6.50	7.81	0.050	0.01709	0.32	0.012	0.1110
26/03	6.50	7.77	0.050	0.02564	0.20	0.004	0.6310
34/03	6.50	5.93	0.350	0.02134	0.40	0.004	0.3016
39/01	2.00	4.73	0.050	0.05127	0.44	0.013	0.2235
45/02	4.00	7.64	0.050	0.01994	0.25	0.011	0.7658
50/01	2.00	8.03	0.050	0.01851	0.52	0.007	0.0401

CHEMICAL TEST RESULTS ON WATER SAMPLE: -

BH No.	Depth (M)	pH value	Sulphate as mg/litr	Chloride as mg/litr	Carbonate as mg/litr	Nitrate as mg/litr	Turbidity As MTU	Organic Matters mg/litr
41	13.80	7.47	240	115.36	12.0	0.12	2.50	15.55
43	13.50	7.49	240	116.78	14.0	0.16	2.00	17.78
01	19.65	7.34	480	109.53	10.0	0.12	4.30	8.32
09	13.40	7.24	420	108.11	10.0	0.24	5.00	6.24
17	15.90	7.10	420	110.95	22.0	0.12	2.25	8.32
22	13.85	7.12	420	109.53	18.0	0.14	2.40	8.32
30	25.10	7.06	420	106.68	10.0	0.26	2.40	8.32
48	14.00	7.67	420	109.53	18.0	0.08	2.22	6.24
53	22.30	7.21	480	116.64	14.0	0.18	3.40	8.32
58	26.50	7.18	480	118.07	14.0	0.18	3.25	6.24

***BDL = Below Detection Limit**

It is seen that the values are on safe side with slightly higher sulphate content. **So, either Ordinary Portland cement or Portland slag cement or Portland Pozzolana cement (minimum cement content will be 330kg/m^3) can be used as per IS : 456. Alternatively, Supersulphated cement or Sulphate Resisting Portlant cement (minimum cement content will be 310 kg/m^3) can be used (as per IS : 456).**

5.10. POSSIBILITY OF SUBSOIL LIQUEFACTION DUE TO EARTHQUAKE:

Based on the subsoil condition and level of ground water table, it can be concluded that the site is not prone to liquefaction.

5.11. SUITABILITY OF EXISTING SOIL FOR FILLING AND BACK-FILLING:

The subsoil at the site is inorganic in nature & consists of silty clay with fine sand mixtures / clayey silty sand having low swelling properties. Thus the soil can be used for filling and back filling purposes with necessary compaction as required.

5.12. SUITABILITY OF SOIL FOR CONSTRUCTION OF ROADS & PAVEMENT:

The subsoil at the site is inorganic in nature & consists of silty clay with fine sand mixtures / clayey silty sand having low swelling properties. Thus the soil can be used for the construction of roads and pavement as a fill material.

In the laboratory, Standard & Modified proctor compaction tests were performed, using samples collected at a depth varying from 1-3m below ground level. The MDD ranges between 1.77 gm/cc to 1.86 gm/cc (standard proctor compaction tests) & 1.82 gm/cc to 1.96 gm/cc (modified proctor compaction tests).

Laboratory CBR tests were performed on remoulded soil samples (compacted at MDD) collected from site at soaked condition. The CBR values are in the range of 6% to 10% (for standard proctor compaction tests) & 14% to 21% (for modified proctor compaction tests).

Modified proctor test on fly ash shows OMC, MDD & CBR (4 days soaked) as 26.50%, 1.205 gm/cc & 15% respectively.

Considering the above, CBR value of 6% (for standard proctor compaction tests) and 14% (for modified proctor compaction tests) may be used for pavement subgrade design.

5.13. EXCAVATION:

For excavation in soil, a slope of 1(V):2(H) is to be adopted for the site with suitable berms, if required.

5.14. EARTH PRESSURE CO-EFFICIENT:

The Co-efficient of earth pressure at Active and Passive State are given below in a tabular form.

Layer	K_a	K_p
Layer – I	0.33	3.00
Layer – IIA	0.38	2.66
Layer – II	0.36	2.77
Layer – III	0.28	3.54
Layer – IV	0.35	2.88
Layer – V	0.27	3.69

6. SUMMARY & RECOMMENDATIONS

Based on the field tests and observation and the foregoing discussion the following are summarized.

1. The subsoil is characterised by a filled up soil followed by loose to medium dense silty sand. Then stiff / very stiff to hard clayey silt layer was found. A dense to very dense silty sand layer was observed below that. Again a hard clayey silt layer was observed there after. Underlying that, a very dense silty sand layer was struck and that continued upto the terminating depth of the boreholes.

2. The standing water level was struck at an average depth of about 16.42m below ground. So, construction of open foundation placed at 1.00m – 3.00m below existing level may not create any problem. However, if required, ordinary surface operated pumps will be able to tackle the situation.

3. Seven nos. (7). Plate Load Tests were conducted in the site (five nos. are of routine type & the rest two nos. are of cyclic type) and discussed in the previous section. Based on the above test results, the subgrade modulus for different foundation areas is presented below.

Test No.	Depth (M)	Subgrade Modulus, (kg/cucm)			
		Foundation Area = 1 sqm	Foundation Area = 4 sqm	Foundation Area = 5 sqm	Foundation Area = 10 sqm or above
PLT-01	3.00	1.47	0.74	0.66	0.46
PLT-02	3.00	1.07	0.54	0.48	0.34
PLT-03	3.00	0.61	0.30	0.27	0.19
PLT-04	3.00	0.47	0.24	0.21	0.15
PLT-05	3.00	2.32	1.16	1.04	0.73
CPLT-01	3.00	0.64	0.32	0.28	0.20
CPLT-02	3.00	0.65	0.32	0.29	0.20

4. Using the elastic rebound as we obtain from CPLT-01 to 02, the dynamic properties are calculated and presented below.

Test No.	Depth (M)	$C_{u\ (10sqm\ fdn.size)}$ (kg/cucm)
CPLT-01	3.00	1.420
CPLT-02	3.00	0.803

5. For major and heavily loaded structures, deep foundation in form of pile is suggested. Bored cast in-situ piles are preferred as discussed in the previous section.

6. The determination of pile capacity (vertical, uplift & lateral) is presented in the previous section. The recommended pile capacity values for different depths & pile diameters are presented below with a cut-off level (COL) of 3.50/6.50m below finished ground level (FGL).

Foundation Location	Length of pile below cut off level (M)	Pile Diameter (mm)	Recommended Pile Capacity, (T)		
			Vertical (T)	Uplift (T)	Lateral (T)
Chimney Area	23m (COL= 6.50)	600	150	95	7.00
BTG Area	23m (COL =6.50)	600	140	90	6.70
		760	200	125	9.80
Switch Yard cont. room & Switch Yard Area and Transformer Yard Area	23m (COL =3.50)	600	140	90	6.70
Effluent Treatment Plant Area	23m (COL =3.50)	600	115	75	5.40
Guard Pond, Air Washers, Space For Dm Plant, DMW Stg.Tanks, Chem. House etc., Side stream Filtration Plant, Clarified Water PH & FWPH , LFO & HFO Tank, IA/SA/MRS Compressor House Area	23m (COL =3.50)	600	150	85	7.00
CW Gas Chlorination Plant, DG Set, Service & Technical Bldg., FO Pressuring Pump House Area	23m (COL =3.50)	600	130	80	5.40
CW Pipe Corridor Area	13m (COL =3.50)	450	55	25	3.40
Pipe Rack Area	13m (COL =3.50)	450	30	20	3.40

Note: Pile capacity shall be confirmed by conducting Pile Load Test as per IS: 2911, Part-IV.

7. For minor & lightly loaded structures, open foundation may be used. The determination of bearing capacity is presented in the previous section. However this is further presented below.

A) Recommendation on bearing Capacity for foundations where EGL is below FGL (Area required Filling)

Foundation Location	D_f below EGL (M)	Width of Foundation (m)	NSBC (t/sqm)	NABC (t/sqm)		
				S=25mm	S=40mm	S=75mm
BTG / Chimney Area	Upto 1.50	Upto 6	--	5		
	2	Up to 2	11.78	10	10	--
		3-4	13.85	12	12	--
		5	15.07	11	15	--
		>6	16.34	--	16	16

Foundation Location	D_f below EGL (M)	Width of Foundation (m)	NSBC (t/sqm)	NABC (t/sqm)		
				S=25mm	S=40mm	S=75mm
BTG / Chimney Area	3	Up to 2	17.28	16	16	--
		3-4	18.54	18	18	--
		5	19.61	14	18	--
		>6	20.77	--	20	20
Switch Yard Control Room & Switch Yard, Transformer Yard	1	Up to 2	6.92	6	6	--
		3-4	9.47	9	9	--
		5	10.79	8	10	--
		>6	12.12	--	12	12
	2	Up to 2	11.78	10	10	--
		3-4	13.85	12	12	--
		5	15.07	11	15	--
		>6	16.34	--	16	16
	3	Up to 2	17.28	16	16	--
		3-4	18.54	18	18	--
		5	19.61	14	18	--
		>6	20.77	--	20	20
Effluent Treatment Plant	1	Upto 2	10.31	10	10	--
		3-4	9.84	7	11	--
		5	9.75	6	10	--
		>6	9.69	--	9	9
	2	Up to 2	43.85	12	12	--
		3-4	39.47	8	12	--
		5	38.60	7	10	--
		>6	38.02	--	10	10
	3	Up to 2	45.62	20	20	--
		3-4	40.37	16	18	--
		5	39.32	15	18	--
		>6	38.62	--	18	18
Guard Pond, Air Washers, Space For Dm Plant, DMW Stg.Tanks, Chem. House etc., Side stream Filtration Plant, Clarified Water PH & FWPH , LFO & HFO Tank, IA/SA/MRS Compressor House Area	1	Up to 2	6.92	6	6	--
		3-4	9.47	5	8	--
		5	10.79	5	8	--
		>6	12.12	--	9	12
	2	Up to 2	11.78	10	10	--
		3-4	13.85	7	11	--
		5	15.07	6	10	--
		>6	16.34	--	12	16
	3	Up to 2	17.28	14	16	--
		3-4	18.54	9	14	--
		5	19.61	8	13	--
		>6	20.77	--	15	20
CW Gas Chlorination Plant, DG Set, Service & Technical Bldg., FO Pressuring Pump House, CW Pipe Corridor Area	1	Upto 2	6.92	6	6	--
		3-4	9.47	5	8	--
		5	10.79	5	8	--
		>6	12.12	--	6	9
	2	Up to 2	11.78	10	10	--
		3-4	13.85	6	10	--
		5	15.07	5	9	--
		>6	16.34	--	10	16
	3	Up to 2	17.28	14	22	--
		3-4	18.54	8	13	--

Foundation Location	D_f below EGL (M)	Width of Foundation (m)	NSBC (t/sqm)	NABC (t/sqm)		
				S=25mm	S=40mm	S=75mm
	3	5	19.61	7	11	--
		>6	20.77	--	12	20
400 KV Extn. Switch Yard	1	Upto 2	6.92	6	6	--
		3-4	8.17	6	8	--
		5	10.79	6	10	--
		>6	12.12	--	10	12
	2	Up to 2	11.78	10	11	--
		3-4	12.71	7	11	--
		5	15.07	6	10	--
		>6	16.34	--	12	16
	3	Up to 2	17.28	15	17	--
		3-4	17.67	9	14	--
		5	19.61	8	13	--
		>6	20.77	--	15	20

B) Recommendation on bearing Capacity for foundations where EGL is above FGL (Area required Cutting)

Foundation Location	D_f below FGL (M)	Width of Foundation (m)	NSBC (t/sqm)	NABC (t/sqm)		
				S=25mm	S=40mm	S=75mm
Natural Draft Cooling Tower (NDCT)	1m	Upto 2	10.00	10	10	--
		3-4	14.15	14	14	--
		5	18.93	16	18	--
		>6	21.36	20	20	20
	2m	Up to 2	19.89	18	18	--
		3-4	21.63	20	20	--
		5	25.98	22	25	--
		>6	28.30	28	28	28
	3m	Up to 2	29.01	28	28	--
		3-4	29.84	28	28	--
		5	32.79	30	30	--
		>6	32.21	30	30	30
	4-5m	Up to 2	114.46	45	45	--
		3-4	98.14	45	45	--
		5	94.87	42	45	--
		>6	92.69	42	45	45
Store, Retaining Wall & Equipment Laydown Space	1m	Up to 2	89.83	35	40	--
		3-4	85.75	32	38	--
		5	84.93	30	35	--
		>6	84.39	--	35	40
	2m	Up to 2	98.04	40	40	--
		3-4	89.88	38	38	--
		5	88.24	35	35	--
		>6	87.16	--	35	40
	3m	Up to 2	106.25	45	45	--
		3-4	94.01	40	40	--
		5	91.56	38	38	--
		>6	89.92	--	40	45

Foundation Location	D_f below FGL (M)	Width of Foundation (m)	NSBC (t/sqm)	NABC (t/sqm)		
				S=25mm	S=40mm	S=75mm
FO Transfer Pump House	1-2m	Upto 2	25.80	25	25	--
		3-4	36.66	35	35	--
		5	37.87	35	35	--
		>6	37.41	--	35	35
	3m	Upto 2	45.62	45	45	--
		3-4	40.37	40	40	--
		5	39.32	38	38	--
		>6	38.62	--	38	38
Space for service water pumps, New clarifier pumps, CW chlorination Plant Area	1m	Upto 2	10.00	10	10	--
		3-4	14.15	10	14	--
		5	18.93	9	14	--
		>6	21.36	--	16	20
	2m	Up to 2	19.89	18	18	--
		3-4	21.63	12	18	--
		5	25.98	10	16	--
		>6	28.30	--	18	28
	3m	Up to 2	29.01	26	28	--
		3-4	29.84	14	22	--
		5	33.46	12	18	--
		>6	35.60	--	20	35

Note:

a) NSBC = Net Safe Bearing Capacity
b) NABC = Net Allowable Bearing Capacity
c) S = Limiting Settlement.

8. Swelling pressure and Free Swelling Index tests have been performed on sufficient samples over the entire zone of investigation. The average swelling pressure and Free Swelling Index as found from the tests are 0.38 kg/sqcm & 14.63% respectively. Thus, the subsoil has low swelling characteristics. So, no problem with respect to heaving of the subsoil is anticipated.

9. Chemical tests were carried out on a few soil and water samples to detect the **pH value, Sulphate, Chloride, Organic matter etc.** It is seen that the values are on safe side with slightly higher sulphate content. **So, either Ordinary Portland cement or Portland slag cement or Portland Pozzolana cement (minimum cement content will be 330kg/m^3) can be used as per IS:456. Alternatively, Supersulphated cement or Sulphate Resisting Portlant cement (minimum cement content will be 310 kg/m^3) can be used (as per IS:456).**

10. 8 (eight) nos. field permeability tests were carried out in 4nos. BH and the test results are presented in the previous section.

11. The suitability of existing soil for filling and back-filling is given in Section 5.11

12. The suitability of soil for construction of roads & pavement is discussed in Section 5.12

13. The discussion on Excavation scheme to be adopted is given in Section 5.13
14. The calculation of earth pressure for deep excavation is given in Section 5.14.
15. The Electrical Resistivity Test Results are presented in Section - 7.
16. The Seismic Refraction Test Results are discussed in Section – 8.
17. The Pressure Meter Test Results are discussed in Section – 9.
18. The Block Vibration Test Results are discussed in Section – 10.
19. The geology of the area is discussed in Section – 11.

For C. E. Testing Company Private Limited,

Prepared By	Checked By	Approved By
(B. BANERJEE)	(S. NATH)	(DR. M. NAYAK)

7. ELECTRICAL RESISTIVITY TEST

REPORT ON
ELECTRICAL RESISTIVITY TEST (ERT) FOR THE PROPOSED 1 x 800MW WANAKBORI TPS, GUJARAT.

INTRODUCTION:

Electrical Resistivity Test was carried out for proposed 1X800 MW TPS at Wanakbori, in the state of Gujarat on 06/11/2014 to 10/11/2014 using resistivity meter (model DDR3, IGIS) and following Indian standard at thirty one (37) locations.

METHODOLOGY:

The Soil Resistivity Survey is a method to find out the Electrical Resistivity (Specific Resistance) of a medium. It is the resistance offered by a unit cube of a particular medium (so called strata below the ground level) when a unit current passes perpendicular to the surface of a cross-sectional area A. The relation is given by Ohm's Law is –

$$\rho = R \text{ ohm} \frac{A}{l} = \text{ohm} \frac{m^2}{m} = \text{ohm} - m \text{ where}$$

ρ= Resistivity, R = resistance offered by the medium of length L and Cross-sectional area A.

In electrical resistivity survey a known current I (direct current or low frequency alternating current) is sent into the ground through a pair of current electrodes A & B and the potential difference (∆V) created in the medium is measured between another pair of electrodes M & N. The resistivity of the formation is then given

by $\rho = K \frac{\Delta V}{I}$ where ρ is the apparent resistivity, K is the geometric factor.

In the Earth Resistivity Test, the Wenner configuration was followed. In this configuration two potential electrodes M & N are placed in a line with the current electrodes A & B, all four being situated equidistance from one to another and disposed symmetrically with respect to a central point such that AM=MN=NB=a . The outer two electrodes A & B were used for

sending current (I) and inner two M & N were used for measuring the potential differences (ΔV). The distance between each consecutive electrode (a) was kept constant and was progressively increased to reach the depth at which resistivity information are wanted. Suitable electrode spacing determines the conductivity of the top soil as well as the various subsurface layers occurring in the area under study. At each location, 4 sets of observations were taken for each of the electrode spacing (a) in four directions (N-S,E-W,NE-SW and NW-SE) and in six different electrode spacing viz,: a = 1.0m, 2.0m, 3.0m, 4.0m, 5.0m, 7.0m and 10.0m were used to know the nature of change of resistivity.

The apparent resistivity was determined by the formula –

$\rho = 6.28\ a \frac{\Delta V}{I}$ where 'a' is the distance between the two consecutive Electrodes and $\frac{\Delta V}{I}$ is R which is the observed resistance for measuring resistivity. A The mean value of the resistivity estimated was taken as the representative one.

The depth of investigation in an isotropic and homogeneous formation can be approximated to the distance between the consecutive two electrodes (a).

GEOLOGY:

The area where the investigation was conducted was full of ash and transported material on the top up to considerable depth. Area is covered with soil and at places thick overburden of loose ash right at the ground surface. This top soil extends up to almost 40 cm bgl and below that it is only red coloured soil - a sticky clay variety. Such sandy ground surface continues further below the ground level. This depicts that, this subsurface layer below that top soil is partly water saturated sandy clay. It continues further below. Summarized result of the resistivity measurements at different locations in the area are given in the following tables.

Here it may be indicated that in case of highly resistive formations, current penetrates much deeper into the earth than when the subsurface formations are conducting. Further, in the present investigation only apparent resistivity is measured which may be taken (as a first approximation) as the weighted average of the true resistivity of the subsurface formations in which current lines flow.

INTERPRETATION:

ERT observations were taken on 31 (Thirty one) locations distributed over the different locations as given in the work schedule of the Client and for direction of observations also followed the same work schedule.

The summarized result of the resistivity measurements along with the co-ordinates and the RL at different locations are given in the table annexed hereto.

All the ERT curves are plotted as "a" (m) vs. ρ (ohm-m) and are exhibited in the form plates annexed hereto. It may also please be noted that in the present investigation we have measured only the apparent resistivity which may be taken as a first approximation to the weighted average of the true resistivity of the subsurface stratums in which the current lines flow. There were much of hindrance and constraint in laying of line due to dumps.

In general, all the ERT curves exhibit the nature of Q-type curves which is indicative of the fact that the resistivity gradually decreases with depth up to a certain depth, then again decreases or remains the same with very little fluctuation and becomes asymptotic to the abscissa.

CONCLUSION:-

The first criteria for earthing purpose is that, the zones of high resistivity are to be avoided and discarded and should hunt for the zone of steady resistivity of so called UNIFORM LAYER. The average apparent resistivity of uniform soil should be considered as correct computation of resistivity to be used in design calculation. It is not the average of all the apparent resistivity values revealed from top to bottom layers. It is only the average of apparent resistivities of so called uniform soil occurring at a particular depth below the ground level at a particular depth when for few consecutive electrodes spacing (with the gradual increase of electrode spacing) the resistivity variations are within 20 to 30 percent, the soil, at that depth, in the vicinity of the test location is to be considered as uniform one. When the electrode spacing is increased gradually from low values, at a stage, it may be found that the resistivity readings are more or less constant (variations are within 20 to 30 %) irrespective of the increase in the electrode spacing. Such type of uniform soil, the corresponding average apparent resistivity and the corresponding average depth are of prime importance for design purpose. Keeping in view of the necessity of detection of

Uniform Soil, one should give a keen and close look in the tables to discern where the apparent resistivity readings for different electrode spacing in a direction is within 20 to 30 percent and the soil at that level will have to be considered as uniform. Such type of Uniform Soil was envisaged and corresponding average resistivities of that particular layer were deciphered and tabulated below.

It can be concluded that the mean apparent resistivity of the uniform soil for different ERT locations are as hereunder:–

Sl. No.	ERT Location	Overall Mean Resistivity (Ohm – m)	Sl. No.	ERT Location	Overall Mean Resistivity (Ohm – m)
1.	ERT- 01	101.94	20.	ERT- 20	122.66
2.	ERT- 02	56.66	21.	ERT- 21	40.54
3.	ERT- 03	60.10	22.	ERT- 22	34.99
4.	ERT- 04	67.00	23.	ERT- 23	62.72
5.	ERT- 05	70.28	24.	ERT- 24	58.54
6.	ERT- 06	34.28	25.	ERT- 25	50.01
7.	ERT- 07	65.79	26.	ERT- 26	41.19
8.	ERT- 08	45.46	27.	ERT- 27	85.43
9.	ERT- 09	40.21	28.	ERT- 28	54.77
10.	ERT- 10	54.56	29.	ERT- 29	53.91
11.	ERT- 11	87.30	30.	ERT- 30	21.80
12.	ERT- 12	141.95	31.	ERT- 31	61.29
13.	ERT- 13	114.68	32.	ERT- 32	78.08
14.	ERT- 14	134.56	33.	ERT- 33	72.55
15.	ERT- 15	44.20	34.	ERT- 34	56.10
16.	ERT- 16	43.70	35.	ERT- 35	74.53
17.	ERT- 17	34.31	36.	ERT- 36	73.18
18.	ERT- 18	578.23	37.	ERT- 37	59.88
19.	ERT- 19	77.41			

APPARENT RESISTIVITY VALUES

ERT No. 01

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	523.33	496.28	322.68	352.87	423.79
2	2.0	271.51	238.83	89.25	115.64	178.81
3	3.0	75.44	58.47	26.40	37.72	49.51
4	4.0	15.08	12.57	17.60	22.63	16.97
5	5.0	15.72	15.72	12.57	15.72	14.93
6	7.0	17.60	17.60	13.20	13.20	15.40
7	10.0	18.86	12.57	12.57	12.57	14.14

Mean Resistivity at ERT-01 is 101.94 Ohm - m.

ERT No. 02

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	70.32	75.98	65.67	73.66	71.41
2	2.0	69.39	74.04	64.11	65.24	68.20
3	3.0	62.05	64.31	59.22	62.24	61.96
4	4.0	60.84	65.36	57.57	61.09	61.22
5	5.0	56.57	61.60	56.26	59.40	58.46
6	7.0	39.60	44.00	43.12	45.76	43.12
7	10.0	30.80	32.06	32.69	33.32	32.22

Mean Resistivity at ERT-02 is 56.65 Ohm - m.

ERT No. 03

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	100.64	93.09	81.77	80.51	89.00
2	2.0	74.16	64.11	71.65	76.68	71.65
3	3.0	71.67	56.58	75.44	79.21	70.73
4	4.0	67.88	62.85	62.85	67.88	65.37
5	5.0	62.86	56.57	53.43	59.72	58.15
6	7.0	48.40	44.00	30.80	39.60	40.70
7	10.0	31.43	25.14	18.86	25.14	25.14

Mean Resistivity at ERT-03 is 60.10 Ohm - m.

ERT No. 04

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	167.94	181.78	163.54	151.59	166.21
2	2.0	93.02	100.56	89.25	82.96	91.45
3	3.0	56.58	66.01	60.35	54.69	59.41
4	4.0	45.25	52.79	50.28	45.25	48.39
5	5.0	37.72	47.15	37.72	31.43	38.51
6	7.0	35.20	39.60	35.20	30.80	35.20
7	10.0	31.43	37.72	25.14	25.14	29.86

Mean Resistivity at ERT-04 is 67.00 Ohm - m.

ERT No. 05

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	125.17	138.38	93.72	106.30	115.89
2	2.0	78.94	83.09	81.71	84.09	81.96
3	3.0	73.37	75.06	77.51	81.48	76.86
4	4.0	73.41	75.42	74.41	74.16	74.35
5	5.0	63.17	69.15	60.97	63.17	64.12
6	7.0	44.00	47.52	45.76	48.40	46.42
7	10.0	32.06	33.32	31.43	32.69	32.38

Mean Resistivity at ERT-05 is 70.28 Ohm - m.

ERT No. 06

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	59.00	56.11	60.57	57.93	58.40
2	2.0	55.31	53.80	57.70	51.91	54.68
3	3.0	42.25	40.17	45.45	43.38	42.81
4	4.0	30.17	25.89	36.70	32.93	31.42
5	5.0	18.86	17.29	22.63	18.86	19.41
6	7.0	15.84	13.64	17.60	15.40	15.62
7	10.0	17.60	15.72	20.12	16.97	17.60

Mean Resistivity at ERT-6 is 34.28 Ohm - m.

ERT No. 07

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	150.96	164.17	149.07	147.82	153.01
2	2.0	86.73	90.50	81.71	82.96	85.48
3	3.0	56.58	62.24	66.01	67.90	63.18
4	4.0	55.31	62.85	55.31	50.28	55.94
5	5.0	47.15	53.43	44.00	40.86	46.36
6	7.0	35.20	39.60	30.80	26.40	33.00
7	10.0	25.14	31.43	18.86	18.86	23.57

Mean Resistivity at ERT-7 is 65.79 Ohm - m.

ERT No. 08

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	91.27	68.12	76.61	70.45	76.61
2	2.0	50.15	51.79	51.16	52.54	51.41
3	3.0	43.38	73.93	43.94	51.11	53.09
4	4.0	39.72	38.46	43.24	41.73	40.79
5	5.0	35.20	33.00	37.09	32.06	34.34
6	7.0	30.80	28.60	31.68	30.36	30.36
7	10.0	32.69	29.54	33.32	30.80	31.59

Mean Resistivity at ERT-8 is 45.46 Ohm - m.

ERT No. 09

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	91.83	85.54	88.04	83.03	87.11
2	2.0	42.74	49.02	46.51	40.22	44.62
3	3.0	45.26	33.95	45.26	39.61	41.02
4	4.0	40.22	27.65	30.17	27.65	31.42
5	5.0	34.57	22.00	31.43	25.14	28.29
6	7.0	35.20	26.40	30.80	22.00	28.60
7	10.0	18.86	25.14	18.86	18.86	20.43

Mean Resistivity at ERT-9 is 40.21 Ohm - m.

ERT No. 10

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	103.91	120.64	112.59	120.14	114.32
2	2.0	116.78	90.50	90.50	85.48	95.82
3	3.0	75.25	62.24	62.24	71.67	67.85
4	4.0	30.17	30.17	25.14	35.20	30.17
5	5.0	28.92	25.14	22.00	25.14	25.30
6	7.0	24.64	22.88	17.60	22.00	21.78
7	10.0	31.43	25.14	25.14	25.14	26.71

Mean Resistivity at ERT-10 is 54.56 Ohm - m.

ERT No. 11

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	293.11	208.83	261.04	244.05	251.76
2	2.0	183.52	163.41	153.35	139.53	159.95
3	3.0	79.21	92.41	98.07	86.76	89.11
4	4.0	45.25	47.77	50.28	45.25	47.14
5	5.0	37.72	25.14	25.14	18.86	26.72
6	7.0	13.20	17.60	22.00	17.60	17.60
7	10.0	12.57	18.86	25.14	18.86	18.86

Mean Resistivity at ERT-11 is 87.30 Ohm - m.

ERT No. 12

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	255.37	248.46	261.66	252.23	254.43
2	2.0	240.09	225.00	247.63	214.95	231.92
3	3.0	118.82	111.27	122.59	111.27	115.99
4	4.0	100.56	93.02	110.62	103.07	101.82
5	5.0	106.86	94.29	119.43	106.86	106.86
6	7.0	96.80	88.00	105.60	88.00	94.60
7	10.0	94.29	75.43	94.29	88.00	88.00

Mean Resistivity at ERT-12 is 141.95 Ohm - m.

ERT No. 13

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	192.47	183.04	197.51	188.07	190.27
2	2.0	201.12	194.84	188.55	182.27	191.70
3	3.0	150.88	139.56	152.65	148.99	148.02
4	4.0	98.05	85.48	103.07	100.56	96.79
5	5.0	84.86	78.58	91.15	84.86	84.86
6	7.0	57.20	48.40	61.60	52.80	55.00
7	10.0	37.72	31.43	44.00	31.43	36.15

Mean Resistivity at ERT-13 is 114.68 Ohm - m.

ERT No. 14

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	462.94	441.56	468.61	452.25	456.34
2	2.0	196.09	175.98	196.09	178.49	186.66
3	3.0	96.19	90.53	86.76	81.10	88.65
4	4.0	82.96	80.45	70.39	62.85	74.16
5	5.0	62.86	56.57	59.72	53.43	58.15
6	7.0	48.40	39.60	44.00	35.20	41.80
7	10.0	44.00	31.43	37.72	31.43	36.15

Mean Resistivity at ERT-14 is 134.56 Ohm - m.

ERT No. 15

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	78.44	75.29	76.74	73.84	76.08
2	2.0	61.09	56.06	59.20	55.56	57.98
3	3.0	41.49	39.98	41.87	39.61	40.74
4	4.0	35.20	32.93	34.44	33.69	34.07
5	5.0	37.40	36.14	37.09	36.14	36.69
6	7.0	32.56	30.80	31.68	30.80	31.46
7	10.0	33.32	31.43	32.69	32.06	32.38

Mean Resistivity at ERT-15 is 44.20 Ohm - m.

ERT No. 16

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	74.60	77.74	76.17	73.66	75.54
2	2.0	55.31	60.46	59.33	53.93	57.26
3	3.0	38.66	43.57	41.68	39.98	40.97
4	4.0	34.44	35.70	34.69	32.93	34.44
5	5.0	33.00	36.46	34.89	33.63	34.50
6	7.0	31.24	33.00	31.68	30.36	31.57
7	10.0	31.43	32.69	32.06	30.17	31.59

Mean Resistivity at ERT-16 is 43.70 Ohm - m.

ERT No. 17

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	32.90	35.29	35.73	34.66	34.65
2	2.0	31.43	32.56	34.94	34.06	33.25
3	3.0	33.01	33.95	31.12	30.55	32.16
4	4.0	35.20	36.20	33.69	32.68	34.44
5	5.0	34.89	35.52	36.46	34.57	35.36
6	7.0	35.20	36.08	37.84	35.64	36.19
7	10.0	33.32	33.94	35.20	33.94	34.10

Mean Resistivity at ERT-17 is 34.31 Ohm - m.

ERT No. 18

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	483.70	516.41	544.71	578.68	530.88
2	2.0	483.95	507.83	476.40	494.00	490.55
3	3.0	646.90	671.42	622.38	699.71	660.10
4	4.0	623.47	676.27	590.79	678.78	642.33
5	5.0	628.60	694.60	691.46	726.03	685.17
6	7.0	448.80	567.60	440.00	422.40	469.70
7	10.0	540.60	616.03	509.17	609.74	568.89

Mean Resistivity at ERT-18 is 578.23 Ohm - m.

ERT No. 19

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	231.47	205.68	344.06	311.98	273.30
2	2.0	93.02	86.73	110.62	99.30	97.42
3	3.0	71.67	62.24	50.92	47.15	58.00
4	4.0	50.28	42.74	32.68	27.65	38.34
5	5.0	31.43	25.14	18.86	15.72	22.79
6	7.0	26.40	30.80	22.00	22.00	25.30
7	10.0	25.14	31.43	25.14	25.14	26.71

Mean Resistivity at ERT-19 is 77.41 Ohm - m.

ERT No. 20

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	457.91	553.52	451.62	484.96	487.00
2	2.0	351.96	113.13	147.07	128.21	185.09
3	3.0	150.88	60.35	84.87	77.33	93.36
4	4.0	50.28	27.65	40.22	32.68	37.71
5	5.0	25.14	18.86	22.00	18.86	21.22
6	7.0	17.60	17.60	22.00	17.00	18.55
7	10.0	18.86	12.57	18.86	12.57	15.72

Mean Resistivity at ERT-20 is 122.66 Ohm - m.

ERT No. 21

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	80.20	62.65	67.62	68.06	69.63
2	2.0	57.07	58.95	60.96	64.74	60.43
3	3.0	42.44	43.76	45.64	49.98	45.46
4	4.0	31.68	34.19	34.44	36.45	34.19
5	5.0	31.43	27.97	24.52	28.92	28.21
6	7.0	30.36	22.88	21.56	23.76	24.64
7	10.0	22.63	22.00	18.86	21.37	21.22

Mean Resistivity at ERT-21 is 40.54 Ohm - m.

ERT No. 22

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	118.00	90.95	95.10	103.53	101.90
2	2.0	59.58	43.12	54.81	41.98	49.87
3	3.0	43.00	28.86	31.12	28.48	32.87
4	4.0	26.40	20.11	20.61	19.36	21.62
5	5.0	15.40	15.72	15.09	11.31	14.38
6	7.0	10.56	12.32	11.44	10.12	11.11
7	10.0	14.46	12.57	12.57	13.20	13.20

Mean Resistivity at ERT-22 is 34.99 Ohm - m.

ERT No. 23

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	160.40	276.76	176.12	236.50	212.45
2	2.0	45.25	90.50	50.28	101.82	71.96
3	3.0	33.95	94.30	30.18	86.76	61.30
4	4.0	31.93	50.28	25.14	40.22	36.89
5	5.0	25.14	44.00	18.86	22.00	27.50
6	7.0	17.60	13.20	13.20	8.80	13.20
7	10.0	18.86	18.86	12.57	12.57	15.72

Mean Resistivity at ERT-23 is 62.72 Ohm - m.

ERT No. 24

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	174.23	193.10	305.69	271.73	236.19
2	2.0	50.28	71.65	74.41	85.48	70.46
3	3.0	34.14	26.40	20.75	22.63	25.98
4	4.0	35.20	17.60	23.13	27.65	25.90
5	5.0	37.72	18.86	11.94	12.57	20.27
6	7.0	13.20	13.20	12.76	13.20	13.09
7	10.0	17.60	16.34	18.86	18.86	17.92

Mean Resistivity at ERT-24 is 58.54 Ohm - m.

ERT No. 25

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	58.25	84.54	47.24	63.59	63.41
2	2.0	74.41	54.81	77.93	73.28	70.11
3	3.0	54.32	53.75	66.01	69.22	60.83
4	4.0	45.75	53.80	48.52	55.81	50.97
5	5.0	36.77	49.35	38.97	44.63	42.43
6	7.0	30.80	30.80	35.20	36.96	33.44
7	10.0	28.29	30.17	27.66	29.54	28.92

Mean Resistivity at ERT-25 is 50.01 Ohm - m.

ERT No. 26

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	76.42	74.60	77.43	74.98	75.86
2	2.0	47.77	45.13	49.53	44.25	46.67
3	3.0	37.91	36.02	39.98	37.72	37.91
4	4.0	34.69	33.44	35.70	32.43	34.07
5	5.0	33.94	30.80	35.52	34.26	33.63
6	7.0	29.48	28.16	30.80	30.36	29.70
7	10.0	30.80	29.54	31.43	30.17	30.49

Mean Resistivity at ERT-26 is 41.19 Ohm - m.

ERT No. 27

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	478.67	375.51	259.15	580.57	423.48
2	2.0	57.82	101.82	125.70	111.87	99.30
3	3.0	24.89	21.88	15.09	33.95	23.95
4	4.0	15.59	11.56	7.04	12.57	11.69
5	5.0	12.57	11.94	11.31	9.43	11.31
6	7.0	14.08	14.08	13.20	8.80	12.54
7	10.0	17.60	17.60	15.09	12.57	15.72

Mean Resistivity at ERT-27 is 85.43 Ohm - m.

ERT No. 28

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	75.29	80.51	79.38	81.20	79.10
2	2.0	62.72	66.37	64.36	66.75	65.05
3	3.0	53.00	54.69	54.32	55.83	54.46
4	4.0	45.25	47.77	46.76	48.02	46.95
5	5.0	42.43	44.63	43.69	44.32	43.77
6	7.0	44.00	45.32	43.56	44.88	44.44
7	10.0	48.40	50.92	49.03	50.29	49.66

Mean Resistivity at ERT-28 is 54.77 Ohm - m.

ERT No. 29

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	131.46	123.28	135.24	125.17	128.79
2	2.0	64.11	59.08	69.14	62.86	63.80
3	3.0	49.04	43.38	54.69	45.26	48.09
4	4.0	47.77	40.22	57.82	52.79	49.65
5	5.0	31.43	31.43	37.72	34.57	33.79
6	7.0	30.80	26.40	35.20	26.40	29.70
7	10.0	25.14	25.14	25.14	18.86	23.57

Mean Resistivity at ERT-29 is 53.91 Ohm - m.

ERT No. 30

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	74.85	27.68	65.42	55.35	55.83
2	2.0	22.63	18.86	22.63	20.11	21.06
3	3.0	22.63	16.97	11.32	11.32	15.56
4	4.0	12.57	15.08	12.57	10.06	12.57
5	5.0	12.57	15.72	12.57	12.57	13.36
6	7.0	8.80	17.60	22.00	13.20	15.40
7	10.0	12.57	18.86	25.14	18.86	18.86

Mean Resistivity at ERT-30 is 21.80 Ohm - m.

ERT No. 31

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	82.08	79.57	137.50	143.03	110.55
2	2.0	66.87	63.10	70.39	73.16	68.38
3	3.0	64.12	61.11	67.52	69.40	65.54
4	4.0	51.29	49.78	50.28	52.29	50.91
5	5.0	48.40	46.52	47.15	49.03	47.78
6	7.0	45.76	44.00	44.88	46.64	45.32
7	10.0	41.49	40.23	38.97	41.49	40.55

Mean Resistivity at ERT-31 is 61.29 Ohm - m.

ERT No. 32

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	132.47	130.58	130.96	131.71	131.43
2	2.0	112.38	119.42	113.13	113.88	114.70
3	3.0	84.12	88.26	89.40	86.38	87.04
4	4.0	59.33	79.95	78.94	71.40	72.41
5	5.0	52.80	69.15	63.49	62.86	62.08
6	7.0	40.48	44.88	47.52	45.76	44.66
7	10.0	31.43	36.46	35.20	33.94	34.26

Mean Resistivity at ERT-32 is 78.08 Ohm - m.

ERT No. 33

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	114.10	126.05	113.85	104.04	114.51
2	2.0	97.79	98.29	95.28	95.78	96.79
3	3.0	89.02	84.49	87.51	89.77	87.70
4	4.0	79.95	76.93	49.78	81.45	72.03
5	5.0	60.35	67.89	36.46	64.12	57.21
6	7.0	49.28	51.92	35.20	50.16	46.64
7	10.0	35.20	37.72	25.14	33.94	33.00

Mean Resistivity at ERT-33 is 72.55 Ohm - m.

ERT No. 34

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	69.57	73.84	61.77	66.55	67.93
2	2.0	62.85	36.08	66.87	70.39	59.05
3	3.0	69.40	65.26	64.50	45.64	61.20
4	4.0	63.86	57.82	63.35	55.81	60.21
5	5.0	59.09	56.57	57.83	56.57	57.52
6	7.0	47.52	48.40	48.40	43.12	46.86
7	10.0	45.26	37.72	40.23	36.46	39.92

Mean Resistivity at ERT-34 is 56.10 Ohm - m.

ERT No. 35

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	100.26	96.11	152.09	151.34	124.95
2	2.0	97.29	84.22	111.62	105.84	99.74
3	3.0	82.98	84.49	96.56	94.30	89.58
4	4.0	75.92	62.85	68.10	70.39	69.32
5	5.0	66.00	61.60	44.00	50.29	55.47
6	7.0	49.28	50.16	44.00	41.36	46.20
7	10.0	37.72	36.46	42.74	28.92	36.46

Mean Resistivity at ERT-35 is 74.53 Ohm - m.

ERT No. 36

Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	152.22	155.36	93.72	94.35	123.91
2	2.0	106.34	105.59	85.48	85.48	95.72
3	3.0	86.38	81.85	82.61	83.36	83.55
4	4.0	71.90	69.89	77.93	62.85	70.64
5	5.0	57.83	56.57	64.75	62.86	60.50
6	7.0	41.36	39.60	47.52	48.40	44.22
7	10.0	36.69	31.43	33.94	32.69	33.69

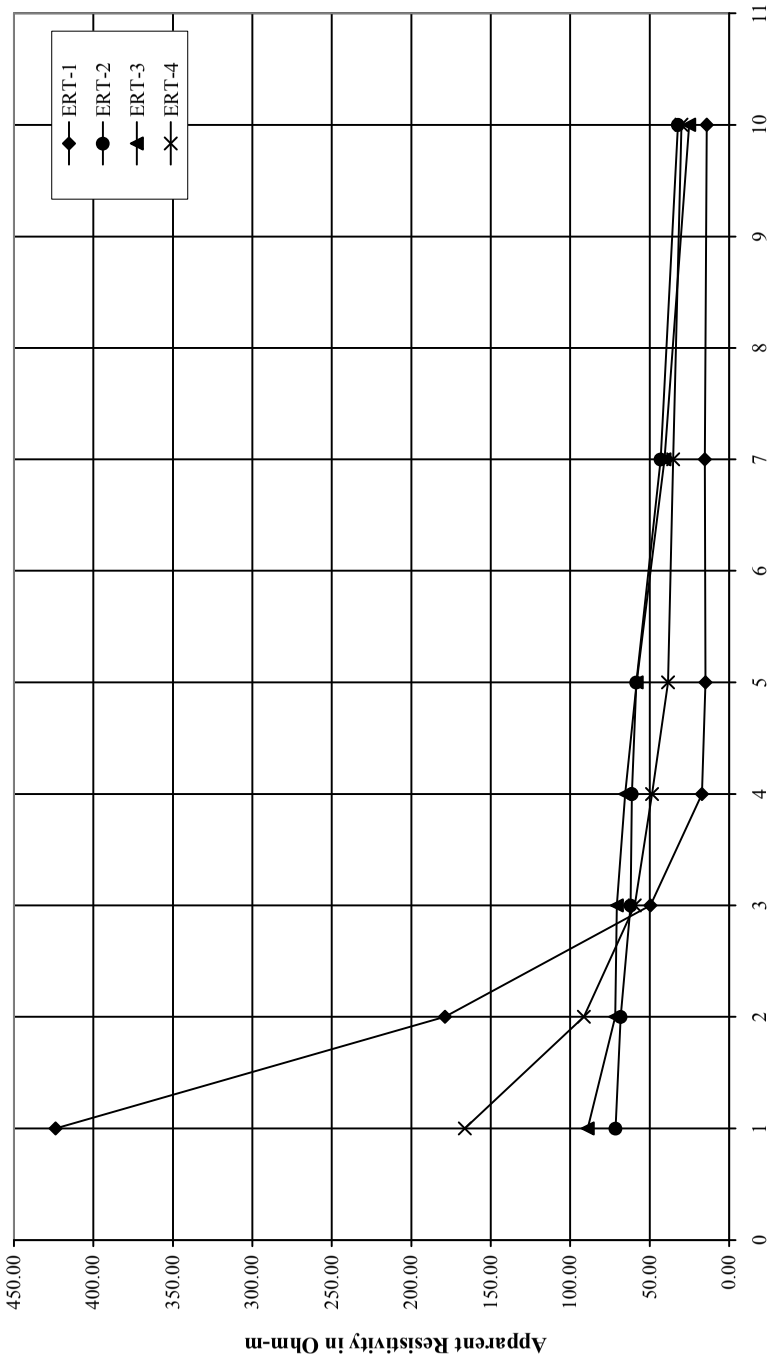
Mean Resistivity at ERT-36 is 73.18 Ohm - m.

ERT No. 37

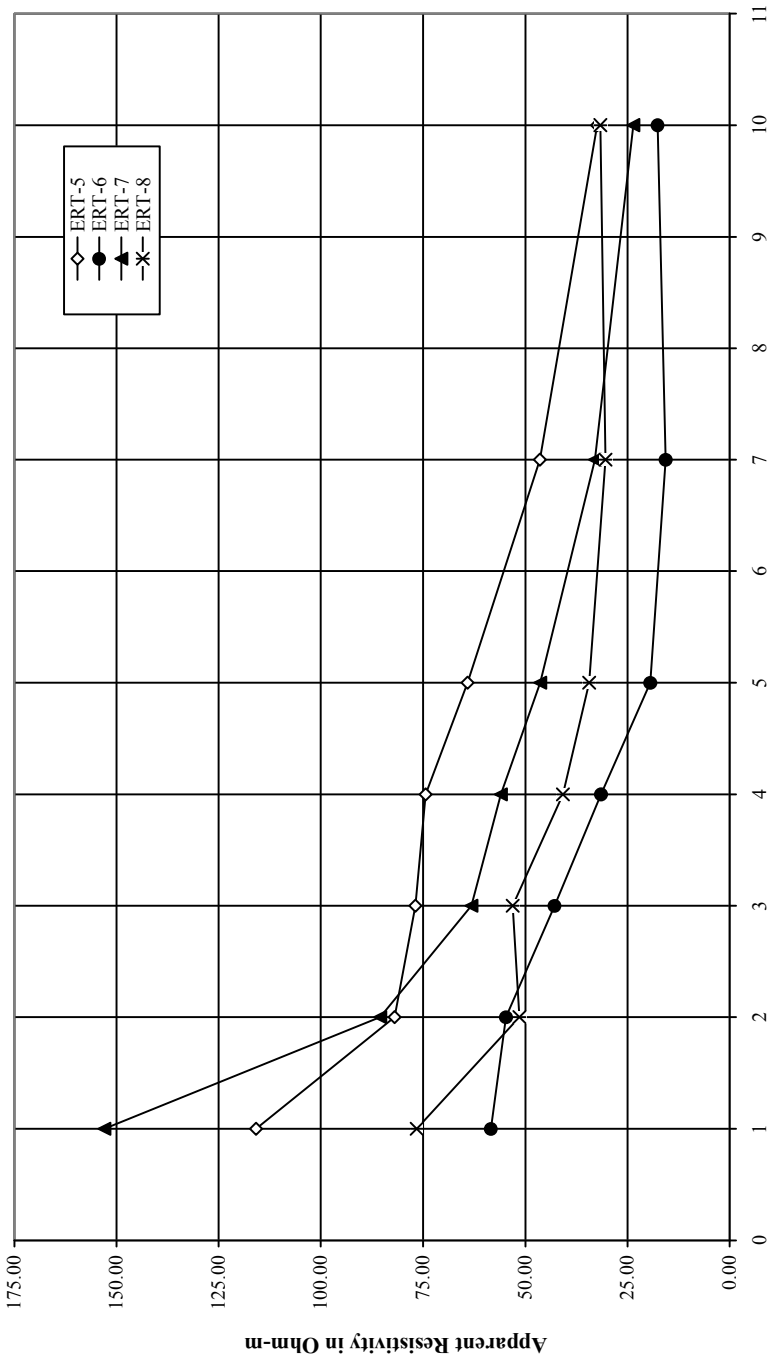
Sl No.	S (M)	Apparent Electrical Resistivity (Ohm-m)				
		(N - S)	(E - W)	(NE - SW)	(NW - SE)	Mean
1	1.0	82.90	108.82	99.00	83.78	93.63
2	2.0	85.48	67.12	75.42	70.89	74.73
3	3.0	75.06	66.01	51.68	67.90	65.16
4	4.0	68.88	58.83	43.74	55.81	56.82
5	5.0	59.72	56.57	31.43	50.29	49.50
6	7.0	46.64	44.00	27.28	44.88	40.70
7	10.0	42.74	37.72	33.94	40.23	38.66

Mean Resistivity at ERT-37 is 59.88 Ohm - m.

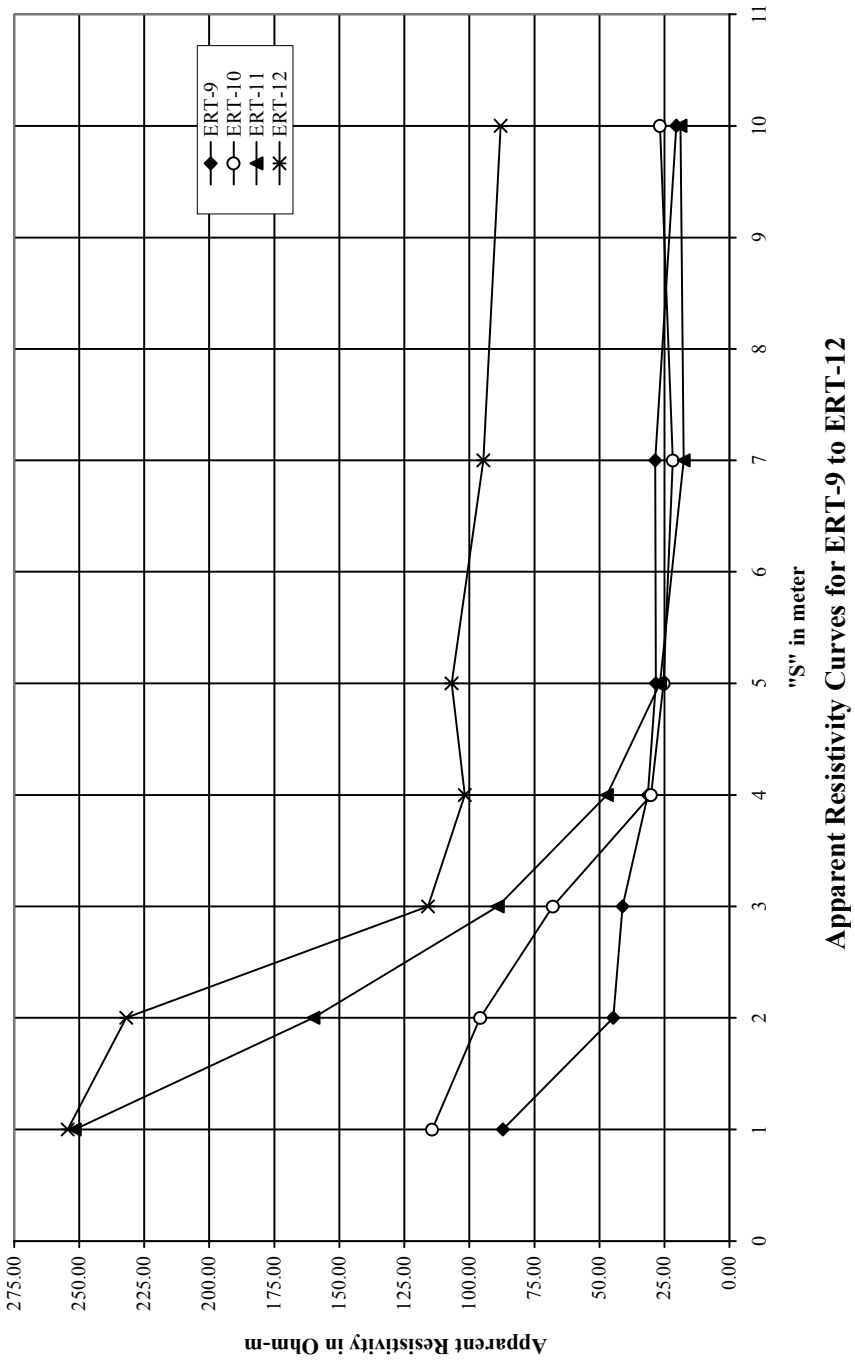
APPARENT RESISTIVITY CURVES



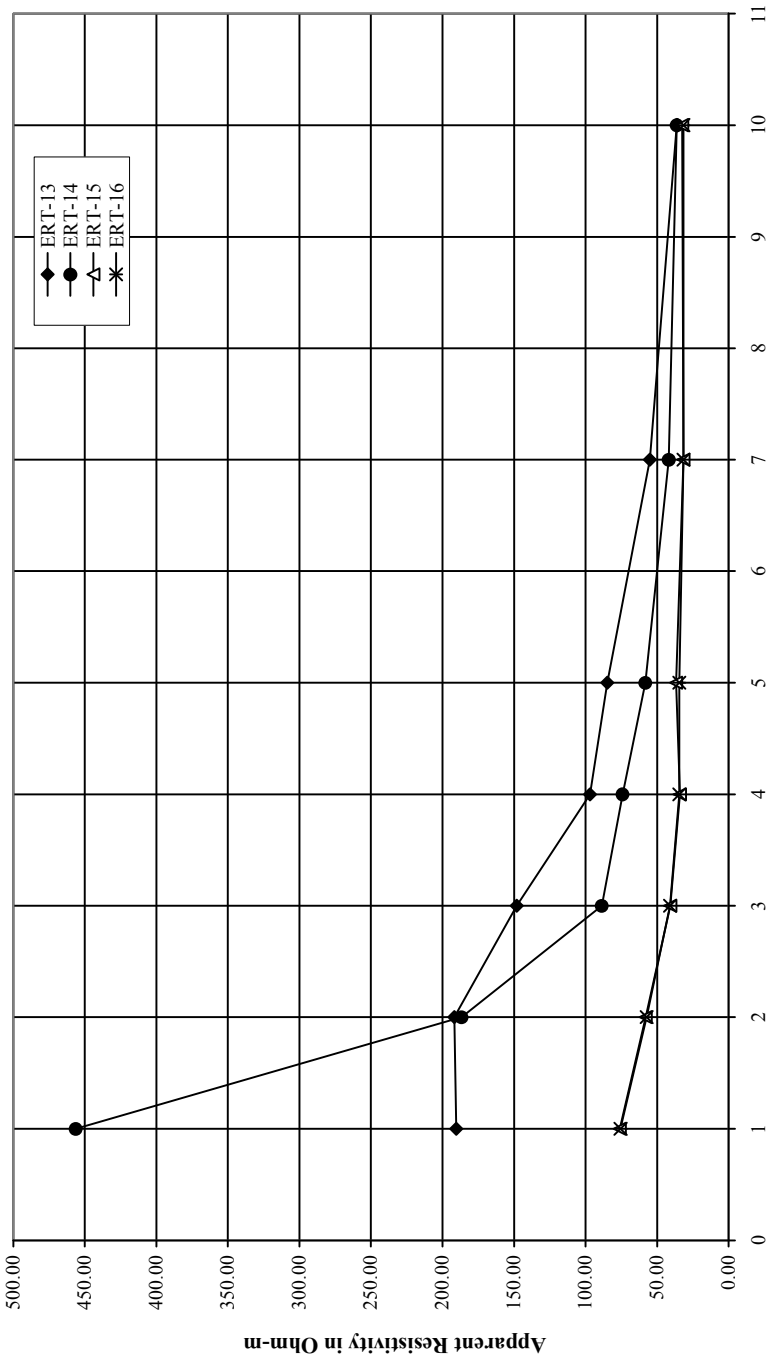
Apparent Resistivity Curves for ERT-1 to ERT-4



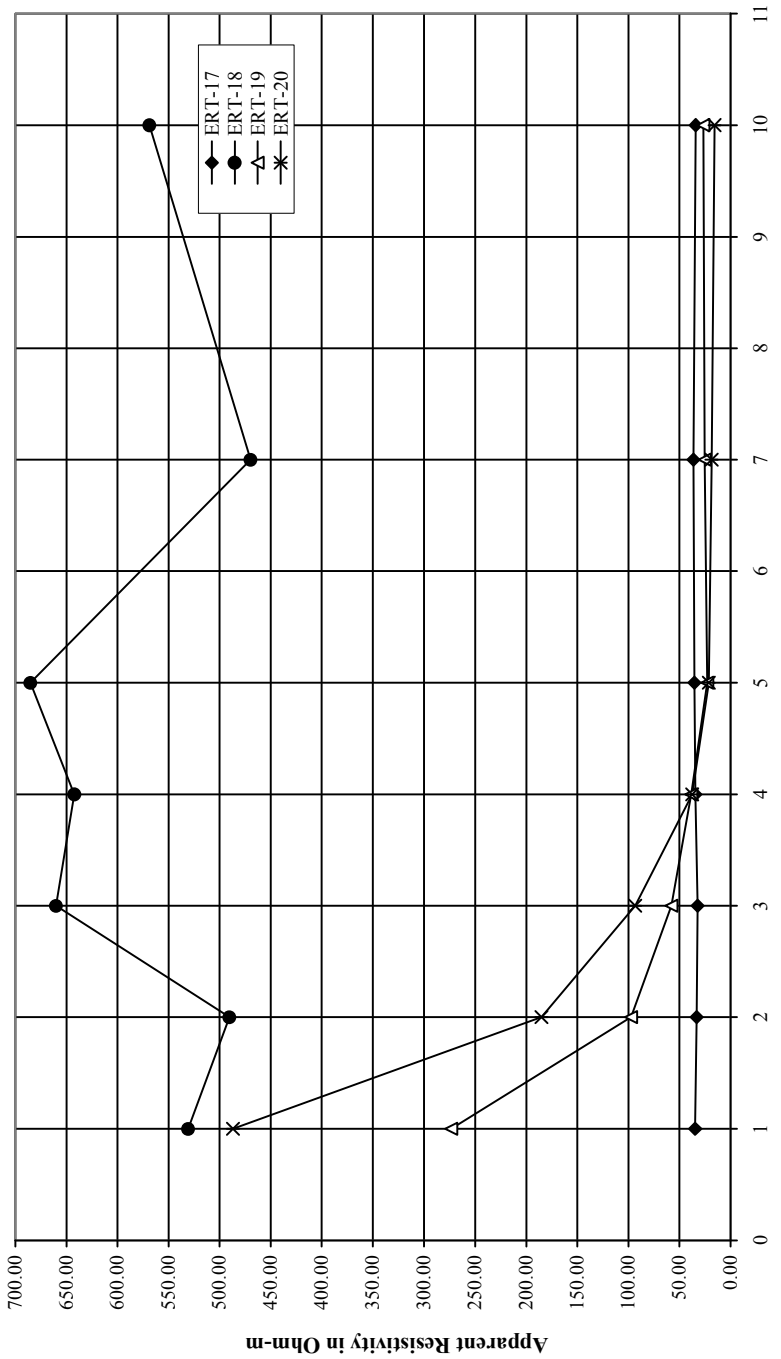
Apparent Resistivity Curves for ERT-5 to ERT-8



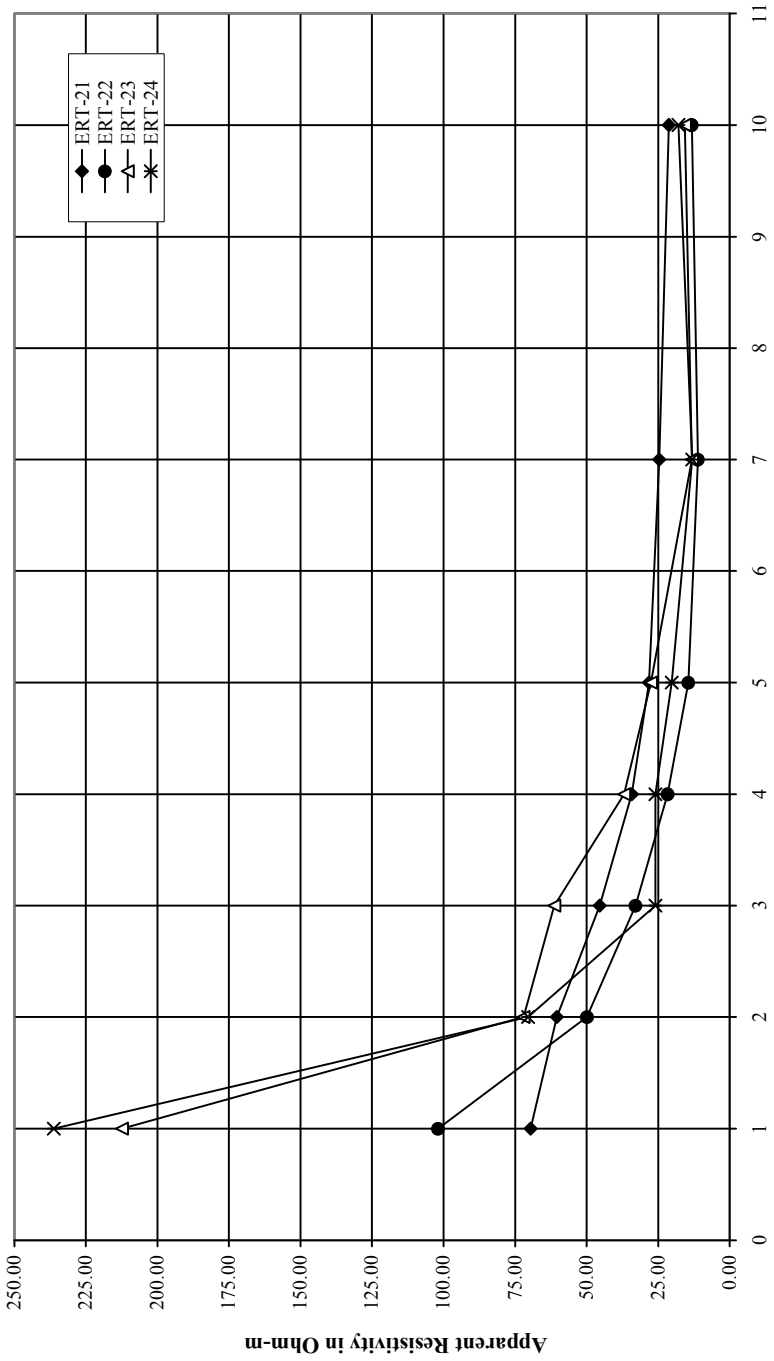
Apparent Resistivity Curves for ERT-9 to ERT-12



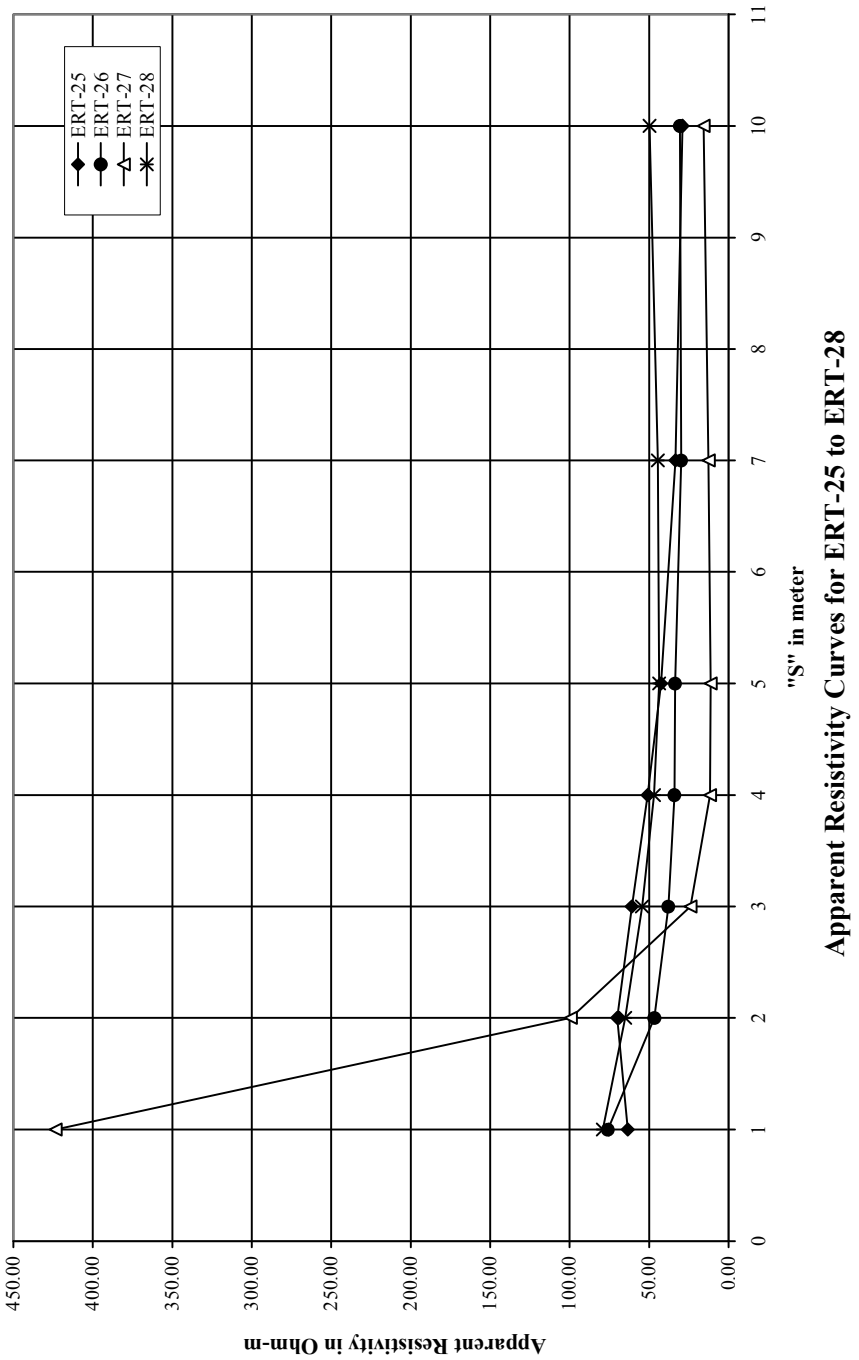
Apparent Resistivity Curves for ERT-13 to ERT-16



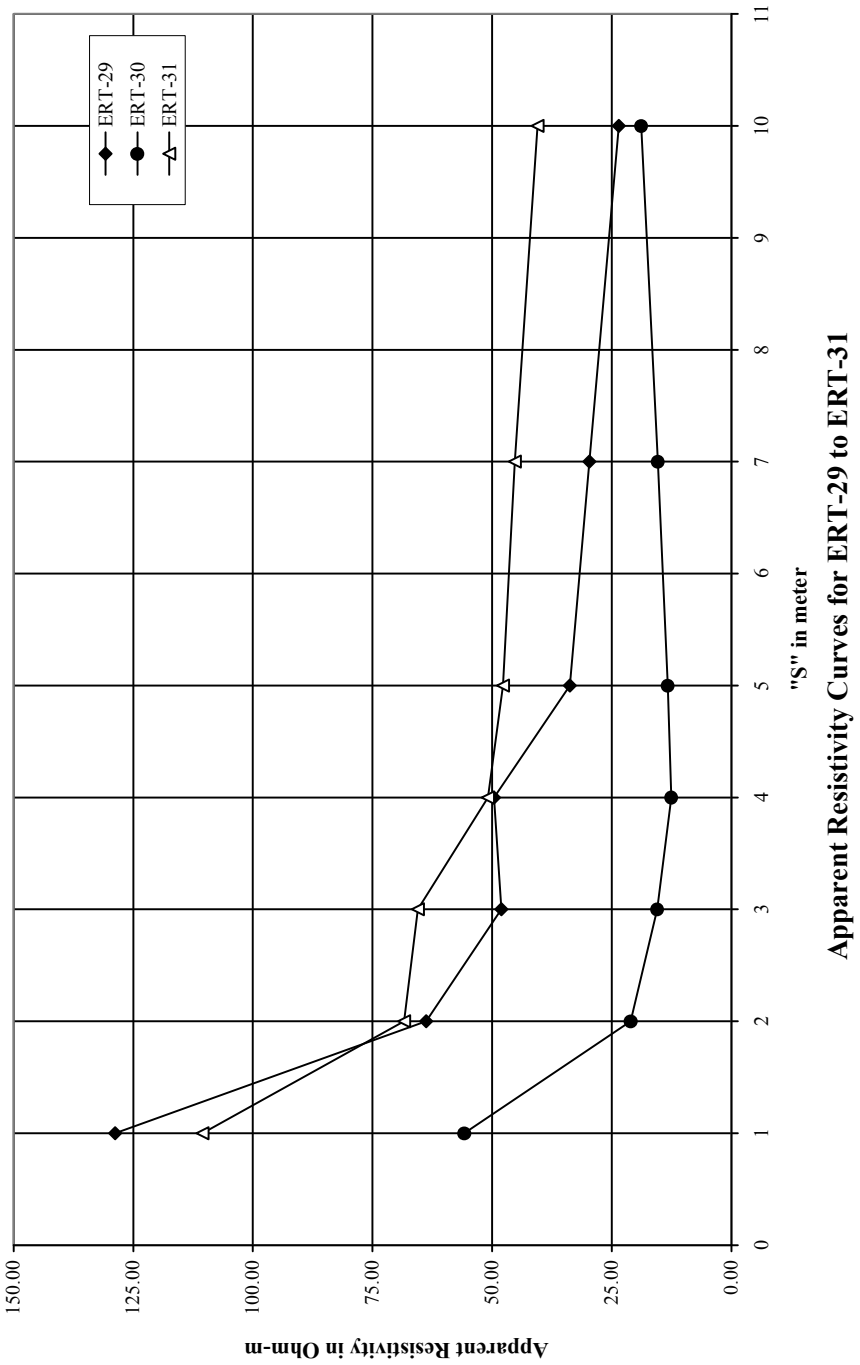
Apparent Resistivity Curves for ERT-17 to ERT-20



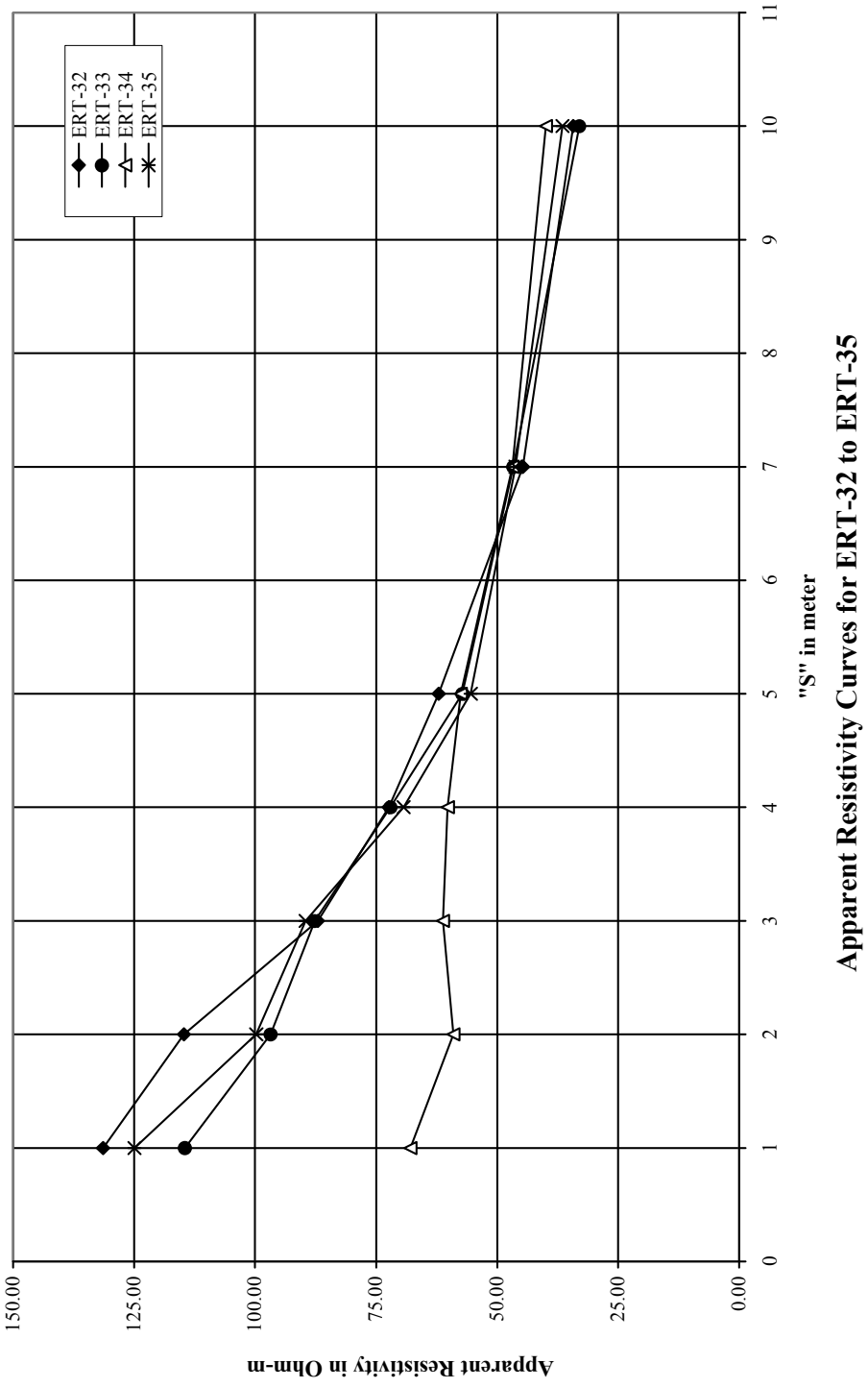
Apparent Resistivity Curves for ERT-21 to ERT-24



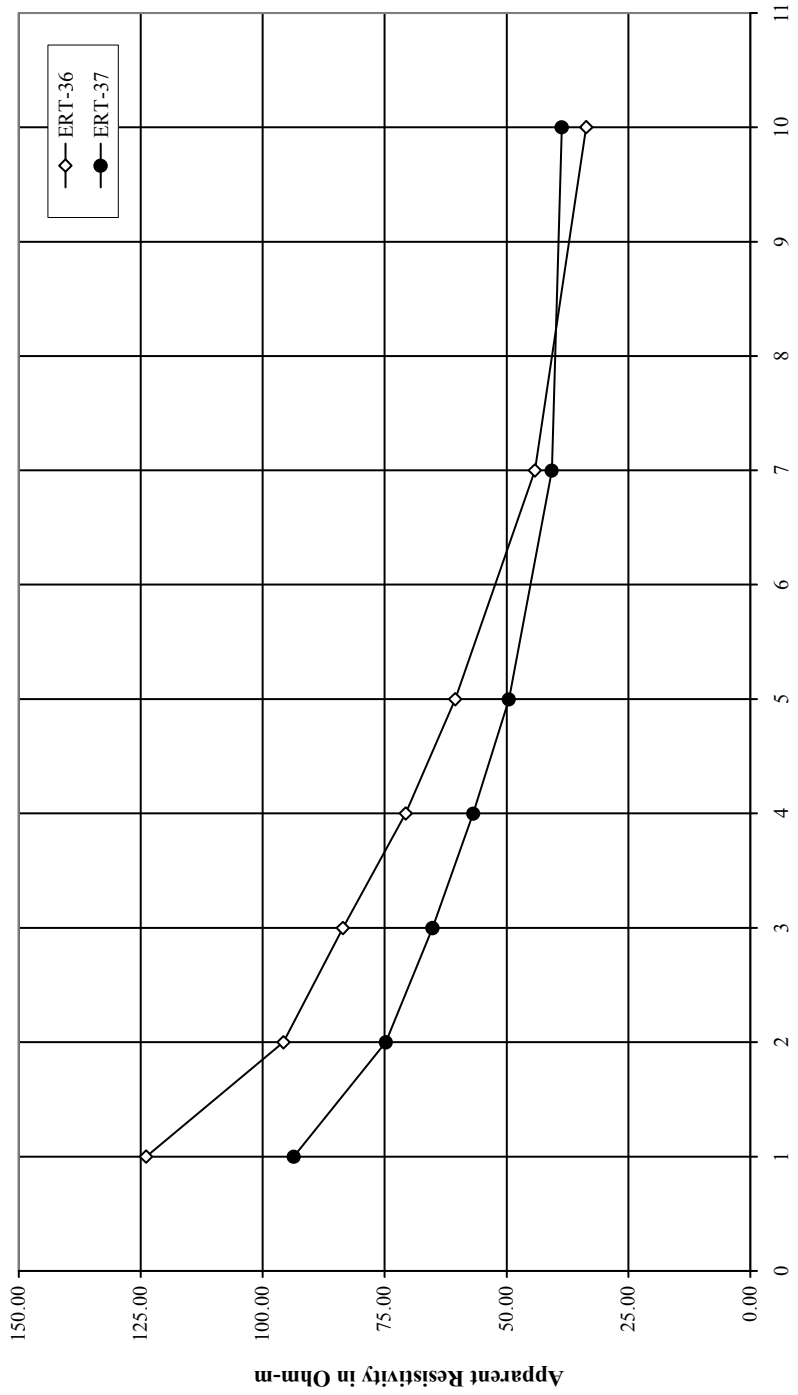
Apparent Resistivity Curves for ERT-25 to ERT-28



Apparent Resistivity Curves for ERT-29 to ERT-31



Apparent Resistivity Curves for ERT-32 to ERT-35



Apparent Resistivity Curves for ERT-36 to ERT-37

8. SEISMIC REFRACTION TESTS

REPORT ON
SEISMIC REFRACTION TEST FOR
1 x 800MW WANAKBORI TPS, GUJARAT

1. INTRODUCTION

M/s. C E Testing Company (P) Limited carried out the work of Geotechnical Investigation for the proposed 1 X 800MW TPS AT Wanakbori, Gujarat.

As a part of geotechnical investigations, seismic refraction survey was carried out to determine the stratigraphy of the proposed area. Present report presents the findings of Seismic Refraction Test.

2. SCOPE OF WORK

The Seismic refraction survey was conducted along five (5) seismic lines with total length of about 1140m. The seismic refraction survey was performed in the month of December' 2014.

3. PURPOSE OF INVESTIGATIONS

The aim of the seismic investigation was to provide information regarding the shallow lithology along the surveyed seismic lines and soil profiles.

4. GENERAL SITE DESCRIPTION

4.1. LOCATION AND TOPOGRAPHY

The Seismic line was located on an undulating ground. The area is having insignificant topographic undulations.

4.2. SITE GEOLOGY

The subsoil is characterised by loose / medium dense silty sand to soft / medium cohesive soil followed by dense silty sand / very stiff to hard cohesive soil. The sand and clay layer were found sandwiched between each other.

5. SEISMIC REFRACTION SURVEY

5.1. LOCATION

Total five seismic line were surveyed and for which separate seismic profile were obtained and presented later in this report.

SRT No.	Spread	Length (M)	Co-ordinate	
			Start	End
SRT1	L1S1	120	N = (-) 102, E = 579	N = (-) 102, E = 759
	L1S2	60		
SRT2	L1S1	120	N = (-) 102, E = 746	N = 198, E = 746
	L1S2	120		
	L1S3	60		
SRT3	L1S1	60	N = 149, E = 746	N = 149, E = 566
	L1S2	120		
SRT4	L1S1	120	N = 149, E = 579	N = (-) 151, E = 579
	L1S2	120		
	L1S3	60		
SRT5	L1S1	60	N = 58, E = 579	N = 58, E = 759
	L1S2	120		

5.2. EQUIPMENT AND ACCESSORIES

Following equipment and accessories were used:

1. Seismograph : PASI model 16S24-U
   Signal enhancement type fully digital 24 channel seismograph,
2. Geophones : Moving-coil type digital grade vertical &
   Horizontal geophones, natural frequency 10 Hertz.
3. Cable : Geophone spread cables, 10m spacing, water
   proof joints, made in Italy
4. Software : WinSism 14

5.2.1. Energy Source:

For the seismic refraction survey work sledge-hammer is struck vertically on an iron plate to generate P-wave.

5.2.2. Geophone and Geophone Spread:

Low frequency (10Hz) spike geophones were used to record seismic signals. The general layout of the seismic survey lines was supplied in accordance with the co-ordinate system provided by the client. Shooting progressed along the lines. Depending on the length available for seismic lines 5 meter geophone spacing was used in a spread. Depending on the length available along seismic lines 24 channels were used. The seismic spread consisted of number of shots with a minimum of two offset shots, two end shots and one center shot.

Care was taken to ensure that the pointed ends (spikes) of the geophones are fully embedded in the topsoil.

5.2.3. Seismograph:

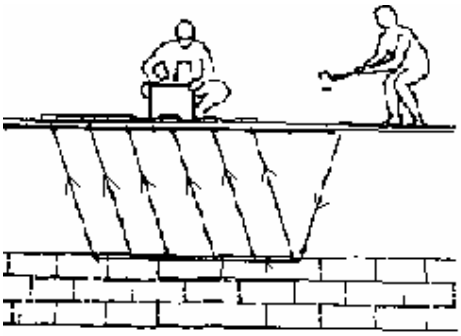
PASI 16S 24-U Seismograph is to be used to record field data. The seismograph has the signal enhancement or stacking capability. The seismograph records the arrival of seismic waves through 24 channels. The seismic waves detected by each geophone are displayed simultaneously on the screen.

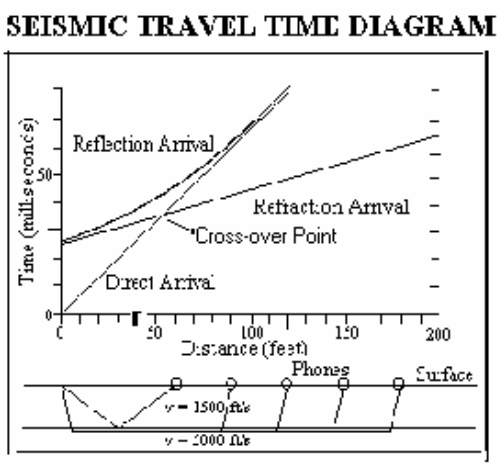
5.3. SEISMIC REFRACTION

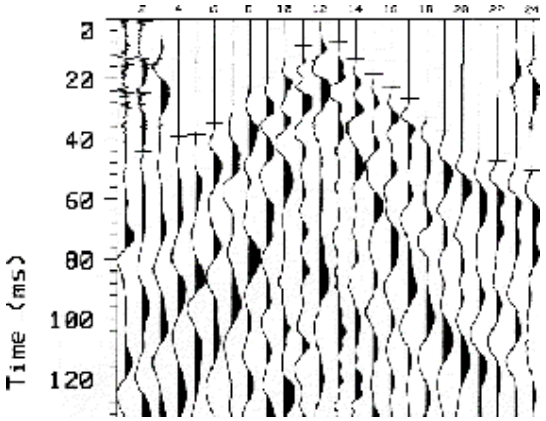
With seismic techniques, in general, a stress applied at the surface of an elastic media creates the conditions for the associated strains to propagate as elastic waves (P & S) in the subsurface material as pattern of particle deformation traveling with velocities that are dependent on the elastic properties and densities of the media through which they travel.

The basic principle behind seismic refraction surveys is to initiate elastic waves at a point at or near the ground surface and to determine at a number of other positions the arrival times of the seismic energy that has traveled along discontinuities or interfaces between surface layers and totally refracted back to the surface.

The seismic energy source creates the seismic elastic waves. The travel times of these elastic waves are detected by series of geophones, placed in line into the ground and connected to the seismograph, via the geophone cable. The seismograph will register these times and display them as traces of time for individual geophones.







By processing these arrival times the characteristic velocity and the thickness of the underlying layer can be calculated.

5.4. SEISMIC REFRACTION SURVEY DATA INTERPRETATION

5.4.1. Data Processing

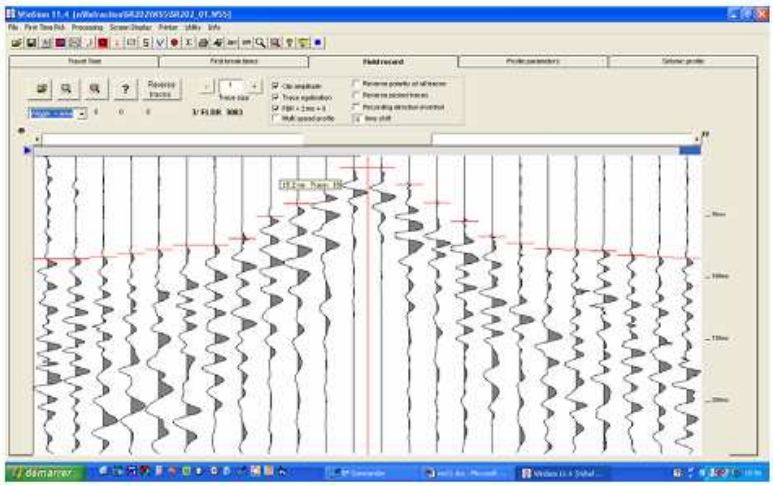
The data is stored in the hard disk of the seismograph at the time of data acquisition. The data is transferred to the computer for further processing.

The processing involves picking the first arrivals, input of data with geophone elevations and first arrivals, and final interpretation for velocity model. In case of noisy data there are intermediate steps of data processing using filtering, amplitude corrections etc.

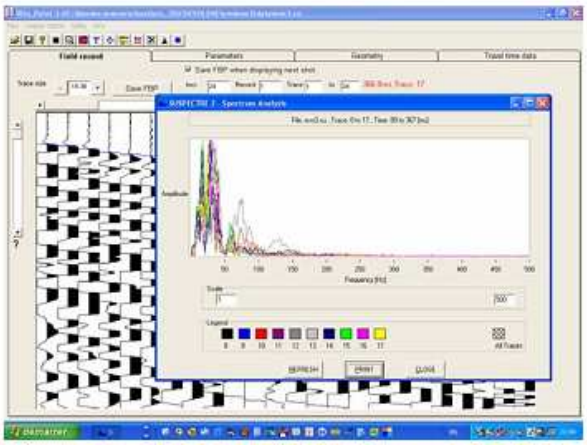
5.4.2. Picking of First Arrivals:

All geometrical data will are displayed under field record panel on the grid. Now one can start first break picking by clicking on the first break, the travel time is drawn automatically and the First break value is written on the grid as the picking progress. One need very precise time determinations to ensure good travel time and a good seismic interpretation.

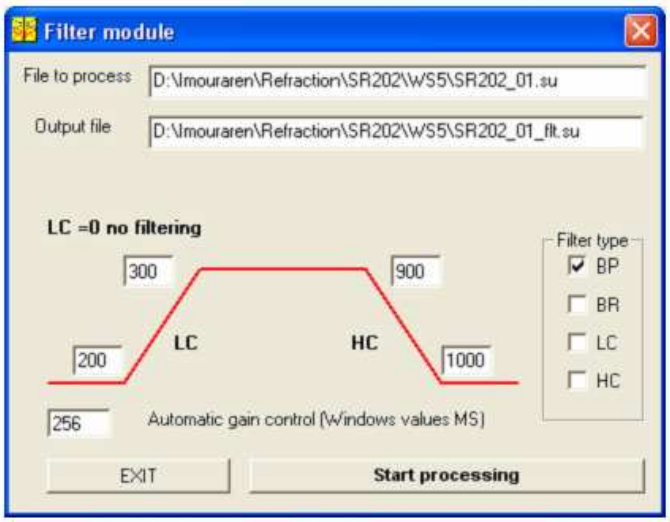
Time scale can be modified by pressing and release mouse button on the time scale (At the right of the record display) to select a time range to display. Click close to time zero to remove a picking time



First Break Point



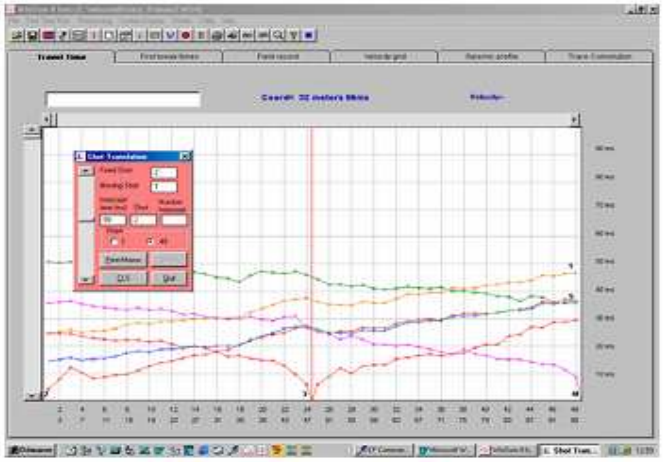
Frequency Spectrum



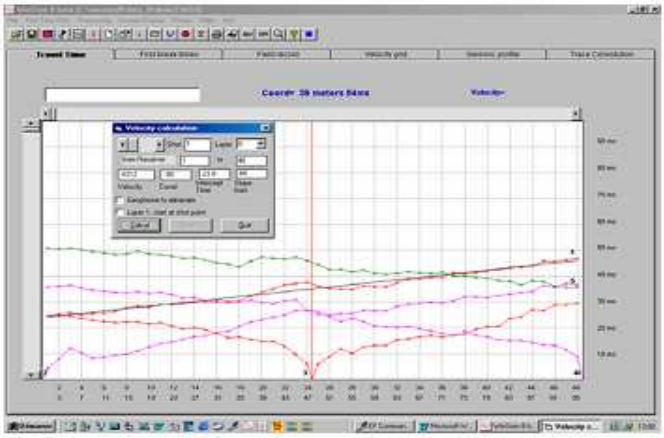
Automatic grain & Filtering

5.4.3. Velocity Model Development

a) Phantom Trace: With WinSism one can move up and down very easily any shot to compare the travel time with others travel time. Intercept times can be measured and recorded. Phantoming is used to check if parts of two travel times correspond to the same layer. Using the Input of Fixed shot number, moving shot number, Intercept number, Intercept time is obtained.

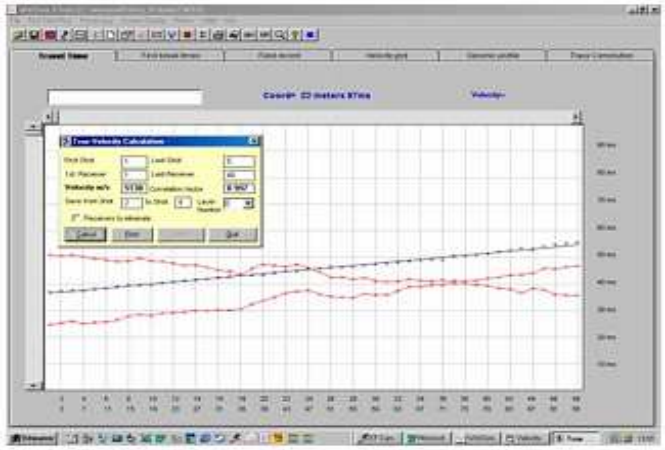


b) Linear Regression:



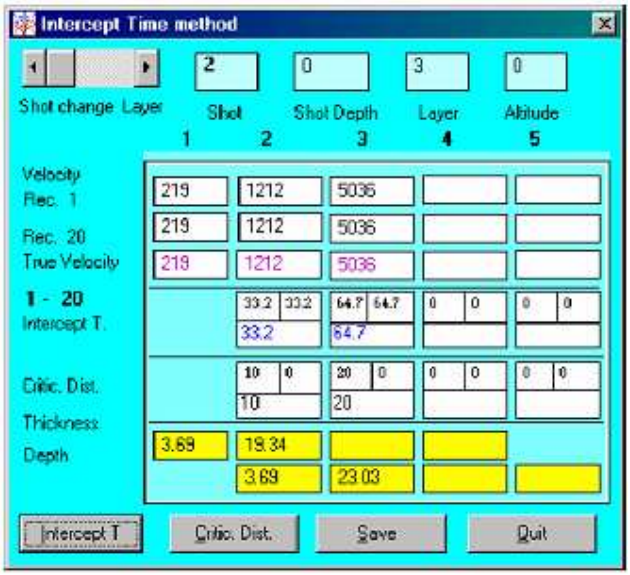
Velocity is computed using linear regression between selected receivers.

c) True Velocity



One can compute the true velocity, even if the bedrock is not horizontal. In this case, two shots (first and last) and the 1st and last receivers are selected. You will get the real velocity and the correlation factor.

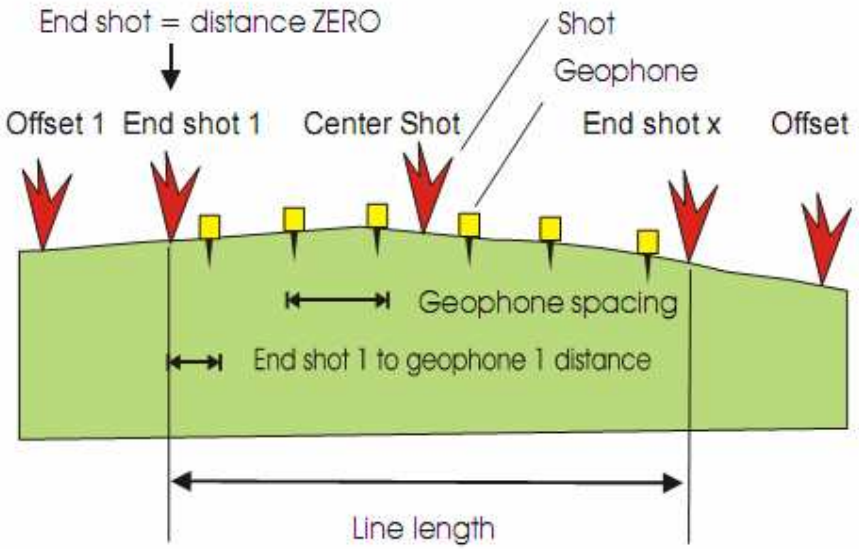
d) Depth Computation

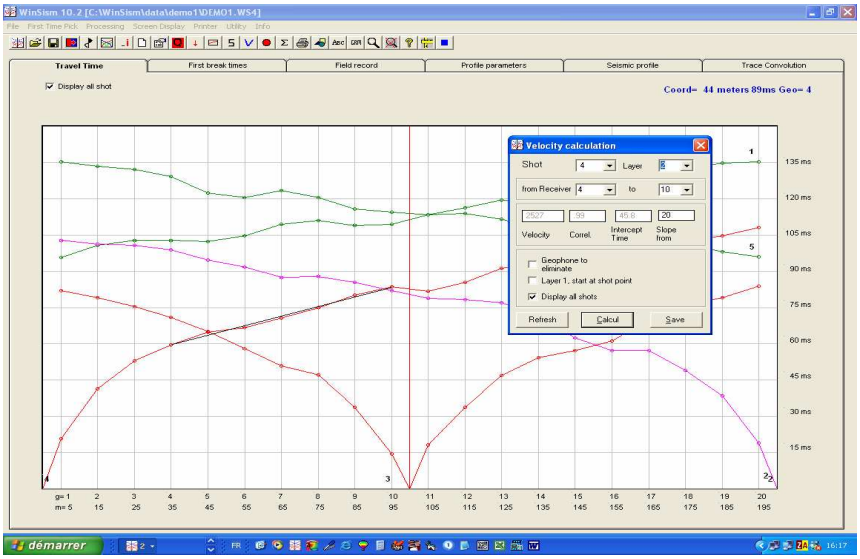


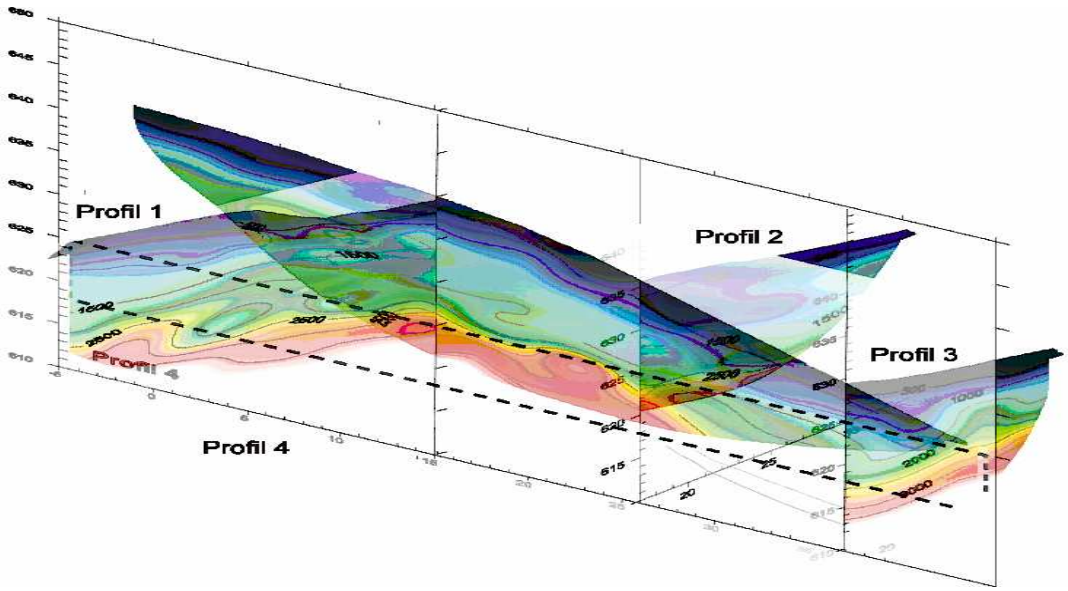
When all velocities and intercept times are recorded, user can compute thickness at shot point using the intercept time method.

5.4.4. Why WinSism 14?

WinSism can accept any field geometry, receiver spacing, shot spacing, shot distance to receiver. All distances are computed from first End-of-line shot. This shot must be always distance 0 and must exist. First Out-of-line shot must have a negative distance. Line length is computed from first End-of-line shot to the last End-of-Shot. Usually, the first End-of-line shot distance to the first receiver is half receiver spacing. Remember that two offset shots are necessary to use Delay or GRM method.


End shot = distance ZERO
Shot
Geophone
Offset 1
End shot 1
Center Shot
End shot x
Offset
Geophone spacing
End shot 1 to geophone 1 distance
Line length


WinSism 10.2 [C:\WinSism\data\demo1\DEMO1.WS4]
Travel Time
First break times
Field record
Profile parameters
Seismic profile
Trace Convolution
Display all shot
Coord= 44 meters 89ms Geo= 4
Velocity calculation
Shot
Layer
from Receiver
to
Velocity
Correl.
Intercept Time
Slope from
Geophone to eliminate
Layer 1, start at shot point
Display all shots
Refresh
Calcul
Save
démarrer



WinSism Travel time can be composed of more than one spread. In this case, first pick all original records using picking module, without to take care of exact geometry then see below.

It is strongly recommended recording at least 5 shots; offset shots allow to use ABC method and to compute depth below all geophones.

1. two offsets shots (distance half spread length),
2. two end shot (half receiver spacing from receiver one)
3. One centre shot

If subsurface geometry is complex, more shot are required.

5.4.5. Seismic Survey Results

1. Seismic wave velocity in soil is dependent on the soil type and its condition. The velocity models obtained from the seismic refraction survey are enclosed.

2. The results show variations in velocities upto the investigated depth. The highest velocities are in the range of 1600-1800m/s. There are various lateral variations in velocity in the models generally associated with intrusions and typical of such sites.

   a) **SRT-1 Profile:** At the top we have a layer of about 5-8m thick having velocity ranges between 200m/sec to 300m/sec. Then a layer of about 11-16m thick having a velocity range of 1000-1200m/sec is found. A velocity range of 1600-1800m/sec is found thereafter.

   b) **SRT-2 Profile:** At the top we have a layer of about 5-11m thick having velocity ranges between 200m/sec to 300m/sec. Then a layer of about 15-18m thick having a velocity range of 1000-1200m/sec is found. A velocity range of 1600-1800m/sec is found thereafter.

   c) **SRT-3 Profile:** At the top we have a layer of about 4-9m thick having velocity ranges between 200m/sec to 300m/sec. Then a layer of about 12-17m thick having a velocity range of 1000-1200m/sec is found. A velocity range of 1600-1800m/sec is found thereafter.

   d) **SRT-4 Profile:** At the top we have a layer of about 4-13m thick having velocity ranges between 200m/sec to 300m/sec. Then a layer of about 10-18m thick having a velocity range of 1000-1200m/sec is found. A velocity range of 1600-1800m/sec is found thereafter.

   e) **SRT-5 Profile:** At the top we have a layer of about 4-11m thick having velocity ranges between 200m/sec to 300m/sec. Then a layer of about 14-20m thick having a velocity range of 1000-1200m/sec is found. A velocity range of 1600-1800m/sec is found thereafter.

3. Based on the Seismic Profile it is seen that we are having following dynamic parameters.

Avg. Thickness of layer below EGL (M)		Avg. V_p (m/sec)	Calculated V_s (m/sec)	Dynamic Young's Modulus (MPa)	Shear Modulus (Mpa)	Soil Type
From	To					
0.00	8.00	250	133	88	33	Granular soil with loose to medium density / cohesive soil with soft to medium consistency
8.00	23.00	1100	588	1797	691	Dense to very dense granular soil / very stiff to hard cohesive soil
Below 23.00		1700	981	4816	1926	Very dense granular soil / hard cohesive soil

Sample Calculation:

$E = V_p^2 \times \rho \times (1+\mu) \times (1-2\mu) / (1-\mu)$

Where, E = Dynamic Young's Modulus in kN/m^2

$V_p = 250$ m/sec

$\rho = 1.90$ gm/cc ≈ 1.90 $kN.s^2/m^4$ (mass density)

$\mu = 0.30$

So, calculated E = 88214 kN/sqm ≈ 88 MPa

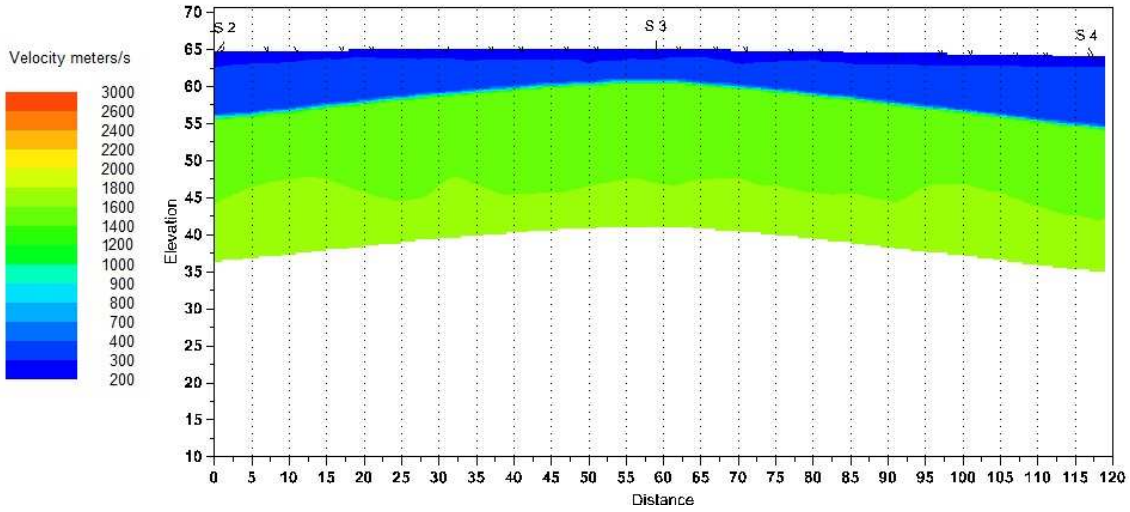
And Shear Modulus comes out to be 33 MPa

Again, $G = \rho V_s^2$ giving $V_s = \sqrt{G/\rho}$

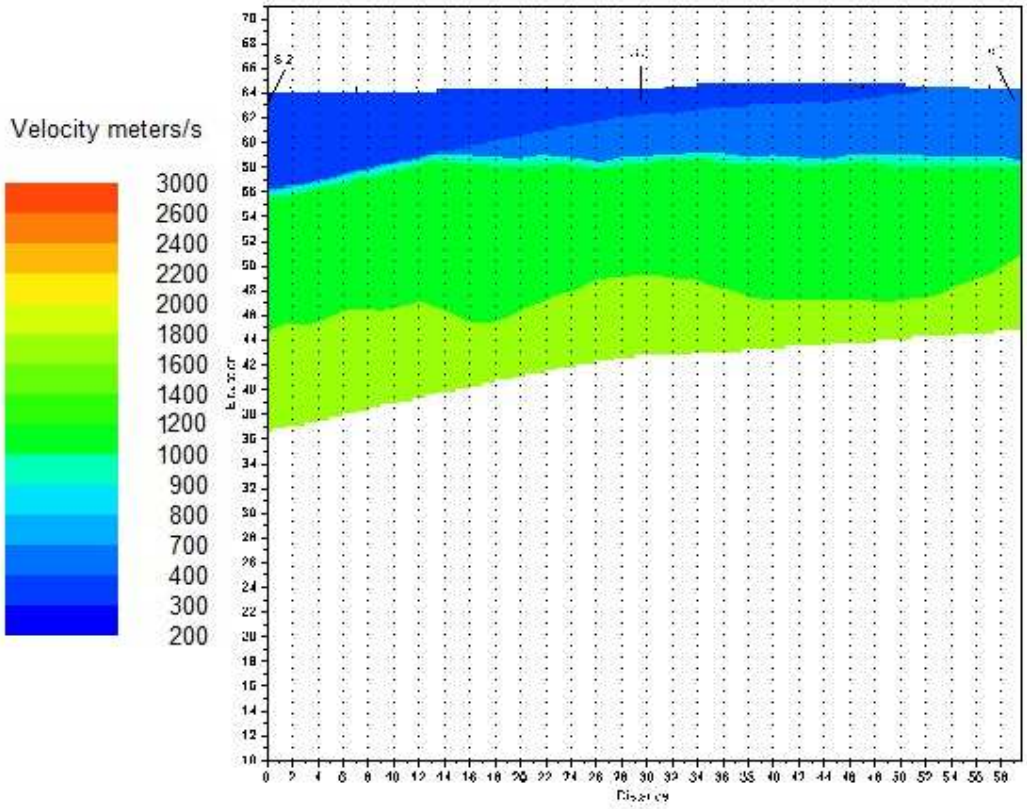
So, calculated V_s = 133 m/sec

SEISMIC PROFILE

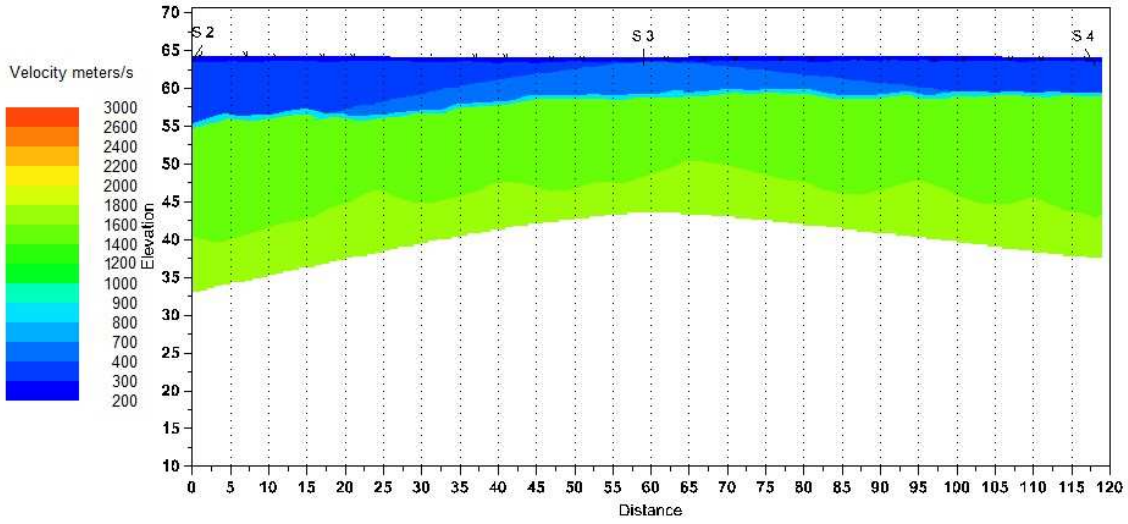
Along SRT-1 / L1S1



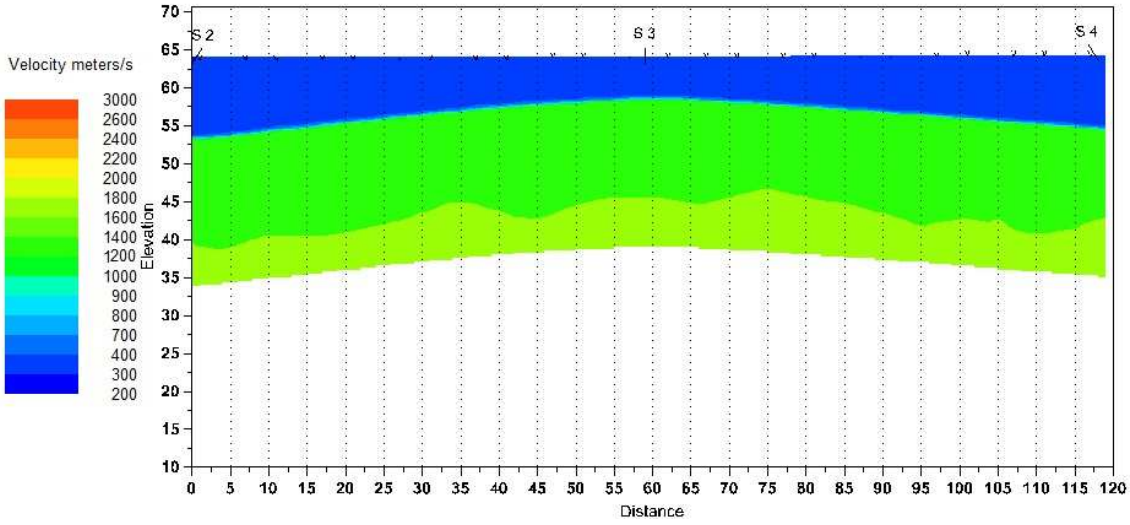
Along SRT-1 / L1S2



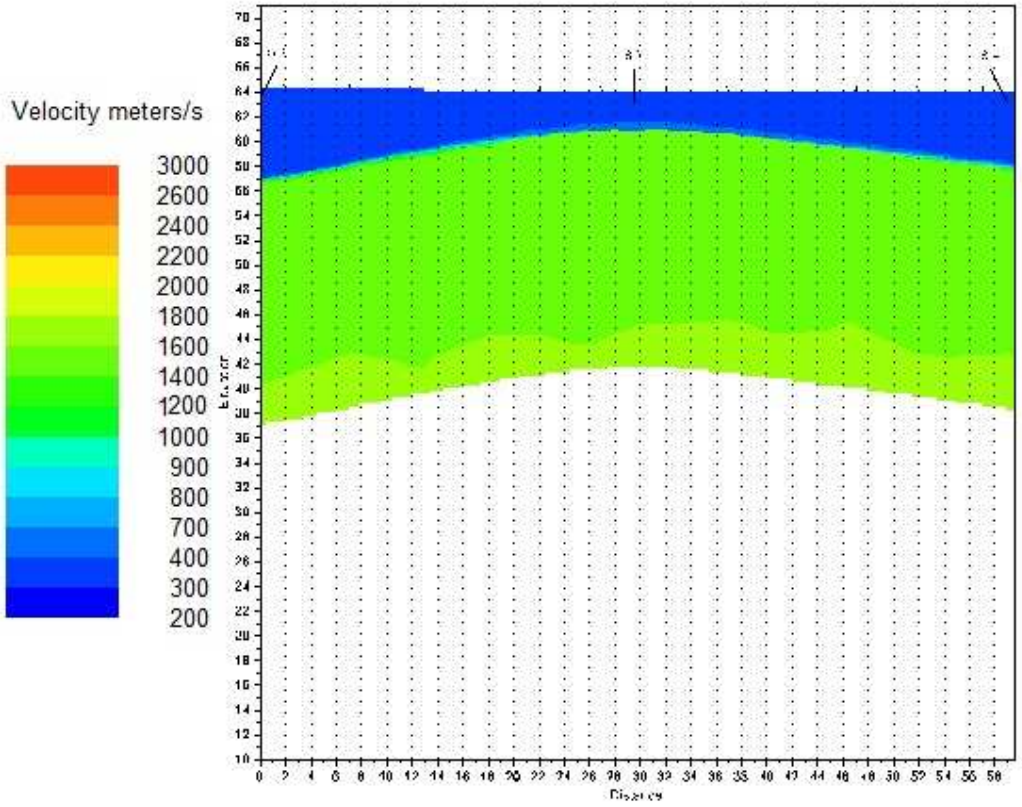
Along SRT-2 / L1S1



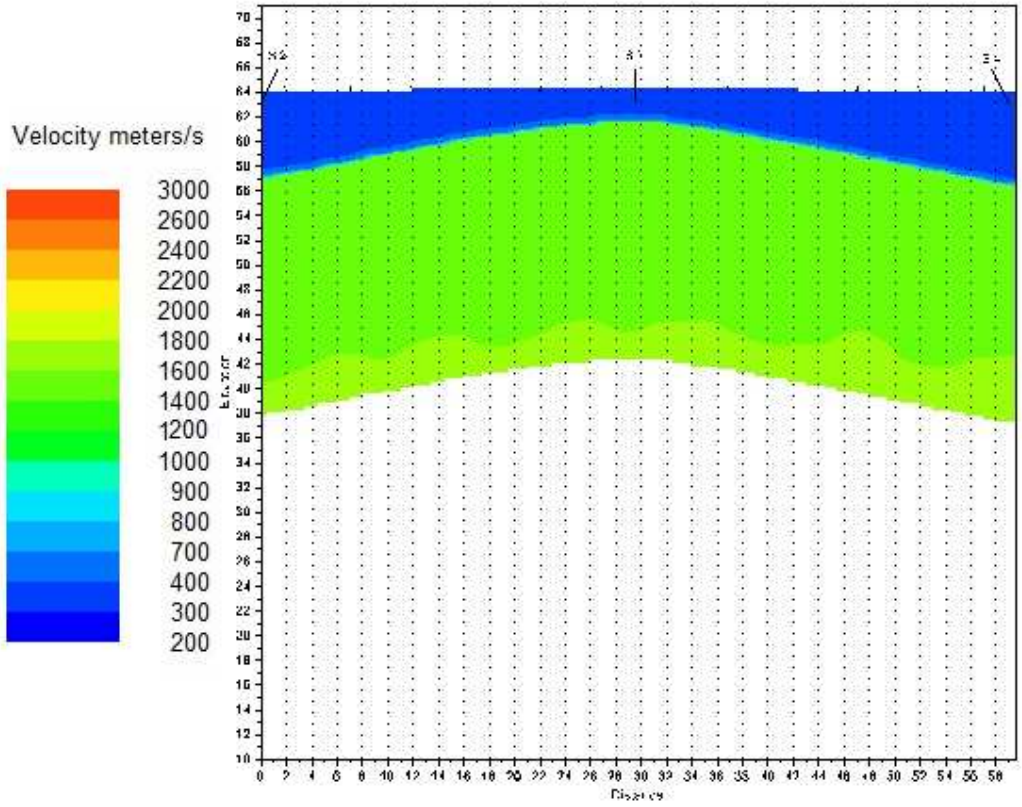
Along SRT-2 / L1S2



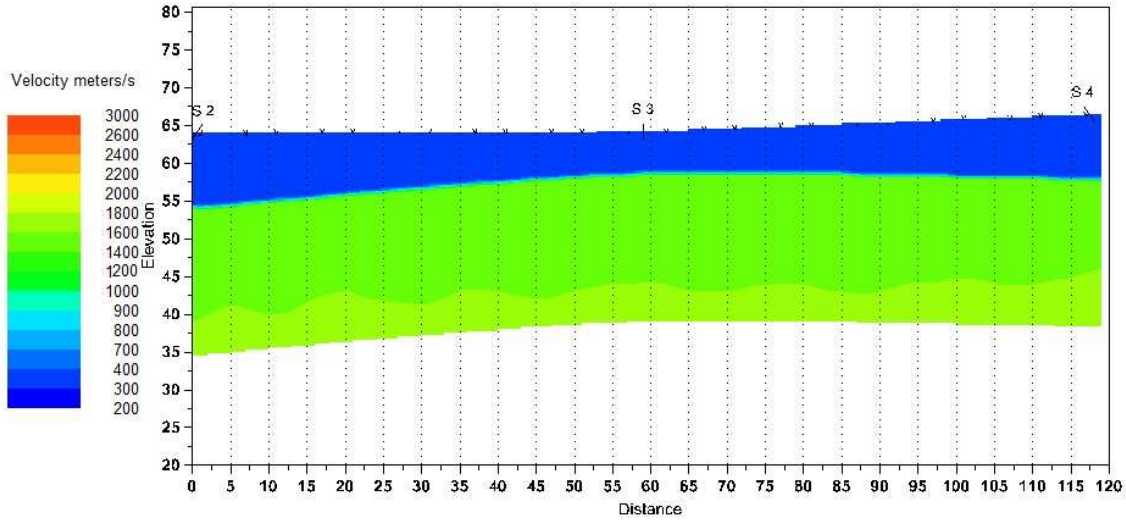
Along SRT-2 / L1S3



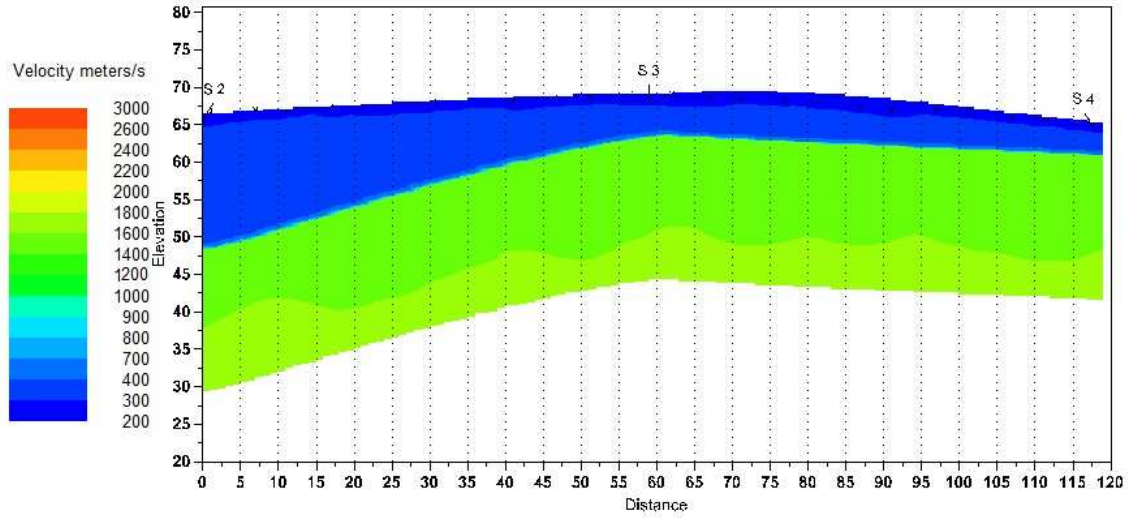
Along SRT-3 / L1S1



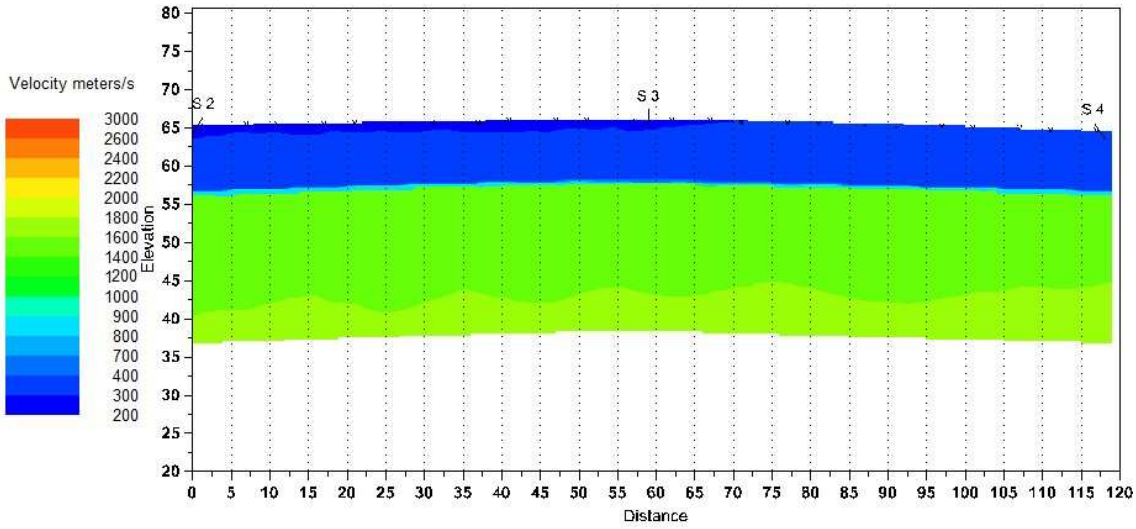
Along SRT-3 / L1S2



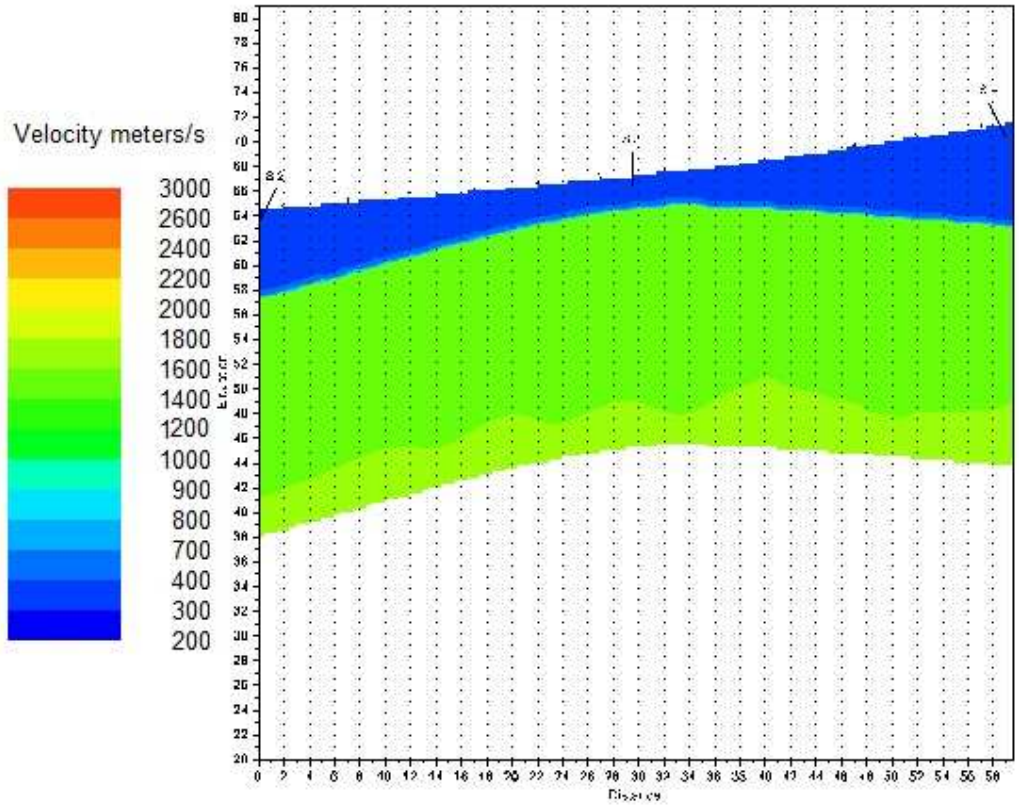
Along SRT-4 / L1S1



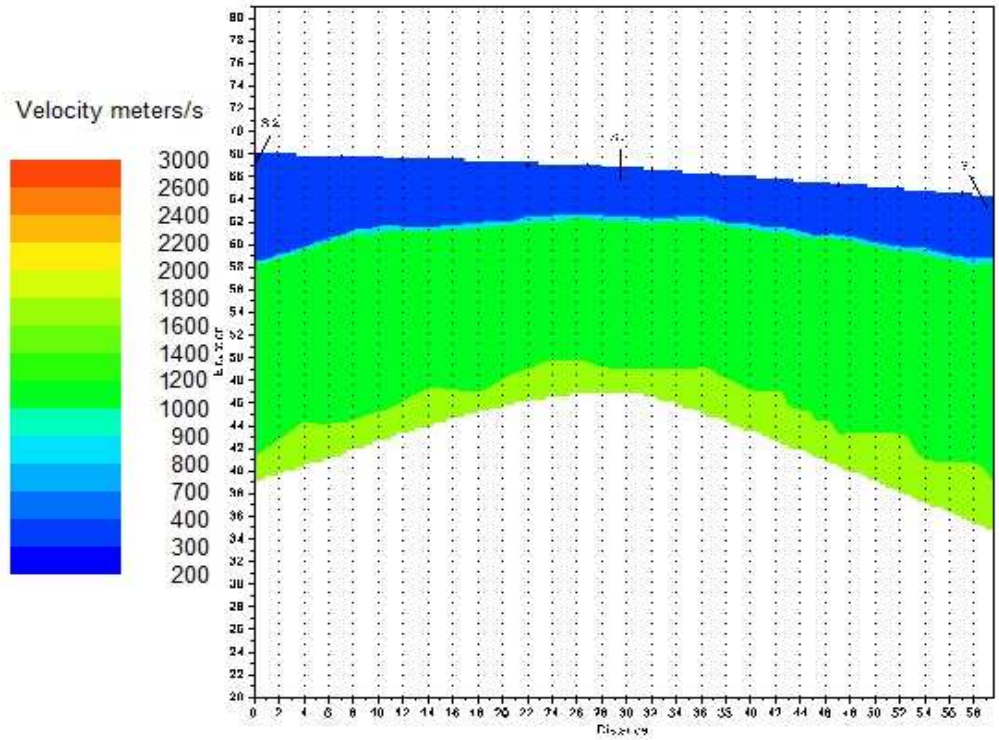
Along SRT-4 / L1S2



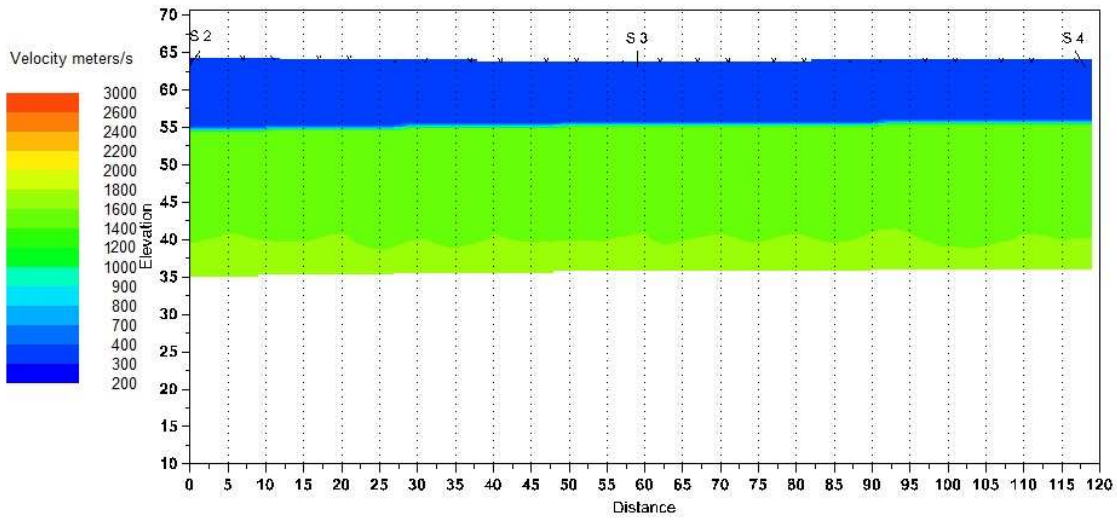
Along SRT-4 / L1S3



Along SRT-5 / L1S1



Along SRT-5 / L1S2



9. PRESSUREMETER TEST

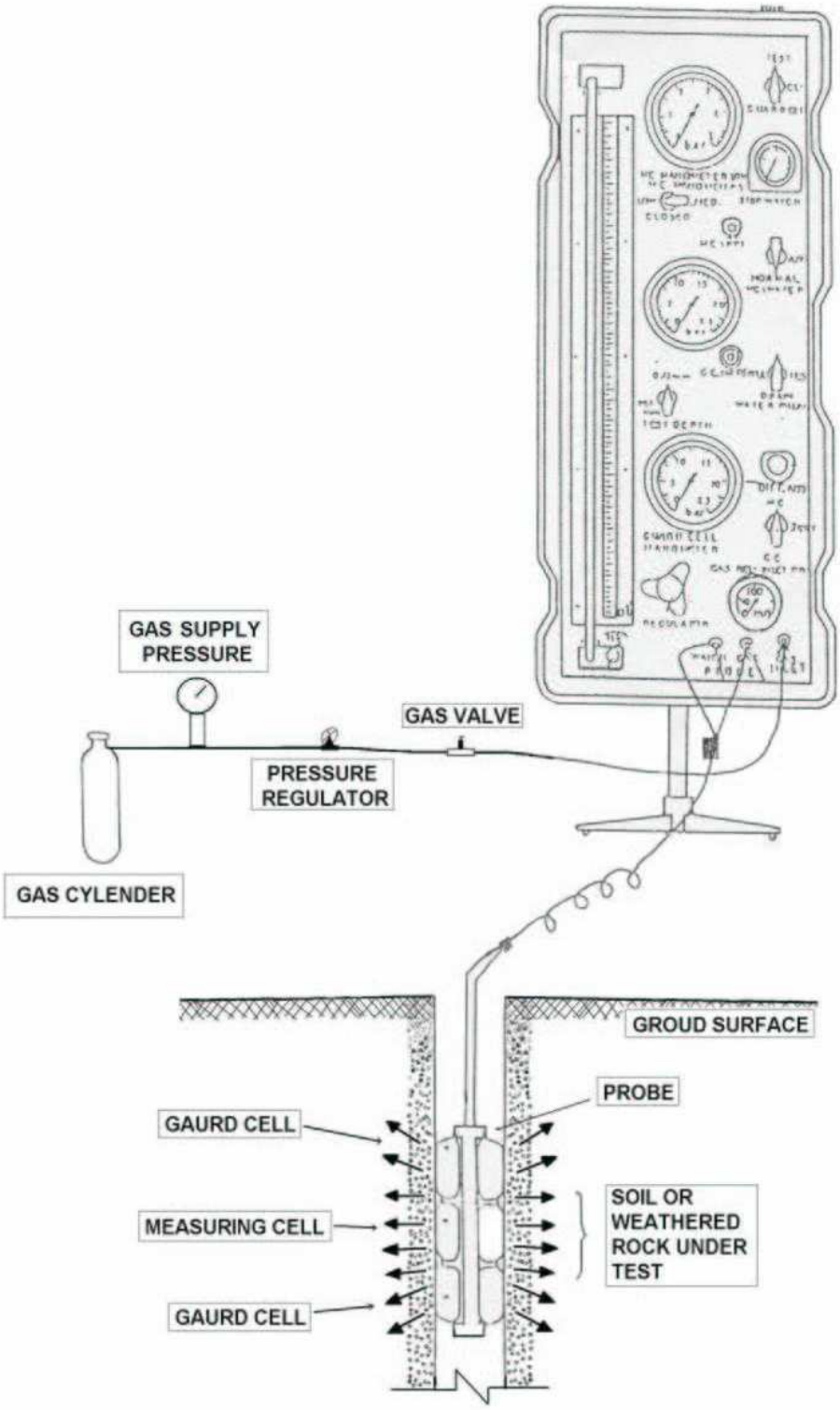


FIG. 1. SCHEMATIC REPRESENTATION OF PRESSUREMETER

PRESSUREMETER TEST

1. INTRODUCTION :

The Pressure meter equipment (Ref. Fig.1) consists of mainly of three components, namely the probe, the control panel and the tubing. The probe consists of rubber membranes stretched over a core. Only the central portion known as the measuring cell is used for measurement. The two end portions known as guard cells serve merely to avoid end convergence over the measured portion. The control panel consists of a water reservoir for the measuring cell which is connected by means of a hole. A coaxial outlet with quick release nipples for connecting to the water and gas outlets meant for measuring cell and guard cells respectively is connected to the water and gas outlets meant for measuring cell and guard cells respectively is connected to the one end of a coaxial tubing. Pressure is applied to the water through pneumatic control equipment and resulting soil deformations are indicated by volume changes which one read on a sight tube.

2. FIELD INVESTIGATIONS & ANALYSIS OF TEST RESULTS :

Total four nos. Pressuremeter tests were conducted at different depths varying from about 2.00m to a maximum of 30.00m below the existing ground surface. The details of test locations are as under:

Test Location	Test No.	Co-ordinates (m)		RL (m)	Date of Testing
		E	N		
PMT-01	01/12	700.000	155.000	63.601	11.12.14
	02/12				11.12.14
	03/12				11.12.14
	04/12				11.12.14
	05/12				11.12.14
	06/12				11.12.14
	07/12				12.12.14
	08/12				12.12.14
	09/12				12.12.14
	10/12				13.12.14
	10/12				13.12.14
	12/12				13.12.14
PMT-02	01/12	628.000	130.000	64.006	14.12.14
	02/12				14.12.14
	03/12				14.12.14

Test Location	Test No.	Co-ordinates (m)		RL (m)	Date of Testing
		E	N		
PMT-02	04/12	628.000	130.000	64.006	14.12.14
	05/12				14.12.14
	06/12				14.12.14
	07/12				15.12.14
	08/12				15.12.14
	09/12				15.12.14
	10/12				16.12.14
	10/12				16.12.14
	12/12				16.12.14
PMT-03	01/12	667.000	91.000	63.686	08.12.14
	02/12				08.12.14
	03/12				08.12.14
	04/12				08.12.14
	05/12				09.12.14
	06/12				09.12.14
	07/12				09.12.14
	08/12				09.12.14
	09/12				10.12.14
	10/12				10.12.14
	10/12				10.12.14
	12/12				10.12.14
PMT-04	01/12	610.000	72.000	64.966	05.12.14
	02/12				06.12.14
	03/12				06.12.14
	04/12				06.12.14
	05/12				06.12.14
	06/12				06.12.14
	07/12				06.12.14
	08/12				07.12.14
	09/12				07.12.14
	10/12				07.12.14
	10/12				07.12.14
	12/12				08.12.14

All the tests were carried out in the bore hole of required size compatible to that of Nx probe of Pressuremeter as per instructions of Engineer-in-Charge. Before starting use of new Nx size probe air calibration was done. For conducting Pressuremeter tests each bore hole of Nx size was made upto the required depth by rotary drilling machine. The probe was attached to the drill rod, lowered into the bore hole and held at test depth. All valves were opened enabling the system to attain equilibrium under atmospheric pressure. Water table of the measuring cell reservoir was noted. The instruments was set ready for test by closing or opening the relevant valves. Then from a compressed gas cylinder a little amount of pressure was let into the system. This pressure caused the probe to expand and consequently the water level to fall. The pressure was maintained constant for that step and the measuring cell voltmeter readings were noted at 30 and 60 seconds. After that next pressure was let in and observations continued as before. This way the test was carried out upto the failure of the soil. Then the pressure was released. Probe was allowed to contract to its original size and withdrawn to the ground level. This constituted one test at a given depth.

□

For the Pressuremeter test conducted at different depths at the specified location the plots of applied pressure and volumetric deformation are shown in figures (2) to (64). From these plots the values of pressure at rest (P_o), limit pressure (P_l) & Creep pressure (P_f) were read. These values were corrected for probe air calibration pressure at corresponding volume & head due to water column.

A typical plot between applied pressure against volumetric deformation is shown in figure (3). The graph clearly shows three different parts. Part AB represents the expansion of the probe in the initial air gap. Part BC, which is a straight line, represents the stress deformation relationship of the soil. Part CD represents the progress of failure of the soil. At D the soil is completely failed. P_o represents the 'natural stress' in the soil. P_f and P_l are called 'Creep Pressure' and 'Limit pressure' respectively.

The Menard's modulus of deformation 'E_m' of the soil is calculated from the following relationship:

$$E_m = 2.66 \times \{V_c + (V_0+V_f)/2\} \times (P_f - P_0) / (V_f - V_0)$$

Where

E_m = Menard's Modulus of deformation in kg/cm^2.

P_o = At rest pressure in kg/cm^2.

P_f = Creep pressure in kg/cm^2.

V_c = Volume of probe before test under deflated condition in c.c.

V_o = Volume corresponding to pressure P_o in c.c.

V_f = Volume corresponding to pressure P_f in c.c.

By putting all the relevant values in the above relationship from the plot between applied pressure against volumetric deformation (Refer figures 2 to 64), the following values of limit pressure & Menard's modulus of deformation have been arrived at : -

Sl. No.	Test Location No.	Test No.	Test depth below existing ground surface (m)	Corrected Limit pressure (Kg/cm^2)	Young's Modulus, E (Kg/cm^2)
1	PMT-01	01/12	2.00	1.35	13.02
2		02/12	4.00	4.00	32.48
3		03/12	6.00	9.40	92.31
4		04/12	8.00	7.10	85.60
5		05/12	10.00	7.20	58.33
6		06/12	12.00	11.15	86.97
7		07/12	15.00	16.85	245.89
8		08/12	18.00	21.65	258.65
9		09/12	21.00	17.70	127.32
10		10/12	24.00	22.25	283.49
11		11/12	27.00	20.80	203.36
12		12/12	30.00	23.40	188.46
13	PMT-02	01/12	2.00	1.25	1.68
14		02/12	4.00	2.95	23.59
15		03/12	6.00	5.40	52.61
16		04/12	8.00	8.85	117.88
17		05/12	10.00	8.55	74.35
18		06/12	12.00	8.95	76.01
19		07/12	15.00	13.75	149.29
20		08/12	18.00	20.05	249.17
21		09/12	21.00	17.80	150.11
22		10/12	24.00	22.60	185.43

Sl. No.	Test Location No.	Test No.	Test depth below existing ground surface (m)	Corrected Limit pressure (Kg/cm^2)	Young's Modulus, E (Kg/cm^2)
23	PMT-02	11/12	27.00	21.80	173.12
24		12/12	30.00	23.10	172.23
25	PMT-03	01/12	2.00	0.05	4.99
26		02/12	4.00	2.70	12.34
27		03/12	6.00	9.35	118.56
28		04/12	8.00	11.05	104.09
29		05/12	10.00	15.80	269.75
30		06/12	12.00	9.50	142.90
31		07/12	15.00	11.30	117.04
32		08/12	18.00	17.85	151.10
33		09/12	21.00	18.30	207.10
34		10/12	24.00	21.10	228.23
35		11/12	27.00	20.40	340.00
36		12/12	30.00	20.70	228.02
37	PMT-04	01/12	2.00	1.15	4.50
38		02/12	4.00	1.55	1.36
39		03/12	6.00	3.60	56.35
40		04/12	8.00	6.05	73.13
41		05/12	10.00	10.55	189.13
42		06/12	12.00	6.50	62.15
43		07/12	15.00	12.05	131.14
44		08/12	18.00	21.60	425.60
45		09/12	21.00	18.55	197.96
46		10/12	24.00	20.60	216.46
47		11/12	27.00	16.90	222.03
48		12/12	30.00	21.45	250.04

SAMPLE CALCULATION:

Test Location = PMT01 / 1

Test depth = 2.00 m

Refer Figure No. = 3

Head due to water column = 0.30 kg/cm^2

Probe air calibration pressure corresponding to volume at limit pressure (P_l) = 1.30 kg/cm^2

Probe air calibration pressure corresponding to volume at Pressure at rest (P_o) = 0.20 kg/cm^2

Probe air calibration pressure corresponding to volume at Creep pressure (P_f) = 0.80 kg/cm^2

Volume of probe before test under deflated condition (V_c) = 705 cc

Limit pressure (P_l) = 2.35 kg/cm^2

Pressure at rest (P_o) = 0.25 kg/cm^2

Creep Pressure (P_f) = 2.05 kg/cm^2

V_o = 190 cm^3

V_f = 440 cm^3

So, corrected limit pressure (P_l) = 2.35 –1.30 + 0.30 = 1.35 kg/cm^2

Corrected pressure at rest (P_o) = 0.25 – 0.20 + 0.30 = 0.35 kg/cm^2

Corrected creep pressure (P_f) = 2.05 – 0.80 + 0.30 = 1.55 kg/cm^2

$E_m = 2.66 \times \{V_c + (V_0+V_f)/2\} \times (P_f - P_0) / (V_f - V_0)$

By substituting all the values in the equation as above, we get

$E_m = 2.66 \{705 + (190+440)/2\} \times (1.55 – 0.35)/(440 - 190) = 13.02$ kg/cm^2

Thus, the two parameters obtained at 2.00m depth below the existing ground surface at the location of PMT-01 are: -

(i) Limit pressure, P_l = 1.35 kg/cm^2

(ii) Young's Modulus, E = 13.02 kg/cm^2

3. CONCLUSIONS:

1. **Four nos. Pressuremeter tests were carried out at various locations** (i.e. PMT-01, 02, 03 & 04) at depths varying from 2.00m to 30.00m below the existing ground surface & shown in figures (2) to (64).

2. It is revealed that the limit pressure ranged from 0.05 to 23.40 kg/cm^2 & Young's modulus ranges from 1.36 to 425.6 kg/cm^2.

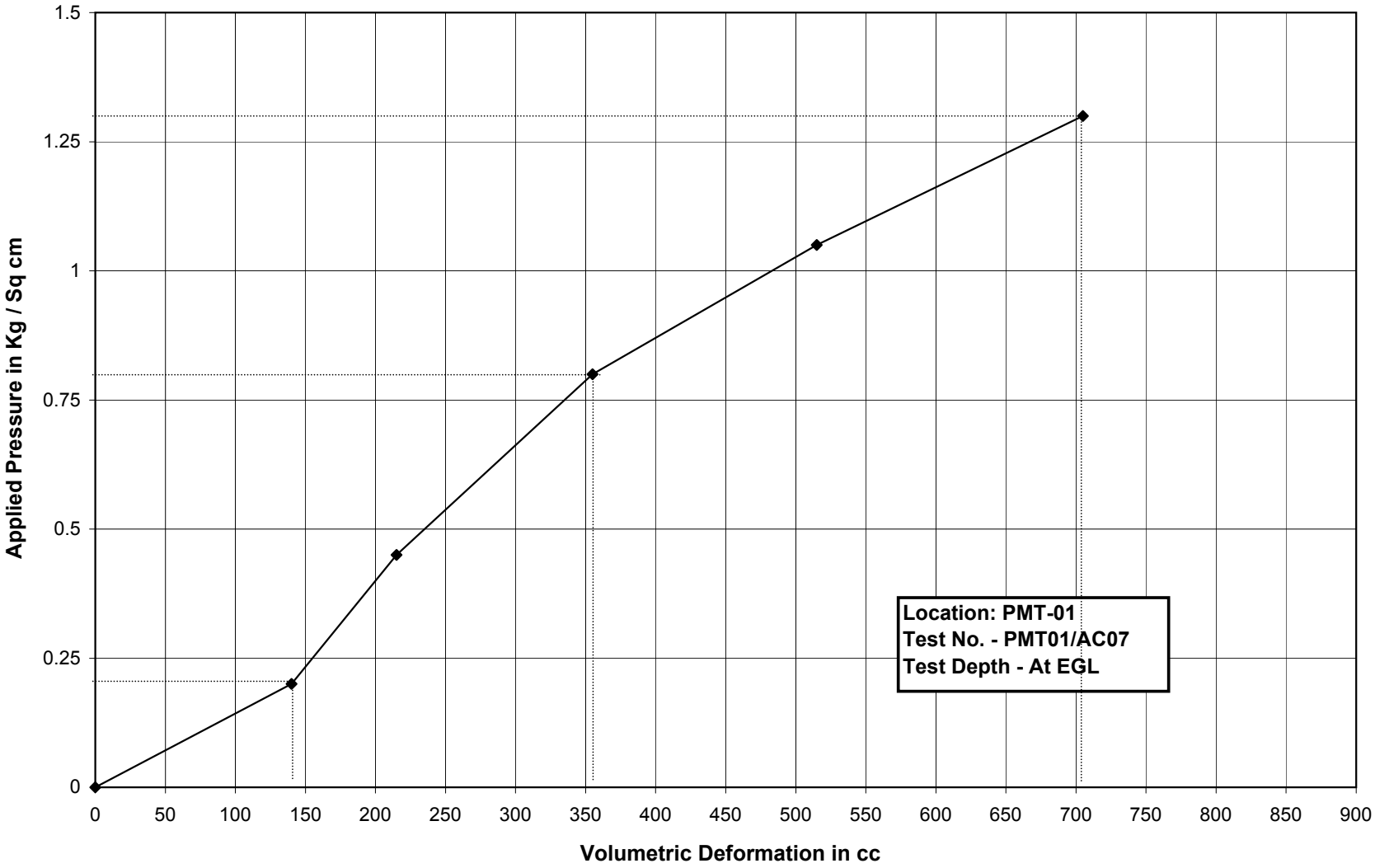


Fig. 2: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

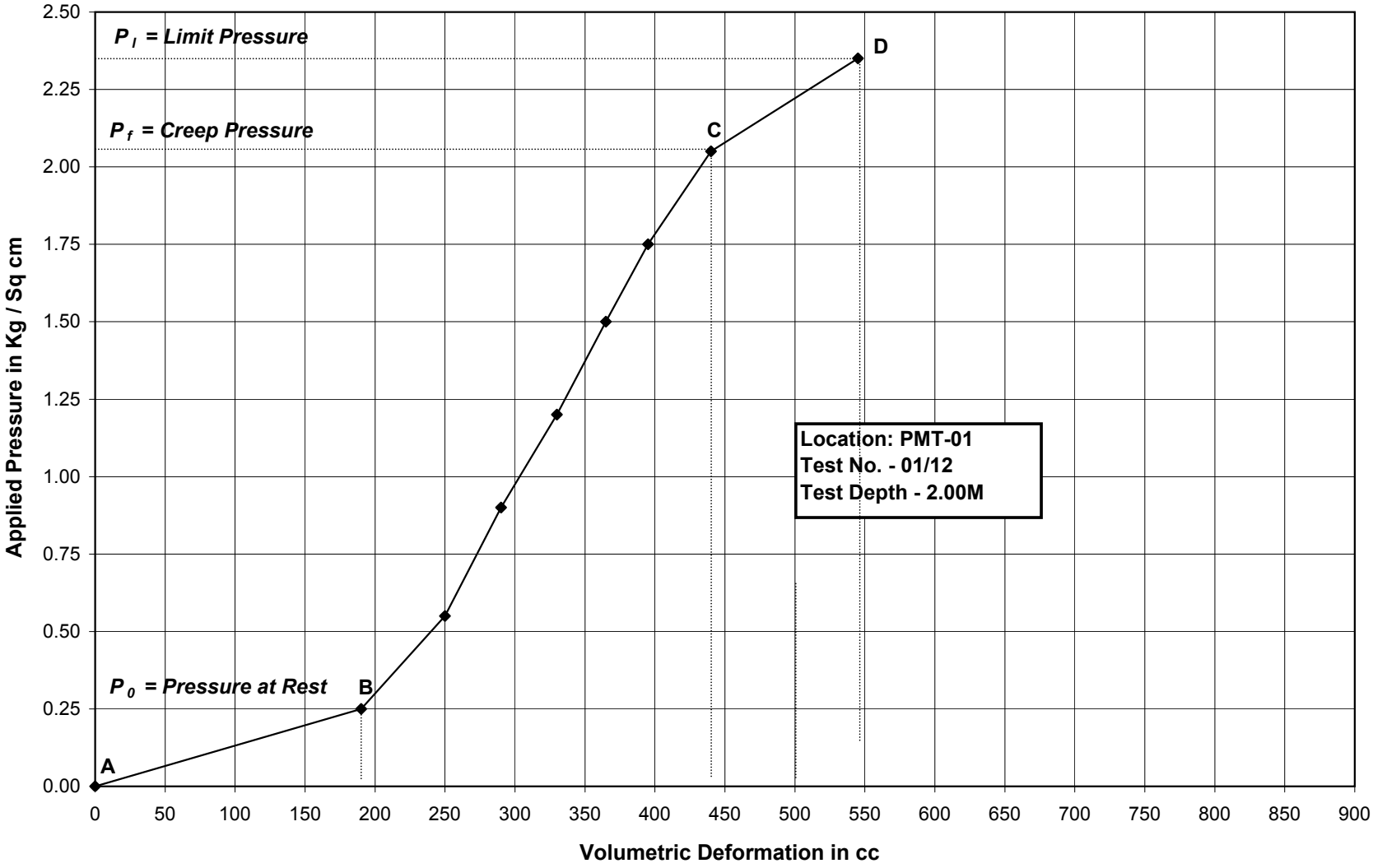


Fig. 3: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

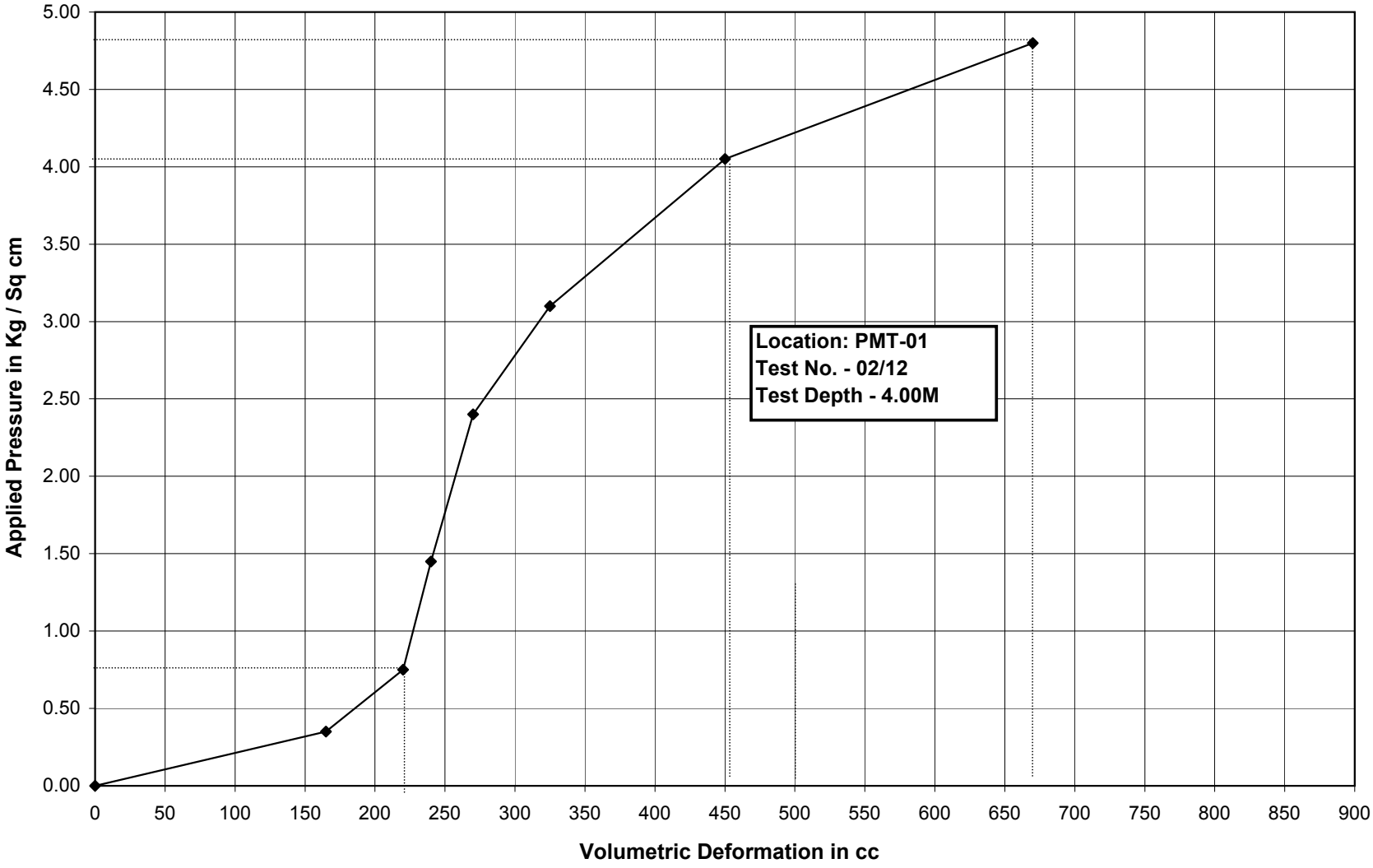


Fig. 4: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

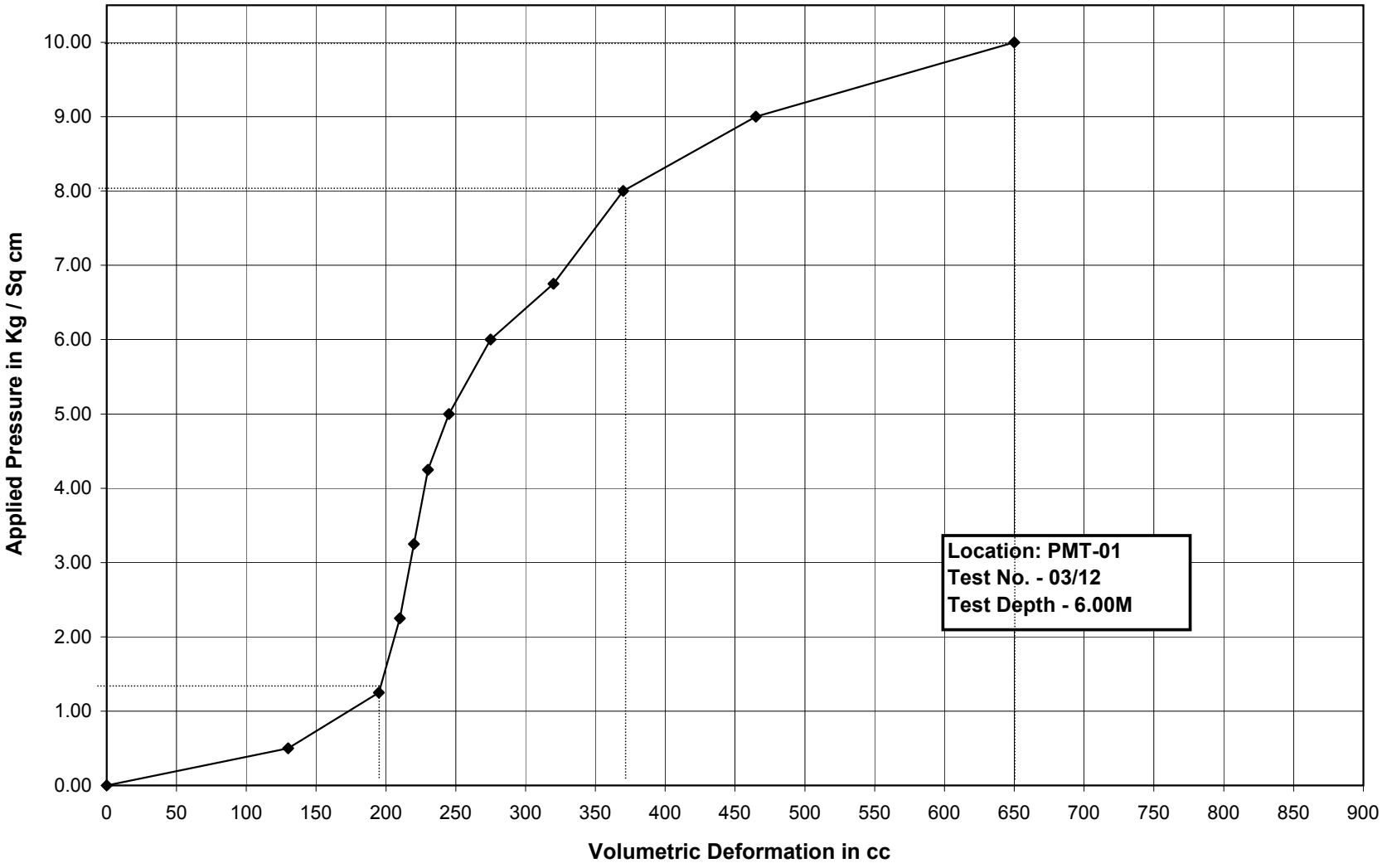


Fig. 5: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

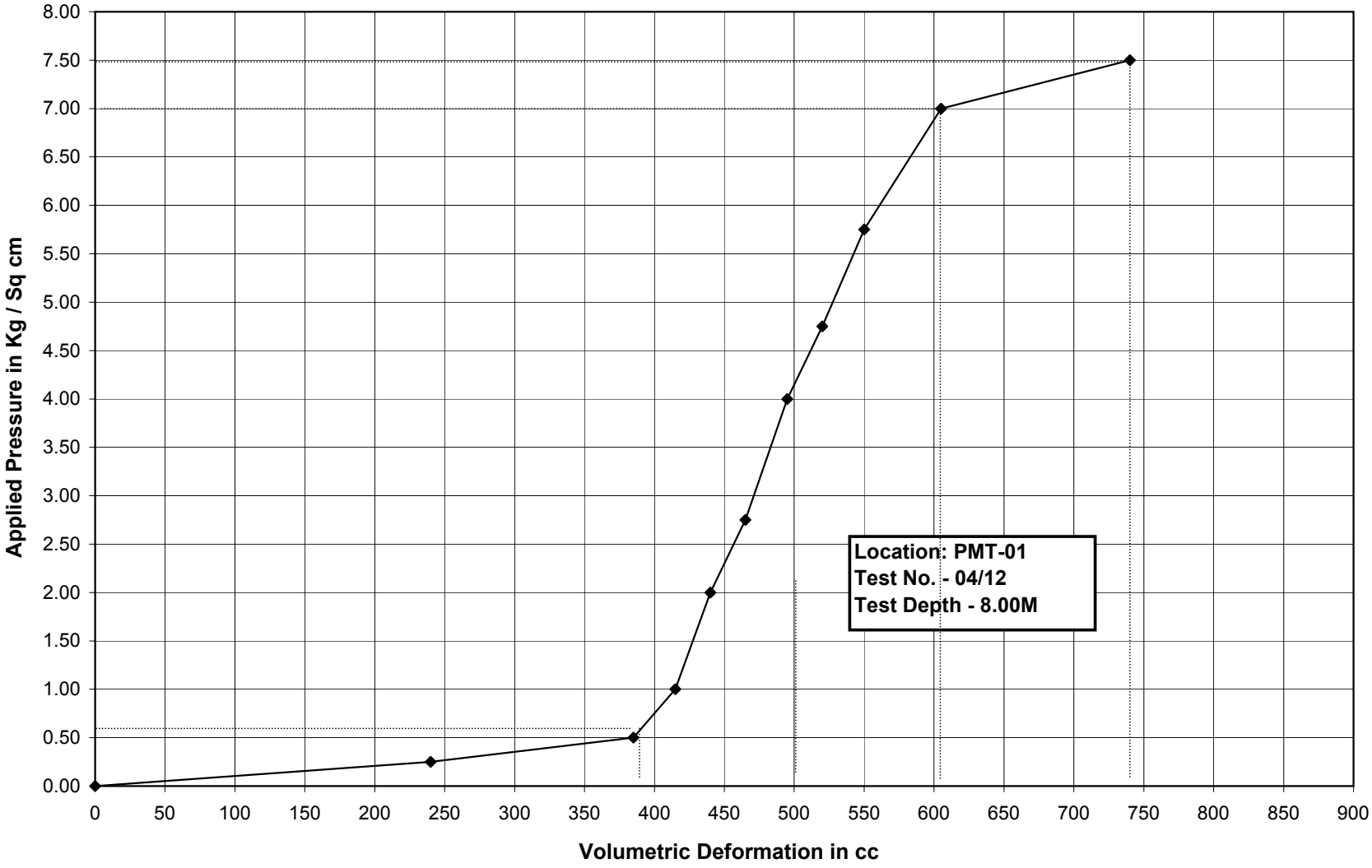


Fig. 6: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

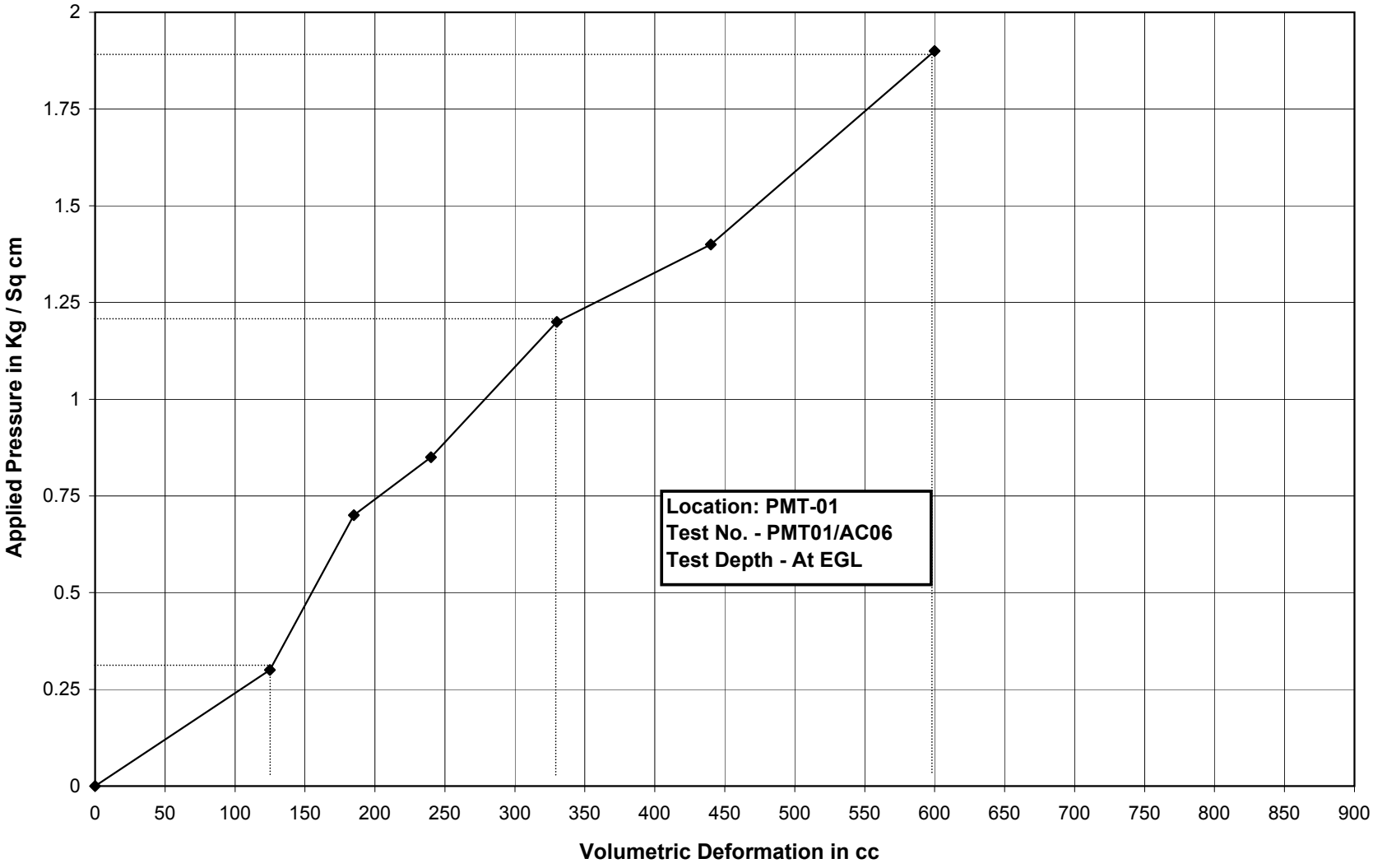


Fig. 7: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

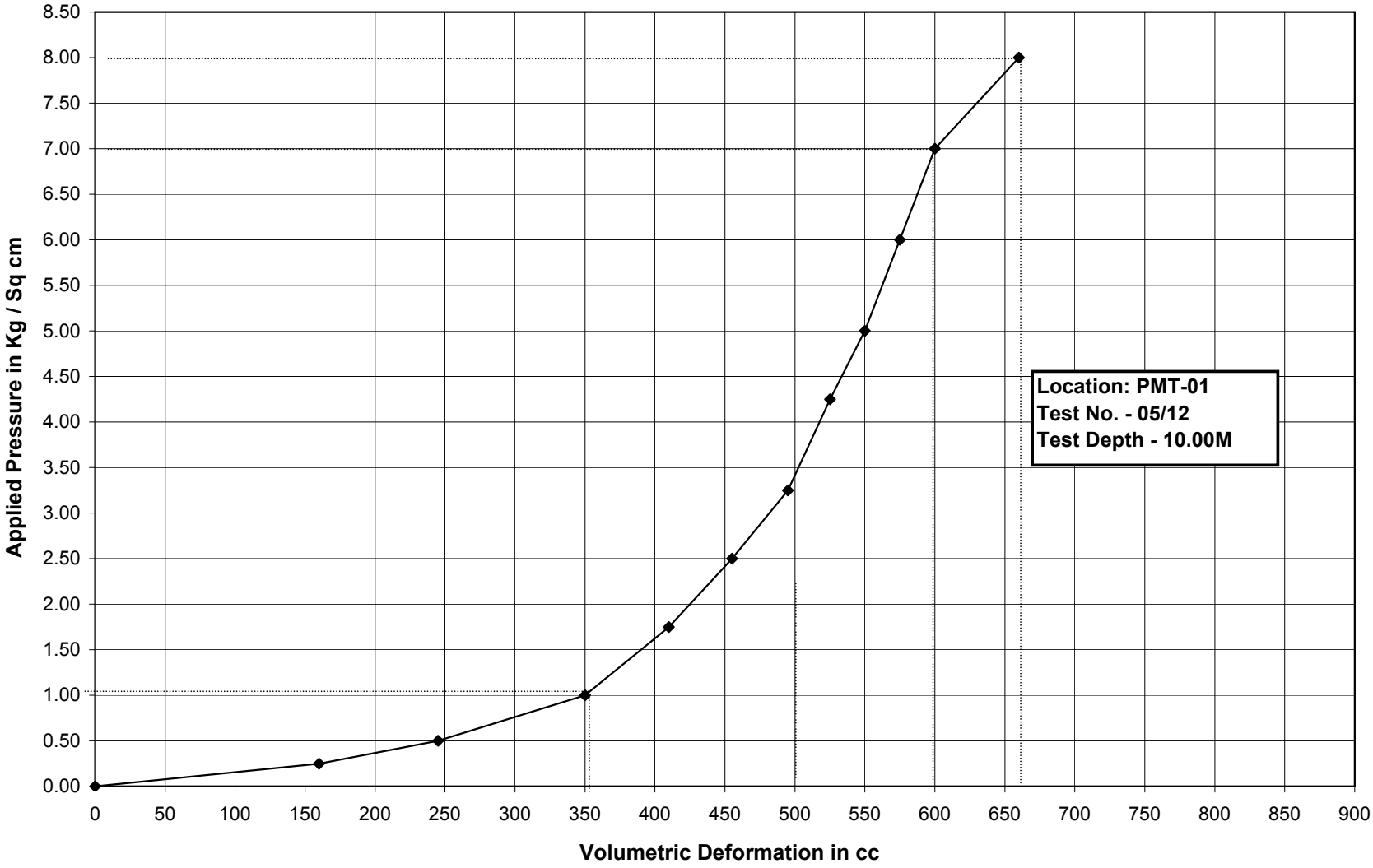


Fig. 8: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

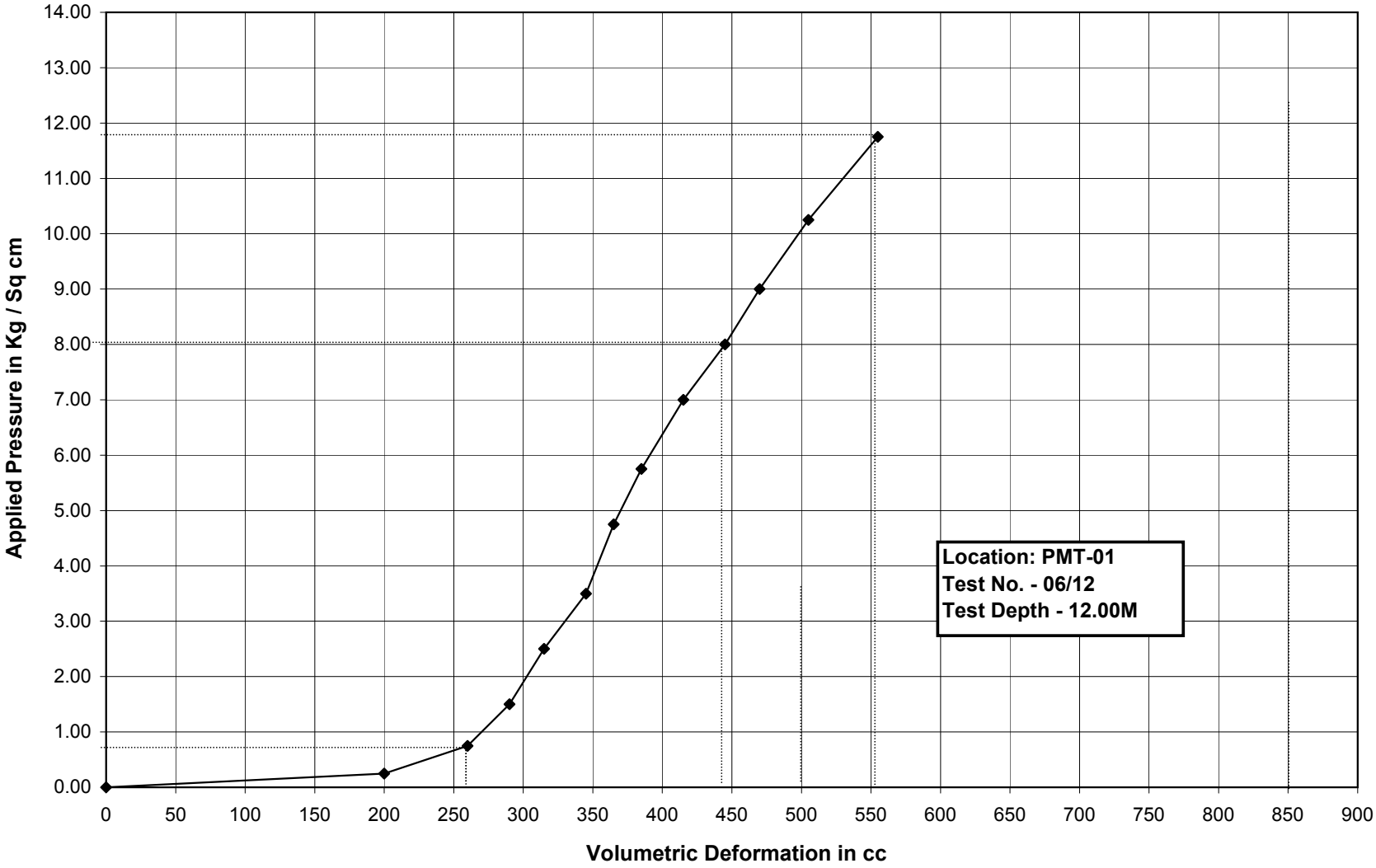


Fig. 9: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

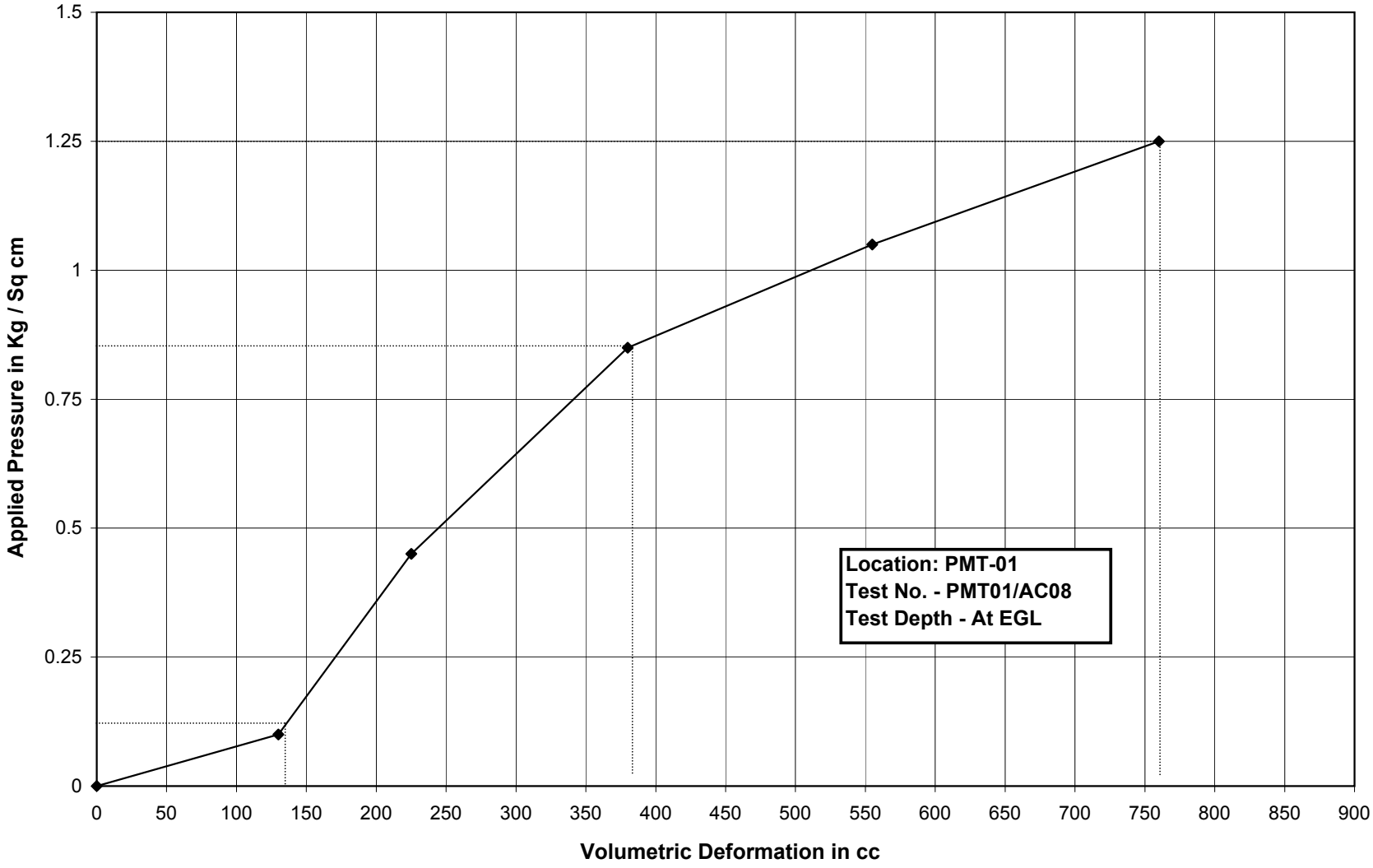


Fig. 10: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

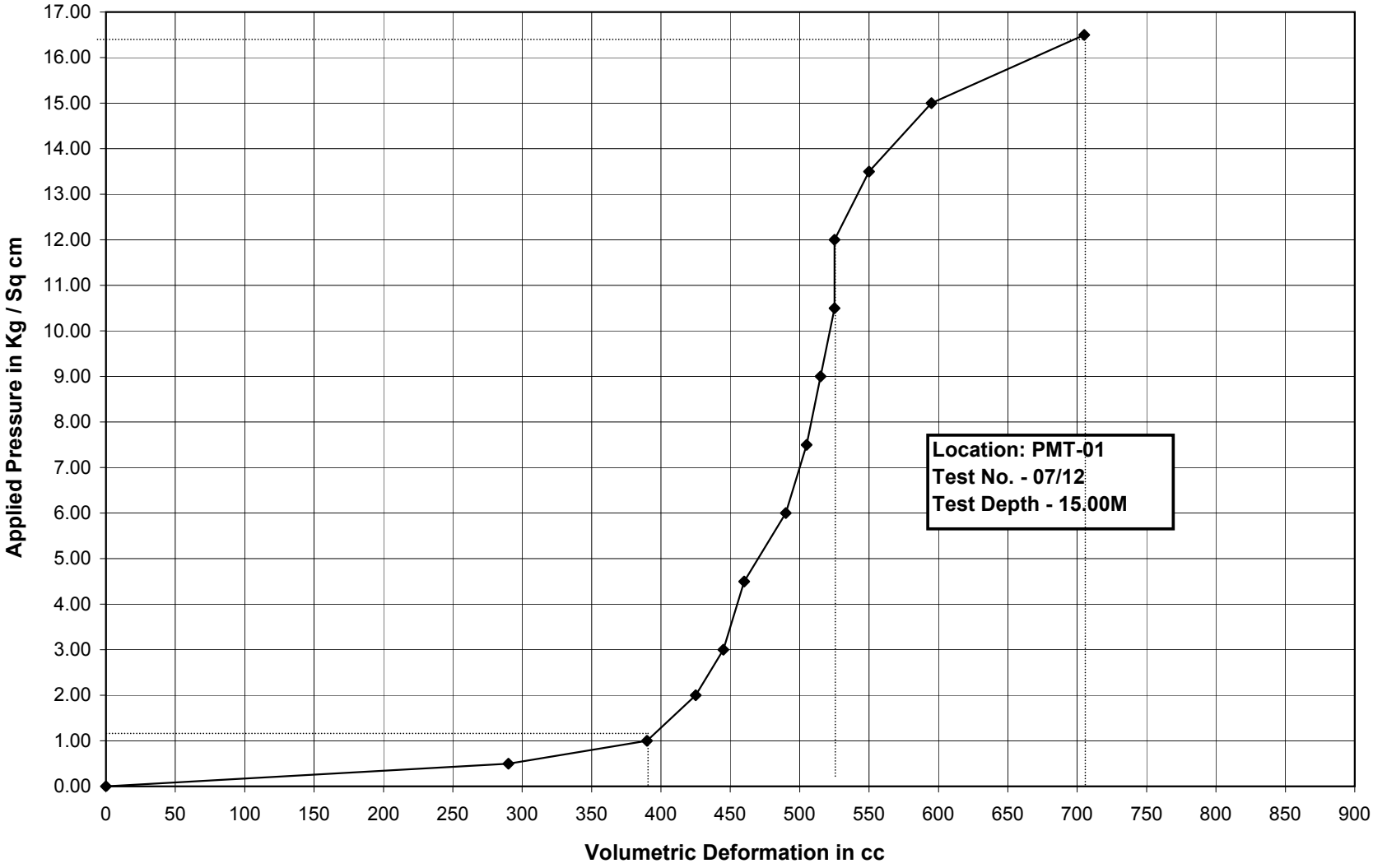


Fig. 11: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

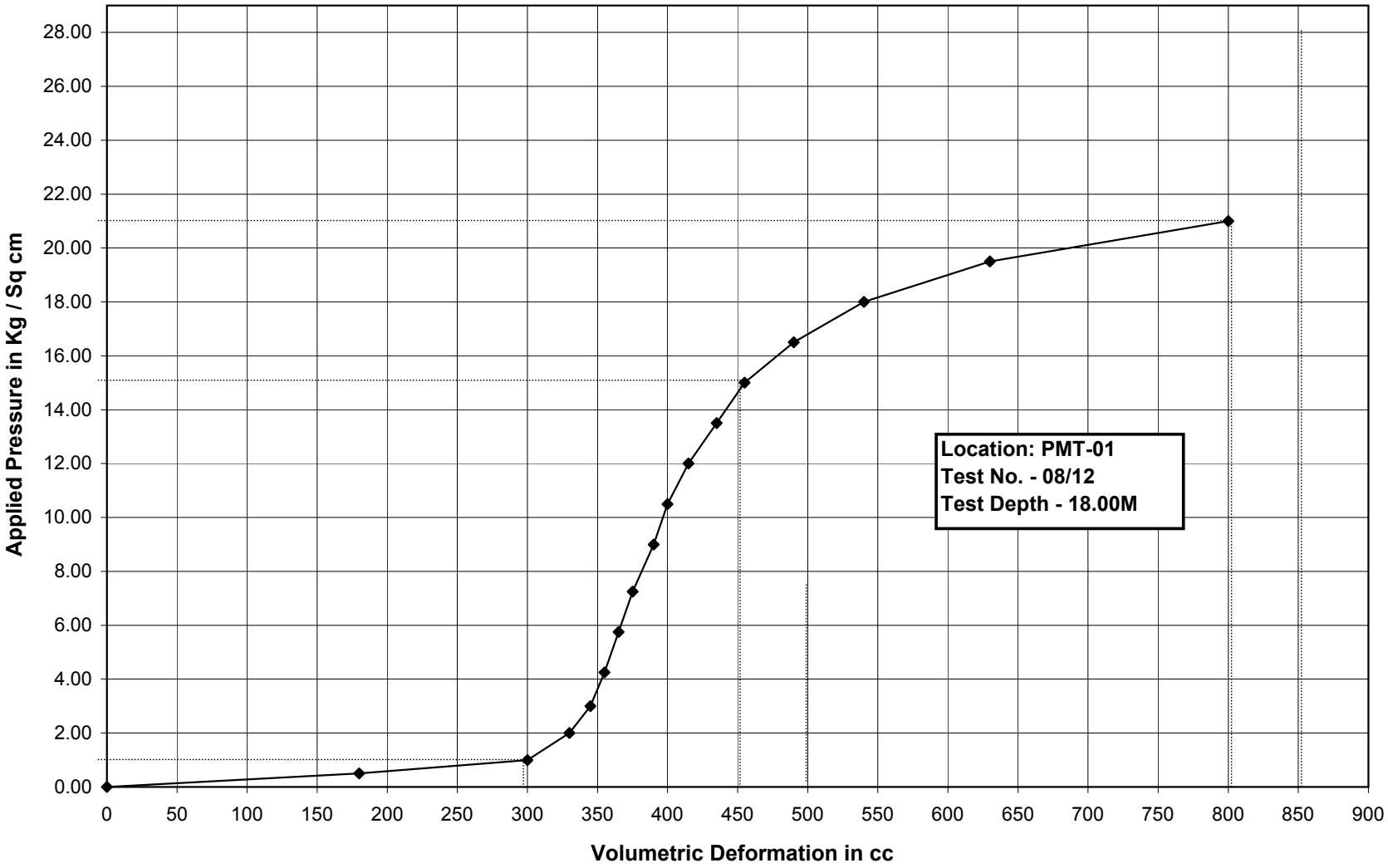


Fig. 12: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

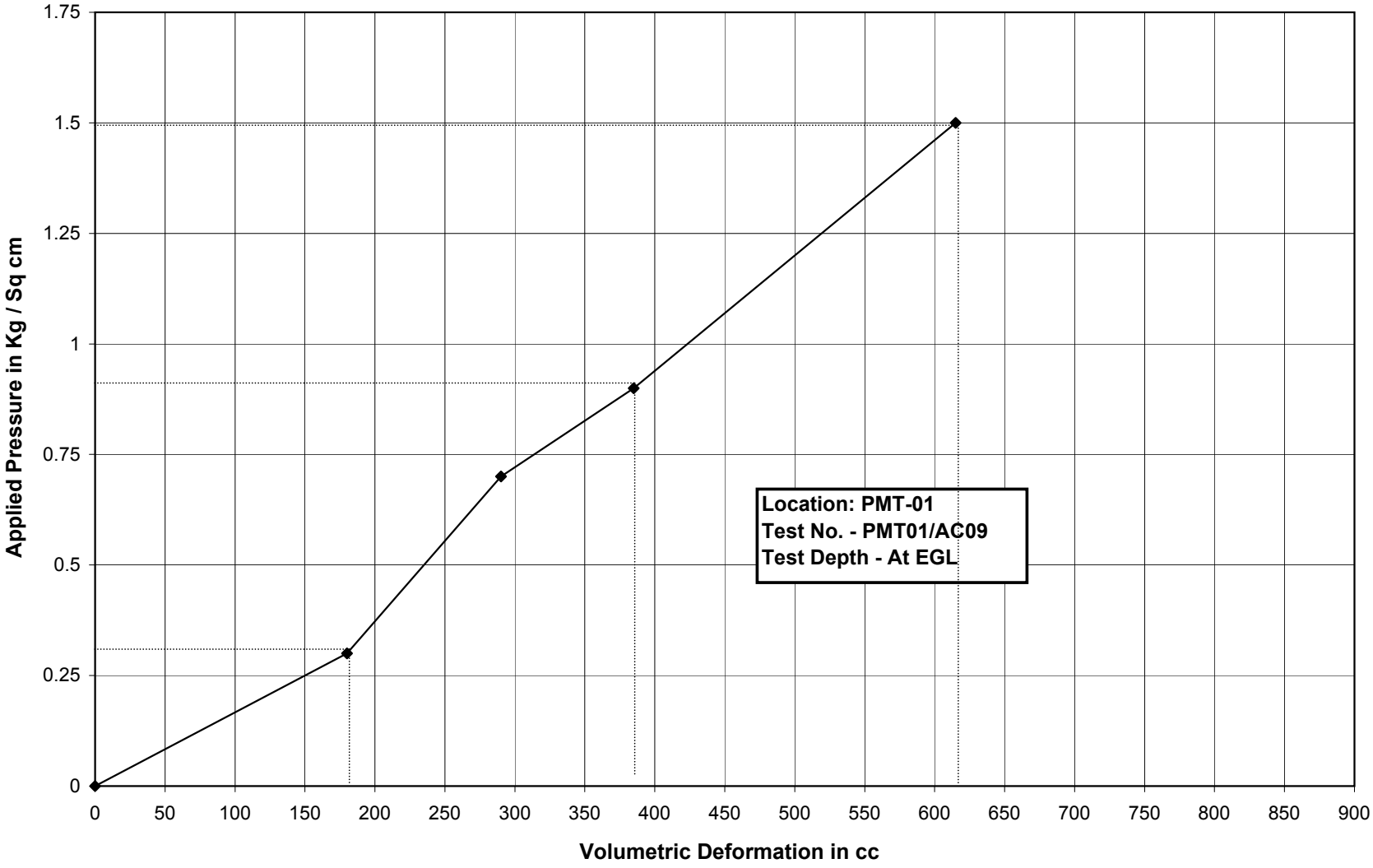


Fig. 13: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

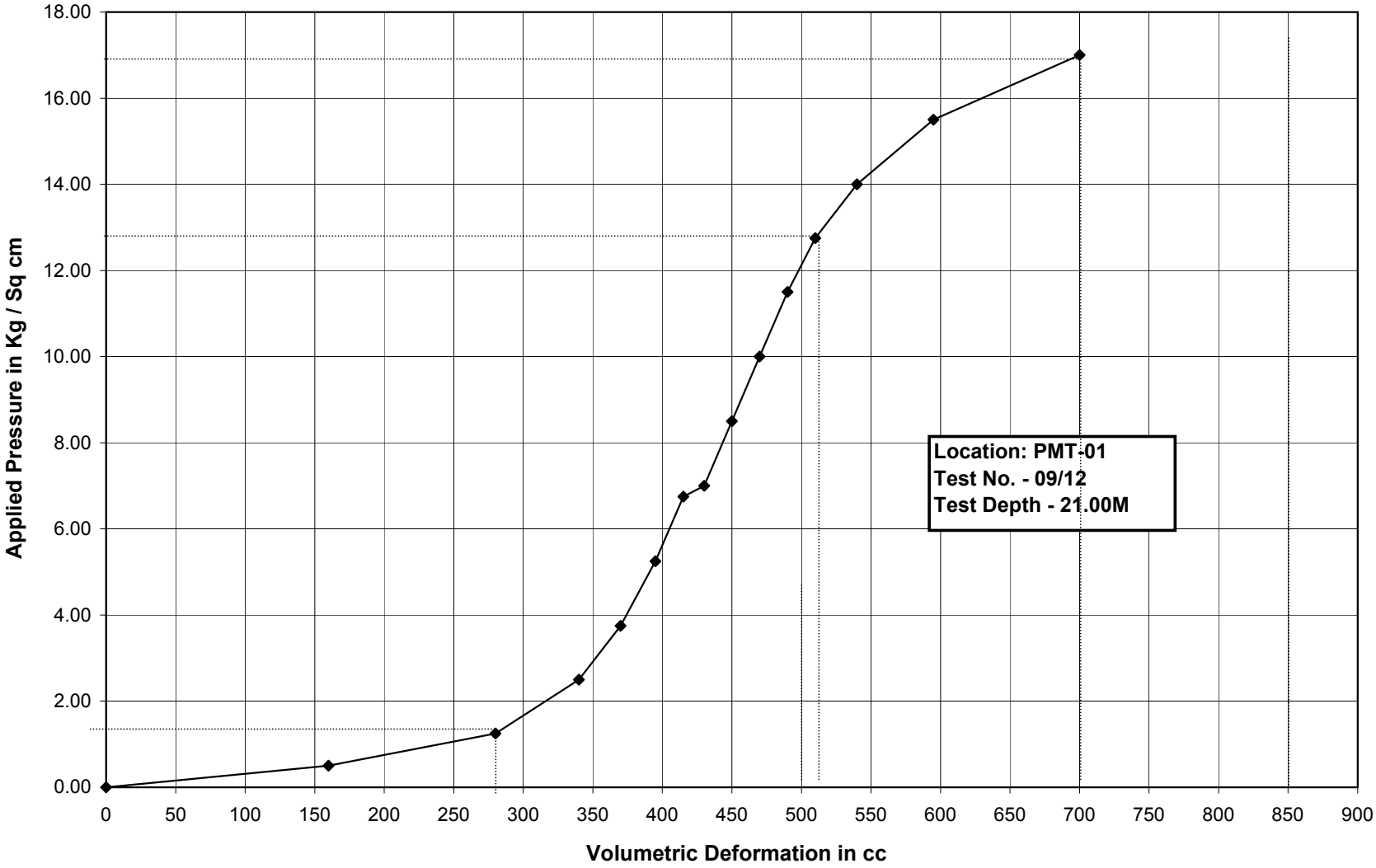


Fig. 14: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

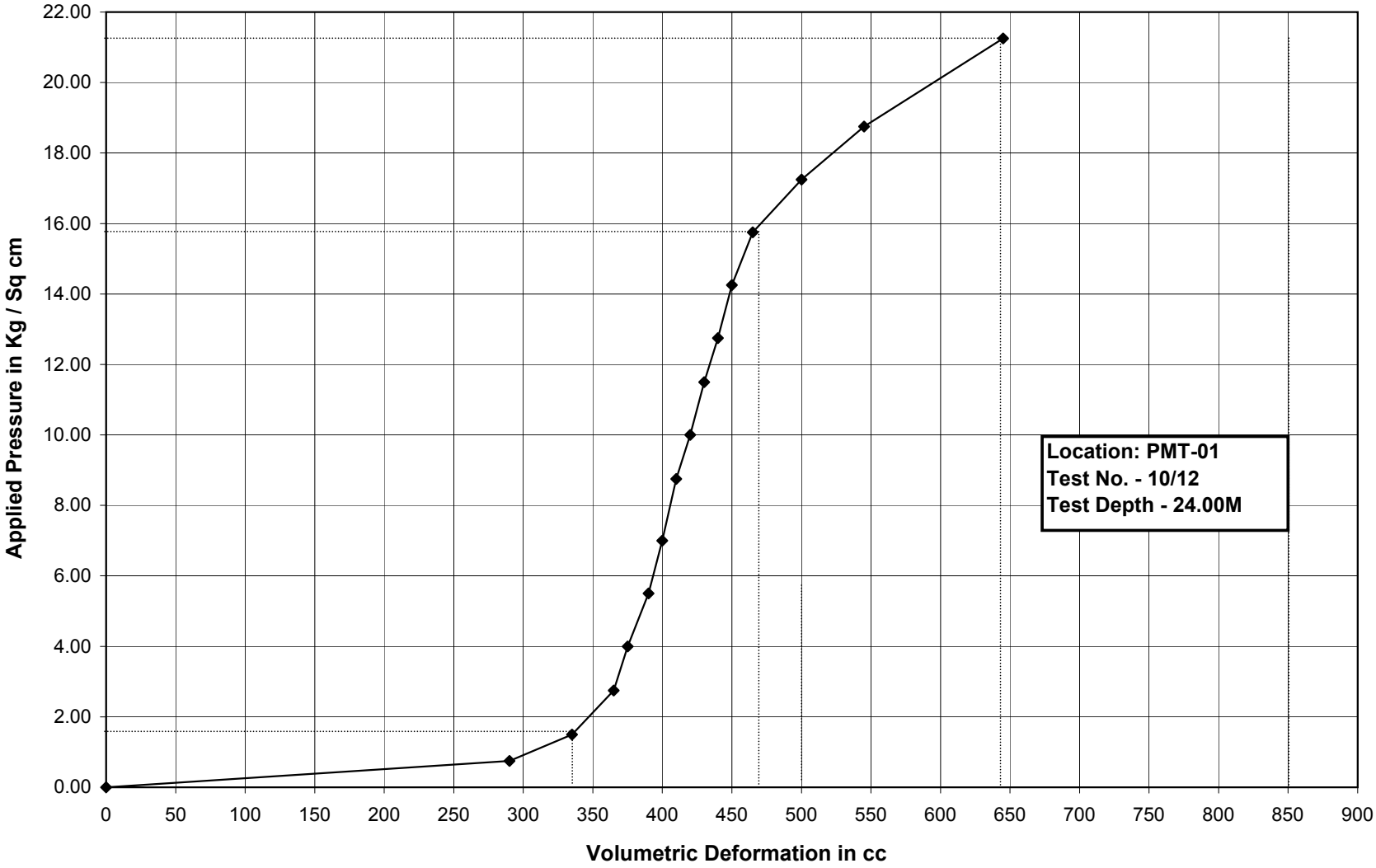


Fig. 15: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

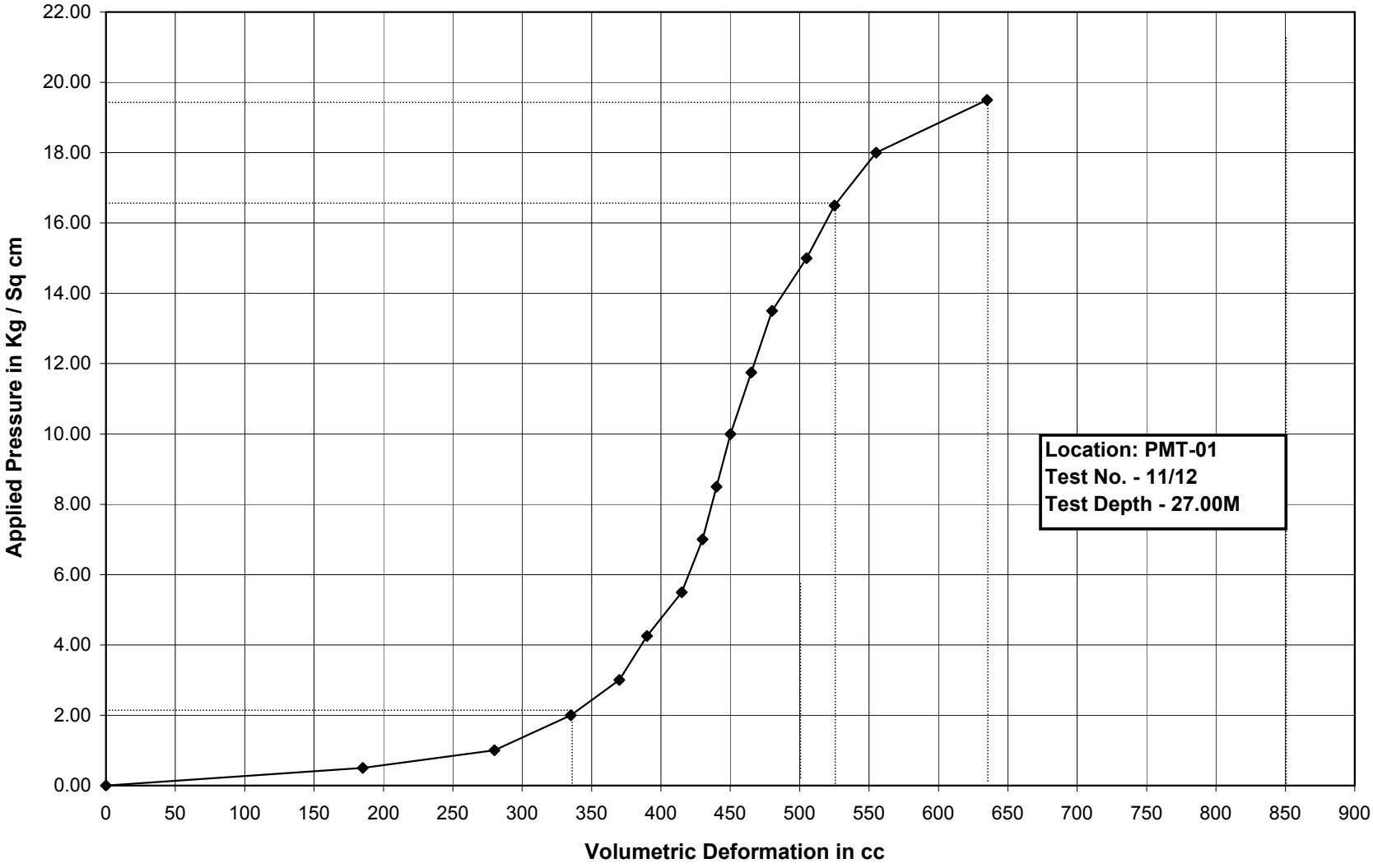


Fig. 16: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

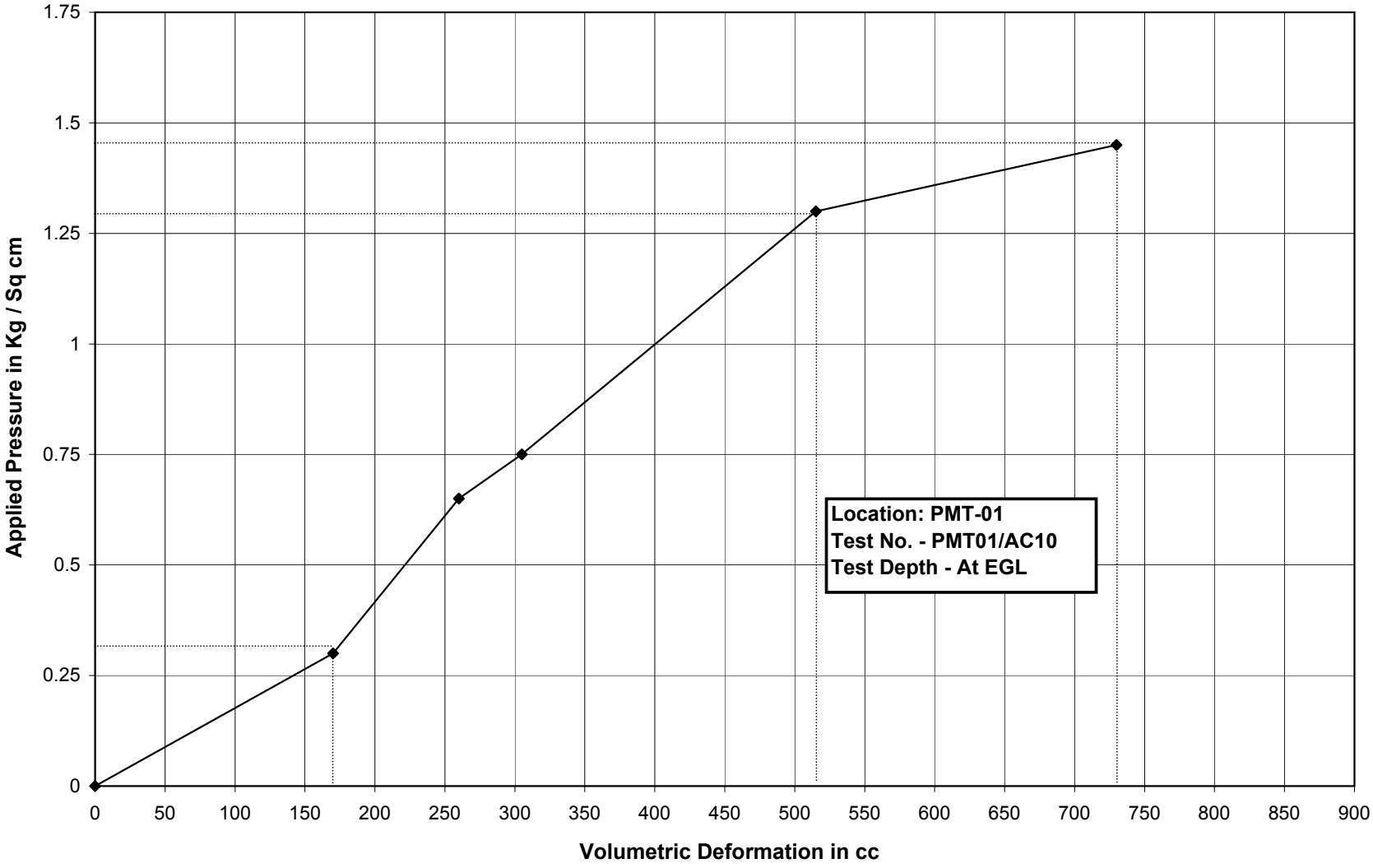


Fig. 17: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

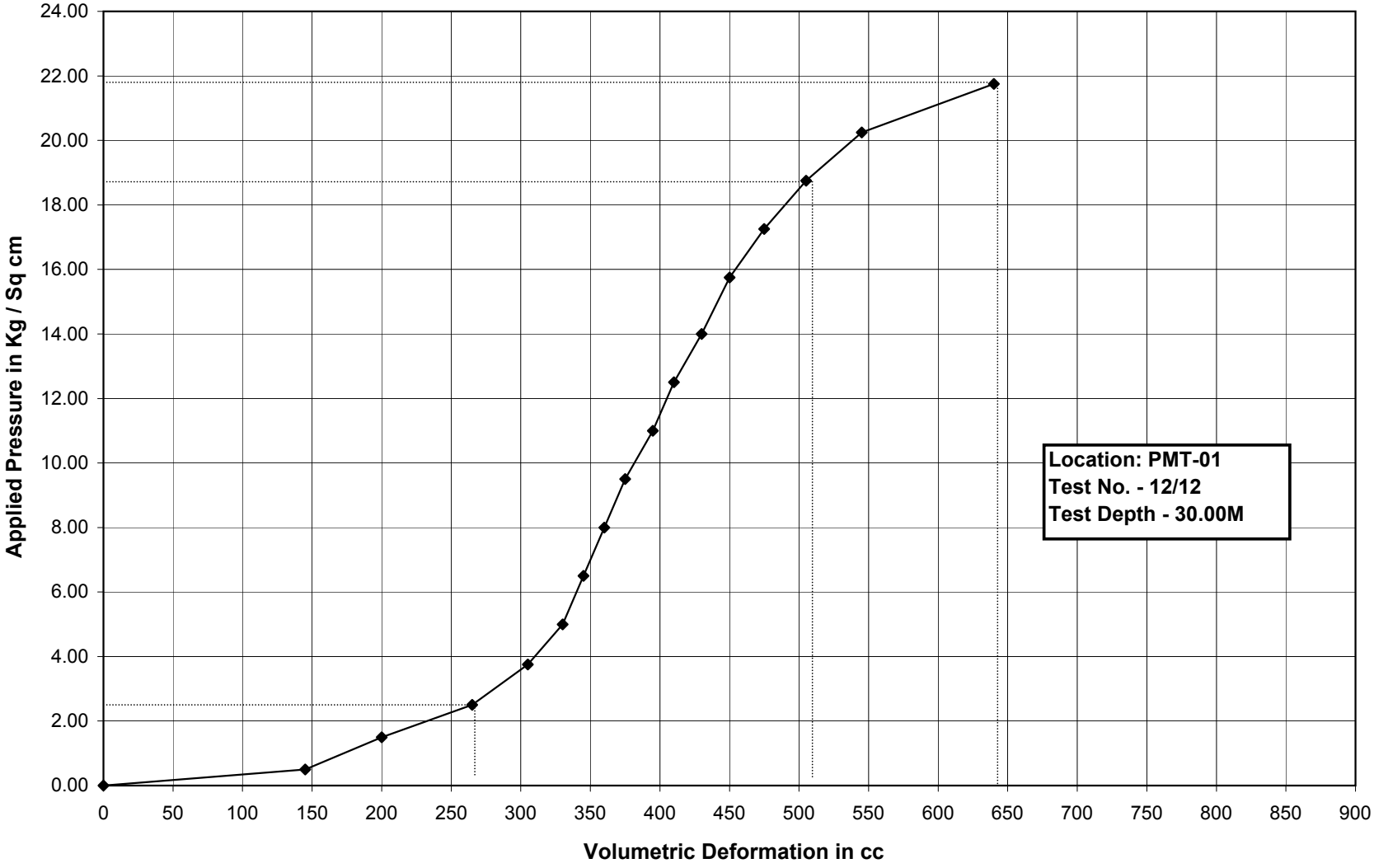


Fig. 18: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

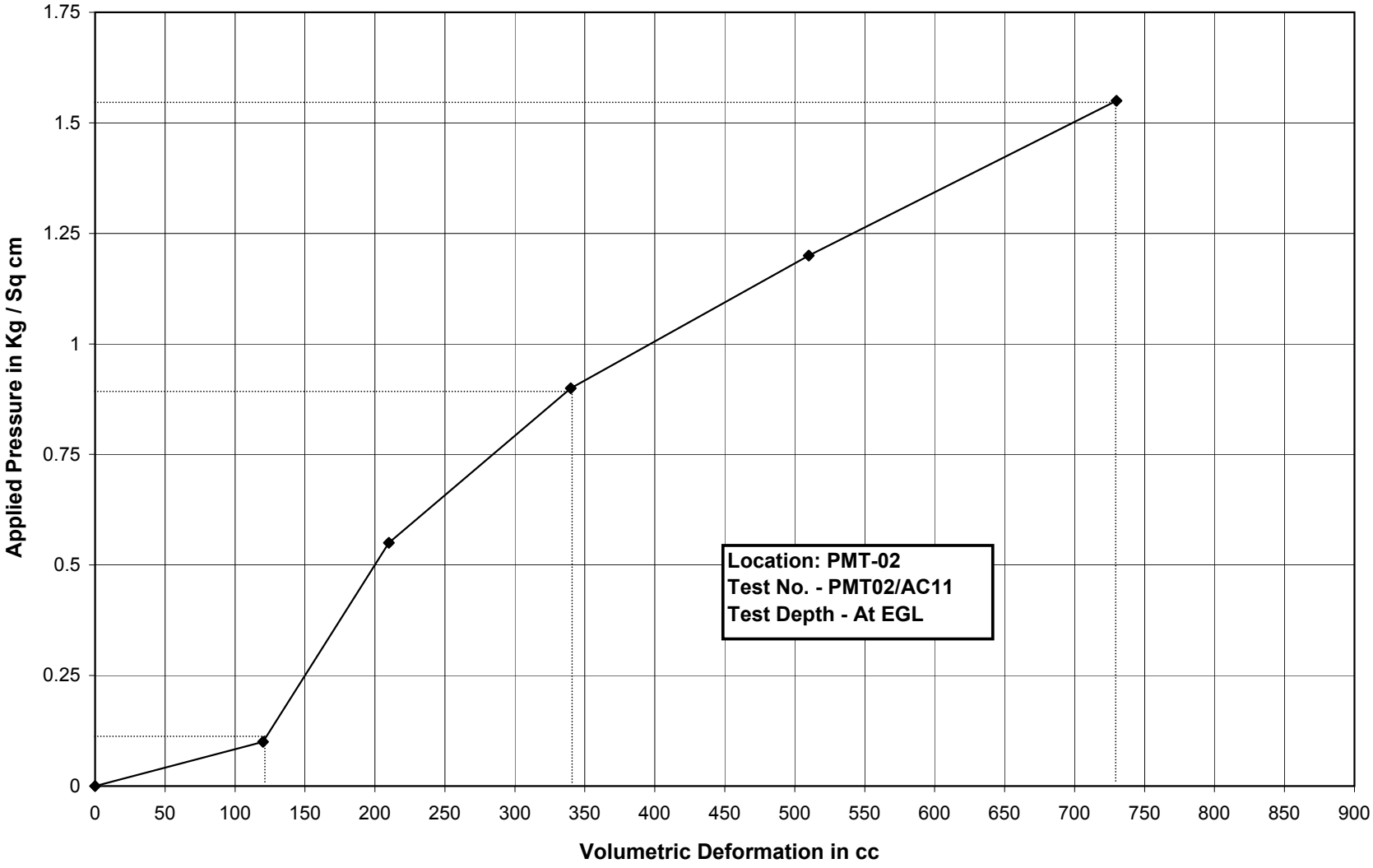


Fig. 19: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

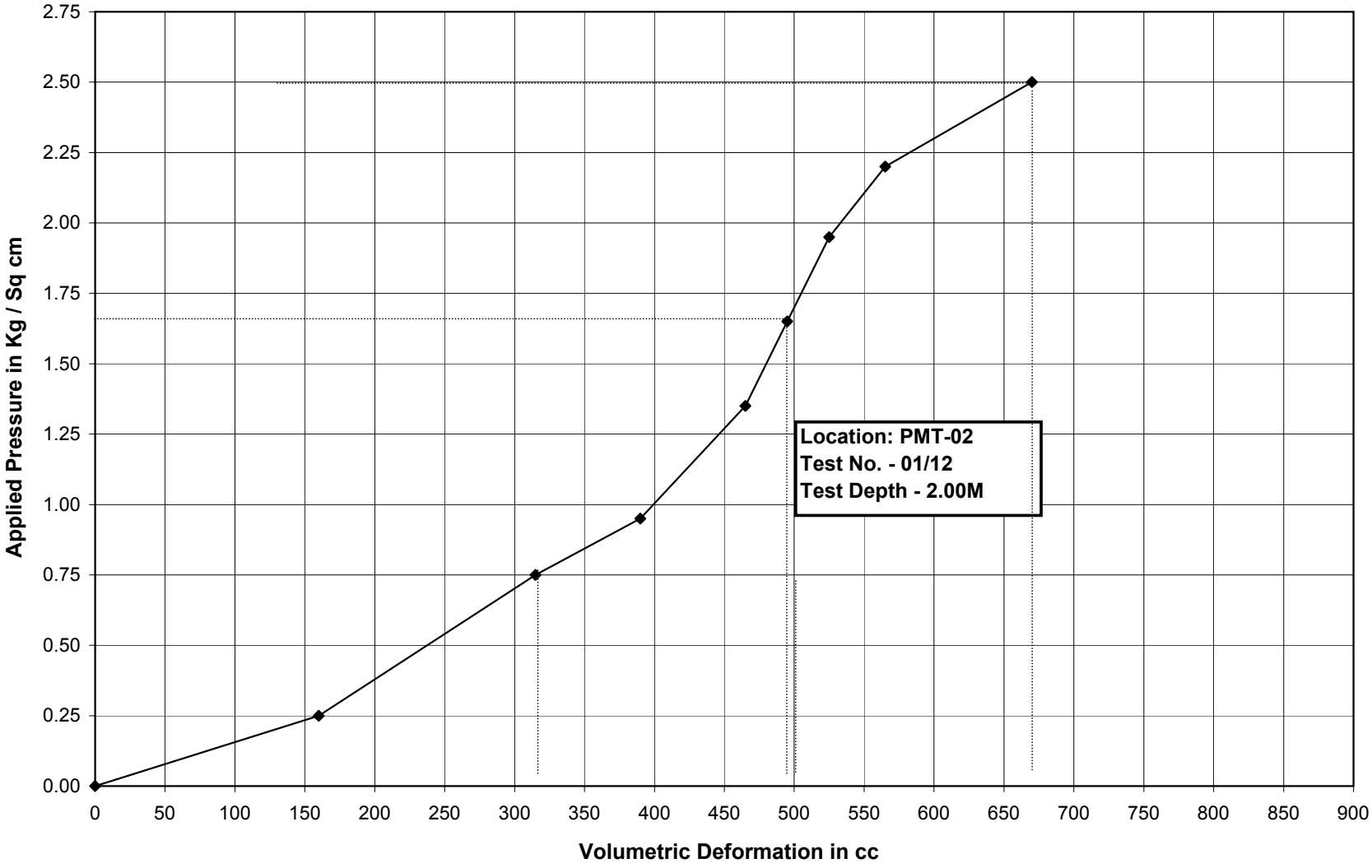


Fig. 20: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

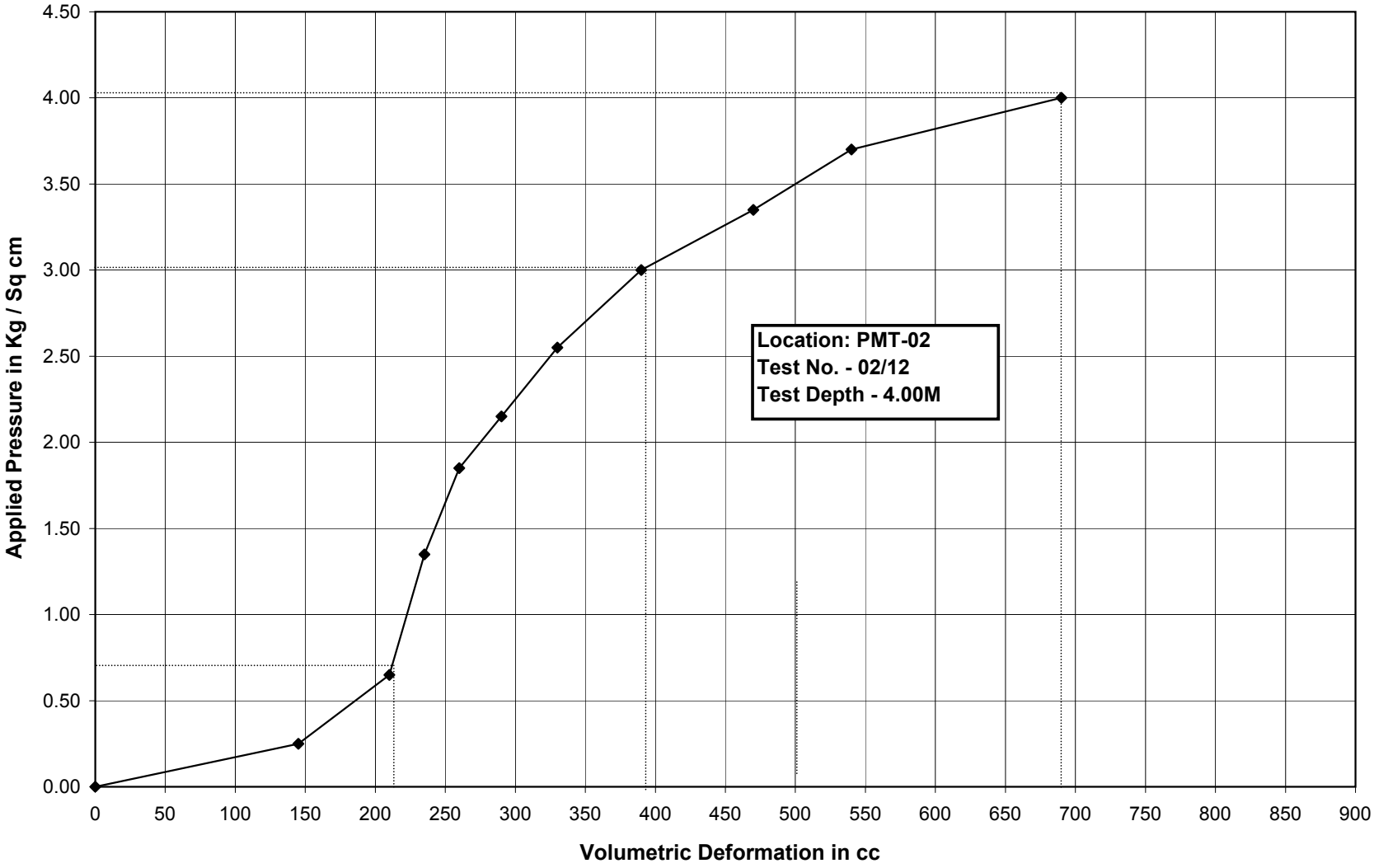


Fig. 21: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

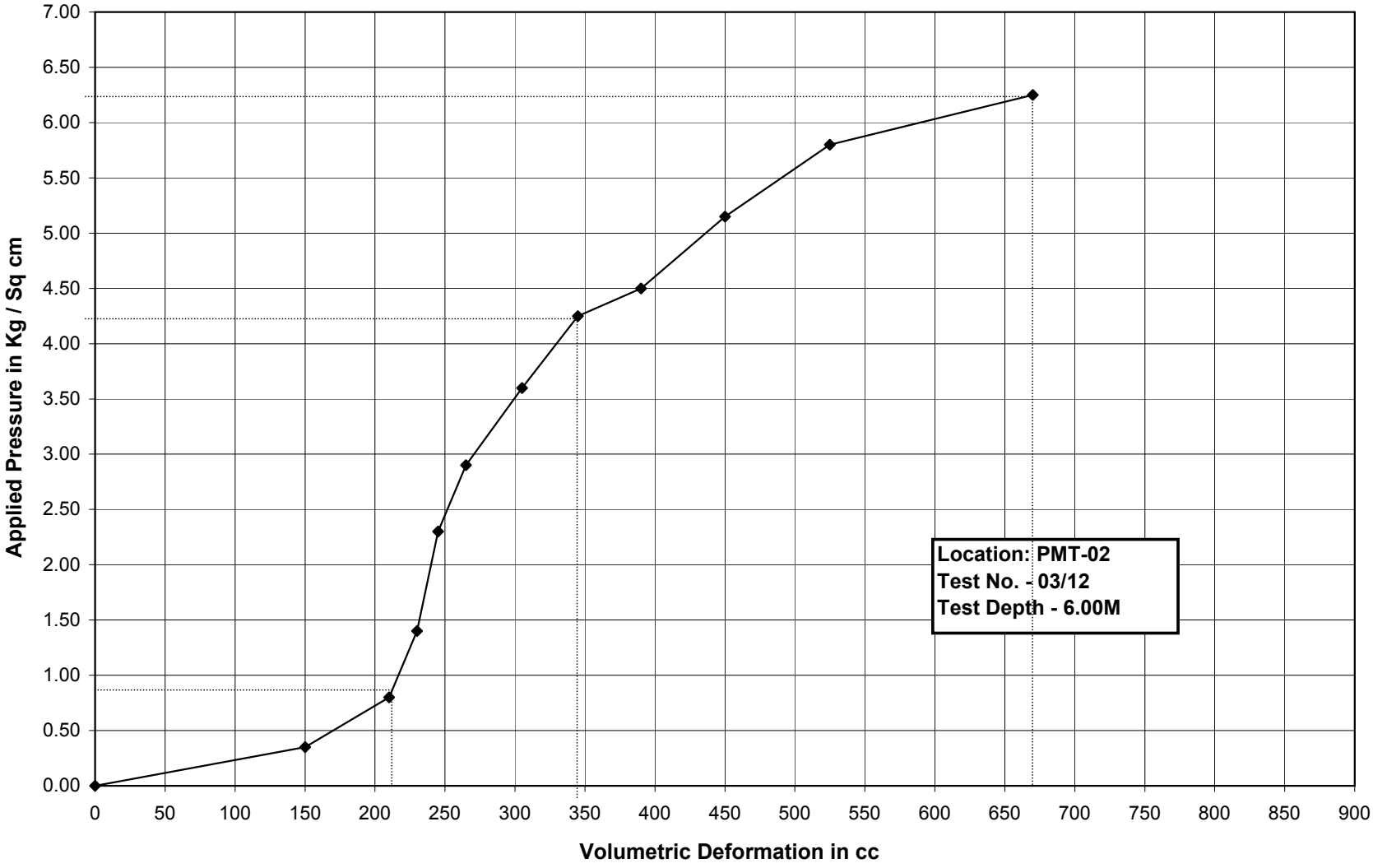


Fig. 22: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

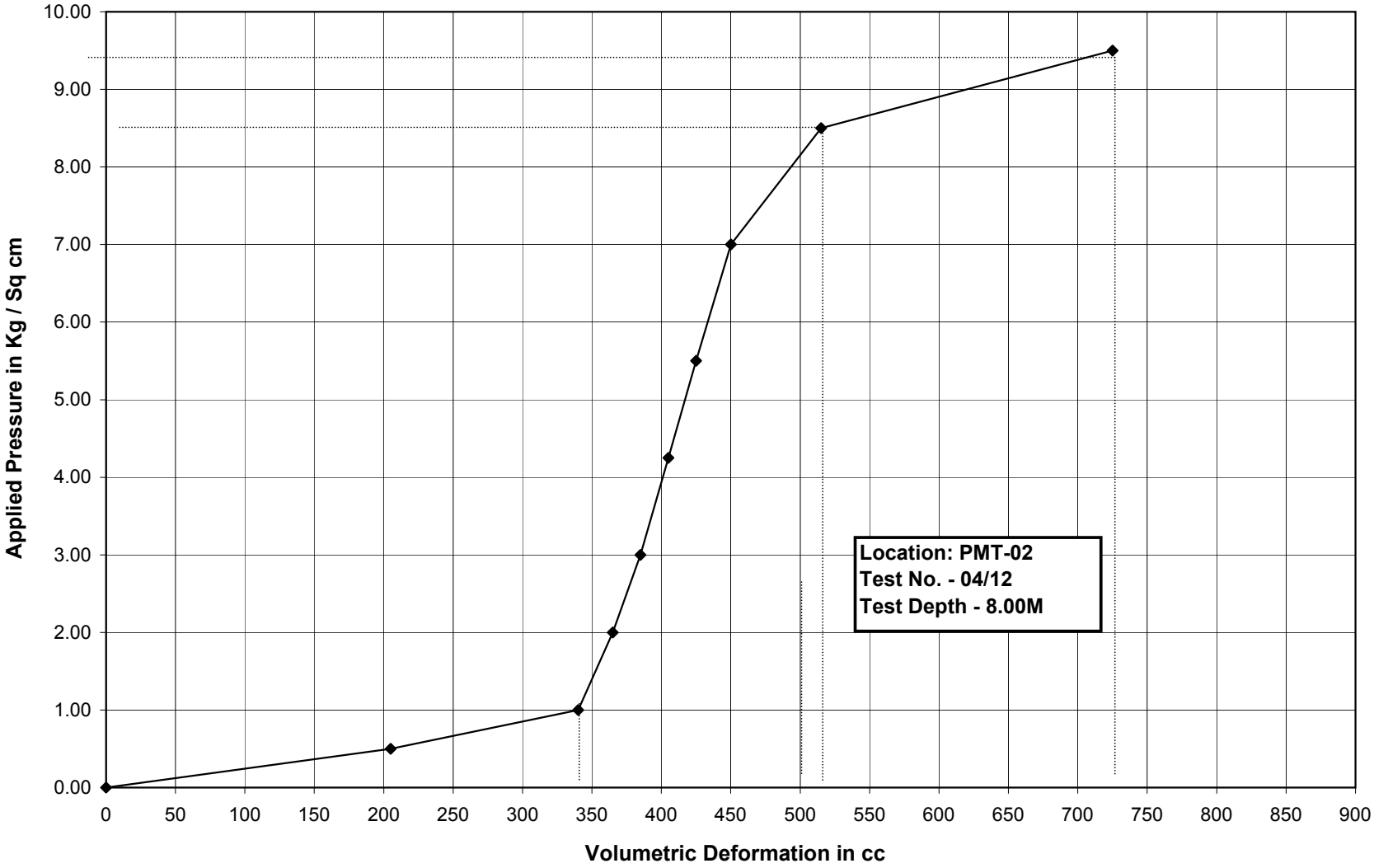


Fig. 23: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

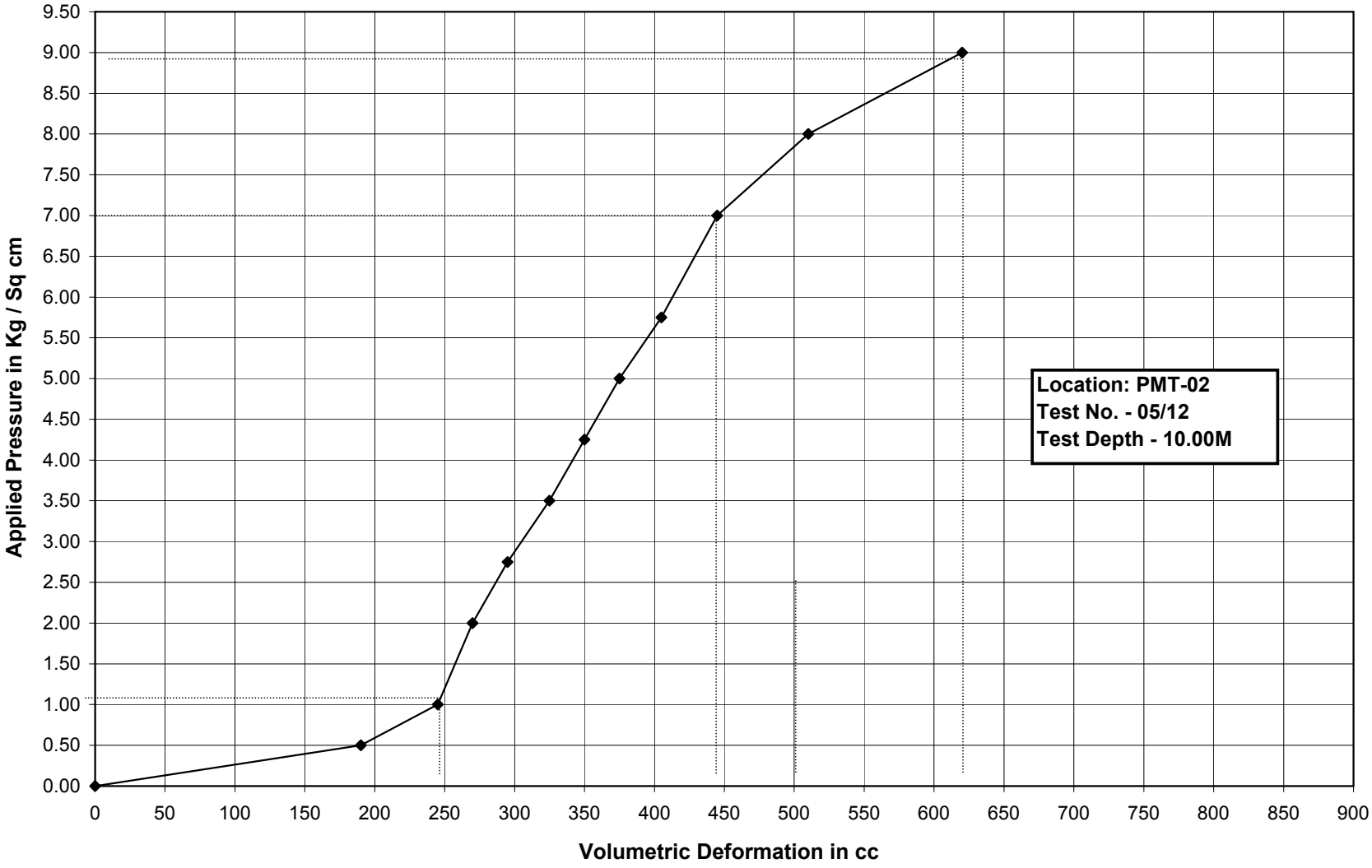


Fig. 24: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

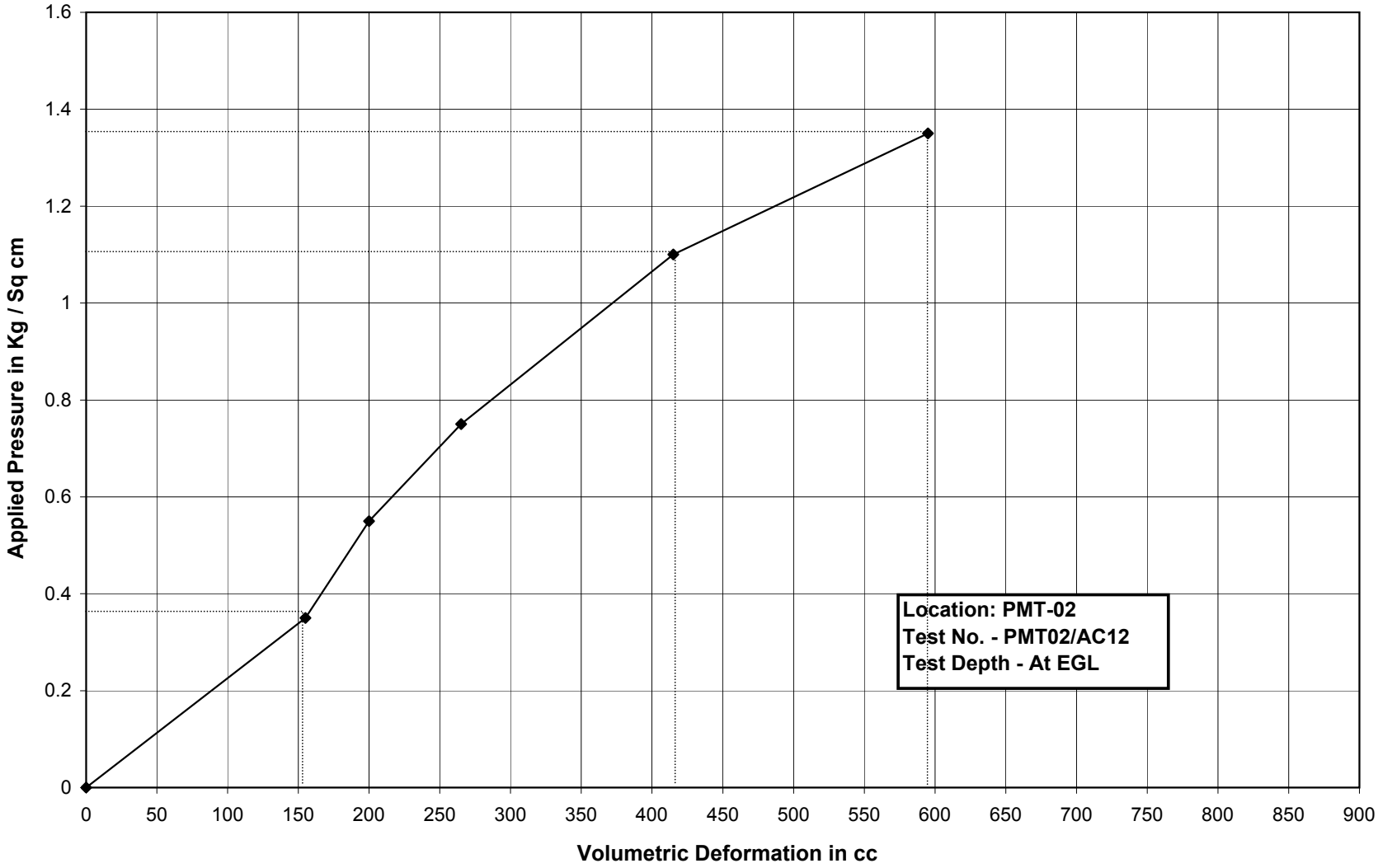


Fig. 25: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

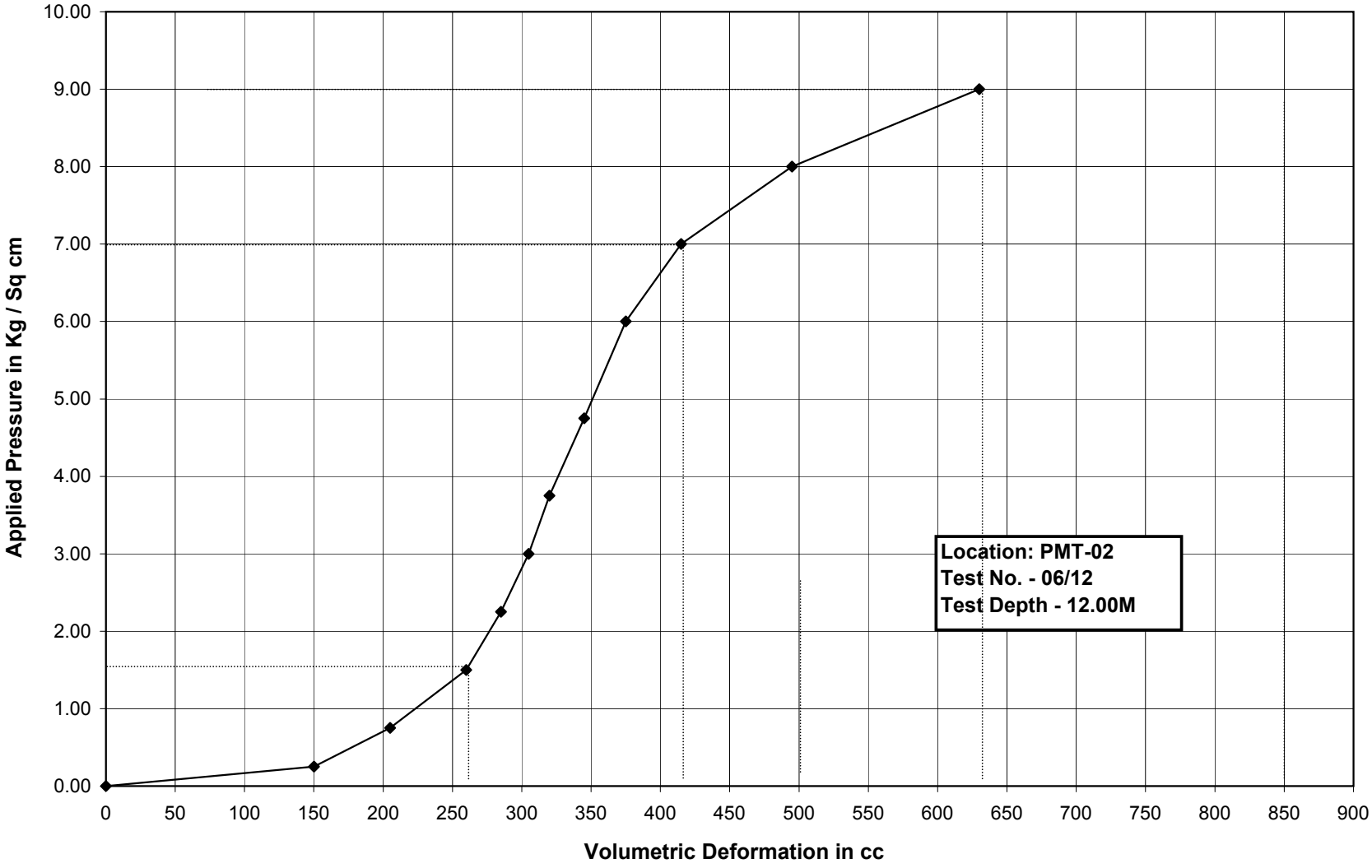


Fig. 26: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

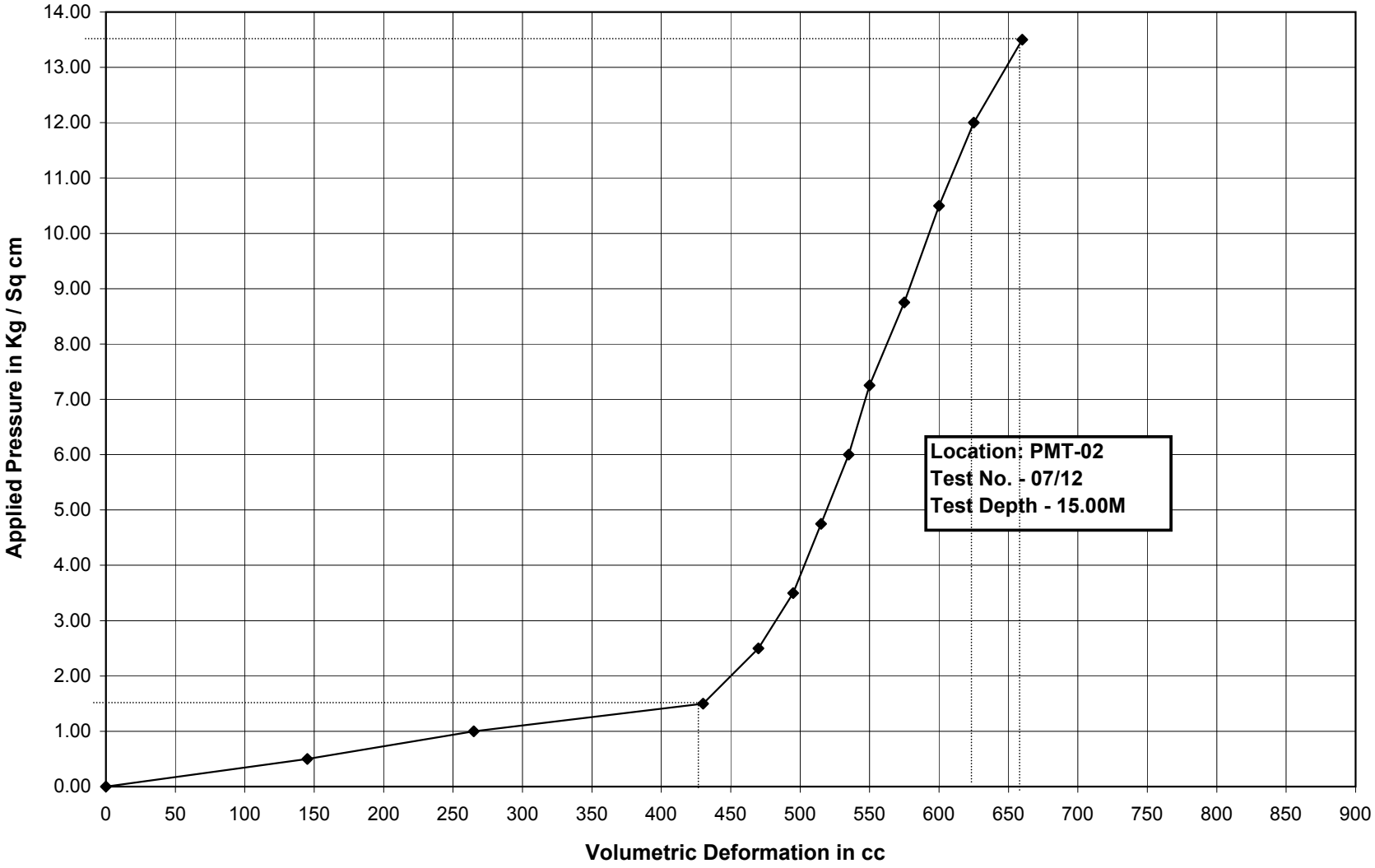


Fig. 27: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

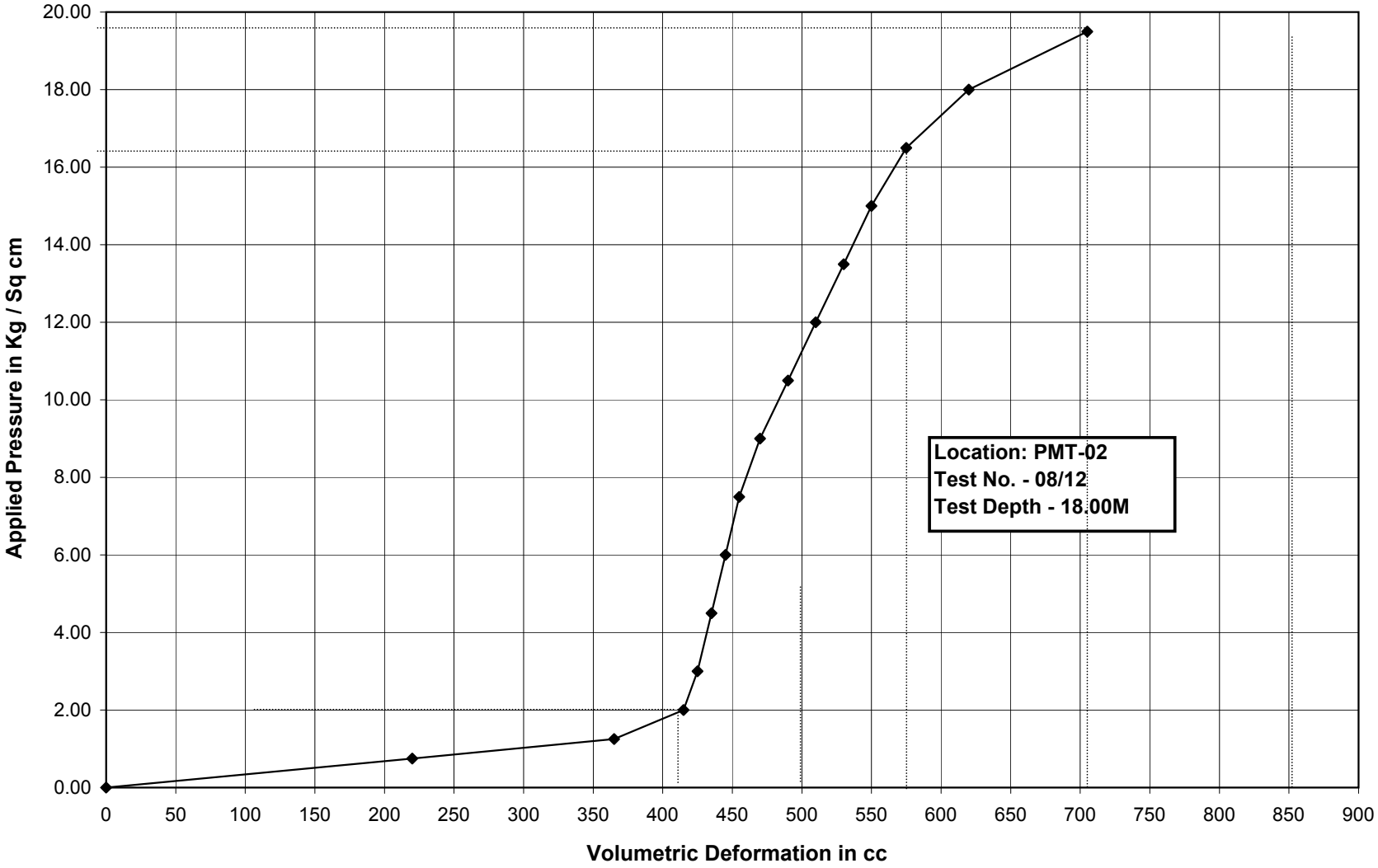


Fig. 28: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

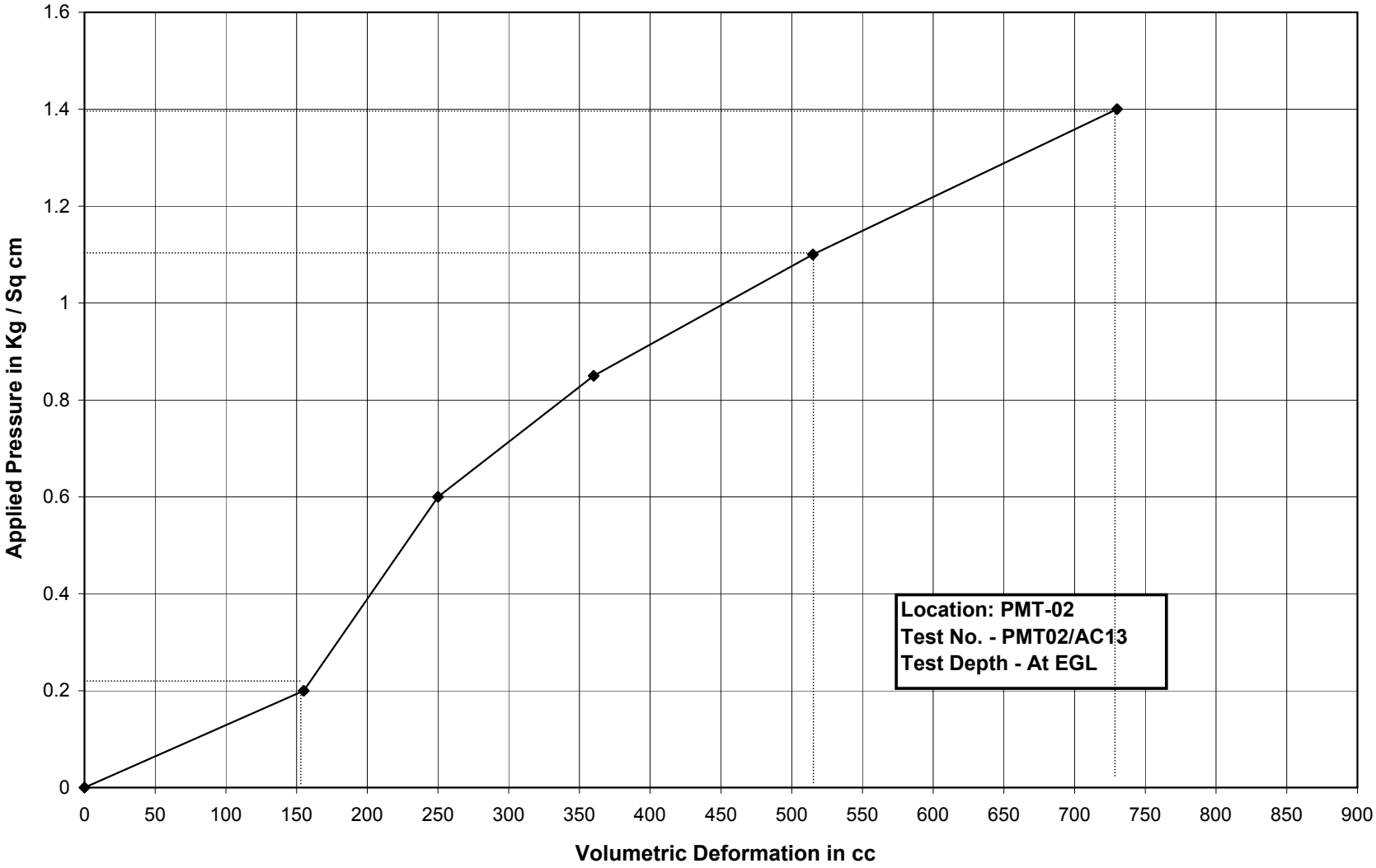


Fig. 29: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

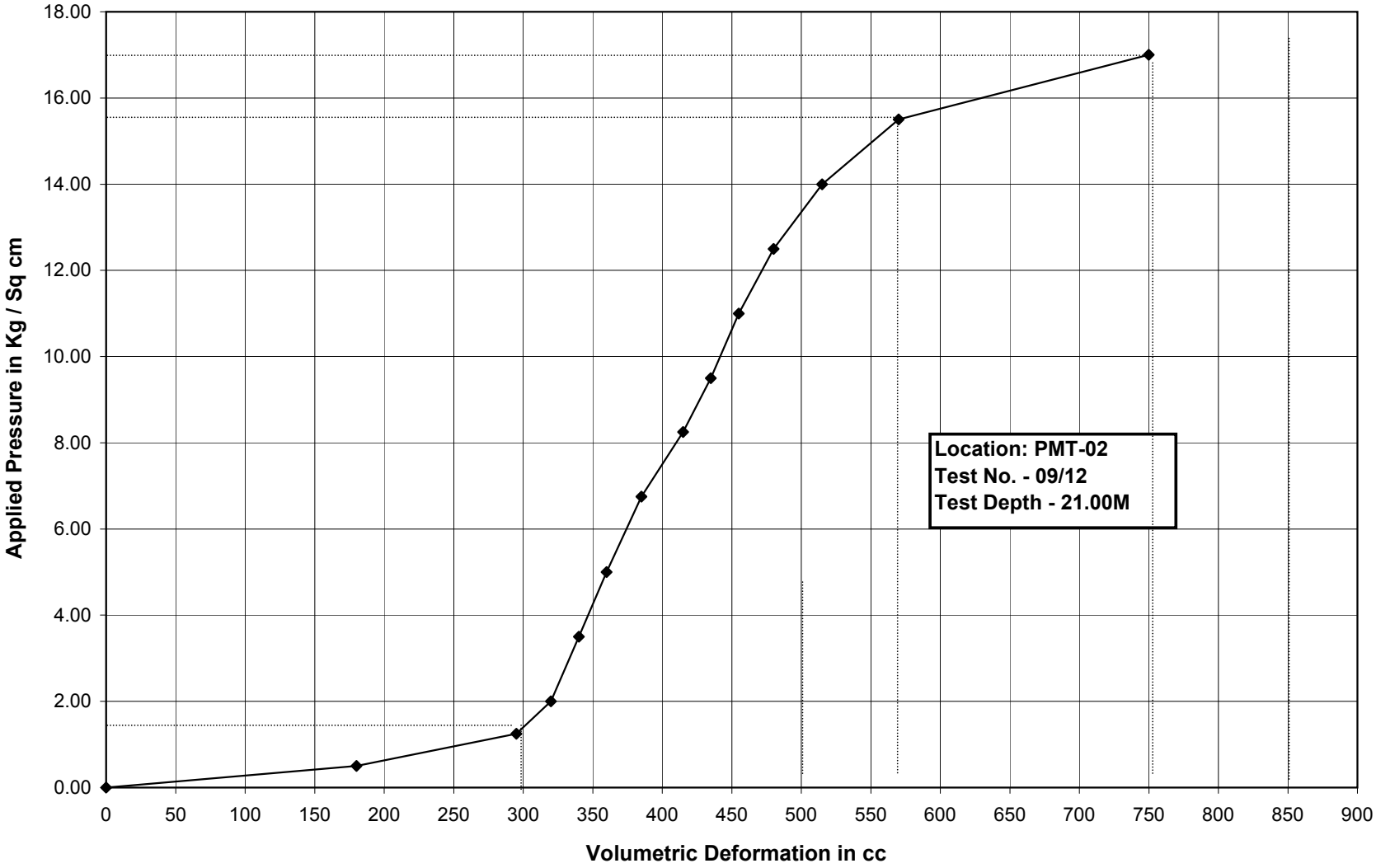


Fig. 30: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

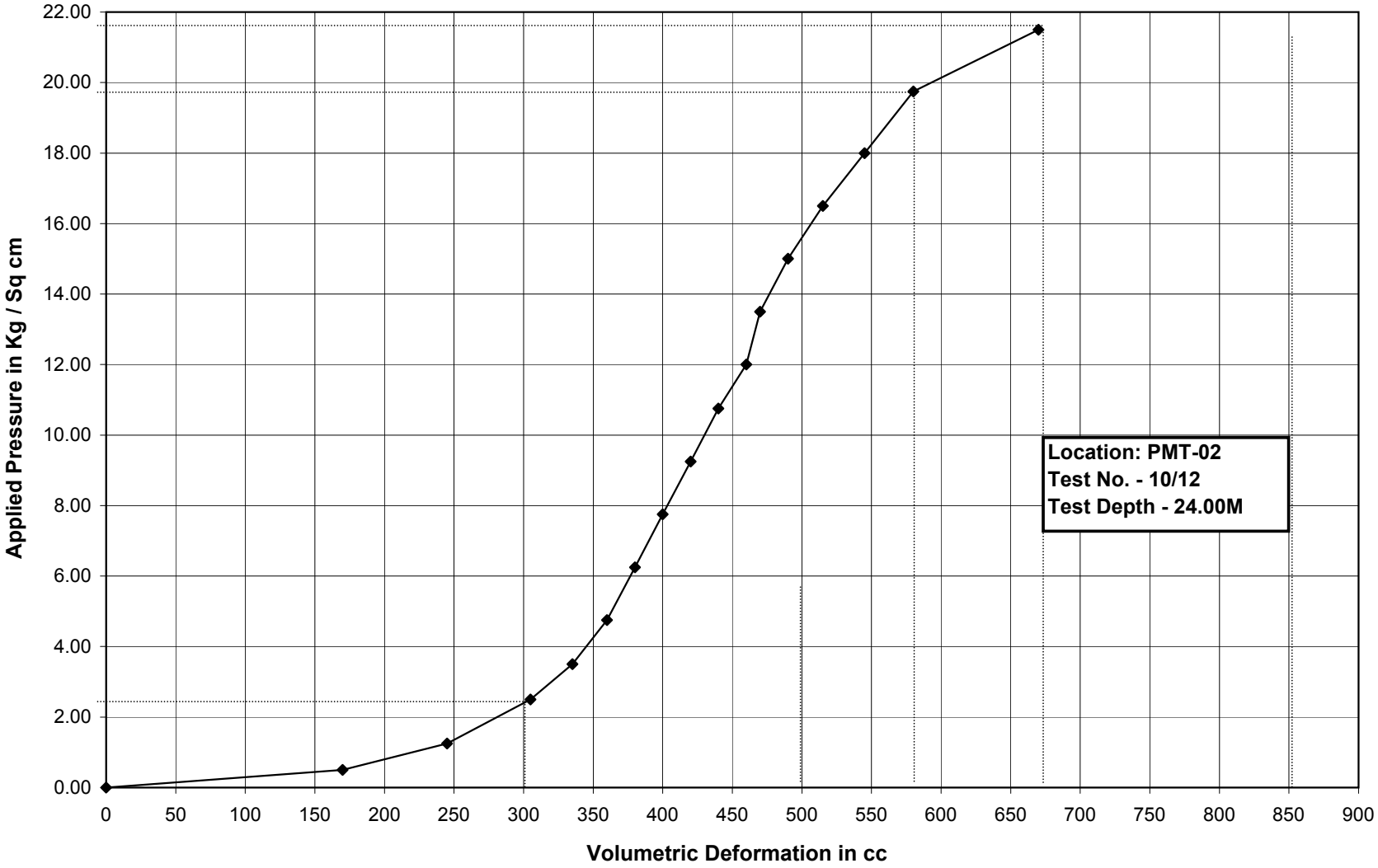


Fig. 31: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

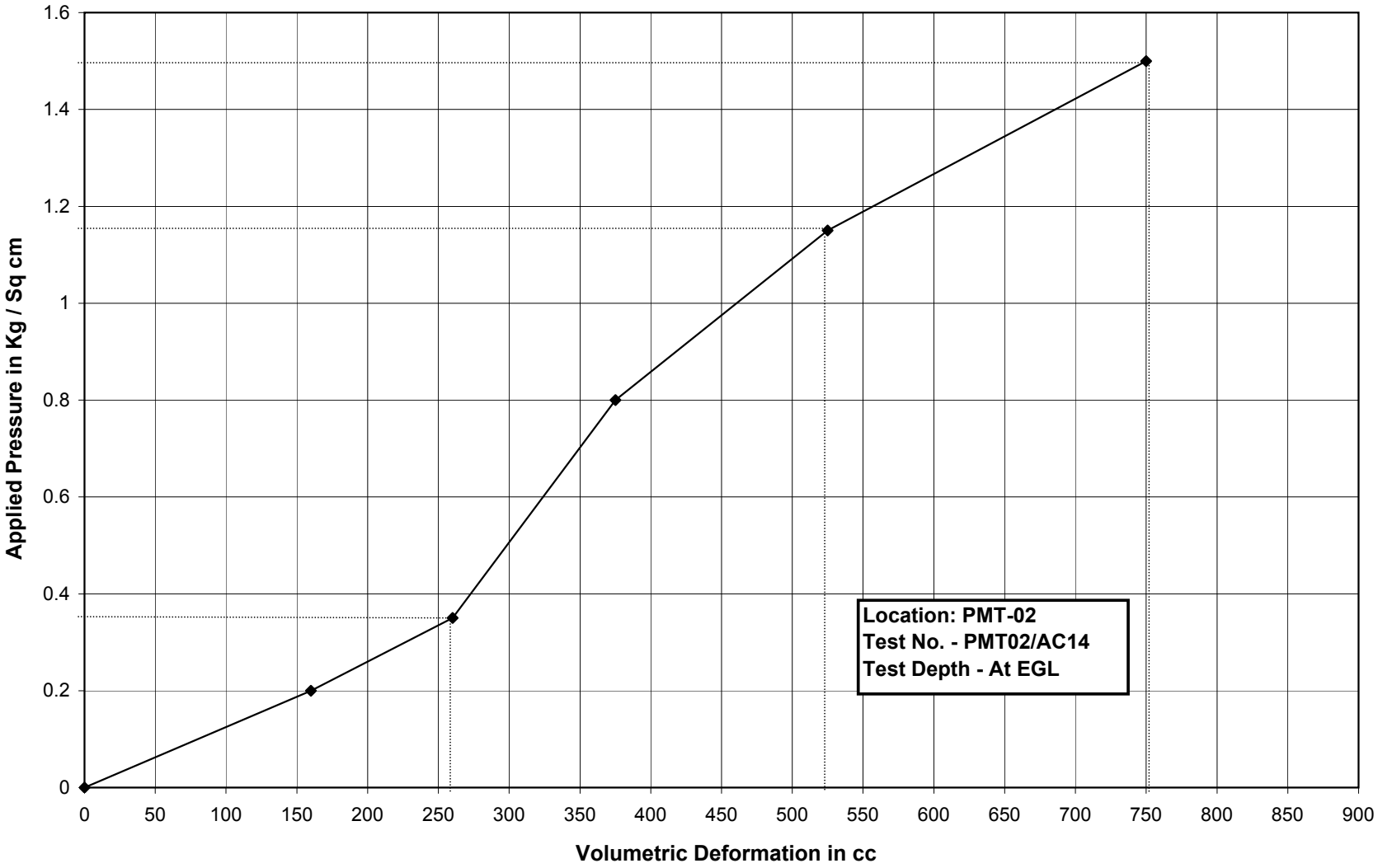


Fig. 32: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

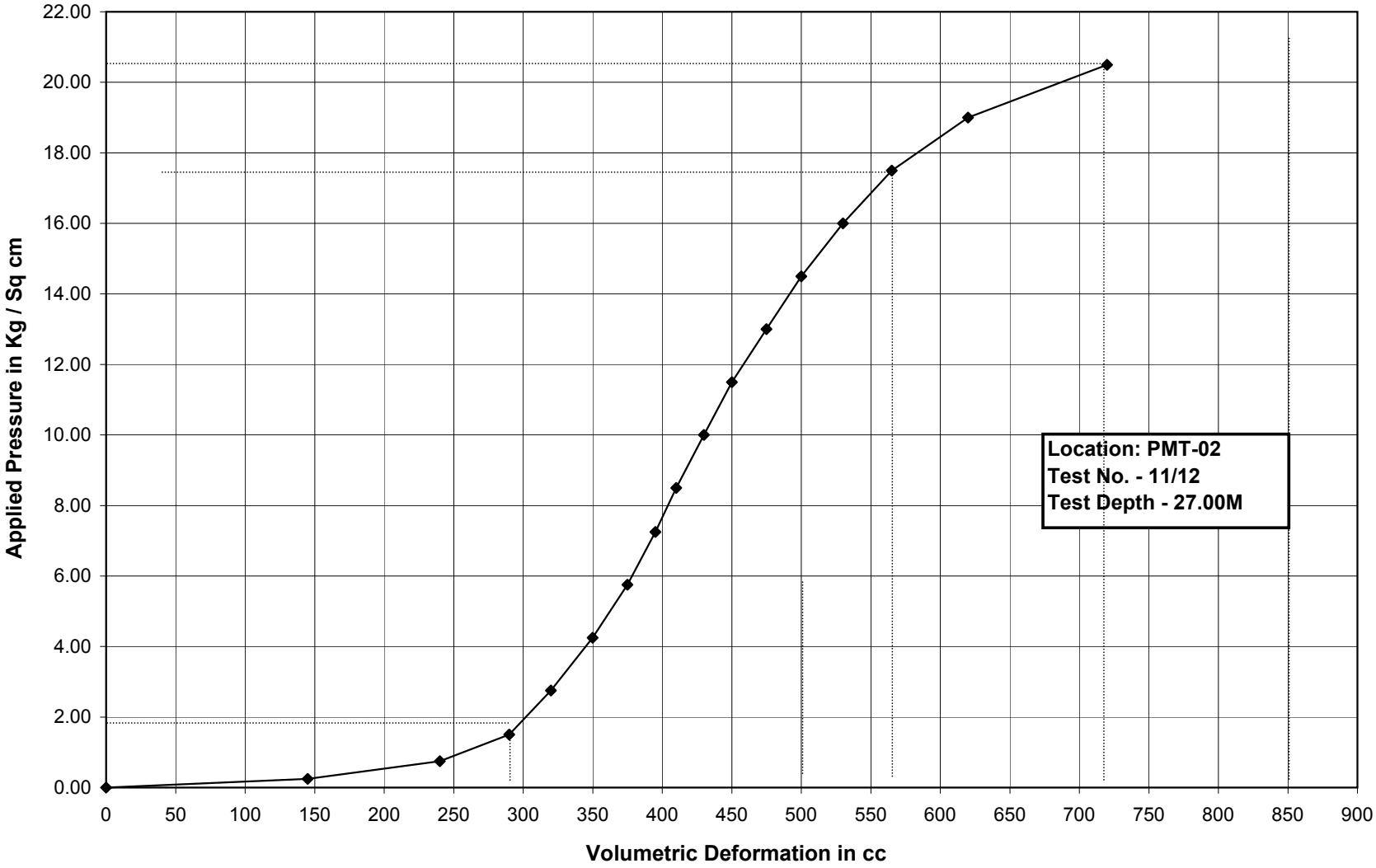


Fig. 33: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

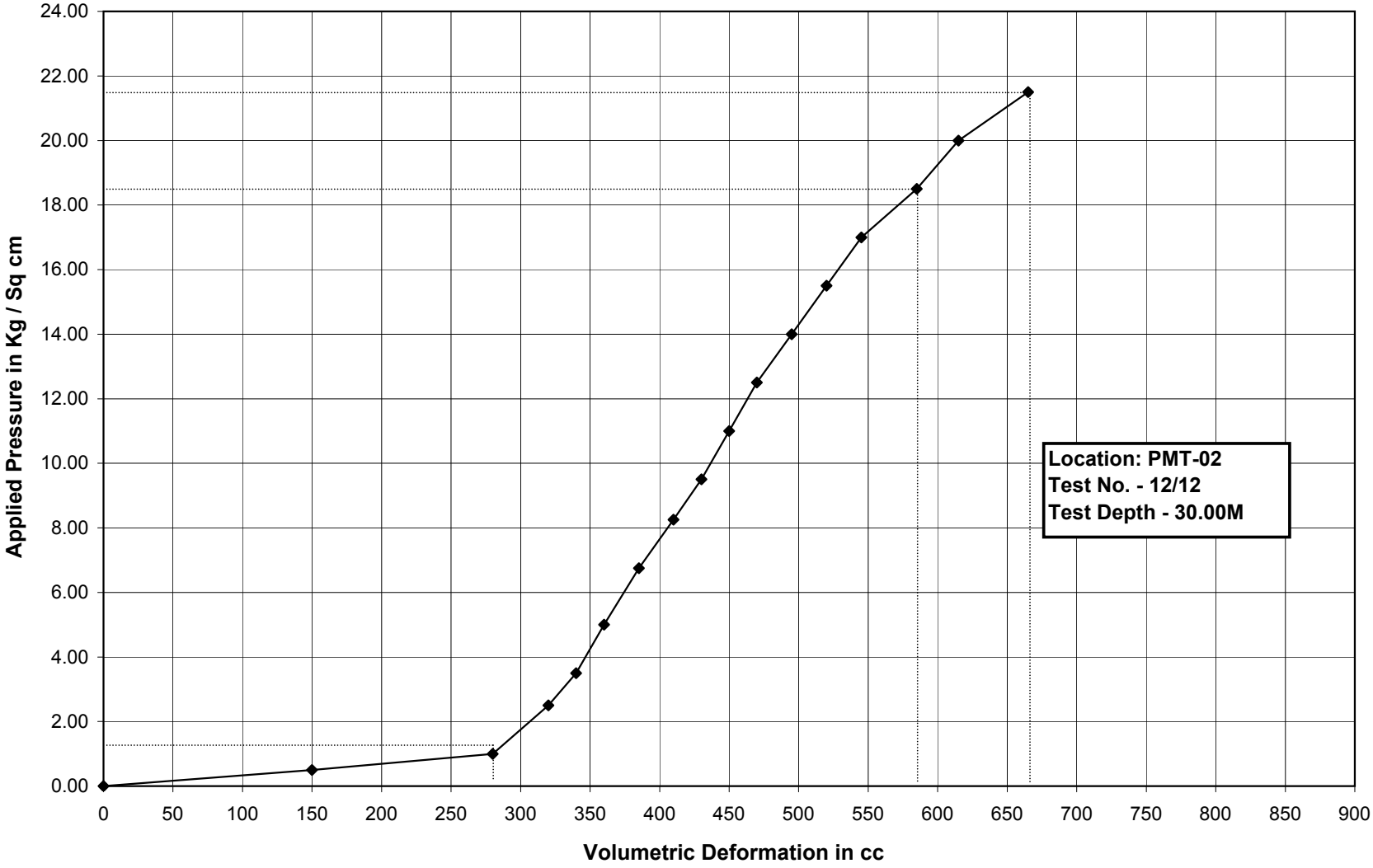


Fig. 34: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

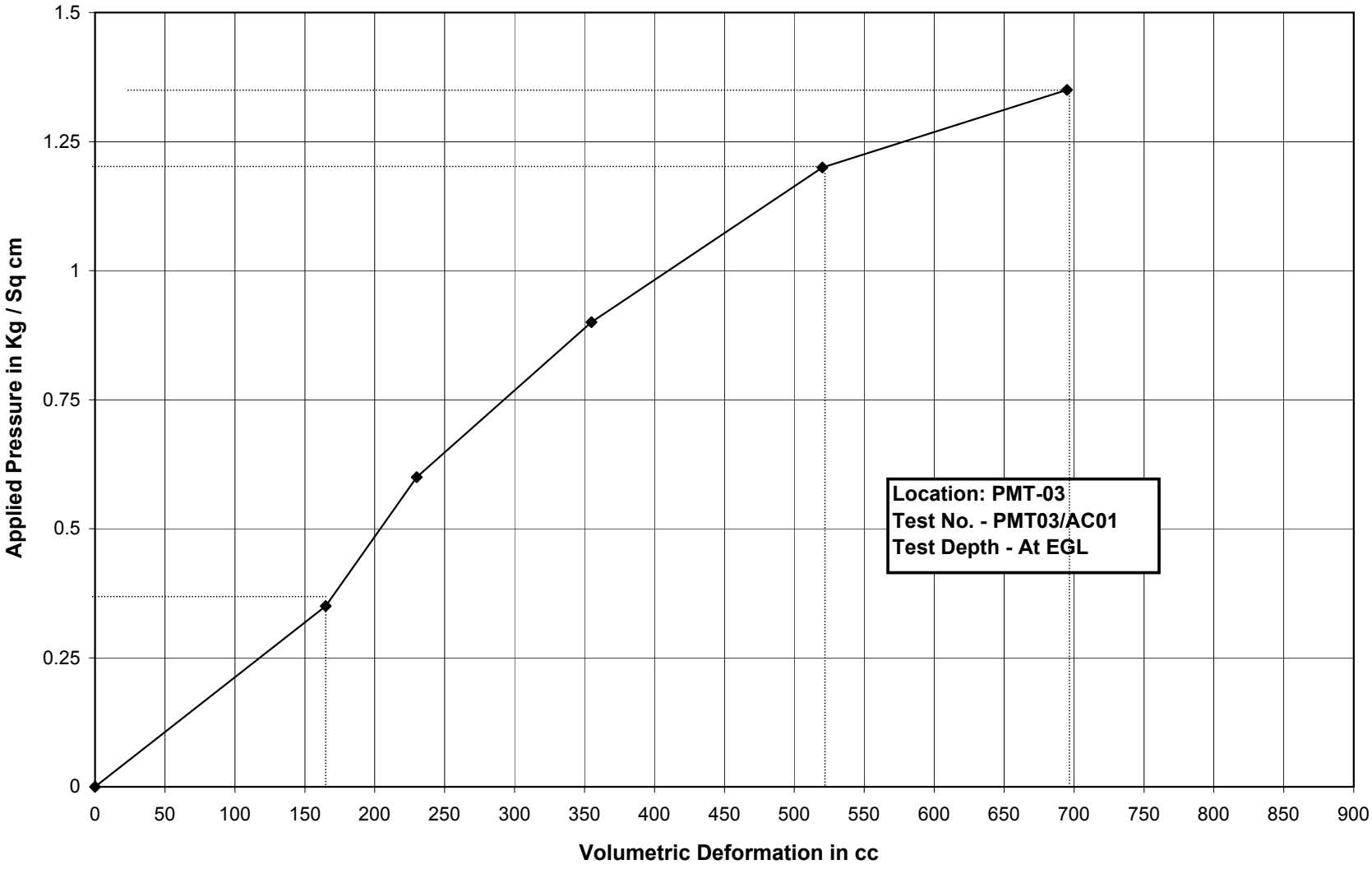


Fig. 35: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

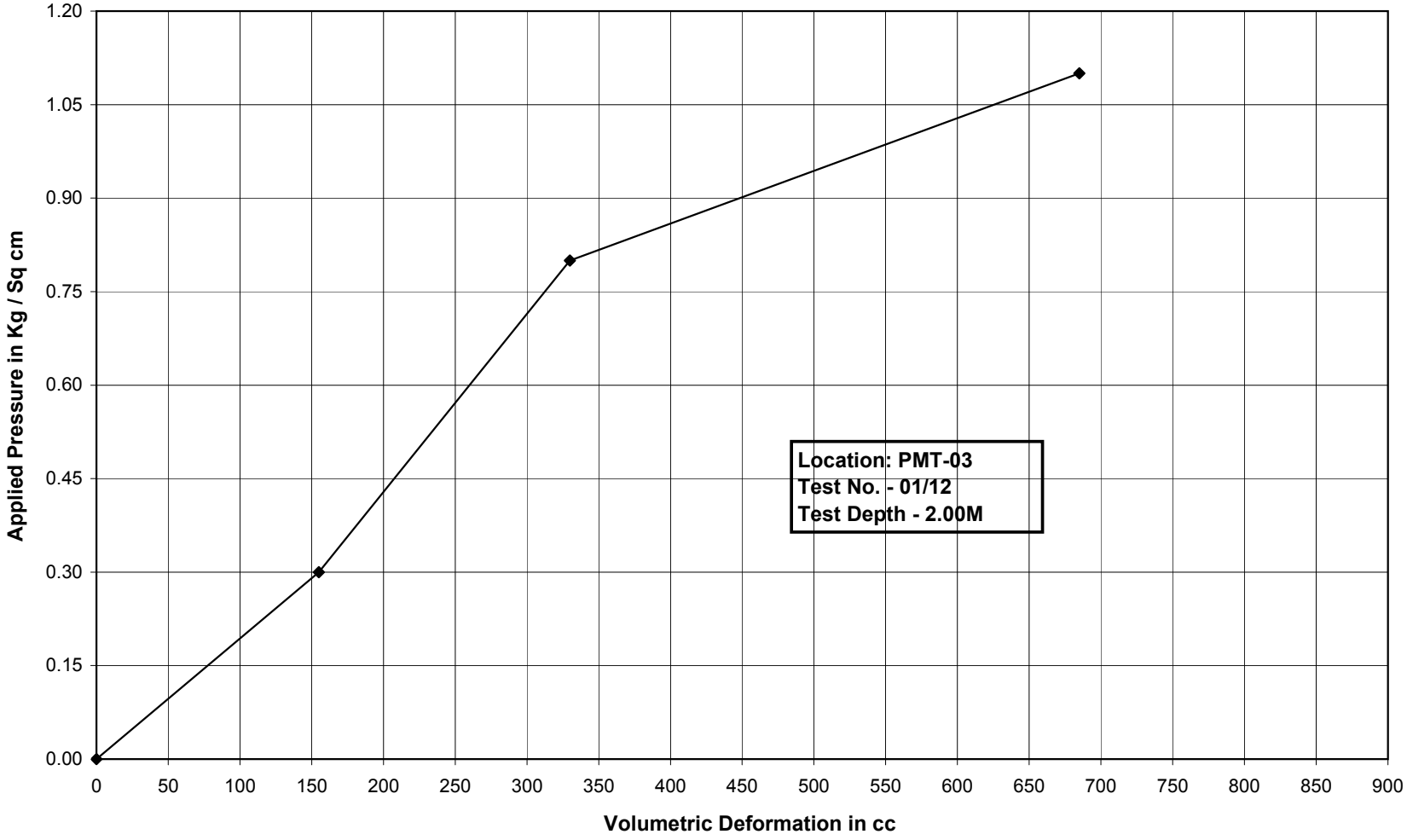


Fig. 36: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

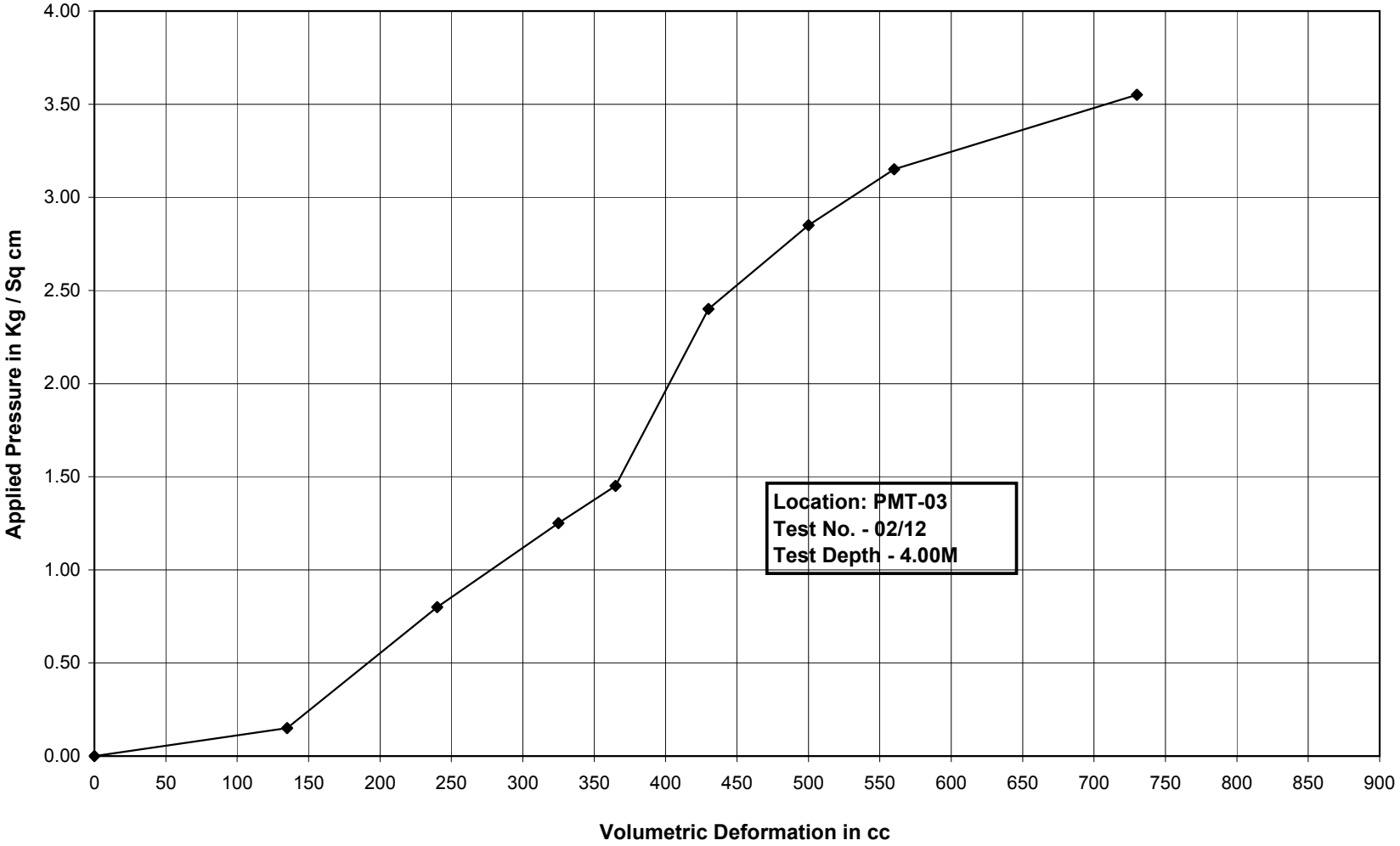


Fig. 37: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

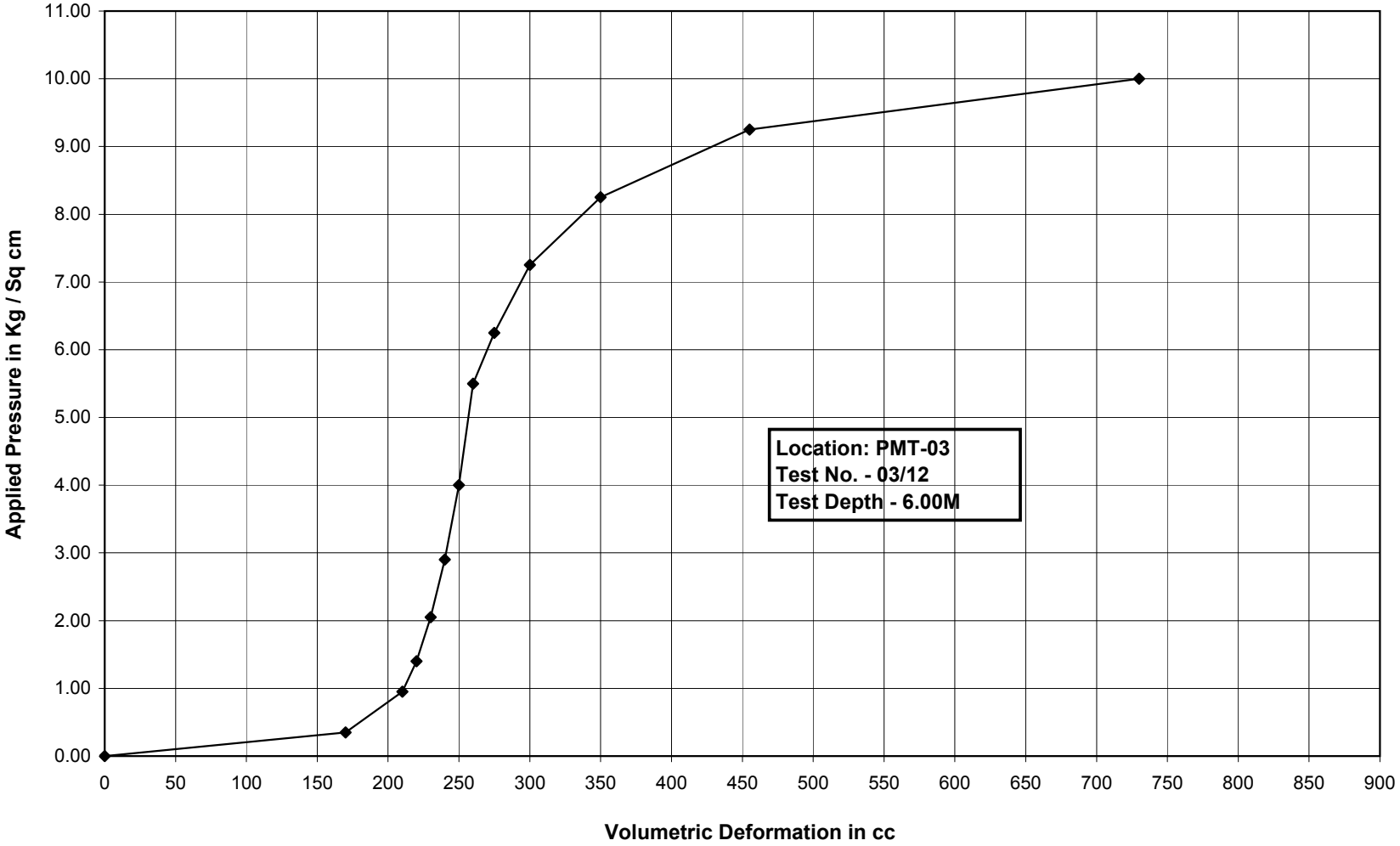


Fig. 38: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

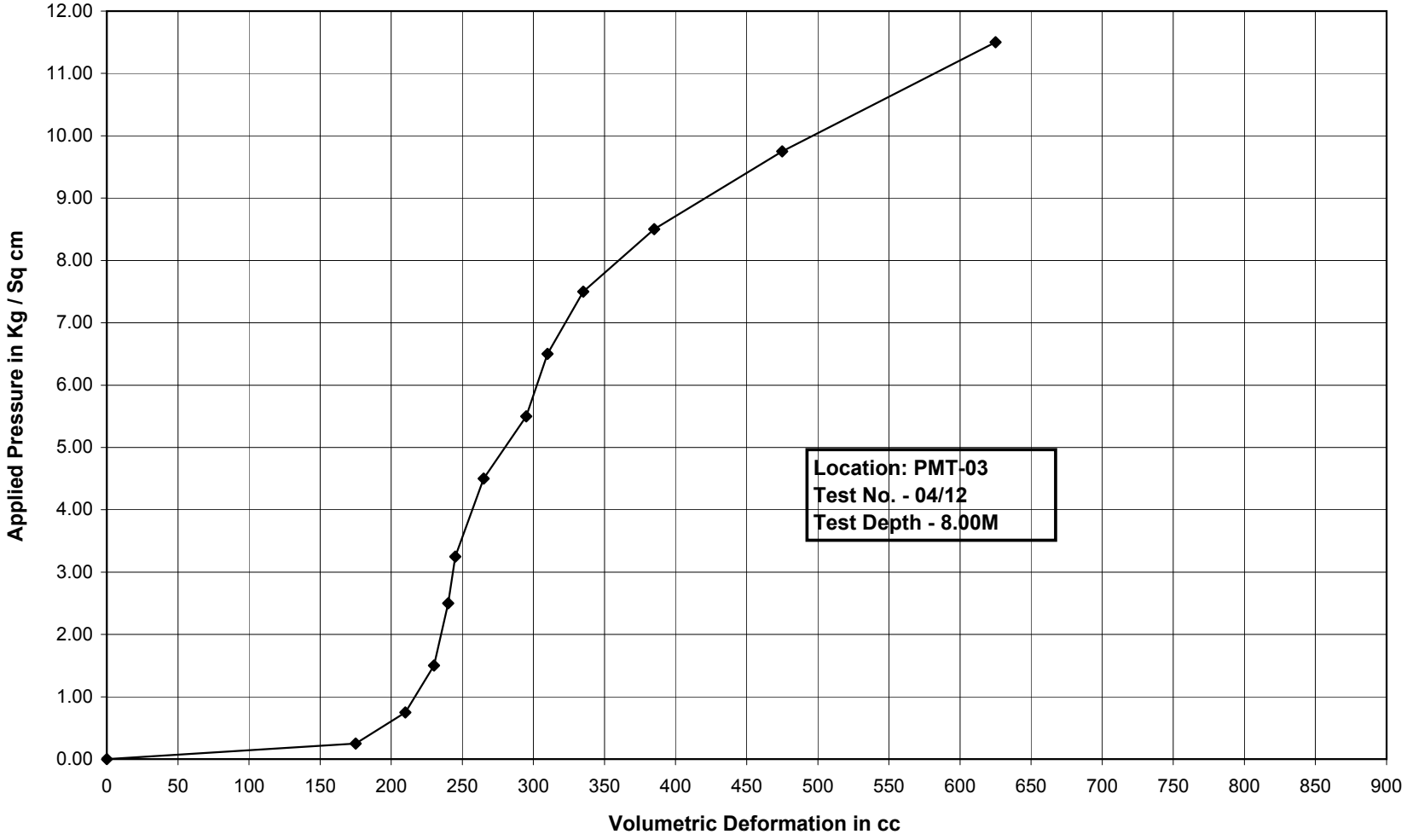


Fig. 39: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

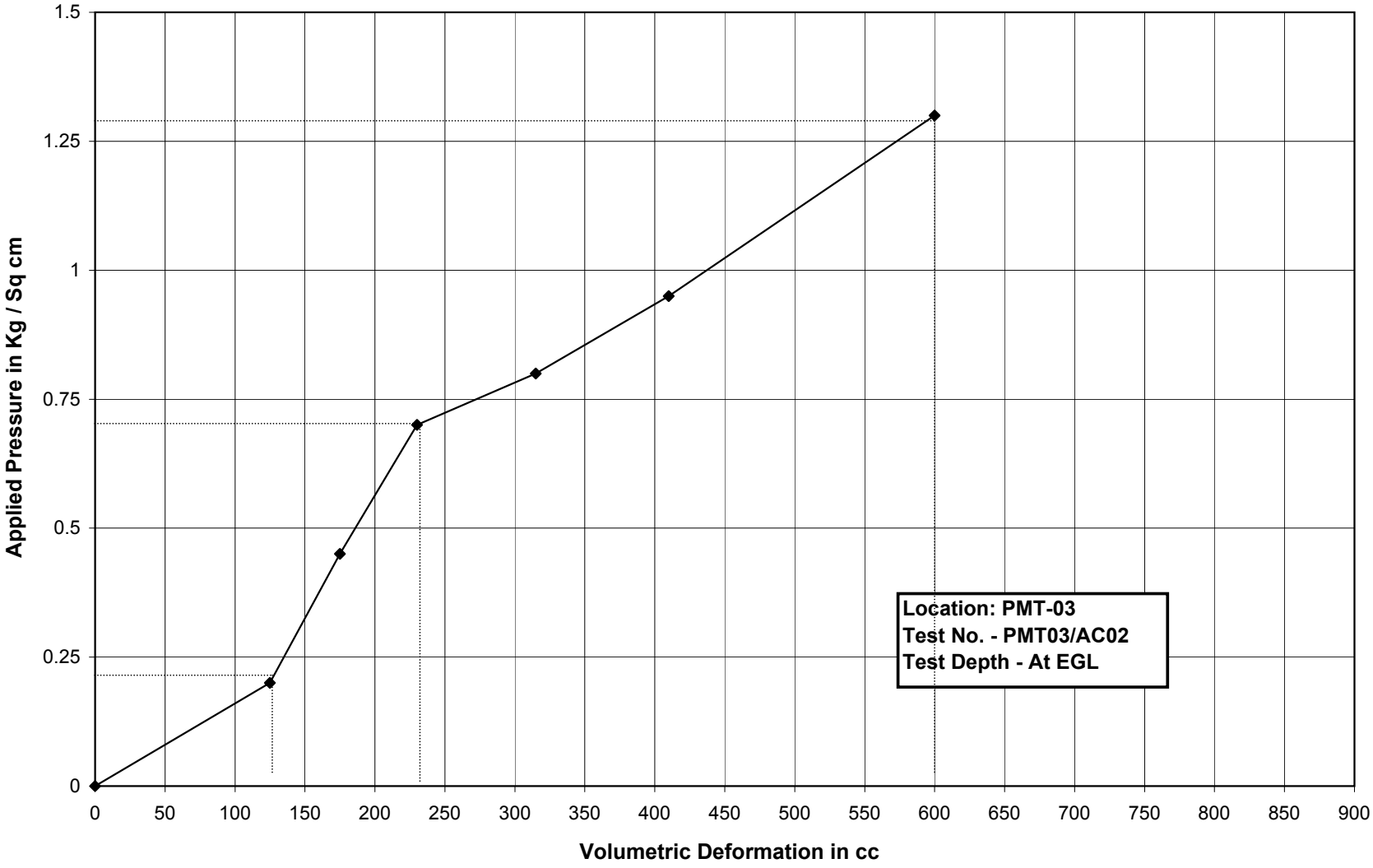

1.5
1.25
1
0.75
0.5
0.25
0
Applied Pressure in Kg / Sq cm
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
Volumetric Deformation in cc
Location: PMT-03
Test No. - PMT03/AC02
Test Depth - At EGL

Fig. 40

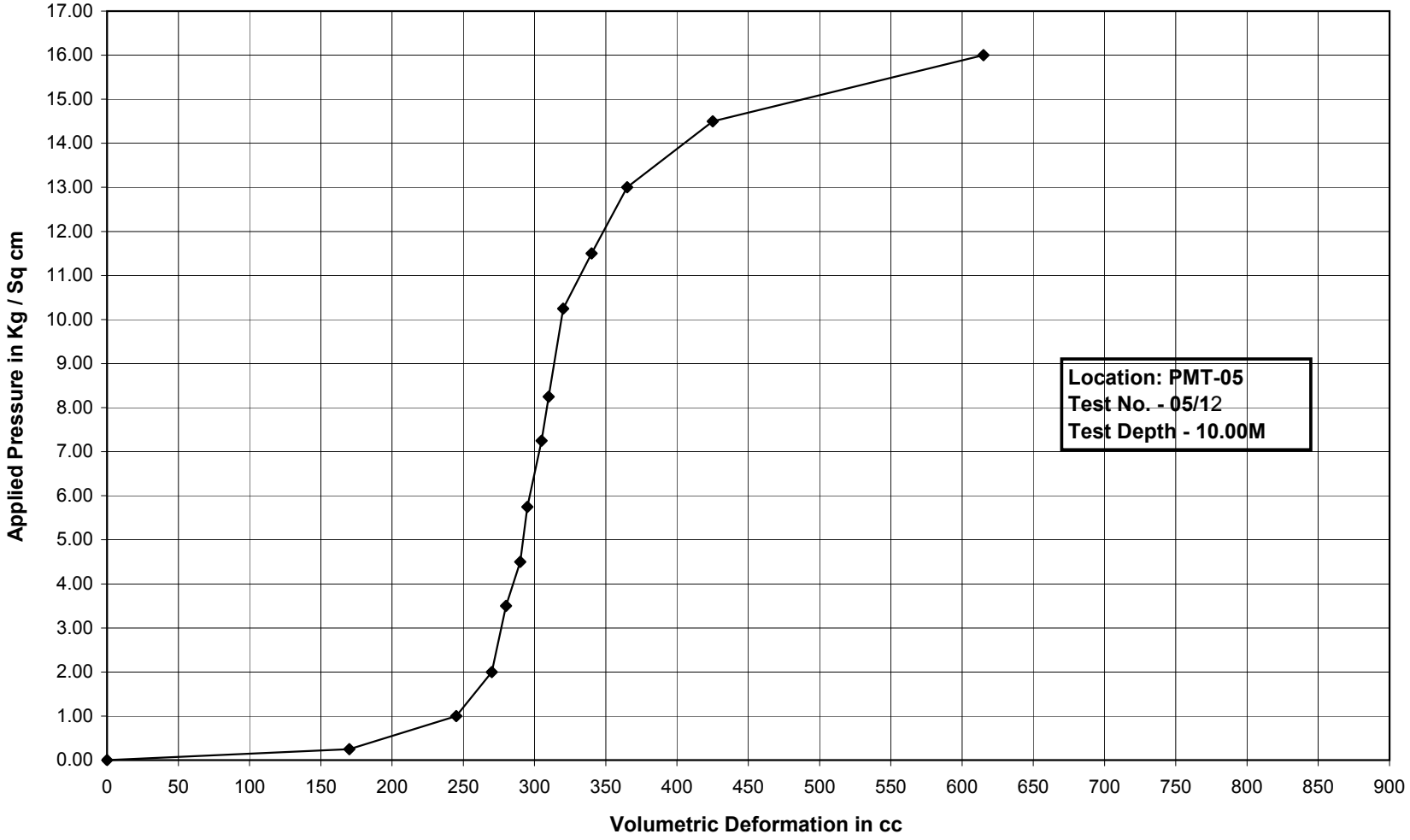


Fig. 41: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

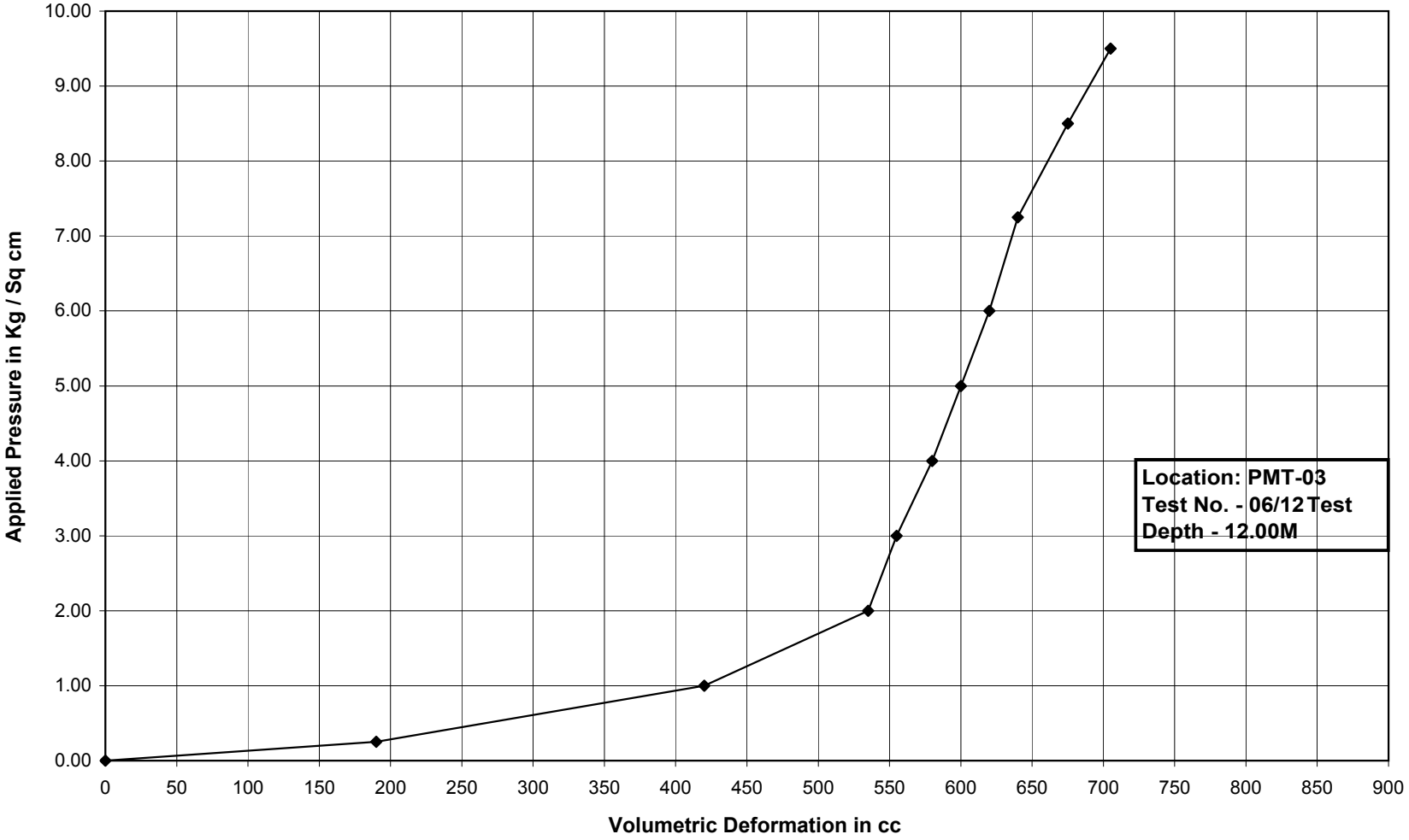


Fig. 42: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

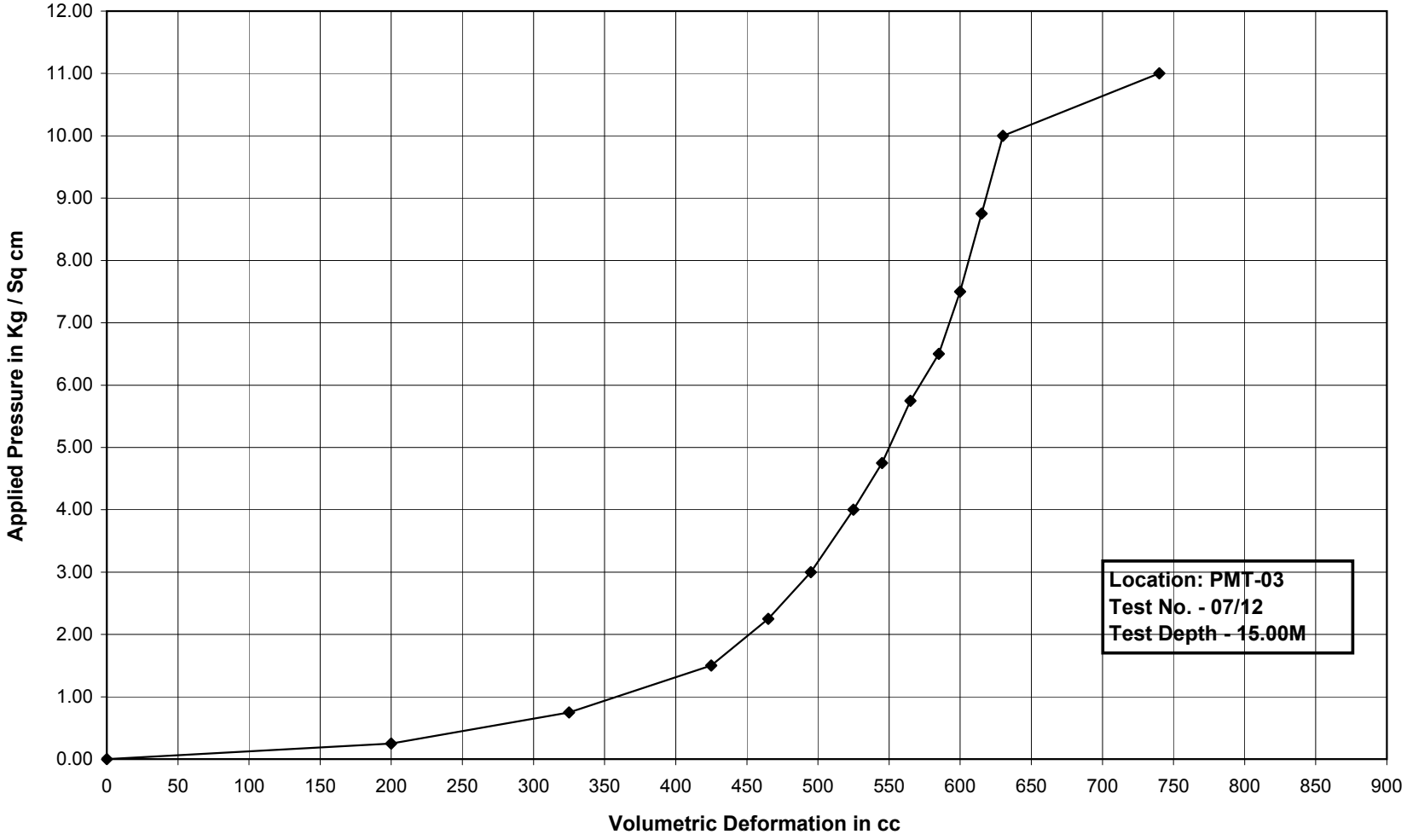


Fig. 43: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

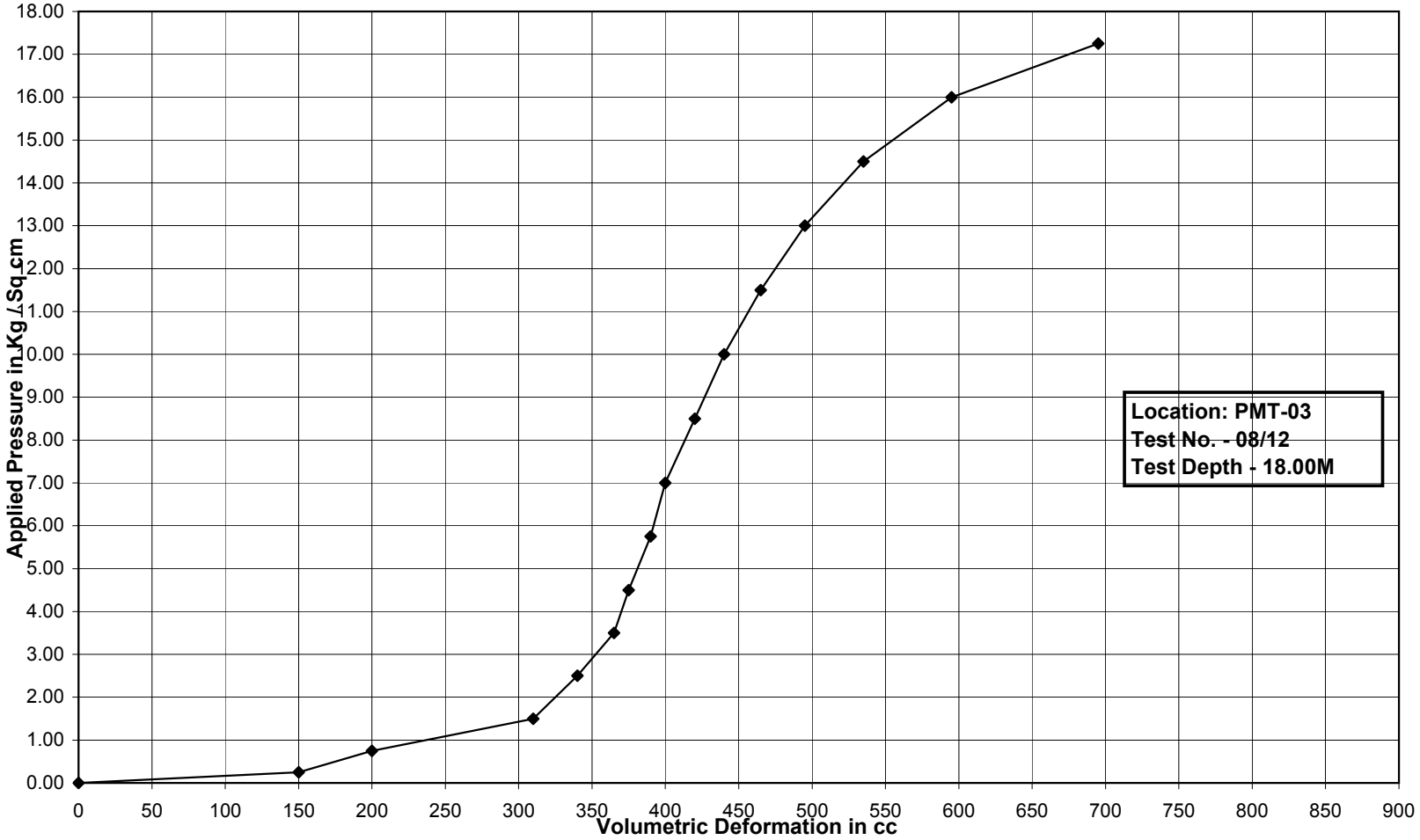


Fig. 44: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

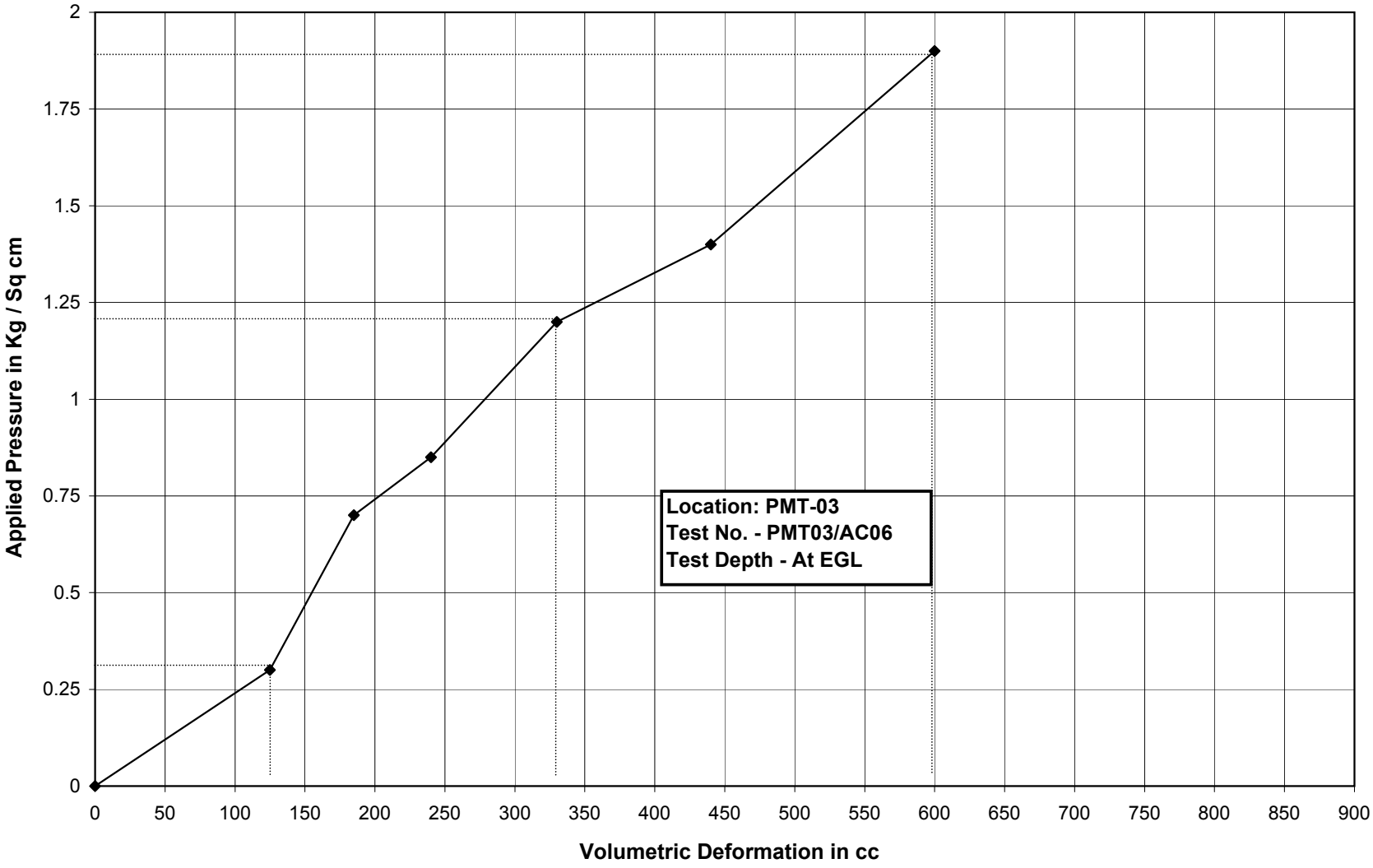


Fig. 45: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

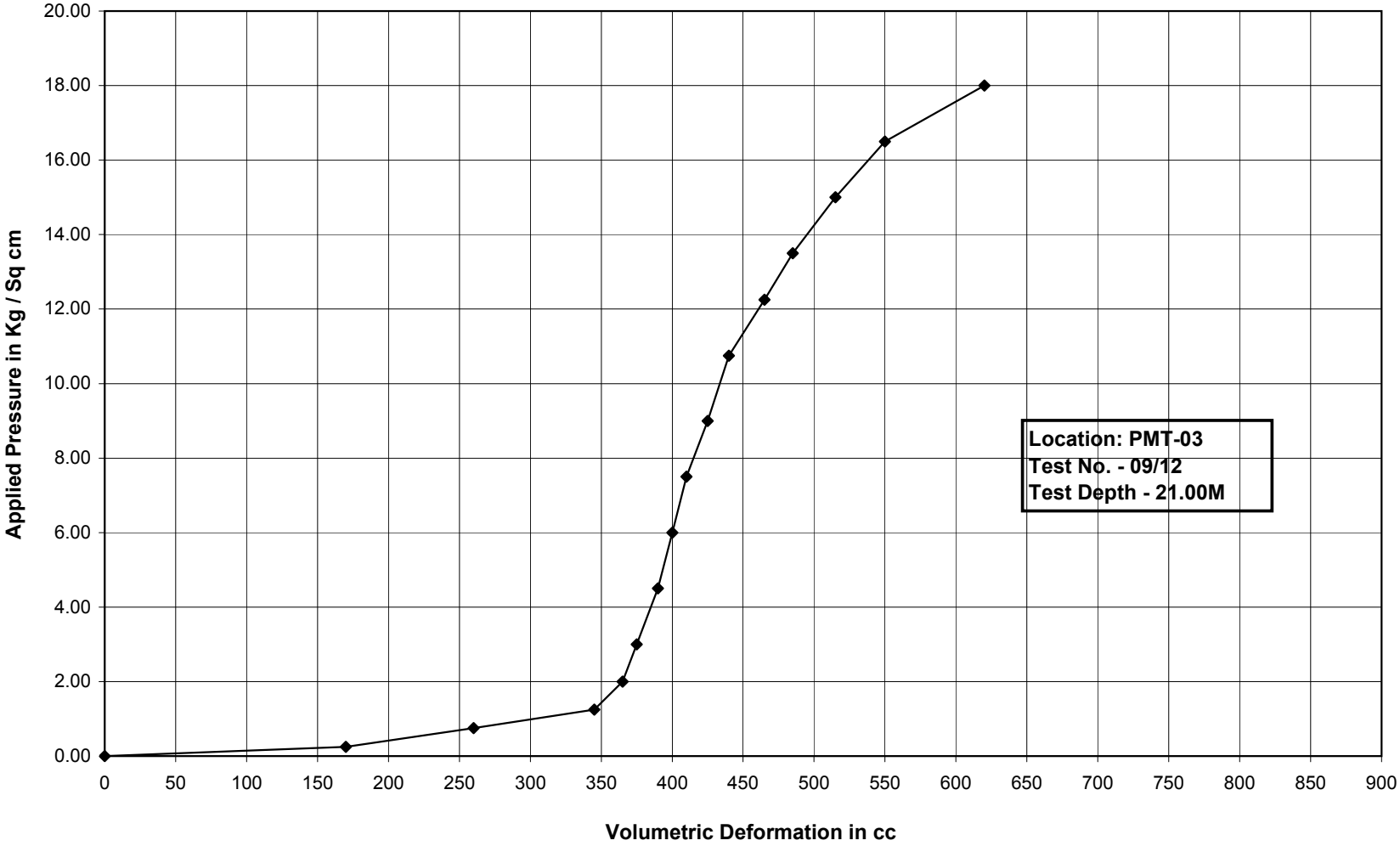


Fig. 46: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

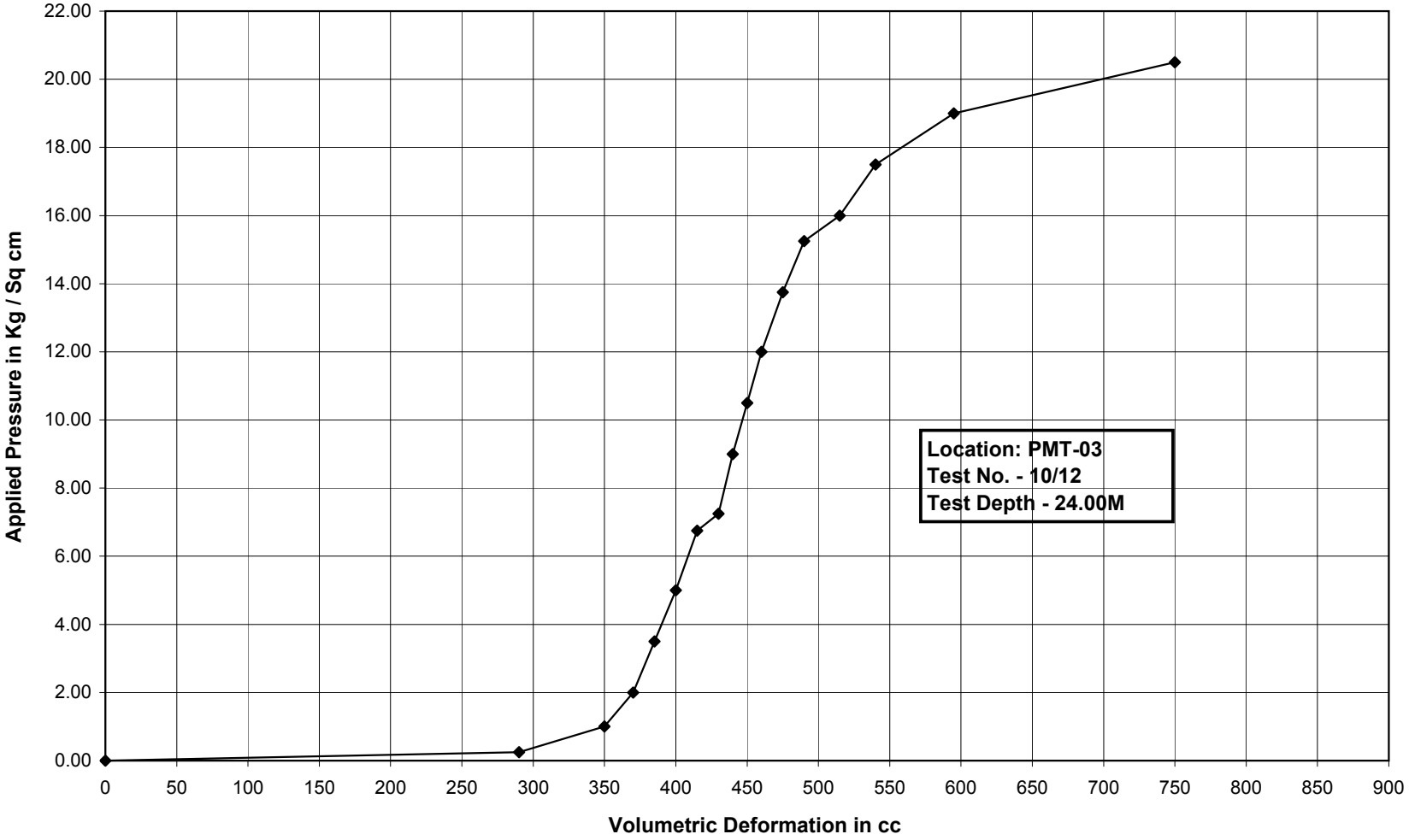


Fig. 47: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

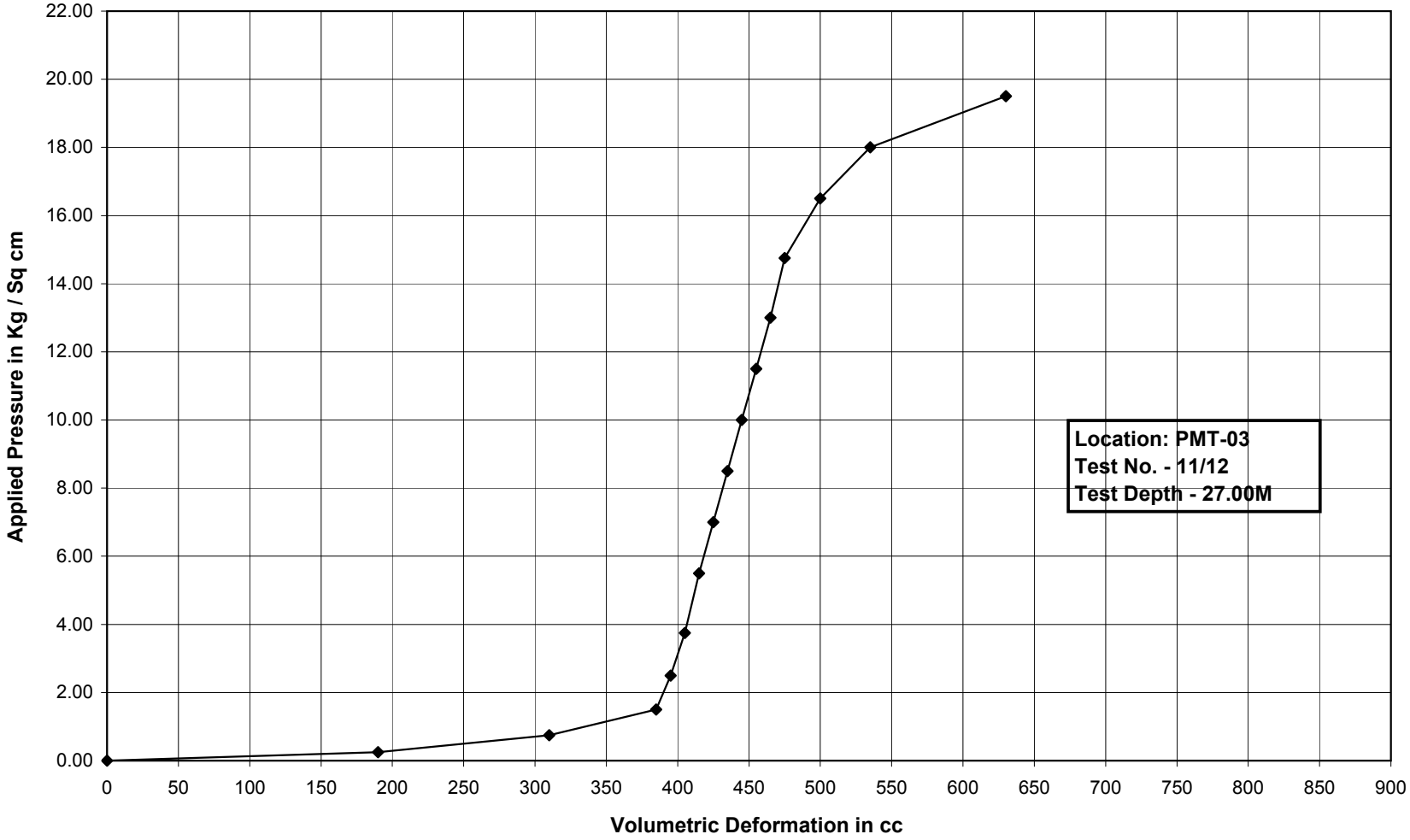


Fig. 48: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

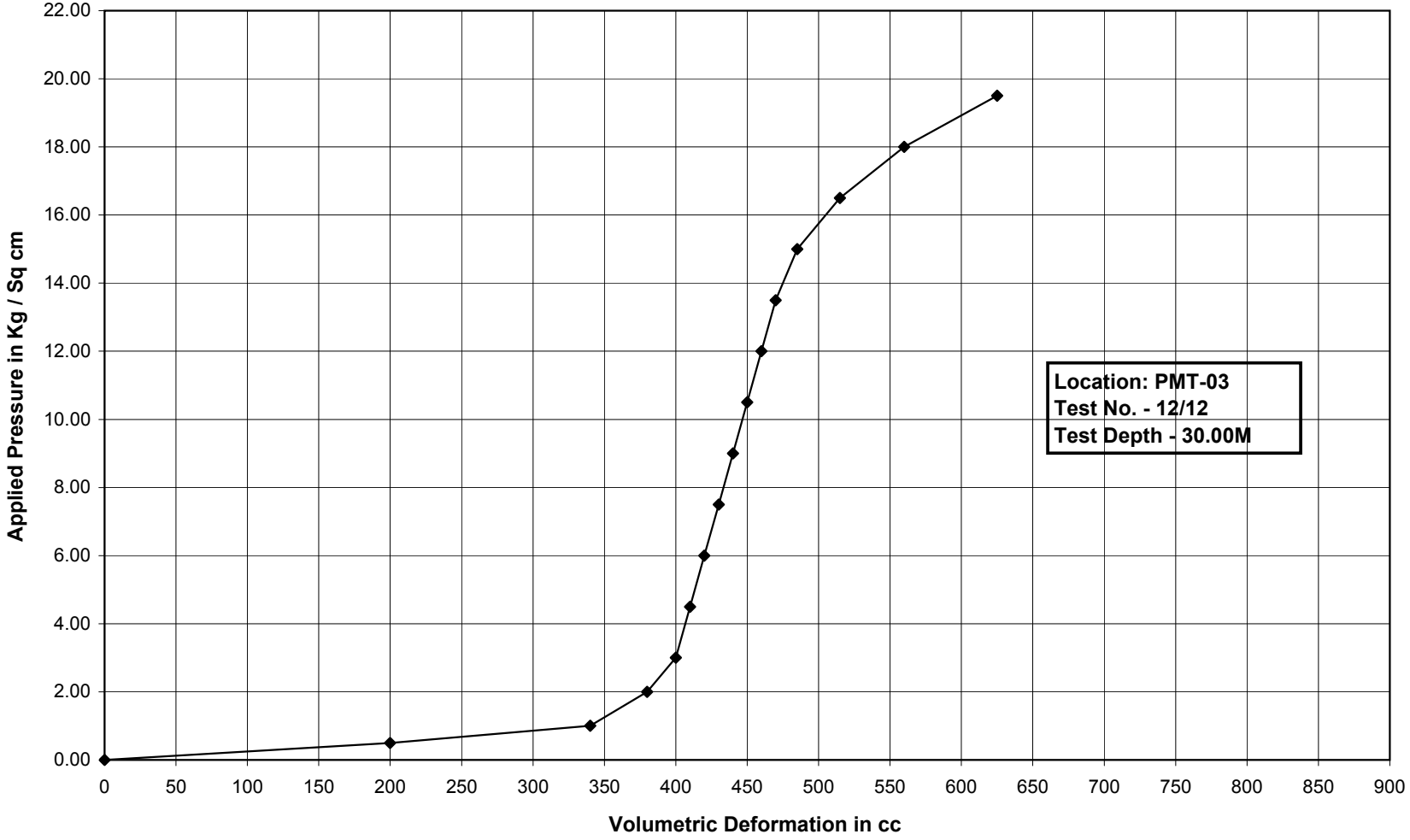


Fig. 49: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

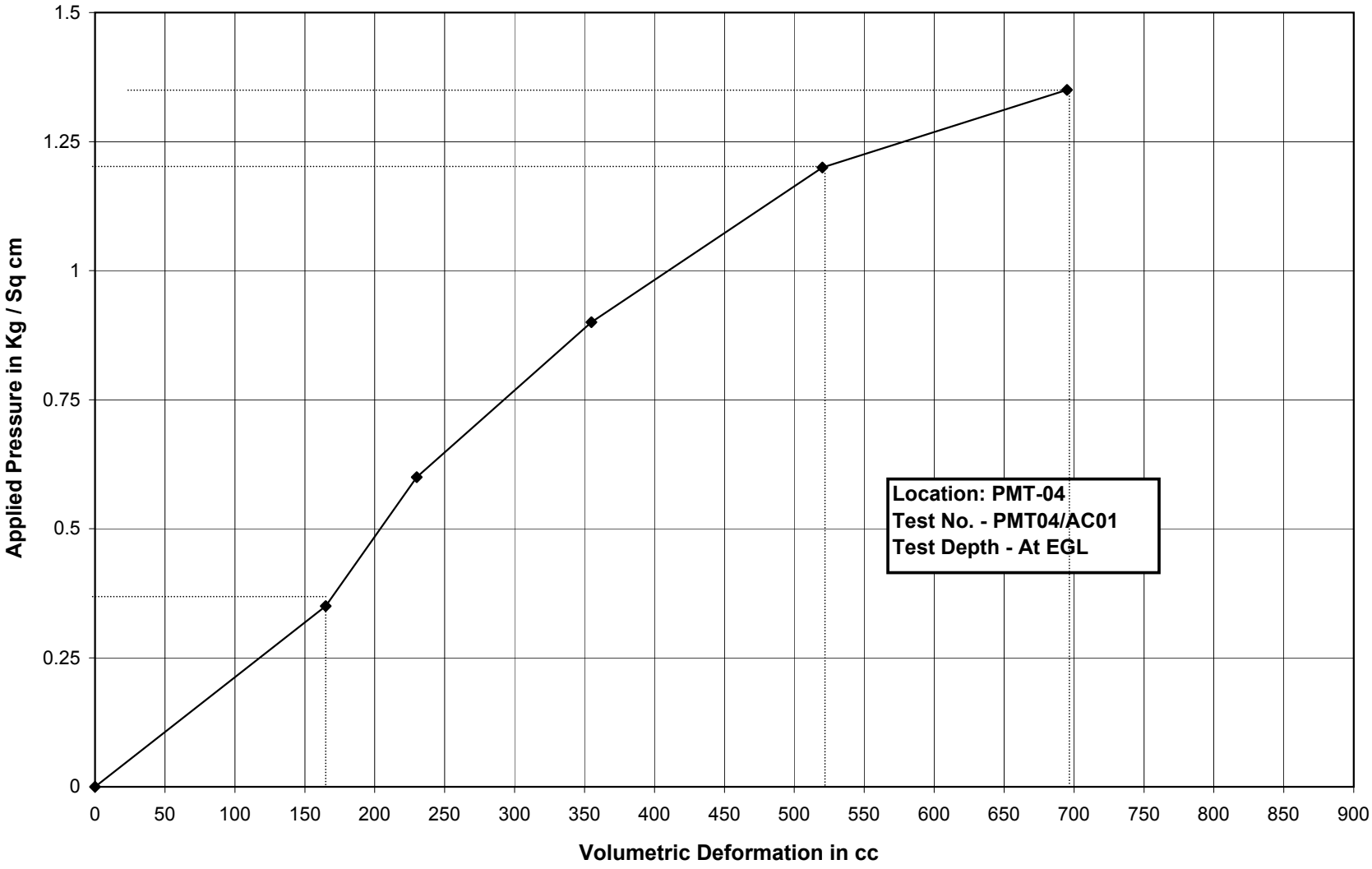


Fig. 50: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

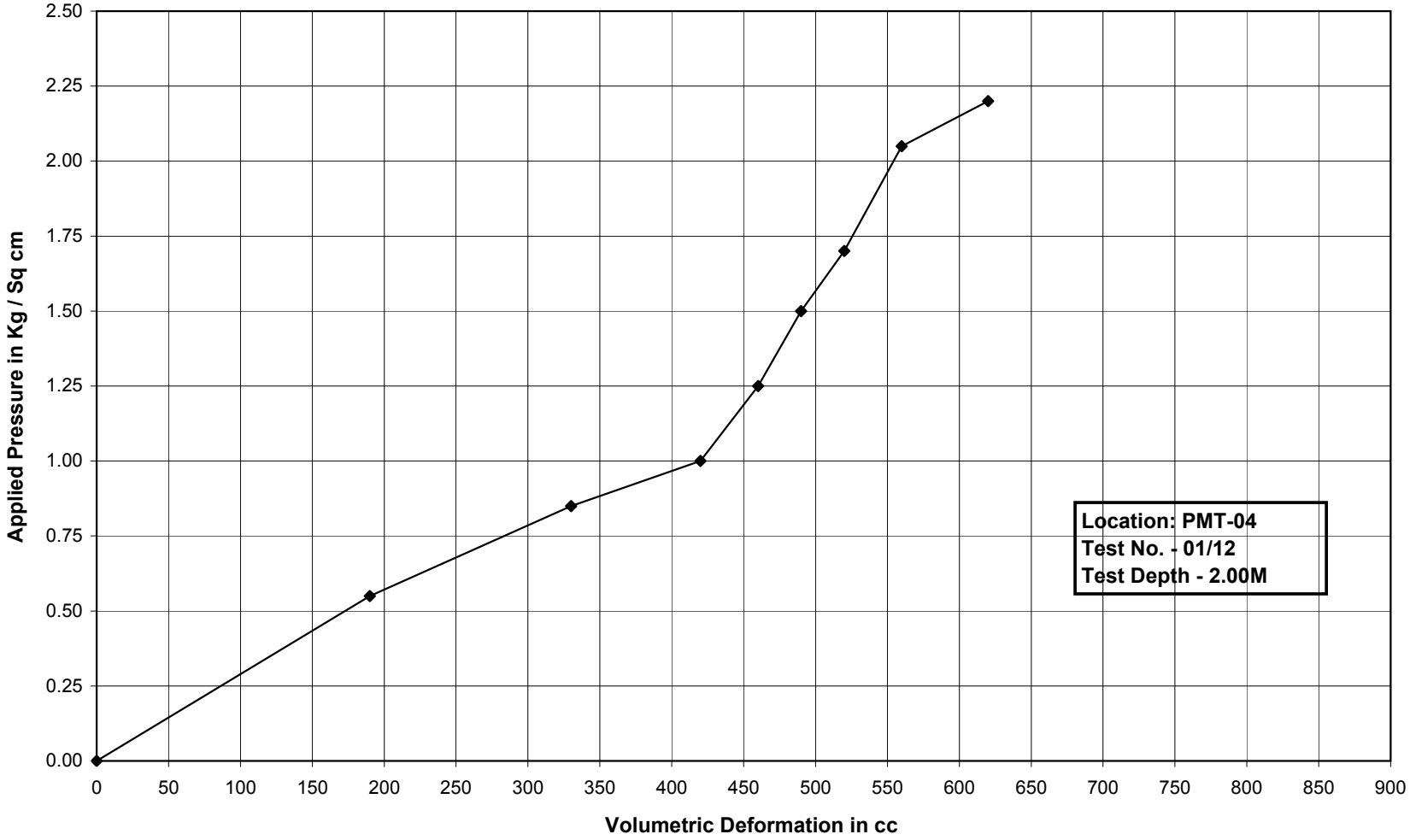


Fig. 51: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

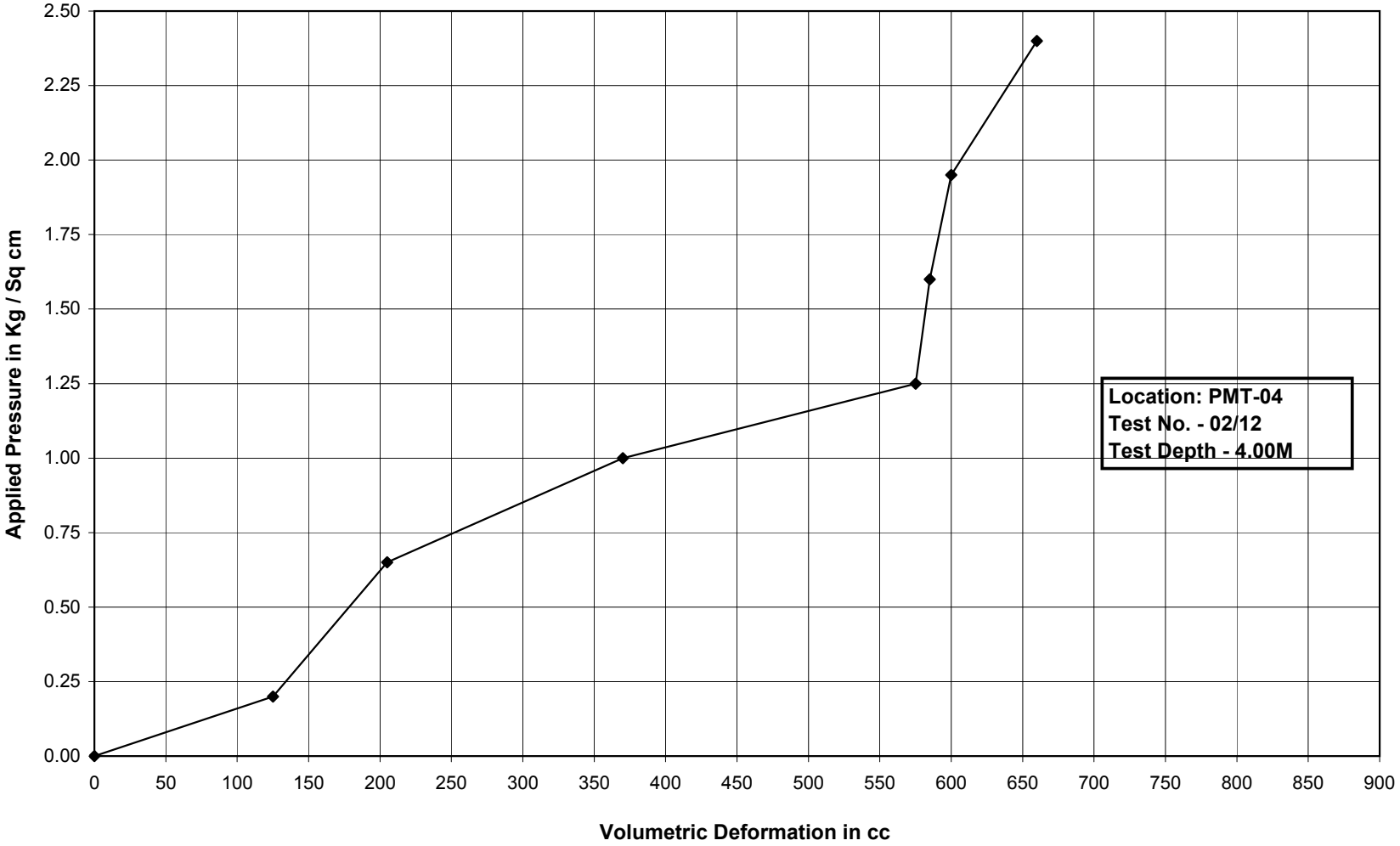


Fig. 52: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

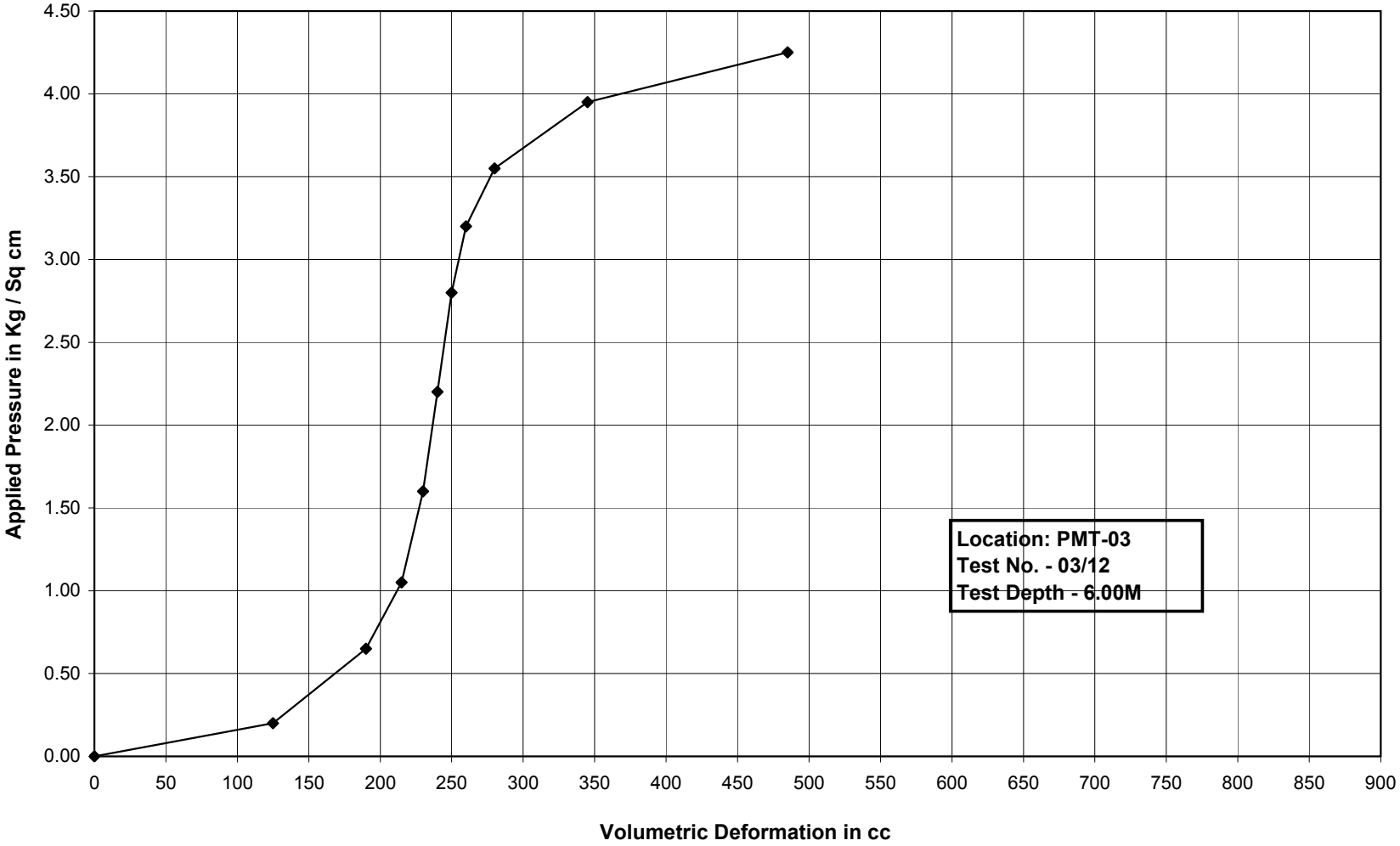


Fig. 53: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

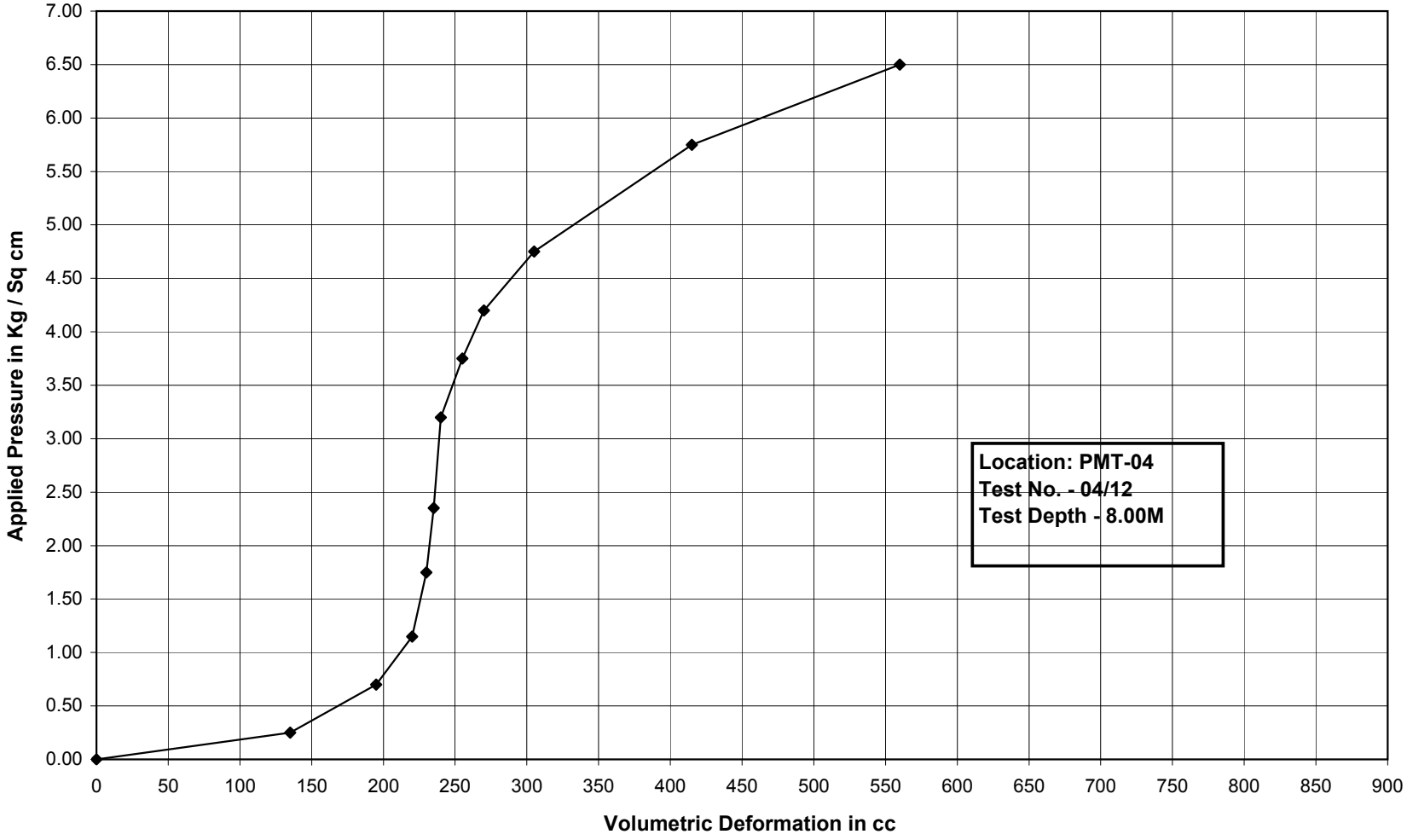


Fig. 54: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

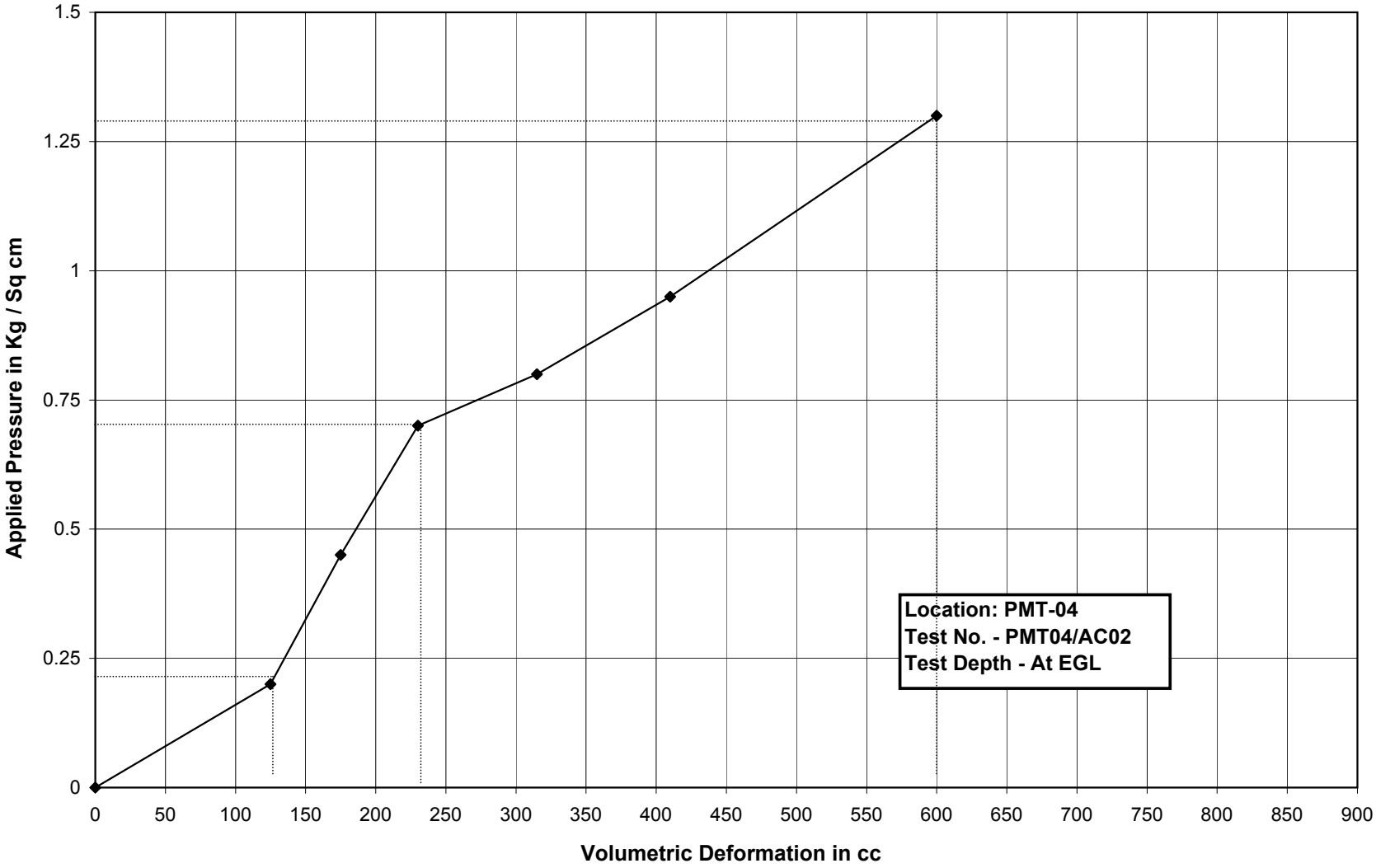


Fig. 55: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

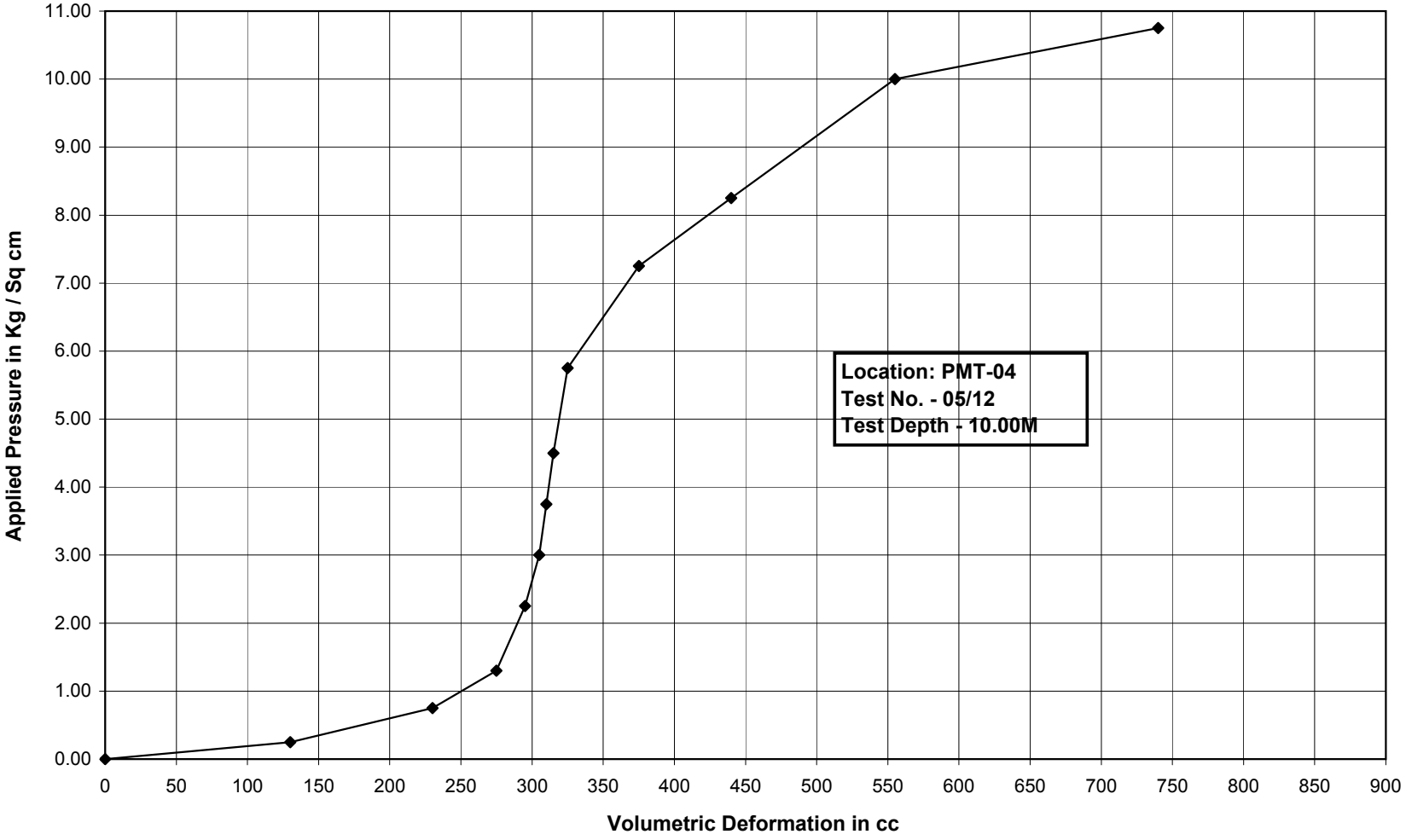


Fig. 56: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

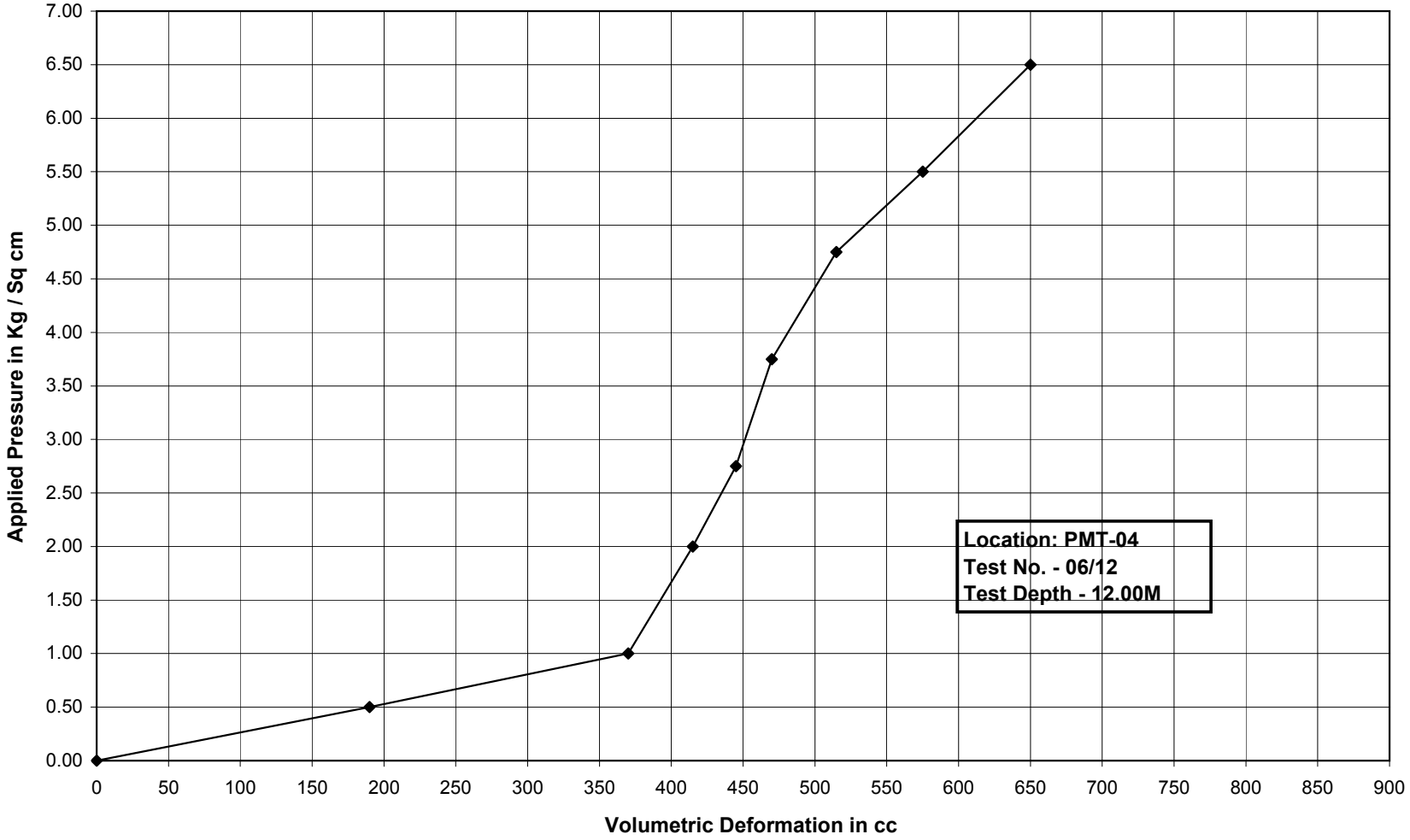


Fig. 57: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

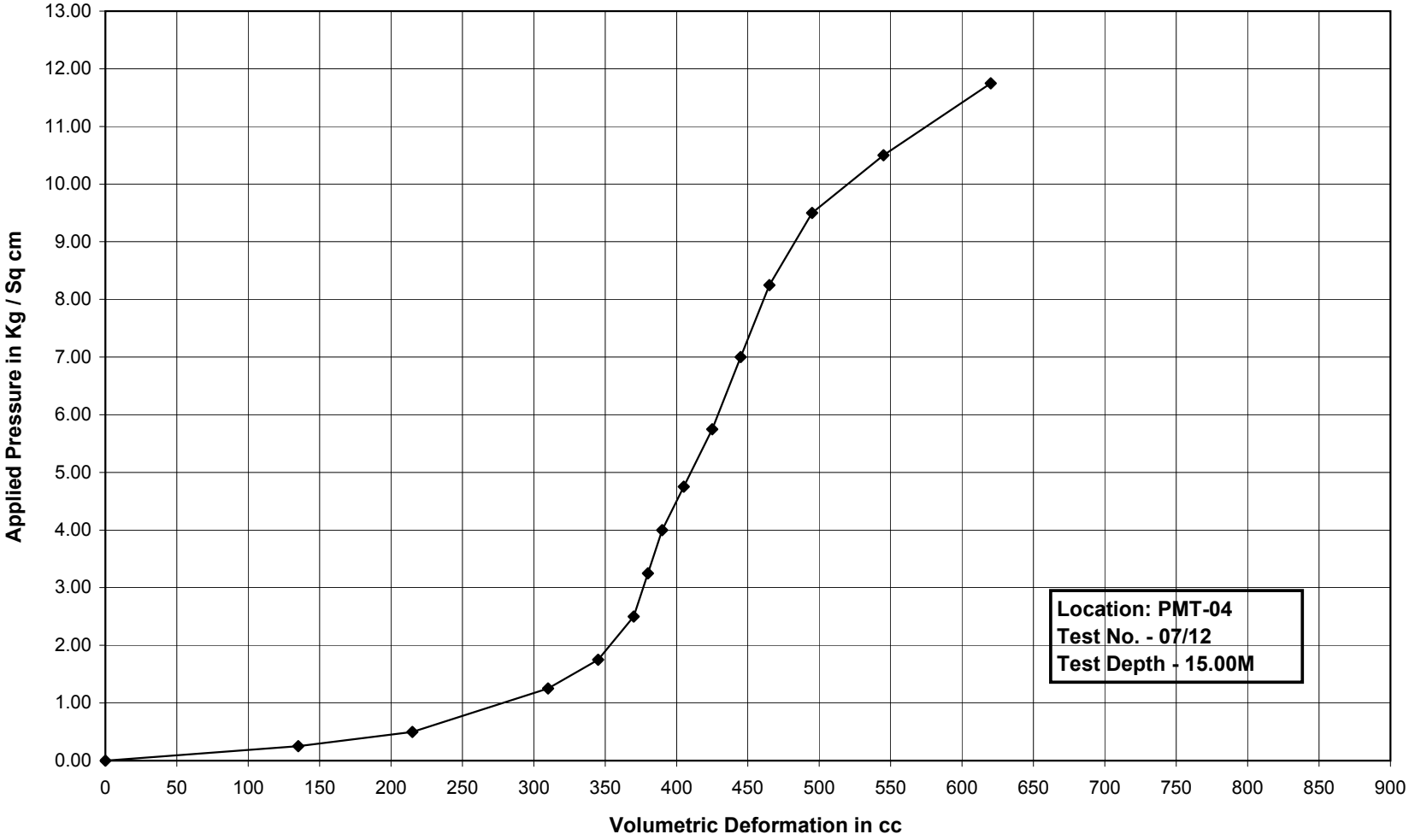


Fig. 58: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

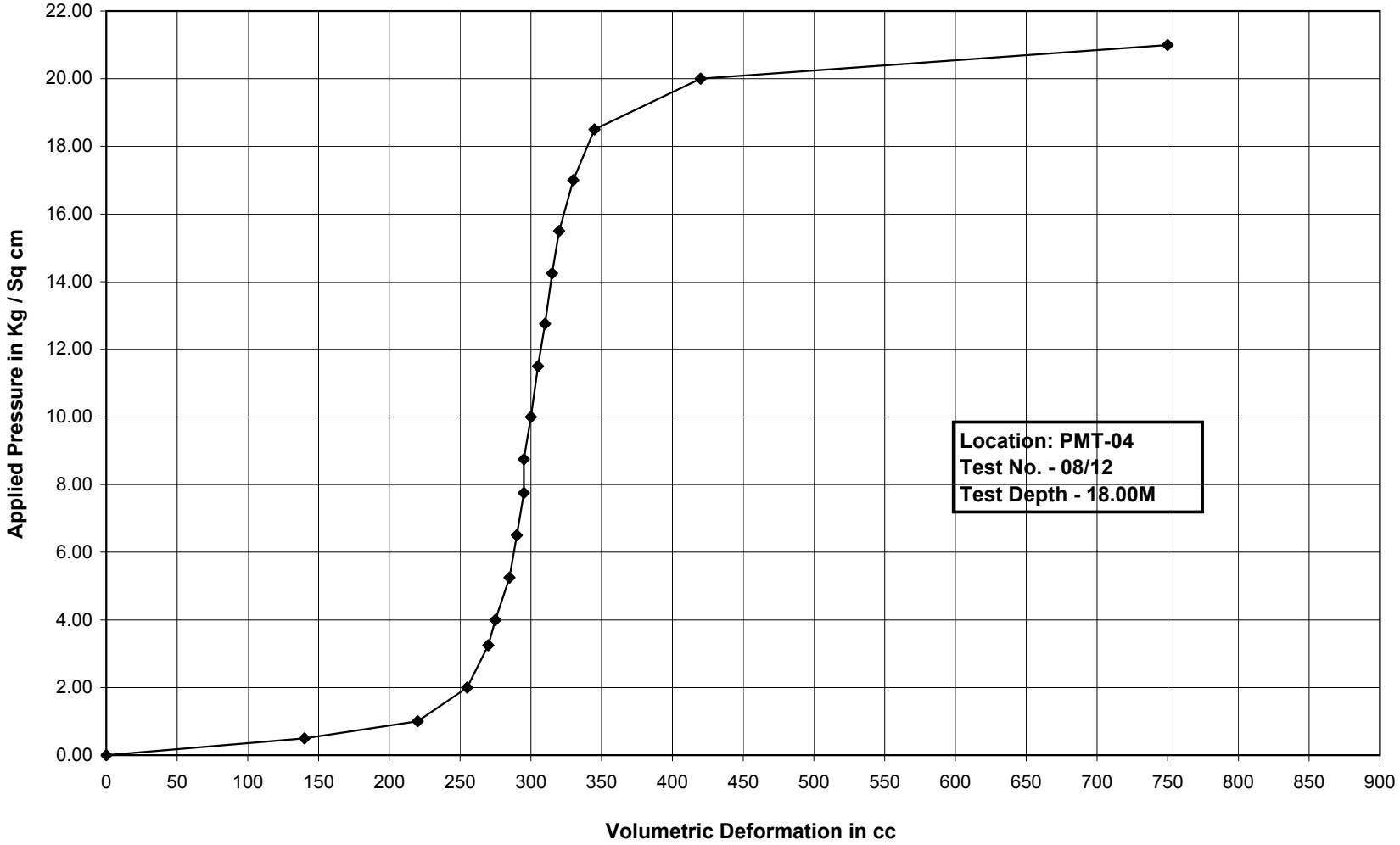


Fig. 59: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

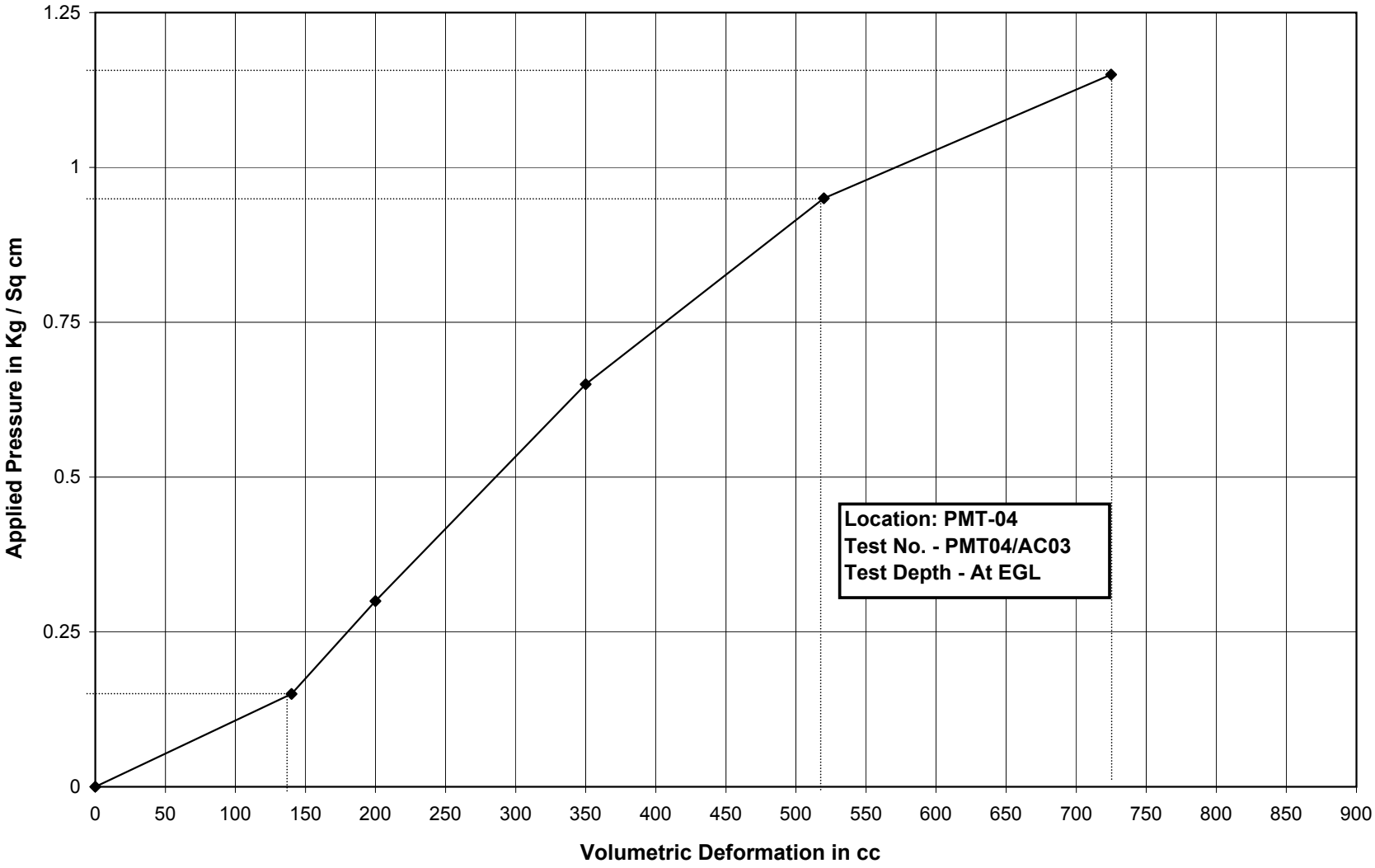


Fig. 60: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

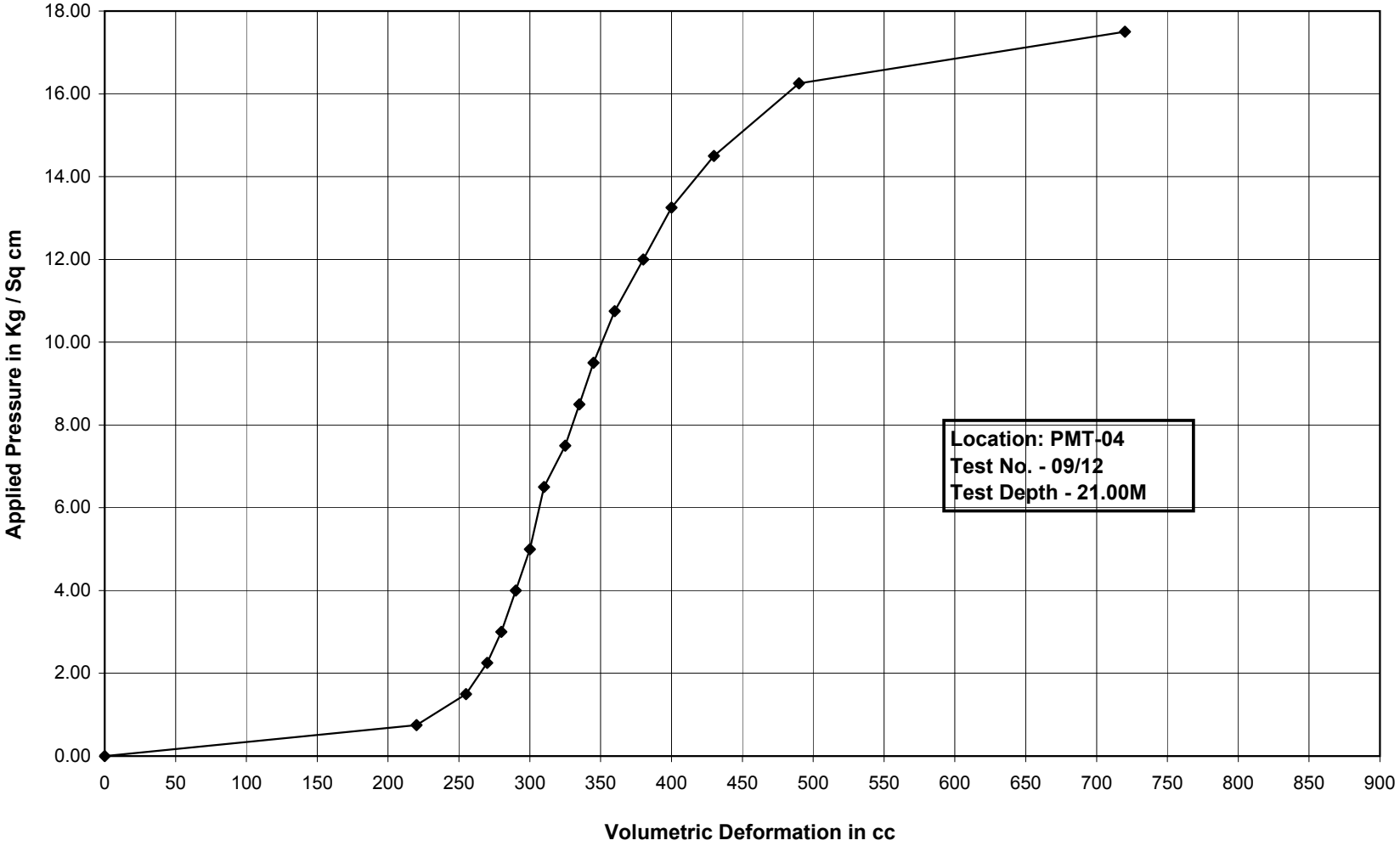


Fig. 61: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

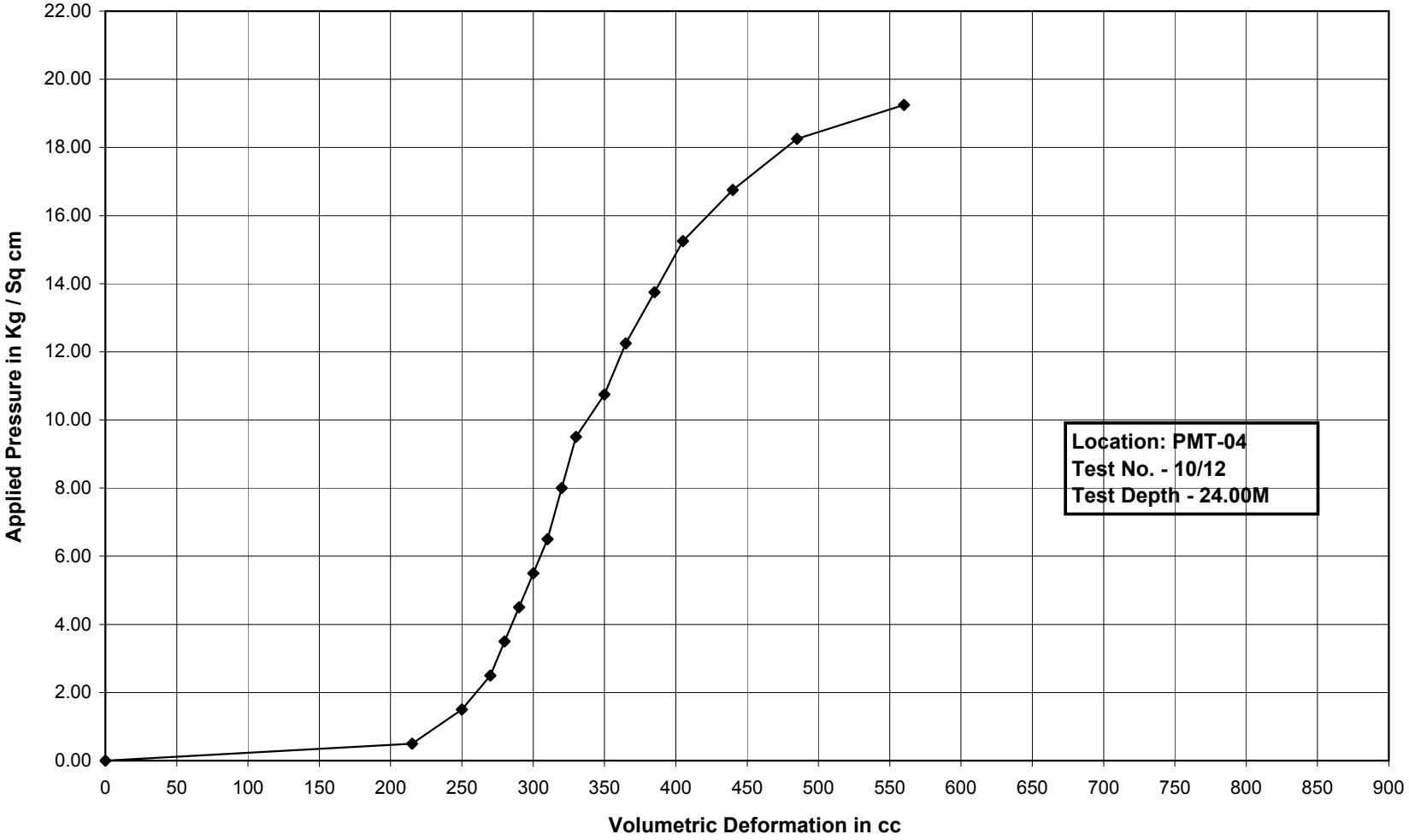


Fig. 62: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

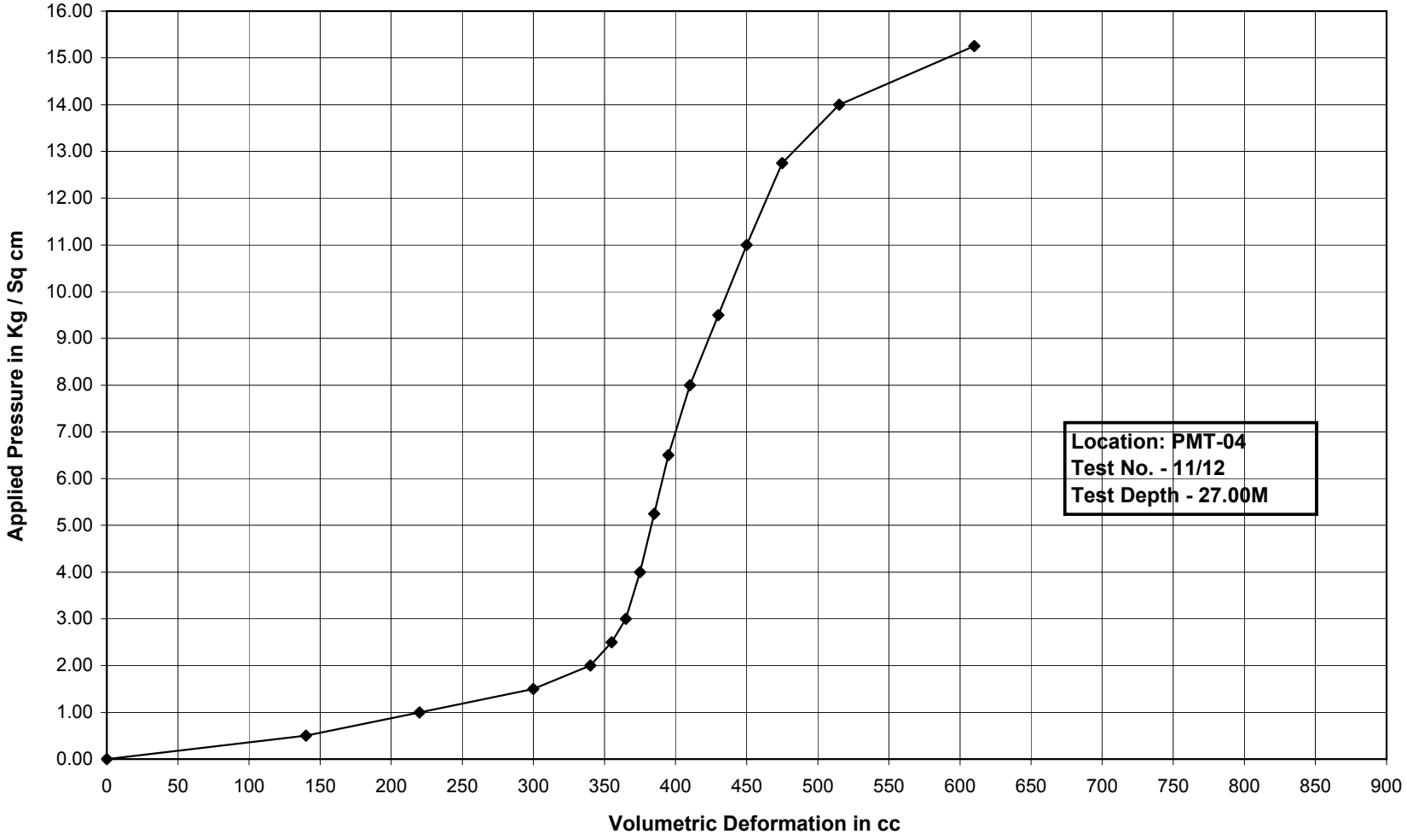


Fig. 63: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

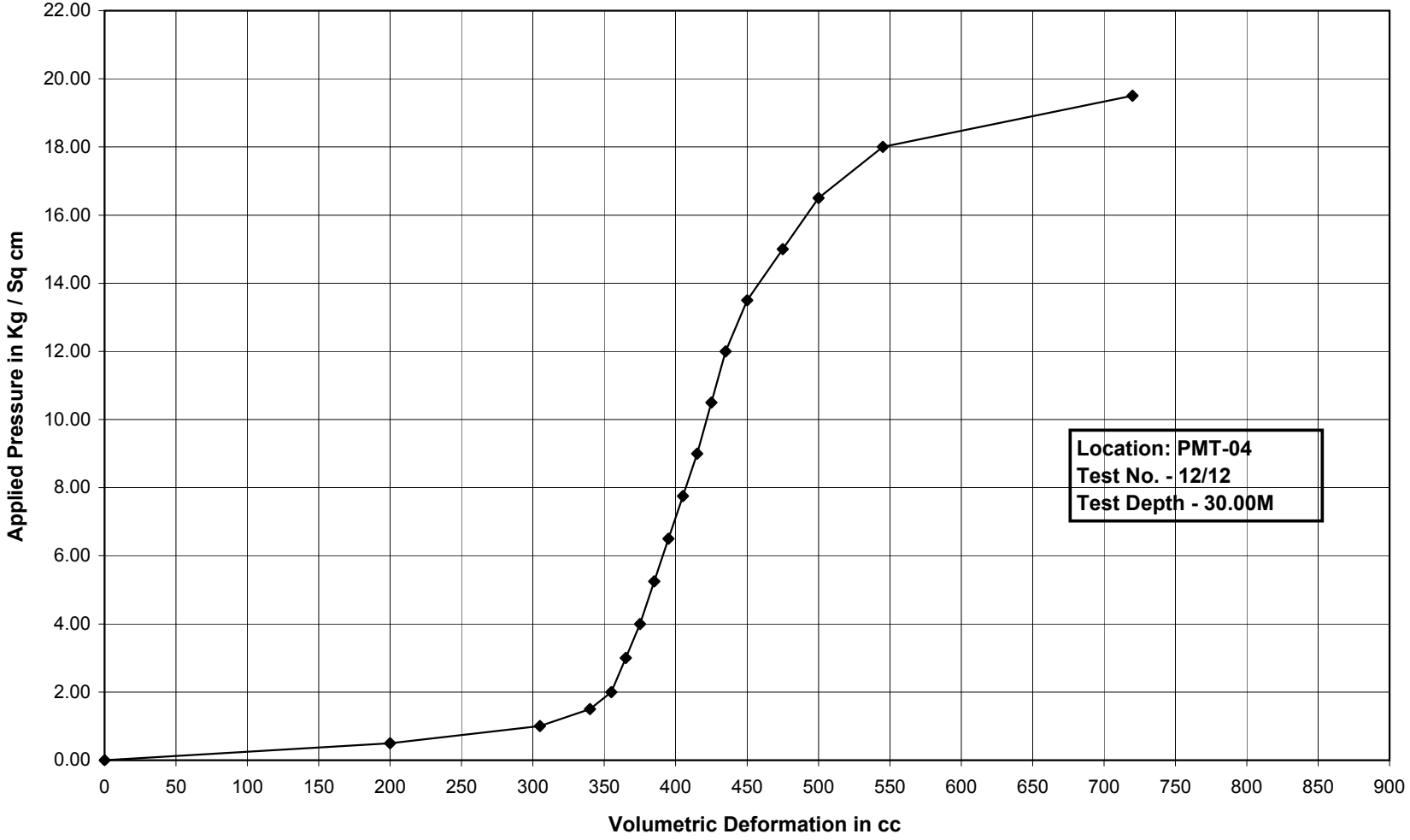


Fig. 64: APPLIED PRESSURE Vs. VOLUMETRIC DEFORMATION CURVE

10. BLOCK VIBRATION TESTS

BLOCK VIBRATION REPORT
FOR 1 x 800MW WANAKBORI TPS
AT GUJARAT.

1. INTRODUCTION

The **Gujarat State Electricity Corporation Limited** has proposed the expansion of Wanakbari Thermal Power Station, Gujarat. It has been proposed to install 1 x 800MW Unit in this phase & the job was awarded to **M/s. Bharat Heavy Electricals Limited**. For designing of Foundation Structures coming under this project, it was necessary to conduct a Detailed Geotechnical Investigation Work and **M/s Bharat Heavy Electricals Limited**, in turn awarded the job to **M/s. C. E. Testing Company Pvt. Ltd., Kolkata**.

As per the scope of work, 2 nos. Block Vibration Tests were conducted.

2. SITE CONDITION:

The soil at the test level is grayish brown, sandy silt. Only two (2) nos. BVT were carried out to determine the dynamic properties of the layer for the construction of machine foundations. The RL & depth of test is given below in a tabular form.

BVT No.	Co-ordinate (M)			Depth (M)
	E	N	R.L	
1	651.000	149.000	63.925	4.00
2	655.000	78.000	63.753	4.00

3. PURPOSE OF TEST:

The dynamic tests were performed for studying the behavior of sub-soil under vibration and for determining the various dynamic properties of soil as obtained by exciting a concrete block mechanically. The tests were performed according to I.S. 5249.

4. EQUIPMENTS USED:

Description of various equipment which were used during the tests are given below:

1. Oscillator:

Mechanical Oscillator type SEA-350 (A) was used. Maximum force that can be generated by this oscillator is 1200 Kg, and maximum frequency is 60 c.p.s. Eccentricity range is 0° - 140°. The oscillator was mounted on the base plate, which was in turn fitted with the block by holding down bolts. The oscillator can be fitted

with the base plate both for vertical vibration and horizontal vibration. The eccentricity is adjusted by adjustor circle on oscillator. One complete clockwise rotation increases the eccentricity by 4°. The tachometer is fixed internally in the equipment having two visible terminals, which were connected to the phase meter. The oscillator, which is filled with standard engine oil SEA-40, is connected by V-belt with the electric D.C. motor.

2. D.C. Motor:

Variable Speed Motor Type SEA-351 (A) was used. This 3 H.P. single phase D.C. Motor was fitted on the frame by the side of the oscillator. Supply from main was given through speed control unit, which controls the speed of the motor. The motor was connected to the oscillator by a V-belt.

3. Speed Control Unit:

Speed Control Unit Type SEA-352(A) was used. The maximum voltage for the armature is 250 V and maximum current is 12 Amp. For the fields, the maximum voltage is 28 V and maximum current is 8 Amp. The main function of the speed control unit is to control the speed of the motor as required. Higher speed of the motor gives higher frequency of the oscillator. The main knob of the speed control unit is turned in the anticlockwise direction till the minimum speed indicator light glows with a 'click' sound and then the knob is turned in the clockwise direction for increasing the speed as required. Maximum indicator light indicates the overloading of the motor.

4. Three-in-one Phase Meter:

Phase Meter Type SEA-550 was used for recording the frequency and amplitude. The instrument is powered by two 9 Volt batteries provided in the cabinet body of the units. For vertical vibration test, one acceleration pick up was fitted on top of the block and was connected to the remaining input of the meter. By turning the switch to "AMPLITUDE", the amplitude of the block is recorded. The second knob is meant for choosing properly the multiplier for recording higher amplitudes.

5. Acceleration Pick up:

The acceleration pick-ups are used to record the amplitude of vibration during vertical and horizontal block resonance test.

5. DESCRIPTION OF TESTS PERFORMED:

Forced vibration test was performed on a concrete block of size 1.50M x 0.75M x 0.70M (height) as per IS-5249. The detailed description of the test is given below:

Vertical Vibration Test: The acceleration pick up is fixed on the top of the concrete block such that it senses vertical motion of the block. The mechanical oscillator is mounted on the block such that it generates purely vertical sinusoidal vibrations and line of action of the vibrating force passes through the center of gravity of the block. After choosing a suitable value of angle of setting of eccentric masses, the oscillator is made to run at a constant frequency. With the help of the speed control unit, the speed of the motor is regulated and the frequency of the oscillator is increased in steps of small values upto the resonant frequency and two or three more readings of amplitude are taken beyond the resonant frequency. The same procedure is repeated for various values of angle of setting of eccentric masses. At any eccentricity and frequency, the dynamic force should not exceed 20 percent of the total mass of the block and motor-oscillator assembly. The frequency and amplitude are recorded through meter. □

6. CALCULATION:

6.1. COEFFICIENT OF □LASTIC UNIFORM COMPRESSION, C_u

The coefficient of elastic uniform compression, C_u, is calculated from the natural frequency as follows.

$$C_u = 4.\pi^2.f_{nz}^2.M/A$$

Where, f_{nz} = Natural frequency as obtained from forced vibration tests.

M = Mass of concrete block with Oscillator etc.

A = Base area of block.

Now we have, A = 150 X 75 = 11250 cm^2.

Weight of block = 1.50 X 0.75 X 0.70 X 2400 = 1890 kg

Weight of motor + Oscillator = 169 kg.

Total weight = 2059 kg.

M = 2059 / 981 = 2.10 kg.Sec^2/cm, M/A = 1.86 x 10^{-4} kg sec^2cm^{-3}

The natural frequencies are presented in Column-3 of Table-1 for vertical vibration for each level of Dynamic force. For example **for BVT-1, eccentricity = 8°,** f_{nz} = 480 rpm = 480/60 = 8 c.p.s.

$C_u = [4 \times \pi^2 \times 1.86 \times 10^{-4}] f_{nz}^2 = 4 \times \pi^2 \times 1.86 \times 10^{-4} \times 8^2$

= 0.47 kg/cucm

6.2. DAMPING CONSTANTS:

The damping constants, ξ is given as ξ **= ([f_2 . f_1] / [2.f_{nx}])**

Where, f_1 and f_2 are the frequencies at which the amplitude is 0.707 times the amplitude at natural frequency.

Considering Vertical Vibration test: **For BVT-01 & 8° eccentric angle**:

f_{nx} = 480 rpm, f_1 = 411 rpm, f_2 = 545 rpm from graph.

Therefore ξ = (545 – 411) / (2 x 480) = 0.140

Table- 1 : Summarised Results for Damping Constant

BVT No.	Type of Test	Eccentric angle (degree)	Natural frequency, f_{nx} (rpm)	Damping constant (ξ)	Avg. ξ
01	Vertical	4°	500	0.250	0.201
		8°	480	0.140	
		12°	571	0.256	
		16°	554	0.160	
02	Vertical	4°	637	0.304	0.183
		8°	754	0.143	
		12°	710	0.187	
		16°	818	0.097	

6.3. DYNAMIC SHEAR AND YOUNG'S MODULUS:

DYNAMIC YOUNG'S MODULUS: -

The co-efficient of elastic uniform compression, C_u is related to dynamic Young's Modulus, E_d as $C_u = 1.09\ E_d/[(1 - \mu^2)\ \sqrt{A}]$, Therefore $E_d = [\sqrt{A}\ C_u\ (1 - \mu^2)]/1.09$

Using μ = 0.30 and A = 150 x 75 = 11250 sqcm.

Substituting the values, E_d is given as $88.55C_u$.

For C_u = 0.47 kg/cucm, E_d = **41.74 kg/sqcm**

THE SHEAR MODULUS, G: -

Shear modulus is related to Young's Modulus by

$E_d = 2G\ (1 + \mu) = 2.60\ G$

Therefore, $G = E_d/2.60$ giving **16.05 kg/sqcm**.

Table:- 2: Summarised results for 1.50M x 0.75M foundation size.

Test No	Eccentricity	Co-efficient of Uniform compression C_u (kg/cucm)	Dynamic Young's Modulus (kg/sqcm)	Shear Modulus kg/sqcm (G)	Damping constant (ξ)
BVT-01	4°	0.51	45.29	17.42	0.250
	8°	0.47	41.74	16.05	0.140
	12°	0.67	59.07	22.72	0.256
	16°	0.63	55.6	21.39	0.160
	Average	**0.57**	**50.43**	**19.40**	**0.202**
BVT-02	4°	0.83	73.51	28.27	0.304
	8°	1.16	103.00	39.61	0.143
	12°	1.03	91.33	35.13	0.187
	16°	1.37	121.22	46.62	0.097
	Average	**1.10**	**97.27**	**37.41**	**0.183**

6.4. CORRECTIONS FOR AREA & OVERBURDEN PRESSURE ON VALUES OF C_u & C_τ

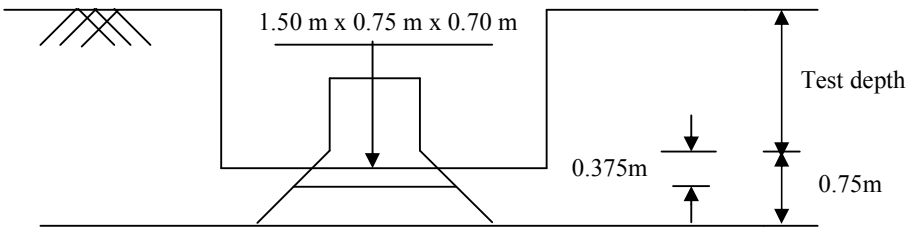
We know that, $C_u \propto 1/\sqrt{A}$ and $C_u \propto \sqrt{P_v}$

So, we can write, $C_u \propto \sqrt{(P_v/A)}$

Hence we can write, $(C_u)_{block}/(C_u)_{foundation} = [\sqrt{(P_v/A)}]_{block} / [\sqrt{(P_v/A)}]_{foundation}$

$$(C_u)_{foundation} = (C_u)_{block} \times [\sqrt{(A/P_v)}]_{block} \times [\sqrt{(P_v/A)}]_{foundation}$$

It is standard practice to deduce the values for 10sqm foundation with vertical stress of 10t/sqm.



6.5. CALCULATION OF $(C_u)_{Foundation}$ & $(E_d)_{Foundation}$

Weight of block = 2.059 t

Load at the base of foundation = 2.059/(1.5 x 0.75) = 1.83 t/sqm

Zone of influence = B = 0.75m below the block.

Hence pressure intensity at B/2 = (1.83x1.50x0.75) / ((1.50+0.375)x(0.75 + 0.375))

= 0.976 t/sqm

Overburden of 0.375m (submerged) soil = 0.338 t/sqm

Hence total Pressure = (0.976 + 0.338) = 1.314 t/sqm

Area of block = 1.5 x 0.75 = 1.125 sqm

Hence $\sqrt{(A/P_v)_{block}} = \sqrt{(1.125/1.314)} = 0.925$

Let us consider one actual footing of base area = 10 sqm = 3.162m x 3.162m

Vertical stress at centre of influence zone = 10 t/sqm (assumed)

Hence $\sqrt{(P_v/A)_{foundation}} = \sqrt{(10/10)} = 1$

Therefore, $(C_u)_{foundation} = (C_u)_{block} \times 1 \times 0.925 = 0.925 \times (C_u)_{block}$

The Young's modulus will vary as $E \propto \sqrt{P_v}$

Hence $E_{foundation} = E_{block} \times \sqrt{(10/1.30)} = 2.759 \times E_{block}$

The shear modulus will follow the same rule.

On the basis of the above, in Table – 3, the dynamic properties for 10 sqm foundation with vertical pressure intensity of 10 t/sqm is presented.

TABLE - 3: RECOMMENDED VALUES OF DYNAMIC PROPERTIES:-

Foundation size = 10 sqm, P_v = 10 t/sqm

Test No	Eccentricity	Corrected C_u (kg/cucm)	Modulus of Elasticity (Kg/sqcm) (E)	Corrected Shear Modulus (kg/sqcm) (G)	Damping constant (ξ)
BVT-01	4°	0.472	125.00	48.06	0.250
	8°	0.435	115.20	44.30	0.140
	12°	0.620	163.00	62.68	0.256
	16°	0.583	153.40	59.01	0.160
	Average	**0.527**	**139.15**	**53.51**	**0.202**
BVT-02	4°	0.768	202.80	78.01	0.304
	8°	1.073	284.20	109.30	0.143
	12°	0.953	252.00	96.92	0.187
	16°	1.267	334.50	128.60	0.097
	Average	**1.015**	**268.38**	**103.21**	**0.183**

Note: Following relations are to be used to calculate the coefficient of non uniform compression & shear.

Coefficient of elastic uniform shear, $C_\tau = 0.50C_u$

Co-efficient of elastic non-uniform compression = $3.46C_\tau$

Coefficient of elastic non-uniform shear = $1.50C_\tau$

7. CONCLUDING REMARKS:

1. Two (2) nos. Routine Block Vibration Tests has been conducted on 1.50m x 0.75m x 0.70m block.
2. The observed natural frequencies for the test are already given in the preceding clause.
3. The computed C_u values for the test are already given. However, this is further presented below.

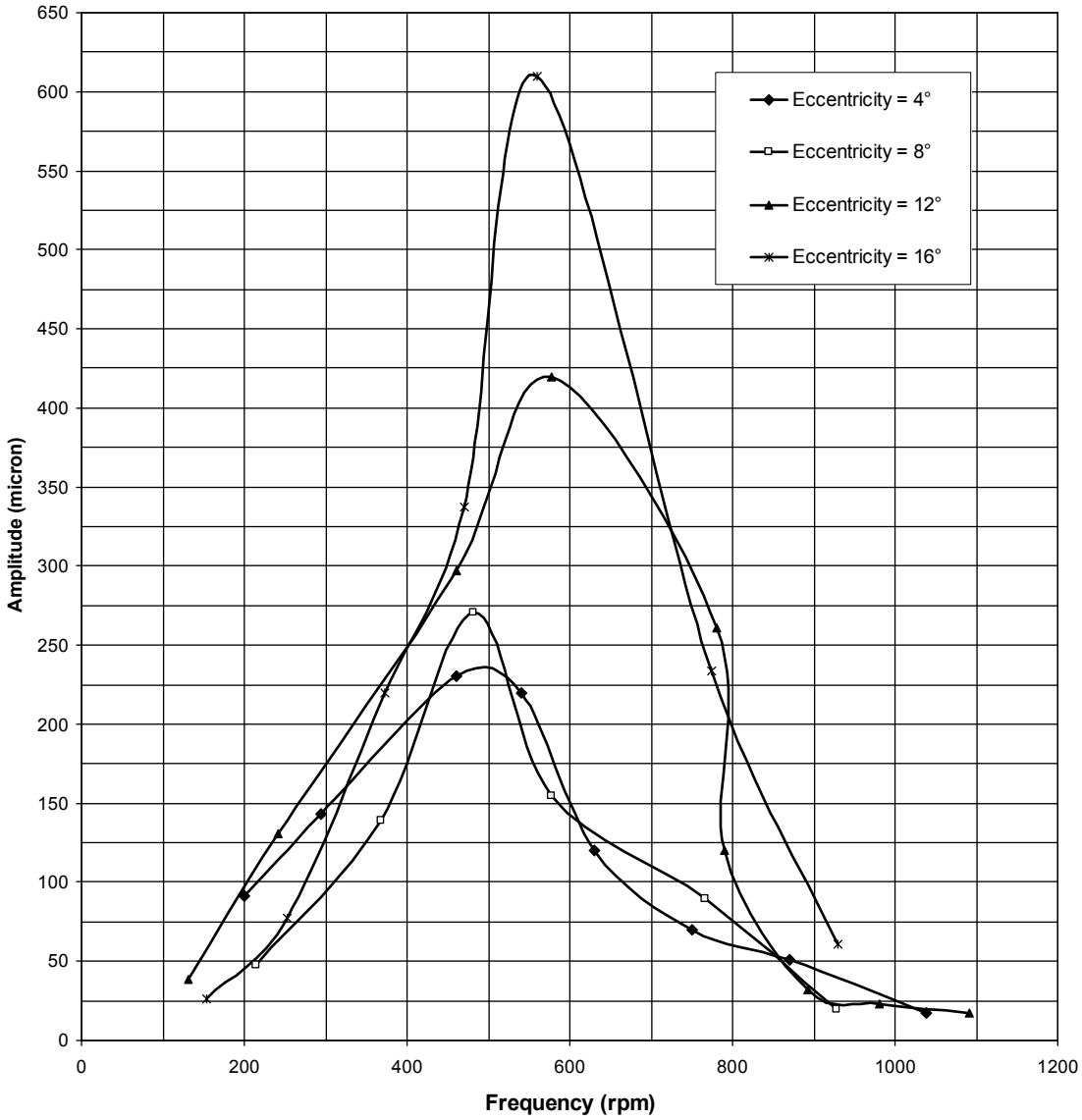
Test No	Eccentricity	Co-efficient of Uniform compression C_u (kg/cucm)	Dynamic Young's Modulus (kg/sqcm)	Shear Modulus kg/sqcm (G)	Damping constant (ξ)
BVT-01	4°	0.51	45.29	17.42	0.250
	8°	0.47	41.74	16.05	0.140
	12°	0.67	59.07	22.72	0.256
	16°	0.63	55.6	21.39	0.160
	Average	**0.57**	**50.43**	**19.40**	**0.202**
BVT-02	4°	0.83	73.51	28.27	0.304
	8°	1.16	103.00	39.61	0.143
	12°	1.03	91.33	35.13	0.187
	16°	1.37	121.22	46.62	0.097
	Average	**1.10**	**97.27**	**37.41**	**0.183**

4. On the basis of experimental test results, dynamic values are recommended for a **10sqm footing** with an average vertical pressure intensity of **10t/sqm** are calculated and supplied in the previous clause. However, the corrected values are presented below.

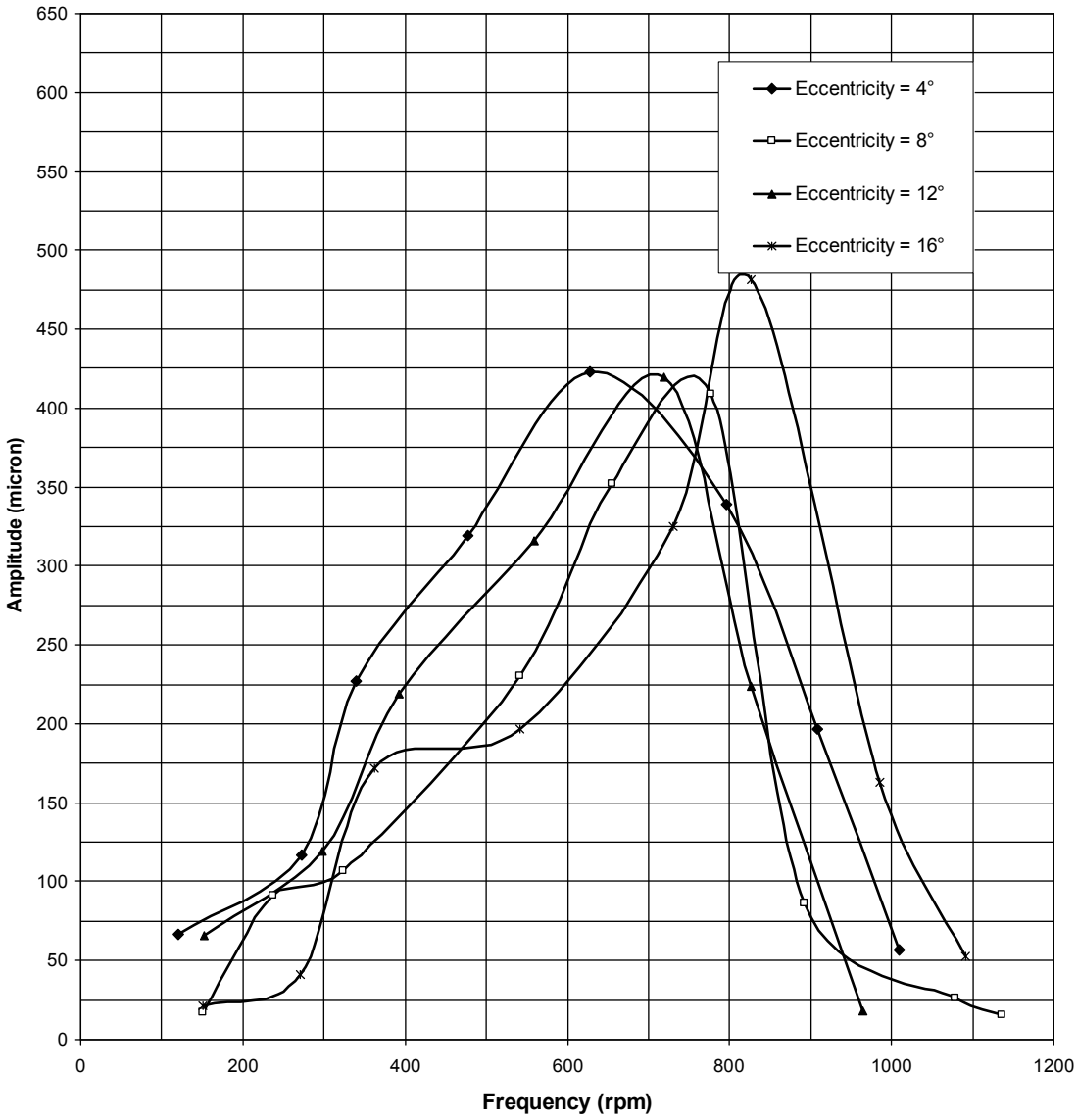
Test No	Eccentricity	Corrected C_u (kg/cucm)	Modulus of Elasticity (Kg/sqcm) (E)	Corrected Shear Modulus (kg/sqcm) (G)	Damping constant (ξ)
BVT-01	4°	0.472	125.00	48.06	0.250
	8°	0.435	115.20	44.30	0.140
	12°	0.620	163.00	62.68	0.256
	16°	0.583	153.40	59.01	0.160
	Average	**0.527**	**139.15**	**53.51**	**0.202**
BVT-02	4°	0.768	202.80	78.01	0.304
	8°	1.073	284.20	109.30	0.143
	12°	0.953	252.00	96.92	0.187
	16°	1.267	334.50	128.60	0.097
	Average	**1.015**	**268.38**	**103.21**	**0.183**

5. For different foundation size & vertical stress, the recommended dynamic properties should be computed by using the principles illustrated.

Vertical Block Vibration Test graphs for BVT-01



Vertical Block Vibration Test graphs for BVT-02



11. GEOLOGY

G E O L O G Y

Introduction

The 'BHEL' has proposed to construct 1 x 800MW Thermal Power Station at Wanakbori, Cheddar district of Gujarat. It is extension project of the existing Power Plant and located adjacent to it. The nearest town Godhra is located about 25km SE and Anand about 60km NE from the site respectively. The State capital Ahmadabad is situated about 100km at SW from the the site and is well connected through National Highway NH-59. NH-8 running almost NS direction cross close proximity to the site. Anand and Vadodara are nearest broad gauge railway stations of Western Railway. International Airport is available at Ahmadabad. Geographically the study area located at on the mainland close to the eastern boundary of the State and on the western part of the Peninsular India. Eastern boundary of the state has contacts with Rajasthan; Madhya Pradesh and Maharastra states of India and at the western and southern part, there is vast Arabian sea. Part of the north boundary of the state has contact with Rajasthan and partly with Pakisthan. The study area lies on the north bank of the NE – SW flowing Mahi river which ultimately discharged into the Arabian Sea in the Gulf of Cambay / Gulf of Khambhat. The river is the main drainage of the region. Morphologically it is plain land covered with alluvium soil, as a result the alluvial stretches is fertile for agriculture. Geologically the area of interest is characterised by the Quaternary alluvial sediments of Holocene / recent period. The depth of standing ground water levels varies from about 12m to 35m below the existing ground level. The maximum and minimum temperatures recorded during summer and winter varies from 43°-27°c and 29°-14°c respectively. The monsoon lasting from June to September and heavy rain fall recorded at southern part and is decreasing northward.

Geomorphology

Geo morphologically, the entire Gujarat can be divided into three distinct division,

I) Gujarat Mainland
II) Saurashtra – Kathiawar Peninsula and
III) Kutch Peninsula.

Gujarat Mainland:

The Gujarat Mainland is a vast alluvium / fluvial deposits extent northward upto the north boundary of the state and beyond the boundary within the Rajasthan whereas southern extension of the deposit continues upto the southern border where it terminated against Deccan Trap. The eastern limit of the basin deposits are marked by Aravalli, Vindhyan, Satpura and Sahyadri hill ranges and western extension is partly bordered by Saurashtra – kathiawar Peninsula at the southwestern portion and Kutch Peninsular at the north western portion. The sedimentary basin is fed by southwesterly to westerly flowing several major rivers like Tapi, Normoda, Mahi Sabarmati etc and ultimately draining into Gulf of Cambay. The basin is originated from high estuarine tract between Narmada and Tapi rivers, and extend about 400km northward. The Maximum width of the basin is about 120km.

Drainage Pattern and Sediment Distribution

The Gujarat Mainland at the western coast is traversed by several rivers flowing from north east to south west and ultimately discharged into Gulf of Cambay of Arabian Sea. The area of interest is located on the Tapi river bank, one of the major river flowing almost central portion of the mainland. All the rivers of the land originated from the high land of the western Peninsula. Most of the rivers are fed by rain water. In their course through the hills / high land area they have good gradient and carry much coarse materials including pebbles and boulders, and also torn off from the beds and banks. It carries enormous quantities of fine sand and silt derived from the hills as well as from the higher peninsular up-lands. Much of the coarse sediments are deposited near its debaucher into the plains.

Geology

The topography of the area is controlled by formation rocks. Eastern part of the south mainland is bordered by alluvium tract has a typical Deccan trap scenery upto Narmada valley. North and north eastern corner of the basin is occupied by quartzite, phyllites and schists. The area of interest is located right bank of the Mahi river close to Anand and Godhra (mentioned).

Deccan traps cover large area along the eastern margin extending from southern tips of Narmada, further northwards there are scattered patches cropping out from alluvial tracts at

different places and has been recorded upto Insurance in Ahmadabad. The Traps comprises lava flows of amygdaloidal trap; porphyritic type and basaltic etc.
The Tertiaries rocks occupying in between mouths of Tapi and Narmada river, forming a fringes along the edge of Deccan traps. The basal bed of Nummulitic limestone and ferruginous clay belongs to Eocene, while overlying rocks of Khand formation (yellow limestone), ferruginous sandstone, and agate bearing conglomerate are upper Gaj of Miocene age.

The Tertiary rocks are covered with Holocene to Recent sediments across the basin. It included fluvial deposits along the river valleys. The marine deposits at the gulf and deltaic sediments at the mouth of rivers. The sands are composed of quartz, fragments of feldspar, mica and heavy minerals. Layers within the alluvial soils vary in color and are composed of sand, dark clay, clayey silt / silty clay to sand particles. Layers are more sandy along river and stream courses but silty and clayey in the flood plains.

Local Geology:

The enormous thickness of soil encountered over the study area is dominantly characterized by yellowish brown to brownish grey silty sand with clay stringers sandwich between clayey silt / silty clay layers of variable thickness. The huge yellowish grey / brownish grey silty sand to sand follows the above and continues upto depth of investigation. From the disposition (see soil profiles), and nature of soil are similar to alluvial sediments occurs on more or less flat mainland and is dominantly sandy in nature. Almost the entire area is covered by Holocene / Recent alluvium, deposited by Mahi river. The alluvium is made up of mainly sand with rare clay and boulders / gravel zones within sand at depth. Sandy areas are found along the river bank of the alluvial deposits.
The area of interested 'Wanakbori' is located at the middle of mainland on the right bank of Mahi river close proximity to nearest Godhra and Anand towns in the Gujarat State. The Mahi river in the eastern high land flows to gulf of Cambay at the west and ultimately connect the Arabian Sea. To understand the subsurface soil distribution pattern and nature altogether 68nos. of boring had been done at different locations. Maximum and minimum depth of investigation restrict between 40m and 30m respectively. It has been observed from the soil profiles when correlated with each other along the preferred directions the upper portion is covered with loose sand of over bank deposit of the recent origin. The clayey silt / silty clay occasionally inter layered with fine to medium sand layers / stringers indicating deposited on the flood plain of

holocene to recent periods. At depth the soil is sandy in nature and at places contains gravels / pebbles indicating channel sand deposits. The river bank sand at places inter layers with clayey silt / silty clay. The alluvial deposits recorded from several boring reveals that the recent alluvial soils are represented by silty sand to fine to medium sand with mica of river bank deposits at the top. The sand may contains kankars at the upper reaches. Overall consistency of subsoil gradually improved with depth.

Seismicity

The Zero peak horizontal ground acceleration (EPGA) is of the order of 0.04 for safe shut down condition and for operating basis average earthquake acceleration spectra is 0.16 (Seismic Zone Factor, Z). The information is intended to bring out the fact that the site shall be considered to lies on moderately damage risk zone. Hence, suitable seismic coefficient commensurate to Seismic Zone-III and Important Factor (I=1.5) shall be adopted in the design of the structures.

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 16/12/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.24

Co-ordinates E=668.000 N=151.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 19/11/14
Completion Date : 23/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.86 m.
Water Struck At :
Standing Water Level : 11.85 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
			DS-12	21.50
		11 23 53 (76)	SPT-13	22.00-22.45
			DS-13	23.00
		26 57 (≥100)	SPT-14	23.50-23.73
		8.0 cm Pentn.		
			DS-14	24.50
		29 52 (≥100)	SPT-15	25.00-25.21
		6.0 cm Pentn.		
			DS-15	26.00
		36 65 (≥100)	SPT-16	26.50-26.72
		7.0 cm Pentn.		
			DS-16	27.50
		40 60 (≥100)	SPT-17	28.00-28.20
		5.0 cm Pentn.		
			DS-17	29.00
		39 62 (≥100)	SPT-18	29.50-29.71
		6.0 cm Pentn.		
			DS-18	30.50
		35 45 50 (≥100)	SPT-19	31.00-31.35
		5.0 cm Pentn.		
			DS-19	32.00
		37 48 50 (≥100)	SPT-20	32.50-32.87
		7.0 cm Pentn.		
			DS-20	33.50
		40 52 50 (≥100)	SPT-21	34.00-34.36
		6.0 cm Pentn.		
			DS-21	35.00
		50 52 (≥100)	SPT-22	35.50-35.73
		8.0 cm Pentn.		
			DS-22	36.50
		56 50 (≥100)	SPT-23	37.00-37.21
		6.0 cm Pentn.		
			DS-23	38.00
		60 58 (≥100)	SPT-24	38.50-38.74
		9.0 cm Pentn.		
			DS-24	39.50
		57 59 (≥100)	SPT-25	40.00-40.22
		7.0 cm Pentn.		
21.00m. Very dense, brownish grey, silty sand with high % of gravels.				
40.22m. N.B. – '*' means sample could not be recovered.				

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 17/12/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.25

Co-ordinates E=638.000 N=150.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
		Disturbed (DS)	23
Vane (V)		Water Sample (WS)	0

Commencement Date : 24/11/14
Completion Date : 29/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.39 m.
Water Struck At :
Standing Water Level : 11.8 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m							
Stiff, light yellowish brown, sandy silt with traces of clay.		4	6	7	13	DS-1	0.50
						SPT-1	1.00-1.45
						UDS-1	2.00-2.45
		4	5	5	10	SPT-2	3.00-3.45
4.00m						UDS-2	4.00-4.45
Medium dense, deep grey, silty sand / sandy silt.		4	6	7	13	SPT-3	5.00-5.45
						DS-2	6.00
6.50m						UDS-3	6.50-6.95
						DS-3	7.50
Dense, brownish grey, sandy silt / silty sand. Obs. gravels.		11	22	23	45	SPT-4	8.00-8.45
						DS-4	9.00
					37	*UDS-4	9.50-9.67
		10	16	21		SPT-5	9.75-10.20
10.50m							
						DS-5	11.00
		10	24	37	61	SPT-6	11.50-11.95
						DS-6	12.50
Hard, yellowish brown, clayey silt. Obs. gravels & sand mixture.		9	21	27	48	SPT-7	13.00-13.45
						DS-7	14.00
		16	43	43	86	SPT-8	14.50-14.95
						DS-8	15.50
16.20m		15	26	30	56	SPT-9	16.00-16.45
						DS-9	17.00
		25	30	37	67	SPT-10	17.50-17.95
Very dense, yellowish grey, silty sand with high % of gravels & pebbles.						DS-10	18.50
		20	35	40	75	SPT-11	19.00-19.45
						DS-11	20.00
20.50m							

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Job No : 3369	Created by : Chandrani	Created on : 17/12/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.25

Co-ordinates E=638.000 N=150.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	23
		Water Sample (WS)	0

Commencement Date : 24/11/14
Completion Date : 29/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.39 m.
Water Struck At :
Standing Water Level : 11.8 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
20.50m				
		16 50 56 ≥100	SPT-12	20.50-20.95
			DS-12	21.50
		≥100	SPT-13	22.00-22.37
		18 58 50 7.0 cm Pentn.		
			DS-13	23.00
		56	SPT-14	23.50-23.95
		27 21 35		
			DS-14	24.50
		≥100	SPT-15	25.00-25.28
		38 67 13.0 cm Pentn.		
			DS-15	26.00
		≥100	SPT-16	26.50-26.77
		42 55 12.0 cm Pentn.		
			DS-16	27.50
		≥100	SPT-17	28.00-28.25
		46 60 10.0 cm Pentn.		
			DS-17	29.00
		≥100	SPT-18	30.00-30.23
Very dense, yellowish grey, silty sand with high % of gravels & pebbles.		58 65 8.0 cm Pentn.		
			DS-18	31.00
		≥100	SPT-19	31.50-31.74
		52 60 9.0 cm Pentn.		
			DS-19	32.50
		≥100	SPT-20	33.00-33.22
		56 62 7.0 cm Pentn.		
			DS-20	34.00
		≥100	SPT-21	34.50-34.69
		58 55 4.0 cm Pentn.		
			DS-21	35.50
		≥100	SPT-22	36.00-36.18
		60 50 3.0 cm Pentn.		
			DS-22	37.00
		≥100	SPT-23	37.50-37.70
		59 56 5.0 cm Pentn.		
			DS-23	38.50
		≥100	SPT-24	39.00-39.17
		65 59 2.0 cm Pentn.		
40.19m		≥100	SPT-25	40.00-40.19
		62 52 4.0 cm Pentn.		

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 17/12/2014** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.26

Co-ordinates E=617.000 N=127.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	21
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 30/11/14
Completion Date : 03/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 65.80 m.
Water Struck At :
Standing Water Level : 13.5 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
		2 2 3 (5)	DS-1	0.50
			SPT-1	1.00-1.45
			UDS-1	2.00-2.45
Loose to medium dense, reddish brown, fine silty sand.		4 5 6 (11)	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
		5 6 8 (14)	SPT-3	5.00-5.45
5.50m				
			DS-2	6.00
			UDS-3	6.50-6.95
Very stiff, deep grey, silty clay / clayey silt.			DS-3	7.50
		5 9 11 (20)	SPT-4	8.00-8.45
			DS-4	9.00
9.50m			UDS-4	9.50-9.95
			DS-5	10.50
Dense, greyish brown, silty sand with mica.		12 20 23 (43)	SPT-5	11.00-11.45
12.00m			DS-6	12.00
			*UDS-5	12.50-12.67
		10 22 27 (49)	SPT-6	12.75-13.20
			DS-7	14.00
Hard, greyish brown, clayey silt / silty clay.		25 39 48 (87)	SPT-7	14.50-14.95
			DS-8	15.50
		23 37 45 (82)	SPT-8	16.00-16.45
			DS-9	17.00
		9 15 27 (42)	SPT-9	17.50-17.95
18.00m				

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BORE LOG DATA SHEET

BORE HOLE NO.26

Co-ordinates E=617.000 N=127.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	21
		Disturbed (DS)	21
Vane (V)		Water Sample (WS)	0

Commencement Date : 30/11/14
Completion Date : 03/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 65.80 m.
Water Struck At :
Standing Water Level : 13.5 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
			DS-10	18.50
Hard, greyish brown, clayey silt / silty clay.		40		
18.00m.				
19.00m.		10 15 25	SPT-10	19.00-19.45
			DS-11	20.00
		≥100		
		28 45 50 4.0 cm Pentn.	SPT-11	20.50-20.84
			DS-12	21.50
Very dense, yellowish brown, silty sand with high % of gravels & pebbles.		≥100		
		45 50 10.0 cm Pentn.	SPT-12	22.00-22.25
			DS-13	23.00
		≥100		
		48 52 50 5.0 cm Pentn.	SPT-13	23.50-23.85
			DS-14	24.50
		35		
25.00m.		7 12 23	SPT-14	25.00-25.45
			DS-15	26.00
Hard, deep grey, silty clay.		40		
		10 16 24	SPT-15	26.50-26.95
			DS-16	27.00
		41		
28.00m.		11 15 26	SPT-16	27.50-27.95
			DS-17	28.50
		≥100		
		29 47 50 4.0 cm Pentn.	SPT-17	29.00-29.34
			DS-18	30.00
		≥100		
		48 58 11.0 cm Pentn.	SPT-18	30.50-30.76
Very dense, brownish grey, silty sand with high % of gravels.			DS-19	31.50
		≥100		
		42 54 9.0 cm Pentn.	SPT-19	32.00-32.24
			DS-20	33.00
		≥100		
		44 52 7.0 cm Pentn.	SPT-20	33.50-33.72
			DS-21	34.50
		≥100		
35.20m.		53 58 5.0 cm Pentn.	SPT-21	35.00-35.20

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
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BORE LOG DATA SHEET

BORE HOLE NO.27

Co-ordinates E=593.000 N=161.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 11/12/14
Completion Date : 13/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 66.624 m.
Water Struck At :
Standing Water Level : 14.6 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of deep grey, ash.			DS-1	0.50
0.50m.		7 12 18 (30)	SPT-1	1.00-1.45
			UDS-1	2.00-2.45
		9 13 19 (32)	SPT-2	3.00-3.45
Dense to medium dense, yellowish brown, silty fine sand / sandy silt.			UDS-2	4.00-4.45
		4 6 7 (13)	SPT-3	5.00-5.45
			DS-2	6.00
6.50m.			UDS-3	6.50-6.95
Very stiff, brownish grey, silty clay / clayey silt.			DS-3	7.50
		7 8 12 (20)	SPT-4	8.00-8.45
9.00m.			DS-4	9.00
			*UDS-4	9.50-9.65
		13 25 28 (53)	SPT-5	9.80-10.25
			DS-5	11.00
Very dense, bronwish grey, silty sand.				
		15 27 29 (56)	SPT-6	11.50-11.95
			DS-6	12.50
		17 28 31 (59)	SPT-7	13.00-13.45
14.00m.			DS-7	14.00
		21 32 35 (67)	SPT-8	14.50-14.95
Hard, greyish brown, clayey silt. Obs. gravels / kankars & mica.			DS-8	15.50
		27 43 48 (91)	SPT-9	16.00-16.45
16.50m.			DS-9	17.00
Very dense, greyish brown, clayey sandy silt with kankars & mica.				
		30 54 52 (>100) 10.0 cm Pentn.	SPT-10	17.50-17.90
18.00m.				

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 07/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.27

Co-ordinates E=593.000 N=161.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 11/12/14
Completion Date : 13/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 66.624 m.
Water Struck At :
Standing Water Level : 14.6 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
18.00m.				
Very dense, greyish brown, clayey sandy silt with kankars & mica.		34 62 ≥100 9.0 cm Pentn.	DS-10	18.50
			SPT-11	19.00-19.24
20.00m.			DS-11	20.00
		54 52 ≥100 11.0 cm Pentn.	SPT-12	20.50-20.76
			DS-12	21.50
		49 57 ≥100 10.0 cm Pentn.	SPT-13	22.00-22.25
			DS-13	23.00
		53 60 ≥100 7.0 cm Pentn.	SPT-14	23.50-23.72
			DS-14	24.50
		48 63 ≥100 12.0 cm Pentn.	SPT-15	25.00-25.27
			DS-15	26.00
		54 60 ≥100 9.0 cm Pentn.	SPT-16	26.50-26.74
Very dense, brownish grey, silty sand with high % of gravels.			DS-16	27.50
		57 54 ≥100 7.0 cm Pentn.	SPT-17	28.00-28.22
			DS-17	29.00
		49 62 ≥100 10.0 cm Pentn.	SPT-18	29.50-29.75
			DS-18	30.50
		58 52 ≥100 8.0 cm Pentn.	SPT-19	31.00-31.23
			DS-19	32.00
		60 54 ≥100 9.0 cm Pentn.	SPT-20	32.50-32.74
			DS-20	33.50
		58 55 ≥100 6.0 cm Pentn.	SPT-21	34.00-34.21
		62 54 ≥100 5.0 cm Pentn.	SPT-22	35.00-35.20
35.20m.				

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 19/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.28

Co-ordinates E=570.000 N=138.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	20	Undisturbed (UDS)	6
Cone (Pc)		Penetrometer (SPT)	20
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 07/12/14
Completion Date : 09/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 65.611 m.
Water Struck At :
Standing Water Level : 13.2 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	Depth (m)
0.00m							
Filled up soil consists of light grey, silty sand with ash.		12	21	28	49	DS-1	0.50
						SPT-1	1.00-1.45
1.50m						UDS-1	2.00-2.45
Loose, yellowish brown, silty sand with traces of clay binder.		3	3	4	7	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
4.50m							
Stiff, deep grey, clayey silt.		4	5	8	13	SPT-3	5.00-5.45
						DS-2	6.00
						UDS-3	6.50-6.95
7.50m						DS-3	7.50
Dense, brownish grey, sandy silt / silty sand.		5	7	8	15	SPT-4	8.00-8.45
						DS-4	9.00
						UDS-4	9.50-9.80
						DS-5	10.50
		9	10	17	27	SPT-5	11.00-11.45
						DS-6	12.00
						*UDS-5	12.50-12.95
		11	16	12	28	SPT-6	13.05-13.50
						DS-7	14.00
14.50m							
Hard, greyish brown, clayey silt. Obs. mica & concreation of silt.		10	18	22	40	SPT-7	14.50-14.95
						DS-8	15.50
						UDS-6	16.00-16.30
						DS-9	17.00
17.50m					>100		
Very dense, brownish grey, silty sand with high % of gravels. 18.00m		25	73	10.0 cm Pentn.		SPT-8	17.50-17.75

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
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BORE HOLE NO.28

Co-ordinates E=570.000 N=138.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	20	Undisturbed (UDS)	6
Cone (Pc)		Penetrometer (SPT)	20
		Disturbed (DS)	20
Vane (V)		Water Sample (WS)	0

Commencement Date : 07/12/14
Completion Date : 09/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 65.611 m.
Water Struck At :
Standing Water Level : 13.2 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
18.00m				
		≥100	DS-10	18.50
		42 57 8.0 cm Pentn.	SPT-9	19.00-19.23
		≥100	DS-11	20.00
		53 62 4.0 cm Pentn.	SPT-10	20.50-20.69
		≥100	DS-12	21.50
		48 58 9.0 cm Pentn.	SPT-11	22.00-22.24
		≥100	DS-13	23.00
		52 60 7.0 cm Pentn.	SPT-12	23.50-23.72
		≥100	DS-14	24.50
		49 57 9.0 cm Pentn.	SPT-13	25.00-25.24
		≥100	DS-15	26.00
Very dense, brownish grey, silty sand with high % of gravels.		53 64 5.0 cm Pentn.	SPT-14	26.50-26.70
		≥100	DS-16	27.50
		57 62 12.0 cm Pentn.	SPT-15	28.00-28.27
		≥100	DS-17	29.00
		48 54 13.0 cm Pentn.	SPT-16	29.50-29.78
		≥100	DS-18	30.50
		52 58 8.0 cm Pentn.	SPT-17	31.00-31.23
		≥100	DS-19	32.00
		58 60 5.0 cm Pentn.	SPT-18	32.50-32.70
		≥100	DS-20	33.50
		62 55 6.0 cm Pentn.	SPT-19	34.00-34.21
		≥100		
35.18m		60 72 3.0 cm Pentn.	SPT-20	35.00-35.18

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 10/12/2014** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.29

Co-ordinates E=499.000 N=159.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	21
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 04/12/14
Completion Date : 06/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 67.752 m.
Water Struck At :
Standing Water Level : 15.1 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
		2 2 3 (5)	DS-1	0.50
			SPT-1	1.00-1.45
			UDS-1	2.00-2.45
Loose to medium dense, yellowish brown, silty sand with traces of mica.		3 4 6 (10)	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
		5 13 14 (27)	SPT-3	5.00-5.45
			DS-2	6.00
6.50m			UDS-3	6.50-6.95
			DS-3	7.50
		7 15 22 (37)	SPT-4	8.00-8.45
Hard, greyish brown, clayey sandy silt. Obs. kankars.			DS-4	9.00
			UDS-4	9.50-9.95
10.50m			DS-5	10.50
		12 29 33 (62)	SPT-5	11.00-11.45
			DS-6	12.00
			*UDS-5	12.50-12.66
Dense to very dense, yellowish grey, sandy silt / silty sand. Obs. mica & kankars.		15 24 36 (60)	SPT-6	12.80-13.25
			DS-7	14.00
		12 14 32 (46)	SPT-7	14.50-14.95
			DS-8	15.50
16.00m			SPT-8	16.00-16.45
		11 17 30 (47)	DS-9	17.00
Hard, brownish grey, silty clay / clayey silt. Obs. mica & sand mixture.			SPT-9	17.50-17.95
		14 20 32 (52)		
18.00m				

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BORE HOLE NO.29

Co-ordinates E=499.000 N=159.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	21
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 04/12/14
Completion Date : 06/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 67.752 m.
Water Struck At :
Standing Water Level : 15.1 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
18.00m.				
Hard, brownish grey, silty clay / clayey silt. Obs. mica & sand mixture.		10 15 24 — 39	DS-10	18.50
			SPT-10	19.00-19.45
20.00m.			DS-11	20.00
		17 32 40 — 72	SPT-11	20.50-20.95
			DS-12	21.50
		34 49 52 — ≥100 (7.0 cm Pentn.)	SPT-12	22.00-22.37
			DS-13	23.00
		30 57 54 — ≥100 (5.0 cm Pentn.)	SPT-13	23.50-23.85
			DS-14	24.50
		40 54 58 — ≥100 (4.0 cm Pentn.)	SPT-14	25.00-25.34
			DS-15	26.00
		52 55 — ≥100 (10.0 cm Pentn.)	SPT-15	26.50-26.75
Very dense, brownish grey, silty sand with gravels & pebbles.			DS-16	27.50
		48 57 — ≥100 (8.0 cm Pentn.)	SPT-16	28.00-28.23
			DS-17	29.00
		53 54 — ≥100 (9.0 cm Pentn.)	SPT-17	29.50-29.74
			DS-18	30.50
		58 62 — ≥100 (12.0 cm Pentn.)	SPT-18	31.00-31.27
			DS-19	32.00
		47 53 — ≥100 (8.0 cm Pentn.)	SPT-19	32.50-32.73
			DS-20	33.50
		52 58 — ≥100 (5.0 cm Pentn.)	SPT-20	34.00-34.20
35.19m.		60 54 — ≥100 (4.0 cm Pentn.)	SPT-21	35.00-35.19

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 15/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.30

Co-ordinates E=313.000 N=150.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	24
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 29/12/14
Completion Date : 01/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 78.844 m.
Water Struck At :
Standing Water Level : 25.1 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of brownish grey, sandy silt with coal dust & gravels.		10 19 21 — 40	DS-1	0.50
			SPT-1	1.00-1.45
			*UDS-1	2.00-2.15
3.00m.		3 4 8 — 12	SPT-2	3.00-3.45
Medium dense, brownish grey, silty sand sand with traces of clay binders.			UDS-2	4.00-4.45
		5 7 11 — 18	SPT-3	5.00-5.45
			DS-2	6.00
			UDS-3	6.50-6.95
			DS-3	7.50
		7 10 13 — 23	SPT-4	8.00-8.45
			DS-4	9.00
			UDS-4	9.50-9.95
10.00m.			DS-5	10.50
		9 17 29 — 46	SPT-5	11.00-11.45
			DS-6	12.00
			*UDS-5	12.50-12.63
Hard, brownish grey, clayey silt with traces of sand mixture. Obs. gravels.		22 36 43 — 79	SPT-6	12.63-13.08
			DS-7	13.50
		28 32 46 — 78	SPT-7	14.00-14.45
			DS-8	15.00
		23 41 48 — 89	SPT-8	15.50-15.95
16.50m.			DS-9	16.50
		32 46 52 — ≥100 (11.0 cm Pentn.)	SPT-9	17.00-17.41
Very dense, brownish grey, clayey sandy silt.			DS-10	18.00
		38 42 55 — ≥100 (8.0 cm Pentn.)	SPT-10	18.50-18.88
			DS-11	19.50
20.00m.				
Very dense, brownish grey, silty sand.		29 48 56 — ≥100 (7.0 cm Pentn.)	SPT-11	20.00-20.37
20.75m.				

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BORE HOLE NO.30

Co-ordinates E=313.000 N=150.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	24
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 29/12/14
Completion Date : 01/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 78.844 m.
Water Struck At :
Standing Water Level : 25.1 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
			DS-12	21.00
		≥100	SPT-12	21.50-21.89
		33 47 53 9.0 cm Pentn.	DS-13	22.50
		≥100	SPT-13	23.00-23.26
		31 54 11.0 cm Pentn.	DS-14	24.00
		≥100	SPT-14	24.50-24.73
Very dense, brownish grey, silty sand.		36 52 8.0 cm Pentn.	DS-15	25.50
		≥100	SPT-15	26.00-26.25
		30 59 10.0 cm Pentn.	DS-16	27.00
		≥100	SPT-16	27.50-27.73
		35 54 8.0 cm Pentn.	DS-17	28.50
28.50m		≥100	SPT-17	29.00-29.37
		39 49 52 7.0 cm Pentn.	DS-18	30.00
		≥100	SPT-18	30.50-30.76
Very dense, brownish grey, clayey sandy silt.		36 59 11.0 cm Pentn.	DS-19	31.50
		≥100	SPT-19	32.00-32.28
32.00m		40 67 13.0 cm Pentn.	DS-20	33.00
		≥100	SPT-20	33.50-33.90
		33 40 57 10.0 cm Pentn.	DS-21	34.50
		≥100	SPT-21	35.00-35.38
		38 45 55 8.0 cm Pentn.	DS-22	36.00
		≥100	SPT-22	36.50-36.73
Very dense, brownish grey, silty sand with gravels.		42 58 8.0 cm Pentn.	DS-23	37.50
		≥100	SPT-23	38.00-38.22
		46 56 7.0 cm Pentn.	DS-24	39.00
		≥100	SPT-24	40.00-40.22
40.22m		57 52 7.0 cm Pentn.		

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 15/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.31

Co-ordinates E=296.000 N=89.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 26/12/14
Completion Date : 29/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 79.905 m.
Water Struck At :
Standing Water Level : 26.0 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of light grey / brownish grey, sandy silt with ash & gravels.						DS-1	0.50
1.00m.		7	13	19	32	SPT-1	1.00-1.45
Blackish grey, coal with gravels.						*UDS-1	2.00-2.13
		8	11	17	28	SPT-2	2.13-2.58
3.00m.		6	8	9	17	SPT-3	3.00-3.45
Medium dense, yellowish brown, sandy silt.						UDS-2	4.00-4.45
		6	12	17	29	SPT-4	5.00-5.45
6.00m.						DS-2	6.00
						UDS-3	6.50-6.95
						DS-3	7.50
Hard, yellowish brown, clayey silt with sand mixture.		9	16	21	37	SPT-5	8.00-8.45
						DS-4	9.00
						UDS-4	9.50-9.95
10.50m.						DS-5	10.50
Very dense, brownish grey, sandy silt with concreation of silt.		15	35	44	79	SPT-6	11.00-11.45
12.00m.						DS-6	12.00
		12	29	38	67	SPT-7	12.50-12.95
						DS-7	13.50
		20	39	49	88	SPT-8	14.00-14.45
						DS-8	15.00
Very dense, brownish grey, sandy silt.		22	41	52	93	SPT-9	15.50-15.95
						DS-9	16.50
		24	50	63	>100	SPT-10	17.00-17.41
				11.0 cm Pentn.			
						DS-10	18.00
		28	50	50	>100	SPT-11	18.50-18.89
19.00m.				9.0 cm Pentn.			
						DS-11	19.50
Very dense, deep grey, silty sand with mica.		19	50	50	>100	SPT-12	20.00-20.37
20.75m.				7.0 cm Pentn.			

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
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BORE LOG DATA SHEET

BORE HOLE NO.31

Co-ordinates E=296.000 N=89.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 26/12/14
Completion Date : 29/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 79.905 m.
Water Struck At :
Standing Water Level : 26.0 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
			DS-12	21.00
		30 42 59 ≥100	SPT-13	21.50-21.95
			DS-13	22.50
		15 38 54 92	SPT-14	23.00-23.45
			DS-14	24.00
		42 58 60 ≥100 9.0 cm Pentn.	SPT-15	24.50-24.89
			DS-15	25.50
		32 46 51 ≥100 9.0 cm Pentn.	SPT-16	26.00-26.39
			DS-16	27.00
		29 43 50 ≥100 7.0 cm Pentn.	SPT-17	27.50-27.87
			DS-17	28.50
		35 45 52 ≥100 7.0 cm Pentn.	SPT-18	29.00-29.37
			DS-18	30.00
		43 52 50 ≥100 4.0 cm Pentn.	SPT-19	30.50-30.84
			DS-19	31.50
		56 60 ≥100 12.0 cm Pentn.	SPT-20	32.00-32.27
			DS-20	33.00
		48 50 ≥100 9.0 cm Pentn.	SPT-21	33.50-33.74
			DS-21	34.50
		45 58 ≥100 13.0 cm Pentn.	SPT-22	35.00-35.28
			DS-22	36.00
		49 56 ≥100 8.0 cm Pentn.	SPT-23	36.50-36.73
			DS-23	37.50
		44 55 ≥100 10.0 cm Pentn.	SPT-24	38.00-38.25
			DS-24	39.00
		48 53 ≥100 7.0 cm Pentn.	SPT-25	40.00-40.22

20.75m

Very dense, deep grey, silty sand with mica.

27.50m

Very dense, brownish grey, silty sand. Obs. concreation of silt.

33.00m

Very dense, brownish grey, sandy silt / silty sand. Obs. mica.

40.22m

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 15/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.32

Co-ordinates E=271.000 N=38.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	24
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 24/12/14
Completion Date : 27/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 79.915 m.
Water Struck At :
Standing Water Level : 26.1 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of brownish grey, sandy silt.			DS-1	0.50
1.00m. Filled up soil consists of dense, deep grey, sandy silt with ash & gravels.		7 19 23 (42)	SPT-1	1.00-1.45
			UDS-1	2.00-2.45
2.50m. Medium dense, brownish grey, silty sand with traces of mica.		3 4 7 (11)	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
		5 7 9 (16)	SPT-3	5.00-5.45
6.00m. Medium dense, yellowish brown, silty sand with traces of mica. Obs. concreation of silt.			DS-2	6.00
			UDS-3	6.50-6.95
			DS-3	7.50
		10 12 13 (25)	SPT-4	8.00-8.45
			DS-4	9.00
9.50m. Very stiff, brownish grey, clayey silt.			UDS-4	9.50-9.95
			DS-5	10.50
		7 11 13 (24)	SPT-5	11.00-11.45
11.50m. Hard, brownish grey, clayey silt with sand mixture.			DS-6	12.00
			*UDS-5	12.50-12.65
		14 26 32 (58)	SPT-6	12.80-13.25
			DS-7	13.55
		20 34 38 (72)	SPT-7	14.00-14.45
			DS-8	15.00
		28 42 54 (>100) 10.0 cm Pentn.	SPT-8	15.50-15.90
			DS-9	16.50
		30 48 52 (>100) 7.0 cm Pentn.	SPT-9	17.00-17.37
18.00m. Very dense, brownish grey, clayey sandy silt.			DS-10	18.00
		26 46 57 (>100) 9.0 cm Pentn.	SPT-10	18.50-18.89
			DS-11	19.50
		21 43 53 (>100) 10.0 cm Pentn.	SPT-11	20.00-20.40
20.75m.				

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 15/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.32

Co-ordinates E=271.000 N=38.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	24
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 24/12/14
Completion Date : 27/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 79.915 m.
Water Struck At :
Standing Water Level : 26.1 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
20.75m. Very dense, brownish grey, clayey sandy silt.		≥100 / 23 48 56 / 7.0 cm Pentn.	DS-12	21.00
			SPT-12	21.50-21.87
22.50m. Very dense, brownish grey, silty sand.		≥100 / 46 50 / 5.0 cm Pentn.	DS-13	22.50
			SPT-13	23.00-23.20
24.00m. Very dense, brownish grey, silty sand with concreation of silt.		≥100 / 28 42 56 / 8.0 cm Pentn.	DS-14	24.00
			SPT-14	24.50-24.88
			DS-15	25.50
26.00m. Very dense, brownish grey, silty sand with traces of kankars & clay binders.		≥100 / 38 55 / 9.0 cm Pentn.	SPT-15	26.00-26.24
			DS-16	27.00
		≥100 / 30 50 / 10.0 cm Pentn.	SPT-16	27.50-27.675
			DS-17	28.50
29.00m. Very dense, brownish grey, silty sand with traces of kankars & clay binders.		≥100 / 24 43 52 / 12.0 cm Pentn.	SPT-17	29.00-29.42
			DS-18	30.00
		≥100 / 27 46 50 / 7.0 cm Pentn.	SPT-18	30.50-30.87
31.50m. Very dense, brownish grey, silty sand / sandy silt.		≥100 / 33 44 52 / 9.0 cm Pentn.	DS-19	31.50
			SPT-19	32.00-32.39
			DS-20	33.00
		≥100 / 42 54 / 13.0 cm Pentn.	SPT-20	33.50-33.78
			DS-21	34.50
		≥100 / 38 53 / 9.0 cm Pentn.	SPT-21	35.00-35.24
			DS-22	36.00
		≥100 / 45 50 / 8.0 cm Pentn.	SPT-22	36.50-36.73
			DS-23	37.50
		≥100 / 41 52 / 7.0 cm Pentn.	SPT-23	38.00-38.22
			DS-24	39.00
40.24m.		≥100 / 45 50 / 9.0 cm Pentn.	SPT-24	40.00-40.24

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 15/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.33

Co-ordinates E=386.000 N=132.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	24
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 28/12/14
Completion Date : 31/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 76.477 m.
Water Struck At :
Standing Water Level : 23.75 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of brownish grey / deep grey, sandy silt with ash & gravels.			DS-1	0.50
1.00m. Filled up soil consists of blackish grey, coal dust & gravels.		4 0 0 0 9/4 5	SPT-1	1.00-1.45
2.00m. Medium dense, yellowish brown, silty sand with traces of mica. Obs. reddish brown patches.			UDS-1	2.00-2.45
		5 7 10 17	SPT-2	3.00-3.45
4.00m. Medium dense, yellowish brown, silty sand with traces of mica.			UDS-2	4.00-4.45
		8 13 15 28	SPT-3	5.00-5.45
			DS-2	6.00
			UDS-3	6.50-6.95
7.50m. Dense, brownish grey, clayey sandy silt with concreation of silt.			DS-3	7.50
		9 14 18 32	SPT-4	8.00-8.45
9.00m. Hard, brownish grey, clayey silt with concreation of silt & traces of sand mixture.			DS-4	9.00
			UDS-4	9.50-9.80
			DS-5	10.50
		44 54 ≥100 10.0 cm Pentn.	SPT-5	11.00-11.25
			DS-6	12.00
		37 42 52 ≥100 9.0 cm Pentn.	SPT-6	12.50-12.89
			DS-7	13.50
		18 54 ≥100 11.0 cm Pentn.	SPT-7	14.00-14.26
			DS-8	15.00
		50 50 ≥100 9.0 cm Pentn.	SPT-8	15.50-15.74
			DS-9	16.50
		47 54 ≥100 7.0 cm Pentn.	SPT-9	17.00-17.22
18.00m. Very dense, brownish grey, silty sand / sandy silt.			DS-10	18.00
		60 50 ≥100 5.0 cm Pentn.	SPT-10	18.50-18.70
			DS-11	19.50
		49 54 ≥100 8.0 cm Pentn.	SPT-11	20.00-20.23
20.75m.				

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Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

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BORE LOG DATA SHEET

BORE HOLE NO.33

Co-ordinates E=386.000 N=132.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	24
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 28/12/14
Completion Date : 31/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 76.477 m.
Water Struck At :
Standing Water Level : 23.75 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
20.75m. Very dense, brownish grey, silty sand / sandy silty.		79	DS-12	21.00
21.50m.		24 37 42	SPT-12	21.50-21.95
Hard, brownish grey, clayey silt with traces of sand mixture. Obs. mica & gravels.		84	DS-13	22.50
		23 39 45	SPT-13	23.00-23.45
24.00m.		≥100	DS-14	24.00
		20 48 55 10.0 cm Pentn.	SPT-14	24.50-24.90
Very dense, brownish grey, silty sand.		≥100	DS-15	25.50
		37 44 54 5.0 cm Pentn.	SPT-15	26.00-26.35
27.00m.		≥100	DS-16	27.00
Very dense, brownish grey, silty sand with concreation of silt & gravels.		48 52 10.0 cm Pentn.	SPT-16	27.50-27.75
		≥100	DS-17	28.50
29.00m.		43 54 8.0 cm Pentn.	SPT-17	29.00-29.23
		≥100	DS-18	30.00
		30 47 54 5.0 cm Pentn.	SPT-18	30.50-30.85
		≥100	DS-19	31.50
		44 54 9.0 cm Pentn.	SPT-19	32.00-32.24
		≥100	DS-20	33.00
		53 50 7.0 cm Pentn.	SPT-20	33.50-33.72
Very dense, brownish grey, silty sand with high % of gravels & pebbles.		≥100	DS-21	34.50
		49 54 8.0 cm Pentn.	SPT-21	35.00-35.23
		≥100	DS-22	36.00
		60 52 9.0 cm Pentn.	SPT-22	36.50-36.74
		≥100	DS-23	37.50
		54 50 7.0 cm Pentn.	SPT-23	38.00-38.22
		≥100	DS-24	39.00
40.23m.		52 54 8.0 cm Pentn.	SPT-24	40.00-40.23

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | Created by : Chandrani | Created on : 15/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.34

Co-ordinates E=430.000 N=90.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	6
Cone (Pc)		Penetrometer (SPT)	24
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 28/12/14
Completion Date : 01/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 79.385 m.
Water Struck At :
Standing Water Level : 25.45 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				Ref. No	Depth (m)
0.00m							
Filled up soil consists of brownish grey, sandy silt with ash & gravels.						DS-1	0.50
1.00m		4	5	6	11	SPT-1	1.00-1.45
						UDS-1	2.00-2.45
		3	5	5	10	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
Medium dense, greyish brown, silty sand with traces of mica. Obs. coal dust patches.		5	8	9	17	SPT-3	5.00-5.45
						DS-2	6.00
						UDS-3	6.50-6.95
						DS-3	7.50
8.00m		8	10	11	21	SPT-4	8.00-8.45
						DS-4	9.00
Medium dense, brownish grey, silty sand with clay binders.						UDS-4	9.50-9.95
						DS-5	10.50
11.00m		17	20	28	48	SPT-5	11.00-11.45
						DS-6	12.00
						*UDS-5	12.50-12.65
		12	17	21	38	SPT-6	12.65-13.10
						DS-7	13.50
		15	25	29	54	SPT-7	14.00-14.45
Hard, brownish grey, clayey silt with gravels.						DS-8	15.00
		14	32	35	67	SPT-8	15.50-15.95
						DS-9	16.50
		16	38	40	78	SPT-9	17.00-17.45
18.00m						DS-10	18.00
		48	54		≥100	SPT-10	18.50-18.72
				7.0 cm Pentn.			
Hard, brownish grey, clayey silt with traces of sand mixture.						DS-11	19.50
		24	40	52	≥100	SPT-11	20.00-20.38
20.75m				8.0 cm Pentn.			

BH-34/Sheet-1

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
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BORE LOG DATA SHEET

BORE HOLE NO.34

Co-ordinates E=430.000 N=90.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	6
Cone (Pc)		Penetrometer (SPT)	24
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 28/12/14
Completion Date : 01/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 79.385 m.
Water Struck At :
Standing Water Level : 25.45 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
20.75m.			DS-12	21.00
		30 45 54 ≥100	SPT-12	21.50-21.86
		6.0 cm Pentn.	DS-13	22.50
Hard, brownish grey, clayey silt with traces of sand mixture.		21 47 57 ≥100	SPT-13	23.00-23.45
			DS-14	24.00
		32 45 52 ≥100	SPT-14	24.50-24.89
		9.0 cm Pentn.	DS-15	25.50
25.50m.		13 16 18 34	SPT-15	26.00-26.45
			DS-16	27.00
Desne brownish grey, silty sand.		14 19 27 46	SPT-16	27.50-27.95
			DS-17	28.50
29.00m.		17 24 35 59	*UDS-6	29.00-29.15
Very dense, brownish grey, silty sand with gravels.			SPT-17	29.30-29.75
30.50m.			DS-18	30.50
Hard, brownish grey, clayey silt with traces of sand mixture.		19 34 43 77	SPT-18	31.00-31.45
32.00m.			DS-19	32.00
		38 49 54 ≥100	SPT-19	32.50-32.84
		4.0 cm Pentn.	DS-20	33.50
		34 47 52 ≥100	SPT-20	34.00-34.36
		6.0 cm Pentn.	DS-21	35.00
		45 54 ≥100	SPT-21	35.50-35.75
Very dense, brownish grey, silty sand with gravels & pebbles.		10.0 cm Pentn.	DS-22	36.50
		47 58 ≥100	SPT-22	37.00-37.22
		7.0 cm Pentn.	DS-23	38.00
		56 50 ≥100	SPT-23	38.50-38.74
		9.0 cm Pentn.	DS-24	39.50
		60 52 ≥100	SPT-24	40.00-40.23
40.23m.		8.0 cm Pentn.		

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 15/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.35

Co-ordinates E=483.000 N=55.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	21
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 11/12/14
Completion Date : 13/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 68.012 m.
Water Struck At :
Standing Water Level : 15.2 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	Depth (m)
Filled up soil consists of light grey, sandy silt with ash.	0.00m / 0.50m					DS-1	0.50
		1	1	2	3	SPT-1	1.00-1.45
						UDS-1	2.00-2.45
Very loose to medium dense, yellowish brown, silty sand with traces of mica.		2	2	1	3	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
		5	6	9	15	SPT-3	5.00-5.45
	6.00m					DS-2	6.00
						UDS-3	6.50-6.95
						DS-3	7.50
		13	40	48	88	SPT-4	8.00-8.45
Hard, yellowish brown, clayey silt with traces of sand mixture.						DS-4	9.00
						UDS-4	9.50-9.80
						DS-5	10.50
		12	63		>100	SPT-5	11.00-11.27
	11.50m			12.0	cm Pentn.		
		11	38	52	90	DS-6 / SPT-6	12.00 / 12.00-12.45
						DS-7	13.50
Very dense, brownish grey, silty sand. Obs. gravels.		12	42	44	86	SPT-7	14.00-14.45
						DS-8	15.00
		11	33	45	78	SPT-8	15.50-15.95
	16.50m					DS-9	16.50
Very dense, greyish brown, sandy silt with traces of clay. Obs. concreation of silt.		16	32	45	77	SPT-9	17.00-17.45
	18.00m					DS-10	18.00

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | Created by : Chandrani | Created on : 15/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.35

Co-ordinates E=483.000 N=55.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	21
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 11/12/14
Completion Date : 13/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 68.012 m.
Water Struck At :
Standing Water Level : 15.2 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
18.00m				
Very dense, greyish brown, sandy silt with traces of clay. Obs. concreation of silt.		20 42 49 (91)	SPT-10	18.50-18.95
			DS-11	19.50
		26 38 38 (76)	SPT-11	20.00-20.45
21.00m			DS-12	21.00
		38 52 2 (>100) 13.0 cm Pentn.	SPT-12	22.00-22.28
			DS-13	23.00
		43 60 (>100) 7.0 cm Pentn.	SPT-13	23.50-23.72
			DS-14	24.50
		50 50 (>100) 2.0 cm Pentn.	SPT-14	25.00-25.17
			DS-15	26.00
		50 50 (>100) 6.0 cm Pentn.	SPT-15	26.50-26.71
			DS-16	27.50
Very dense, yellowish brown, silty sand with high % of gravels.		50 50 (>100) 9.0 cm Pentn.	SPT-16	28.00-28.24
			DS-17	29.00
		50 50 (>100) 3.0 cm Pentn.	SPT-17	29.50-29.68
			DS-18	30.50
		50 50 (>100) 8.0 cm Pentn.	SPT-18	31.00-31.23
			DS-19	31.50
		63 50 (>100) 5.0 cm Pentn.	SPT-19	32.00-32.20
			DS-20	33.00
		54 52 (>100) 9.0 cm Pentn.	SPT-20	33.50-33.74
			DS-21	34.50
35.19m		61 50 (>100) 4.0 cm Pentn.	SPT-21	35.00-35.19

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 07/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.36

Co-ordinates E=522.000 N=72.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	18	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	18
Vane (V)		Disturbed (DS)	17
		Water Sample (WS)	0

Commencement Date : 15/12/14
Completion Date : 17/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 66.246 m.
Water Struck At :
Standing Water Level : 13.3 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of sandy silt with ash. 0.50m.			DS-1	0.50
		3 3 4 (7)	SPT-1	1.00-1.45
			UDS-1	2.00-2.45
		5 6 7 (13)	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
Loose to medium dense, greyish brown, silty sand with traces of mica & clay binders.		7 5 9 (14)	SPT-3	5.00-5.45
			DS-2	6.00
			UDS-3	6.50-6.95
			DS-3	7.50
		9 11 18 (29)	SPT-4	8.00-8.45
			DS-4	9.00
			UDS-4	9.50-9.95
			DS-5	10.50
11.00m.		13 41 45 (86)	SPT-5	11.00-11.45
			DS-6	12.00
Hard, brownish grey, clayey silt with sand mixture.		12 29 47 (76)	SPT-6	12.50-12.95
			DS-7	13.50
		14 27 48 (75)	SPT-7	14.00-14.45
15.00m.			DS-8	15.00
Very dense, brownish grey, clayey silty sand. 15.50m.				

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
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BORE LOG DATA SHEET

BORE HOLE NO.36

Co-ordinates E=522.000 N=72.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	18	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	18
		Disturbed (DS)	17
Vane (V)		Water Sample (WS)	0

Commencement Date : 15/12/14
Completion Date : 17/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 66.246 m.
Water Struck At :
Standing Water Level : 13.3 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
15.50m				
Very dense, brownish grey, clayey silty sand.		18 32 57 — 89	SPT-8	15.50-15.95
			DS-9	16.50
		20 27 38 — 65	SPT-9	17.00-17.45
			DS-10	18.00
		21 29 40 — 69	SPT-10	18.50-18.95
19.00m				
			DS-11	19.50
		12 26 42 — 68	SPT-11	20.00-20.45
			DS-12	21.00
		35 45 49 — 94	SPT-12	21.50-21.95
Very dense, brownish grey, silty sand with gravels. A pocket of clayey silt with sand mixture was observed around SPT-15.			DS-13	22.50
		43 62 — 6.0 cm Pentn. — ≥100	SPT-13	23.00-23.21
			DS-14	24.00
		53 56 — 3.0 cm Pentn. — ≥100	SPT-14	24.50-24.68
			DS-15	25.50
		55 62 — 7.0 cm Pentn. — ≥100	SPT-15	26.00-26.22
26.50m				
			DS-16	27.00
		29 52 50 — 8.0 cm Pentn. — ≥100	SPT-16	27.50-27.88
Very dense, greyish brown, silty sand with traces of clay. Obs. concreation of silt & mica.			DS-17	28.50
		43 61 — 13.0 cm Pentn. — ≥100	SPT-17	29.00-29.28
		34 60 — 11.0 cm Pentn. — ≥100	SPT-18	30.00-30.26
30.26m				

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 17/12/2014** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.37

Co-ordinates E=609.000 N=93.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	24
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 02/12/14
Completion Date : 04/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.026 m.
Water Struck At :
Standing Water Level : 11.4 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of brownish grey, silty fine sand. Obs. gravels. 0.50m.			DS-1	0.50
		6 7 7 (14)	SPT-1	1.00-1.45
			UDS-1	2.00-2.45
Medium dense, yellowish brown, silty sand / sandy silt.		4 6 9 (15)	SPT-2	3.00-3.45
			*UDS-2	4.00-4.45
		5 6 5 (11)	SPT-3	4.80-5.25
5.50m.				
			DS-2	6.00
			UDS-3	6.50-6.95
Medium dense, yellowish brown, silty fine sand with pieces of clay mixture.			DS-3	7.50
		9 10 10 (20)	SPT-4	8.00-8.45
9.00m.			DS-4	9.00
			UDS-4	9.50-9.95
Medium dense, yellowish brown, silty sand.			DS-5	10.50
11.00m.				
		11 14 16 (30)	SPT-5	11.00-11.45
			DS-6	12.00
			*UDS-5	12.50-12.68
		8 17 26 (43)	SPT-6	12.75-13.20
Hard, greyish brown, silty clay / clayey silt.			DS-7	14.00
		12 20 28 (48)	SPT-7	14.50-14.95
			DS-8	15.50
16.00m.		30 45 55 (100)	SPT-8	16.00-16.45
			DS-9	17.00
		27 47 58 (>100) 13.0 cm Pentn.	SPT-9	17.50-17.93
Very dense, brownish grey, silty sand.			DS-10	18.50
		29 54 50 (>100) 5.0 cm Pentn.	SPT-10	19.00-19.35
			DS-11	20.00
21.00m.		21 43 52 (>100) 10.0 cm Pentn.	SPT-11	20.50-20.90

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Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 17/12/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.37

Co-ordinates E=609.000 N=93.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	24
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 02/12/14
Completion Date : 04/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.026 m.
Water Struck At :
Standing Water Level : 11.4 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
21.00m				
Very dense, brownish grey, silty sand.		32 45 50 (9.0 cm) ≥100 Pentn.	DS-12	21.50
			SPT-12	22.00-22.39
			DS-13	23.00
23.50m		35 43 50 (7.0 cm) ≥100 Pentn.	SPT-13	23.50-23.87
			DS-14	24.50
		34 47 50 (4.0 cm) ≥100 Pentn.	SPT-14	25.00-25.34
			DS-15	26.00
		12 20 32 52	SPT-15	26.50-26.95
Hard, greyish brown, silty clay / clayey silt.			DS-16	27.50
		14 25 34 59	SPT-16	28.00-28.45
			DS-17	29.00
		17 30 43 73	SPT-17	29.50-29.95
			DS-18	30.50
		20 35 42 77	SPT-18	31.00-31.45
32.00m			DS-19	32.00
Very dense, greyish brown, clayey silty fine sand. Obs. mica.		23 38 44 82	SPT-19	32.50-32.95
33.50m			DS-20	33.50
Very dense, brownish grey, silty sand with gravels. Obs. clay binder.		48 54 (7.0 cm) ≥100 Pentn.	SPT-20	34.00-34.22
35.00m			DS-21	35.00
		57 50 (5.0 cm) ≥100 Pentn.	SPT-21	35.50-35.70
			DS-22	36.50
Very dense, brownish grey to light grey, compacted coarse sand. Obs. gravels.		65 50 (3.0 cm) ≥100 Pentn.	SPT-22	37.00-37.18
			DS-23	38.00
		63 50 (4.0 cm) ≥100 Pentn.	SPT-23	38.50-38.69
			DS-24	39.50
40.17m		70 54 (2.0 cm) ≥100 Pentn.	SPT-24	40.00-40.17

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
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BORE LOG DATA SHEET

BORE HOLE NO.38

Co-ordinates E=645.000 N=94.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 03/12/14
Completion Date : 06/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.681 m.
Water Struck At :
Standing Water Level : 11.3 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.							
Filled up soil consists of deep grey, ash. Obs. stone pieces.						DS-1	0.50
0.50m.		5	5	6	11	SPT-1	1.00-1.45
						UDS-1	2.00-2.45
Medium dense, yellowish brown, silty sand.		3	5	6	11	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
		4	6	7	13	SPT-3	5.00-5.45
6.00m.						DS-2	6.00
Brownish grey, clayey silt with traces of sand mixture.						UDS-3	6.50-6.95
7.50m.						DS-3	7.50
		10	18	25	43	SPT-4	8.00-8.45
						DS-4	9.00
					48	*UDS-4	9.50-9.67
Desne, brownish grey, silty sand. Obs. gravels & pebbles.		12	20	28		SPT-5	9.80-10.25
						DS-5	11.00
					45		
		8	21	24		SPT-6	11.50-11.95
						DS-6	12.50
13.00m.					38		
		10	16	22		SPT-7	13.00-13.45
						DS-7	14.00
					57		
		12	23	34		SPT-8	14.50-14.95
Hard, greyish brown, clayey silt. Obs. kankars & mica.						DS-8	15.50
					36		
		14	17	19		SPT-9	16.00-16.45
						DS-9	17.00
						*UDS-5	17.50-17.65
18.00m.							

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Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 17/12/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.38

Co-ordinates E=645.000 N=94.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 03/12/14
Completion Date : 06/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.681 m.
Water Struck At :
Standing Water Level : 11.3 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
18.00m		11 15 24 39	SPT-10	17.80-18.25
			DS-10	18.50
		80		
		24 38 42	SPT-11	19.00-19.45
Hard, greyish brown, clayey silt. Obs. kankars & mica.			DS-11	20.00
		55		
		19 27 28	SPT-12	20.50-20.95
21.50m			DS-12	21.50
		84		
		21 37 47	SPT-13	22.00-22.45
Very dense, brownish grey, silty sand with high % of gravels.			DS-13	23.00
		>100		
		32 49 50 7.0 cm Pentn.	SPT-14	23.50-23.87
24.50m			DS-14	24.50
		73		
Hard, brownish grey, silty clay / clayey silt. Obs. gravels.		19 30 43	SPT-15	25.00-25.45
26.00m			DS-15	26.00
		>100		
		50 50 12.0 cm Pentn.	SPT-16	26.50-26.77
			DS-16	27.50
		>100		
		24 38 50 10.0 cm Pentn.	SPT-17	28.00-28.40
			DS-17	29.00
		>100		
		28 40 50 7.0 cm Pentn.	SPT-18	29.50-29.87
Very dense, brownish grey, clayey silty fine sand / sandy silt. Obs. mica.			DS-18	30.50
		68		
		17 25 43	SPT-19	31.00-31.45
			DS-19	32.00
		82		
		19 34 48	SPT-20	32.50-32.95
			DS-20	33.50
		97		
		23 43 54	SPT-21	34.00-34.45
34.50m				
Very dense, brownish grey, silty sand with gravels & pebbles.		>100		
35.18m		48 55 3.0 cm Pentn.	SPT-22	35.00-35.18

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | Created by : Chandrani | Created on : 11/11/2014 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.39

Co-ordinates E=680.000 N=92.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	23	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	23
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 24/10/14
Completion Date : 29/10/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.524 m.
Water Struck At :
Standing Water Level : 13.6 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists with grey, ash & stone pieces. 0.60m.						DS-1	0.50
Loose to medium dense, greyish brown, silty sand. A pocket of clayey silt with sand mixture was observed around UDS-01.		3	3	4	7	SPT-1	1.00-1.45
						UDS-1	2.00-2.45
3.40m.		3	5	7	12	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
Very stiff to hard, brownish grey, clayey silt with sand mixture.		5	7	12	19	SPT-3	5.00-5.45
						DS-2	6.00
						UDS-3	6.50-6.95
						DS-3	7.50
8.80m.		8	16	20	36	SPT-4	8.00-8.45
						DS-4	9.00
Dense, brownish grey, silty sand.		12	20	23	43	SPT-5	9.50-9.95
						DS-5	10.50
		8	19	26	45	SPT-6	11.00-11.45
						DS-6	12.00
		9	13	21	34	SPT-7	12.50-12.95
						DS-7	13.00
		10	15	23	38	SPT-8	14.00-14.45
						DS-8	15.00
15.50m.		13	28	25	53	SPT-9	15.50-15.95
						DS-9	16.50
Hard, brownish grey, clayey silt with sand mixture.		15	20	26	46	SPT-10	17.00-17.45
17.90m.							

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
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BORE LOG DATA SHEET

BORE HOLE NO.39

Co-ordinates E=680.000 N=92.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	23	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	23
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 24/10/14
Completion Date : 29/10/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.524 m.
Water Struck At :
Standing Water Level : 13.6 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
17.90m			DS-10	18.00
Hard, brownish grey, clayey silt with sand mixture.		19 22 30 — 52	SPT-11	18.50-18.95
19.90m		25 30 41 — 71	SPT-12	19.50-19.95
			DS-11	20.00
		24 32 42 — 74	SPT-13	21.00-21.45
			DS-12	22.00
		26 35 45 — 80	SPT-14	22.50-22.95
Very dense, brownish grey, silty sand with high % of gravels & pebbles. Obs. mica.			DS-13	23.50
		30 35 48 — 83	SPT-15	24.00-24.45
			DS-14	25.00
		22 42 53 — 95	SPT-16	25.50-25.95
			DS-15	26.50
		35 72 50 — ≥100	SPT-17	27.00-27.38
		8.0 cm Penetn.		
28.00m			DS-16	28.00
Very dense, brownish grey, clayey silty sand / sandy silt Obs. mica.		40 68 50 — ≥100	SPT-18	28.50-28.90
		10.0 cm Penetn.		
29.00m			DS-17	29.50
Very dense, brownish grey, silty sand. Obs. mica.		40 60 — ≥100	SPT-19	30.00-30.28
		13.0 cm Penetn.		
			DS-18	31.00
		45 56 — ≥100	SPT-20	31.50-31.75
32.00m		10.0 cm Penetn.		
			DS-19	32.50
		46 57 — ≥100	SPT-21	33.00-33.20
Very dense, light grey to brownish grey, silty sand / sandy silt. Obs. mica.		5.0 cm Penetn.		
			DS-20	34.00
		50 56 — ≥100	SPT-22	34.50-34.70
		5.0 cm Penetn.		
		15 33 47 — 80	SPT-23	35.00-35.45
35.45m				

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
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BORE LOG DATA SHEET

BORE HOLE NO.40

Co-ordinates E=609.000 N=58.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	6
Cone (Pc)		Penetrometer (SPT)	21
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 28/11/14
Completion Date : 01/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 66.376 m.
Water Struck At :
Standing Water Level : 11.6 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.							
Filled up soil consists of silty sand with ash.		2	2	2	4	DS-1	0.50
						SPT-1	1.00-1.45
2.00m.						UDS-1	2.00-2.45
Loose to medium dense, reddish brown, silty sand.		4	7	8	15	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
		5	7	5	12	SPT-3	5.00-5.45
5.50m.						DS-2	6.00
						UDS-3	6.50-6.95
						DS-3	7.50
		8	9	8	17	SPT-4	8.00-8.45
Very stiff, greyish brown, clayey silt.						DS-4	9.00
						UDS-4	9.50-9.95
						DS-5	10.50
		11	13	13	26	SPT-5	11.00-11.45
						DS-6	12.00
12.50m.						UDS-5	12.50-12.95
Dense, yellowish grey, silty sand with traces of clay.						DS-7	13.50
		30	19	22	41	SPT-6	14.00-14.45
15.00m.						DS-8	15.00
						*UDS-6	15.50-15.64
		17	19	30	49	SPT-7	15.75-16.20
Hard, greyish brown, clayey silt. Obs. mica & fine sand.						DS-9	17.00
		21	26	39	65	SPT-8	17.50-17.95
						DS-10	18.50
19.00m.							

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Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 17/12/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.40

Co-ordinates E=609.000 N=58.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	6
Cone (Pc)		Penetrometer (SPT)	21
		Disturbed (DS)	21
Vane (V)		Water Sample (WS)	0

Commencement Date : 28/11/14
Completion Date : 01/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 66.376 m.
Water Struck At :
Standing Water Level : 11.6 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
19.00m.				
Very dense, brownish grey, silty sand. Obs. mica & gravels.		37 45 58 >100	SPT-9	19.00-19.45
			DS-11	20.00
		91		
		30 42 49	SPT-10	20.50-20.95
21.50m.			DS-12	21.50
		>100		
		37 46 50	SPT-11	22.00-22.37
		7.0 cm Pentn.		
Hard, deep grey to brownish grey, clayey sandy silt. Obs. concreation of silt & mica.			DS-13	23.00
		>100		
		25 38 62	SPT-12	23.50-23.84
		4.0 cm Pentn.		
			DS-14	24.50
		>100		
		54 55	SPT-13	25.00-25.19
25.50m.		4.0 cm Pentn.		
Very dense, yellowish brown, sandy silt with traces of clay. Obs. concreation of silt & mica.			DS-15	26.00
		>100		
		31 68	SPT-14	26.50-26.78
27.00m.		13.0 cm Pentn.		
			DS-16	27.50
		>100		
		42 66	SPT-15	28.00-28.21
		6.0 cm Pentn.		
			DS-17	29.00
Hard, yellowish brown, clayey silt. Obs. concreation of silt & fine sand.		83		
		16 35 48	SPT-16	29.50-29.95
			DS-18	30.50
		>100		
		22 38 60	SPT-17	31.00-31.35
		5.0 cm Pentn.		
32.00m.			DS-19	32.00
		>100		
		28 54 50	SPT-18	32.50-32.83
		3.0 cm Pentn.		
			DS-20	33.50
		>100		
		37 63	SPT-19	34.00-34.28
Very dense, brownish grey, silty sand with gravels pieces.		13.0 cm Pentn.		
		>100		
		64 50	SPT-20	35.00-35.18
		3.0 cm Pentn.		
			DS-21	36.00
		>100		
37.17m.		61 50	SPT-21	37.00-37.17
N.B. - '*' means sample could not be recovered.		2.0 cm Pentn.		

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
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BORE LOG DATA SHEET

BORE HOLE NO.41

Co-ordinates E=646.000 N=59.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 04/11/14
Completion Date : 06/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.813 m.
Water Struck At :
Standing Water Level : 13.8 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	Depth (m)
0.00m.							
Filled up soil consists of yellowish grey, silty sand.						DS-1	0.50
1.00m.		8	11	17	28	SPT-1	1.00-1.45
Loose to medium dense, greyish brown, silty sand.						UDS-1	2.00-2.45
		3	4	5	9	SPT-2	3.00-3.45
3.50m.						UDS-2	4.00-4.45
		4	5	8	13	SPT-3	5.00-5.45
Stiff, brownish grey, clayey silt. Obs. sand mixture.						DS-2	6.00
						UDS-3	6.50-6.95
						DS-3	7.50
8.00m.		12	25	33	58	SPT-4	8.00-8.45
						DS-4	9.00
		17	30	33	63	SPT-5	9.50-9.95
						DS-5	10.50
		19	32	36	68	SPT-6	11.00-11.45
Very dense, brownish grey, sandy silt / silty sand. Obs. concreation of silt.						DS-6	12.00
		12	24	30	54	SPT-7	12.50-12.95
						DS-7	13.50
		15	26	32	58	SPT-8	14.00-14.45
						DS-8	15.00
15.50m.		9	18	23	41	SPT-9	15.50-15.95
						DS-9	16.50
Hard, greyish brown, clayey silt with sand mixture & mica.		10	19	26	45	SPT-10	17.00-17.45
17.90m.							

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 11/11/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.41

Co-ordinates E=646.000 N=59.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	22
		Disturbed (DS)	21
Vane (V)		Water Sample (WS)	0

Commencement Date : 04/11/14
Completion Date : 06/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.813 m.
Water Struck At :
Standing Water Level : 13.8 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
			DS-10	18.00
Hard, greyish brown, clayey silt with sand mixture & mica.		13 21 29 50	SPT-11	18.50-18.95
			DS-11	19.50
17.90m				
		45 55 >100 10.0 cm Pentn.	SPT-12	20.00-20.25
			DS-12	21.00
		48 52 >100 5.0 cm Pentn.	SPT-13	21.50-21.70
Very dense, brownish grey, silty sand with gravels & pebbles.			DS-13	22.50
		65 35 >100 3.0 cm Pentn.	SPT-14	23.00-23.18
			DS-14	24.00
		100 >100 15.0 cm Pentn.	SPT-15	24.50-24.65
20.00m				
			DS-15	25.50
		15 31 60 91	SPT-16	26.00-26.45
			DS-16	27.00
		20 42 38 >100 10.0 cm Pentn.	SPT-17	27.50-27.90
			DS-17	28.50
		60 40 >100 5.0 cm Pentn.	SPT-18	29.00-29.20
			DS-18	30.00
Very dense, brownish grey, sandy silt / silty sand.		22 42 55 97	SPT-19	30.50-30.95
			DS-19	31.50
		30 52 28 >100 5.0 cm Pentn.	SPT-20	32.00-32.35
			DS-20	33.00
		40 60 >100 15.0 cm Pentn.	SPT-21	33.50-33.80
			DS-21	34.00
		30 46 34 >100 6.0 cm Pentn.	SPT-22	35.00-35.36
25.00m				
35.36m				

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 11/11/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.42

Co-ordinates E=683.000 N=62.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	23
		Water Sample (WS)	0

Commencement Date : 30/10/14
Completion Date : 02/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.616 m.
Water Struck At :
Standing Water Level : 13.55 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m							
					5	DS-1	0.50
		2	2	3		SPT-1	1.00-1.45
Loose, greyish brown to brownish grey, silty sand with clay binders.						UDS-1	2.00-2.45
					7		
		3	3	4		SPT-2	3.00-3.45
4.00m						UDS-2	4.00-4.45
					31		
		8	14	17		SPT-3	5.00-5.45
						UDS-3	6.50-6.80
Hard, light blackish grey to brownish grey, silty clay / clayey silt. Obs. pocket of silty sand in UDS-03.						DS-2	7.50
					40		
		10	16	24		SPT-4	8.00-8.45
						UDS-4	8.50-8.95
						DS-3	9.50
10.00m					43		
		8	14	29		SPT-5	10.00-10.45
						DS-4	11.00
					47		
		10	16	31		SPT-6	11.50-11.95
						DS-5	12.50
					45		
		12	16	29		SPT-7	13.00-13.45
						DS-6	14.00
Hard, brownish grey, clayey silt with sand with sand mixture & mica.					42		
		10	14	28		SPT-8	14.50-14.95
						DS-7	15.50
					53		
		18	24	29		SPT-9	16.00-16.45
						DS-8	17.00
					57		
		13	25	32		SPT-10	17.50-17.95
18.20m						DS-9	18.50
					88		
Very dense, brownish grey, silty sand with gravels pebbles & mica.		32	42	46		SPT-11	19.00-19.45
						DS-10	20.00
20.20m							

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 11/11/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.42

Co-ordinates E=683.000 N=62.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	23
		Water Sample (WS)	0

Commencement Date : 30/10/14
Completion Date : 02/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.616 m.
Water Struck At :
Standing Water Level : 13.55 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
			SPT-12	20.50-20.92
		30 46 50 (≥100) 12.0 cm Pentn.	DS-11	21.50
			SPT-13	22.00-22.40
		33 50 61 (≥100) 10.0 cm Pentn.	DS-12	23.00
			SPT-14	23.50-23.85
		40 42 35 (≥100) 5.0 cm Pentn.	DS-13	24.50
20.20m				
Very dense, brownish grey, silty sand with gravels pebbles & mica.			SPT-15	25.00-25.45
		32 41 52 (93)	DS-14	26.00
			SPT-16	26.50-26.95
		23 32 36 (68)	DS-15	27.50
25.00m				
			SPT-17	28.00-28.45
		37 49 50 (≥100) 11.0 cm Pentn.	DS-16	29.00
			SPT-18	29.50-29.75
		47 50 (≥100) 2.5 cm Pentn.	DS-17	30.50
			SPT-19	31.00-31.25
		50 52 (≥100) 10.0 cm Pentn.	DS-18	32.00
Very dense, brownish grey, silty sand / sandy silt. Obs. mica.			SPT-20	32.50-32.70
		53 50 (≥100) 5.0 cm Pentn.	DS-19	33.50
			SPT-21	34.00-34.21
		55 50 (≥100) 6.0 cm Pentn.	DS-20	35.00
			SPT-22	35.50-35.75
		58 60 (≥100) 10.0 cm Pentn.	DS-21	36.50
			SPT-23	37.00-37.20
		80 50 (≥100) 5.0 cm Pentn.	DS-22	38.00
			SPT-24	38.50-38.65
		100 (≥100) 15.0 cm Pentn.	DS-23	39.00
			SPT-25	40.00-40.10
40.10m		150 (≥100) 10.0 cm Pentn.		

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

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BORE LOG DATA SHEET

BORE HOLE NO.43

Co-ordinates E=773.000 N=39.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	19	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	19
Vane (V)		Disturbed (DS)	18
		Water Sample (WS)	0

Commencement Date : 21/10/14
Completion Date : 27/10/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.524 m.
Water Struck At :
Standing Water Level : 13.5 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists with ash, brick etc.				
0.70m.			DS-1	0.50
		4 6 9 (15)	SPT-1	1.00-1.45
			UDS-1	2.00-2.45
Very stiff to hard, brownish grey, clayey silt. Obs. sand mixture & mica.		3 8 9 (17)	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
		11 14 17 (31)	SPT-3	5.00-5.45
5.60m.			DS-2	6.00
			UDS-3	6.50-6.95
			DS-3	7.50
Dense, brownish grey, silty sand.		12 17 21 (38)	SPT-4	8.00-8.45
			DS-4	9.00
		10 20 22 (42)	SPT-5	9.50-9.95
			DS-5	10.50
11.00m.		12 20 33 (53)	SPT-6	11.00-11.45
Very dense, brownish grey, silty sand with high % of gravels. Obs. mica.			DS-6	12.00
		23 22 36 (58)	SPT-7	12.50-12.95
13.20m.			DS-7	13.50
Dense, brownish grey, silty sand with high % of gravels & mica. Obs. clay pocket around SPT-12.		8 15 19 (34)	SPT-8	14.00-14.45
			DS-8	15.00
15.50m.				

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 11/11/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.43

Co-ordinates E=773.000 N=39.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	19	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	19
Vane (V)		Disturbed (DS)	18
		Water Sample (WS)	0

Commencement Date : 21/10/14
Completion Date : 27/10/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.524 m.
Water Struck At :
Standing Water Level : 13.5 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
15.50m.							
		10	16	20	36	SPT-9	15.50-15.95
						DS-9	16.50
		11	17	22	39	SPT-10	17.00-17.45
						DS-10	18.00
		13	20	23	43	SPT-11	18.50-18.95
						DS-11	19.50
		8	12	17	29	SPT-12	20.00-20.45
Dense, brownish grey, silty sand with high % of gravels & mica. Obs. clay pocket around SPT-12.						DS-12	21.00
		12	19	22	41	SPT-13	21.50-21.95
						DS-13	22.50
		14	21	24	45	SPT-14	23.00-23.45
						DS-14	24.00
		15	20	26	46	SPT-15	24.50-24.95
						DS-15	25.50
		12	22	28	50	SPT-16	26.00-26.45
27.00m.						DS-16	27.00
		14	24	35	59	SPT-17	27.50-27.95
						DS-17	28.30
Very dense, brownish grey, silty sand with high % of gravels. Obs. mica.		20	28	52	80	SPT-18	28.50-28.95
						DS-18	29.50
		25	40	54	94	SPT-19	30.00-30.45
30.45m.							

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
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BORE LOG DATA SHEET

BORE HOLE NO.44

Co-ordinates E=646.000 N=25.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	20	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	20
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 07/11/14
Completion Date : 11/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.034 m.
Water Struck At :
Standing Water Level : 13.45 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of light grey, silty sand with ash.			DS-1	0.50
0.50m.		21		
		13 13 8	SPT-1	1.00-1.45
			UDS-1	2.00-2.45
		10		
Loose to medium dense, greyish brown, silty sand with traces of clay binders & mica.		4 4 6	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
		9		
		5 5 4	SPT-3	5.00-5.45
6.00m.			DS-2	6.00
			UDS-3	6.50-6.90
Very stiff, greyish brown, clayey silt with traces of fine sand.			DS-3	7.50
		28		
		11 13 15	SPT-4	8.00-8.45
9.00m.			DS-4	9.00
Brownish grey, silty sand with mica.			UDS-4	9.50-9.95
10.50m.			DS-5	10.50
		45		
		13 18 27	SPT-5	11.00-11.45
			DS-6	12.50
			UDS-5	13.00-13.30
Hard, greyish brown, clayey silt with fine sand. Obs. mica.			DS-7	14.00
		81		
		16 33 48	SPT-6	14.50-14.95
			DS-8	15.50
		94		
		24 37 57	SPT-7	16.00-16.45
			DS-9	17.00
		>100		
17.90m.		22 39 50 4.0 cm Penth.	SPT-8	17.50-17.84

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Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 13/11/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.44

Co-ordinates E=646.000 N=25.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	20	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	20
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 07/11/14
Completion Date : 11/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.034 m.
Water Struck At :
Standing Water Level : 13.45 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
17.90m				
Hard, greyish brown, clayey silt with fine sand. Obs. mica.		18 26 58 — 84	DS-10	18.50
			SPT-9	19.00-19.45
20.00m			DS-11	20.00
Dense, silty sand. Obs. gravels & pebbles.		12 16 26 — 42	SPT-10	20.50-20.95
			DS-12	21.50
		11 17 28 — 45	SPT-11	22.00-22.45
23.00m			DS-13	23.00
Hard, brownish grey, clayey silt. Obs. mica.		14 19 32 — 51	SPT-12	23.50-23.95
			DS-14	24.50
		13 20 34 — 54	SPT-13	25.00-25.45
			DS-15	26.00
		16 22 36 — 58	SPT-14	26.50-26.95
			DS-16	27.50
		19 24 36 — 60	SPT-15	28.00-28.45
			DS-17	29.00
		25 32 49 — 81	SPT-16	29.50-29.95
30.00m			DS-18	30.50
Very dense, brownish grey, silty sand with high % of gravels & pebbles.		29 67 — >100 — 10.0 cm Pentn.	SPT-17	31.00-31.25
			DS-19	32.00
		64 36 — >100 — 7.0 cm Pentn.	SPT-18	32.50-32.72
			DS-20	33.20
		73 27 — >100 — 2.0 cm Pentn.	SPT-19	33.50-33.67
			DS-21	34.50
35.21m		58 42 — >100 — 6.0 cm Pentn.	SPT-20	35.00-35.21

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 17/12/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.45

Co-ordinates E=633.000 N=(-)11.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	24
		Disturbed (DS)	23
Vane (V)		Water Sample (WS)	0

Commencement Date : 13/11/14
Completion Date : 16/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 65.039 m.
Water Struck At :
Standing Water Level : 13.45 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	Depth (m)
0.00m							
Filled up soil consists of silty sand with ash.		2	2	4	6	DS-1	0.50
						SPT-1	1.00-1.45
1.90m						UDS-1	2.00-2.45
Loose, yellowish brown, sandy silt / silty sand.		5	4	5	9	SPT-2	3.00-3.45
4.00m						UDS-2	4.00-4.45
Very stiff, deep grey, silty clay / clayey silt. Obs. mica, fine sand.		6	9	10	19	SPT-3	5.00-5.45
						DS-2	6.00
6.30m						UDS-3	6.50-6.95
						DS-3	7.50
Hard, yellowish brown, clayey silt with fine sand. Obs. concreation of silt.		15	26	23	49	SPT-4	8.00-8.45
						DS-4	9.00
					52	*UDS-4	9.50-9.65
		17	24	28		SPT-5	9.75-10.20
10.50m						DS-5	10.50
		24	40	58	98	SPT-6	11.00-11.45
Very dense, brownish grey, silty sand.						DS-6	12.00
		19	28	36	64	SPT-7	12.50-12.95
13.50m						DS-7	13.50
		16	22	31	53	SPT-8	14.00-14.45
						DS-8	15.00
		13	24	30	54	SPT-9	15.50-15.95
Hard, brownish grey, clayey silt. Obs. concreation of silt.						DS-9	16.50
		12	17	29	46	SPT-10	17.00-17.45
						DS-10	18.00
		15	33	30	63	SPT-11	18.50-18.95
19.00m							

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 17/12/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.45

Co-ordinates E=633.000 N=(-)11.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	24
Vane (V)		Disturbed (DS)	23
		Water Sample (WS)	0

Commencement Date : 13/11/14
Completion Date : 16/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 65.039 m.
Water Struck At :
Standing Water Level : 13.45 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
19.00m.				
Hard, brownish grey, clayey silt. Obs. concreation of silt.		24 33 43 — 76	DS-11	19.50
			SPT-12	20.00-20.45
			DS-12	21.00
		26 37 53 — 90	SPT-13	21.50-21.95
22.00m.			DS-13	22.50
Hard, brownish grey, clayey silt with fine sand. Obs. mica & concreation of silt.		36 52 12 — >100 (2.0 cm Pentn.)	SPT-14	23.00-23.32
			DS-14	24.00
		26 42 32 — >100 (8.0 cm Pentn.)	SPT-15	24.50-24.88
			DS-15	25.50
		39 62 — >100 (13.0 cm Pentn.)	SPT-16	26.00-26.28
27.00m.			DS-16	27.00
Very dense, brownish grey, silty sand with high % of gravels pieces.		56 44 — >100 (8.0 cm Pentn.)	SPT-17	27.50-27.73
			DS-17	28.20
		61 50 — >100 (6.0 cm Pentn.)	SPT-18	29.00-29.21
			DS-18	30.00
		46 54 — >100 (4.0 cm Pentn.)	SPT-19	30.50-30.69
			DS-19	31.00
		34 66 — >100 (9.0 cm Pentn.)	SPT-20	31.50-31.74
			DS-20	32.50
		53 47 — >100 (12.0 cm Pentn.)	SPT-21	33.00-33.27
			DS-21	34.00
		59 41 — >100 (3.0 cm Pentn.)	SPT-22	34.50-34.68
			DS-22	35.00
		37 58 15 — >100 (2.0 cm Pentn.)	SPT-23	35.50-35.82
			DS-23	36.50
37.28m.		43 57 — >100 (13.0 cm Pentn.)	SPT-24	37.00-37.28

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 15/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.46

Co-ordinates E=687.000 N=(-)34.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	24
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 14/11/14
Completion Date : 11/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.447 m.
Water Struck At :
Standing Water Level : 13.35 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of light grey, silty sand with ash.			DS-1	0.50
0.80m.		2 4 5 — 9	SPT-1	1.00-1.45
			UDS-1	2.00-2.45
Stiff to hard, deep grey, clayey silt with traces of sand. Obs. concreation of silt.		8 10 13 — 23	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
		12 18 21 — 39	SPT-3	5.00-5.45
5.50m.			DS-2	6.00
		22 28 33 — 61	*UDS-3 SPT-4	6.50-6.65 6.75-7.20
			DS-3	8.00
		19 34 39 — 73	SPT-5	8.50-8.95
			DS-4	9.50
		28 35 58 — >100 (7.0 cm Pentn.)	SPT-6	10.00-10.37
			DS-5	11.00
Very dense, brownish grey, silty sand with gravels & pebbles.		22 46 52 — >100 (3.0 cm Pentn.)	SPT-7	11.50-11.83
			DS-6	12.20
		26 40 34 — >100 (14.0 cm Pentn.)	SPT-8 DS-7	12.50-12.79 13.00
		18 51 52 — >100 (8.0 cm Pentn.)	SPT-9	13.50-13.88
			DS-8	14.20
		21 33 58 — >100 (11.0 cm Pentn.)	SPT-10	15.00-15.41
			DS-9	16.00
		20 36 61 — 97	SPT-11	16.50-16.95
			DS-10	17.50
18.00m.				

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Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 15/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.46

Co-ordinates E=687.000 N=(-)34.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	24
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 14/11/14
Completion Date : 11/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.447 m.
Water Struck At :
Standing Water Level : 13.35 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
18.00m Very dense, brownish grey, silty sand with gravels & pebbles.		10 32 54 — 86	SPT-12	18.00-18.45
19.00m			DS-11	19.00
		16 28 34 — 62	SPT-13	19.50-19.95
Hard, brownish grey, clayey silt. Obs. concreation of silt.			DS-12	20.50
		13 31 47 — 78	SPT-14	21.00-21.45
22.00m			DS-13	22.00
		10 22 27 — 49	SPT-15	22.50-22.95
Desne to very dense, brownish grey, silty sand / sandy silt with traces of clay. Obs. gravels.			DS-14	23.50
		17 21 33 — 54	SPT-16	24.00-24.45
			DS-15	25.00
25.50m		41 30 31 — >100 (13.0 cm Penth.)	SPT-17	25.50-25.78
			DS-16	26.50
		43 60 — >100 (10.0 cm Penth.)	SPT-18	27.00-27.25
			DS-17	28.00
		52 54 — >100 (8.0 cm Pentn.)	SPT-19	28.50-28.73
			DS-18	29.50
Very dense, brownish grey, silty sand with high % of gravels & pebbles.		57 52 — >100 (9.0 cm Pentn.)	SPT-20	30.00-30.24
			DS-19	31.00
		60 50 — >100 (7.0 cm Pentn.)	SPT-21	31.50-31.72
			DS-20	32.50
		54 52 — >100 (10.0 cm Penth.)	SPT-22	33.00-33.25
		62 50 — >100 (5.0 cm Pentn.)	SPT-23	34.00-34.20
35.18m		69 59 — >100 (3.0 cm Pentn.)	SPT-24	35.00-35.18
N.B. - '*' means sample could not be recovered.				

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 17/12/2014** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.47

Co-ordinates E=606.000 N=(-)34.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	21
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 17/11/14
Completion Date : 19/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.284 m.
Water Struck At :
Standing Water Level : 12.6 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.							
Medium, yellowish brown, clayey silt with fine sand.		2	3	3	6	DS-1	0.50
						SPT-1	1.00-1.45
1.50m.						UDS-1	2.00-2.45
Stiff, deep grey, silty clay.		3	4	6	10	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
		3	5	8	13	SPT-3	5.00-5.45
6.00m.						DS-2	6.00
						UDS-3	6.50-6.95
Very stiff, brownish grey, clayey silt with fine sand. Obs. mica.						DS-3	7.50
		8	10	9	19	SPT-4	8.00-8.45
						DS-4	9.00
9.50m.						UDS-4	9.50-9.95
Dense, brownish grey, silty sand.						DS-5	10.50
		11	22	27	49	SPT-5	11.00-11.45
12.00m.						DS-6	12.00
						*UDS-5	12.50-12.67
		10	13	21	34	SPT-6	12.75-13.20
						DS-7	14.00
Hard, brownish grey, clayey silt with fine sand mixture. Obs. mica.		10	12	15	27	SPT-7	14.50-14.95
						DS-8	15.50
		16	17	20	37	SPT-8	16.00-16.45
						DS-9	17.00
		18	20	22	42	SPT-9	17.50-17.95
18.00m.							

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 17/12/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.47

Co-ordinates E=606.000 N=(-)34.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	21
		Disturbed (DS)	20
Vane (V)		Water Sample (WS)	0

Commencement Date : 17/11/14
Completion Date : 19/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.284 m.
Water Struck At :
Standing Water Level : 12.6 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
18.00m.				
Hard, brownish grey, clayey silt with fine sand mixture. Obs. mica.		19 25 29 — 54	DS-10	18.50
			SPT-10	19.00-19.45
			DS-11	20.00
20.50m.		22 50 50 — 100	SPT-11	20.50-20.95
			DS-12	21.50
		30 48 50 — 98	SPT-12	22.00-22.45
			DS-13	23.00
		40 50 10.0 cm Pentn. — >100	SPT-13	23.50-23.75
			DS-14	24.50
		15 50 10.0 cm Pentn. — >100	SPT-14	25.00-25.25
			DS-15	26.00
		20 50 9.0 cm Pentn. — >100	SPT-15	26.50-26.74
Very dense, brownish grey, silty sand with gravels pieces.			DS-16	27.50
		48 60 6.0 cm Pentn. — >100	SPT-16	28.00-28.21
			DS-17	29.00
		60 55 4.0 cm Pentn. — >100	SPT-17	29.50-29.69
			DS-18	30.50
		58 50 5.0 cm Pentn. — >100	SPT-18	31.00-31.20
			DS-19	32.00
		62 55 3.0 cm Pentn. — >100	SPT-19	32.50-32.68
			DS-20	33.50
		65 57 4.0 cm Pentn. — >100	SPT-20	34.00-34.19
35.18m.		70 60 3.0 cm Pentn. — >100	*SPT-21	35.00-35.18

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 17/12/2014** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.48

Co-ordinates E=571.000 N=(-)12.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	20	Undisturbed (UDS)	6
Cone (Pc)		Penetrometer (SPT)	20
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 16/11/14
Completion Date : 19/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.129 m.
Water Struck At :
Standing Water Level : 14.0 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES	
						Ref. No	Depth (m)
0.00m.							
		3	4	4	8	DS-1	0.50
						SPT-1	1.00-1.45
Filled up soil consists of yellowish brown to greyish brown, clayey silt with fine sand.						UDS-1	2.00-2.45
		3	2	4	6	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
4.50m.							
Stiff, deep grey, silty clay.		6	5	5	10	SPT-3	5.00-5.45
6.00m.						DS-2	6.00
						UDS-3	6.50-6.95
Stiff, greyish brown, clayey silt with fine sand.						DS-3	7.50
		4	7	8	15	SPT-4	8.00-8.45
9.00m.						DS-4	9.00
						UDS-4	9.50-9.95
Medium dense, brownish grey, silty sand.						DS-5	10.50
		5	8	9	17	SPT-5	11.00-11.45
11.50m.							
						DS-6	12.00
						UDS-5	12.50-12.95
						DS-7	13.50
		6	13	24	37	SPT-6	14.00-14.45
Hard, brownish grey, clayey silt with fine sand. Obs. mica & concreation of silt.						DS-8	15.00
						*UDS-6	15.50-15.68
		9	19	27	46	SPT-7	15.80-16.25
						DS-9	17.00
		11	20	25	45	SPT-8	17.50-17.95
18.00m.							

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 17/12/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.48

Co-ordinates E=571.000 N=(-)12.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	20	Undisturbed (UDS)	6
Cone (Pc)		Penetrometer (SPT)	20
		Disturbed (DS)	20
Vane (V)		Water Sample (WS)	0

Commencement Date : 16/11/14
Completion Date : 19/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.129 m.
Water Struck At :
Standing Water Level : 14.0 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
18.00m.				
Hard, brownish grey, clayey silt with fine sand. Obs. mica & concreation of silt.		10 22 29 — 51	DS-10	18.50
			SPT-9	19.00-19.45
20.50m.			DS-11	20.50
		28 43 50 — ≥100 (8.0 cm Pentn.)	SPT-10	21.00-21.38
			DS-12	22.00
		42 50 50 — 100	SPT-11	22.50-22.95
			DS-13	23.50
		45 49 52 — ≥100	SPT-12	24.00-24.45
			DS-14	25.00
		48 50 — ≥100 (7.0 cm Pentn.)	SPT-13	25.50-25.72
			DS-15	26.50
		59 50 — ≥100 (6.0 cm Pentn.)	SPT-14	27.00-27.21
Very dense, brownish grey, silty sand with gravels pieces.			DS-16	28.00
		47 50 — ≥100 (3.0 cm Pentn.)	SPT-15	28.50-28.68
			DS-17	29.50
		60 50 — ≥100 (5.0 cm Pentn.)	SPT-16	30.00-30.20
			DS-18	31.00
		68 50 — ≥100 (6.0 cm Pentn.)	SPT-17	31.50-31.71
			DS-19	32.50
		68 55 — ≥100 (4.0 cm Pentn.)	SPT-18	33.00-33.19
			DS-20	34.00
		72 60 — ≥100 (6.0 cm Pentn.)	SPT-19	34.50-34.71
35.18m.		75 50 — ≥100 (3.0 cm Pentn.)	SPT-20	35.00-35.18

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 17/12/2014** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.49

Co-ordinates E=654.000 N=(-)67.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 15/11/14
Completion Date : 18/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 65.011 m.
Water Struck At :
Standing Water Level : 13.8 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of silty sand with ash.		4 7 9 — 16	DS-1	0.50
			SPT-1	1.00-1.45
1.60m.			UDS-1	2.00-2.45
		7 11 22 — 33	SPT-2	3.00-3.45
Very stiff / hard, deep grey, silty clay. A pocket of deep brown, silty sand was observed around UDS-03.			UDS-2	4.00-4.45
		22 10 18 — 28	SPT-3	5.00-5.45
			DS-2	6.00
			UDS-3	6.50-6.95
7.50m.			DS-3	7.50
		14 31 42 — 73	SPT-4	8.00-8.45
Hard, yellowish grey, clayey silt with white shade. Obs. fine sand & concreation of silt.			DS-4	9.00
			*UDS-4	9.50-9.65
		12 20 33 — 53	SPT-5	9.80-10.25
11.00m.			DS-5	11.00
		21 43 50/8.0 cm Pentn. — >100	SPT-6	11.50-11.88
			DS-6	13.00
		24 50 50/2.0 cm Pentn. — >100	SPT-7	13.50-13.82
			DS-7	14.50
Very dense, yellowish grey to brownish grey, silty sand with high % of gravels & pebbles.		38 50/8.0 cm Pentn. — >100	SPT-8	15.00-15.23
			DS-8	16.00
		50 48/4.0 cm Pentn. — >100	SPT-9	16.50-16.69
			DS-9	17.50
		41 50/11.0 cm Pentn. — >100	SPT-10	18.00-18.26
19.00m.			DS-10	19.00

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 17/12/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.49

Co-ordinates E=654.000 N=(-)67.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	22
		Disturbed (DS)	21
Vane (V)		Water Sample (WS)	0

Commencement Date : 15/11/14
Completion Date : 18/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 65.011 m.
Water Struck At :
Standing Water Level : 13.8 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
19.00m				
		32 23 27 50	SPT-11	19.50-19.95
			DS-11	20.50
		21 33 39 72	SPT-12	21.00-21.45
			DS-12	22.50
		27 48 50 >100 (7.0 cm Pentn.)	SPT-13	23.00-23.37
			DS-13	24.00
		36 50 >100 (13.0 cm Pentn.)	SPT-14	24.50-24.78
			DS-14	25.50
		48 50 >100 (8.0 cm Pentn.)	SPT-15	26.00-26.23
			DS-15	27.00
Very dense, yellowish grey to brownish grey, silty sand with high % of gravels & pebbles.		29 42 50 >100 (3.0 cm Pentn.)	SPT-16	27.50-27.83
			DS-16	28.50
		38 50 >100 (12.0 cm Pentn.)	SPT-17	29.00-29.27
			DS-17	30.00
		25 47 50 >100 (5.0 cm Pentn.)	SPT-18	30.50-30.85
			DS-18	31.50
		38 41 50 >100 (1.0 cm Pentn.)	SPT-19	32.00-32.31
			DS-19	33.00
		46 50 >100 (11.0 cm Pentn.)	SPT-20	33.50-33.76
			DS-20	34.50
		50 50 >100 (9.0 cm Pentn.)	SPT-21	35.00-35.24
			DS-21	36.00
37.22m		50 50 >100 (7.0 cm Pentn.)	SPT-22	37.00-37.22

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 17/12/2014** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.50

Co-ordinates E=615.000 N=(-)102.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	21
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 23/11/14
Completion Date : 27/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.299 m.
Water Struck At :
Standing Water Level : 13.9 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Filled up soil consists of blackish grey, silty sand with gravels.			DS-1	0.50
1.00m		1 2 2 (4)	SPT-1	1.00-1.45
Loose, deep grey, silty sand / sandy silt. Obs. mica.			UDS-1	2.00-2.45
2.00m		4 3 2 (5)	SPT-2	3.00-3.45
Loose, yellowish brown, silty sand. Obs. mica.			UDS-2	4.00-4.45
4.00m		6 3 7 (10)	SPT-3	5.00-5.45
			DS-2	6.00
Stiff, brownish grey, clayey silt with sand mixture.			UDS-3	6.50-6.95
			DS-3	7.50
		8 5 10 (15)	SPT-4	8.00-8.45
9.00m			DS-4	9.00
			UDS-4	9.50-9.95
			DS-5	10.50
		15 27 30 (57)	SPT-5	11.00-11.45
Dense to very dense, brownish grey, silty sand. Obs. gravels.			DS-6	12.00
			*UDS-5	12.50-12.66
		18 24 30 (54)	SPT-6	12.80-13.25
			DS-7	14.00
		22 17 25 (42)	SPT-7	14.50-14.95
15.50m			DS-8	15.50
Dense, yellowish brown, sandy silt with traces of clay. Obs. mica.		13 12 19 (31)	SPT-8	16.00-16.45
17.00m			DS-9	17.00
Very dense, yellowish grey, silty sand with gravels.		54 58 9.0 cm Pentn. (>100)	SPT-9	17.50-17.74
18.00m				

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 17/12/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.50

Co-ordinates E=615.000 N=(-)102.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	21
Vane (V)		Disturbed (DS)	20
		Water Sample (WS)	0

Commencement Date : 23/11/14
Completion Date : 27/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.299 m.
Water Struck At :
Standing Water Level : 13.9 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
18.00m				
			DS-10	18.50
		86		
		22 38 48	SPT-10	19.00-19.45
Very dense, yellowish grey, silty sand with gravels.			DS-11	20.00
		81		
		18 30 51	SPT-11	20.50-20.95
			DS-12	21.50
		>100		
22.00m		42 56 52	SPT-12	22.00-22.34
		4.0 cm Pentn.		
			DS-13	23.00
		>100		
Very dense, reddish brown, sandy silt / silty sand. Obs. mica & gravels.		59 62	SPT-13	24.00-24.27
		12.0 cm Pentn.		
			DS-14	25.00
		79		
		22 35 44	SPT-14	25.50-25.95
26.50m			DS-15	26.50
		94		
		23 38 56	SPT-15	27.00-27.45
			DS-16	28.00
		>100		
		49 58	SPT-16	28.50-28.74
		9.0 cm Pentn.		
			DS-17	29.50
		>100		
		52 55	SPT-17	30.00-30.22
		7.0 cm Pentn.		
Very dense, yellowish brown, silty sand, high % of gravels pieces.			DS-18	31.00
		>100		
		60 58	SPT-18	31.50-31.74
		9.0 cm Pentn.		
			DS-19	32.50
		>100		
		63 56	SPT-19	33.00-33.23
		8.0 cm Pentn.		
			DS-20	34.00
		>100		
		62 58	SPT-20	34.50-34.75
		10.0 cm Pentn.		
		>100		
35.19m		55 50	*SPT-21	35.00-35.19
		4.0 cm Pentn.		

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | Created by : Chandrani | Created on : 16/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.51

Co-ordinates E=676.000 N=(-)102.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	21
		Disturbed (DS)	21
Vane (V)		Water Sample (WS)	0

Commencement Date : 22/12/14
Completion Date : 25/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 61.517 m.
Water Struck At :
Standing Water Level : 11.15 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.							
Filled up soil consists of black mill reject.						DS-1	0.50
		2	2	3	5	SPT-1	1.00-1.45
1.50m.							
						UDS-1	2.00-2.45
		5	6	8	14	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
		3	4	7	11	SPT-3	5.00-5.45
Stiff, deep grey, silty clay / clayey silt with traces of sand mixture.						DS-2	6.00
						UDS-3	6.50-6.95
						DS-3	7.50
		3	5	7	12	SPT-4	8.00-8.45
						DS-4	9.00
9.50m.							
						*UDS-4	9.50-9.95
						DS-5	10.50
		10	19	32	51	SPT-5	11.00-11.45
						DS-6	12.00
		10	10	20	30	SPT-6	12.50-12.95
						DS-7	13.50
Dense to very dense, brownish grey, silty sand. Obs. gravels. Observed clay pocket around SPT-06.		12	17	22	39	SPT-7	14.00-14.45
						DS-8	15.00
		15	18	25	43	SPT-8	15.50-15.95
						DS-9	16.50
		20	25	35	60	SPT-9	17.00-17.45
18.00m.						DS-10	18.00

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Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | Created by : Chandrani | Created on : 16/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.51

Co-ordinates E=676.000 N=(-)102.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	21	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	21
		Disturbed (DS)	21
Vane (V)		Water Sample (WS)	0

Commencement Date : 22/12/14
Completion Date : 25/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 61.517 m.
Water Struck At :
Standing Water Level : 11.15 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
18.00m.				
Dense to very dense, brownish grey, silty sand. Obs. gravels. Observed clay pocket around SPT-06.		10 25 36 = 61	SPT-10	18.50-18.95
			DS-11	19.50
		17 19 36 = 55	SPT-11	20.00-20.45
21.00m.			DS-12	21.00
		15 32 35 = 67	SPT-12	21.50-21.95
			DS-13	22.50
		10 21 40 = 61	SPT-13	23.00-23.45
			DS-14	24.00
		15 28 36 = 64	SPT-14	24.50-24.95
			DS-15	25.50
		22 32 42 = 74	SPT-15	26.00-26.45
			DS-16	27.00
Very dense, greyish brown, silty sand / sandy silt. Obs. pebbles.		36 45 58 = >100 5.0 cm Pentn.	SPT-16	27.50-27.85
			DS-17	28.50
		43 62 = >100 13.0 cm Pentn.	SPT-17	29.00-29.28
			DS-18	30.00
		52 50 = >100 8.0 cm Pentn.	SPT-18	30.50-30.73
			DS-19	31.50
		56 51 = >100 6.0 cm Pentn.	SPT-19	32.00-32.21
			DS-20	33.00
		62 52 = >100 4.0 cm Pentn.	SPT-20	33.50-33.69
			DS-21	34.50
35.20m.		58 50 = >100 5.0 cm Pentn.	SPT-21	35.00-35.20

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

BH-51/Sheet-2

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 17/12/2014** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.52

Co-ordinates E=656.000 N=(-)128.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 20/11/14
Completion Date : 22/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.97 m.
Water Struck At :
Standing Water Level : 14.4 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of silty sand with ash.			DS-1	0.50
1.00m.		2 3 5 (8)	SPT-1	1.00-1.45
			UDS-1	2.00-2.45
Loose to medium dense, yellowish brown, silty sand.		4 7 11 (18)	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
		8 11 13 (24)	SPT-3	5.00-5.45
5.50m.			DS-2	6.00
			UDS-3	6.50-6.95
Hard, greyish brown, clayey silt with fine sand. Obs. kankars.			DS-3	7.50
		10 16 23 (39)	SPT-4	8.00-8.45
			DS-4	9.00
9.50m.			UDS-4	9.50-9.80
			DS-5	10.50
		18 36 50 6.0 cm Pentn. (>100)	SPT-5	11.00-11.36
			DS-6	12.00
		23 42 50 3.0 cm Pentn. (>100)	SPT-6	12.50-12.83
			DS-7	13.50
Dense to very dense, brownish grey, silty sand with gravels pieces.		12 17 24 (41)	SPT-7	14.00-14.45
			DS-8	15.00
		14 18 26 (44)	SPT-8	15.50-15.95
			DS-9	16.50
		10 18 23 (41)	SPT-9	17.00-17.45
			DS-10	18.00
		11 13 22 (35)	SPT-10	18.00-18.45
			DS-11	19.00
19.50m.		14 21 34 (55)	SPT-11	19.50-19.95
Hard, yellowish brown, silty clay / clayey silt with sand mixture. Obs. concreation of silt.			DS-12	20.50
21.00m.				

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 17/12/2014	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.52

Co-ordinates E=656.000 N=(-)128.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 20/11/14
Completion Date : 22/11/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.97 m.
Water Struck At :
Standing Water Level : 14.4 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
		23 36 42 78	SPT-12	21.00-21.45
			DS-13	22.00
		19 33 48 81	SPT-13	22.50-22.95
			DS-14	23.50
Hard, yellowish brown, silty clay / clayey silt with sand mixture. Obs. concreation of silt.		16 32 54 86	SPT-14	24.00-24.45
			DS-15	25.00
		18 35 53 88	SPT-15	25.50-25.95
			DS-16	26.50
		23 39 56 95	SPT-16	27.00-27.45
21.00m.			DS-17	28.00
		33 45 50 ≥100 4.0 cm Pentn.	SPT-17	28.50-28.84
			DS-18	29.50
		42 60 ≥100 7.0 cm Pentn.	SPT-18	30.00-30.22
			DS-19	31.00
		48 50 ≥100 3.0 cm Pentn.	SPT-19	31.50-31.68
			DS-20	32.50
		54 50 ≥100 12.0 cm Pentn.	SPT-20	33.00-33.27
Very dense, yellowish grey, silty sand with traces of gravels & mica.			DS-21	34.00
		61 50 ≥100 8.0 cm Pentn.	SPT-21	34.50-34.73
			DS-22	35.50
		57 50 ≥100 10.0 cm Pentn.	SPT-22	36.00-36.25
			DS-23	37.00
		65 50 ≥100 6.0 cm Pentn.	SPT-23	37.50-37.71
			DS-24	38.50
		62 50 ≥100 4.0 cm Pentn.	SPT-24	39.00-39.19
40.22m.		73 52 ≥100 7.0 cm Pentn.	SPT-25	40.00-40.22

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 07/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.53

Co-ordinates E=628.000 N=(-)149.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	18	Undisturbed (UDS)	7
Cone (Pc)		Penetrometer (SPT)	18
		Disturbed (DS)	21
Vane (V)		Water Sample (WS)	0

Commencement Date : 15/12/14
Completion Date : 18/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 72.226 m.
Water Struck At :
Standing Water Level : 22.3 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Filled up soil consists of light grey, silty sand / sandy silt with ash.		2 2 3 (5)	DS-1	0.50
			SPT-1	1.00-1.45
			UDS-1	2.00-2.45
		2 3 3 (6)	SPT-2	3.00-3.45
3.50m				
Medium dense, yellowish brown, silty sand with traces of clay binder. Obs. concreation of silt & mica.			UDS-2	4.00-4.45
		5 9 11 (20)	SPT-3	5.00-5.45
			DS-2	6.00
			UDS-3	6.50-6.95
			DS-3	7.50
		8 8 9 (17)	SPT-4	8.00-8.45
9.00m			DS-4	9.00
Hard, brownish grey, clayey silt with sand mixture & mica.			UDS-4	9.50-9.95
			DS-5	10.50
		5 12 18 (30)	SPT-5	11.00-11.45
			DS-6	12.00
			UDS-5	12.50-12.95
13.50m			DS-7	13.50
Dense, yellowish brown, silty sand with traces of kankars. Obs. concreation of silt & mica.		5 12 18 (30)	SPT-6	14.00-14.45
			DS-8	15.00
			UDS-6	15.50-15.95
			DS-9	16.50
		7 13 21 (34)	SPT-7	17.00-17.45
18.00m			DS-10	18.00

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 07/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.53

Co-ordinates E=628.000 N=(-)149.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	18	Undisturbed (UDS)	7
Cone (Pc)		Penetrometer (SPT)	18
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 15/12/14
Completion Date : 18/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 72.226 m.
Water Struck At :
Standing Water Level : 22.3 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
18.00m.				
Dense, yellowish brown, silty sand with traces of kankars. Obs. concreation of silt & mica.			UDS-7	18.50-18.80
			DS-11	19.50
		12 18 32 — 50	SPT-8	20.00-20.45
21.00m.			DS-12	21.00
		20 34 38 — 72	SPT-9	21.50-21.95
			DS-13	22.50
		18 35 38 — 73	SPT-10	23.00-23.45
			DS-14	24.00
		32 46 55 — ≥100 (4.0 cm Pentn.)	SPT-11	24.50-24.84
			DS-15	25.50
		43 60 — ≥100 (12.0 cm Pentn.)	SPT-12	26.00-26.27
			DS-16	27.00
Very dense, brownish grey, silty sand with gravels.		52 50 — ≥100 (7.0 cm Pentn.)	SPT-13	27.50-27.72
			DS-17	28.50
		55 58 — ≥100 (9.0 cm Pentn.)	SPT-14	29.00-29.24
			DS-18	30.00
		61 50 — ≥100 (3.0 cm Pentn.)	SPT-15	30.50-30.68
			DS-19	31.50
		57 50 — ≥100 (5.0 cm Pentn.)	SPT-16	32.00-32.20
			DS-20	33.00
		63 53 — ≥100 (2.0 cm Pentn.)	SPT-17	33.50-33.67
			DS-21	34.50
35.19m.		67 50 — ≥100 (4.0 cm Pentn.)	SPT-18	35.00-35.19

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 16/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.54

Co-ordinates E=666.000 N=(-)149.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	18	Undisturbed (UDS)	7
Cone (Pc)		Penetrometer (SPT)	18
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 12/12/14
Completion Date : 13/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 72.476 m.
Water Struck At :
Standing Water Level : 22.6 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
			DS-1	0.50
		3		
		1 1 2	SPT-1	1.00-1.45
Filled up soil consists of yellowish brown, sandy silt with ash.			UDS-1	2.00-2.45
		6		
		2 3 3	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
5.00m		17		
		8 7 10	SPT-3	5.00-5.45
Very stiff, brownish grey, clayey silt with sand mixture.			DS-2	6.00
			UDS-3	6.50-6.95
6.95m			DS-3	7.50
		23		
		8 10 13	SPT-4	8.00-8.45
			DS-4	9.00
Medium dense, yellowish brown, sandy silt.			UDS-4	9.50-9.95
			DS-5	10.50
		26		
		11 12 14	SPT-5	11.00-11.45
			DS-6	12.00
			UDS-5	12.50-12.95
13.00m			DS-7	13.50
		29		
Very stiff, blackish grey, silty clay / clayey silt.		8 11 18	SPT-6	14.00-14.45
			DS-8	15.00
15.00m			UDS-6	15.00-15.45
Medium dense, yellowish brown, silty sand.			DS-9	16.50
		44		
17.00m				
Dense to very dense, brownish grey, silty sand. Obs. gravels.		11 17 27	SPT-7	17.00-17.45
18.00m			DS-10	18.00

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
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BORE LOG DATA SHEET

BORE HOLE NO.54

Co-ordinates E=666.000 N=(-)149.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	18	Undisturbed (UDS)	7
Cone (Pc)		Penetrometer (SPT)	18
Vane (V)		Disturbed (DS)	21
		Water Sample (WS)	0

Commencement Date : 12/12/14
Completion Date : 13/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 72.476 m.
Water Struck At :
Standing Water Level : 22.6 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
18.00m							
						*UDS-7	18.50-18.69
						DS-11	19.50
					53		
		19	23	30		SPT-8	20.00-20.45
						DS-12	21.00
					56		
		21	24	32		SPT-9	21.50-21.95
						DS-13	22.50
Dense to very dense, brownish grey, silty sand. Obs. gravels.					60		
		23	25	35		SPT-10	23.00-23.45
						DS-14	24.00
					47		
		15	19	28		SPT-11	24.50-24.95
						DS-15	25.50
					61		
		19	28	33		SPT-12	26.00-26.45
						DS-16	27.00
27.50m					73		
		22	34	39		SPT-13	27.50-27.95
						DS-17	28.50
					55		
		12	24	31		SPT-14	29.00-29.45
Hard, greyish brown, clayey silt with sand mixture.						DS-18	30.00
					61		
		17	26	35		SPT-15	30.50-30.95
						DS-19	31.50
32.00m					65		
		12	28	37		SPT-16	32.00-32.45
						DS-20	33.00
					84		
Very dense, brownish grey, silty sand.		23	38	46		SPT-17	33.50-33.95
						DS-21	34.50
					85		
35.45m		13	37	48		SPT-18	35.00-35.45

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 07/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.55

Co-ordinates E=766.000 N=(-)194.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	17	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	17
Vane (V)		Disturbed (DS)	17
		Water Sample (WS)	0

Commencement Date : 19/12/14
Completion Date : 21/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 71.248 m.
Water Struck At :
Standing Water Level : 21.8 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
			DS-1	0.50
		6		
		2 3 3	SPT-1	1.00-1.45
Filled up soil consists of light grey, silty sand with ash.			UDS-1	2.00-2.45
		8		
		3 4 4	SPT-2	3.00-3.45
3.50m.				
			UDS-2	4.00-4.45
		11		
		5 4 7	SPT-3	5.00-5.45
			DS-2	6.00
Medium dense, yellowish brown, sandy silt. Obs. mica.			UDS-3	6.50-6.95
			DS-3	7.50
		11		
		4 4 7	SPT-4	8.00-8.45
			DS-4	9.00
			UDS-4	9.50-9.95
10.50m.			DS-5	10.50
		34		
		9 12 22	SPT-5	11.00-11.45
			DS-6	12.00
Hard, brownish grey, clayey silt with sand mixture.			UDS-5	12.50-12.95
			DS-7	13.50
		50		
		5 22 28	SPT-6	14.00-14.45
15.00m.			DS-8	15.00
Very dense, brownish grey, silty sand. 15.50m.				

BH-55/Sheet-1

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 07/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.55

Co-ordinates E=766.000 N=(-)194.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	17	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	17
		Disturbed (DS)	17
Vane (V)		Water Sample (WS)	0

Commencement Date : 19/12/14
Completion Date : 21/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 71.248 m.
Water Struck At :
Standing Water Level : 21.8 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
15.50m.				
Very dense, brownish grey, silty sand.		7 20 35 55	SPT-7	15.50-15.95
			DS-9	16.50
		13 21 37 58	SPT-8	17.00-17.45
			DS-10	18.00
		15 25 45 70	SPT-9	18.50-18.95
19.50m.			DS-11	19.50
		28 55 50/9.0 cm Pentn.	SPT-10	20.00-20.39
			DS-12	21.00
		35 67 50/8.0 cm Pentn.	SPT-11	21.50-21.73
			DS-13	22.50
		42 61 50/5.0 cm Pentn.	SPT-12	23.00-23.20
			DS-14	24.00
Very dense, brownish grey, silty sand with high % of gravels.		48 55 50/9.0 cm Pentn.	SPT-13	24.50-24.74
			DS-15	25.50
		52 50 50/6.0 cm Pentn.	SPT-14	26.00-26.21
			DS-16	27.00
		56 50 50/3.0 cm Pentn.	SPT-15	27.50-27.68
			DS-17	28.50
		53 55 50/5.0 cm Pentn.	SPT-16	29.00-29.20
30.17m.		58 51 50/2.0 cm Pentn.	SPT-17	30.00-30.17

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 07/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.56

Co-ordinates E=517.000 N=(-)66.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	18	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	18
Vane (V)		Disturbed (DS)	17
		Water Sample (WS)	0

Commencement Date : 21/12/14
Completion Date : 23/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.518 m.
Water Struck At :
Standing Water Level : 11.8 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
			DS-1	0.50
		3 4 6 (10)	SPT-1	1.00-1.45
Medium dense, yellowish brown, silty sand / sandy silt.			UDS-1	2.00-2.45
		4 6 8 (14)	SPT-2	3.00-3.45
4.00m			UDS-2	4.00-4.45
		3 7 9 (16)	SPT-3	5.00-5.45
Medium dense, brownish grey, silty sand / sandy silt with traces of clay.			DS-2	6.00
			UDS-3	6.50-6.95
			DS-3	7.50
8.00m		11 14 20 (34)	SPT-4	8.00-8.45
			DS-4	9.00
Hard, brownish grey, clayey silt with sand mixture.			UDS-4	9.50-9.95
			DS-5	10.50
11.00m		13 27 32 (59)	SPT-5	11.00-11.45
			DS-6	12.00
		42 76 (>100) 13.0 cm Pentn.	SPT-6	12.50-12.78
Very dense, brownish grey, silty sand with gravels.			DS-7	13.50
		51 78 (>100) 11.0 cm Pentn.	SPT-7	14.00-14.26
			DS-8	15.00
15.50m				

BH-56/Sheet-1

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 07/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.56

Co-ordinates E=517.000 N=(-)66.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	18	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	18
Vane (V)		Disturbed (DS)	17
		Water Sample (WS)	0

Commencement Date : 21/12/14
Completion Date : 23/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 64.518 m.
Water Struck At :
Standing Water Level : 11.8 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
15.50m				
		54 75 ≥100 10.0 cm Penth.	SPT-8	15.50-15.75
			DS-9	16.50
		55 56 ≥100 11.0 cm Penth.	SPT-9	17.00-17.26
			DS-10	18.00
		52 59 ≥100 8.0 cm Penth.	SPT-10	18.50-18.73
			DS-11	19.50
		56 45 ≥100 10.0 cm Penth.	SPT-11	20.00-20.25
			DS-12	21.00
		40 64 ≥100 11.0 cm Penth.	SPT-12	21.50-21.76
			DS-13	22.50
Very dense, brownish grey, silty sand with gravels.		52 61 ≥100 7.0 cm Penth.	SPT-13	23.00-23.22
			DS-14	24.00
		48 53 ≥100 6.0 cm Penth.	SPT-14	24.50-24.71
			DS-15	25.50
		51 59 ≥100 9.0 cm Penth.	SPT-15	26.00-26.24
			DS-16	27.00
		55 64 ≥100 7.0 cm Penth.	SPT-16	27.50-27.72
			DS-17	28.50
		58 65 ≥100 10.0 cm Penth.	SPT-17	29.00-29.25
30.23m		60 62 ≥100 8.0 cm Penth.	SPT-18	30.00-30.23

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | Created by : Chandrani | Created on : 16/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.57

Co-ordinates E=480.000 N=(-)81.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	18	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	18
Vane (V)		Disturbed (DS)	17
		Water Sample (WS)	0

Commencement Date : 24/12/14
Completion Date : 27/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 68.229 m.
Water Struck At :
Standing Water Level : 14.35 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Medium dense, brownish grey, sandy silt.		5 6 7 (13)	DS-1	0.50
			SPT-1	1.00-1.45
1.50m			UDS-1	2.00-2.45
		5 6 8 (14)	SPT-2	3.00-3.45
Medium dense, yellowish brown, silty sand with traces of clay binders.			UDS-2	4.00-4.45
		3 6 13 (19)	SPT-3	5.00-5.45
			DS-2	6.00
			UDS-3	6.50-6.95
7.50m			DS-3	7.50
		4 8 11 (19)	SPT-4	8.00-8.45
			DS-4	9.00
Very stiff to hard, brownish grey, clayey silt.			UDS-4	9.50-9.95
			DS-5	10.50
		35 47 52 (99)	SPT-5	11.00-11.45
12.00m			DS-6	12.00
		38 48 52 (≥100) 8.0 cm Pentn.	SPT-6	12.50-12.88
Very dense, brownish grey, silty sand.			DS-7	13.50
14.00m		53 58 (≥100) 14.0 cm Pentn.	SPT-7	14.00-14.29
Very dense, brownish grey, silty sand with gravels.			DS-8	15.00
15.50m				

BH-57/Sheet-1

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 16/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.57

Co-ordinates E=480.000 N=(-)81.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	18	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	18
		Disturbed (DS)	17
Vane (V)		Water Sample (WS)	0

Commencement Date : 24/12/14
Completion Date : 27/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 68.229 m.
Water Struck At :
Standing Water Level : 14.35 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
15.50m.				
		55 59 ≥100 10.0 cm Pentn.	SPT-8	15.50-15.75
			DS-9	16.50
		54 65 ≥100 13.0 cm Pentn.	SPT-9	17.00-17.28
			DS-10	18.00
		40 52 54 ≥100 3.0 cm Pentn.	SPT-10	18.50-18.83
			DS-11	19.50
		42 59 ≥100 8.0 cm Pentn.	SPT-11	20.00-20.23
			DS-12	21.00
		40 52 58 ≥100 8.0 cm Pentn.	SPT-12	21.50-21.88
			DS-13	22.50
Very dense, brownish grey, silty sand with gravels.		46 58 ≥100 11.0 cm Pentn.	SPT-13	23.00-23.26
			DS-14	24.00
		43 59 ≥100 11.0 cm Pentn.	SPT-14	24.50-24.76
			DS-15	25.50
		45 56 ≥100 8.0 cm Pentn.	SPT-15	26.00-26.23
			DS-16	27.00
		52 50 ≥100 6.0 cm Pentn.	SPT-16	27.50-27.71
			DS-17	28.50
		58 51 ≥100 3.0 cm Pentn.	SPT-17	29.00-29.18
30.20m.		55 50 ≥100 5.0 cm Pentn.	SPT-18	30.00-30.20

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 16/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.58

Co-ordinates E=339.000 N=(-)45.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 24/12/14
Completion Date : 27/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 80.057 m.
Water Struck At :
Standing Water Level : 26.5 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of brownish grey to deep grey, sandy silt with ash & gravels. 1.00m.		14 15 12 (27)	DS-1	0.50
			SPT-1	1.00-1.45
			UDS-1	2.00-2.45
Medium dense, yellowish brown, silty sand with traces of mica & clay binders.		11 9 14 (23)	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
5.50m.		8 7 7 (14)	SPT-3	5.00-5.45
			DS-2	6.00
			UDS-3	6.50-6.95
Very dense, yellowish brown, silty sand with traces of mica & clay binders.			DS-3	7.50
		18 24 30 (54)	SPT-4	8.00-8.45
9.00m.			DS-4	9.00
		30 43 52 (>100) 4.0 cm Pentn.	SPT-5	9.50-9.84
			DS-5	10.50
		34 60 (>100) 12.0 cm Pentn.	SPT-6	11.00-11.27
			DS-6	12.00
		45 54 (>100) 9.0 cm Pentn.	SPT-7	12.50-12.74
Hard, yellowish brown, clayey silt. Obs. mica.			DS-7	13.50
		48 63 (>100) 11.0 cm Pentn.	SPT-8	14.00-14.26
			DS-8	15.00
		54 52 (>100) 7.0 cm Pentn.	SPT-9	15.50-15.72
			DS-9	16.50
		47 54 (>100) 10.0 cm Pentn.	SPT-10	17.00-17.25
18.00m.			DS-10	18.00
		36 58 (>100) 9.0 cm Pentn.	SPT-11	18.50-18.74
Very dense, brownish grey, clayey sandy silt.			DS-11	19.50
20.20m.		48 52 (>100) 5.0 cm Pentn.	SPT-12	20.00-20.20
Very dense, brownish grey, silty sand. 20.75m.				

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 16/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.58

Co-ordinates E=339.000 N=(-)45.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 24/12/14
Completion Date : 27/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 80.057 m.
Water Struck At :
Standing Water Level : 26.5 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
20.75m.				
Very dense, brownish grey, silty sand.		≥100	DS-12	21.00
		44 54 7.0 cm Pentn.	SPT-13	21.50-21.72
		≥100	DS-13	22.50
		47 61 10.0 cm Pentn.	SPT-14	23.00-23.25
		≥100	DS-14	24.00
		26 53 50 4.0 cm Pentn.	SPT-15	24.50-24.84
		≥100	DS-15	25.50
		37 60 13.0 cm Pentn.	SPT-16	26.00-26.28
		≥100	DS-16	27.00
		48 53 8.0 cm Pentn.	SPT-17	27.50-27.73
		≥100	DS-17	28.50
		57 52 6.0 cm Pentn.	SPT-18	29.00-29.21
30.00m.				
Hard, brownish grey, clayey silt with traces of sand mixture. Obs. mica & concreation of silt.		≥100	DS-18	30.00
		52 54 8.0 cm Pentn.	SPT-19	30.50-30.73
		≥100	DS-19	31.50
		61 50 5.0 cm Pentn.	SPT-20	32.00-32.20
		≥100	DS-20	33.00
		62 50 6.0 cm Pentn.	SPT-21	33.50-33.71
		≥100	DS-21	34.50
		54 50 7.0 cm Pentn.	SPT-22	35.00-35.22
36.00m.				
Hard, brownish grey, clayey silt with sand mixture & concreation of silt.		≥100	DS-22	36.00
		58 52 9.0 cm Pentn.	SPT-23	36.50-36.74
38.00m.		≥100	DS-23	37.50
Very dense, brownish grey, silty sand. Obs. gravels.		49 54 8.0 cm Pentn.	SPT-24	38.00-38.23
		≥100	DS-24	39.00
40.21m.		53 60 6.0 cm Pentn.	SPT-25	40.00-40.21

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 16/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.59

Co-ordinates E=187.000 N=-(-)134.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 28/12/14
Completion Date : 30/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 81.313 m.
Water Struck At :
Standing Water Level : 28.1 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of deep reddish grey, ash, gravels & coal dust.		30 40 59 — 99	DS-1	0.50
			SPT-1	1.00-1.45
1.50m.			UDS-1	2.00-2.45
Very dense, brownish grey, silty sand with traces of clay binder.		20 20 34 — 54	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
5.00m.		12 14 14 — 28	SPT-3	5.00-5.45
			DS-2	6.00
			UDS-3	6.50-6.95
			DS-3	7.50
		6 20 52 — 72	SPT-4	8.00-8.45
Dense to very dense, yellowish brown, silty sand with traces of kankars.			DS-4	9.00
			UDS-4	9.50-9.95
			DS-5	10.50
		9 51 60 (9.0 cm Pentn.) — >100	SPT-5	11.00-11.39
			DS-6	12.00
		12 55 62 (3.0 cm Pentn.) — >100	SPT-6	12.50-12.83
			DS-7	13.50
14.00m.		21 38 64 (5.0 cm Pentn.) — >100	SPT-7	14.00-14.35
			DS-8	15.00
		23 31 55 (8.0 cm Pentn.) — >100	SPT-8	15.50-15.88
Hard, brownish grey, clayey silt with traces of sand. Obs. concreation of silt.			DS-9	16.50
		38 49 56 — >100	SPT-9	17.00-17.45
			DS-10	18.00
		40 48 60 (8.0 cm Pentn.) — >100	SPT-10	18.50-18.88
			DS-11	19.50
20.00m.		42 58 (5.0 cm Pentn.) — >100	SPT-11	20.00-20.20
Very dense, greyish brown, clayey sandy silt. Obs. mica. 20.75m.				

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Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 16/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.59

Co-ordinates E=187.000 N=-(-)134.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 28/12/14
Completion Date : 30/12/14
Bore Hole Diameter : 150 mm.
Level Of Ground : 81.313 m.
Water Struck At :
Standing Water Level : 28.1 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
20.75m			DS-12	21.00
Very dense, greyish brown, clayey sandy silt. Obs. mica.		45 59 ≥100 8.0 cm Pentn.	SPT-12	21.50-21.73
			DS-13	22.50
23.00m		48 61 ≥100 9.0 cm Pentn.	SPT-13	23.00-23.24
Very dense, brownish grey, silty sand. Obs. mica.			DS-14	24.00
		49 65 ≥100 10.0 cm Pentn.	SPT-14	24.50-24.75
			DS-15	25.00
26.00m		48 53 ≥100 11.0 cm Pentn.	SPT-15	26.00-26.26
			DS-16	27.00
		48 58 ≥100 8.0 cm Pentn.	SPT-16	27.50-27.73
			DS-17	28.50
		45 56 ≥100 7.0 cm Pentn.	SPT-17	29.00-29.22
			DS-18	30.00
Very dense, yellowish brown, silty sand with traces of clay. Obs. concreation of silt & mica.		46 58 ≥100 8.0 cm Pentn.	SPT-18	30.50-30.73
			DS-19	31.50
		49 62 ≥100 10.0 cm Pentn.	SPT-19	32.00-32.25
			DS-20	33.00
		48 63 ≥100 11.0 cm Pentn.	SPT-20	33.50-33.76
			DS-21	34.50
		53 51 ≥100 7.0 cm Pentn.	SPT-21	35.00-35.22
36.00m			DS-22	36.00
		56 58 ≥100 9.0 cm Pentn.	SPT-22	36.50-36.74
			DS-23	37.50
Very dense, brownish grey, sandy silt / silty fine sand. Obs. concreation of silt & mica.		41 60 ≥100 6.0 cm Pentn.	SPT-23	38.00-38.21
			DS-24	39.00
		51 56 ≥100 4.0 cm Pentn.	SPT-24	39.50-39.69
40.17m		56 50 ≥100 2.0 cm Pentn.	SPT-25	40.00-40.17

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 16/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.60

Co-ordinates E=(-)740.000 N=(-)72.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	26	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	26
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 06/01/15
Completion Date : 09/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 78.01 m.
Water Struck At :
Standing Water Level : 21.85 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of brownish grey / blackish grey, sandy silt with coal dust & gravels.		4 7 9 — 16	DS-1	0.50
			SPT-1	1.00-1.45
2.00m.			UDS-1	2.00-2.45
		14 22 32 — 54	SPT-2	3.00-3.45
Very dense, yellowish brown, silty sand.		13 24 37 — 61	SPT-3	4.00-4.45
		16 32 43 — 75	SPT-4	5.00-5.45
			DS-2	6.00
		12 27 33 — 60	SPT-5	6.50-6.95
7.50m.			DS-3	7.50
		14 15 13 — 28	SPT-6	8.00-8.45
Very stiff, brownish grey, clayey sandy silt with sand mixture. Obs. mica & concreation of silt.			DS-4	9.00
			UDS-2	9.50-9.95
			DS-5	10.50
11.00m.		21 39 45 — 84	SPT-7	11.00-11.45
			DS-6	12.00
Very dense, brownish grey, sandy silt.		18 37 42 — 79	SPT-8	12.50-12.95
			DS-7	13.50
14.00m.		15 28 39 — 67	SPT-9	14.00-14.45
			DS-8	15.00
Very dense, brownish grey, clayey sandy silt. A clay pocket was observed around SPT-10.		13 21 34 — 55	SPT-10	15.50-15.95
			DS-9	16.50
17.00m.		32 44 54 — >100	SPT-11	17.00-17.37
		7.0 cm Pentn.		
			DS-10	18.00
Very dense, brownish grey, silty sand / sandy silt.		21 40 52 — >100	SPT-12	18.50-18.89
		9.0 cm Pentn.		
			DS-11	19.50
		30 43 54 — >100	SPT-13	20.00-20.37
20.75m.		7.0 cm Pentn.		

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 16/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.60

Co-ordinates E=(-)740.000 N=(-)72.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	26	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	26
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 06/01/15
Completion Date : 09/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 78.01 m.
Water Struck At :
Standing Water Level : 21.85 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
20.75m						DS-12	21.00
Very dense, brownish grey, silty sand / sandy silt.		18	32	43	75	SPT-14	21.50-21.95
						DS-13	22.50
		19	30	34	64	SPT-15	23.00-23.45
						DS-14	24.00
24.50m		14	20	24	44	SPT-16	24.50-24.95
Hard, brownish grey, silty clay / clayey silt. Obs. concreation of silt.						DS-15	25.50
		17	23	29	52	SPT-17	26.00-26.45
						DS-16	27.00
27.50m		13	17	20	37	SPT-18	27.50-27.95
Dense, brownish grey, silty sand. Obs. gravels.						DS-17	28.50
29.00m		14	19	25	44	SPT-19	29.00-29.45
						DS-18	30.00
Hard, brownish grey, silty clay / clayey silt with concreation of silt. Obs. sand mixture.		20	27	31	58	SPT-20	30.50-30.95
						DS-19	31.50
		18	24	29	53	SPT-21	32.00-32.45
33.00m						DS-20	33.00
Very dense, brownish grey, clayey sandy silt. Obs. concreation of silt.		17	27	40	67	SPT-22	33.50-33.95
						DS-21	34.50
		28	30	48	78	SPT-23	35.00-35.45
36.00m						DS-22	36.00
		24	48	54	≥100	SPT-24	36.50-36.89
				9.0 cm	Pentn.		
Very dense, brownish grey, sandy silt with traces of clay mixture. Obs. concreation of silt.						DS-23	37.50
		29	44	52	≥100	SPT-25	38.00-38.37
				7.0 cm	Pentn.		
						DS-24	39.00
		34	53	50	≥100	SPT-26	40.00-40.35
40.35m				5.0 cm	Pentn.		

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 16/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.61

Co-ordinates E=377.000 N=65.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 31/12/14
Completion Date : 01/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 80.441 m.
Water Struck At :
Standing Water Level : 24.7 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of light grey to deep grey, sandy silt. Obs. ash & gravels (coal dust).		3 5 7 — 12	DS-1	0.50
			SPT-1	1.00-1.45
			UDS-1	2.00-2.45
		5 8 9 — 17	SPT-2	3.00-3.45
4.00m.			UDS-2	4.00-4.45
Very stiff, brownish grey, clayey silt with traces of sand mixture.		6 7 9 — 16	SPT-3	5.00-5.45
			DS-2	6.00
6.50m.			*UDS-3	6.50-6.90
Dense to very dense, brownish grey, silty sand with traces of clay.		10 13 22 — 35	SPT-4	7.00-7.45
			DS-3	7.80
		12 19 35 — 54	SPT-5	8.00-8.45
			DS-4	9.00
			UDS-4	9.50-9.95
			DS-5	10.50
		29 41 42 — 83	SPT-6	11.00-11.45
			DS-6	12.00
			UDS-5	12.50-12.80
			DS-7	13.50
14.00m.		30 43 52 — >100	SPT-7	14.00-14.37
Hard, brownish grey, clayey silt with traces of sand mixture.		7.0 cm Pentn.	DS-8	15.00
		34 60 — >100	SPT-8	15.50-15.74
		9.0 cm Pentn.	DS-9	16.50
		28 47 52 — >100	SPT-9	17.00-17.38
		8.0 cm Pentn.	DS-10	18.00
18.50m.		41 55 — >100	SPT-10	18.50-18.75
Hard, brownish grey, clayey sandy silt.		10.0 cm Pentn.	DS-11	19.50
		45 52 — >100	SPT-11	20.00-20.23
20.75m.		8.0 cm Pentn.		

BH-61/Sheet-1

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 16/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.61

Co-ordinates E=377.000 N=65.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	25
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 31/12/14
Completion Date : 01/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 80.441 m.
Water Struck At :
Standing Water Level : 24.7 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
20.75m.			DS-12	21.00
		≥100		
		40 56	SPT-12	21.50-21.74
		9.0 cm Pentn.		
			DS-13	22.50
		90		
		27 37 53	SPT-13	23.00-23.45
			DS-14	24.00
		≥100		
		33 41 52	SPT-14	24.50-24.89
		9.0 cm Pentn.		
			DS-15	25.50
		≥100		
Hard, brownish grey, clayey sandy silt.		40 45 55	SPT-15	26.00-26.37
		7.0 cm Pentn.		
			DS-16	27.00
		≥100		
		43 56 60	SPT-16	27.50-27.85
		5.0 cm Pentn.		
			DS-17	28.50
		≥100		
		49 69	SPT-17	29.00-29.25
		10.0 cm Pentn.		
			DS-18	30.00
		≥100		
		40 52 65	SPT-18	30.50-30.88
		8.0 cm Pentn.		
			DS-19	31.50
32.00m.		≥100		
		43 55 65	SPT-19	32.00-32.37
		7.0 cm Pentn.		
			DS-20	33.00
		≥100		
		44 58 65	SPT-20	33.50-33.88
		8.0 cm Pentn.		
			DS-21	34.50
		≥100		
		49 65 15	SPT-21	35.00-35.23
		8.0 cm Pentn.		
Very dense, brownish grey, silty sand. Obs. gravels.			DS-22	36.00
		≥100		
		53 62	SPT-22	36.50-36.78
		13.0 cm Pentn.		
			DS-23	37.50
		≥100		
		56 51	SPT-23	38.00-38.25
		10.0 cm Pentn.		
			DS-24	39.00
		≥100		
		51 60	SPT-24	39.50-39.71
		6.0 cm Pentn.		
40.18m.		≥100	SPT-25	40.00-40.18
		54 51		
		3.0 cm Pentn.		

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 16/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.62

Co-ordinates E=470.000 N=120.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	23	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	23
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 03/01/15
Completion Date : 05/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 78.12 m.
Water Struck At :
Standing Water Level : 23.25 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m							
Filled up soil consists of light grey, silty sand with stone chips, gravels & roots.						DS-1	0.50
1.00m		2	2	3	5	SPT-1	1.00-1.45
Loose, yellowish brown, silty sand with traces of kankars.						UDS-1	2.00-2.45
		4	4	3	7	SPT-2	3.00-3.45
4.00m						UDS-2	4.00-4.45
Medium dense, brownish grey, sandy silt.		5	5	7	12	SPT-3	5.00-5.45
						DS-2	6.00
						UDS-3	6.50-6.95
						DS-3	7.50
8.00m		5	9	11	20	SPT-4	8.00-8.45
						DS-4	9.00
						UDS-4	9.50-9.95
Medium dense, greyish brown, silty sand with traces of clay binders.						DS-5	10.50
		7	9	13	22	SPT-5	11.00-11.45
						DS-6	12.00
						UDS-5	12.50-12.95
13.50m						DS-7	13.50
		24	22	29	51	SPT-6	14.00-14.45
						DS-8	15.00
		25	26	32	58	SPT-7	15.50-15.95
Very dense, brownish grey, sandy silt with traces of clay. Obs. concreation of silt.						DS-9	16.50
		18	29	35	64	SPT-8	17.00-17.45
						DS-10	18.00
		17	22	43	65	SPT-9	18.50-18.95
						DS-11	19.50
		21	26	47	73	SPT-10	20.00-20.45
20.75m							

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | Created by : Chandrani | Created on : 16/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.62

Co-ordinates E=470.000 N=120.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	23	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	23
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 03/01/15
Completion Date : 05/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 78.12 m.
Water Struck At :
Standing Water Level : 23.25 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
20.75m. Very dense, brownish grey, sandy silt with traces of clay. Obs. concreation of silt.		24 31 44 (75)	DS-12	21.00
			SPT-11	21.50-21.95
22.50m. Very dense, greyish brown, silty sand with mica.		37 41 60 (≥100) 8.0 cm Pentn.	DS-13	22.50
			SPT-12	23.00-23.38
		43 52 50 (≥100) 3.0 cm Pentn.	DS-14	24.00
			SPT-13	24.50-24.83
26.00m. Hard, brownish grey, clayey silt with traces of sand. Obs. concreation of silt.		14 25 38 (63)	DS-15	25.50
			SPT-14	26.00-26.45
		16 28 43 (71)	DS-16	27.00
			SPT-15	27.50-27.95
28.50m. Very dense, brownish grey, silty sand with gravels.		21 37 63 (≥100) 5.0 cm Pentn.	DS-17	28.50
			SPT-16	29.00-29.35
		28 43 60 (≥100) 7.0 cm Pentn.	DS-18	30.00
			SPT-17	30.50-30.87
		37 65 15 (≥100) 13.0 cm Pentn.	DS-19	31.50
			SPT-18	32.00-32.28
		43 58 (≥100) 11.0 cm Pentn.	DS-20	33.00
			SPT-19	33.50-33.76
		48 53 (≥100) 7.0 cm Pentn.	DS-21	34.50
			SPT-20	35.00-35.22
		52 59 (≥100) 10.0 cm Pentn.	DS-22	36.00
			SPT-21	36.50-36.75
		54 50 (≥100) 8.0 cm Pentn.	DS-23	37.50
			SPT-22	38.00-38.23
40.19m.		56 52 (≥100) 4.0 cm Pentn.	DS-24	39.00
			SPT-23	40.00-40.19

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 16/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.63

Co-ordinates E=650.000 N=(-)50.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	24
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 02/01/15
Completion Date : 05/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 62.387 m.
Water Struck At :
Standing Water Level : 13.6 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m							
Filled up soil consists of light grey, silty sand with ash.					4	DS-1	0.50
		1	2	2		SPT-1	1.00-1.45
1.50m							
Loose, greyish brown, silty sand with traces of clay binders & mica.					7	UDS-1	2.00-2.45
		3	3	4		SPT-2	3.00-3.45
						UDS-2	4.00-4.45
4.50m							
Stiff, deep grey, silty clay / clayey silt. Obs. concreation of sand & mica.					13	SPT-3	5.00-5.45
		3	5	8		DS-2	6.00
						UDS-3	6.50-6.95
7.00m							
Dense to very dense, greyish brown, sandy silt / silty sand. Obs. gravels.					40	DS-3	7.50
		8	18	22		SPT-4	8.00-8.45
						DS-4	9.00
						*UDS-4	9.50-9.67
						DS-5	10.50
		12	24	36	60	SPT-5	11.00-11.45
12.00m						DS-6	12.00
Dense to very dense, brownish grey, silty sand with gravels.		12	26	31	57	SPT-6	12.50-12.95
						DS-7	13.50
		9	17	18	35	SPT-7	14.00-14.45
15.00m						DS-8	15.00
Very stiff, brownish grey, silty clay wtih gravels.		9	13	15	28	SPT-8	15.50-15.95
16.50m						DS-9	16.50
Very dense, brownish grey, silty sand with gravels.		17	38	49	87	SPT-9	17.00-17.45
						DS-10	18.00
18.50m					40		
Hard, yellowish brown, clayey silt.		19	17	23		SPT-10	18.50-18.95
						DS-11	19.50
Very dense, brownish grey, silty sand with traces of clay binders. Obs. concreation of silt & kankars. 20.00m					51	*UDS-5	20.00-20.15
20.75m		11	23	28		SPT-11	20.30-20.75

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Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 16/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.63

Co-ordinates E=650.000 N=(-)50.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	24	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	24
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 02/01/15
Completion Date : 05/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 62.387 m.
Water Struck At :
Standing Water Level : 13.6 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
			DS-12	21.00
		82		
		14 34 48	SPT-12	21.50-21.95
			DS-13	22.50
		93		
		23 39 54	SPT-13	23.00-23.45
			DS-14	24.00
		>100		
		37 48 52	SPT-14	24.50-24.87
		7.0 cm Pentn.		
		>100	DS-15	25.50
		34 46 54	SPT-15	26.00-26.39
		9.0 cm Pentn.		
		>100	DS-16	27.00
		38 49 56	SPT-16	27.50-27.84
		4.0 cm Pentn.		
		>100	DS-17	28.50
		43 58	SPT-17	29.00-29.27
		12.0 cm Pentn.		
		>100	DS-18	30.00
		48 53 50	SPT-18	30.50-30.82
		2.0 cm Pentn.		
		>100	DS-19	31.50
		51 54	SPT-19	32.00-32.26
		11.0 cm Pentn.		
		>100	DS-20	33.00
		59 50	SPT-20	33.50-33.75
		10.0 cm Pentn.		
		>100	DS-21	34.50
		57 52	SPT-21	35.00-35.23
		8.0 cm Pentn.		
		>100	DS-22	36.00
		55 51	SPT-22	36.50-36.74
		9.0 cm Pentn.		
		>100	DS-23	37.50
		58 53	SPT-23	38.00-38.23
		8.0 cm Pentn.		
			DS-24	39.00
		>100		
		57 50	SPT-24	40.00-40.21
		6.0 cm Pentn.		

20.75m

Very dense, brownish grey, silty sand with traces of clay binders. Obs. concreation of silt & kankars.

25.50m

Very dense, brownish grey, silty sand with gravels & pebbles.

40.21m

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 16/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.64

Co-ordinates E=610.000 N=35.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	7
Cone (Pc)		Penetrometer (SPT)	22
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 02/01/15
Completion Date : 05/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.246 m.
Water Struck At :
Standing Water Level : 13.85 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)				SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of deep grey. Obs. ash & gravels. 1.00m.						DS-1	0.50
		6	7	7	14	SPT-1	1.00-1.45
Brownish grey to blackish grey, sandy silt with coal dust & gravels. 3.00m.						UDS-1	2.00-2.45
		3	3	5	8	SPT-2	3.00-3.45
Loose to medium dense, brownish grey, silty sand / sandy silt. 6.00m.						UDS-2	4.00-4.45
		6	7	9	16	SPT-3	5.00-5.45
Very stiff, brownish grey, silty clay. 8.00m.						DS-2	6.00
						UDS-3	6.50-6.95
						DS-3	7.50
Very stiff, bronwish grey, clayey silt. Obs. concreation of silt. 9.50m.		6	11	17	28	SPT-4	8.00-8.45
						DS-4	9.00
						UDS-4	9.50-9.95
Dense, brownish grey, silty sand. 12.00m.						DS-5	10.50
		10	18	21	39	SPT-5	11.00-11.45
						DS-6	12.00
						UDS-5	12.50-12.95
Hard, brownish grey, clayey silt with traces of sand mixture. Obs. concreation of silt. 15.50m.						DS-7	13.50
		9	16	27	43	SPT-6	14.00-14.45
						DS-8	15.00
						UDS-6	15.50-15.95
						DS-9	16.50
Very stiff to hard, yellowish brown, clayey silt with traces of sand mixture. Obs. mica.		7	14	21	35	SPT-7	17.00-17.45
						DS-10	18.00
						*UDS-7	18.50-18.65
		7	13	17	30	SPT-8	18.80-19.25
20.00m. Hard, brownish grey, clayey silt / silty clay. Obs. kankars. 20.75m.						DS-11	20.00
		8	17	21	38	SPT-9	20.50-20.95

BH-64/Sheet-1

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 16/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.64

Co-ordinates E=610.000 N=35.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	22	Undisturbed (UDS)	7
Cone (Pc)		Penetrometer (SPT)	22
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 02/01/15
Completion Date : 05/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 63.246 m.
Water Struck At :
Standing Water Level : 13.85 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
20.75m. Hard, brownish grey, clayey silt / silty clay. Obs. kankars. 21.50m.			DS-12	21.50
		19 30 43 73	SPT-10	22.00-22.45
			DS-13	23.00
		28 42 54 >100 10.0 cm Pentn.	SPT-11	23.50-23.90
			DS-14	24.50
		34 47 52 >100 7.0 cm Pentn.	SPT-12	25.00-25.37
			DS-15	26.00
		38 53 54 >100 4.0 cm Pentn.	SPT-13	26.50-26.84
			DS-16	27.50
		44 60 >100 12.0 cm Pentn.	SPT-14	28.00-28.27
			DS-17	29.00
		47 54 >100 9.0 cm Pentn.	SPT-15	29.50-29.74
Very dense, brownish grey, silty sand with high % of gravels & pebbles.			DS-18	30.50
		45 58 >100 8.0 cm Pentn.	SPT-16	31.00-31.23
			DS-19	32.00
		48 60 >100 10.0 cm Pentn.	SPT-17	32.50-32.75
			DS-20	33.50
		57 50 >100 6.0 cm Pentn.	SPT-18	34.00-34.21
			DS-21	35.00
		49 57 >100 9.0 cm Pentn.	SPT-19	35.50-35.74
			DS-22	36.50
		54 50 >100 5.0 cm Pentn.	SPT-20	37.00-37.20
			DS-23	38.00
		57 52 >100 7.0 cm Pentn.	SPT-21	38.50-38.72
			DS-24	39.50
40.19m.		54 50 >100 4.0 cm Pentn.	SPT-22	40.00-40.19

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 19/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.T1

Co-ordinates E=(-)204.000 N=455.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 06/01/15
Completion Date : 09/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 78.947 m.
Water Struck At :
Standing Water Level : 22.9 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	Depth (m)
Filled up soil consists of yellowish brown, sandy silt. 0.00m – 0.50m						DS-1	0.50
Loose, greyish brown, sandy silt with traces of clay.		2	2	3	5	SPT-1	1.00-1.45
1.90m						UDS-1	2.00-2.45
Medium dense, yellowish brown, silty sand with traces of clay binders. Obs. concreation of sand.		3	4	7	11	SPT-2	3.00-3.45
						UDS-2	4.00-4.45
4.75m		5	11	15	26	SPT-3	5.00-5.45
Medium dense, greyish brown, sandy silt with traces of clay.						DS-2	6.00
						UDS-3	6.50-6.95
7.50m						DS-3	7.50
		11	17	19	36	SPT-4	8.00-8.45
Brownish grey, clayey silt with sand mixture.						DS-4	9.00
						UDS-4	9.50-9.95
10.00m						DS-5	10.50
		17	54	60/7.0 cm	>100 Pentn.	SPT-5	11.00-11.37
						DS-6	12.00
Dense to very dense, brownish grey, sandy silt with traces of clay.		22	56	62/7.0 cm	>100 Pentn.	SPT-6	12.50-12.87
						DS-7	13.50
		18	32	44	76	SPT-7	14.00-14.45
						DS-8	15.00
15.50m		15	29	35	64	SPT-8	15.50-15.95
						DS-9	16.50
		16	28	42	70	SPT-9	17.00-17.45
Very dense, greyish brown, silty sand.						DS-10	18.00
		14	28	46	74	SPT-10	18.50-18.95
						DS-11	19.50
		17	30	48	78	SPT-11	20.00-20.45
20.75m							

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 19/01/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.T1

Co-ordinates E=(-)204.000 N=455.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 06/01/15
Completion Date : 09/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 78.947 m.
Water Struck At :
Standing Water Level : 22.9 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.				SAMPLES Ref. No	SAMPLES Depth (m)
20.75m							
					77	DS-12	21.00
		14	28	49		SPT-12	21.50-21.95
						DS-13	22.50
					22		
Very dense, greyish brown, silty sand.		10	11	11		SPT-13	23.00-23.45
						DS-14	24.00
					68		
		21	28	40		SPT-14	24.50-24.95
25.50m							
						DS-15	25.50
					84		
		29	35	49		SPT-15	26.00-26.45
						DS-16	27.00
					>100		
Very dense, brownish grey, silty sand. Obs. gravels.		35	45	54		SPT-16	27.50-27.89
				9.0	cm Pentn.		
						DS-17	28.50
					>100		
		38	48	50		SPT-17	29.00-29.37
				7.0	cm Pentn.		
30.00m							
						DS-18	30.00
					59		
		14	24	35		SPT-18	30.50-30.95
						DS-19	31.50
					75		
		17	35	40		SPT-19	32.00-32.45
						DS-20	33.00
					82		
		22	38	44		SPT-20	33.50-33.95
						DS-21	34.50
Hard, brownish grey, clayey silt with traces of sand. Obs. concreation of silt & mica.					89		
		25	40	49		SPT-21	35.00-35.45
						DS-22	36.00
					97		
		28	42	55		SPT-22	36.50-36.95
						DS-23	37.50
					78		
		24	37	41		SPT-23	38.00-38.45
						DS-24	39.00
					70		
		20	33	37		SPT-24	39.50-39.95
					81		
		22	36	45		SPT-25	40.00-40.45
40.45m							

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 19/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.T2

Co-ordinates E=(-)204.000 N=420.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 07/01/15
Completion Date : 09/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 79.086 m.
Water Struck At :
Standing Water Level : 23.1 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Loose, yellowish grey, sandy silt.			DS-1	0.50
1.00m. Loose, brownish grey, sandy silt with traces of clay.		3 4 4 (8)	SPT-1	1.00-1.45
2.00m.			UDS-1	2.00-2.45
Medium dense, brownish grey, sandy silt / silty sand. Obs. concreation of sand.		3 6 7 (13)	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
5.00m. Medium dense, brownish grey, clayey sandy silt.		9 10 12 (22)	SPT-3	5.00-5.45
			DS-2	6.00
6.50m.			UDS-3	6.50-6.95
Dense, brownish grey, silty sand / sandy silt. Obs. concreation of sand.		13 22 25 (47)	DS-3	7.50
			SPT-4	8.00-8.45
9.00m.			DS-4	9.00
		15 25 28 (53)	*UDS-4	9.50-9.63
			SPT-5	9.63-10.08
			DS-5	11.00
		26 43 47 (90)	SPT-6	11.50-11.95
			DS-6	12.50
		34 46 54 (≥100) 10.0 cm Pentn.	SPT-7	13.00-13.40
Hard, brownish grey, clayey silt. Obs. calcareous nodules.			DS-7	14.00
		41 52 57 (≥100) 8.0 cm Pentn.	SPT-8	14.50-14.88
			DS-8	15.50
		45 54 (≥100) 9.0 cm Pentn.	SPT-9	16.00-16.24
			DS-9	17.00
		48 53 (≥100) 8.0 cm Pentn.	SPT-10	17.50-17.73
			DS-10	18.50
19.00m.		43 54 (≥100) 8.0 cm Pentn.	SPT-11	19.00-19.23
Very dense, brownish grey, silty sand. Obs. gravels.			DS-11	20.00
20.75m.		26 35 60 (≥100) 9.0 cm Pentn.	SPT-12	20.50-20.89

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 19/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.T2

Co-ordinates E=(-)204.000 N=420.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	4
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 07/01/15
Completion Date : 09/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 79.086 m.
Water Struck At :
Standing Water Level : 23.1 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
20.75m				
			DS-12	21.50
		≥100	SPT-13	22.00-22.41
		21 38 62 11.0 cm Pentn.	DS-13	23.00
		≥100	SPT-14	23.50-23.89
Very dense, brownish grey, silty sand. Obs. gravels.		18 41 53 9.0 cm Pentn.	DS-14	24.50
		≥100	SPT-15	25.00-25.38
		23 39 60 8.0 cm Pentn.	DS-15	26.00
		≥100	SPT-16	26.50-26.89
		27 43 55 9.0 cm Pentn.	DS-16	27.50
28.00m		80	SPT-17	28.00-28.45
		26 38 42	DS-17	29.00
		79	SPT-18	29.50-29.95
		22 35 44	DS-18	30.50
		87	SPT-19	31.00-31.45
		24 40 47	DS-19	32.00
		83	SPT-20	32.50-32.95
Hard, brownish grey, clayey silt with traces of sand. Obs. concreation of silt, mica.		11 30 53	DS-20	33.50
		89	SPT-21	34.00-34.45
		16 38 51	DS-21	35.00
		95	SPT-22	35.50-35.95
		19 46 49	DS-22	36.50
		87	SPT-23	37.00-37.45
		21 42 45	DS-23	38.00
		80	SPT-24	38.50-38.95
		18 39 41	DS-24	39.50
		78	SPT-25	40.00-40.45
40.45m		20 35 43		

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

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | Created by : Chandrani | Created on : 19/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.T3

Co-ordinates E=(-)204.000 N=385.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	23	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	23
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 07/01/15
Completion Date : 12/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 79.087 m.
Water Struck At :
Standing Water Level : 23.15 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m			DS-1	0.50
Loose, brownish grey, sandy silt.		3 4 4 (8)	SPT-1	1.00-1.45
			UDS-1	2.00-2.45
3.00m				
Medium dense, brownish grey, clayey sandy silt.		6 7 9 (16)	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
4.50m				
Very stiff, deep brownish grey, clayey silt.		7 9 13 (22)	SPT-3	5.00-5.45
6.00m			DS-2	6.00
			UDS-3	6.50-6.95
Dense, brownish grey, clayey silty sand.		10 12 27 (39)	DS-3	7.50
			SPT-4	8.00-8.45
9.00m			DS-4	9.00
			UDS-4	9.50-9.95
			DS-5	10.50
		14 22 38 (60)	SPT-5	11.00-11.45
			DS-6	12.00
Very dense, brownish grey, clayey silty sand.			*UDS-5	12.50-12.65
			DS-7	13.50
		21 31 46 (77)	SPT-6	14.00-14.45
			DS-8	15.00
15.50m				
Very dense, brownish grey, sandy silt / silty sand.		23 52 53 (>100) 7.0 cm Pentn.	SPT-7	15.50-15.87
			DS-9	16.50
17.00m				
Very dense, brownish grey, sandy silt with traces of clay.		27 55 50 (>100) 9.0 cm Pentn.	SPT-8	17.00-17.39
18.00m			DS-10	18.00
		33 46 55 (>100) 5.0 cm Pentn.	SPT-9	18.50-18.85
Very dense, brownish grey, silty sand. Obs. gravels.			DS-11	19.50
		37 43 54 (>100) 6.0 cm Pentn.	SPT-10	20.00-20.36
20.75m				

BH-3/Sheet-1

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | Created by : Chandrani | Created on : 19/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.T3

Co-ordinates E=(-)204.000 N=385.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	23	Undisturbed (UDS)	5
Cone (Pc)		Penetrometer (SPT)	23
		Disturbed (DS)	24
Vane (V)		Water Sample (WS)	0

Commencement Date : 07/01/15
Completion Date : 12/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 79.087 m.
Water Struck At :
Standing Water Level : 23.15 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
			DS-12	21.00
		≥100	SPT-11	21.50-21.83
		28 47 53 (3.0 cm Pentn.)	DS-13	22.50
		≥100	SPT-12	23.00-23.35
		32 51 54 (5.0 cm Pentn.)	DS-14	24.00
		≥100	SPT-13	24.50-24.87
		30 48 52 (7.0 cm Pentn.)	DS-15	25.50
		≥100	SPT-14	26.00-26.35
		33 45 51 (5.0 cm Pentn.)	DS-16	27.00
		≥100	SPT-15	27.50-27.88
20.75m. Very dense, brownish grey, silty sand. Obs. gravels.		37 52 55 (8.0 cm Pentn.)		
28.50m. Hard, brownish grey, silty clay.		64	DS-17	28.50
		13 28 36	SPT-16	29.00-29.45
			DS-18	30.00
		65	SPT-17	30.50-30.95
		11 25 40	DS-19	31.50
32.00m. Very dense, brownish grey, silty sand. Obs. gravels.		99	SPT-18	32.00-32.45
		24 46 53	DS-20	33.00
		≥100	SPT-19	33.50-33.90
		29 43 51 (10.0 cm Pentn.)	DS-21	34.50
		≥100	SPT-20	35.00-35.37
		33 46 53 (7.0 cm Pentn.)	DS-22	36.00
		≥100	SPT-21	36.50-36.74
		42 30 30 (9.0 cm Pentn.)	DS-23	37.50
		≥100	SPT-22	38.00-38.22
		45 50 (7.0 cm Pentn.)	DS-24	39.00
		≥100	SPT-23	40.00-40.24
40.24m.		51 50 (9.0 cm Pentn.)		

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

BH-3/Sheet-2

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | **Created by : Chandrani** | **Created on : 19/01/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO.T4

Co-ordinates E=(-)204.000 N=355.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 11/01/15
Completion Date : 18/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 79.06 m.
Water Struck At :
Standing Water Level : 23.05 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
		19	DS-1	0.50
		6 8 1	SPT-1	1.00-1.45
Medium dense, yellowish brown, silty sand with calcareous nodules.			UDS-1	2.00-2.45
		22		
		7 10 12	SPT-2	3.00-3.45
3.75m.			UDS-2	4.00-4.45
		36		
		13 17 19	SPT-3	5.00-5.45
Hard, deep brownish grey, clayey silt with sand mixture.			DS-2	6.00
			UDS-3	6.50-6.95
7.50m.			DS-3	7.50
		77		
Very dense, brownish grey, sandy silt.		20 35 42	SPT-4	8.00-8.45
9.00m.			DS-4	9.00
		83		
		25 38 45	SPT-5	9.50-9.95
			DS-5	10.50
		86		
		28 39 47	SPT-6	11.00-11.45
			DS-6	12.00
		89		
		35 40 49	SPT-7	12.50-12.95
			DS-7	13.50
		97		
		38 42 55	SPT-8	14.00-14.45
Very dense, greyish brown, silty sand with gravels.			DS-8	15.00
Observed clay pocket around SPT-07.		93		
		32 41 52	SPT-9	15.50-15.95
			DS-9	16.50
		100		
		39 43 57	SPT-10	17.00-17.45
			DS-10	18.00
		>100		
		34 45 50 7.0 cm Pentn.	SPT-11	18.50-18.87
			DS-11	19.50
		>100		
		34 48 50 6.0 cm Pentn.	SPT-12	20.00-20.36
20.75m.				

BH-4/Sheet-1

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat. CETEST

Job No : 3369 | Created by : Chandrani | Created on : 19/01/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.T4

Co-ordinates E=(-)204.000 N=355.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	25	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	25
Vane (V)		Disturbed (DS)	24
		Water Sample (WS)	0

Commencement Date : 11/01/15
Completion Date : 18/01/15
Bore Hole Diameter : 150 mm.
Level Of Ground : 79.06 m.
Water Struck At :
Standing Water Level : 23.05 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
20.75m			DS-12	21.00
		≥100		
		40 45 50 9.0 cm Pentn.	SPT-13	21.50-21.89
			DS-13	22.50
		≥100		
Very dense, greyish brown, silty sand with gravels. Observed clay pocket around SPT-07.		42 47 50 10.0 cm Pentn.	SPT-14	23.00-23.40
			DS-14	24.00
		≥100		
		45 50 2 10.0 cm Pentn.	SPT-15	24.50-24.75
			DS-15	25.50
		≥100		
		58 56 7.0 cm Pentn.	SPT-16	26.00-26.22
26.50m			DS-16	26.50
		71		
		23 31 40	SPT-17	27.50-27.95
			DS-17	28.00
		90		
		33 42 48	SPT-18	29.00-29.45
			DS-18	29.50
		86		
		30 37 49	SPT-19	30.50-30.95
			DS-19	31.00
		82		
		26 39 43	SPT-20	32.00-32.45
			DS-20	32.50
Hard, brownish grey, silty clay / clayey silt. Obs. concreation of sand & silt		88		
		29 41 47	SPT-21	33.50-33.95
			DS-21	34.00
		86		
		34 40 46	SPT-22	35.00-35.45
			DS-22	35.50
		85		
		30 37 48	SPT-23	36.50-36.95
			DS-23	37.00
		95		
		38 43 52	SPT-24	38.00-38.45
			DS-24	39.00
		≥100		
40.45m		41 47 56	SPT-25	40.00-40.45

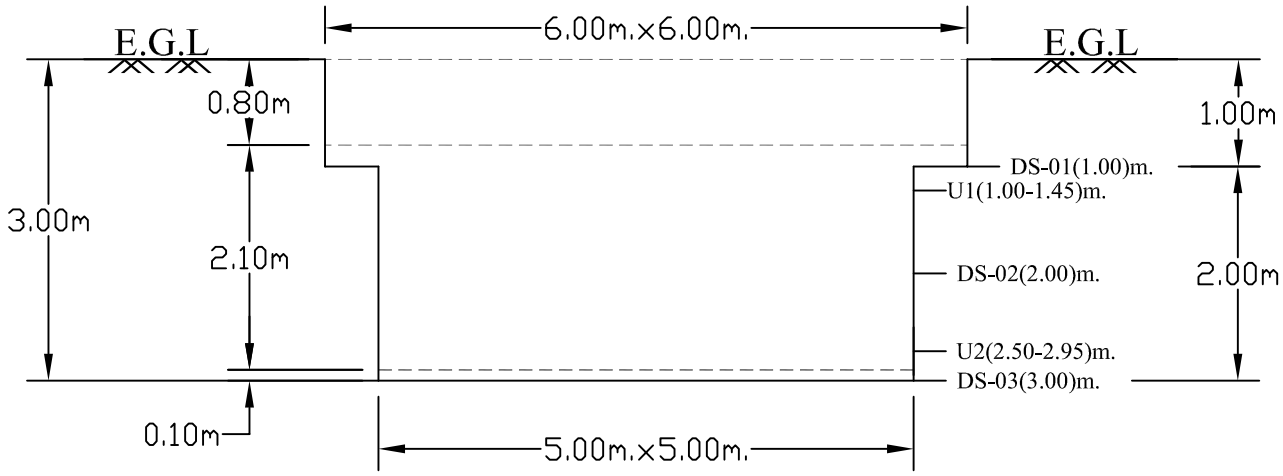
BH-4/Sheet-2

Project :	Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 22 / 12 / 2014	Sheet No:	

Commenced on: 23/12/2014
Completed on: 24/12/2014
Pit size: 5.00mX5.00mX3.00m(depth)
Load on pr.guage/divn.=10kg/sq.cm
Load on jack/divn. = 0.7091t
Plate size: 0.60mX0.60m
Load on plate/divn.= 1.97t/sq.m
Test Type: Routine PLT

Co-ordinates:
E = 650.000M.
N = 334.000M.
RL = 64.911M.

SWL = Not found



Description of Soil:-

(EGL-0.20)m:- Brownish grey, silty sand.

(0.20-2.90)m:- Brownish grey, sandy silt.

(2.90-3.00)m:- Light blackish grey, clayey silt.

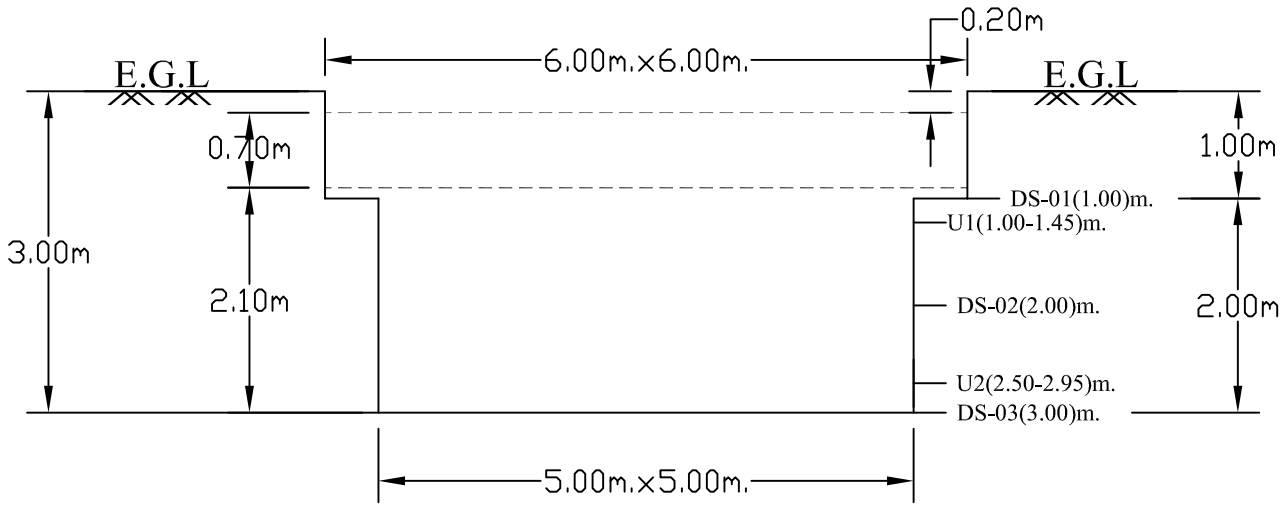
PIT LOG OF PLT - 01

Project :	Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 22 / 12 / 2014	Sheet No:	

Commenced on: 15/12/2014
Completed on: 16/12/2014
Pit size: 5.00mX5.00mX3.00m(depth)
Load on pr.guage/divn.=10kg/sq.cm
Load on jack/divn. = 0.7091t
Plate size: 060mX0.60m
Load on plate/divn.= 1.97t/sq.m
Test Type: Routine PLT

Co-ordinates:
E = 614.000M.
N = 222.000M.
RL = 65.903M.

SWL = Not found



Description of Soil:-

(EGL-0.20)m:- Brownish grey, sandy silt / silty sand.

(0.20-0.90)m:- Blackish grey, clayey silt / silty clay.

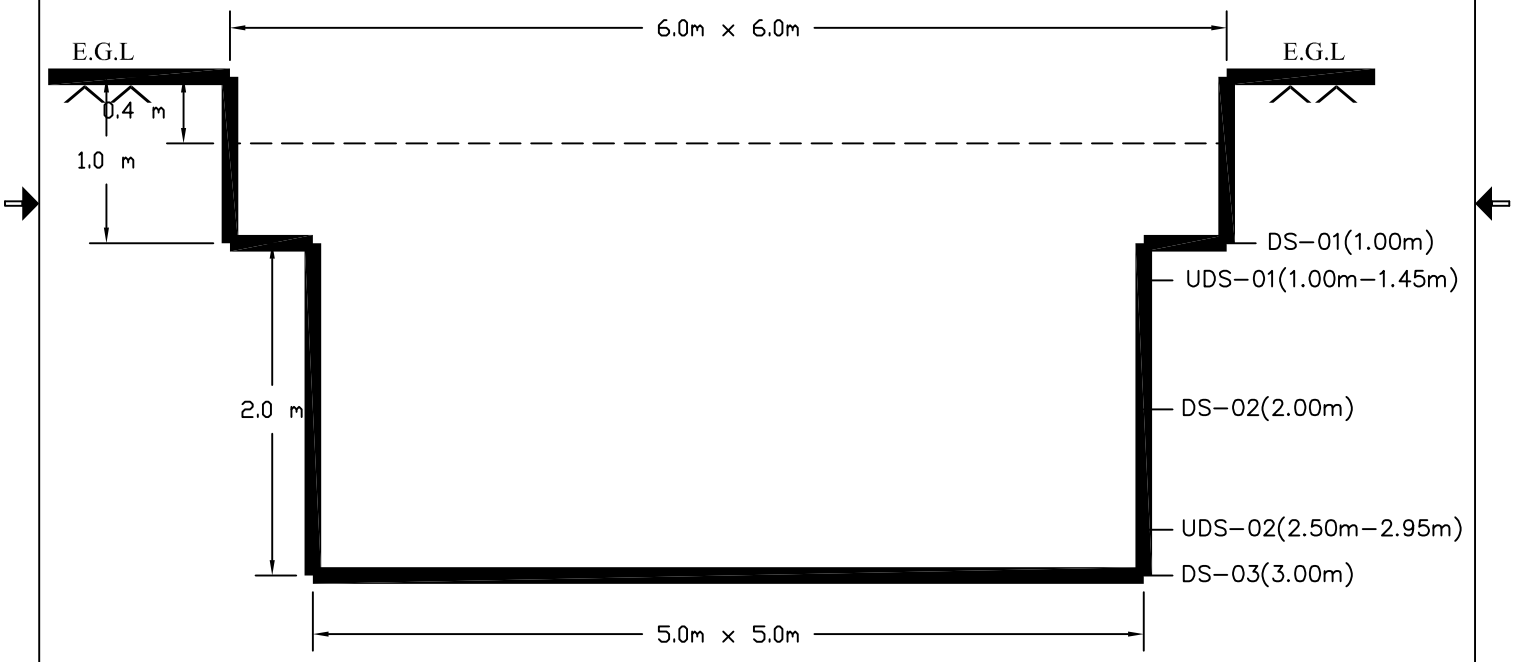
(0.90-3.00)m:- Yellowish grey / brownish grey, silty sand / sandy silt with concreation of sand.

PIT LOG OF PLT - 02

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3 3 6 9	Created by : S K D	Created on : 15/12/2014	Sheet No:

Commenced on: 27/11/2014
Completed on: 28/11/2014
Pit size: 5.00mX5.00mX3.00m(depth)
Load on pr.guage/divn.=10kg/sq.cm
Load on jack/divn. =0.7091te
Plate size: 0.60mX0.60m
Load on plate/divn.=1.97te/sq.m
Test Type: Routine PLT

Co-ordinates:
E = 569
N = 155
RL = 66.345M



EGL-0.40m:-	Filled up with ash.
0.40m-3.00m:-	Yellowish grey, silty sand / sandy silt with silty clay patches.

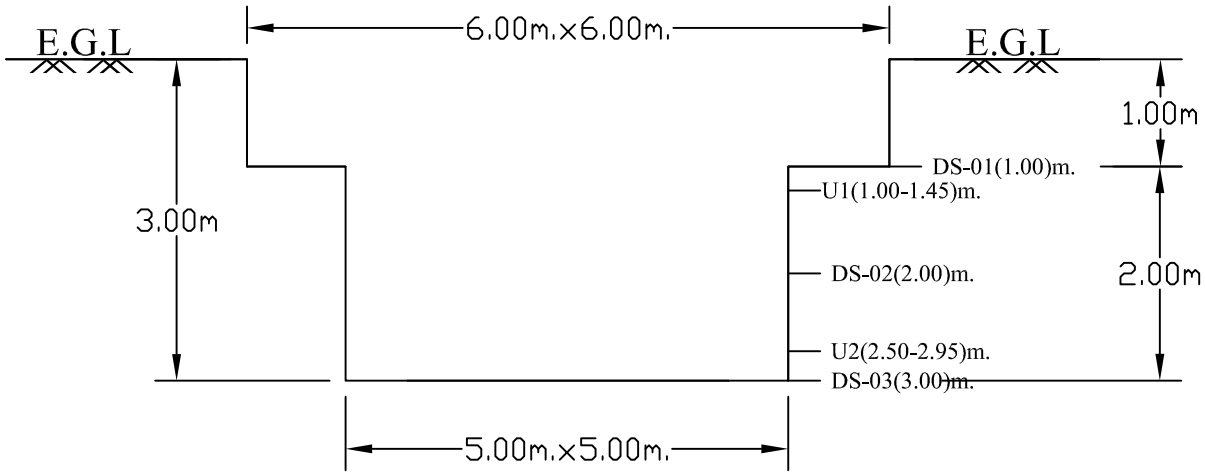
PIT LOG OF PLT-03

Project :	Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.		CETEST
Job No : 3369	Created by : Chandrani	Created on : 14 / 01 / 2015	Sheet No:

Commenced on: 29/12/2014
Completed on: 29/12/2014
Pit size: 5.00mX5.00mX3.00m(depth)
Load on pr.guage/divn.=10kg/sq.cm
Load on jack/divn. = 0.7091t
Plate size: 0.60mX0.60m
Load on plate/divn.= 1.97t/sq.m
Test Type: Routine PLT

Co-ordinates:
E = 500.000M.
N = (-)200.000M.
RL = 67.919M.

SWL = Not found



Description of Soil:-

(EGL - 3.00)m :- Light grey, ash.

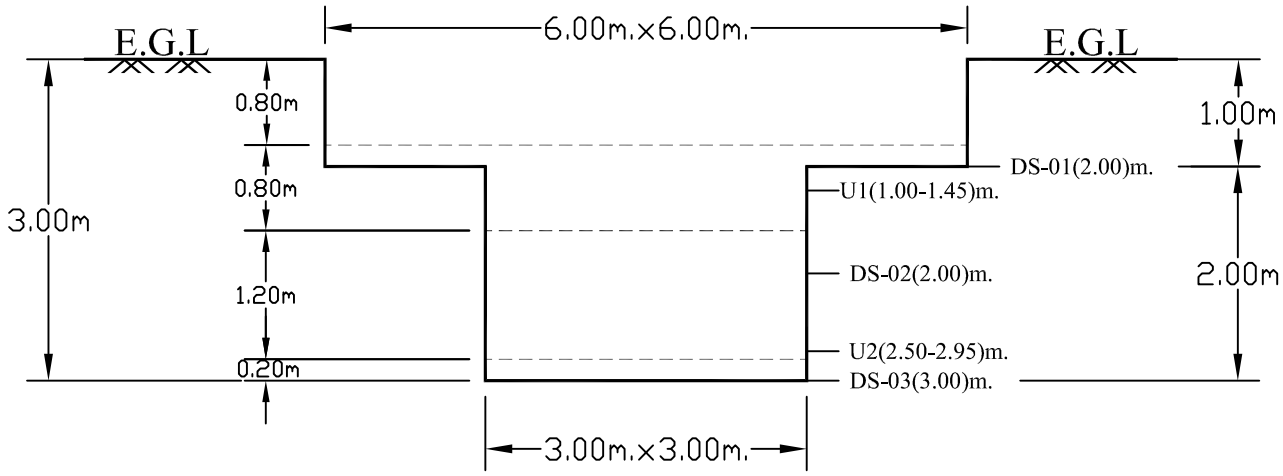
PIT LOG OF PLT - 04

Project :	Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 15 / 12 / 2014	Sheet No:	

Commenced on: 11/11/2014
Completed on: 12/11/2014
Pit size: 3.00mX3.00mX3.00m(depth)
Load on pr.guage/divn.=10kg/sq.cm
Load on jack/divn. = 0.7091t
Plate size: 060mX0.60m
Load on plate/divn.= 1.97t/sq.m
Test Type: Routine PLT

Co-ordinates:
E = 725.000M.
N = 6.000M.
RL = 63.629M.

SWL = Not found



Description of Soil:-

(EGL-0.80)m:- Top soil consists of light grey / brownish grey, ash, silty sand with stone pieces.

(0.80-1.60)m:- Yellowish grey, silty sand / sandy silt.

(1.60-2.80)m:- Blackish grey, silty clay.

(2.80-3.00)m:- Brownish grey, silty clay / clayey silt with traces of sand mixture.

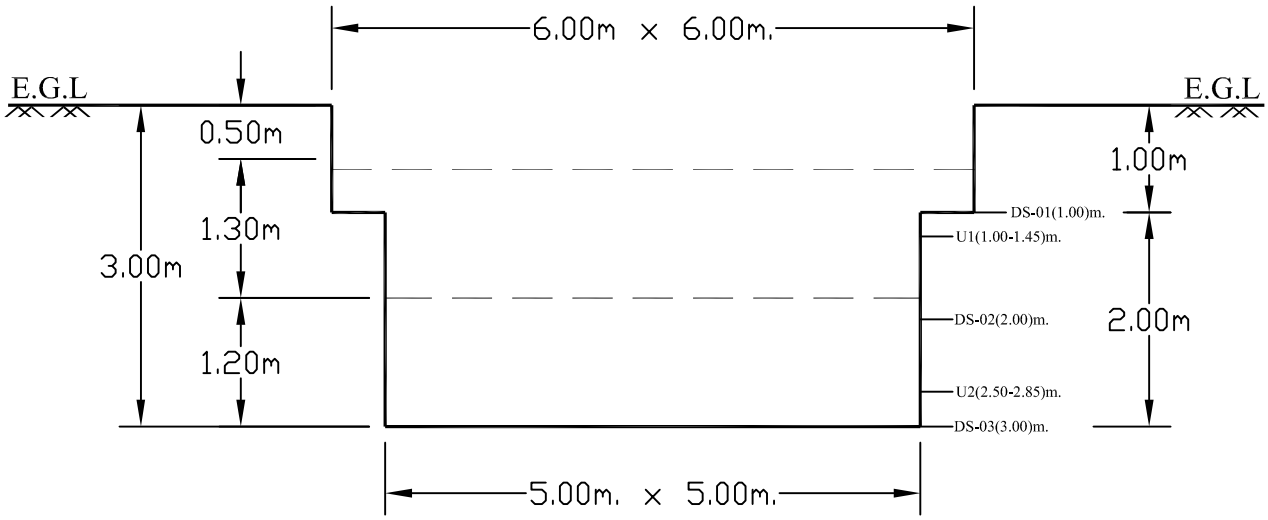
PIT LOG OF PLT - 05

Project :	Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 15 / 12 / 2014	Sheet No:	

Commenced on: 21/11/2014
Completed on: 21/11/2014
Pit size: 5.00mX5.00mX3.00m(depth)
Load on pr.guage/divn.=10kg/sq.cm
Load on jack/divn. = 0.709t
Plate size: 060mX0.60m
Load on plate/divn.= 1.97t/sq.m
Test Type: Routine PLT

Co-ordinates:
E = 615.000M.
N = (-)124.000M.
RL = 65.104M.

SWL = Not found



Description of Soil:-

(EGL-0.60)m:- Top soil consists of ash & stone pieces.

(0.60-1.80)m:- Yellowish grey, clayey silt with fine sand mixture.

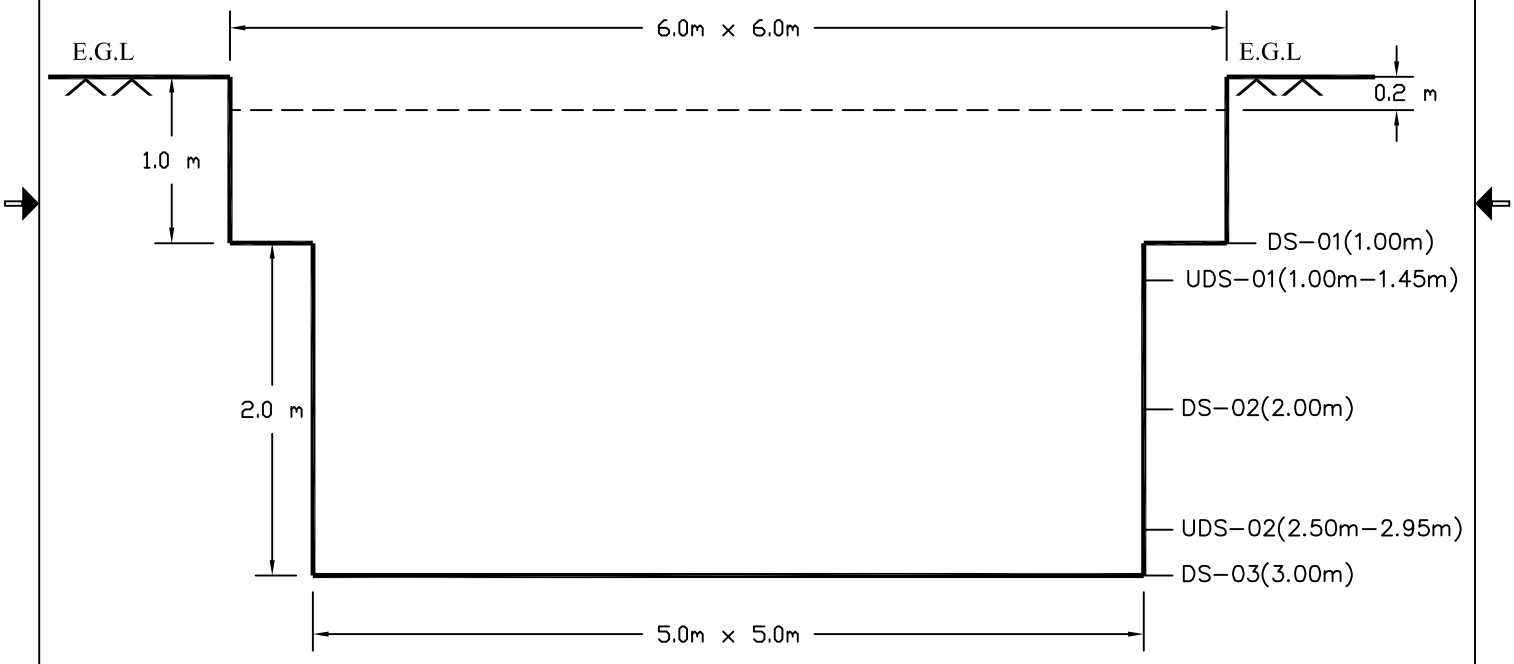
(1.80-3.00)m:- Yellowish grey, sandy silt / silty sand with silty clay patches.

PIT LOG OF CPLT - 01

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3 3 6 9	Created by : S K D	Created on : 15/12/2014	Sheet No:

Commenced on: 3/12/2014
Completed on: 3/12/2014
Pit size: 5.00mX5.00mX3.00m(depth)
Load on pr.guage/divn.=10kg/sq.cm
Load on jack/divn. =0.7091te
Plate size: 0.60mX0.60m
Load on plate/divn.=1.97te/sq.m
Test Type: CPLT

Co-ordinates:
E = 680
N = -129
RL = 64.439M



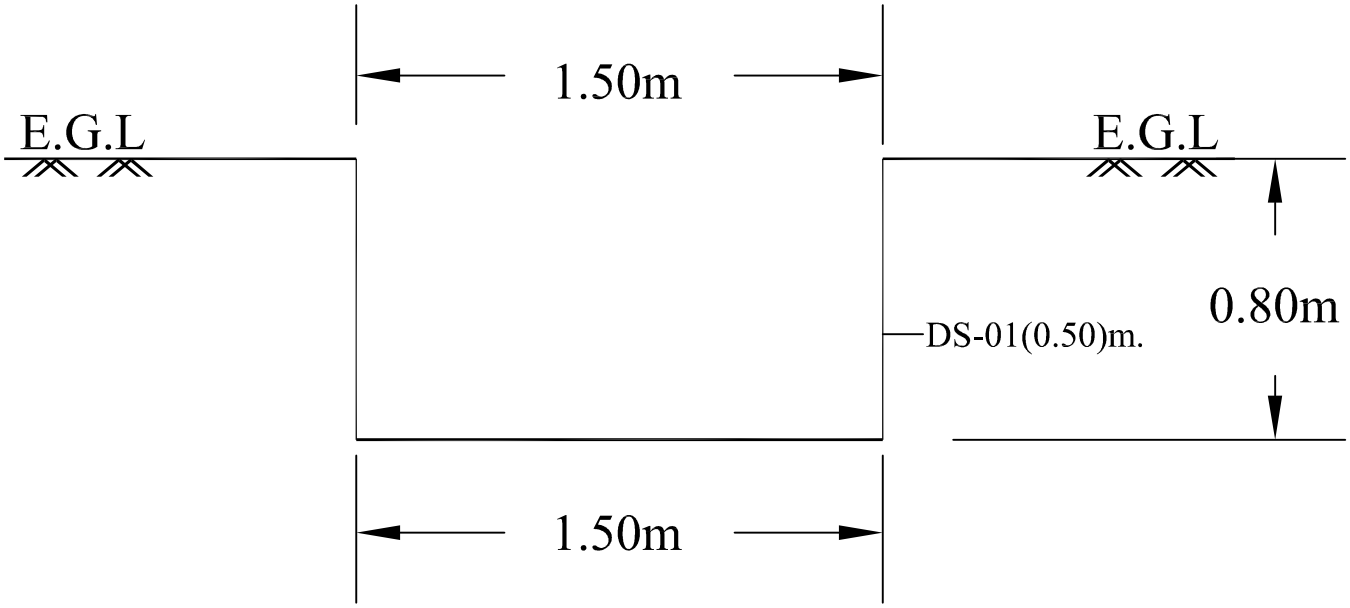
EGL-0.20m:-	Filled up with ash.
0.20m-3.00m:-	Yellowish grey, silty sand / sandy silt with laminated grey colour silty clay.

PIT LOG OF CPLT-02

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 12 / 12 / 2014	Sheet No:

Co-Ordinate:-
E = 647.000
N = 379.000
RL = 64.579

S.W.L. = Not Found.



Description Of Soil:-

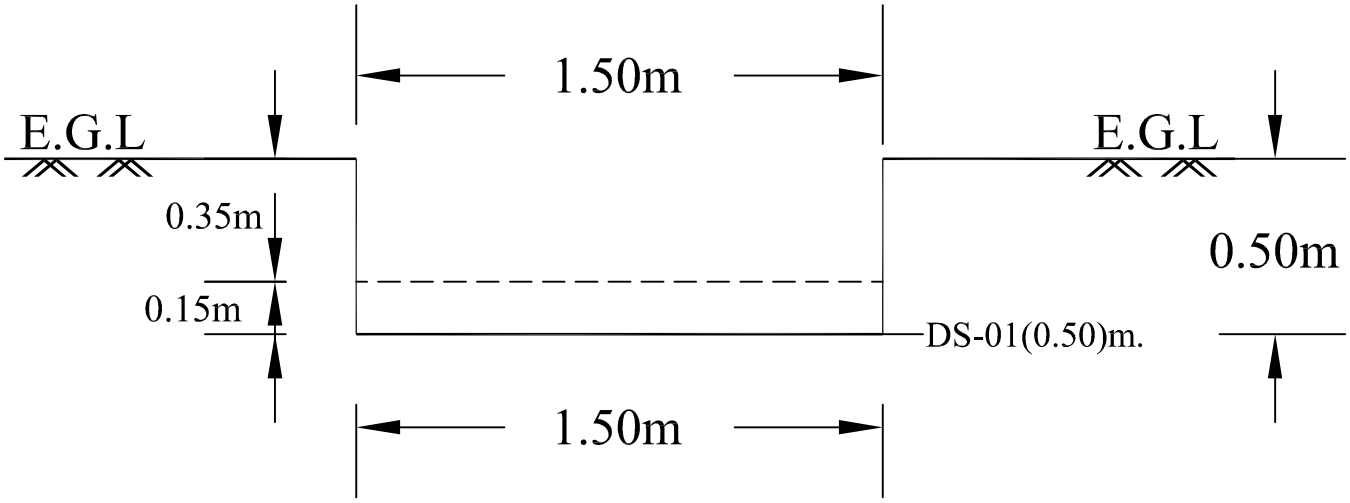
EGL-0.80m :- Yellowish grey, silty sand / sandy silt.

PIT LOG FOR CBR - 01

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 12 / 12 / 2014	Sheet No:

Co-Ordinate:-
E = 747.000
N = 116.000
RL = 63.446

S.W.L. = Not Found.



Description Of Soil:-

EGL-0.35m :- Top soil consists of ash & stone pieces.

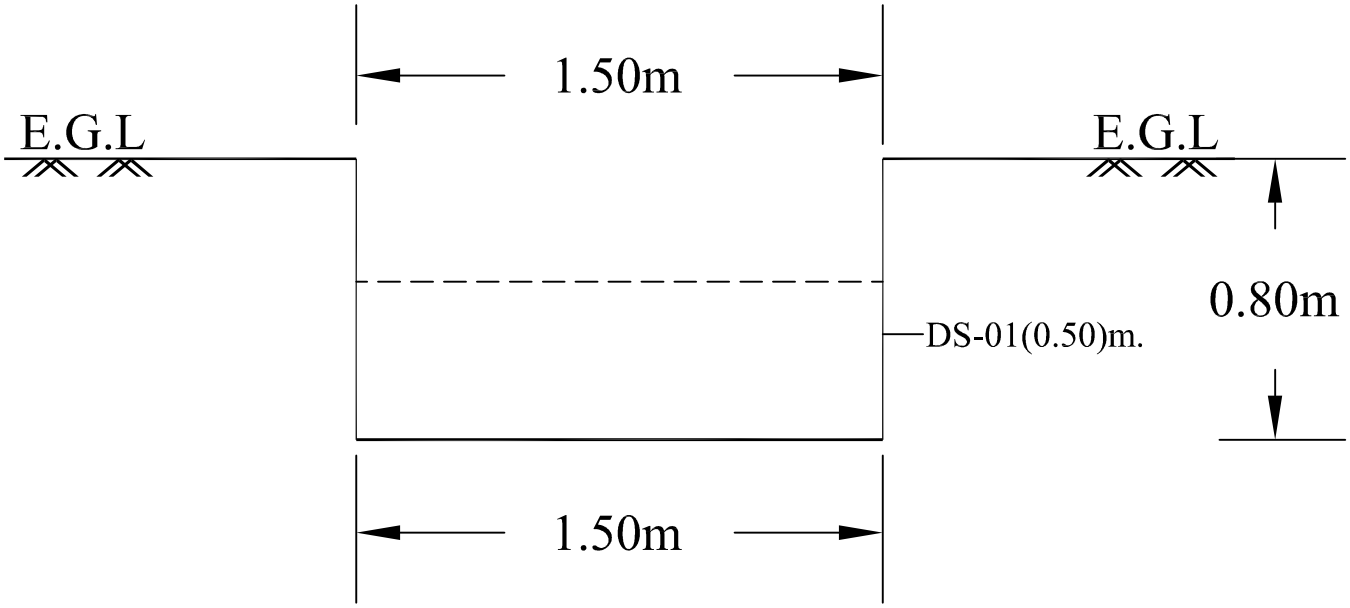
0.35-0.50m :- Yellowish grey, silty sand / sandy silt.

PIT LOG FOR CBR - 02

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 12 / 12 / 2014	Sheet No:

Co-Ordinate:-
E = 363.000
N = (-)32.000
RL = 74.248

S.W.L. = Not Found.



Description Of Soil:-

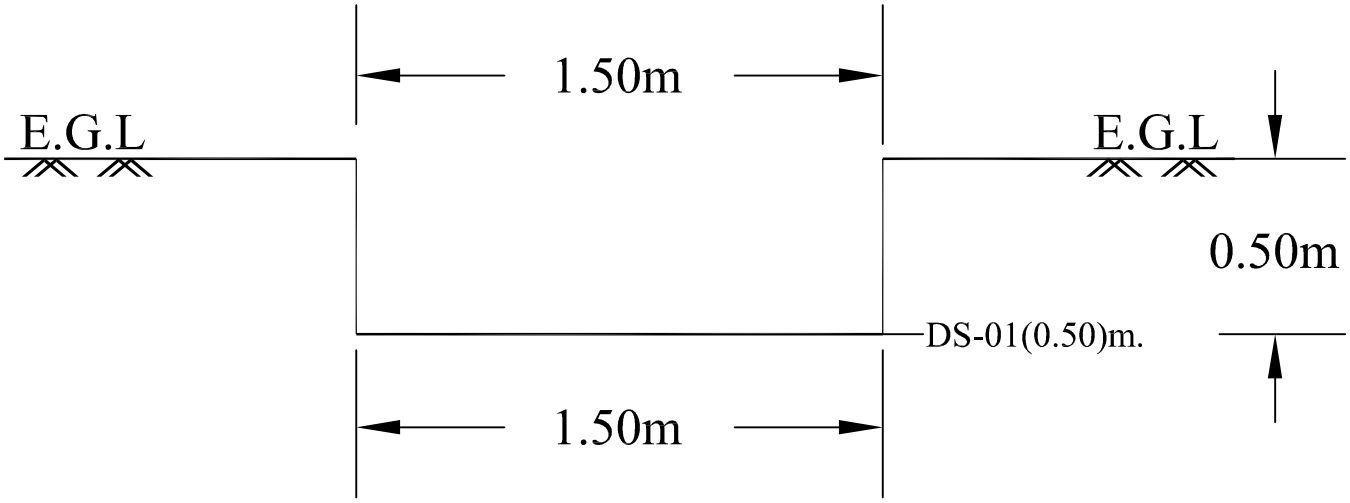
EGL-0.80m :- Brownish grey / light grey, silty sand with ash.

PIT LOG FOR CBR - 03

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 12 / 12 / 2014	Sheet No:

Co-Ordinate:-
E = 652.000
N = (-)167.000
RL = 70.366

S.W.L. = Not Found.



Description Of Soil:-

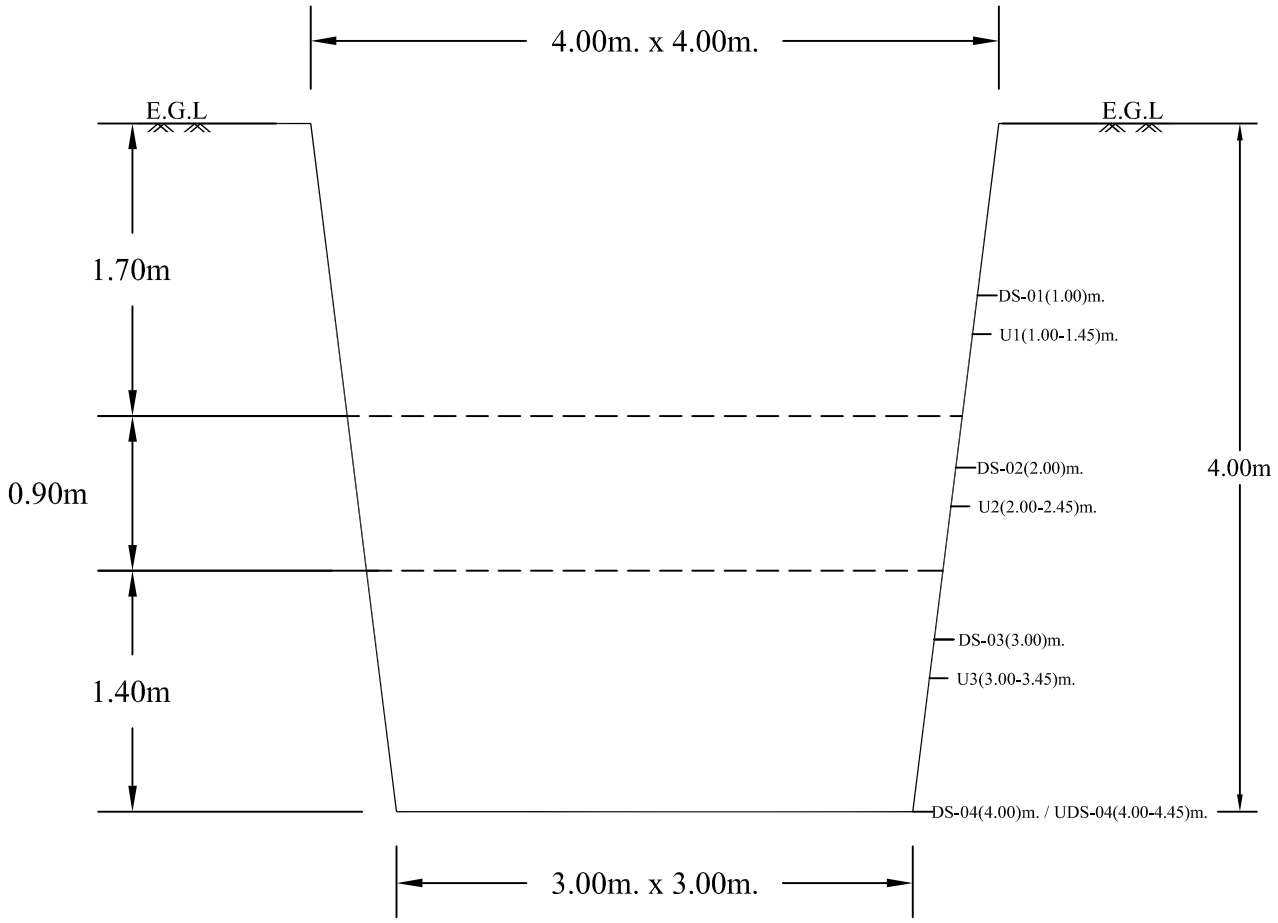
EGL-0.50m :- Yellowish grey, silty sand / sandy silt.

PIT LOG FOR CBR - 04

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 12 / 12 / 2014	Sheet No:

Co-Ordinate:-
E = 712.000
N = 336.000
RL = 65.159

S.W.L. = Not Found.



Description Of Soil:-

EGL-1.70m :- Brownish grey, sandy silt / silty sand.

1.70m-2.60m :- Yellowish grey, silty sand.

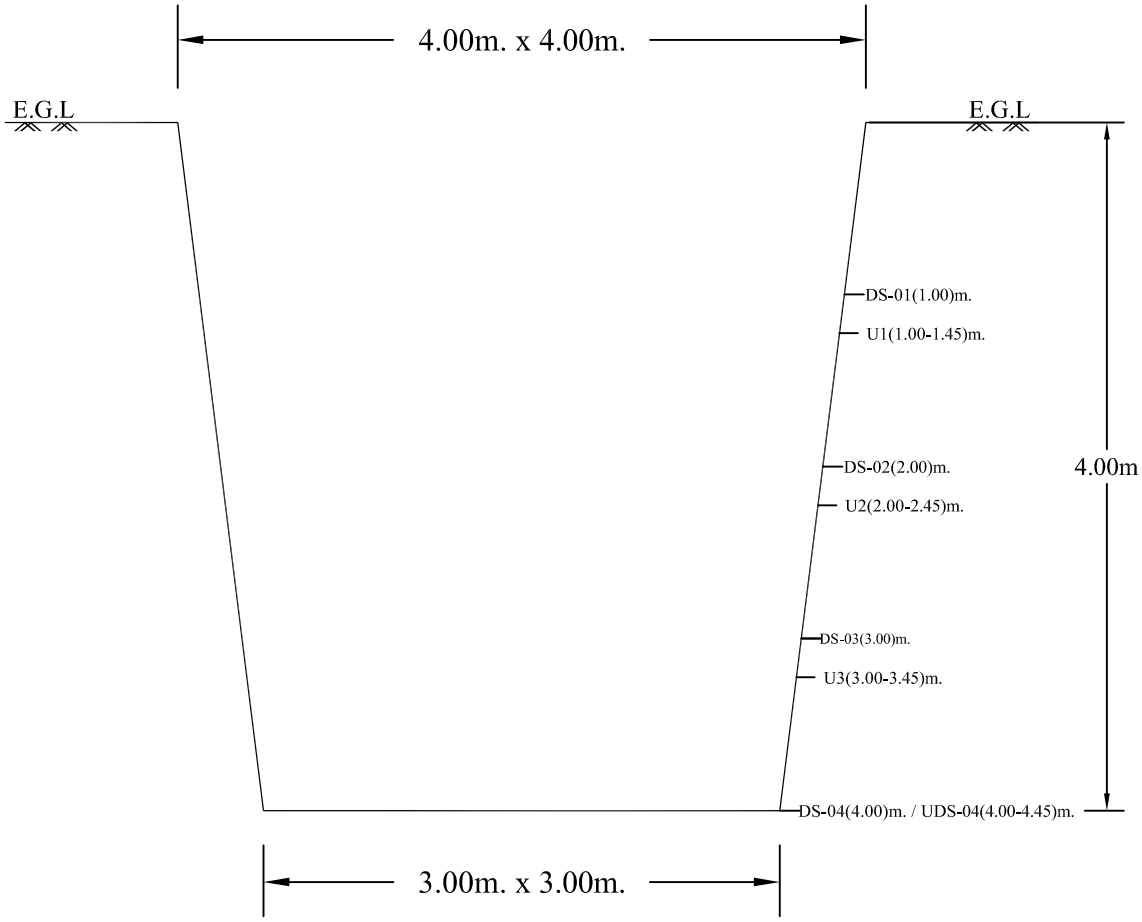
2.60m-4.00m :- Blackish grey, silty clay.

PIT LOG FOR TP - 01

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			
Job No : 3369	Created by : Chandrani	Created on : 14 / 01 / 2015	Sheet No:

Co-Ordinate:-
E = 456.000
N = 277.000
RL = 67.316

S.W.L. = Not Found.



Description Of Soil:-

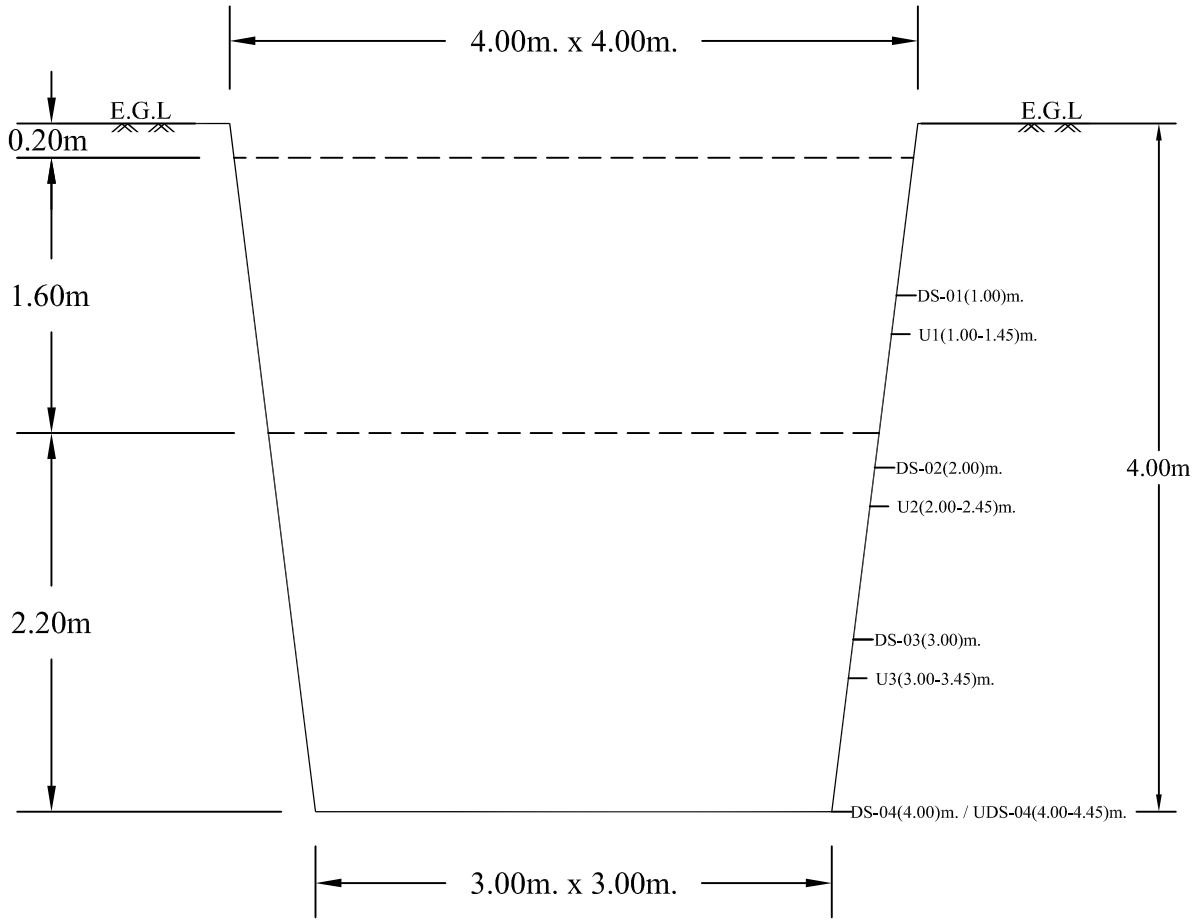
EGL - 4.00m :- Yellowish brown, sandy silt. Obs. concreation of sand.

PIT LOG FOR TP - 02

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 12 / 12 / 2014	Sheet No:

Co-Ordinate:-
E = 619.000
N = 185.000
RL = 67.076

S.W.L. = Not Found.



Description Of Soil:-

EGL-0.20m :- Top soil consists of ash & stone pieces.

0.20m-1.60m :- Brownish grey, silty sand / sandy silt.

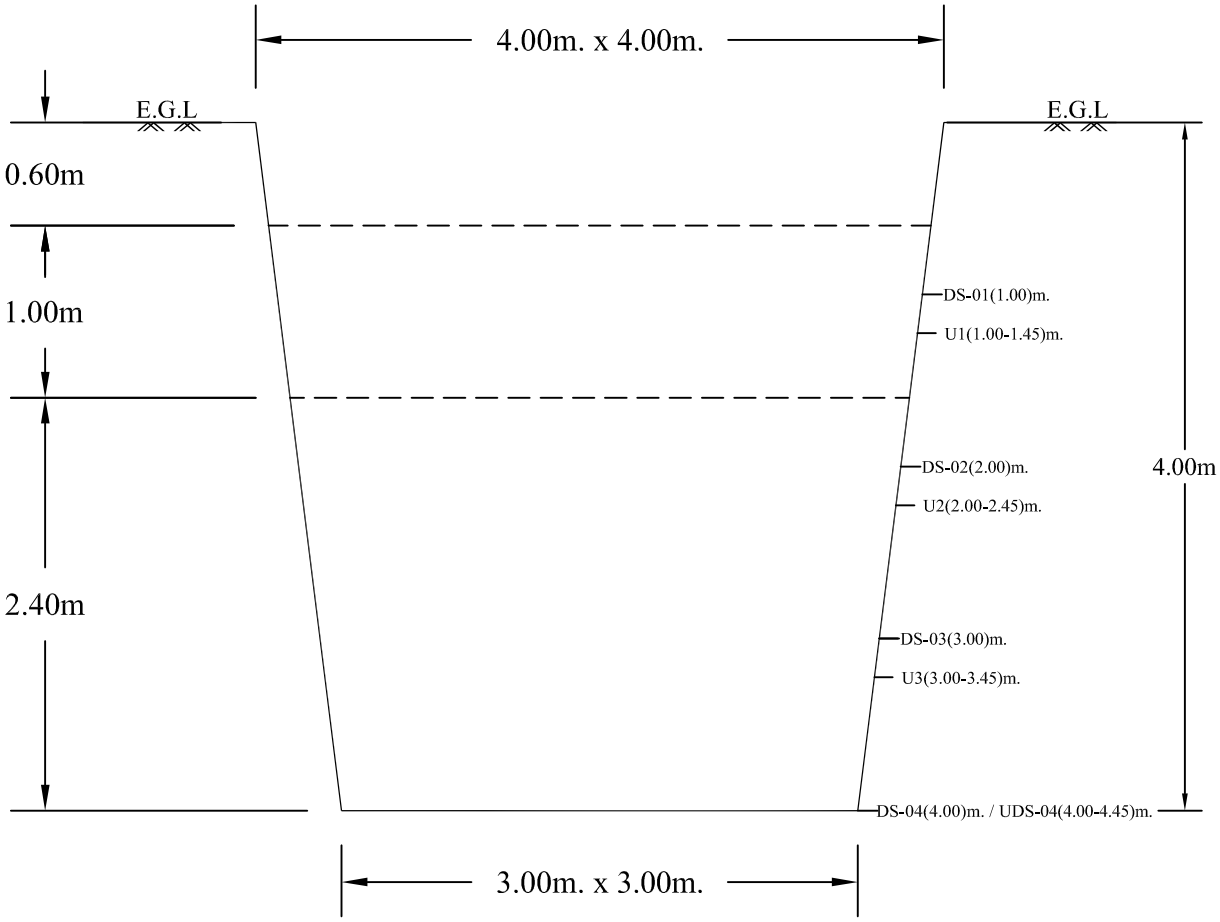
1.60m-4.00m :- Brownish grey, silty sand.

PIT LOG FOR TP - 03

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 12 / 12 / 2014	Sheet No:

Co-Ordinate:-
E = 780.000
N = 137.000
RL = 62.679

S.W.L. = Not Found.



Description Of Soil:-

EGL-0.60m :- Yellowish grey, silty sand.

0.60m-1.60m :- Blackish grey, silty clay.

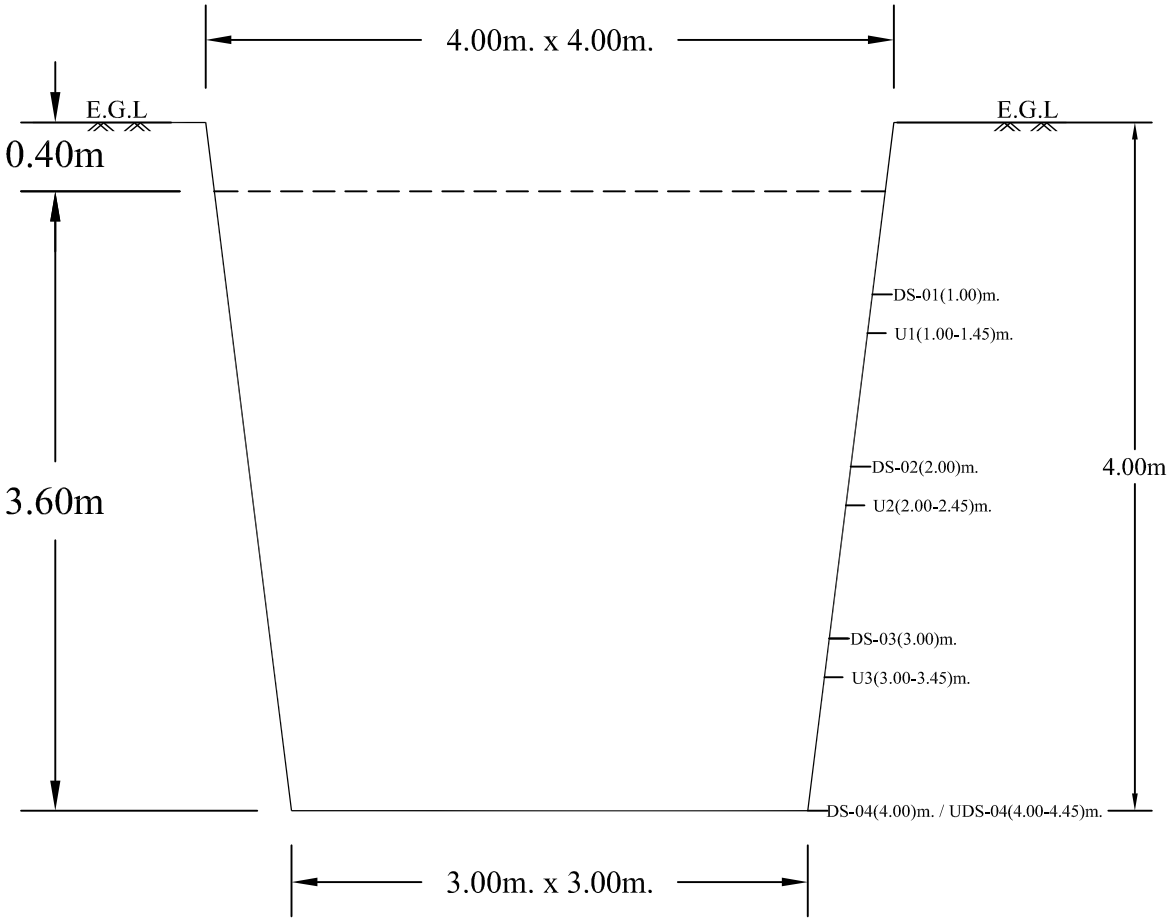
1.60m-4.00m :- Brownish grey, clayey silt / silty clay.

PIT LOG FOR TP - 04

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			
Job No : 3369	Created by : Chandrani	Created on : 14 / 01 / 2015	Sheet No:

Co-Ordinate:-
E = (-)12.000
N = (-)106.000
RL = 78.783

S.W.L. = Not Found.



Description Of Soil:-

EGL - 0.40m :- Filled up soil consists of blackish grey to brownish grey, sandy silt / silty sand with gravels & boulders.

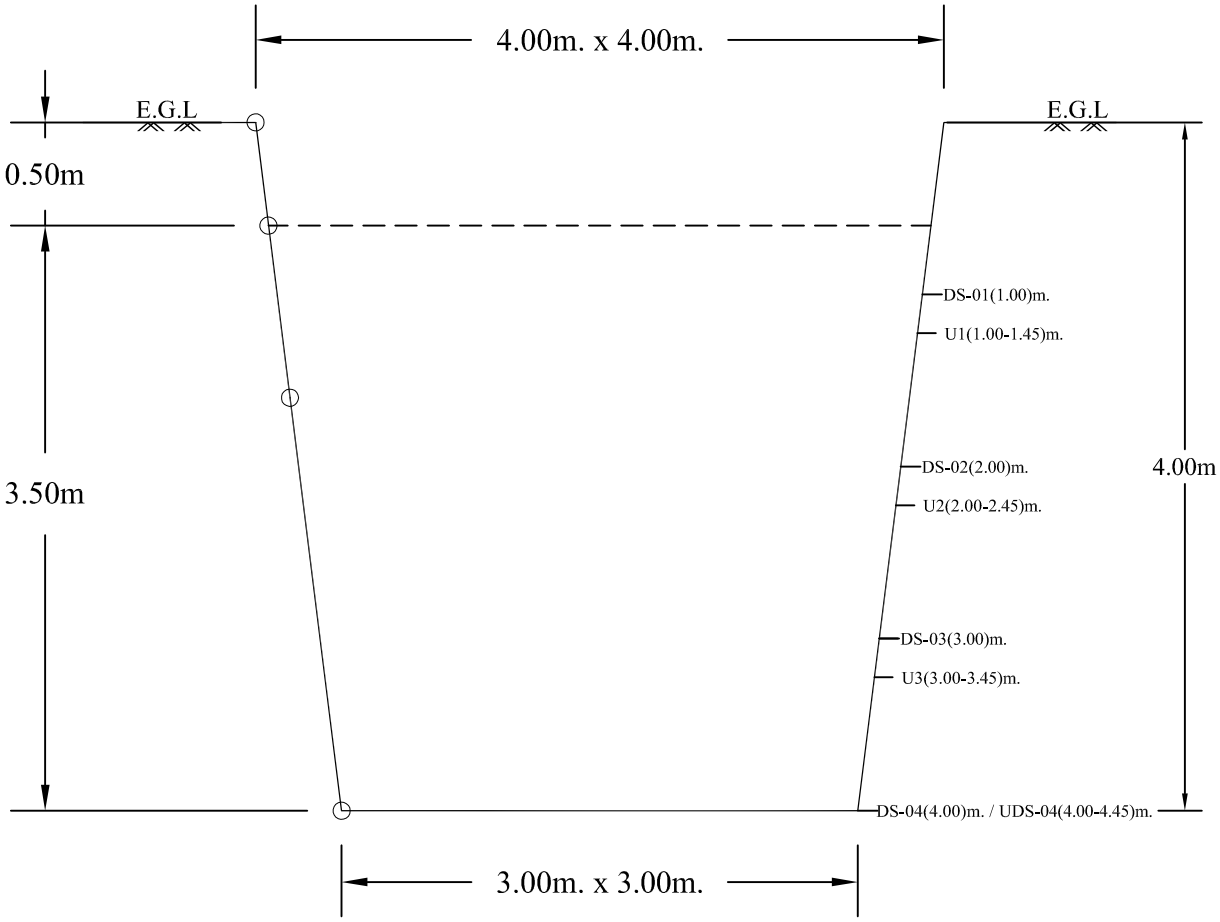
0.40m - 4.00m :- Yellowish brown, sandy silt. Obs. concreation of sand.

PIT LOG FOR TP - 05

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			
Job No : 3369	Created by : Chandrani	Created on : 14 / 01 / 2015	Sheet No:

Co-Ordinate:-
E = (-)419.000
N = (-)45.000
RL = 78.200

S.W.L. = Not Found.



Description Of Soil:-

EGL - 0.50m :- Filled up soil consists of blackish grey to brownish grey, silty sand / sandy silt with gravels & brick bats.

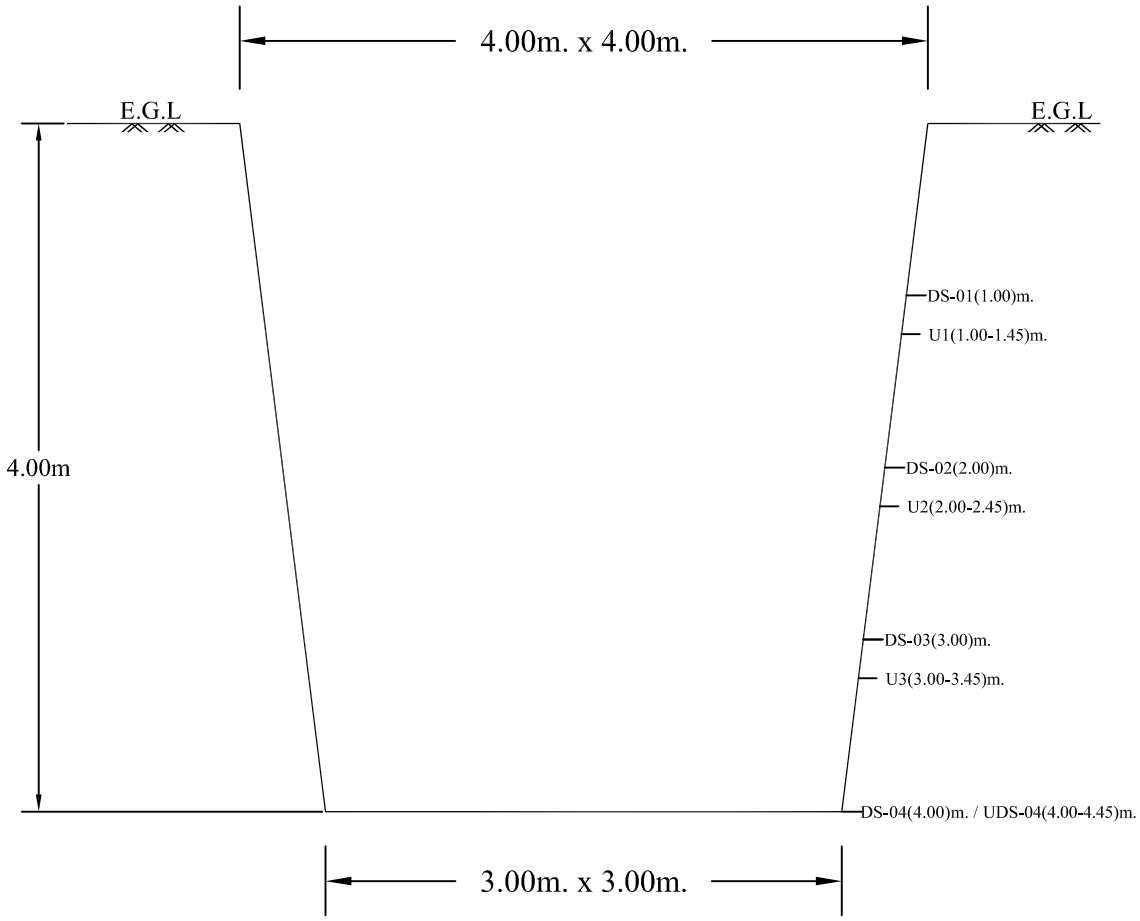
0.50m - 4.00m :- Yellowish brown, sandy silt. Obs. concreation of silt.

PIT LOG FOR TP - 06

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 12 / 12 / 2014	Sheet No:

Co-Ordinate:-
E = 436.000
N = (-)145.000
RL = 71.558

S.W.L. = Not Found.



Description Of Soil:-

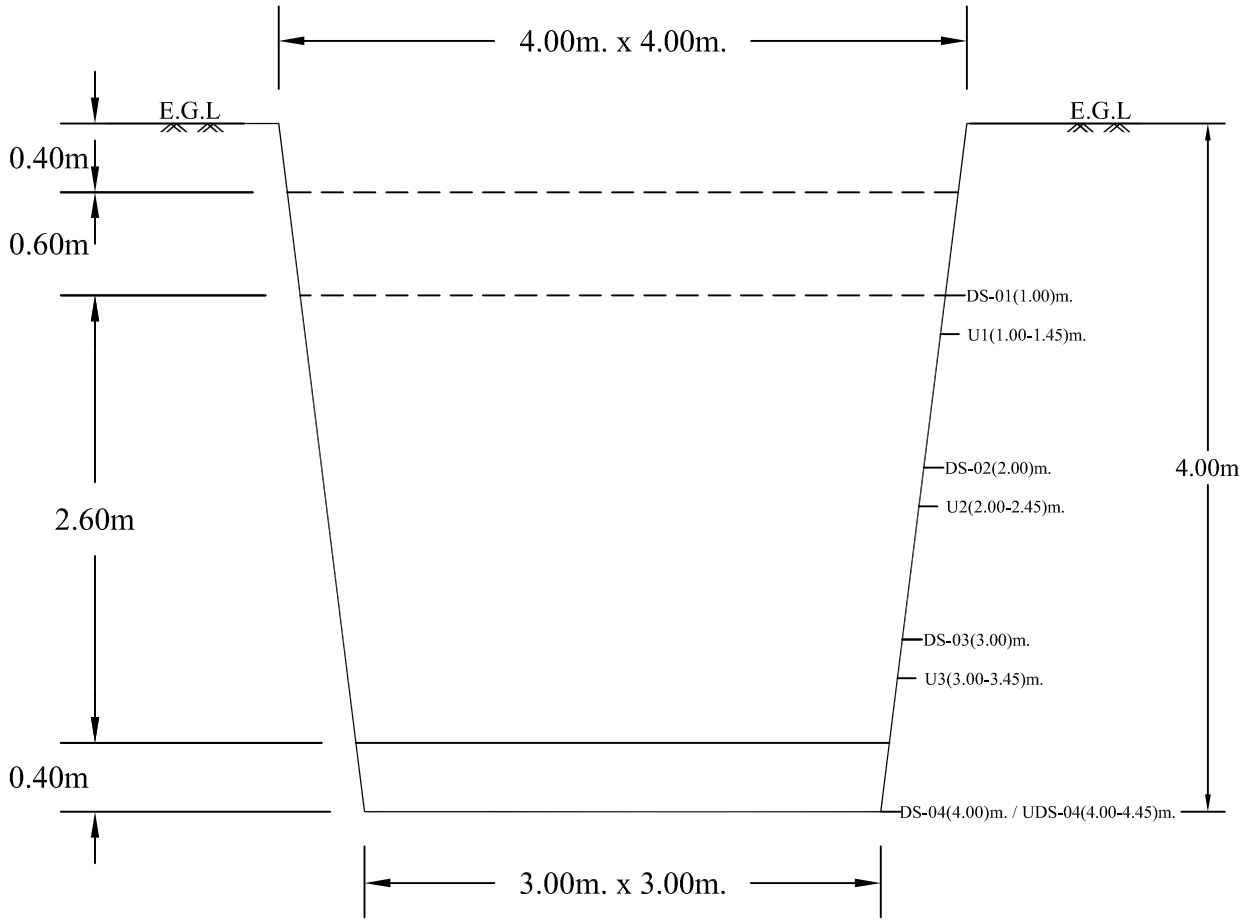
EGL-4.00m :- Blackish grey / grey, ash.

PIT LOG FOR TP - 07

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 12 / 12 / 2014	Sheet No:

Co-Ordinate:-
E = 775.000
N = (-)82.000
RL = 64.247

S.W.L. = Not Found.



Description Of Soil:-

EGL-0.40m :- Top soil consists of ash & stone pieces.

0.40m-1.00m :- Yellowish grey, silty sand.

1.00m-3.60m :- Blackish grey, silty clay.

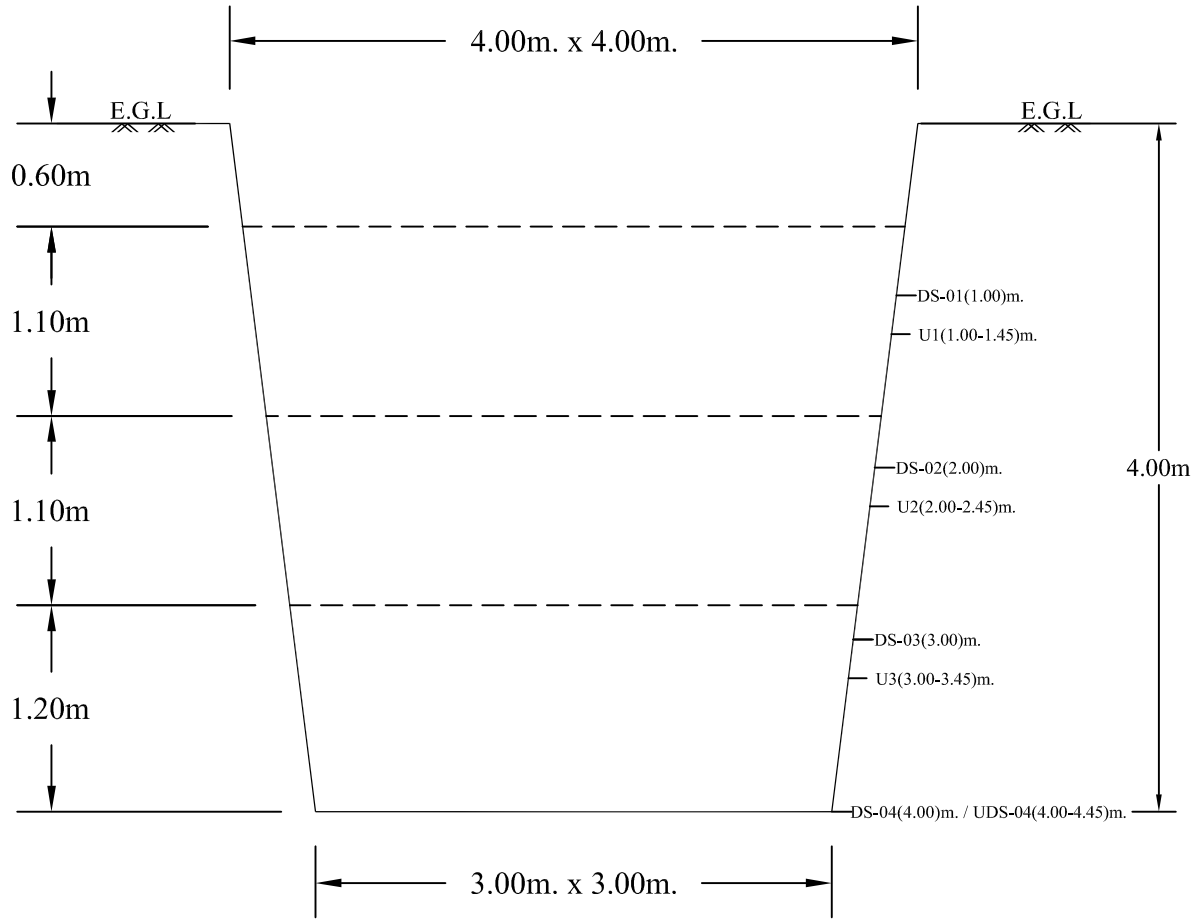
3.60m-4.00m :- Brownish grey, silty clay / clayey silt.

PIT LOG FOR TP - 08

Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.			CETEST
Job No : 3369	Created by : Chandrani	Created on : 12 / 12 / 2014	Sheet No:

Co-Ordinate:-
E = 947.000
N = (-)39.000
RL = 64.807

S.W.L. = Not Found.



Description Of Soil:-

EGL-0.60m :- Top soil consists of silty sand, ash.

0.60m-1.70m :- Yellowish grey, silty sand.

1.70m-2.80m :- Blackish grey, silty clay.

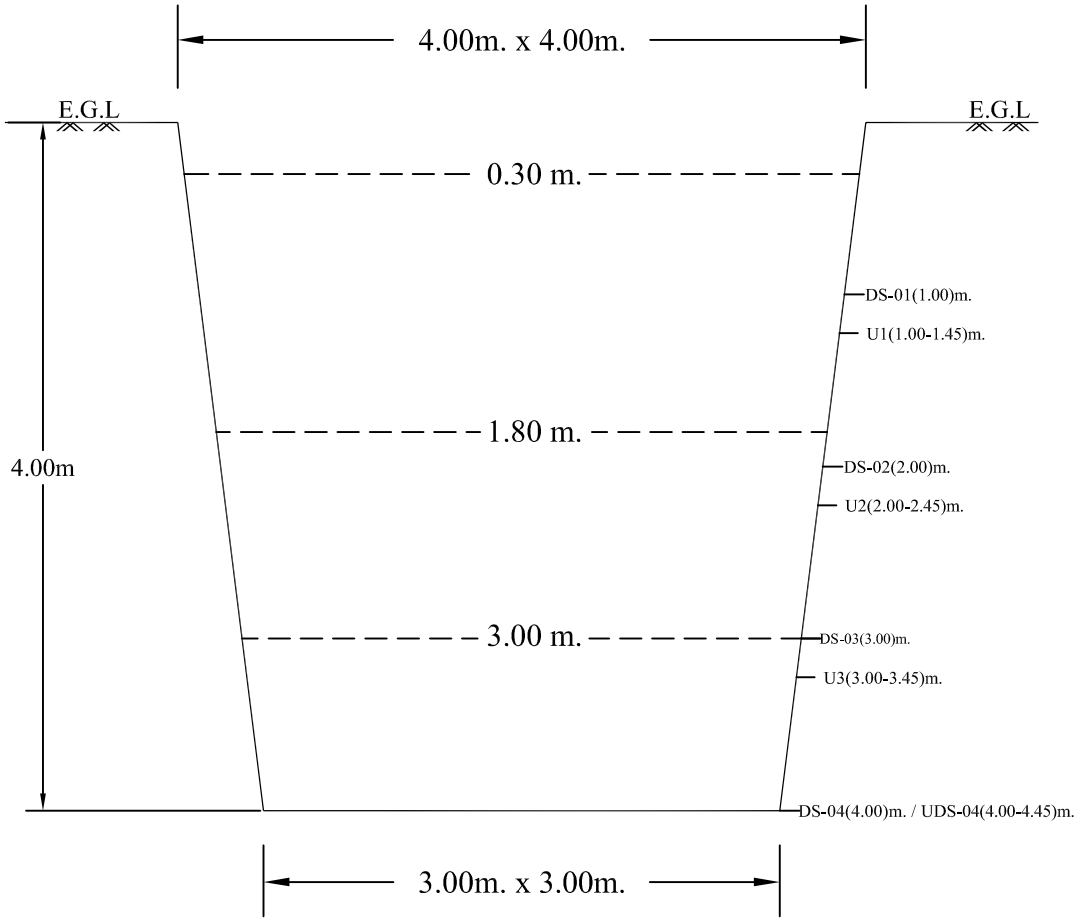
2.80m-4.00m :- Brownish grey, silty clay.

PIT LOG FOR TP - 09

Project : Geotech. Inv. work for 1x800 MW Wanakbori TPS, Gujarat.			
Job No : 3369	Created by : Chandrani	Created on : 29 / 01 / 2015	Sheet No:

Co-Ordinate:-
E = (-)218.000
N = 400.000
RL = 79.000

S.W.L. = Not Found.



Description Of Soil:-

EGL-0.30m :- Filled up soil consists of brownish grey, sandy silt / silty sand.

0.30m-1.80m :- Yellowish grey, silty sand. Obs. concreation of sand.

1.80m-4.00m :- Yellowish grey, sandy silt / silty sand.

PIT LOG FOR TTP - 01

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH01	1.00	1.45	1.23	8	12	71.10	I	31
BH01	3.00	3.45	3.23	22	22	69.10	II	
BH01	5.00	5.45	5.23	34	34	67.10	II	
BH01	8.00	8.45	8.23	52	52	64.10	II	
BH01	11.00	11.45	11.23	69	69	61.10	IV	
BH01	12.50	12.75	12.63	>100	100	59.70	IV	
BH01	14.00	14.38	14.19	>100	100	58.13	IV	
BH01	15.50	15.87	15.69	>100	100	56.64	IV	
BH01	17.00	17.26	17.13	>100	100	55.19	IV	
BH01	18.50	18.77	18.64	>100	100	53.69	IV	
BH01	20.00	20.45	20.23	52	23	52.10	III	35
BH01	21.50	21.95	21.73	55	23	50.60	III	35
BH01	23.00	23.45	23.23	64	25	49.10	III	36
BH01	24.50	24.95	24.73	34	17	47.60	III	33
BH01	26.00	26.45	26.23	51	21	46.10	III	34
BH01	27.50	27.74	27.62	>100	>50	44.70	V	42
BH01	29.00	29.21	29.11	>100	>50	43.22	V	42
BH01	30.00	30.23	30.12	>100	>50	42.21	V	42
BH02	1.00	1.45	1.23	13	17	64.91	I	33
BH02	3.00	3.45	3.23	7	07	62.91	IIA	
BH02	5.00	5.45	5.23	12	12	60.91	II	
BH02	8.00	8.45	8.23	42	42	57.91	IV	
BH02	11.00	11.45	11.23	40	23	54.91	III	35
BH02	14.00	14.45	14.23	52	26	51.91	III	36
BH02	15.50	15.95	15.73	59	28	50.41	III	36
BH02	17.00	17.45	17.23	70	31	48.91	III	37
BH02	18.50	18.95	18.73	71	71	47.41	IV	
BH02	20.00	20.45	20.23	74	31	45.91	III	37
BH02	21.50	21.89	21.70	>100	>50	44.44	V	42
BH02	23.00	23.37	23.19	>100	>50	42.95	V	42
BH02	24.50	24.74	24.62	>100	>50	41.51	V	42
BH02	26.00	26.22	26.11	>100	>50	40.02	V	42
BH02	27.50	27.73	27.62	>100	>50	38.52	V	42
BH02	29.00	29.21	29.11	>100	>50	37.03	V	42
BH02	30.00	30.19	30.10	>100	>50	36.04	V	42
BH03	1.00	1.45	1.23	5	07	65.04	I	29
BH03	3.00	3.45	3.23	4	05	63.04	I	28
BH03	5.00	5.45	5.23	14	14	61.04	I	32
BH03	8.00	8.45	8.23	51	51	58.04	II	
BH03	9.50	9.95	9.73	72	72	56.54	IV	
BH03	11.00	11.40	11.20	>100	>50	55.07	III	42
BH03	12.50	12.87	12.69	>100	100	53.58	IV	

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH03	14.00	14.38	14.19	>100	100	52.08	IV	
BH03	15.50	15.95	15.73	40	21	50.54	III	34
BH03	17.00	17.45	17.23	36	36	49.04	IV	
BH03	18.80	19.25	19.03	52	24	47.24	III	35
BH03	20.50	20.95	20.73	75	31	45.54	V	37
BH03	22.00	22.40	22.20	>100	>50	44.07	V	42
BH03	23.50	23.85	23.68	>100	>50	42.59	V	42
BH03	25.00	25.27	25.14	>100	>50	41.13	V	42
BH03	26.50	26.73	26.62	>100	>50	39.65	V	42
BH03	28.00	28.24	28.12	>100	>50	38.15	V	42
BH03	30.00	30.22	30.11	>100	>50	36.16	V	42
BH04	1.00	1.45	1.23	6	09	64.86	I	29
BH04	3.00	3.45	3.23	4	05	62.86	I	28
BH04	5.00	5.45	5.23	7	07	60.86	II	
BH04	8.00	8.45	8.23	24	24	57.86	II	
BH04	11.00	11.45	11.23	42	24	54.86	III	35
BH04	12.80	13.25	13.03	72	72	53.06	IV	
BH04	14.50	14.95	14.73	63	63	51.36	IV	
BH04	16.00	16.45	16.23	81	35	49.86	V	38
BH04	17.50	17.95	17.73	94	38	48.36	V	39
BH04	19.00	19.40	19.20	>100	>50	46.89	V	42
BH04	20.50	20.88	20.69	>100	>50	45.40	V	42
BH04	22.00	22.34	22.17	>100	>50	43.92	V	42
BH04	23.50	23.90	23.70	>100	>50	42.39	V	42
BH04	25.00	25.39	25.20	>100	>50	40.89	V	42
BH04	26.50	26.72	26.61	>100	>50	39.48	V	42
BH04	28.00	28.20	28.10	>100	>50	37.99	V	42
BH04	30.00	30.19	30.10	>100	>50	35.99	V	42
BH05	1.00	1.45	1.23	14	18	70.02	I	33
BH05	3.00	3.45	3.23	62	62	68.02	IV	
BH05	5.00	5.45	5.23	58	58	66.02	IV	
BH05	6.50	6.95	6.73	53	53	64.52	IV	
BH05	8.00	8.45	8.23	45	45	63.02	IV	
BH05	11.00	11.45	11.23	63	63	60.02	IV	
BH05	12.50	12.95	12.73	78	78	58.52	IV	
BH05	14.00	14.45	14.23	87	87	57.02	IV	
BH05	15.50	15.70	15.60	>100	100	55.65	IV	
BH05	17.00	17.37	17.19	>100	>50	54.06	V	42
BH05	18.50	18.95	18.73	79	31	52.52	V	39
BH05	20.00	20.45	20.23	80	31	51.02	V	37
BH05	21.50	21.95	21.73	74	29	49.52	V	37
BH05	23.00	23.45	23.23	81	30	48.02	V	37

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH05	24.50	24.87	24.69	>100	>50	46.56	V	42
BH05	26.00	26.39	26.20	>100	>50	45.05	V	42
BH05	27.50	27.86	27.68	>100	>50	43.57	V	42
BH05	29.00	29.38	29.19	>100	>50	42.06	V	42
BH05	30.00	30.27	30.14	>100	>50	41.11	V	42
BH06	1.00	1.45	1.23	12	16	70.87	I	32
BH06	3.00	3.45	3.23	20	19	68.87	I	33
BH06	5.00	5.45	5.23	14	14	66.87	II	
BH06	8.00	8.45	8.23	14	14	63.87	II	
BH06	11.00	11.45	11.23	18	18	60.87	II	
BH06	14.00	14.45	14.23	88	38	57.87	III	39
BH06	15.50	15.95	15.73	80	34	56.37	III	38
BH06	17.00	17.45	17.23	81	33	54.87	III	38
BH06	18.50	18.95	18.73	54	24	53.37	III	35
BH06	20.00	20.45	20.23	45	20	51.87	III	34
BH06	21.50	21.95	21.73	57	24	50.37	V	35
BH06	23.00	23.45	23.23	65	25	48.87	V	36
BH06	24.50	24.95	24.73	55	22	47.37	V	35
BH06	26.00	26.45	26.23	71	26	45.87	V	36
BH06	27.50	27.95	27.73	77	77	44.37	IV	
BH06	29.00	29.45	29.23	65	24	42.87	V	35
BH06	30.50	30.85	30.68	>100	>50	41.42	V	42
BH06	32.00	32.25	32.13	>100	>50	39.97	V	42
BH06	33.50	33.72	33.61	>100	>50	38.49	V	42
BH06	35.00	35.18	35.09	>100	>50	37.01	V	42
BH07	1.00	1.45	1.23	28	28	67.54	I	36
BH07	3.00	3.45	3.23	14	16	65.54	I	32
BH07	5.00	5.45	5.23	16	16	63.54	I	32
BH07	8.00	8.45	8.23	20	16	60.54	I	32
BH07	11.00	11.45	11.23	13	13	57.54	II	
BH07	14.00	14.45	14.23	69	31	54.54	III	37
BH07	15.50	15.95	15.73	61	28	53.04	III	36
BH07	17.00	17.45	17.23	54	25	51.54	III	36
BH07	18.50	18.95	18.73	24	15	50.04	III	32
BH07	20.00	20.45	20.23	82	33	48.54	III	38
BH07	21.50	21.95	21.73	70	29	47.04	III	37
BH07	23.00	23.37	23.19	>100	100	45.58	IV	
BH07	24.50	24.85	24.68	>100	100	44.09	IV	
BH07	26.00	26.45	26.23	87	32	42.54	V	38
BH07	27.50	27.90	27.70	>100	>50	41.07	V	42
BH07	29.00	29.38	29.19	>100	>50	39.58	V	42
BH07	30.00	30.21	30.11	>100	>50	38.66	V	42

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH08	1.00	1.45	1.23	9	13	63.21	I	31
BH08	3.00	3.45	3.23	13	13	61.21	II	
BH08	5.00	5.45	5.23	14	14	59.21	II	
BH08	8.00	8.45	8.23	16	14	56.21	I	32
BH08	10.00	10.45	10.23	22	16	54.21	I	32
BH08	13.00	13.45	13.23	82	37	51.21	III	39
BH08	14.50	14.89	14.70	>100	100	49.74	IV	
BH08	16.00	16.45	16.23	37	37	48.21	IV	
BH08	17.50	17.95	17.73	64	29	46.71	V	37
BH08	19.00	19.38	19.19	>100	>50	45.24	V	42
BH08	20.50	20.85	20.68	>100	>50	43.76	V	42
BH08	22.00	22.25	22.13	>100	>50	42.31	V	42
BH08	23.50	23.72	23.61	>100	>50	40.82	V	42
BH08	25.00	25.24	25.12	>100	>50	39.31	V	42
BH08	26.50	26.71	26.61	>100	>50	37.83	V	42
BH08	28.00	28.23	28.12	>100	>50	36.32	V	42
BH08	30.00	30.20	30.10	>100	>50	34.33	V	42
BH09	1.00	1.45	1.23	7	07	63.54	IIA	
BH09	3.00	3.45	3.23	11	11	61.54	II	
BH09	5.00	5.45	5.23	18	18	59.54	II	
BH09	8.00	8.45	8.23	22	17	56.54	I	33
BH09	9.75	10.20	9.98	43	25	54.79	III	35
BH09	11.50	11.95	11.73	54	28	53.04	III	36
BH09	13.00	13.45	13.23	45	45	51.54	IV	
BH09	14.50	14.95	14.73	65	65	50.04	IV	
BH09	16.00	16.45	16.23	75	75	48.54	IV	
BH09	17.50	17.95	17.73	51	51	47.04	IV	
BH09	19.00	19.45	19.23	84	84	45.54	IV	
BH09	20.50	20.95	20.73	95	35	44.04	V	38
BH09	22.00	22.24	22.12	>100	>50	42.65	V	42
BH09	23.50	23.71	23.61	>100	>50	41.16	V	42
BH09	25.00	25.18	25.09	>100	>50	39.68	V	42
BH09	26.50	26.70	26.60	>100	>50	38.17	V	42
BH09	28.00	28.26	28.13	>100	>50	36.64	V	42
BH09	30.00	30.17	30.09	>100	>50	34.68	V	42
BH10	1.00	1.45	1.23	21	21	63.50	II	
BH10	3.00	3.45	3.23	44	44	61.50	II	
BH10	5.00	5.45	5.23	61	61	59.50	IV	
BH10	6.50	6.95	6.73	77	77	58.00	IV	
BH10	8.00	8.45	8.23	69	37	56.50	V	39
BH10	9.50	9.95	9.73	90	44	55.00	V	41

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH10	11.00	11.39	11.20	>100	>50	53.53	V	42
BH10	12.50	12.74	12.62	>100	>50	52.11	V	42
BH10	14.00	14.24	14.12	>100	>50	50.61	V	42
BH10	15.50	15.70	15.60	>100	>50	49.13	V	42
BH10	17.00	17.21	17.11	>100	>50	47.62	V	42
BH10	18.50	18.73	18.62	>100	>50	46.11	V	42
BH10	20.00	20.21	20.11	>100	>50	44.62	V	42
BH10	21.50	21.74	21.62	>100	>50	43.11	V	42
BH10	23.00	23.22	23.11	>100	>50	41.62	V	42
BH10	24.50	24.73	24.62	>100	>50	40.11	V	42
BH10	26.00	26.21	26.11	>100	>50	38.62	V	42
BH10	27.50	27.74	27.62	>100	>50	37.11	V	42
BH10	29.00	29.22	29.11	>100	>50	35.62	V	42
BH10	30.00	30.21	30.11	>100	>50	34.62	V	42
BH11	1.00	1.45	1.23	7	07	62.70	IIA	
BH11	3.00	3.45	3.23	12	12	60.70	II	
BH11	5.00	5.45	5.23	37	37	58.70	II	
BH11	8.00	8.45	8.23	47	28	55.70	III	36
BH11	9.80	10.25	10.03	91	91	53.90	IV	
BH11	11.50	11.95	11.73	66	66	52.20	IV	
BH11	13.00	13.45	13.23	44	44	50.70	IV	
BH11	14.50	14.95	14.73	50	50	49.20	IV	
BH11	16.00	16.45	16.23	44	44	47.70	IV	
BH11	17.50	17.95	17.73	47	47	46.20	IV	
BH11	19.00	19.45	19.23	68	30	44.70	V	37
BH11	20.00	20.45	20.23	83	35	43.70	V	38
BH11	21.50	21.71	21.61	>100	>50	42.32	V	42
BH11	23.00	23.19	23.10	>100	>50	40.83	V	42
BH11	24.50	24.83	24.67	>100	>50	39.26	V	42
BH11	26.00	26.18	26.09	>100	>50	37.84	V	42
BH11	27.50	27.72	27.61	>100	>50	36.32	V	42
BH11	29.00	29.20	29.10	>100	>50	34.83	V	42
BH11	30.00	30.18	30.09	>100	>50	33.84	V	42
BH12	1.00	1.45	1.23	6	06	62.85	IIA	
BH12	3.00	3.45	3.23	12	12	60.85	II	
BH12	5.00	5.45	5.23	34	34	58.85	II	
BH12	8.00	8.45	8.23	44	27	55.85	III	36
BH12	9.80	10.25	10.03	80	40	54.05	V	40
BH12	11.50	11.95	11.73	72	35	52.35	V	38
BH12	13.00	13.45	13.23	80	37	50.85	V	39
BH12	14.50	14.95	14.73	65	31	49.35	V	37
BH12	16.00	16.45	16.23	55	27	47.85	V	36

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH12	17.50	17.95	17.73	62	29	46.35	V	37
BH12	19.00	19.20	19.10	>100	>50	44.98	V	42
BH12	20.50	20.68	20.59	>100	>50	43.49	V	42
BH12	22.00	22.21	22.11	>100	>50	41.97	V	42
BH12	23.50	23.77	23.64	>100	>50	40.44	V	42
BH12	25.00	25.23	25.12	>100	>50	38.96	V	42
BH12	26.50	26.69	26.60	>100	>50	37.48	V	42
BH12	28.00	28.20	28.10	>100	>50	35.98	V	42
BH12	30.00	30.23	30.12	>100	>50	33.96	V	42
BH13	1.00	1.45	1.23	9	13	63.27	I	31
BH13	3.00	3.45	3.23	11	13	61.27	I	31
BH13	5.00	5.45	5.23	20	20	59.27	II	
BH13	8.00	8.45	8.23	33	22	56.27	III	34
BH13	9.75	10.20	9.98	46	26	54.52	III	36
BH13	11.50	11.95	11.73	65	32	52.77	III	38
BH13	13.00	13.45	13.23	57	28	51.27	V	36
BH13	14.50	14.95	14.73	55	27	49.77	V	36
BH13	16.00	16.45	16.23	59	59	48.27	IV	
BH13	17.50	17.95	17.73	50	24	46.77	V	35
BH13	18.50	18.73	18.62	>100	>50	45.88	V	42
BH13	20.00	20.24	20.12	>100	>50	44.38	V	42
BH13	21.50	21.73	21.62	>100	>50	42.88	V	42
BH13	23.00	23.22	23.11	>100	>50	41.39	V	42
BH13	24.50	24.74	24.62	>100	>50	39.88	V	42
BH13	26.00	26.23	26.12	>100	>50	38.38	V	42
BH13	27.50	27.75	27.63	>100	>50	36.87	V	42
BH13	29.00	29.24	29.12	>100	>50	35.38	V	42
BH13	30.00	30.21	30.11	>100	>50	34.39	V	42
BH14	1.00	1.45	1.23	4	06	62.68	I	28
BH14	3.00	3.45	3.23	9	09	60.68	II	
BH14	5.00	5.45	5.23	22	22	58.68	II	
BH14	8.00	8.45	8.23	31	31	55.68	II	
BH14	11.00	11.45	11.23	36	36	52.68	II	
BH14	14.00	14.45	14.23	36	36	49.68	II	
BH14	17.00	17.45	17.23	62	29	46.68	V	37
BH14	18.50	18.95	18.73	53	25	45.18	V	36
BH14	20.00	20.22	20.11	>100	>50	43.80	V	42
BH14	21.50	21.70	21.60	>100	>50	42.31	V	42
BH14	23.00	23.23	23.12	>100	>50	40.79	V	42
BH14	24.50	24.69	24.60	>100	>50	39.31	V	42
BH14	26.00	26.22	26.11	>100	>50	37.80	V	42
BH14	27.50	27.95	27.73	82	31	36.18	V	37

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH14	29.00	29.45	29.23	66	26	34.68	V	36
BH14	30.00	30.45	30.23	83	31	33.68	V	37
BH15	1.00	1.45	1.23	11	16	62.49	I	32
BH15	3.00	3.45	3.23	16	17	60.49	I	33
BH15	5.00	5.45	5.23	13	13	58.49	I	31
BH15	8.00	8.45	8.23	28	28	55.49	II	
BH15	11.00	11.45	11.23	51	27	52.49	V	36
BH15	14.00	14.45	14.23	78	36	49.49	V	39
BH15	17.00	17.27	17.14	>100	42	46.58	V	40
BH15	18.50	18.73	18.62	>100	42	45.10	V	40
BH15	20.00	20.45	20.23	95	39	43.49	V	39
BH15	21.50	21.95	21.73	86	35	41.99	V	38
BH15	23.00	23.19	23.10	>100	>50	40.62	V	42
BH15	24.50	24.71	24.61	>100	>50	39.11	V	42
BH15	26.00	26.19	26.10	>100	>50	37.62	V	42
BH15	27.50	27.70	27.60	>100	>50	36.12	V	42
BH15	29.00	29.17	29.09	>100	>50	34.63	V	42
BH15	30.00	30.19	30.10	>100	>50	33.62	V	42
BH16	1.00	1.45	1.23	16	19	65.37	I	34
BH16	3.00	3.45	3.23	28	24	63.37	I	35
BH16	5.00	5.45	5.23	34	25	61.37	I	35
BH16	8.00	8.45	8.23	13	13	58.37	II	
BH16	11.00	11.45	11.23	53	28	55.37	V	36
BH16	12.50	12.95	12.73	82	37	53.87	V	39
BH16	14.00	14.45	14.23	88	38	52.37	V	39
BH16	15.50	15.95	15.73	55	26	50.87	V	36
BH16	17.00	17.40	17.20	>100	100	49.40	IV	
BH16	18.50	18.77	18.64	>100	100	47.96	IV	
BH16	20.00	20.45	20.23	62	27	46.37	V	36
BH16	21.50	21.95	21.73	89	35	44.87	V	38
BH16	23.00	23.40	23.20	>100	>50	43.40	V	42
BH16	24.50	24.85	24.68	>100	>50	41.92	V	42
BH16	26.00	26.25	26.13	>100	>50	40.47	V	42
BH16	27.50	27.72	27.61	>100	>50	38.99	V	42
BH16	29.00	29.24	29.12	>100	>50	37.48	V	42
BH16	30.00	30.21	30.11	>100	>50	36.49	V	42
BH17	1.00	1.45	1.23	15	18	67.26	I	33
BH17	3.00	3.45	3.23	18	18	65.26	I	33
BH17	5.00	5.45	5.23	22	19	63.26	I	33
BH17	8.00	8.45	8.23	16	14	60.26	I	32
BH17	11.00	11.45	11.23	62	31	57.26	V	37

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH17	12.50	12.95	12.73	69	33	55.76	V	38
BH17	14.00	14.45	14.23	83	36	54.26	V	39
BH17	15.50	15.95	15.73	74	32	52.76	V	38
BH17	17.00	17.45	17.23	79	33	51.26	V	38
BH17	18.50	18.95	18.73	58	58	49.76	IV	
BH17	20.00	20.45	20.23	86	34	48.26	V	38
BH17	21.50	21.95	21.73	77	31	46.76	V	37
BH17	23.00	23.45	23.23	88	33	45.26	V	38
BH17	24.50	24.87	24.69	>100	>50	43.80	V	42
BH17	26.00	26.35	26.18	>100	>50	42.31	V	42
BH17	27.50	27.76	27.63	>100	>50	40.85	V	42
BH17	29.00	29.24	29.12	>100	>50	39.36	V	42
BH17	30.00	30.17	30.09	>100	>50	38.40	V	42
BH18	1.00	1.45	1.23	9	13	75.37	I	31
BH18	3.00	3.45	3.23	13	15	73.37	I	32
BH18	5.00	5.45	5.23	19	17	71.37	I	33
BH18	8.00	8.45	8.23	20	16	68.37	I	32
BH18	11.00	11.45	11.23	28	18	65.37	I	33
BH18	14.00	14.45	14.23	33	19	62.37	III	33
BH18	17.00	17.45	17.23	92	92	59.37	IV	
BH18	18.50	18.90	18.70	>100	100	57.89	IV	
BH18	20.00	20.37	20.19	>100	100	56.41	IV	
BH18	21.50	21.88	21.69	>100	100	54.90	IV	
BH18	23.00	23.45	23.23	46	20	53.37	III	34
BH18	24.50	24.95	24.73	64	24	51.87	III	35
BH18	26.00	26.45	26.23	67	24	50.37	III	35
BH18	27.50	27.95	27.73	68	24	48.87	V	35
BH18	29.00	29.45	29.23	79	26	47.37	V	36
BH18	30.50	30.95	30.73	84	27	45.87	V	36
BH18	32.00	32.45	32.23	75	24	44.37	V	35
BH18	33.50	33.91	33.71	>100	>50	42.89	V	42
BH18	35.00	35.38	35.19	>100	>50	41.40	V	42
BH19	1.00	1.45	1.23	7	10	66.25	I	30
BH19	3.00	3.45	3.23	9	10	64.25	I	30
BH19	5.00	5.45	5.23	10	10	62.25	I	30
BH19	8.00	8.45	8.23	43	43	59.25	IV	
BH19	11.00	11.45	11.23	98	45	56.25	V	41
BH19	14.00	14.45	14.23	80	35	53.25	V	38
BH19	15.50	15.95	15.73	78	34	51.75	V	38
BH19	17.00	17.45	17.23	74	74	50.25	IV	
BH19	18.50	18.95	18.73	87	87	48.75	IV	
BH19	20.00	20.34	20.17	>100	>50	47.30	V	42

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH19	21.50	21.83	21.67	>100	>50	45.81	V	42
BH19	23.00	23.23	23.12	>100	>50	44.36	V	42
BH19	24.50	24.84	24.67	>100	>50	42.80	V	42
BH19	26.00	26.26	26.13	>100	>50	41.34	V	42
BH19	27.50	27.71	27.61	>100	>50	39.87	V	42
BH19	29.00	29.23	29.12	>100	>50	38.36	V	42
BH19	30.00	30.20	30.10	>100	>50	37.37	V	42
BH20	1.00	1.45	1.23	8	12	65.21	I	31
BH20	3.00	3.45	3.23	16	17	63.21	I	33
BH20	5.00	5.45	5.23	15	15	61.21	I	32
BH20	8.00	8.45	8.23	13	13	58.21	II	
BH20	11.00	11.45	11.23	52	28	55.21	III	36
BH20	12.50	12.95	12.73	69	33	53.71	III	38
BH20	14.00	14.45	14.23	92	40	52.21	III	40
BH20	15.50	15.95	15.73	60	60	50.71	IV	
BH20	17.00	17.45	17.23	83	83	49.21	IV	
BH20	18.50	18.95	18.73	77	77	47.71	IV	
BH20	20.00	20.45	20.23	54	25	46.21	V	35
BH20	21.50	21.88	21.69	>100	>50	44.75	V	42
BH20	23.00	23.35	23.18	>100	>50	43.26	V	42
BH20	24.50	24.83	24.67	>100	>50	41.77	V	42
BH20	26.00	26.25	26.13	>100	>50	40.31	V	42
BH20	27.50	27.72	27.61	>100	>50	38.83	V	42
BH20	29.00	29.24	29.12	>100	>50	37.32	V	42
BH20	30.50	30.73	30.62	>100	>50	35.82	V	42
BH20	32.00	32.25	32.13	>100	>50	34.31	V	42
BH20	33.50	33.70	33.60	>100	>50	32.84	V	42
BH20	35.00	35.19	35.10	>100	>50	31.34	V	42
BH21	1.00	1.45	1.23	6	06	62.49	IIA	
BH21	3.00	3.45	3.23	7	07	60.49	IIA	
BH21	5.00	5.45	5.23	22	22	58.49	II	
BH21	8.00	8.45	8.23	41	25	55.49	III	36
BH21	11.00	11.45	11.23	52	52	52.49	IV	
BH21	14.00	14.45	14.23	57	57	49.49	IV	
BH21	15.50	15.95	15.73	58	58	47.99	IV	
BH21	17.00	17.36	17.18	>100	42	46.53	V	40
BH21	18.50	18.95	18.73	56	26	44.99	V	36
BH21	20.00	20.45	20.23	36	19	43.49	V	34
BH21	21.50	21.95	21.73	50	24	41.99	V	35
BH21	23.00	23.18	23.09	>100	>50	40.62	V	42
BH21	24.50	24.74	24.62	>100	>50	39.09	V	42
BH21	26.00	26.23	26.12	>100	>50	37.60	V	42

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH21	27.50	27.71	27.61	>100	>50	36.11	V	42
BH21	29.00	29.28	29.14	>100	>50	34.57	V	42
BH21	30.50	30.75	30.63	>100	>50	33.09	V	42
BH21	32.00	32.22	32.11	>100	>50	31.60	V	42
BH21	33.50	33.71	33.61	>100	>50	30.11	V	42
BH21	35.00	35.22	35.11	>100	>50	28.60	V	42
BH22	1.00	1.45	1.23	10	10	62.70	II	
BH22	3.00	3.45	3.23	12	12	60.70	II	
BH22	5.00	5.45	5.23	28	28	58.70	II	
BH22	8.00	8.45	8.23	56	32	55.70	III	37
BH22	9.80	10.25	10.03	55	30	53.90	III	37
BH22	11.50	11.95	11.73	77	77	52.20	IV	
BH22	13.00	13.45	13.23	53	53	50.70	IV	
BH22	14.50	14.95	14.73	35	35	49.20	IV	
BH22	16.00	16.45	16.23	40	40	47.70	IV	
BH22	17.50	17.95	17.73	43	43	46.20	IV	
BH22	19.00	19.45	19.23	44	44	44.70	IV	
BH22	20.50	20.95	20.73	33	33	43.20	IV	
BH22	22.00	22.45	22.23	58	25	41.70	V	36
BH22	23.50	23.74	23.62	>100	>50	40.31	V	42
BH22	25.00	25.45	25.23	54	23	38.70	V	35
BH22	26.50	26.95	26.73	47	21	37.20	V	34
BH22	28.00	28.45	28.23	38	18	35.70	V	33
BH22	29.50	29.95	29.73	34	34	34.20	IV	
BH22	31.00	31.45	31.23	45	45	32.70	IV	
BH22	32.50	32.95	32.73	49	49	31.20	IV	
BH22	34.00	34.23	34.12	>100	>50	29.81	V	42
BH22	35.00	35.21	35.11	>100	>50	28.82	V	42
BH23	1.00	1.45	1.23	14	14	63.12	II	
BH23	3.00	3.45	3.23	13	13	61.12	II	
BH23	5.00	5.45	5.23	22	22	59.12	II	
BH23	8.00	8.45	8.23	45	27	56.12	III	36
BH23	9.80	10.25	10.03	49	27	54.32	III	36
BH23	13.00	13.45	13.23	36	36	51.12	IV	
BH23	14.80	15.25	15.03	50	50	49.32	IV	
BH23	16.50	16.95	16.73	54	54	47.62	IV	
BH23	18.00	18.45	18.23	45	45	46.12	IV	
BH23	19.50	19.95	19.73	59	59	44.62	IV	
BH23	21.00	21.23	21.12	>100	>50	43.23	V	42
BH23	22.50	22.95	22.73	48	22	41.62	V	35
BH23	24.00	24.45	24.23	78	31	40.12	V	37
BH23	25.50	25.95	25.73	50	50	38.62	IV	

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH23	27.00	27.45	27.23	61	61	37.12	IV	
BH23	28.50	28.95	28.73	32	32	35.62	IV	
BH23	30.00	30.45	30.23	53	53	34.12	IV	
BH23	31.50	31.95	31.73	50	50	32.62	IV	
BH23	33.00	33.45	33.23	49	49	31.12	IV	
BH23	35.00	35.39	35.20	>100	100	29.15	IV	
BH24	1.00	1.45	1.23	7	10	62.64	I	30
BH24	3.00	3.45	3.23	10	10	60.64	II	
BH24	5.00	5.45	5.23	19	19	58.64	II	
BH24	8.00	8.45	8.23	32	32	55.64	II	
BH24	9.80	10.25	10.03	64	33	53.84	III	38
BH24	11.50	11.95	11.73	36	36	52.14	IV	
BH24	13.00	13.45	13.23	70	70	50.64	IV	
BH24	14.50	14.95	14.73	67	67	49.14	IV	
BH24	16.00	16.45	16.23	74	74	47.64	IV	
BH24	17.50	17.95	17.73	73	73	46.14	IV	
BH24	19.00	19.45	19.23	69	69	44.64	IV	
BH24	20.50	20.95	20.73	69	30	43.14	V	37
BH24	22.00	22.45	22.23	76	32	41.64	V	37
BH24	23.50	23.73	23.62	>100	>50	40.25	V	42
BH24	25.00	25.21	25.11	>100	>50	38.76	V	42
BH24	26.50	26.72	26.61	>100	>50	37.25	V	42
BH24	28.00	28.20	28.10	>100	>50	35.76	V	42
BH24	29.50	29.71	29.61	>100	>50	34.26	V	42
BH24	31.00	31.35	31.18	>100	>50	32.69	V	42
BH24	32.50	32.87	32.69	>100	>50	31.18	V	42
BH24	34.00	34.36	34.18	>100	>50	29.68	V	42
BH24	35.50	35.73	35.62	>100	>50	28.25	V	42
BH24	37.00	37.21	37.11	>100	>50	26.76	V	42
BH24	38.50	38.74	38.62	>100	>50	25.24	V	42
BH24	40.00	40.22	40.11	>100	>50	23.75	V	42
BH25	1.00	1.45	1.23	13	13	63.17	II	
BH25	3.00	3.45	3.23	10	10	61.17	II	
BH25	5.00	5.45	5.23	13	13	59.17	I	31
BH25	8.00	8.45	8.23	45	27	56.17	III	36
BH25	9.75	10.20	9.98	37	22	54.42	III	35
BH25	11.50	11.95	11.73	61	61	52.67	IV	
BH25	13.00	13.45	13.23	48	48	51.17	IV	
BH25	14.50	14.95	14.73	86	86	49.67	IV	
BH25	16.00	16.45	16.23	56	27	48.17	V	36
BH25	17.50	17.95	17.73	67	30	46.67	V	37
BH25	19.00	19.45	19.23	75	33	45.17	V	38

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH25	20.50	20.95	20.73	100	40	43.67	V	40
BH25	22.00	22.37	22.19	>100	40	42.21	V	40
BH25	23.50	23.95	23.73	56	25	40.67	V	35
BH25	25.00	25.28	25.14	>100	>50	39.25	V	42
BH25	26.50	26.77	26.64	>100	>50	37.76	V	42
BH25	28.00	28.25	28.13	>100	>50	36.27	V	42
BH25	30.00	30.23	30.12	>100	>50	34.28	V	42
BH25	31.50	31.74	31.62	>100	>50	32.77	V	42
BH25	33.00	33.22	33.11	>100	>50	31.28	V	42
BH25	34.50	34.69	34.60	>100	>50	29.80	V	42
BH25	36.00	36.18	36.09	>100	>50	28.30	V	42
BH25	37.50	37.70	37.60	>100	>50	26.79	V	42
BH25	39.00	39.17	39.09	>100	>50	25.31	V	42
BH25	40.00	40.19	40.10	>100	>50	24.30	V	42
BH26	1.00	1.45	1.23	5	07	64.58	I	29
BH26	3.00	3.45	3.23	11	13	62.58	I	31
BH26	5.00	5.45	5.23	14	14	60.58	I	32
BH26	8.00	8.45	8.23	20	20	57.58	II	
BH26	11.00	11.45	11.23	43	24	54.58	III	35
BH26	12.75	13.20	12.98	49	49	52.83	IV	
BH26	14.50	14.95	14.73	87	87	51.08	IV	
BH26	16.00	16.45	16.23	82	82	49.58	IV	
BH26	17.50	17.95	17.73	42	42	48.08	IV	
BH26	19.00	19.45	19.23	40	20	46.58	V	34
BH26	20.50	20.84	20.67	>100	>50	45.13	V	42
BH26	22.00	22.25	22.13	>100	>50	43.68	V	42
BH26	23.50	23.85	23.68	>100	>50	42.13	V	42
BH26	25.00	25.45	25.23	35	35	40.58	IV	
BH26	26.50	26.95	26.73	40	40	39.08	IV	
BH26	27.50	27.95	27.73	41	41	38.08	IV	
BH26	29.00	29.34	29.17	>100	>50	36.63	V	42
BH26	30.50	30.76	30.63	>100	>50	35.17	V	42
BH26	32.00	32.24	32.12	>100	>50	33.68	V	42
BH26	33.50	33.72	33.61	>100	>50	32.19	V	42
BH26	35.00	35.20	35.10	>100	>50	30.70	V	42
BH27	1.00	1.45	1.23	30	29	65.40	I	37
BH27	3.00	3.45	3.23	32	26	63.40	I	36
BH27	5.00	5.45	5.23	13	13	61.40	I	31
BH27	8.00	8.45	8.23	20	20	58.40	II	
BH27	9.80	10.25	10.03	53	29	56.60	III	37
BH27	11.50	11.95	11.73	56	29	54.90	III	37
BH27	13.00	13.45	13.23	59	29	53.40	III	37

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH27	14.50	14.95	14.73	67	67	51.90	IV	
BH27	16.00	16.45	16.23	91	91	50.40	IV	
BH27	17.50	17.90	17.70	>100	>50	48.92	V	42
BH27	19.00	19.24	19.12	>100	>50	47.50	V	42
BH27	20.50	20.76	20.63	>100	>50	45.99	V	42
BH27	22.00	22.25	22.13	>100	>50	44.50	V	42
BH27	23.50	23.72	23.61	>100	>50	43.01	V	42
BH27	25.00	25.27	25.14	>100	>50	41.49	V	42
BH27	26.50	26.74	26.62	>100	>50	40.00	V	42
BH27	28.00	28.22	28.11	>100	>50	38.51	V	42
BH27	29.50	29.75	29.63	>100	>50	37.00	V	42
BH27	31.00	31.23	31.12	>100	>50	35.51	V	42
BH27	32.50	32.74	32.62	>100	>50	34.00	V	42
BH27	34.00	34.21	34.11	>100	>50	32.52	V	42
BH27	35.00	35.20	35.10	>100	>50	31.52	V	42
BH28	1.00	1.45	1.23	49	49	64.39	Fill	
BH28	3.00	3.45	3.23	7	08	62.39	III	29
BH28	5.00	5.45	5.23	13	13	60.39	II	
BH28	8.00	8.45	8.23	15	13	57.39	III	31
BH28	11.00	11.45	11.23	27	18	54.39	III	33
BH28	13.05	13.50	13.28	28	18	52.34	III	33
BH28	14.50	14.95	14.73	40	40	50.89	IV	
BH28	17.50	17.75	17.63	>100	>50	47.99	V	42
BH28	19.00	19.23	19.12	>100	>50	46.50	V	42
BH28	20.50	20.69	20.60	>100	>50	45.02	V	42
BH28	22.00	22.24	22.12	>100	>50	43.49	V	42
BH28	23.50	23.72	23.61	>100	>50	42.00	V	42
BH28	25.00	25.24	25.12	>100	>50	40.49	V	42
BH28	26.50	26.70	26.60	>100	>50	39.01	V	42
BH28	28.00	28.27	28.14	>100	>50	37.48	V	42
BH28	29.50	29.78	29.64	>100	>50	35.97	V	42
BH28	31.00	31.23	31.12	>100	>50	34.50	V	42
BH28	32.50	32.70	32.60	>100	>50	33.01	V	42
BH28	34.00	34.21	34.11	>100	>50	31.51	V	42
BH28	35.00	35.18	35.09	>100	>50	30.52	V	42
BH29	1.00	1.45	1.23	5	07	66.53	I	29
BH29	3.00	3.45	3.23	10	11	64.53	I	31
BH29	5.00	5.45	5.23	27	21	62.53	I	34
BH29	8.00	8.45	8.23	37	37	59.53	IV	
BH29	11.00	11.45	11.23	62	31	56.53	III	37
BH29	12.80	13.25	13.03	60	29	54.73	III	37
BH29	14.50	14.95	14.73	46	23	53.03	III	35

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH29	16.00	16.45	16.23	47	47	51.53	IV	
BH29	17.50	17.95	17.73	52	52	50.03	IV	
BH29	19.00	19.45	19.23	39	39	48.53	IV	
BH29	20.50	20.95	20.73	72	30	47.03	V	37
BH29	22.00	22.37	22.19	>100	>50	45.57	V	42
BH29	23.50	23.85	23.68	>100	>50	44.08	V	42
BH29	25.00	25.34	25.17	>100	>50	42.58	V	42
BH29	26.50	26.75	26.63	>100	>50	41.13	V	42
BH29	28.00	28.23	28.12	>100	>50	39.64	V	42
BH29	29.50	29.74	29.62	>100	>50	38.13	V	42
BH29	31.00	31.27	31.14	>100	>50	36.62	V	42
BH29	32.50	32.73	32.62	>100	>50	35.14	V	42
BH29	34.00	34.20	34.10	>100	>50	33.65	V	42
BH29	35.00	35.19	35.10	>100	>50	32.66	V	42
BH30	1.00	1.45	1.23	40	40	77.62	Fill	
BH30	3.00	3.45	3.23	12	14	75.62	I	32
BH30	5.00	5.45	5.23	18	17	73.62	I	33
BH30	8.00	8.45	8.23	23	17	70.62	I	33
BH30	11.00	11.45	11.23	46	46	67.62	IV	
BH30	12.63	13.08	12.86	79	79	65.99	IV	
BH30	14.00	14.45	14.23	78	78	64.62	IV	
BH30	15.50	15.95	15.73	89	89	63.12	IV	
BH30	17.00	17.41	17.21	>100	>50	61.64	V	42
BH30	18.50	18.88	18.69	>100	>50	60.15	V	42
BH30	20.00	20.37	20.19	>100	>50	58.66	V	42
BH30	21.50	21.89	21.70	>100	>50	57.15	V	42
BH30	23.00	23.26	23.13	>100	>50	55.71	V	42
BH30	24.50	24.73	24.62	>100	>50	54.23	V	42
BH30	26.00	26.25	26.13	>100	>50	52.72	V	42
BH30	27.50	27.73	27.62	>100	>50	51.23	V	42
BH30	29.00	29.37	29.19	>100	>50	49.66	V	42
BH30	30.50	30.76	30.63	>100	>50	48.21	V	42
BH30	32.00	32.28	32.14	>100	>50	46.70	V	42
BH30	33.50	33.90	33.70	>100	>50	45.14	V	42
BH30	35.00	35.38	35.19	>100	>50	43.65	V	42
BH30	36.50	36.73	36.62	>100	>50	42.23	V	42
BH30	38.00	38.22	38.11	>100	>50	40.73	V	42
BH30	40.00	40.22	40.11	>100	>50	38.73	V	42
BH31	1.00	1.45	1.23	32	32	78.68	Fill	
BH31	2.13	2.58	2.36	28	28	77.55	Fill	
BH31	3.00	3.45	3.23	17	17	76.68	I	33
BH31	5.00	5.45	5.23	29	22	74.68	I	35

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH31	8.00	8.45	8.23	37	37	71.68	IV	
BH31	11.00	11.45	11.23	79	38	68.68	V	39
BH31	12.50	12.95	12.73	67	32	67.18	V	38
BH31	14.00	14.45	14.23	88	38	65.68	V	39
BH31	15.50	15.95	15.73	93	38	64.18	V	39
BH31	17.00	17.41	17.21	>100	>50	62.70	V	42
BH31	18.50	18.89	18.70	>100	>50	61.21	V	42
BH31	20.00	20.37	20.19	>100	>50	59.72	V	42
BH31	21.50	21.95	21.73	>100	>50	58.18	V	42
BH31	23.00	23.45	23.23	92	31	56.68	V	37
BH31	24.50	24.89	24.70	>100	>50	55.21	V	42
BH31	26.00	26.39	26.20	>100	>50	53.71	V	42
BH31	27.50	27.87	27.69	>100	>50	52.22	V	42
BH31	29.00	29.37	29.19	>100	>50	50.72	V	42
BH31	30.50	30.84	30.67	>100	>50	49.24	V	42
BH31	32.00	32.27	32.14	>100	>50	47.77	V	42
BH31	33.50	33.74	33.62	>100	>50	46.29	V	42
BH31	35.00	35.28	35.14	>100	>50	44.77	V	42
BH31	36.50	36.73	36.62	>100	>50	43.29	V	42
BH31	38.00	38.25	38.13	>100	>50	41.78	V	42
BH31	40.00	40.22	40.11	>100	>50	39.80	V	42
BH32	1.00	1.45	1.23	42	42	78.69	Fill	
BH32	3.00	3.45	3.23	11	13	76.69	I	31
BH32	5.00	5.45	5.23	16	16	74.69	I	32
BH32	8.00	8.45	8.23	25	18	71.69	I	33
BH32	11.00	11.45	11.23	24	24	68.69	II	
BH32	12.80	13.25	13.03	58	58	66.89	IV	
BH32	14.00	14.45	14.23	72	72	65.69	IV	
BH32	15.50	15.90	15.70	>100	100	64.22	IV	
BH32	17.00	17.37	17.19	>100	>50	62.73	V	42
BH32	18.50	18.89	18.70	>100	>50	61.22	V	42
BH32	20.00	20.40	20.20	>100	>50	59.72	V	42
BH32	21.50	21.87	21.69	>100	>50	58.23	V	42
BH32	23.00	23.20	23.10	>100	>50	56.82	V	42
BH32	24.50	24.88	24.69	>100	>50	55.23	V	42
BH32	26.00	26.24	26.12	>100	>50	53.80	V	42
BH32	27.50	27.68	27.59	>100	>50	52.33	V	42
BH32	29.00	29.42	29.21	>100	>50	50.71	V	42
BH32	30.50	30.87	30.69	>100	>50	49.23	V	42
BH32	32.00	32.39	32.20	>100	>50	47.72	V	42
BH32	33.50	33.78	33.64	>100	>50	46.28	V	42
BH32	35.00	35.24	35.12	>100	>50	44.80	V	42
BH32	36.50	36.73	36.62	>100	>50	43.30	V	42

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH32	38.00	38.22	38.11	>100	>50	41.81	V	42
BH32	40.00	40.24	40.12	>100	>50	39.80	V	42
BH33	1.00	1.45	1.23	9	09	75.25	Fill	
BH33	3.00	3.45	3.23	17	17	73.25	I	33
BH33	5.00	5.45	5.23	28	22	71.25	I	34
BH33	8.00	8.45	8.23	32	21	68.25	III	34
BH33	11.00	11.25	11.13	>100	100	65.35	IV	
BH33	12.50	12.89	12.70	>100	100	63.78	IV	
BH33	14.00	14.26	14.13	>100	100	62.35	IV	
BH33	15.50	15.74	15.62	>100	100	60.86	IV	
BH33	17.00	17.22	17.11	>100	100	59.37	IV	
BH33	18.50	18.70	18.60	>100	>50	57.88	V	42
BH33	20.00	20.23	20.12	>100	>50	56.36	V	42
BH33	21.50	21.95	21.73	79	79	54.75	IV	
BH33	23.00	23.45	23.23	84	84	53.25	IV	
BH33	24.50	24.90	24.70	>100	>50	51.78	V	42
BH33	26.00	26.35	26.18	>100	>50	50.30	V	42
BH33	27.50	27.75	27.63	>100	>50	48.85	V	42
BH33	29.00	29.23	29.12	>100	>50	47.36	V	42
BH33	30.50	30.85	30.68	>100	>50	45.80	V	42
BH33	32.00	32.24	32.12	>100	>50	44.36	V	42
BH33	33.50	33.72	33.61	>100	>50	42.87	V	42
BH33	35.00	35.23	35.12	>100	>50	41.36	V	42
BH33	36.50	36.74	36.62	>100	>50	39.86	V	42
BH33	38.00	38.22	38.11	>100	>50	38.37	V	42
BH33	40.00	40.23	40.12	>100	>50	36.36	V	42
BH34	1.00	1.45	1.23	11	16	78.16	I	32
BH34	3.00	3.45	3.23	10	11	76.16	I	31
BH34	5.00	5.45	5.23	17	16	74.16	I	32
BH34	8.00	8.45	8.23	21	17	71.16	I	33
BH34	11.00	11.45	11.23	48	48	68.16	IV	
BH34	12.65	13.10	12.88	38	38	66.51	IV	
BH34	14.00	14.45	14.23	54	54	65.16	IV	
BH34	15.50	15.95	15.73	67	67	63.66	IV	
BH34	17.00	17.45	17.23	78	78	62.16	IV	
BH34	18.50	18.72	18.61	>100	100	60.78	IV	
BH34	20.00	20.38	20.19	>100	100	59.20	IV	
BH34	21.50	21.86	21.68	>100	100	57.71	IV	
BH34	23.00	23.45	23.23	>100	100	56.16	IV	
BH34	24.50	24.89	24.70	>100	100	54.69	IV	
BH34	26.00	26.45	26.23	34	16	53.16	III	32
BH34	27.50	27.95	27.73	46	18	51.66	III	33

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH34	29.30	29.75	29.53	59	21	49.86	III	34
BH34	31.00	31.45	31.23	77	77	48.16	IV	
BH34	32.50	32.84	32.67	>100	>50	46.72	V	42
BH34	34.00	34.36	34.18	>100	>50	45.21	V	42
BH34	35.50	35.75	35.63	>100	>50	43.76	V	42
BH34	37.00	37.22	37.11	>100	>50	42.28	V	42
BH34	38.50	38.74	38.62	>100	>50	40.77	V	42
BH34	40.00	40.23	40.12	>100	>50	39.27	V	42
BH35	1.00	1.45	1.23	3	04	66.79	I	28
BH35	3.00	3.45	3.23	3	03	64.79	I	27
BH35	5.00	5.45	5.23	15	15	62.79	I	32
BH35	8.00	8.45	8.23	88	88	59.79	IV	
BH35	11.00	11.27	11.14	>100	100	56.88	IV	
BH35	12.00	12.45	12.23	90	41	55.79	V	40
BH35	14.00	14.45	14.23	86	37	53.79	V	39
BH35	15.50	15.95	15.73	78	34	52.29	V	38
BH35	17.00	17.45	17.23	77	33	50.79	V	38
BH35	18.50	18.95	18.73	91	36	49.29	V	39
BH35	20.00	20.45	20.23	76	31	47.79	V	37
BH35	22.00	22.28	22.14	>100	>50	45.87	V	42
BH35	23.50	23.72	23.61	>100	>50	44.40	V	42
BH35	25.00	25.17	25.09	>100	>50	42.93	V	42
BH35	26.50	26.71	26.61	>100	>50	41.41	V	42
BH35	28.00	28.24	28.12	>100	>50	39.89	V	42
BH35	29.50	29.68	29.59	>100	>50	38.42	V	42
BH35	31.00	31.23	31.12	>100	>50	36.90	V	42
BH35	32.00	32.20	32.10	>100	>50	35.91	V	42
BH35	33.50	33.74	33.62	>100	>50	34.39	V	42
BH35	35.00	35.19	35.10	>100	>50	32.92	V	42
BH36	1.00	1.45	1.23	7	10	65.02	I	30
BH36	3.00	3.45	3.23	13	15	63.02	I	32
BH36	5.00	5.45	5.23	14	14	61.02	I	32
BH36	8.00	8.45	8.23	29	20	58.02	I	34
BH36	11.00	11.45	11.23	86	86	55.02	IV	
BH36	12.50	12.95	12.73	76	76	53.52	IV	
BH36	14.00	14.45	14.23	75	34	52.02	V	38
BH36	15.50	15.95	15.73	89	38	50.52	V	39
BH36	17.00	17.45	17.23	65	29	49.02	V	37
BH36	18.50	18.95	18.73	69	30	47.52	V	37
BH36	20.00	20.45	20.23	68	29	46.02	V	37
BH36	21.50	21.95	21.73	94	37	44.52	V	39
BH36	23.00	23.21	23.11	>100	>50	43.14	V	42

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH36	24.50	24.68	24.59	>100	>50	41.66	V	42
BH36	26.00	26.22	26.11	>100	>50	40.14	V	42
BH36	27.50	27.88	27.69	>100	>50	38.56	V	42
BH36	29.00	29.28	29.14	>100	>50	37.11	V	42
BH36	30.00	30.26	30.13	>100	>50	36.12	V	42
BH37	1.00	1.45	1.23	14	18	62.80	I	33
BH37	3.00	3.45	3.23	15	16	60.80	I	32
BH37	4.80	5.25	5.03	11	11	59.00	I	30
BH37	8.00	8.45	8.23	20	16	55.80	I	32
BH37	11.00	11.45	11.23	30	30	52.80	IV	
BH37	12.75	13.20	12.98	43	43	51.05	IV	
BH37	14.50	14.95	14.73	48	48	49.30	IV	
BH37	16.00	16.45	16.23	95	41	47.80	V	40
BH37	17.50	17.93	17.72	>100	>50	46.31	V	42
BH37	19.00	19.35	19.18	>100	>50	44.85	V	42
BH37	20.50	20.90	20.70	>100	>50	43.33	V	42
BH37	22.00	22.39	22.20	>100	>50	41.83	V	42
BH37	23.50	23.87	23.69	>100	100	40.34	IV	
BH37	25.00	25.34	25.17	>100	100	38.86	IV	
BH37	26.50	26.95	26.73	52	52	37.30	IV	
BH37	28.00	28.45	28.23	59	59	35.80	IV	
BH37	29.50	29.95	29.73	73	73	34.30	IV	
BH37	31.00	31.45	31.23	77	77	32.80	IV	
BH37	32.50	32.95	32.73	82	30	31.30	V	37
BH37	34.00	34.22	34.11	>100	>50	29.92	V	42
BH37	35.50	35.70	35.60	>100	>50	28.43	V	42
BH37	37.00	37.18	37.09	>100	>50	26.94	V	42
BH37	38.50	38.69	38.60	>100	>50	25.43	V	42
BH37	40.00	40.17	40.09	>100	>50	23.94	V	42
BH38	1.00	1.45	1.23	11	16	62.46	I	32
BH38	3.00	3.45	3.23	11	13	60.46	I	31
BH38	5.00	5.45	5.23	13	13	58.46	I	31
BH38	8.00	8.45	8.23	43	26	55.46	III	36
BH38	9.80	10.25	10.03	48	27	53.66	III	36
BH38	11.50	11.95	11.73	45	25	51.96	III	35
BH38	13.00	13.45	13.23	38	38	50.46	IV	
BH38	14.50	14.95	14.73	57	57	48.96	IV	
BH38	16.00	16.45	16.23	36	36	47.46	IV	
BH38	17.80	18.25	18.03	39	39	45.66	IV	
BH38	19.00	19.45	19.23	80	80	44.46	IV	
BH38	20.50	20.95	20.73	55	55	42.96	IV	
BH38	22.00	22.45	22.23	84	34	41.46	V	38

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH38	23.50	23.87	23.69	>100	>50	40.00	V	42
BH38	25.00	25.45	25.23	73	73	38.46	IV	
BH38	26.50	26.77	26.64	>100	>50	37.05	V	42
BH38	28.00	28.40	28.20	>100	>50	35.48	V	42
BH38	29.50	29.87	29.69	>100	>50	34.00	V	42
BH38	31.00	31.45	31.23	68	26	32.46	V	36
BH38	32.50	32.95	32.73	82	30	30.96	V	37
BH38	34.00	34.45	34.23	97	33	29.46	V	38
BH38	35.00	35.18	35.09	>100	>50	28.59	V	42
BH39	1.00	1.45	1.23	7	10	62.30	I	30
BH39	3.00	3.45	3.23	12	14	60.30	I	32
BH39	5.00	5.45	5.23	19	19	58.30	II	
BH39	8.00	8.45	8.23	36	36	55.30	II	
BH39	9.50	9.95	9.73	43	25	53.80	III	35
BH39	11.00	11.45	11.23	45	25	52.30	III	35
BH39	12.50	12.95	12.73	34	20	50.80	III	34
BH39	14.00	14.45	14.23	38	21	49.30	III	34
BH39	15.50	15.95	15.73	53	53	47.80	IV	
BH39	17.00	17.45	17.23	61	61	46.30	IV	
BH39	18.50	18.95	18.73	52	52	44.80	IV	
BH39	19.50	19.95	19.73	71	30	43.80	V	37
BH39	21.00	21.45	21.23	74	31	42.30	V	37
BH39	22.50	22.95	22.73	80	32	40.80	V	38
BH39	24.00	24.45	24.23	83	32	39.30	V	38
BH39	25.50	25.95	25.73	92	34	37.80	V	38
BH39	27.00	27.38	27.19	>100	>50	36.33	V	42
BH39	28.50	28.90	28.70	>100	>50	34.82	V	42
BH39	30.00	30.28	30.14	>100	>50	33.38	V	42
BH39	31.50	31.75	31.63	>100	>50	31.90	V	42
BH39	33.00	33.20	33.10	>100	>50	30.42	V	42
BH39	34.50	34.70	34.60	>100	>50	28.92	V	42
BH39	35.00	35.45	35.23	80	28	28.30	V	36
BH40	1.00	1.45	1.23	4	04	65.15	Fill	
BH40	3.00	3.45	3.23	15	16	63.15	I	32
BH40	5.00	5.45	5.23	12	12	61.15	I	31
BH40	8.00	8.45	8.23	17	17	58.15	II	
BH40	11.00	11.45	11.23	26	26	55.15	II	
BH40	14.00	14.45	14.23	41	22	52.15	III	35
BH40	15.75	16.20	15.98	49	49	50.40	IV	
BH40	17.50	17.95	17.73	65	65	48.65	IV	
BH40	19.00	19.45	19.23	95	39	47.15	V	39
BH40	20.50	20.95	20.73	91	37	45.65	V	39

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH40	22.00	22.37	22.19	>100	100	44.19	IV	
BH40	23.50	23.84	23.67	>100	100	42.71	IV	
BH40	25.00	25.19	25.10	>100	100	41.28	IV	
BH40	26.50	26.78	26.64	>100	>50	39.74	V	42
BH40	28.00	28.21	28.11	>100	100	38.27	IV	
BH40	29.50	29.95	29.73	83	83	36.65	IV	
BH40	31.00	31.35	31.18	>100	100	35.20	IV	
BH40	32.50	32.83	32.67	>100	>50	33.71	V	42
BH40	34.00	34.28	34.14	>100	>50	32.24	V	42
BH40	35.00	35.18	35.09	>100	>50	31.29	V	42
BH40	37.00	37.17	37.09	>100	>50	29.29	V	42
BH41	1.00	1.45	1.23	28	28	62.59	I	36
BH41	3.00	3.45	3.23	9	10	60.59	I	30
BH41	5.00	5.45	5.23	13	13	58.59	II	
BH41	8.00	8.45	8.23	58	33	55.59	III	38
BH41	9.50	9.95	9.73	63	33	54.09	III	38
BH41	11.00	11.45	11.23	68	34	52.59	III	38
BH41	12.50	12.95	12.73	54	27	51.09	III	36
BH41	14.00	14.45	14.23	58	28	49.59	III	36
BH41	15.50	15.95	15.73	41	41	48.09	IV	
BH41	17.00	17.45	17.23	45	45	46.59	IV	
BH41	18.50	18.95	18.73	50	50	45.09	IV	
BH41	20.00	20.25	20.13	>100	>50	43.69	V	42
BH41	21.50	21.70	21.60	>100	>50	42.21	V	42
BH41	23.00	23.18	23.09	>100	>50	40.72	V	42
BH41	24.50	24.65	24.58	>100	>50	39.24	V	42
BH41	26.00	26.45	26.23	81	31	37.59	V	37
BH41	27.50	27.90	27.70	>100	>50	36.11	V	42
BH41	29.00	29.20	29.10	>100	>50	34.71	V	42
BH41	30.50	30.95	30.73	92	32	33.09	V	38
BH41	32.00	32.35	32.18	>100	>50	31.64	V	42
BH41	33.50	33.80	33.65	>100	>50	30.16	V	42
BH41	35.00	35.36	35.18	>100	>50	28.63	V	42
BH42	1.00	1.45	1.23	5	07	62.39	I	29
BH42	3.00	3.45	3.23	7	08	60.39	I	29
BH42	5.00	5.45	5.23	31	31	58.39	II	
BH42	8.00	8.45	8.23	40	40	55.39	II	
BH42	10.00	10.45	10.23	43	43	53.39	IV	
BH42	11.50	11.95	11.73	47	47	51.89	IV	
BH42	13.00	13.45	13.23	45	45	50.39	IV	
BH42	14.50	14.95	14.73	42	42	48.89	IV	
BH42	16.00	16.45	16.23	53	53	47.39	IV	

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH42	17.50	17.95	17.73	57	57	45.89	IV	
BH42	19.00	19.45	19.23	88	36	44.39	V	39
BH42	20.50	20.92	20.71	>100	>50	42.91	V	42
BH42	22.00	22.40	22.20	>100	>50	41.42	V	42
BH42	23.50	23.85	23.68	>100	>50	39.94	V	42
BH42	25.00	25.45	25.23	91	34	38.39	V	38
BH42	26.50	26.95	26.73	68	27	36.89	V	36
BH42	28.00	28.45	28.23	50	22	35.39	V	34
BH42	29.50	29.75	29.63	>100	>50	33.99	V	42
BH42	31.00	31.25	31.13	>100	>50	32.49	V	42
BH42	32.50	32.70	32.60	>100	>50	31.02	V	42
BH42	34.00	34.21	34.11	>100	>50	29.51	V	42
BH42	35.50	35.75	35.63	>100	>50	27.99	V	42
BH42	37.00	37.20	37.10	>100	>50	26.52	V	42
BH42	38.50	38.65	38.58	>100	>50	25.04	V	42
BH42	40.00	40.10	40.05	>100	>50	23.57	V	42
BH43	1.00	1.45	1.23	15	15	62.30	II	
BH43	3.00	3.45	3.23	17	17	60.30	II	
BH43	5.00	5.45	5.23	31	31	58.30	II	
BH43	8.00	8.45	8.23	38	24	55.30	III	35
BH43	9.50	9.95	9.73	42	25	53.80	III	35
BH43	11.00	11.45	11.23	53	28	52.30	III	36
BH43	12.50	12.95	12.73	58	29	50.80	III	37
BH43	14.00	14.45	14.23	34	19	49.30	III	34
BH43	15.50	15.95	15.73	36	20	47.80	III	34
BH43	17.00	17.45	17.23	39	21	46.30	III	34
BH43	18.50	18.95	18.73	43	22	44.80	III	34
BH43	20.00	20.45	20.23	29	17	43.30	III	33
BH43	21.50	21.95	21.73	41	20	41.80	III	34
BH43	23.00	23.45	23.23	45	21	40.30	III	34
BH43	24.50	24.95	24.73	46	21	38.80	III	34
BH43	26.00	26.45	26.23	50	22	37.30	III	34
BH43	27.50	27.95	27.73	59	24	35.80	V	35
BH43	28.50	28.95	28.73	78	29	34.80	V	37
BH43	30.00	30.45	30.23	90	32	33.30	V	38
BH44	1.00	1.45	1.23	21	23	62.81	I	35
BH44	3.00	3.45	3.23	10	11	60.81	I	31
BH44	5.00	5.45	5.23	9	09	58.81	I	30
BH44	8.00	8.45	8.23	28	28	55.81	II	
BH44	11.00	11.45	11.23	45	45	52.81	IV	
BH44	14.50	14.95	14.73	81	81	49.31	IV	
BH44	16.00	16.45	16.23	87	87	47.81	IV	

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH44	17.50	17.84	17.67	>100	100	46.36	IV	
BH44	19.00	19.45	19.23	76	76	44.81	IV	
BH44	20.50	20.95	20.73	42	21	43.31	III	34
BH44	22.00	22.45	22.23	45	21	41.81	III	34
BH44	23.50	23.95	23.73	51	51	40.31	IV	
BH44	25.00	25.45	25.23	54	54	38.81	IV	
BH44	26.50	26.95	26.73	58	58	37.31	IV	
BH44	28.00	28.45	28.23	60	60	35.81	IV	
BH44	29.50	29.95	29.73	81	81	34.31	IV	
BH44	31.00	31.25	31.13	>100	>50	32.91	V	42
BH44	32.50	32.72	32.61	>100	>50	31.42	V	42
BH44	33.50	33.67	33.59	>100	>50	30.45	V	42
BH44	35.00	35.21	35.11	>100	>50	28.93	V	42
BH45	1.00	1.45	1.23	6	06	63.81	Fill	
BH45	3.00	3.45	3.23	9	10	61.81	I	30
BH45	5.00	5.45	5.23	19	19	59.81	II	
BH45	8.00	8.45	8.23	49	49	56.81	IV	
BH45	9.75	10.20	9.98	52	52	55.06	IV	
BH45	11.00	11.45	11.23	90	42	53.81	III	40
BH45	12.50	12.95	12.73	64	31	52.31	III	37
BH45	14.00	14.45	14.23	53	53	50.81	IV	
BH45	15.50	15.95	15.73	54	54	49.31	IV	
BH45	17.00	17.45	17.23	46	46	47.81	IV	
BH45	18.50	18.95	18.73	63	63	46.31	IV	
BH45	20.00	20.45	20.23	76	76	44.81	IV	
BH45	21.50	21.95	21.73	90	90	43.31	IV	
BH45	23.00	23.32	23.16	>100	100	41.88	IV	
BH45	24.50	24.88	24.69	>100	100	40.35	IV	
BH45	26.00	26.28	26.14	>100	100	38.90	IV	
BH45	27.50	27.73	27.62	>100	>50	37.42	V	42
BH45	29.00	29.21	29.11	>100	>50	35.93	V	42
BH45	30.50	30.69	30.60	>100	>50	34.44	V	42
BH45	31.50	31.74	31.62	>100	>50	33.42	V	42
BH45	33.00	33.27	33.14	>100	>50	31.90	V	42
BH45	34.50	34.68	34.59	>100	>50	30.45	V	42
BH45	35.50	35.82	35.66	>100	>50	29.38	V	42
BH45	37.00	37.28	37.14	>100	>50	27.90	V	42
BH46	1.00	1.45	1.23	9	09	62.22	II	
BH46	3.00	3.45	3.23	23	23	60.22	II	
BH46	5.00	5.45	5.23	39	39	58.22	II	
BH46	6.75	7.20	6.98	61	35	56.47	V	38
BH46	8.50	8.95	8.73	73	38	54.72	V	39

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH46	10.00	10.37	10.19	>100	>50	53.26	V	42
BH46	11.50	11.83	11.67	>100	>50	51.78	V	42
BH46	12.50	12.79	12.65	>100	>50	50.80	V	42
BH46	13.50	13.88	13.69	>100	>50	49.76	V	42
BH46	15.00	15.41	15.21	>100	>50	48.24	V	42
BH46	16.50	16.95	16.73	97	40	46.72	V	40
BH46	18.00	18.45	18.23	86	36	45.22	V	39
BH46	19.50	19.95	19.73	62	62	43.72	IV	
BH46	21.00	21.45	21.23	78	78	42.22	IV	
BH46	22.50	22.95	22.73	49	23	40.72	III	35
BH46	24.00	24.45	24.23	54	24	39.22	III	35
BH46	25.50	25.78	25.64	>100	>50	37.81	V	42
BH46	27.00	27.25	27.13	>100	>50	36.32	V	42
BH46	28.50	28.73	28.62	>100	>50	34.83	V	42
BH46	30.00	30.24	30.12	>100	>50	33.33	V	42
BH46	31.50	31.72	31.61	>100	>50	31.84	V	42
BH46	33.00	33.25	33.13	>100	>50	30.32	V	42
BH46	34.00	34.20	34.10	>100	>50	29.35	V	42
BH46	35.00	35.18	35.09	>100	>50	28.36	V	42
BH47	1.00	1.45	1.23	6	06	63.06	IIA	
BH47	3.00	3.45	3.23	10	10	61.06	II	
BH47	5.00	5.45	5.23	13	13	59.06	II	
BH47	8.00	8.45	8.23	19	19	56.06	II	
BH47	11.00	11.45	11.23	49	26	53.06	III	36
BH47	12.75	13.20	12.98	34	34	51.31	IV	
BH47	14.50	14.95	14.73	27	27	49.56	IV	
BH47	16.00	16.45	16.23	43	43	48.06	IV	
BH47	17.50	17.95	17.73	42	42	46.56	IV	
BH47	19.00	19.45	19.23	54	54	45.06	IV	
BH47	20.50	20.95	20.73	100	100	43.56	IV	
BH47	22.00	22.45	22.23	98	98	42.06	IV	
BH47	23.50	23.75	23.63	>100	100	40.66	IV	
BH47	25.00	25.25	25.13	>100	100	39.16	IV	
BH47	26.50	26.74	26.62	>100	100	37.66	IV	
BH47	28.00	28.21	28.11	>100	>50	36.18	V	42
BH47	29.50	29.69	29.60	>100	>50	34.69	V	42
BH47	31.00	31.20	31.10	>100	>50	33.18	V	42
BH47	32.50	32.68	32.59	>100	>50	31.69	V	42
BH47	34.00	34.19	34.10	>100	>50	30.19	V	42
BH47	35.00	35.18	35.09	>100	>50	29.19	V	42
BH48	1.00	1.45	1.23	8	08	62.90	Fill	
BH48	3.00	3.45	3.23	6	06	60.90	Fill	

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH48	5.00	5.45	5.23	10	10	58.90	II	
BH48	8.00	8.45	8.23	15	15	55.90	II	
BH48	11.00	11.45	11.23	17	13	52.90	I	31
BH48	14.00	14.45	14.23	37	37	49.90	IV	
BH48	15.80	16.25	16.03	46	46	48.10	IV	
BH48	17.50	17.95	17.73	45	45	46.40	IV	
BH48	19.00	19.45	19.23	51	51	44.90	IV	
BH48	21.00	21.38	21.19	>100	>50	42.94	V	42
BH48	22.50	22.95	22.73	100	>50	41.40	V	42
BH48	24.00	24.45	24.23	>100	>50	39.90	V	42
BH48	25.50	25.72	25.61	>100	>50	38.52	V	42
BH48	27.00	27.21	27.11	>100	>50	37.02	V	42
BH48	28.50	28.68	28.59	>100	>50	35.54	V	42
BH48	30.00	30.20	30.10	>100	>50	34.03	V	42
BH48	31.50	31.71	31.61	>100	>50	32.52	V	42
BH48	33.00	33.19	33.10	>100	>50	31.03	V	42
BH48	34.50	34.71	34.61	>100	>50	29.52	V	42
BH48	35.00	35.18	35.09	>100	>50	29.04	V	42
BH49	1.00	1.45	1.23	16	16	63.79	Fill	
BH49	3.00	3.45	3.23	33	33	61.79	II	
BH49	5.00	5.45	5.23	28	28	59.79	II	
BH49	8.00	8.45	8.23	73	73	56.79	IV	
BH49	9.80	10.25	10.03	53	53	54.99	IV	
BH49	11.50	11.88	11.69	>100	45	53.32	V	41
BH49	13.50	13.82	13.66	>100	45	51.35	V	41
BH49	15.00	15.23	15.12	>100	45	49.90	V	41
BH49	16.50	16.69	16.60	>100	45	48.42	V	41
BH49	18.00	18.26	18.13	>100	45	46.88	V	41
BH49	19.50	19.95	19.73	50	24	45.29	V	35
BH49	21.00	21.45	21.23	72	30	43.79	V	37
BH49	23.00	23.37	23.19	>100	>50	41.82	V	42
BH49	24.50	24.78	24.64	>100	>50	40.36	V	42
BH49	26.00	26.23	26.12	>100	>50	38.89	V	42
BH49	27.50	27.83	27.67	>100	>50	37.34	V	42
BH49	29.00	29.27	29.14	>100	>50	35.87	V	42
BH49	30.50	30.85	30.68	>100	>50	34.33	V	42
BH49	32.00	32.31	32.16	>100	>50	32.85	V	42
BH49	33.50	33.76	33.63	>100	>50	31.37	V	42
BH49	35.00	35.24	35.12	>100	>50	29.88	V	42
BH49	37.00	37.22	37.11	>100	>50	27.89	V	42
BH50	1.00	1.45	1.23	4	06	63.07	I	28
BH50	3.00	3.45	3.23	5	06	61.07	I	28

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH50	5.00	5.45	5.23	10	10	59.07	II	
BH50	8.00	8.45	8.23	15	15	56.07	II	
BH50	11.00	11.45	11.23	57	29	53.07	III	37
BH50	12.80	13.25	13.03	54	27	51.27	III	36
BH50	14.50	14.95	14.73	42	22	49.57	III	35
BH50	16.00	16.45	16.23	31	18	48.07	III	33
BH50	17.50	17.74	17.62	>100	41	46.68	V	40
BH50	19.00	19.45	19.23	86	35	45.07	V	38
BH50	20.50	20.95	20.73	81	33	43.57	V	38
BH50	22.00	22.34	22.17	>100	>50	42.13	V	42
BH50	24.00	24.27	24.14	>100	>50	40.16	V	42
BH50	25.50	25.95	25.73	79	38	38.57	V	39
BH50	27.00	27.45	27.23	94	34	37.07	V	38
BH50	28.50	28.74	28.62	>100	>50	35.68	V	42
BH50	30.00	30.22	30.11	>100	>50	34.19	V	42
BH50	31.50	31.74	31.62	>100	>50	32.68	V	42
BH50	33.00	33.23	33.12	>100	>50	31.18	V	42
BH50	34.50	34.75	34.63	>100	>50	29.67	V	42
BH50	35.00	35.19	35.10	>100	>50	29.20	V	42
BH51	1.00	1.45	1.23	5	05	60.29	Fill	
BH51	3.00	3.45	3.23	14	14	58.29	II	
BH51	5.00	5.45	5.23	11	11	56.29	II	
BH51	8.00	8.45	8.23	12	12	53.29	II	
BH51	11.00	11.45	11.23	51	27	50.29	III	36
BH51	12.50	12.95	12.73	30	30	48.79	II	
BH51	14.00	14.45	14.23	39	22	47.29	III	34
BH51	15.50	15.95	15.73	43	23	45.79	III	35
BH51	17.00	17.45	17.23	60	28	44.29	III	37
BH51	18.50	18.95	18.73	61	28	42.79	III	36
BH51	20.00	20.45	20.23	55	26	41.29	III	36
BH51	21.50	21.95	21.73	67	29	39.79	V	37
BH51	23.00	23.45	23.23	61	27	38.29	V	36
BH51	24.50	24.95	24.73	64	27	36.79	V	36
BH51	26.00	26.45	26.23	74	30	35.29	V	37
BH51	27.50	27.85	27.68	>100	>50	33.84	V	42
BH51	29.00	29.28	29.14	>100	>50	32.38	V	42
BH51	30.50	30.73	30.62	>100	>50	30.90	V	42
BH51	32.00	32.21	32.11	>100	>50	29.41	V	42
BH51	33.50	33.69	33.60	>100	>50	27.92	V	42
BH51	35.00	35.20	35.10	>100	>50	26.42	V	42
BH52	1.00	1.45	1.23	8	12	63.75	I	31
BH52	3.00	3.45	3.23	18	18	61.75	I	33

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH52	5.00	5.45	5.23	24	20	59.75	I	34
BH52	8.00	8.45	8.23	39	39	56.75	II	
BH52	11.00	11.36	11.18	>100	46	53.79	III	41
BH52	12.50	12.83	12.67	>100	46	52.31	III	41
BH52	14.00	14.45	14.23	41	22	50.75	III	34
BH52	15.50	15.95	15.73	44	22	49.25	III	35
BH52	17.00	17.45	17.23	41	21	47.75	III	34
BH52	18.00	18.45	18.23	35	19	46.75	III	33
BH52	19.50	19.95	19.73	55	55	45.25	IV	
BH52	21.00	21.45	21.23	78	78	43.75	IV	
BH52	22.50	22.95	22.73	81	81	42.25	IV	
BH52	24.00	24.45	24.23	86	86	40.75	IV	
BH52	25.50	25.95	25.73	88	88	39.25	IV	
BH52	27.00	27.45	27.23	95	95	37.75	IV	
BH52	28.50	28.84	28.67	>100	>50	36.30	V	42
BH52	30.00	30.22	30.11	>100	>50	34.86	V	42
BH52	31.50	31.68	31.59	>100	>50	33.38	V	42
BH52	33.00	33.27	33.14	>100	>50	31.84	V	42
BH52	34.50	34.73	34.62	>100	>50	30.36	V	42
BH52	36.00	36.25	36.13	>100	>50	28.85	V	42
BH52	37.50	37.71	37.61	>100	>50	27.37	V	42
BH52	39.00	39.19	39.10	>100	>50	25.88	V	42
BH52	40.00	40.22	40.11	>100	>50	24.86	V	42
BH53	1.00	1.45	1.23	5	05	71.00	Fill	
BH53	3.00	3.45	3.23	6	06	69.00	Fill	
BH53	5.00	5.45	5.23	20	18	67.00	I	33
BH53	8.00	8.45	8.23	17	15	64.00	I	32
BH53	11.00	11.45	11.23	30	30	61.00	II	
BH53	14.00	14.45	14.23	30	18	58.00	III	33
BH53	17.00	17.45	17.23	34	18	55.00	III	33
BH53	20.00	20.45	20.23	50	22	52.00	III	34
BH53	21.50	21.95	21.73	72	27	50.50	V	36
BH53	23.00	23.45	23.23	73	27	49.00	V	36
BH53	24.50	24.84	24.67	>100	>50	47.56	V	42
BH53	26.00	26.27	26.14	>100	>50	46.09	V	42
BH53	27.50	27.72	27.61	>100	>50	44.62	V	42
BH53	29.00	29.24	29.12	>100	>50	43.11	V	42
BH53	30.50	30.68	30.59	>100	>50	41.64	V	42
BH53	32.00	32.20	32.10	>100	>50	40.13	V	42
BH53	33.50	33.67	33.59	>100	>50	38.64	V	42
BH53	35.00	35.19	35.10	>100	>50	37.13	V	42
BH54	1.00	1.45	1.23	3	03	71.25	Fill	

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH54	3.00	3.45	3.23	6	06	69.25	Fill	
BH54	5.00	5.45	5.23	17	17	67.25	II	
BH54	8.00	8.45	8.23	23	17	64.25	I	33
BH54	11.00	11.45	11.23	26	18	61.25	I	33
BH54	14.00	14.45	14.23	29	29	58.25	II	
BH54	17.00	17.45	17.23	44	21	55.25	III	34
BH54	20.00	20.45	20.23	53	23	52.25	III	35
BH54	21.50	21.95	21.73	56	23	50.75	III	35
BH54	23.00	23.45	23.23	60	23	49.25	III	35
BH54	24.50	24.95	24.73	47	20	47.75	III	34
BH54	26.00	26.45	26.23	61	23	46.25	III	35
BH54	27.50	27.95	27.73	73	73	44.75	IV	
BH54	29.00	29.45	29.23	55	55	43.25	IV	
BH54	30.50	30.95	30.73	61	61	41.75	IV	
BH54	32.00	32.45	32.23	65	22	40.25	V	35
BH54	33.50	33.95	33.73	84	26	38.75	V	36
BH54	35.00	35.45	35.23	85	26	37.25	V	36
BH55	1.00	1.45	1.23	6	06	70.02	Fill	
BH55	3.00	3.45	3.23	8	08	68.02	Fill	
BH55	5.00	5.45	5.23	11	11	66.02	I	30
BH55	8.00	8.45	8.23	11	10	63.02	I	30
BH55	11.00	11.45	11.23	34	34	60.02	IV	
BH55	14.00	14.45	14.23	50	50	57.02	IV	
BH55	15.50	15.95	15.73	55	26	55.52	V	36
BH55	17.00	17.45	17.23	58	26	54.02	V	36
BH55	18.50	18.95	18.73	70	29	52.52	V	37
BH55	20.00	20.39	20.20	>100	>50	51.05	V	42
BH55	21.50	21.73	21.62	>100	>50	49.63	V	42
BH55	23.00	23.20	23.10	>100	>50	48.15	V	42
BH55	24.50	24.74	24.62	>100	>50	46.63	V	42
BH55	26.00	26.21	26.11	>100	>50	45.14	V	42
BH55	27.50	27.68	27.59	>100	>50	43.66	V	42
BH55	29.00	29.20	29.10	>100	>50	42.15	V	42
BH55	30.00	30.17	30.09	>100	>50	41.16	V	42
BH56	1.00	1.45	1.23	10	15	63.29	I	32
BH56	3.00	3.45	3.23	14	16	61.29	I	32
BH56	5.00	5.45	5.23	16	16	59.29	I	32
BH56	8.00	8.45	8.23	34	34	56.29	IV	
BH56	11.00	11.45	11.23	59	30	53.29	V	37
BH56	12.50	12.78	12.64	>100	>50	51.88	V	42
BH56	14.00	14.26	14.13	>100	>50	50.39	V	42
BH56	15.50	15.75	15.63	>100	>50	48.89	V	42

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH56	17.00	17.26	17.13	>100	>50	47.39	V	42
BH56	18.50	18.73	18.62	>100	>50	45.90	V	42
BH56	20.00	20.25	20.13	>100	>50	44.39	V	42
BH56	21.50	21.76	21.63	>100	>50	42.89	V	42
BH56	23.00	23.22	23.11	>100	>50	41.41	V	42
BH56	24.50	24.71	24.61	>100	>50	39.91	V	42
BH56	26.00	26.24	26.12	>100	>50	38.40	V	42
BH56	27.50	27.72	27.61	>100	>50	36.91	V	42
BH56	29.00	29.25	29.13	>100	>50	35.39	V	42
BH56	30.00	30.23	30.12	>100	>50	34.40	V	42
BH57	1.00	1.45	1.23	13	17	67.00	I	33
BH57	3.00	3.45	3.23	14	16	65.00	I	32
BH57	5.00	5.45	5.23	19	17	63.00	I	33
BH57	8.00	8.45	8.23	19	19	60.00	II	
BH57	11.00	11.45	11.23	99	99	57.00	IV	
BH57	12.50	12.88	12.69	>100	>50	55.54	V	42
BH57	14.00	14.29	14.15	>100	>50	54.08	V	42
BH57	15.50	15.75	15.63	>100	>50	52.60	V	42
BH57	17.00	17.28	17.14	>100	>50	51.09	V	42
BH57	18.50	18.83	18.67	>100	>50	49.56	V	42
BH57	20.00	20.23	20.12	>100	>50	48.11	V	42
BH57	21.50	21.88	21.69	>100	>50	46.54	V	42
BH57	23.00	23.26	23.13	>100	>50	45.10	V	42
BH57	24.50	24.76	24.63	>100	>50	43.60	V	42
BH57	26.00	26.23	26.12	>100	>50	42.11	V	42
BH57	27.50	27.71	27.61	>100	>50	40.62	V	42
BH57	29.00	29.18	29.09	>100	>50	39.14	V	42
BH57	30.00	30.20	30.10	>100	>50	38.13	V	42
BH58	1.00	1.45	1.23	27	27	78.83	I	36
BH58	3.00	3.45	3.23	23	21	76.83	I	34
BH58	5.00	5.45	5.23	14	14	74.83	I	32
BH58	8.00	8.45	8.23	54	31	71.83	III	37
BH58	9.50	9.84	9.67	>100	100	70.39	IV	
BH58	11.00	11.27	11.14	>100	100	68.92	IV	
BH58	12.50	12.74	12.62	>100	100	67.44	IV	
BH58	14.00	14.26	14.13	>100	100	65.93	IV	
BH58	15.50	15.72	15.61	>100	100	64.45	IV	
BH58	17.00	17.25	17.13	>100	100	62.93	IV	
BH58	18.50	18.74	18.62	>100	100	61.44	IV	
BH58	20.00	20.20	20.10	>100	100	59.96	IV	
BH58	21.50	21.72	21.61	>100	>50	58.45	V	42
BH58	23.00	23.25	23.13	>100	>50	56.93	V	42

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH58	24.50	24.84	24.67	>100	>50	55.39	V	42
BH58	26.00	26.28	26.14	>100	>50	53.92	V	42
BH58	27.50	27.73	27.62	>100	>50	52.44	V	42
BH58	29.00	29.21	29.11	>100	>50	50.95	V	42
BH58	30.50	30.73	30.62	>100	100	49.44	IV	
BH58	32.00	32.20	32.10	>100	100	47.96	IV	
BH58	33.50	33.71	33.61	>100	100	46.45	IV	
BH58	35.00	35.22	35.11	>100	100	44.95	IV	
BH58	36.50	36.74	36.62	>100	100	43.44	IV	
BH58	38.00	38.23	38.12	>100	>50	41.94	V	42
BH58	40.00	40.21	40.11	>100	>50	39.95	V	42
BH59	1.00	1.45	1.23	99	99	80.09	Fill	
BH59	3.00	3.45	3.23	54	39	78.09	III	39
BH59	5.00	5.45	5.23	28	22	76.09	III	34
BH59	8.00	8.45	8.23	72	39	73.09	III	39
BH59	11.00	11.39	11.20	>100	>50	70.12	III	42
BH59	12.50	12.83	12.67	>100	>50	68.65	III	42
BH59	14.00	14.35	14.18	>100	100	67.14	IV	
BH59	15.50	15.88	15.69	>100	100	65.62	IV	
BH59	17.00	17.45	17.23	>100	100	64.09	IV	
BH59	18.50	18.88	18.69	>100	100	62.62	IV	
BH59	20.00	20.20	20.10	>100	>50	61.21	V	42
BH59	21.50	21.73	21.62	>100	>50	59.70	V	42
BH59	23.00	23.24	23.12	>100	>50	58.19	V	42
BH59	24.50	24.75	24.63	>100	>50	56.69	V	42
BH59	26.00	26.26	26.13	>100	>50	55.18	V	42
BH59	27.50	27.73	27.62	>100	>50	53.70	V	42
BH59	29.00	29.22	29.11	>100	>50	52.20	V	42
BH59	30.50	30.73	30.62	>100	>50	50.70	V	42
BH59	32.00	32.25	32.13	>100	>50	49.19	V	42
BH59	33.50	33.76	33.63	>100	>50	47.68	V	42
BH59	35.00	35.22	35.11	>100	>50	46.20	V	42
BH59	36.50	36.74	36.62	>100	>50	44.69	V	42
BH59	38.00	38.21	38.11	>100	>50	43.21	V	42
BH59	39.50	39.69	39.60	>100	>50	41.72	V	42
BH59	40.00	40.17	40.09	>100	>50	41.23	V	42
BH60	1.00	1.45	1.23	16	16	76.79	Fill	
BH60	3.00	3.45	3.23	54	39	74.79	III	39
BH60	4.00	4.45	4.23	61	40	73.79	III	40
BH60	5.00	5.45	5.23	75	45	72.79	III	41
BH60	6.50	6.95	6.73	60	35	71.29	III	38
BH60	8.00	8.45	8.23	28	28	69.79	II	

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH60	11.00	11.45	11.23	84	40	66.79	V	40
BH60	12.50	12.95	12.73	79	36	65.29	V	39
BH60	14.00	14.45	14.23	67	31	63.79	V	37
BH60	15.50	15.95	15.73	55	55	62.29	IV	
BH60	17.00	17.37	17.19	>100	>50	60.83	V	42
BH60	18.50	18.89	18.70	>100	>50	59.32	V	42
BH60	20.00	20.37	20.19	>100	>50	57.83	V	42
BH60	21.50	21.95	21.73	75	28	56.29	V	36
BH60	23.00	23.45	23.23	64	25	54.79	V	35
BH60	24.50	24.95	24.73	44	44	53.29	IV	
BH60	26.00	26.45	26.23	52	52	51.79	IV	
BH60	27.50	27.95	27.73	37	17	50.29	III	33
BH60	29.00	29.45	29.23	44	44	48.79	IV	
BH60	30.50	30.95	30.73	68	68	47.29	IV	
BH60	32.00	32.45	32.23	53	53	45.79	IV	
BH60	33.50	33.95	33.73	67	23	44.29	V	35
BH60	35.00	35.45	35.23	78	25	42.79	V	35
BH60	36.50	36.89	36.70	>100	>50	41.32	V	42
BH60	38.00	38.37	38.19	>100	>50	39.83	V	42
BH60	40.00	40.35	40.18	>100	>50	37.84	V	42
BH61	1.00	1.45	1.23	12	12	79.19	Fill	
BH61	3.00	3.45	3.23	17	17	77.19	Fill	
BH61	5.00	5.45	5.23	16	16	75.19	II	
BH61	7.00	7.45	7.23	35	23	73.19	III	35
BH61	8.00	8.45	8.23	54	31	72.19	III	37
BH61	11.00	11.45	11.23	83	39	69.19	III	40
BH61	14.00	14.37	14.19	>100	100	66.23	IV	
BH61	15.50	15.74	15.62	>100	100	64.79	IV	
BH61	17.00	17.38	17.19	>100	100	63.22	IV	
BH61	18.50	18.75	18.63	>100	100	61.79	IV	
BH61	20.00	20.23	20.12	>100	100	60.30	IV	
BH61	21.50	21.74	21.62	>100	100	58.79	IV	
BH61	23.00	23.45	23.23	90	90	57.19	IV	
BH61	24.50	24.89	24.70	>100	100	55.72	IV	
BH61	26.00	26.37	26.19	>100	100	54.23	IV	
BH61	27.50	27.85	27.68	>100	100	52.74	IV	
BH61	29.00	29.25	29.13	>100	100	51.29	IV	
BH61	30.50	30.88	30.69	>100	100	49.72	IV	
BH61	32.00	32.37	32.19	>100	>50	48.23	V	42
BH61	33.50	33.88	33.69	>100	>50	46.72	V	42
BH61	35.00	35.23	35.12	>100	>50	45.30	V	42
BH61	36.50	36.78	36.64	>100	>50	43.77	V	42
BH61	38.00	38.25	38.13	>100	>50	42.29	V	42

CORRECTION FOR STANDARD PENETRATION TEST VALUES

Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH61	39.50	39.71	39.61	>100	>50	40.81	V	42
BH61	40.00	40.18	40.09	>100	>50	40.32	V	42
BH62	1.00	1.45	1.23	5	07	76.90	I	29
BH62	3.00	3.45	3.23	7	08	74.90	I	29
BH62	5.00	5.45	5.23	12	12	72.90	I	31
BH62	8.00	8.45	8.23	20	16	69.90	I	32
BH62	11.00	11.45	11.23	22	16	66.90	I	32
BH62	14.00	14.45	14.23	51	51	63.90	IV	
BH62	15.50	15.95	15.73	58	58	62.40	IV	
BH62	17.00	17.45	17.23	64	64	60.90	IV	
BH62	18.50	18.95	18.73	65	65	59.40	IV	
BH62	20.00	20.45	20.23	73	73	57.90	IV	
BH62	21.50	21.95	21.73	75	75	56.40	IV	
BH62	23.00	23.38	23.19	>100	>50	54.93	V	42
BH62	24.50	24.83	24.67	>100	>50	53.46	V	42
BH62	26.00	26.45	26.23	63	63	51.90	IV	
BH62	27.50	27.95	27.73	71	71	50.40	IV	
BH62	29.00	29.35	29.18	>100	>50	48.95	V	42
BH62	30.50	30.87	30.69	>100	>50	47.44	V	42
BH62	32.00	32.28	32.14	>100	>50	45.98	V	42
BH62	33.50	33.76	33.63	>100	>50	44.49	V	42
BH62	35.00	35.22	35.11	>100	>50	43.01	V	42
BH62	36.50	36.75	36.63	>100	>50	41.50	V	42
BH62	38.00	38.23	38.12	>100	>50	40.01	V	42
BH62	40.00	40.19	40.10	>100	>50	38.03	V	42
BH63	1.00	1.45	1.23	4	04	61.16	Fill	
BH63	3.00	3.45	3.23	7	08	59.16	I	29
BH63	5.00	5.45	5.23	13	13	57.16	II	
BH63	8.00	8.45	8.23	40	25	54.16	III	35
BH63	11.00	11.45	11.23	60	31	51.16	III	37
BH63	12.50	12.95	12.73	57	28	49.66	III	37
BH63	14.00	14.45	14.23	35	20	48.16	III	34
BH63	15.50	15.95	15.73	28	28	46.66	II	
BH63	17.00	17.45	17.23	87	37	45.16	V	39
BH63	18.50	18.95	18.73	40	40	43.66	IV	
BH63	20.30	20.75	20.53	51	24	41.86	V	35
BH63	21.50	21.95	21.73	82	33	40.66	V	38
BH63	23.00	23.45	23.23	93	36	39.16	V	39
BH63	24.50	24.87	24.69	>100	>50	37.70	V	42
BH63	26.00	26.39	26.20	>100	>50	36.19	V	42
BH63	27.50	27.84	27.67	>100	>50	34.72	V	42
BH63	29.00	29.27	29.14	>100	>50	33.25	V	42

CORRECTION FOR STANDARD PENETRATION TEST VALUES

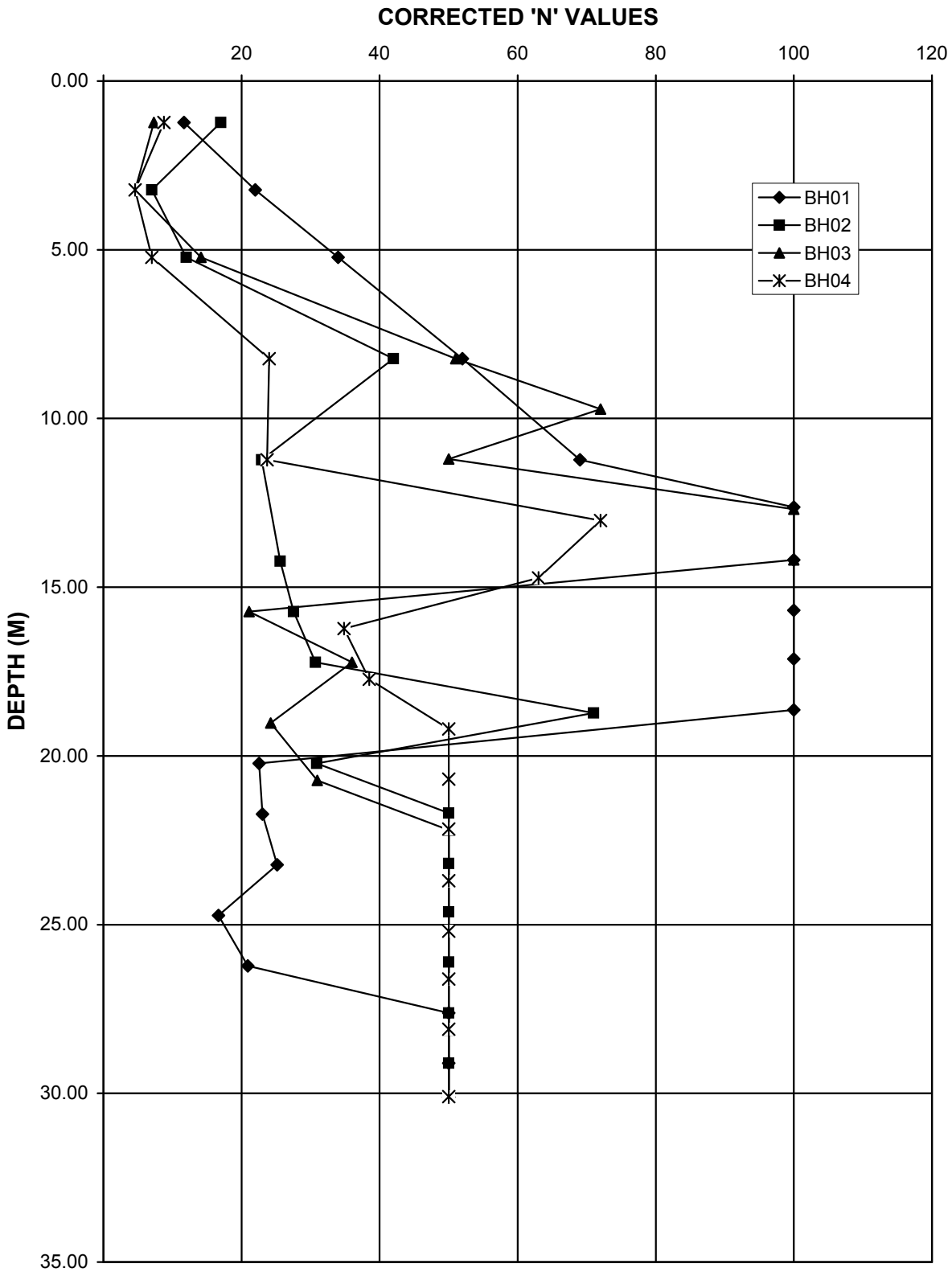
Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BH63	30.50	30.82	30.66	>100	>50	31.73	V	42
BH63	32.00	32.26	32.13	>100	>50	30.26	V	42
BH63	33.50	33.75	33.63	>100	>50	28.76	V	42
BH63	35.00	35.23	35.12	>100	>50	27.27	V	42
BH63	36.50	36.74	36.62	>100	>50	25.77	V	42
BH63	38.00	38.23	38.12	>100	>50	24.27	V	42
BH63	40.00	40.21	40.11	>100	>50	22.28	V	42
BH64	1.00	1.45	1.23	14	14	62.02	Fill	
BH64	3.00	3.45	3.23	8	09	60.02	I	30
BH64	5.00	5.45	5.23	16	16	58.02	I	32
BH64	8.00	8.45	8.23	28	28	55.02	II	
BH64	11.00	11.45	11.23	39	23	52.02	III	35
BH64	14.00	14.45	14.23	43	43	49.02	IV	
BH64	17.00	17.45	17.23	35	35	46.02	IV	
BH64	18.80	19.25	19.03	30	30	44.22	IV	
BH64	20.50	20.95	20.73	38	38	42.52	IV	
BH64	22.00	22.45	22.23	73	30	41.02	V	37
BH64	23.50	23.90	23.70	>100	>50	39.55	V	42
BH64	25.00	25.37	25.19	>100	>50	38.06	V	42
BH64	26.50	26.84	26.67	>100	>50	36.58	V	42
BH64	28.00	28.27	28.14	>100	>50	35.11	V	42
BH64	29.50	29.74	29.62	>100	>50	33.63	V	42
BH64	31.00	31.23	31.12	>100	>50	32.13	V	42
BH64	32.50	32.75	32.63	>100	>50	30.62	V	42
BH64	34.00	34.21	34.11	>100	>50	29.14	V	42
BH64	35.50	35.74	35.62	>100	>50	27.63	V	42
BH64	37.00	37.20	37.10	>100	>50	26.15	V	42
BH64	38.50	38.72	38.61	>100	>50	24.64	V	42
BH64	40.00	40.19	40.10	>100	>50	23.15	V	42
BHT1	1.00	1.45	1.23	5	07	77.72	I	29
BHT1	3.00	3.45	3.23	11	13	75.72	I	31
BHT1	5.00	5.45	5.23	26	21	73.72	I	34
BHT1	8.00	8.45	8.23	36	36	70.72	IV	
BHT1	11.00	11.37	11.19	>100	>50	67.76	III	42
BHT1	12.50	12.87	12.69	>100	>50	66.26	III	42
BHT1	14.00	14.45	14.23	76	34	64.72	III	38
BHT1	15.50	15.95	15.73	64	29	63.22	V	37
BHT1	17.00	17.45	17.23	70	30	61.72	V	37
BHT1	18.50	18.95	18.73	74	30	60.22	V	37
BHT1	20.00	20.45	20.23	78	30	58.72	V	37
BHT1	21.50	21.95	21.73	77	29	57.22	V	37
BHT1	23.00	23.45	23.23	22	12	55.72	V	31

CORRECTION FOR STANDARD PENETRATION TEST VALUES

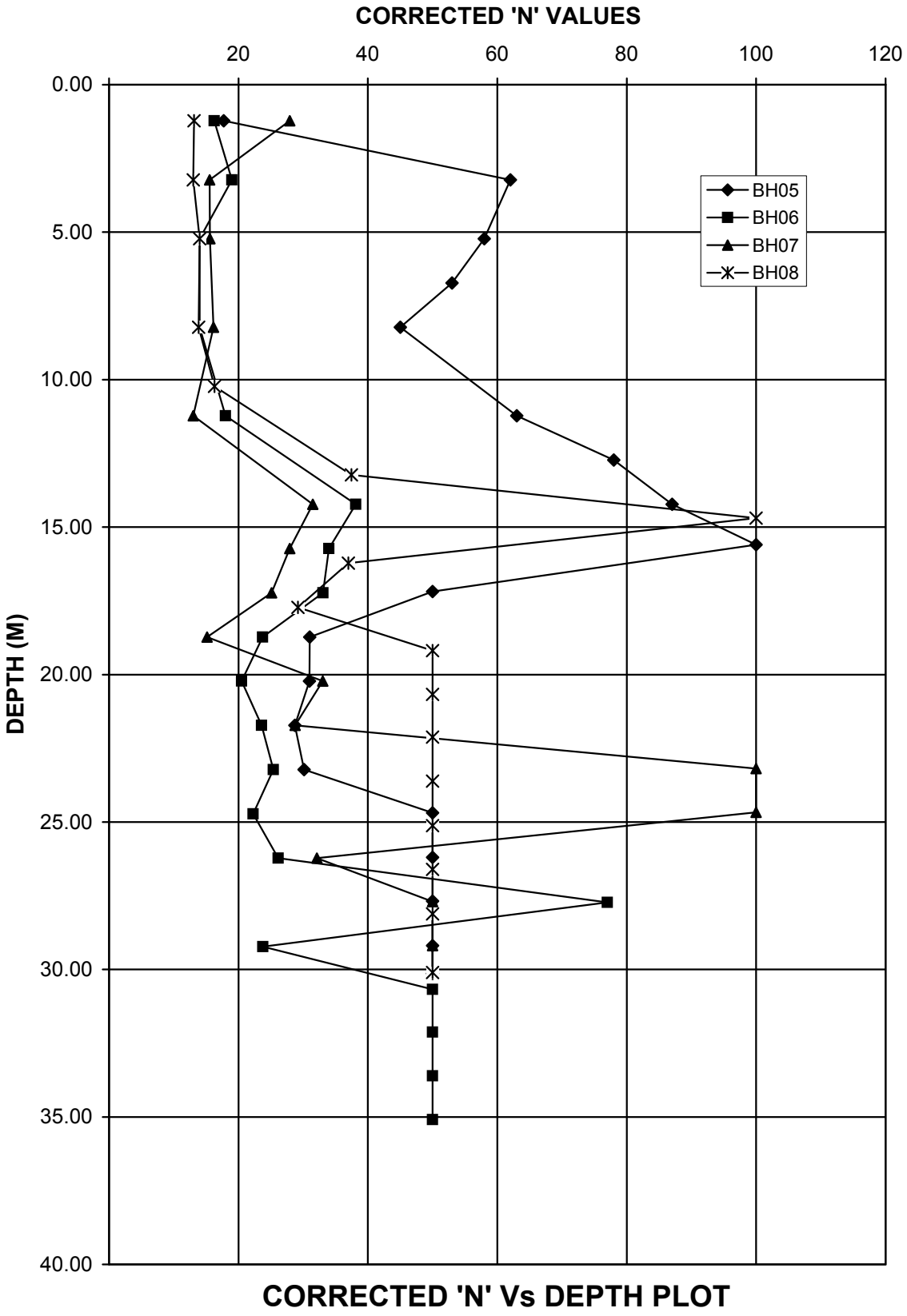
Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BHT1	24.50	24.95	24.73	68	25	54.22	V	35
BHT1	26.00	26.45	26.23	84	28	52.72	V	37
BHT1	27.50	27.89	27.70	>100	>50	51.25	V	42
BHT1	29.00	29.37	29.19	>100	>50	49.76	V	42
BHT1	30.50	30.95	30.73	59	59	48.22	IV	
BHT1	32.00	32.45	32.23	75	75	46.72	IV	
BHT1	33.50	33.95	33.73	82	82	45.22	IV	
BHT1	35.00	35.45	35.23	89	89	43.72	IV	
BHT1	36.50	36.95	36.73	97	97	42.22	IV	
BHT1	38.00	38.45	38.23	78	78	40.72	IV	
BHT1	39.50	39.95	39.73	70	70	39.22	IV	
BHT1	40.00	40.45	40.23	81	81	38.72	IV	
BHT2	1.00	1.45	1.23	8	12	77.86	I	31
BHT2	3.00	3.45	3.23	13	15	75.86	I	32
BHT2	5.00	5.45	5.23	22	19	73.86	I	33
BHT2	8.00	8.45	8.23	47	28	70.86	III	36
BHT2	9.63	10.08	9.86	53	53	69.23	IV	
BHT2	11.50	11.95	11.73	90	90	67.36	IV	
BHT2	13.00	13.40	13.20	>100	100	65.89	IV	
BHT2	14.50	14.88	14.69	>100	100	64.40	IV	
BHT2	16.00	16.24	16.12	>100	100	62.97	IV	
BHT2	17.50	17.73	17.62	>100	100	61.47	IV	
BHT2	19.00	19.23	19.12	>100	>50	59.97	V	42
BHT2	20.50	20.89	20.70	>100	>50	58.39	V	42
BHT2	22.00	22.41	22.21	>100	>50	56.88	V	42
BHT2	23.50	23.89	23.70	>100	>50	55.39	V	42
BHT2	25.00	25.38	25.19	>100	>50	53.90	V	42
BHT2	26.50	26.89	26.70	>100	>50	52.39	V	42
BHT2	28.00	28.45	28.23	80	80	50.86	IV	
BHT2	29.50	29.95	29.73	79	79	49.36	IV	
BHT2	31.00	31.45	31.23	87	87	47.86	IV	
BHT2	32.50	32.95	32.73	83	83	46.36	IV	
BHT2	34.00	34.45	34.23	89	89	44.86	IV	
BHT2	35.50	35.95	35.73	95	95	43.36	IV	
BHT2	37.00	37.45	37.23	87	87	41.86	IV	
BHT2	38.50	38.95	38.73	80	80	40.36	IV	
BHT2	40.00	40.45	40.23	78	78	38.86	IV	
BHT3	1.00	1.45	1.23	8	12	77.86	I	31
BHT3	3.00	3.45	3.23	16	17	75.86	I	33
BHT3	5.00	5.45	5.23	22	22	73.86	II	
BHT3	8.00	8.45	8.23	39	24	70.86	III	35
BHT3	11.00	11.45	11.23	60	31	67.86	V	37

CORRECTION FOR STANDARD PENETRATION TEST VALUES

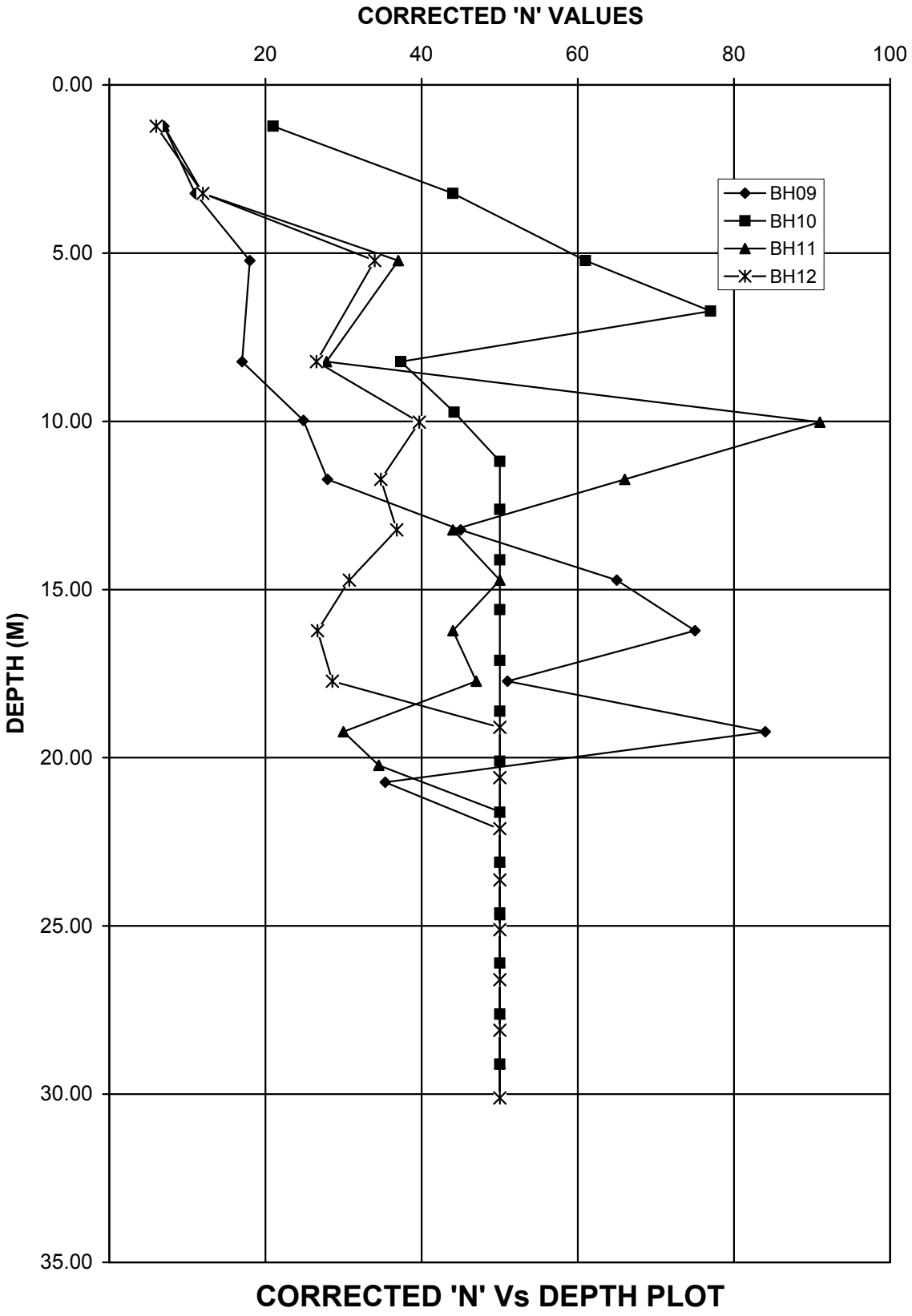
Bore Hole No:	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Field 'N' Values	Cor. 'N' for Ovp. & Dilatancy (if reqd)	Reduced Level (M)	Stratum	Computed Phi in Degrees
BHT3	14.00	14.45	14.23	77	34	64.86	V	38
BHT3	15.50	15.87	15.69	>100	100	63.40	IV	
BHT3	17.00	17.39	17.20	>100	>50	61.89	V	42
BHT3	18.50	18.85	18.68	>100	>50	60.41	V	42
BHT3	20.00	20.36	20.18	>100	>50	58.91	V	42
BHT3	21.50	21.83	21.67	>100	>50	57.42	V	42
BHT3	23.00	23.35	23.18	>100	>50	55.91	V	42
BHT3	24.50	24.87	24.69	>100	>50	54.40	V	42
BHT3	26.00	26.35	26.18	>100	>50	52.91	V	42
BHT3	27.50	27.88	27.69	>100	>50	51.40	V	42
BHT3	29.00	29.45	29.23	64	64	49.86	IV	
BHT3	30.50	30.95	30.73	65	65	48.36	IV	
BHT3	32.00	32.45	32.23	99	30	46.86	V	37
BHT3	33.50	33.90	33.70	>100	29	45.39	V	37
BHT3	35.00	35.37	35.19	>100	29	43.90	V	37
BHT3	36.50	36.74	36.62	>100	29	42.47	V	37
BHT3	38.00	38.22	38.11	>100	29	40.98	V	37
BHT3	40.00	40.24	40.12	>100	29	38.97	V	37
BHT4	1.00	1.45	1.23	9	13	77.84	I	31
BHT4	3.00	3.45	3.23	22	20	75.84	I	34
BHT4	5.00	5.45	5.23	36	36	73.84	II	
BHT4	8.00	8.45	8.23	77	41	70.84	V	40
BHT4	9.50	9.95	9.73	83	41	69.34	V	40
BHT4	11.00	11.45	11.23	86	41	67.84	V	40
BHT4	12.50	12.95	12.73	89	89	66.34	IV	
BHT4	14.00	14.45	14.23	97	41	64.84	V	40
BHT4	15.50	15.95	15.73	93	38	63.34	V	39
BHT4	17.00	17.45	17.23	100	39	61.84	V	39
BHT4	18.50	18.87	18.69	>100	>50	60.38	V	42
BHT4	20.00	20.36	20.18	>100	>50	58.88	V	42
BHT4	21.50	21.89	21.70	>100	>50	57.37	V	42
BHT4	23.00	23.40	23.20	>100	>50	55.86	V	42
BHT4	24.50	24.75	24.63	>100	>50	54.44	V	42
BHT4	26.00	26.22	26.11	>100	>50	52.95	V	42
BHT4	27.50	27.95	27.73	71	71	51.34	IV	
BHT4	29.00	29.45	29.23	90	90	49.84	IV	
BHT4	30.50	30.95	30.73	86	86	48.34	IV	
BHT4	32.00	32.45	32.23	82	82	46.84	IV	
BHT4	33.50	33.95	33.73	88	88	45.34	IV	
BHT4	35.00	35.45	35.23	86	86	43.84	IV	
BHT4	36.50	36.95	36.73	85	85	42.34	IV	
BHT4	38.00	38.45	38.23	95	95	40.84	IV	
BHT4	40.00	40.45	40.23	>100	100	38.84	IV	



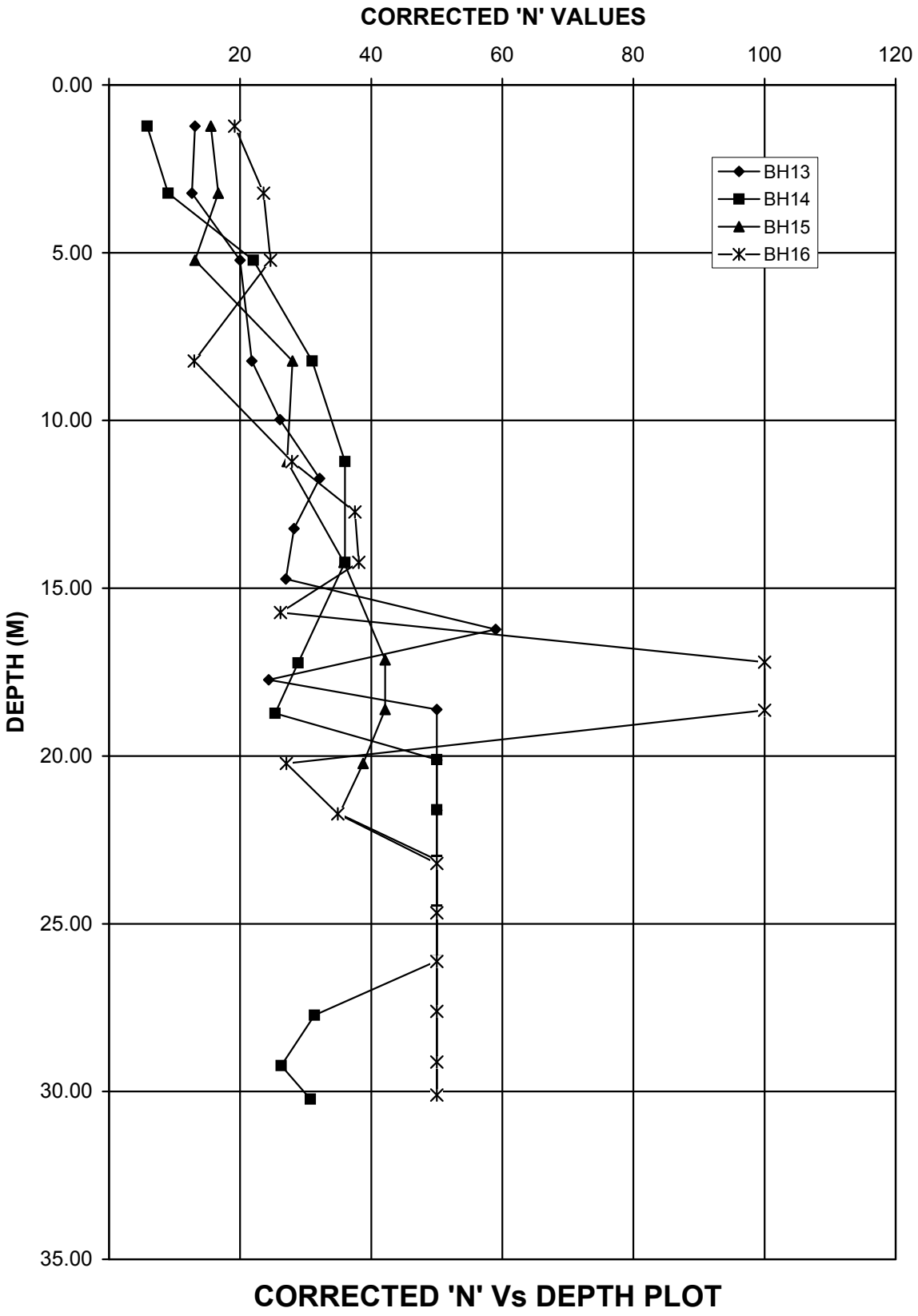
CORRECTED 'N' Vs DEPTH PLOT



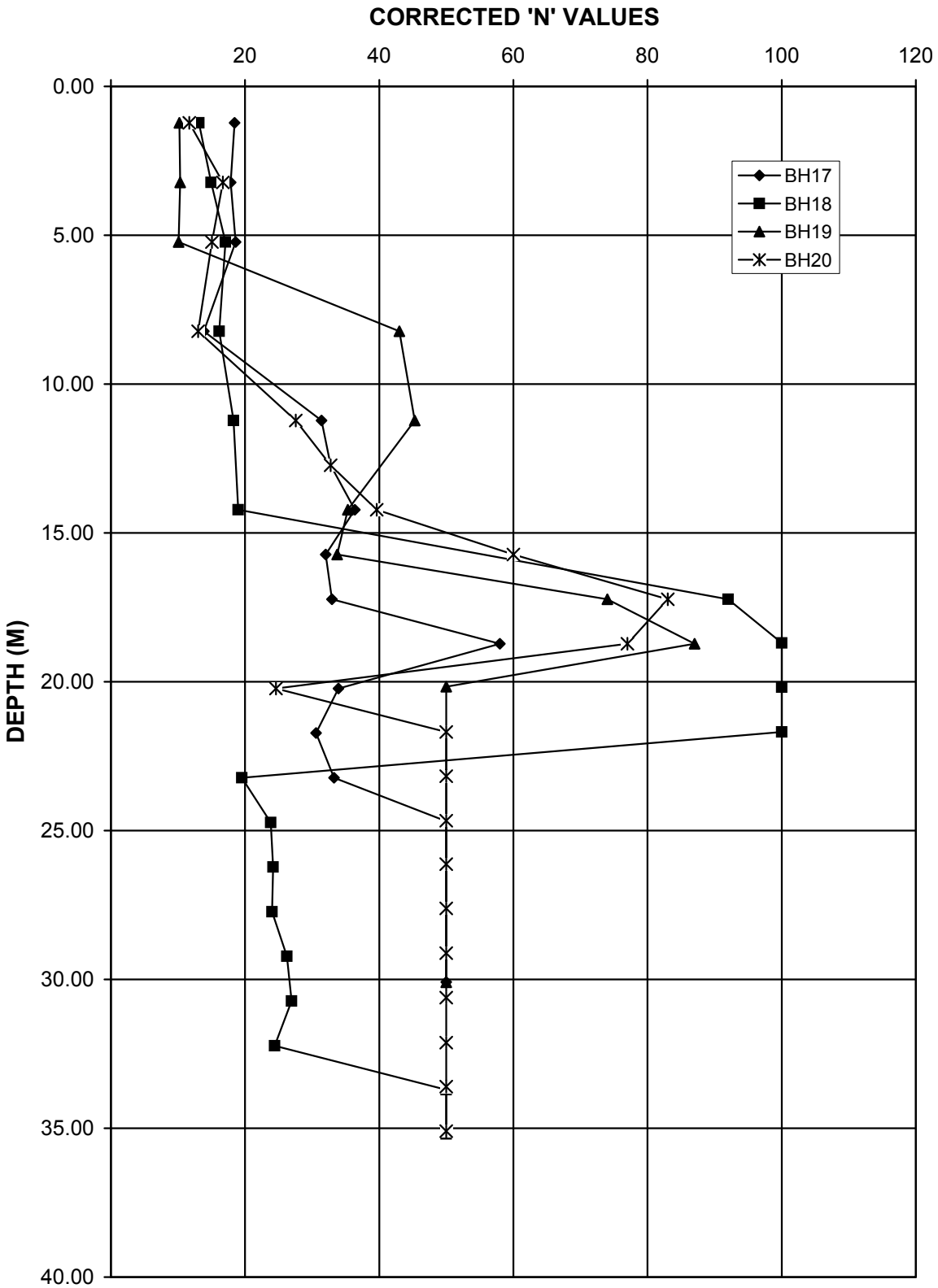
CORRECTED 'N' Vs DEPTH PLOT



CORRECTED 'N' Vs DEPTH PLOT



CORRECTED 'N' Vs DEPTH PLOT



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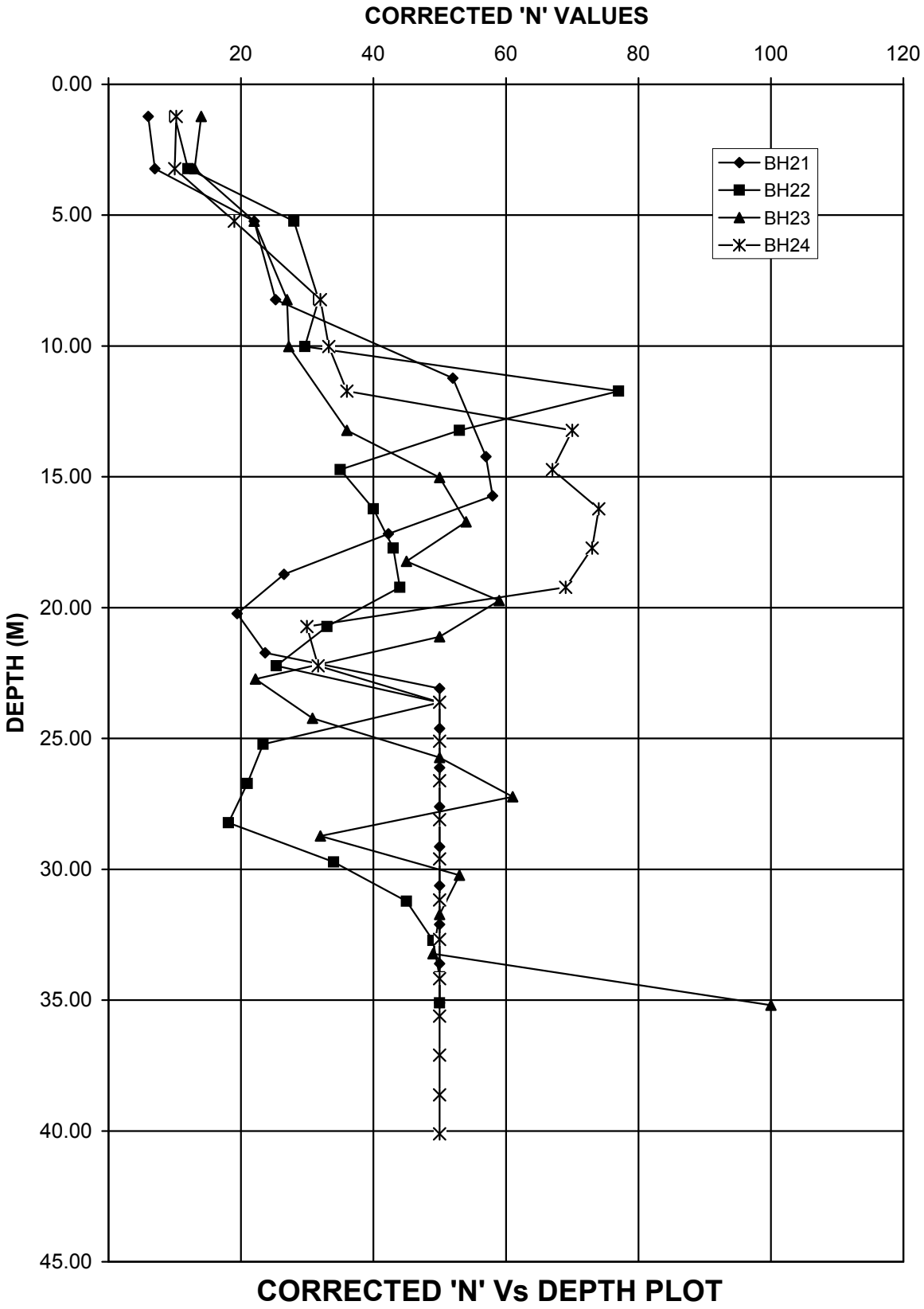

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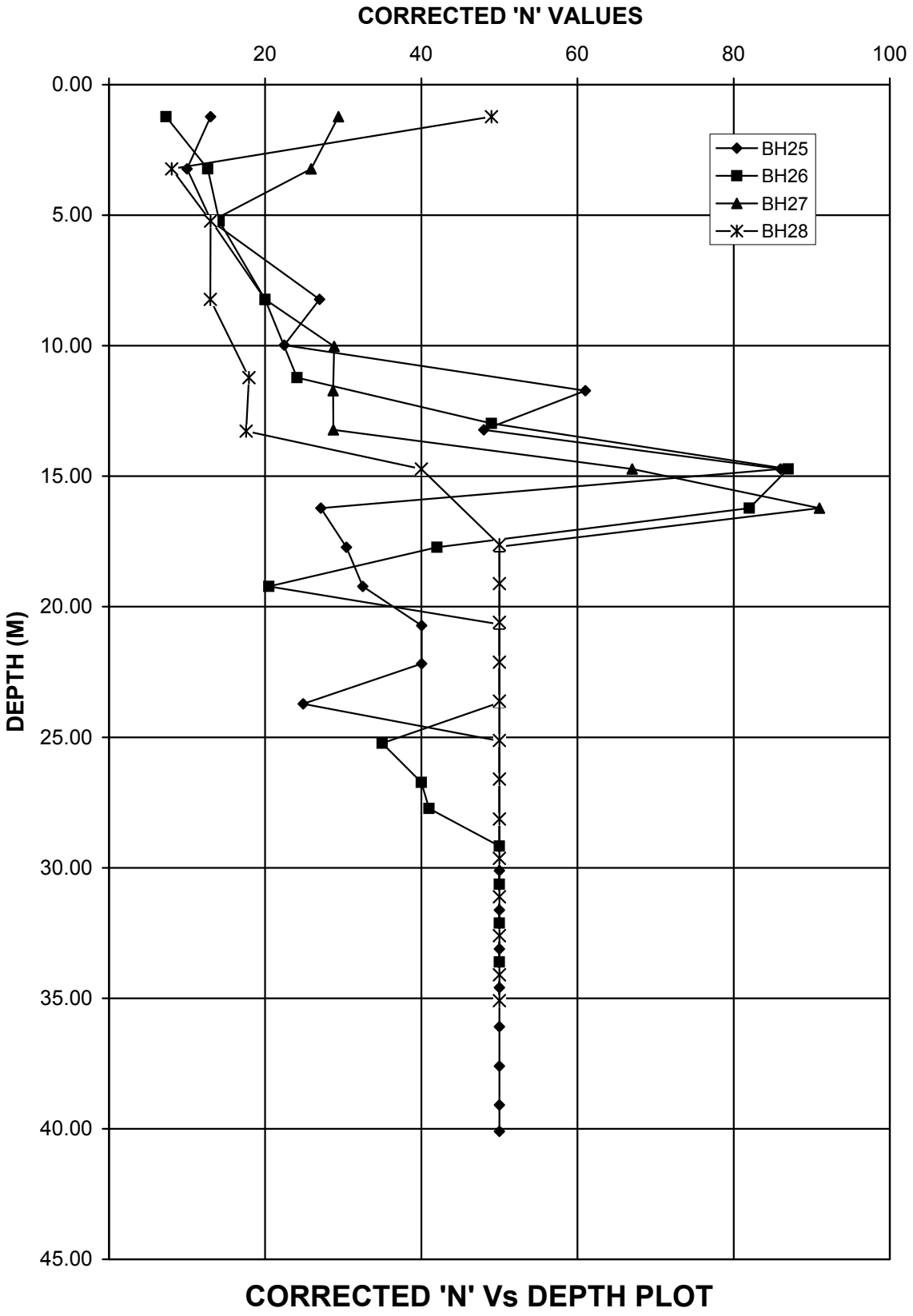

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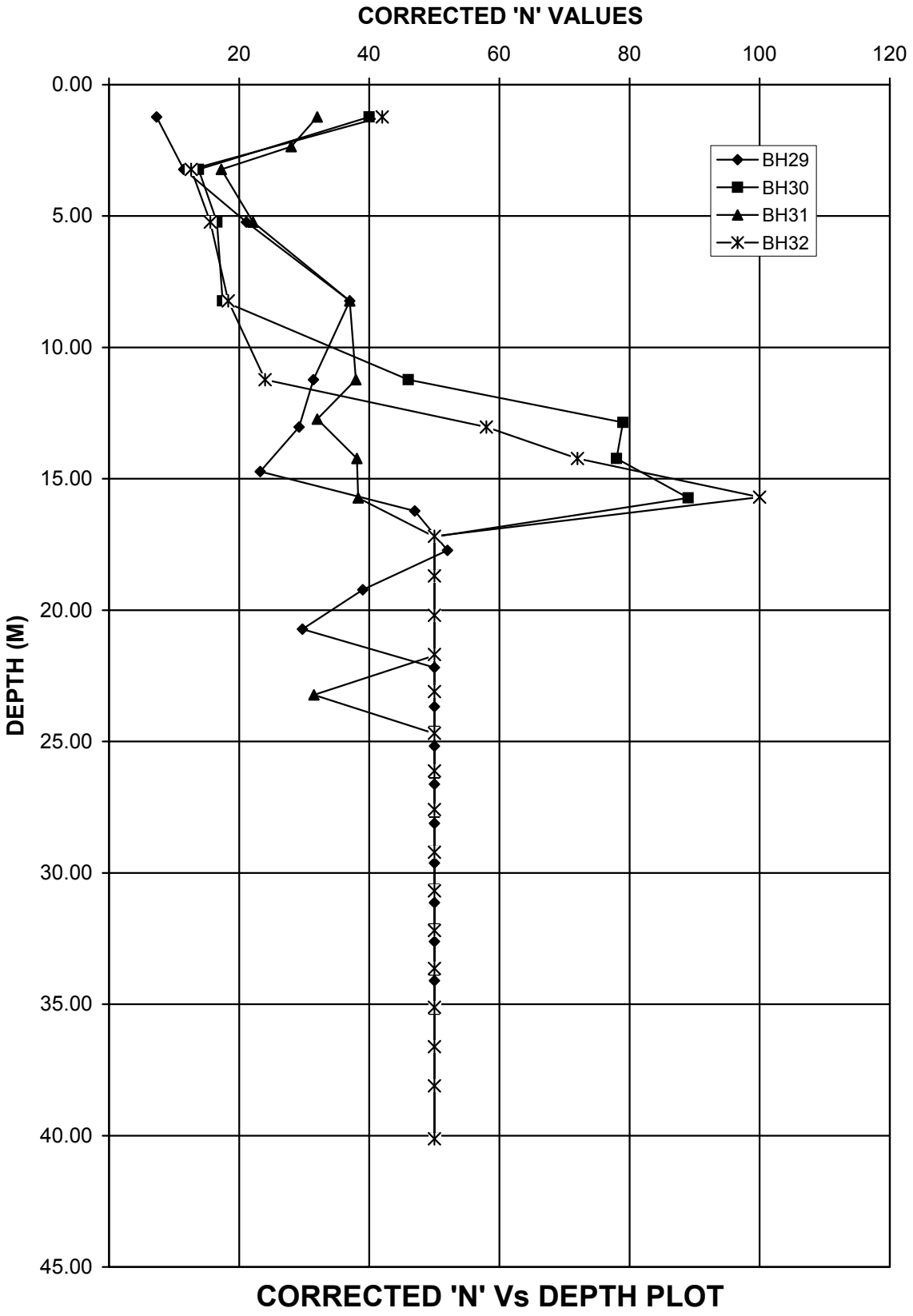

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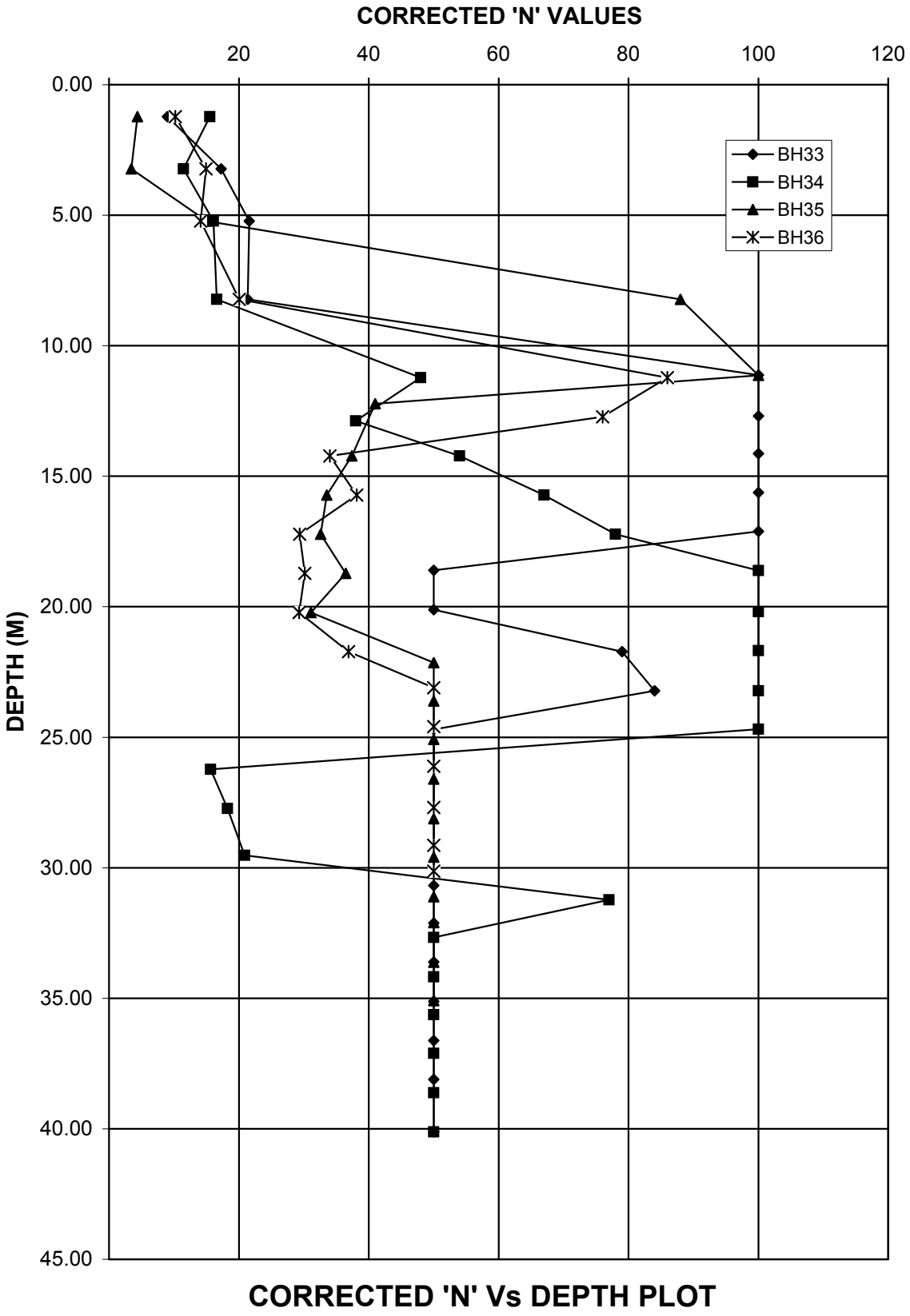

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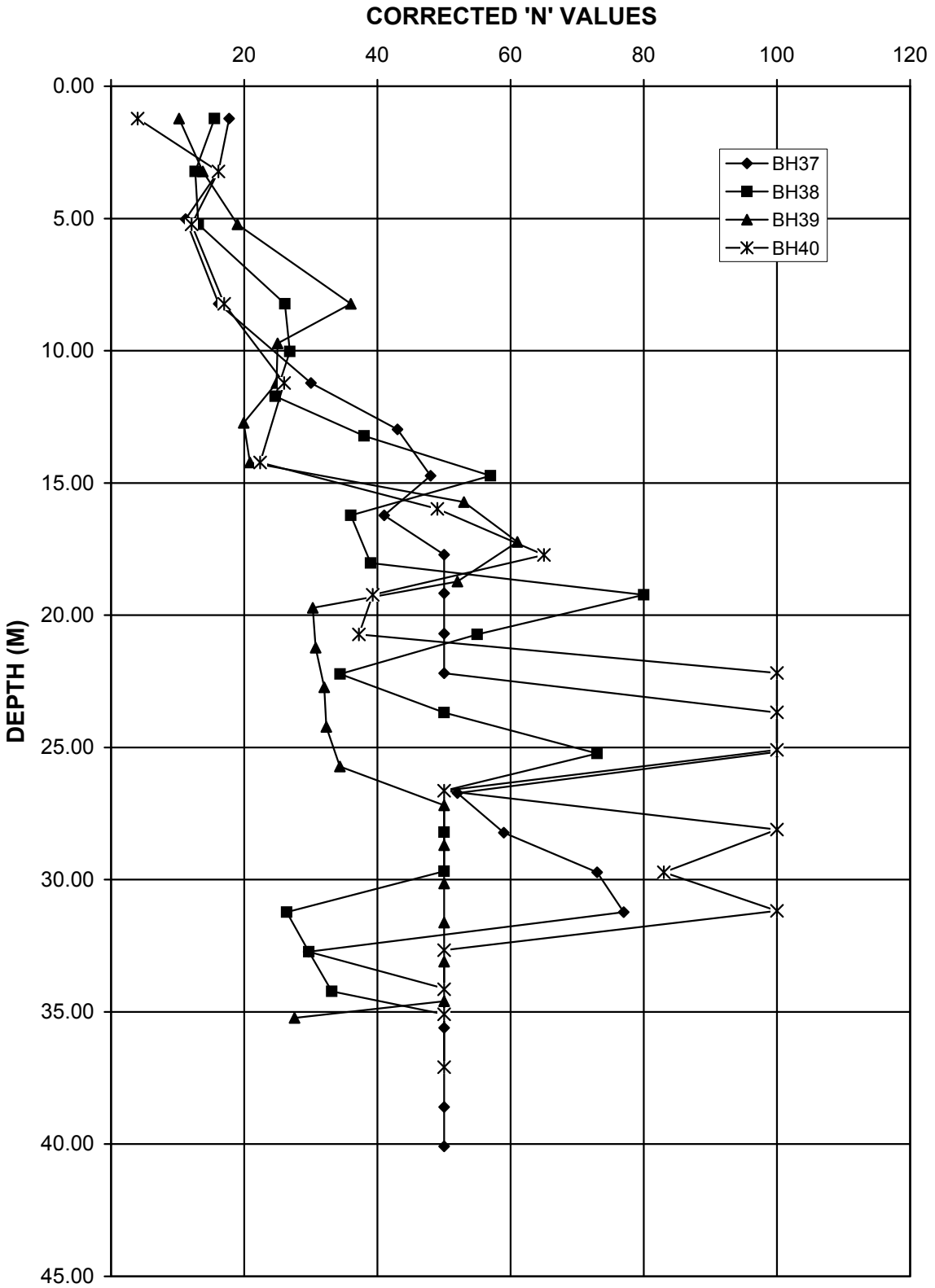

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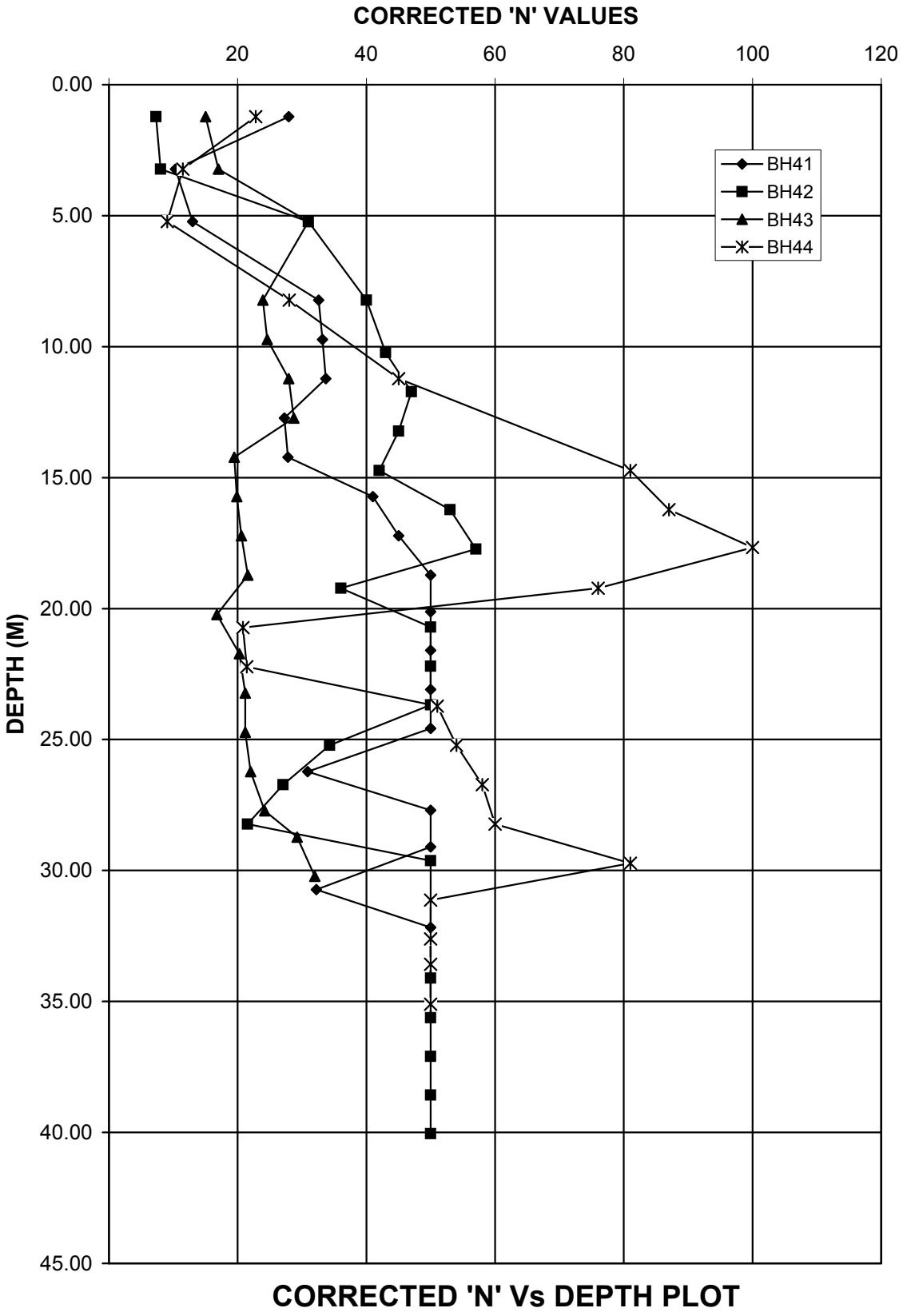

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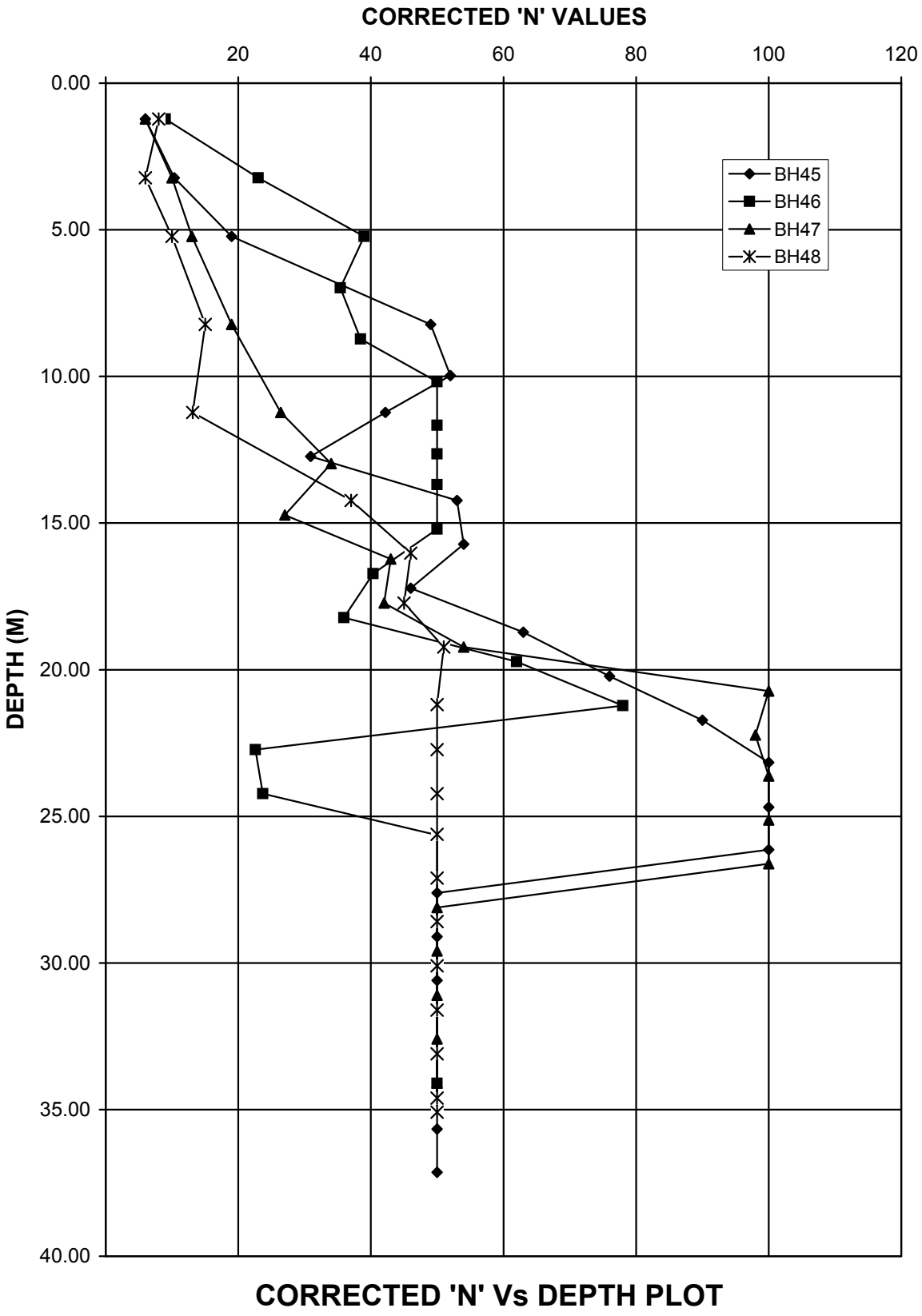

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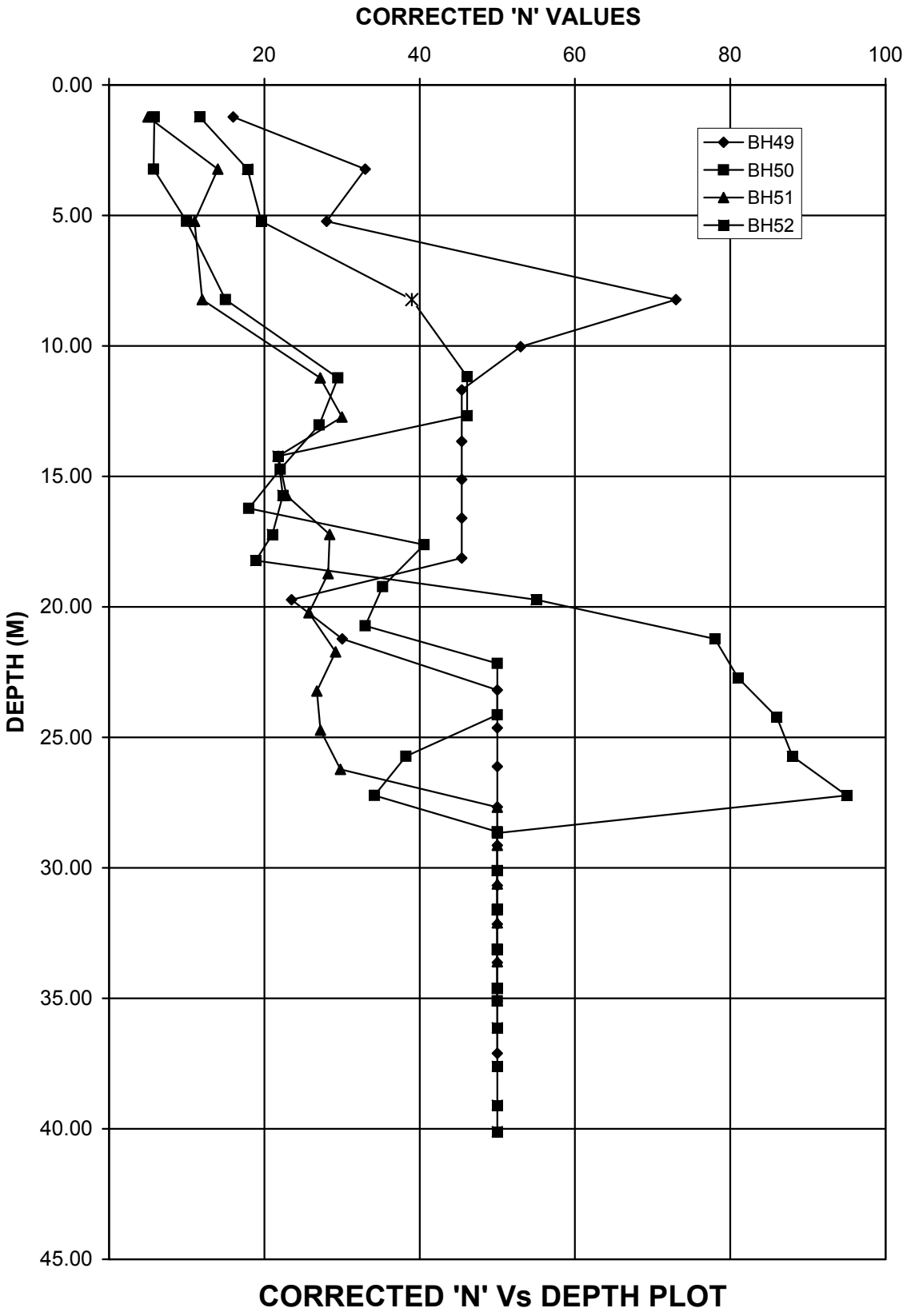

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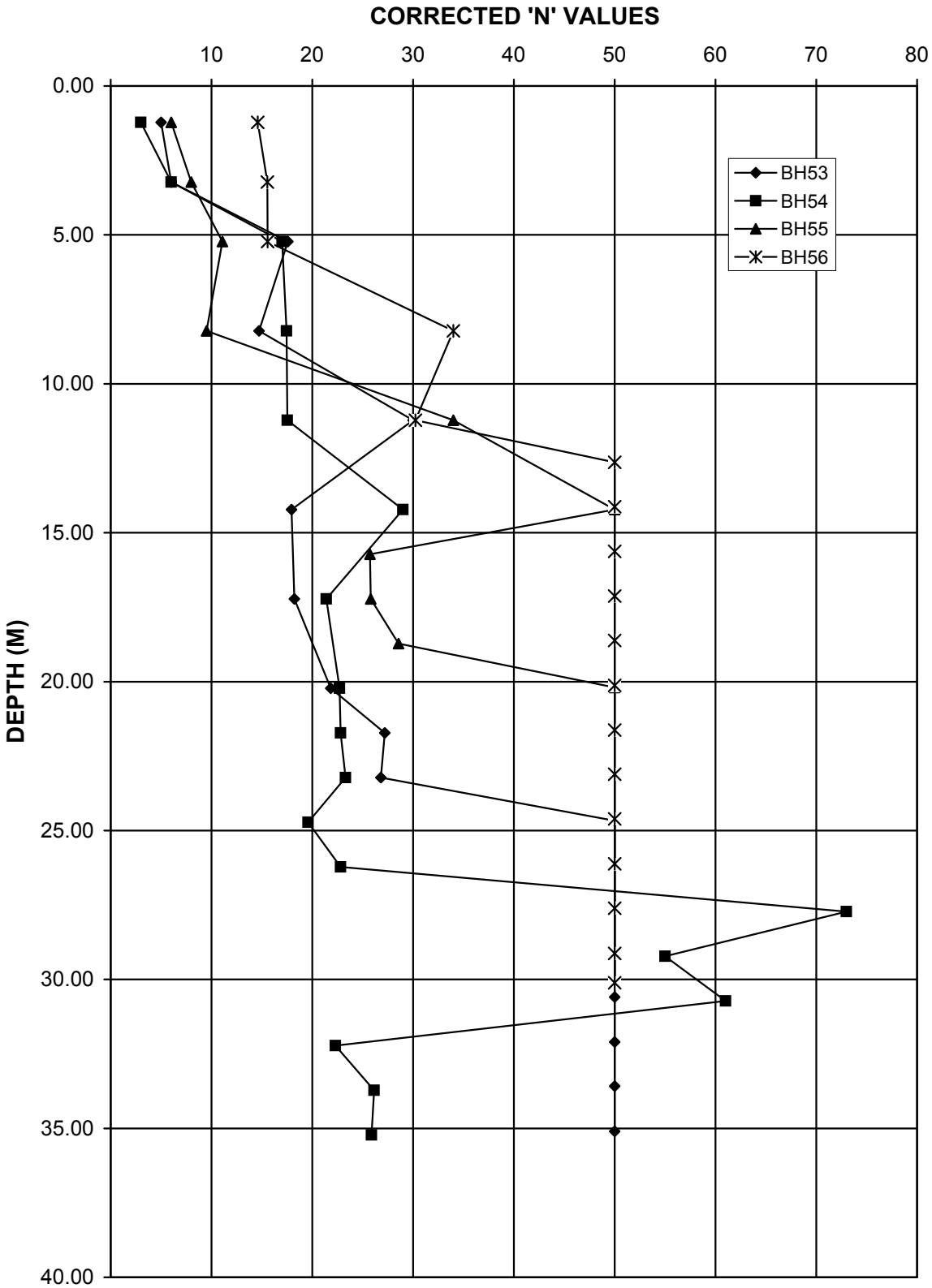

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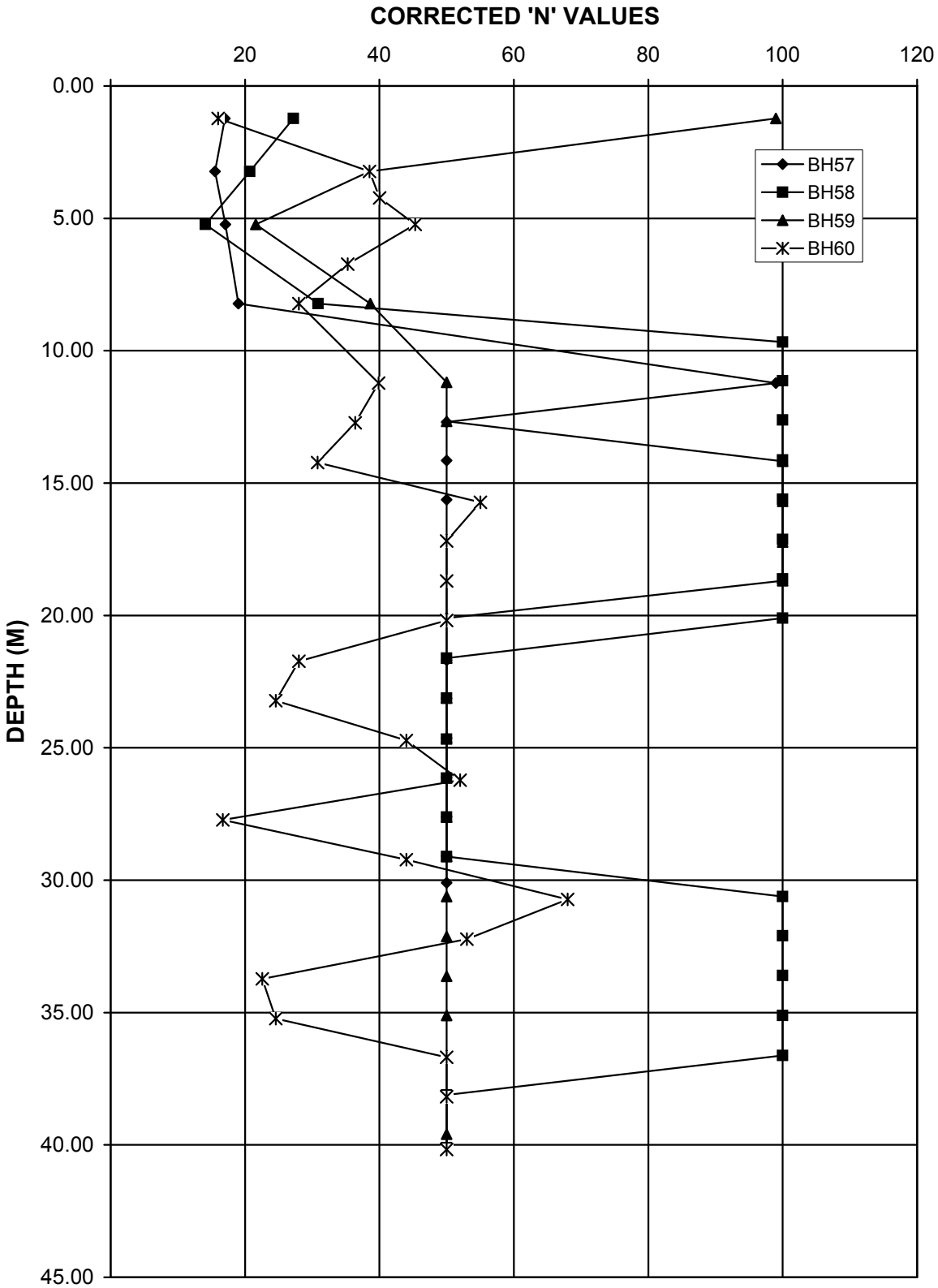
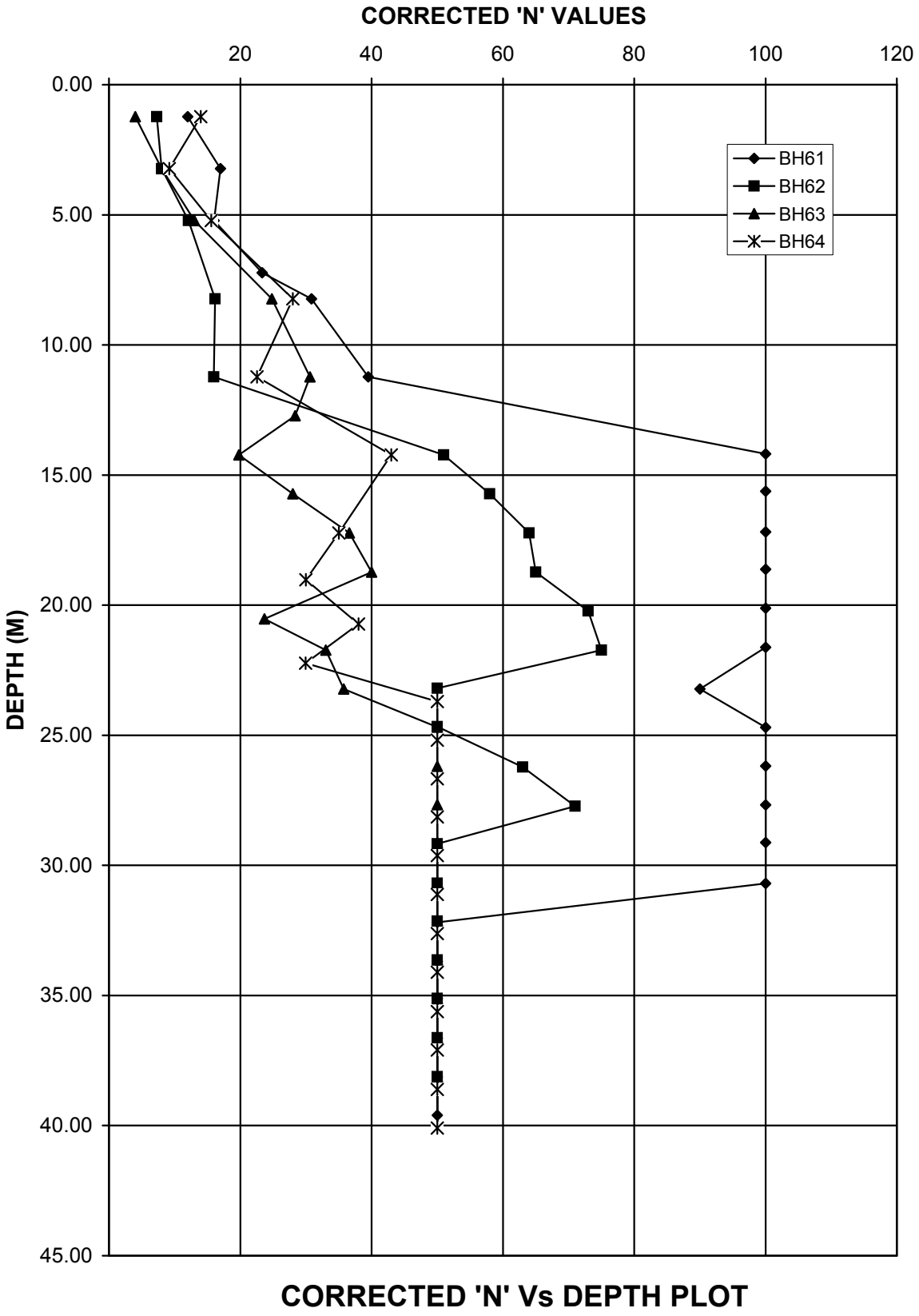
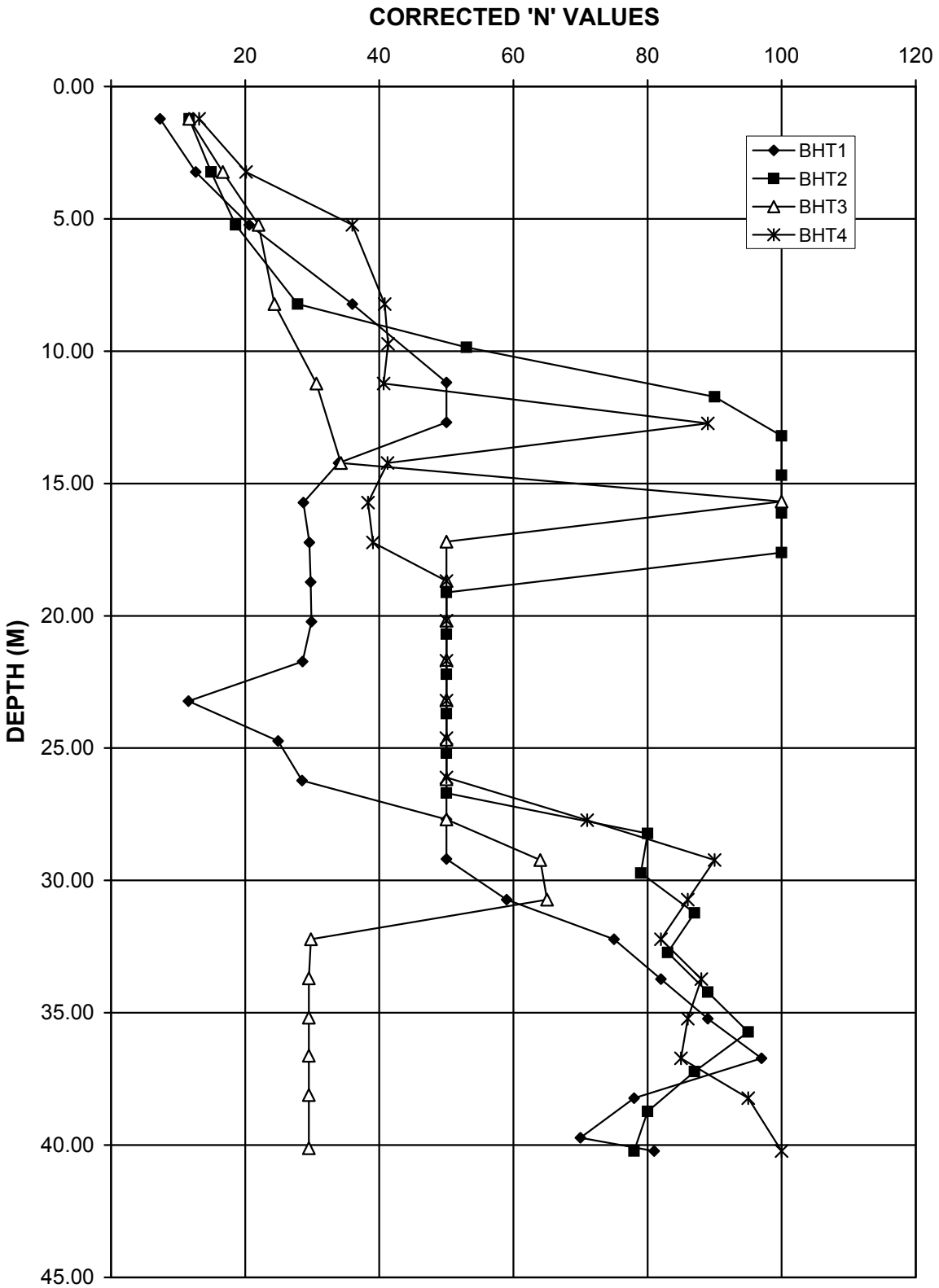


CORRECTED 'N' Vs DEPTH PLOT



CORRECTED 'N' Vs DEPTH PLOT



CORRECTED 'N' Vs DEPTH PLOT

DYNAMIC CONE PENETRATION TEST RESULTS

DCPT No.	Co-Ordinates		R.L. of Ground (M)	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Nc Value
	Easting	Northinng					
DCPT-01	953.000	505.000	63.730	0.00	0.30	0.15	20
				0.30	0.60	0.45	17
				0.60	0.90	0.75	20
				0.90	1.20	1.05	22
				1.20	1.50	1.35	20
				1.50	1.80	1.65	20
				1.80	2.10	1.95	24
				2.10	2.40	2.25	28
				2.40	2.70	2.55	24
				2.70	3.00	2.85	30
				3.00	3.30	3.15	29
				3.30	3.60	3.45	58
				3.60	3.90	3.75	48
				3.90	4.20	4.05	51
				4.20	4.50	4.35	79
				4.50	4.80	4.65	87
				4.80	5.10	4.95	88
				5.10	5.40	5.25	54
				5.40	5.70	5.55	74
				5.70	6.00	5.85	84
				6.00	6.30	6.15	99
				6.30	6.60	6.45	114
				6.60	6.90	6.75	152
				6.90	7.20	7.05	393
					Extrapolated value		
DCPT-02	663.000	387.000	64.824	0.00	0.30	0.15	6
				0.30	0.60	0.45	41
				0.60	0.90	0.75	63
				0.90	1.20	1.05	52
				1.20	1.50	1.35	38
				1.50	1.80	1.65	19
				1.80	2.10	1.95	18
				2.10	2.40	2.25	23
				2.40	2.70	2.55	18
				2.70	3.00	2.85	13
				3.00	3.30	3.15	29
				3.30	3.60	3.45	38
				3.60	3.90	3.75	68
				3.90	4.20	4.05	71
				4.20	4.50	4.35	101
				4.50	4.80	4.65	107
				4.80	5.10	4.95	92
				5.10	5.40	5.25	92
				5.40	5.70	5.55	83
				5.70	6.00	5.85	86
				6.00	6.30	6.15	98
				6.30	6.60	6.45	106
				6.60	6.90	6.75	144
				6.90	7.20	7.05	197
				7.20	7.50	7.35	315
					Extrapolated value		

DYNAMIC CONE PENETRATION TEST RESULTS

DCPT No.	Co-Ordinates		R.L. of Ground (M)	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Nc Value
	Easting	Northinng					
DCPT-03	689.000	271.000	64.528	0.00	0.30	0.15	31
				0.30	0.60	0.45	55
				0.60	0.90	0.75	106
				0.90	1.20	1.05	102
				1.20	1.50	1.35	117
				1.50	1.80	1.65	29
				1.80	2.10	1.95	15
				2.10	2.40	2.25	21
				2.40	2.70	2.55	16
				2.70	3.00	2.85	16
				3.00	3.30	3.15	19
				3.30	3.60	3.45	25
				3.60	3.90	3.75	34
				3.90	4.20	4.05	38
				4.20	4.50	4.35	29
				4.50	4.80	4.65	31
				4.80	5.10	4.95	30
				5.10	5.40	5.25	34
				5.40	5.70	5.55	39
				5.70	6.00	5.85	51
				6.00	6.30	6.15	49
				6.30	6.60	6.45	97
				6.60	6.90	6.75	319
				6.90	7.20	7.05	600
					Extrapolated value		
DCPT-04	932.000	235.000	63.302	0.00	0.30	0.15	4
				0.30	0.60	0.45	11
				0.60	0.90	0.75	33
				0.90	1.20	1.05	59
				1.20	1.50	1.35	80
				1.50	1.80	1.65	67
				1.80	2.10	1.95	83
				2.10	2.40	2.25	135
				2.40	2.70	2.55	290
				2.70	3.00	2.85	378
					Extrapolated value		
DCPT-05	640.000	220.000	64.579	0.00	0.30	0.15	12
				0.30	0.60	0.45	25
				0.60	0.90	0.75	11
				0.90	1.20	1.05	20
				1.20	1.50	1.35	36
				1.50	1.80	1.65	27
				1.80	2.10	1.95	25
				2.10	2.40	2.25	30
				2.40	2.70	2.55	34
				2.70	3.00	2.85	30
				3.00	3.30	3.15	38
				3.30	3.60	3.45	31
				3.60	3.90	3.75	27
				3.90	4.20	4.05	19
				4.20	4.50	4.35	16
				4.50	4.80	4.65	16
				4.80	5.10	4.95	18
				5.10	5.40	5.25	20
				5.40	5.70	5.55	23
				5.70	6.00	5.85	19
				6.00	6.30	6.15	21
				6.30	6.60	6.45	29
				6.60	6.90	6.75	61
				6.90	7.20	7.05	98

DYNAMIC CONE PENETRATION TEST RESULTS

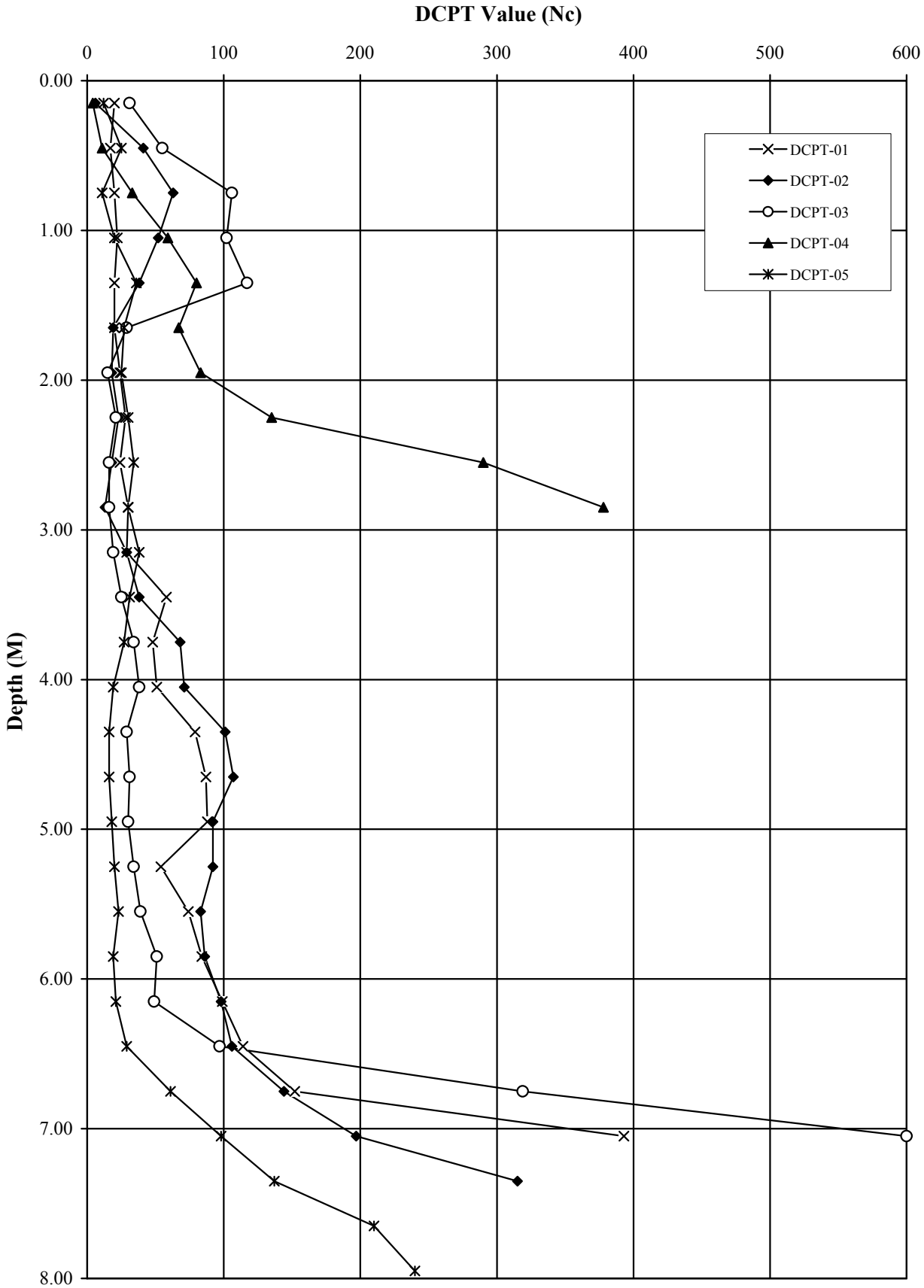
DCPT No.	Co-Ordinates		R.L. of Ground (M)	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Nc Value
	Easting	Northinng					
				7.20	7.50	7.35	137
				7.50	7.80	7.65	210
				7.80	8.10	7.95	240
						Extrapolated value	
DCPT-06	523.000	106.000	66.127	0.00	0.30	0.15	11
				0.30	0.60	0.45	14
				0.60	0.90	0.75	13
				0.90	1.20	1.05	21
				1.20	1.50	1.35	28
				1.50	1.80	1.65	19
				1.80	2.10	1.95	13
				2.10	2.40	2.25	31
				2.40	2.70	2.55	29
				2.70	3.00	2.85	31
				3.00	3.30	3.15	39
				3.30	3.60	3.45	26
				3.60	3.90	3.75	22
				3.90	4.20	4.05	12
				4.20	4.50	4.35	16
				4.50	4.80	4.65	14
				4.80	5.10	4.95	25
				5.10	5.40	5.25	35
				5.40	5.70	5.55	33
				5.70	6.00	5.85	33
				6.00	6.30	6.15	30
				6.30	6.60	6.45	25
				6.60	6.90	6.75	28
				6.90	7.20	7.05	22
				7.20	7.50	7.35	29
				7.50	7.80	7.65	41
				7.80	8.10	7.95	52
				8.10	8.40	8.25	91
				8.40	8.70	8.55	136
				8.70	9.00	8.85	167
				9.00	9.30	9.15	342
						Extrapolated value	
DCPT-07	190.000	-24.000	80.157	0.00	0.30	0.15	172
				0.30	0.60	0.45	136
				0.60	0.90	0.75	146
				0.90	1.20	1.05	157
				1.20	1.50	1.35	88
				1.50	1.80	1.65	68
				1.80	2.10	1.95	50
				2.10	2.40	2.25	40
				2.40	2.70	2.55	26
				2.70	3.00	2.85	19
				3.00	3.30	3.15	26
				3.30	3.60	3.45	34
				3.60	3.90	3.75	39
				3.90	4.20	4.05	43
				4.20	4.50	4.35	51
				4.50	4.80	4.65	51
				4.80	5.10	4.95	56
				5.10	5.40	5.25	60
				5.40	5.70	5.55	66
				5.70	6.00	5.85	84
				6.00	6.30	6.15	83
				6.30	6.60	6.45	44
				6.60	6.90	6.75	30
				6.90	7.20	7.05	42

DYNAMIC CONE PENETRATION TEST RESULTS

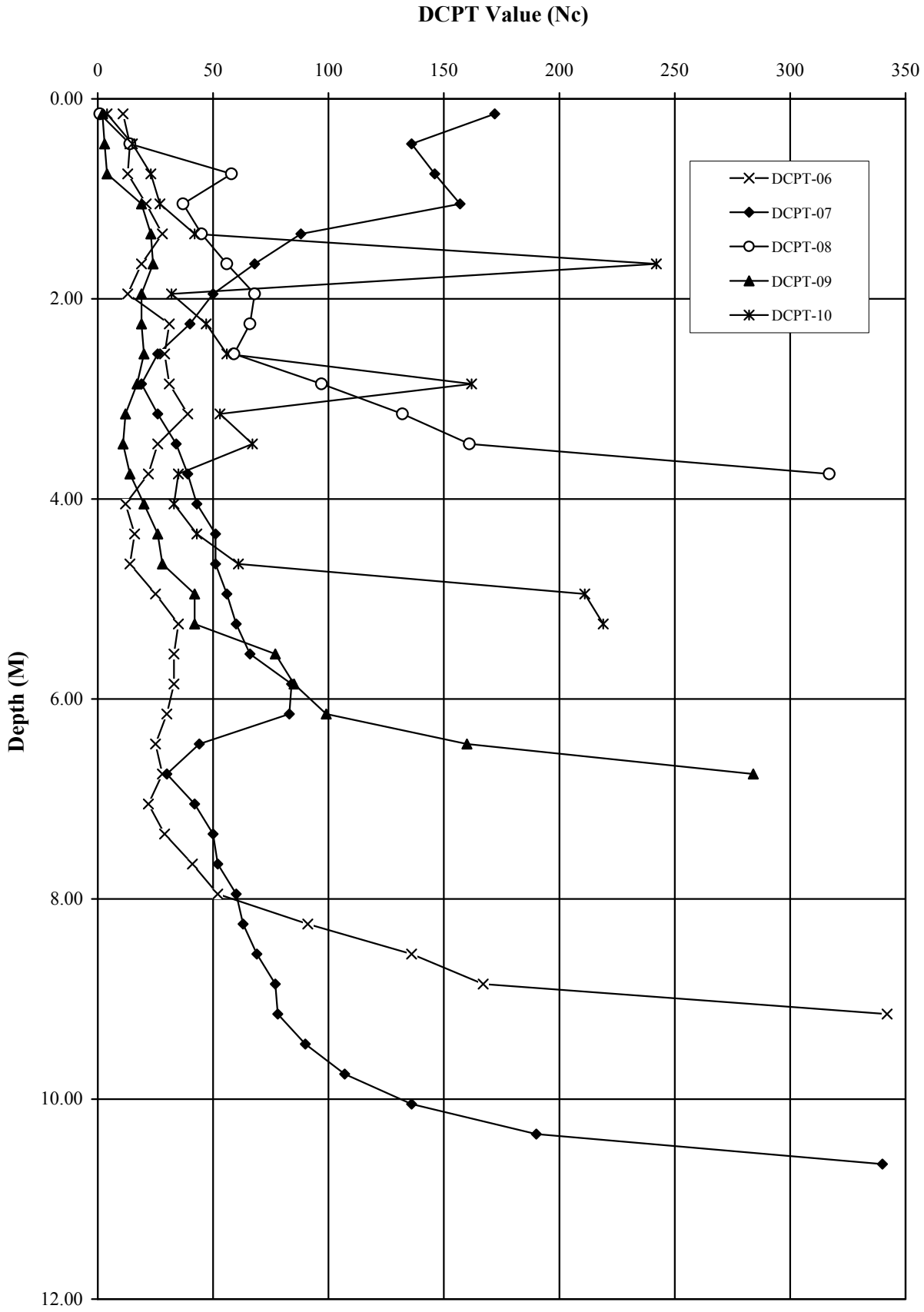
DCPT No.	Co-Ordinates		R.L. of Ground (M)	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Nc Value
	Easting	Northinng					
				7.20	7.50	7.35	50
				7.50	7.80	7.65	52
				7.80	8.10	7.95	60
				8.10	8.40	8.25	63
				8.40	8.70	8.55	69
				8.70	9.00	8.85	77
				9.00	9.30	9.15	78
				9.30	9.60	9.45	90
				9.60	9.90	9.75	107
				9.90	10.20	10.05	136
				10.20	10.50	10.35	190
				10.50	10.80	10.65	340
						Extrapolated value	
DCPT-08	-610.000	-24.000	78.092	0.00	0.30	0.15	1
				0.30	0.60	0.45	14
				0.60	0.90	0.75	58
				0.90	1.20	1.05	37
				1.20	1.50	1.35	45
				1.50	1.80	1.65	56
				1.80	2.10	1.95	68
				2.10	2.40	2.25	66
				2.40	2.70	2.55	59
				2.70	3.00	2.85	97
				3.00	3.30	3.15	132
				3.30	3.60	3.45	161
				3.60	3.90	3.75	317
						Extrapolated value	
DCPT-09	625.000	-58.000	64.178	0.00	0.30	0.15	2
				0.30	0.60	0.45	3
				0.60	0.90	0.75	4
				0.90	1.20	1.05	19
				1.20	1.50	1.35	23
				1.50	1.80	1.65	24
				1.80	2.10	1.95	19
				2.10	2.40	2.25	19
				2.40	2.70	2.55	20
				2.70	3.00	2.85	17
				3.00	3.30	3.15	12
				3.30	3.60	3.45	11
				3.60	3.90	3.75	14
				3.90	4.20	4.05	20
				4.20	4.50	4.35	26
				4.50	4.80	4.65	28
				4.80	5.10	4.95	42
				5.10	5.40	5.25	42
				5.40	5.70	5.55	77
				5.70	6.00	5.85	85
				6.00	6.30	6.15	99
				6.30	6.60	6.45	160
				6.60	6.90	6.75	284
						Extrapolated value	
DCPT-10	871.000	-642.000	70.598	0.00	0.30	0.15	4
				0.30	0.60	0.45	15
				0.60	0.90	0.75	23
				0.90	1.20	1.05	27
				1.20	1.50	1.35	42
				1.50	1.80	1.65	242
				1.80	2.10	1.95	32

DYNAMIC CONE PENETRATION TEST RESULTS

DCPT No.	Co-Ordinates		R.L. of Ground (M)	Starting Depth (M)	Ending Depth (M)	Average Depth (M)	Nc Value
	Easting	Northinng					
				2.10	2.40	2.25	47
				2.40	2.70	2.55	56
				2.70	3.00	2.85	162
				3.00	3.30	3.15	53
				3.30	3.60	3.45	67
				3.60	3.90	3.75	35
				3.90	4.20	4.05	33
				4.20	4.50	4.35	43
				4.50	4.80	4.65	61
				4.80	5.10	4.95	211
				5.10	5.40	5.25	219



DCPT Value (Nc) vs. Depth Plot



DCPT Value (Nc) vs. Depth Plot

SCPT NO. - 1

Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	96.0	176.0	98.6	178.6	9.9	0.714	7.2
0.4	236.0	262.0	238.6	264.6	23.9	0.237	1.0
0.6	308.0	314.0	310.6	316.6	31.1	0.060	0.2
0.8	350.0	410.0	352.6	412.6	35.3	0.537	1.5
1.0	368.0	406.0	372.1	410.1	37.2	0.343	0.9
1.2	170.0	290.0	174.1	294.1	17.4	1.068	6.1
1.4	204.0	284.0	208.1	288.1	20.8	0.714	3.4
1.6	238.0	304.0	242.1	308.1	24.2	0.591	2.4
1.8	188.0	256.0	192.1	260.1	19.2	0.608	3.2
2.0	192.0	282.0	197.6	287.6	19.8	0.803	4.1
2.2	170.0	318.0	175.6	323.6	17.6	1.316	7.5
2.4	132.0	336.0	137.6	341.6	13.8	1.812	13.2
2.6	156.0	386.0	161.6	391.6	16.2	2.042	12.6
2.8	210.0	414.0	215.6	419.6	21.6	1.812	8.4
3.0	222.0	456.0	229.1	463.1	22.9	2.077	9.1
3.2	232.0	468.0	239.1	475.1	23.9	2.095	8.8
3.4	251.0	474.0	258.1	481.1	25.8	1.980	7.7
3.6	208.0	414.0	215.1	421.1	21.5	1.830	8.5
3.8	376.0	612.0	383.1	619.1	38.3	2.095	5.5
4.0	298.0	418.0	306.6	426.6	30.7	1.068	3.5
4.2	480.0	672.0	488.6	680.6	48.9	1.706	3.5
4.4	482.0	670.0	490.6	678.6	49.1	1.670	3.4
4.6	666.0	1072.0	674.6	1080.6	67.5	3.599	5.3
4.8	612.0	1016.0	620.6	1024.6	62.1	3.582	5.8
5.0	610.0	1056.0	620.1	1066.1	62.0	3.953	6.4
5.2	560.0	995.0	570.1	1005.1	57.0	3.856	6.8
5.4	528.0	1062.0	538.1	1072.1	53.8	4.732	8.8
5.6	530.0	1092.0	540.1	1102.1	54.0	4.980	9.2
5.8	498.0	932.0	508.1	942.1	50.8	3.847	7.6
6.0	310.0	612.0	321.6	623.6	32.2	2.679	8.3
6.2	292.0	410.0	303.6	421.6	30.4	1.051	3.5
6.4	310.0	456.0	321.6	467.6	32.2	1.299	4.0
6.6	356.0	512.0	367.6	523.6	36.8	1.387	3.8
6.8	714.0	916.0	725.6	927.6	72.6	1.794	2.5
7.0	832.0	1092.0	845.1	1105.1	84.5	2.307	2.7
7.2	862.0	1136.0	875.1	1149.1	87.5	2.431	2.8
7.4	710.0	1032.0	723.1	1045.1	72.3	2.856	3.9
7.6	1352.0	1665.0	1365.1	1678.1	136.5	2.776	2.0
7.8	1492.0	1852.0	1505.1	1865.1	150.5	3.192	2.1
8.0	1132.0	1706.0	1146.6	1720.6	114.7	5.086	4.4
8.2	1610.0	2132.0	1624.6	2146.6	162.5	4.626	2.8
8.4	1612.0	2208.0	1626.6	2222.6	162.7	5.281	3.2
8.6	1702.0	2456.0	1716.6	2470.6	171.7	6.679	3.9

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
II	0	5.00	5.57	Clay	30.41	1.13kg/sqcm
I	5.00	8.60	4.58	Sandy silt	86.80	38°

SCPT NO. - 2

Mass of cone(kg) = 1.1
Area of Cone (sqcm) = 10
Area of friction jacket (sqcm) = 113
Mass of each rod (kg) = 1.5
Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	114.0	260.0	116.6	262.6	11.7	1.299	11.1
0.4	358.0	488.0	360.6	490.6	36.1	1.157	3.2
0.6	412.0	810.0	414.6	812.6	41.5	3.529	8.5
0.8	592.0	912.0	594.6	914.6	59.5	2.838	4.8
1.0	442.0	582.0	446.1	586.1	44.6	1.245	2.8
1.2	312.0	470.0	316.1	474.1	31.6	1.405	4.4
1.4	306.0	462.0	310.1	466.1	31.0	1.387	4.5
1.6	296.0	398.0	300.1	402.1	30.0	0.909	3.0
1.8	256.0	370.0	260.1	374.1	26.0	1.015	3.9
2.0	182.0	322.0	187.6	327.6	18.8	1.245	6.6
2.2	201.0	394.0	206.6	399.6	20.7	1.714	8.3
2.4	192.0	332.0	197.6	337.6	19.8	1.245	6.3
2.6	138.0	242.0	143.6	247.6	14.4	0.927	6.5
2.8	148.0	272.0	153.6	277.6	15.4	1.104	7.2
3.0	172.0	308.0	179.1	315.1	17.9	1.210	6.8
3.2	232.0	342.0	239.1	349.1	23.9	0.980	4.1
3.4	230.0	516.0	237.1	523.1	23.7	2.537	10.7
3.6	544.0	798.0	551.1	805.1	55.1	2.254	4.1
3.8	498.0	746.0	505.1	753.1	50.5	2.201	4.4
4.0	444.0	754.0	452.6	762.6	45.3	2.750	6.1
4.2	592.0	820.0	600.6	828.6	60.1	2.024	3.4
4.4	632.0	922.0	640.6	930.6	64.1	2.573	4.0
4.6	661.0	914.0	669.6	922.6	67.0	2.245	3.4
4.8	862.0	1154.0	870.6	1162.6	87.1	2.591	3.0
5.0	1310.0	1890.0	1320.1	1900.1	132.0	5.139	3.9
5.2	986.0	1730.0	996.1	1740.1	99.6	6.591	6.6
5.4	1092.0	1752.0	1102.1	1762.1	110.2	5.847	5.3
5.6	924.0	1586.0	934.1	1596.1	93.4	5.865	6.3
5.8	962.0	1502.0	972.1	1512.1	97.2	4.785	4.9
6.0	776.0	1476.0	787.6	1487.6	78.8	6.201	7.9
6.2	760.0	1472.0	771.6	1483.6	77.2	6.307	8.2
6.4	630.0	842.0	641.6	853.6	64.2	1.883	2.9
6.6	1196.0	1406.0	1207.6	1417.6	120.8	1.865	1.5
6.8	1310.0	2246.0	1321.6	2257.6	132.2	8.290	6.3
7.0	1072.0	1982.0	1085.1	1995.1	108.5	8.060	7.4
7.2	866.0	2010.0	879.1	2023.1	87.9	10.130	11.5
7.4	1292.0	2196.0	1305.1	2209.1	130.5	8.006	6.1
7.6	1366.0	2236.0	1379.1	2249.1	137.9	7.706	5.6

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
II	0.00	5.60	5.47	Clay	47.52	1.76kg/sqcm
I	5.60	7.60	4.60	Sandy silt	113.80	38°

SCPT NO. - 3

Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	720.0	1132.0	722.6	1134.6	72.3	3.653	5.05
0.4	930.0	1660.0	932.6	1662.6	93.3	6.467	6.93
0.6	1630.0	1995.0	1632.6	1997.6	163.3	3.237	1.98
0.8	1890.0	2130.0	1892.6	2132.6	189.3	2.130	1.13
1.0	1273.0	1863.0	1277.1	1867.1	127.7	5.228	4.09
1.2	1891.0	2110.0	1895.1	2114.1	189.5	1.945	1.03
1.4	1645.0	2032.0	1649.1	2036.1	164.9	3.431	2.08
1.6	2192.0	2530.0	2196.1	2534.1	219.6	2.998	1.36
1.8	1870.0	2310.0	1874.1	2314.1	187.4	3.900	2.08
2.0	2243.0	2630.0	2248.6	2635.6	224.9	3.431	1.53
2.2	2110.0	2615.0	2115.6	2620.6	211.6	4.476	2.12
2.4	1870.0	1995.0	1875.6	2000.6	187.6	1.113	0.59
2.6	1395.0	1795.0	1400.6	1800.6	140.1	3.546	2.53
2.8	1012.0	1210.0	1017.6	1215.6	101.8	1.759	1.73
3.0	670.0	1074.0	677.1	1081.1	67.7	3.582	5.29
3.2	552.0	902.0	559.1	909.1	55.9	3.104	5.55
3.4	302.0	514.0	309.1	521.1	30.9	1.883	6.09
3.6	314.0	531.0	321.1	538.1	32.1	1.927	6.00
3.8	352.0	571.0	359.1	578.1	35.9	1.945	5.42
4.0	320.0	499.0	328.6	507.6	32.9	1.591	4.84
4.2	280.0	495.0	288.6	503.6	28.9	1.909	6.62
4.4	282.0	493.0	290.6	501.6	29.1	1.874	6.45
4.6	262.0	471.0	270.6	479.6	27.1	1.856	6.86
4.8	340.0	510.0	348.6	518.6	34.9	1.511	4.33
5.0	320.0	512.0	330.1	522.1	33.0	1.706	5.17
5.2	399.0	531.0	409.1	541.1	40.9	1.175	2.87
5.4	361.0	498.0	371.1	508.1	37.1	1.219	3.28
5.6	332.0	442.0	342.1	452.1	34.2	0.980	2.86
5.8	292.0	410.0	302.1	420.1	30.2	1.051	3.48
6.0	309.0	446.0	320.6	457.6	32.1	1.219	3.80
6.2	288.0	402.0	299.6	413.6	30.0	1.015	3.39
6.4	364.0	508.0	375.6	519.6	37.6	1.281	3.41
6.6	292.0	472.0	303.6	483.6	30.4	1.599	5.27
6.8	410.0	472.0	421.6	483.6	42.2	0.555	1.32
7.0	408.0	470.0	421.1	483.1	42.1	0.555	1.32
7.2	496.0	512.0	509.1	525.1	50.9	0.148	0.29
7.4	462.0	514.0	475.1	527.1	47.5	0.467	0.98
7.6	386.0	496.0	399.1	509.1	39.9	0.980	2.46
7.8	432.0	532.0	445.1	545.1	44.5	0.891	2.00
8.0	510.0	551.0	524.6	565.6	52.5	0.369	0.70
8.2	496.0	610.0	510.6	624.6	51.1	1.015	1.99
8.4	392.0	532.0	406.6	546.6	40.7	1.245	3.06
8.6	456.0	610.0	470.6	624.6	47.1	1.369	2.91
8.8	462.0	583.0	476.6	597.6	47.7	1.077	2.26
9.0	512.0	710.0	528.1	726.1	52.8	1.759	3.33
9.2	549.0	742.0	565.1	758.1	56.5	1.714	3.03
9.4	612.0	910.0	628.1	926.1	62.8	2.644	4.21
9.6	790.0	1010.0	806.1	1026.1	80.6	1.953	2.42
9.8	630.0	910.0	646.1	926.1	64.6	2.484	3.85
10.0	782.0	1053.0	799.6	1070.6	80.0	2.405	3.01
10.2	1053.0	1262.0	1070.6	1279.6	107.1	1.856	1.73
10.4	1392.0	1642.0	1409.6	1659.6	141.0	2.219	1.57
10.6	1111.0	1518.0	1128.6	1535.6	112.9	3.608	3.20
10.8	1492.0	1666.0	1509.6	1683.6	151.0	1.546	1.02
11.0	1515.0	1749.0	1534.1	1768.1	153.4	2.077	1.35
11.2	1810.0	1998.0	1829.1	2017.1	182.9	1.670	0.91

SCPT NO. - 3

Mass of cone(kg) = 1.1
Area of Cone (sqcm) = 10
Area of friction jacket (sqcm) = 113
Mass of each rod (kg) = 1.5
Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
11.4	1042.0	1612.0	1061.1	1631.1	106.1	5.051	4.76
11.6	1272.0	1865.0	1291.1	1884.1	129.1	5.254	4.07
11.8	1792.0	2142.0	1811.1	2161.1	181.1	3.104	1.71
12.0	1610.0	1978.0	1630.6	1998.6	163.1	3.263	2.00
12.2	1832.0	2242.0	1852.6	2262.6	185.3	3.635	1.96
12.4	1934.0	2302.0	1954.6	2322.6	195.5	3.263	1.67

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
I	0.00	7.50	3.49	Sandy silt	84.77	40°
III	7.50	12.40	2.45	Silty sand	101.16	36°

SCPT NO. - 4

Mass of cone(kg) = 1.1
Area of Cone (sqcm) = 10
Area of friction jacket (sqcm) = 113
Mass of each rod (kg) = 1.5
Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	1162.0	1250.0	1164.6	1252.6	116.5	0.785	0.67
0.4	672.0	810.0	674.6	812.6	67.5	1.228	1.82
0.6	1672.0	2232.0	1674.6	2234.6	167.5	4.962	2.96
0.8	448.0	656.0	450.6	658.6	45.1	1.847	4.10
1.0	510.0	720.0	514.1	724.1	51.4	1.865	3.63
1.2	444.0	716.0	448.1	720.1	44.8	2.414	5.39
1.4	450.0	684.0	454.1	688.1	45.4	2.077	4.57
1.6	318.0	574.0	322.1	578.1	32.2	2.272	7.05
1.8	480.0	642.0	484.1	646.1	48.4	1.440	2.97
2.0	92.0	166.0	97.6	171.6	9.8	0.661	6.78
2.2	202.0	348.0	207.6	353.6	20.8	1.299	6.25
2.4	175.0	324.0	180.6	329.6	18.1	1.325	7.34
2.6	160.0	334.0	165.6	339.6	16.6	1.546	9.34
2.8	116.0	188.0	121.6	193.6	12.2	0.644	5.29
3.0	74.0	160.0	81.1	167.1	8.1	0.768	9.46
3.2	112.0	192.0	119.1	199.1	11.9	0.714	6.00
3.4	160.0	234.0	167.1	241.1	16.7	0.661	3.96
3.6	480.0	642.0	487.1	649.1	48.7	1.440	2.96
3.8	254.0	532.0	261.1	539.1	26.1	2.467	9.45
4.0	136.0	372.0	144.6	380.6	14.5	2.095	14.49
4.2	216.0	394.0	224.6	402.6	22.5	1.582	7.04
4.4	272.0	458.0	280.6	466.6	28.1	1.653	5.89
4.6	102.0	248.0	110.6	256.6	11.1	1.299	11.74
4.8	250.0	428.0	258.6	436.6	25.9	1.582	6.12
5.0	215.0	420.0	225.1	430.1	22.5	1.821	8.09
5.2	334.0	540.0	344.1	550.1	34.4	1.830	5.32
5.4	266.0	520.0	276.1	530.1	27.6	2.254	8.16
5.6	456.0	666.0	466.1	676.1	46.6	1.865	4.00
5.8	330.0	548.0	340.1	558.1	34.0	1.936	5.69
6.0	252.0	578.0	263.6	589.6	26.4	2.891	10.97
6.2	396.0	611.0	407.6	622.6	40.8	1.909	4.68
6.4	301.0	516.0	312.6	527.6	31.3	1.909	6.11
6.6	228.0	424.0	239.6	435.6	24.0	1.741	7.27
6.8	234.0	536.0	245.6	547.6	24.6	2.679	10.91
7.0	258.0	568.0	271.1	581.1	27.1	2.750	10.14
7.2	256.0	556.0	269.1	569.1	26.9	2.661	9.89
7.4	302.0	612.0	315.1	625.1	31.5	2.750	8.73
7.6	356.0	646.0	369.1	659.1	36.9	2.573	6.97
7.8	378.0	710.0	391.1	723.1	39.1	2.945	7.53
8.0	388.0	732.0	402.6	746.6	40.3	3.051	7.58
8.2	272.0	602.0	286.6	616.6	28.7	2.927	10.21
8.4	252.0	482.0	266.6	496.6	26.7	2.042	7.66
8.6	270.0	604.0	284.6	618.6	28.5	2.962	10.41
8.8	310.0	813.0	324.6	827.6	32.5	4.458	13.73
9.0	422.0	742.0	438.1	758.1	43.8	2.838	6.48
9.2	362.0	760.0	378.1	776.1	37.8	3.529	9.33
9.4	494.0	808.0	510.1	824.1	51.0	2.785	5.46
9.6	811.0	1214.0	827.1	1230.1	82.7	3.573	4.32
9.8	116.0	1644.0	132.1	1660.1	13.2	13.529	102.41
10.0	790.0	1266.0	807.6	1283.6	80.8	4.219	5.22
10.2	1348.0	1994.0	1365.6	2011.6	136.6	5.723	4.19

SCPT NO. - 4

Mass of cone(kg) =	1.1	Area of friction jacket (sqcm) =	113
Area of Cone (sqcm) =	10	Mass of each rod (kg) =	1.5
		Mass of friction jacket(kg) =	0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
10.4	1470.0	2145.0	1487.6	2162.6	148.8	5.980	4.02
10.6	1520.0	2242.0	1537.6	2259.6	153.8	6.396	4.16

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
II	0.00	9.50	7.03	Clay	35.58	1.32kg/sqcm
III	9.50	10.60	4.38	Sandy silt	120.50	36°

SCPT NO. - 5

Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	176.0	220.0	178.6	222.6	17.9	0.396	2.22
0.4	240.0	686.0	242.6	688.6	24.3	3.953	16.30
0.6	224.0	540.0	226.6	542.6	22.7	2.803	12.37
0.8	326.0	568.0	328.6	570.6	32.9	2.148	6.54
1.0	658.0	778.0	662.1	782.1	66.2	1.068	1.61
1.2	314.0	616.0	318.1	620.1	31.8	2.679	8.42
1.4	72.0	248.0	76.1	252.1	7.6	1.564	20.55
1.6	176.0	210.0	180.1	214.1	18.0	0.307	1.71
1.8	136.0	318.0	140.1	322.1	14.0	1.617	11.54
2.0	160.0	354.0	165.6	359.6	16.6	1.723	10.41
2.2	406.0	420.0	411.6	425.6	41.2	0.130	0.32
2.4	380.0	470.0	385.6	475.6	38.6	0.803	2.08
2.6	264.0	468.0	269.6	473.6	27.0	1.812	6.72
2.8	290.0	504.0	295.6	509.6	29.6	1.900	6.43
3.0	304.0	504.0	311.1	511.1	31.1	1.776	5.71
3.2	216.0	380.0	223.1	387.1	22.3	1.458	6.53
3.4	154.0	300.0	161.1	307.1	16.1	1.299	8.06
3.6	180.0	338.0	187.1	345.1	18.7	1.405	7.51
3.8	402.0	550.0	409.1	557.1	40.9	1.316	3.22
4.0	510.0	720.0	518.6	728.6	51.9	1.865	3.60
4.2	650.0	1090.0	658.6	1098.6	65.9	3.900	5.92
4.4	548.0	992.0	556.6	1000.6	55.7	3.936	7.07
4.6	562.0	1048.0	570.6	1056.6	57.1	4.307	7.55
4.8	582.0	1072.0	590.6	1080.6	59.1	4.343	7.35
5.0	610.0	1088.0	620.1	1098.1	62.0	4.237	6.83
5.2	700.0	1150.0	710.1	1160.1	71.0	3.989	5.62
5.4	782.0	1236.0	792.1	1246.1	79.2	4.024	5.08
5.6	764.0	1354.0	774.1	1364.1	77.4	5.228	6.75
5.8	664.0	1256.0	674.1	1266.1	67.4	5.245	7.78
6.0	506.0	782.0	517.6	793.6	51.8	2.449	4.73
6.2	570.0	968.0	581.6	979.6	58.2	3.529	6.07
6.4	822.0	1142.0	833.6	1153.6	83.4	2.838	3.40
6.6	922.0	1502.0	933.6	1513.6	93.4	5.139	5.50
6.8	1324.0	2024.0	1335.6	2035.6	133.6	6.201	4.64
7.0	1350.0	3032.0	1363.1	3045.1	136.3	14.891	10.92
7.2	696.0	1176.0	709.1	1189.1	70.9	4.254	6.00
7.4	810.0	1312.0	823.1	1325.1	82.3	4.449	5.41
7.6	1702.0	1914.0	1715.1	1927.1	171.5	1.883	1.10
7.8	854.0	1430.0	867.1	1443.1	86.7	5.104	5.89
8.0	912.0	1610.0	926.6	1624.6	92.7	6.183	6.67
8.2	2066.0	2422.0	2080.6	2436.6	208.1	3.157	1.52
8.4	2218.0	2636.0	2232.6	2650.6	223.3	3.706	1.66
8.6	1934.0	2440.0	1948.6	2454.6	194.9	4.484	2.30
8.8	1896.0	2018.0	1910.6	2032.6	191.1	1.086	0.57

SCPT NO. - 5

Mass of cone(kg) = 1.1
Area of Cone (sqcm) = 10
Area of friction jacket (sqcm) = 113
Mass of each rod (kg) = 1.5
Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
9.0	2024.0	2476.0	2040.1	2492.1	204.0	4.006	1.96
9.2	2310.0	3112.0	2326.1	3128.1	232.6	7.104	3.05

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
II	0.00	8.00	6.55	Clay	55.61	2.06kg/sqcm
III	8.00	9.20	1.84	Sand	208.98	40°

SCPT NO. - 6

Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	170.0	318.0	172.6	320.6	17.3	1.316	7.63
0.4	230.0	624.0	232.6	626.6	23.3	3.493	15.02
0.6	496.0	512.0	498.6	514.6	49.9	0.148	0.30
0.8	470.0	614.0	472.6	616.6	47.3	1.281	2.71
1.0	496.0	670.0	500.1	674.1	50.0	1.546	3.09
1.2	512.0	734.0	516.1	738.1	51.6	1.971	3.82
1.4	510.0	772.0	514.1	776.1	51.4	2.325	4.52
1.6	606.0	852.0	610.1	856.1	61.0	2.183	3.58
1.8	936.0	1108.0	940.1	1112.1	94.0	1.529	1.63
2.0	604.0	828.0	609.6	833.6	61.0	1.989	3.26
2.2	740.0	1032.0	745.6	1037.6	74.6	2.591	3.47
2.4	830.0	1160.0	835.6	1165.6	83.6	2.927	3.50
2.6	796.0	1102.0	801.6	1107.6	80.2	2.714	3.39
2.8	1242.0	1710.0	1247.6	1715.6	124.8	4.148	3.32
3.0	1314.0	1556.0	1321.1	1563.1	132.1	2.148	1.63
3.2	1372.0	1980.0	1379.1	1987.1	137.9	5.387	3.91
3.4	1526.0	2096.0	1533.1	2103.1	153.3	5.051	3.29
3.6	1642.0	2362.0	1649.1	2369.1	164.9	6.378	3.87
3.8	1610.0	2340.0	1617.1	2347.1	161.7	6.467	4.00
4.0	1598.0	2306.0	1606.6	2314.6	160.7	6.272	3.90
4.2	1876.0	2510.0	1884.6	2518.6	188.5	5.617	2.98
4.4	1984.0	2592.0	1992.6	2600.6	199.3	5.387	2.70

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
III	0.00	4.40	3.89	Sandy silt	98.55	42°

SCPT NO. - 7

Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	0.0	0.0	2.6	2.6	0.3	0.006	2.50
0.4	16.0	52.0	18.6	54.6	1.9	0.325	17.48
0.6	60.0	101.0	62.6	103.6	6.3	0.369	5.90
0.8	333.0	480.0	335.6	482.6	33.6	1.307	3.90
1.0	416.0	592.0	420.1	596.1	42.0	1.564	3.72
1.2	510.0	690.0	514.1	694.1	51.4	1.599	3.11
1.4	630.0	820.0	634.1	824.1	63.4	1.688	2.66
1.6	70.0	160.0	74.1	164.1	7.4	0.803	10.84
1.8	110.0	180.0	114.1	184.1	11.4	0.626	5.49
2.0	127.0	206.0	132.6	211.6	13.3	0.706	5.32
2.2	138.0	234.0	143.6	239.6	14.4	0.856	5.96
2.4	176.0	292.0	181.6	297.6	18.2	1.033	5.69
2.6	188.0	300.0	193.6	305.6	19.4	0.998	5.15
2.8	192.0	326.0	197.6	331.6	19.8	1.192	6.03
3.0	210.0	360.0	217.1	367.1	21.7	1.334	6.14
3.2	236.0	372.0	243.1	379.1	24.3	1.210	4.98
3.4	326.0	456.0	333.1	463.1	33.3	1.157	3.47
3.6	351.0	482.0	358.1	489.1	35.8	1.166	3.26
3.8	410.0	920.0	417.1	927.1	41.7	4.520	10.84
4.0	496.0	1028.0	504.6	1036.6	50.5	4.714	9.34
4.2	270.0	436.0	278.6	444.6	27.9	1.476	5.30
4.4	140.0	354.0	148.6	362.6	14.9	1.900	12.79
4.6	212.0	362.0	220.6	370.6	22.1	1.334	6.05
4.8	246.0	402.0	254.6	410.6	25.5	1.387	5.45
5.0	312.0	642.0	322.1	652.1	32.2	2.927	9.09
5.2	464.0	504.0	474.1	514.1	47.4	0.360	0.76
5.4	498.0	840.0	508.1	850.1	50.8	3.033	5.97
5.6	310.0	934.0	320.1	944.1	32.0	5.529	17.27
5.8	1042.0	1162.0	1052.1	1172.1	105.2	1.068	1.02
6.0	1192.0	1498.0	1203.6	1509.6	120.4	2.714	2.26
6.2	600.0	1106.0	611.6	1117.6	61.2	4.484	7.33
6.4	574.0	1062.0	585.6	1073.6	58.6	4.325	7.39
6.6	688.0	1186.0	699.6	1197.6	70.0	4.414	6.31
6.8	732.0	1210.0	743.6	1221.6	74.4	4.237	5.70
7.0	766.0	1260.0	779.1	1273.1	77.9	4.378	5.62
7.2	1218.0	1498.0	1231.1	1511.1	123.1	2.484	2.02
7.4	1610.0	2066.0	1623.1	2079.1	162.3	4.042	2.49
7.6	1540.0	2068.0	1553.1	2081.1	155.3	4.679	3.01
7.8	1201.0	1774.0	1214.1	1787.1	121.4	5.077	4.18
8.0	1199.0	1594.0	1213.6	1608.6	121.4	3.502	2.89
8.2	1210.0	1614.0	1224.6	1628.6	122.5	3.582	2.92
8.4	1230.0	1636.0	1244.6	1650.6	124.5	3.599	2.89
8.6	1296.0	1716.0	1310.6	1730.6	131.1	3.723	2.84
8.8	1356.0	1811.0	1370.6	1825.6	137.1	4.033	2.94
9.0	1401.0	1890.0	1417.1	1906.1	141.7	4.334	3.06
9.2	1532.0	2010.0	1548.1	2026.1	154.8	4.237	2.74
9.4	1591.0	2056.0	1607.1	2072.1	160.7	4.122	2.56
9.6	1651.0	2115.0	1667.1	2131.1	166.7	4.113	2.47
9.8	1590.0	2054.0	1606.1	2070.1	160.6	4.113	2.56
10.0	1710.0	2218.0	1727.6	2235.6	172.8	4.502	2.61
10.2	1856.0	2382.0	1873.6	2399.6	187.4	4.661	2.49
10.4	1891.0	2410.0	1908.6	2427.6	190.9	4.599	2.41
10.6	1940.0	2560.0	1957.6	2577.6	195.8	5.493	2.81
10.8	2021.0	2701.0	2038.6	2718.6	203.9	6.024	2.96

SCPT NO. - 7

Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
11.0	2232.0	2916.0	2251.1	2935.1	225.1	6.060	2.69
11.2	2292.0	3104.0	2311.1	3123.1	231.1	7.192	3.11

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
II	0.00	6.30	6.29	Clay	33.85	1.25kg/sqcm
IV	6.30	10.50	3.43	Clay	134.04	4.96kg/sqcm
III	10.50	11.20	2.89	Silty sand	213.96	38°

SCPT NO. - 8

Mass of cone(kg) = 1.1
Area of Cone (sqcm) = 10
Area of friction jacket (sqcm) = 113
Mass of each rod (kg) = 1.5
Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	258.0	318.0	260.6	320.6	26.1	0.537	2.06
0.4	314.0	410.0	316.6	412.6	31.7	0.856	2.70
0.6	690.0	816.0	692.6	818.6	69.3	1.122	1.62
0.8	528.0	616.0	530.6	618.6	53.1	0.785	1.48
1.0	214.0	236.0	218.1	240.1	21.8	0.201	0.92
1.2	416.0	678.0	420.1	682.1	42.0	2.325	5.53
1.4	470.0	680.0	474.1	684.1	47.4	1.865	3.93
1.6	336.0	528.0	340.1	532.1	34.0	1.706	5.02
1.8	292.0	312.0	296.1	316.1	29.6	0.183	0.62
2.0	296.0	430.0	301.6	435.6	30.2	1.192	3.95
2.2	288.0	420.0	293.6	425.6	29.4	1.175	4.00
2.4	389.0	572.0	394.6	577.6	39.5	1.626	4.12
2.6	648.0	770.0	653.6	775.6	65.4	1.086	1.66
2.8	438.0	578.0	443.6	583.6	44.4	1.245	2.81
3.0	410.0	572.0	417.1	579.1	41.7	1.440	3.45
3.2	296.0	371.0	303.1	378.1	30.3	0.670	2.21
3.4	196.0	302.0	203.1	309.1	20.3	0.945	4.65
3.6	220.0	372.0	227.1	379.1	22.7	1.352	5.95
3.8	202.0	328.0	209.1	335.1	20.9	1.122	5.36
4.0	190.0	332.0	198.6	340.6	19.9	1.263	6.36
4.2	120.0	236.0	128.6	244.6	12.9	1.033	8.03
4.4	74.0	174.0	82.6	182.6	8.3	0.891	10.79
4.6	72.0	200.0	80.6	208.6	8.1	1.139	14.13
4.8	148.0	280.0	156.6	288.6	15.7	1.175	7.50
5.0	138.0	202.0	148.1	212.1	14.8	0.573	3.87
5.2	212.0	244.0	222.1	254.1	22.2	0.290	1.30
5.4	358.0	372.0	368.1	382.1	36.8	0.130	0.35
5.6	306.0	420.0	316.1	430.1	31.6	1.015	3.21
5.8	300.0	390.0	310.1	400.1	31.0	0.803	2.59
6.0	384.0	570.0	395.6	581.6	39.6	1.653	4.18
6.2	286.0	397.0	297.6	408.6	29.8	0.989	3.32
6.4	272.0	504.0	283.6	515.6	28.4	2.060	7.26
6.6	318.0	500.0	329.6	511.6	33.0	1.617	4.91
6.8	330.0	572.0	341.6	583.6	34.2	2.148	6.29
7.0	294.0	526.0	307.1	539.1	30.7	2.060	6.71
7.2	284.0	352.0	297.1	365.1	29.7	0.608	2.05
7.4	552.0	860.0	565.1	873.1	56.5	2.732	4.83
7.6	612.0	1032.0	625.1	1045.1	62.5	3.723	5.96
7.8	639.0	1104.0	652.1	1117.1	65.2	4.122	6.32
8.0	728.0	1258.0	742.6	1272.6	74.3	4.697	6.32
8.2	814.0	1354.0	828.6	1368.6	82.9	4.785	5.78
8.4	872.0	1502.0	886.6	1516.6	88.7	5.582	6.30
8.6	1040.0	1752.0	1054.6	1766.6	105.5	6.307	5.98
8.8	1110.0	1858.0	1124.6	1872.6	112.5	6.626	5.89
9.0	1072.0	1802.0	1088.1	1818.1	108.8	6.467	5.94

SCPT NO. - 8

Mass of cone(kg) = 1.1
Area of Cone (sqcm) = 10
Area of friction jacket (sqcm) = 113
Mass of each rod (kg) = 1.5
Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
9.2	1111.0	1962.0	1127.1	1978.1	112.7	7.537	6.69
9.4	1220.0	2134.0	1236.1	2150.1	123.6	8.095	6.55

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
II	0.00	9.40	4.71	Clayey silt / silty clay	45.08	1.67kg/sqcm

SCPT NO. - 9

Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	176.0	240.0	178.6	242.6	17.9	0.573	3.21
0.4	294.0	326.0	296.6	328.6	29.7	0.290	0.98
0.6	158.0	206.0	160.6	208.6	16.1	0.431	2.69
0.8	42.0	144.0	44.6	146.6	4.5	0.909	20.38
1.0	61.0	194.0	65.1	198.1	6.5	1.183	18.18
1.2	248.0	322.0	252.1	326.1	25.2	0.661	2.62
1.4	150.0	210.0	154.1	214.1	15.4	0.537	3.49
1.6	126.0	222.0	130.1	226.1	13.0	0.856	6.58
1.8	160.0	210.0	164.1	214.1	16.4	0.449	2.74
2.0	170.0	236.0	175.6	241.6	17.6	0.591	3.36
2.2	244.0	246.0	249.6	251.6	25.0	0.024	0.10
2.4	278.0	302.0	283.6	307.6	28.4	0.219	0.77
2.6	404.0	498.0	409.6	503.6	41.0	0.838	2.05
2.8	458.0	501.0	463.6	506.6	46.4	0.387	0.83
3.0	460.0	510.0	467.1	517.1	46.7	0.449	0.96
3.2	360.0	564.0	367.1	571.1	36.7	1.812	4.94
3.4	440.0	506.0	447.1	513.1	44.7	0.591	1.32
3.6	480.0	708.0	487.1	715.1	48.7	2.024	4.16
3.8	712.0	852.0	719.1	859.1	71.9	1.245	1.73
4.0	186.0	410.0	194.6	418.6	19.5	1.989	10.22
4.2	446.0	701.0	454.6	709.6	45.5	2.263	4.98
4.4	270.0	420.0	278.6	428.6	27.9	1.334	4.79
4.6	224.0	420.0	232.6	428.6	23.3	1.741	7.48
4.8	172.0	322.0	180.6	330.6	18.1	1.334	7.39
5.0	214.0	312.0	224.1	322.1	22.4	0.874	3.90
5.2	132.0	186.0	142.1	196.1	14.2	0.484	3.41
5.4	168.0	220.0	178.1	230.1	17.8	0.467	2.62
5.6	292.0	352.0	302.1	362.1	30.2	0.537	1.78
5.8	304.0	410.0	314.1	420.1	31.4	0.945	3.01
6.0	376.0	400.0	387.6	411.6	38.8	0.219	0.56
6.2	920.0	1120.0	931.6	1131.6	93.2	1.776	1.91
6.4	1302.0	1634.0	1313.6	1645.6	131.4	2.945	2.24
6.6	690.0	1450.0	701.6	1461.6	70.2	6.732	9.60
6.8	478.0	1052.0	489.6	1063.6	49.0	5.086	10.39
7.0	572.0	940.0	585.1	953.1	58.5	3.263	5.58
7.2	472.0	896.0	485.1	909.1	48.5	3.759	7.75
7.4	448.0	710.0	461.1	723.1	46.1	2.325	5.04
7.6	534.0	772.0	547.1	785.1	54.7	2.113	3.86
7.8	298.0	644.0	311.1	657.1	31.1	3.068	9.86
8.0	434.0	786.0	448.6	800.6	44.9	3.122	6.96
8.2	624.0	912.0	638.6	926.6	63.9	2.555	4.00
8.4	115.0	1522.0	129.6	1536.6	13.0	12.458	96.13
8.6	1214.0	1864.0	1228.6	1878.6	122.9	5.759	4.69
8.8	1328.0	2426.0	1342.6	2440.6	134.3	9.723	7.24

SCPT NO. - 9

Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
9.0	1112.0	2238.0	1128.1	2254.1	112.8	9.971	8.84
9.2	1162.0	2252.0	1178.1	2268.1	117.8	9.653	8.19

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
I	0.00	7.50	3.47	Sandy silt	38.10	36°
IV	7.50	9.20	6.71	Clay	85.30	3.16kg/sqcm

SCPT NO. - 10

Mass of cone(kg) = 1.1
Area of Cone (sqcm) = 10
Area of friction jacket (sqcm) = 113
Mass of each rod (kg) = 1.5
Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	206.0	474.0	208.6	476.6	20.9	2.378	11.40
0.4	394.0	526.0	396.6	528.6	39.7	1.175	2.96
0.6	224.0	272.0	226.6	274.6	22.7	0.431	1.90
0.8	152.0	362.0	154.6	364.6	15.5	1.865	12.06
1.0	242.0	378.0	246.1	382.1	24.6	1.210	4.92
1.2	146.0	242.0	150.1	246.1	15.0	0.856	5.70
1.4	126.0	204.0	130.1	208.1	13.0	0.697	5.36
1.6	146.0	310.0	150.1	314.1	15.0	1.458	9.71
1.8	44.0	94.0	48.1	98.1	4.8	0.449	9.33
2.0	28.0	62.0	33.6	67.6	3.4	0.307	9.15
2.2	70.0	120.0	75.6	125.6	7.6	0.449	5.94
2.4	110.0	170.0	115.6	175.6	11.6	0.537	4.65
2.6	84.0	130.0	89.6	135.6	9.0	0.414	4.62
2.8	86.0	158.0	91.6	163.6	9.2	0.644	7.03
3.0	192.0	306.0	199.1	313.1	19.9	1.015	5.10
3.2	394.0	496.0	401.1	503.1	40.1	0.909	2.27
3.4	491.0	632.0	498.1	639.1	49.8	1.254	2.52
3.6	308.0	560.0	315.1	567.1	31.5	2.237	7.10
3.8	174.0	364.0	181.1	371.1	18.1	1.688	9.32
4.0	166.0	300.0	174.6	308.6	17.5	1.192	6.83
4.2	236.0	436.0	244.6	444.6	24.5	1.776	7.26
4.4	252.0	526.0	260.6	534.6	26.1	2.431	9.33
4.6	168.0	236.0	176.6	244.6	17.7	0.608	3.44
4.8	118.0	202.0	126.6	210.6	12.7	0.750	5.92
5.0	130.0	212.0	140.1	222.1	14.0	0.732	5.23
5.2	108.0	204.0	118.1	214.1	11.8	0.856	7.25
5.4	210.0	412.0	220.1	422.1	22.0	1.794	8.15
5.6	236.0	426.0	246.1	436.1	24.6	1.688	6.86
5.8	352.0	436.0	362.1	446.1	36.2	0.750	2.07
6.0	174.0	224.0	185.6	235.6	18.6	0.449	2.42
6.2	236.0	420.0	247.6	431.6	24.8	1.635	6.60
6.4	222.0	410.0	233.6	421.6	23.4	1.670	7.15
6.6	142.0	210.0	153.6	221.6	15.4	0.608	3.96
6.8	134.0	208.0	145.6	219.6	14.6	0.661	4.54
7.0	166.0	232.0	179.1	245.1	17.9	0.591	3.30
7.2	176.0	272.0	189.1	285.1	18.9	0.856	4.53
7.4	164.0	264.0	177.1	277.1	17.7	0.891	5.03
7.6	290.0	486.0	303.1	499.1	30.3	1.741	5.74
7.8	152.0	216.0	165.1	229.1	16.5	0.573	3.47
8.0	142.0	210.0	156.6	224.6	15.7	0.608	3.88
8.2	138.0	264.0	152.6	278.6	15.3	1.122	7.35
8.4	144.0	226.0	158.6	240.6	15.9	0.732	4.62
8.6	118.0	200.0	132.6	214.6	13.3	0.732	5.52
8.8	104.0	198.0	118.6	212.6	11.9	0.838	7.07
9.0	120.0	174.0	136.1	190.1	13.6	0.484	3.56
9.2	126.0	186.0	142.1	202.1	14.2	0.537	3.78
9.4	106.0	224.0	122.1	240.1	12.2	1.051	8.61
9.6	130.0	208.0	146.1	224.1	14.6	0.697	4.77
9.8	92.0	162.0	108.1	178.1	10.8	0.626	5.79
10.0	50.0	142.0	67.6	159.6	6.8	0.821	12.14
10.2	78.0	176.0	95.6	193.6	9.6	0.874	9.14
10.4	112.0	244.0	129.6	261.6	13.0	1.175	9.06
10.6	444.0	586.0	461.6	603.6	46.2	1.263	2.74
10.8	428.0	616.0	445.6	633.6	44.6	1.670	3.75
11.0	546.0	978.0	563.6	995.6	56.4	3.830	6.79

SCPT NO. - 10

Mass of cone(kg) = 1.1
Area of Cone (sqcm) = 10
Area of friction jacket (sqcm) = 113
Mass of each rod (kg) = 1.5
Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
11.2	568.0	962.0	585.6	979.6	58.6	3.493	5.97
11.4	688.0	1242.0	705.6	1259.6	70.6	4.909	6.96
11.6	612.0	1258.0	629.6	1275.6	63.0	5.723	9.09
11.8	680.0	1270.0	697.6	1287.6	69.8	5.228	7.49
12.0	760.0	1320.0	777.6	1337.6	77.8	4.962	6.38
12.2	770.0	1210.0	787.6	1227.6	78.8	3.900	4.95
12.4	706.0	1110.0	723.6	1127.6	72.4	3.582	4.95
12.6	410.0	760.0	427.6	777.6	42.8	3.104	7.26
12.8	480.0	922.0	497.6	939.6	49.8	3.918	7.87
13.0	720.0	1132.0	737.6	1149.6	73.8	3.653	4.95
13.2	928.0	1322.0	945.6	1339.6	94.6	3.493	3.69
13.4	1632.0	2692.0	1649.6	2709.6	165.0	9.387	5.69

Layer No	Depth		Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
	From (M)	To (M)				
II	0.00	13.40	6.03	Clay	29.90	1.11kg/sqcm

SCPT NO. - 11

Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	310.0	418.0	312.6	420.6	31.3	0.962	3.08
0.4	550.0	662.0	552.6	664.6	55.3	0.998	1.81
0.6	314.0	440.0	316.6	442.6	31.7	1.122	3.54
0.8	512.0	726.0	514.6	728.6	51.5	1.900	3.69
1.0	666.0	834.0	670.1	838.1	67.0	1.493	2.23
1.2	630.0	802.0	634.1	806.1	63.4	1.529	2.41
1.4	406.0	766.0	410.1	770.1	41.0	3.192	7.78
1.6	1210.0	1688.0	1214.1	1692.1	121.4	4.237	3.49
1.8	806.0	1218.0	810.1	1222.1	81.0	3.653	4.51
2.0	538.0	876.0	543.6	881.6	54.4	2.998	5.51
2.2	512.0	836.0	517.6	841.6	51.8	2.874	5.55
2.4	582.0	840.0	587.6	845.6	58.8	2.290	3.90
2.6	236.0	502.0	241.6	507.6	24.2	2.360	9.77
2.8	154.0	300.0	159.6	305.6	16.0	1.299	8.14
3.0	176.0	288.0	183.1	295.1	18.3	0.998	5.45
3.2	168.0	206.0	175.1	213.1	17.5	0.343	1.96
3.4	196.0	282.0	203.1	289.1	20.3	0.768	3.78
3.6	232.0	332.0	239.1	339.1	23.9	0.891	3.73
3.8	180.0	316.0	187.1	323.1	18.7	1.210	6.47
4.0	218.0	318.0	226.6	326.6	22.7	0.891	3.93
4.2	216.0	320.0	224.6	328.6	22.5	0.927	4.13
4.4	198.0	294.0	206.6	302.6	20.7	0.856	4.14
4.6	118.0	268.0	126.6	276.6	12.7	1.334	10.54
4.8	144.0	240.0	152.6	248.6	15.3	0.856	5.61
5.0	172.0	306.0	182.1	316.1	18.2	1.192	6.55
5.2	228.0	332.0	238.1	342.1	23.8	0.927	3.89
5.4	224.0	352.0	234.1	362.1	23.4	1.139	4.87
5.6	276.0	424.0	286.1	434.1	28.6	1.316	4.60
5.8	238.0	432.0	248.1	442.1	24.8	1.723	6.95
6.0	214.0	390.0	225.6	401.6	22.6	1.564	6.93
6.2	192.0	346.0	203.6	357.6	20.4	1.369	6.73
6.4	196.0	306.0	207.6	317.6	20.8	0.980	4.72
6.6	210.0	300.0	221.6	311.6	22.2	0.803	3.62
6.8	216.0	312.0	227.6	323.6	22.8	0.856	3.76
7.0	290.0	482.0	303.1	495.1	30.3	1.706	5.63
7.2	544.0	756.0	557.1	769.1	55.7	1.883	3.38
7.4	656.0	974.0	669.1	987.1	66.9	2.821	4.22
7.6	614.0	1120.0	627.1	1133.1	62.7	4.484	7.15
7.8	804.0	1252.0	817.1	1265.1	81.7	3.971	4.86
8.0	822.0	1470.0	836.6	1484.6	83.7	5.741	6.86
8.2	844.0	1456.0	858.6	1470.6	85.9	5.422	6.32
8.4	866.0	1510.0	880.6	1524.6	88.1	5.706	6.48
8.6	914.0	1522.0	928.6	1536.6	92.9	5.387	5.80
8.8	972.0	1734.0	986.6	1748.6	98.7	6.750	6.84
9.0	810.0	1512.0	826.1	1528.1	82.6	6.219	7.53
9.2	824.0	1144.0	840.1	1160.1	84.0	2.838	3.38
9.4	956.0	1572.0	972.1	1588.1	97.2	5.458	5.61
9.6	1602.0	2101.0	1618.1	2117.1	161.8	4.422	2.73
9.8	1896.0	2562.0	1912.1	2578.1	191.2	5.900	3.09

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
I	0.00	5.00	4.07	Sandy silt	41.20	36°
II	5.00	9.00	5.56	Clay	51.92	1.92kg/sqcm
III	9.00	9.80	3.70	Sandy silt	133.56	38°

SCPT NO. - 12

Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	122.0	410.0	124.6	412.6	12.5	2.555	20.51
0.4	670.0	720.0	672.6	722.6	67.3	0.449	0.67
0.6	354.0	540.0	356.6	542.6	35.7	1.653	4.63
0.8	370.0	470.0	372.6	472.6	37.3	0.891	2.39
1.0	790.0	818.0	794.1	822.1	79.4	0.254	0.32
1.2	496.0	836.0	500.1	840.1	50.0	3.015	6.03
1.4	362.0	508.0	366.1	512.1	36.6	1.299	3.55
1.6	250.0	384.0	254.1	388.1	25.4	1.192	4.69
1.8	76.0	188.0	80.1	192.1	8.0	0.998	12.46
2.0	158.0	216.0	163.6	221.6	16.4	0.520	3.18
2.2	178.0	394.0	183.6	399.6	18.4	1.918	10.45
2.4	166.0	272.0	171.6	277.6	17.2	0.945	5.50
2.6	176.0	282.0	181.6	287.6	18.2	0.945	5.20
2.8	132.0	290.0	137.6	295.6	13.8	1.405	10.21
3.0	190.0	296.0	197.1	303.1	19.7	0.945	4.79
3.2	144.0	176.0	151.1	183.1	15.1	0.290	1.92
3.4	124.0	212.0	131.1	219.1	13.1	0.785	5.99
3.6	166.0	364.0	173.1	371.1	17.3	1.759	10.16
3.8	182.0	314.0	189.1	321.1	18.9	1.175	6.21
4.0	186.0	332.0	194.6	340.6	19.5	1.299	6.67
4.2	192.0	406.0	200.6	414.6	20.1	1.900	9.47
4.4	206.0	310.0	214.6	318.6	21.5	0.927	4.32
4.6	174.0	380.0	182.6	388.6	18.3	1.830	10.02
4.8	192.0	304.0	200.6	312.6	20.1	0.998	4.97
5.0	230.0	384.0	240.1	394.1	24.0	1.369	5.70
5.2	276.0	424.0	286.1	434.1	28.6	1.316	4.60
5.4	276.0	466.0	286.1	476.1	28.6	1.688	5.90
5.6	282.0	454.0	292.1	464.1	29.2	1.529	5.23
5.8	304.0	492.0	314.1	502.1	31.4	1.670	5.32
6.0	184.0	310.0	195.6	321.6	19.6	1.122	5.73
6.2	182.0	308.0	193.6	319.6	19.4	1.122	5.79
6.4	202.0	362.0	213.6	373.6	21.4	1.422	6.66
6.6	214.0	340.0	225.6	351.6	22.6	1.122	4.97
6.8	202.0	358.0	213.6	369.6	21.4	1.387	6.49
7.0	306.0	530.0	319.1	543.1	31.9	1.989	6.23
7.2	332.0	612.0	345.1	625.1	34.5	2.484	7.20
7.4	814.0	1046.0	827.1	1059.1	82.7	2.060	2.49
7.6	724.0	1042.0	737.1	1055.1	73.7	2.821	3.83
7.8	810.0	1286.0	823.1	1299.1	82.3	4.219	5.13
8.0	792.0	1402.0	806.6	1416.6	80.7	5.405	6.70
8.2	1350.0	1766.0	1364.6	1780.6	136.5	3.688	2.70
8.4	1502.0	2130.0	1516.6	2144.6	151.7	5.564	3.67
8.6	1320.0	2022.0	1334.6	2036.6	133.5	6.219	4.66
8.8	920.0	1560.0	934.6	1574.6	93.5	5.670	6.07
9.0	872.0	1482.0	888.1	1498.1	88.8	5.405	6.09
9.2	974.0	1362.0	990.1	1378.1	99.0	3.440	3.47
9.4	1478.0	1940.0	1494.1	1956.1	149.4	4.095	2.74
9.6	1132.0	1836.0	1148.1	1852.1	114.8	6.237	5.43
9.8	1146.0	1862.0	1162.1	1878.1	116.2	6.343	5.46
10.0	1176.0	1578.0	1193.6	1595.6	119.4	3.564	2.99

SCPT NO. - 12

Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
10.2	1510.0	2340.0	1527.6	2357.6	152.8	7.352	4.81
10.4	1936.0	2580.0	1953.6	2597.6	195.4	5.706	2.92

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
I	0.00	3.00	3.72	Sandy silt	36.60	38°
II	3.00	7.50	6.00	Clay	25.41	0.94kg/sqcm
I	7.50	10.40	4.44	Sandy silt	119.16	36°

SCPT NO. - 13

Mass of cone(kg) = 1.1
Area of Cone (sqcm) = 10
Area of friction jacket (sqcm) = 113
Mass of each rod (kg) = 1.5
Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	812.0	1810.0	814.6	1812.6	81.5	8.838	10.85
0.4	470.0	2040.0	472.6	2042.6	47.3	13.900	29.41
0.6	870.0	1502.0	872.6	1504.6	87.3	5.599	6.42
0.8	992.0	1496.0	994.6	1498.6	99.5	4.467	4.49
1.0	1106.0	1444.0	1110.1	1448.1	111.0	2.998	2.70
1.2	1114.0	1652.0	1118.1	1656.1	111.8	4.768	4.26
1.4	1246.0	1904.0	1250.1	1908.1	125.0	5.830	4.66
1.6	1800.0	2342.0	1804.1	2346.1	180.4	4.803	2.66
1.8	1310.0	1614.0	1314.1	1618.1	131.4	2.697	2.05
2.0	1460.0	2274.0	1465.6	2279.6	146.6	7.210	4.92
2.2	1374.0	2194.0	1379.6	2199.6	138.0	7.263	5.26
2.4	2620.0	2980.0	2625.6	2985.6	262.6	3.192	1.22
2.6	1002.0	1976.0	1007.6	1981.6	100.8	8.626	8.56
2.8	662.0	1106.0	667.6	1111.6	66.8	3.936	5.90
3.0	409.0	812.0	416.1	819.1	41.6	3.573	8.59
3.2	302.0	512.0	309.1	519.1	30.9	1.865	6.03
3.4	299.0	472.0	306.1	479.1	30.6	1.537	5.02
3.6	264.0	390.0	271.1	397.1	27.1	1.122	4.14
3.8	312.0	468.0	319.1	475.1	31.9	1.387	4.35
4.0	280.0	380.0	288.6	388.6	28.9	0.891	3.09
4.2	310.0	420.0	318.6	428.6	31.9	0.980	3.08
4.4	338.0	512.0	346.6	520.6	34.7	1.546	4.46
4.6	304.0	454.0	312.6	462.6	31.3	1.334	4.27
4.8	282.0	412.0	290.6	420.6	29.1	1.157	3.98
5.0	292.0	438.0	302.1	448.1	30.2	1.299	4.30
5.2	296.0	444.0	306.1	454.1	30.6	1.316	4.30
5.4	244.0	370.0	254.1	380.1	25.4	1.122	4.41
5.6	284.0	440.0	294.1	450.1	29.4	1.387	4.72
5.8	356.0	478.0	366.1	488.1	36.6	1.086	2.97
6.0	292.0	478.0	303.6	489.6	30.4	1.653	5.44
6.2	318.0	426.0	329.6	437.6	33.0	0.962	2.92
6.4	364.0	504.0	375.6	515.6	37.6	1.245	3.32
6.6	292.0	402.0	303.6	413.6	30.4	0.980	3.23
6.8	390.0	484.0	401.6	495.6	40.2	0.838	2.09
7.0	372.0	486.0	385.1	499.1	38.5	1.015	2.64
7.2	340.0	508.0	353.1	521.1	35.3	1.493	4.23
7.4	334.0	484.0	347.1	497.1	34.7	1.334	3.84
7.6	368.0	416.0	381.1	429.1	38.1	0.431	1.13
7.8	436.0	560.0	449.1	573.1	44.9	1.104	2.46
8.0	390.0	540.0	404.6	554.6	40.5	1.334	3.30
8.2	410.0	582.0	424.6	596.6	42.5	1.529	3.60
8.4	498.0	617.0	512.6	631.6	51.3	1.060	2.07
8.6	530.0	692.0	544.6	706.6	54.5	1.440	2.64
8.8	612.0	734.0	626.6	748.6	62.7	1.086	1.73
9.0	707.0	899.0	723.1	915.1	72.3	1.706	2.36
9.2	910.0	1064.0	926.1	1080.1	92.6	1.369	1.48
9.4	1114.0	1362.0	1130.1	1378.1	113.0	2.201	1.95
9.6	1392.0	1668.0	1408.1	1684.1	140.8	2.449	1.74
9.8	1490.0	1760.0	1506.1	1776.1	150.6	2.396	1.59
10.0	1062.0	1340.0	1079.6	1357.6	108.0	2.467	2.28
10.2	1578.0	1880.0	1595.6	1897.6	159.6	2.679	1.68
10.4	1790.0	2035.0	1807.6	2052.6	180.8	2.175	1.20
10.6	2002.0	2242.0	2019.6	2259.6	202.0	2.130	1.05

SCPT NO. - 13

Mass of cone(kg) =	1.1	Area of friction jacket (sqcm) =	113
Area of Cone (sqcm) =	10	Mass of each rod (kg) =	1.5
		Mass of friction jacket(kg) =	0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
10.8	2146.0	2310.0	2163.6	2327.6	216.4	1.458	0.67
11.0	2252.0	2636.0	2271.1	2655.1	227.1	3.405	1.50

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
I	0.00	11.00	3.45	Sandy silt	81.29	38°

SCPT NO. - 14

Mass of cone(kg) = 1.1
Area of Cone (sqcm) = 10
Area of friction jacket (sqcm) = 113
Mass of each rod (kg) = 1.5
Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	340.0	376.0	342.6	378.6	34.3	0.325	0.95
0.4	310.0	338.0	312.6	340.6	31.3	0.254	0.81
0.6	222.0	270.0	224.6	272.6	22.5	0.431	1.92
0.8	176.0	280.0	178.6	282.6	17.9	0.927	5.19
1.0	314.0	370.0	318.1	374.1	31.8	0.502	1.58
1.2	710.0	836.0	714.1	840.1	71.4	1.122	1.57
1.4	630.0	782.0	634.1	786.1	63.4	1.352	2.13
1.6	166.0	366.0	170.1	370.1	17.0	1.776	10.44
1.8	440.0	552.0	444.1	556.1	44.4	0.998	2.25
2.0	244.0	510.0	249.6	515.6	25.0	2.360	9.46
2.2	160.0	294.0	165.6	299.6	16.6	1.192	7.20
2.4	75.0	236.0	80.6	241.6	8.1	1.431	17.76
2.6	88.0	196.0	93.6	201.6	9.4	0.962	10.28
2.8	112.0	218.0	117.6	223.6	11.8	0.945	8.03
3.0	208.0	250.0	215.1	257.1	21.5	0.378	1.76
3.2	266.0	406.0	273.1	413.1	27.3	1.245	4.56
3.4	630.0	988.0	637.1	995.1	63.7	3.175	4.98
3.6	1472.0	2002.0	1479.1	2009.1	147.9	4.697	3.18
3.8	1130.0	1878.0	1137.1	1885.1	113.7	6.626	5.83
4.0	792.0	1186.0	800.6	1194.6	80.1	3.493	4.36
4.2	604.0	1120.0	612.6	1128.6	61.3	4.573	7.46
4.4	554.0	1082.0	562.6	1090.6	56.3	4.679	8.32
4.6	534.0	882.0	542.6	890.6	54.3	3.086	5.69
4.8	698.0	1110.0	706.6	1118.6	70.7	3.653	5.17
5.0	198.0	406.0	208.1	416.1	20.8	1.847	8.88
5.2	172.0	372.0	182.1	382.1	18.2	1.776	9.76
5.4	154.0	332.0	164.1	342.1	16.4	1.582	9.64
5.6	184.0	314.0	194.1	324.1	19.4	1.157	5.96
5.8	194.0	324.0	204.1	334.1	20.4	1.157	5.67
6.0	222.0	358.0	233.6	369.6	23.4	1.210	5.18
6.2	224.0	354.0	235.6	365.6	23.6	1.157	4.91
6.4	252.0	386.0	263.6	397.6	26.4	1.192	4.52
6.6	306.0	466.0	317.6	477.6	31.8	1.422	4.48
6.8	682.0	714.0	693.6	725.6	69.4	0.290	0.42
7.0	850.0	1346.0	863.1	1359.1	86.3	4.396	5.09
7.2	852.0	1348.0	865.1	1361.1	86.5	4.396	5.08
7.4	792.0	1294.0	805.1	1307.1	80.5	4.449	5.53
7.6	768.0	1178.0	781.1	1191.1	78.1	3.635	4.65
7.8	742.0	1312.0	755.1	1325.1	75.5	5.051	6.69
8.0	736.0	1182.0	750.6	1196.6	75.1	3.953	5.27
8.2	886.0	1460.0	900.6	1474.6	90.1	5.086	5.65
8.4	844.0	1434.0	858.6	1448.6	85.9	5.228	6.09
8.6	1070.0	1504.0	1084.6	1518.6	108.5	3.847	3.55
8.8	1272.0	1752.0	1286.6	1766.6	128.7	4.254	3.31
9.0	974.0	1478.0	990.1	1494.1	99.0	4.467	4.51
9.2	930.0	1448.0	946.1	1464.1	94.6	4.591	4.85
9.4	922.0	1396.0	938.1	1412.1	93.8	4.201	4.48
9.6	792.0	1286.0	808.1	1302.1	80.8	4.378	5.42
9.8	858.0	1266.0	874.1	1282.1	87.4	3.617	4.14
10.0	794.0	1266.0	811.6	1283.6	81.2	4.183	5.15
10.2	852.0	1289.0	869.6	1306.6	87.0	3.874	4.45
10.4	948.0	1556.0	965.6	1573.6	96.6	5.387	5.58
10.6	1316.0	1814.0	1333.6	1831.6	133.4	4.414	3.31

SCPT NO. - 14

Mass of cone(kg) =	1.1	Area of friction jacket (sqcm) =	113
Area of Cone (sqcm) =	10	Mass of each rod (kg) =	1.5
		Mass of friction jacket(kg) =	0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
10.8	1304.0	2292.0	1321.6	2309.6	132.2	8.750	6.62
11.0	1434.0	2310.0	1453.1	2329.1	145.3	7.759	5.34

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
I	0.00	11.00	4.27	Sandy silt	71.30	36°

SCPT NO. - 15

Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	700.0	1620.0	702.6	1622.6	70.3	8.148	11.60
0.4	1024.0	1560.0	1026.6	1562.6	102.7	4.750	4.63
0.6	306.0	562.0	308.6	564.6	30.9	2.272	7.36
0.8	366.0	496.0	368.6	498.6	36.9	1.157	3.14
1.0	280.0	462.0	284.1	466.1	28.4	1.617	5.69
1.2	300.0	382.0	304.1	386.1	30.4	0.732	2.41
1.4	382.0	542.0	386.1	546.1	38.6	1.422	3.68
1.6	370.0	544.0	374.1	548.1	37.4	1.546	4.13
1.8	436.0	692.0	440.1	696.1	44.0	2.272	5.16
2.0	406.0	654.0	411.6	659.6	41.2	2.201	5.35
2.2	388.0	620.0	393.6	625.6	39.4	2.060	5.23
2.4	345.0	594.0	350.6	599.6	35.1	2.210	6.30
2.6	508.0	766.0	513.6	771.6	51.4	2.290	4.46
2.8	626.0	922.0	631.6	927.6	63.2	2.626	4.16
3.0	624.0	890.0	631.1	897.1	63.1	2.360	3.74
3.2	724.0	1102.0	731.1	1109.1	73.1	3.352	4.58
3.4	510.0	1148.0	517.1	1155.1	51.7	5.653	10.93
3.6	536.0	756.0	543.1	763.1	54.3	1.953	3.60
3.8	422.0	790.0	429.1	797.1	42.9	3.263	7.60
4.0	488.0	862.0	496.6	870.6	49.7	3.316	6.68
4.2	512.0	1126.0	520.6	1134.6	52.1	5.440	10.45
4.4	1338.0	1512.0	1346.6	1520.6	134.7	1.546	1.15
4.6	742.0	1255.0	750.6	1263.6	75.1	4.546	6.06
4.8	632.0	1186.0	640.6	1194.6	64.1	4.909	7.66
5.0	934.0	1472.0	944.1	1482.1	94.4	4.768	5.05
5.2	996.0	1592.0	1006.1	1602.1	100.6	5.281	5.25
5.4	806.0	1310.0	816.1	1320.1	81.6	4.467	5.47
5.6	872.0	1482.0	882.1	1492.1	88.2	5.405	6.13
5.8	1012.0	1742.0	1022.1	1752.1	102.2	6.467	6.33
6.0	910.0	1582.0	921.6	1593.6	92.2	5.953	6.46
6.2	736.0	1292.0	747.6	1303.6	74.8	4.927	6.59
6.4	982.0	1486.0	993.6	1497.6	99.4	4.467	4.50
6.6	430.0	992.0	441.6	1003.6	44.2	4.980	11.28
6.8	406.0	708.0	417.6	719.6	41.8	2.679	6.42
7.0	562.0	912.0	575.1	925.1	57.5	3.104	5.40
7.2	601.0	1004.0	614.1	1017.1	61.4	3.573	5.82
7.4	628.0	1314.0	641.1	1327.1	64.1	6.077	9.48
7.6	872.0	1536.0	885.1	1549.1	88.5	5.883	6.65
7.8	976.0	1788.0	989.1	1801.1	98.9	7.192	7.27
8.0	1132.0	2106.0	1146.6	2120.6	114.7	8.626	7.52
8.2	1210.0	2246.0	1224.6	2260.6	122.5	9.175	7.49

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
I	0.00	6.00	4.40	Sandy silt	61.30	40°
II	6.00	8.20	7.04	Clay	70.10	2.60kg/sqcm

SCPT NO. - 16

Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	12.0	44.0	14.6	46.6	1.5	0.290	19.84
0.4	124.0	286.0	126.6	288.6	12.7	1.440	11.38
0.6	156.0	297.0	158.6	299.6	15.9	1.254	7.91
0.8	852.0	982.0	854.6	984.6	85.5	1.157	1.35
1.0	492.0	574.0	496.1	578.1	49.6	0.732	1.48
1.2	96.0	636.0	100.1	640.1	10.0	4.785	47.80
1.4	502.0	582.0	506.1	586.1	50.6	0.714	1.41
1.6	254.0	424.0	258.1	428.1	25.8	1.511	5.85
1.8	156.0	292.0	160.1	296.1	16.0	1.210	7.56
2.0	148.0	222.0	153.6	227.6	15.4	0.661	4.31
2.2	318.0	332.0	323.6	337.6	32.4	0.130	0.40
2.4	180.0	366.0	185.6	371.6	18.6	1.653	8.90
2.6	276.0	376.0	281.6	381.6	28.2	0.891	3.17
2.8	148.0	320.0	153.6	325.6	15.4	1.529	9.95
3.0	282.0	348.0	289.1	355.1	28.9	0.591	2.04
3.2	206.0	290.0	213.1	297.1	21.3	0.750	3.52
3.4	285.0	334.0	292.1	341.1	29.2	0.440	1.51
3.6	232.0	336.0	239.1	343.1	23.9	0.927	3.88
3.8	236.0	314.0	243.1	321.1	24.3	0.697	2.87
4.0	292.0	336.0	300.6	344.6	30.1	0.396	1.32
4.2	264.0	344.0	272.6	352.6	27.3	0.714	2.62
4.4	312.0	342.0	320.6	350.6	32.1	0.272	0.85
4.6	376.0	548.0	384.6	556.6	38.5	1.529	3.97
4.8	456.0	702.0	464.6	710.6	46.5	2.183	4.70
5.0	492.0	544.0	502.1	554.1	50.2	0.467	0.93
5.2	588.0	622.0	598.1	632.1	59.8	0.307	0.51
5.4	532.0	910.0	542.1	920.1	54.2	3.352	6.18
5.6	476.0	878.0	486.1	888.1	48.6	3.564	7.33
5.8	596.0	974.0	606.1	984.1	60.6	3.352	5.53
6.0	612.0	700.0	623.6	711.6	62.4	0.785	1.26
6.2	612.0	666.0	623.6	677.6	62.4	0.484	0.78
6.4	622.0	1032.0	633.6	1043.6	63.4	3.635	5.74
6.6	710.0	1022.0	721.6	1033.6	72.2	2.768	3.84
6.8	720.0	1236.0	731.6	1247.6	73.2	4.573	6.25
7.0	740.0	1176.0	753.1	1189.1	75.3	3.865	5.13
7.2	682.0	724.0	695.1	737.1	69.5	0.378	0.54
7.4	1082.0	1732.0	1095.1	1745.1	109.5	5.759	5.26
7.6	1872.0	1914.0	1885.1	1927.1	188.5	0.378	0.20
7.8	1910.0	2006.0	1923.1	2019.1	192.3	0.856	0.45
8.0	1066.0	2042.0	1080.6	2056.6	108.1	8.644	8.00
8.2	1822.0	2076.0	1836.6	2090.6	183.7	2.254	1.23
8.4	1650.0	2126.0	1664.6	2140.6	166.5	4.219	2.53
8.6	1616.0	2062.0	1630.6	2076.6	163.1	3.953	2.42
8.8	1974.0	2336.0	1988.6	2350.6	198.9	3.210	1.61
9.0	1999.0	2338.0	2015.1	2354.1	201.5	3.006	1.49
9.2	1850.0	2246.0	1866.1	2262.1	186.6	3.511	1.88
9.4	2068.0	2902.0	2084.1	2918.1	208.4	7.387	3.54
9.6	2156.0	3360.0	2172.1	3376.1	217.2	10.661	4.91

Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
II	0.00	4.00	7.32	Clay	26.80	0.99kg/sqcm
I	4.00	9.60	3.20	Sandy silt	107.90	38°

SCPT NO. - 17

Mass of cone(kg) = 1.1
Area of Cone (sqcm) = 10
Area of friction jacket (sqcm) = 113
Mass of each rod (kg) = 1.5
Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0.2	138.0	166.0	140.6	168.6	14.1	0.254	1.81
0.4	142.0	201.0	144.6	203.6	14.5	0.529	3.66
0.6	144.0	204.0	146.6	206.6	14.7	0.537	3.67
0.8	116.0	164.0	118.6	166.6	11.9	0.431	3.64
1.0	122.0	172.0	126.1	176.1	12.6	0.449	3.56
1.2	170.0	262.0	174.1	266.1	17.4	0.821	4.71
1.4	288.0	340.0	292.1	344.1	29.2	0.467	1.60
1.6	210.0	230.0	214.1	234.1	21.4	0.183	0.86
1.8	178.0	266.0	182.1	270.1	18.2	0.785	4.31
2.0	196.0	288.0	201.6	293.6	20.2	0.821	4.07
2.2	256.0	392.0	261.6	397.6	26.2	1.210	4.63
2.4	262.0	402.0	267.6	407.6	26.8	1.245	4.65
2.6	230.0	370.0	235.6	375.6	23.6	1.245	5.29
2.8	268.0	394.0	273.6	399.6	27.4	1.122	4.10
3.0	286.0	302.0	293.1	309.1	29.3	0.148	0.51
3.2	174.0	374.0	181.1	381.1	18.1	1.776	9.81
3.4	112.0	212.0	119.1	219.1	11.9	0.891	7.48
3.6	90.0	172.0	97.1	179.1	9.7	0.732	7.54
3.8	52.0	138.0	59.1	145.1	5.9	0.768	12.99
4.0	49.0	134.0	57.6	142.6	5.8	0.759	13.17
4.2	152.0	232.0	160.6	240.6	16.1	0.714	4.45
4.4	160.0	278.0	168.6	286.6	16.9	1.051	6.23
4.6	188.0	334.0	196.6	342.6	19.7	1.299	6.60
4.8	170.0	314.0	178.6	322.6	17.9	1.281	7.17
5.0	168.0	296.0	178.1	306.1	17.8	1.139	6.40
5.2	220.0	358.0	230.1	368.1	23.0	1.228	5.34
5.4	196.0	316.0	206.1	326.1	20.6	1.068	5.18
5.6	224.0	340.0	234.1	350.1	23.4	1.033	4.41
5.8	196.0	324.0	206.1	334.1	20.6	1.139	5.53
6.0	244.0	398.0	255.6	409.6	25.6	1.369	5.36
6.2	342.0	444.0	353.6	455.6	35.4	0.909	2.57
6.4	390.0	505.0	401.6	516.6	40.2	1.024	2.55
6.6	336.0	496.0	347.6	507.6	34.8	1.422	4.09
6.8	610.0	892.0	621.6	903.6	62.2	2.502	4.03
7.0	938.0	1610.0	951.1	1623.1	95.1	5.953	6.26
7.2	468.0	912.0	481.1	925.1	48.1	3.936	8.18
7.4	516.0	998.0	529.1	1011.1	52.9	4.272	8.07
7.6	628.0	1108.0	641.1	1121.1	64.1	4.254	6.64
7.8	726.0	1178.0	739.1	1191.1	73.9	4.006	5.42
8.0	656.0	1074.0	670.6	1088.6	67.1	3.706	5.53
8.2	690.0	1210.0	704.6	1224.6	70.5	4.608	6.54
8.4	622.0	1224.0	636.6	1238.6	63.7	5.334	8.38
8.6	790.0	1326.0	804.6	1340.6	80.5	4.750	5.90
8.8	612.0	1256.0	626.6	1270.6	62.7	5.706	9.11
9.0	699.0	1382.0	715.1	1398.1	71.5	6.051	8.46
9.2	1496.0	1792.0	1512.1	1808.1	151.2	2.626	1.74
9.4	1504.0	1864.0	1520.1	1880.1	152.0	3.192	2.10
9.6	1820.0	2410.0	1836.1	2426.1	183.6	5.228	2.85
9.8	2096.0	2638.0	2112.1	2654.1	211.2	4.803	2.27

SCPT NO. - 17

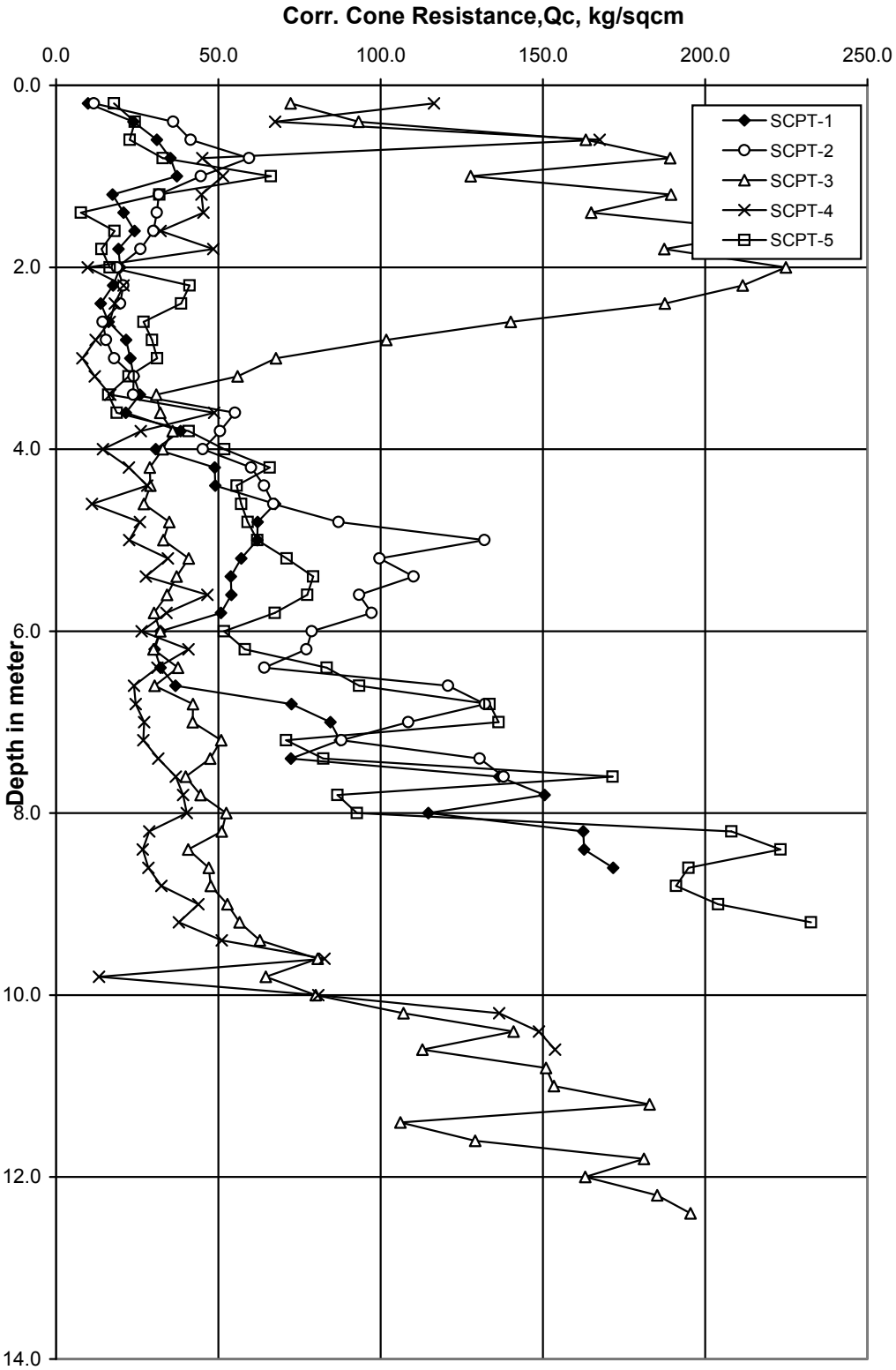
Mass of cone(kg) = 1.1 Area of friction jacket (sqcm) = 113

Area of Cone (sqcm) = 10 Mass of each rod (kg) = 1.5

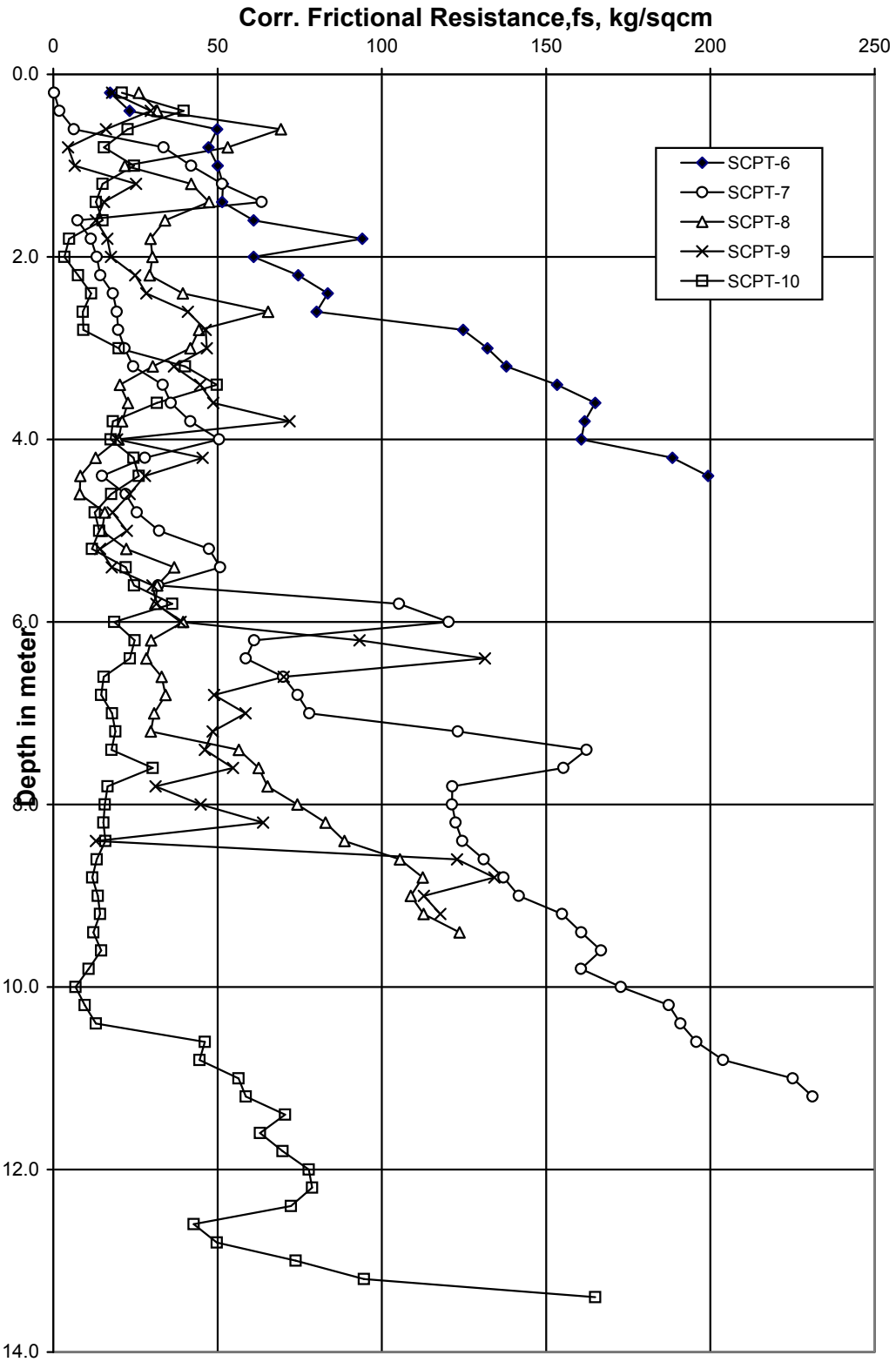
Mass of friction jacket(kg) = 0.734

Depth in m	Cone resi. In kg	Total resi. In kg	Correrected Cone resi. In kg	Corrected Total resi. In kg	Correrected Cone resi.Qc, kg/sqcm	Corrected Friction resi. fs, kg/sqcm	Friction Ratio in %
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
10.0	2052.0	2766.0	2069.6	2783.6	207.0	6.325	3.06
10.2	2022.0	2788.0	2039.6	2805.6	204.0	6.785	3.33

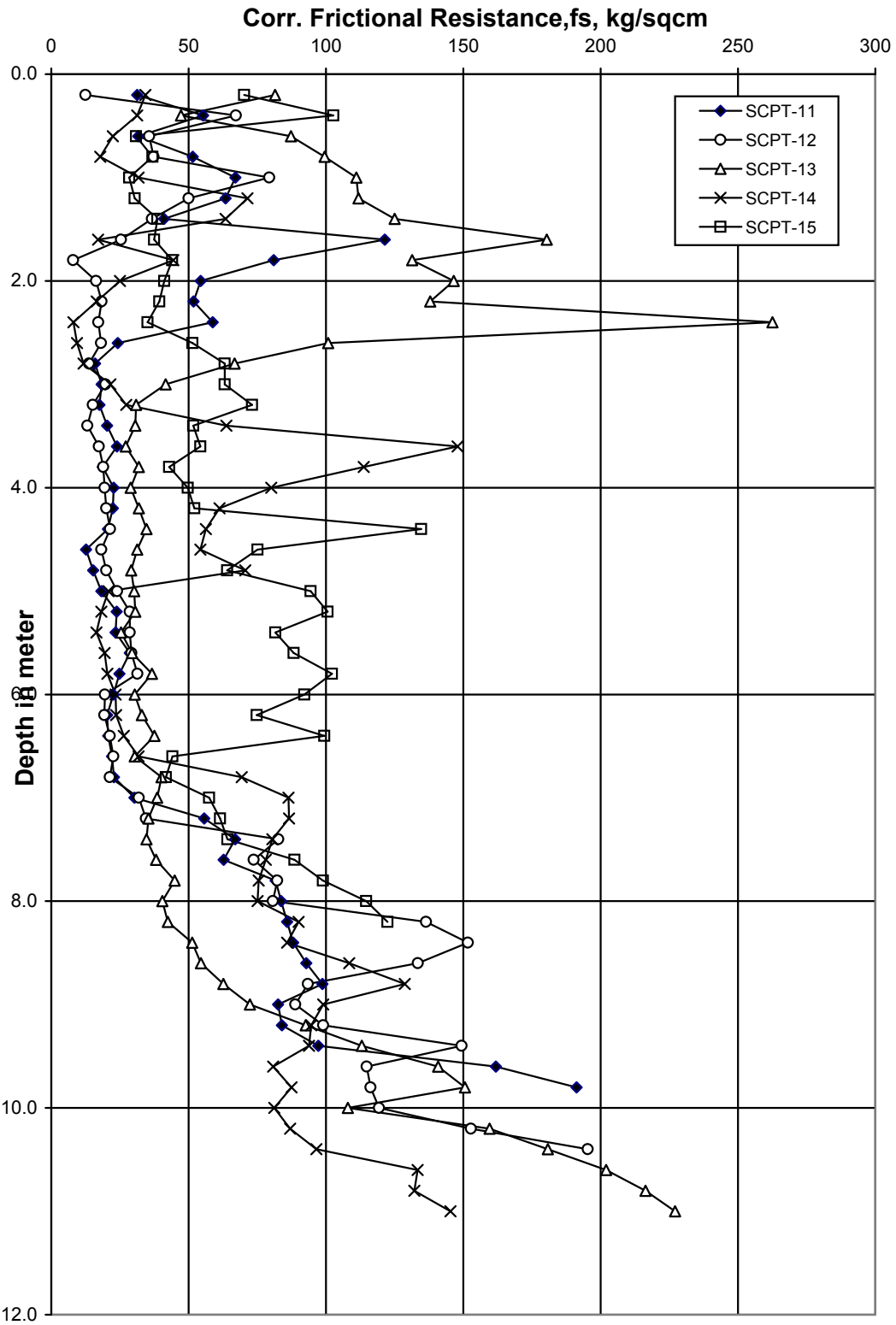
Layer No	Depth From (M)	Depth To (M)	Average Friction Ratio	Type of Soil	Average Qc kg/sqcm	Strength Parameters (c / f)
II	0.00	9.00	5.57	Clay	32.94	1.22kg/sqcm
III	9.00	10.20	2.56	Silty sand	184.83	38°



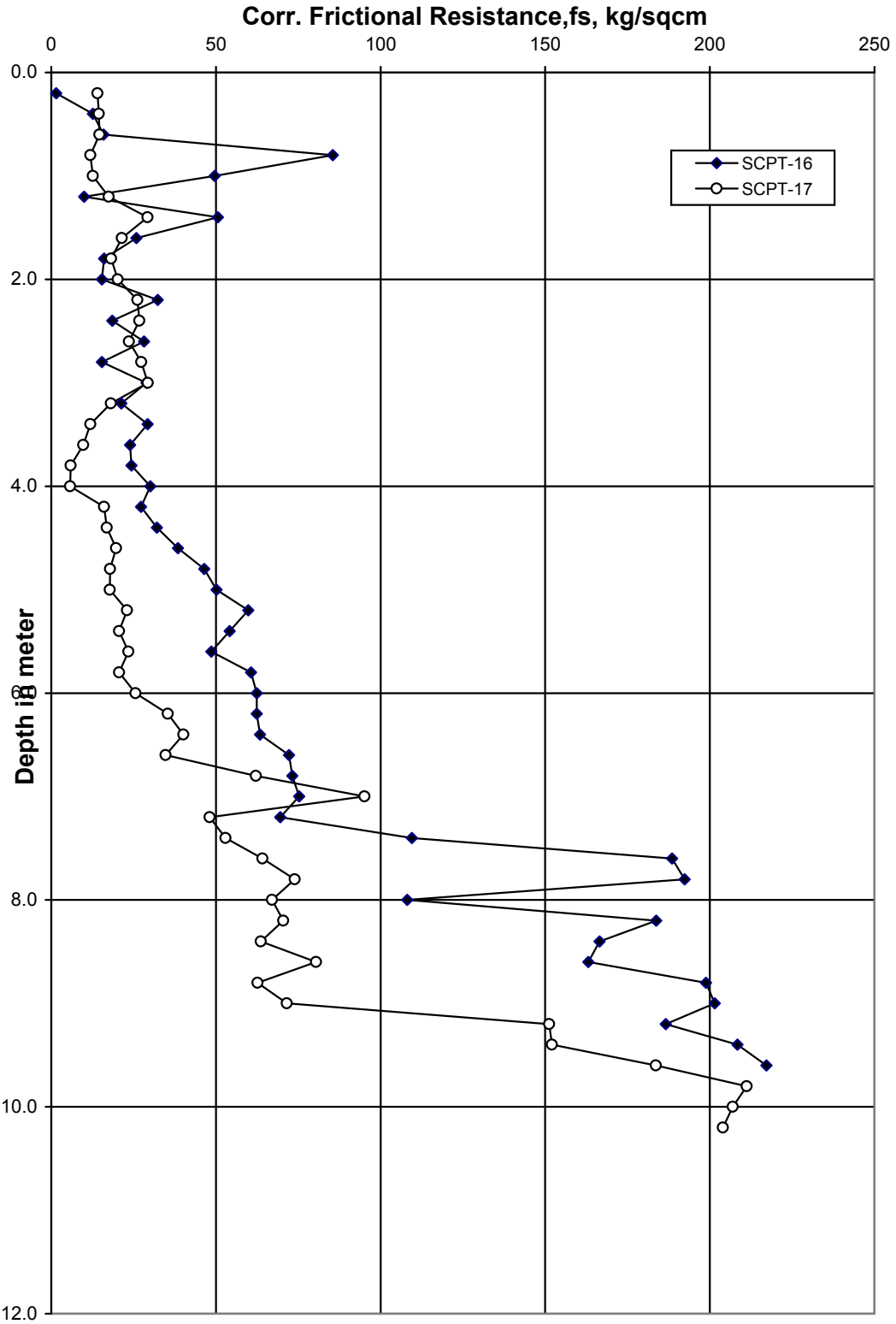
Corr. Cone Res vs depth plot



Corr. Frictional Resistance vs depth plot



Corr. Frictional Resistance vs depth plot



Corr. Frictional Resistance vs depth plot

Summarised Field CBR Test Results

Test Location	Depth of Test (M)	Field CBR (%)					
		Unsokaed			Soaked		
		For 2.5mm Pentn.	For 5.0mm Pentn.	Average FCBR	For 2.5mm Pentn.	For 5.0mm Pentn.	Average FCBR
FCBR-01	0.50	11.21	10.31		3.57	3.41	
		12.49	11.41	12.53	1.65	2.05	2.89
		13.89	11.71		3.46	3.06	
FCBR-02	0.50	4.42	3.54		2.04	2.04	
		8.79	7.55	7.11	4.06	3.54	4.02
		8.12	6.84		5.97	5.41	
FCBR-03	0.50	4.29	4.51		5.39	5.44	
		3.84	3.78	3.69	2.42	2.12	3.48
		2.70	2.77		2.63	2.73	
FCBR-04	0.50	10.55	10.19		3.60	3.36	
		11.64	10.90	11.38	3.36	3.04	3.71
		11.94	10.69		4.17	4.05	

FIELD PERMEABILITY TEST RESULTS:

Field permeability tests were conducted in four bore holes. The test results are presented below.

Test Locations	Type of Test	Depth of Test (M)	Permeability (cm/sec)
BH-02	Falling Head	1.40 – 2.00	7.737×10^{-6}
	Falling Head	2.80 – 3.50	1.172×10^{-6}
BH-10	Falling Head	1.45 – 2.00	5.401×10^{-6}
	Falling Head	2.90 – 3.50	5.132×10^{-6}
BH-31	Falling Head	1.30 – 2.00	2.588×10^{-5}
	Falling Head	2.80 – 3.50	7.311×10^{-6}
BH-53	Falling Head	1.40 – 2.00	4.079×10^{-4}
	Falling Head	2.90 – 3.50	3.414×10^{-4}

PART II: LABORATORY TEST RESULTS

CETEST Engineering Consultants
C. E. Testing Company Pvt. Ltd.
(AN NABL ACCREDITED TESTING LABORATORY AS PER ISO/IEC 17025)
124A, N. S. C. Bose Road, Kolkata 700 092, Tel.: +91 33 2428 6221 / 6222 / 6223
Fax: +91 33 2428 6220 • E-mail: cetest@cetestindia.com • Web: www.cetestindia.com
Laboratory: Brahmapur, Kolkata 700 096, Tel.: (033) 2410 5085 / 9813
Certificate No: T-2704

TEST REPORT

TEST REPORT NO : 3369 DATE: 10/02/2015

Name and Address of Customer: Bharat Heavy Electricals Ltd.,
Power Sector, Western Region,
Shreemohini Complex, 345 Kingsway
Nagpur - 440 001.

Customer Reference No : BHE/PW/PUR/PWHQ-GEO/1317-LOI/3369

Customer Reference Date : 13/11/2014

Date of Sample Received at Lab : 17/11/2014

Date of Starting of Test : 18/11/2014

Date of Completion of Test : 03/02/2015

Sample ID Nos : 3369/BH01/UDS01 to 3369/CPLT02/DS02

Please refer the page nos. 254 of 469 to 297 of 469 of the Report for the following:

1. Sample Description
2. Test methods used
3. Test results

Further to note that the test parameters are mentioned at the header of test result table.

* The report related to the particular sample(s) tested under stated condition.
* All tests are based as per IS specifications
* Any discrepancy in this report should be brought to the notice within 15 (fifteen) days from the date of certificate
* Full/Partial use of this test results could not be done without the written permission of authorized signatory.

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classification	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%		%	%	%	%	
BH01	UDS01	2.00	Brownish grey, silty clay with sand mixture.	1.72	1.42	2.65	20 S		DRSH-CQ		0.34	30	40	21		CI		9	85	6	#See the Note
							22DR		0.5	0.632											
									1.0	0.933											
									1.5	1.215											
BH01	UDS03	6.50	Brownish grey, silty clay with sand mixture.										$			CI*		38	62 (Silt+Clay)		Do
BH01	SPT05	11.00	Brownish grey, silty clay with sand mixture.			2.69							$			CL*		22	75	3	Do
BH01	SPT10	18.50	Brownish grey, silty clay with sand mixture and silt stone.										$			CL*	2	34	64 (Silt+Clay)		Do
BH01	SPT15	26.00	Brownish grey, silty sand with traces of mica.										NP			SM-SP		94	06 (Silt+Clay)		Do
BH02	UDS01	2.00	Brownish grey, clayey silt with sand mixture.										$			MI*		44	56 (Silt+Clay)		Do
BH02	UDS03	6.50	Deep brownish grey, silty clay with sand mixtureand traces of silt.	1.75	1.40	2.67	23 S		DRSH-CQ		0.22	31	$			CI*		20	78	2	Do
							25DR		0.5	0.545											
									1.0	0.812											
									1.5	1.150											
BH02	UDS04	9.50	Brownish grey, silty clay with traces of sand mixture and mica.			2.67							33	21		CL		20	78	2	Do
BH02	UDS05	12.50	Brownish grey, silty sand with traces of mica.										NP			SM-SP		93	07 (Silt+Clay)		Do
BH02	SPT09	18.50	Brownish grey, silty clay with sand mixture.										42	23		CI		34	66 (Silt+Clay)		Do
BH02	SPT14	26.00	Brownish grey, gravelly sand.										NP			SW	47	50	3 (Silt+Clay)		Do

Bore Hole	Sample Number	Depth M	Sample Description	Bulk Dens. gms/cc	Dry Dens. gms/cc	Spec. Grav.	Nat. Mois. %	Void Ratio	Strength Test Results Pc/Pn kg/sqcm	Shear kg/sqcm	Cohesn kg/sqcm	Frictn Deg.	Atter. Limits LL %	PL %	SL %	IS Classification	Grain Size Gravl %	Sand %	Silt %	Clay %	Test Method
BH03	UDS01	2.00	Greyish brown, silty sand with traces of clay binders.	2.08	1.73	2.62	19 S						NP			SM		50	49	1	Do
BH03	UDS03	6.50	Yellowish grey, silty clay with sand mixture.										$			CI*		24	76 (Silt+Clay)		Do
BH03	SPT06	11.00	Brownish grey, silty sand with traces of clay binders.			2.67							NP			SM		63	36	1	Do
BH03	SPT10	17.00	Brownish grey, silty clay with sand mixture and mica.										$			CI*		43	57 (Silt+Clay)		Do
BH03	SPT14	23.50	Brownish grey, silty sand with traces of gravels.										NP			SP	47	50	03 (Silt+Clay)		Do
BH04	UDS01	2.00	Brownish grey, silty sand with traces of mica.										NP			SM		77	23 (Silt+Clay)		Do
BH04	UDS03	6.50	Brownish grey, silty clay.	1.93	1.54	2.66	25 S	0.691	TRSH-UU		1.07	7	49	26	16	CI		12	85	3	Do
							25 T		3.0	1.609											
							25 C		2.0	1.476											
									1.0	1.345											
									UNCONFD		1.47	0									
									0.0	1.541											
									0.0	1.476											
									0.0	1.398											
									REMOULD		1.13	0									
									0.0	1.235											
									0.0	1.109											
									0.0	1.041											
BH04	UDS04	9.50	Greyish brown, silty sand with clay binders.	1.90	1.71	2.69	12 S						NP			SM		75	23	2	Do
BH04	SPT06	12.80	Brownish grey, silty clay with sand mixture and mica.										32	19		CL		18	82 (Silt+Clay)		Do

Project: Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.

Job No. : 3369

Sheet No.

CETEST

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH04	SPT12	22.00	Brownish grey, gravelly sand with traces of kankars.										NP			SP	20	76	04 (Silt+Clay)		Do
BH05	UDS01	2.00	Brownish grey, silty sand with clay binders.										NP			SM		54	46 (Silt+Clay)		Do
BH05	UDS02	4.00	Brownish grey, silty clay.	1.79	1.55	2.63	16 S		TRSH-UU		1.84	6	37	24	20	CI		10	78	12	Do
							15 T		3.0	2.412											
									2.0	2.271											
									1.0	2.154											
BH05	UDS03	9.50	Brownish grey, silty clay with sand mixture.	1.74	1.55		13 S						$			CL*		8	80	12	Do
BH05	SPT08	14.00	Yellowish grey, silty clay with traces of sand mixture.										32	25		ML					Do
BH05	SPT10	17.00	Brownish grey, silty sand with traces of clay binders.										NP			SM		64	36 (Silt+Clay)		Do
BH05	SPT17	27.50	Brownish grey, silty sand with traces of mica.										NP			SM-SP		88	12 (Silt+Clay)		Do
BH06	UDS01	1.00	Brownish grey, silty sand with traces of mica.										NP			SM		50	50		Do
BH06	UDS02	4.00	Brownish grey, silty clay with sand mixture.	2.06	1.77	2.64	17 S	0.456	TRSH-UU		1.22	11	37	17	17	CI		43	48	9	Do
							16 T		3.0	2.175											
							13 C		2.0	1.971											
									1.0	1.716											
									UNCONFD		1.61	0									
									0.0	1.557											
									0.0	1.593											
									0.0	1.667											
									REMOLED		1.25	0									
									0.0	1.217											
									0.0	1.265											
									0.0	1.279											

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH06	UDS03	6.00	greyish brown, silty clay with sand mixture.										41	23		CI		37	63 (Silt+Clay)		Do
BH06	UDS05	12.50	Brownish grey, silty sand with traces of clay binder and mica.	1.77	1.54		15DR		DRSH-CQ		0.07	37	NP			SM		71	29 (Silt+Clay)		Do
									0.5	0.432											
									1.0	0.833											
									1.5	1.195											
BH06	SPT10	20.00	Brownish grey, silty sand with traces of mica.										NP			SM		86	14 (Silt+Clay)		Do
BH06	SPT15	27.50	Brownish grey, silty clay with sand mixture.										$			CI*		42	58 (Silt+Clay)		Do
BH07	UDS01	2.00	Brownish grey, silty sand with traces of kankars.										NP			SM	2	80	18 (Silt+Clay)		Do
BH07	UDS03	6.50	Brownish grey, silty sand.	1.88	1.57		9 S						NP			SM-SP		91	09 (Silt+Clay)		Do
BH07	UDS05	12.50	Light brownish grey, silty sand.	1.76	1.59		9 S		DRSH-CQ		0.22	29	NP			SM-SP		88	12 (Silt+Clay)		Do
							11DR		0.5	0.455											
									1.0	0.808											
									1.5	1.030											
BH07	SPT09	18.50	Brownish grey, silty sand.										NP			SM-SP		94	06 (Silt+Clay)		Do
BH07	SPT12	23.00	Brownish grey, silty clay with sand mixture.										$			CL*		40	46	14	Do
BH08	UDS01	2.00	Greyish brown, silty sand with traces of kankars.										NP			SM-SP		91	09 (Silt+Clay)		Do
BH08	UDS02	4.00	Greyish brown, silty clay with traces of kankars.	2.03	1.64	2.61	24 S						49	26		CI		12	82	6	Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH08	UDS05	11.50	Brownish grey, silty sand.	1.78	1.47		21 S		DRSH-CQ		0.21	27	NP			SM-SP		89	11 (Silt+Clay)		Do
							21DR		0.5	0.438											
									1.0	0.751											
									1.5	0.965											
BH08	SPT08	16.00	Yellowish grey, silty clay with sand mixture.										30	23		ML					Do
BH08	SPT13	23.50	Brownish grey, silty sand with gravels, traces of kankars and mica.										NP			SP	25	73	02 (Silt+Clay)		Do
BH09	UDS01	2.00	Brownish grey, silty clay.	2.09	1.75	2.67	20 S	0.499	TRSH-UU		1.11	0	29	20	22	CL		32	65	3	Do
							19 T		3.0	1.205											
							17 C		2.0	1.135											
									1.0	1.081											
									UNCONFD		1.13	0									
									0.0	1.150											
									0.0	1.094											
									0.0	1.143											
									REMOULD		0.89	0									
									0.0	0.900											
									0.0	0.844											
									0.0	0.939											
BH09	UDS03	6.50	brownish grey, silty clay with sand mixture.	1.76	1.49		19 S		DRSH-CQ		0.19	33	$			CI*		34	66 (Silt+Clay)		Do
							18DR		0.5	0.484											
									1.0	0.887											
									1.5	1.180											
BH09	SPT07	13.00	Brownish grey, silty clay with traces of sand mixture.										35	22		CI					Do
BH09	SPT12	20.50	Brownish grey, silty sand with traces of gravels.										NP			SP	13	85	02 (Silt+Clay)		Do
BH09	SPT17	28.00	Brownish grey, silty sand with gravels.										NP			SP	25	71	04 (Silt+Clay)		Do
BH10	UDS01	2.00	Brownish grey, silty clay with traces of fine sand mixture.			2.64	14 S						43	17	14	CI		13	45	42	Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH10	UDS02	4.00	Brownish grey, silty clay with sand mixture.	1.73	1.48		14 S		DRSH-CQ		0.20	33	34	20		CL*		38	62 (Silt+Clay)		Do
							17DR		0.5	0.551											
									1.0	0.812											
									1.5	1.175											
BH10	SPT07	11.00	Brownish grey, silty sand with traces if mica.										NP			SM-SP		93	07 (Silt+Clay)		Do
BH10	SPT12	18.50	Brownish grey, silty sand with traces of gravels and kankars.										NP			SP	20	76	04 (Silt+Clay)		Do
BH10	SPT18	27.50	Brownish grey, silty sand with gravels and traces of kankars.										NP			SM-SP	31	64	05 (Silt+Clay)		Do
BH11	UDS01	2.00	Greyish brown silty clay.	2.02	1.68	2.64	21 S	0.568	TRSH-UU		1.35	0	54	24		CH		26	58	16	Do
							20 T		3.0	1.429											
							22 C		2.0	1.361											
									1.0	1.265											
BH11	UDS02	4.00	Deep brown silty clay with fine sand mixture.	1.84	1.45		21 S		UNCONFD		0.19	0	33	23		CL		38	62(silt+clay)		Do
							26 T		0.0	0.232											
									0.0	0.160											
									0.0	0.192											
									REMOULD		0.13	0									
									0.0	0.184											
									0.0	0.089											
									0.0	0.128											
BH11	UDS03	6.50	Brownish grey clayey silt with sand mixture & mica.										35	25		MI		38	62(silt+clay)		Do
BH11	SPT05	9.80	Yellowish grey silty clay with sand mixture.			2.61							$			CL*		40	58	2	Do
BH11	SPT11	20.00	Brownish grey silty sand with gravels & mica.										NP			SM	33	50	17(silt+clay)		Do
BH11	SPT18	29.00	Brownish grey silty sand with traces of gravels & mica.										NP			SM	15	63	22(silt+clay)		Do
BH12	UDS01	2.00	Brownish grey silty clay.										40	25		CI		19	81(silt+clay)		Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH12	UDS02	4.00	Greyish brown clayey silt with traces of fine sand mixture.	1.87	1.54	2.59	20 S		TRSH-UU		0.68	28				MI*		20	78	2	Do
							22 T		3.0	3.790											
									2.0	2.993											
									1.0	1.975											
BH12	UDS03	6.50	Brownish grey silty clay with sand mixture.										$			CI*		18	82(silt+clay)		Do
BH12	SPT06	11.50	Brownish grey silty sand with traces of clay binders & mica.			2.74							NP			SM-SP		89	10	1	Do
BH12	SPT10	17.50	Brownish grey silty sand with traces of mica.										NP			SM-SP		92	8(silt+clay)		Do
BH13	UDS01	2.00	Brownish grey, silty sand with traces of mica.										NP			SM		81	19 (Silt+Clay)		Do
BH13	UDS02	4.00	Brownish grey, silty clay with traces of laminated sand.	2.08	1.75	2.62	20 S						46	16		CI		36	55	9	Do
BH13	SPT05	9.70	Brownish grey, silty sand with traces of gravels.										NP			SP	31	65	04 (Silt+Clay)		Do
BH13	SPT09	16.00	Brownish grey, silty clay with sand mixture.										$			CL*		44	56 (Silt+Clay)		Do
BH13	SPT14	23.00	Brownish grey, silty sand with traces of gravel.										NP			SP	26	71	03 (Silt+Clay)		Do
BH13	SPT19	30.00	Brownish grey, silty clay with traces of sand mixture.										$			CI*		6	94 (Silt+Clay)		Do
BH14	UDS01	2.00	Brownish grey, silty sand.										NP			SM		71	29 (Silt+Clay)		Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH14	UDS02	4.00	Brownish grey, silty clay with traces of sand mixture.	2.01	1.65	2.62	22 S		TRSH-UU		1.03	5	50	25		CH		15	76	9	Do
							22 T		3.0	1.462											
									2.0	1.291											
									1.0	1.260											
									UNCONFD		1.26	0									
									0.0	1.287											
									0.0	1.267											
									0.0	1.223											
									REMOULD		0.97	0									
									0.0	1.038											
									0.0	0.965											
									0.0	0.905											
BH14	UDS04	9.50	Brownish grey, silty clay with traces of sand mixture and calcereous nodules.										45	23		CI	4	31	65 (Silt+Clay)		Do
BH14	UDS06	15.50	Brownish grey, silty clay with sand mixture.										$			CI*		21	70	9	Do
BH14	SPT11	23.00	Brownish grey, silty sand with gravel and mica.										NP			SP	26	70	04 (Silt+Clay)		Do
BH15	UDS01	2.00	Brownish grey, silty sand with traces of clay binders.													SM		63	37 (Silt+Clay)		Do
BH15	UDS03	6.50	Brownish grey, silty clay with sand mixture.	2.06	1.72	2.64	17 S						28	20	21	CL-SC		56	42	2	Do
BH15	UDS05	12.50	Brownish grey, silty sand with traces of mica.										NP			SM-SP		94	06 (Silt+Clay)		Do
BH15	SPT07	17.00	Brownish grey, silty sand with traces of gravels.										NP			SP	30	66	04 (Silt+Clay)		Do
BH15	SPT12	24.50	Brownish grey, silty sand with gravels.										NP			SP	35	62	03 (Silt+Clay)		Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH16	UDS01	2.00	Brownish grey, silty sand with traces of mica.										NP			SM		83	17 (Silt+Clay)		Do
BH16	UDS03	6.50	Brownish grey, silty sand with traces of clay binders and mica.										NP			SM		69	31 (Silt+Clay)		Do
BH16	UDS04	9.50	Brownish grey, silty clay.	1.99	1.58	2.65	24 S		TRSH-UU		0.31	0	43	17		CI		30	59	11	Do
							26 T		3.0	0.378											
									2.0	0.288											
									1.0	0.254											
									UNCONFD		0.29	0									
									0.0	0.262											
									0.0	0.321											
									0.0	0.290											
									REMOULD		0.18	0									
									0.0	0.163											
									0.0	0.204											
									0.0	0.181											
BH16	SPT07	14.00	Brownish grey, silty sand with traces of gravel and kankars.										NP			SM-SP	12	79	09 (Silt+Clay)		Do
BH16	SPT10	18.50	Brownish grey, silty clay with traces of sand mixture.										35	22		CI					Do
BH16	SPT13	23.00	Brownish grey, silty sand with traces of gravel and kankars.										NP			SP	30	68	02 (Silt+Clay)		Do
BH17	UDS01	2.00	Brownish grey, silty sand with traces of mica.										NP			SM		84	16 (Silt+Clay)		Do
BH17	UDS04	9.50	Brownish grey, silty clay.	2.06	1.76	2.60	20 S		TRSH-UU		2.37	0	$			CI*		37	61	2	Do
							17 T		3.0	2.403											
									2.0	2.367											
									1.0	2.333											
BH17	SPT07	14.00	Brownish grey, silty sand with traces of kankars.										NP			SM-SP		93	07 (Silt+Clay)		Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH17	SPT10	18.50	Brownish grey, silty clay with traces of sand mixture.										31	21		CL					Do
BH17	SPT13	23.00	Brownish grey, silty sand with gravel.										NP			SP	47	52	01 (Silt+Clay)		Do
BH18	UDS01	2.00	Brownish grey, silty sand with traces of clay binder.										NP			SM		64	36 (Silt+Clay)		Do
BH18	UDS03	6.50	Greyish brown, silty sand with traces of clay binders.	1.65	1.55	2.67	6 S						NP			SM		83	17	0	Do
BH18	UDS05	12.50	Brownish grey, silty sand with traces of kankars.										NP			SM-SP		90	10 (Silt+Clay)		Do
BH18	SPT07	17.00	Brownish grey, clayey silt with sand mixture.										31	23		ML					Do
BH18	SPT11	23.00	Brownish grey, silty sand with traces of mica.										NP			SM		85	15 (Silt+Clay)		Do
BH18	SPT17	32.00	Brownish grey, silty sand with gravel and traces of kankars.										NP			SP	32	65	03 (Silt+Clay)		Do
BH19	UDS01	2.00	Brownish grey, silty sand with traces of mica.										NP			SM-SP		88	12 (Silt+Clay)		Do
BH19	UDS03	6.50	Brownish grey, silty clay.	2.08	1.77	2.62	16 S		TRSH-UU		1.52	0	34	20		CL		38	59	3	Do
							18 T		3.0	1.555											
									2.0	1.524											
									1.0	1.485											
BH19	UDS04	9.50	Brownish grey, silty sand with traces of clay binders.										NP			SM		69	31 (Silt+Clay)		Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH19	SPT08	17.00	Brownish grey, silty clay with sand mixture and traces of silt stone.										$			CL*	3	35	62 (Silt+Clay)		Do
BH20	UDS01	2.00	Brownish grey, silty sand with traces of clay binders.										NP			SM		71	29 (Silt+Clay)		Do
BH20	SPT04	8.00	Brownish grey, silty clay with sand mixture.										42	19		CI		13	78	9	Do
BH20	UDS04	9.50	Brownish grey, silty sand with traces of mica.										NP			SM-SP		94	06 (Silt+Clay)		Do
BH20	SPT08	15.50	Brownish grey, silty clay with traces of sand mixture.										27	21		CL-ML					
BH20	SPT13	23.00	Brownish grey, silty sand with gravel and traces of kankars.										NP			SM-SP	25	70	05 (Silt+Clay)		Do
BH21	UDS01	2.00	Greyish brown, clayey silt.	1.84	1.43	2.58	28 S						43	29		MI		18	66	16	Do
BH21	UDS03	6.50	Deep brown silty clay.										38	23		CI					Do
BH21	UDS04	9.50	Brownish grey silty sand with gravels & traces of mica.										NP			SM	40	31	29(silt+clay)		Do
BH21	SPT06	14.00	Brownish grey silty clay with traces of sand mixture.										31	21		CL					
BH21	DS06	12.00	Greyish brown silty clay with sand mixture.										$			CL*		14	86(silt+clay)		Do
BH21	SPT07	15.50	Greyish brown silty clay with sand mixture.										$			CL*		42	58(silt+clay)		Do

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Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH21	SPT10	20.00	Brownish grey silty sand with traces of mica.										NP			SM-SP		93	7(silt+clay)		Do
BH21	SPT11	21.50	Brownish grey silty sand with traces of gravels & mica.										NP			SM	3	83	14(silt+clay)		Do
BH22	UDS01	2.00	Brownish grey, silty clay.	2.04	1.70	2.62	20 S	0.528	TRSH-UU		1.99	0	49	22		CI		20	76	4	Do
							20 T		3.0	2.014											
							20 C		2.0	1.992											
									1.0	1.960											
									UNCONFD		2.02	0									
									0.0	2.080											
									0.0	2.018											
									0.0	1.973											
									REMOULD		1.59	0									
									0.0	1.673											
									0.0	1.587											
									0.0	1.537											
BH22	UDS03	6.50	Brownish grey, silty clay with sand mixture.	1.86	1.44	2.70	31 S						39	25		CI		25	73	2	Do
BH22	SPT06	11.50	Brownish grey, silty clay with sand mixture and mica.										$			CL*		33	60	7	Do
BH22	SPT09	16.00	Brownish grey, silty clay with traces of sand mixture and calcereous nodules.										33	23		CL					Do
BH22	SPT14	23.50	Brownish grey, silty sand with gravels and traces of kankars.										NP			SM	14	50	36 (Silt+Clay)		Do
BH23	UDS01	2.00	Brownish grey silty clay with fine sand mixture.										55	22		CH		14	86(silt+clay)		Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH23	UDS02	4.00	Greyish brown, silty clay with sand mixture & kankars.	1.88	1.56	2.61	21 S		TRSH-UU		0.63	18	31	22		CL		32	66	2	Do
							20 T		3.0	2.241											
									2.0	1.780											
									1.0	1.330											
BH23	UDS03	6.50	Greyish brown clayey silt.	1.86	1.47		26 S		UNCONFD		0.64	0	38	25		MI		12	88(silt+clay)		Do
							27 T		0.0	0.604											
									0.0	0.638											
									0.0	0.670											
									REMOULD		0.43	0									
									0.0	0.414											
									0.0	0.436											
									0.0	0.447											
BH23	UDS05	11.50	Brownish grey silty clay with sand mixture & mica.										32	21		CL		30	70(silt+clay)		Do
BH23	SPT07	14.80	Brownish grey silty clay.										38	23		CI					
BH23	SPT12	22.50	Brownish grey silty sand with traces of mica.										NP			SM		83	17(silt+clay)		Do
BH23	SPT15	27.00	Brownish grey silty clay with traces of sand mixture.										30	22		CL					
BH23	SPT17	30.00	Greyish brown silty clay with sand mixture.										$			CL*		23	77(silt+clay)		Do
BH24	UDS01	2.00	Brownish grey silty clay with traces of sand mixture.										25	19		CL		62	38(silt+clay)		Do
BH24	UDS02	4.00	Brownish grey silty clay.										47	29		MI					
BH24	UDS03	6.50	Brownish grey clayey silt.	1.79	1.36		28 S		TRSH-UU		0.59	16	41	29		MI		16	84(silt+clay)		Do
							31 T		3.0	2.044											
									2.0	1.416											
									1.0	1.266											

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH24	SPT05	9.80	Brownish grey silty sand with traces of mica.										NP			SM-SP		94	6(silt+clay)		Do
BH24	SPT08	14.50	Greyish brown silty clay with traces of sand mixture.										29	20		CL					Do
BH24	SPT09	16.00	Greyish brown silty clay with sand mixture.			.							$			CL*		34	64	2	Do
BH24	SPT19	31.00	Brownish grey silty sand with gravels & mica.										NP			SM	21	51	28(silt+clay)		Do
BH25	UDS02	4.00	Deep brownish grey silty sand with traces of clay binders & mica.			2.70							NP			SM		86	12	2	Do
BH25	UDS03	6.50	Greyish brown silty sand.	1.78	1.66		8 S		DRSH-CQ		0.06	32	NP			SM-SP		89	11(silt+clay)		Do
							8DR		0.5	0.362											
									1.0	0.692											
									1.5	0.986											
BH25	SPT06	11.50	Brownish grey silty clay.										36	24		CI					Do
BH25	SPT07	13.00	Greyish brown silty clay with sand mixture.										33	18		CL		29	71(silt+clay)		Do
BH25	SPT10	17.50	Brownish grey silty sand with gravels & mica.										NP			SM	25	54	21(silt+clay)		Do
BH26	UDS01	2.00	Brownish grey silty sand with traces of mica.										NP			SM-SP		88	12(silt+clay)		Do
BH26	UDS02	4.00	Brownish grey silty sand with traces of mica.										NP			SM		81	19(silt+clay)		Do

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Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH26	UDS03	6.50	Brownish grey silty clay.	1.98	1.60	2.57	24 S	0.550	TRSH-UU		1.25	0	53	25		CH		26	51	23	Do
							24 T		3.0	1.361											
							24 C		2.0	1.213											
									1.0	1.181											
BH26	UDS04	9.50	Brownish grey silty sand with traces of mica.										NP			SM		87	13(silt+clay)		Do
BH26	SPT06	12.75	Brownish grey silty clay with traces of kankars.										33	22		CL					Do
BH26	SPT07	14.50	Greyish brown silty clay with sand mixture.										$			CL*		32	68(silt+clay)		Do
BH26	SPT12	22.00	Brownish grey silty sand with gravel pcs. & mica.										NP			SM	23	52	25(silt+clay)		Do
BH26	SPT14	25.00	Greyish brown silty clay with sand mixture.										$			CL*		37	63(silt+clay)		Do
BH26	SPT15	26.50	Deep brownish grey silty clay with traces of sand mixture.										33	20		CL					Do
BH27	UDS01	2.00	Reddish brown, silty sand with moorum and traces of kankars.										NP			SM-SP	5	84	11 (Silt+Clay)		Do
BH27	UDS03	6.50	Greyish brown, silty clay with traces of kankars.	2.10	1.76	2.58	20 T						44	20		CI		31	60	9	Do
BH27	SPT06	11.50	Brownish grey, silty sand with traces of mica.										NP			SM		87	13 (Silt+Clay)		Do
BH27	SPT08	14.50	Brownish grey, silty clay with sand mixture and calcereous nodules.										33	23		CL					Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH27	SPT12	20.50	Brownish grey, silty sand with gravels and traces of kankars.										NP			SM-SP	30	65	05 (Silt+Clay)		Do
BH27	SPT18	29.30	Brownish grey, silty sand with gravels and traces of kankars.										NP			SP	35	62	03 (Silt+Clay)		Do
BH28	UDS01	2.00	Brownish grey, silty sand with traces of clay binders and mica.										NP			SM		67	33 (Silt+Clay)		Do
BH28	UDS03	6.50	Brownish grey, silty clay with traces of sand mixture.	2.13	1.80	2.61	15 T						33	19		CL		41	51	8	Do
BH28	UDS04	9.50	Brownish grey, silty sand with traces of mica.										NP			SM-SP		94	06 (Silt+Clay)		Do
BH28	UDS06	16.00	Brownish grey, silty clay with sand mixture and traces of mica.										35	24		CI		32	63	5	Do
BH28	SPT12	23.50	Brownish grey, silty sand with traces of gravel and kankars.										NP			SP	73	24	03 (Silt+Clay)		Do
BH29	UDS01	2.00	Brownish grey, silty sand with traces of mica.										NP			SM-SP		91	09 (Silt+Clay)		Do
BH29	UDS03	6.50	Deep brownish grey, silty clay with traces of sand mixture.										$			CL*		17	83 (Silt+Clay)		Do
BH29	UDS04	9.50	Brownish grey, silty clay.	1.95	1.68	2.66	15 S	0.521	TRSH-UU		2.19	6	29	21		CL		33	64	3	Do
							16 T		3.0	2.794											
							19 C		2.0	2.662											
									1.0	2.541											
									UNCONFD		2.96	0									
									0.0	3.656											
									0.0	2.915											
									0.0	2.325											

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
									REMOULD		2.52	0									
									0.0	3.020											
									0.0	2.585											
									0.0	1.956											
BH29	SPT06	12.80	Brownish grey, silty sand with traces of mica.										NP			SM-SP		95	05 (Silt+Clay)		Do
BH29	SPT09	17.50	Brownish grey, silty clay with traces of sand mixture.										31	22		CL					Do
BH29	SPT12	22.00	Brownish grey, silty sand with gravel and traces of kankars.										NP			SP	35	63	02 (Silt+Clay)		Do
BH29	SPT18	31.00	Brownish grey, silty sand with traces of gravels.										NP			SM-SP	17	78	05 (Silt+Clay)		Do
BH30	UDS02	4.00	Brownish grey, silty sand with traces of clay binders.										NP			SM		74	26 (Silt+Clay)		Do
BH30	UDS04	9.50	Brownish grey, silty sand.	1.73	1.61	2.62	8 S						NP			SM		79	20	1	Do
BH30	SPT08	15.50	Brownish grey, silty clay with sand mixture.										31	19		CL		39	61 (Silt+Clay)		Do
BH30	SPT15	26.00	Brownish grey, silty sandwith traces of mica.										NP			SM-SP		93	07 (Silt+Clay)		Do
BH31	UDS04	9.50	Brownish grey, silty clay with traces of sand mixture.	1.72	1.50	2.68	16 S		DRSH-CQ		0.15	34	$			CL*		22	74	4	Do
							15DR		0.5	0.529											
									1.0	0.768											
									1.5	1.170											
BH31	SPT12	20.00	Brownish grey, silty sand with traces of kankars and mica.										NP			SM-SP		92	08 (Silt+Clay)		Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH31	SPT16	26.00	Brownish grey, silty sand with traces of mica.										NP			SM		69	31 (Silt+Clay)		Do
BH32	UDS01	2.00	Brownish grey, silty clay/clayey silt with sand mixture and mica.															44	56 (Silt+Clay)		Do
BH32	UDS03	6.50	Brownish grey, silty sand with traces of mica.										NP			SM-SP		89	11 (Silt+Clay)		Do
BH32	UDS04	9.50	Brownish grey, clayey silt.	1.89	1.50	2.65	23 S		TRSH-UU		1.24	6	33	26	26	ML		30	69	1	Do
							26 T		3.0	1.734											
									2.0	1.617											
									1.0	1.501											
									UNCONFD		1.69	0									
									0.0	1.710											
									0.0	1.790											
									0.0	1.560											
									REMOULD		1.35	0									
									0.0	1.373											
									0.0	1.425											
									0.0	1.244											
BH32	SPT09	17.00	Brownish grey, silty clay.										$			CL*		35	59	6	Do
BH32	SPT15	26.00	Brownish grey, silty sand with traces of kankars and clay binders.										NP			SM	10	59	31 (Silt+Clay)		Do
BH33	UDS01	2.00	Brownish grey, silty sand with traces of sand stone and mica.										NP			SM	2	80	18 (Silt+Clay)		Do
BH33	UDS04	9.50	Brownish grey, silty clay with traces of sand.	1.84	1.58	2.67	8 S						37	24		CI		32	67	1	Do
BH33	SPT08	15.50	Brownish grey, silty clay with sand mixture.										$			CL*		38	62 (Silt+Clay)		Do
BH33	SPT12	21.50	Brownish grey, silty clay with traces of sand mixture.										34	23		CL					Do

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Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH33	SPT17	29.00	Brownish grey, silty sand with traces of gravels.										NP			SP	35	62	03 (Silt+Clay)		Do
BH34	UDS01	2.00	Brownish grey, silty sand with traces of mica.										NP			SM		86	14 (Silt+Clay)		Do
BH34	UDS03	6.50	Brownish grey, silty sand.	1.75	1.57	2.65	9 S						NP			SM		79	19	2	Do
BH34	SPT05	11.00	Brownish grey, silty clay with traces of sand mixture.										35	20		CI					Do
BH34	SPT12	21.50	Brownish grey, silty clay with tyraces of sand mixture.										35	22		CI					Do
BH34	SPT15	26.00	Brownish grey, silty sand with traces of kankars and mica.										NP			SM-SP		94	06 (Silt+Clay)		Do
BH34	SPT18	31.00	Brownish grey, silty clay with traces of sand mixture.										35	21		CI					Do
BH35	UDS01	2.00	Brownish grey, silty sand with traces of mica.										NP			SM		83	17 (Silt+Clay)		Do
BH35	UDS03	6.50	Greyish brown, silty clay with traces of sand mixture.	2.10	1.79	2.62	17 S		TRSH-UU		1.03	12	33	22		CL		54	44	2	Do
							18 T		3.0	2.077											
									2.0	1.898											
									1.0	1.545											
BH35	SPT08	15.50	Brownish grey, silty sand with traces of mica.										NP			SM-SP		92	08 (Silt+Clay)		Do
BH35	SPT14	25.00	Brownish grey, silty sand with gravel and kankars.										NP			SP	19	78	03 (Silt+Clay)		Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH36	UDS01	2.00	Brownish grey, silty sand with traces of clay binders.	1.68	1.55	2.62	10 S									SM		82	17	1	Do
BH36	UDS03	6.50	Brownish grey, silty sand with traces of kankars and mica.										NP			SM-SP		91	09 (Silt+Clay)		Do
BH36	SPT07	14.00	Brownish grey, silty clay with sand mixture.										34	18		CL		33	67 (Silt+Clay)		Do
BH36	SPT11	20.00	Brownish grey, silty sand with traces of gravels.										NP			SP	20	76	04 (Silt+Clay)		Do
BH36	SPT15	26.00	Brownish grey, silty clay with sand mixture and mica.										$			CI*		41	59 (Silt+Clay)		Do
BH37	UDS01	2.00	Brownish grey silty sand with traces of mica.										NP			SM-SP		89	11(silt+clay)		Do
BH37	UDS03	6.50	Deep grey silty sand / sandy silt.	1.79	1.63		10 S		DRSH-CQ		0.05	35				SM		76	24(silt+clay)		Do
							10DR		0.5	0.390											
									1.0	0.781											
									1.5	1.101											
BH37	UDS04	9.50	Brownish grey silty sand.	1.80	1.63		11 S						NP			SM-SP		93	7(silt+clay)		Do
BH37	SPT06	12.75	Yellowish grey silty clay with sand mixture.			2.61							$			CL*		30	67	3	Do
BH37	SPT10	19.00	Brownish grey silty sand with traces of mica										NP			SM-SP		91	9(silt+clay)		Do
BH37	SPT12	22.00	Brownish grey silty sand with traces of mica										NP			SM-SP		93	7(silt+clay)		Do
BH37	SPT13	23.50	Brownish grey silty clay with sand mixture.										$			CL*		23	74	3	Do

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Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH37	SPT14	25.00	Brownish grey silty sand with traces of clay binders & mica.										NP			SM		50	50(silt+clay)		Do
BH37	SPT16	28.00	Brownish grey silty clay with fine sand mixture.			.							31	21		CL					Do
BH37	SPT18	31.00	Brownish grey silty sand with traces of clay binders & mica.										NP			SM		51	49(silt+clay)		Do
BH38	UDS01	2.00	Brownish grey, silty sand.	1.78	1.69	2.68	5 S		DRSH-CQ		0.10	36	NP			SM		85	15	0	Do
							6DR		0.5	0.458											
									1.0	0.840											
									1.5	1.200											
BH38	UDS03	6.50	Brownish grey, silty clay with traces of sand mixture and silt stone.										$			CI*	2	19	79 (Silt+Clay)		Do
BH38	SPT05	9.80	Brownish grey, silty sand with traces of mica.										NP			SM-SP		95	05 (Silt+Clay)		Do
BH38	SPT09	16.00	Brownish grey, silty clay with traces of silt stone.										35	22		CI					Do
BH38	SPT13	22.00	Brownish grey, gravelly sand.										NP			SW	31	65	04 (Silt+Clay)		Do
BH38	SPT15	25.00	Brownish grey, silty clay with silt stone.										39	22		CI					Do
BH39	UDS01	2.00	Greyish brown silty clay with sand mixture.	1.99	1.68	2.65	18 S	0.504	TRSH-UU		0.72	11	28	21		SM-SC		67	29	4	Do
							18 T		3.0	1.642											
							12 C		2.0	1.311											
									1.0	1.154											

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Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
									UNCONFD		1.14	0									
									0.0	1.041											
									0.0	1.174											
									0.0	1.208											
									REMOULD		0.85	0									
									0.0	0.777											
									0.0	0.874											
									0.0	0.909											
BH39	UDS02	4.00	Greyish brown silty clay with traces of sand mixture.	1.72	1.21	2.62	31 S		TRSH-UU		0.48	0	39	25		CI		22	71	7	Do
							41 T		3.0	0.534											
									2.0	0.458											
									1.0	0.442											
BH39	UDS03	6.50	Brownish grey silty clay with traces of calcareous nodules.	1.74	1.38	2.63	22 S		TRSH-UU		1.12	11	43	25		CI		16	78	6	Do
							27 T		3.0	2.001											
									2.0	1.808											
									1.0	1.555											
BH39	SPT05	9.50	Brownish grey silty sand with traces of mica.										NP			SM		82	18(silt+clay)		Do
BH39	SPT09	15.50	Greyish brown silty clay with sand mixture.										$			CL*		48	45	7	Do
BH39	SPT13	21.00	Brownish grey silty sand with traces of kankars.										NP			SP	15	83	2(silt+clay)		Do
BH39	SPT18	28.50	Greyish brown silty clay with sand mixture & mica.										$			CL*		41	59(silt+clay)		Do
BH40	UDS01	2.00	Brownish grey silty sand with traces of mica.										NP			SM		83	17(silt+clay)		Do
BH40	UDS02	4.00	Brownish grey silty sand with traces of clay binders & mica.										NP			SM		74	26(silt+clay)		Do
BH40	UDS03	6.50	Greyish brwon clayey silt.	1.88	1.52	2.52	23 S						53	30		MH		8	88	4	Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH40	UDS04	9.50	Brownish grey silty clay.	1.76	1.50		17 S		UNCONFD		1.63	0	38	22		CI					Do
							17 T		0.0	2.109											
									0.0	1.682											
									0.0	1.092											
									REMOULD		1.23	0									
									0.0	1.631											
									0.0	1.269											
									0.0	0.800											
BH40	UDS05	12.50	Brownish grey silty sand with traces of clay binders & mica.										NP			SM		67	33(silt+clay)		Do
BH40	SPT07	15.75	Greyish brown silty clay with sand mixture.										31	19		CL					Do
BH40	SPT08	17.50	Brownish grey silty clay with sand mixture.										$			CL*		46	54(silt+clay)		Do
BH40	SPT10	20.50	Brownish grey silty sand with traces of clay binders & mica.										NP			SM		60	40(silt+clay)		Do
BH40	SPT11	22.00	Brownish grey silty clay with sand mixture.										$			CL*		25	62	13	Do
BH40	SPT12	23.50	Deep grey clayey silt.										35	29		MI					Do
BH40	SPT16	29.50	Brownish grey silty clay.										36	22		CI					Do
BH41	UDS01	2.00	Greyish brown silty sand.	1.78	1.59		12 S		DRSH-CQ		0.09	29	NP			SM		85	15(silt+clay)		Do
							12DR		0.5	0.369											
									1.0	0.637											
									1.5	0.928											
BH41	UDS02	4.00	Greyish brown silty clay with traces of fine sand	1.92	1.50	2.70	28 S	0.791	TRSH-UU		1.62	0	47	26		CI		6	85	9	Do
							28 T		3.0	1.665											
							26 C		2.0	1.607											
									1.0	1.601											

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH41	UDS03	6.50	Greyish brown silty clay with traces of sand mixture.	1.88	1.47	2.71	24 S		TRSH-UU		0.60	4	32	21		CL		38	57	5	Do
							28 T		3.0	0.883											
									2.0	0.815											
									1.0	0.726											
BH41	SPT04	8.00	Brownish grey silty sand with traces of mica.										NP			SM		86	14(silt+clay)		Do
BH41	SPT09	15.50	Greyish brown silty clay with sand mixture & mica.										32	17		CL		39	61(silt+clay)		Do
BH41	SPT13	21.50	Brownish grey silty sand with traces of kankars.										NP			SM-SP	28	66	6(silt+clay)		Do
BH41	SPT19	30.50	Brownish grey silty sand with traces of mica.										NP			SM		87	13(silt+clay)		Do
BH42	UDS01	2.00	Greyish brown silty sand with clay binders.	1.85	1.56		15 S		DRSH-CQ		0.12	35	NP			SM		86	14(silt+clay)		Do
							19DR		0.5	0.480											
									1.0	0.818											
									1.5	1.192											
BH42	UDS02	4.00	Greyish brwon clayey silt with traces of sand.	1.84	1.42	2.60	26 S	0.786	TRSH-UU		1.18	0	41	26		MI		18	74	8	Do
							30 T		3.0	1.212											
							27 C		2.0	1.189											
									1.0	1.142											
BH42	UDS03	6.50	Greyish brown silty sand.	1.78	1.61		11 S		DRSH-CQ		0.11	30	NP			SM-SP		90	10(silt+clay)		Do
							10DR		0.5	0.399											
									1.0	0.687											
									1.5	0.981											
BH42	UDS04	8.00	Brownish grey silty clay with traces of calcareous nodules & sand.	1.94	1.61	2.65	19 S		TRSH-UU		0.92	4	32	21		CL		6	87	7	Do
							21 T		3.0	1.213											
									2.0	1.174											
									1.0	1.063											
BH42	SPT05	10.00	Brownish grey silty clay with sand mixture & mica.										$			CL*		34	66(silt+clay)		Do
BH42	SPT08	14.50	Brownish grey silty clay with sand mixture & mica.										$			CL*		35	60	5	Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH42	SPT13	22.00	Brownish grey silty sand with traces of kankars.										NP			SP	21	75	4(silt+clay)		Do
BH42	SPT19	31.00	Brownish grey silty sand with traces of clay binders.										NP			SM	13	60	27(silt+clay)		Do
BH43	UDS01	2.00	Brownish grey silty clay.	1.98	1.65	2.67	20 S		TRSH-UU		1.33	0	43	23		CI		27	58	15	Do
							20 T		3.0	1.356											
									2.0	1.333											
									1.0	1.301											
BH43	UDS02	4.00	Brownish grey clayey silt with sand mixture.	1.71	1.41	2.65	22 S		TRSH-UU		2.08	17	37	28		MI		16	79	5	Do
							22 T		3.0	4.191											
									2.0	3.512											
									1.0	3.330											
BH43	UDS03	6.50	Brownish grey silty sand.	1.78	1.73		04 S		DRSH-CQ		0.20	27	NP			SM-SP		95	5(silt+clay)		Do
							03DR		0.5	0.463											
									1.0	0.713											
									1.5	0.983											
BH43	SPT06	11.00	Brownish grey silty sand with traces of mica.										NP			SM		87	13(silt+clay)		Do
BH43	SPT12	20.00	Brownish grey silty clay with sand mixture & mica.										$			CL*		17	83(silt+clay)		Do
BH43	SPT17	27.50	Brownish grey silty sand with traces of kankars & mica.										NP			SM-SP	20	75	5(silt+clay)		Do
BH44	UDS01	2.00	Greyish brown silty sand.	1.78	1.63		09 S		DRSH-CQ		0.07	29	NP			SM-SP		89	11(silt+clay)		Do
							9DR		0.5	0.357											
									1.0	0.621											
									1.5	0.914											
BH44	UDS02	4.00	Greyish brown silty sand.	1.78	1.49		20 S		DRSH-CQ		0.06	34	NP			SM		84	16(silt+clay)		Do
							19DR		0.5	0.405											
									1.0	0.706											
									1.5	1.076											

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH44	UDS03	6.50	Greyish brown clayey silt with traces of fine sand	1.79	1.29	2.66	35 S		TRSH-UU		0.51	0	42	26		MI		12	80	8	Do
							39 T		3.0	0.577											
									2.0	0.509											
									1.0	0.430											
BH44	UDS04	9.50	Brownish grey silty sand.	1.78	1.65		08 S		DRSH-CQ		0.08	33	NP			SM-SP		94	6(silt+clay)		Do
							8DR		0.5	0.401											
									1.0	0.713											
									1.5	1.043											
BH44	UDS05	13.00	Greyish brown silty clay with traces of sand.	1.86	1.39	2.65	28 S		TRSH-UU		0.89	0	43	25		CI		32	60	8	Do
							34 T		3.0	0.912											
									2.0	0.885											
									1.0	0.873											
BH44	SPT10	20.50	Brownish grey silty sand with tracres of kankars.										NP			SM-SP	18	73	9(silt+clay)		Do
BH44	SPT14	26.50	Brownish grey silty clay with traces of fine sand mixture.										33	19		CL		6	94(silt+clay)		Do
BH44	SPT18	32.50	Brownish grey silty sand with kankars & traces of mica.										NP			SM	25	61	14(silt+clay)		Do
BH45	UDS01	2.00	Deep brown silty sand.	1.78	1.66		7DR		DRSH-CQ		0.11	32	NP			SM		87	13(silt+clay)		Do
									0.5	0.388											
									1.0	0.796											
									1.5	1.008											
BH45	UDS02	4.00	Brownish grey silty clay with traces of calcareous nodules.	1.97	1.57	2.56	25 S		UNCONFD		1.00	0	61	27		CH		12	62	26	Do
							26 T		0.0	1.022											
									0.0	1.042											
									0.0	0.922											
									REMOULD		0.69	0									
									0.0	0.720											
									0.0	0.736											
									0.0	0.623											
BH45	UDS03	6.50	Brownish grey silty clay.				13 S						38	24		CI		28	67	5	Do
BH45	SPT06	11.00	Brownish grey silty sand with traces of mica.										NP			SM		85	15(silt+clay)		Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH45	SPT09	15.50	Brownish grey silty clay with traces of kankars.										35	23		CI					Do
BH45	SPT15	24.50	Brownish grey clayey silt with traces of sand mixture.										38	25		MI		36	64(silt+clay)		Do
BH45	SPT19	30.50	Brownish grey silty sand with gravels, traces of kankars & mica.										NP			SM	16	58	26(silt+clay)		Do
BH46	UDS01	2.00	Brownish grey, silty clay.	1.99	1.58	2.65	28 S	0.823	TRSH-UU		0.63	0	50	26	12	CH		22	75	3	Do
							26 T		3.0	0.661											
							31 C		2.0	0.630											
									1.0	0.591											
BH46	SPT07	11.50	Brownish grey, gravelly sand.										NP			SM-SW	41	50	09 (Silt+Clay)		Do
BH46	SPT13	19.50	Brownish grey, silty clay with traces of sand mixture.										35	22		CI					Do
BH46	SPT18	27.00	Brownish grey, silty sand with gravels and traces of kankars.										NP			SP	30	68	02 (Silt+Clay)		Do
BH47	UDS01	2.00	Deep brown silty clay with traces of sand mixture.										29	19		CL		18	82(silt+clay)		Do
BH47	UDS02	4.00	Greyish brown silty clay.	1.99	1.65	2.68	22 S	0.567	TRSH-UU		0.49	13	54	26		CH		8	87	5	Do
							21 T		3.0	1.497											
							21 C		2.0	1.185											
									1.0	0.864											
BH47	UDS03	6.50	Brownish grey clayey silt with traces of sand mixture.										41	29		MI					Do
BH47	UDS04	9.50	Greyish brown silty sand.	1.78	1.71		4 S		DRSH-CQ		0.15	36	NP			SM-SP		95	5(silt+clay)		Do
							5DR		0.5	0.519											
									1.0	0.841											
									1.5	1.239											

Bore Hole	Sample Number	Depth M	Sample Description	Bulk Dens. gms/cc	Dry Dens. gms/cc	Spec. Grav.	Nat. Mois. %	Void Ratio	Strength Test Results Pc/Pn kg/sqcm	Shear kg/sqcm	Cohesn kg/sqcm	Frictn Deg.	Atter. Limits LL %	PL %	SL %	IS Classification	Grain Size Gravl %	Sand %	Silt %	Clay %	Test Method
BH47	SPT06	12.75	Brownish grey silty clay with traces of sand mixture.										34	23		CL					Do
BH47	SPT11	20.50	Brownish grey silty sand with traces of clay binders & mica.										NP			SM		64	36(silt+clay)		Do
BH47	SPT17	29.50	Brownish grey silty sand with traces of gravel pcs. & mica.										NP			SM	17	63	20(silt+clay)		Do
BH48	UDS01	2.00	Greyish brown silty clay.										31	20		CL					Do
BH48	UDS02	4.00	Brownish grey silty clay with traces of calcareous nodules.	2.00	1.64		22 S		UNCONFD		1.76	0	52	25		CH		16	70	14	Do
							22 T		0.0	1.711											
									0.0	1.814											
									0.0	1.745											
									REMOULD		1.31	0									
									0.0	1.258											
									0.0	1.403											
									0.0	1.277											
BH48	UDS03	6.50	Greyish brown silty clay.	1.74	1.43	2.57	21 S						46	26		CI		9	91(silt+clay)		Do
BH48	UDS04	9.50	Brownish grey silty sand with traces of mica.										NP			SM-SP		90	10(silt+clay)		Do
BH48	UDS05	12.50	Brownish grey silty clay.										36	24		CI					Do
BH48	SPT07	14.00	Greyish brown silty clay with sand mixture.										$			CL*		19	81(silt+clay)		Do
BH48	SPT09	19.00	Brownish grey silty clay with traces of sand mixture.										32	23		CL					Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH48	SPT16	28.50	Brownish grey silty sand with gravels & traces of mica.										NP			SM	26	45	29(silt+clay)		Do
BH49	UDS01	2.00	Brownish grey silty clay with sand mixture & mica.													CI*		34	66(silt+clay)		Do
BH49	UDS02	4.00	Deep brownish grey silty clay.										49	25		CI					Do
BH49	UDS03	6.50	Deep brown silty sand.	1.78	1.65	2.66	8 S		DRSH-CQ		0.09	31	NP			SM		86	13	1	Do
							8DR		0.5	0.367											
									1.0	0.703											
									1.5	0.958											
BH49	SPT04	8.00	Brownish grey silty clay.										38	24		CI					Do
BH49	SPT05	9.80	Brownish grey silty clay with sand mixture & mica.										$			CL*		19	81(silt+clay)		Do
BH49	SPT10	18.00	Brownish grey silty sand with traces of kankars.										NP			SP		96	04(silt+clay)		Do
BH49	SPT18	30.50	Brownish grey silty sand with gravels & traces of mica.										NP			SM	20	59	21(silt+clay)		Do
BH50	UDS01	2.00	Brownish grey silty sand with traces of mica.										NP			SM		86	14(silt+clay)		Do
BH50	UDS02	4.00	Brownish grey silty clay with sand mixture.										42	21		CI		13	87(silt+clay)		Do
BH50	UDS03	6.50	Greyish brown silty clay.	1.86	1.46		26 S						$			CI*		12	88(silt+clay)		Do
							27 T														
BH50	UDS04	9.50	Brownish grey silty sand with traces of mica.										NP			SP		96	4(silt+clay)		Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH50	SPT11	20.50	Yellowish grey silty sand with clay binders & mica.			2.68							NP			SM		75	25	0	Do
BH51	UDS01	2.00	Greyish brown, silty clay.	2.04	1.63	2.64	23 S						37	20		CI		25	71	4	Do
BH51	UDS03	6.50	Brownish grey, silty clay with traces of sand mixture.										$			CI*		14	78	8	Do
BH51	SPT06	12.50	Brownish grey, silty clay with sand mixture and mica.										$			CI*		28	72 (Silt+Clay)		Do
BH51	SPT11	20.00	Brownish grey, silty sand										NP			SM		86	14 (Silt+Clay)		Do
BH51	SPT13	23.00	Brownish grey, silty sand with traces of gravels.										NP			SP	26	70	04 (Silt+Clay)		Do
BH51	SPT16	27.50	Brownish grey, silty sand										NP			SM-SP		90	10 (Silt+Clay)		Do
BH52	UDS01	2.00	Brownish grey silty sand with traces of mica.										NP			SM-SP		90	10(silt+clay)		Do
BH52	UDS03	6.50	Brownish grey silty clay.	1.81	1.41	2.55	27 S		UNCONFD		0.47	0	40	25		CI		20	71	9	Do
							29 T		0.0	0.376											
									0.0	0.463											
									0.0	0.581											
									REMOULD		0.30	0									
									0.0	0.232											
									0.0	0.292											
									0.0	0.369											
BH52	UDS04	9.50	Deep brown silty sand.	1.79	1.58		11 S		DRSH-CQ		0.25	29	NP			SM-SP		88	12(silt+clay)		Do
							13DR		0.5	0.539											
									1.0	0.773											
									1.5	1.087											

Project: Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.

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Sheet No.

CETEST

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH52	SPT11	19.50	Brownish grey silty clay with traces of sand mixture & calcareous nodules.										31	20		CL					Do
BH52	SPT17	28.50	Brownish grey silty sand with traces of mica.										NP			SM-SP		92	8(silt+clay)		Do
BH52	SPT20	31.50	Brownish grey silty sand with traces of mica.										NP			SM-SP		93	7(silt+clay)		Do
BH53	UDS02	4.00	Brownish grey, silty sand with traces of clay binders.	1.88	1.65	2.36	13 S									SM		55	43	2	Do
BH53	UDS05	12.50	Brownish grey, silty clay with sand mixture and mica.										45	23		CI		19	81 (Silt+Clay)		Do
BH53	UDS07	18.50	Brownish grey, silty sand with traces of kankars and mica.										NP			SM-SP	5	90	5 (Silt+Clay)		Do
BH53	SPT10	23.00	Brownish grey, silty sand with traces of sand mixture.										NP			SM-SP	17	78	05 (Silt+Clay)		Do
BH53	SPT14	29.00	Brownish grey, silty sand with traces of gravels.										NP			SP	10	86	04 (Silt+Clay)		Do
BH54	UDS03	6.50	Brownish grey, silty clay with sand mixture.										$			CI*		26	74 (Silt+Clay)		Do
BH54	UDS06	15.50	Brownish grey, silty sand.	1.53	1.49		3 S						NP			SM-SP		94	06 (Silt+Clay)		Do
BH54	SPT10	23.00	Brownish grey, silty sand with traces of gravels.										NP			SP	17	80	03 (Silt+Clay)		Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH54	SPT14	29.00	Brownish grey, silty clay with sand mixture.										$			CL*		36	64 (Silt+Clay)		Do
BH55	UDS02	4.00	Yellowish brown, silty sand with traces of mica.	1.78	1.60	2.69	12 S		DRSH-CQ		0.28	30	NP			SM		68	31	1	Do
							12DR		0.5	0.492											
									1.0	0.959											
									1.5	1.142											
BH55	UDS05	12.50	Brownish grey, silty clay with sand mixture.										$			CL*		20	71	9	Do
BH55	SPT10	20.00	Brownish grey, silty sand with traces of gravels.										NP			SM-SP	24	65	11 (Silt+Clay)		Do
BH55	SPT12	23.00	Brownish grey, silty sand with gravel and traces of kankars.										NP			SP	30	68	02 (Silt+Clay)		Do
BH55	SPT15	27.50	Brownish grey, silty sand with gravels and kankars.										NP			SM-SP	38	53	09 (Silt+Clay)		Do
BH56	UDS01	2.00	Brownish grey, silty sand.	1.70	1.59	2.65	7 S						NP			SM		80	19	1	Do
BH56	UDS04	9.50	Brownish grey, silty clay with sand mixture.										33	18		CL		24	76 (Silt+Clay)		Do
BH56	SPT07	14.00	Brownish grey, silty sand with traces of kankars.										NP			SM-SP		92	08 (Silt+Clay)		Do
BH57	UDS01	2.00	Brownish grey, silty sand with traces of clay binder and mica.										NP			SM		68	32 (Silt+Clay)		Do
BH57	UDS04	9.50	Brownish grey, silty clay.	2.06	1.80	2.65	15 S		TRSH-UU		1.87	13	35	18	17	CI		45	52	3	Do
							15 T		3.0	3.232											
									2.0	2.913											
									1.0	2.653											

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH57	SPT06	12.50	Brownish grey, silty sand with traces of mica.										NP			SP		96	04 (Silt+Clay)		Do
BH57	SPT10	18.50	Brownish grey, silty sand with traces of mica.										NP			SM-SP		94	06 (Silt+Clay)		Do
BH57	SPT15	26.00	Brownish grey, gravelly sand.										NP			SW	25	71	4 (Silt+Clay)		Do
BH58	UDS01	2.00	Greyish brown, silty sand with sand mixture.	1.84	1.70	2.67	8 S						NP			SM		72	27	1	Do
BH58	UDS03	6.50	Brownish grey, silty sand with traces of mica.										NP			SM-SP		89	11 (Silt+Clay)		Do
BH58	SPT07	12.50	Brownish grey, clayey silt with sand mixture.										30	25		ML					Do
BH58	SPT12	20.00	Brownish grey, silty clay with sand mixture.										$			CL*		48	52 (Silt+Clay)		Do
BH58	SPT18	29.00	Brownish grey, silty sand with traces of kankars.										NP			SM		82	18 (Silt+Clay)		Do
BH59	UDS01	2.00	Greyish brown, silty sand with traces of clay binders and kankars.	1.80	1.44	2.45	22 S						NP			SM		62	37	1	Do
BH59	UDS04	9.50	Brownish grey, silty sand with traces of sand stone.										NP			SM	3	82	15 (Silt+Clay)		Do
BH59	SPT08	15.50	Brownish grey, silty clay with sand mixture and mica.										34	20		CL		43	57 (Silt+Clay)		Do
BH59	SPT12	21.50	Brownish grey, silty sand with traces of mica.										NP			SM		50	50 (Silt+Clay)		Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH59	SPT18	30.50	Brownish grey, silty sand with traces of mica.										NP			SM-SP		94	06 (Silt+Clay)		Do
BH60	UDS01	2.00	Brownish grey, silty sand with traces of mica.										NP			SM-SP		93	07 (Silt+Clay)		Do
BH60	UDS02	9.50	Brownish grey, silty clay with traces of sand mixture.	1.92	1.69	2.66	15 S						$			CI*		15	84	1	Do
BH60	SPT10	15.50	Brownish grey, silty clay with traces of sand mixture.										$			CI*		40	60 (Silt+Clay)		Do
BH60	SPT17	26.00	Brownish grey, silty clay with traces of sand mixture.										39	19		CI					Do
BH60	SPT20	30.50	Brownish grey, silty clay with calcareous nodules and sand mixture.										36	20		CI					Do
BH61	UDS02	4.00	Reddish brown, silty clay with traces of sand mixture.										$			CI*		14	81	5	Do
BH61	UDS04	9.50	Brownish grey, silty sand.	1.78	1.51	2.64	18 S		DRSH-CQ		0.08	38	NP			SM		78	21	1	Do
							18DR		0.5	0.469											
									1.0	0.848											
									1.5	1.237											
BH61	SPT08	15.50	Yellowish grey, clayey silt with sand mixture.										32	26		ML					Do
BH61	SPT12	21.50	Brownish grey, silty clay with traces of sand mixture.										34	17		CL		51	49 (Silt+Clay)		Do
BH61	SPT17	29.00	Brownish grey, silty clay with traces of sand nixture.										$			CL*		23	77 (Silt+Clay)		Do

Bore Hole	Sample Number	Depth M	Sample Description	Bulk Dens. gms/cc	Dry Dens. gms/cc	Spec. Grav.	Nat. Mois. %	Void Ratio	Strength Test Results Pc/Pn kg/sqcm	Shear kg/sqcm	Cohesn kg/sqcm	Frictn Deg.	Atter. Limits LL %	PL %	SL %	IS Classification	Grain Size Gravl %	Sand %	Silt %	Clay %	Test Method
BH62	UDS01	2.00	Brownish grey, silty sand with traces of kankars.										NP			SM-SP	3	86	11 (Silt+Clay)		Do
BH62	UDS04	9.50	Deep brown, silty sand.	1.57	1.50	2.67	5 S						NP			SM		80	20	0	Do
BH62	SPT07	15.50	Brownish grey, silty clay with sand mixture and mica.										$			CL*		40	60 (Silt+Clay)		Do
BH62	SPT14	26.00	Brownish grey, silty clay with traces of sand mixture.										36	22		CI					Do
BH62	SPT18	32.00	Brownish grey, silty sand with traces of gravels and mica.										NP			SM-SP	25	70	05 (Silt+Clay)		Do
BH63	UDS01	2.00	Brownish grey, silty sand with traces of mica.										NP			SM		78	22 (Silt+Clay)		Do
BH63	UDS03	6.50	Brownish grey, silty clay with sand mixture.	1.66	1.48	2.65	12 S						$			CI*		35	60	5	Do
BH63	SPT08	15.50	Brownish grey, silty clay with traces of sand mixture.										31	22		CL					Do
BH63	SPT10	18.50	Brownish grey, silty clay with traces of sand mixture.										31	20		CL					Do
BH63	SPT14	24.50	Brownish grey, silty sand with gravels and traces of clay binders.										NP			SM	19	50	31 (Silt+Clay)		Do
BH64	UDS01	2.00	Brownish grey, silty sand with traces of mica.										NP			SM-SP		88	12 (Silt+Clay)		Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BH64	UDS03	6.50	Brownish grey, clayey silt.	1.66	1.34	2.63	21 S	0.904	TRSH-UU		1.04	7	45	32		MI		20	76	4	Do
							24 T		3.0	1.599											
							21 C		2.0	1.442											
									1.0	1.294											
BH64	UDS04	9.50	Brownish grey, silty sand with traces of mica.										NP			SM		84	16 (Silt+Clay)		Do
BH64	UDS05	12.50	Brownish grey, silty clay with sand mixture and traces of mica.										35	24		CI		49	51 (Silt+Clay)		Do
BH64	SPT08	18.80	Brownish grey, silty clay with sand mixture.										31	22		CL					Do
BH64	SPT12	25.00	Brownish grey, silty sand with traces of gravel oieces.										NP			SP	47	50	03 (Silt+Clay)		Do
BHT1	UDS01	2.00	Brownish grey, silty sand with traces of mica.										NP			SM-SP		88	12 (Silt+Clay)		Do
BHT1	UDS04	9.50	Brownish grey, silty clay with sand mixture.	1.94	1.70	2.63	13 S						31	18		CL		15	80	5	Do
BHT1	SPT09	17.00	Brownish grey, silty sand with traces of mica.										NP			SM-SP		93	07 (Silt+Clay)		Do
BHT1	SPT13	23.00	Yellowish brown, silty sand with traces of rock dust and mica.										NP			SM-SP	4	90	06 (Silt+Clay)		Do
BHT1	SPT19	32.00	Brownish grey, silty clay with traces of sand mixture.										35	22		CI					Do
BHT2	UDS01	2.00	Brownish grey, silty sand with clay binder and mica.										NP			SM		59	41 (Silt+Clay)		Do
BHT2	UDS03	6.50	Brownish grey, silty sand.	1.61	1.53	2.66	5 S						NP			SM		75	24	1	Do

Project: Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.

Job No. : 3369

Sheet No.

CETEST

Project: Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.

Job No. : 3369

Sheet No.

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BHT2	SPT05	9.63	Brownish grey, silty clay with traces of sand mixture.										35	20		CI					Do
BHT2	SPT10	17.50	Brownish grey, silty clay with sand mixture.										$			CL*		41	55	4	Do
BHT2	SPT14	23.50	Brownish grey, silty sand										NP			SM-SP		94	06 (Silt+Clay)		Do
BHT2	SPT20	32.50	Brownish grey, silty clay.										42	20		CI					Do
BHT3	UDS01	2.00	Brownish grey, silty clay/clayey silt with traces of mica.										NP			SM-SP		92	08 (Silt+Clay)		Do
BHT3	UDS03	6.50	Brownish grey, silty sand.	1.73	1.58	2.62	10 S		DRSH-CQ		0.20	34	NP			SM		54	42	4	Do
							10DR		0.0	0.493											
									1.0	0.927											
									1.5	1.200											
BHT3	SPT07	15.50	Brownish grey, silty clay with sand mixture.										$			CL*		36	64 (Silt+Clay)		Do
BHT3	SPT12	23.00	Brownish grey, silty sand with traces of gravel pieces.										NP			SM-SP	18	76	06 (Silt+Clay)		Do
BHT3	SPT16	29.00	Brownish grey, silty clay.										42	19		CI					Do
BHT4	UDS01	2.00	Brownish grey, silty sand with traces of calcereous nodules.										NP			SM	15	65	20 (Silt+Clay)		Do
BHT4	UDS03	6.50	Brownish grey, silty clay with traces of fine sand mixture.	1.90	1.74	2.65	9 S						$			CI*		41	58	1	Do

Bore	Sample	Depth	Sample Description	Bulk	Dry	Spec.	Nat.	Void	Strength Test Results				Atter. Limits			IS	Grain Size				Test Method
Hole	Number	M		Dens.	Dens.	Grav.	Mois.	Ratio	Pc/Pn	Shear	Cohesn	Frictn	LL	PL	SL	Classifi	Gravl	Sand	Silt	Clay	
				gms/cc	gms/cc		%		kg/sqcm	kg/sqcm	kg/sqcm	Deg.	%	%	%	cation	%	%	%	%	
BHT4	SPT07	12.50	Brownish grey, clayey silt with sand mixture.										32	25		ML					Do
BHT4	SPT14	23.00	Brownish grey, silty sand with gravels and traces of kankars.										NP			SM	25	60	15 (Silt+Clay)		Do
BHT4	SPT17	27.50	Brownish grey, silty clay with traces of silt stone and sand mixture.										39	22		CI					Do

*** Classification is based on average subsoil properties.**

$ Test could not be possible due to shortage of sample.

Density Test results of Trial Pit Samples

Trial Pit Location	Sample Number	Depth M	Sample Description	Bulk Dens. gms/cc	Dry Dens. gms/cc	Nat. Mois. %
TP-01	UDS01	1.00	Brownish grey, sandy silt / silty sand.	1.57	1.46	7.53
TP-01	UDS02	2.00	Yellowish grey, silty sand.	1.51	1.43	5.59
TP-01	UDS03	3.00	Blackish grey, silty clay.	1.76	1.61	9.32
TP-01	UDS04	4.00	Blackish grey, silty clay.	1.72	1.59	8.18
TP-02	UDS01	1.00	Greyish brown, silty sand.	1.68	1.54	9.09
TP-02	UDS02	2.00	Greyish brown, silty sand.	1.76	1.54	14.01
TP-02	UDS03	3.00	Greyish brown, silty sand with silt stone & kankars.	1.70	1.54	10.39
TP-02	UDS04	4.00	Greyish brown, silty sand with silt stone & kankars.	2.00	1.71	16.38
TP-03	UDS01	1.00	Brownish grey, silty sand / sandy silt.	1.57	1.48	6.08
TP-03	UDS02	2.00	Brownish grey, silty sand.	1.47	1.40	5.00
TP-03	UDS03	3.00	Brownish grey, silty sand.	1.61	1.54	4.55
TP-03	UDS04	4.00	Brownish grey, silty sand.	1.54	1.45	6.21
TP-04	UDS01	1.00	Blackish grey, silty clay.	1.62	1.52	6.58
TP-04	UDS02	2.00	Brownish grey, clayey silt / silty clay.	1.63	1.55	5.16
TP-04	UDS03	3.00	Brownish grey, clayey silt / silty clay.	1.72	1.60	7.50
TP-04	UDS04	4.00	Brownish grey, clayey silt / silty clay.	1.70	1.58	7.59
TP-05	UDS01	1.00	Greyish brown, silty sand.	1.55	1.47	5.44
TP-05	UDS02	2.00	Greyish brown, silty sand.	1.57	1.48	6.08
TP-05	UDS03	3.00	Greyish brown, silty sand.	1.53	1.46	5.00
TP-05	UDS04	4.00	Greyish brown, silty sand.	1.54	1.49	3.44
TP-06	UDS01	1.00	Greyish brown, silty sand.	1.52	1.44	5.39
TP-06	UDS02	2.00	Greyish brown, silty sand.	1.56	1.47	6.12
TP-06	UDS03	3.00	Greyish brown, silty sand.	1.52	1.44	5.61
TP-06	UDS04	4.00	Greyish brown, silty sand.	1.55	1.47	5.44
TP-07	UDS01	1.00	Blackish grey / grey, ash.	1.21	1.15	5.22
TP-07	UDS02	2.00	Blackish grey / grey, ash.	1.24	1.18	5.08

Trial Pit Location	Sample Number	Depth M	Sample Description	Bulk Dens. gms/cc	Dry Dens. gms/cc	Nat. Mois. %
TP-07	UDS03	3.00	Blackish grey / grey, ash.	1.27	1.21	4.96
TP-07	UDS04	4.00	Blackish grey / grey, ash.	1.25	1.2	4.17
TP-08	UDS01	1.00	Blackish grey, silty clay.	1.62	1.54	5.19
TP-08	UDS02	2.00	Blackish grey, silty clay.	1.67	1.58	5.70
TP-08	UDS03	3.00	Blackish grey, silty clay.	1.72	1.61	6.83
TP-08	UDS04	4.00	Brownish grey, silty clay / clayey silt.	1.74	1.63	6.75
TP-09	UDS01	1.00	Yellowish grey, silty sand.	1.52	1.46	4.11
TP-09	UDS02	2.00	Blackish grey, silty clay.	1.58	1.49	6.04
TP-09	UDS03	3.00	Brownish grey, silty clay.	1.66	1.51	9.93
TP-09	UDS04	4.00	Brownish grey, silty clay.	1.73	1.55	11.61
TTP-01	UDS01	1.00	Greyish brown, silty sand with traces of silt stone.	1.46	1.39	5.22
TTP-01	UDS02	2.00	Brownish grey, silty sand.	1.64	1.56	5.22
TTP-01	UDS03	3.00	Brownish grey, silty sand.	1.53	1.47	4.25
TTP-01	UDS04	4.00	Greyish brown, silty sand with traces of silt stone.	1.66	1.57	5.73

SWELLING TEST RESULTS

Borehole No.	Sample No.	Depth (M)	Description	Free Swell Index, (%)	Swelling Pressure (kg/cm^2)	Moisture Content (%)	Test Method
BH-4	UDS-03	6.50	Brownish grey, silty clay/clayey silt.	15.56	0.12	25	#See the Note
BH-5	UDS-02	4.00	Brownish grey, silty clay/clayey silt.	10.20	--	16	Do
BH-6	UDS-02	4.00	Brownish grey, silty clay with sand mixture.	13.89	0.04	17	Do
BH-7	UDS-05	12.50	Light brownish grey, silty sand.	0.00	--	10	Do
BH-9	UDS-01	2.00	Brownish grey, silty clay/clayey silt.	9.09	0.05	20	Do
BH-10	UDS-01	2.00	Brownish grey, silty clay/clayey silt with traces of fine sand mixture.	15.91	--	14	Do
BH-11	UDS-01	2.00	Greyish brown silty clay.	21.74	0.86	22	Do
BH-23	UDS-02	4.00	Greyish brown, silty clay/clayey silt with sand mixture & kankars.	13.51	0.35	29	Do
BH-26	UDS-03	6.50	Brownish grey silty clay/clayey silt.	26.67	1.33	23	Do
BH-29	UDS-04	9.50	Brownish grey, silty clay/clayey silt.	0.00	0.00	16	Do
BH-32	UDS-04	9.50	Brownish grey, silty clay/clayey silt.	0.00	--	25	Do
BH-39	UDS-02	4.00	Greyish brown silty clay / clayey silt with traces of sand mixture.	4.17	0.00	27	Do
BH-44	UDS-03	6.50	Greyish brown silty clay / clayey silt with traces of fine sand.	4.00	0.00	29	Do
BH-45	UDS-02	4.00	Brownish grey clayey silt/silty clay with traces of calcareous nodules.	45.45	--	26	Do
BH-46	UDS-01	2.00	Brownish grey, clayey silt / silty clay.	30.00	0.00	27	Do
BH-47	UDS-02	4.00	Greyish brown silty clay/clayey silt.	28.26	1.89	24	Do

SWELLING TEST RESULTS

Borehole No.	Sample No.	Depth (M)	Description	Free Swell Index, (%)	Swelling Pressure (kg/cm^2)	Moisture Content (%)	Test Method
BH-49	UDS-03	6.50	Deep brown silty sand.	0.00	0.00	9	Do
BH-57	UDS-04	9.50	Brownish grey, silty clay/clayey silt.	23.68	--	15	Do
BH-64	UDS-03	6.50	Brownish grey, silty clay/clayey silt.	15.91	0.24	23	Do

SUMMERISED LABORATORY COMPACTION & CBR TEST RESULTS

SL No.	Sample No.	Depth (M)	Description	Standard Proctor Compaction Test			Modified Proctor Compaction Test			Test Method
				OMC (%)	MDD (gm/cc)	Soaked CBR (%)	OMC (%)	MDD (gm/cc)	Soaked CBR (%)	
1	TP-01 / DS01	1.00	Light grey, silty sand with traces of mica & clay binders.	14.00	1.770	9	--	--	--	# See the Note
1	TP-01 / DS02	2.00	Yellowish grey, silty sand with traces of clay binders.	--	--	--	12.00	1.950	--	Do
2	TP-02 / DS02	2.00	Yellowish brown sandy silt with clay binders.	14.75	1.836	8	--	--	--	Do
3	TP-03 / DS01	1.00	Greyish brown silty sand.	14.26	1.701	--	--	--	--	Do
3	TP-03 / DS02	2.00	Greyish brown silty sand.	--	--	--	13.30	1.827	21	Do
4	TP-07 / DS01	1.00	Deep grey fly ash.	--	--	--	26.50	1.205	15	Do
5	TP-08 / DS01	1.00	Brownish grey, clayey silty sand.	15.20	1.863	10	--	--	--	Do
6	TP-09 / DS01	1.00	Yellowish grey, silty sand.	--	--	--	12.74	1.851	--	Do
6	TP-09 / DS03	3.00	Brownish grey silty clay	16.10	1.773	6	--	--	--	Do
7	TTP-01 / DS02	2.00	Yellowihs grey sandy silt / silty sand with clay binders.	--	--	--	14.55	1.83	14	Do
8	PLT03 / DS02	2.00	Greyish brown, clayey silty sand / clayey sandy silt.	14.00	1.801	7	--	--	--	Do
9	PLT05 / DS01	1.00	Brownish grey clayey silty sand.	--	--	--	12.90	1.961	16	Do
9	PLT05 / DS02	2.00	Blackish / deep grey, silty clay.	14.25	1.749	--	--	--	--	Do
10	CPLT01 / DS01	1.00	Brownish grey clayey silt with traces of sand mixture.	15.32	1.822	8	--	--	--	Do

SUMMERISED LABORATORY COMPACTION & CBR TEST RESULTS

SL No.	Sample No.	Depth (M)	Description	Standard Proctor Compaction Test			Modified Proctor Compaction Test			Test Method
				OMC (%)	MDD (gm/cc)	Soaked CBR (%)	OMC (%)	MDD (gm/cc)	Soaked CBR (%)	
11	CPLT01 / DS01	1.00	Yellowish grey, clayey silt with fine sand mixture.	13.85	1.777	--	--	--	--	Do
11	CPLT02 / DS02	2.00	Greyish brown clayey silty sand.	--	--	--	12.20	1.954	19	Do

 # Note: Test Methods

Bulk Density & Dry Density: Ref. CET/SOP/01, Issue No. 01-(Page 27 & 39 of 40)
Natural Moisture Content: IS 2720 (Part 2)
Specific Gravity: IS 2720 (Part 3).
Grain size analysis: IS 2720 (Part 4)
Lquid Limit & Plastic Limit: IS 2720 (Part 5)
Standard Proctor Compaction Test (Light Compaction): IS 2720 (Part 7)
Modified Proctor Compaction Test (Heavy Compaction): IS 2720 (Part 8)

Unconfined Compressive Strength Test: IS 2720 (Part 10)
Triaxial Test (TRSH-UU): IS 2720 (Part 11)
Direct Shear Test (DRSH-CQ): IS 2720 (Part 13)
Consolidation Properties (Void Ratio): IS 2720 (Part 15)
California Bearing Ratio (CBR) Test: IS 2720 (Part 16)
Free Swell Index: IS 2720 (Part 40)
Swelling Pressure: IS 2720 (Part 41)

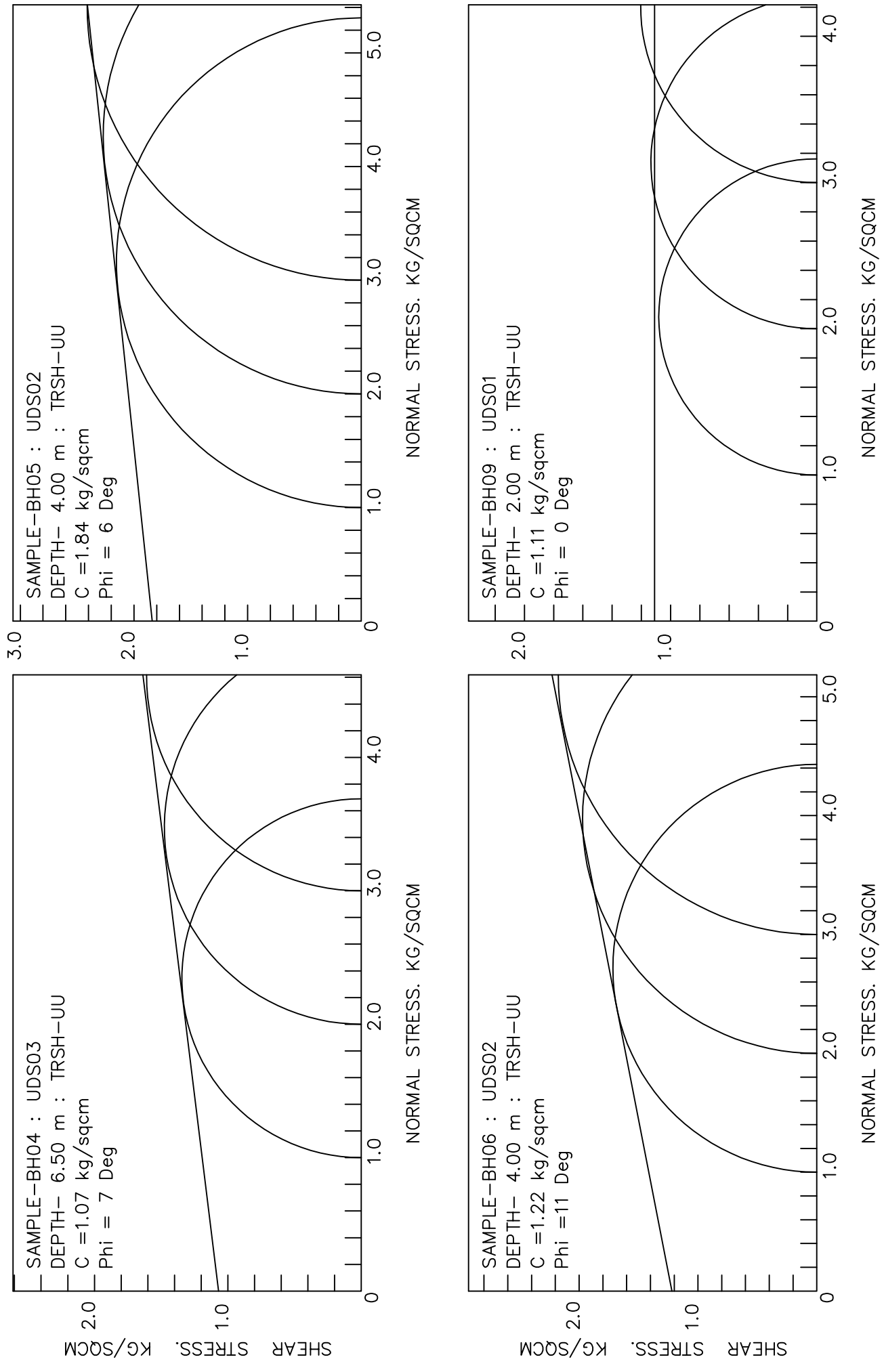
C.E.Testing Company Pvt. Ltd.

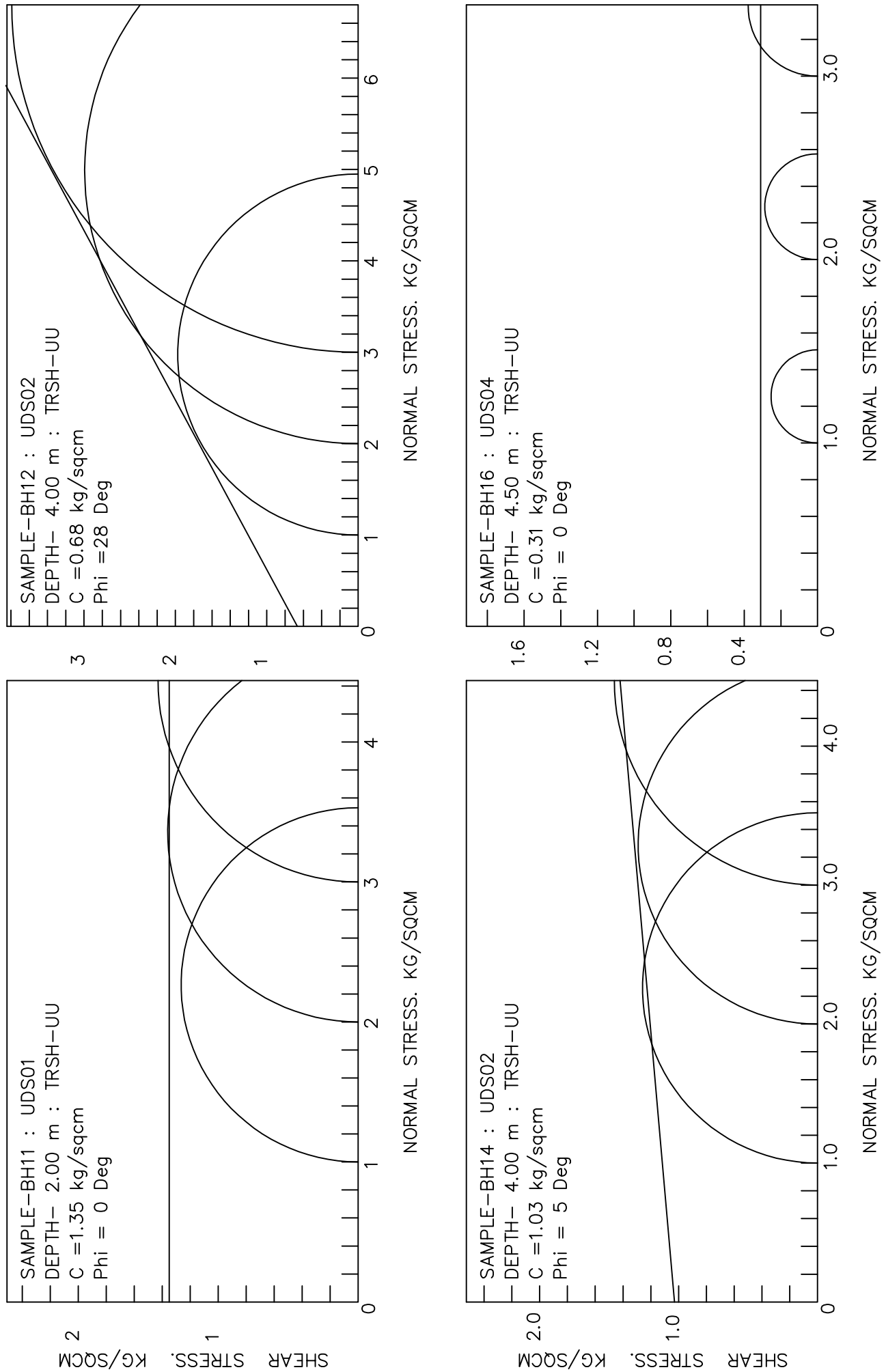
Prepared By
Babita Banerjee
(Name)
Geotech Engineer

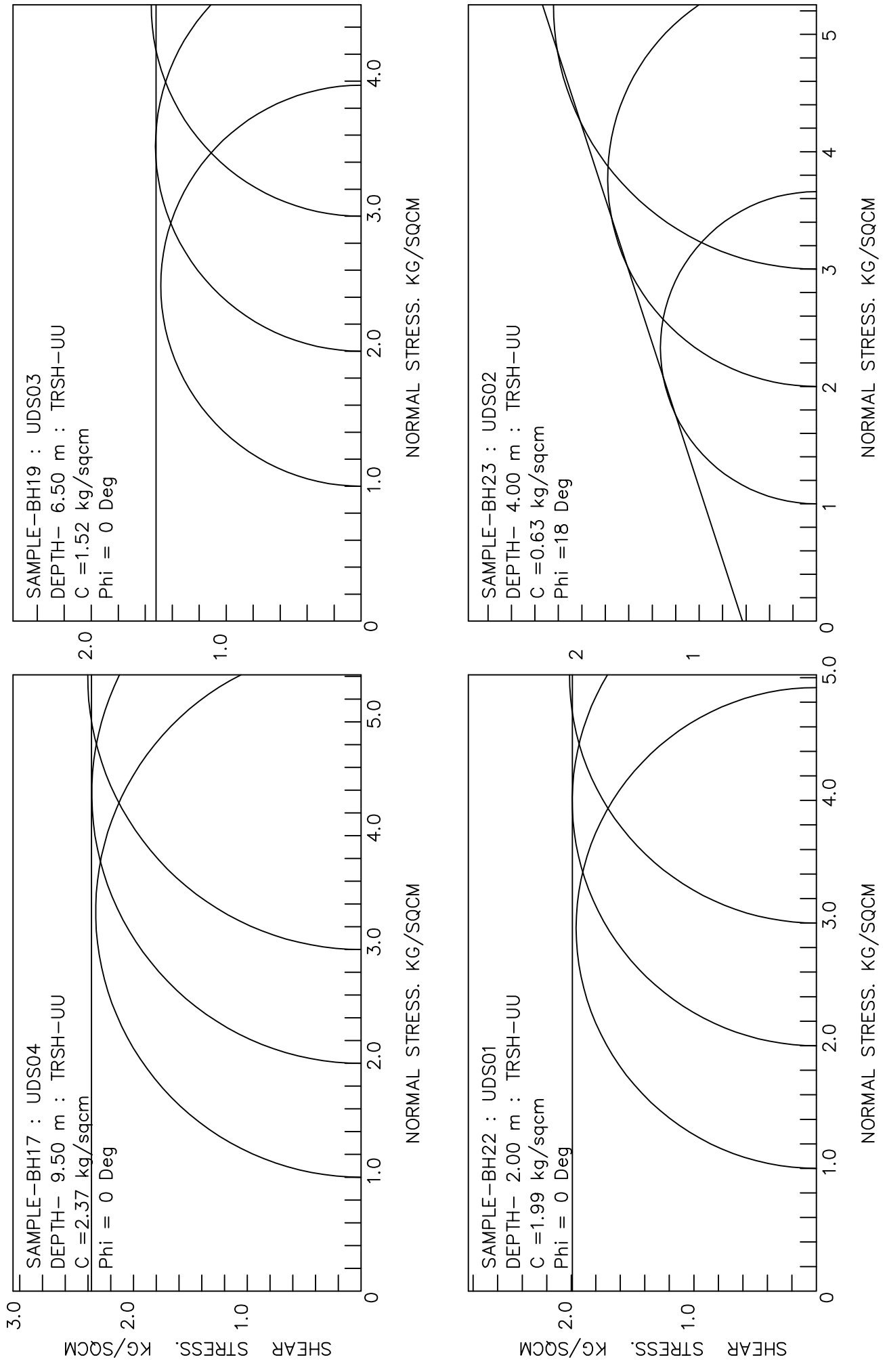
Checked / Approved By
Sudip Nath
S. Nath
Technical Manager

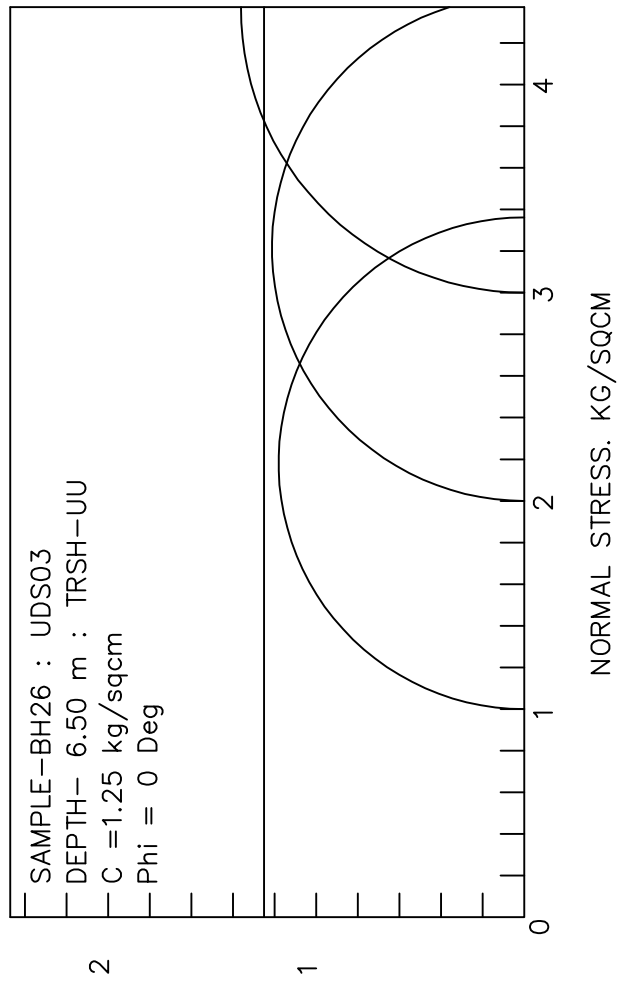
**** End of Report****

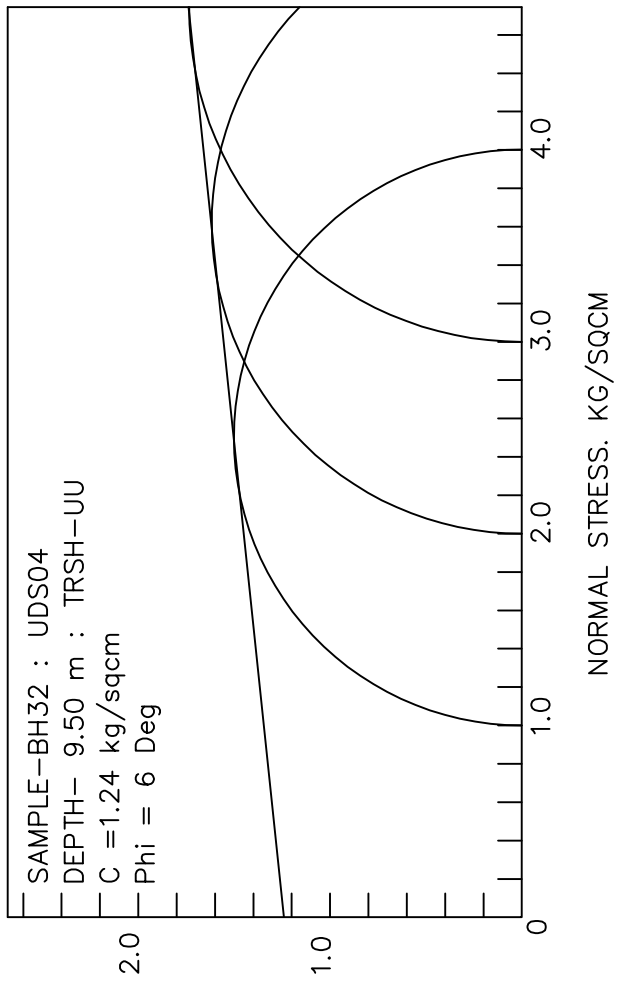
PART III: CHARTS & GRAPHS

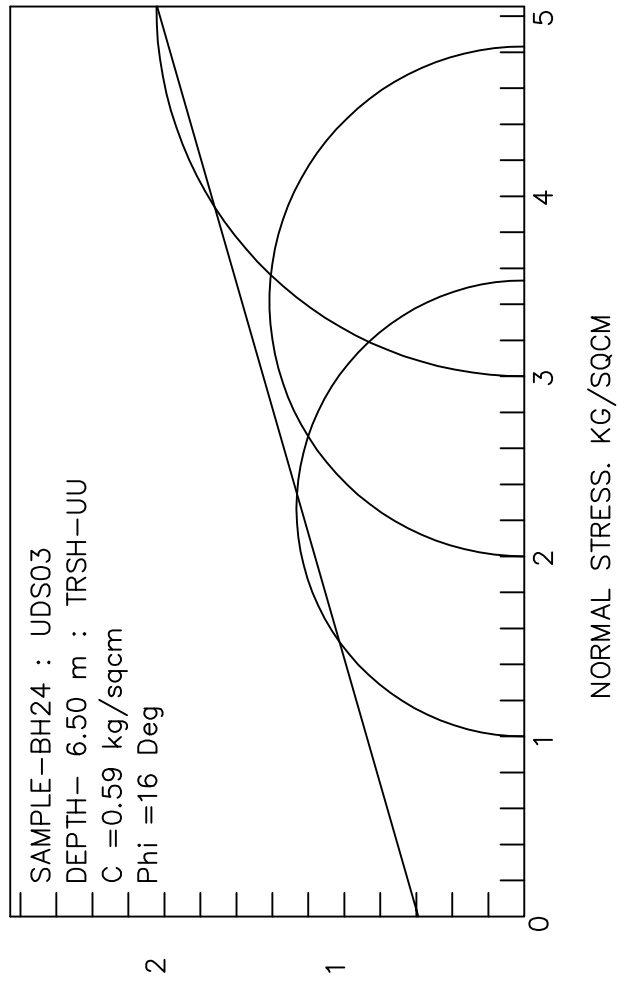

SAMPLE-BH05 : UDS02
DEPTH- 4.00 m : TRSH-UU
C =1.84 kg/sqcm
Phi = 6 Deg
SAMPLE-BH09 : UDS01
DEPTH- 2.00 m : TRSH-UU
C =1.11 kg/sqcm
Phi = 0 Deg
SAMPLE-BH04 : UDS03
DEPTH- 6.50 m : TRSH-UU
C =1.07 kg/sqcm
Phi = 7 Deg
SAMPLE-BH06 : UDS02
DEPTH- 4.00 m : TRSH-UU
C =1.22 kg/sqcm
Phi =11 Deg
NORMAL STRESS. KG/SQCM
SHEAR STRESS. KG/SQCM

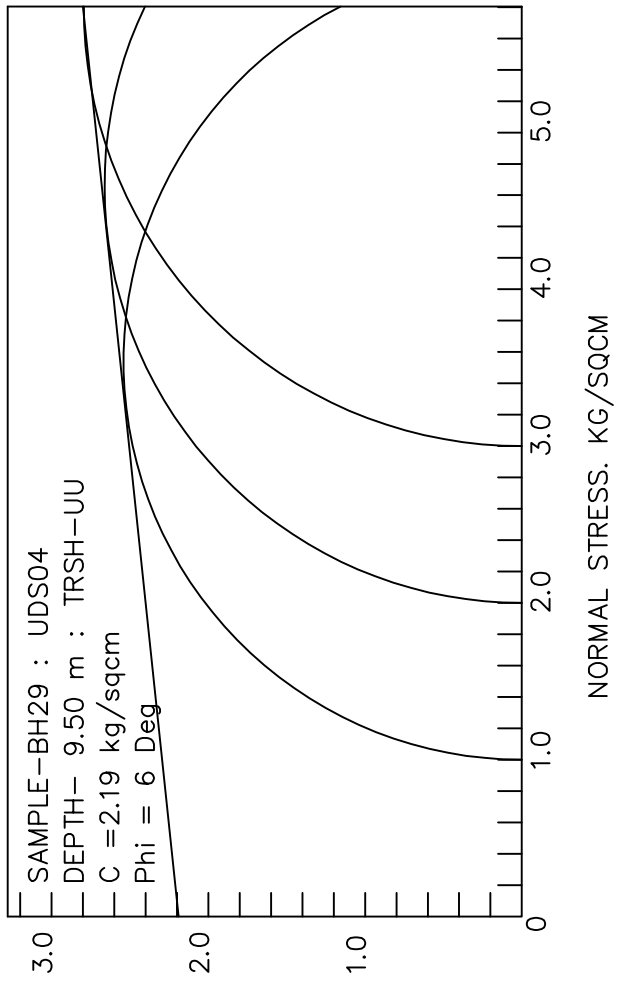

SAMPLE-BH12 : UDS02
DEPTH- 4.00 m : TRSH-UU
C =0.68 kg/sqcm
Phi =28 Deg
NORMAL STRESS. KG/SQCM
SAMPLE-BH16 : UDS04
DEPTH- 4.50 m : TRSH-UU
C =0.31 kg/sqcm
Phi = 0 Deg
NORMAL STRESS. KG/SQCM
SAMPLE-BH11 : UDS01
DEPTH- 2.00 m : TRSH-UU
C =1.35 kg/sqcm
Phi = 0 Deg
NORMAL STRESS. KG/SQCM
SHEAR STRESS. KG/SQCM
SAMPLE-BH14 : UDS02
DEPTH- 4.00 m : TRSH-UU
C =1.03 kg/sqcm
Phi = 5 Deg
NORMAL STRESS. KG/SQCM
SHEAR STRESS. KG/SQCM

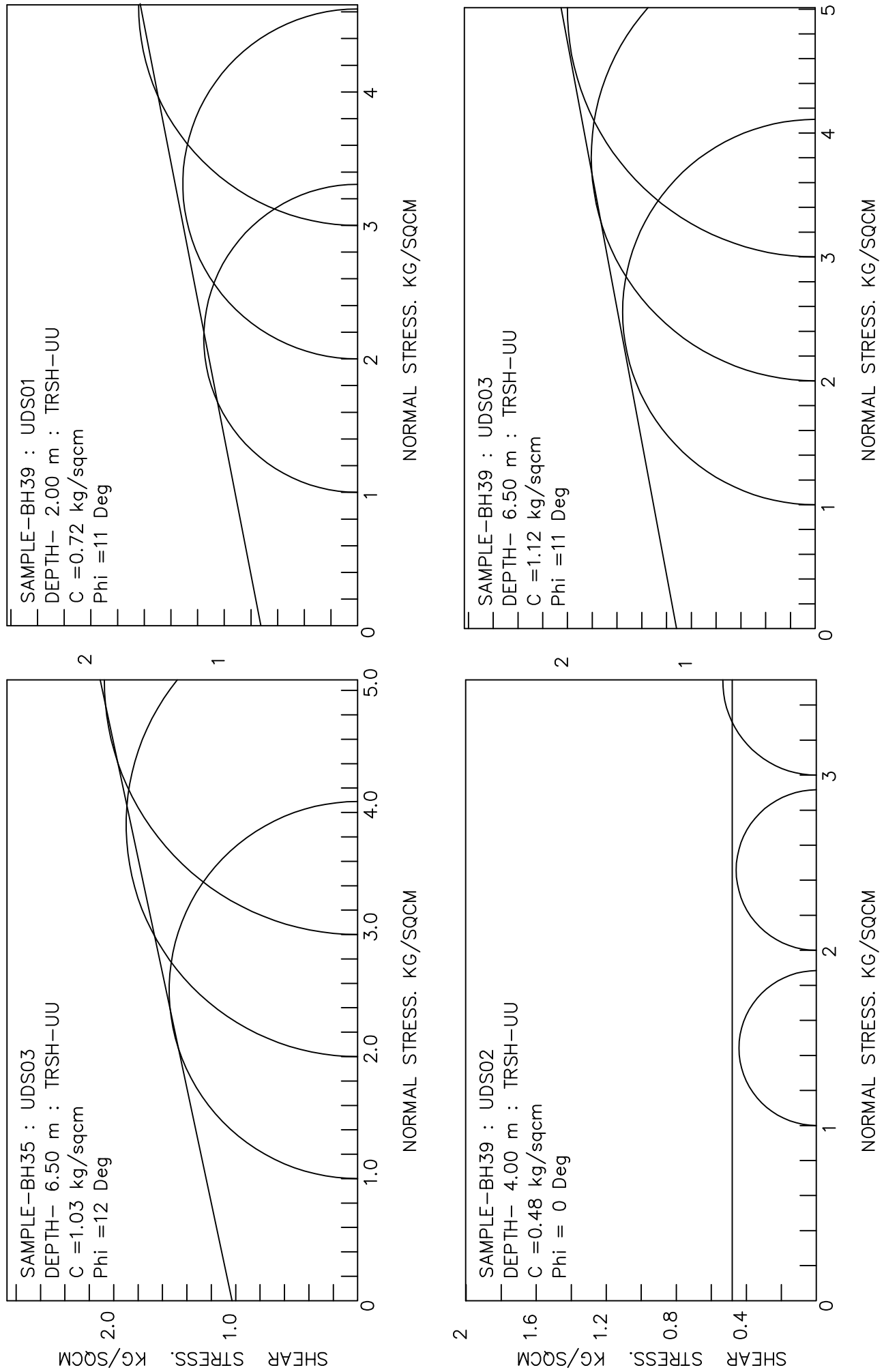

SAMPLE-BH19 : UDS03
DEPTH- 6.50 m : TRSH-UU
C =1.52 kg/sqcm
Phi = 0 Deg
NORMAL STRESS. KG/SQCM
SAMPLE-BH23 : UDS02
DEPTH- 4.00 m : TRSH-UU
C =0.63 kg/sqcm
Phi =18 Deg
NORMAL STRESS. KG/SQCM
SAMPLE-BH17 : UDS04
DEPTH- 9.50 m : TRSH-UU
C =2.37 kg/sqcm
Phi = 0 Deg
SHEAR STRESS. KG/SQCM
NORMAL STRESS. KG/SQCM
SAMPLE-BH22 : UDS01
DEPTH- 2.00 m : TRSH-UU
C =1.99 kg/sqcm
Phi = 0 Deg
SHEAR STRESS. KG/SQCM
NORMAL STRESS. KG/SQCM

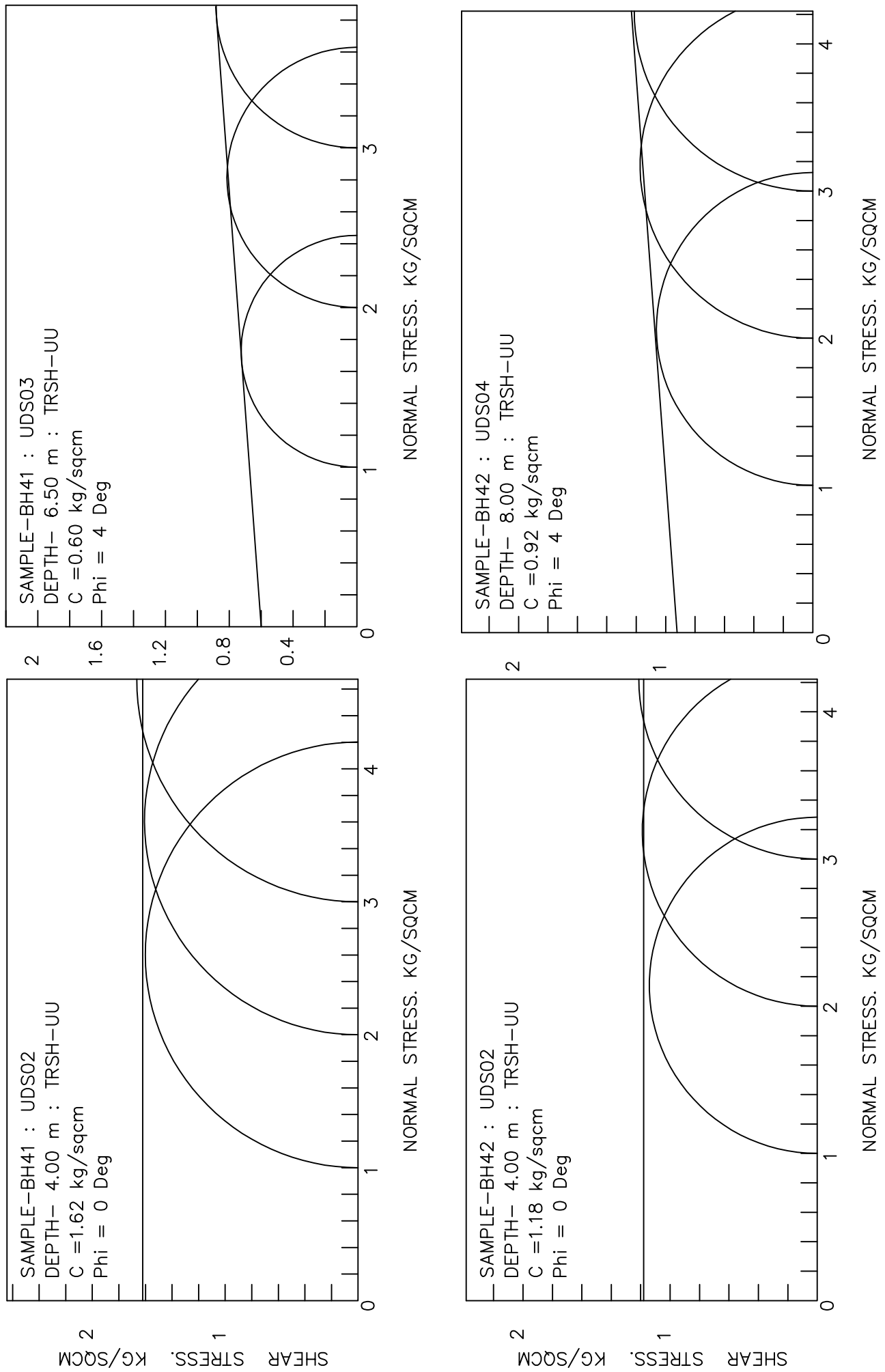

SAMPLE-BH26 : UDS03
DEPTH- 6.50 m : TRSH-UU
C =1.25 kg/sqcm
Phi = 0 Deg
NORMAL STRESS. KG/SQCM

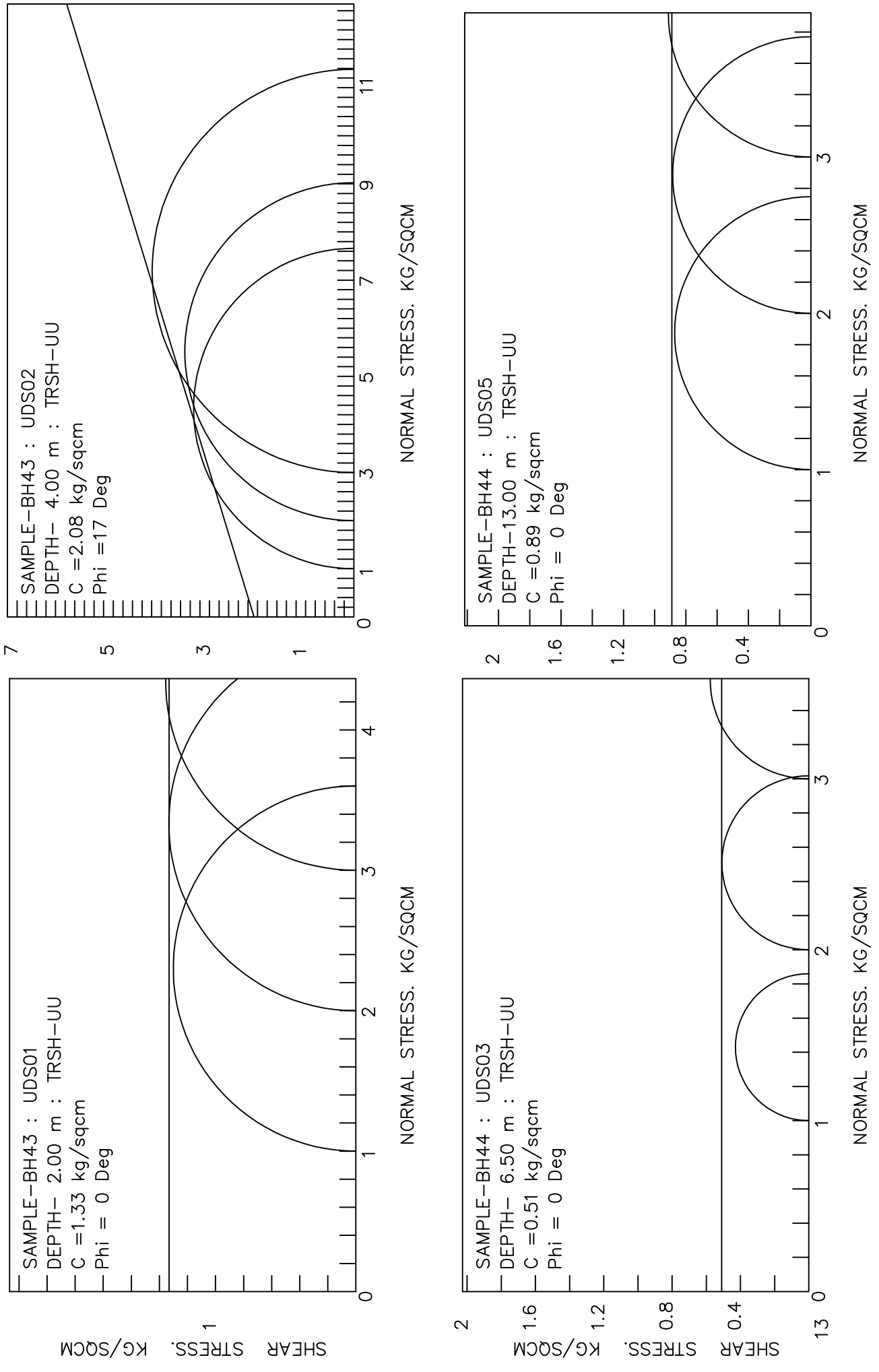

SAMPLE-BH32 : UDS04
DEPTH- 9.50 m : TRSH-UU
C =1.24 kg/sqcm
Phi = 6 Deg
NORMAL STRESS. KG/SQCM

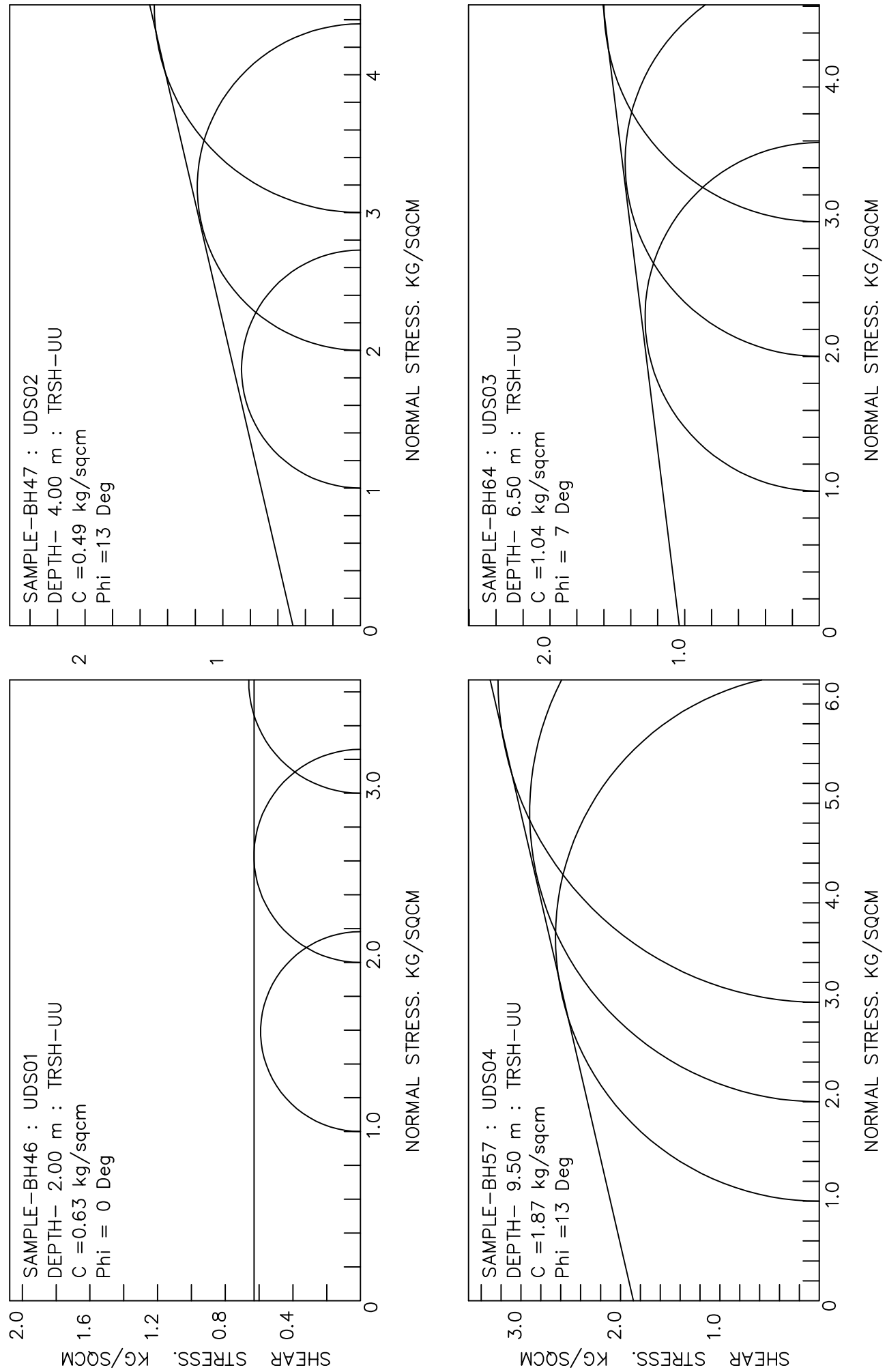

SAMPLE-BH24 : UDS03
DEPTH- 6.50 m : TRSH-UU
C =0.59 kg/sqcm
Phi =16 Deg
SHEAR STRESS. KG/SQCM
NORMAL STRESS. KG/SQCM

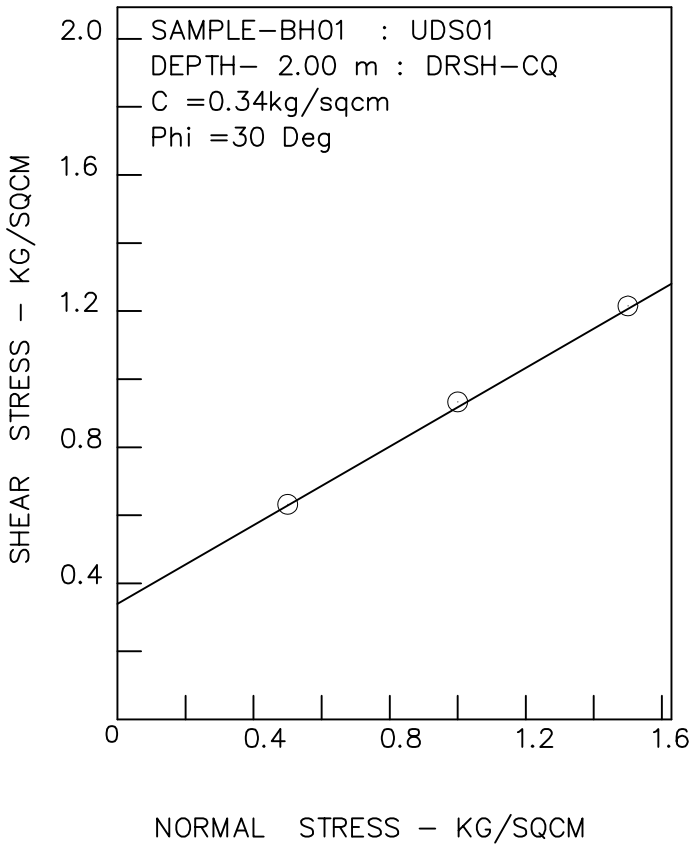

SAMPLE-BH29 : UDS04
DEPTH- 9.50 m : TRSH-UU
C =2.19 kg/sqcm
Phi = 6 Deg
SHEAR STRESS. KG/SQCM
NORMAL STRESS. KG/SQCM

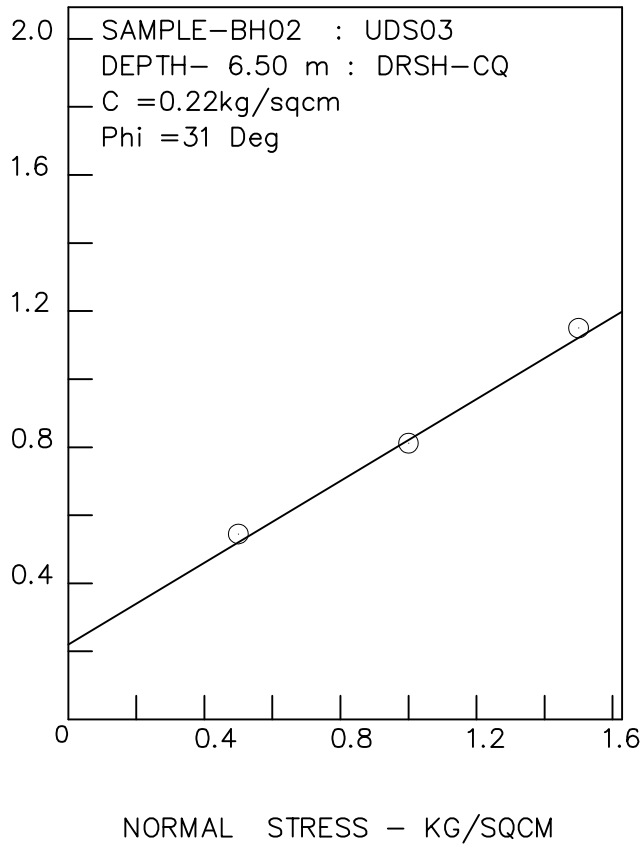

SAMPLE-BH39 : UDS01
DEPTH- 2.00 m : TRSH-UU
C =0.72 kg/sqcm
Phi =11 Deg
NORMAL STRESS. KG/SQCM
SAMPLE-BH39 : UDS03
DEPTH- 6.50 m : TRSH-UU
C =1.12 kg/sqcm
Phi =11 Deg
NORMAL STRESS. KG/SQCM
SAMPLE-BH35 : UDS03
DEPTH- 6.50 m : TRSH-UU
C =1.03 kg/sqcm
Phi =12 Deg
SHEAR STRESS. KG/SQCM
NORMAL STRESS. KG/SQCM
SAMPLE-BH39 : UDS02
DEPTH- 4.00 m : TRSH-UU
C =0.48 kg/sqcm
Phi = 0 Deg
SHEAR STRESS. KG/SQCM
NORMAL STRESS. KG/SQCM

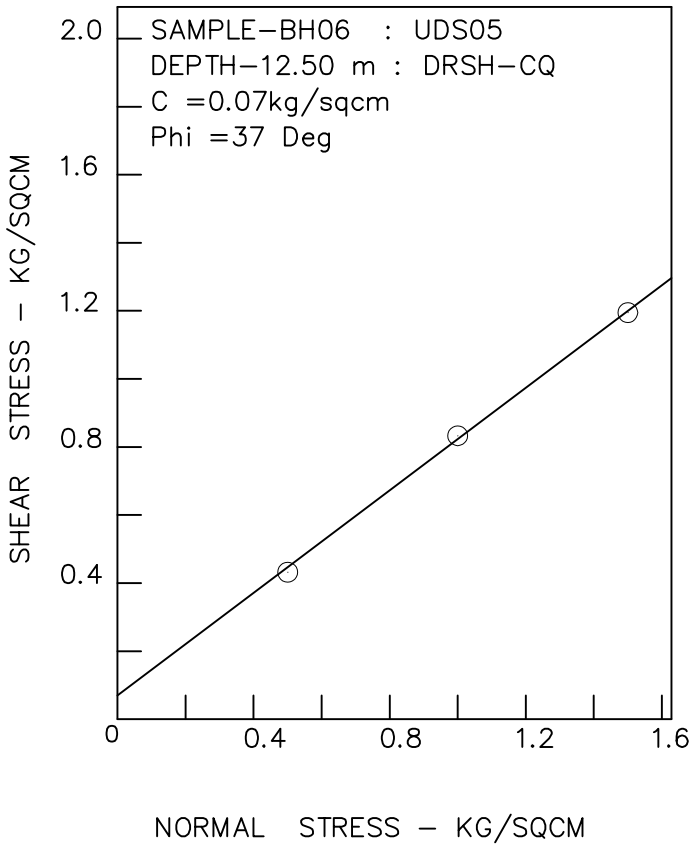

SAMPLE-BH41 : UDS03
DEPTH- 6.50 m : TRSH-UU
C =0.60 kg/sqcm
Phi = 4 Deg
NORMAL STRESS. KG/SQCM
SAMPLE-BH42 : UDS04
DEPTH- 8.00 m : TRSH-UU
C =0.92 kg/sqcm
Phi = 4 Deg
NORMAL STRESS. KG/SQCM
SAMPLE-BH41 : UDS02
DEPTH- 4.00 m : TRSH-UU
C =1.62 kg/sqcm
Phi = 0 Deg
NORMAL STRESS. KG/SQCM
SHEAR STRESS. KG/SQCM
SAMPLE-BH42 : UDS02
DEPTH- 4.00 m : TRSH-UU
C =1.18 kg/sqcm
Phi = 0 Deg
NORMAL STRESS. KG/SQCM
SHEAR STRESS. KG/SQCM

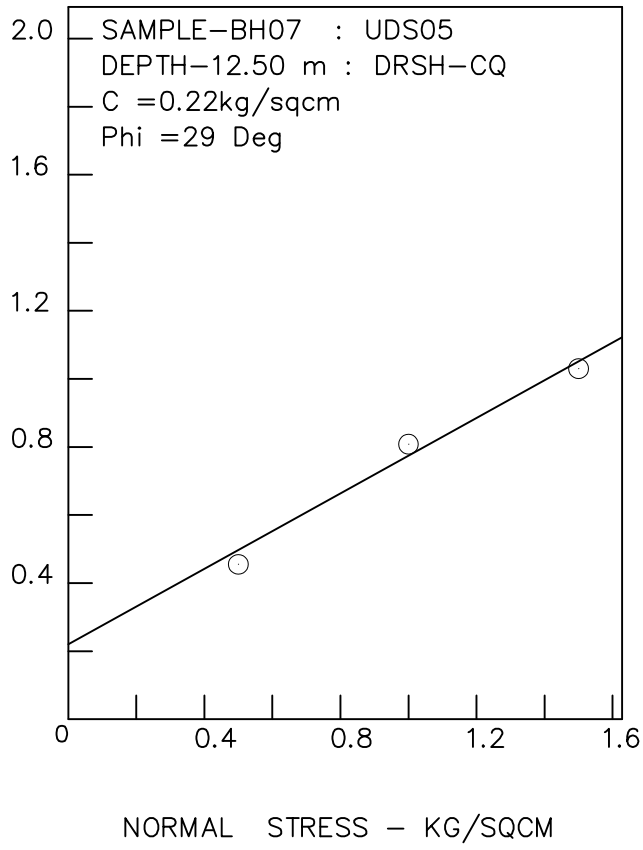

SAMPLE-BH43 : UDS02
DEPTH- 4.00 m : TRSH-UU
C =2.08 kg/sqcm
Phi =17 Deg
NORMAL STRESS. KG/SQCM
SAMPLE-BH44 : UDS05
DEPTH-13.00 m : TRSH-UU
C =0.89 kg/sqcm
Phi = 0 Deg
NORMAL STRESS. KG/SQCM
SAMPLE-BH43 : UDS01
DEPTH- 2.00 m : TRSH-UU
C =1.33 kg/sqcm
Phi = 0 Deg
NORMAL STRESS. KG/SQCM
SHEAR STRESS. KG/SQCM
SAMPLE-BH44 : UDS03
DEPTH- 6.50 m : TRSH-UU
C =0.51 kg/sqcm
Phi = 0 Deg
NORMAL STRESS. KG/SQCM
SHEAR STRESS. KG/SQCM

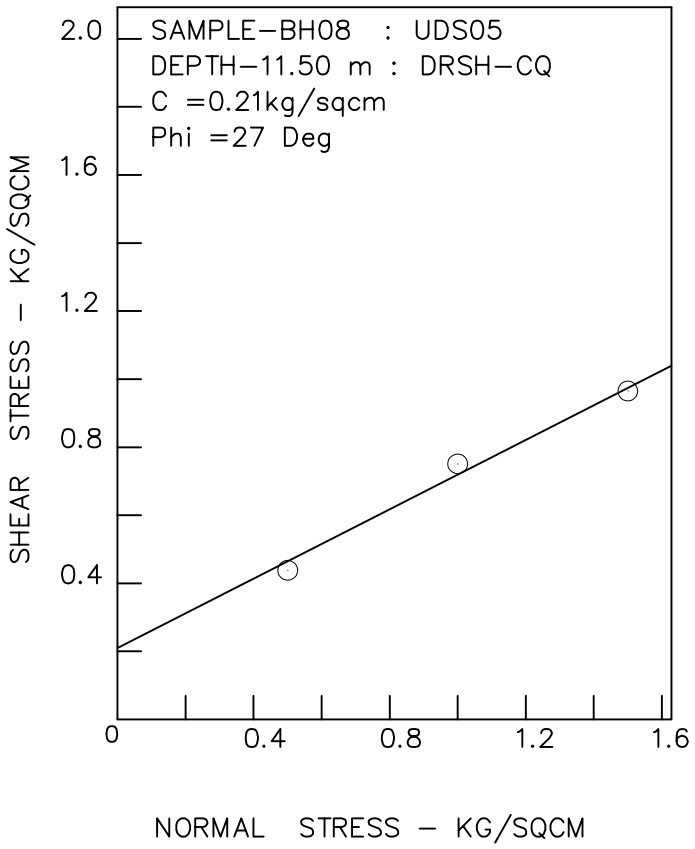

SAMPLE-BH47 : UDS02
DEPTH- 4.00 m : TRSH-UU
C =0.49 kg/sqcm
Phi =13 Deg
NORMAL STRESS. KG/SQCM
SAMPLE-BH64 : UDS03
DEPTH- 6.50 m : TRSH-UU
C =1.04 kg/sqcm
Phi = 7 Deg
NORMAL STRESS. KG/SQCM
SAMPLE-BH46 : UDS01
DEPTH- 2.00 m : TRSH-UU
C =0.63 kg/sqcm
Phi = 0 Deg
SHEAR STRESS. KG/SQCM
NORMAL STRESS. KG/SQCM
SAMPLE-BH57 : UDS04
DEPTH- 9.50 m : TRSH-UU
C =1.87 kg/sqcm
Phi =13 Deg
SHEAR STRESS. KG/SQCM
NORMAL STRESS. KG/SQCM

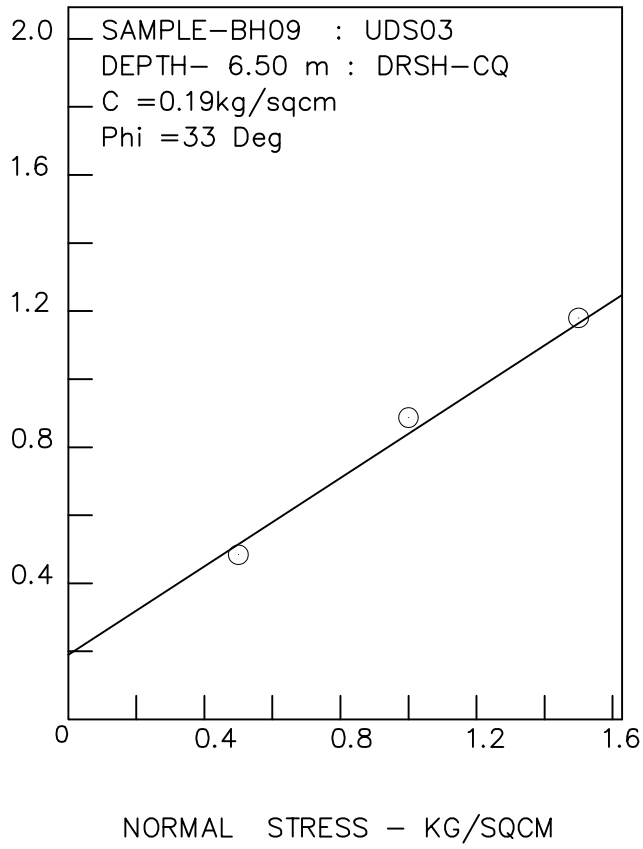

SAMPLE-BH01 : UDS01
DEPTH- 2.00 m : DRSH-CQ
C =0.34kg/sqcm
Phi =30 Deg
SHEAR STRESS - KG/SQCM
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

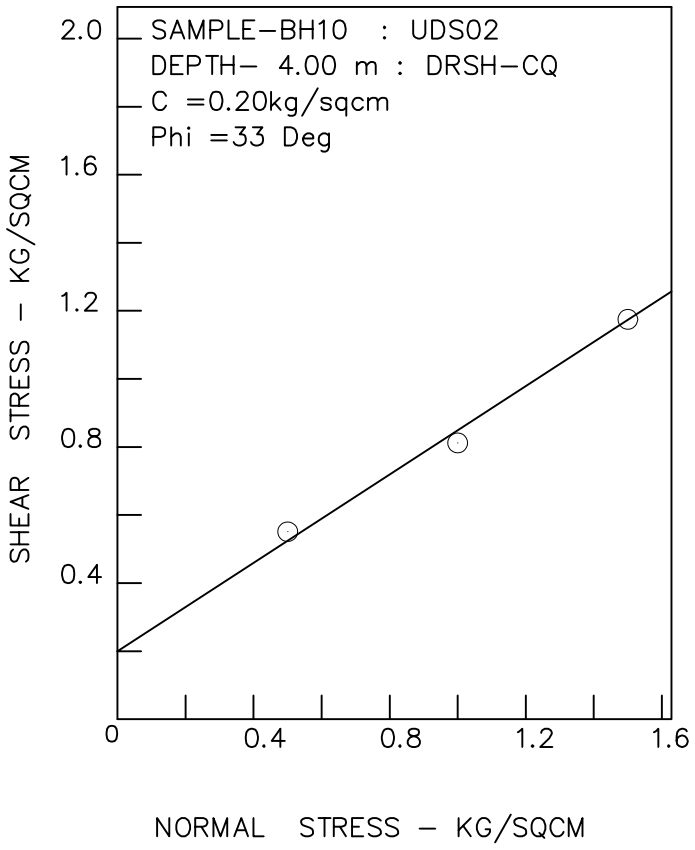

SAMPLE-BH02 : UDS03
DEPTH- 6.50 m : DRSH-CQ
C =0.22kg/sqcm
Phi =31 Deg
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

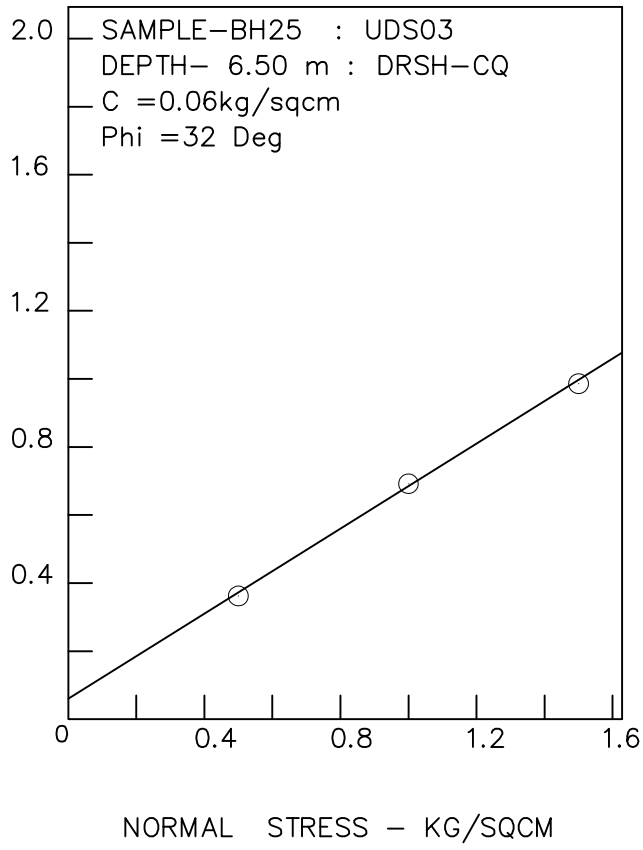

SAMPLE-BH06 : UDS05
DEPTH-12.50 m : DRSH-CQ
C =0.07kg/sqcm
Phi =37 Deg
SHEAR STRESS - KG/SQCM
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

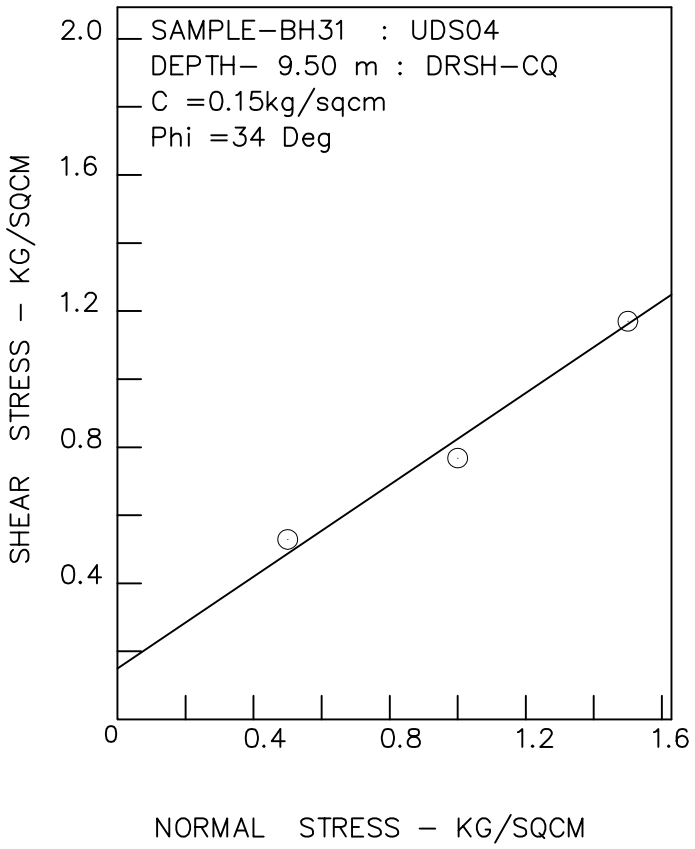

SAMPLE-BH07 : UDS05
DEPTH-12.50 m : DRSH-CQ
C =0.22kg/sqcm
Phi =29 Deg
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

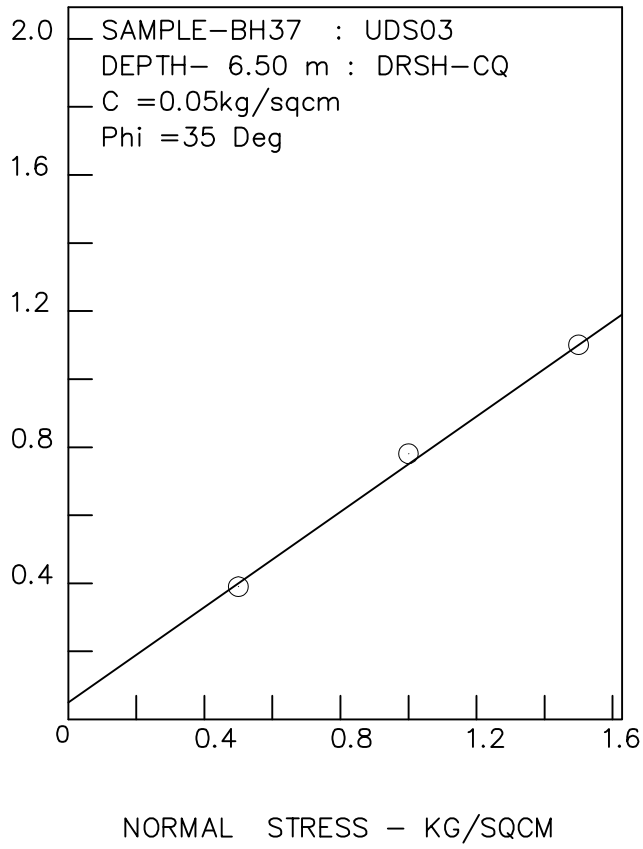

SAMPLE-BH08 : UDS05
DEPTH-11.50 m : DRSH-CQ
C =0.21kg/sqcm
Phi =27 Deg
SHEAR STRESS - KG/SQCM
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

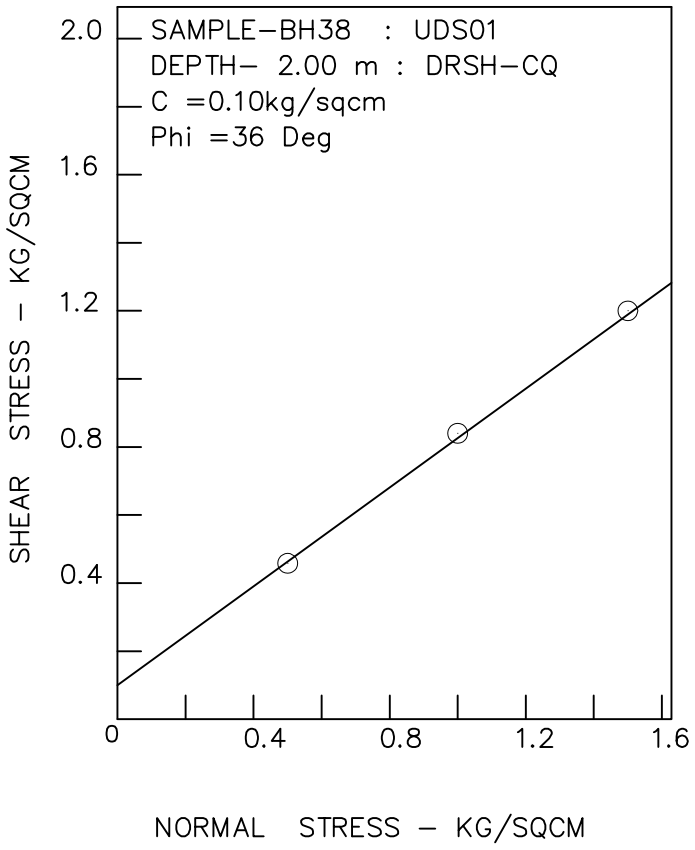

SAMPLE-BH09 : UDS03
DEPTH- 6.50 m : DRSH-CQ
C =0.19kg/sqcm
Phi =33 Deg
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

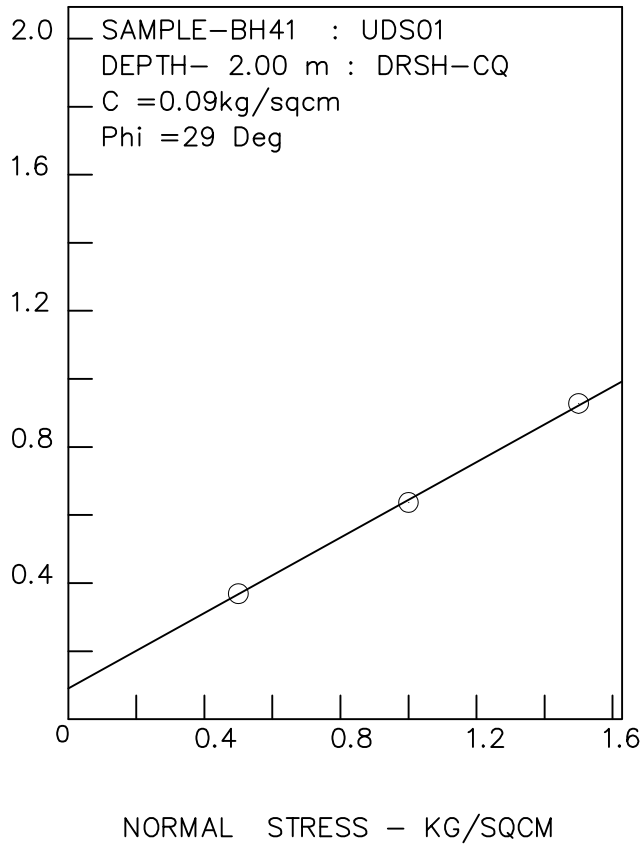

SAMPLE-BH10 : UDS02
DEPTH- 4.00 m : DRSH-CQ
C =0.20kg/sqcm
Phi =33 Deg
SHEAR STRESS - KG/SQCM
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

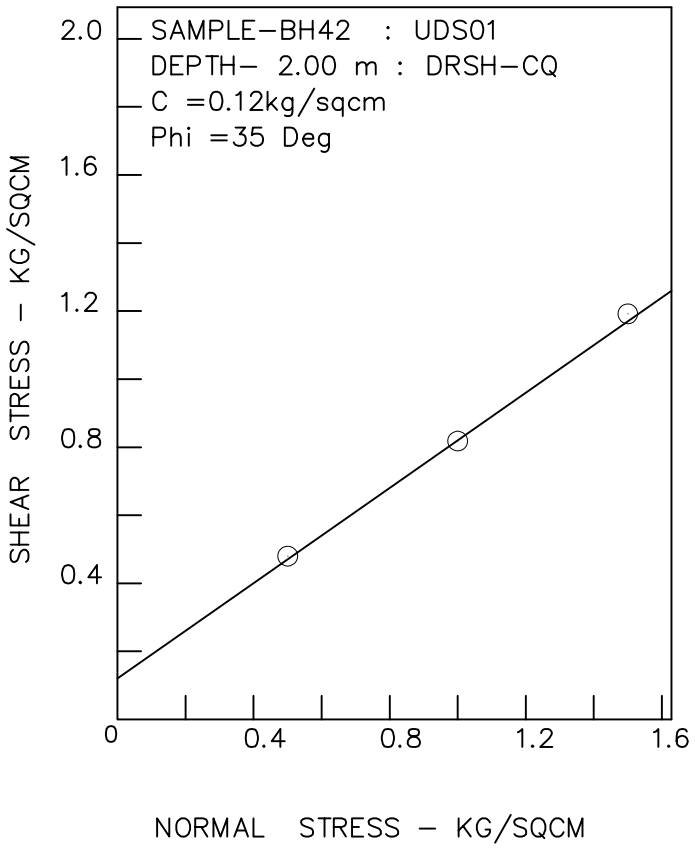

SAMPLE-BH25 : UDS03
DEPTH- 6.50 m : DRSH-CQ
C =0.06kg/sqcm
Phi =32 Deg
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

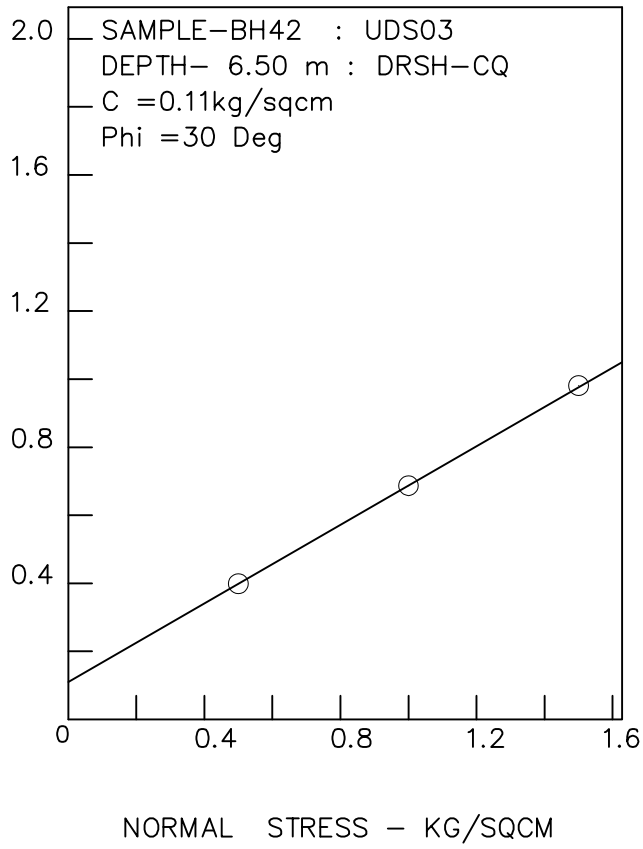

SAMPLE-BH31 : UDS04
DEPTH- 9.50 m : DRSH-CQ
C =0.15kg/sqcm
Phi =34 Deg
SHEAR STRESS - KG/SQCM
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

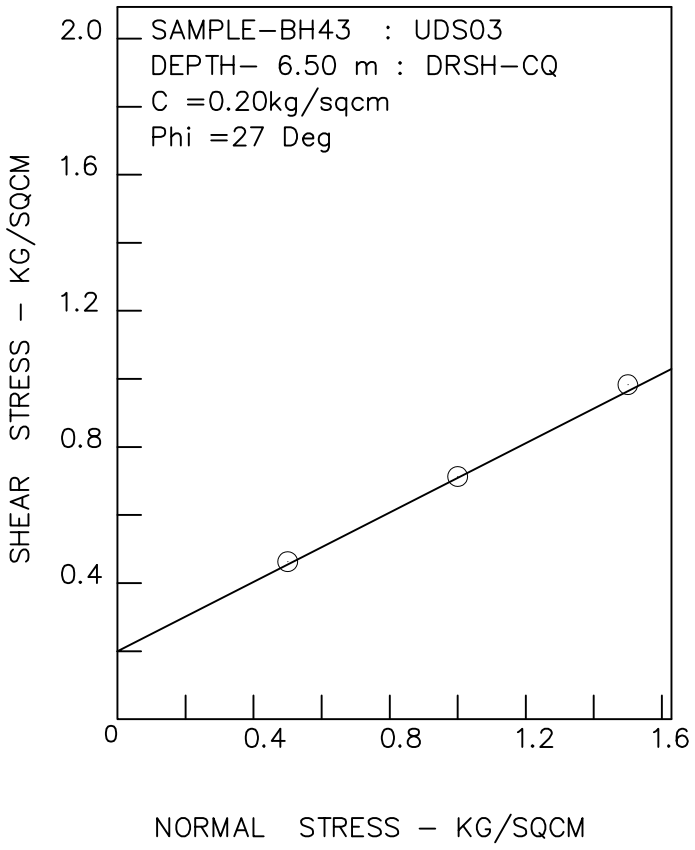

SAMPLE-BH37 : UDS03
DEPTH- 6.50 m : DRSH-CQ
C =0.05kg/sqcm
Phi =35 Deg
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

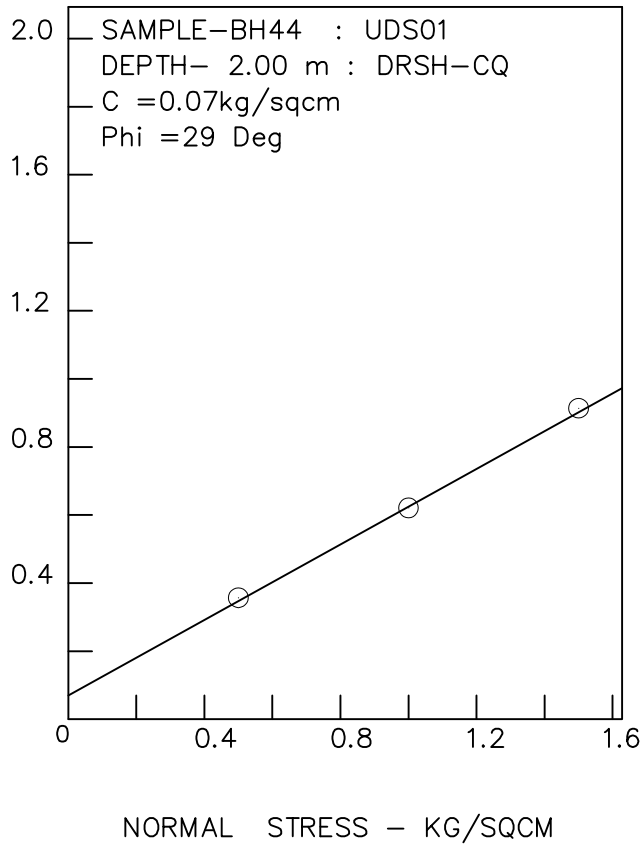

SAMPLE-BH38 : UDS01
DEPTH- 2.00 m : DRSH-CQ
C =0.10kg/sqcm
Phi =36 Deg
SHEAR STRESS - KG/SQCM
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

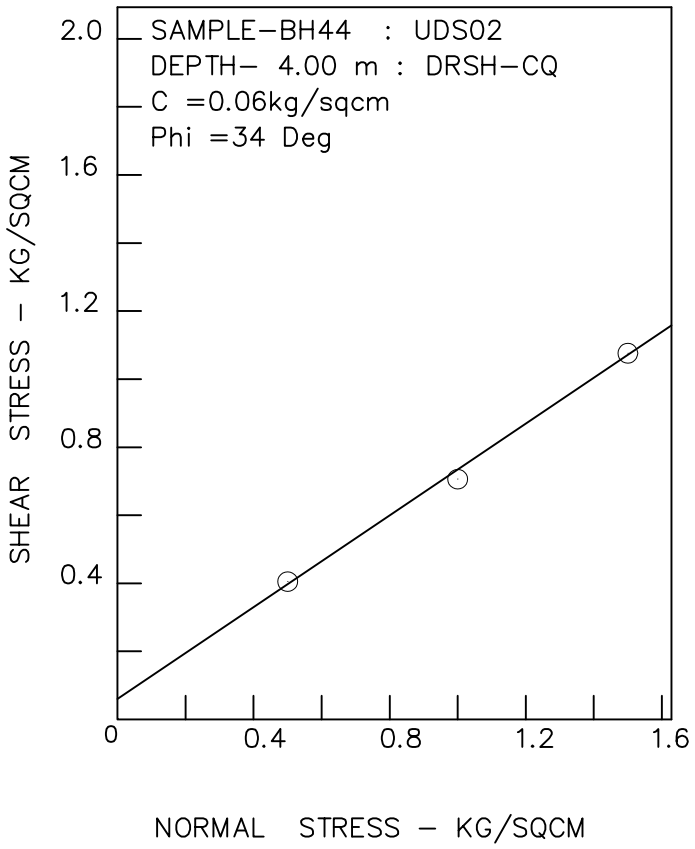

SAMPLE-BH41 : UDS01
DEPTH- 2.00 m : DRSH-CQ
C =0.09kg/sqcm
Phi =29 Deg
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

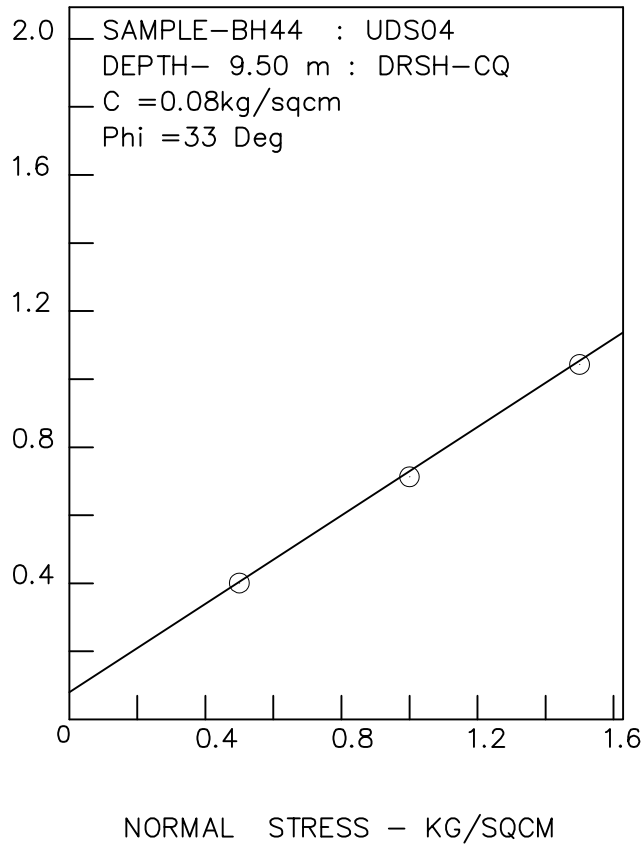

SAMPLE-BH42 : UDS01
DEPTH- 2.00 m : DRSH-CQ
C =0.12kg/sqcm
Phi =35 Deg
SHEAR STRESS - KG/SQCM
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

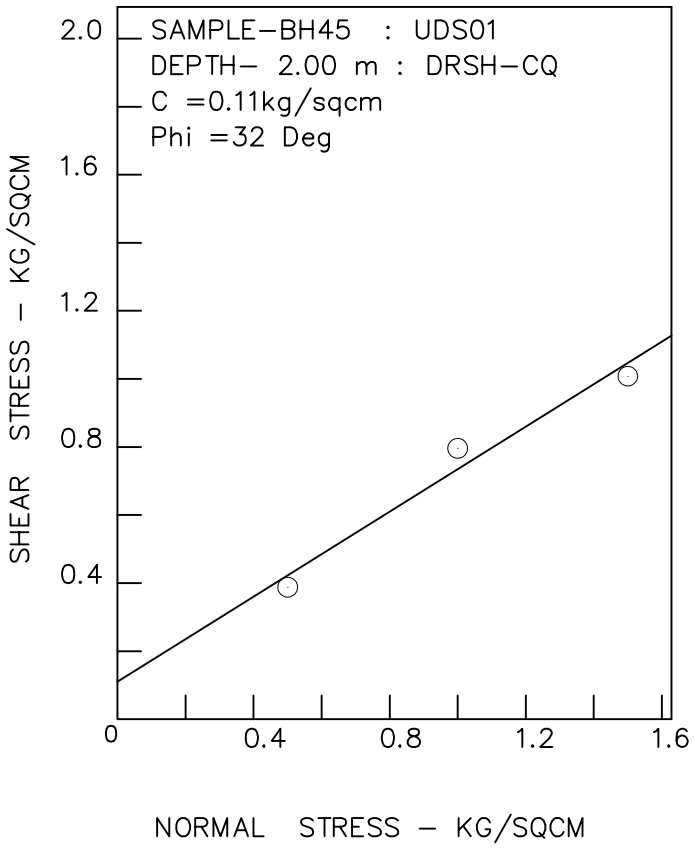

SAMPLE-BH42 : UDS03
DEPTH- 6.50 m : DRSH-CQ
C =0.11kg/sqcm
Phi =30 Deg
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

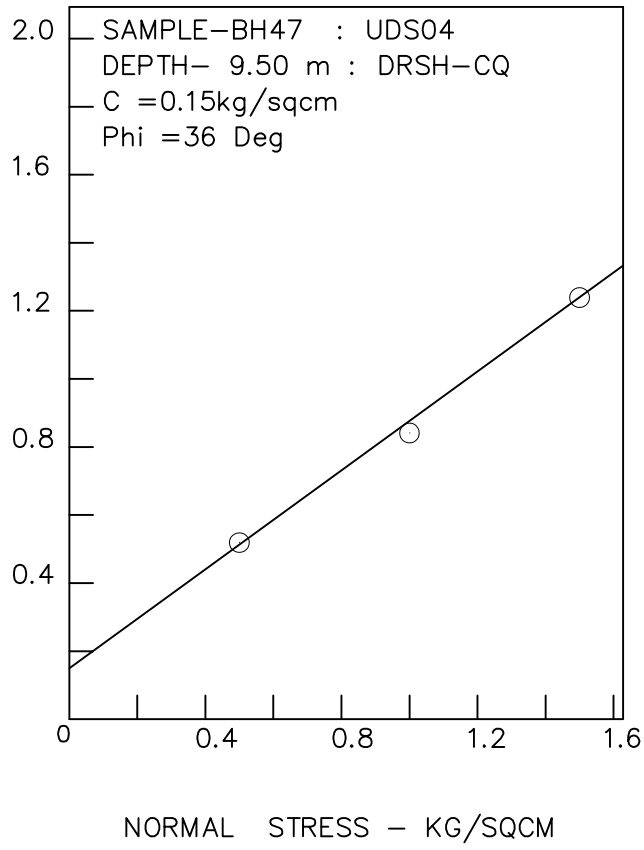

SAMPLE-BH43 : UDS03
DEPTH- 6.50 m : DRSH-CQ
C =0.20kg/sqcm
Phi =27 Deg
SHEAR STRESS - KG/SQCM
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

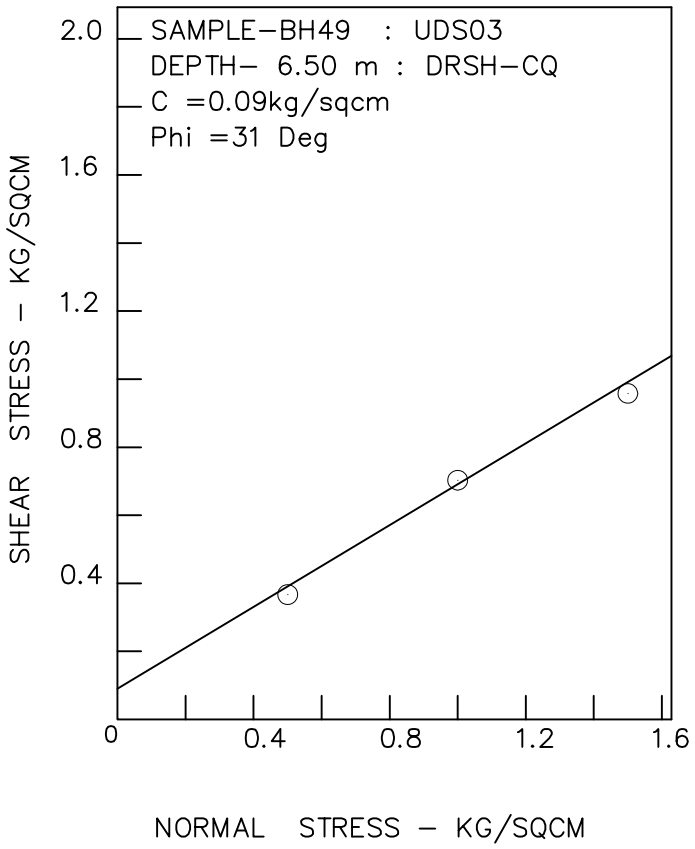

SAMPLE-BH44 : UDS01
DEPTH- 2.00 m : DRSH-CQ
C =0.07kg/sqcm
Phi =29 Deg
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

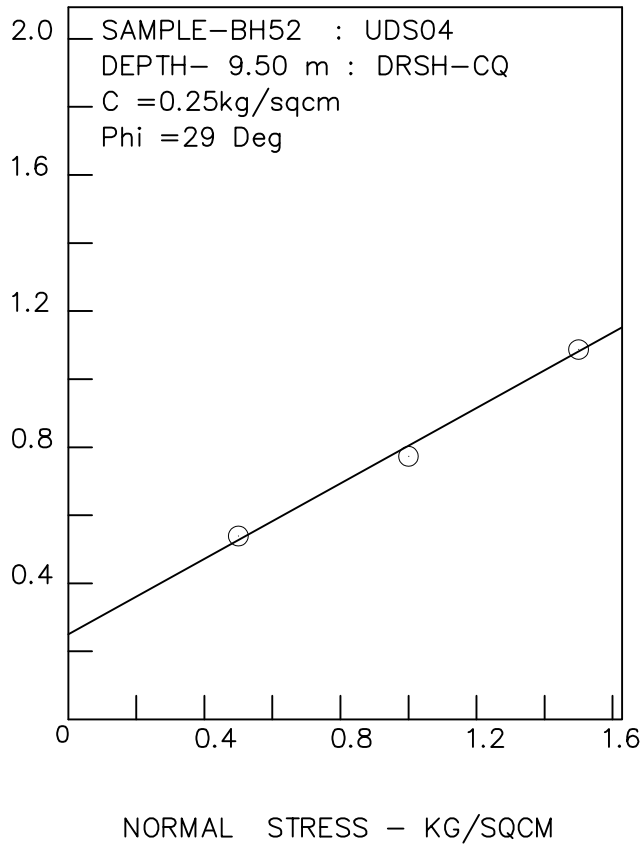

SAMPLE-BH44 : UDS02
DEPTH- 4.00 m : DRSH-CQ
C =0.06kg/sqcm
Phi =34 Deg
SHEAR STRESS - KG/SQCM
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

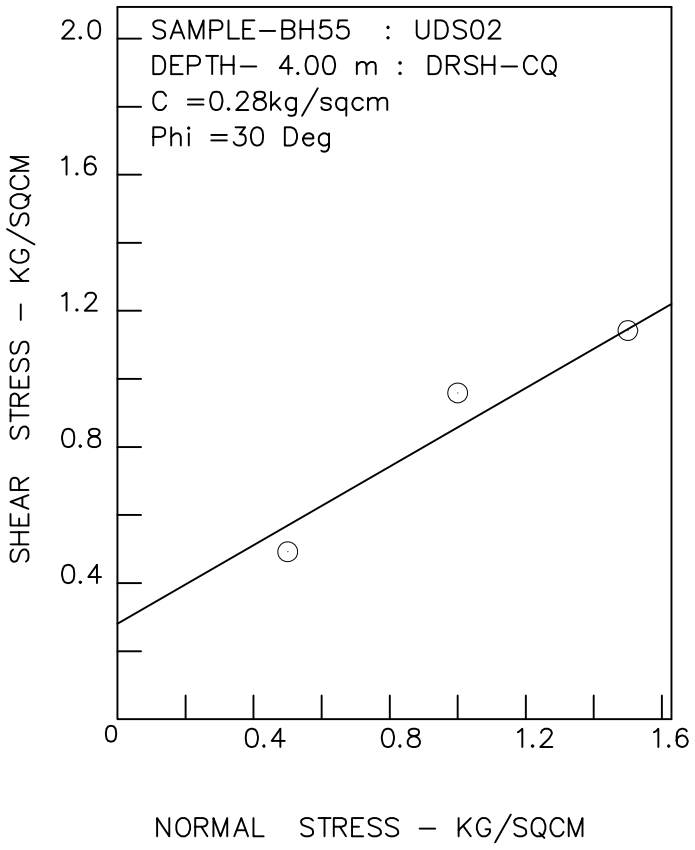

SAMPLE-BH44 : UDS04
DEPTH- 9.50 m : DRSH-CQ
C =0.08kg/sqcm
Phi =33 Deg
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

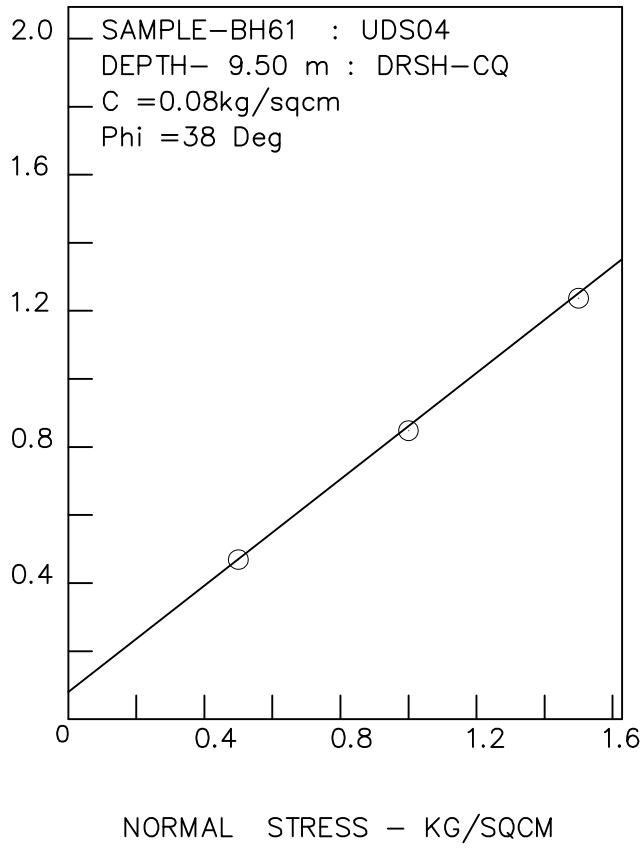

SAMPLE-BH45 : UDS01
DEPTH- 2.00 m : DRSH-CQ
C =0.11kg/sqcm
Phi =32 Deg
SHEAR STRESS - KG/SQCM
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0

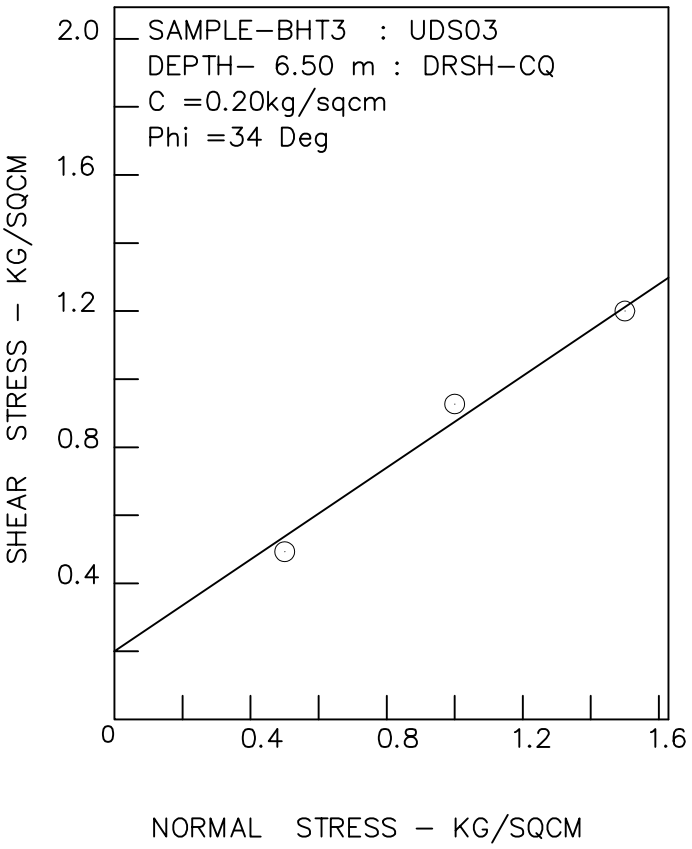

SAMPLE-BH47 : UDS04
DEPTH- 9.50 m : DRSH-CQ
C =0.15kg/sqcm
Phi =36 Deg
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0


SAMPLE-BH49 : UDS03
DEPTH- 6.50 m : DRSH-CQ
C =0.09kg/sqcm
Phi =31 Deg
SHEAR STRESS - KG/SQCM
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0


SAMPLE-BH52 : UDS04
DEPTH- 9.50 m : DRSH-CQ
C =0.25kg/sqcm
Phi =29 Deg
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0


SAMPLE-BH55 : UDS02
DEPTH- 4.00 m : DRSH-CQ
C =0.28kg/sqcm
Phi =30 Deg
SHEAR STRESS - KG/SQCM
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0


SAMPLE-BH61 : UDS04
DEPTH- 9.50 m : DRSH-CQ
C =0.08kg/sqcm
Phi =38 Deg
NORMAL STRESS - KG/SQCM
0
0.4
0.8
1.2
1.6
2.0


SAMPLE-BHT3 : UDS03
DEPTH- 6.50 m : DRSH-CQ
C =0.20kg/sqcm
Phi =34 Deg
SHEAR STRESS - KG/SQCM
2.0
1.6
1.2
0.8
0.4
0
0.4
0.8
1.2
1.6
NORMAL STRESS - KG/SQCM

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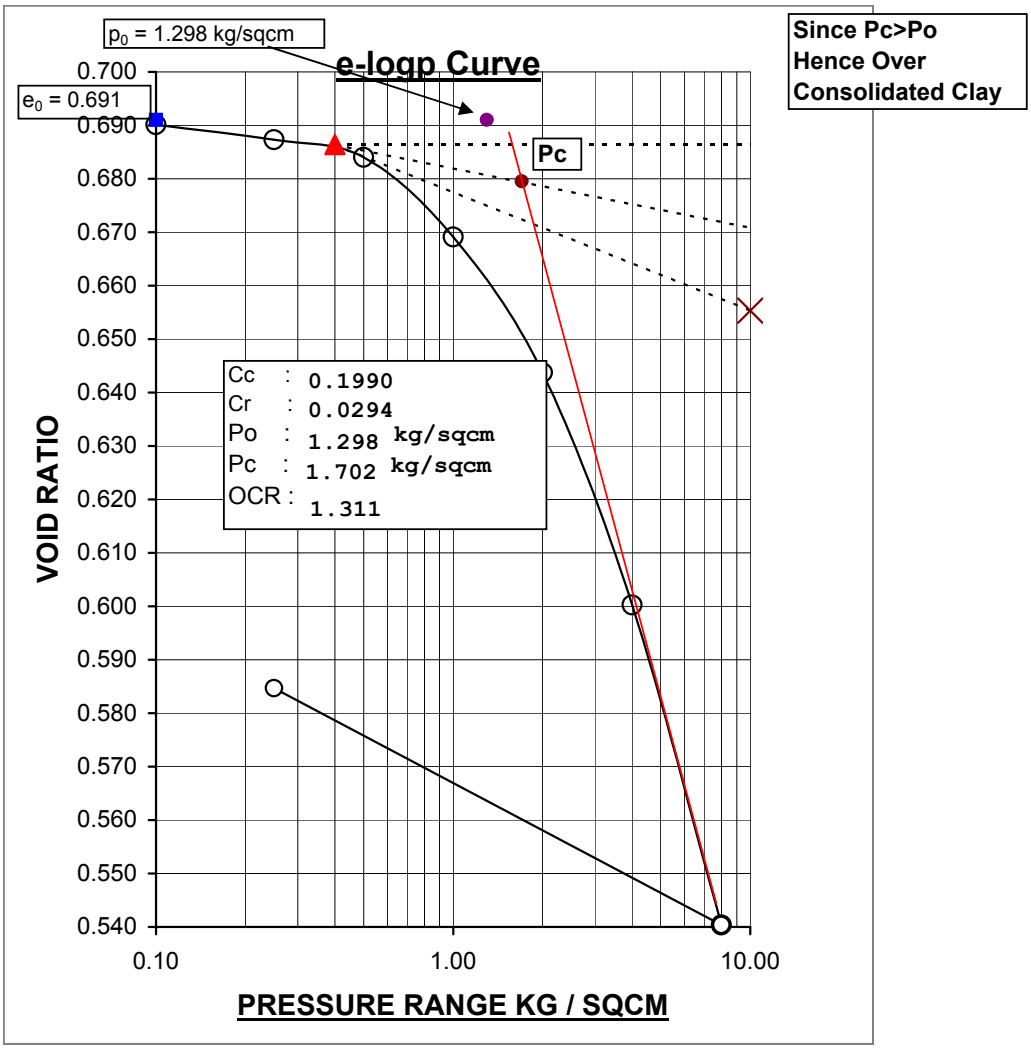
CONSOLIDATION TEST RESULTS

Sample Number:BH-04/UDS-03 Depth :6.5-6.95 meters
Description :Deep brown silty clay with traces of kankars.
Water content:Initial=25.3% Final =26% Initial Void Ratio =0.691

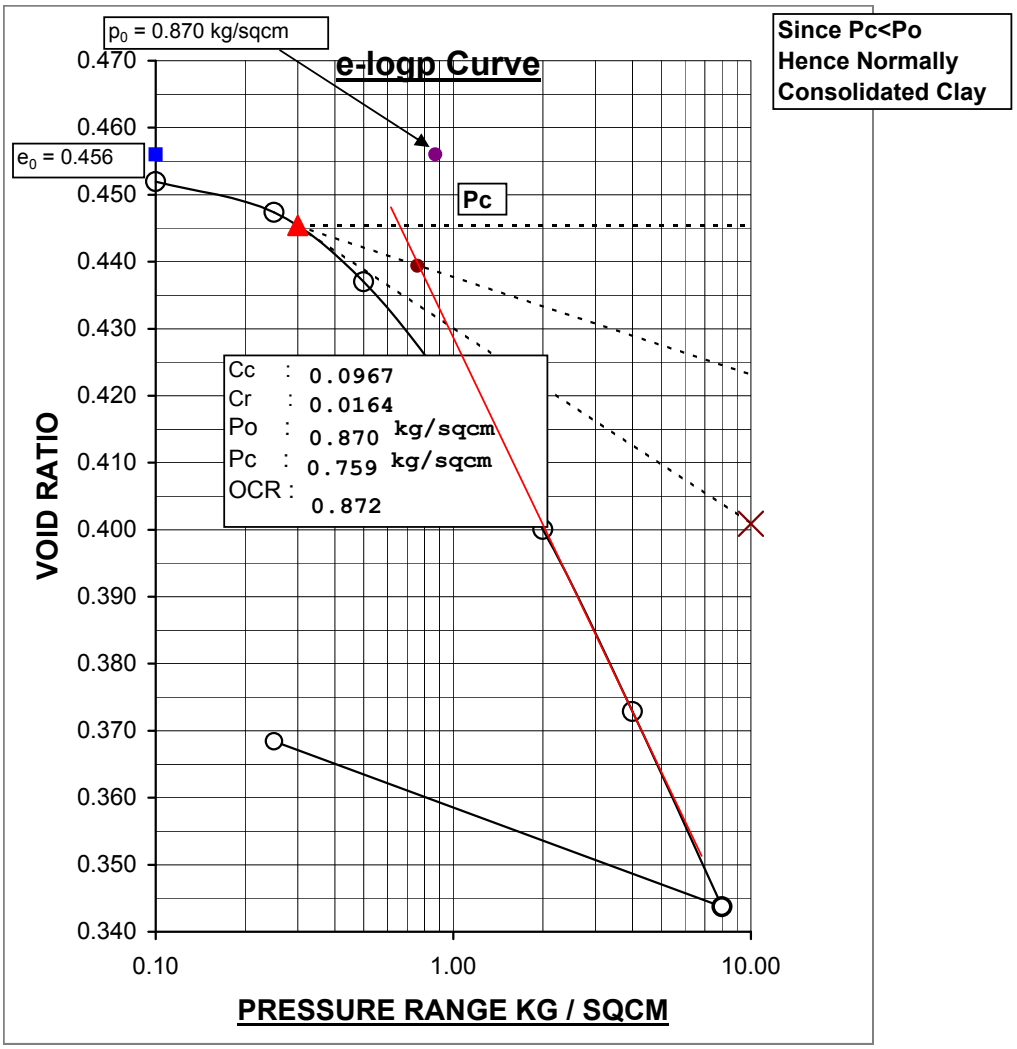
P1-P2 Kg/Sqcm	Dial Change	Void Ratio	Mv Sqcm/kg	Comprn %	Mvc sqcm/kg	T90 Sec	1000.Cv sqcm/sec
0.00 - 0.10	3	0.690	0.0031				
0.10 - 0.25	16	0.687	0.0111	56.25	0.0048	146.0	5.384
0.25 - 0.50	19	0.684	0.0079	57.89	0.0033	112.5	6.937
0.50 - 1.00	85	0.669	0.0177	31.76	0.0121	126.2	6.053
1.00 - 2.00	145	0.644	0.0152	46.21	0.0082	126.2	5.763
2.00 - 4.00	248	0.600	0.0132	48.79	0.0068	155.5	4.286
4.00 - 8.00	342	0.540	0.0094	41.23	0.0055	317.4	1.830
8.00 - 0.25	253	0.585	0.0037				



CONSOLIDATION TEST RESULTS

Sample Number:BH-06/UDS-02 Depth :4-4.45 meters
Description :Brownish grey clayey silt with traces of sand mixtures.
Water content:Initial=13.3% Final =15.8% Initial Void Ratio =0.456

P1-P2 Kg/Sqcm	Dial Change	Void Ratio	Mv Sqcm/kg	Comprn %	Mvc sqcm/kg	T90 Sec	1000.Cv sqcm/sec
0.00 - 0.10	29	0.452	0.0294				
0.10 - 0.25	31	0.447	0.0210	41.38	0.0123	220.4	3.666
0.25 - 0.50	70	0.437	0.0286	35.71	0.0184	267.1	2.962
0.50 - 1.00	113	0.420	0.0233	59.29	0.0095	161.4	4.720
1.00 - 2.00	137	0.400	0.0143	39.42	0.0086	118.5	6.093
2.00 - 4.00	184	0.373	0.0097	55.98	0.0043	103.0	6.532
4.00 - 8.00	197	0.344	0.0053	64.47	0.0019	103.5	5.954
8.00 - 0.25	167	0.368	0.0024				



Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	CETEST
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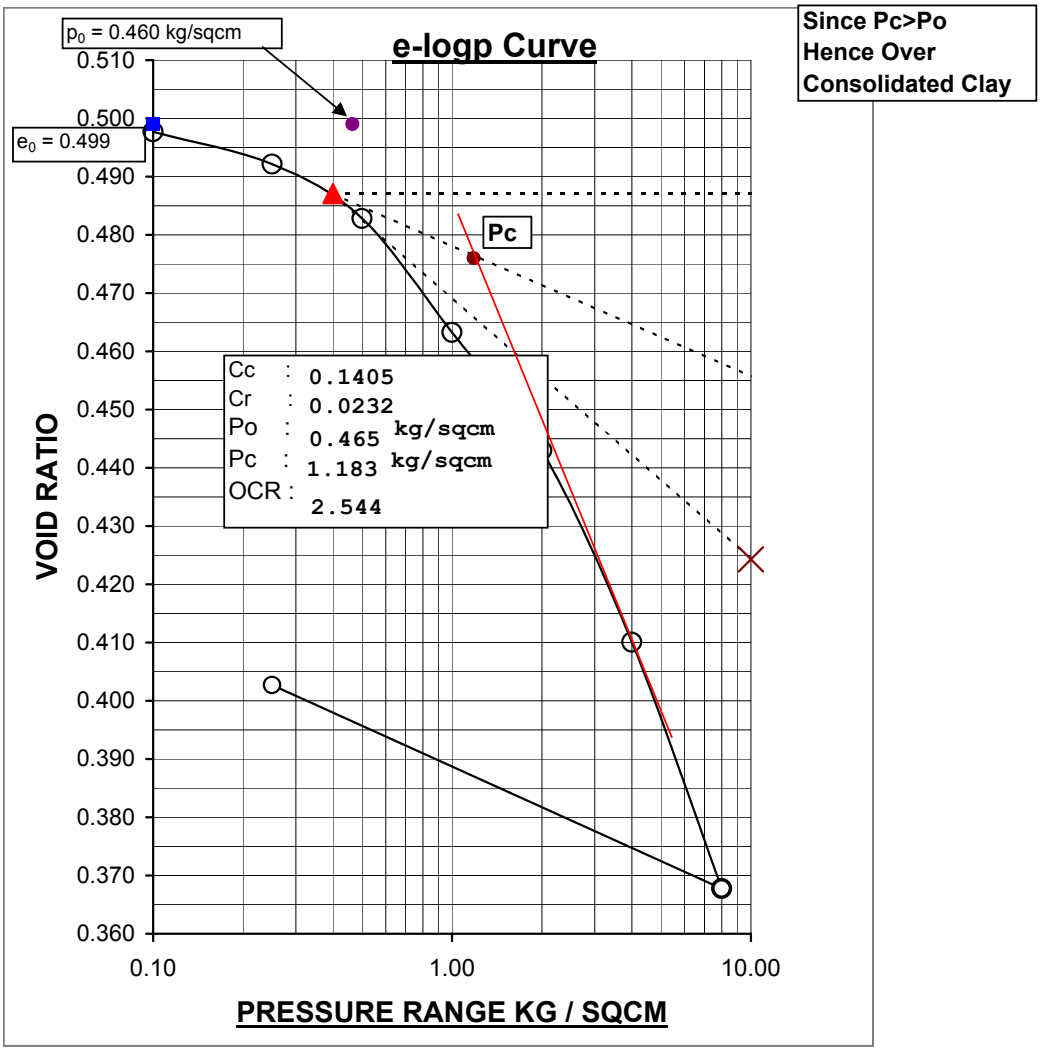
CONSOLIDATION TEST RESULTS

Sample Number:BH-09/UDS-01 Depth :2-2.45 meters
Description :Brownish grey clayey silt with traces of sand mixtures.
Water content:Initial=17% Final =17.7% Initial Void Ratio =0.499

P1-P2 Kg/Sqcm	Dial Change	Void Ratio	Mv Sqcm/kg	Comprn %	Mvc sqcm/kg	T90 Sec	1000.Cv sqcm/sec
0.00 - 0.10	10	0.498	0.0103				
0.10 - 0.25	36	0.492	0.0246	38.89	0.0151	214.4	3.717
0.25 - 0.50	61	0.483	0.0251	36.07	0.0161	163.7	4.771
0.50 - 1.00	127	0.463	0.0263	59.06	0.0108	173.4	4.329
1.00 - 2.00	132	0.443	0.0139	34.09	0.0091	119.3	5.952
2.00 - 4.00	214	0.410	0.0114	43.46	0.0064	117.6	5.589
4.00 - 8.00	275	0.368	0.0075	45.09	0.0041	117.6	4.986
8.00 - 0.25	227	0.403	0.0033				



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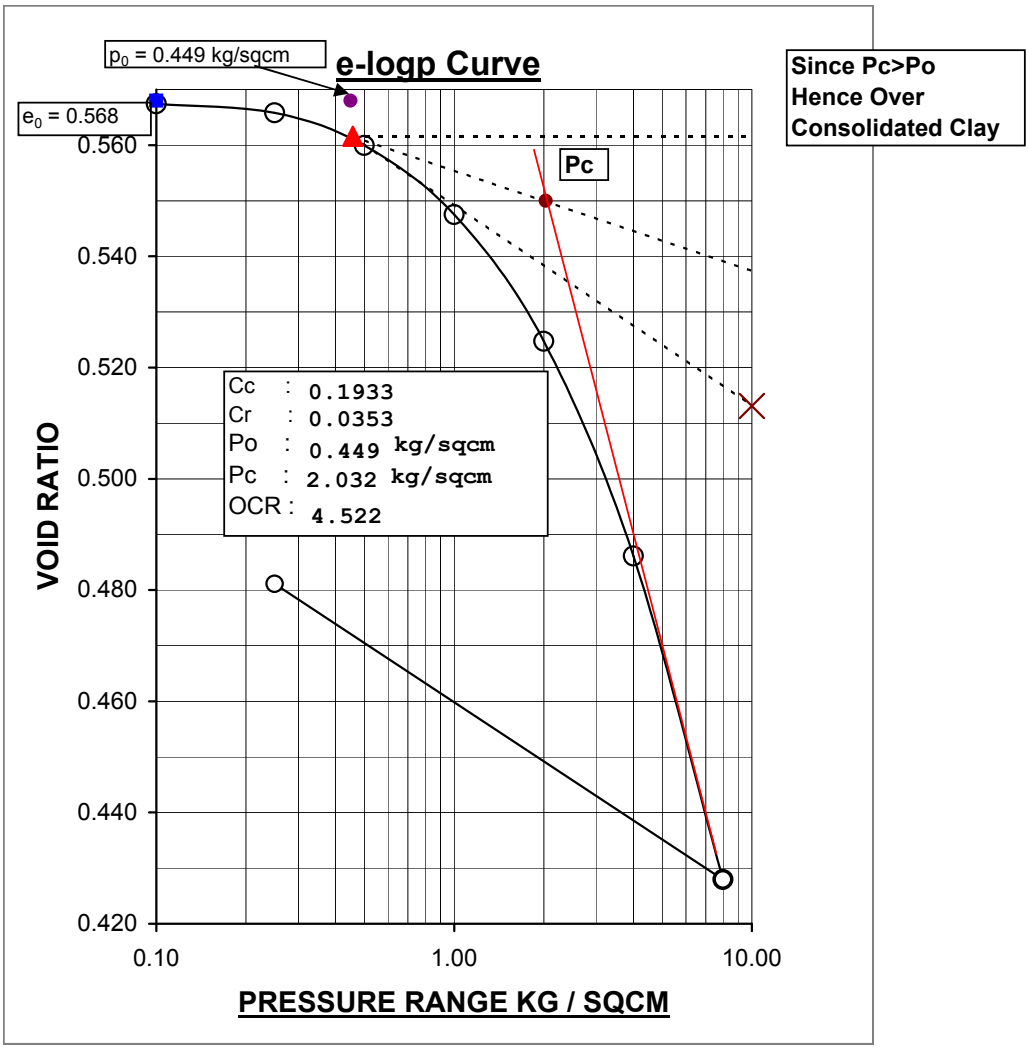
CONSOLIDATION TEST RESULTS

Sample Number:BH-11/UDS-01 Depth :2-2.45 meters
Description :Deep brown silty clay
Water content:Initial=21.6% Final =21.5% Initial Void Ratio =0.568

P1-P2 Kg/Sqcm	Dial Change	Void Ratio	Mv Sqcm/kg	Comprn %	Mvc sqcm/kg	T90 Sec	1000.Cv sqcm/sec
0.00 - 0.10	2	0.567	0.0021				
0.10 - 0.25	10	0.566	0.0069	20.00	0.0055	106.5	7.470
0.25 - 0.50	36	0.560	0.0149	38.89	0.0091	111.4	7.074
0.50 - 1.00	77	0.548	0.0160	36.36	0.0102	103.0	7.475
1.00 - 2.00	141	0.525	0.0147	39.72	0.0089	106.1	6.924
2.00 - 4.00	239	0.486	0.0127	46.44	0.0068	124.4	5.434
4.00 - 8.00	360	0.428	0.0098	38.06	0.0061	101.2	5.814
8.00 - 0.25	329	0.481	0.0048				

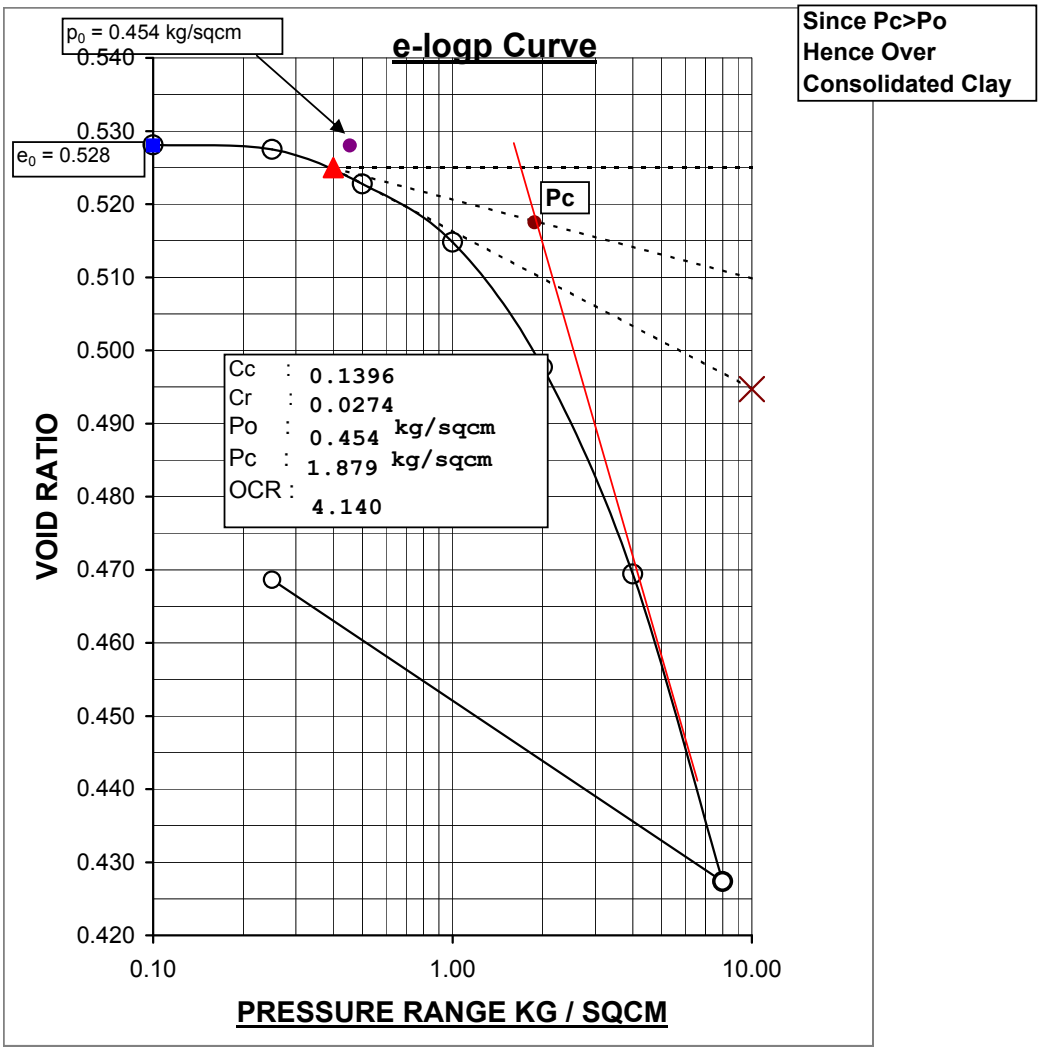


Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	CETEST
Job No. 3369	Sheet No.

CONSOLIDATION TEST RESULTS

Sample Number:BH-22/UDS-01 Depth :2-2.45 meters
Description :Brownish grey silty clay with traces of kankars.
Water content:Initial=20% Final =21.3% Initial Void Ratio =0.528

P1-P2 Kg/Sqcm	Dial Change	Void Ratio	Mv Sqcm/kg	Comprn %	Mvc sqcm/kg	T90 Sec	1000.Cv sqcm/sec
0.00 - 0.10	2	0.528	0.0020				
0.10 - 0.25	4	0.527	0.0027				
0.25 - 0.50	31	0.523	0.0124	12.90	0.0108	227.7	3.692
0.50 - 1.00	52	0.515	0.0104	36.54	0.0066	181.7	4.551
1.00 - 2.00	112	0.498	0.0113	39.29	0.0069	126.2	6.338
2.00 - 4.00	185	0.469	0.0094	40.54	0.0056	117.6	6.389
4.00 - 8.00	275	0.427	0.0072	29.45	0.0050	115.9	5.863
8.00 - 0.25	270	0.469	0.0037				

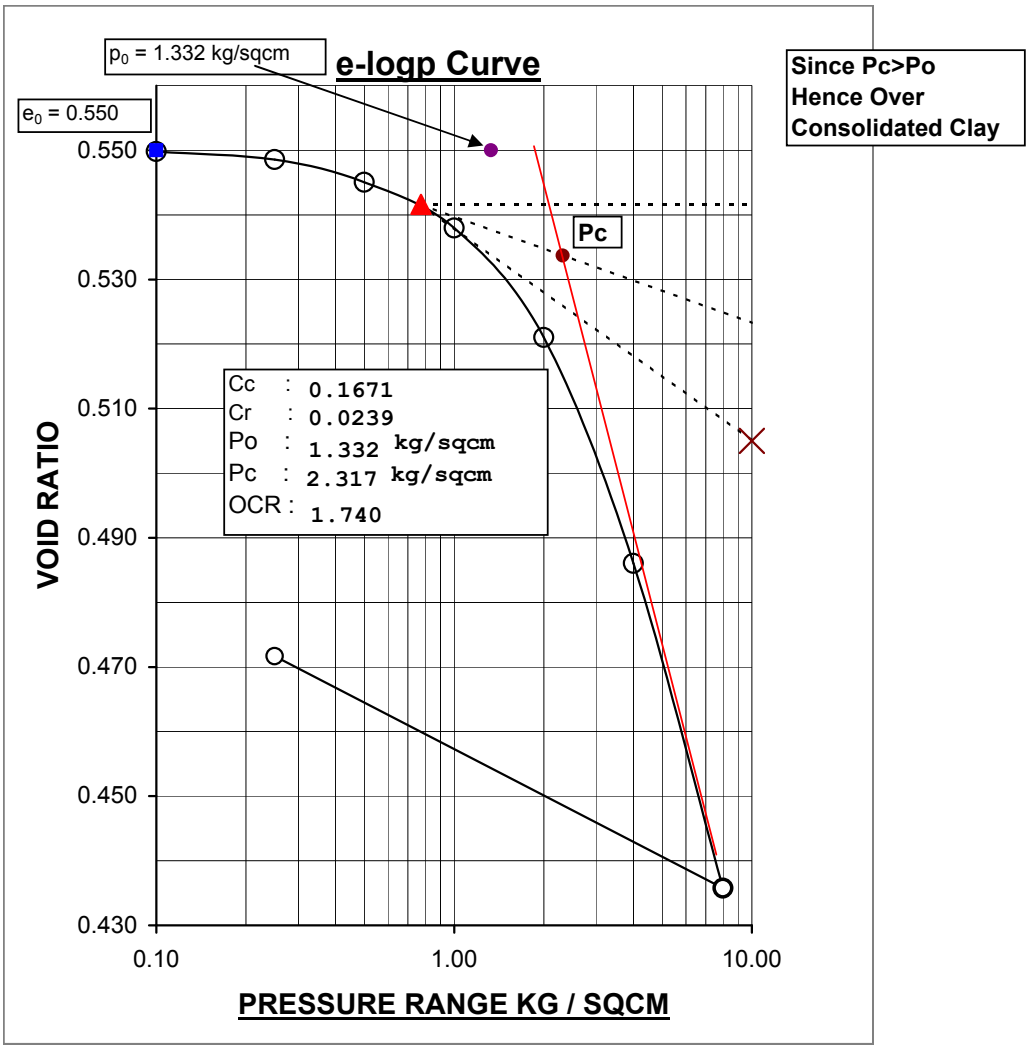


Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	CETEST
Job No. 3369	Sheet No.

CONSOLIDATION TEST RESULTS

Sample Number:BH-26/UDS-03 Depth :6.5-6.95 meters
Description :Deep brown silty clay with traces of sand mixtures.
Water content:Initial=23.5% Final =22.8% Initial Void Ratio =0.55

P1-P2 Kg/Sqcm	Dial Change	Void Ratio	Mv Sqcm/kg	Comprn %	Mvc sqcm/kg	T90 Sec	1000.Cv sqcm/sec
0.00 - 0.10	3	0.550	0.0031				
0.10 - 0.25	8	0.549	0.0054	12.50	0.0048	182.5	4.450
0.25 - 0.50	22	0.545	0.0090	22.22	0.0070	145.6	5.543
0.50 - 1.00	45	0.538	0.0092	31.11	0.0063	163.4	4.873
1.00 - 2.00	107	0.521	0.0110	29.91	0.0077	187.5	4.114
2.00 - 4.00	221	0.486	0.0115	29.86	0.0081	149.6	4.807
4.00 - 8.00	318	0.436	0.0085	20.13	0.0068	181.2	3.518
8.00 - 0.25	227	0.472	0.0032				

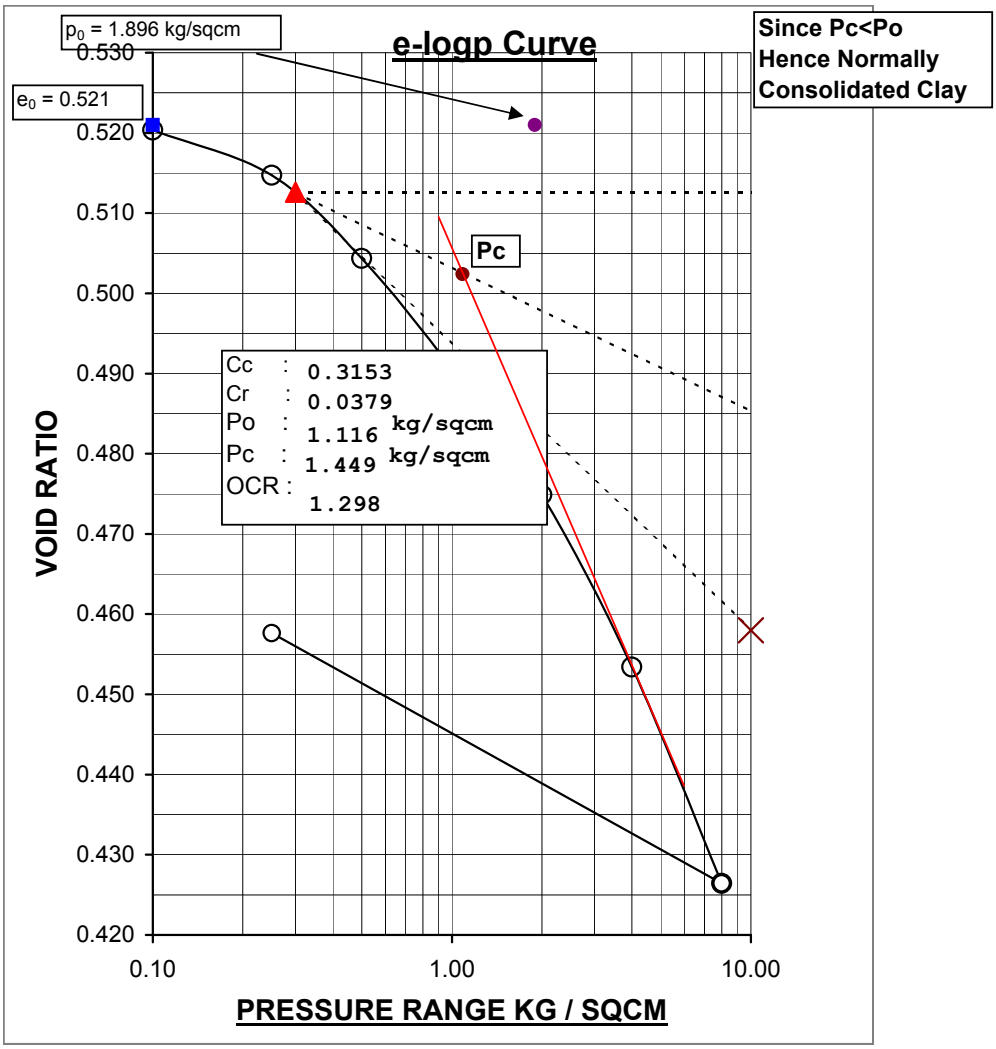


Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	CETEST
Job No. 3369	Sheet No.

CONSOLIDATION TEST RESULTS

Sample Number:BH-29/UDS-04 Depth :9.5-9.95 meters
Description :Brownish grey clayey silt with traces of kankars.
Water content:Initial=19% Final =22.6% Initial Void Ratio =0.521

P1-P2 Kg/Sqcm	Dial Change	Void Ratio	Mv Sqcm/kg	Comprn %	Mvc sqcm/kg	T90 Sec	1000.Cv sqcm/sec
0.00 - 0.10	6	0.520	0.0062				
0.10 - 0.25	36	0.515	0.0248	61.11	0.0096	181.9	4.343
0.25 - 0.50	66	0.504	0.0273	51.52	0.0133	114.3	6.769
0.50 - 1.00	88	0.491	0.0183	52.27	0.0088	151.7	4.936
1.00 - 2.00	100	0.475	0.0105	64.00	0.0038	181.0	3.972
2.00 - 4.00	137	0.453	0.0073	70.07	0.0022	155.5	4.388
4.00 - 8.00	172	0.426	0.0046	59.30	0.0019	108.5	5.864
8.00 - 0.25	199	0.458	0.0028				



Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	CETEST
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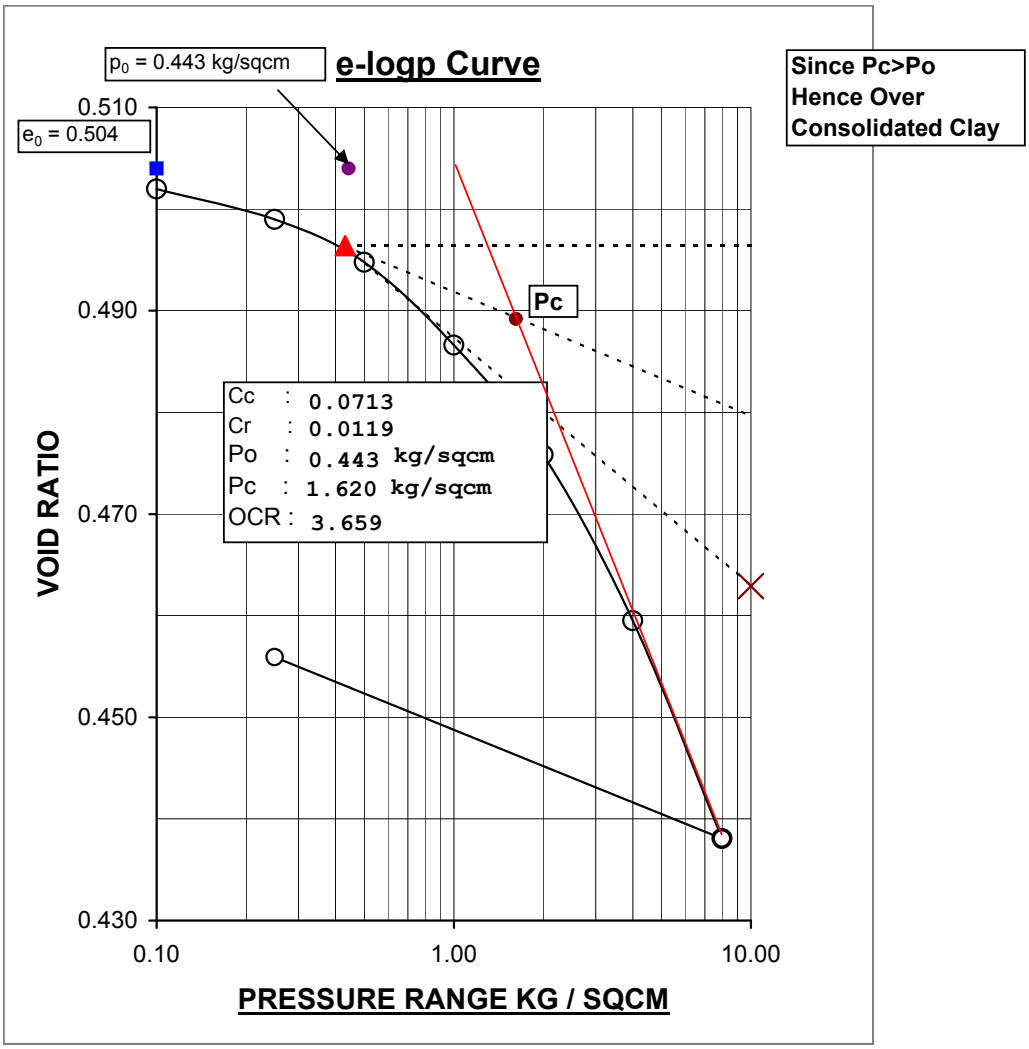
CONSOLIDATION TEST RESULTS

Sample Number:BH-39/UDS-01 Depth :2-2.45 meters
Description :Brownish grey clayey silt with sand mixture.
Water content:Initial=12.4% Final =16.3% Initial Void Ratio =0.504

P1-P2 Kg/Sqcm	Dial Change	Void Ratio	Mv Sqcm/kg	Comprn %	Mvc sqcm/kg	T90 Sec	1000.Cv sqcm/sec
0.00 - 0.10	14	0.502	0.0146				
0.10 - 0.25	19	0.499	0.0132	57.89	0.0056	101.0	7.662
0.25 - 0.50	27	0.495	0.0113	55.56	0.0050	133.5	5.741
0.50 - 1.00	52	0.487	0.0109	67.31	0.0036	103.5	7.283
1.00 - 2.00	69	0.476	0.0073	63.77	0.0026	159.4	4.608
2.00 - 4.00	104	0.460	0.0055	73.08	0.0015	106.1	6.666
4.00 - 8.00	137	0.438	0.0037	72.26	0.0010	112.6	5.955
8.00 - 0.25	114	0.456	0.0016				

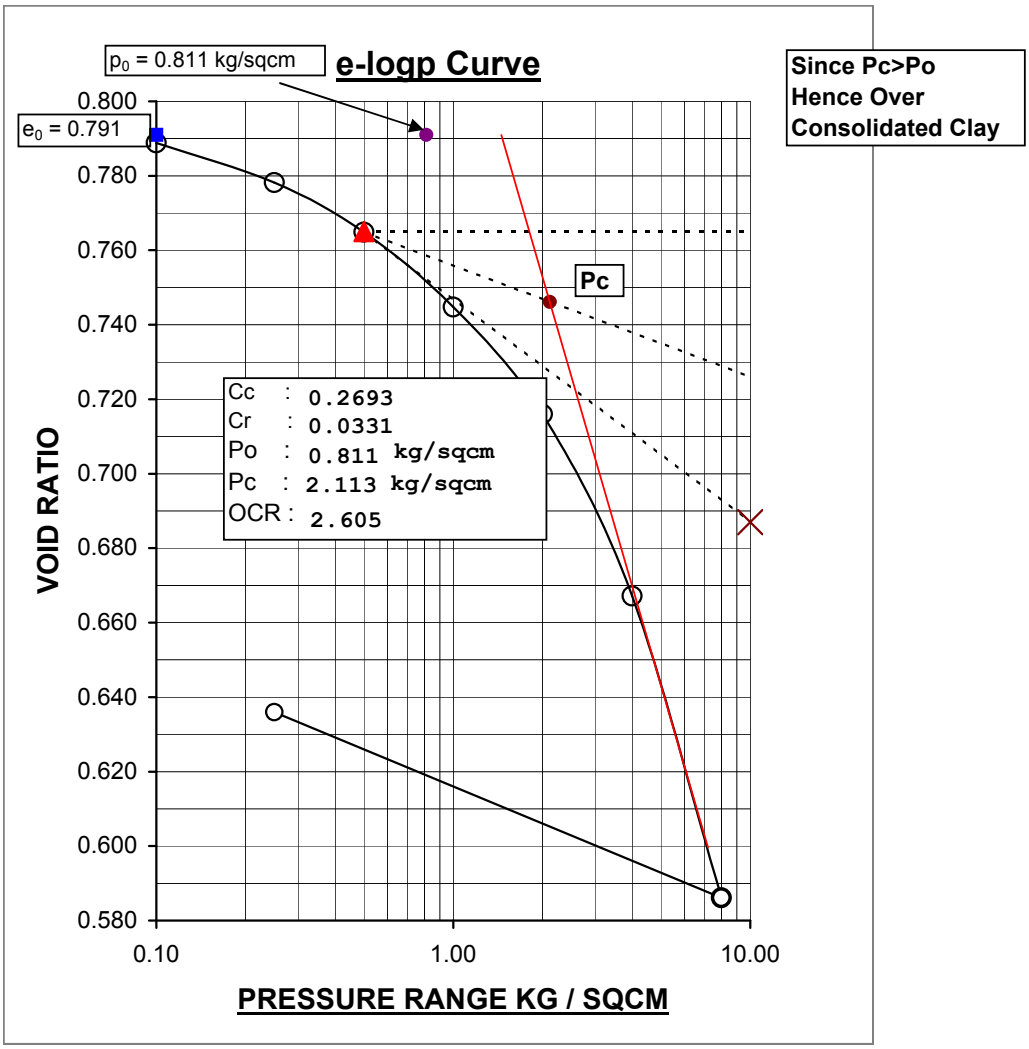


Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	CETEST
Job No. 3369	Sheet No.

CONSOLIDATION TEST RESULTS

Sample Number:BH-41/UDS-02 Depth :4-4.45 meters
Description :Brownish grey clayey silt with traces of kankars.
Water content:Initial=25.6% Final =25.8% Initial Void Ratio =0.791

P1-P2 Kg/Sqcm	Dial Change	Void Ratio	Mv Sqcm/kg	Comprn %	Mvc sqcm/kg	T90 Sec	1000.Cv sqcm/sec
0.00 - 0.10	13	0.789	0.0134				
0.10 - 0.25	58	0.778	0.0399	37.93	0.0248	275.5	2.846
0.25 - 0.50	72	0.765	0.0299	43.60	0.0169	381.0	2.003
0.50 - 1.00	109	0.745	0.0228	42.40	0.0131	375.0	1.958
1.00 - 2.00	156	0.716	0.0165	53.85	0.0076	325.7	2.128
2.00 - 4.00	264	0.667	0.0142	56.82	0.0061	195.7	3.220
4.00 - 8.00	439	0.586	0.0122	52.10	0.0058	172.6	3.079
8.00 - 0.25	270	0.636	0.0041				

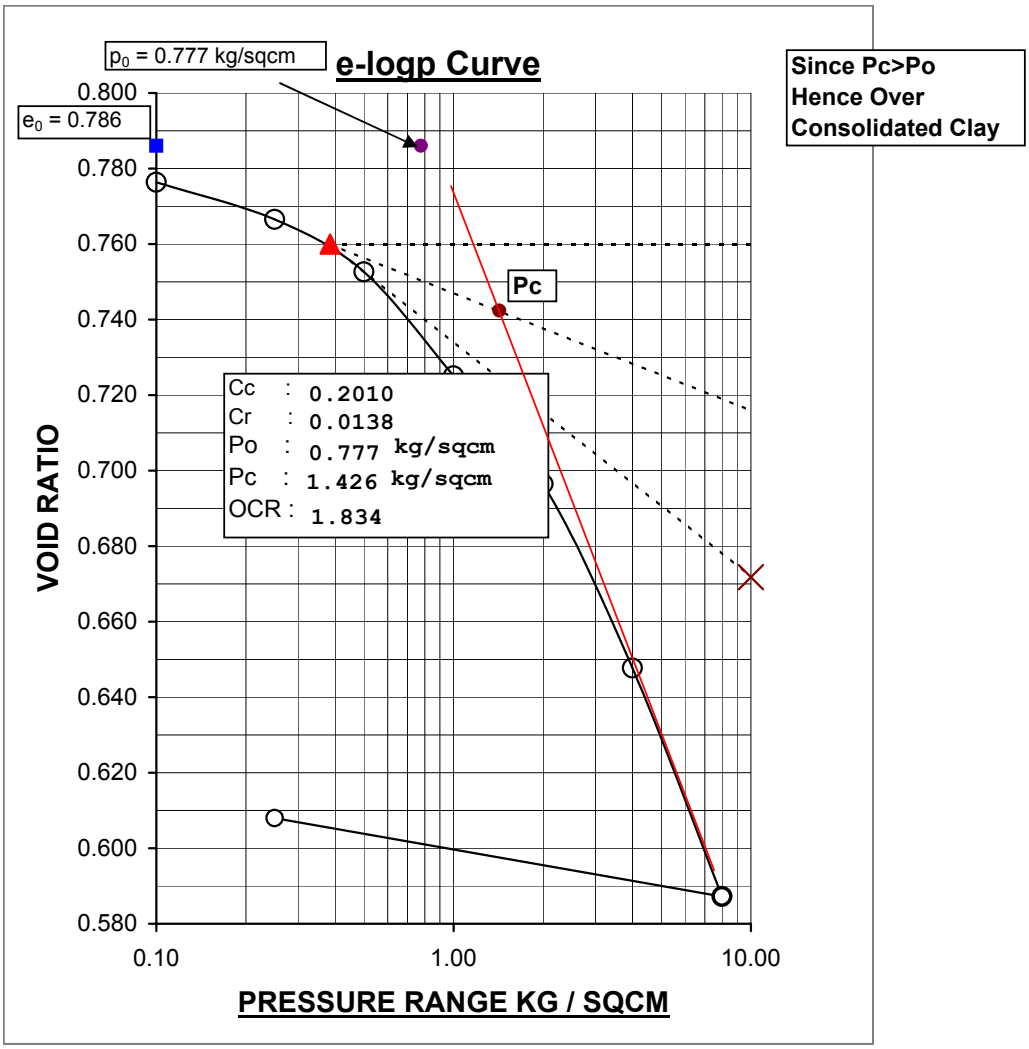


Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	CETEST
Job No. 3369	Sheet No.

CONSOLIDATION TEST RESULTS

Sample Number:BH-42/UDS-02 Depth :4-4.45 meters
Description :Brownish grey clayey silt with traces of sand mixture.
Water content:Initial=26.8% Final =27.7% Initial Void Ratio =0.786

P1-P2 Kg/Sqcm	Dial Change	Void Ratio	Mv Sqcm/kg	Comprn %	Mvc sqcm/kg	T90 Sec	1000.Cv sqcm/sec
0.00 - 0.10	51	0.776	0.0528				
0.10 - 0.25	53	0.767	0.0368	50.20	0.0183	160.2	4.772
0.25 - 0.50	75	0.753	0.0314	52.00	0.0151	259.6	2.866
0.50 - 1.00	149	0.725	0.0315	64.50	0.0112	188.0	3.771
1.00 - 2.00	155	0.696	0.0166	51.61	0.0080	167.3	3.959
2.00 - 4.00	263	0.648	0.0143	61.60	0.0055	129.5	4.644
4.00 - 8.00	327	0.587	0.0092	63.00	0.0034	127.9	4.066
8.00 - 0.25	112	0.608	0.0017				

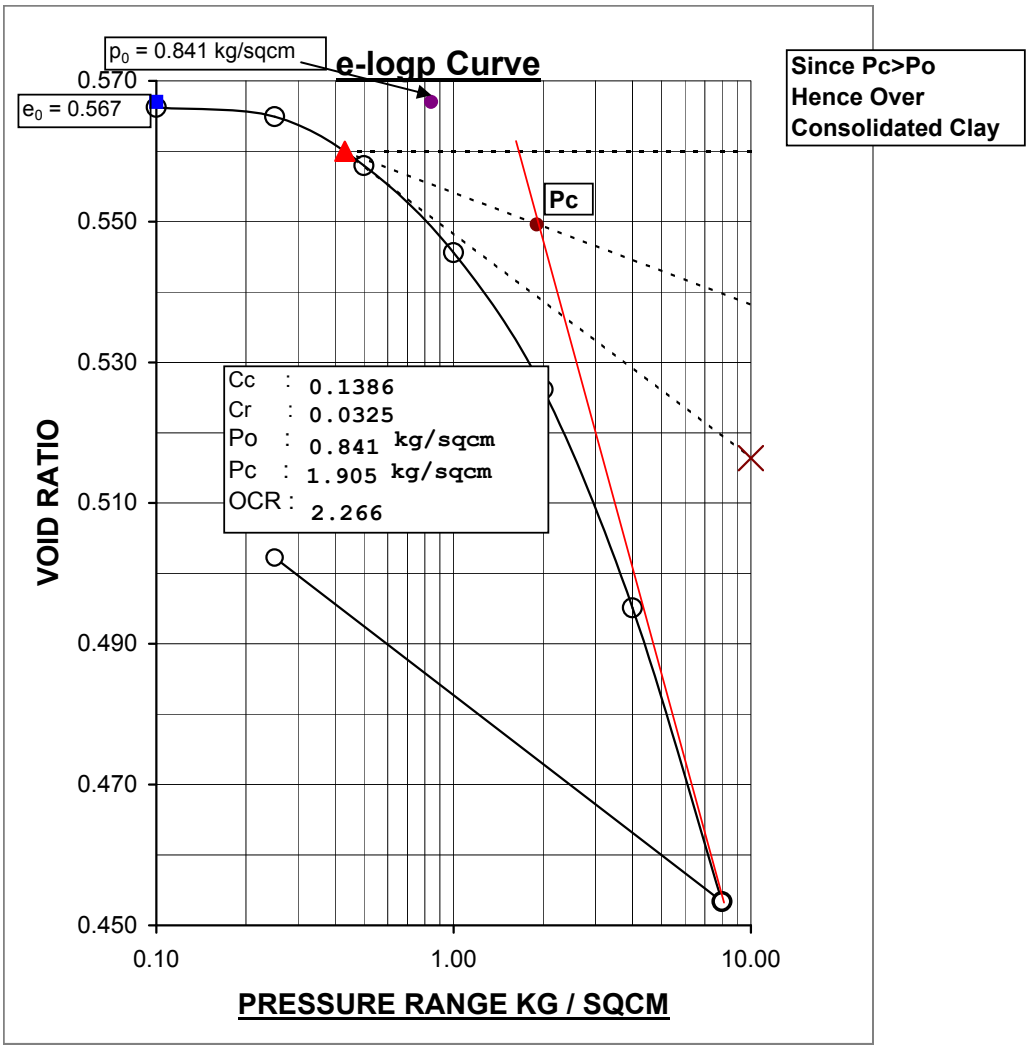


Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	CETEST
Job No. 3369	Sheet No.

CONSOLIDATION TEST RESULTS

Sample Number:BH-47/UDS-02 Depth :4-4.45 meters
Description :Greyish brown silty clay.
Water content:Initial=21.3% Final =24.2% Initial Void Ratio =0.567

P1-P2 Kg/Sqcm	Dial Change	Void Ratio	Mv Sqcm/kg	Comprn %	Mvc sqcm/kg	T90 Sec	1000.Cv sqcm/sec
0.00 - 0.10	2	0.566	0.0021				
0.10 - 0.25	8	0.565	0.0055	25.00	0.0041	98.3	8.013
0.25 - 0.50	43	0.558	0.0178	39.53	0.0108	93.8	8.314
0.50 - 1.00	76	0.546	0.0158	33.50	0.0105	106.1	7.162
1.00 - 2.00	120	0.526	0.0126	32.50	0.0085	106.1	6.869
2.00 - 4.00	191	0.495	0.0102	34.55	0.0066	115.9	5.874
4.00 - 8.00	257	0.453	0.0070	35.41	0.0045	109.8	5.597
8.00 - 0.25	301	0.502	0.0043				

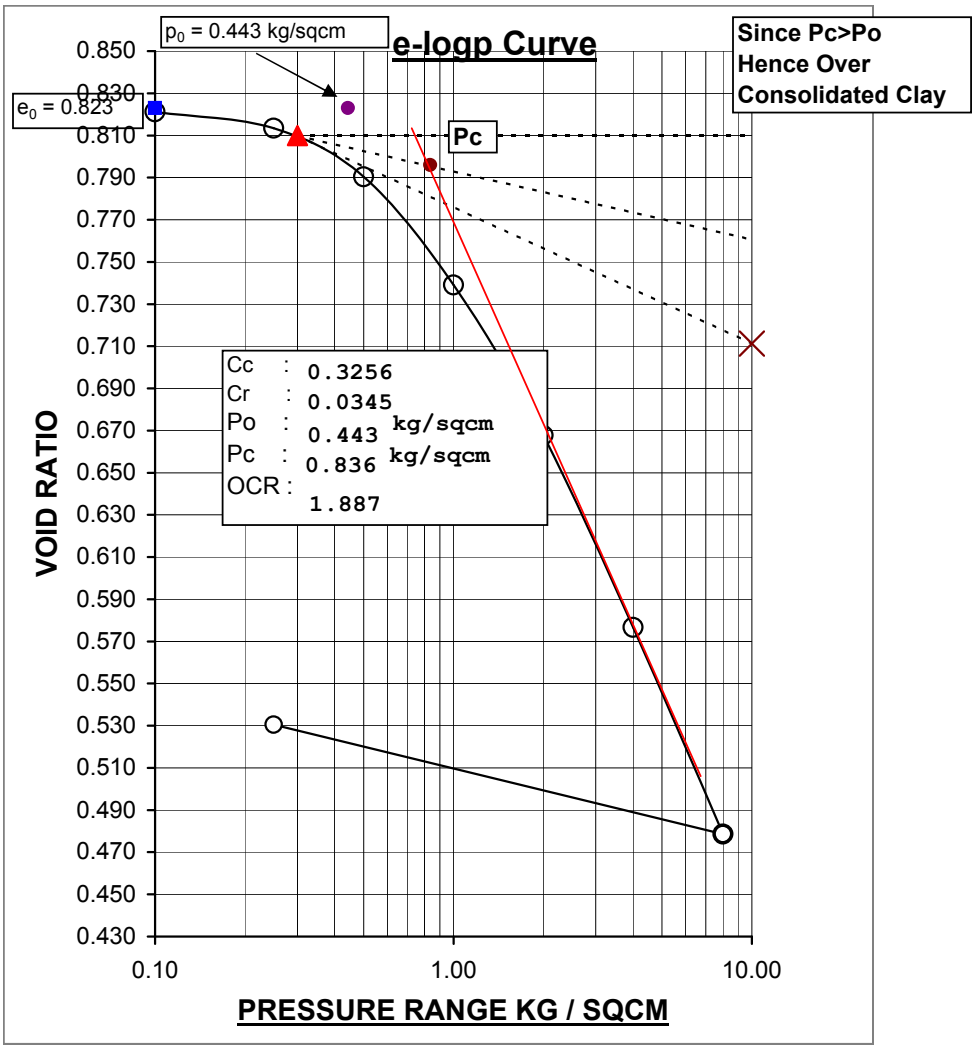


Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	CETEST
Job No. 3369	Sheet No.

CONSOLIDATION TEST RESULTS

Sample Number:BH-46/UDS-01 Depth :2-2.45 meters
Description :Deep brown silty clay with kankars.
Water content:Initial=31.3% Final =24.1% Initial Void Ratio =0.823

P1-P2 Kg/Sqcm	Dial Change	Void Ratio	Mv Sqcm/kg	Comprn %	Mvc sqcm/kg	T90 Sec	1000.Cv sqcm/sec
0.00 - 0.10	10	0.821	0.0102				
0.10 - 0.25	41	0.813	0.0279	24.39	0.0211	203.5	3.952
0.25 - 0.50	124	0.790	0.0509	19.35	0.0410	211.6	3.673
0.50 - 1.00	276	0.739	0.0574	19.20	0.0463	252.2	2.830
1.00 - 2.00	384	0.668	0.0411	17.97	0.0337	295.7	2.079
2.00 - 4.00	489	0.577	0.0273	18.61	0.0222	225.8	2.193
4.00 - 8.00	527	0.479	0.0155	12.33	0.0136	183.5	2.028
8.00 - 0.25	279	0.531	0.0045				



Project : Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	CETEST
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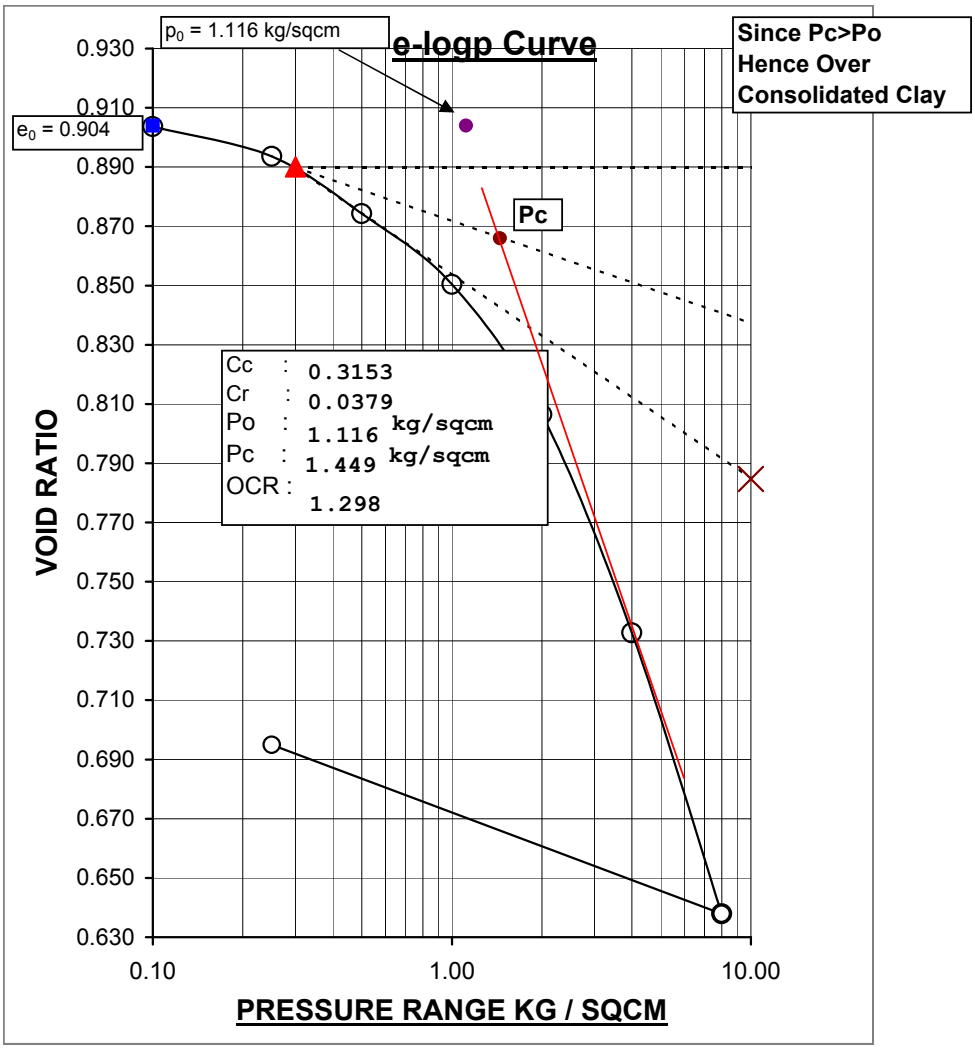
CONSOLIDATION TEST RESULTS

Sample Number:BH-64/UDS-03 Depth :6.5-6.95 meters
Description :Brownish grey clayey silt with traces of sand mixtures.
Water content:Initial=21.3% Final =32.4% Initial Void Ratio =0.904

P1-P2 Kg/Sqcm	Dial Change	Void Ratio	Mv Sqcm/kg	Comprn %	Mvc sqcm/kg	T90 Sec	1000.Cv sqcm/sec
0.00 - 0.10	4	0.904	0.0041				
0.10 - 0.25	51	0.894	0.0352	54.90	0.0159	144.2	5.411
0.25 - 0.50	98	0.874	0.0409	52.04	0.0196	106.1	7.123
0.50 - 1.00	121	0.850	0.0255	54.55	0.0116	115.9	6.222
1.00 - 2.00	223	0.806	0.0238	56.05	0.0105	101.4	6.593
2.00 - 4.00	373	0.733	0.0204	61.39	0.0079	101.4	5.738
4.00 - 8.00	481	0.638	0.0137	55.72	0.0061	112.6	4.156
8.00 - 0.25	289	0.695	0.0045				



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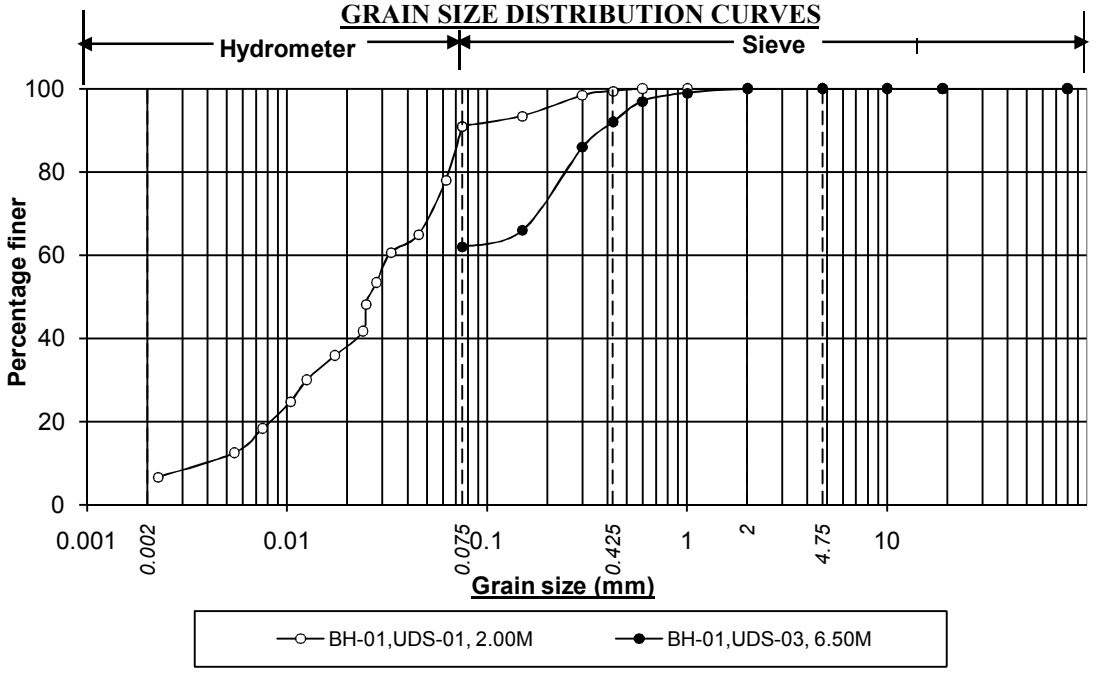
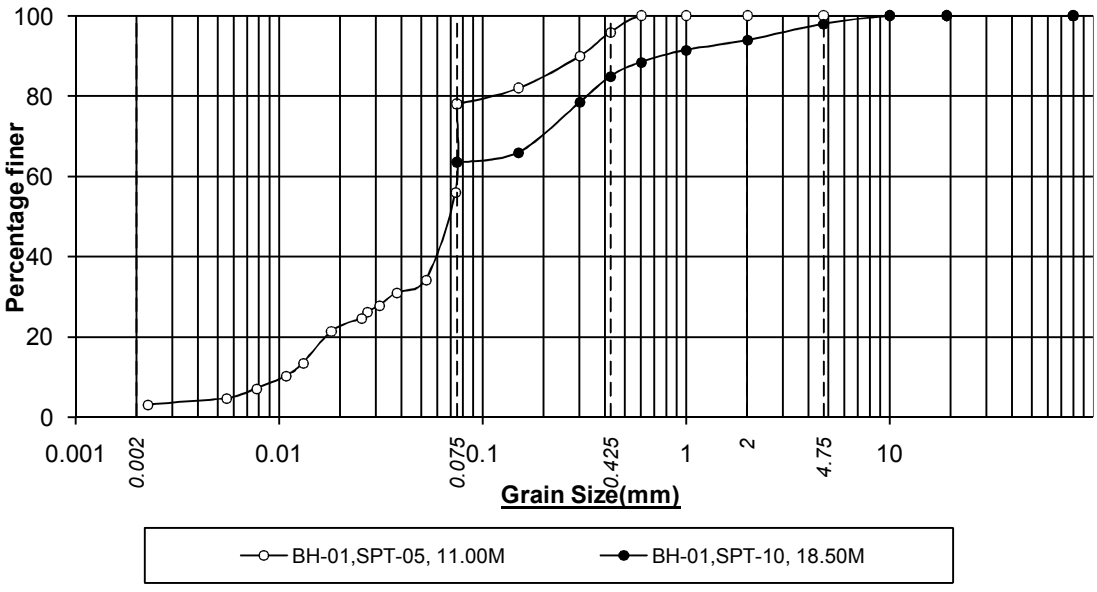
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-01,UDS-01, 2.00M	5.8	85.2	8.5	0.5	0.0	9.0		0.0
BH-01,UDS-03, 6.50M		62.0	30.0	8.0	0.0	38.0		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-01,SPT-05, 11.00M	3.0	75.0	18.0	4.0	0.0	22.0		0.0
BH-01,SPT-10, 18.50M		63.5	21.5	9.0	4.0	34.5		2.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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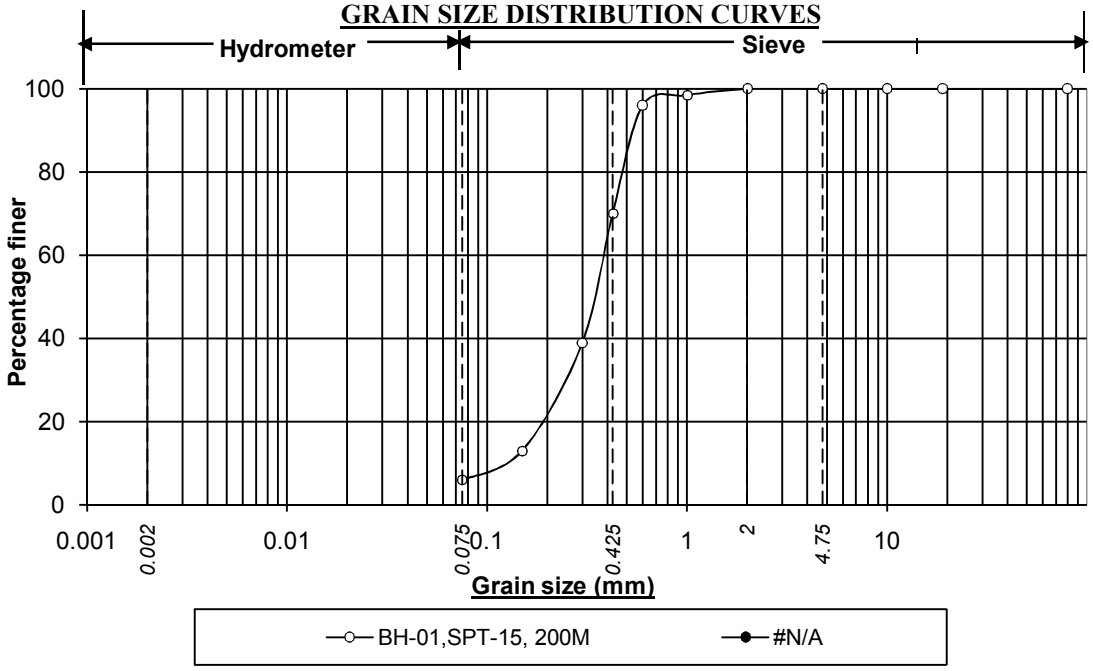
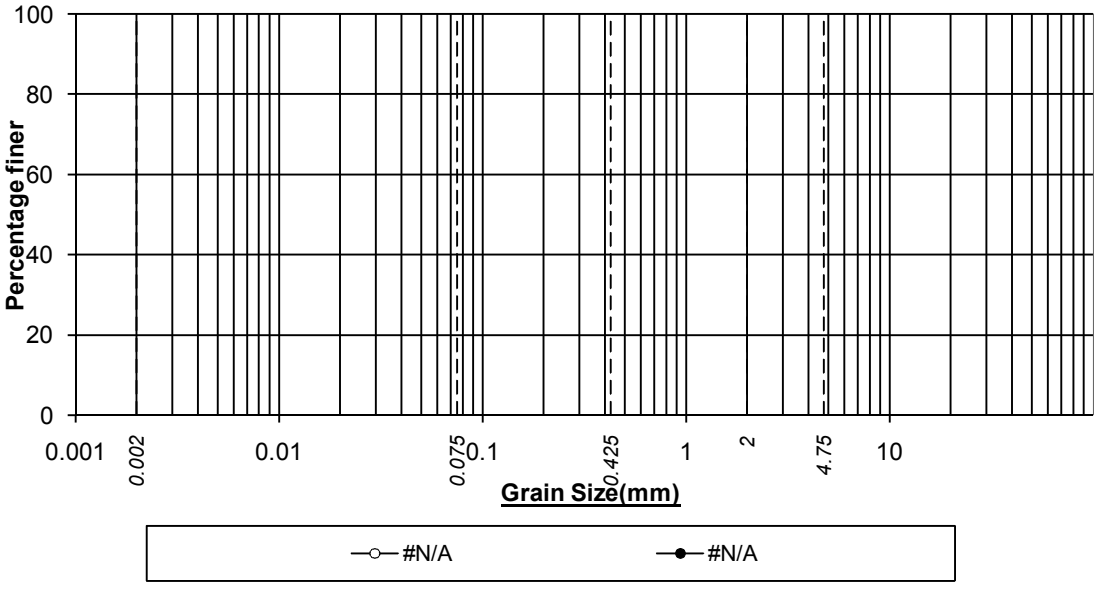
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-01,SPT-15, 200M		6.0	64.0	30.0	0.0	94.0	3.191/1.355	0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	**Job No. 3369**	

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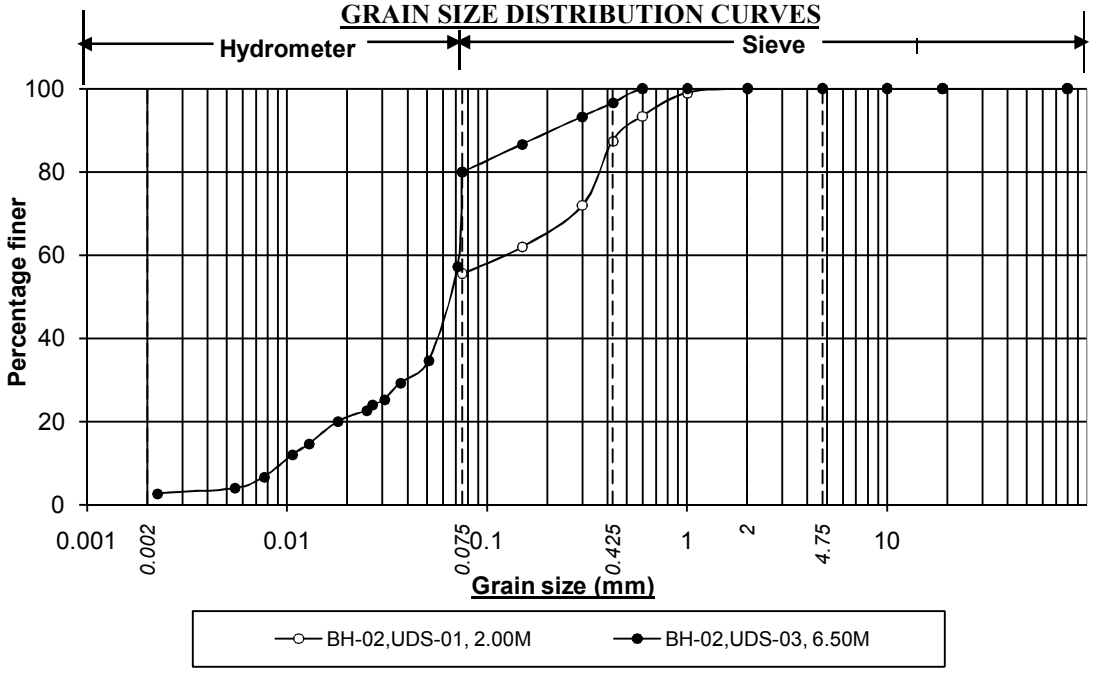
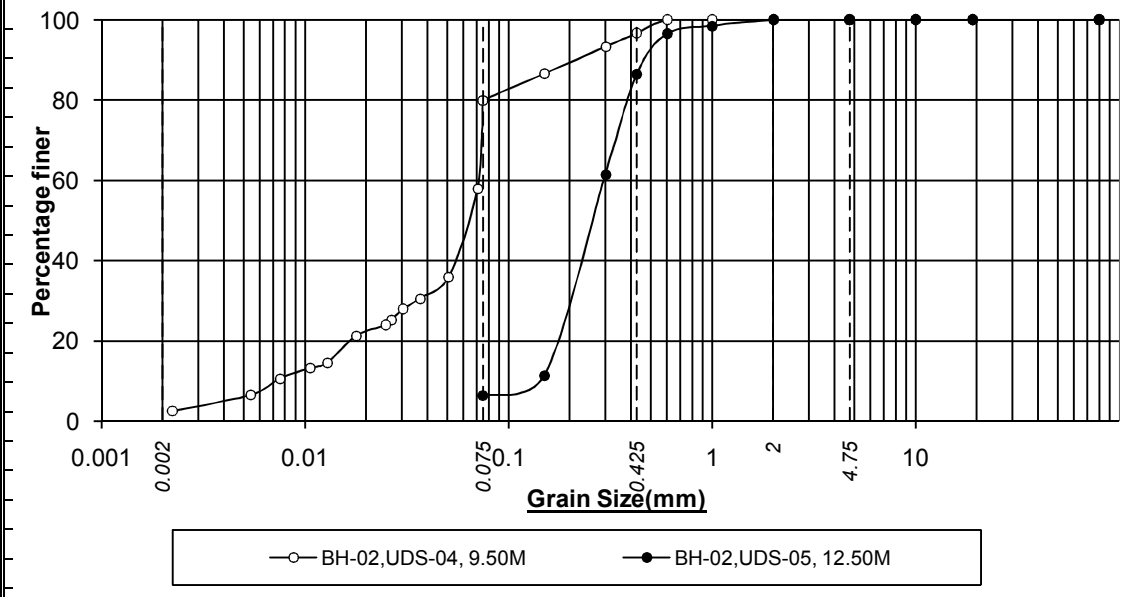


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-02,UDS-01, 2.00M		55.5	32.0	12.5	0.0	44.5		0.0
BH-02,UDS-03, 6.50M	2.5	77.5	16.7	3.3	0.0	20.0		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-02,UDS-04, 9.50M	2.2	77.8	16.7	3.3	0.0	20.0		0.0
BH-02,UDS-05, 12.50M		6.5	80.0	13.5	0.0	93.5	2.06/1.042	0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

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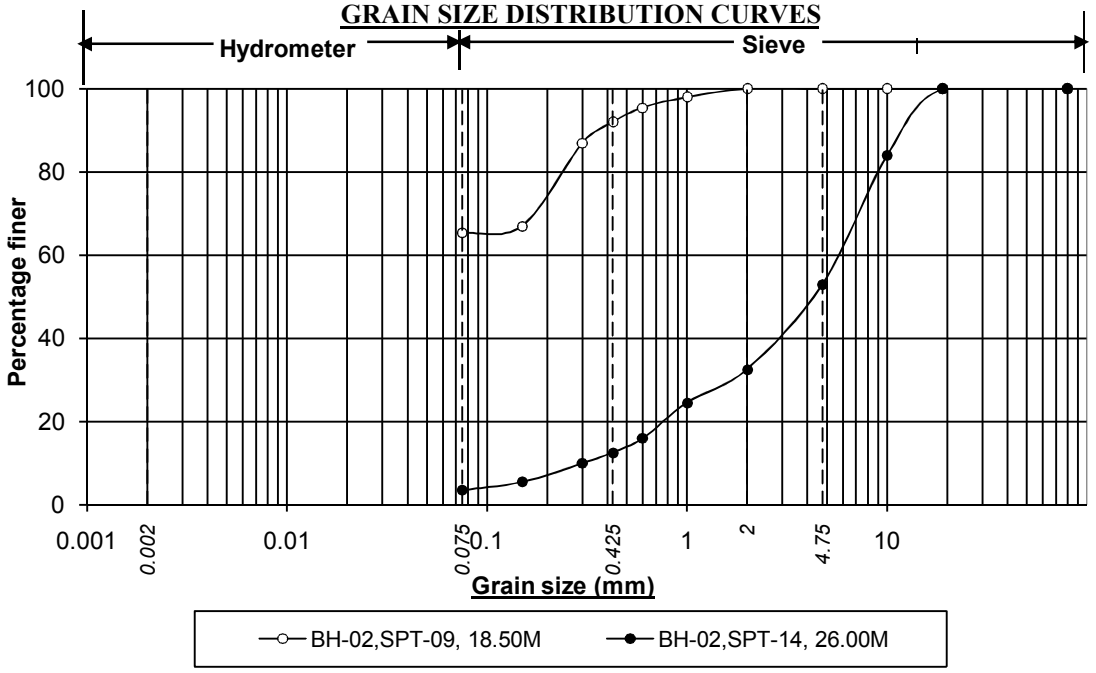
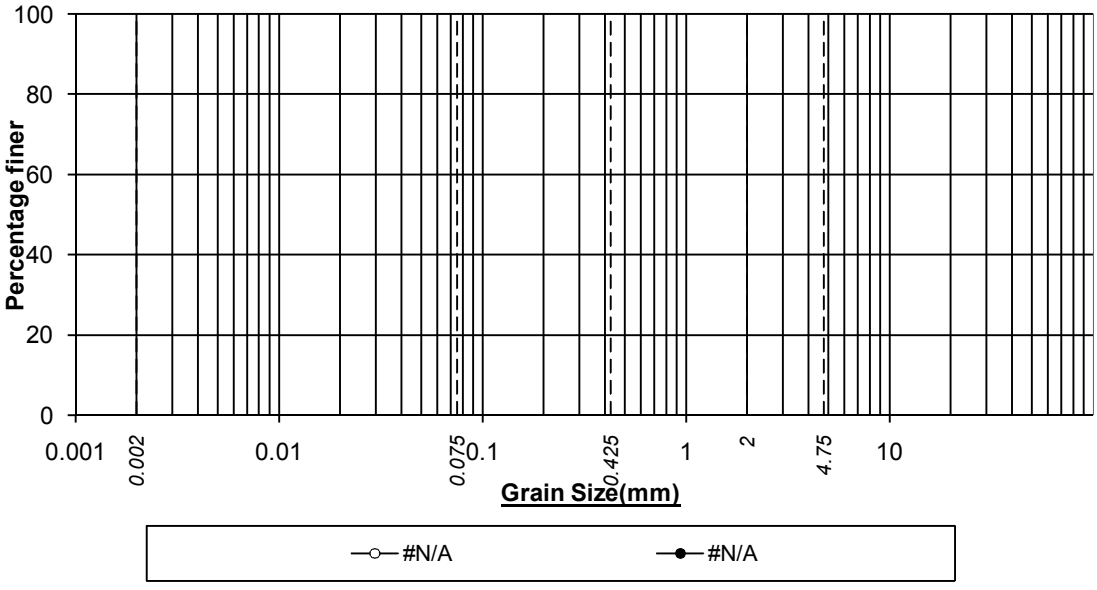
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-02,SPT-09, 18.50M		65.5	26.5	8.0	0.0	34.5		0.0
BH-02,SPT-14, 26.00M		3.5	9.0	20.0	20.5	49.5	20.606/1.778	47.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

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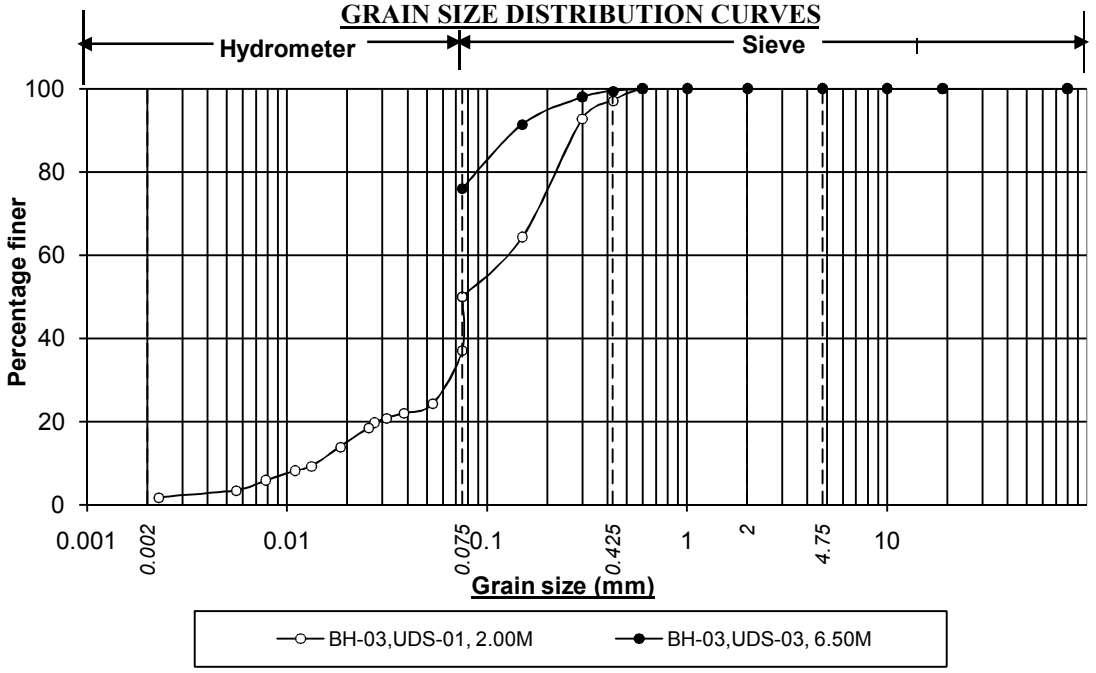
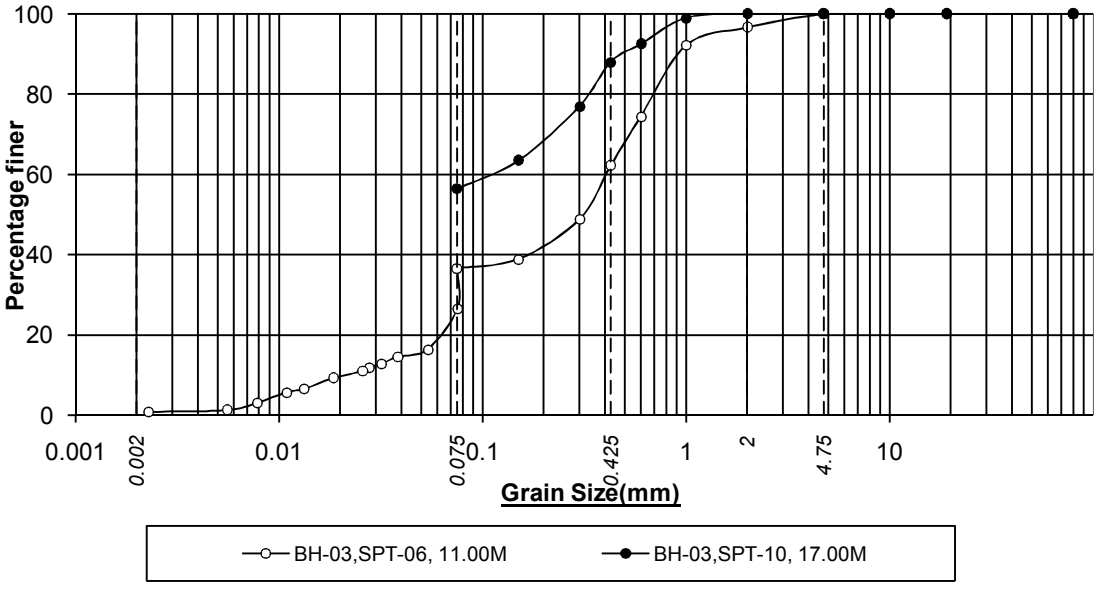


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-03,UDS-01, 2.00M	1.5	48.5	47.1	2.9	0.0	50.0		0.0
BH-03,UDS-03, 6.50M		76.0	23.5	0.5	0.0	24.0		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-03,SPT-06, 11.00M	0.8	35.8	25.7	34.4	3.3	63.4		0.0
BH-03,SPT-10, 17.00M		56.5	31.5	12.0	0.0	43.5		0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	**Job No.3369**	

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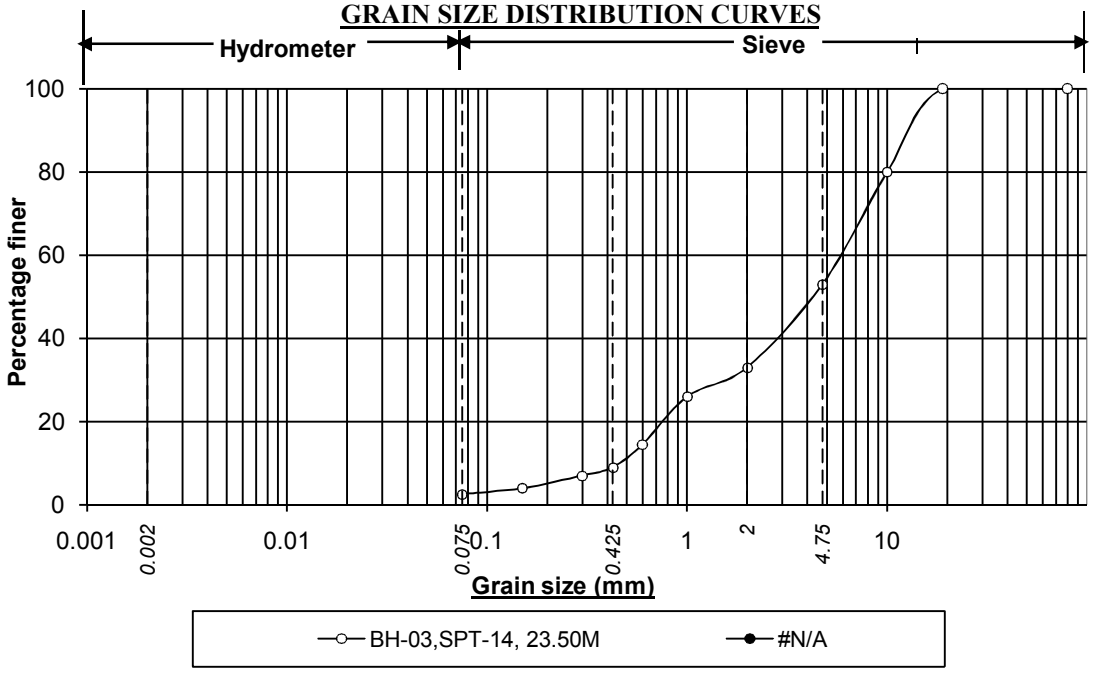
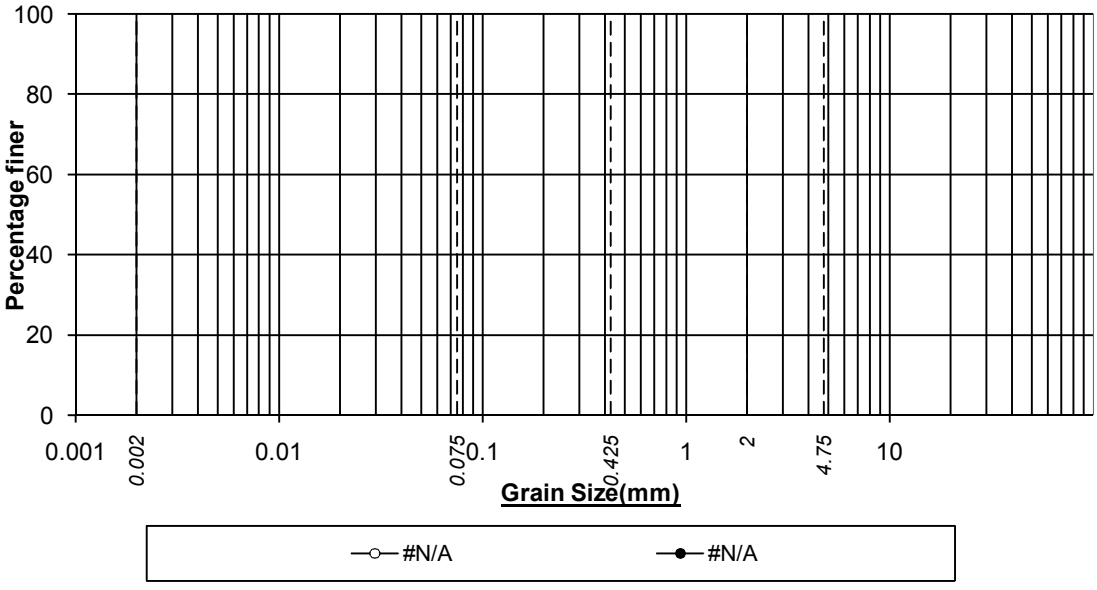
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-03,SPT-14, 23.50M		2.5	6.5	24.0	20.0	50.5	12.852/0.948	47.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	**Job No. 3369**	

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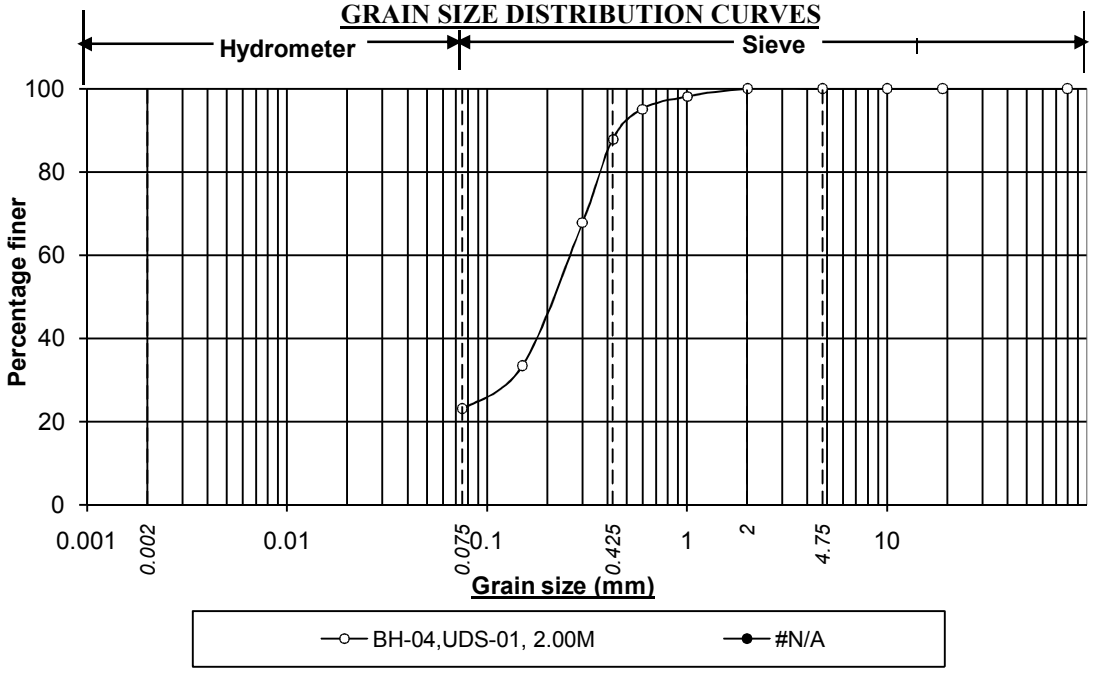
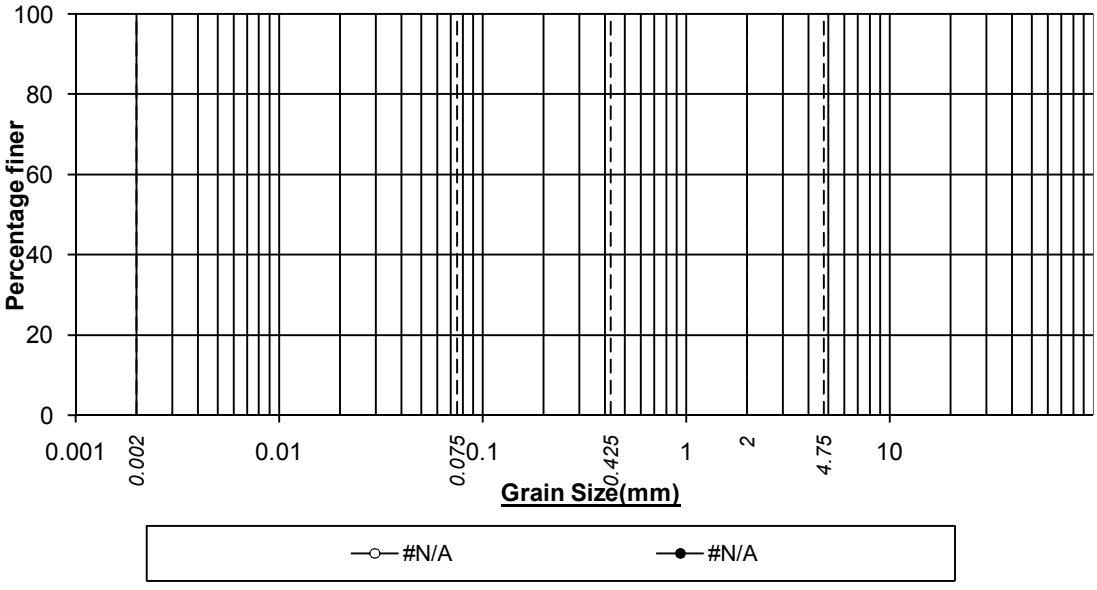
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-04,UDS-01, 2.00M		23.0	64.9	12.1	0.0	77.0		0.0

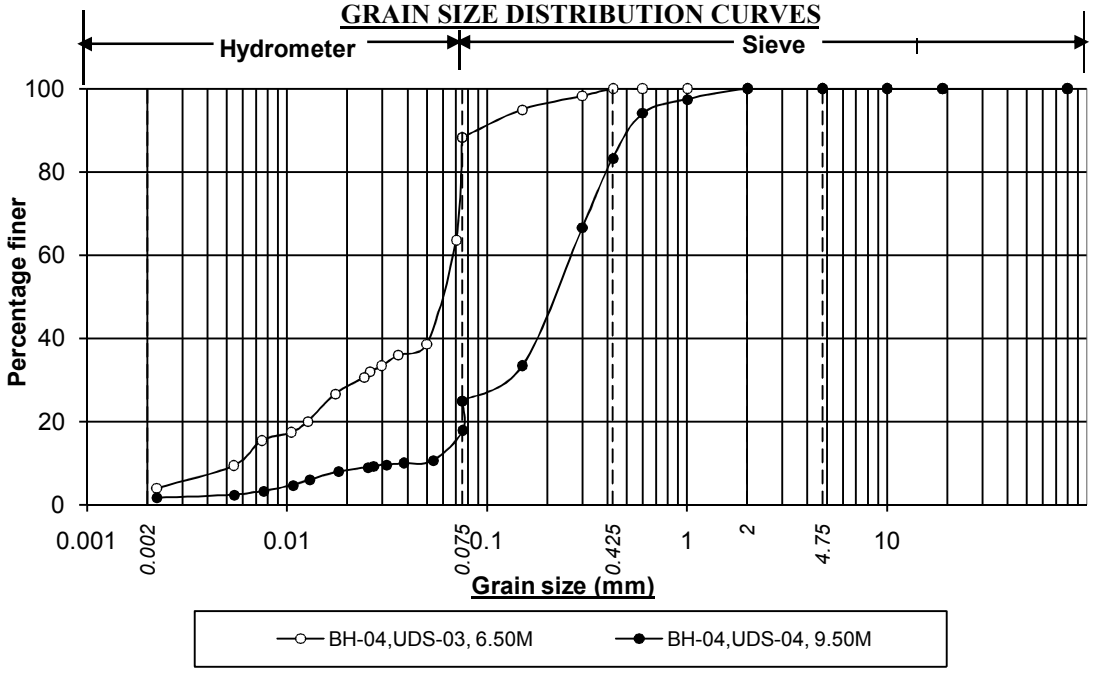


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

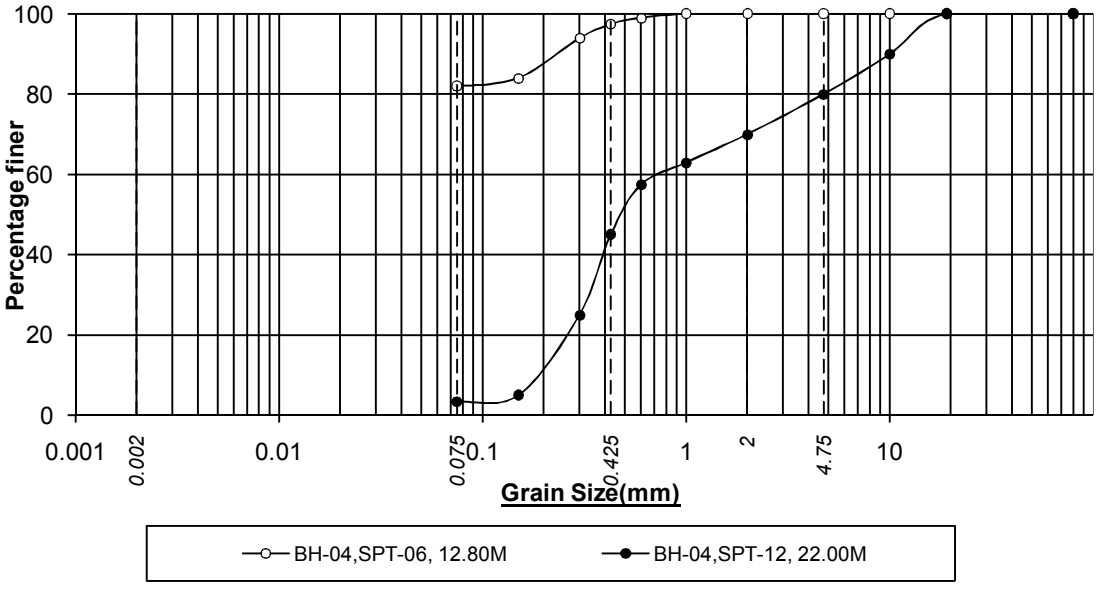
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	**Job No. 3369**	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-04,UDS-03, 6.50M	3.3	85.0	11.7	0.0	0.0	11.7		0.0
BH-04,UDS-04, 9.50M	1.6	23.4	58.3	16.7	0.0	75.0		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-04,SPT-06, 12.80M		82.0	15.5	2.5	0.0	18.0		0.0
BH-04,SPT-12, 22.00M		3.5	41.5	25.0	10.0	76.5	3.854/0.843	20.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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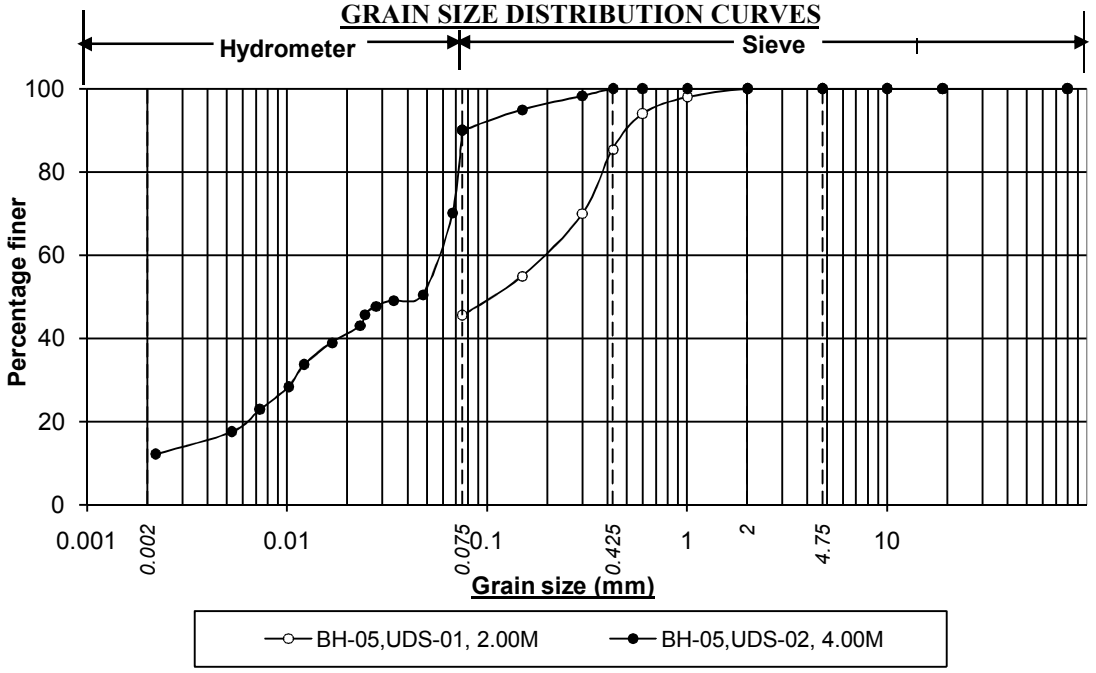
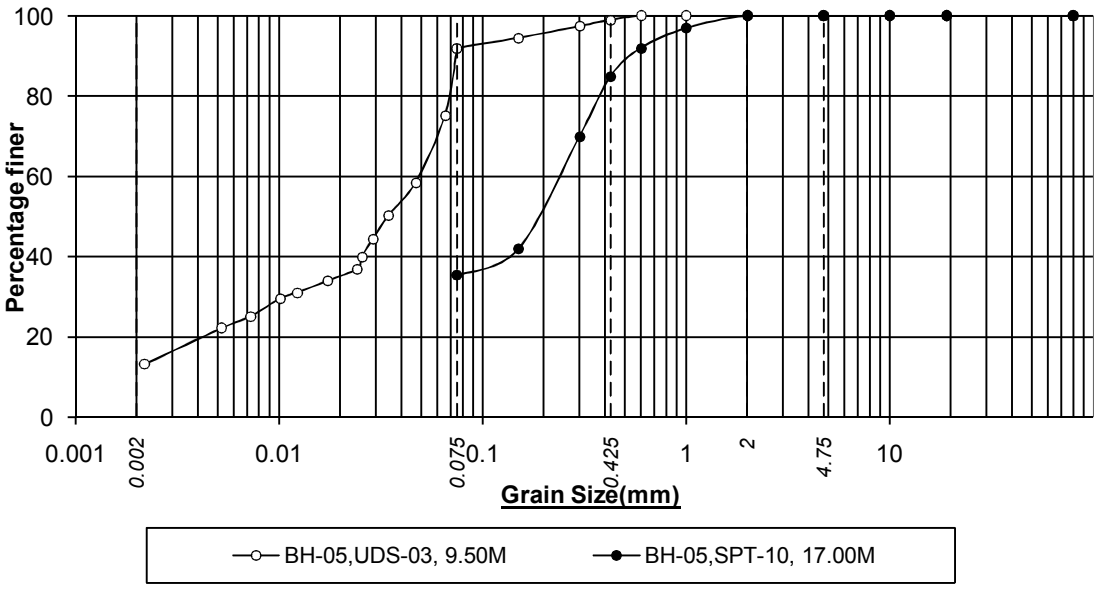
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-05,UDS-01, 2.00M		45.5	40.0	14.5	0.0	54.5		0.0
BH-05,UDS-02, 4.00M	11.5	78.5	10.0	0.0	0.0	10.0		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-05,UDS-03, 9.50M	12.4	79.6	7.0	1.0	0.0	8.0		0.0
BH-05,SPT-10, 17.00M		35.5	49.5	15.0	0.0	64.5		0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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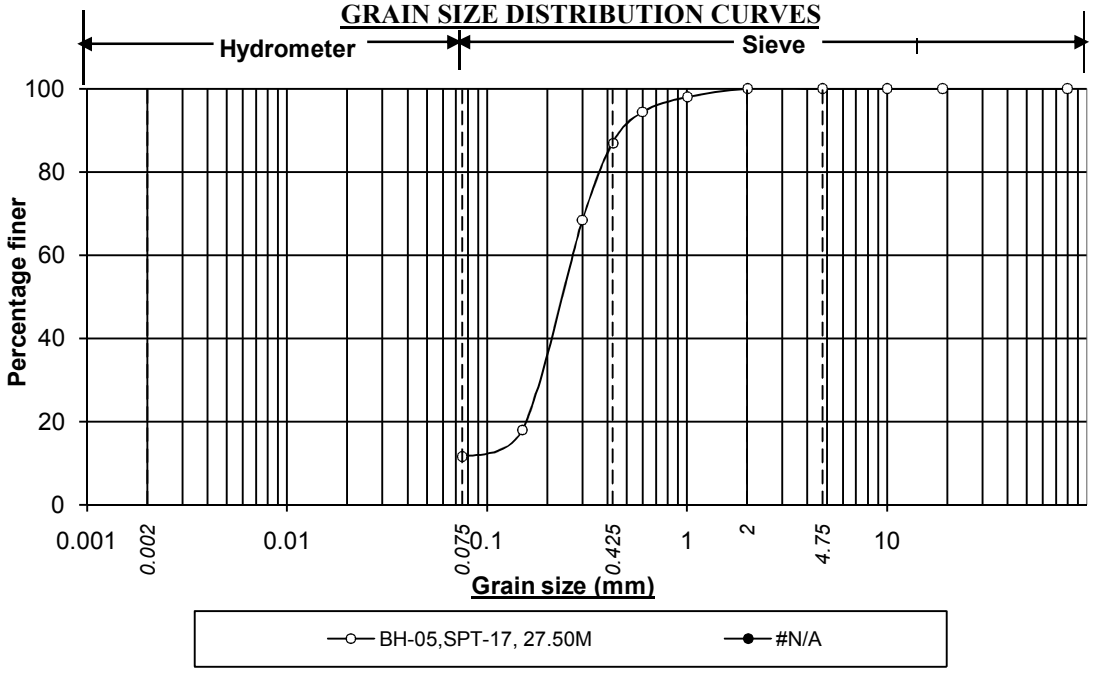
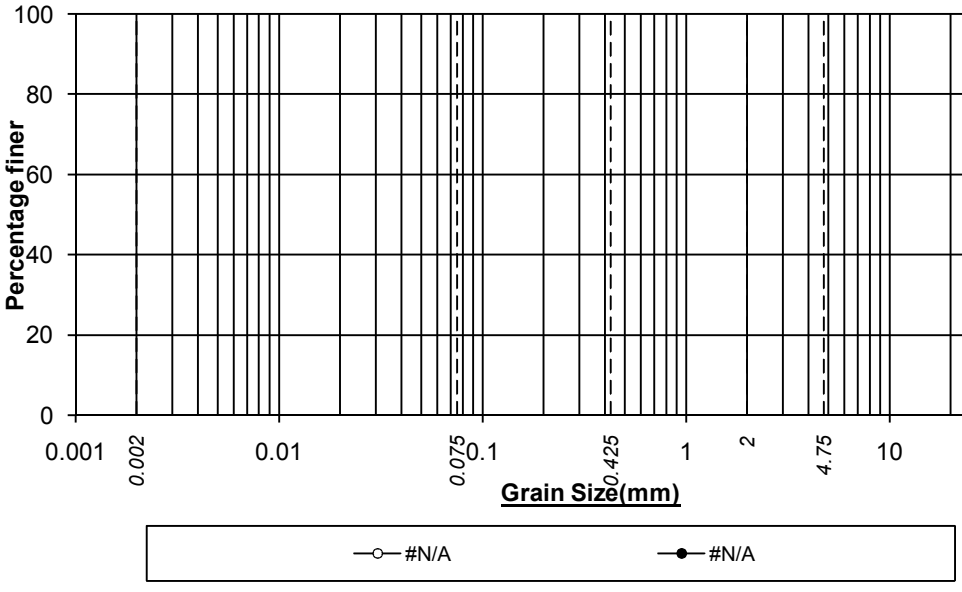
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-05,SPT-17, 27.50M		11.5	75.5	13.0	0.0	88.5		0.0

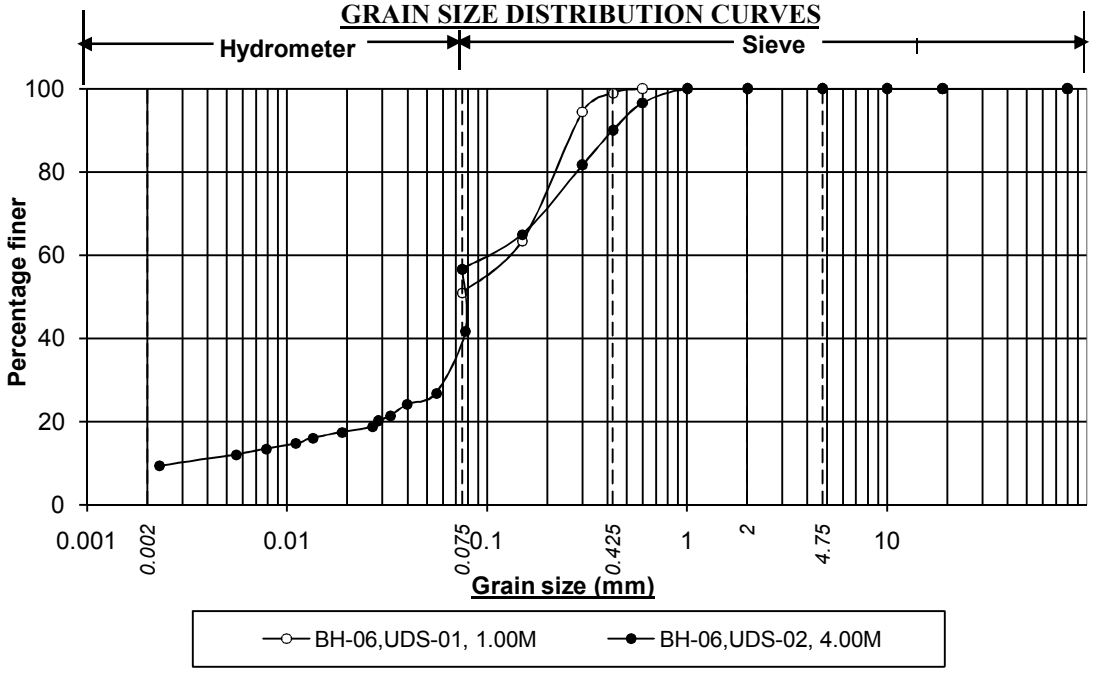


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

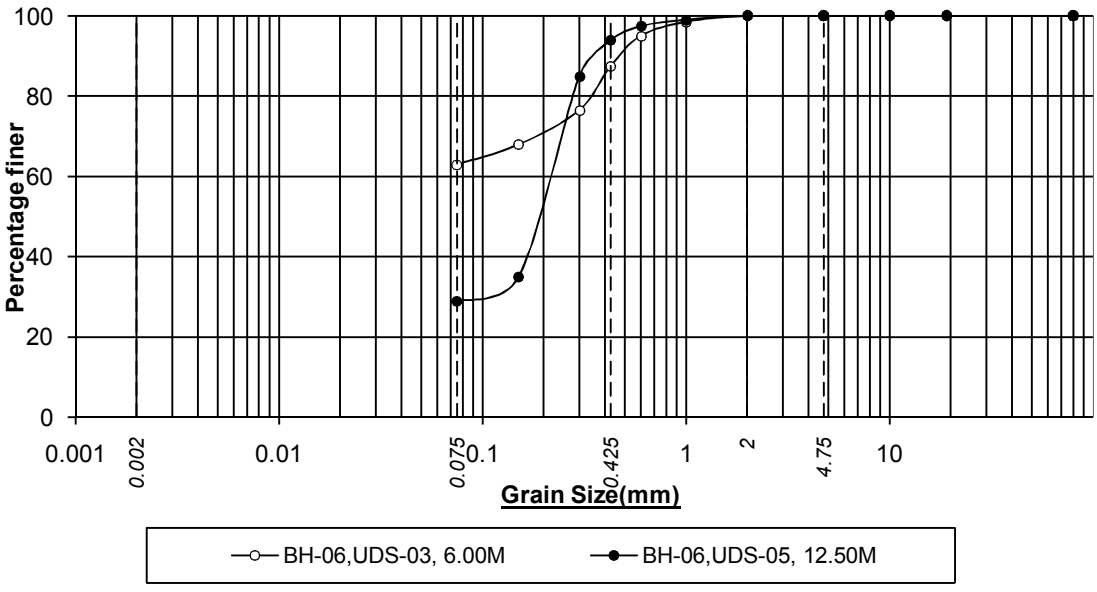
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	**Job No. 3369**	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-06,UDS-01, 1.00M		51.0	48.0	1.0	0.0	49.0		0.0
BH-06,UDS-02, 4.00M	9.0	47.7	33.3	10.0	0.0	43.3		0.0

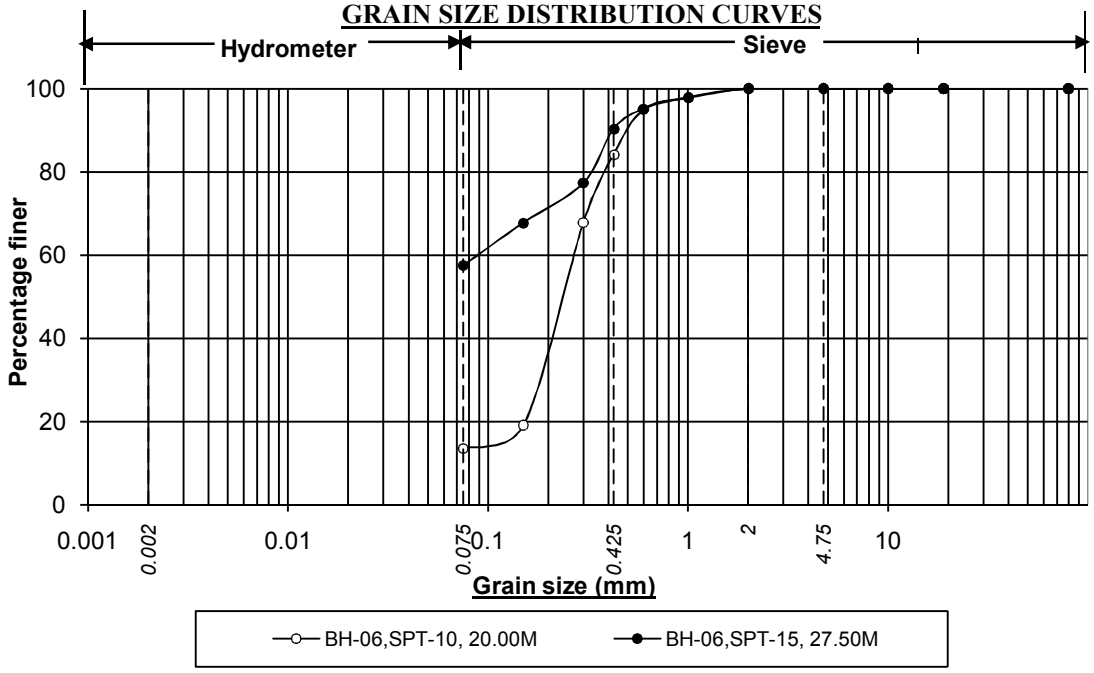


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-06,UDS-03, 6.00M		63.0	24.5	12.5	0.0	37.0		0.0
BH-06,UDS-05, 12.50M		29.0	65.0	6.0	0.0	71.0		0.0

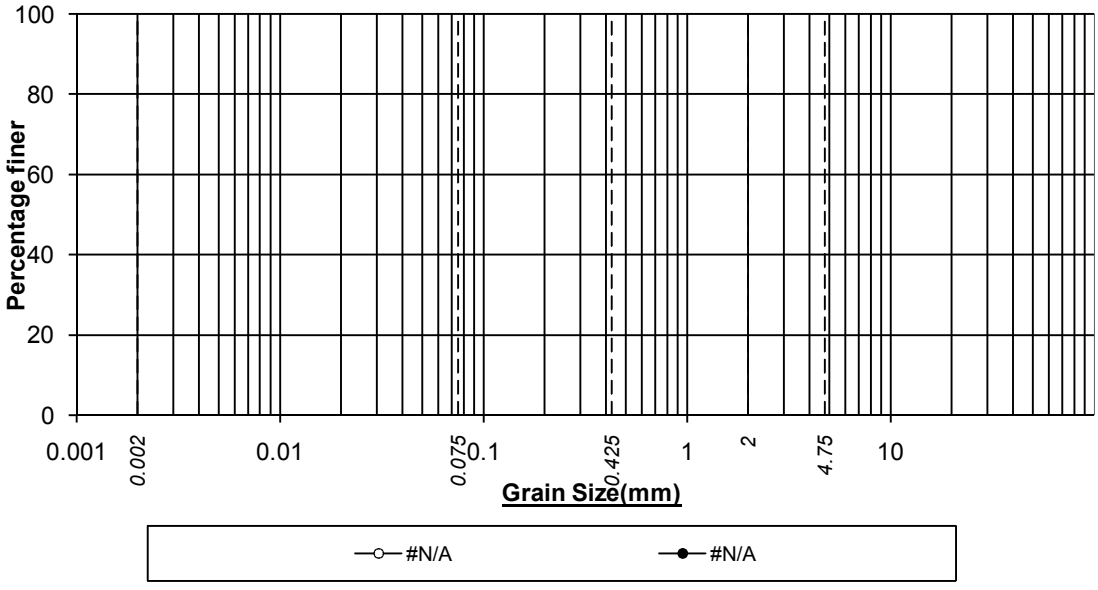
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-06,SPT-10, 20.00M		13.6	70.6	15.8	0.0	86.4		0.0
BH-06,SPT-15, 27.50M		57.5	32.9	9.6	0.0	42.5		0.0

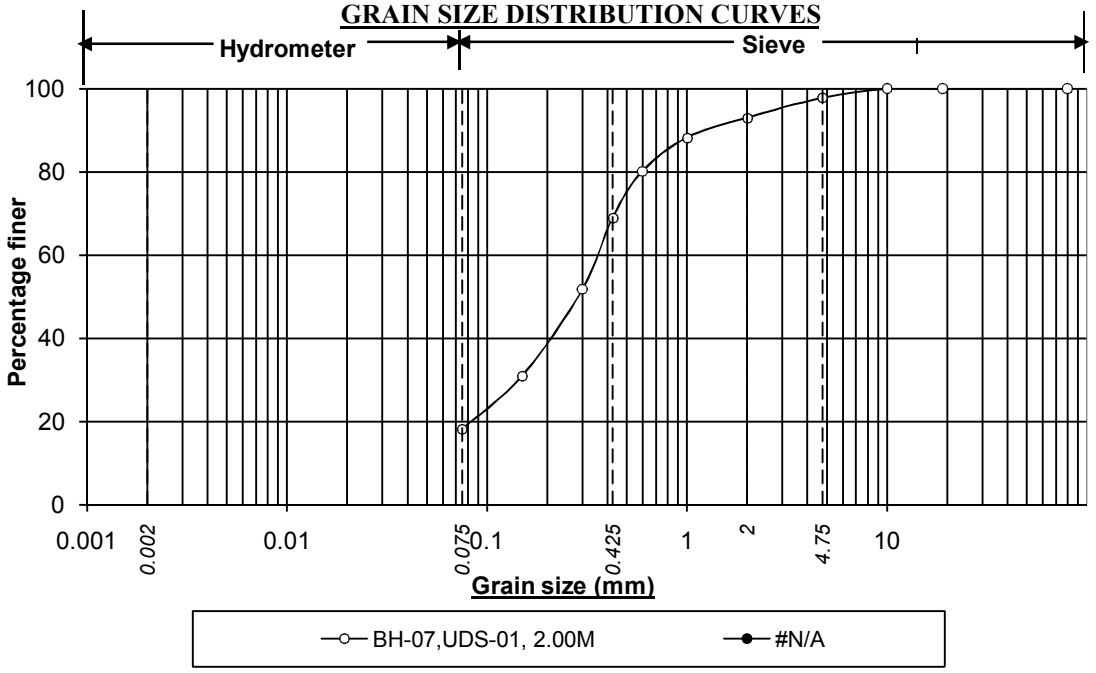


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

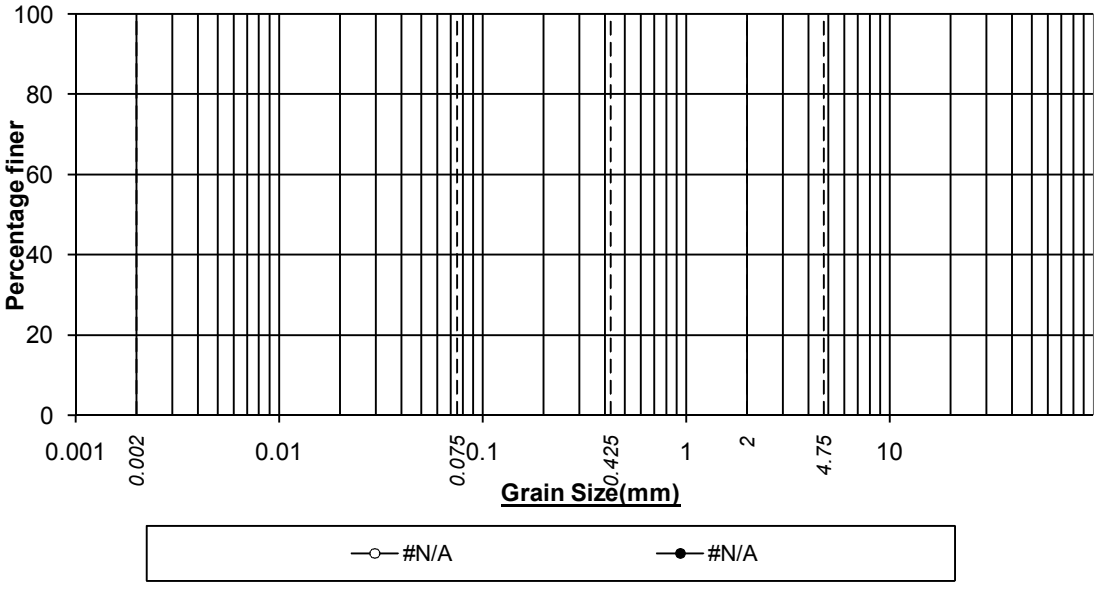
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-07,UDS-01, 2.00M		18.2	50.8	24.1	4.8	79.7		2.1

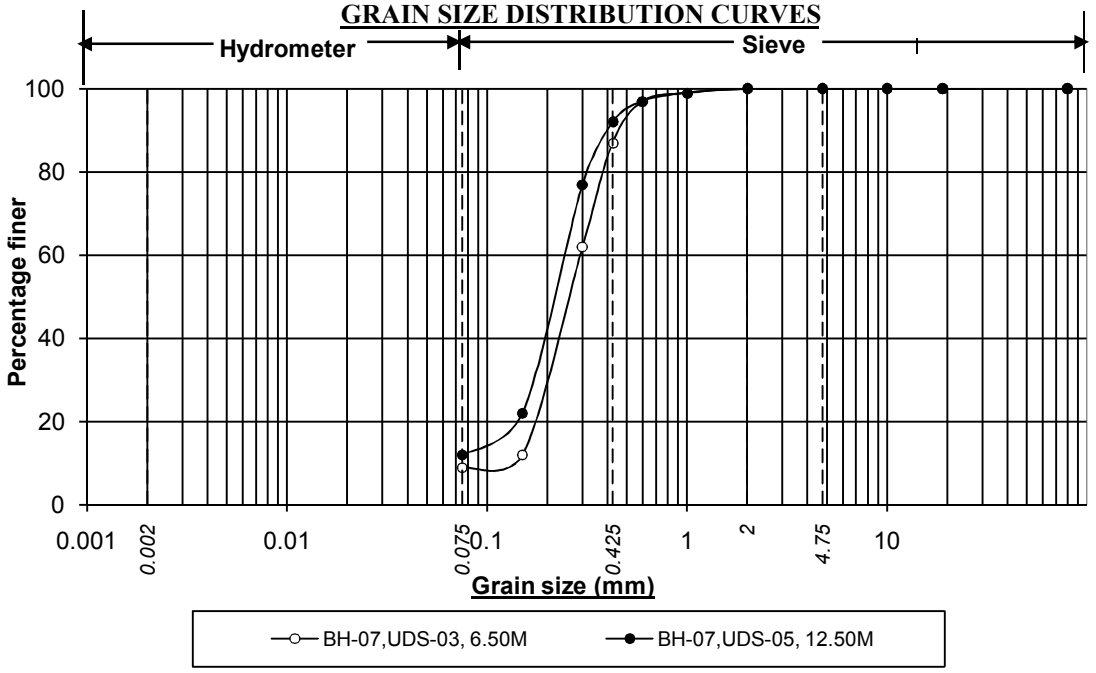


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

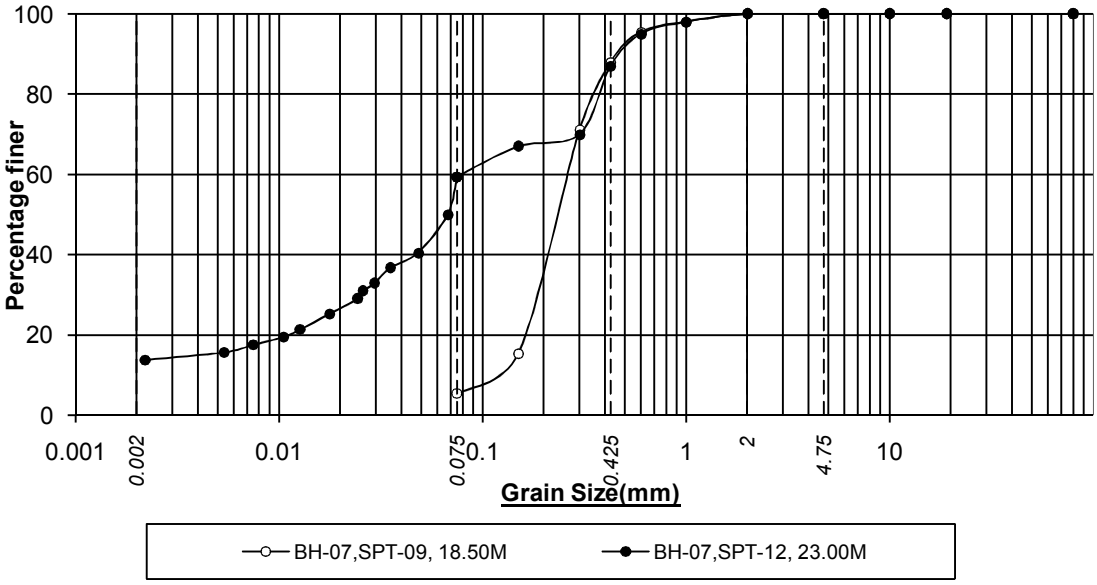
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-07,UDS-03, 6.50M		9.0	78.0	13.0	0.0	91.0	2.051/0.995	0.0
BH-07,UDS-05, 12.50M		12.0	80.0	8.0	0.0	88.0		0.0

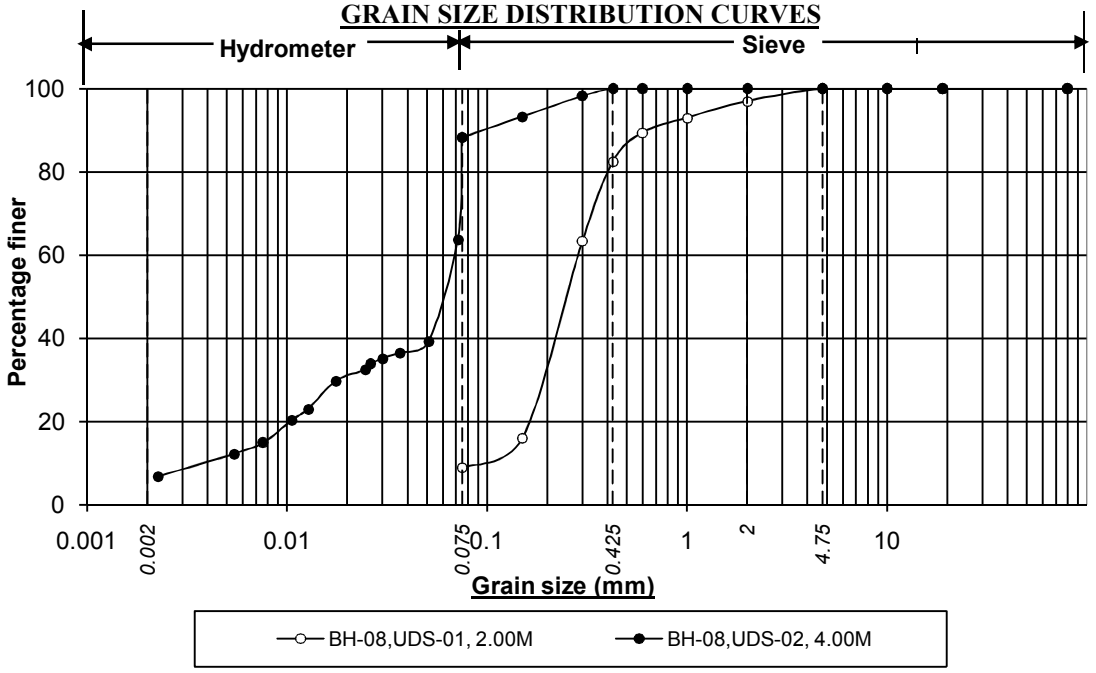


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-07,SPT-09, 18.50M		5.5	82.5	12.0	0.0	94.5	2.118/1.132	0.0
BH-07,SPT-12, 23.00M	13.6	45.9	27.5	13.0	0.0	40.5		0.0

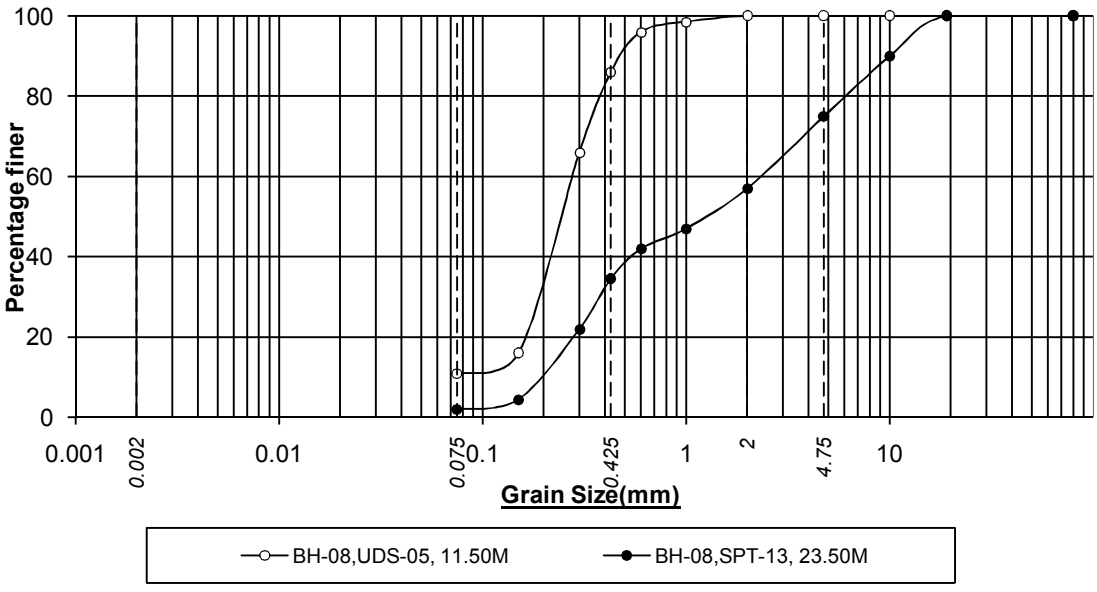
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-08,UDS-01, 2.00M		9.0	73.5	14.5	3.0	91.0	2.904/1.315	0.0
BH-08,UDS-02, 4.00M	6.0	82.3	11.7	0.0	0.0	11.7		0.0

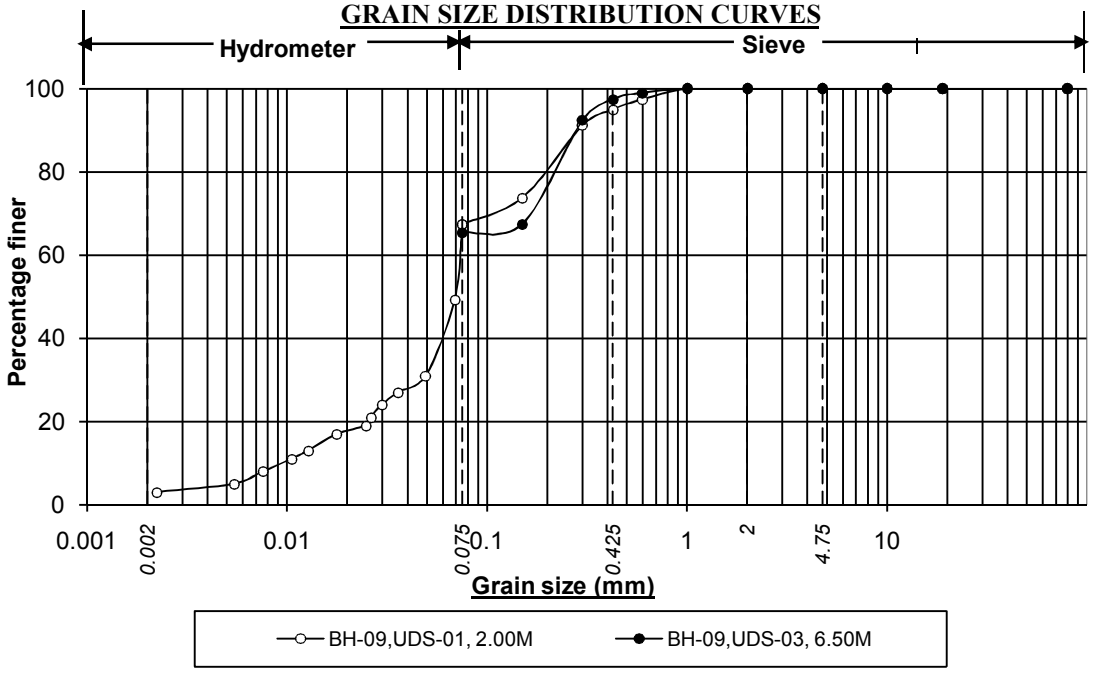


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-08,UDS-05, 11.50M		11.0	75.0	14.0	0.0	89.0		0.0
BH-08,SPT-13, 23.50M		2.0	32.5	22.5	18.0	73.0	11.587/0.288	25.0

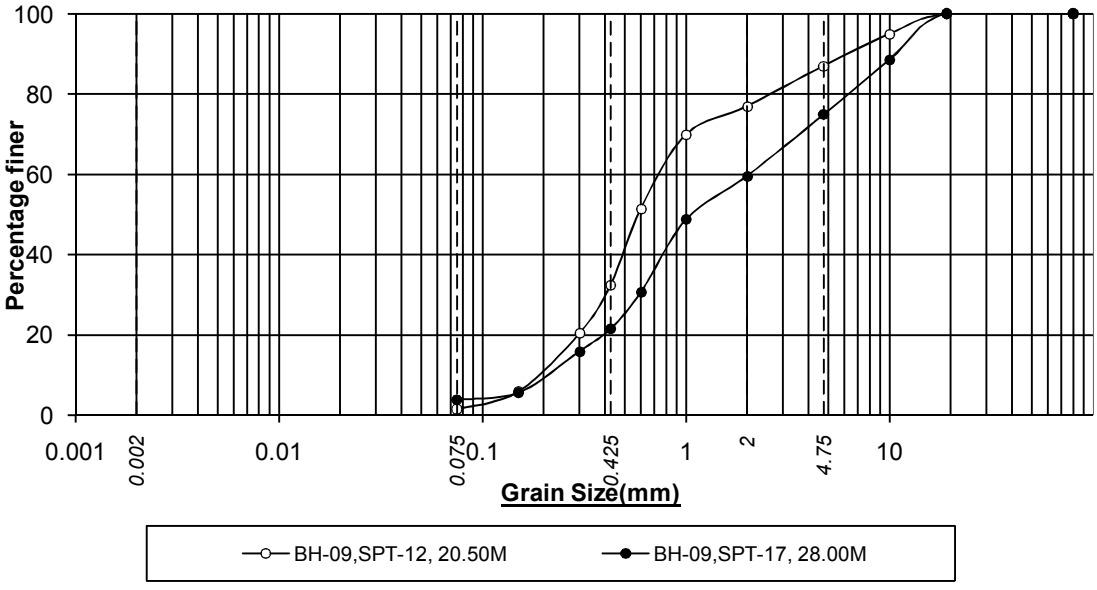
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-09,UDS-01, 2.00M	2.8	64.7	27.5	5.0	0.0	32.5		0.0
BH-09,UDS-03, 6.50M		65.5	32.0	2.5	0.0	34.5		0.0

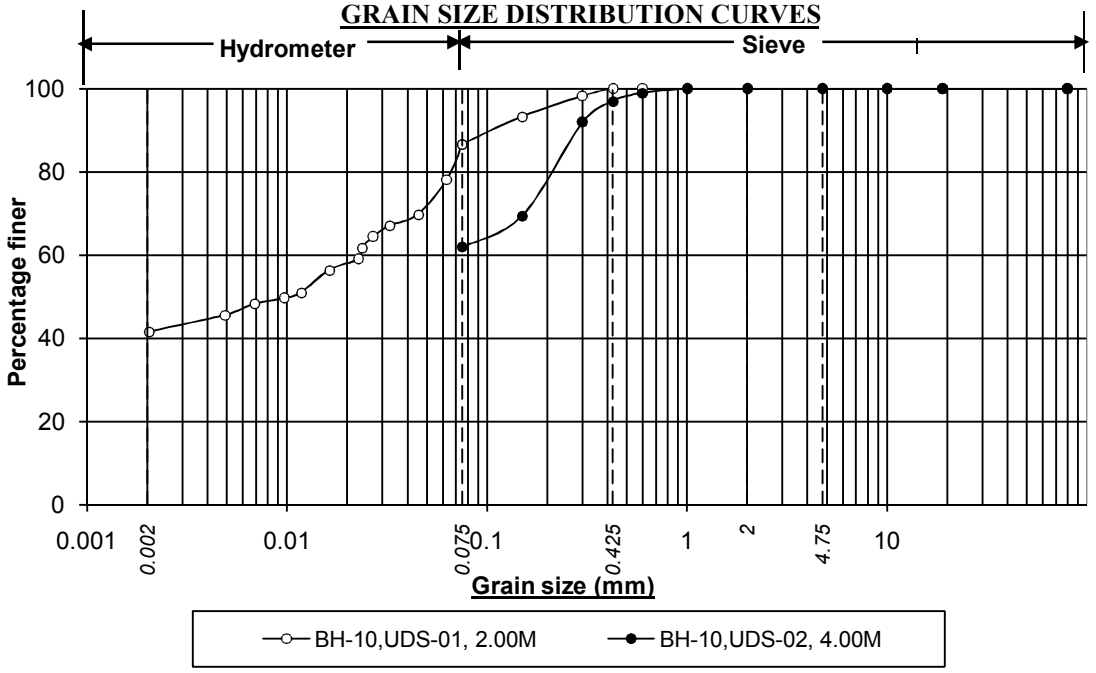


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-09,SPT-12, 20.50M		1.5	31.0	44.5	10.0	85.5	3.715/1.148	13.0
BH-09,SPT-17, 28.00M		4.0	17.6	38.1	15.3	71.0	8.81/0.77	25.0

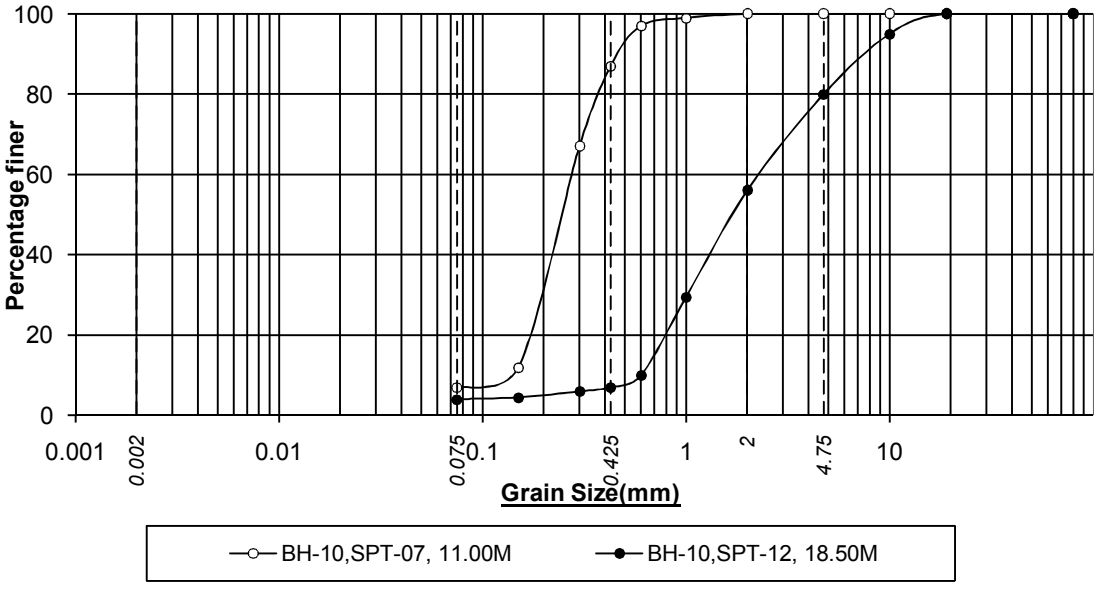
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-10,UDS-01, 2.00M	41.5	45.2	13.3	0.0	0.0	13.3		0.0
BH-10,UDS-02, 4.00M		62.0	35.0	3.0	0.0	38.0		0.0

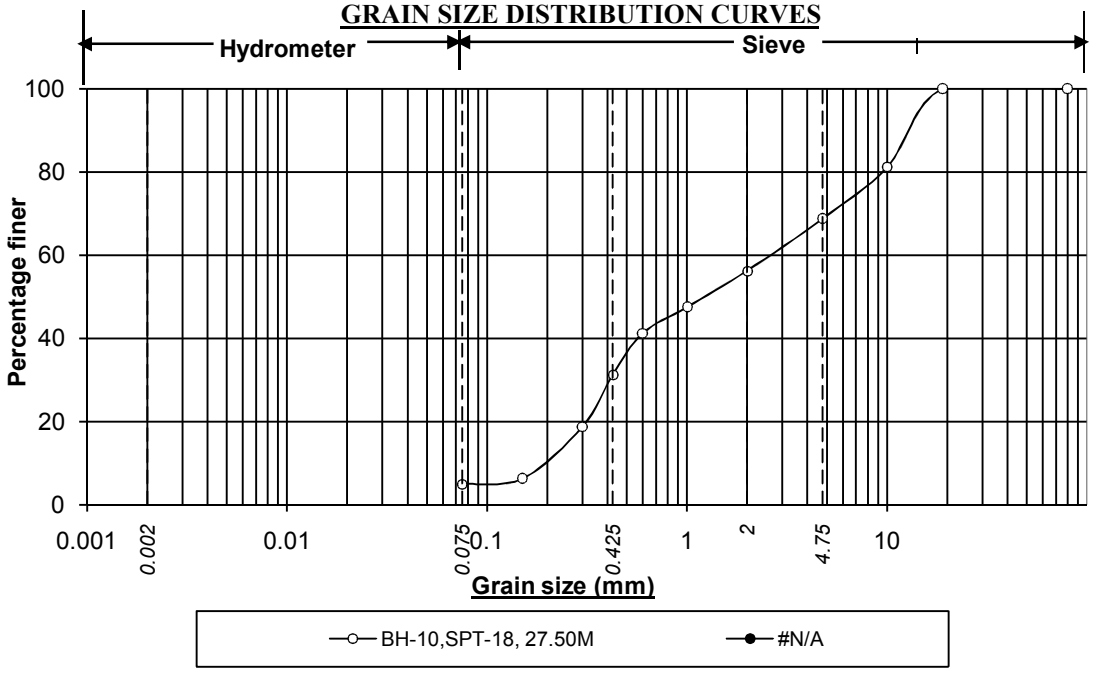


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-10,SPT-07, 11.00M		7.0	80.0	13.0	0.0	93.0	1.972/0.997	0.0
BH-10,SPT-12, 18.50M		4.0	3.0	49.0	24.0	76.0	3.564/0.772	20.0

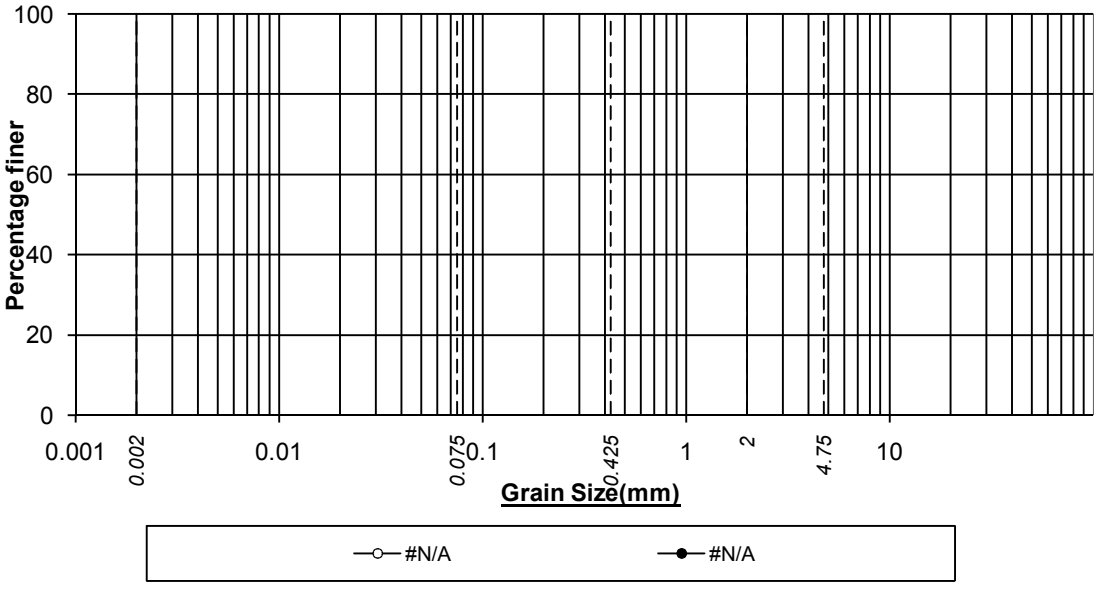
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-10,SPT-18, 27.50M		5.0	26.2	25.0	12.5	63.7	13.091/0.334	31.3

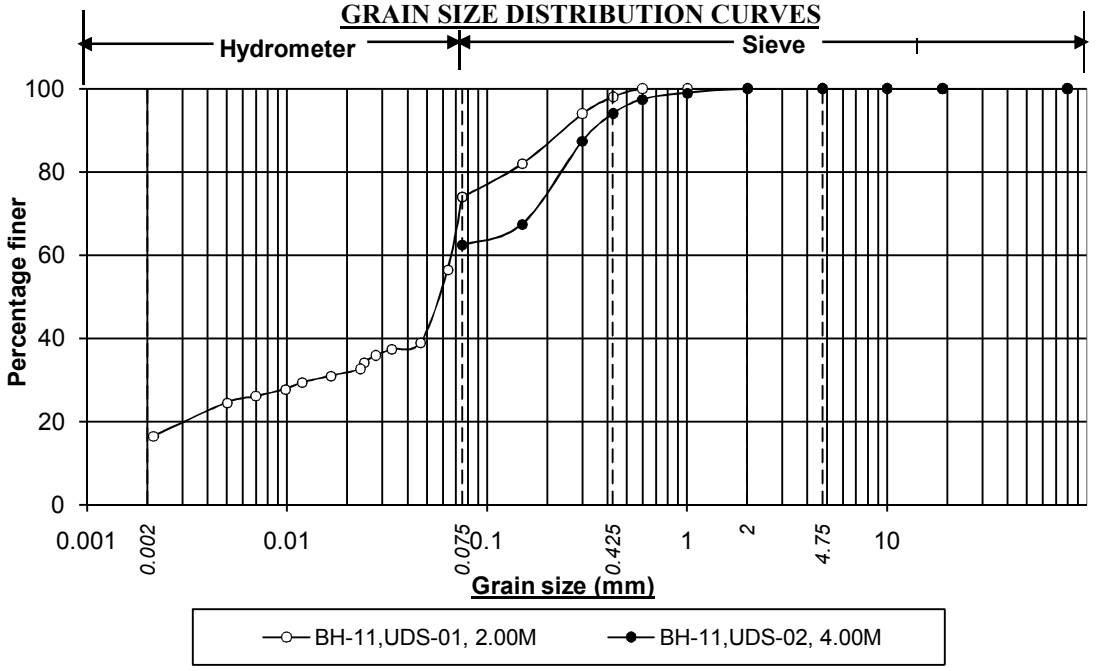


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)

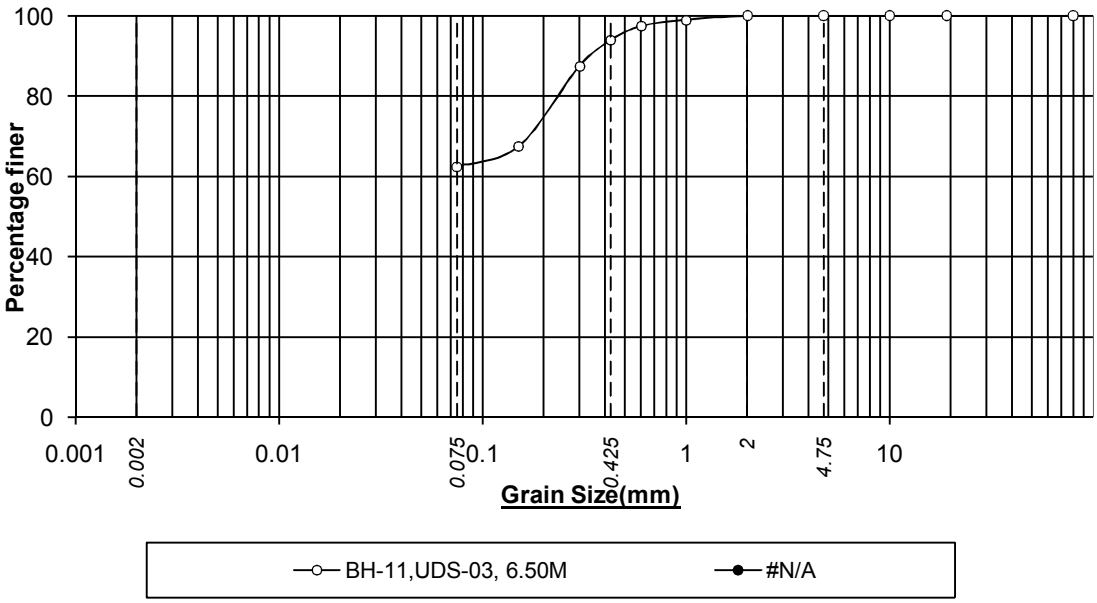
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat	Job No. 3369	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-11,UDS-01, 2.00M	15.8	58.2	24.0	2.0	0.0	26.0		0.0
BH-11,UDS-02, 4.00M		62.5	31.5	6.0	0.0	37.5		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-11,UDS-03, 6.50M		62.5	31.5	6.0	0.0	37.5		0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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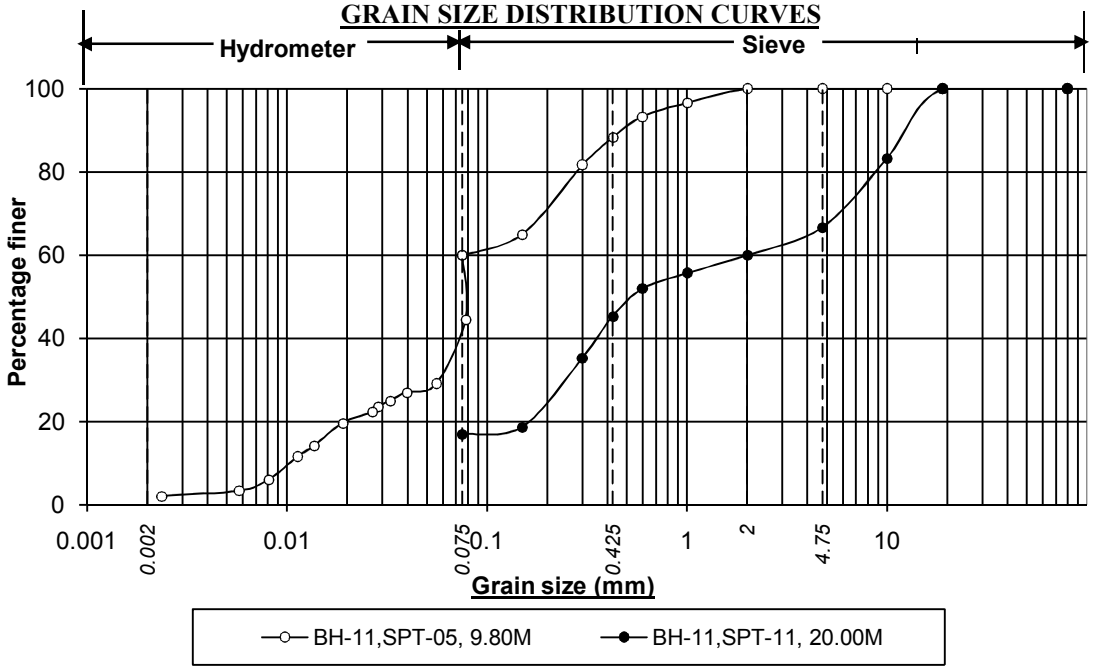
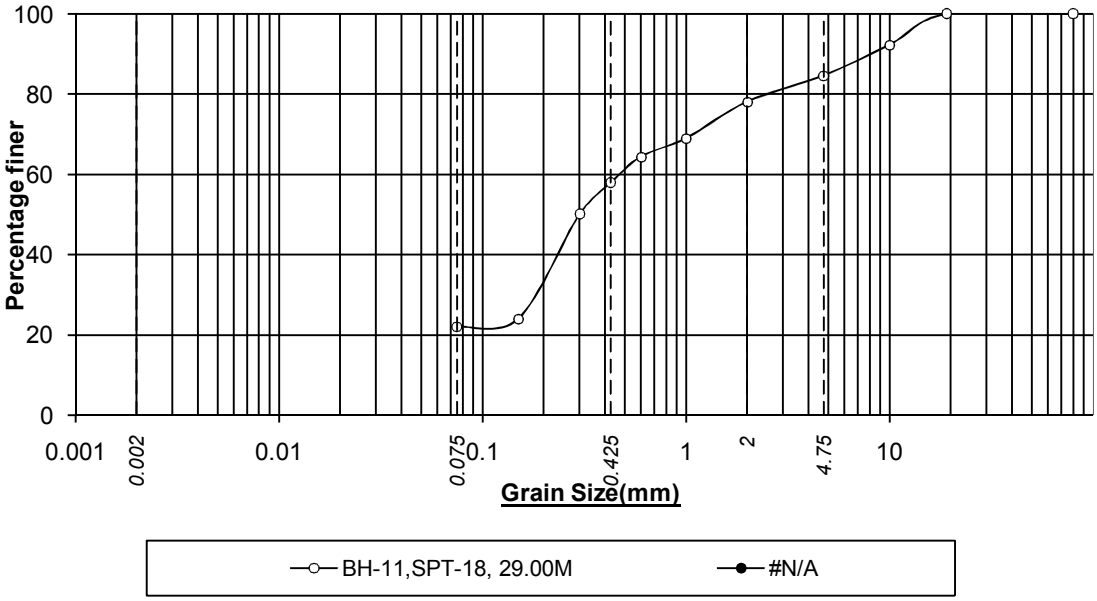
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-11,SPT-05, 9.80M	1.8	58.2	28.3	11.7	0.0	40.0		0.0
BH-11,SPT-11, 20.00M		17.0	28.3	14.7	6.7	49.7		33.3

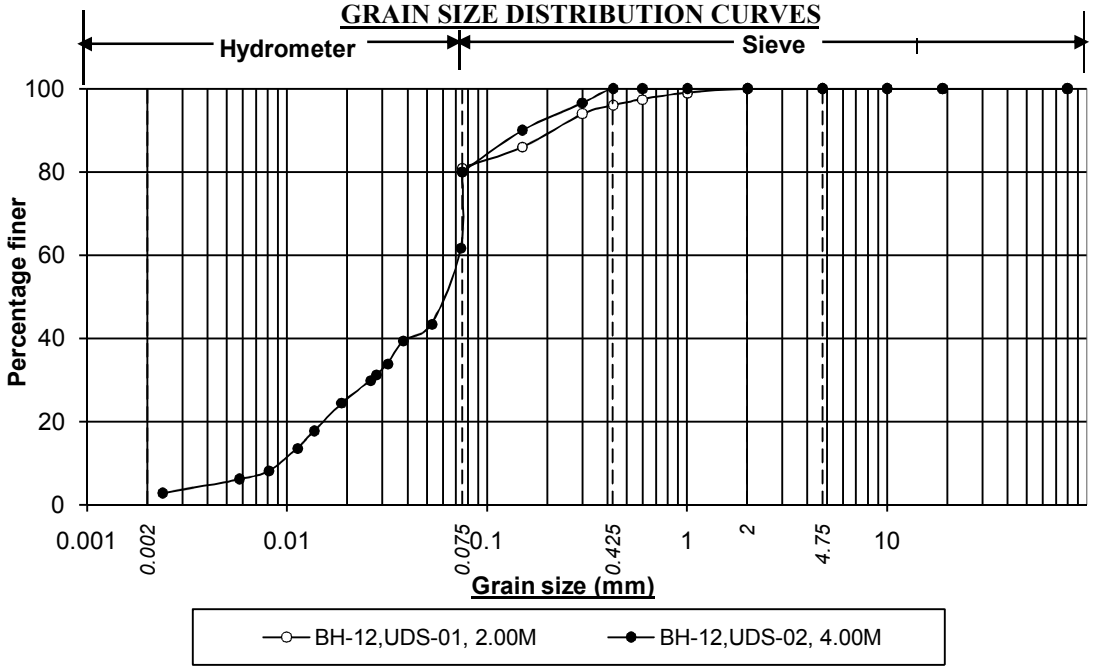


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-11,SPT-18, 29.00M		22.1	35.8	20.2	6.5	62.5		15.4

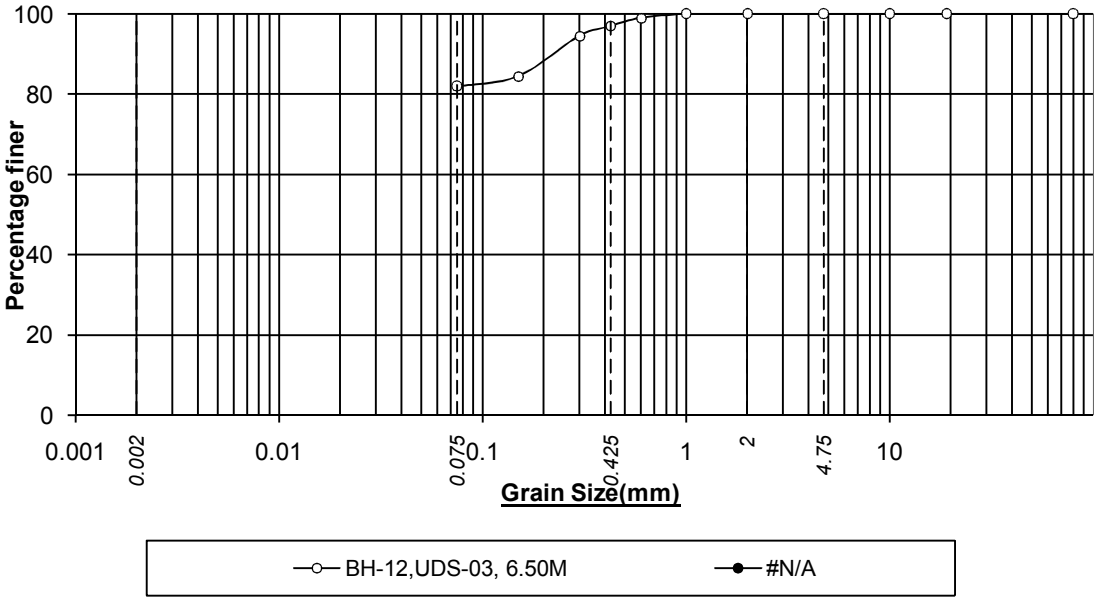
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-12,UDS-01, 2.00M		81.0	15.0	4.0	0.0	19.0		0.0
BH-12,UDS-02, 4.00M	2.0	78.0	20.0	0.0	0.0	20.0		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-12,UDS-03, 6.50M		82.0	15.0	3.0	0.0	18.0		0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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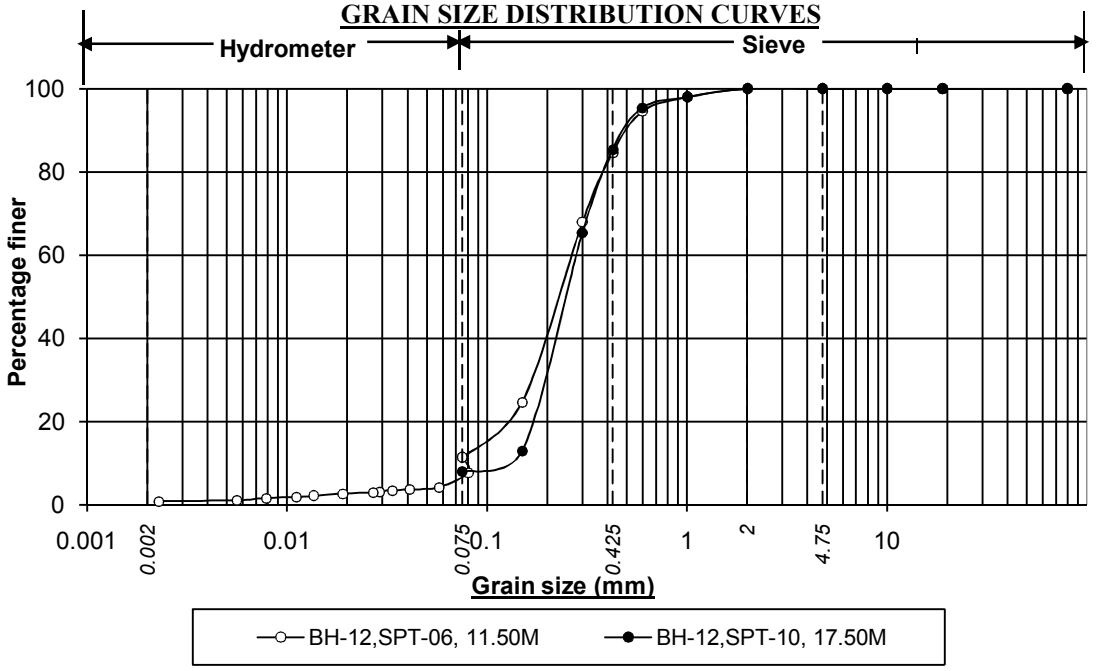
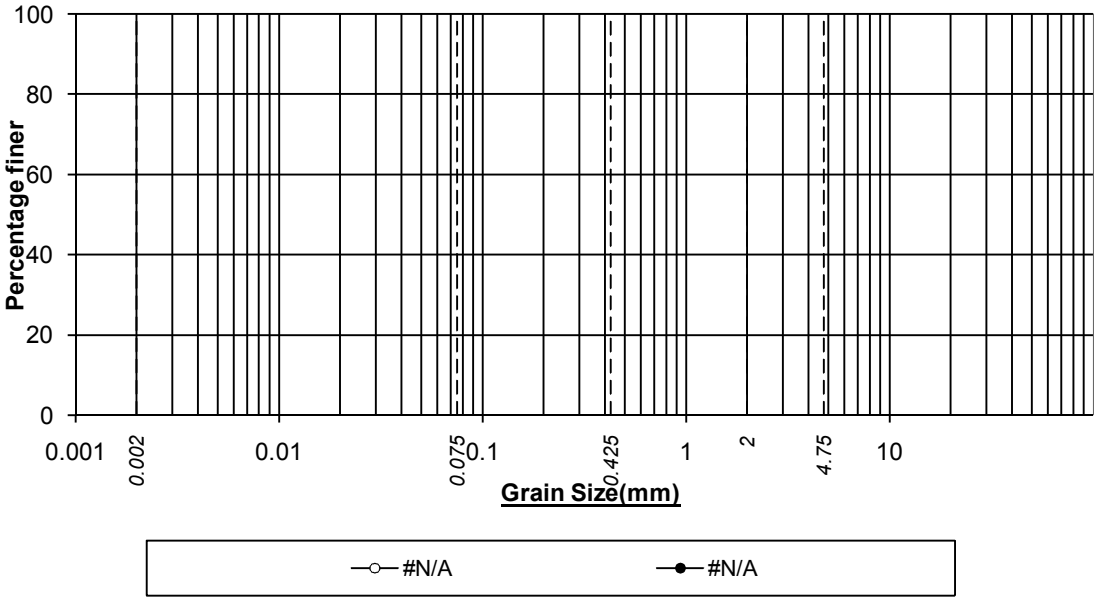
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-12,SPT-06, 11.50M	0.7	10.6	73.4	15.3	0.0	88.7		0.0
BH-12,SPT-10, 17.50M		8.0	77.5	14.5	0.0	92.0	2.084/1.039	0.0

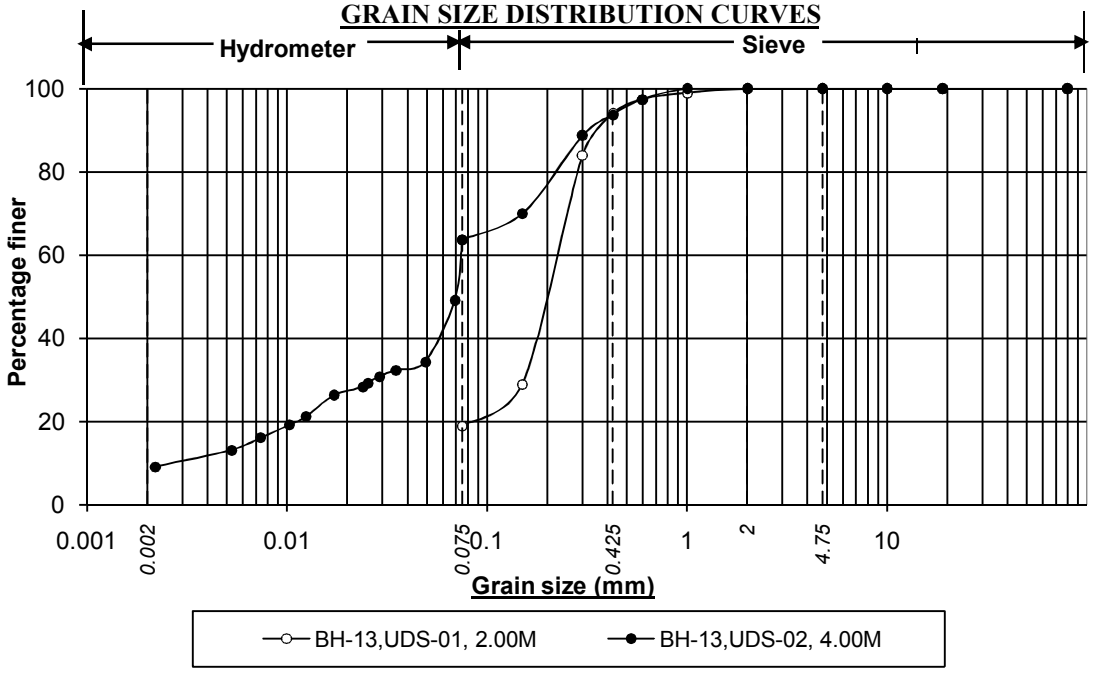


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)

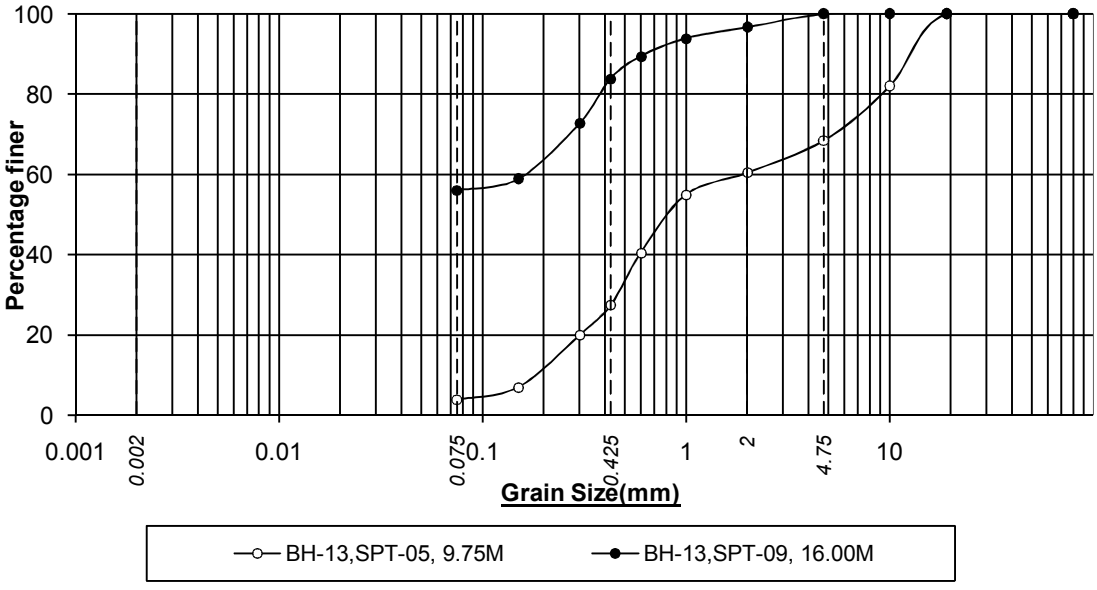
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	Job No. 3369	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-13,UDS-01, 2.00M		19.0	75.0	6.0	0.0	81.0		0.0
BH-13,UDS-02, 4.00M	8.7	55.1	29.9	6.3	0.0	36.2		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-13,SPT-05, 9.75M		4.0	23.5	33.0	8.0	64.5	10.303/0.533	31.5
BH-13,SPT-09, 16.00M		56.1	27.8	12.8	3.3	43.9		0.0

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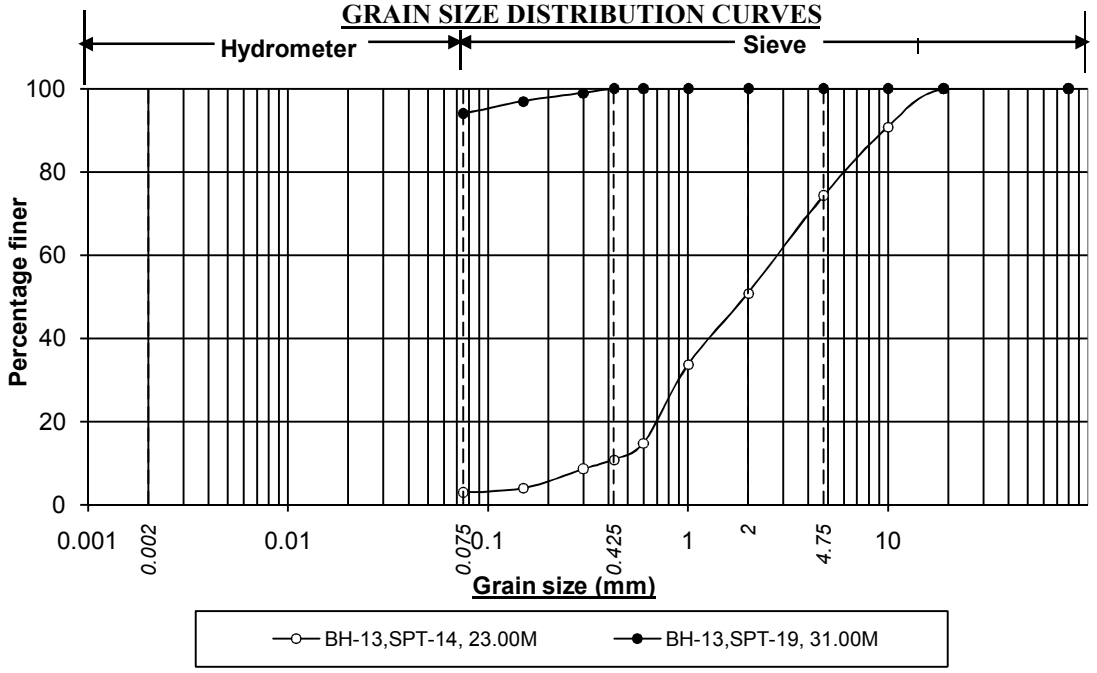
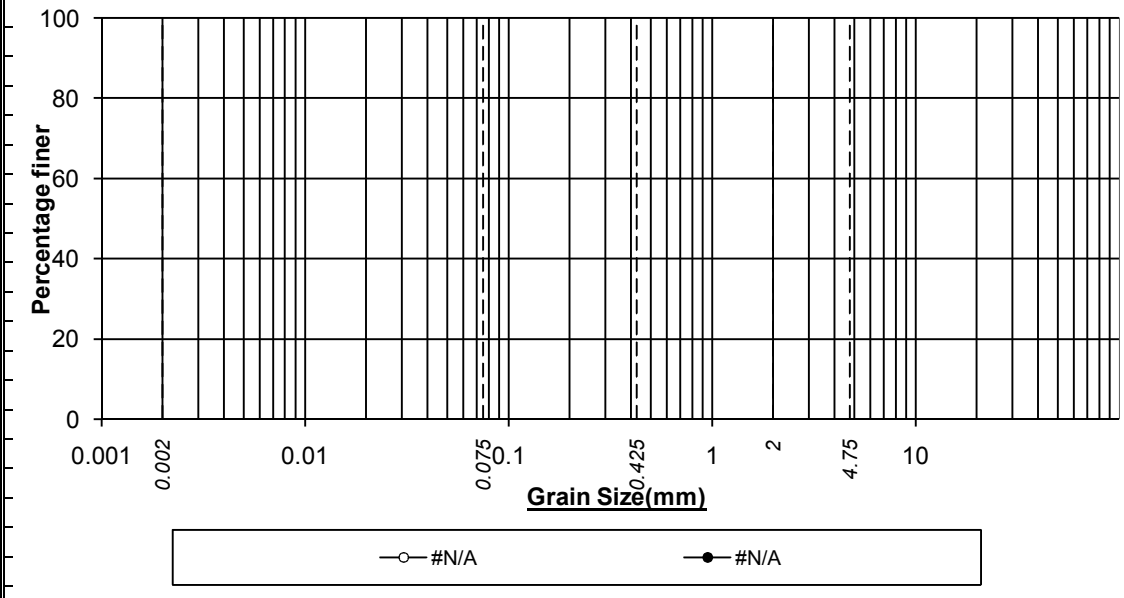
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-13,SPT-14, 23.00M		2.9	8.0	40.0	23.4	71.4	8.147/0.833	25.7
BH-13,SPT-19, 31.00M		94.0	6.0	0.0	0.0	6.0		0.0

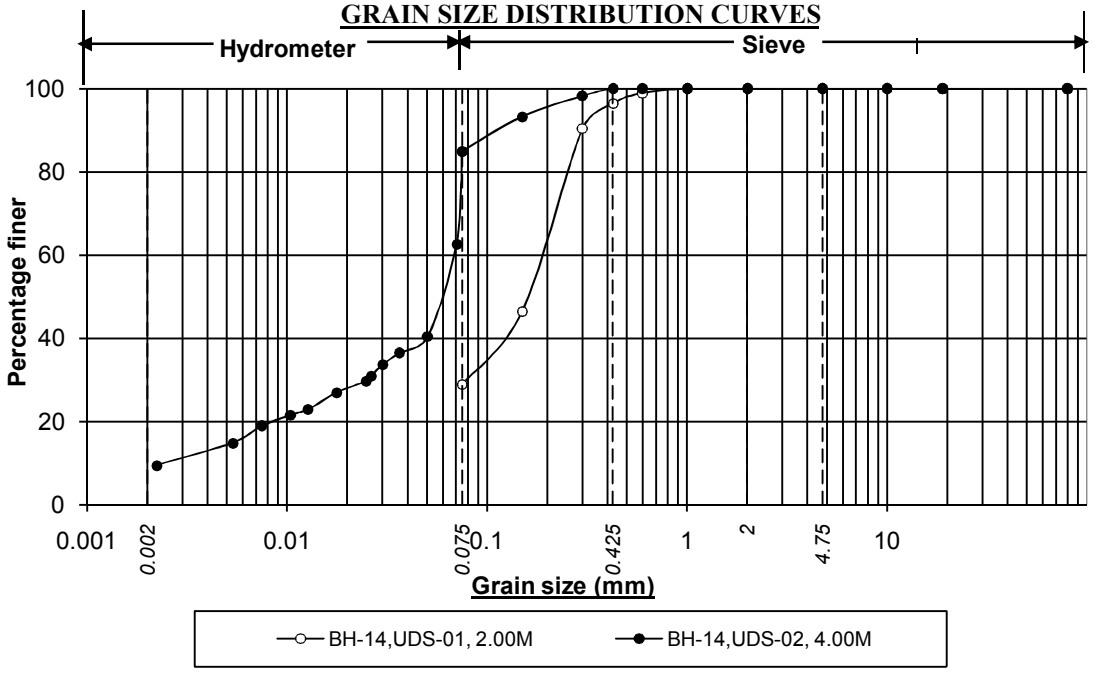


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)

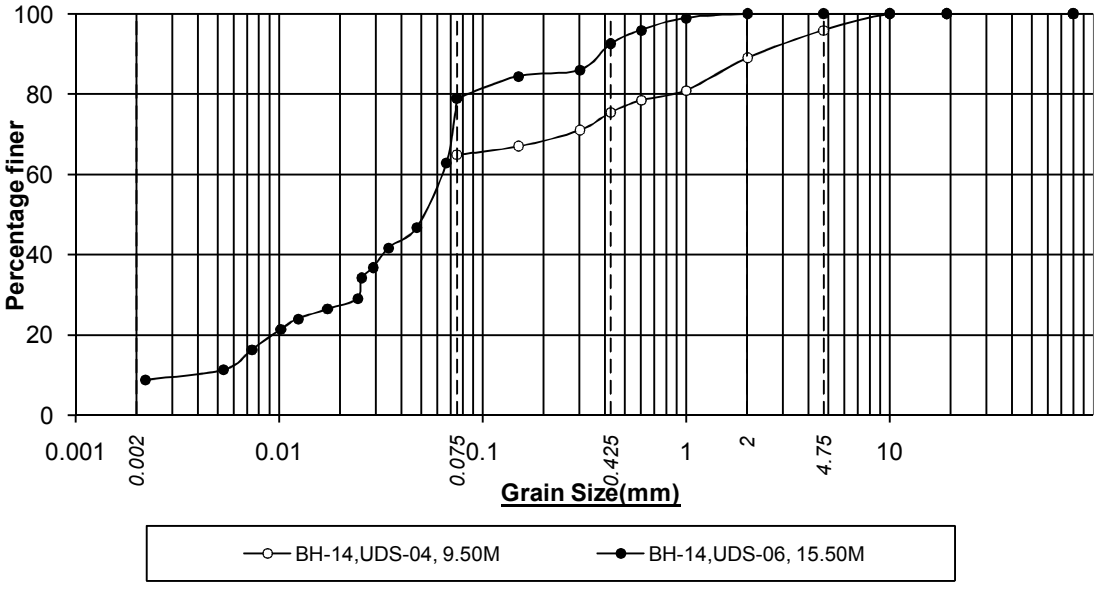
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat — **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-14,UDS-01, 2.00M		29.0	67.5	3.5	0.0	71.0		0.0
BH-14,UDS-02, 4.00M	8.8	76.2	15.0	0.0	0.0	15.0		0.0

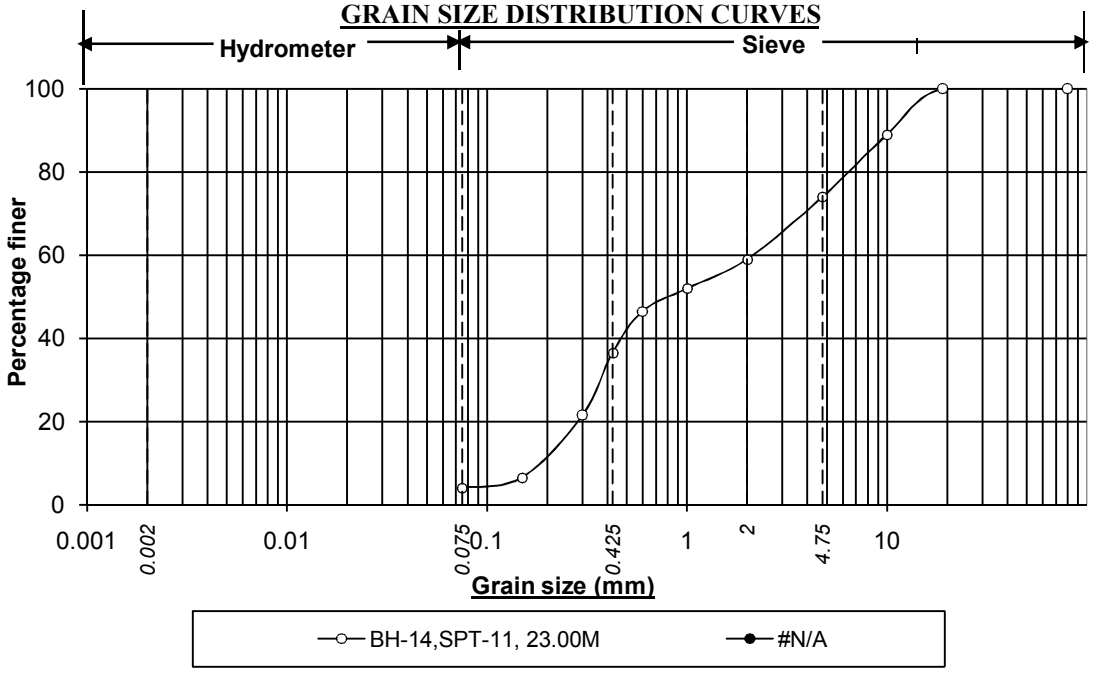


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-14,UDS-04, 9.50M		65.0	10.5	13.5	7.0	31.0		4.0
BH-14,UDS-06, 15.50M	8.6	70.4	13.5	7.5	0.0	21.0		0.0

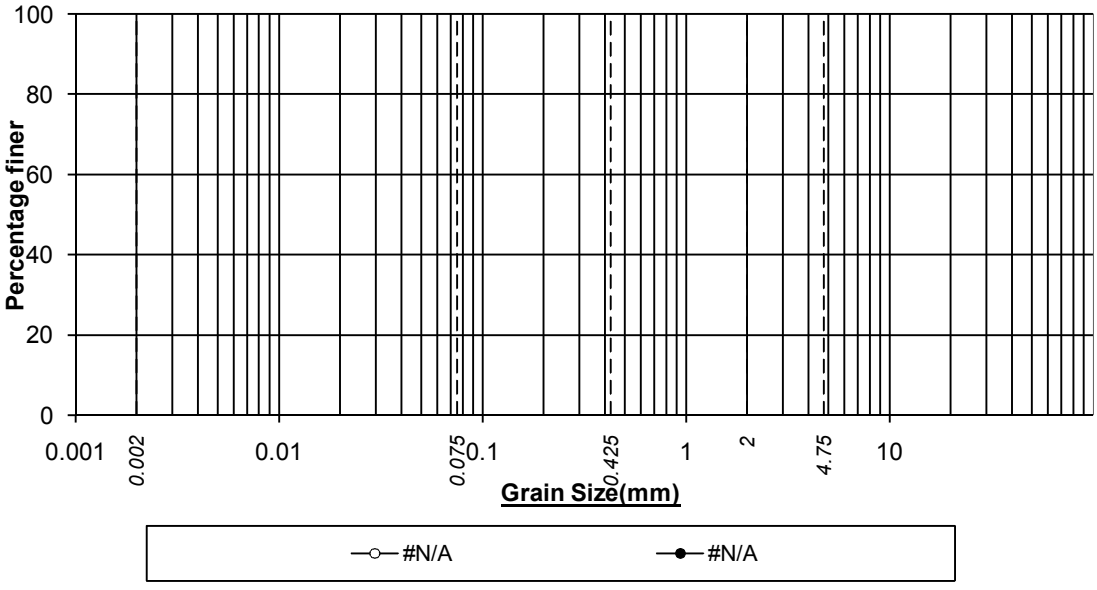
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-14,SPT-11, 23.00M		4.0	32.5	22.5	15.0	70.0	11.614/0.305	26.0

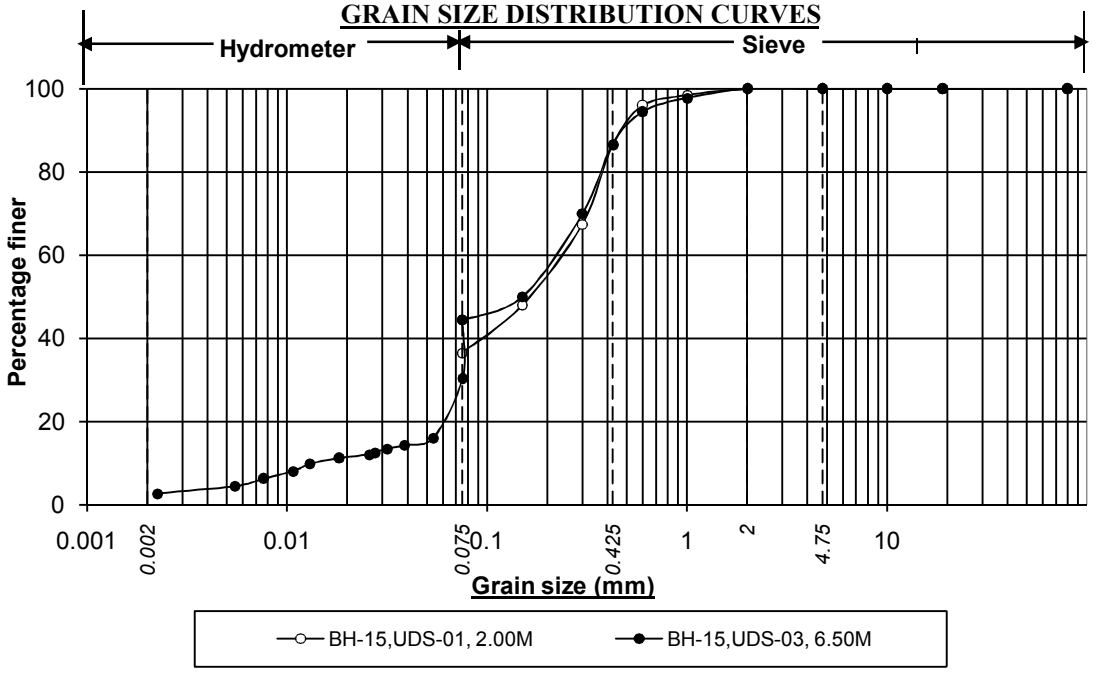


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)

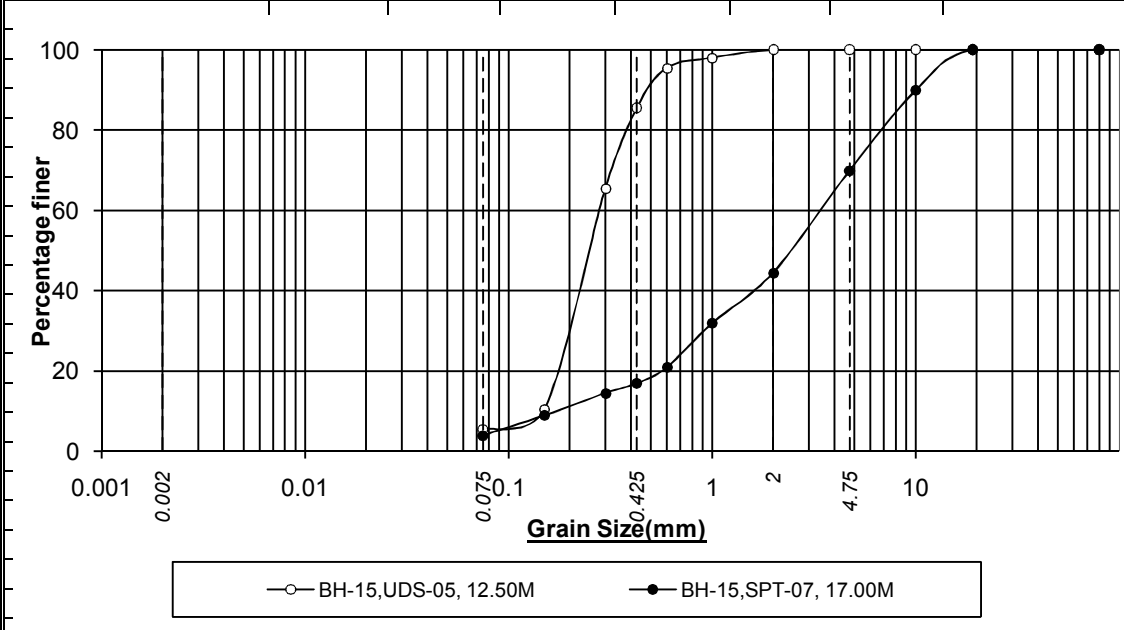
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat	Job No. 3369	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-15,UDS-01, 2.00M		36.5	50.0	13.5	0.0	63.5		0.0
BH-15,UDS-03, 6.50M	2.4	42.0	42.3	13.3	0.0	55.6		0.0

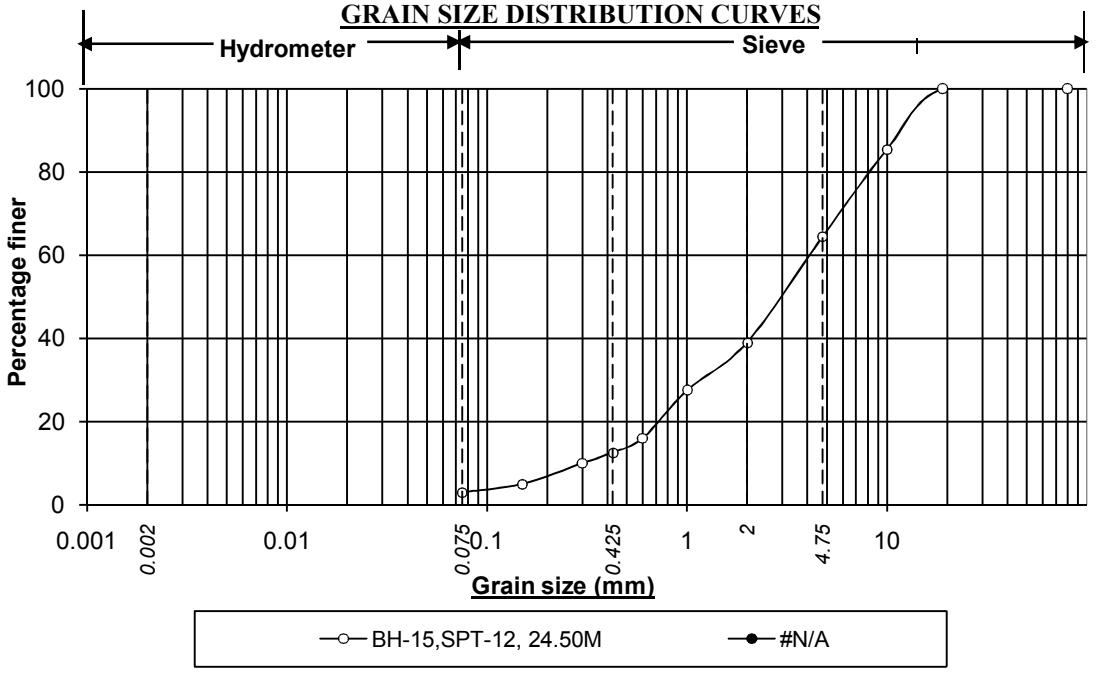


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-15,UDS-05, 12.50M		5.5	80.0	14.5	0.0	94.5	1.857/0.926	0.0
BH-15,SPT-07, 17.00M		4.0	13.0	27.5	25.5	66.0	19.906/1.364	30.0

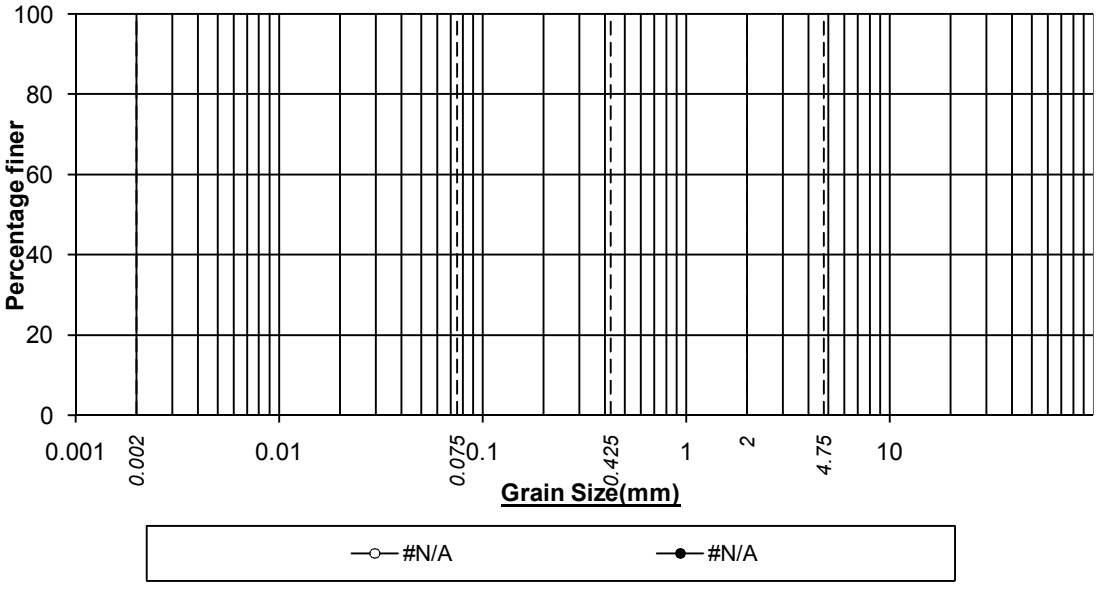
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat — **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-15,SPT-12, 24.50M		3.0	9.5	26.5	25.5	61.5	14.791/1.241	35.5

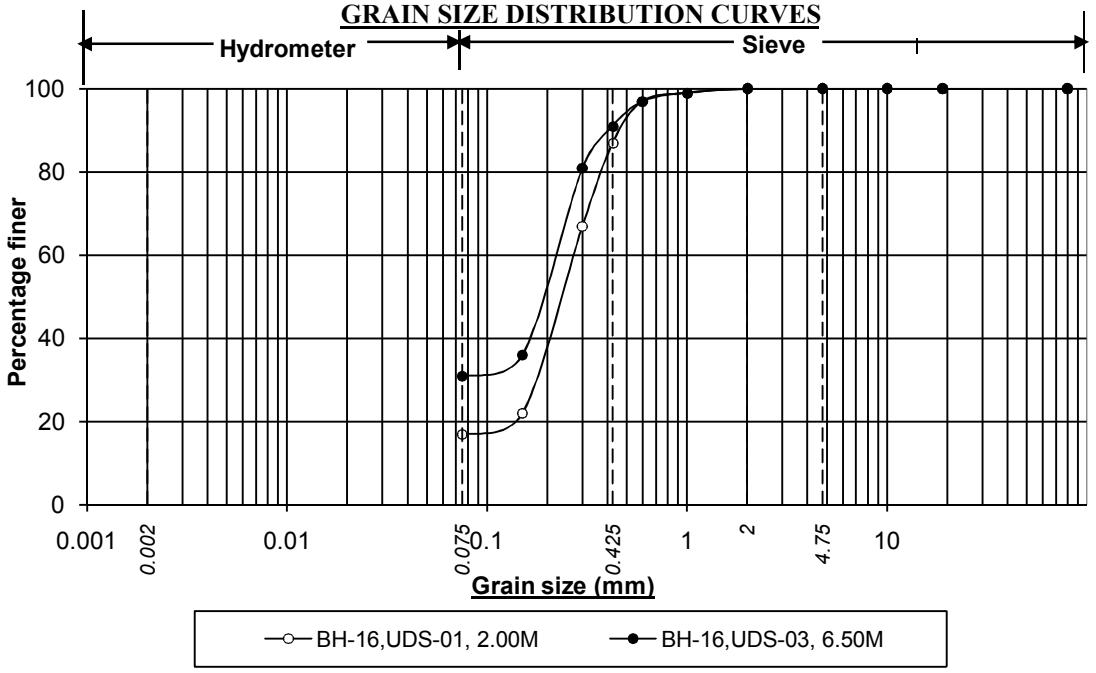


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)

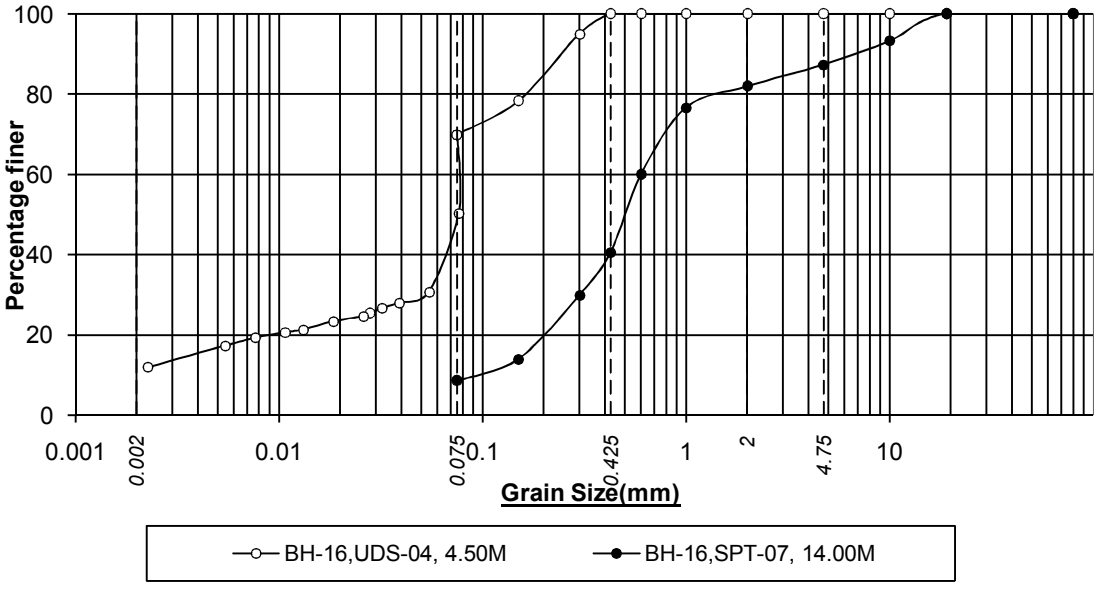
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat	Job No. 3369	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-16,UDS-01, 2.00M		17.0	70.0	13.0	0.0	83.0		0.0
BH-16,UDS-03, 6.50M		31.0	60.0	9.0	0.0	69.0		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-16,UDS-04, 4.50M	11.3	58.7	30.0	0.0	0.0	30.0		0.0
BH-16,SPT-07, 14.00M		8.7	32.0	41.3	5.3	78.6	5.997/1.506	12.7

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

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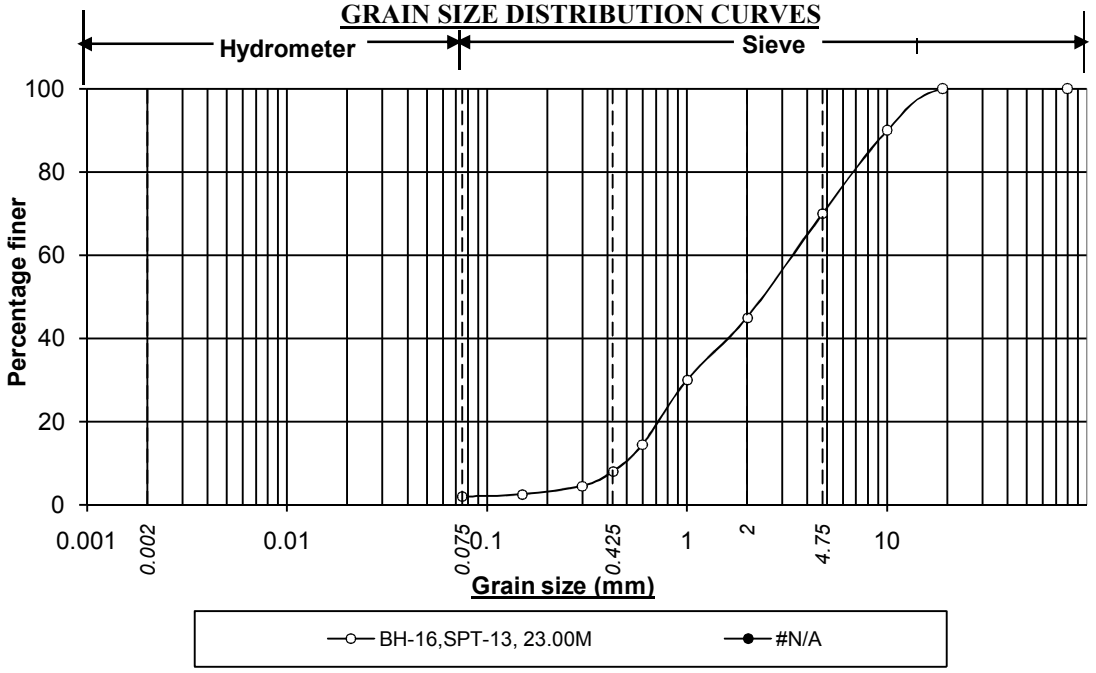
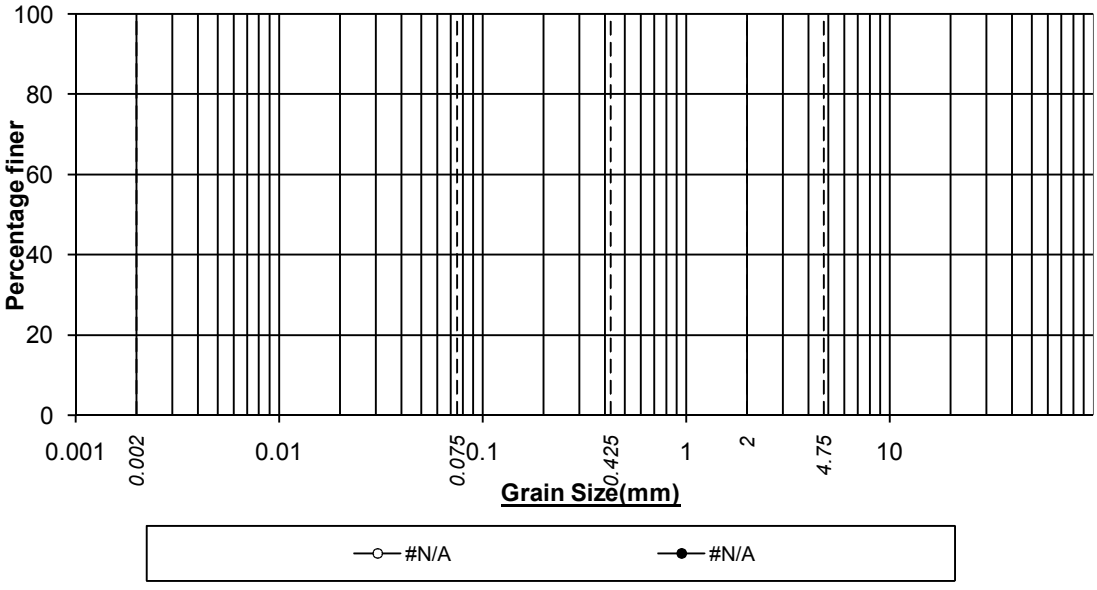
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-16,SPT-13, 23.00M		2.0	6.0	37.0	25.0	68.0	7.294/0.59	30.0

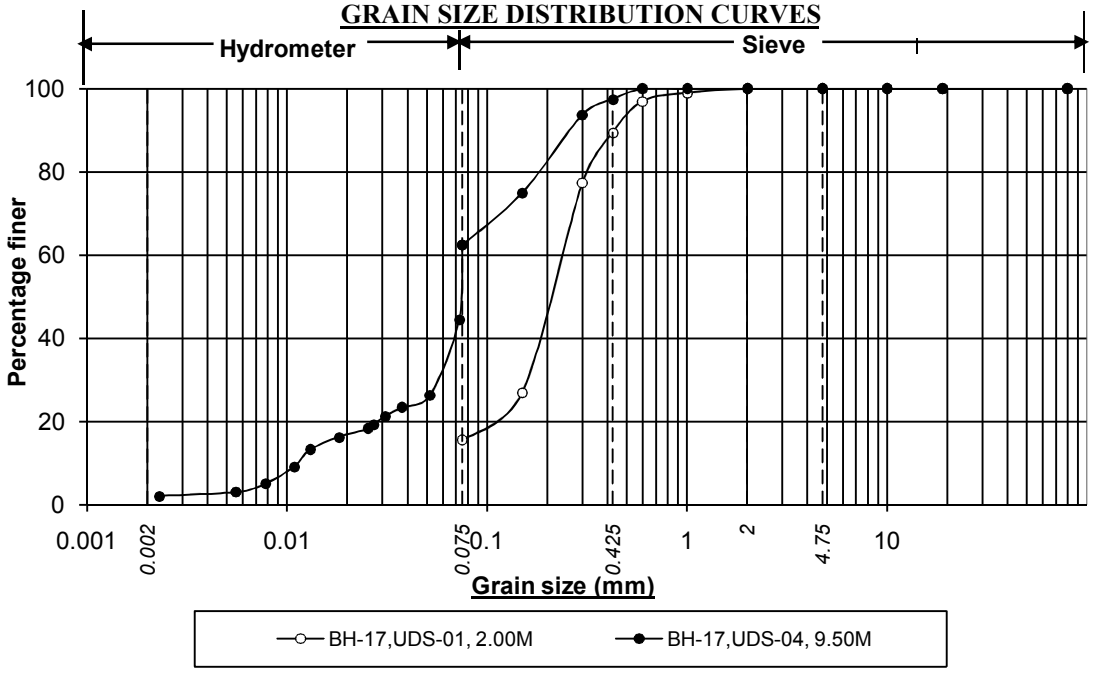


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

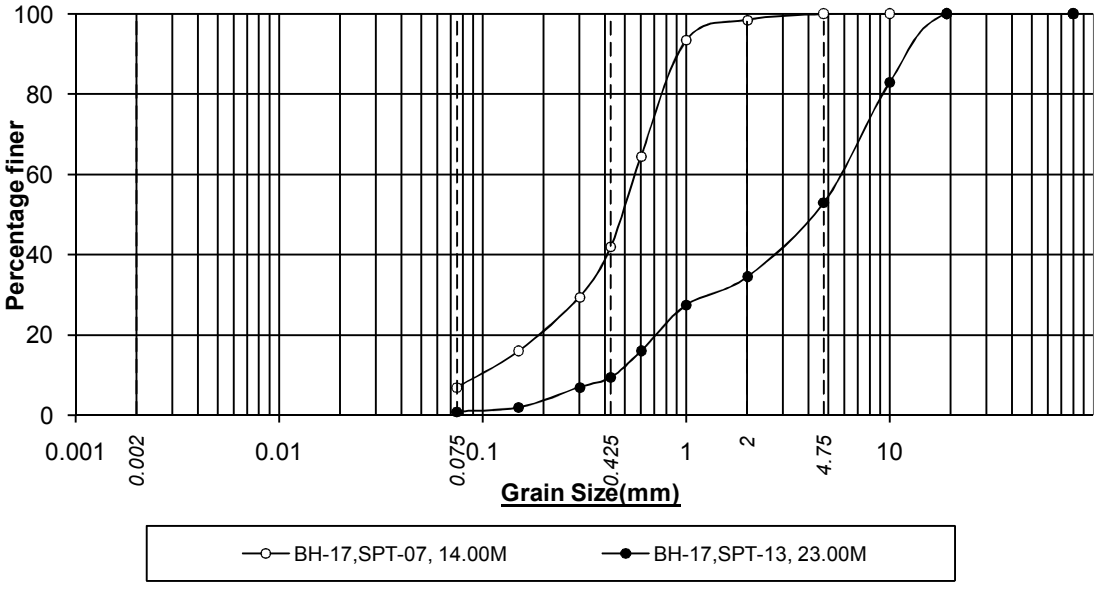
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat	**Job No. 3369**	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-17,UDS-01, 2.00M		15.5	74.0	10.5	0.0	84.5		0.0
BH-17,UDS-04, 9.50M	1.9	60.6	35.0	2.5	0.0	37.5		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-17,SPT-07, 14.00M		7.0	35.0	56.5	1.5	93.0	5.956/1.671	0.0
BH-17,SPT-13, 23.00M		1.0	8.5	25.0	18.5	52.0	13.52/0.563	47.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

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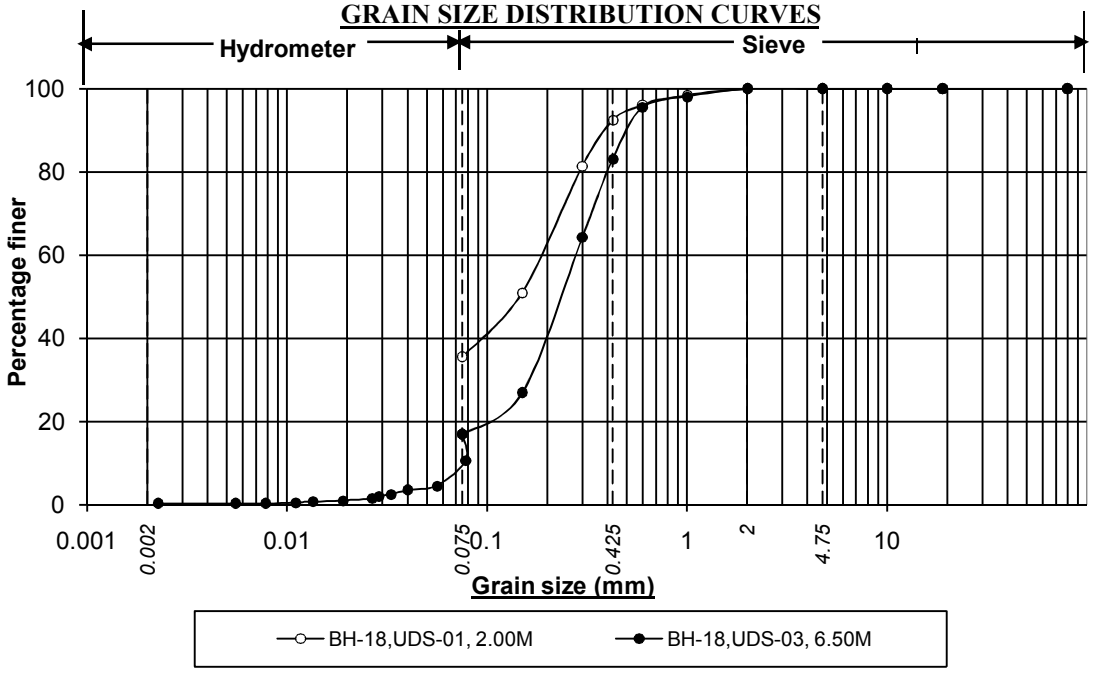
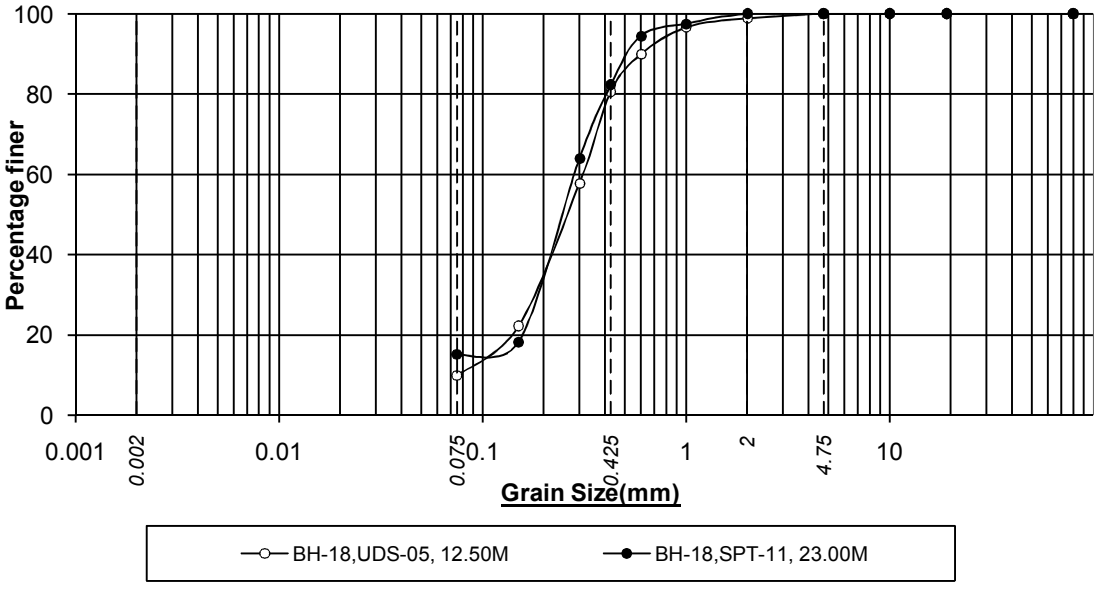
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-18,UDS-01, 2.00M		35.5	57.0	7.5	0.0	64.5		0.0
BH-18,UDS-03, 6.50M	0.2	16.6	66.3	16.9	0.0	83.2		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-18,UDS-05, 12.50M		10.0	70.6	18.3	1.1	90.0	4.111/1.479	0.0
BH-18,SPT-11, 23.00M		15.2	67.1	17.7	0.0	84.8		0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

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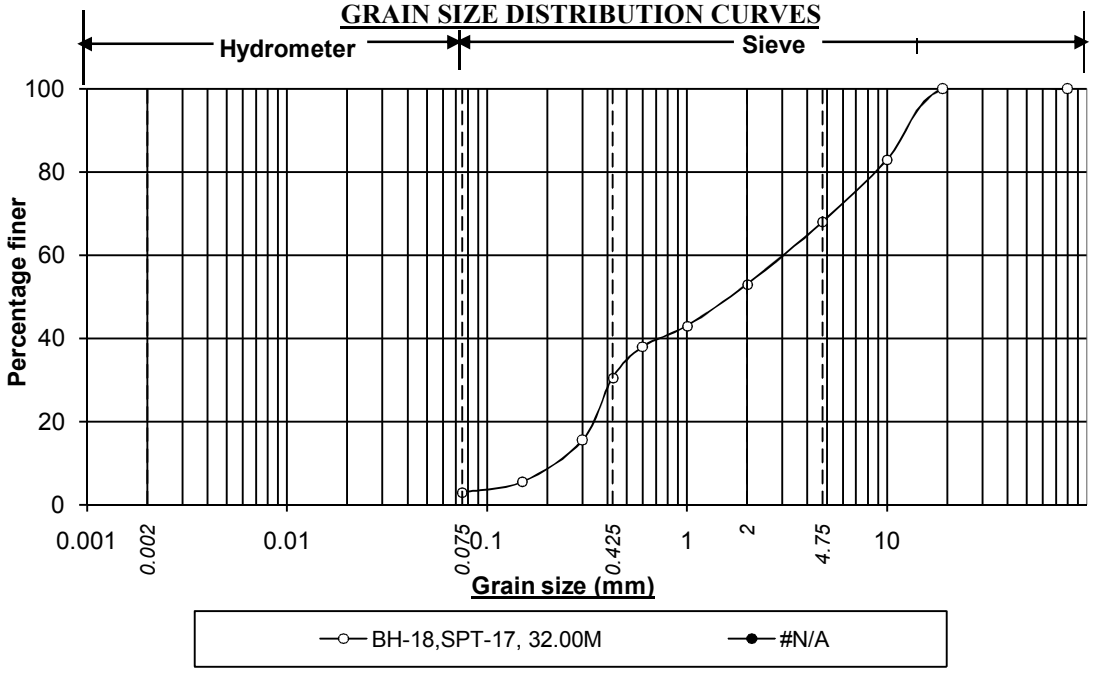
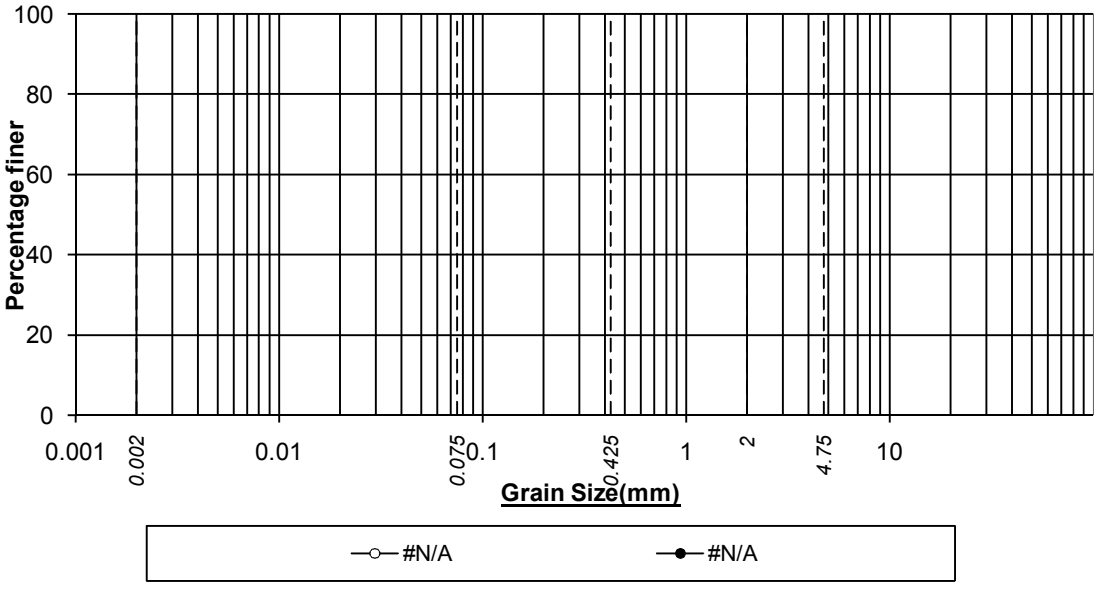
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-18,SPT-17, 32.00M		3.0	27.5	22.5	15.0	65.0	13.772/0.276	32.0

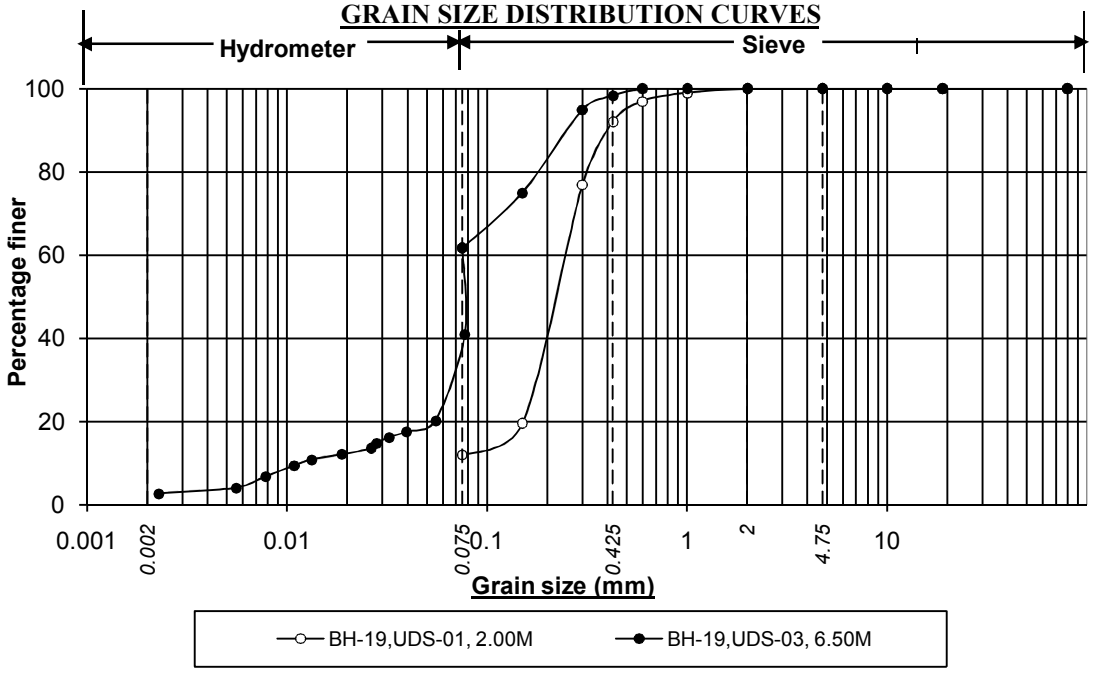


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)

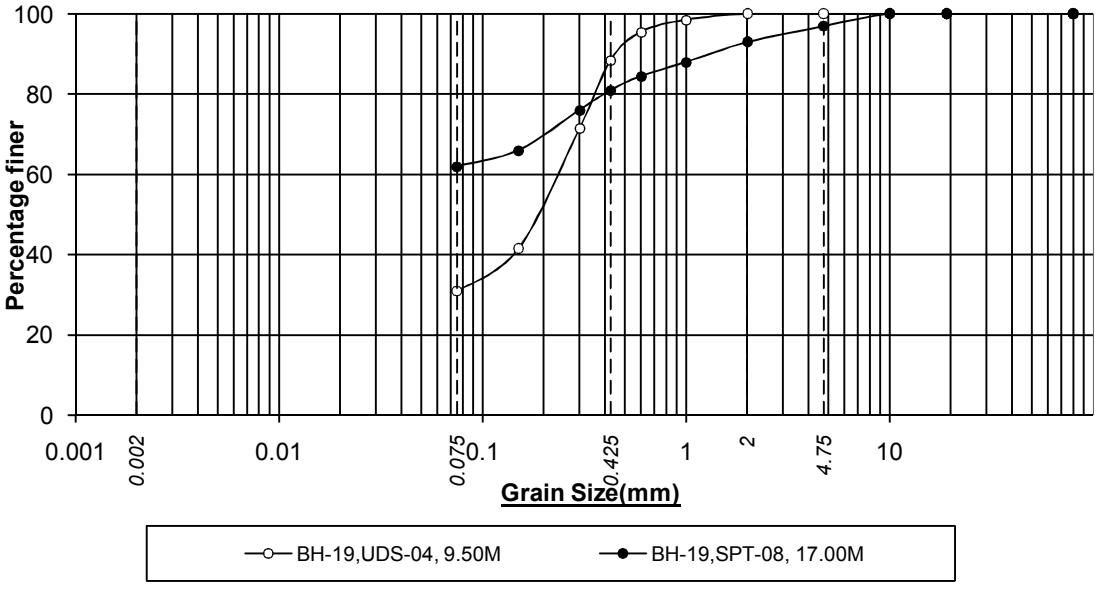
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-19,UDS-01, 2.00M		12.0	80.0	8.0	0.0	88.0		0.0
BH-19,UDS-03, 6.50M	2.5	59.2	36.6	1.7	0.0	38.3		0.0

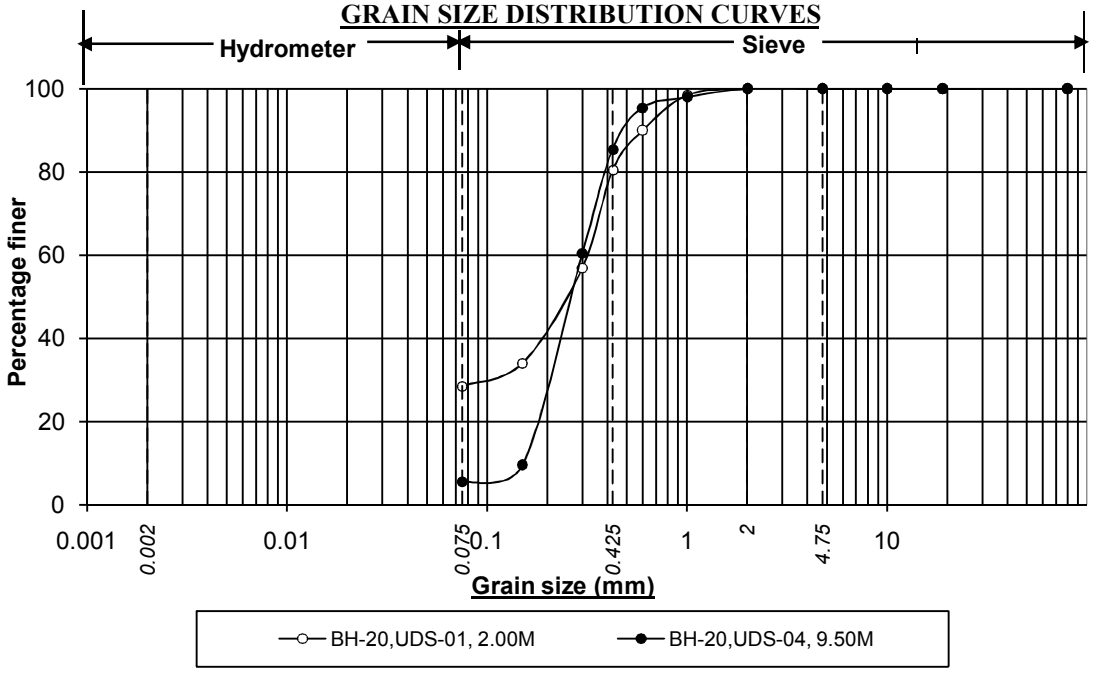


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-19,UDS-04, 9.50M		31.0	57.5	11.5	0.0	69.0		0.0
BH-19,SPT-08, 17.00M		62.0	19.0	12.0	4.0	35.0		3.0

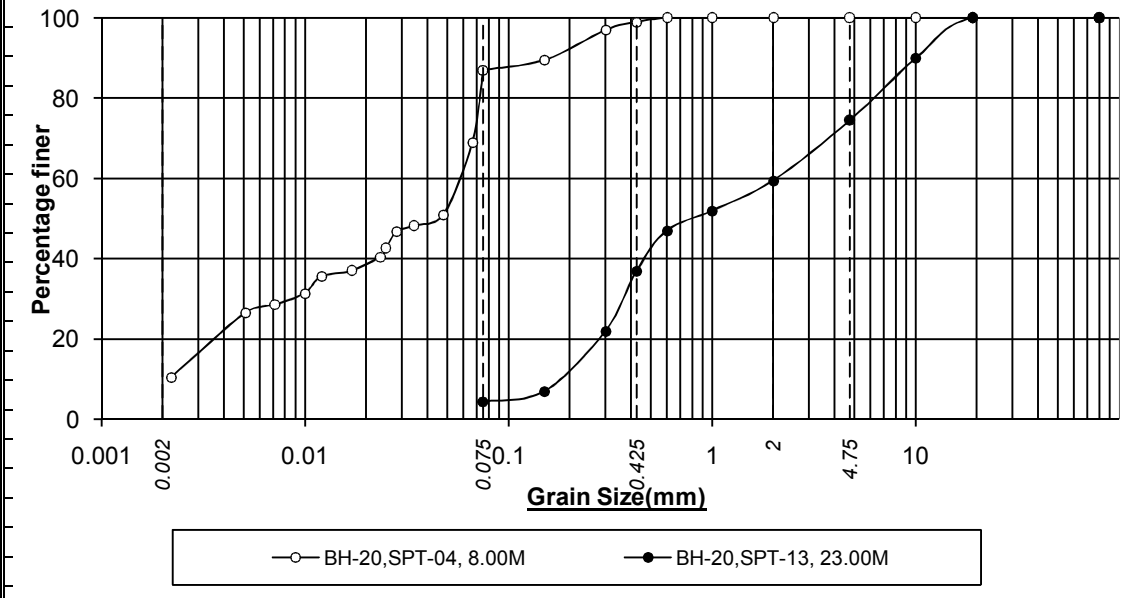
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat	**Job No. 3369**	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-20,UDS-01, 2.00M		28.5	52.0	19.5	0.0	71.5		0.0
BH-20,UDS-04, 9.50M		5.5	80.0	14.5	0.0	94.5	1.999/0.914	0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-20,SPT-04, 8.00M	8.7	78.3	12.0	1.0	0.0	13.0		0.0
BH-20,SPT-13, 23.00M		4.5	32.5	22.5	15.0	70.0	11.641/0.343	25.5

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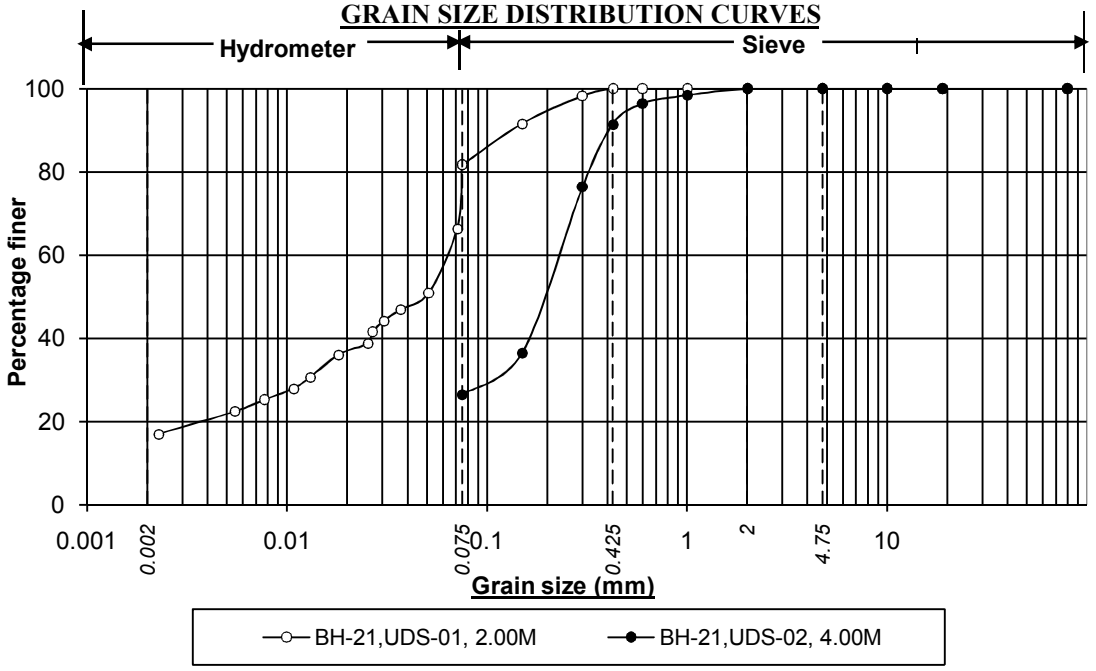
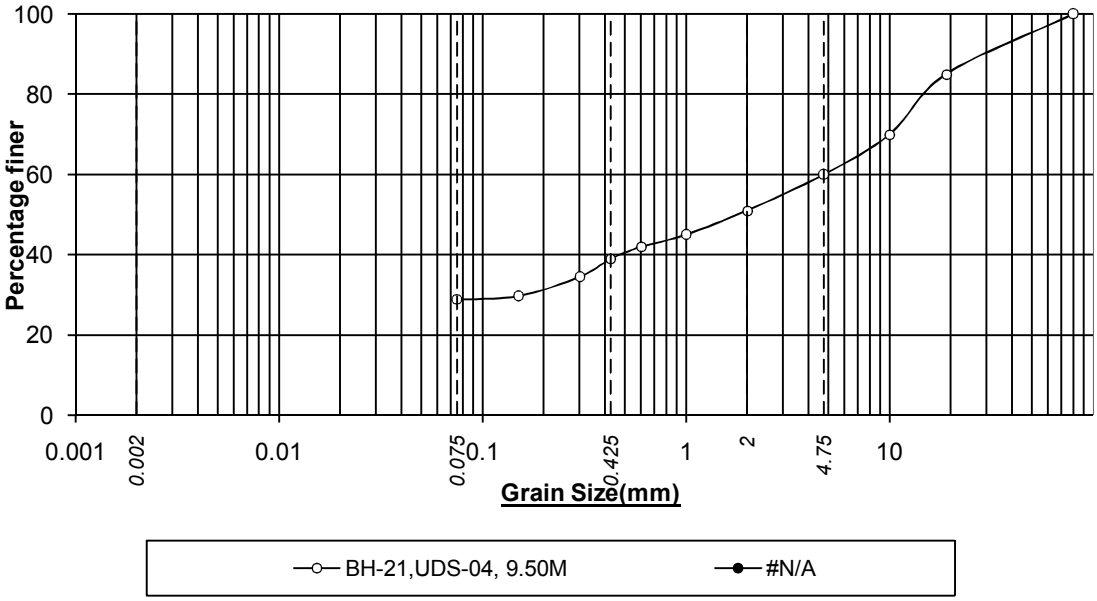
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-21,UDS-01, 2.00M	16.2	65.5	18.3	0.0	0.0	18.3		0.0
BH-21,UDS-02, 4.00M		26.5	65.0	8.5	0.0	73.5		0.0

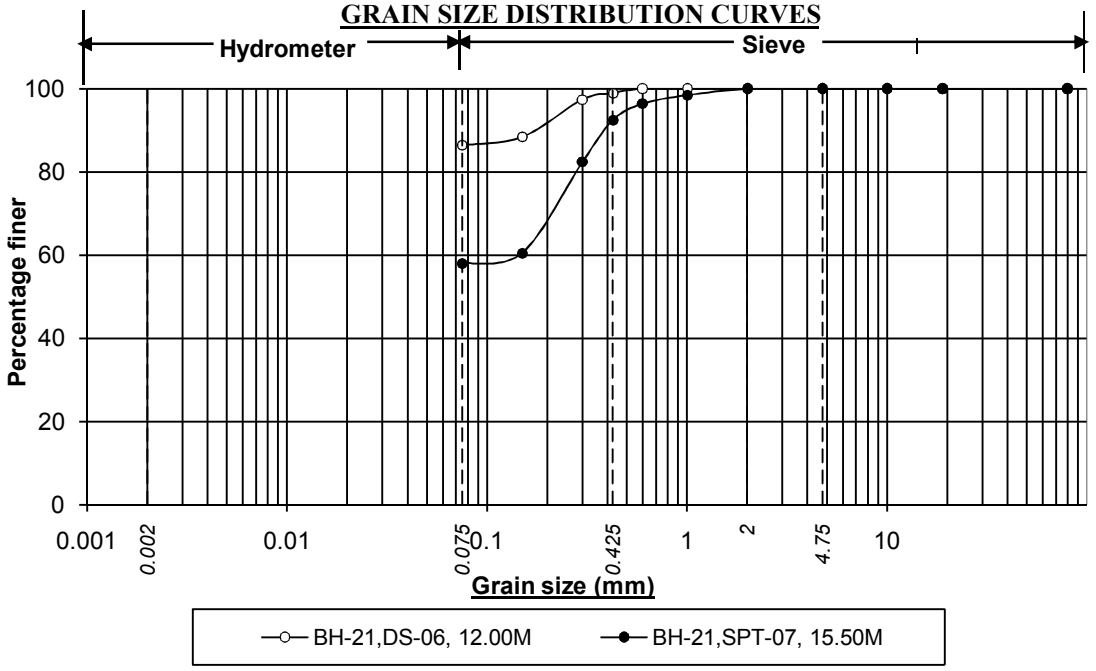


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-21,UDS-04, 9.50M		29.0	10.0	12.0	9.0	31.0		40.0

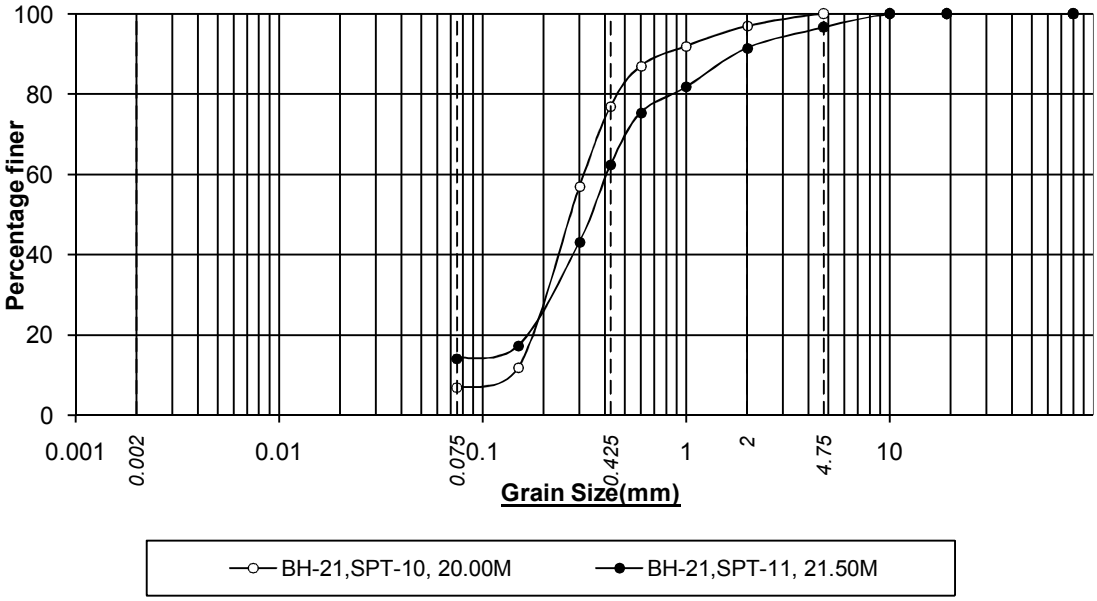
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-21,DS-06, 12.00M		86.5	12.5	1.0	0.0	13.5		0.0
BH-21,SPT-07, 15.50M		58.0	34.5	7.5	0.0	42.0		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-21,SPT-10, 20.00M		7.0	70.0	20.0	3.0	93.0	2.339/0.997	0.0
BH-21,SPT-11, 21.50M		14.2	48.3	29.0	5.2	82.5		3.3

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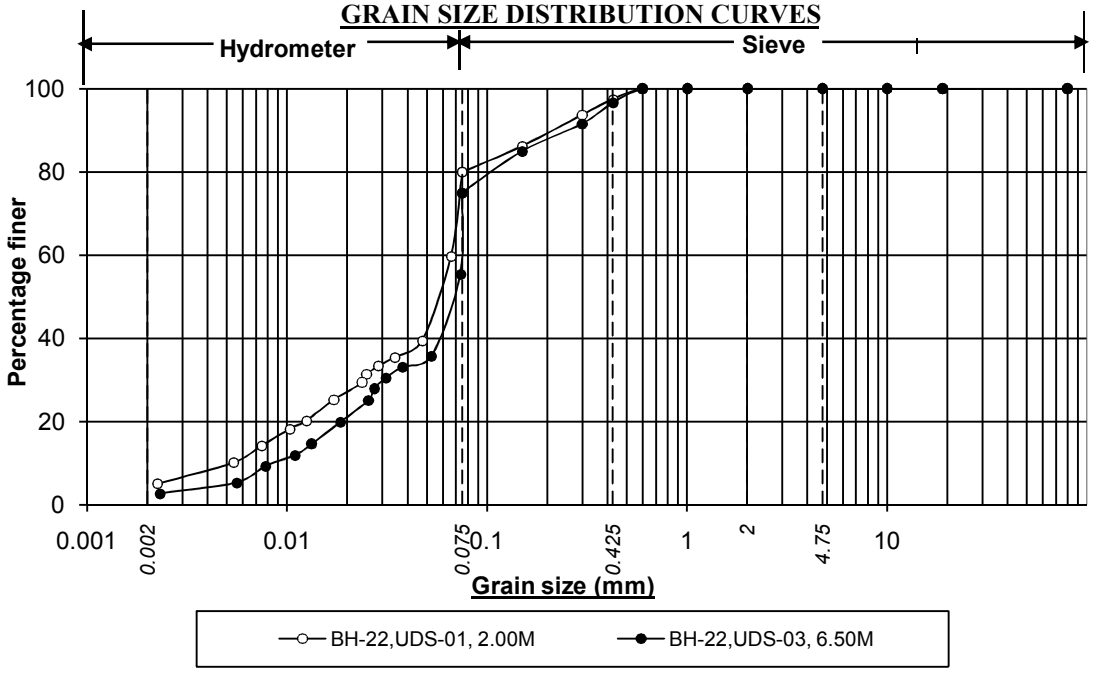
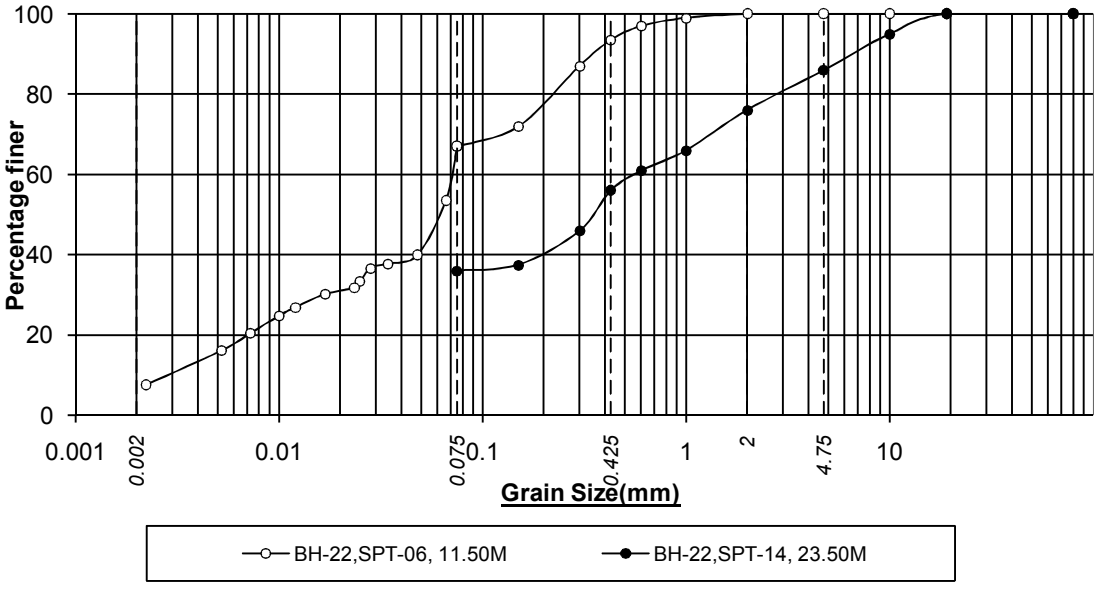
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-22,UDS-01, 2.00M	4.4	75.6	17.5	2.5	0.0	20.0		0.0
BH-22,UDS-03, 6.50M	2.2	72.8	21.7	3.3	0.0	25.0		0.0

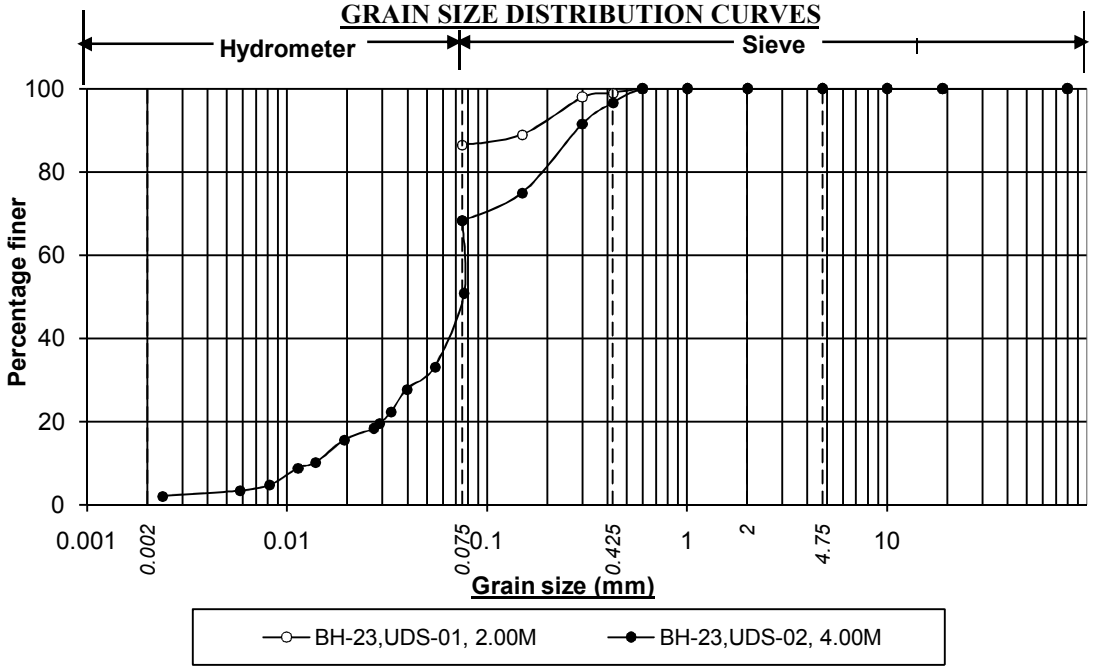


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-22,SPT-06, 11.50M	6.5	60.5	26.5	6.5	0.0	33.0		0.0
BH-22,SPT-14, 23.50M		36.0	20.0	20.0	10.0	50.0		14.0

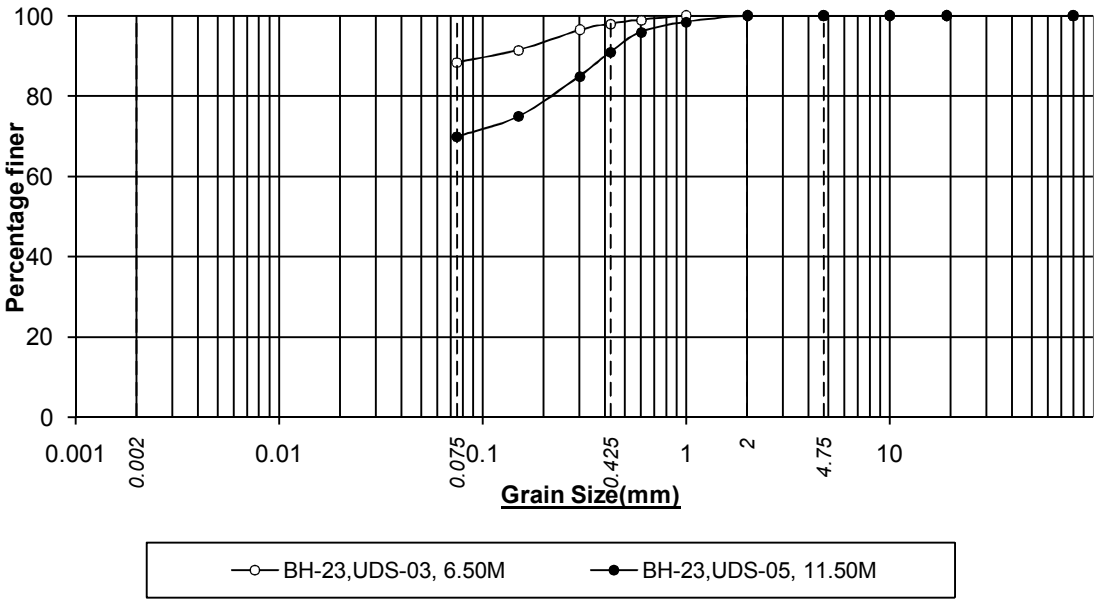
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-23,UDS-01, 2.00M		86.5	12.5	1.0	0.0	13.5		0.0
BH-23,UDS-02, 4.00M	1.8	66.6	28.3	3.3	0.0	31.6		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-23,UDS-03, 6.50M		88.5	9.5	2.0	0.0	11.5		0.0
BH-23,UDS-05, 11.50M		70.0	21.0	9.0	0.0	30.0		0.0

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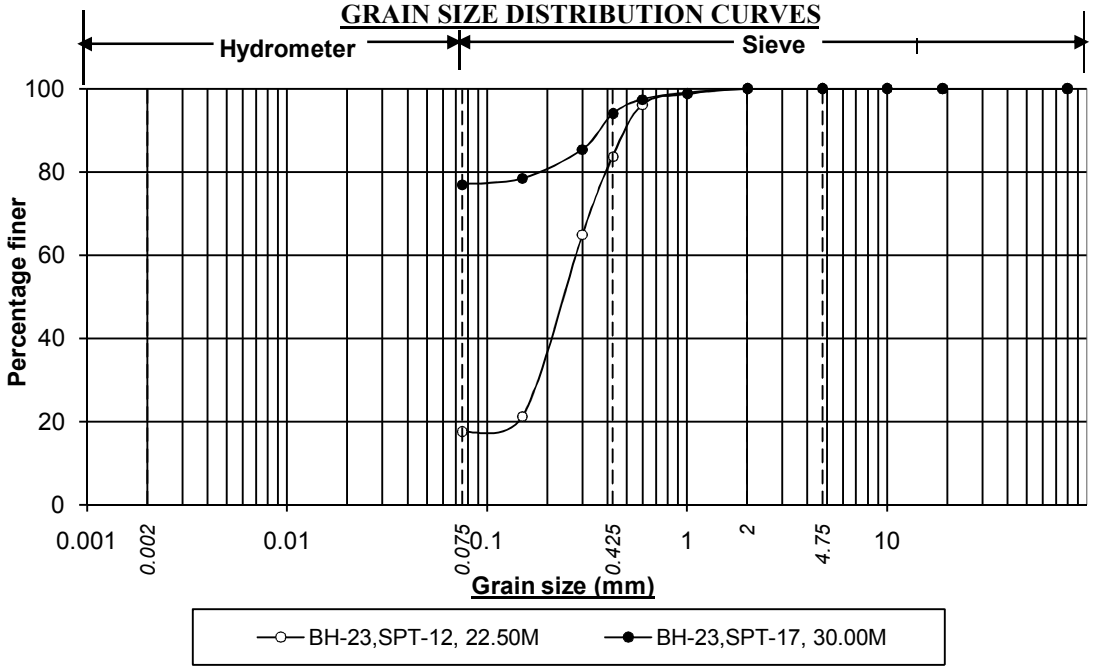
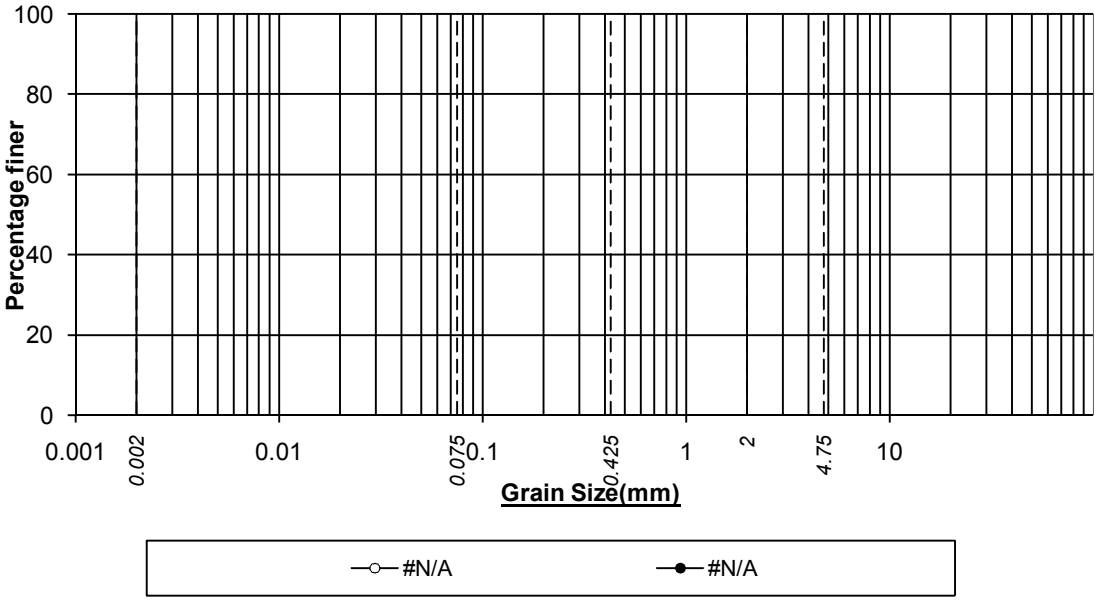
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-23,SPT-12, 22.50M		17.5	66.2	16.3	0.0	82.5		0.0
BH-23,SPT-17, 30.00M		77.0	17.0	6.0	0.0	23.0		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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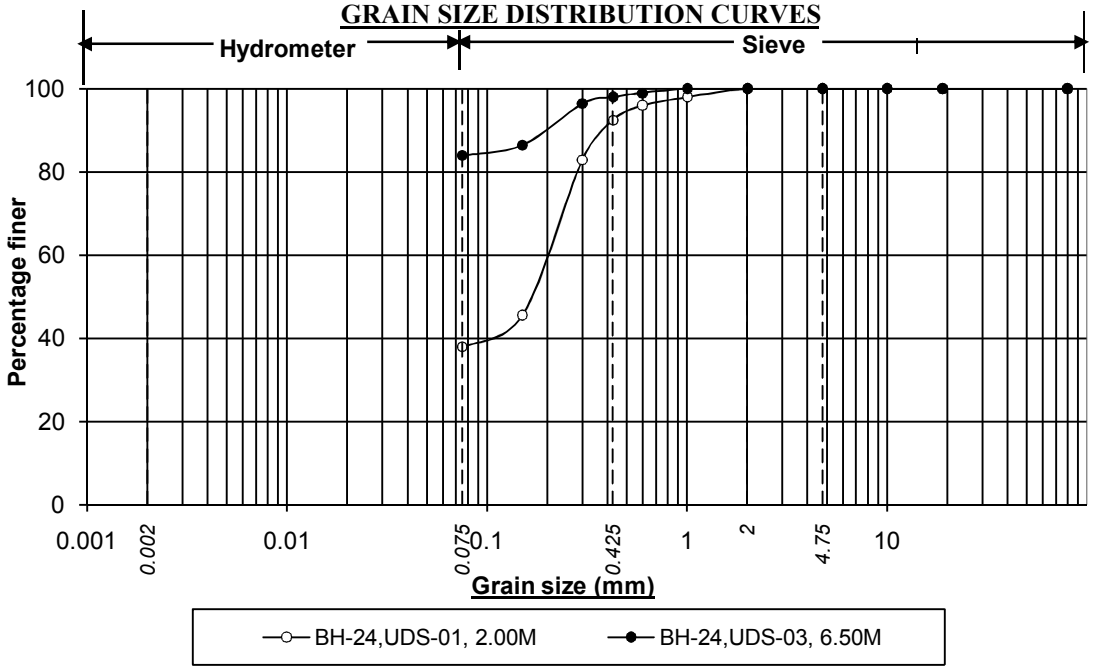
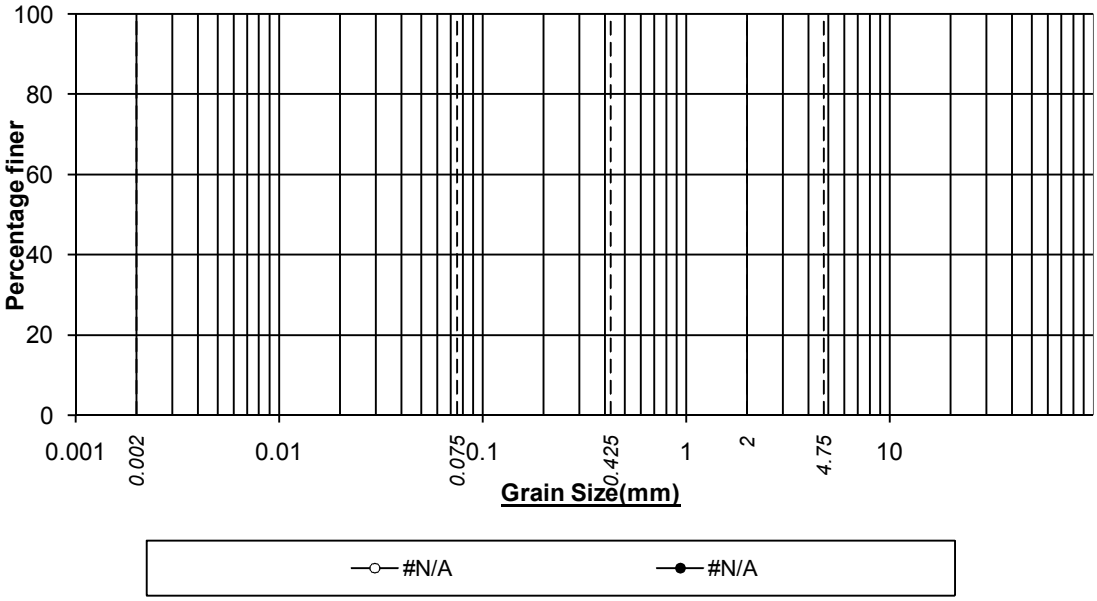
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-24,UDS-01, 2.00M		38.0	54.5	7.5	0.0	62.0		0.0
BH-24,UDS-03, 6.50M		84.0	14.0	2.0	0.0	16.0		0.0

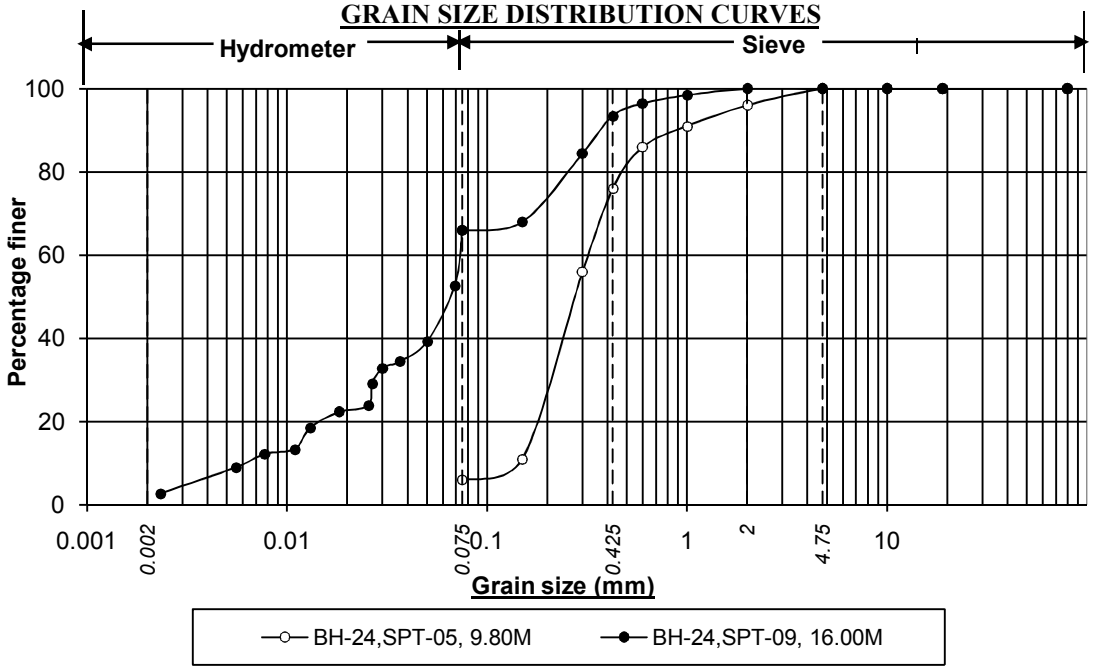


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

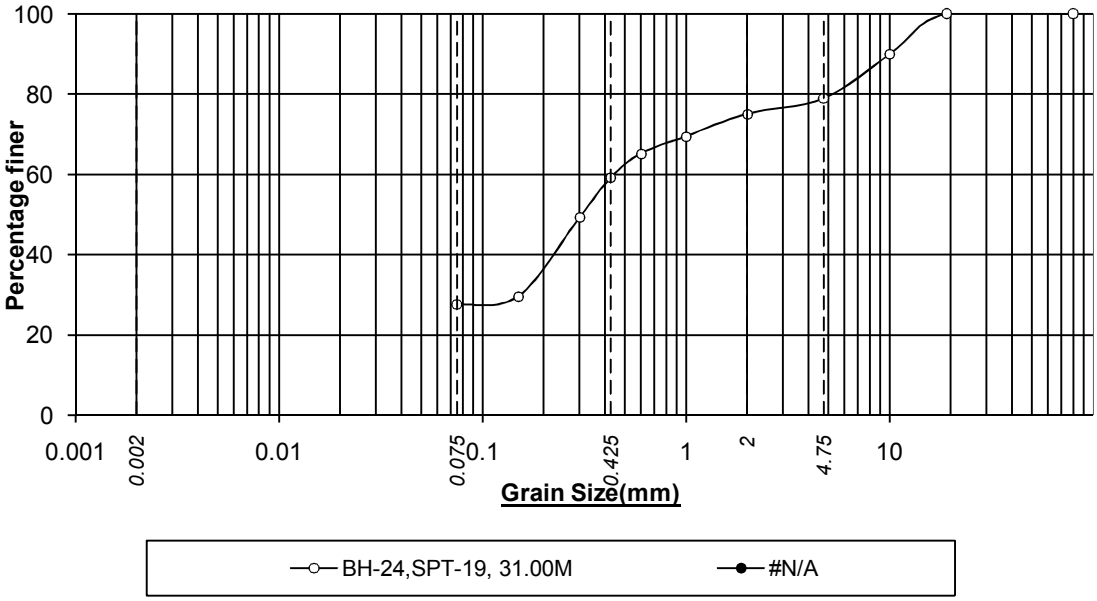
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-24,SPT-05, 9.80M		6.0	70.0	20.0	4.0	94.0	2.113/0.901	0.0
BH-24,SPT-09, 16.00M	1.5	64.5	27.5	6.5	0.0	34.0		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-24,SPT-19, 31.00M		27.7	31.5	15.8	4.0	51.3		21.0

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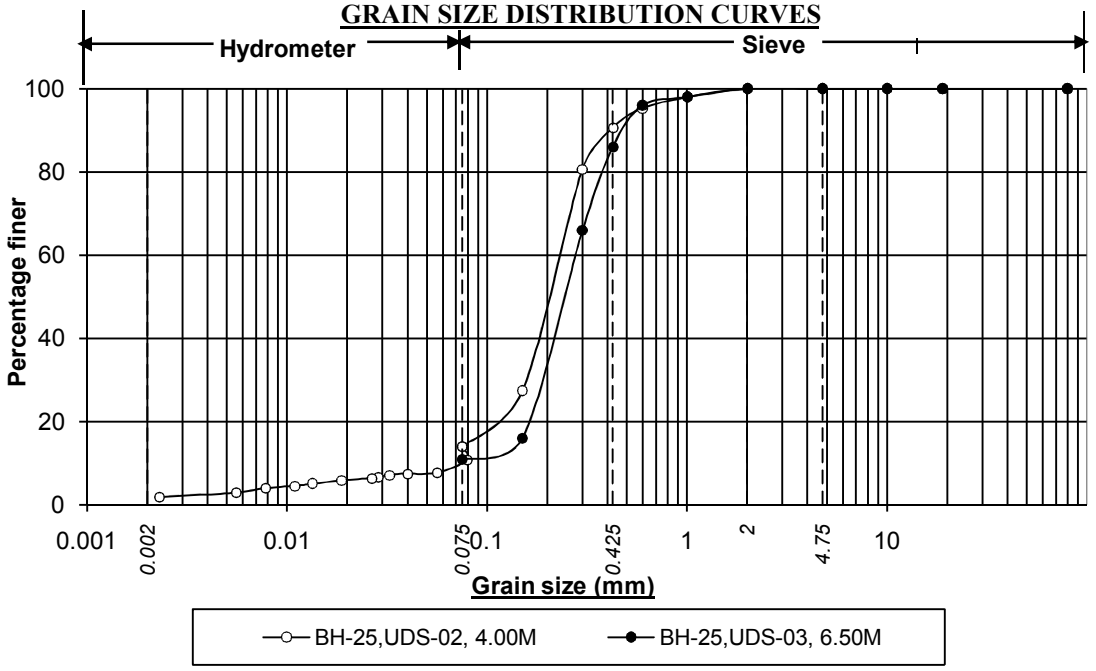
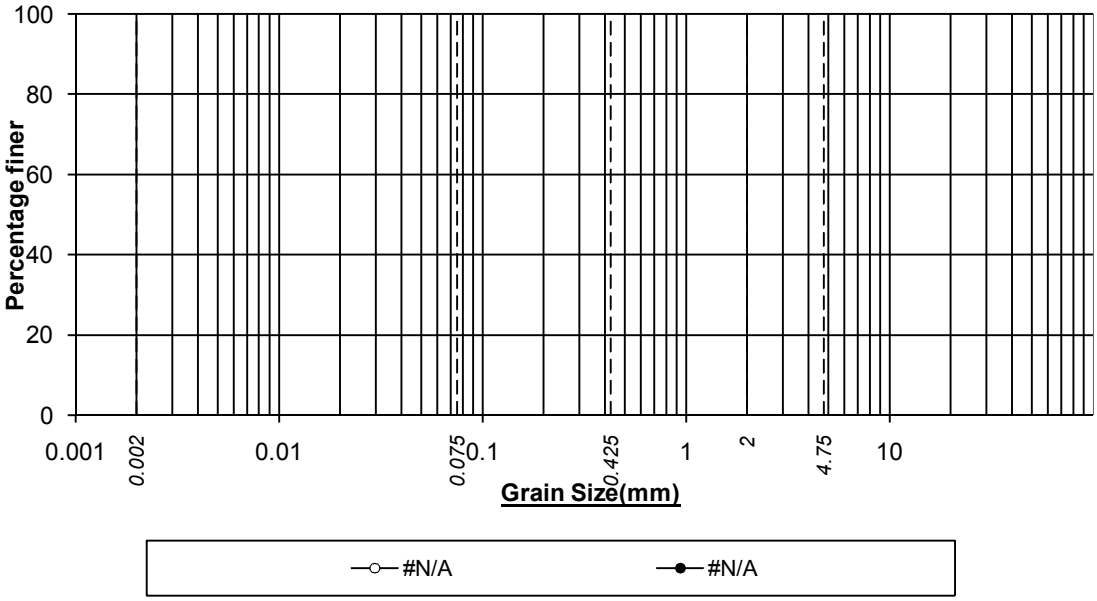
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-25,UDS-02, 4.00M	1.7	12.3	76.7	9.3	0.0	86.0		0.0
BH-25,UDS-03, 6.50M		11.0	75.0	14.0	0.0	89.0		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)

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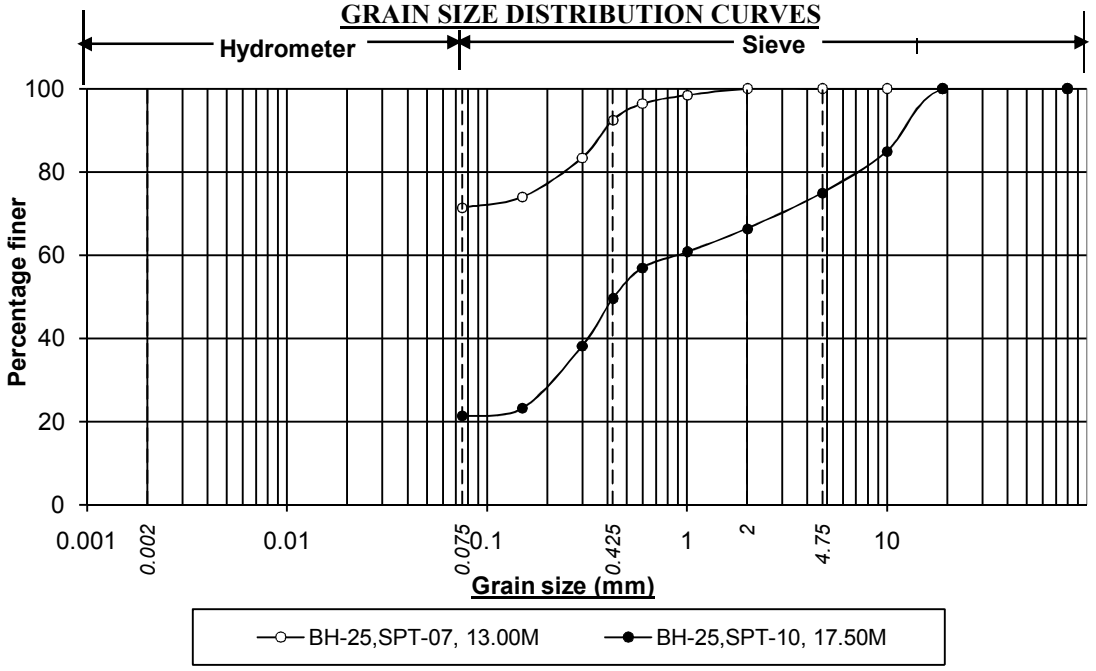
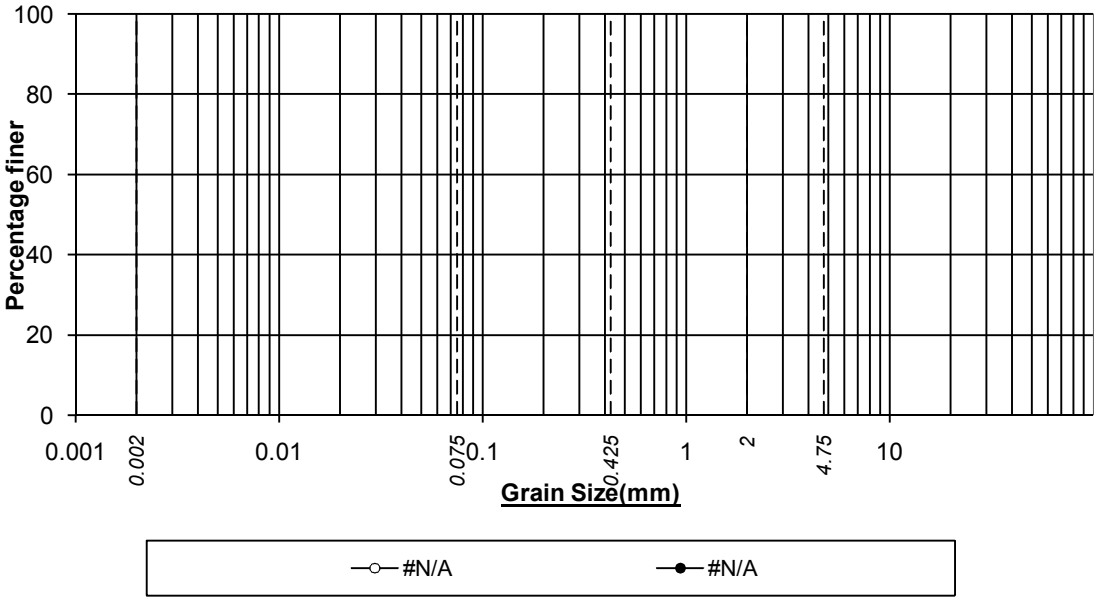
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-25,SPT-07, 13.00M		71.5	21.0	7.5	0.0	28.5		0.0
BH-25,SPT-10, 17.50M		21.4	28.1	16.9	8.6	53.6		25.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

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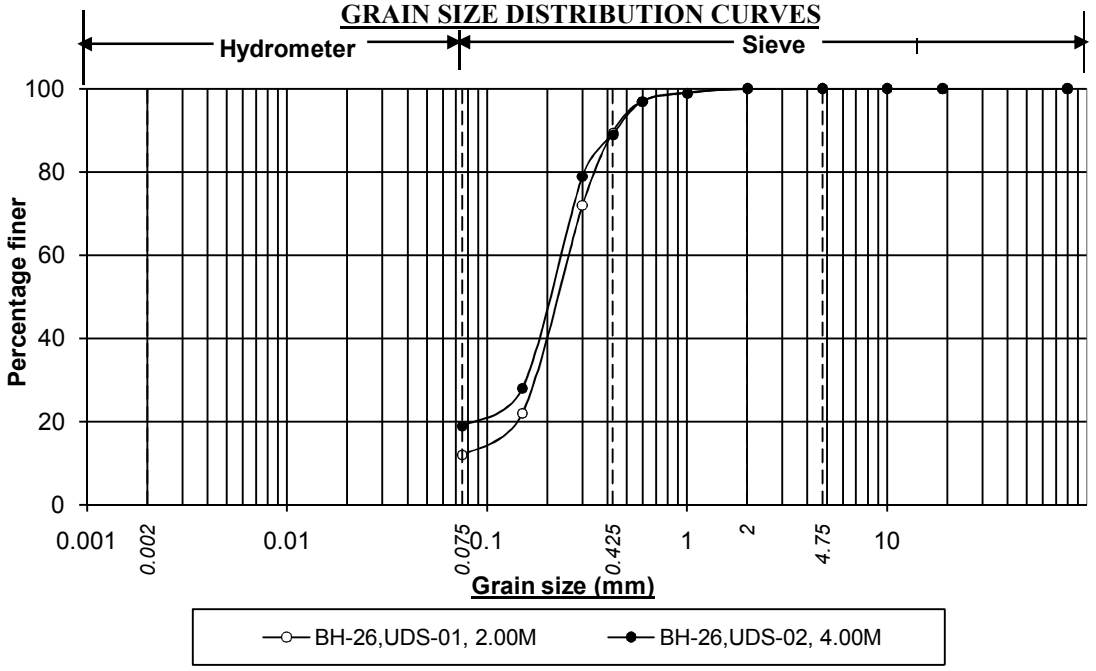
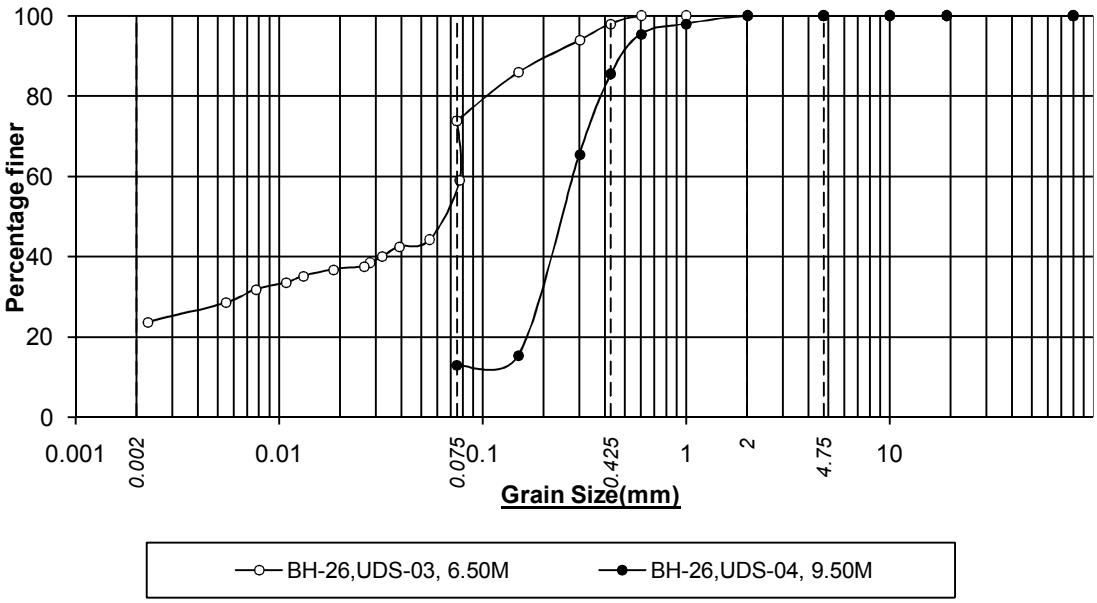
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	Total sand	Cu/Cc	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-26,UDS-01, 2.00M		12.0	77.5	10.5	0.0	88.0		0.0
BH-26,UDS-02, 4.00M		19.0	70.0	11.0	0.0	81.0		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	Total sand	Cu/Cc	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-26,UDS-03, 6.50M	23.0	51.0	24.0	2.0	0.0	26.0		0.0
BH-26,UDS-04, 9.50M		13.0	72.5	14.5	0.0	87.0		0.0

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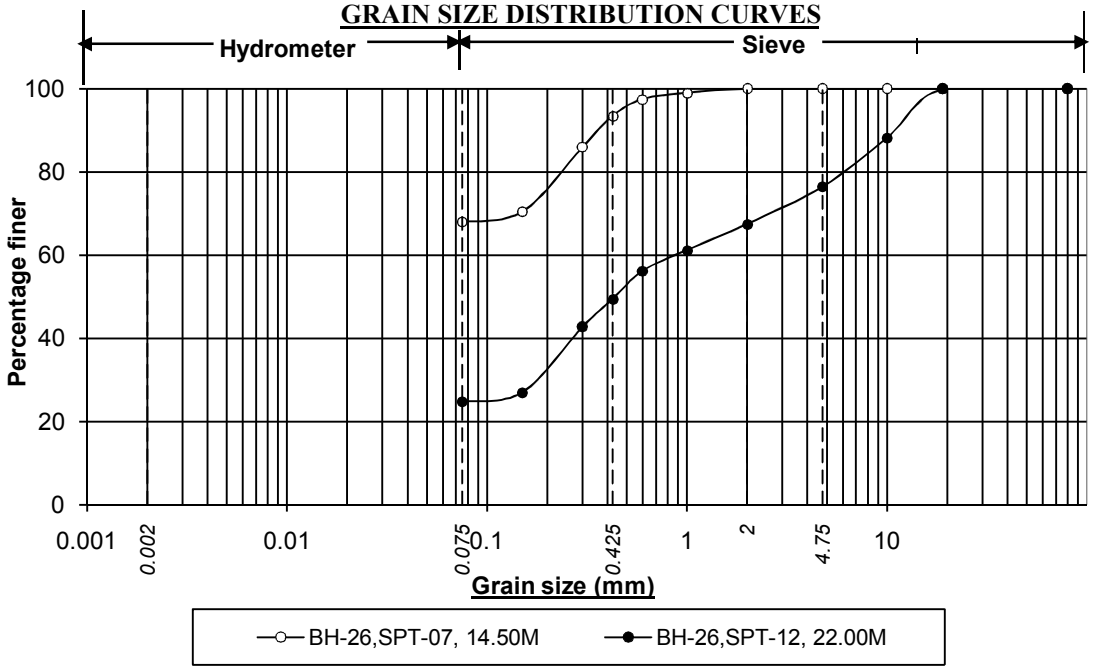
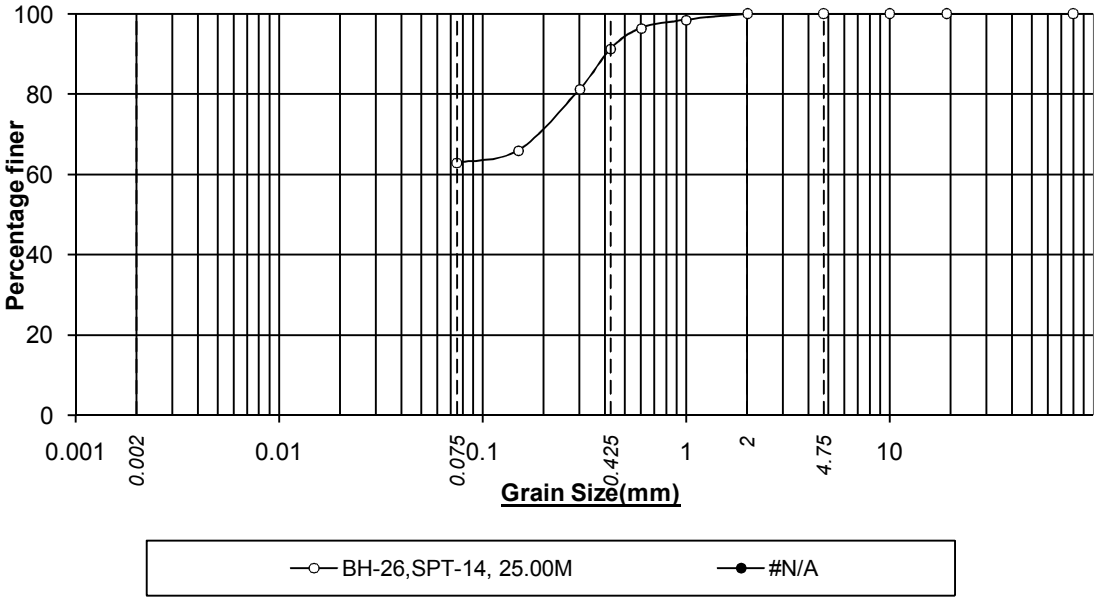
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-26,SPT-07, 14.50M		68.0	25.5	6.5	0.0	32.0		0.0
BH-26,SPT-12, 22.00M		24.7	24.8	18.0	9.0	51.8		23.5



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-26,SPT-14, 25.00M		62.9	28.5	8.6	0.0	37.1		0.0

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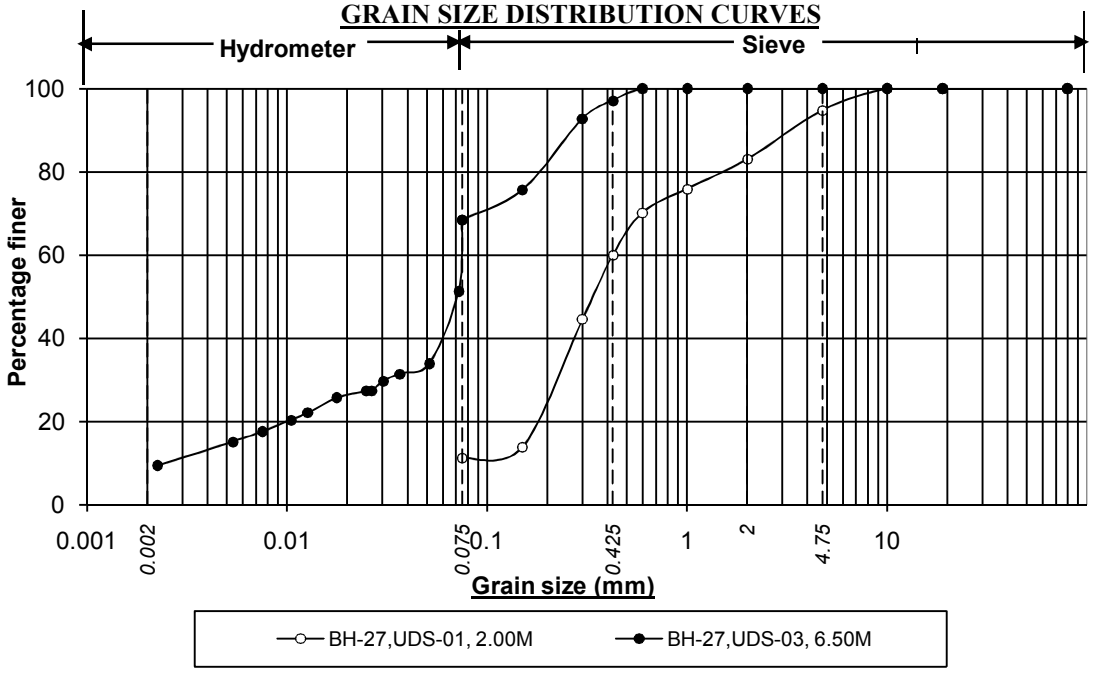
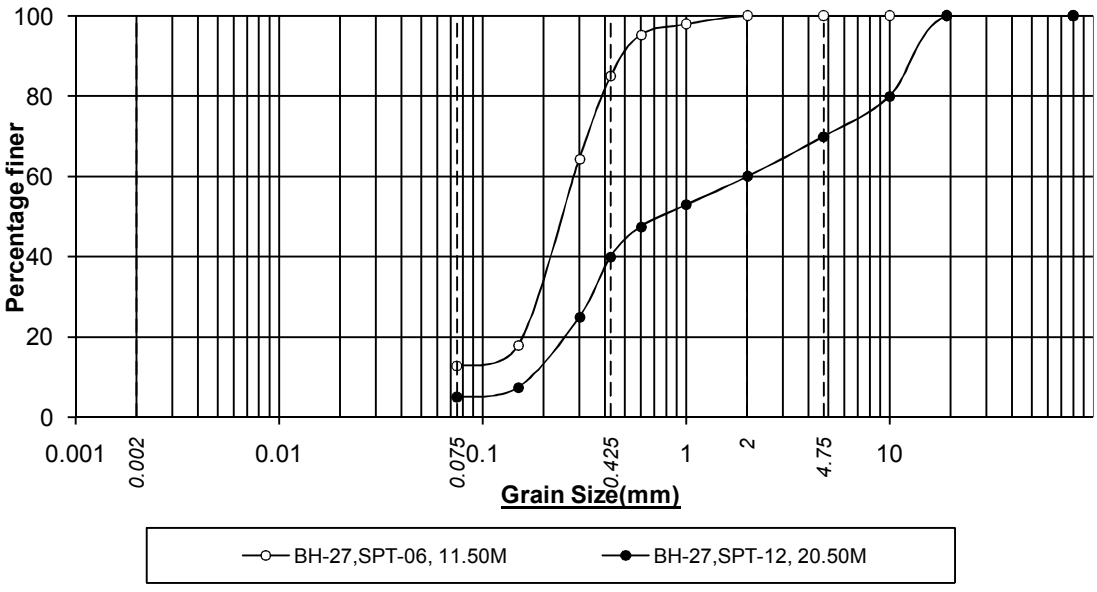
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-27,UDS-01, 2.00M		11.3	48.7	23.1	11.8	83.6		5.1
BH-27,UDS-03, 6.50M	8.6	60.0	28.5	2.9	0.0	31.4		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-27,SPT-06, 11.50M		12.9	72.2	14.9	0.0	87.1		0.0
BH-27,SPT-12, 20.50M		5.0	35.0	20.0	10.0	65.0	11.721/0.325	30.0

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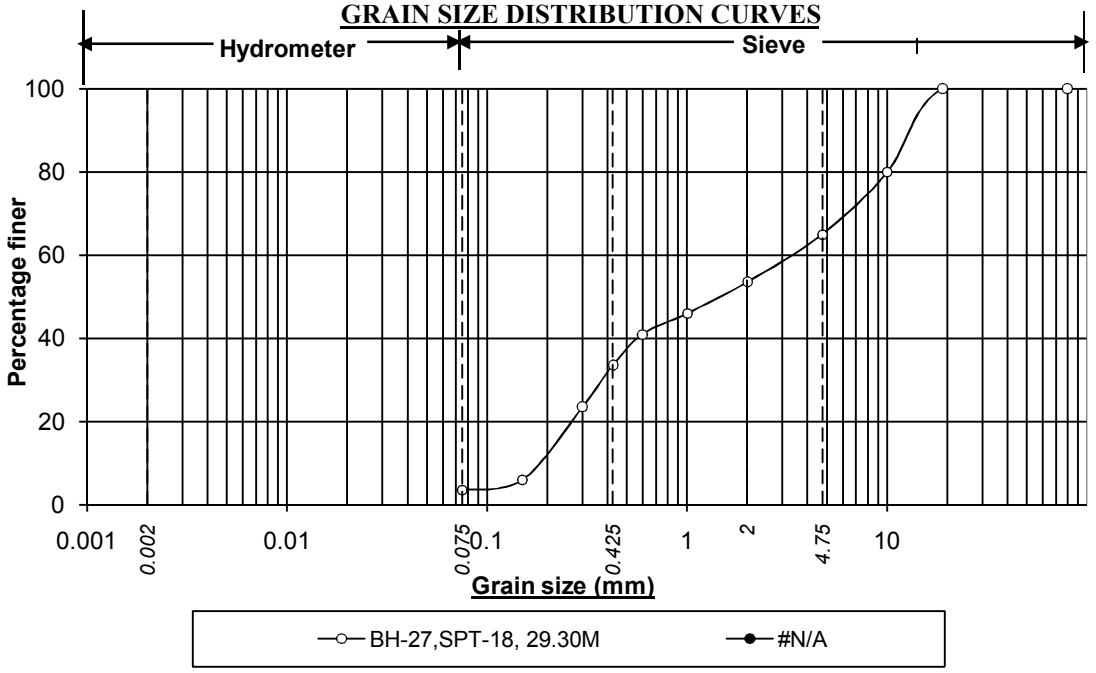
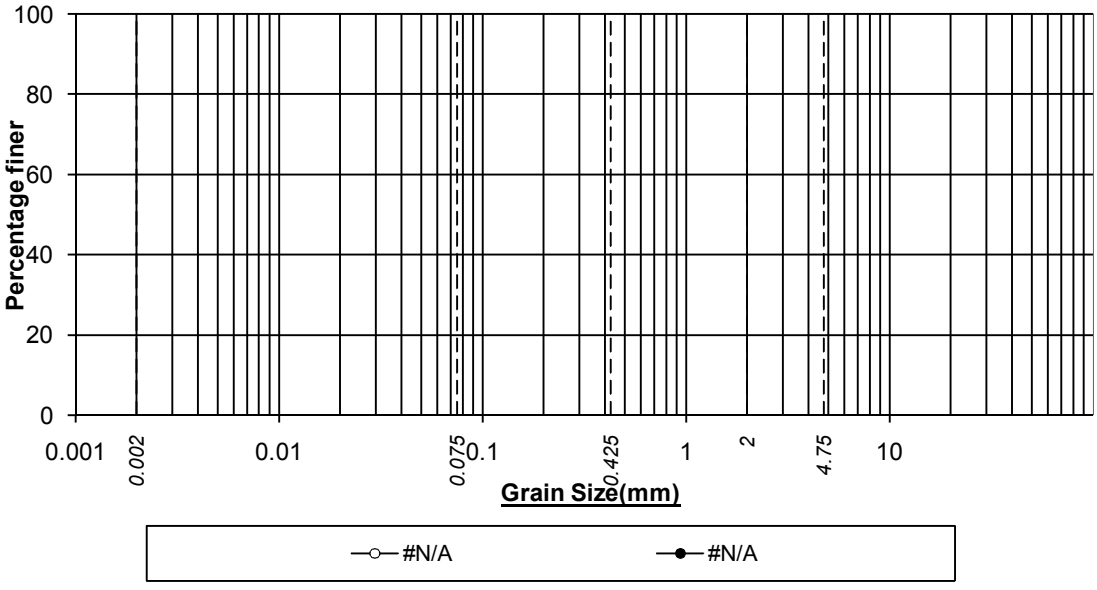
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-27,SPT-18, 29.30M		3.5	30.0	20.0	11.5	61.5	17.906/0.241	35.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

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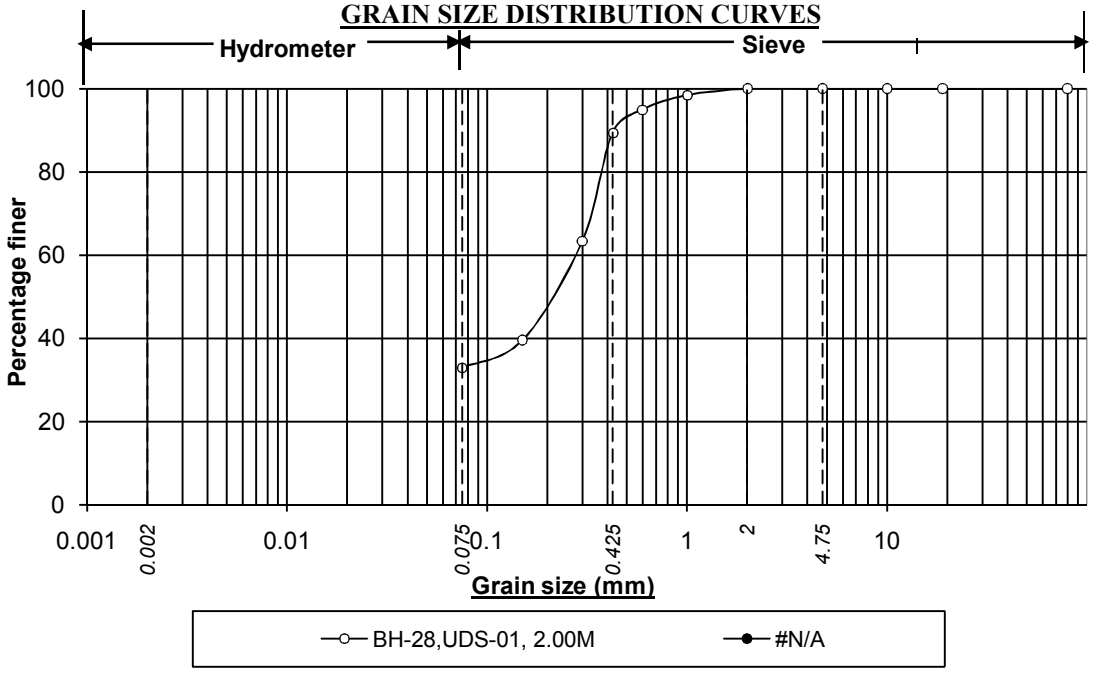
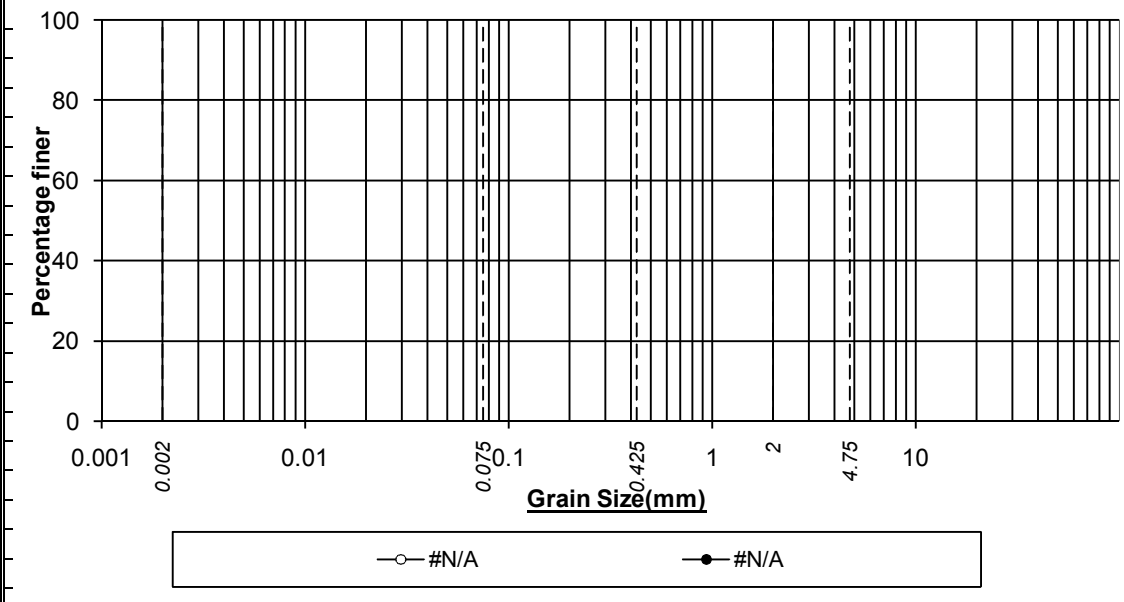
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-28,UDS-01, 2.00M		33.0	56.5	10.5	0.0	67.0		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

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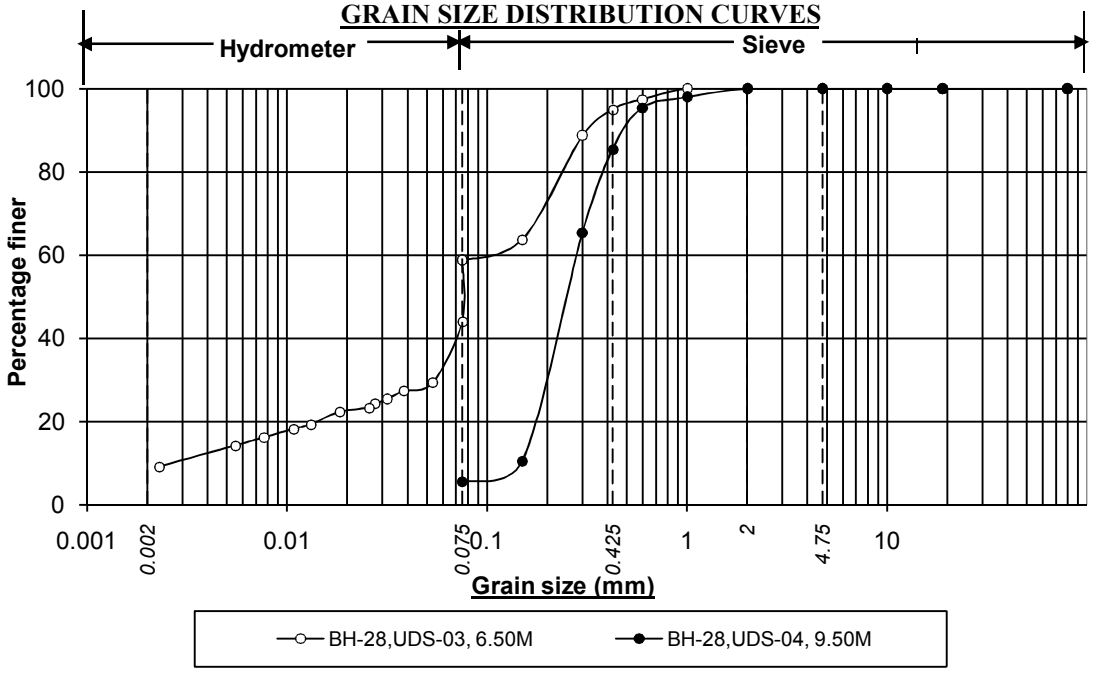
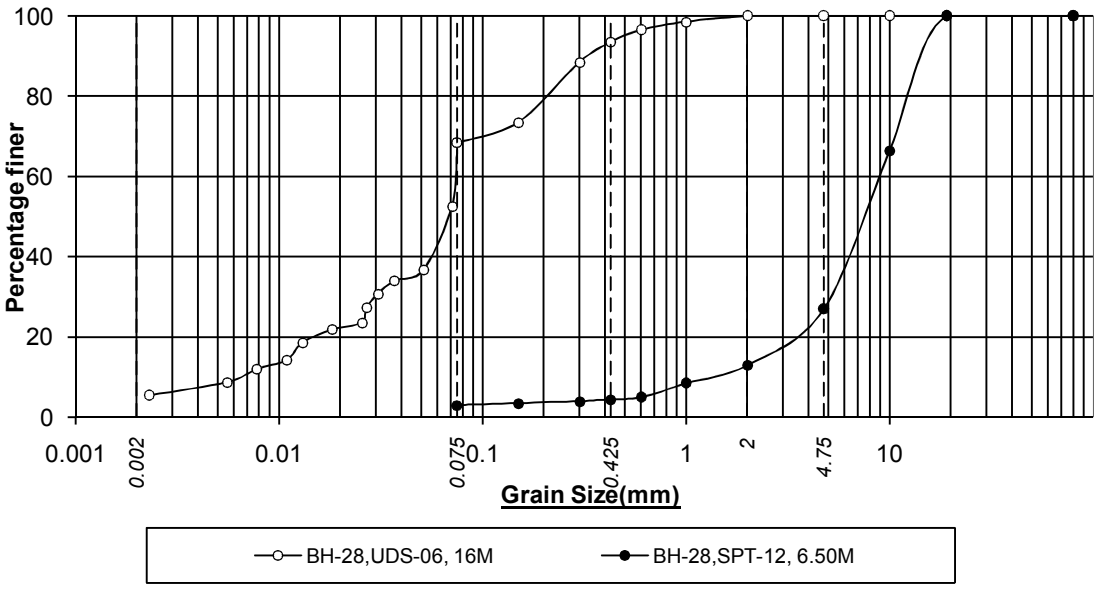
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-28,UDS-03, 6.50M	8.3	50.4	36.3	5.0	0.0	41.3		0.0
BH-28,UDS-04, 9.50M		5.5	80.0	14.5	0.0	94.5	1.823/0.966	0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-28,UDS-06, 16M	5.0	63.5	25.0	6.5	0.0	31.5		0.0
BH-28,SPT-12, 6.50M		3.0	1.5	8.5	14.0	24.0	6.714/2.172	73.0

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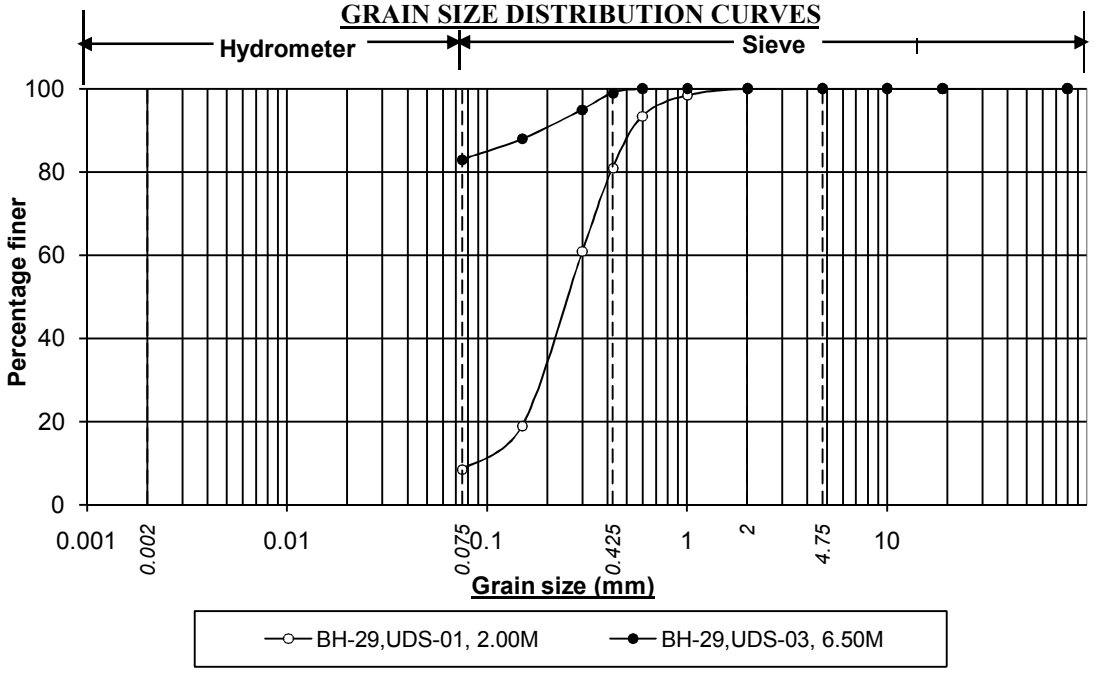
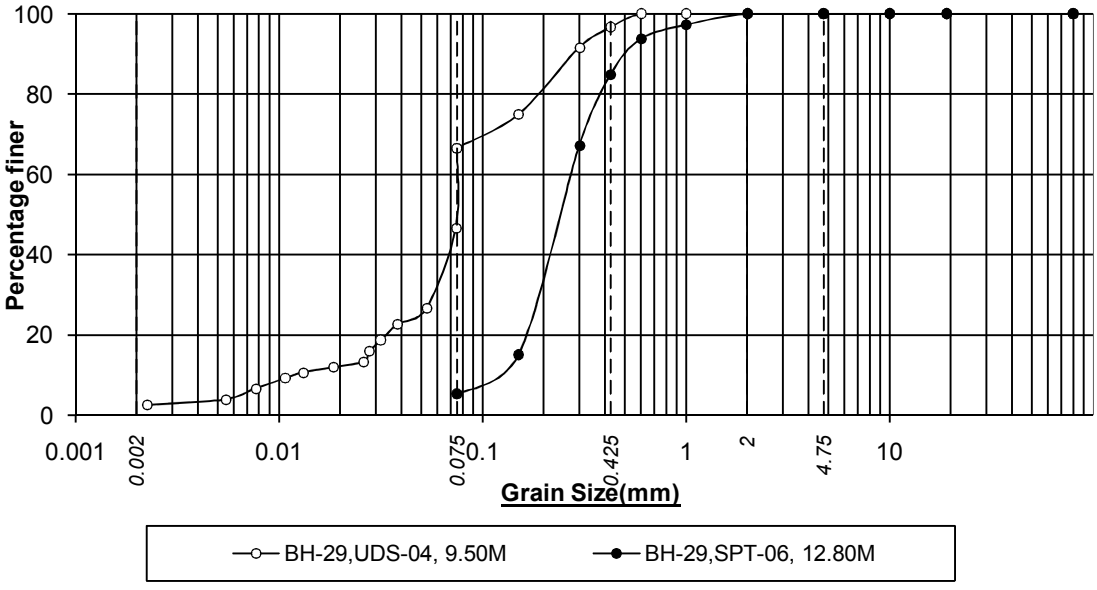
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-29,UDS-01, 2.00M		8.5	72.5	19.0	0.0	91.5	3.819/1.506	0.0
BH-29,UDS-03, 6.50M		83.0	16.0	1.0	0.0	17.0		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-29,UDS-04, 9.50M	2.5	64.2	30.0	3.3	0.0	33.3		0.0
BH-29,SPT-06, 12.80M		5.3	79.7	15.0	0.0	94.7	2.094/1.083	0.0

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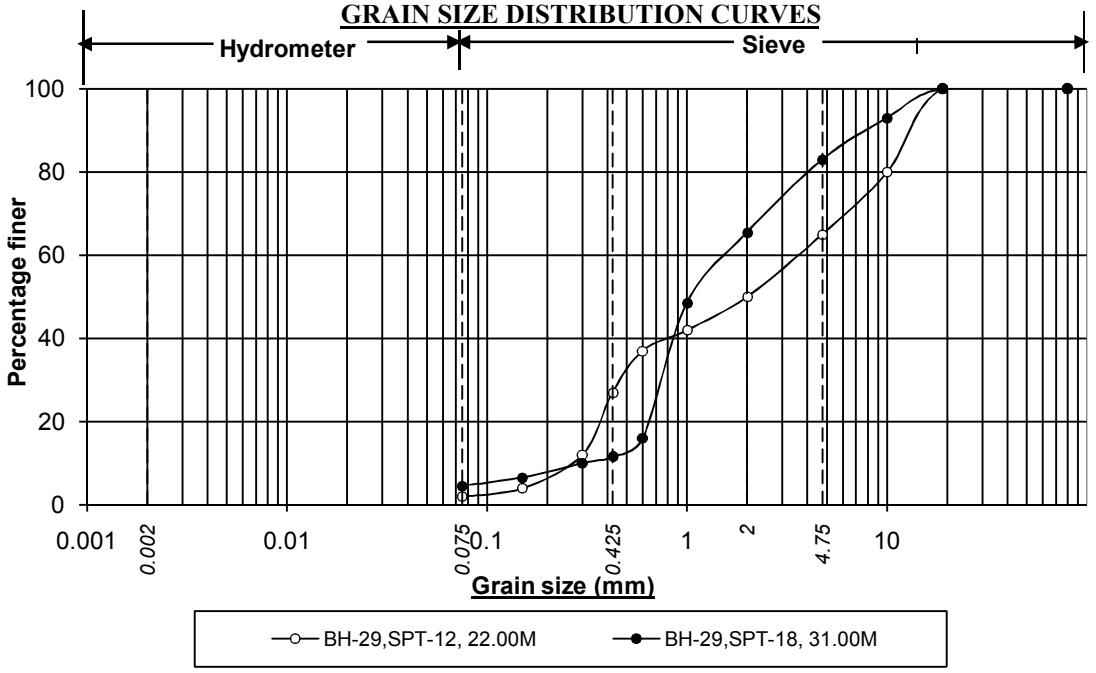
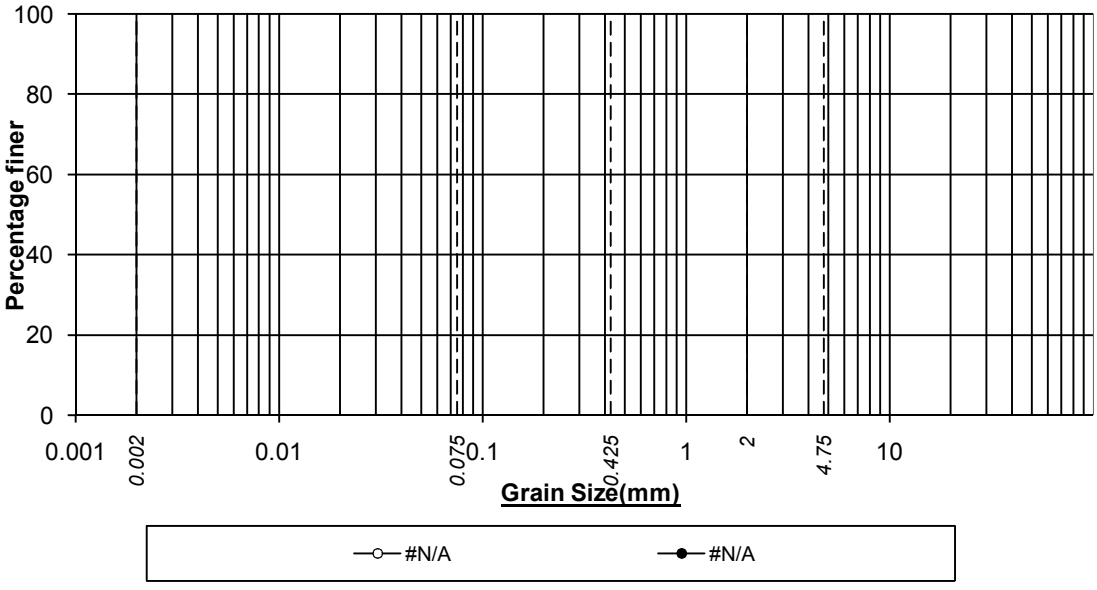
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	Total sand	Cu/Cc	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-29,SPT-12, 22.00M		2.0	25.0	23.0	15.0	63.0	13.427/0.209	35.0
BH-29,SPT-18, 31.00M		4.5	7.0	54.0	17.5	78.5	5/1.129	17.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	Total sand	Cu/Cc	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

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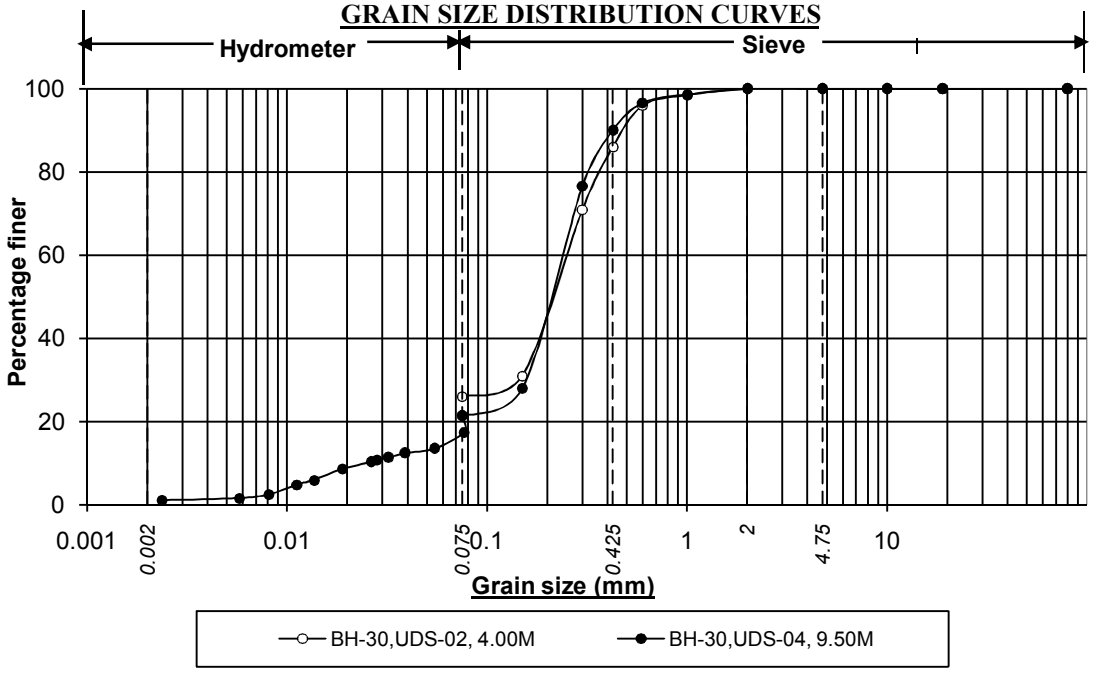
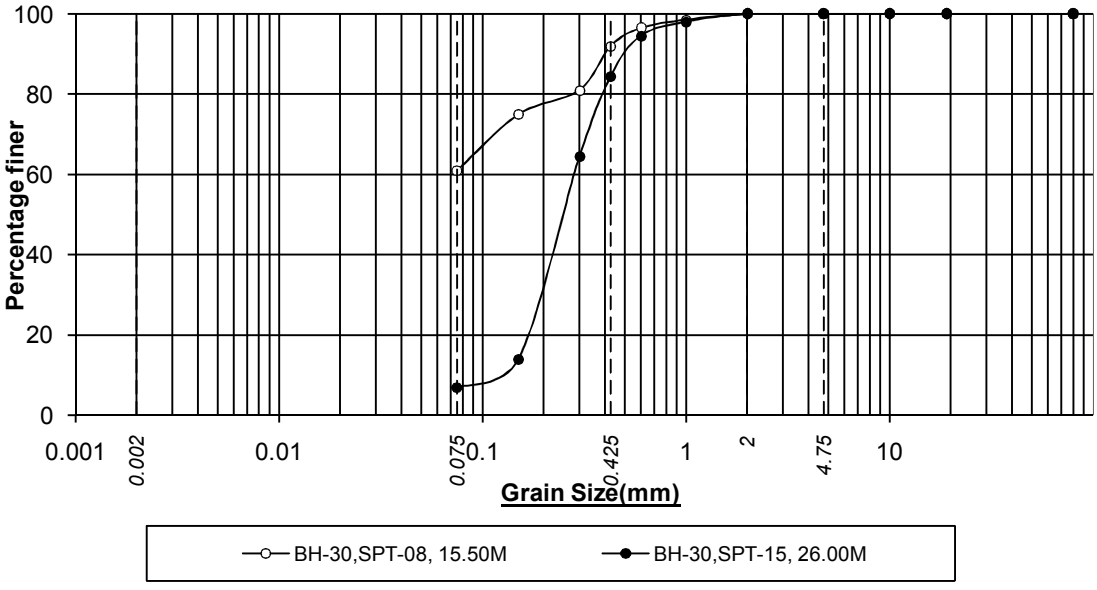
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-30,UDS-02, 4.00M		26.0	60.0	14.0	0.0	74.0		0.0
BH-30,UDS-04, 9.50M	1.0	20.4	68.6	10.0	0.0	78.6		0.0

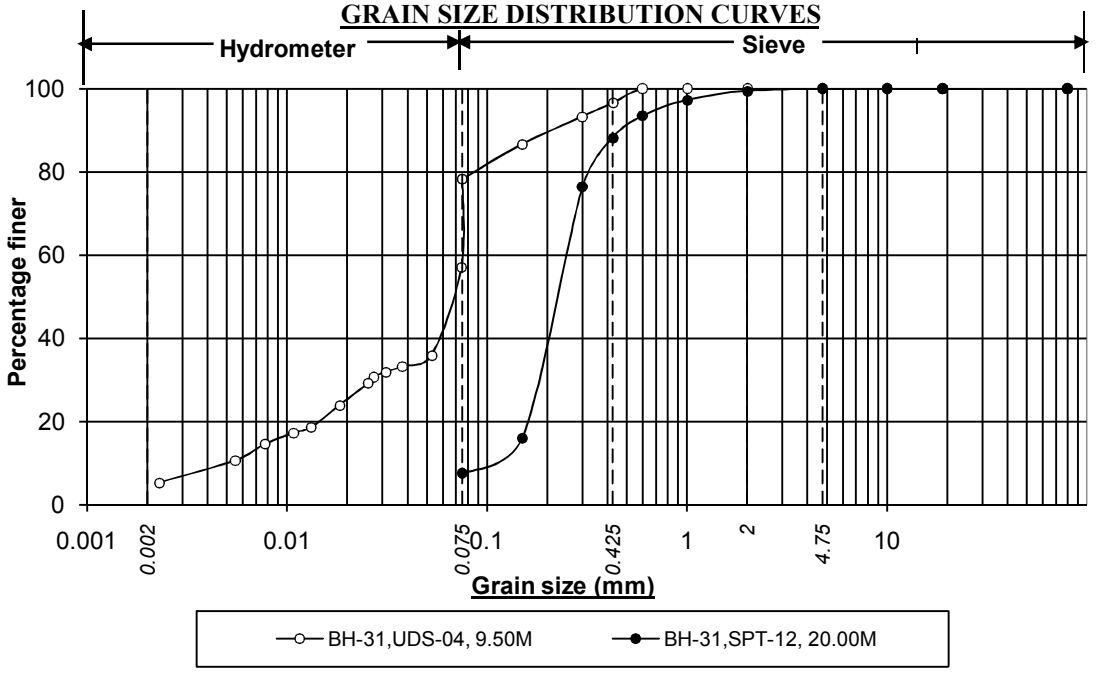


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-30,SPT-08, 15.50M		61.0	31.0	8.0	0.0	39.0		0.0
BH-30,SPT-15, 26.00M		7.0	77.5	15.5	0.0	93.0	2.269/1.153	0.0

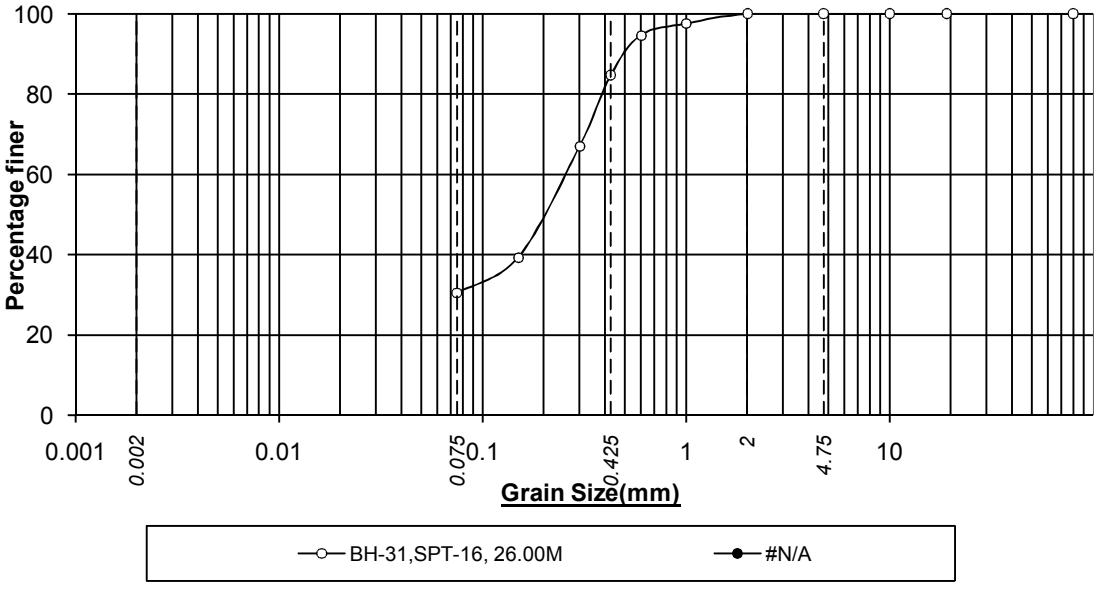
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-31,UDS-04, 9.50M	4.5	73.9	18.3	3.3	0.0	21.6		0.0
BH-31,SPT-12, 20.00M		7.5	80.8	11.2	0.5	92.5	2.213/1.216	0.0

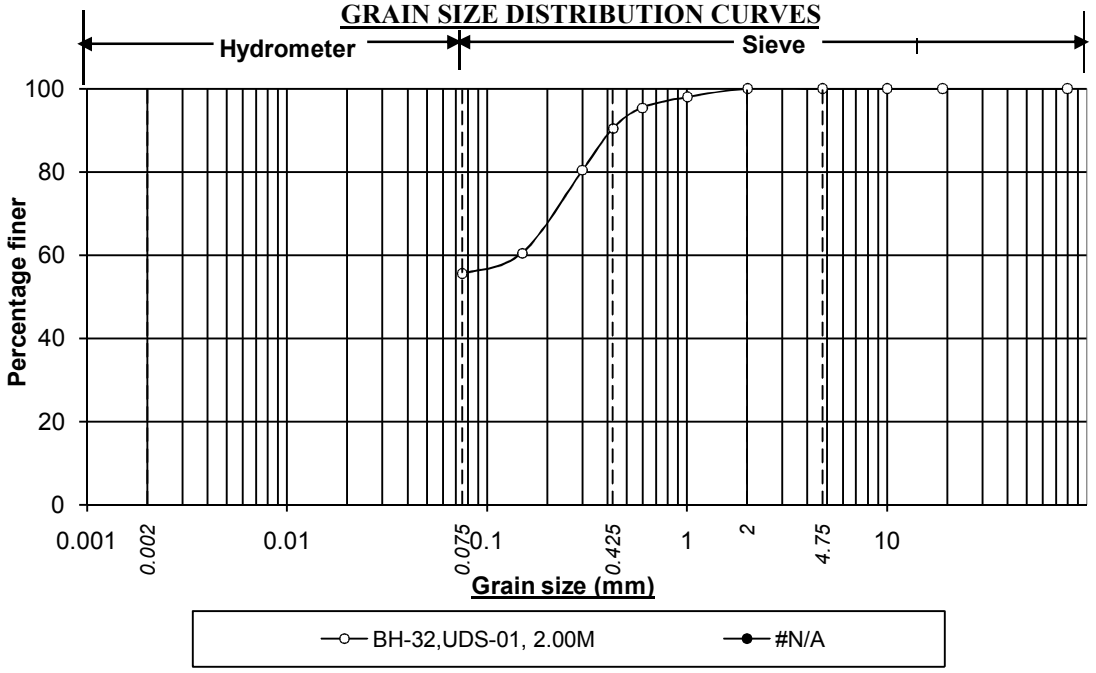


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-31,SPT-16, 26.00M		30.6	54.1	15.3	0.0	69.4		0.0

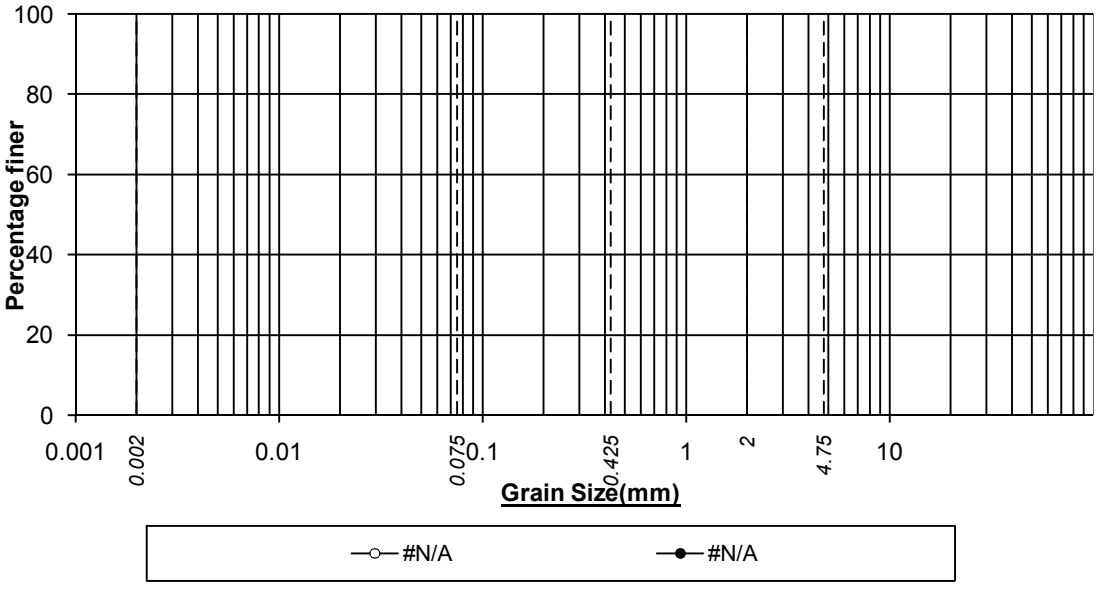
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-32,UDS-01, 2.00M		55.5	35.0	9.5	0.0	44.5		0.0

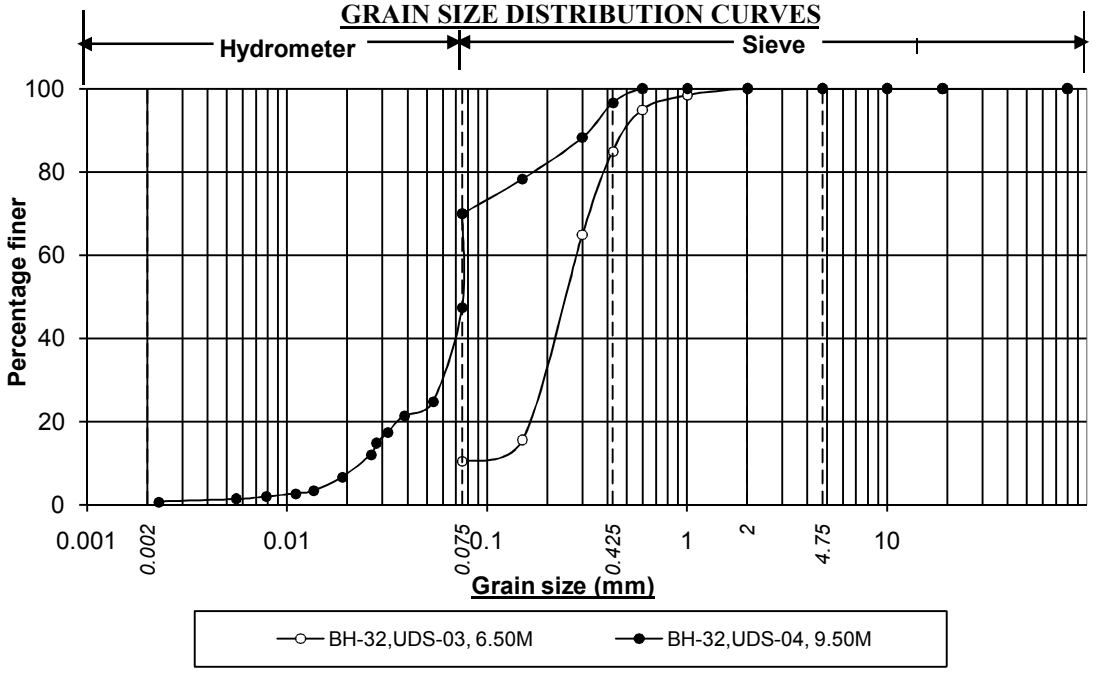


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

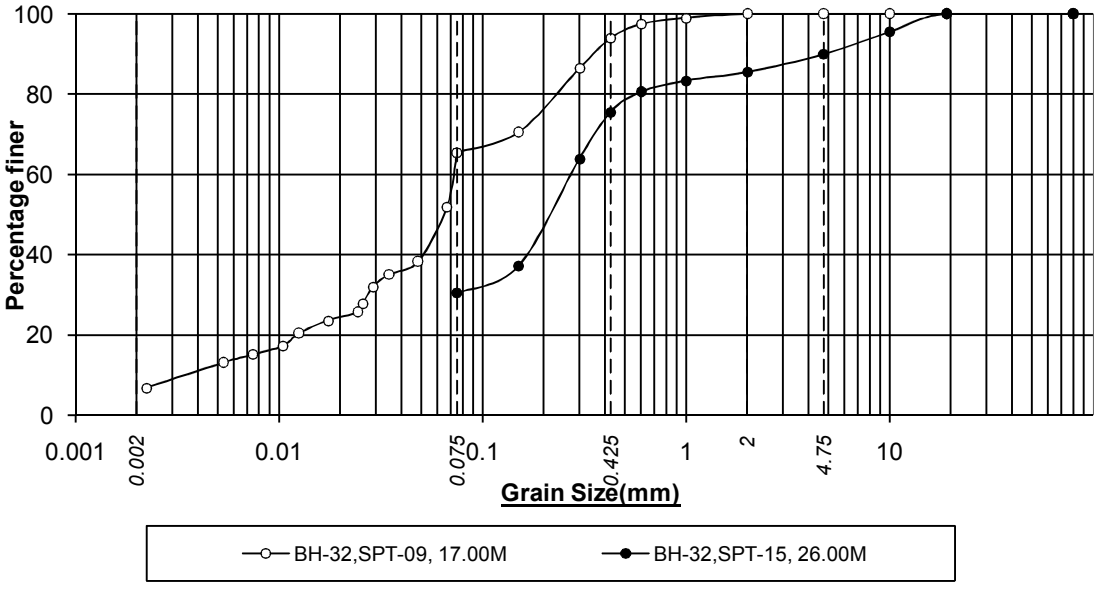
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-32,UDS-03, 6.50M		10.5	74.5	15.0	0.0	89.5	3.775/1.918	0.0
BH-32,UDS-04, 9.50M	0.6	69.4	26.7	3.3	0.0	30.0		0.0

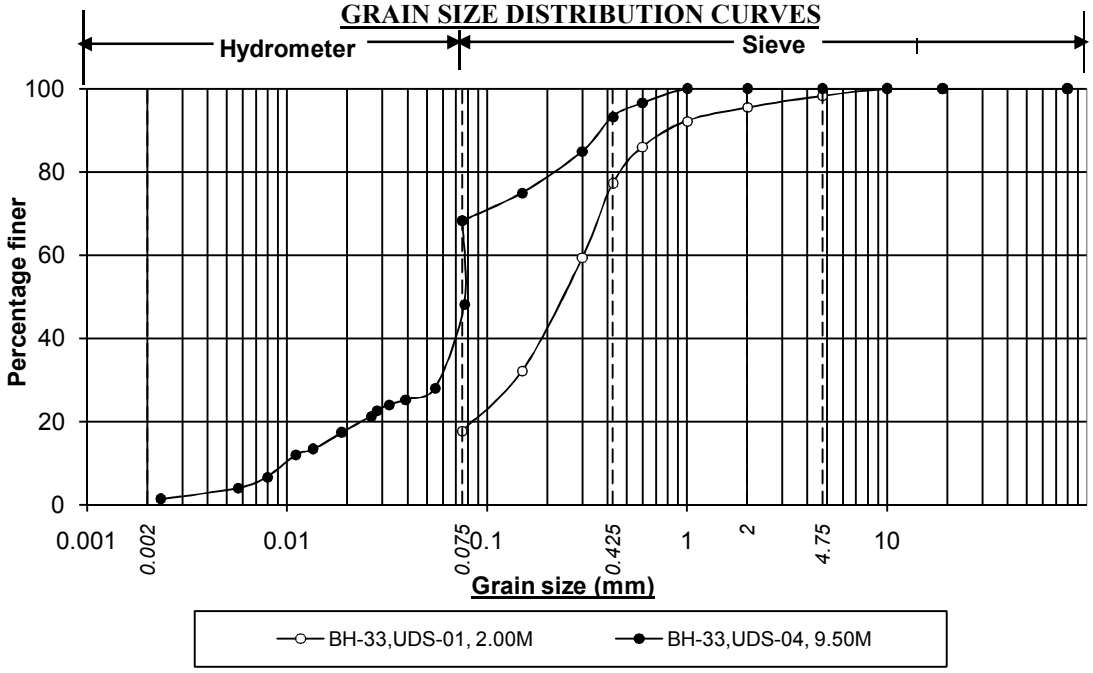


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-32,SPT-09, 17.00M	6.0	59.5	28.5	6.0	0.0	34.5		0.0
BH-32,SPT-15, 26.00M		30.6	45.0	10.0	4.4	59.4		10.0

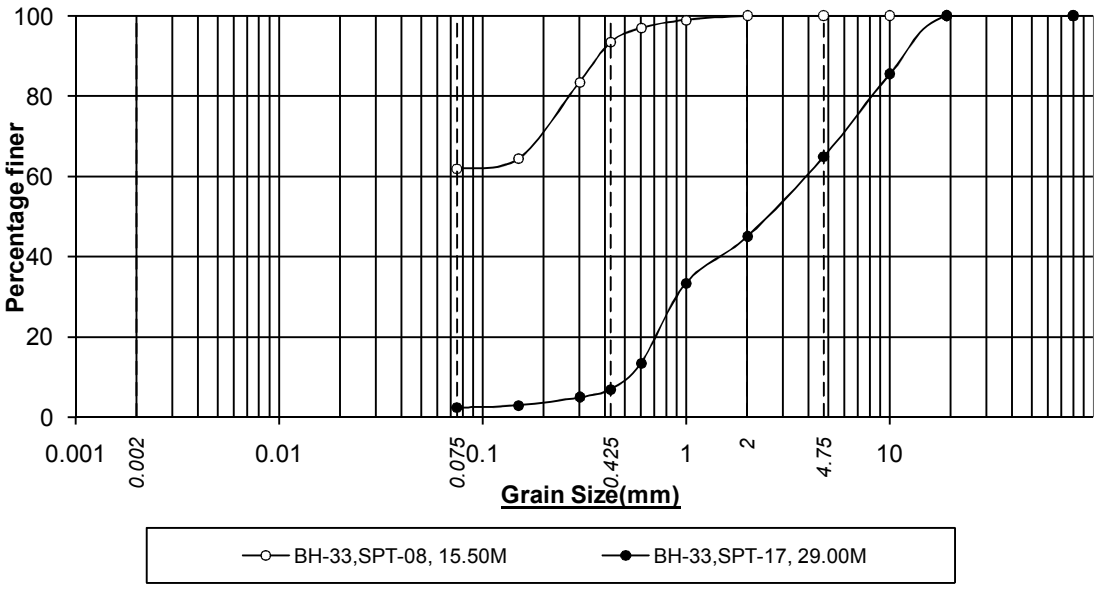
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-33,UDS-01, 2.00M		17.8	59.4	18.3	2.8	80.5		1.7
BH-33,UDS-04, 9.50M	0.9	67.5	24.9	6.7	0.0	31.6		0.0

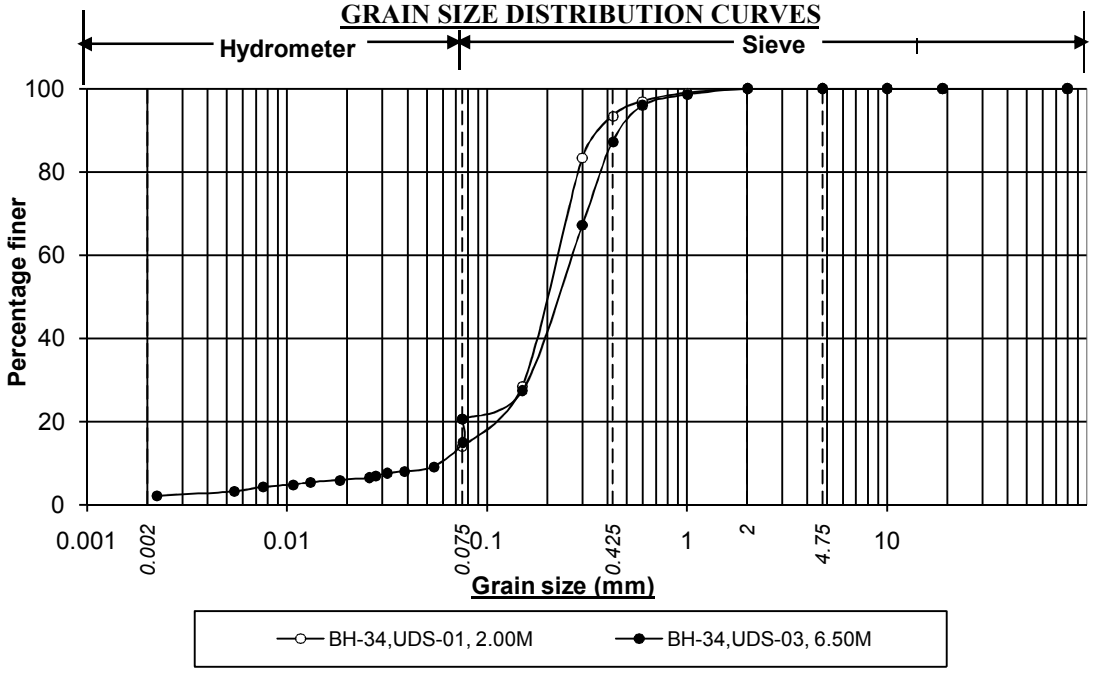


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-33,SPT-08, 15.50M		62.0	31.5	6.5	0.0	38.0		0.0
BH-33,SPT-17, 29.00M		2.5	4.5	38.0	20.0	62.5	7.533/0.41	35.0

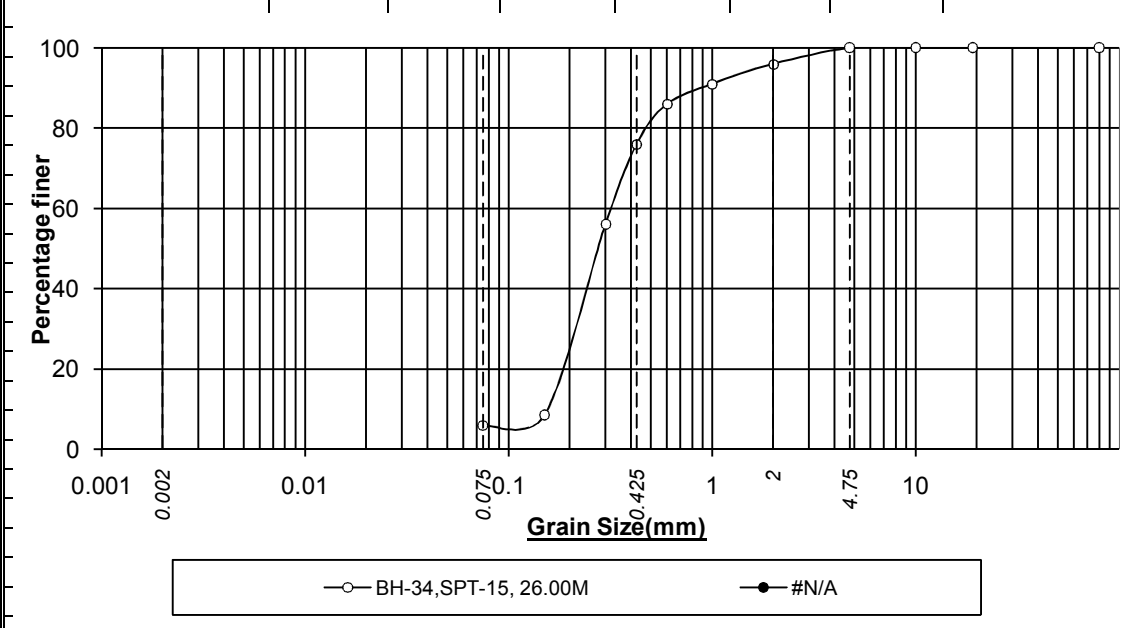
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-34,UDS-01, 2.00M		14.0	79.5	6.5	0.0	86.0		0.0
BH-34,UDS-03, 6.50M	2.0	18.7	66.6	12.7	0.0	79.3		0.0

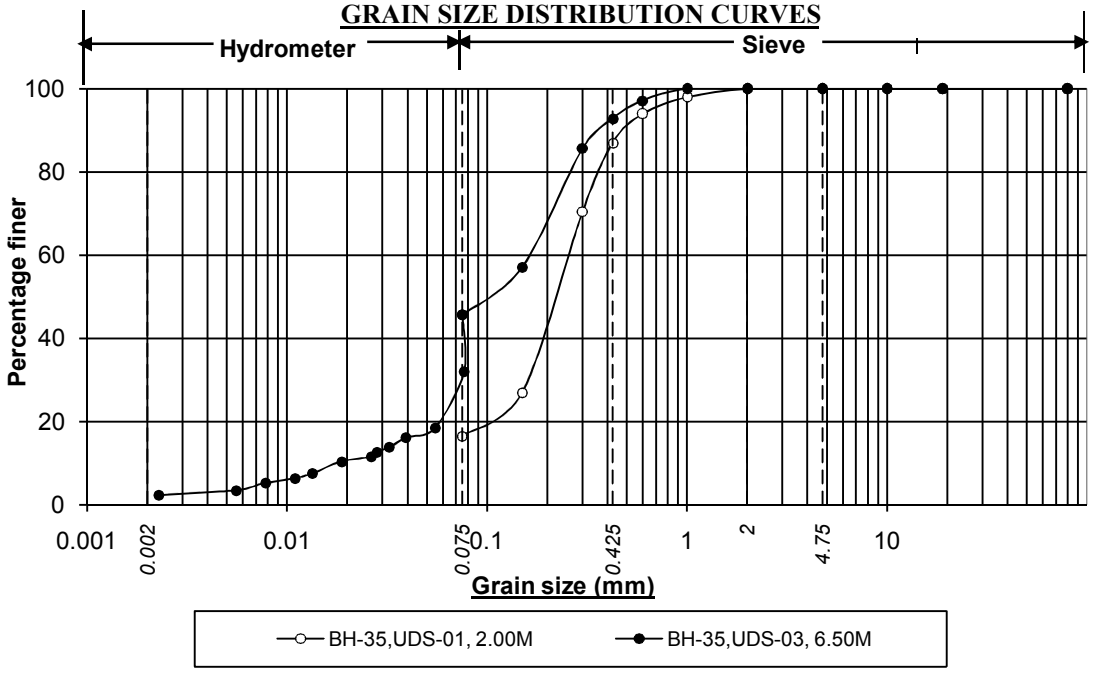


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-34,SPT-15, 26.00M		6.0	70.0	20.0	4.0	94.0	2.172/0.931	0.0

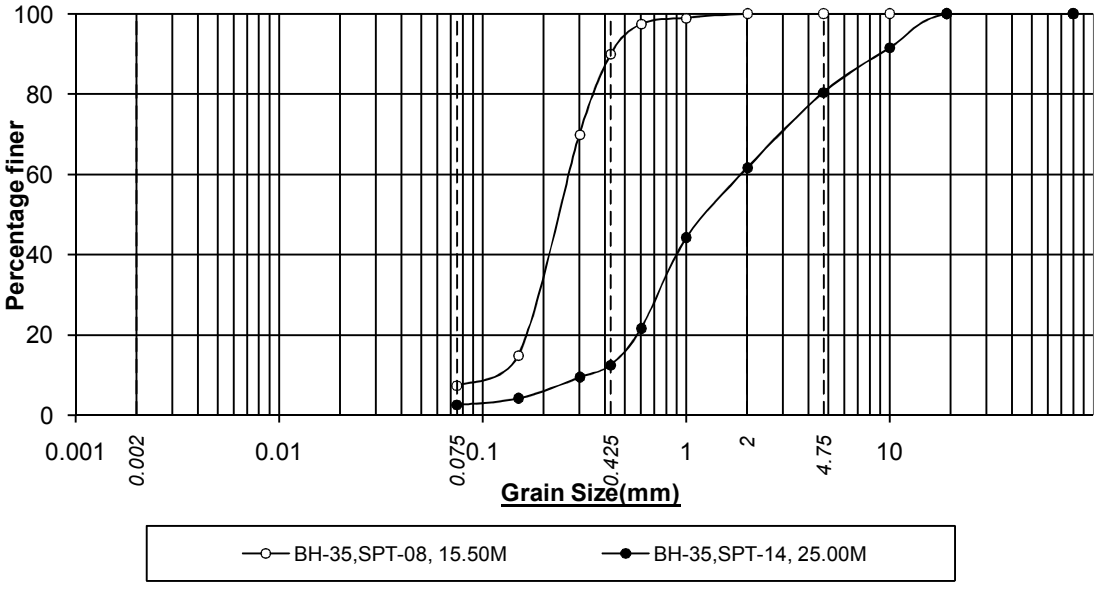
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-35,UDS-01, 2.00M		16.5	70.5	13.0	0.0	83.5		0.0
BH-35,UDS-03, 6.50M	2.1	43.6	47.2	7.1	0.0	54.3		0.0

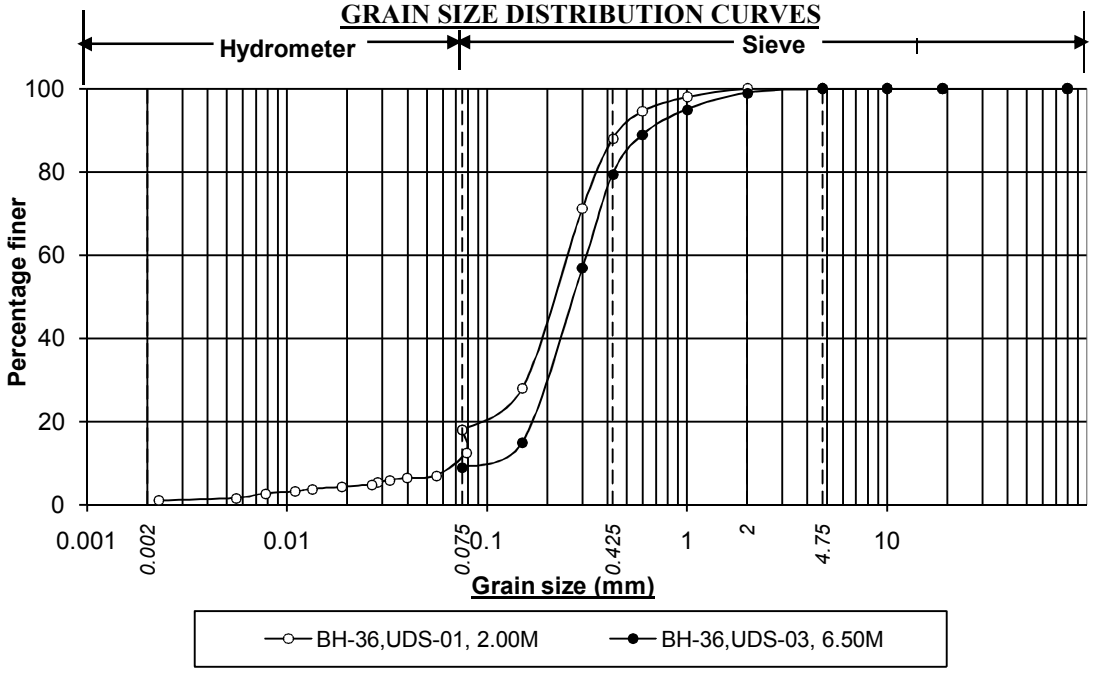


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-35,SPT-08, 15.50M		7.5	82.5	10.0	0.0	92.5	2.218/1.111	0.0
BH-35,SPT-14, 25.00M		2.6	10.1	48.9	18.9	77.9	6.652/0.914	19.5

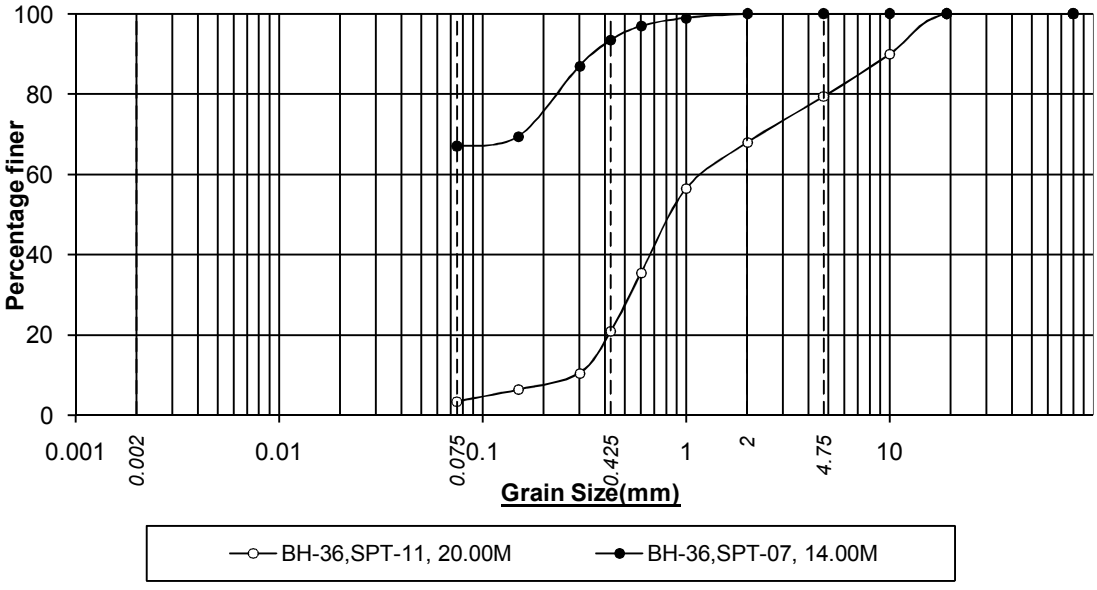
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat — **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-36,UDS-01, 2.00M	1.0	17.0	70.0	12.0	0.0	82.0		0.0
BH-36,UDS-03, 6.50M		9.0	70.5	19.5	1.0	91.0	3.054/1.166	0.0

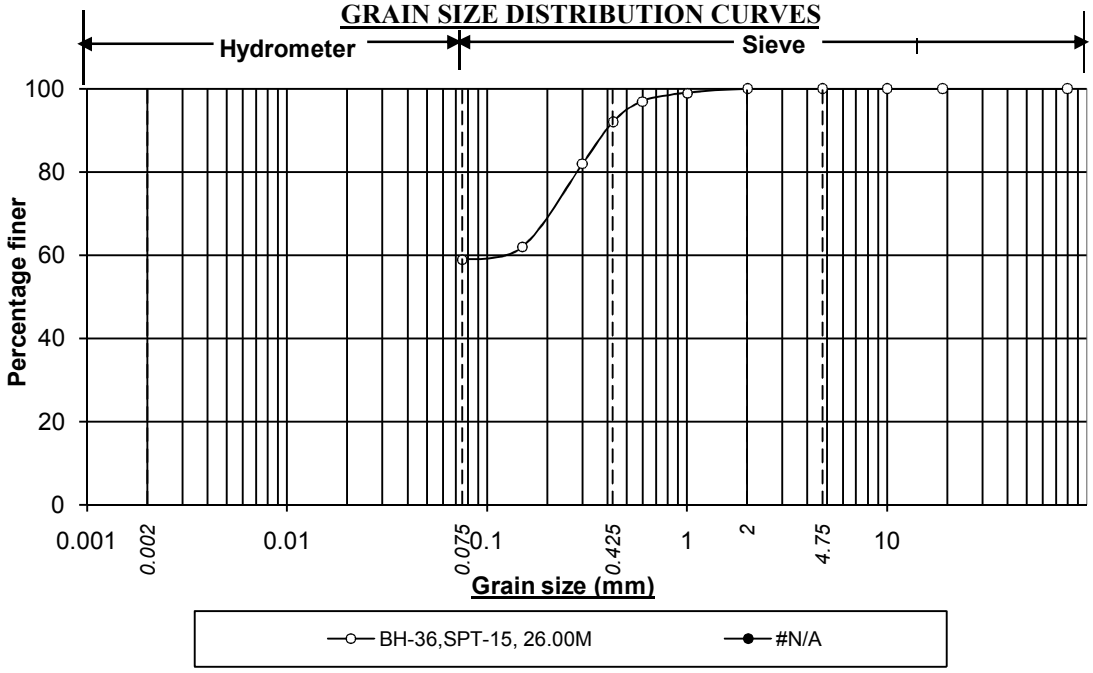


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-36,SPT-11, 20.00M		3.5	17.5	47.0	11.5	76.0	3.793/0.803	20.5
BH-36,SPT-07, 14.00M		67.0	26.5	6.5	0.0	33.0		0.0

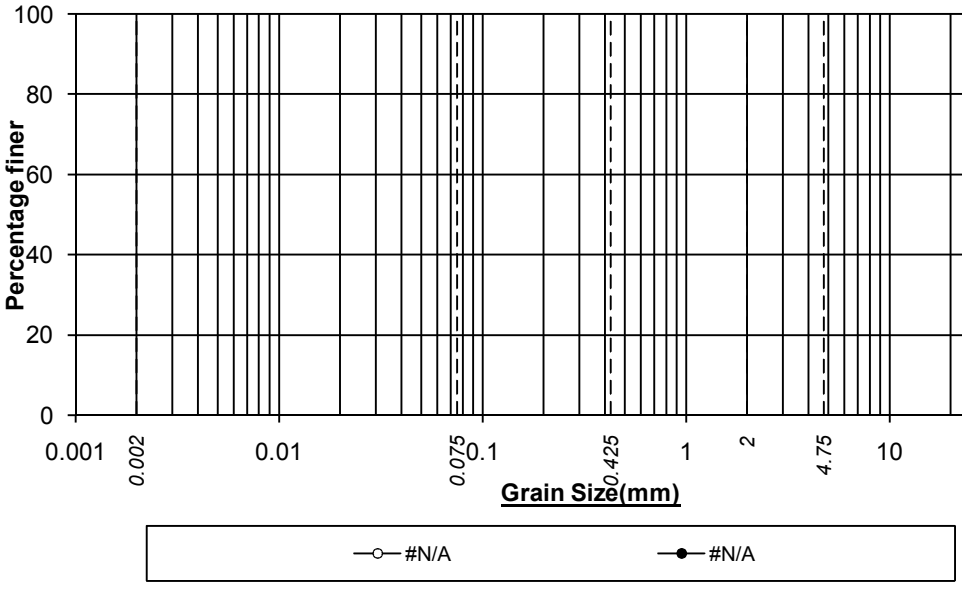
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat — **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-36,SPT-15, 26.00M		59.0	33.0	8.0	0.0	41.0		0.0

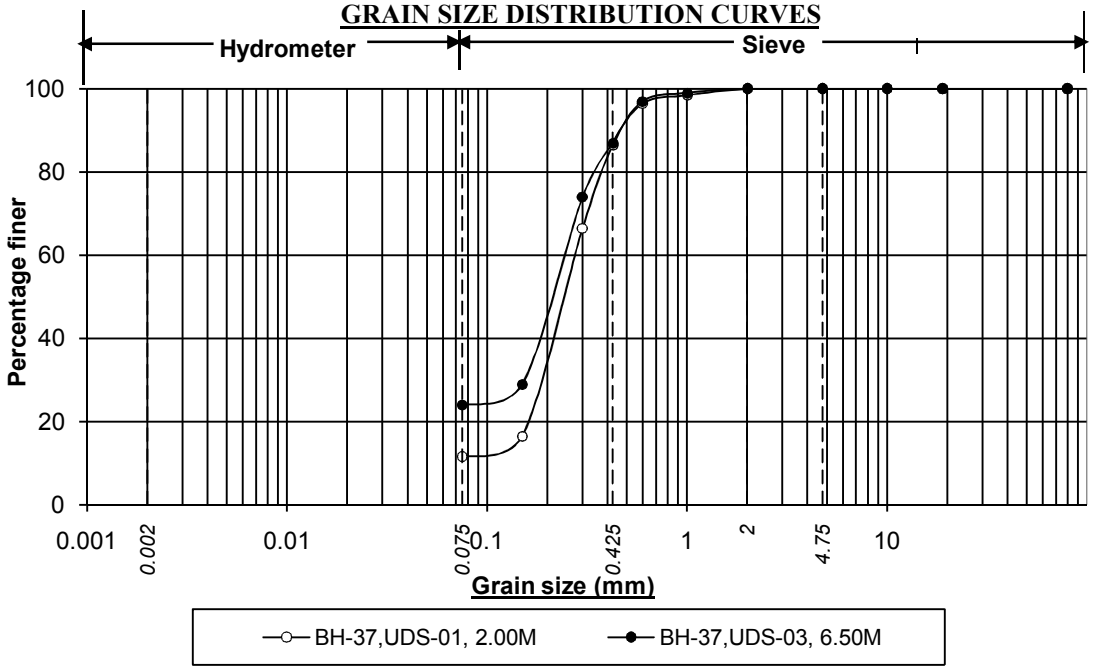


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

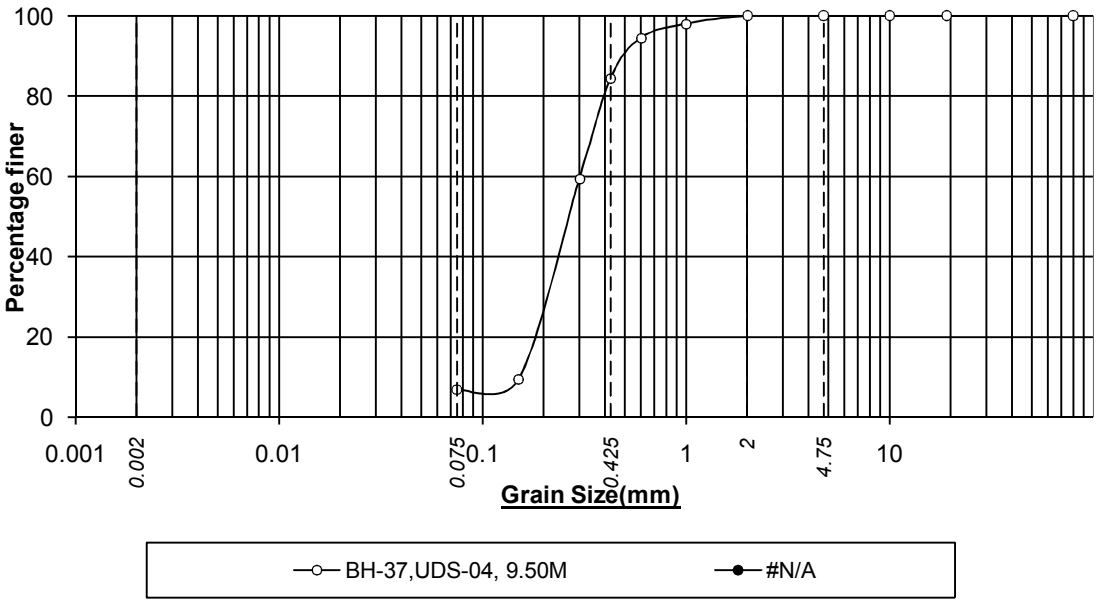
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat	**Job No. 3369**	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-37,UDS-01, 2.00M		11.5	75.0	13.5	0.0	88.5		0.0
BH-37,UDS-03, 6.50M		24.0	63.0	13.0	0.0	76.0		0.0

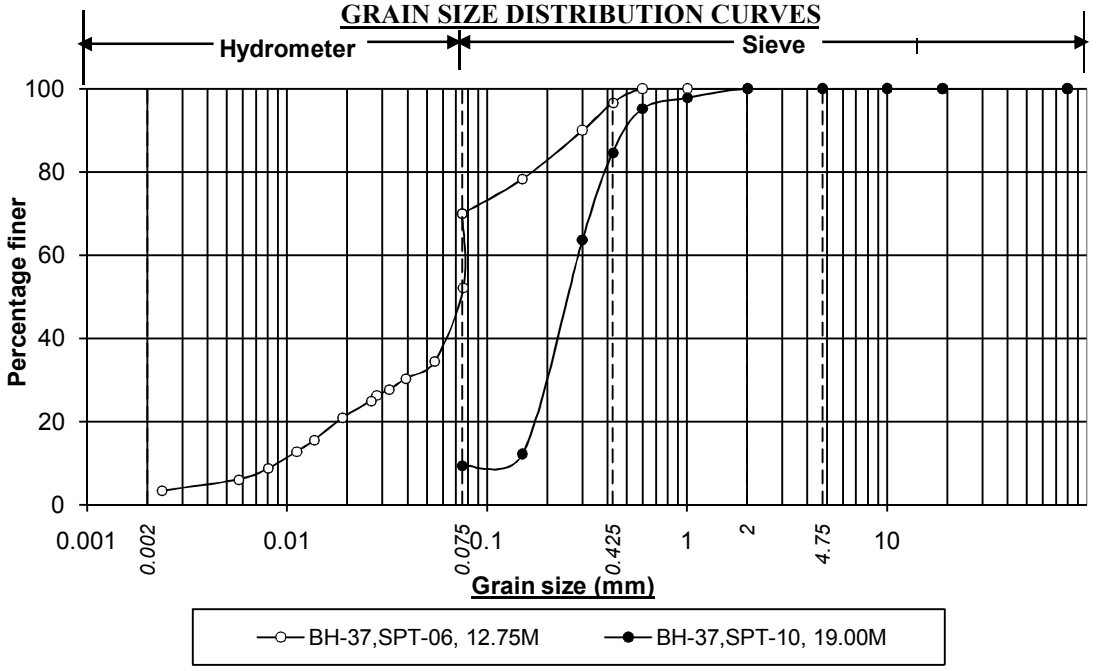


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-37,UDS-04, 9.50M		7.0	77.5	15.5	0.0	93.0	1.954/1.044	0.0

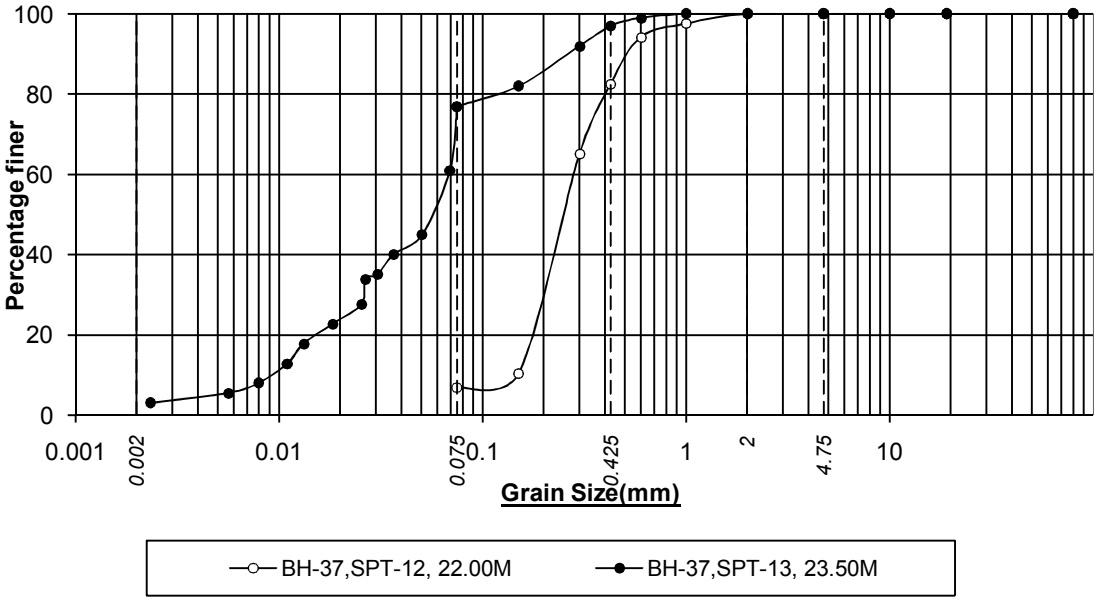
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-37,SPT-06, 12.75M	2.9	67.1	26.7	3.3	0.0	30.0		0.0
BH-37,SPT-10, 19.00M		9.5	75.2	15.3	0.0	90.5	2.046/1.011	0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-37,SPT-12, 22.00M		7.0	75.6	17.4	0.0	93.0	1.931/0.955	0.0
BH-37,SPT-13, 23.50M	2.7	74.3	20.0	3.0	0.0	23.0		0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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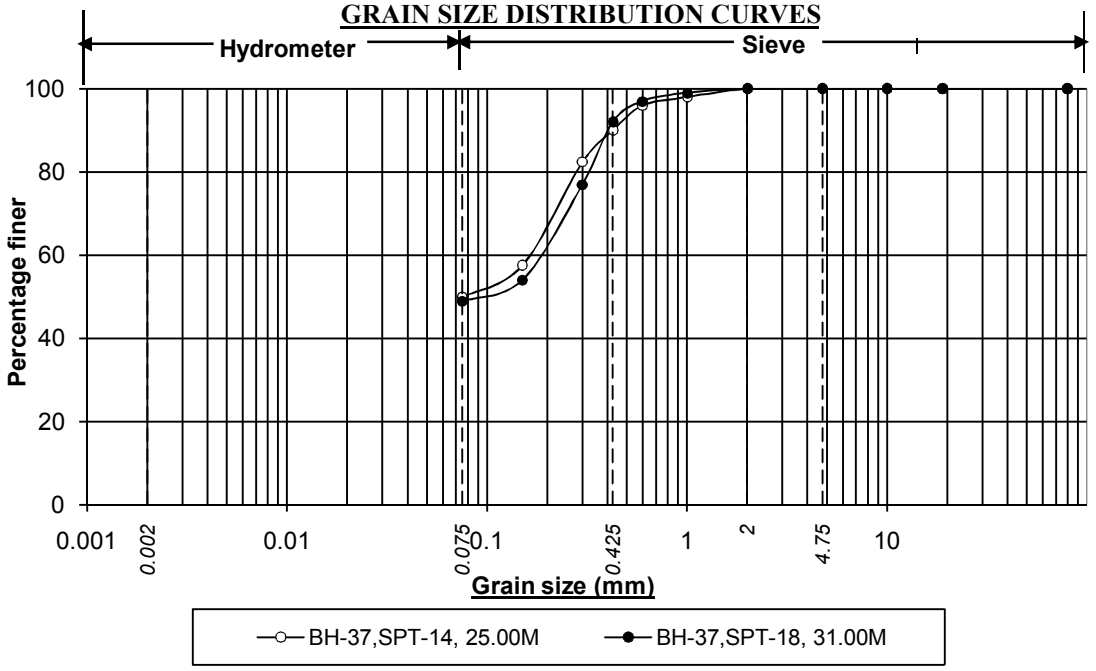
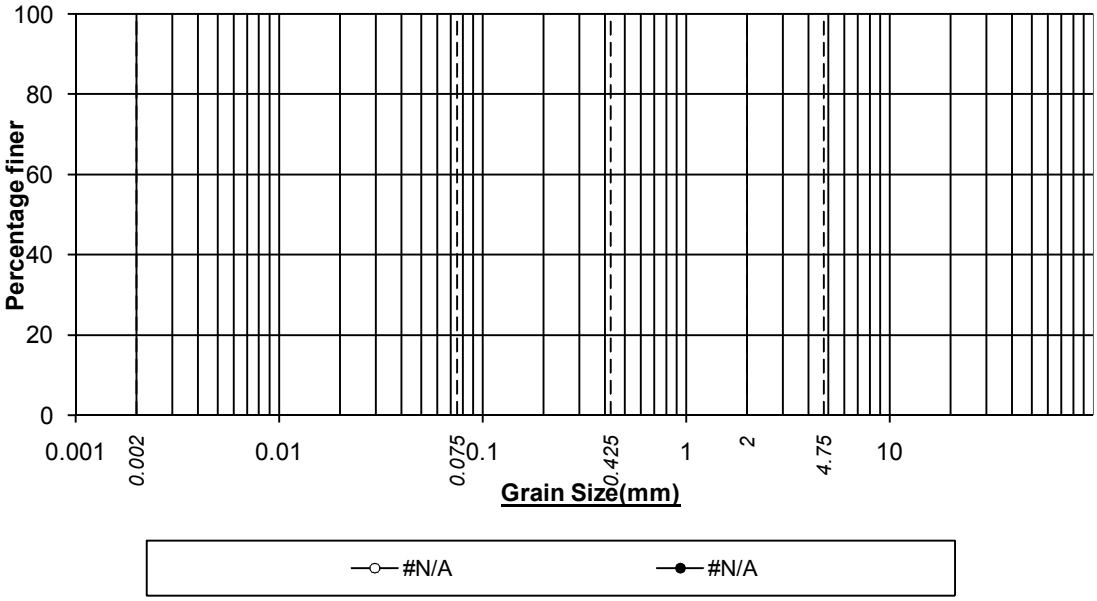
Sheet No.:

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-37,SPT-14, 25.00M		50.0	40.0	10.0	0.0	50.0		0.0
BH-37,SPT-18, 31.00M		49.0	43.0	8.0	0.0	51.0		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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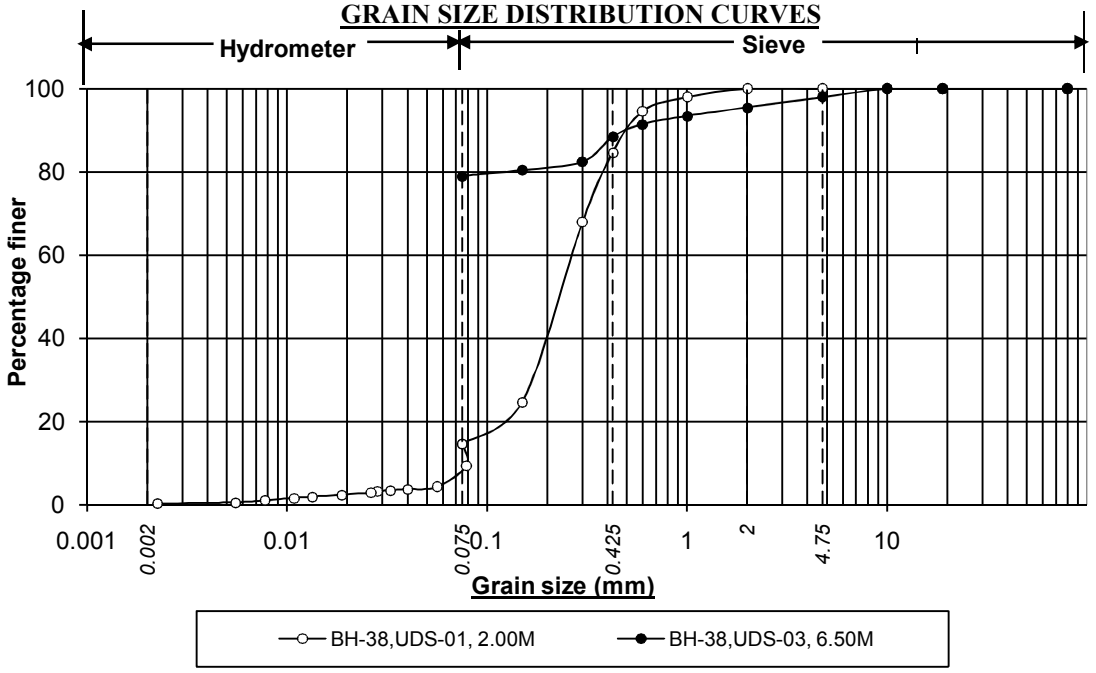
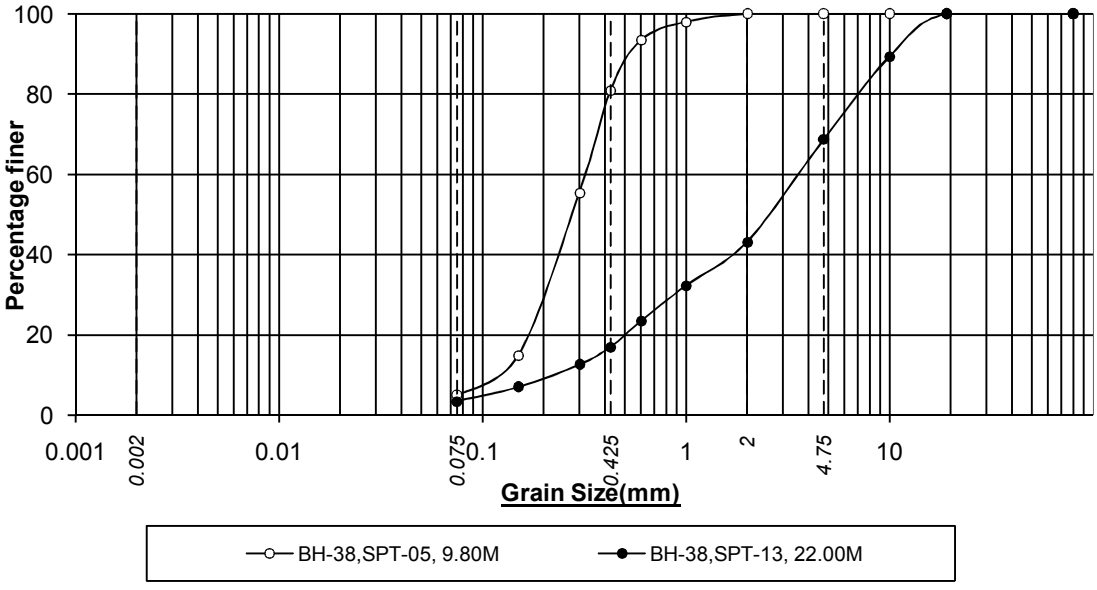
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-38,UDS-01, 2.00M	0.2	14.4	70.1	15.3	0.0	85.4		0.0
BH-38,UDS-03, 6.50M		79.0	9.5	7.0	2.5	19.0		2.0

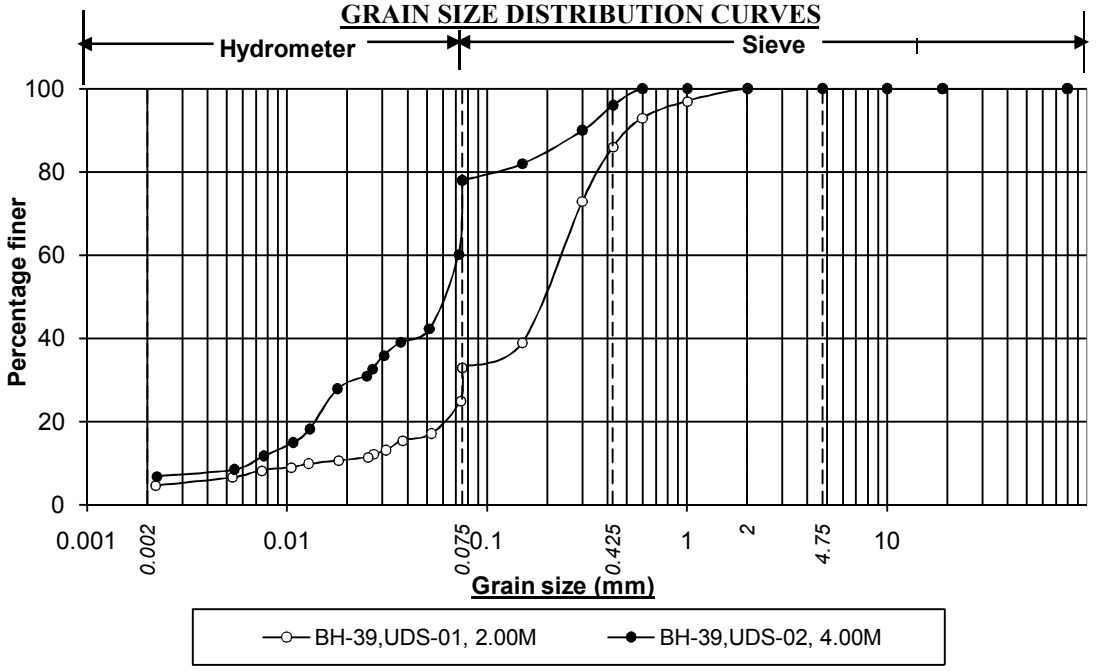


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-38,SPT-05, 9.80M		5.0	76.0	19.0	0.0	95.0	2.606/1	0.0
BH-38,SPT-13, 22.00M		3.5	13.5	26.2	25.6	65.3	14.588/0.999	31.2

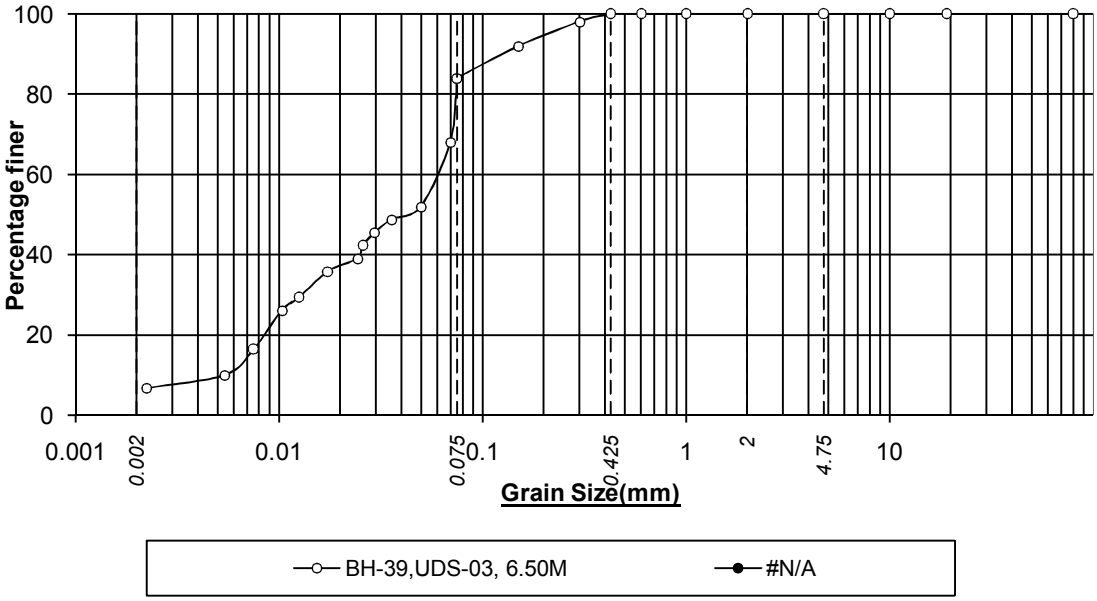
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-39,UDS-01, 2.00M	4.4	28.6	53.0	14.0	0.0	67.0		0.0
BH-39,UDS-02, 4.00M	6.6	71.4	18.0	4.0	0.0	22.0		0.0

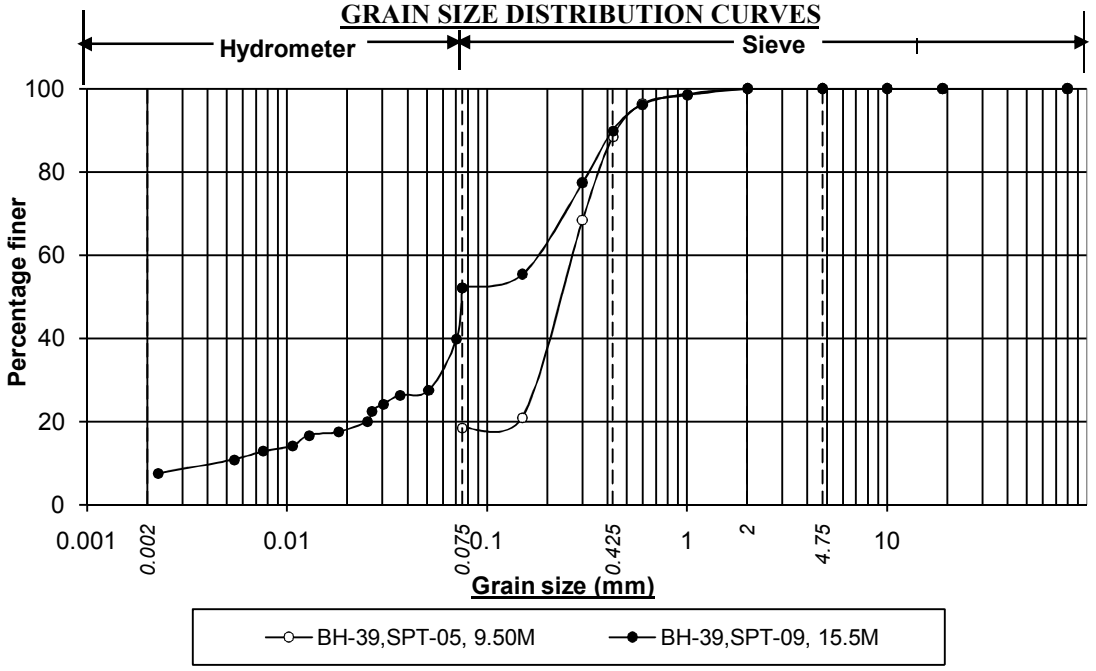


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-39,UDS-03, 6.50M	6.4	77.6	16.0	0.0	0.0	16.0		0.0

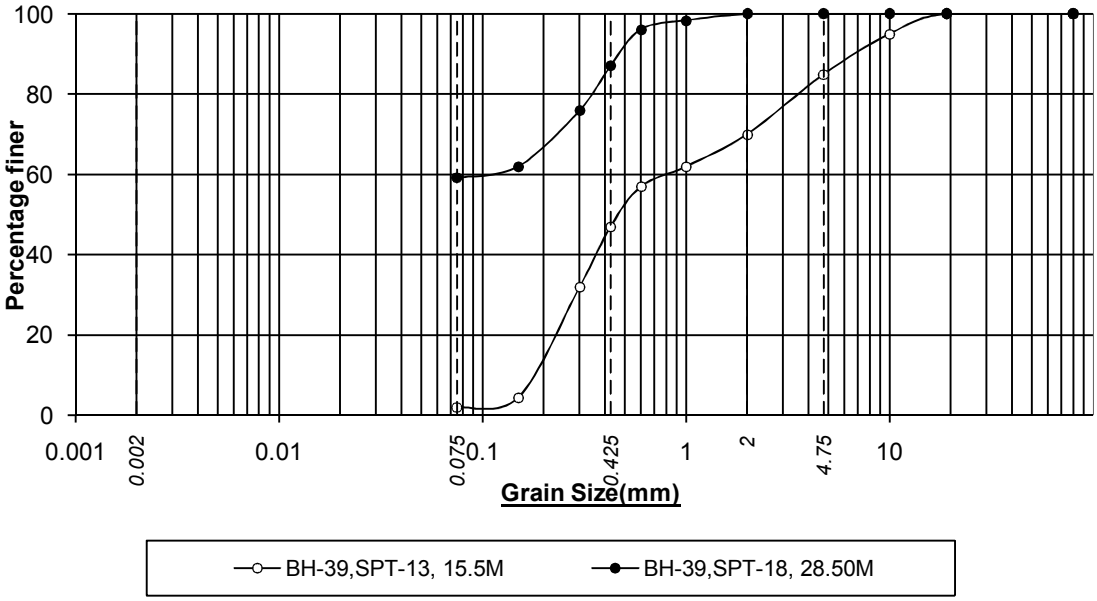
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-39,SPT-05, 9.50M		18.5	70.0	11.5	0.0	81.5		0.0
BH-39,SPT-09, 15.5M	7.1	45.1	37.7	10.1	0.0	47.8		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-39,SPT-13, 15.5M		2.0	45.0	23.0	15.0	83.0	4.405/0.575	15.0
BH-39,SPT-18, 28.50M		59.2	28.0	12.8	0.0	40.8		0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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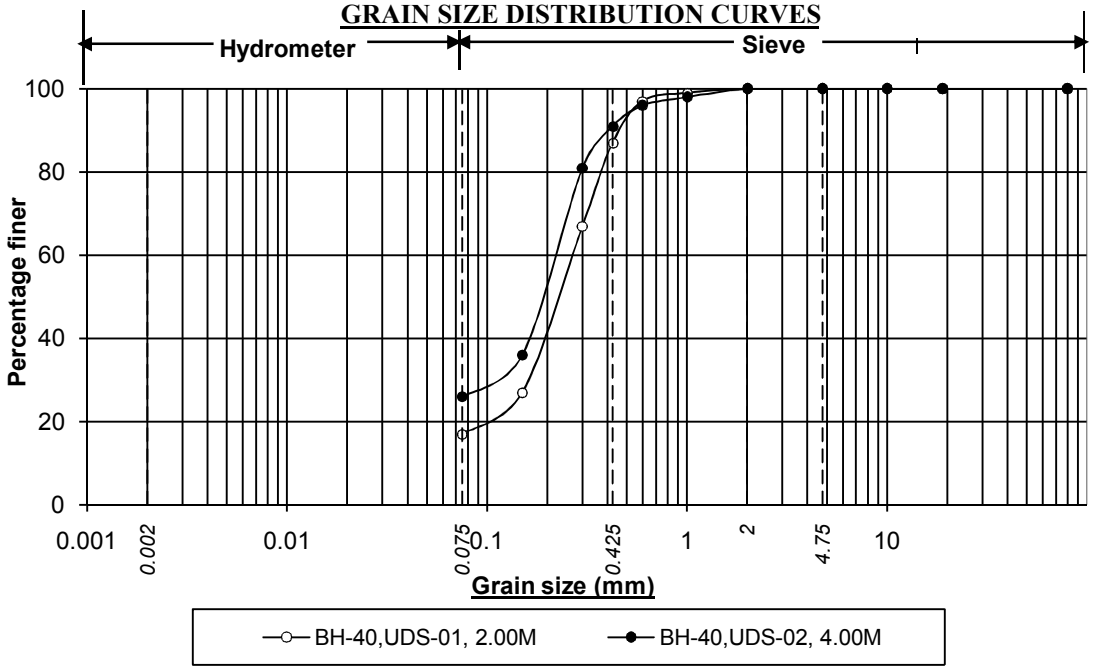
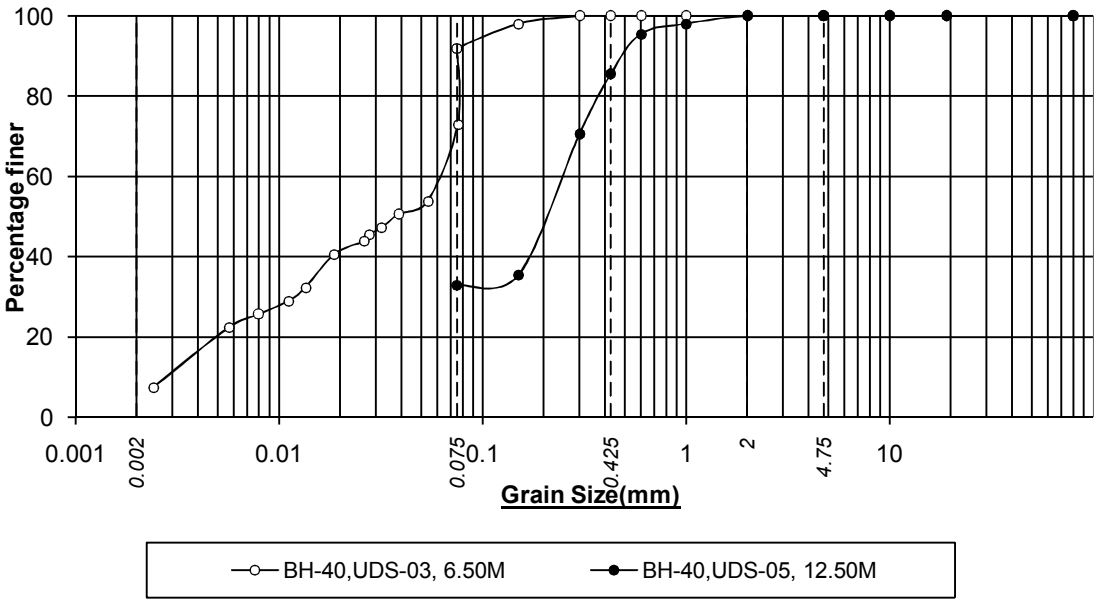
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-40,UDS-01, 2.00M		17.0	70.0	13.0	0.0	83.0		0.0
BH-40,UDS-02, 4.00M		26.0	65.0	9.0	0.0	74.0		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-40,UDS-03, 6.50M	4.2	87.8	8.0	0.0	0.0	8.0		0.0
BH-40,UDS-05, 12.50M		33.0	52.5	14.5	0.0	67.0		0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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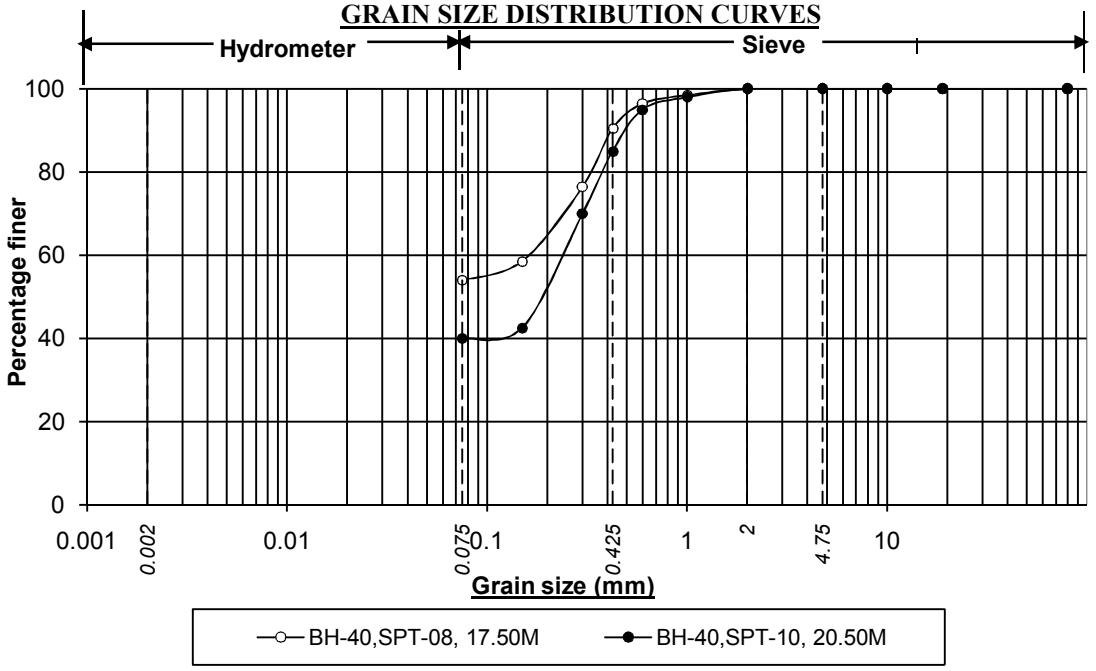
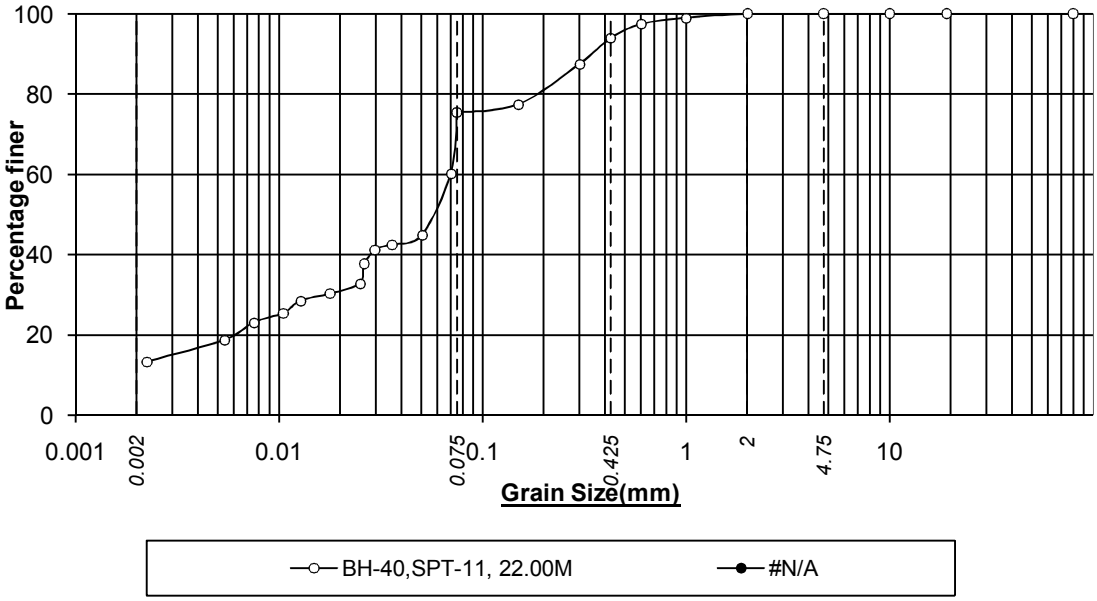
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-40,SPT-08, 17.50M		54.0	36.5	9.5	0.0	46.0		0.0
BH-40,SPT-10, 20.50M		40.0	45.0	15.0	0.0	60.0		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-40,SPT-11, 22.00M	12.6	62.9	18.5	6.0	0.0	24.5		0.0

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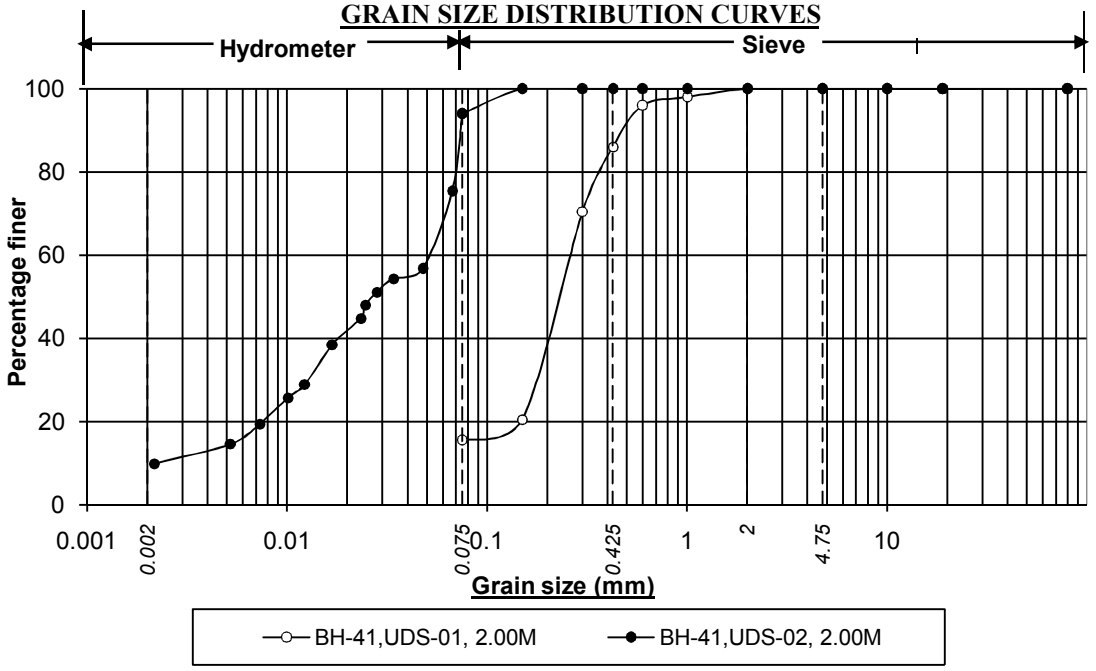
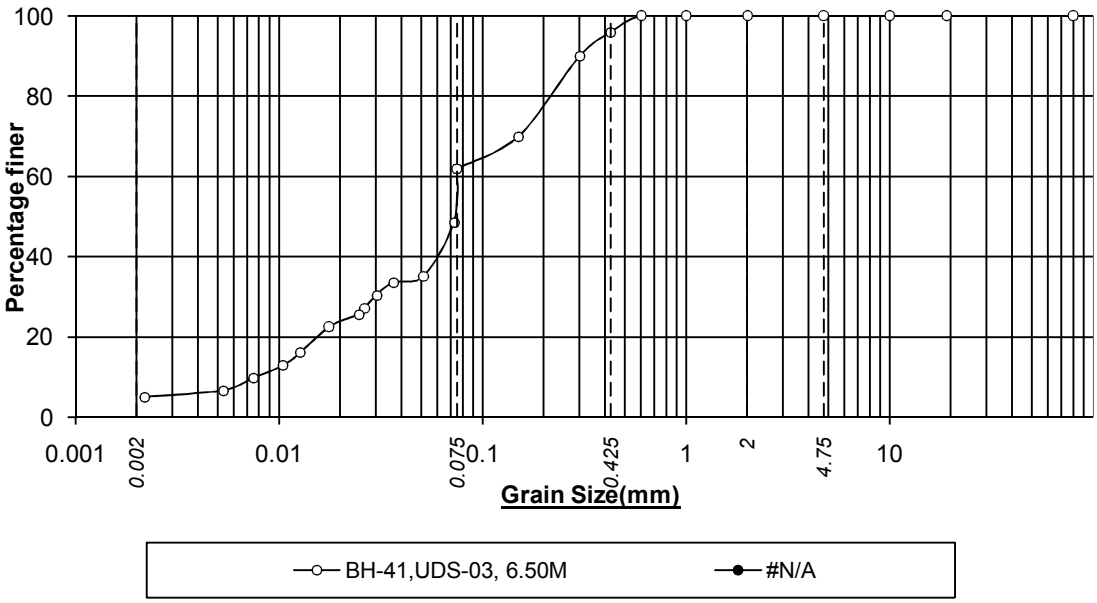
C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-41,UDS-01, 2.00M		15.5	70.5	14.0	0.0	84.5		0.0
BH-41,UDS-02, 2.00M	9.4	84.6	6.0	0.0	0.0	6.0		0.0

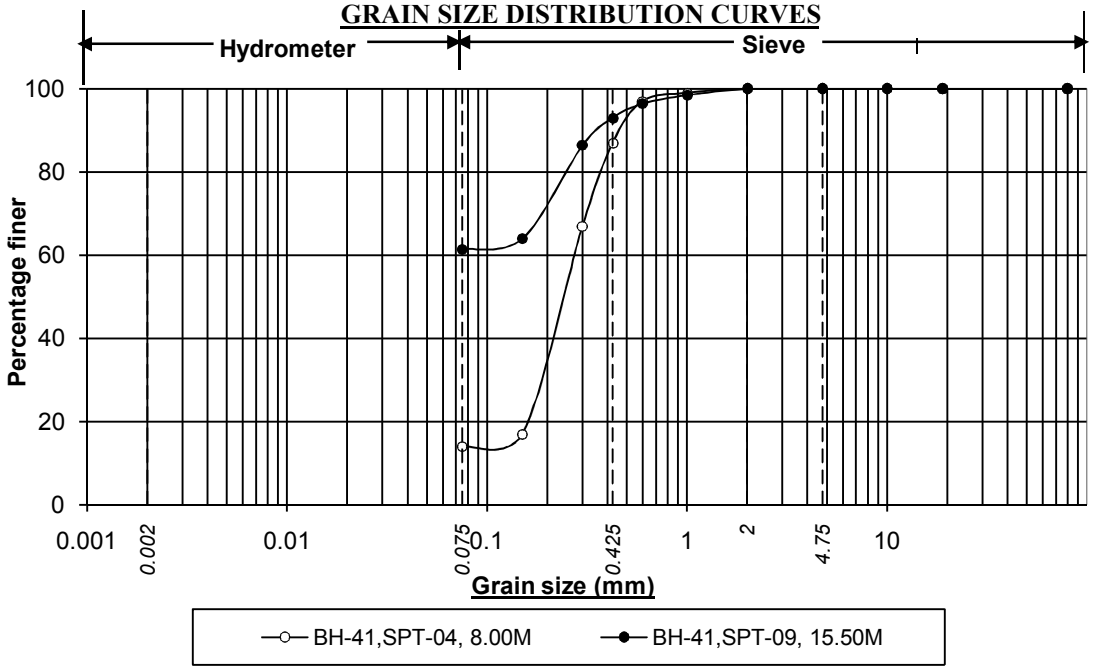


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-41,UDS-03, 6.50M	4.9	57.1	34.0	4.0	0.0	38.0		0.0

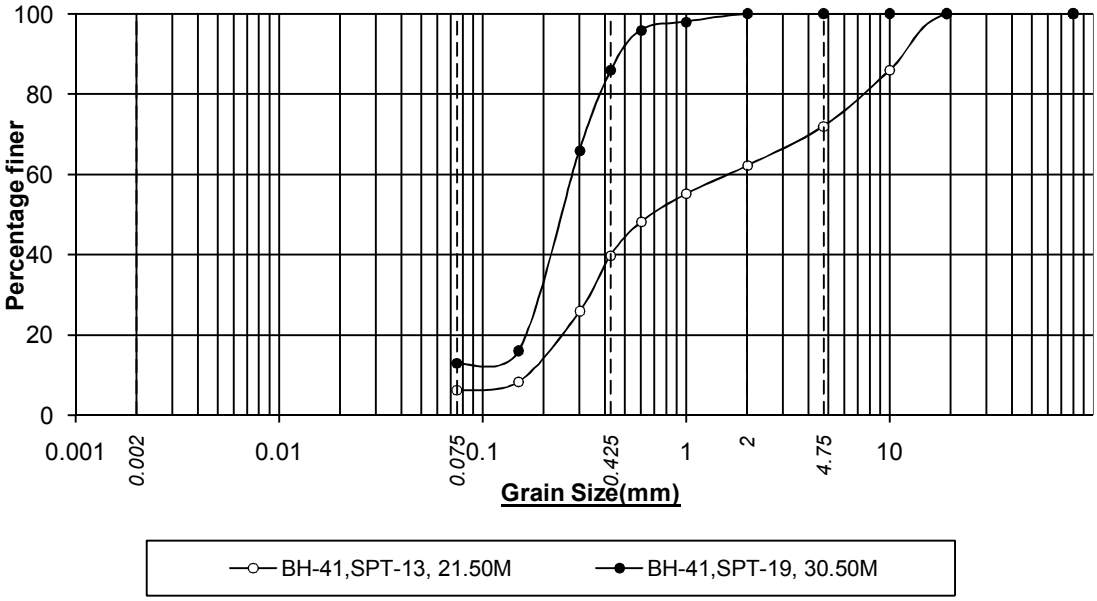
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-41,SPT-04, 8.00M		14.0	73.0	13.0	0.0	86.0		0.0
BH-41,SPT-09, 15.50M		61.5	31.5	7.0	0.0	38.5		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-41,SPT-13, 21.50M		6.3	33.5	22.4	9.8	65.7	9.594/0.452	28.0
BH-41,SPT-19, 30.50M		13.0	73.0	14.0	0.0	87.0		0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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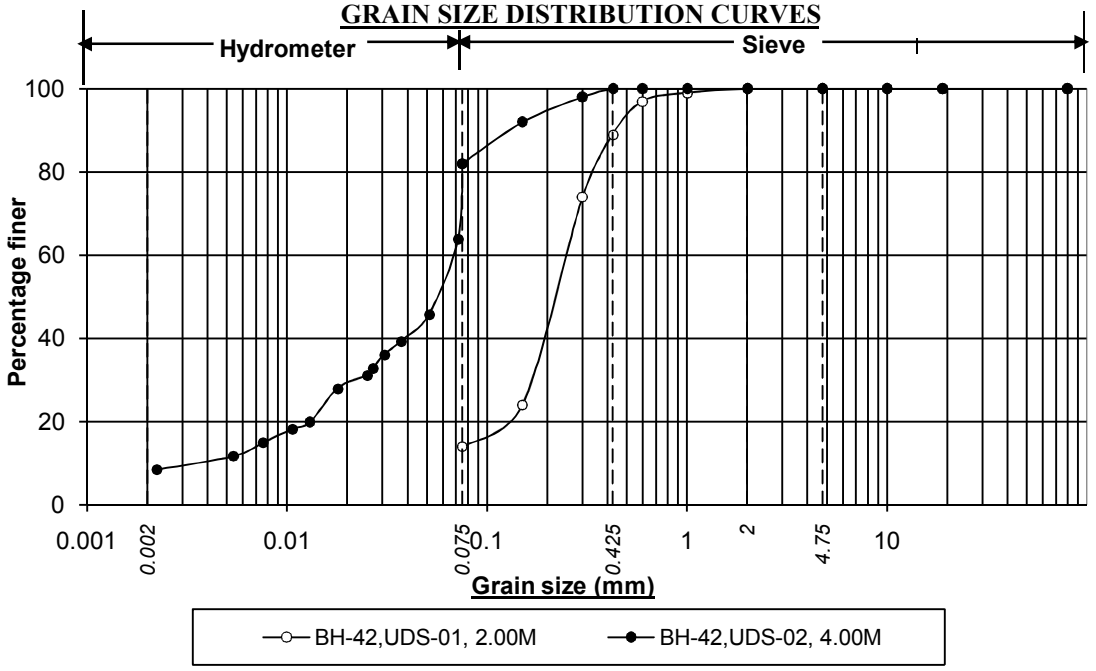
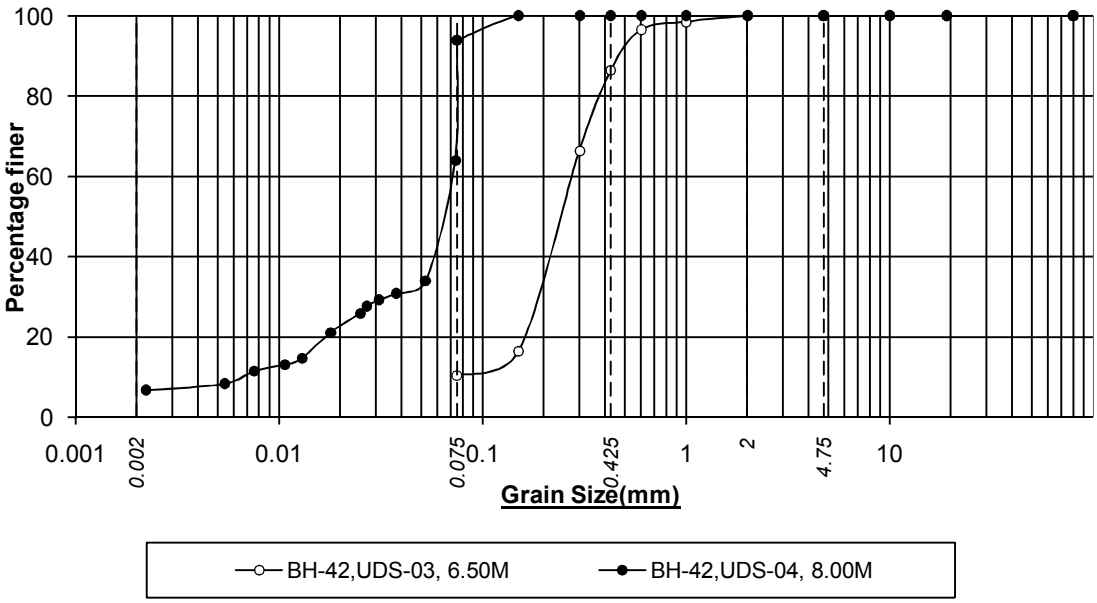
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-42,UDS-01, 2.00M		14.0	75.0	11.0	0.0	86.0		0.0
BH-42,UDS-02, 4.00M	8.0	74.0	18.0	0.0	0.0	18.0		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-42,UDS-03, 6.50M		10.5	76.0	13.5	0.0	89.5		0.0
BH-42,UDS-04, 8.00M	6.6	87.4	6.0	0.0	0.0	6.0		0.0

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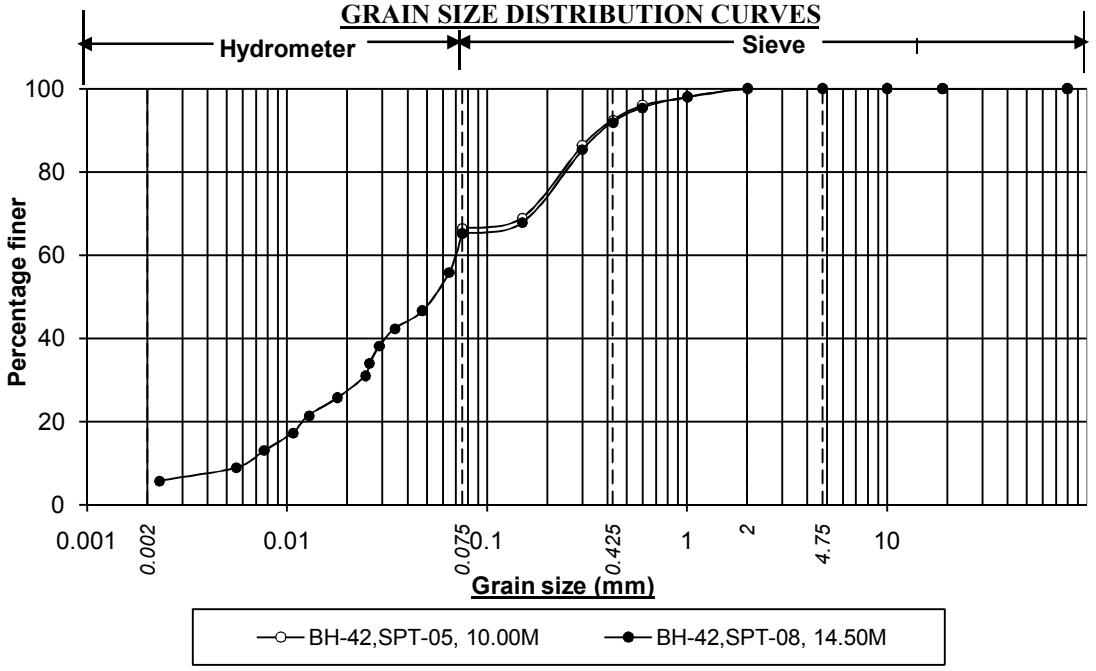
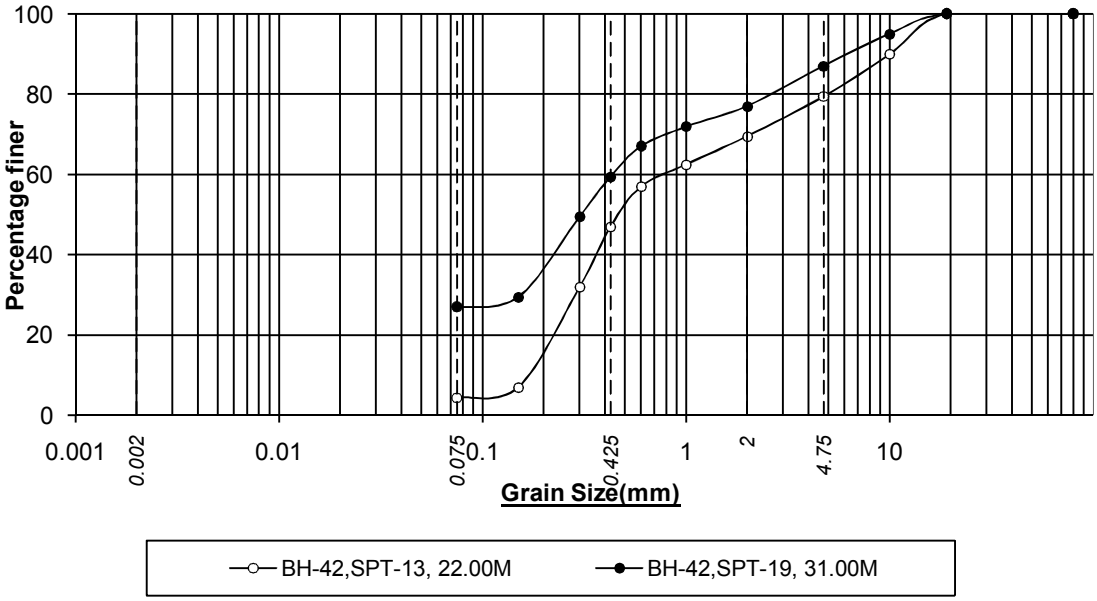
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-42,SPT-05, 10.00M		66.5	26.0	7.5	0.0	33.5		0.0
BH-42,SPT-08, 14.50M	5.3	60.1	26.6	8.0	0.0	34.6		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-42,SPT-13, 22.00M		4.5	42.5	22.5	10.0	75.0	4.623/0.598	20.5
BH-42,SPT-19, 31.00M		27.0	32.5	17.5	10.0	60.0		13.0

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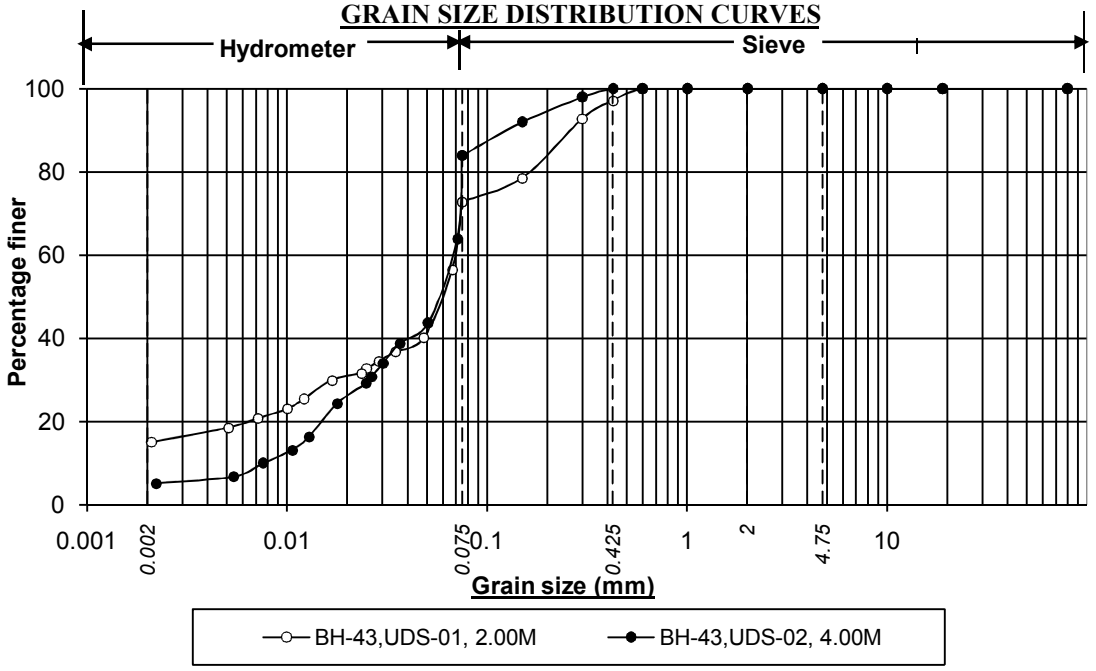
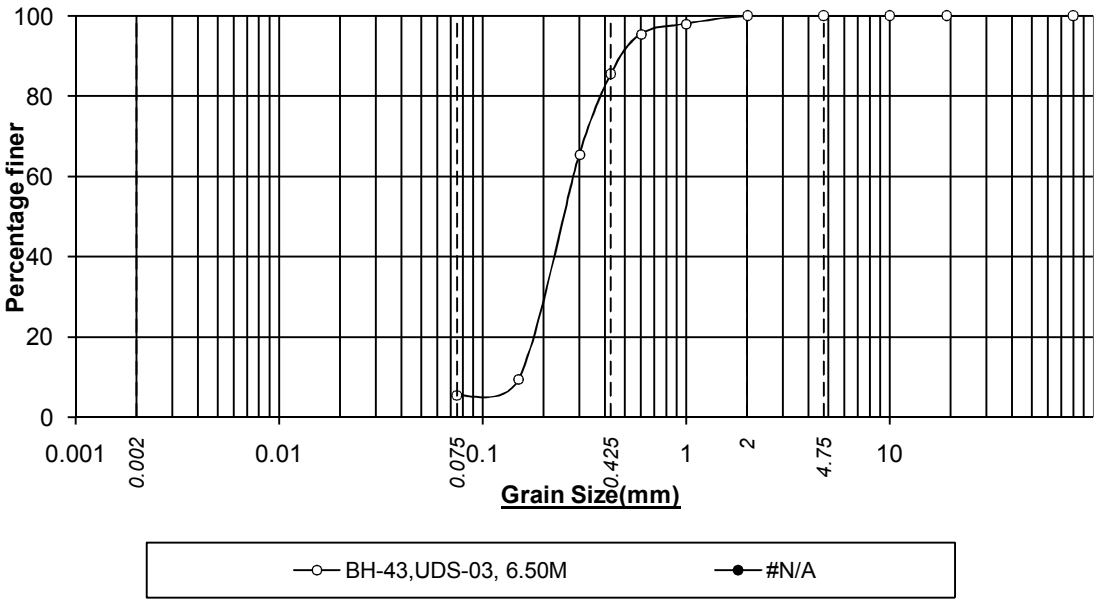
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-43,UDS-01, 2.00M	14.9	58.0	24.2	2.9	0.0	27.1		0.0
BH-43,UDS-02, 4.00M	5.0	79.0	16.0	0.0	0.0	16.0		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-43,UDS-03, 6.50M		5.5	80.0	14.5	0.0	94.5	1.807/0.885	0.0

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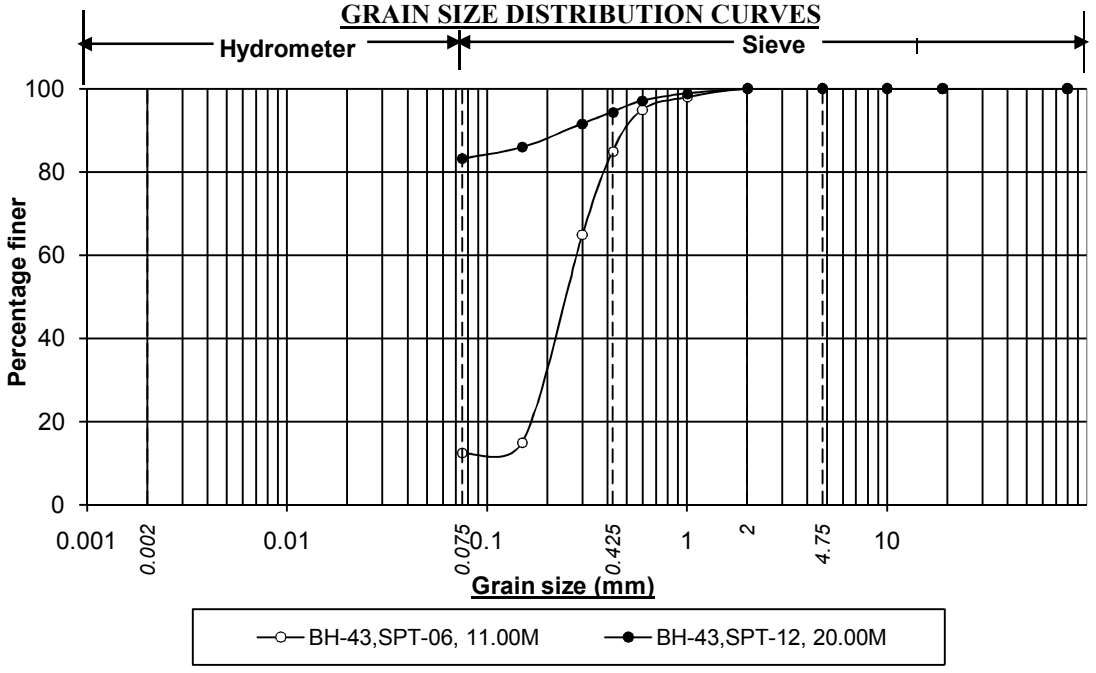
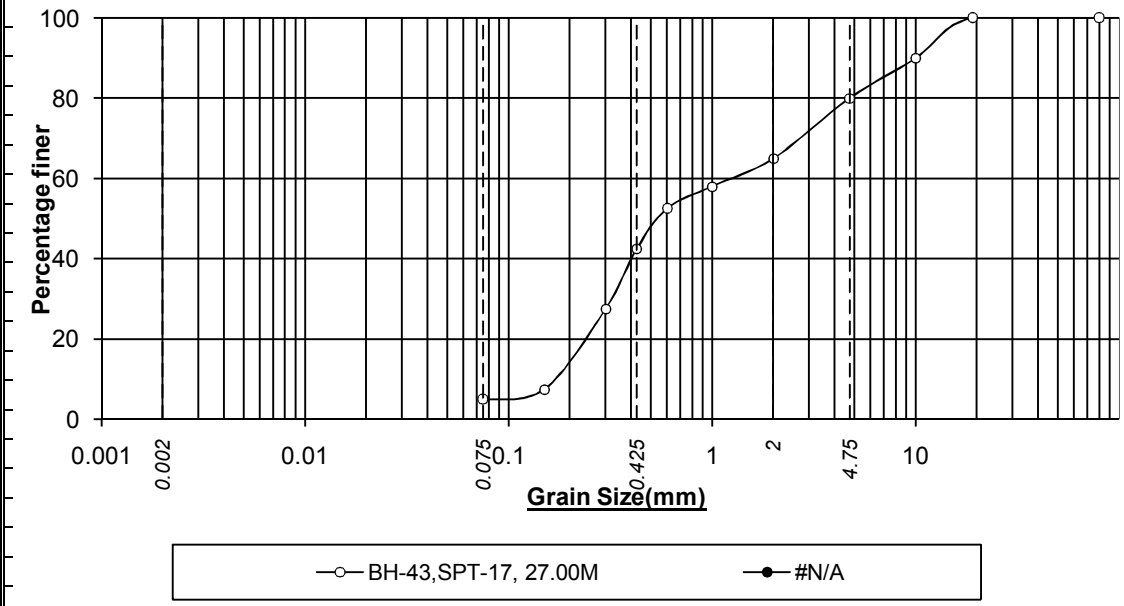
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-43,SPT-06, 11.00M		12.5	72.5	15.0	0.0	87.5		0.0
BH-43,SPT-12, 20.00M		83.2	11.2	5.6	0.0	16.8		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-43,SPT-17, 27.00M		5.0	37.5	22.5	15.0	75.0	7.396/0.493	20.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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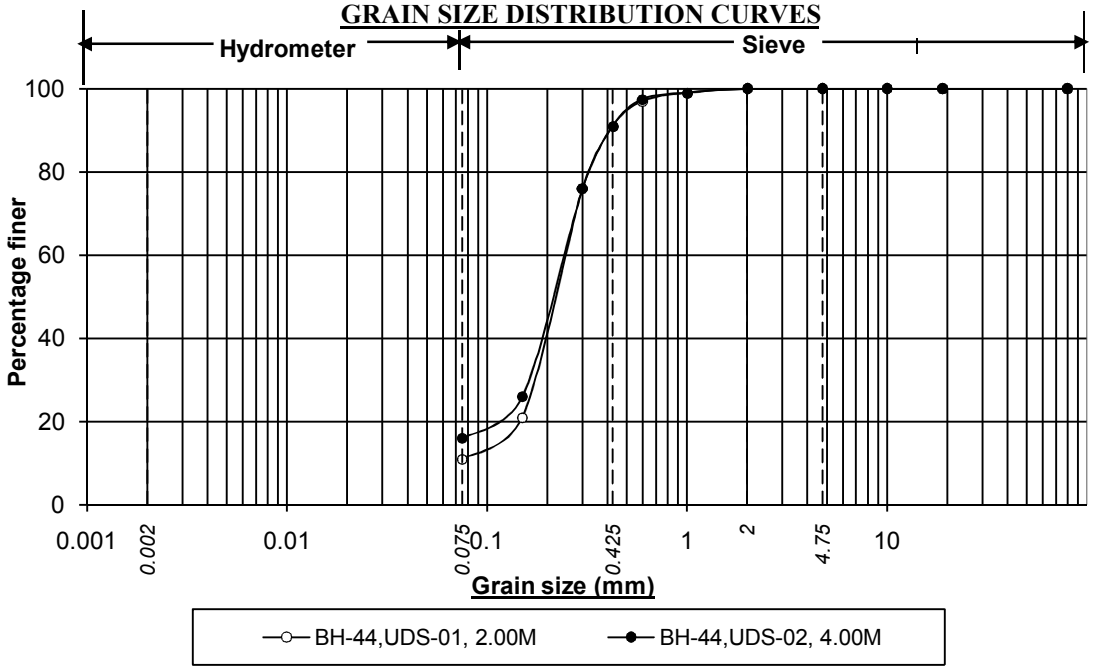
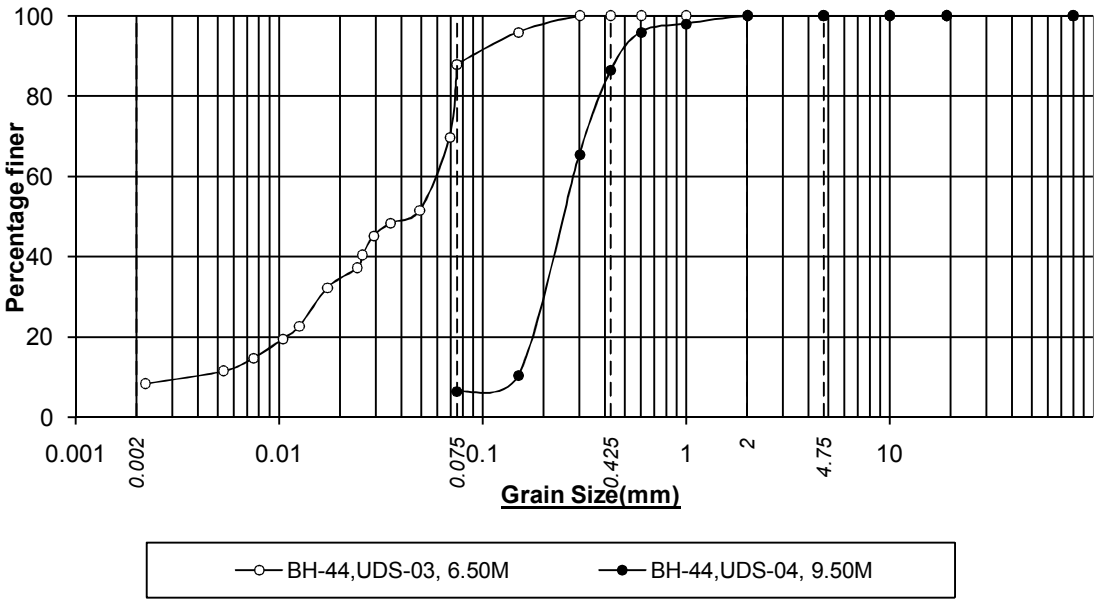
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-44,UDS-01, 2.00M		11.0	80.0	9.0	0.0	89.0		0.0
BH-44,UDS-02, 4.00M		16.0	75.0	9.0	0.0	84.0		0.0

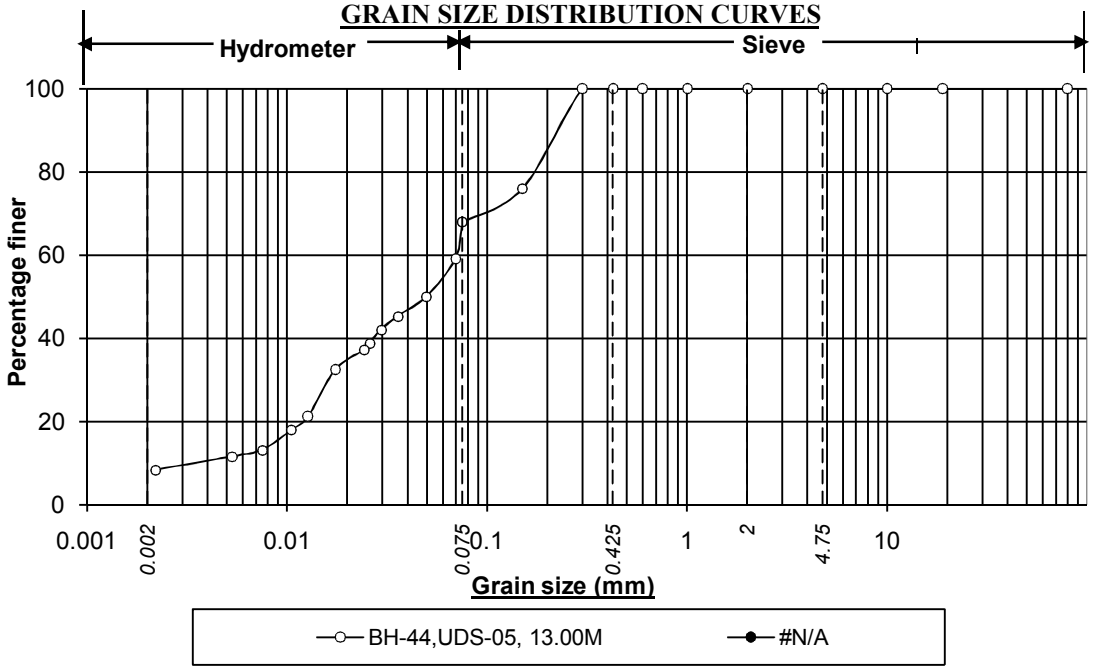


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-44,UDS-03, 6.50M	8.0	80.0	12.0	0.0	0.0	12.0		0.0
BH-44,UDS-04, 9.50M		6.5	80.0	13.5	0.0	93.5	1.927/0.918	0.0

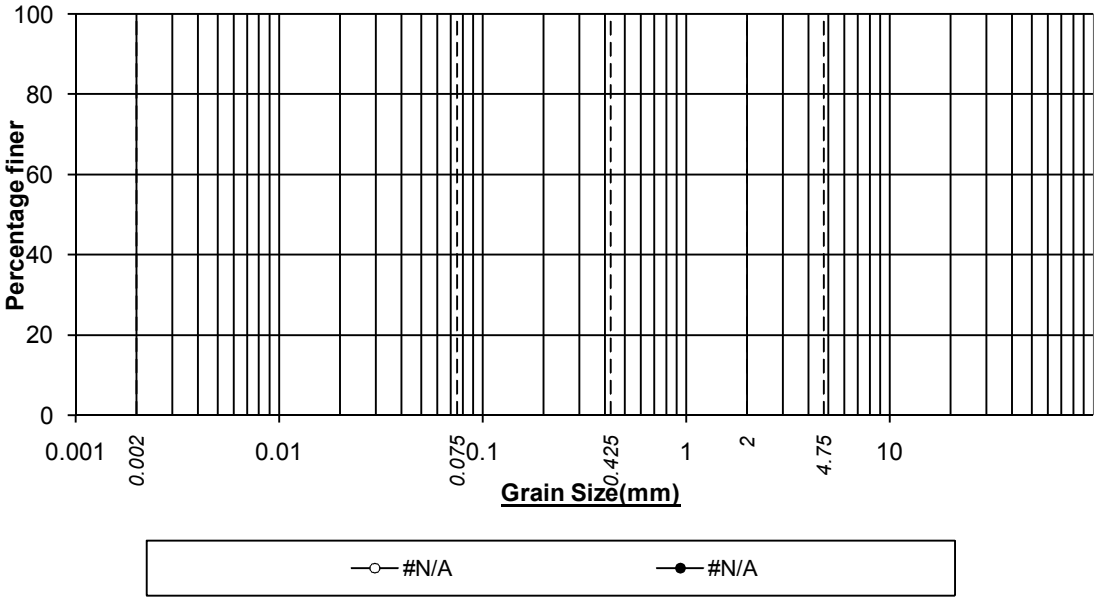
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-44,UDS-05, 13.00M	8.0	60.0	32.0	0.0	0.0	32.0		0.0

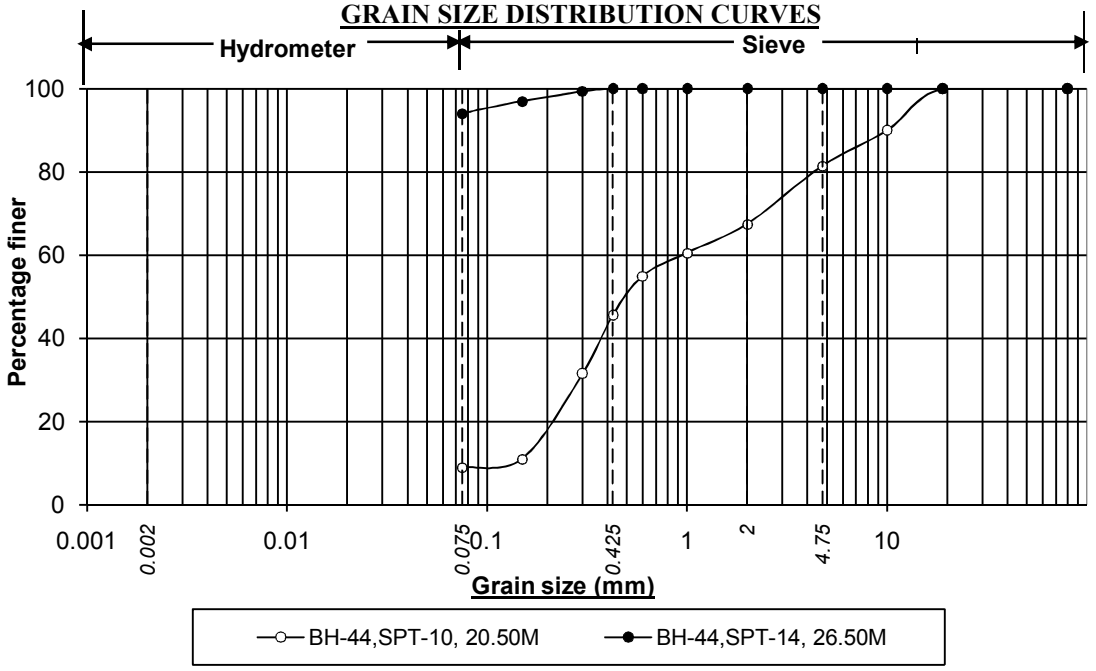


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

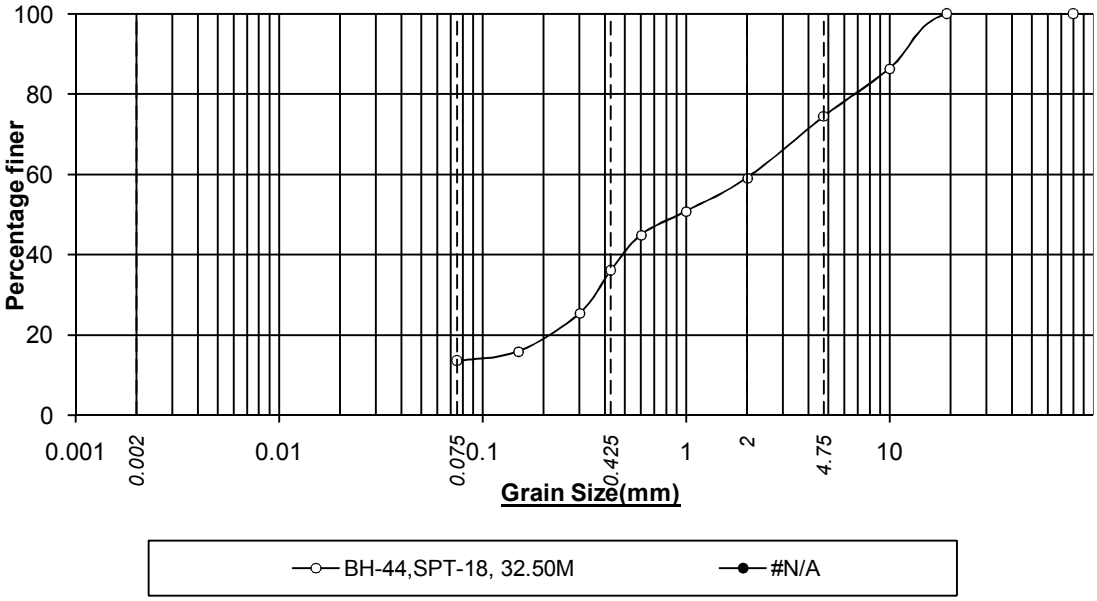
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	**Job No. 3369**	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-44,SPT-10, 20.50M		9.0	36.5	22.0	14.0	72.5	7.144/0.639	18.5
BH-44,SPT-14, 26.50M		94.1	5.9	0.0	0.0	5.9		0.0

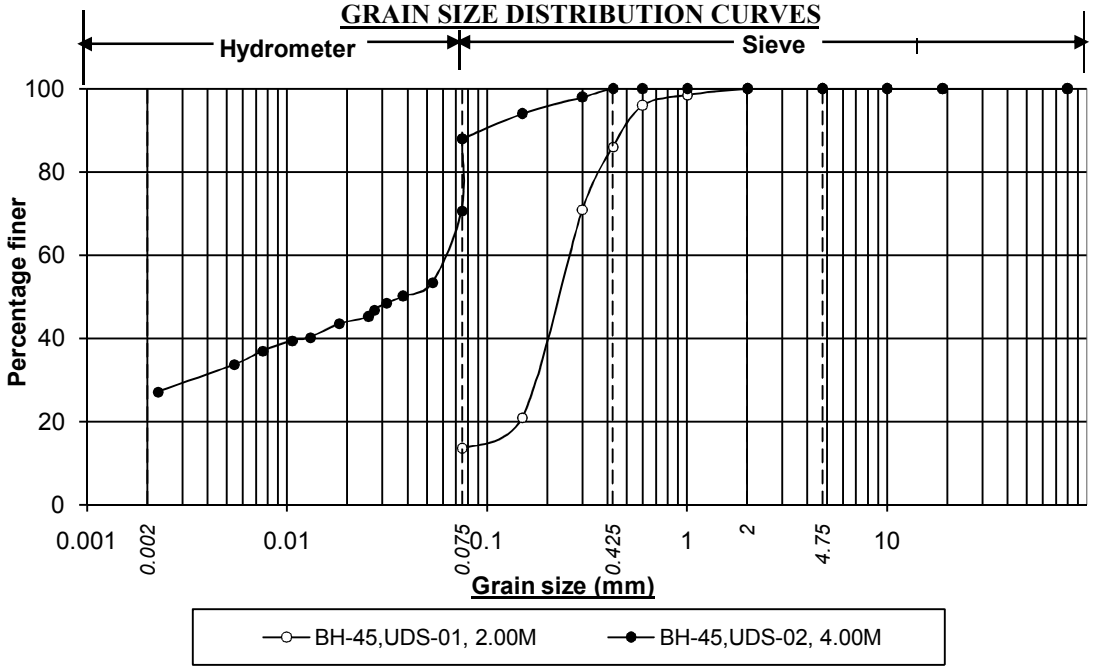


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-44,SPT-18, 32.50M		13.6	22.5	23.1	15.4	61.0		25.4

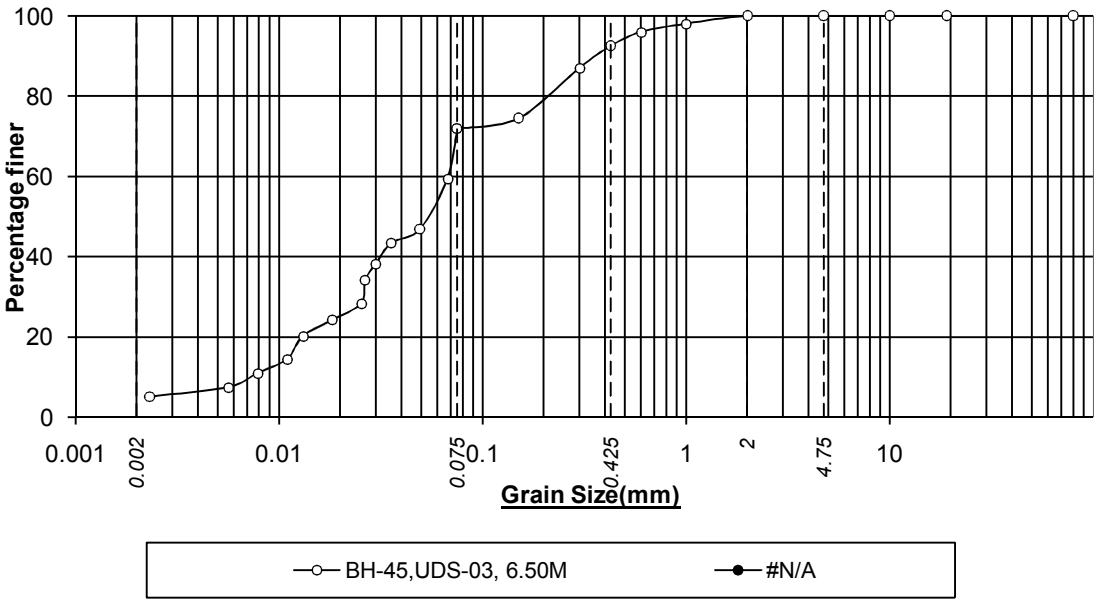
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-45,UDS-01, 2.00M		13.5	72.5	14.0	0.0	86.5		0.0
BH-45,UDS-02, 4.00M	26.2	61.8	12.0	0.0	0.0	12.0		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-45,UDS-03, 6.50M	4.8	67.2	20.5	7.5	0.0	28.0		0.0

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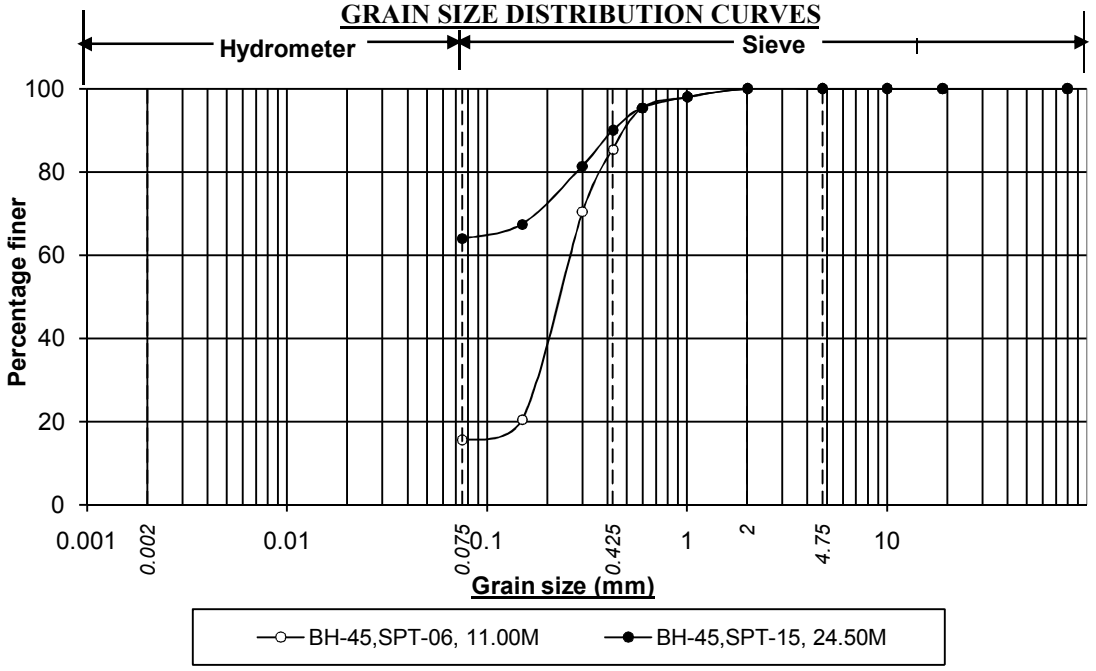
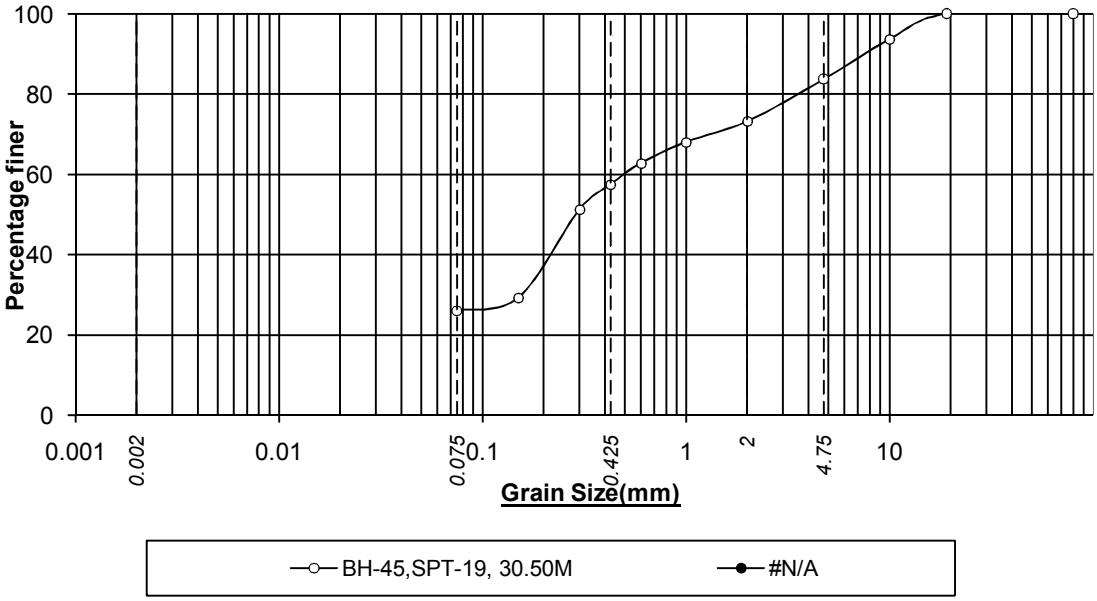
Sheet No.:

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-45,SPT-06, 11.00M		15.5	70.0	14.5	0.0	84.5		0.0
BH-45,SPT-15, 24.50M		64.0	26.0	10.0	0.0	36.0		0.0

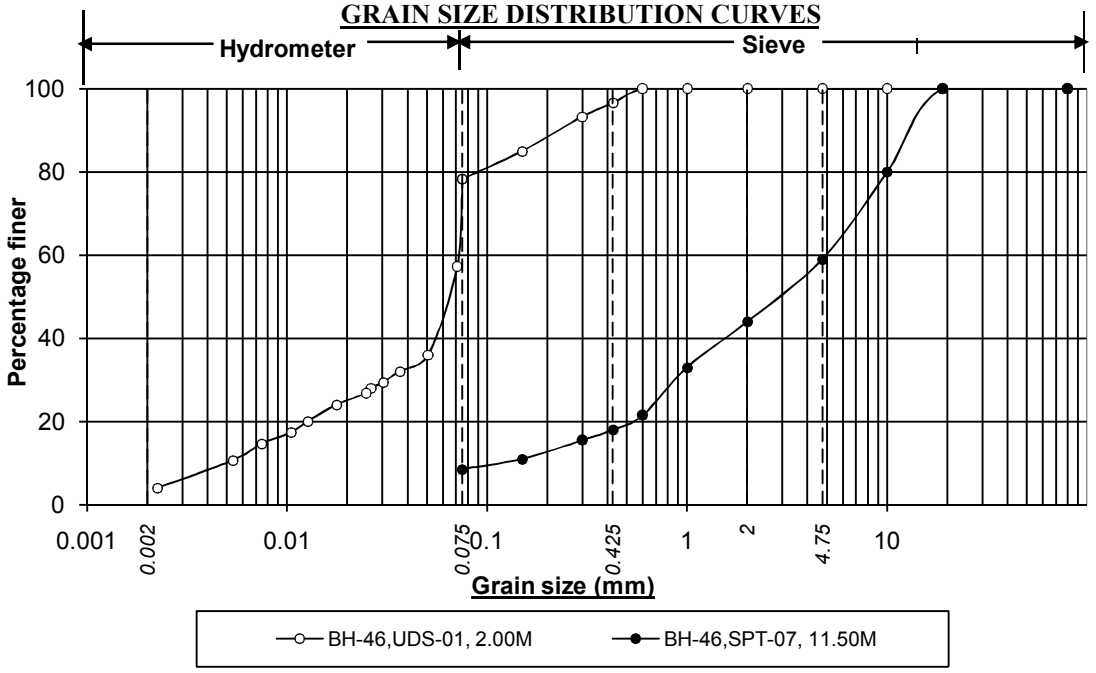


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-45,SPT-19, 30.50M		26.2	31.3	15.7	10.5	57.5		16.3

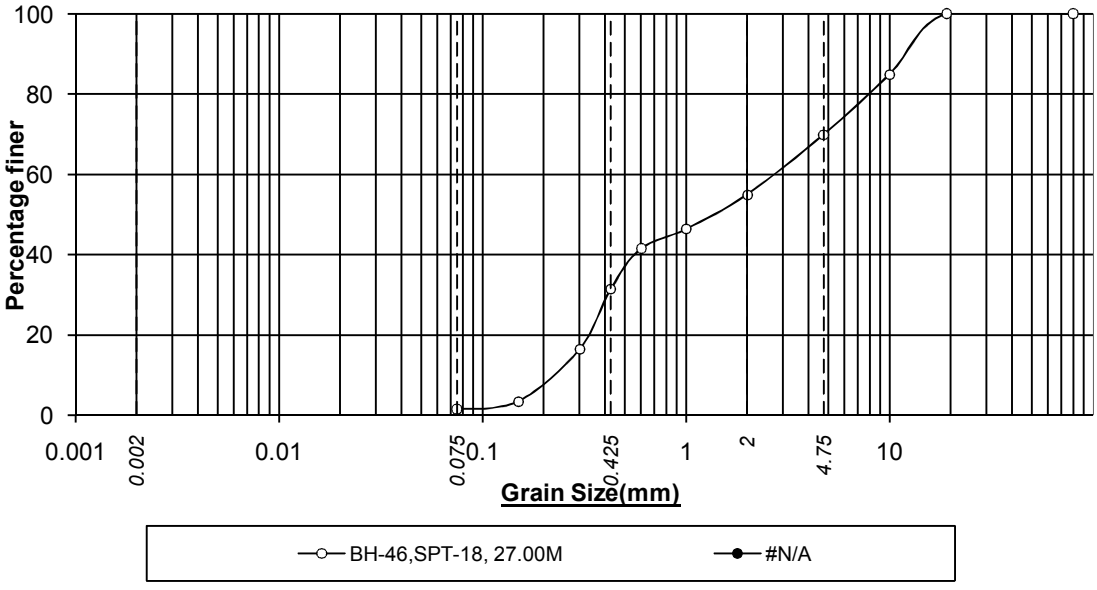
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-46,UDS-01, 2.00M	3.1	75.2	18.4	3.3	0.0	21.7		0.0
BH-46,SPT-07, 11.50M		8.5	9.5	26.0	15.0	50.5	33.884/1.009	41.0

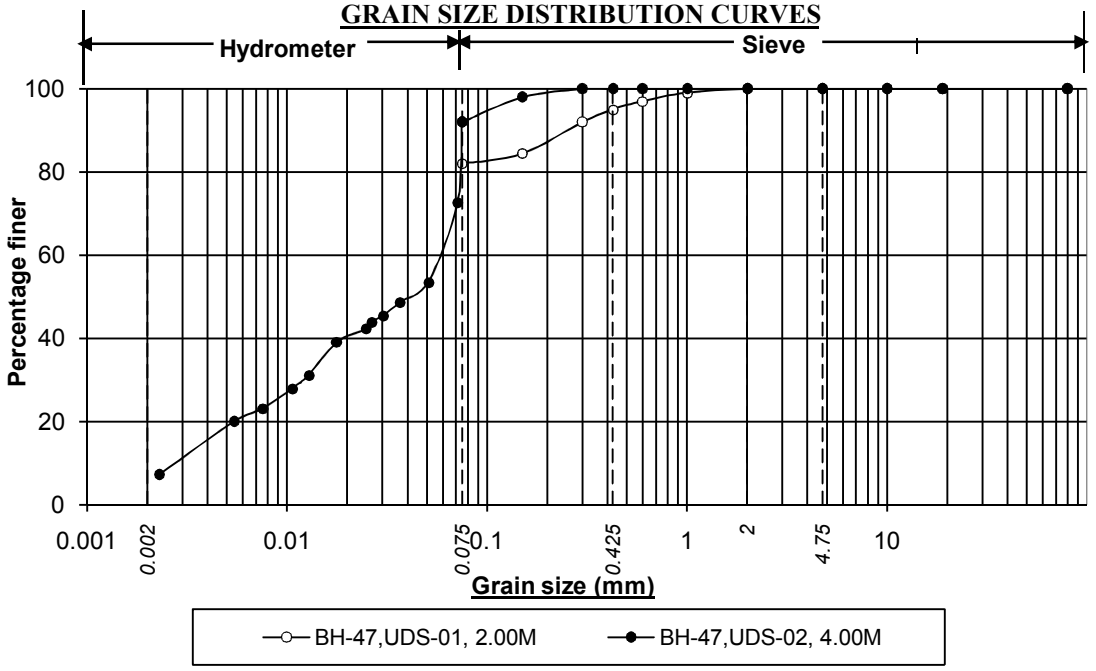


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-46,SPT-18, 27.00M		1.5	30.0	23.5	15.0	68.5	12.022/0.267	30.0

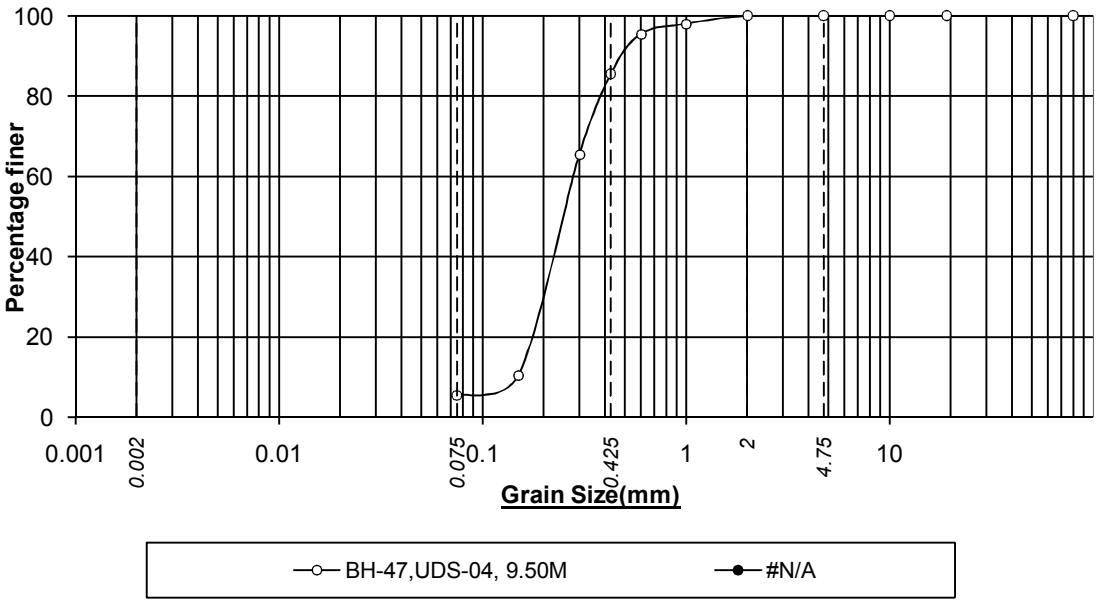
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-47,UDS-01, 2.00M		82.0	13.0	5.0	0.0	18.0		0.0
BH-47,UDS-02, 4.00M	5.2	86.8	8.0	0.0	0.0	8.0		0.0

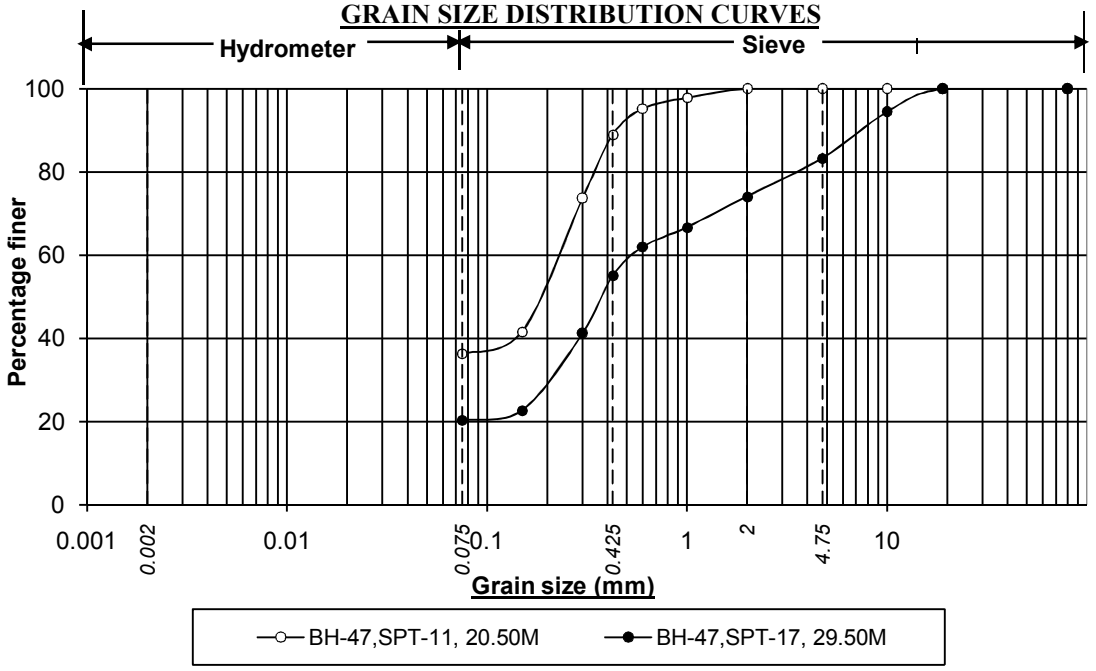


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-47,UDS-04, 9.50M		5.5	80.0	14.5	0.0	94.5	1.923/0.924	0.0

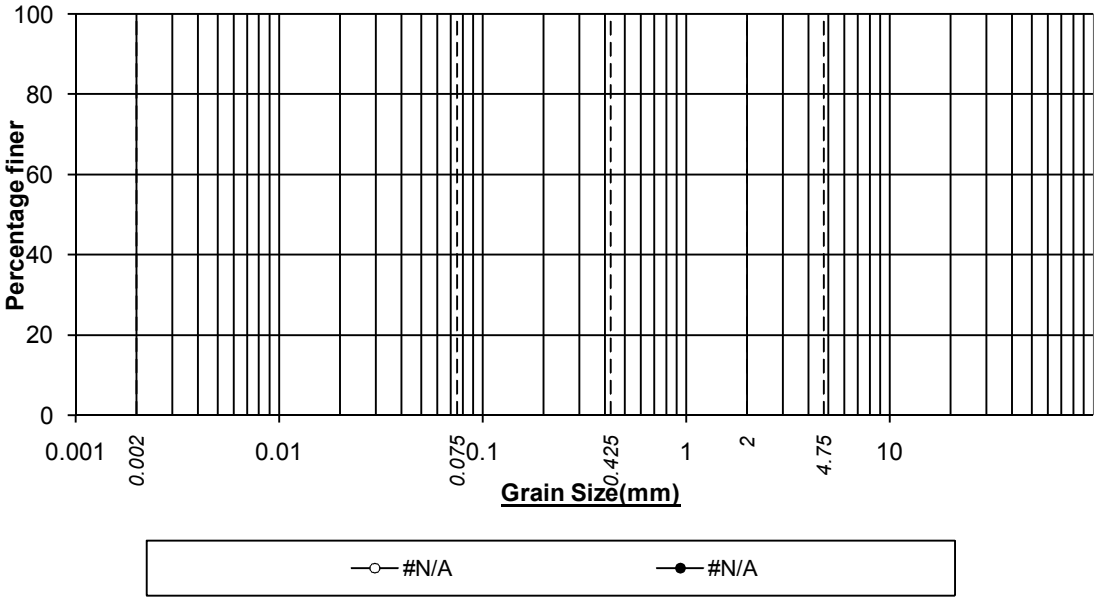
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-47,SPT-11, 20.50M		36.3	52.6	11.1	0.0	63.7		0.0
BH-47,SPT-17, 29.50M		20.4	34.6	19.0	9.3	62.9		16.7

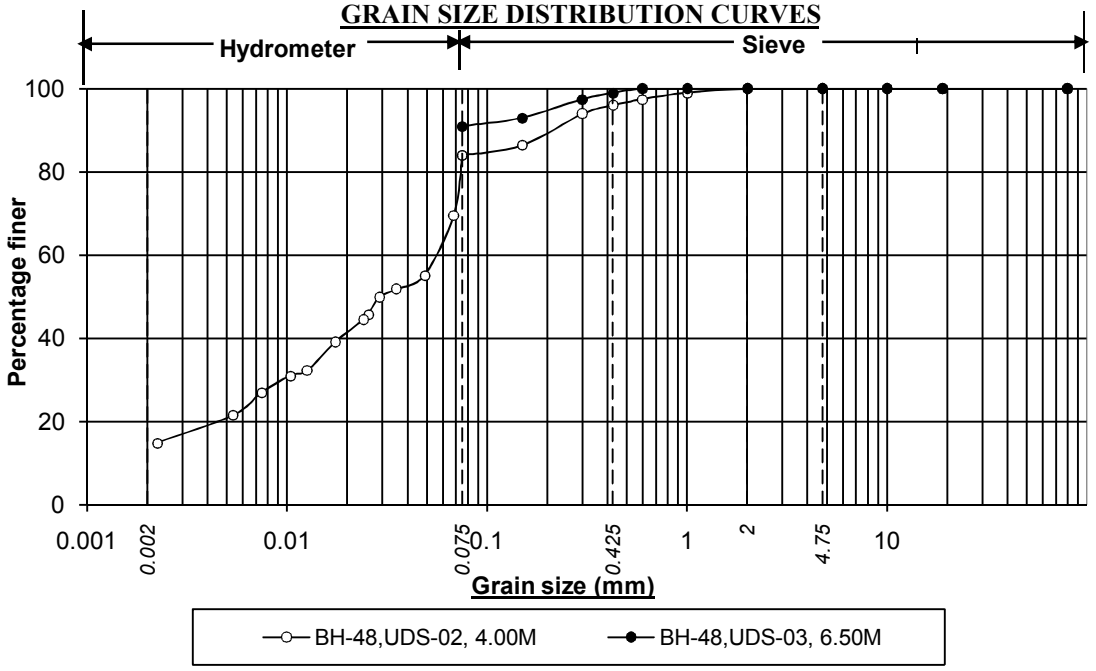


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

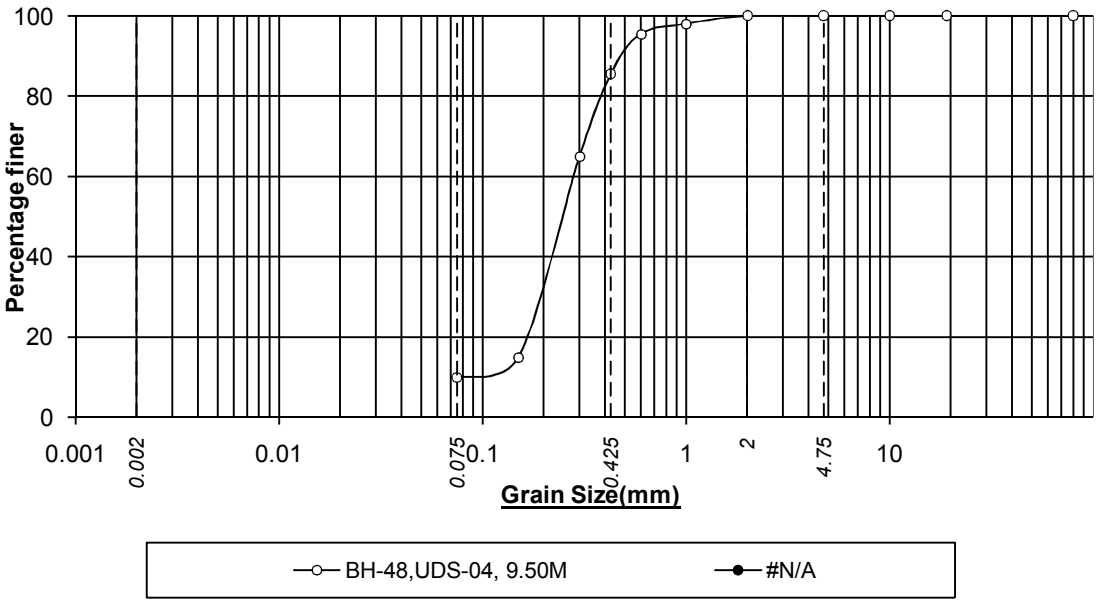
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-48,UDS-02, 4.00M	13.9	70.1	12.0	4.0	0.0	16.0		0.0
BH-48,UDS-03, 6.50M		91.0	8.0	1.0	0.0	9.0		0.0

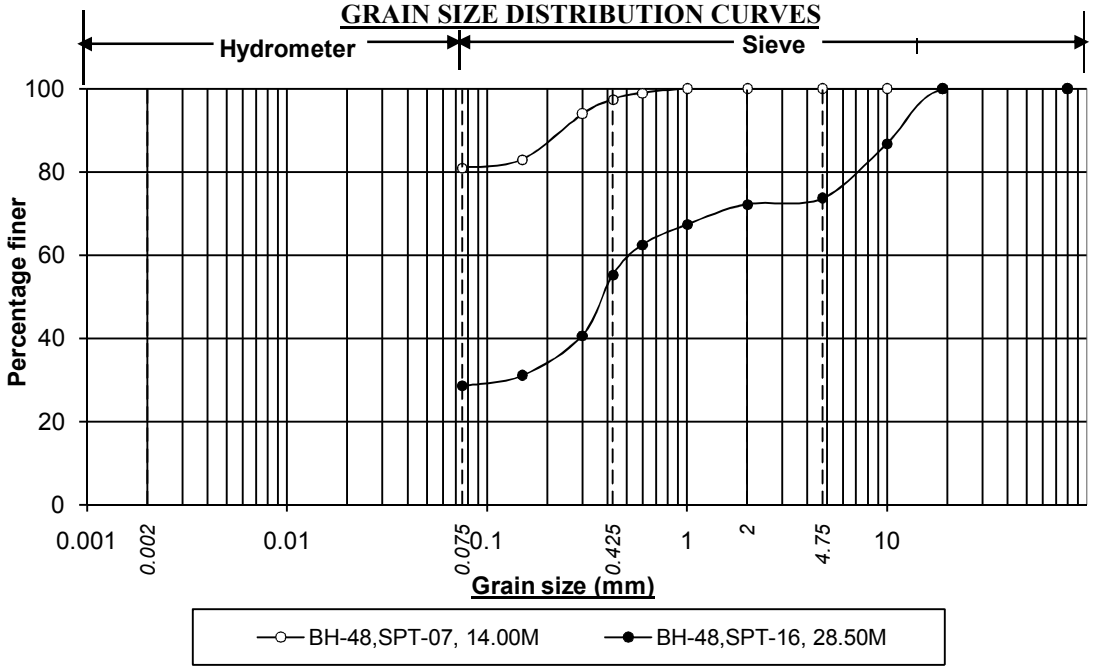


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-48,UDS-04, 9.50M		10.0	75.5	14.5	0.0	90.0		0.0

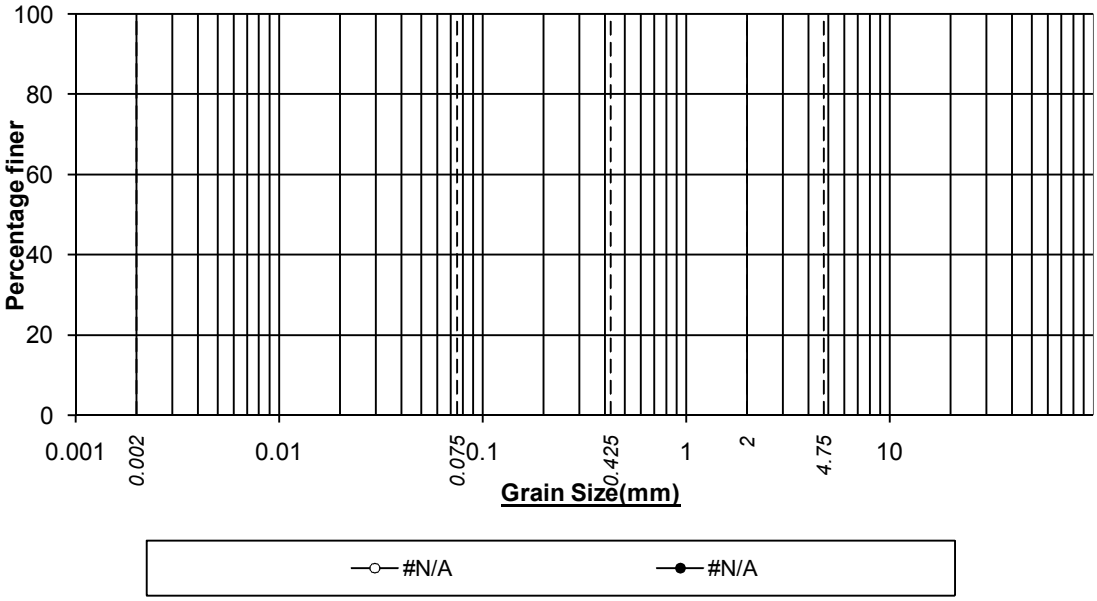
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-48,SPT-07, 14.00M		81.0	16.5	2.5	0.0	19.0		0.0
BH-48,SPT-16, 28.50M		28.6	26.6	17.0	1.5	45.1		26.3



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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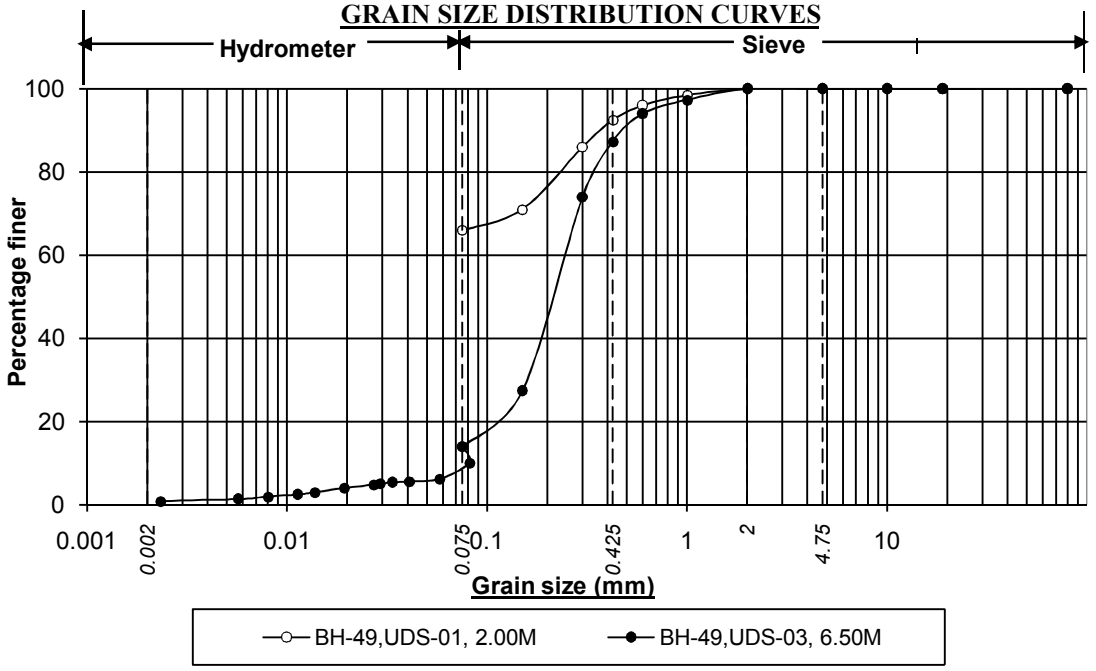
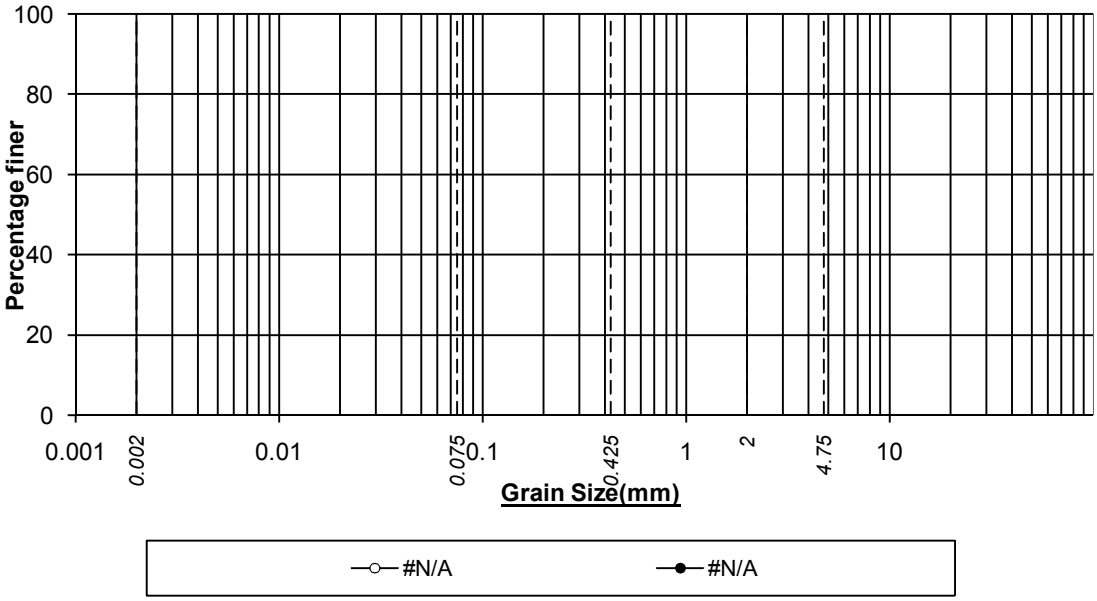
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-49,UDS-01, 2.00M		66.0	26.5	7.5	0.0	34.0		0.0
BH-49,UDS-03, 6.50M	0.7	13.3	73.3	12.7	0.0	86.0		0.0

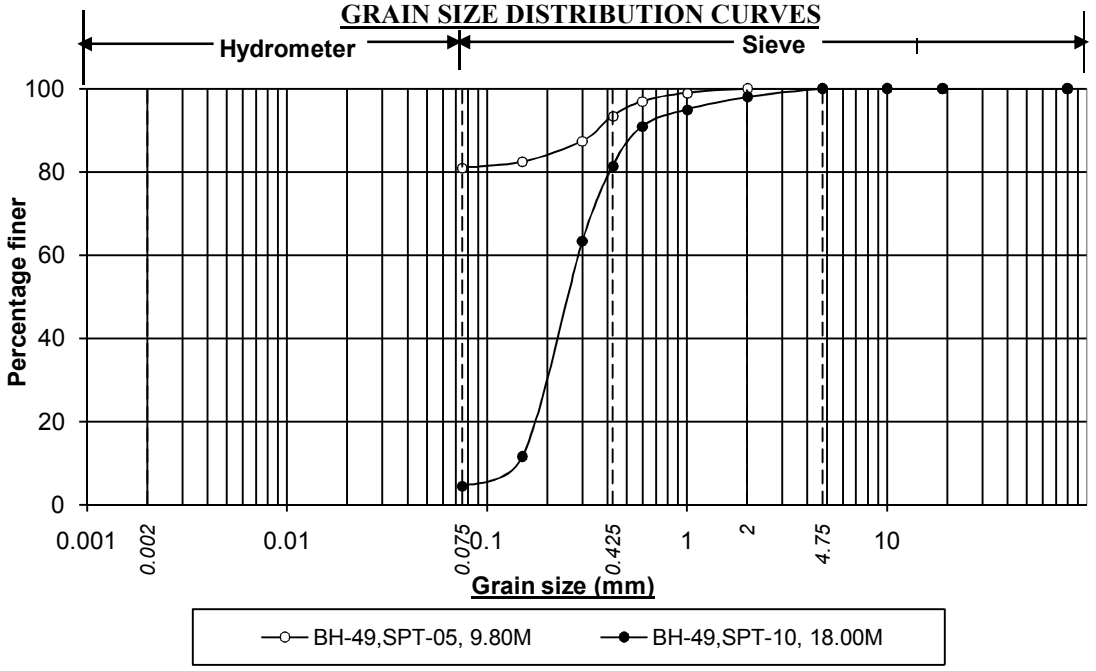


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

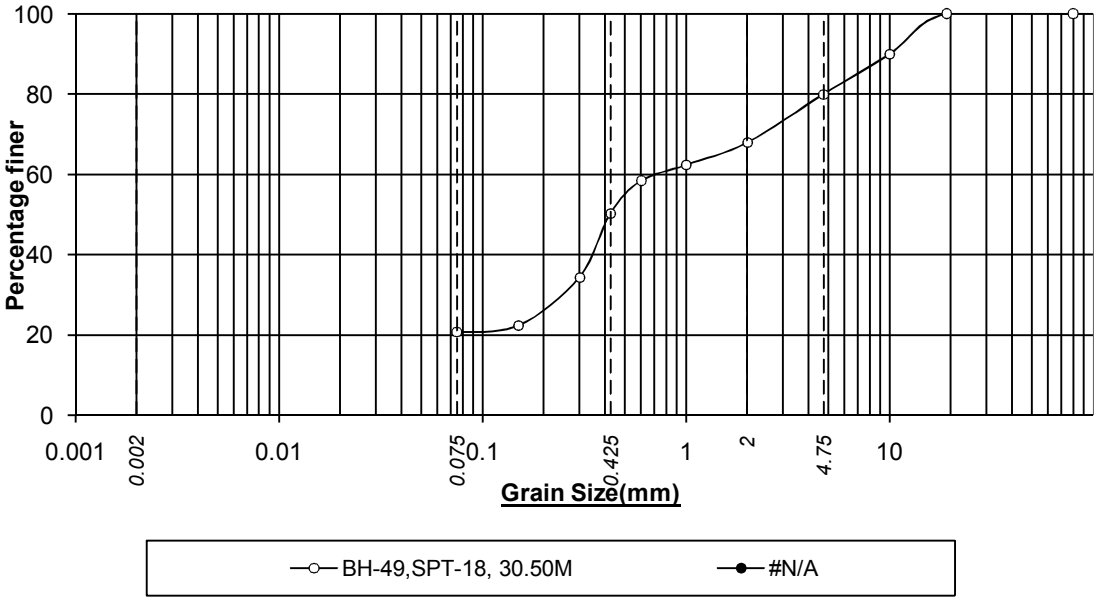
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	**Job No. 3369**	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-49,SPT-05, 9.80M		81.0	12.5	6.5	0.0	19.0		0.0
BH-49,SPT-10, 18.00M		4.5	77.0	16.5	2.0	95.5	2.004/0.95	0.0

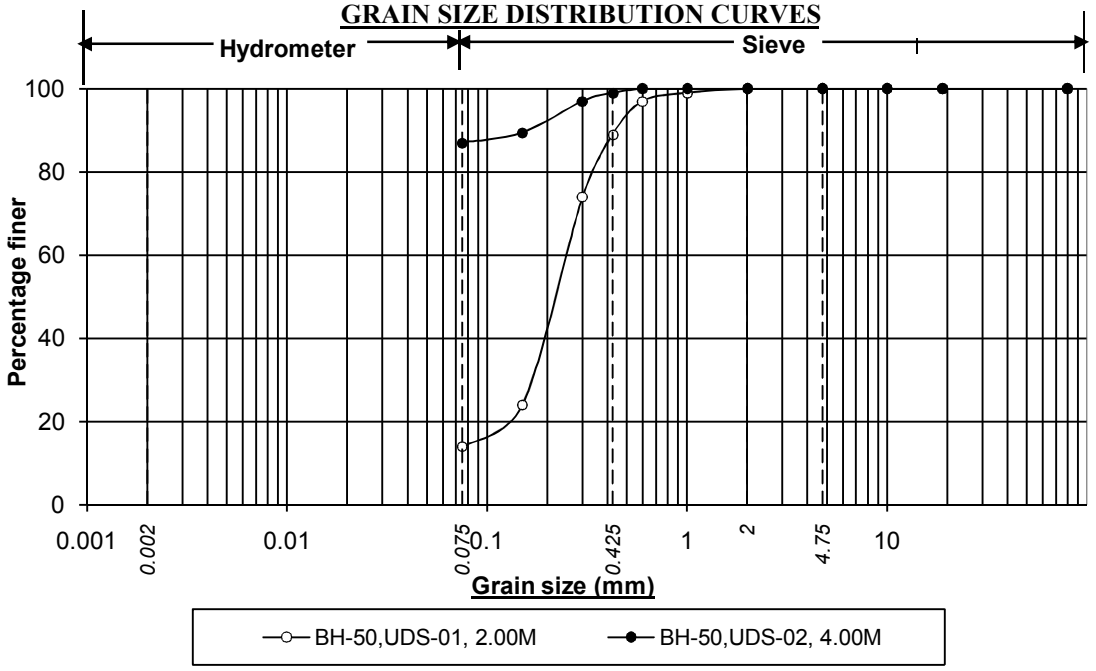


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-49,SPT-18, 30.50M		20.8	29.6	17.6	12.0	59.2		20.0

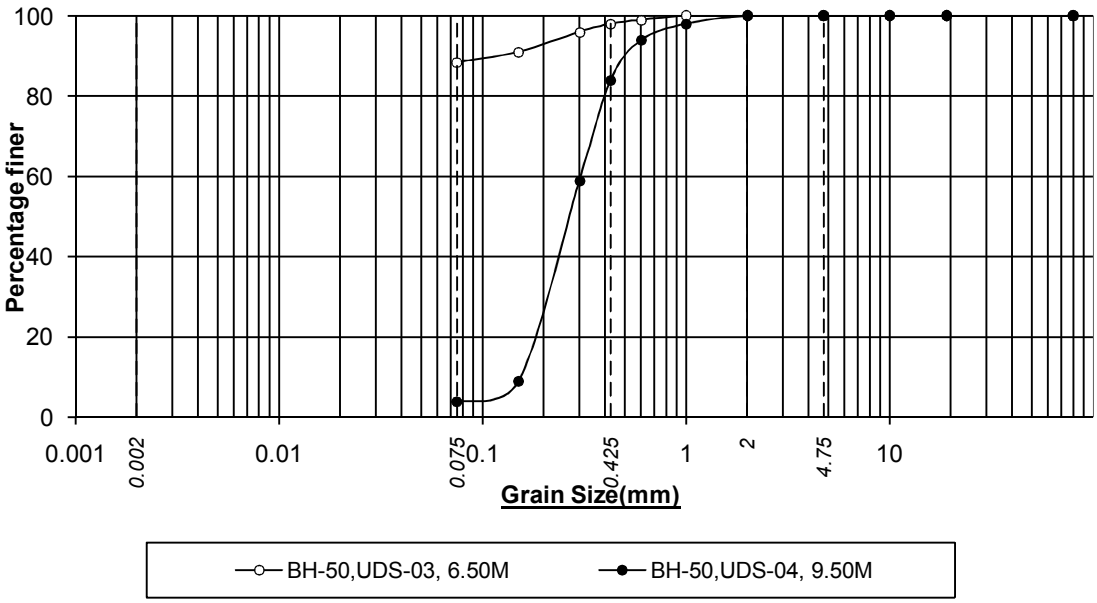
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-50,UDS-01, 2.00M		14.0	75.0	11.0	0.0	86.0		0.0
BH-50,UDS-02, 4.00M		87.0	12.0	1.0	0.0	13.0		0.0

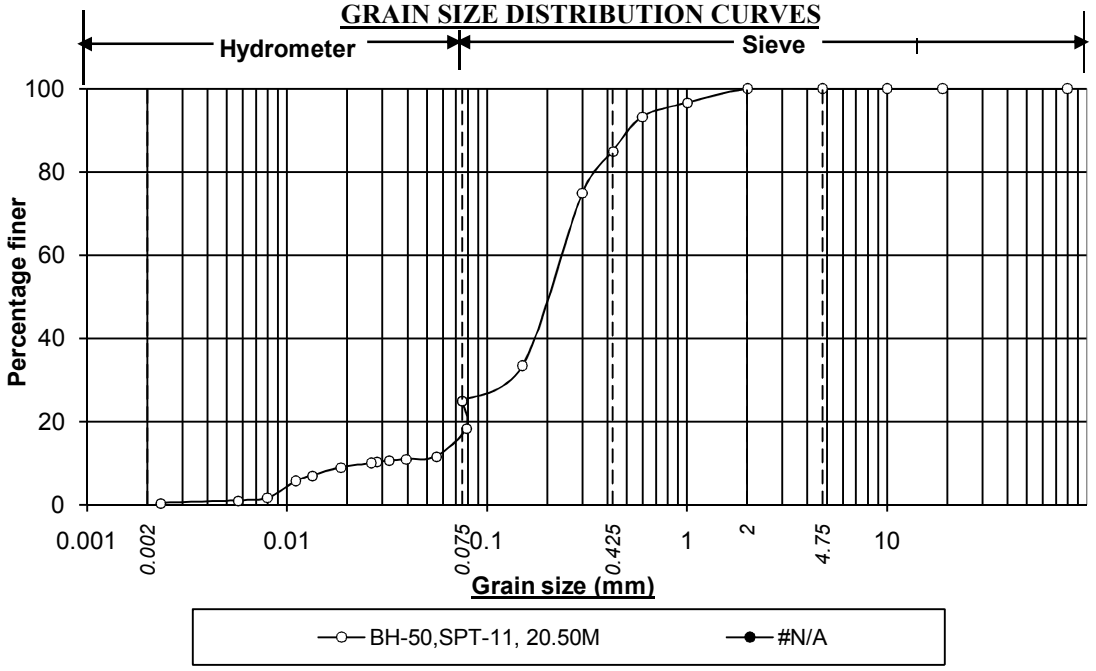


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-50,UDS-03, 6.50M		88.5	9.5	2.0	0.0	11.5		0.0
BH-50,UDS-04, 9.50M		4.0	80.0	16.0	0.0	96.0	2.065/0.935	0.0

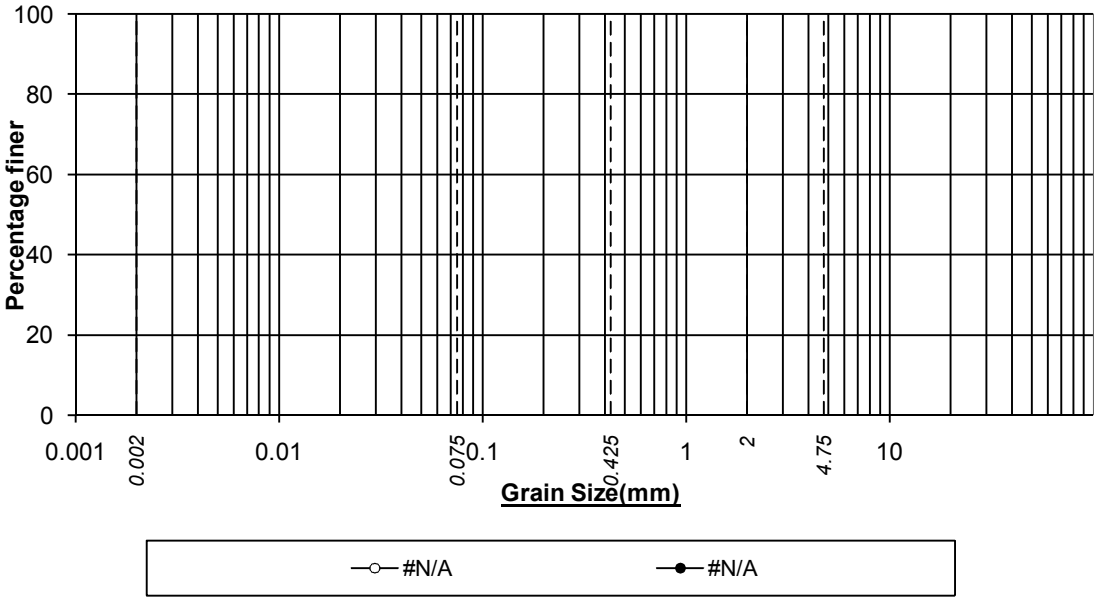
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-50,SPT-11, 20.50M	0.2	24.8	60.0	15.0	0.0	75.0		0.0

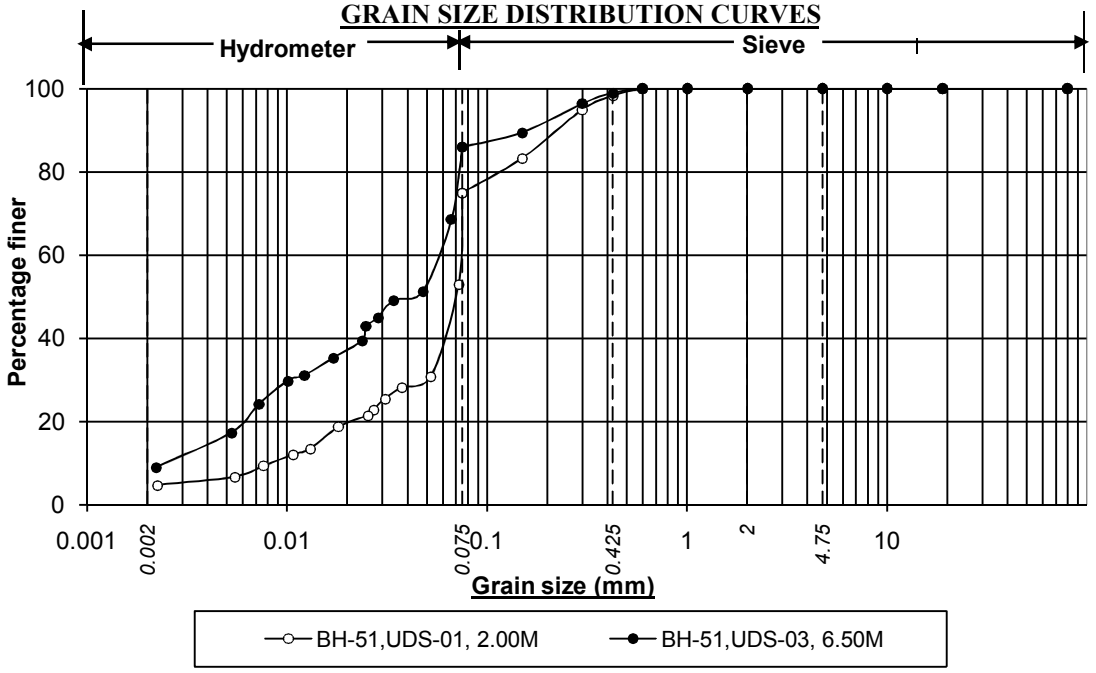


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

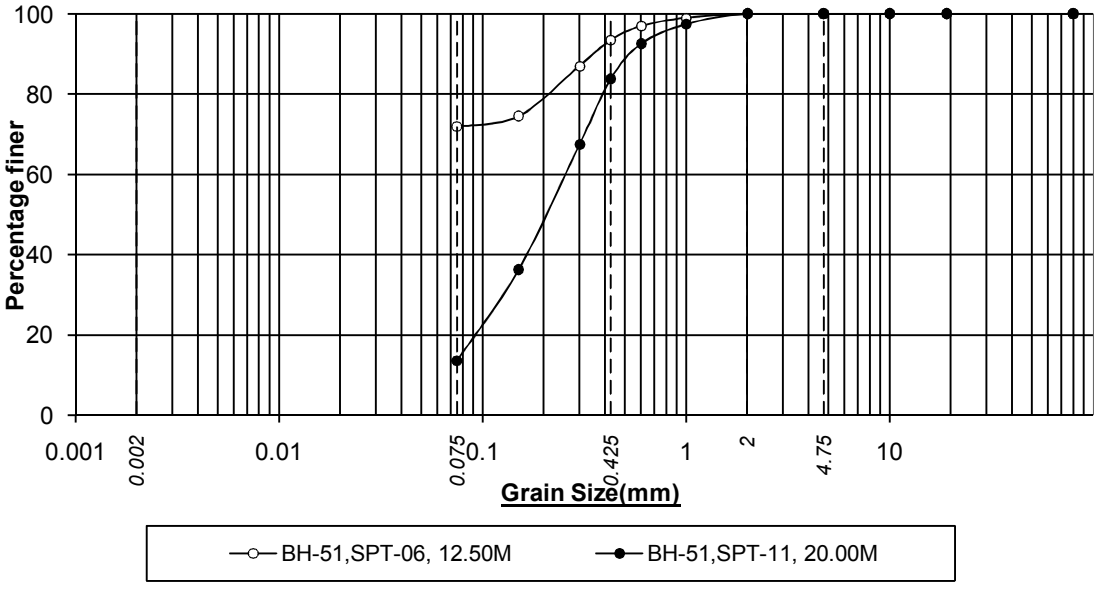
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-51,UDS-01, 2.00M	4.4	70.6	23.3	1.7	0.0	25.0		0.0
BH-51,UDS-03, 6.50M	8.0	78.0	13.0	1.0	0.0	14.0		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-51,SPT-06, 12.50M		72.0	21.5	6.5	0.0	28.0		0.0
BH-51,SPT-11, 20.00M		13.8	69.9	16.3	0.0	86.2		0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

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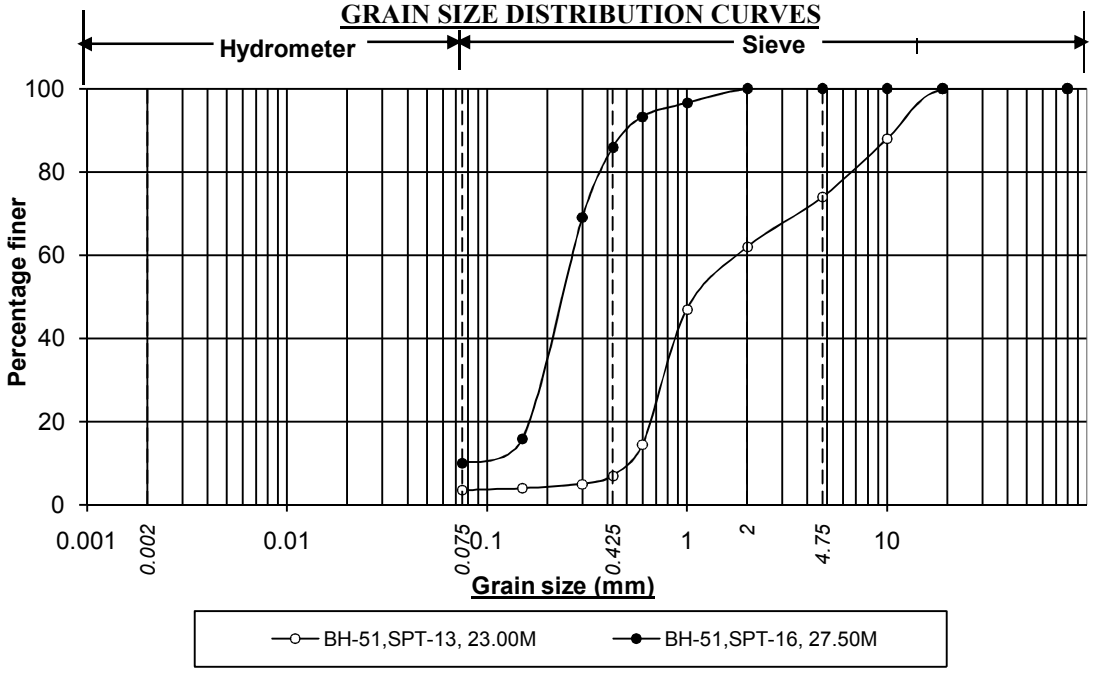
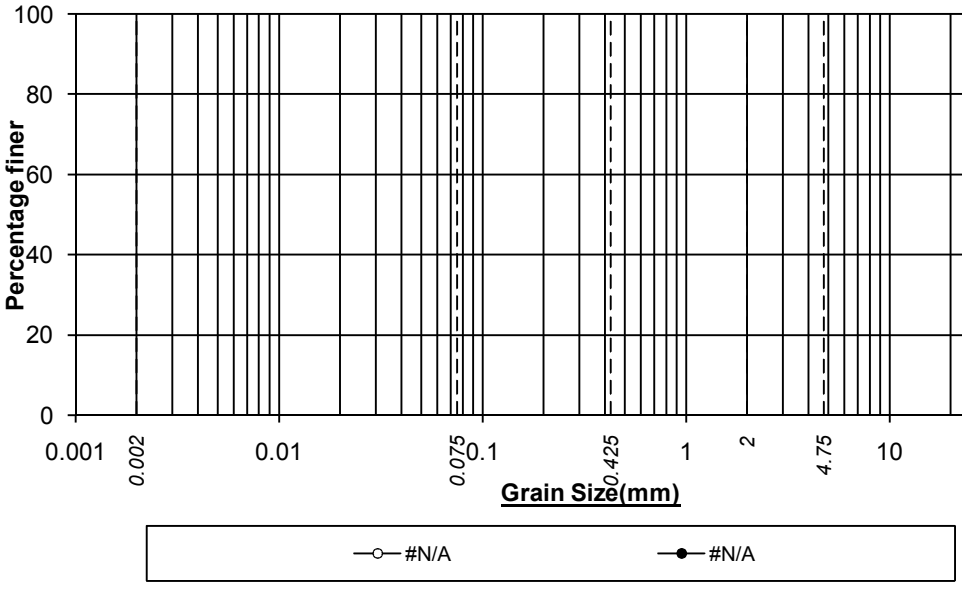
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-51,SPT-13, 23.00M		3.5	3.5	55.0	12.0	70.5	3.372/0.619	26.0
BH-51,SPT-16, 27.50M		10.0	75.8	14.2	0.0	90.0	3.507/1.832	0.0

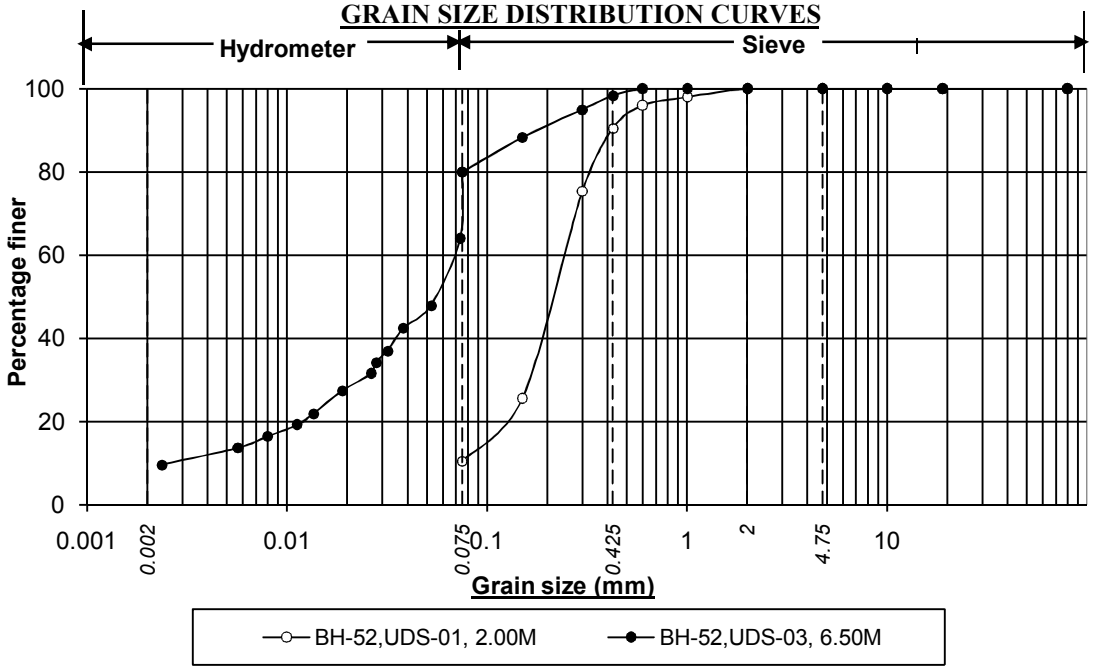


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)

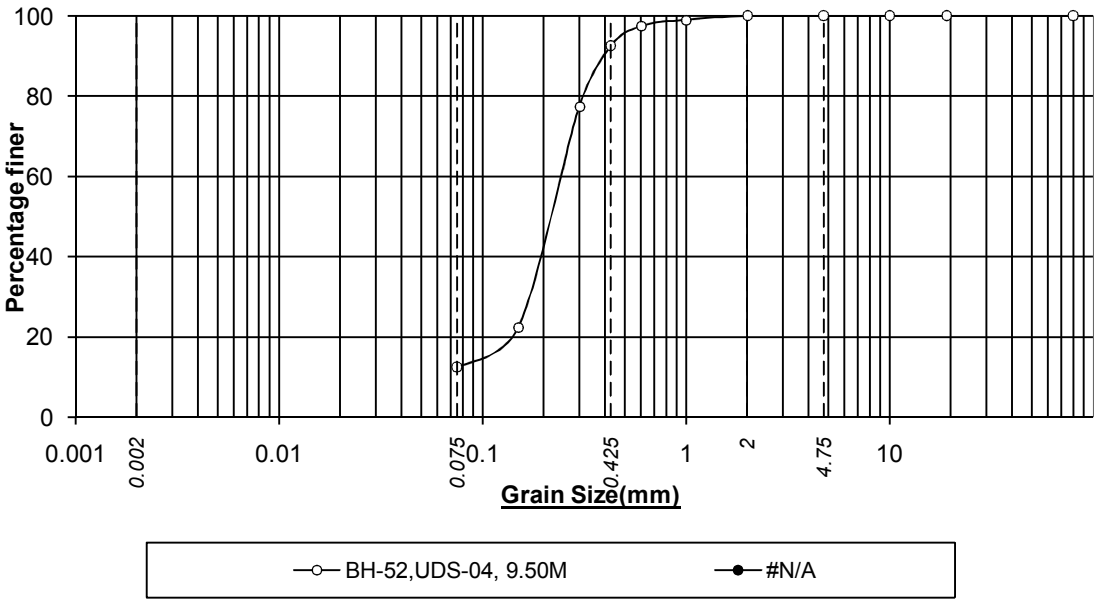
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat — **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-52,UDS-01, 2.00M		10.5	80.0	9.5	0.0	89.5		0.0
BH-52,UDS-03, 6.50M	8.8	71.2	18.3	1.7	0.0	20.0		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-52,UDS-04, 9.50M		12.5	80.0	7.5	0.0	87.5		0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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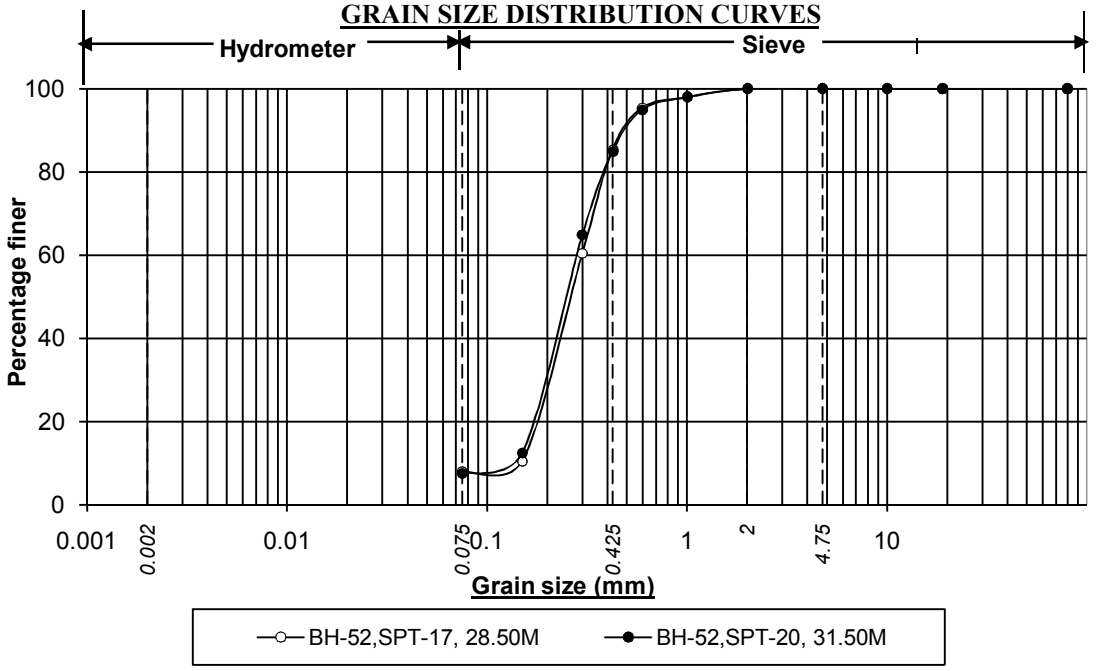
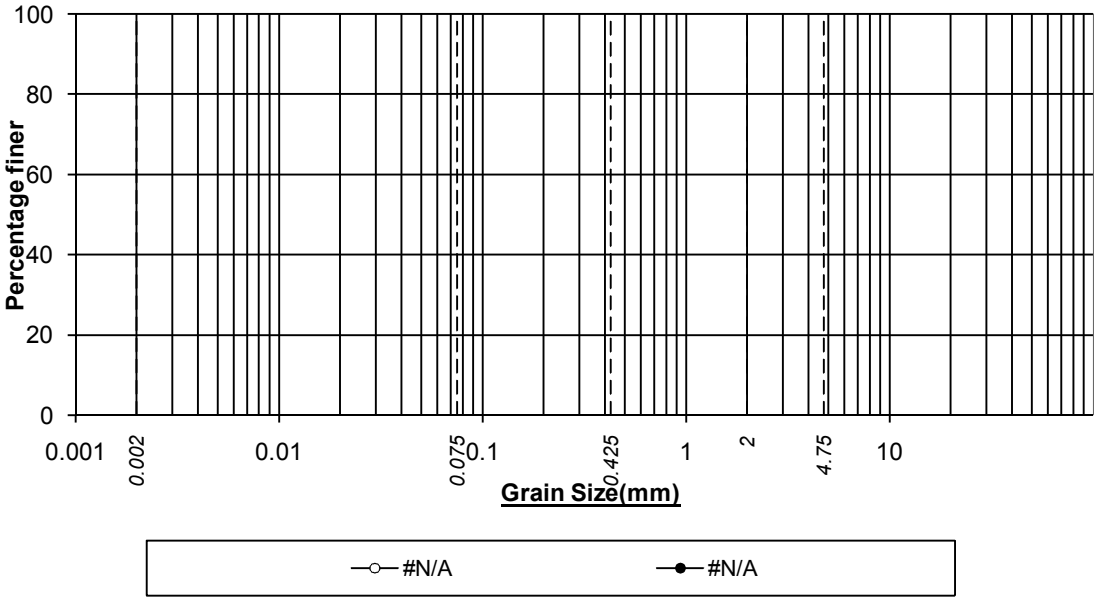
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-52,SPT-17, 28.50M		8.0	77.5	14.5	0.0	92.0	1.931/0.946	0.0
BH-52,SPT-20, 31.50M		7.5	77.5	15.0	0.0	92.5	2.037/1.078	0.0

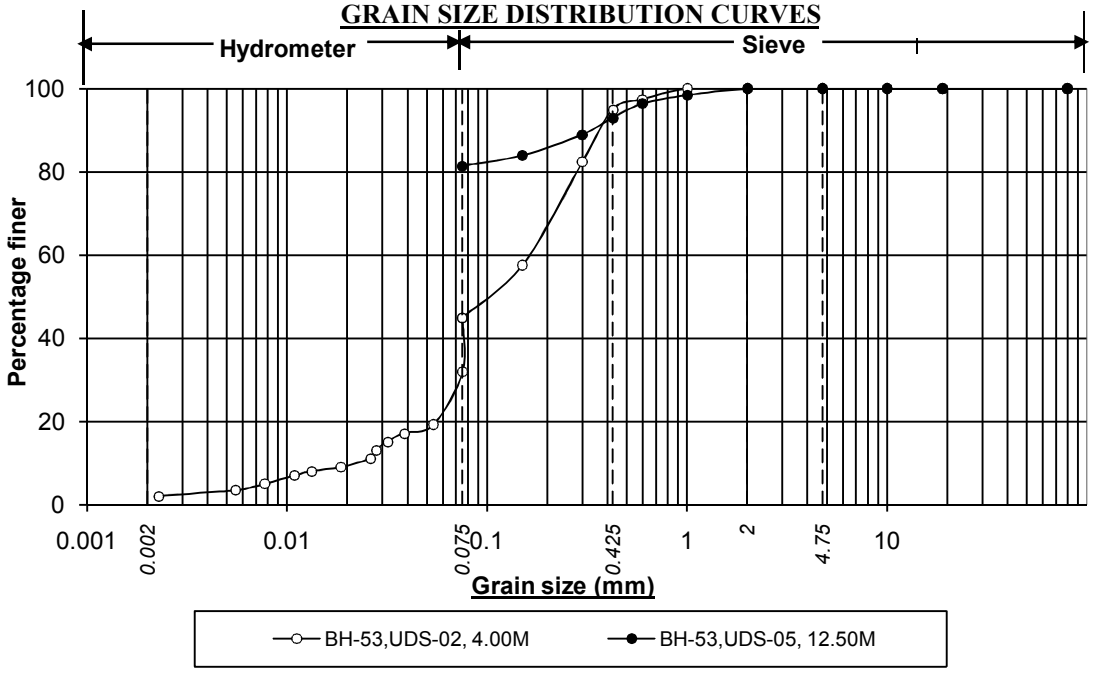


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)

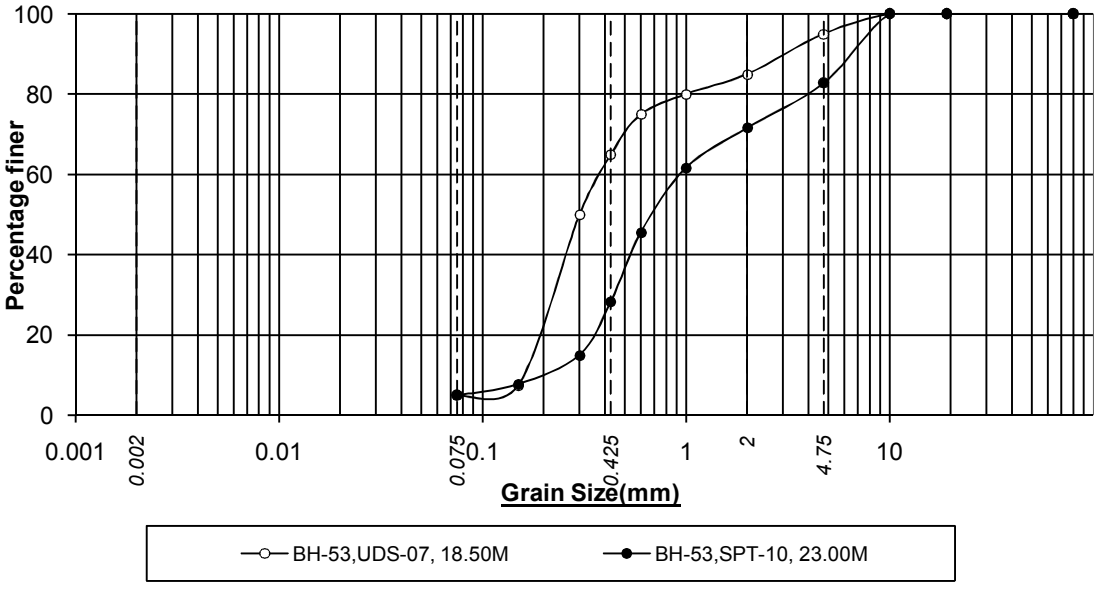
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-53,UDS-02, 4.00M	1.8	43.2	50.0	5.0	0.0	55.0		0.0
BH-53,UDS-05, 12.50M		81.5	11.5	7.0	0.0	18.5		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-53,UDS-07, 18.50M		5.0	60.0	20.0	10.0	90.0	2.301/0.859	5.0
BH-53,SPT-10, 23.00M		5.0	23.4	43.3	11.1	77.8	4.731/1.059	17.2

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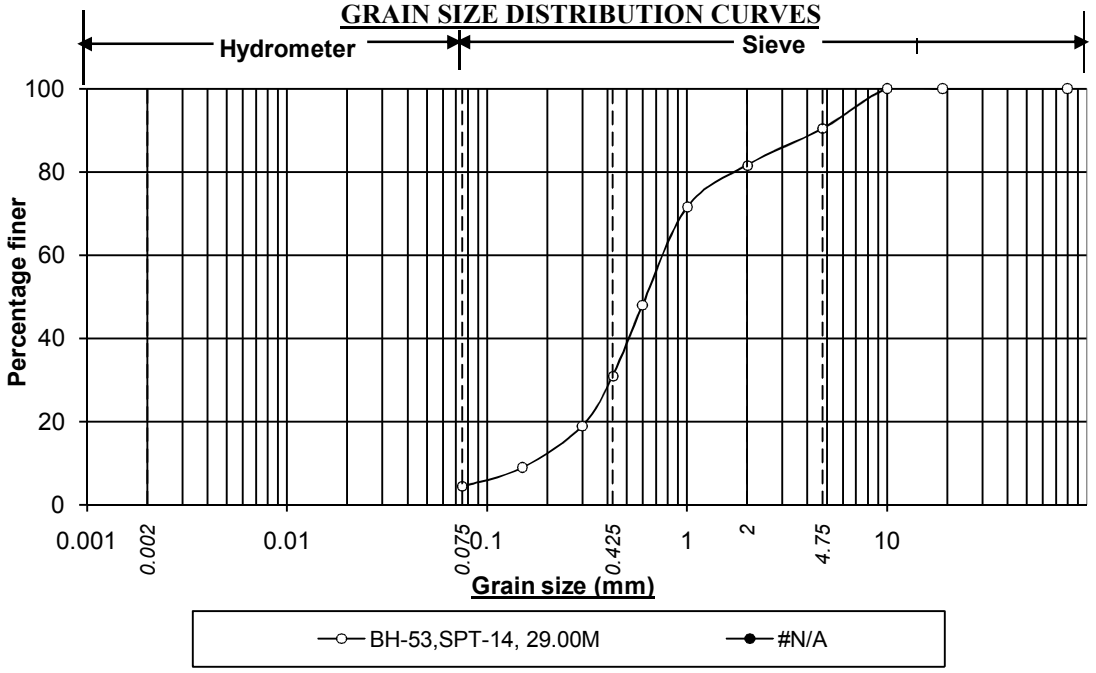
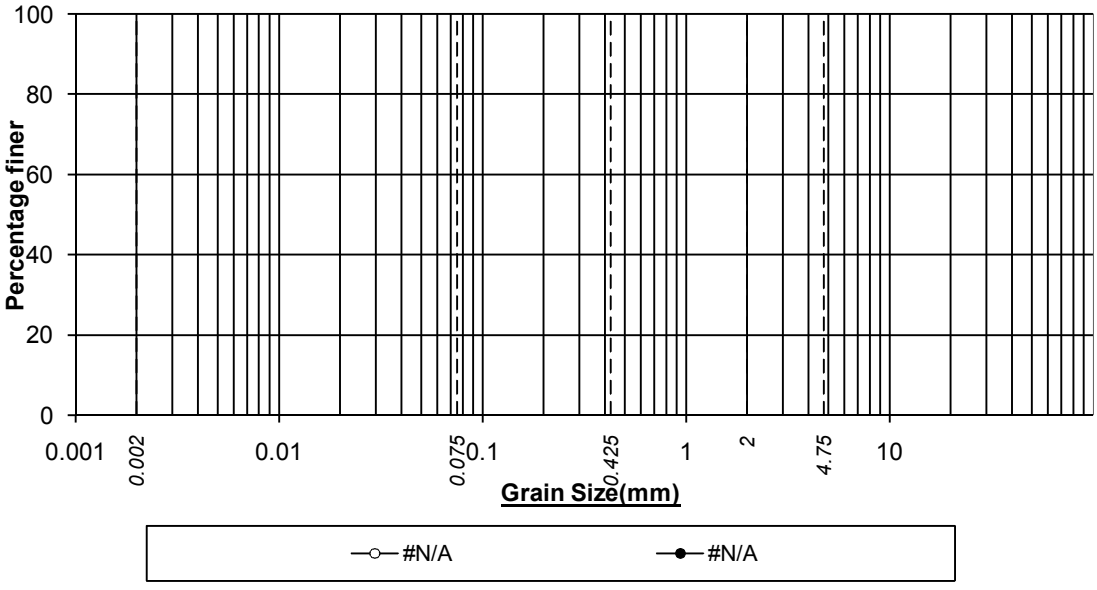
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-53,SPT-14, 29.00M		4.4	26.6	50.6	8.9	86.1	4.698/1.452	9.5

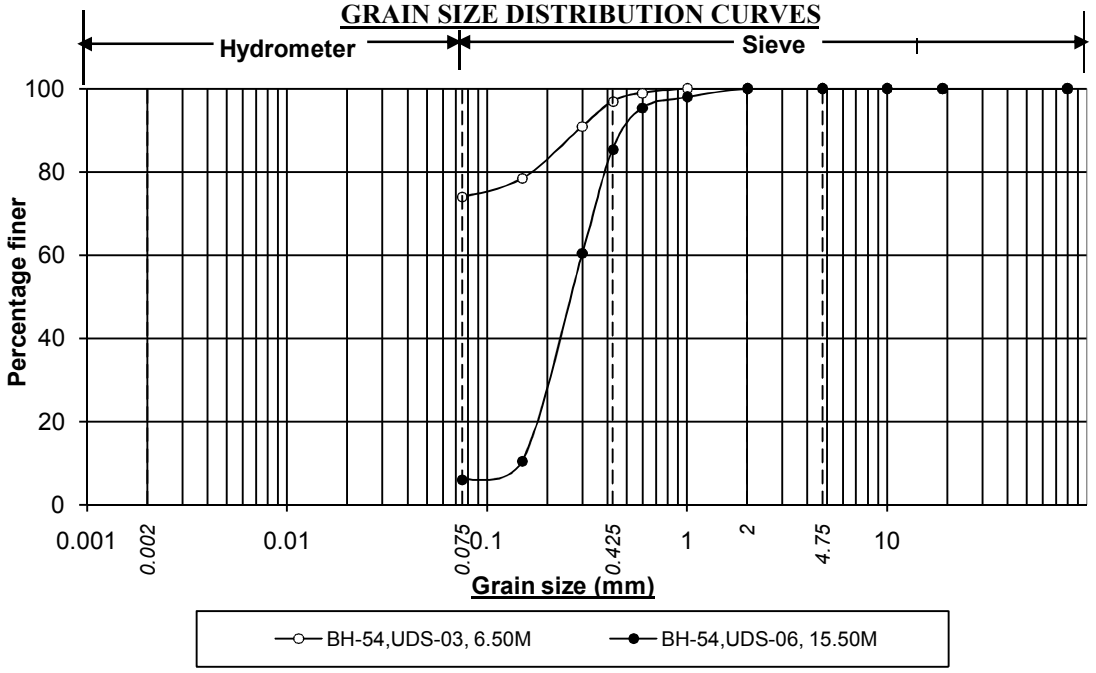


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)

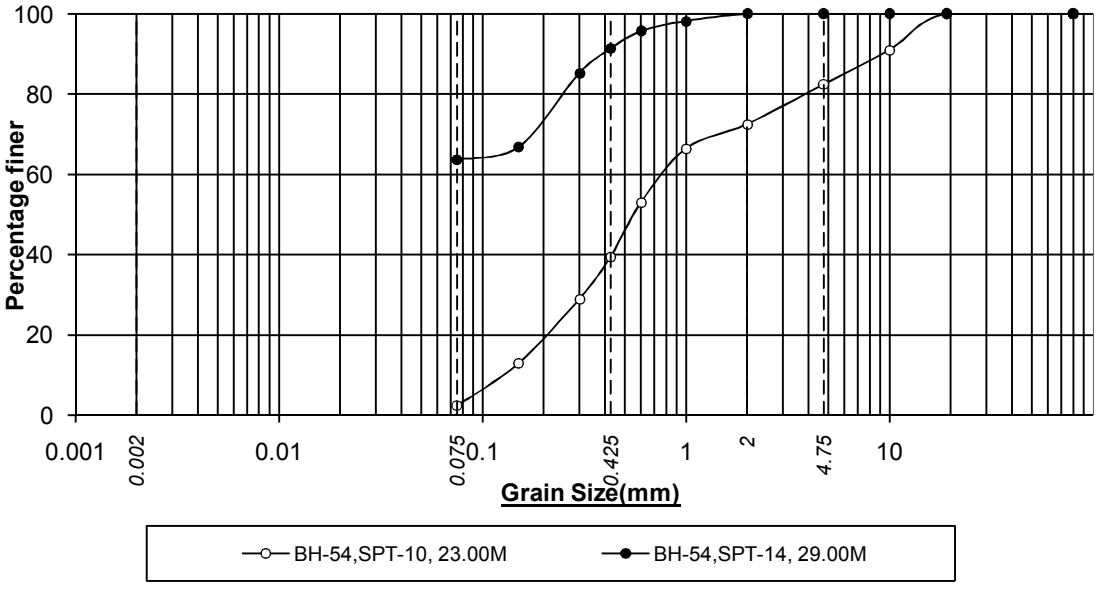
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-54,UDS-03, 6.50M		74.0	23.0	3.0	0.0	26.0		0.0
BH-54,UDS-06, 15.50M		6.0	79.5	14.5	0.0	94.0	2.013/0.92	0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-54,SPT-10, 23.00M		2.5	37.0	33.0	10.0	80.0	5.929/0.979	17.5
BH-54,SPT-14, 29.00M		63.8	27.6	8.6	0.0	36.2		0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No.**

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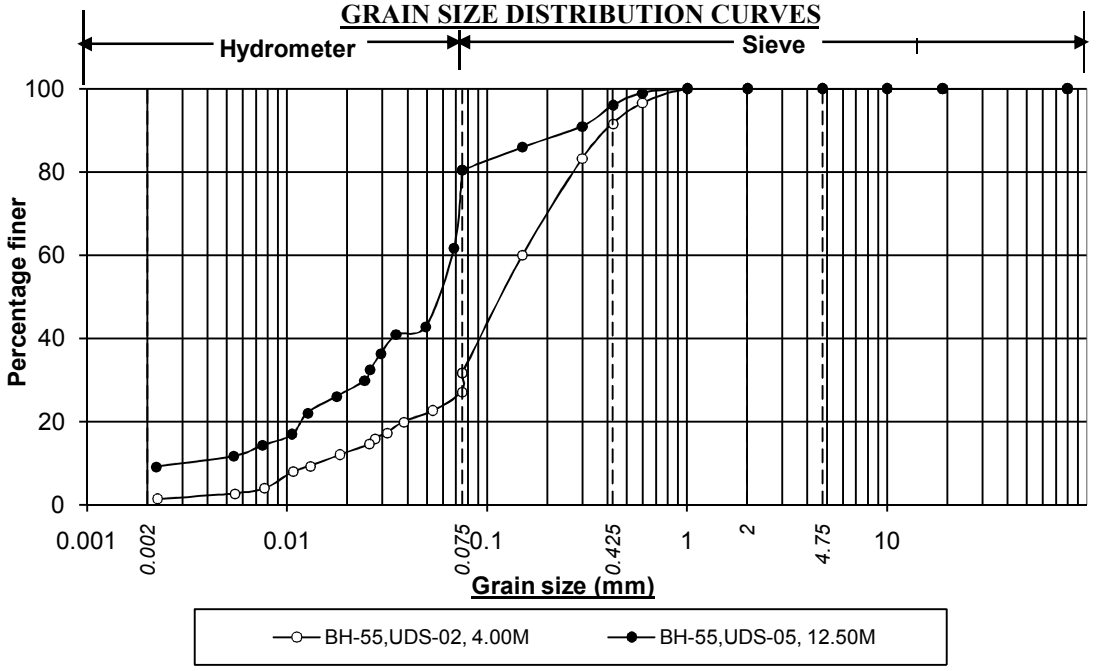
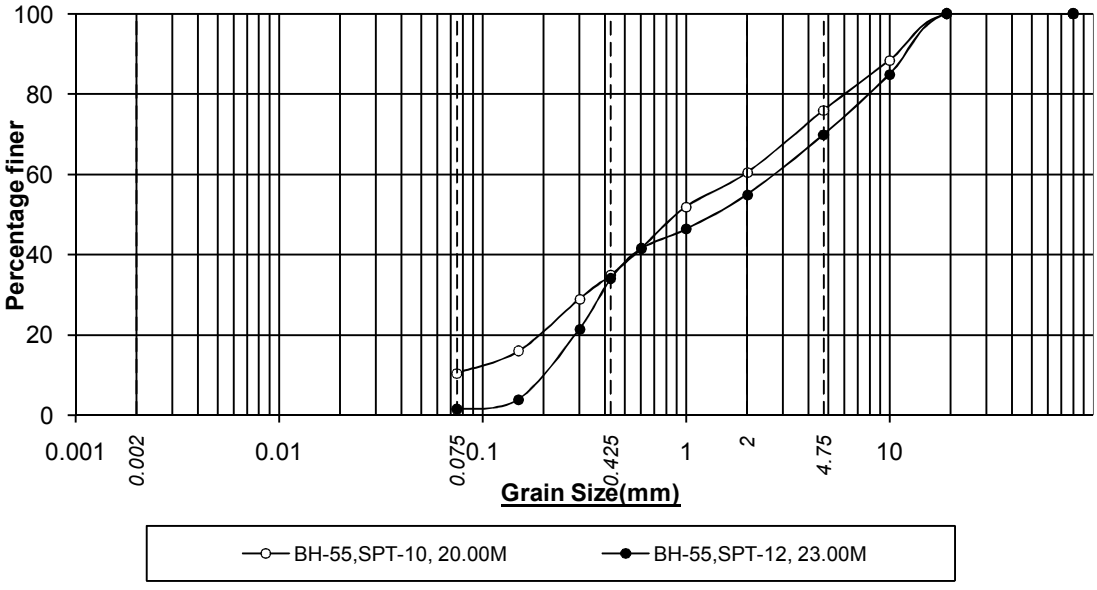
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-55,UDS-02, 4.00M	1.2	30.5	60.0	8.3	0.0	68.3		0.0
BH-55,UDS-05, 12.50M	8.8	71.7	15.5	4.0	0.0	19.5		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-55,SPT-10, 20.00M		10.5	24.5	25.5	15.5	65.5		24.0
BH-55,SPT-12, 23.00M		1.5	32.5	21.0	15.0	68.5	13.708/0.261	30.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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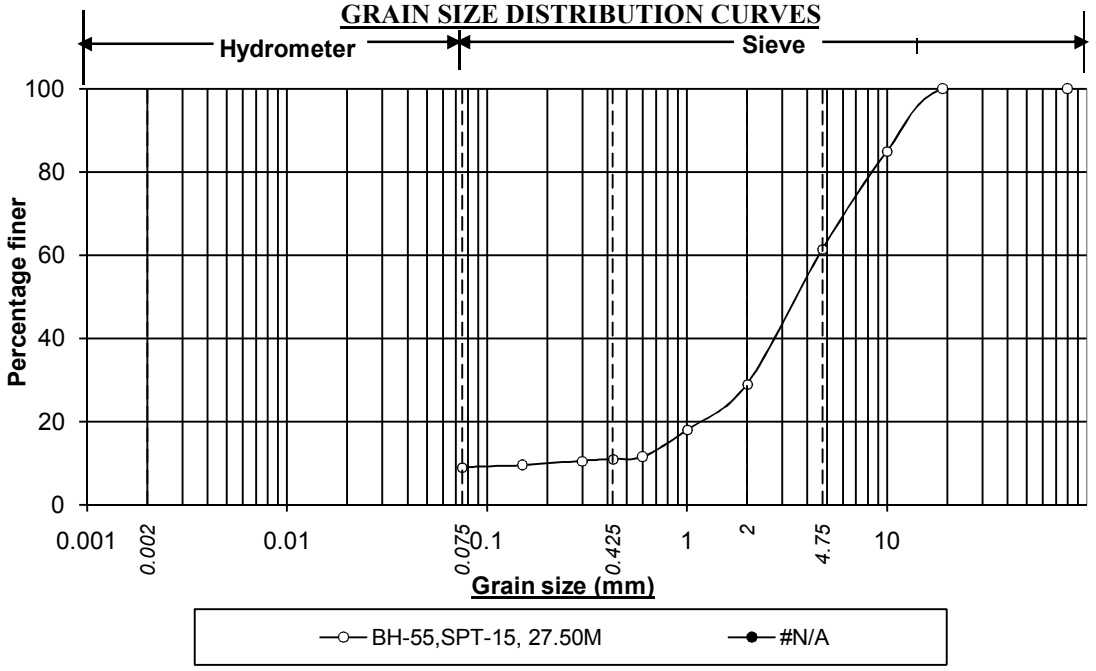
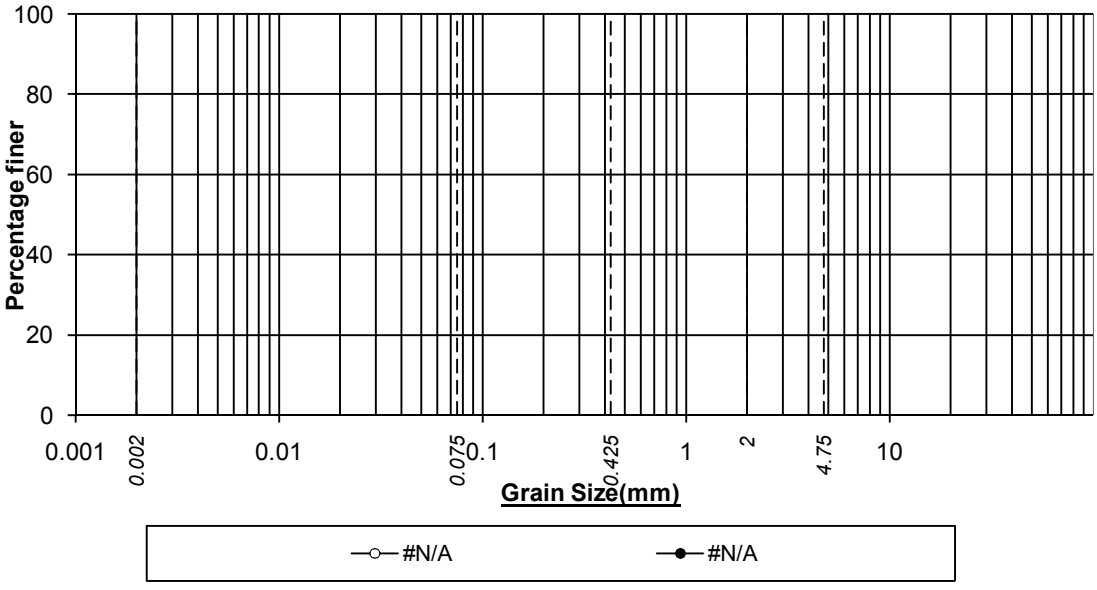
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-55,SPT-15, 27.50M		9.0	2.0	18.0	32.5	52.5	27.989/6.441	38.5



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	**Job No. 3369**	

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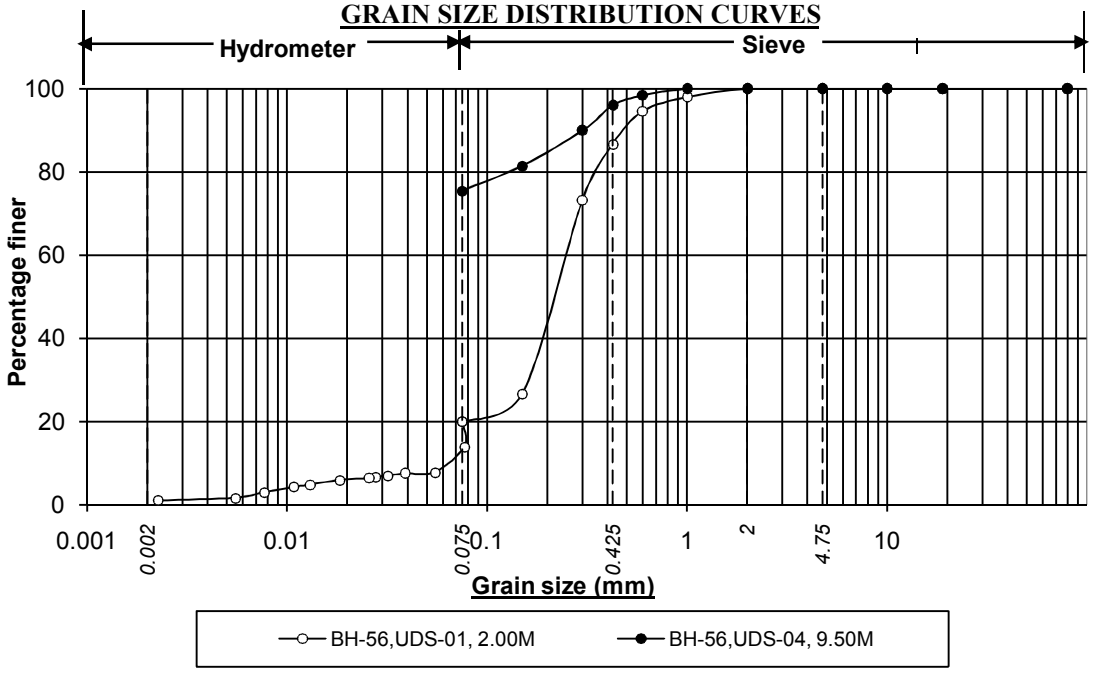
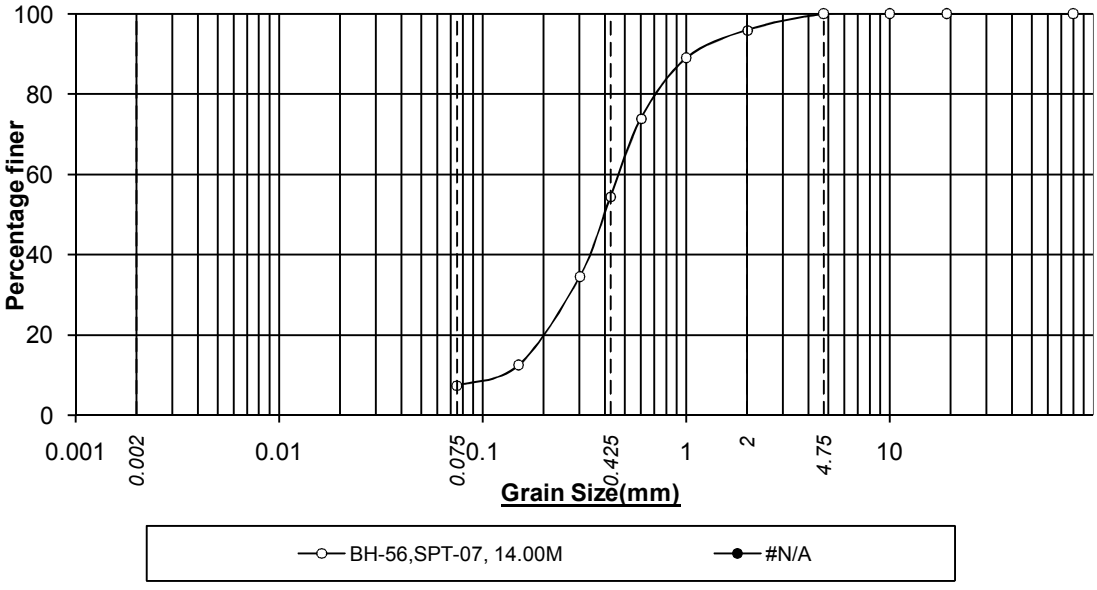
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-56,UDS-01, 2.00M	1.0	19.0	66.7	13.3	0.0	80.0		0.0
BH-56,UDS-04, 9.50M		75.5	20.5	4.0	0.0	24.5		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-56,SPT-07, 14.00M		7.5	47.0	41.5	4.0	92.5	3.767/1.153	0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

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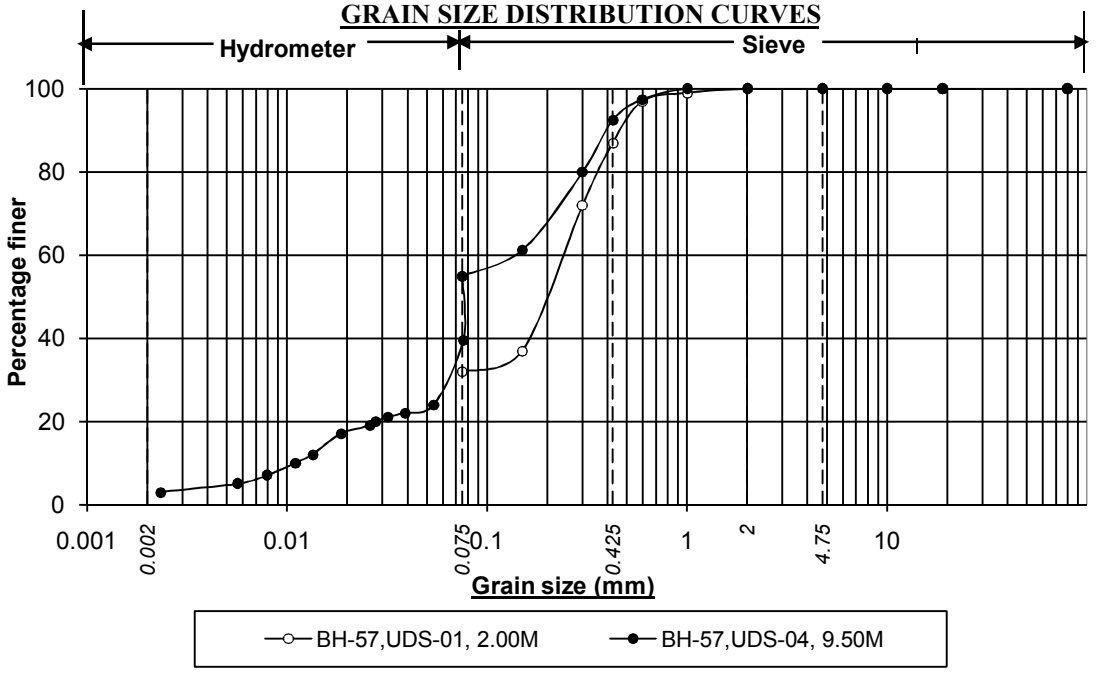
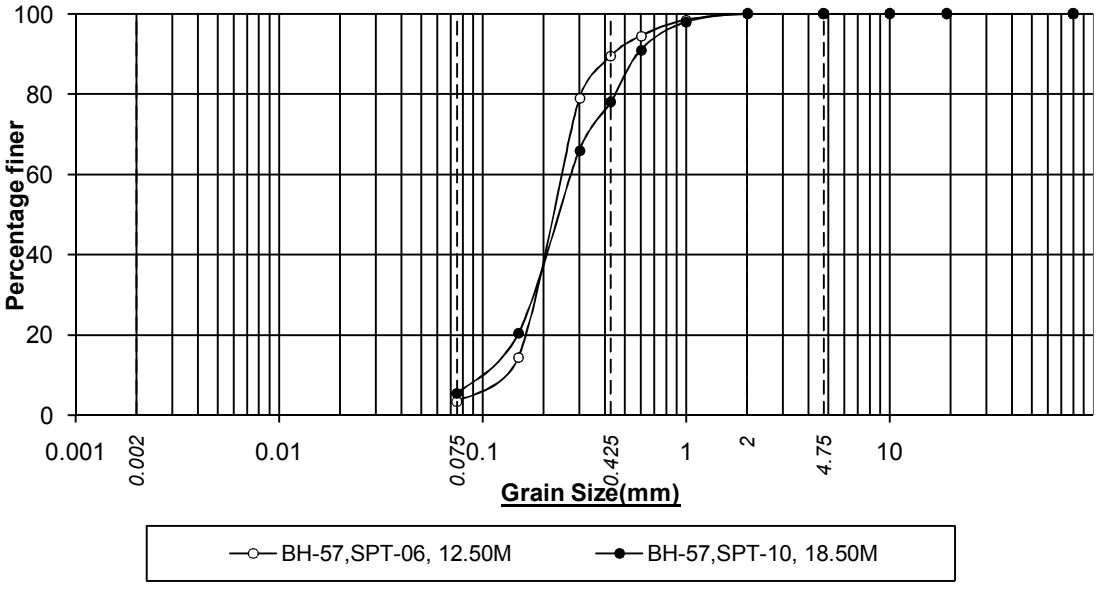
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-57,UDS-01, 2.00M		32.0	55.0	13.0	0.0	68.0		0.0
BH-57,UDS-04, 9.50M	2.7	52.3	37.5	7.5	0.0	45.0		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-57,SPT-06, 12.50M		3.5	86.0	10.5	0.0	96.5	1.823/1.03	0.0
BH-57,SPT-10, 18.50M		5.5	72.5	22.0	0.0	94.5	2.76/1.244	0.0

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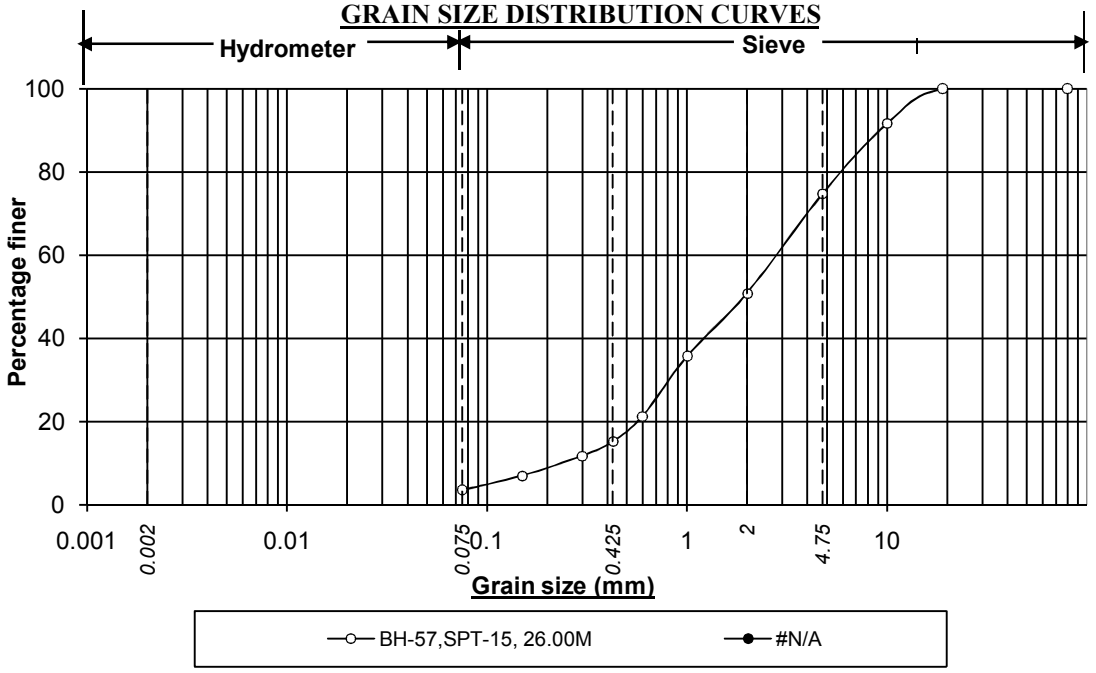
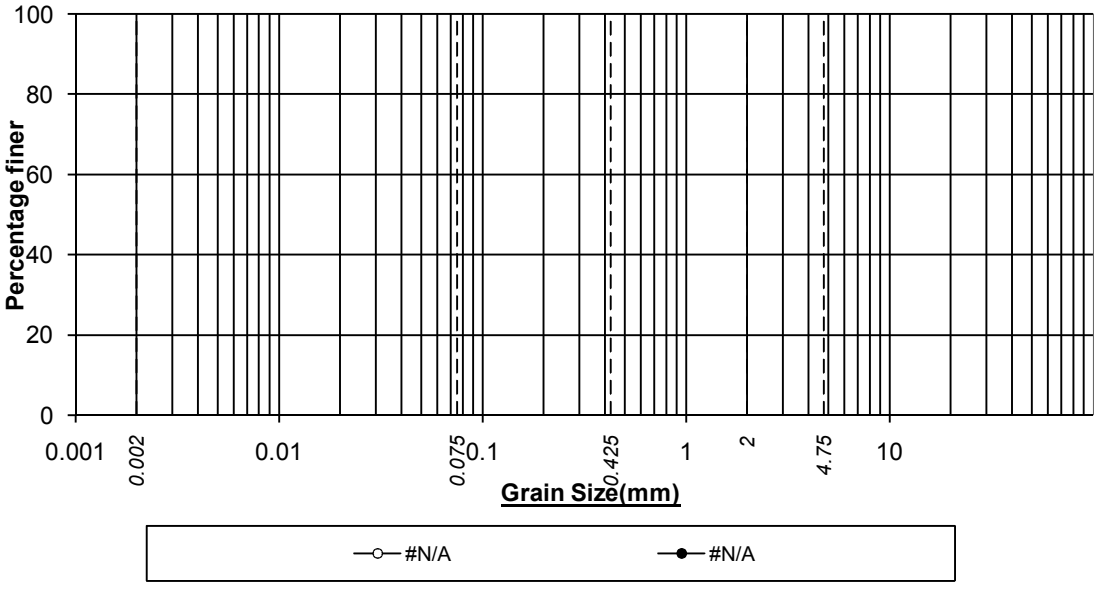
C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-57,SPT-15, 26.00M		3.5	11.7	35.7	23.9	71.3	11.994/1.002	25.2

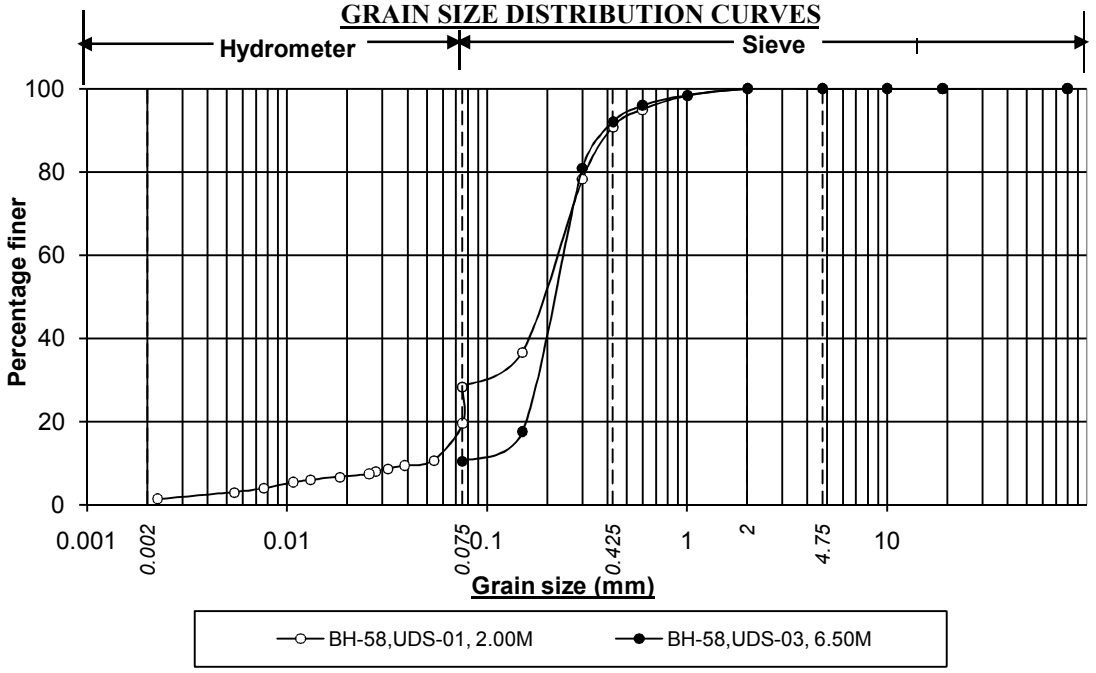


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**

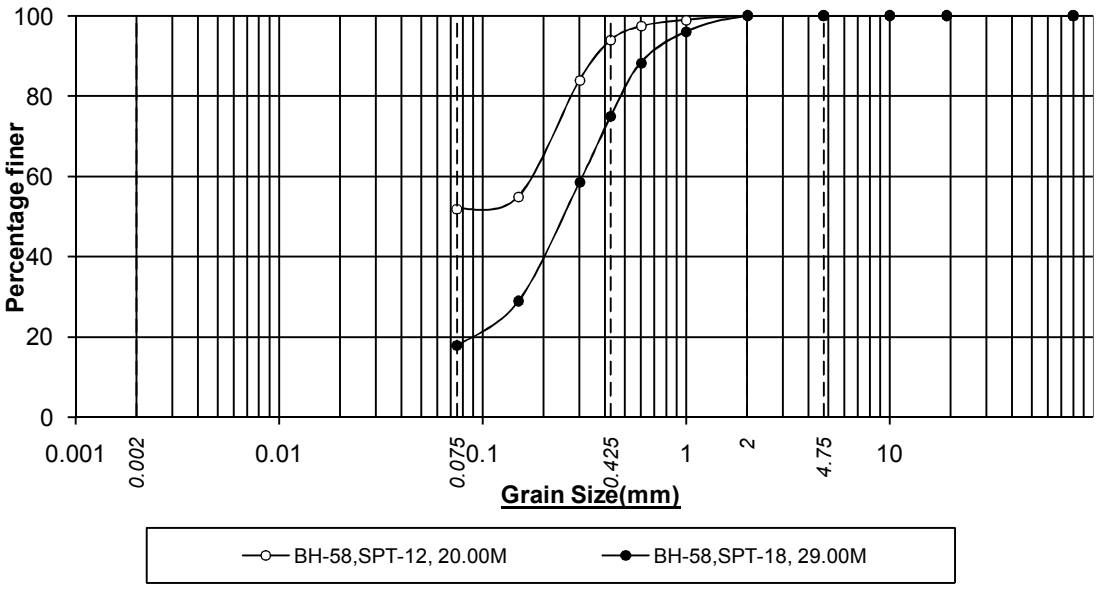
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat	**Job No. 3369**	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-58,UDS-01, 2.00M	1.1	27.2	62.5	9.2	0.0	71.7		0.0
BH-58,UDS-03, 6.50M		10.5	81.5	8.0	0.0	89.5		0.0

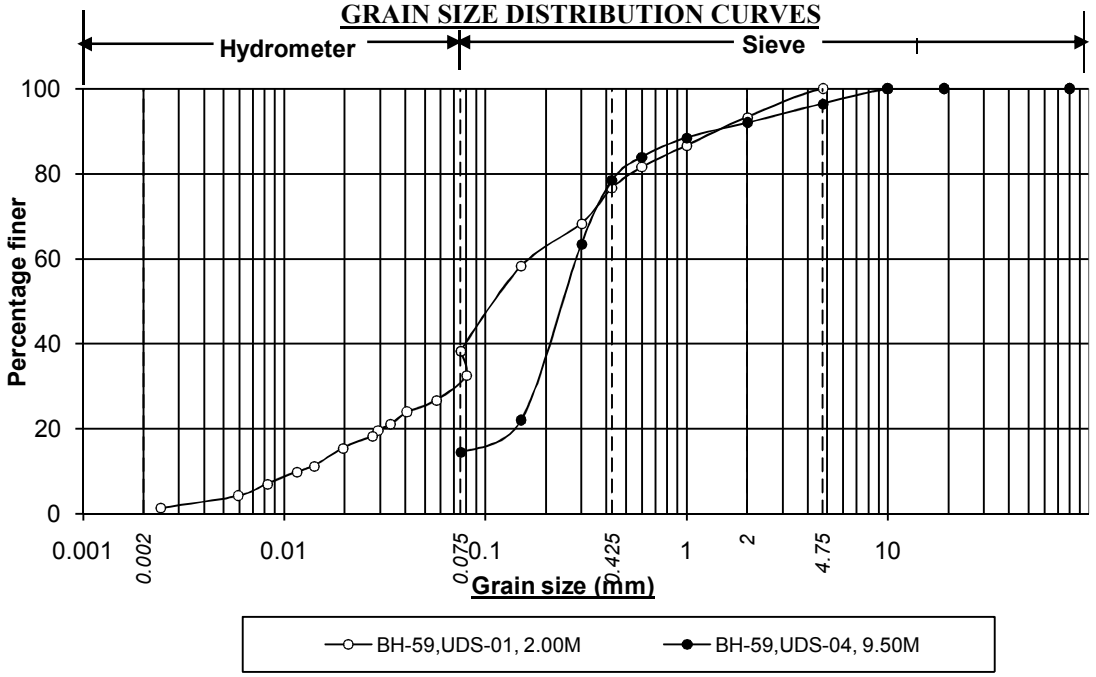


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-58,SPT-12, 20.00M		52.0	42.0	6.0	0.0	48.0		0.0
BH-58,SPT-18, 29.00M		18.0	57.0	25.0	0.0	82.0		0.0

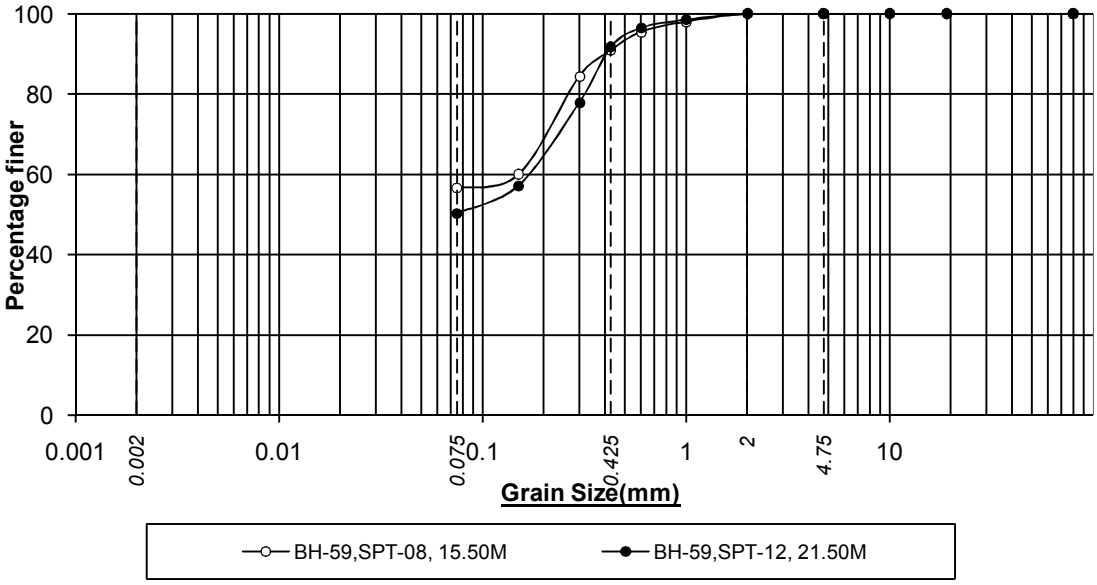
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-59,UDS-01, 2.00M	0.8	37.5	38.3	16.7	6.7	61.7		0.0
BH-59,UDS-04, 9.50M		14.5	64.0	13.5	4.5	82.0		3.5



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-59,SPT-08, 15.50M		56.8	34.2	9.0	0.0	43.2		0.0
BH-59,SPT-12, 21.50M		50.3	41.4	8.3	0.0	49.7		0.0

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat. | **Job No. 3369**

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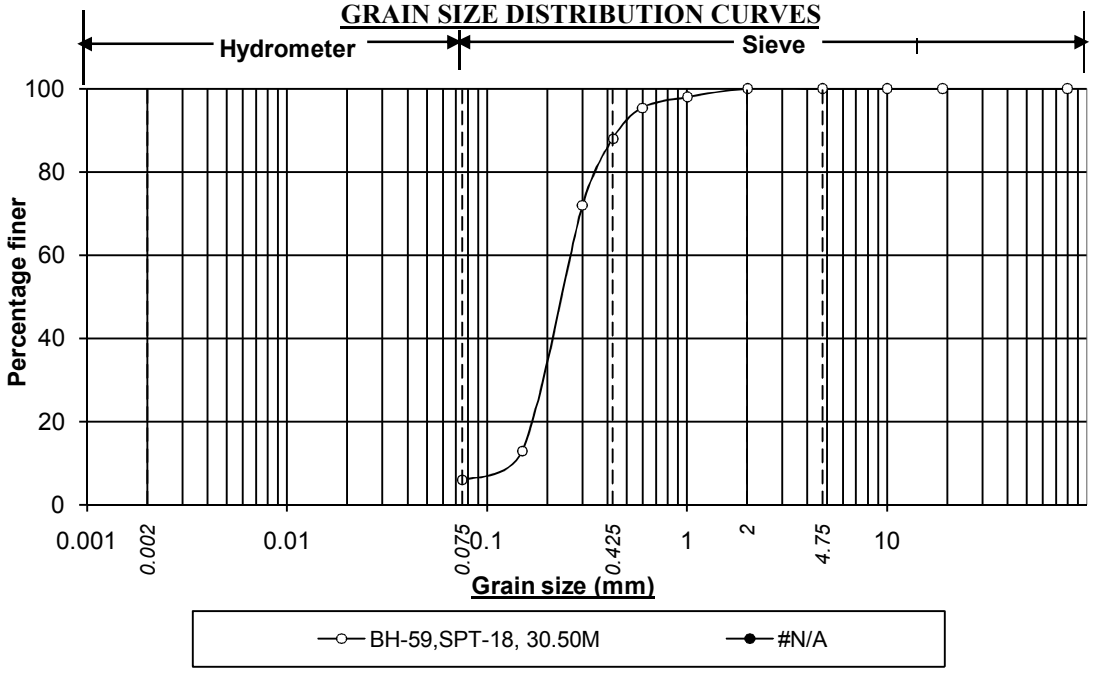
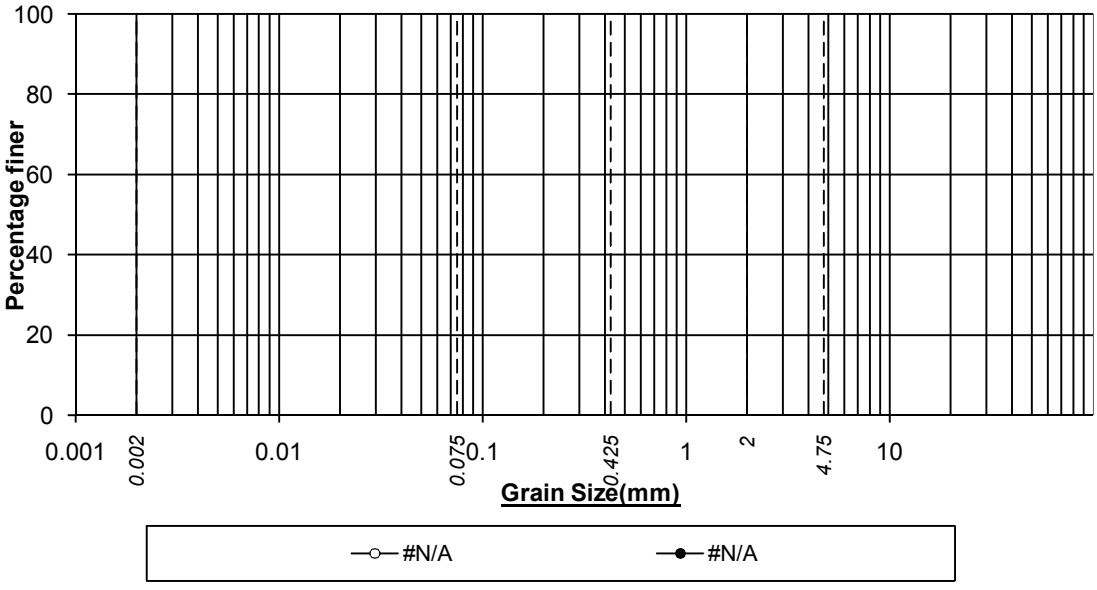
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-59,SPT-18, 30.50M		6.0	82.0	12.0	0.0	94.0	1.823/1.025	0.0

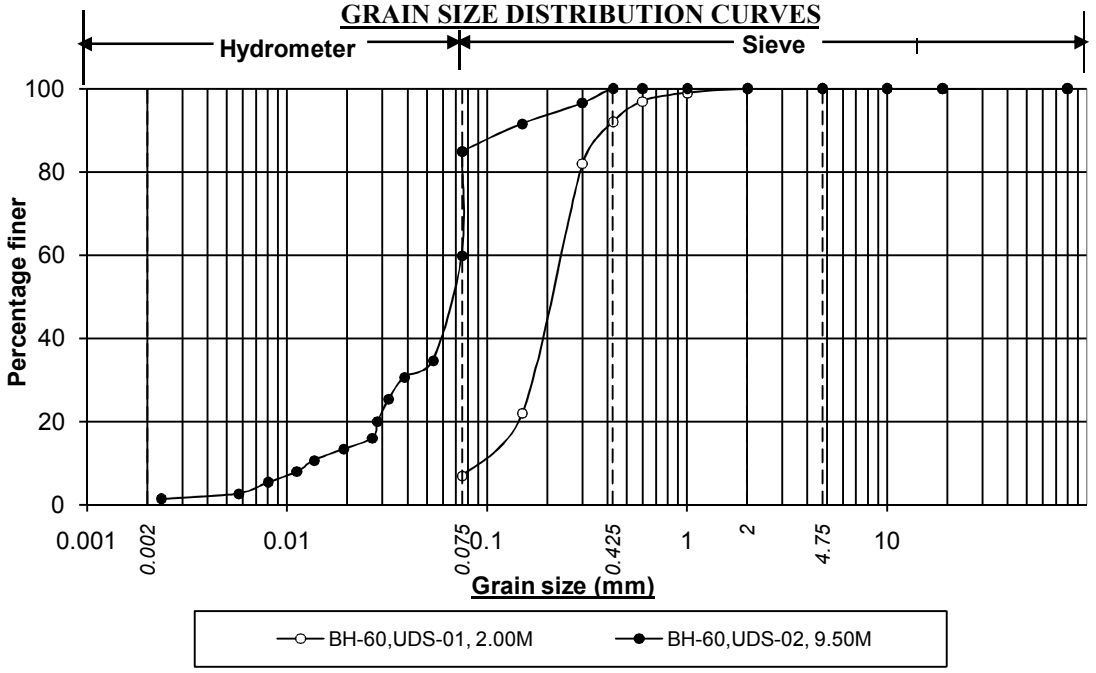


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)

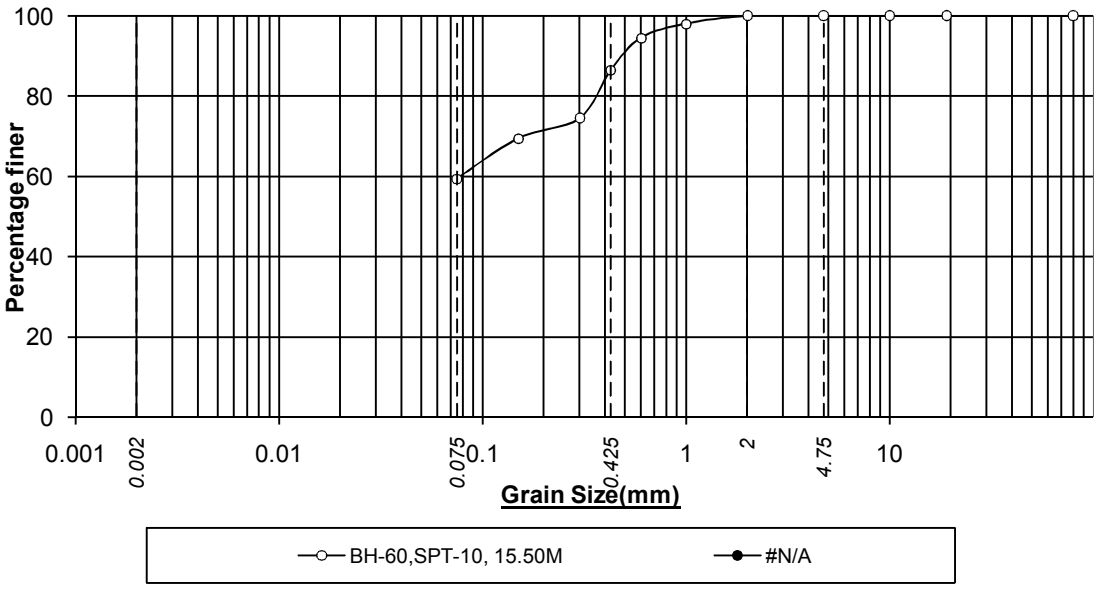
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat.	Job No. 3369	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-60,UDS-01, 2.00M		7.0	85.0	8.0	0.0	93.0	2.529/1.315	0.0
BH-60,UDS-02, 9.50M	1.1	83.9	15.0	0.0	0.0	15.0		0.0

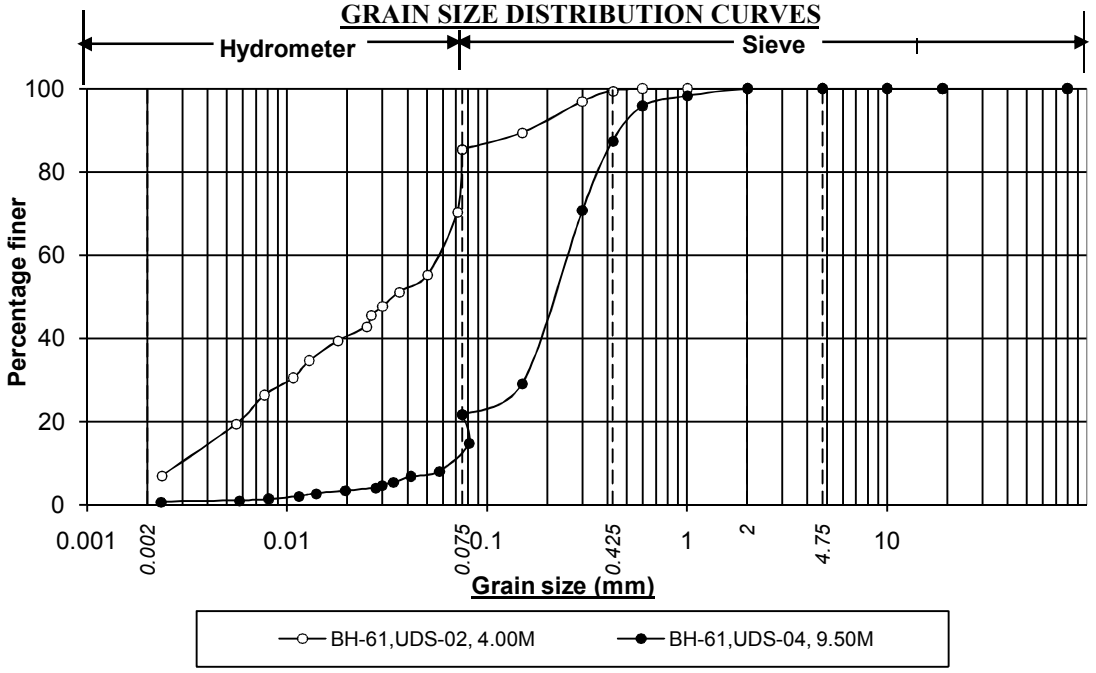


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-60,SPT-10, 15.50M		59.5	27.0	13.5	0.0	40.5		0.0

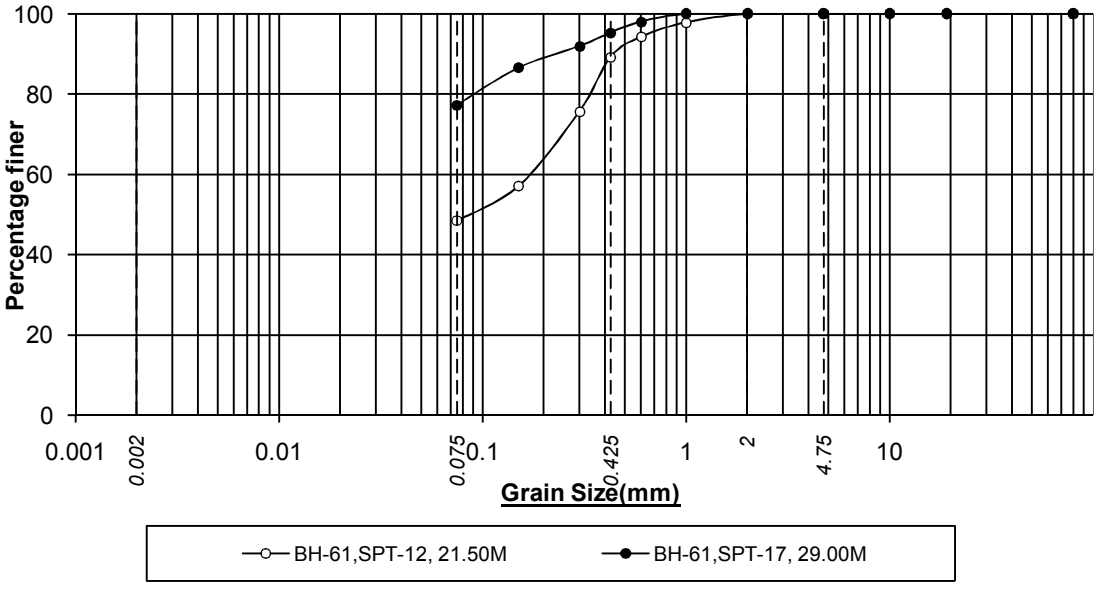
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-61,UDS-02, 4.00M	4.5	81.0	14.0	0.5	0.0	14.5		0.0
BH-61,UDS-04, 9.50M	0.6	21.1	65.8	12.5	0.0	78.3		0.0

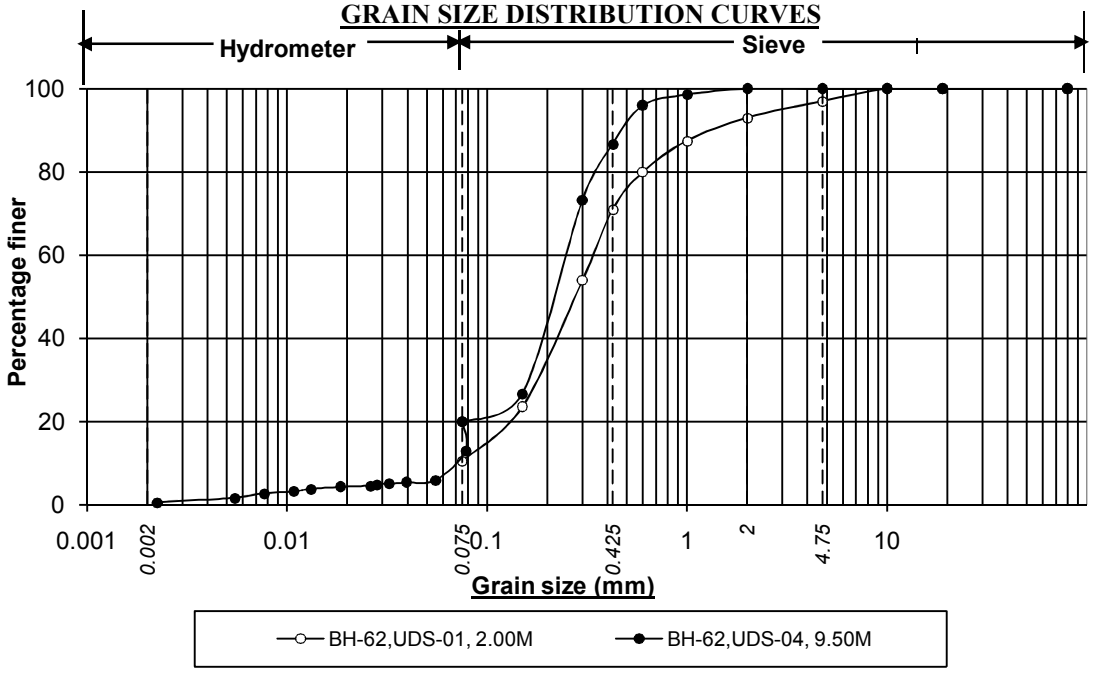


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-61,SPT-12, 21.50M		48.6	40.7	10.7	0.0	51.4		0.0
BH-61,SPT-17, 29.00M		77.3	18.0	4.7	0.0	22.7		0.0

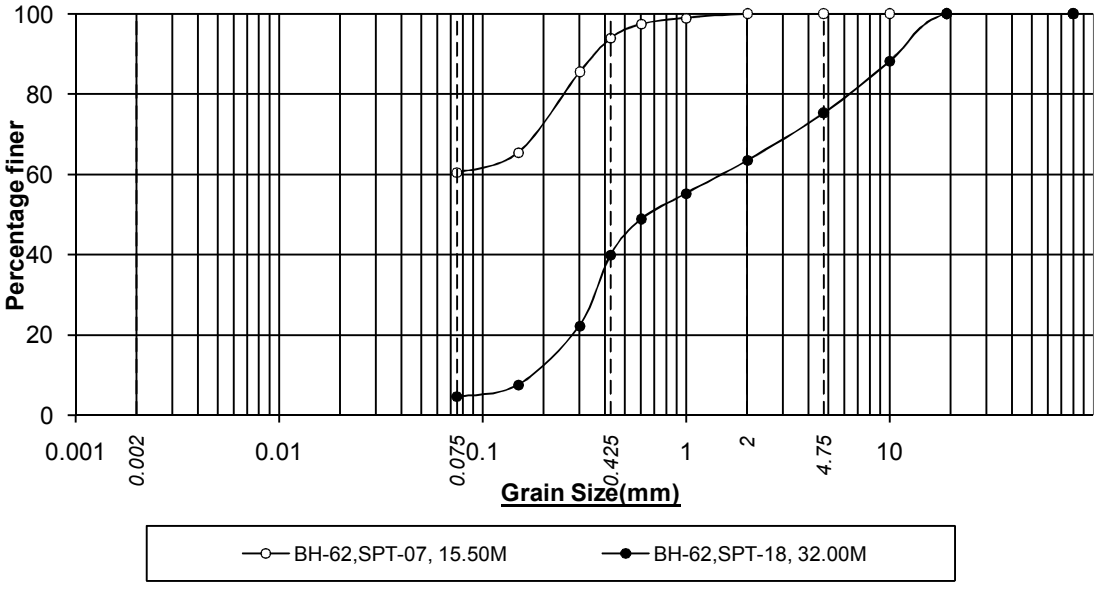
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-62,UDS-01, 2.00M		10.5	60.5	22.0	4.0	86.5		3.0
BH-62,UDS-04, 9.50M	0.4	19.6	66.7	13.3	0.0	80.0		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-62,SPT-07, 15.50M		60.5	33.5	6.0	0.0	39.5		0.0
BH-62,SPT-18, 32.00M		4.7	35.3	23.5	11.8	70.6	8.531/0.5	24.7

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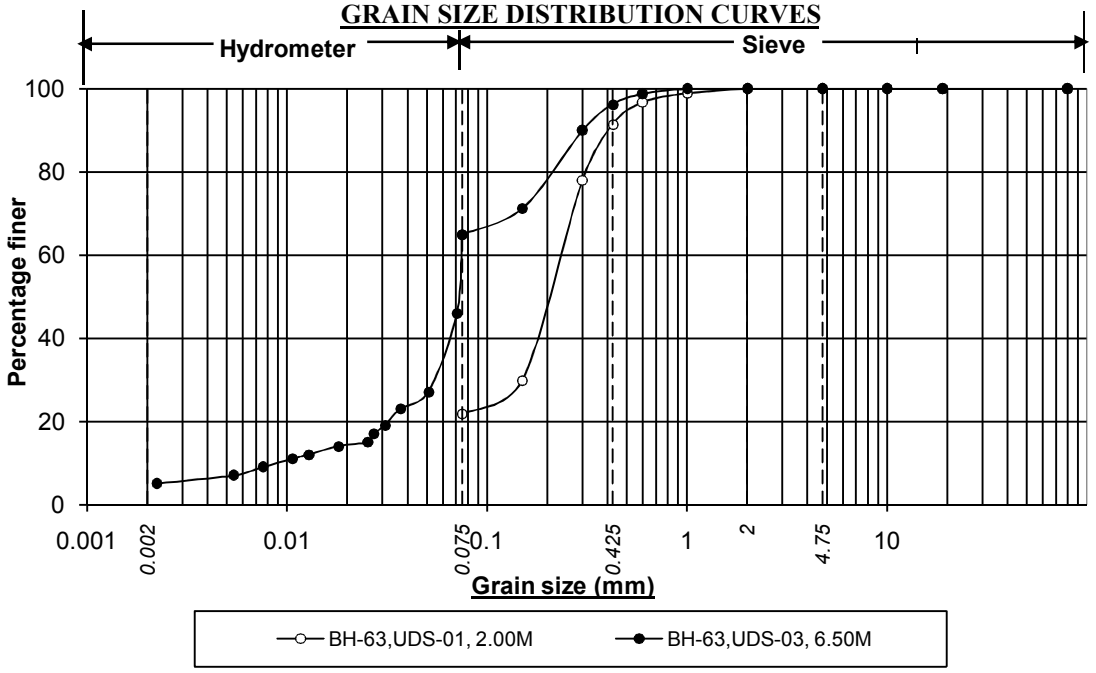
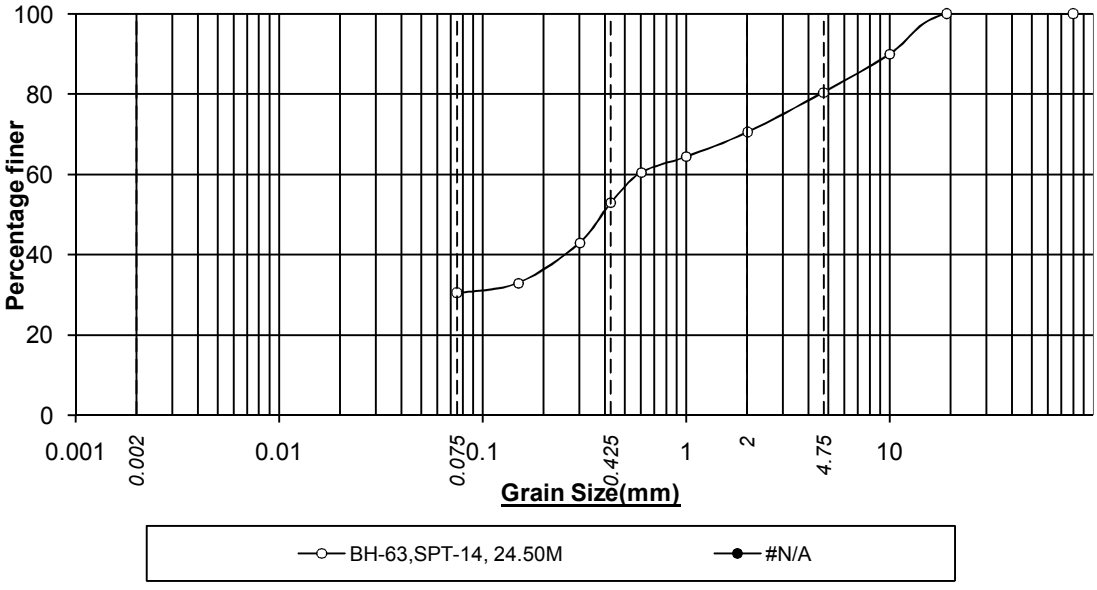
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-63,UDS-01, 2.00M		21.9	69.5	8.6	0.0	78.1		0.0
BH-63,UDS-03, 6.50M	4.8	60.2	31.2	3.8	0.0	35.0		0.0

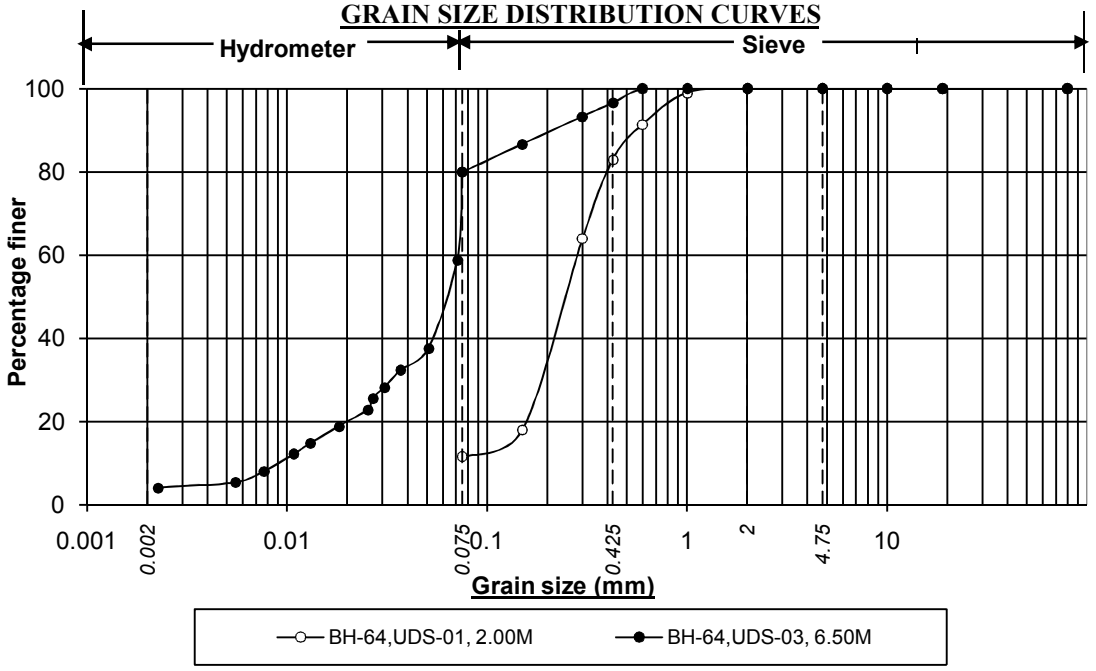


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-63,SPT-14, 24.50M		30.5	22.5	17.5	10.0	50.0		19.5

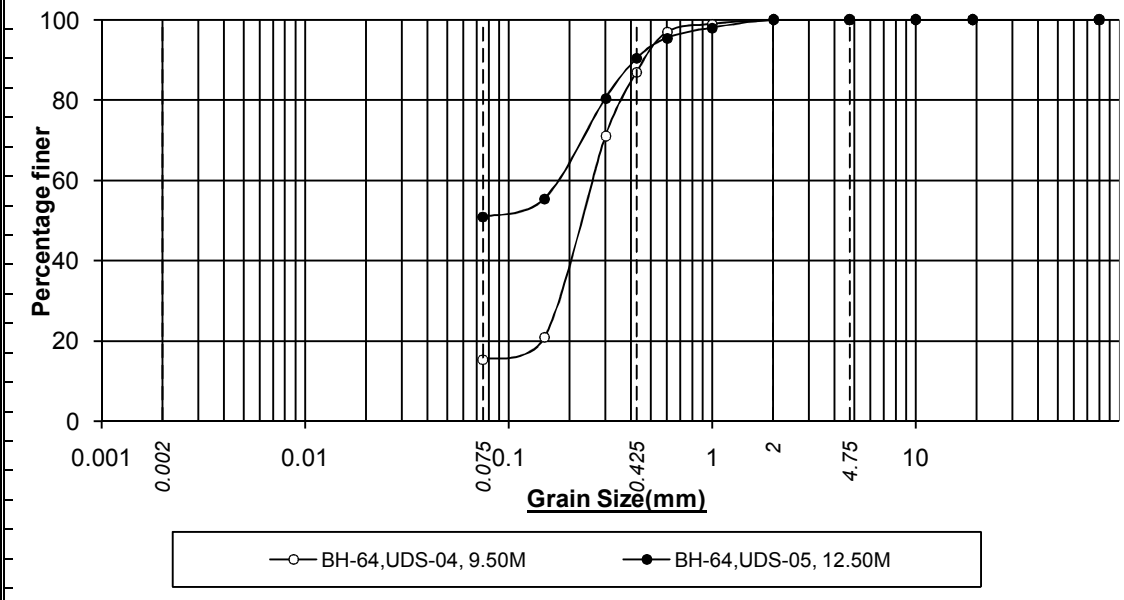
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-64,UDS-01, 2.00M		11.5	71.5	17.0	0.0	88.5		0.0
BH-64,UDS-03, 6.50M	3.9	76.1	16.7	3.3	0.0	20.0		0.0

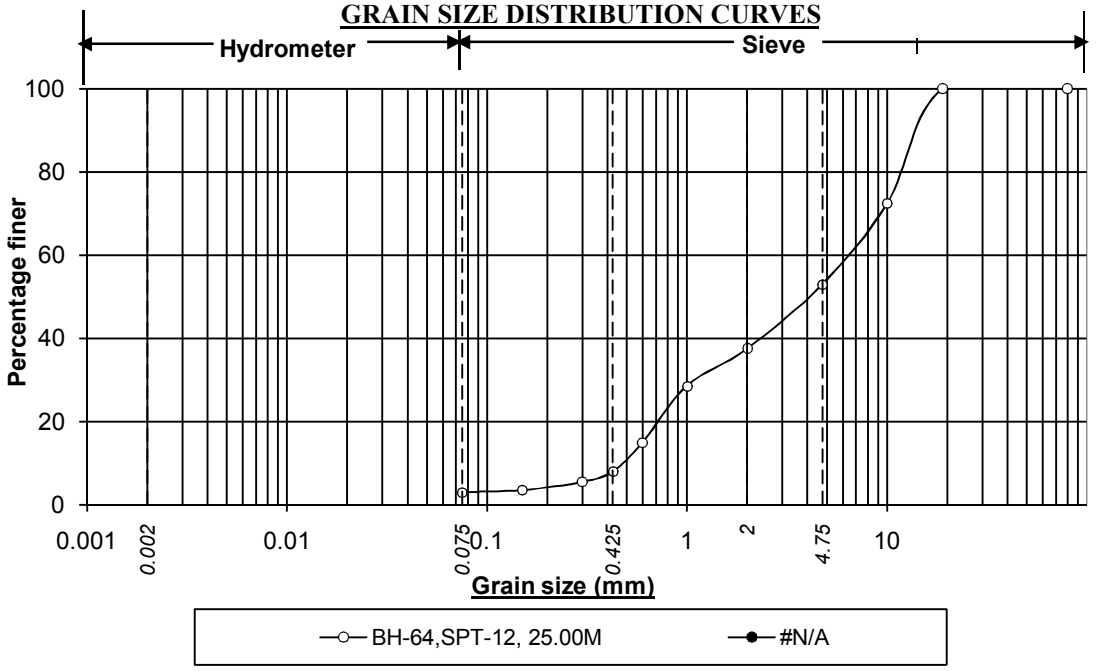


Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-64,UDS-04, 9.50M		15.5	71.5	13.0	0.0	84.5		0.0
BH-64,UDS-05, 12.50M		51.0	39.5	9.5	0.0	49.0		0.0

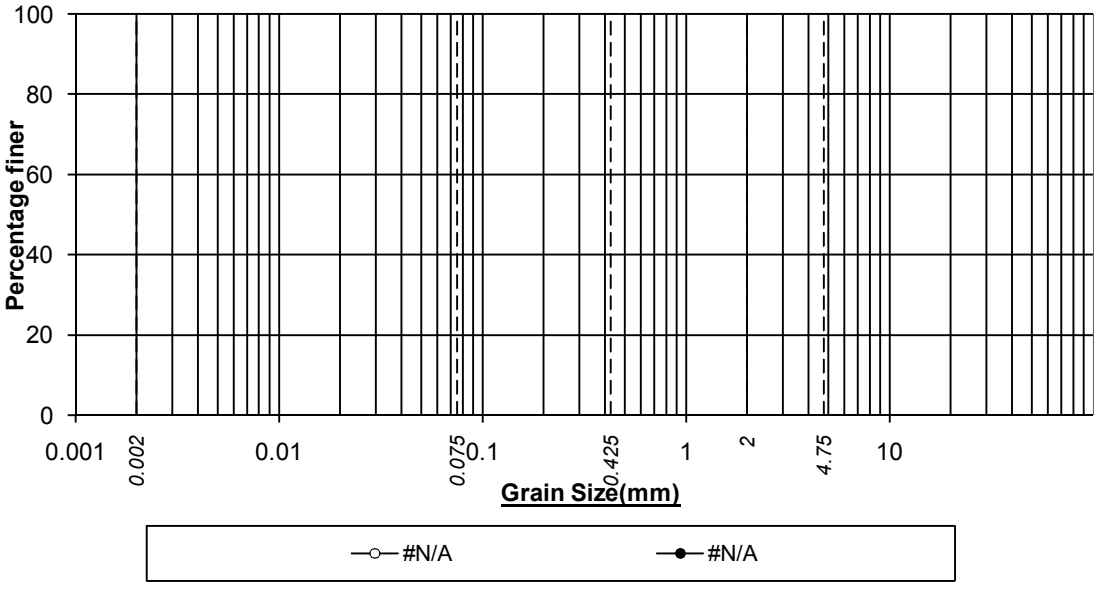
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)
BH-64,SPT-12, 25.00M		3.0	5.0	29.5	15.5	50.0	13.583/0.412	47.0

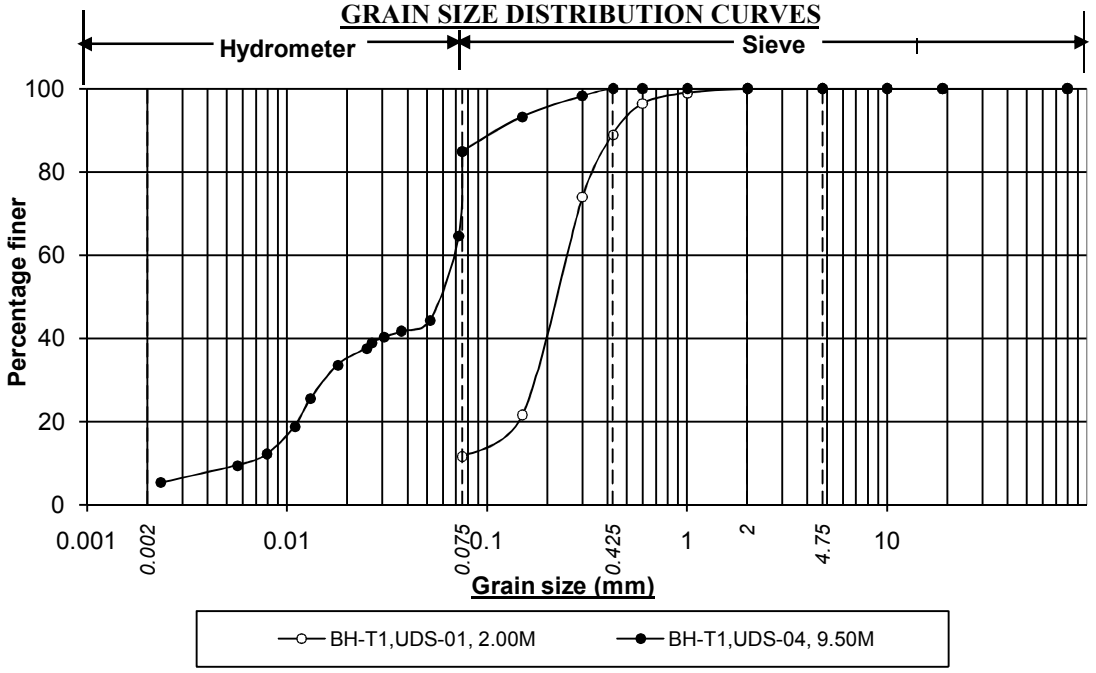


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	Clay (%)	Silt (%)	Fine sand (%)	Medium sand (%)	Coarse sand (%)			Gravel (%)

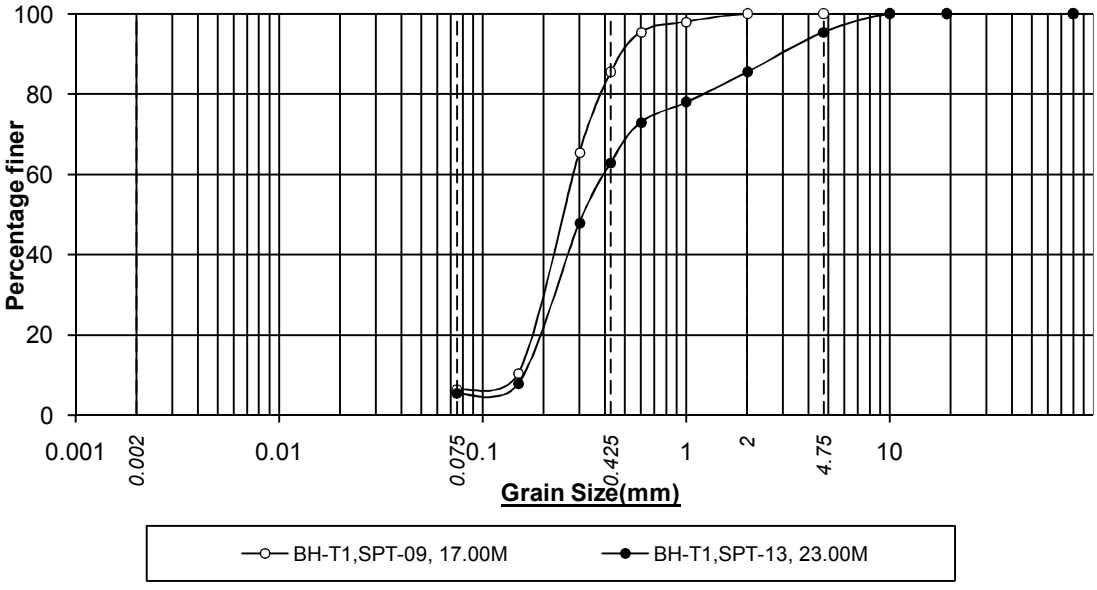
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat	Job No. 3369	

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-T1,UDS-01, 2.00M		11.5	77.5	11.0	0.0	88.5		0.0
BH-T1,UDS-04, 9.50M	4.7	80.3	15.0	0.0	0.0	15.0		0.0



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-0.425*	*0.425-2.00*	*2.0-4.75*	**Total sand**	**Cu/Cc**	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-T1,SPT-09, 17.00M		6.5	79.0	14.5	0.0	93.5	1.945/0.849	0.0
BH-T1,SPT-13, 23.00M		5.5	57.5	22.5	10.0	90.0	2.426/0.872	4.5

Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

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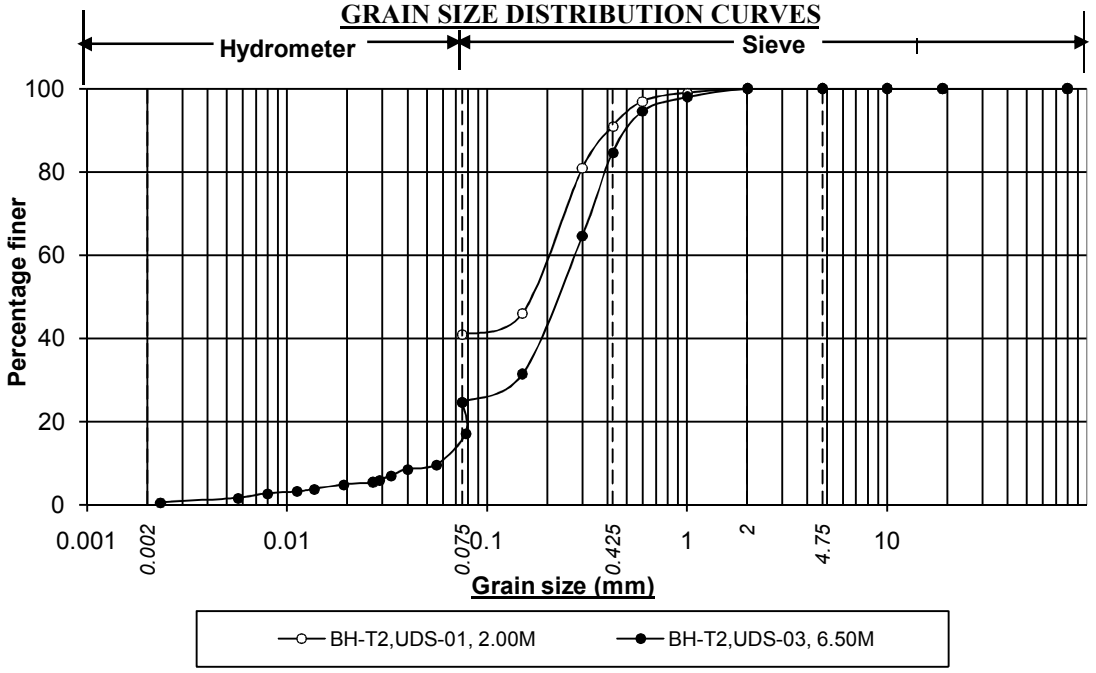
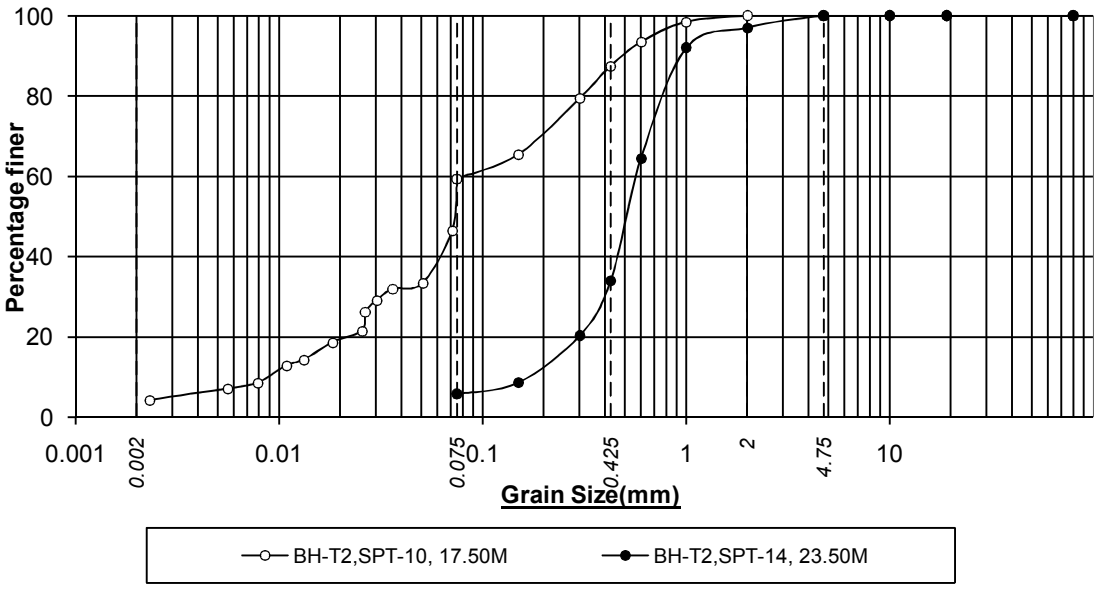
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-T2,UDS-01, 2.00M		41.0	50.0	9.0	0.0	59.0		0.0
BH-T2,UDS-03, 6.50M	0.3	24.3	60.1	15.3	0.0	75.4		0.0

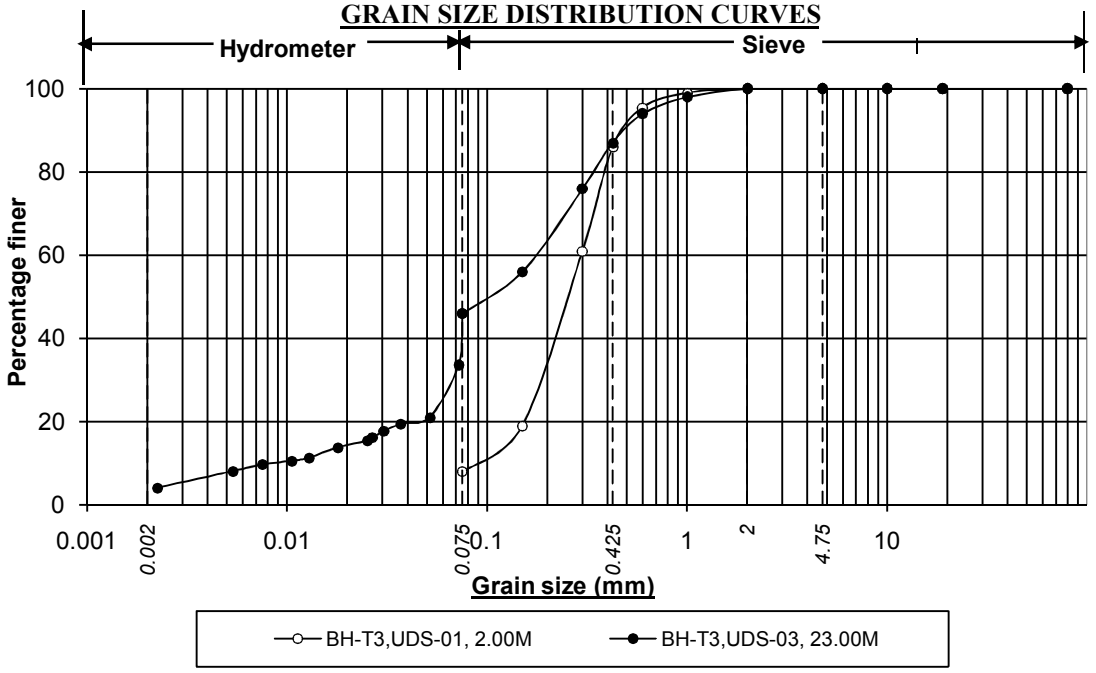


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-T2,SPT-10, 17.50M	3.8	55.7	28.0	12.5	0.0	40.5		0.0
BH-T2,SPT-14, 23.50M		5.8	28.3	63.0	2.9	94.2	3.396/1.648	0.0

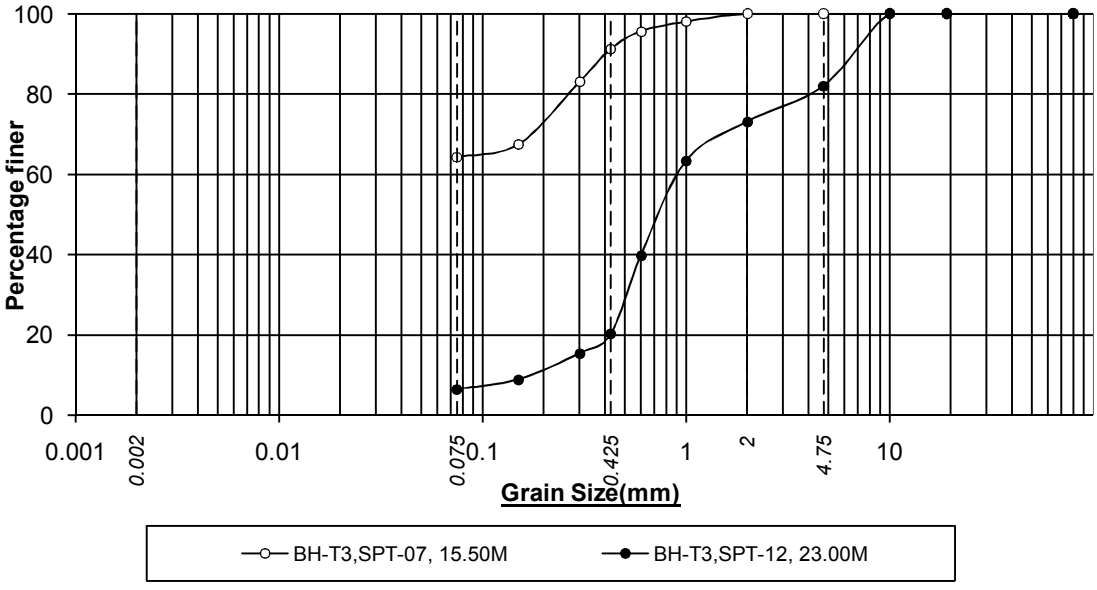
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-T3,UDS-01, 2.00M		8.0	78.0	14.0	0.0	92.0	3.396/1.415	0.0
BH-T3,UDS-03, 23.00M	3.5	42.5	41.0	13.0	0.0	54.0		0.0

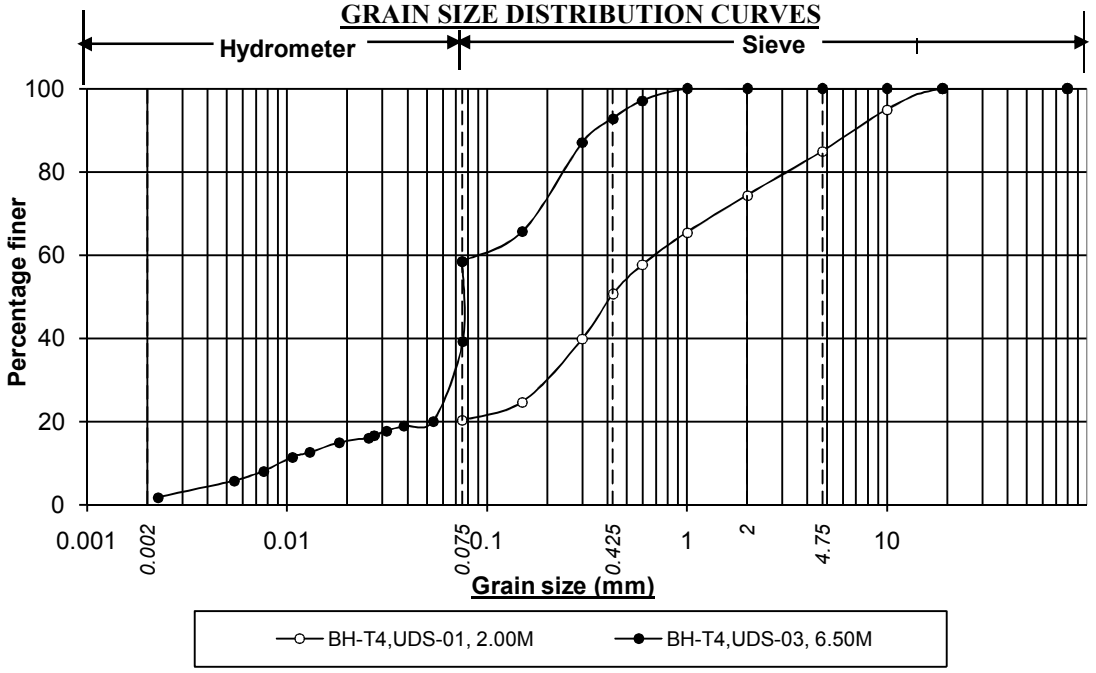


Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-T3,SPT-07, 15.50M		64.4	26.8	8.8	0.0	35.6		0.0
BH-T3,SPT-12, 23.00M		6.5	13.9	52.8	8.9	75.6	5.199/1.592	17.9

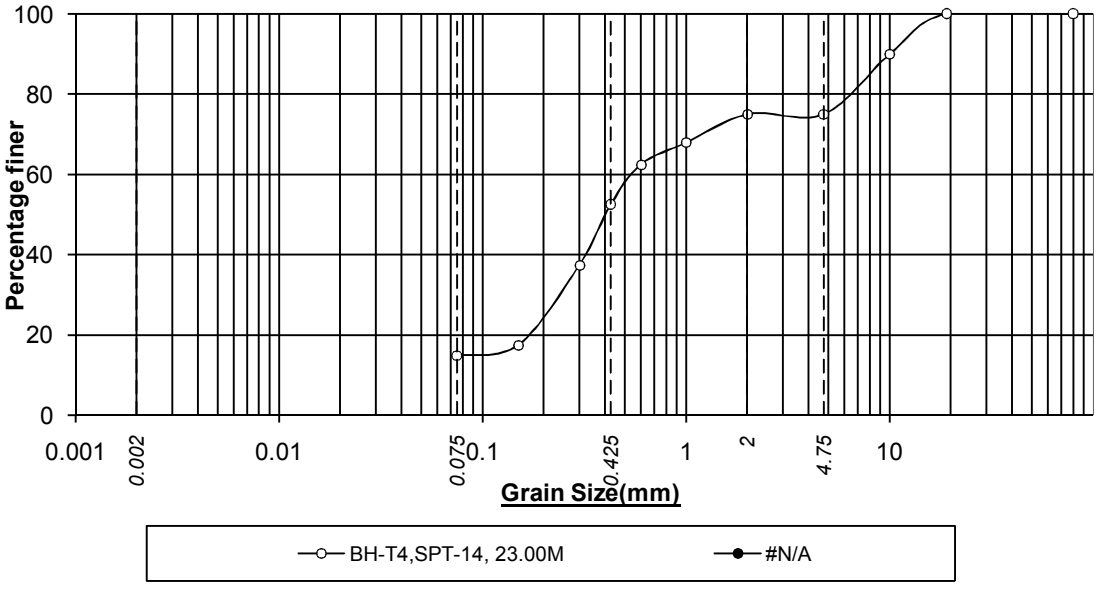
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C. E. Testing Company Pvt. Ltd.

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-T4,UDS-01, 2.00M		20.4	30.2	23.8	10.6	64.6		15.0
BH-T4,UDS-03, 6.50M	1.2	57.4	34.3	7.1	0.0	41.4		0.0



Grain size (mm)	<0.002	0.002-0.075	0.075-0.425	0.425-2.00	2.0-4.75	Total sand	Cu/Cc	>4.75
Sample No.	**Clay (%)**	**Silt (%)**	**Fine sand (%)**	**Medium sand (%)**	**Coarse sand (%)**			**Gravel (%)**
BH-T4,SPT-14, 23.00M		15.0	37.5	22.5	0.0	60.0		25.0

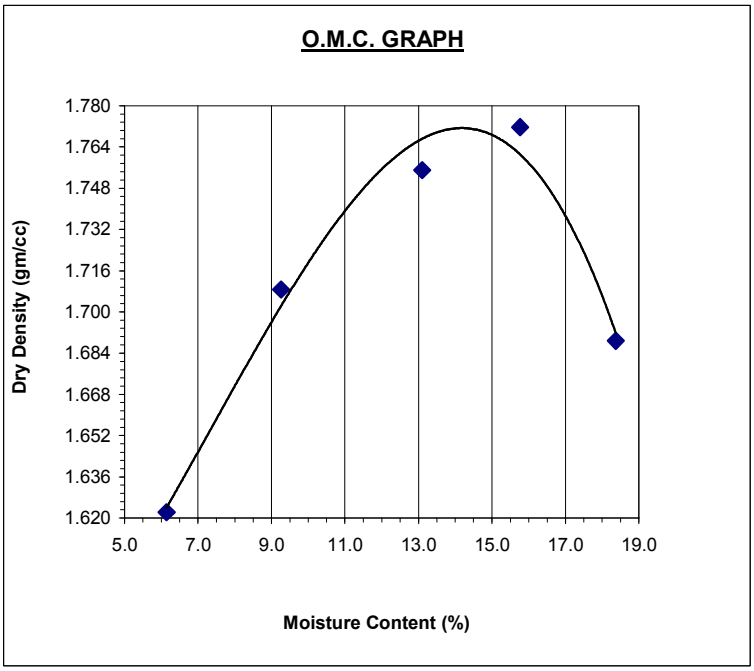
Project:- Geotech. Inv. work for 1 x 800 MW Wanakbori TPS, Gujarat | **Job No. 3369**

C.B.R. & STANDARD PROCTOR TEST RESULTS.

TP01 / DS01

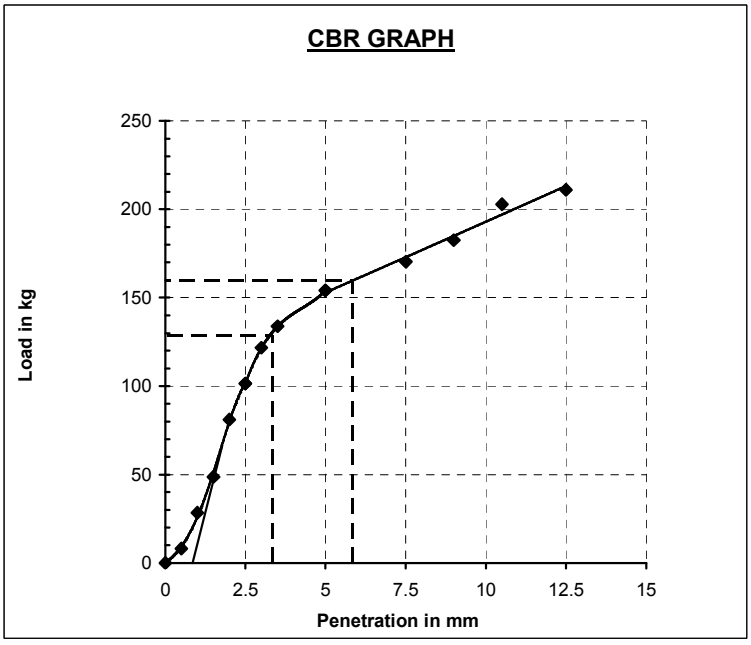
Depth = 1.00m

Maximum Dry Density : 1.770 gm/cc
Optimum Moisture Content: 14.00 %



TYPE :- SOAKED

Penetration (mm)	CBR (%)
2.5	9.40
5.0	7.76

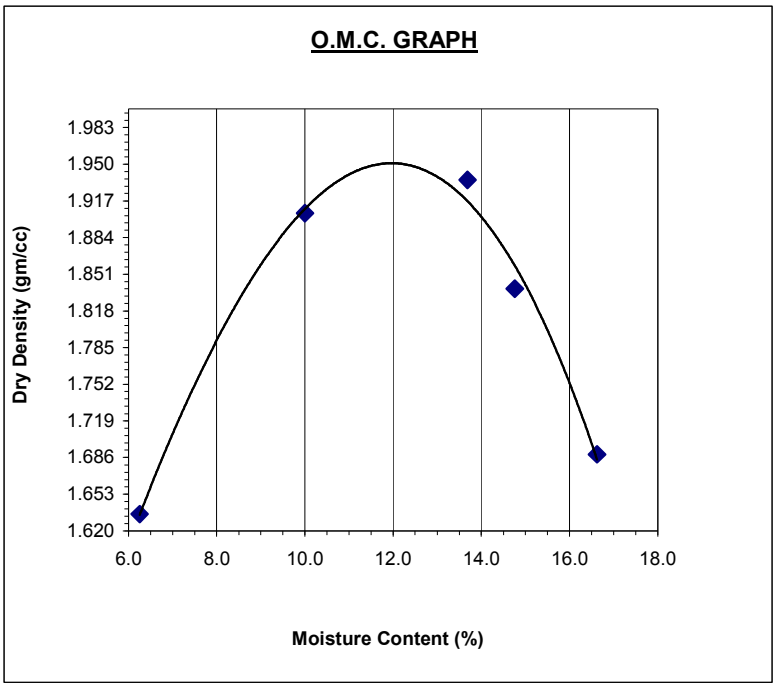


MODIFIED PROCTOR TEST RESULTS.

TP01 / DS02

Depth = 2.00m

Maximum Dry Density : 1.950 gm/cc
Optimum Moisture Content: 12.00 %

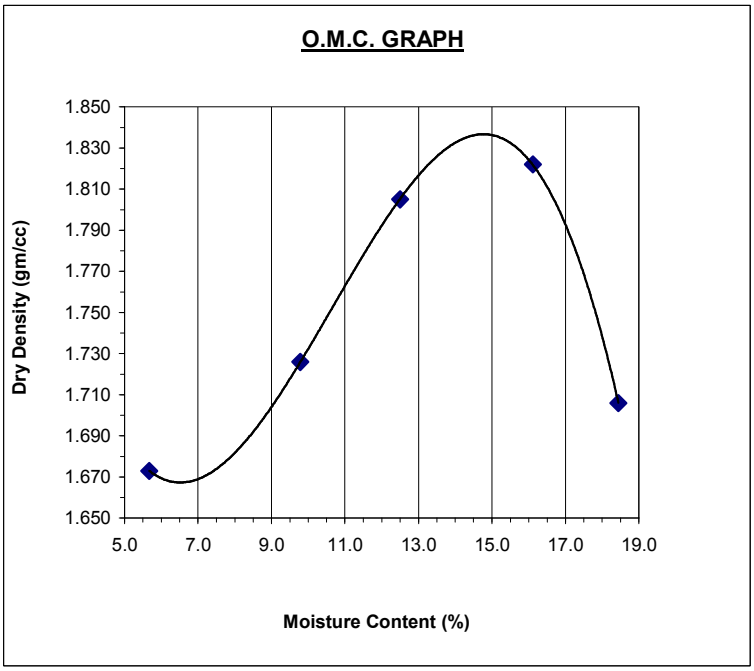


C.B.R. & STANDARD PROCTOR TEST RESULTS.

TP02 / DS02

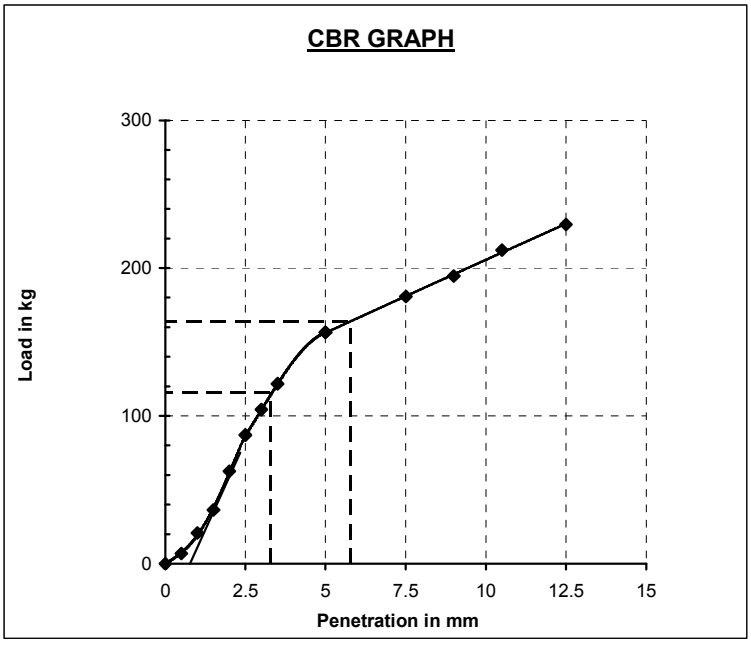
Depth = 2.00m

Maximum Dry Density : 1.836 gm/cc
Optimum Moisture Content: 14.75 %



TYPE :- SOAKED

Penetration (mm)	CBR (%)
2.5	8.47
5.0	7.97

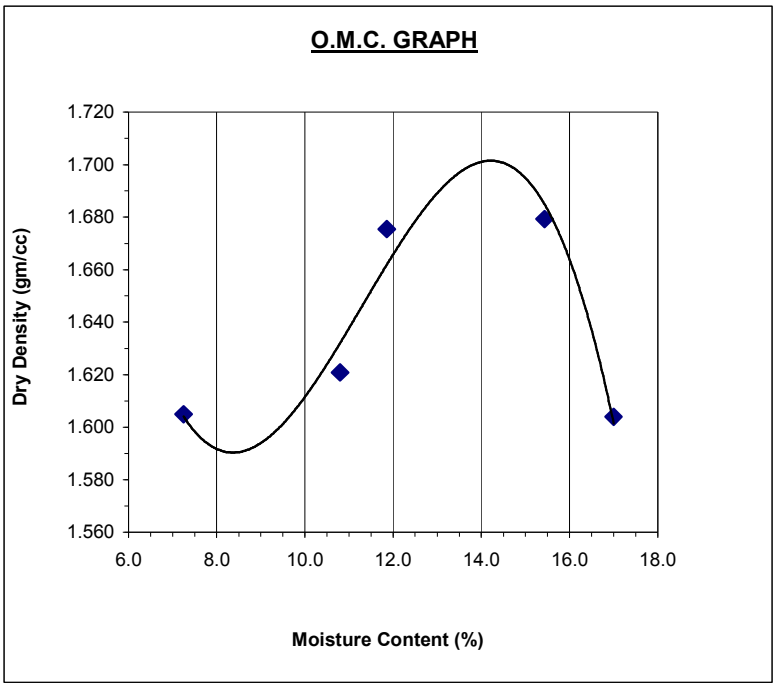


STANDARD PROCTOR TEST RESULTS.

TP03 / DS01

Depth = 1.00m

Maximum Dry Density : 1.701 gm/cc
Optimum Moisture Content: 14.26 %

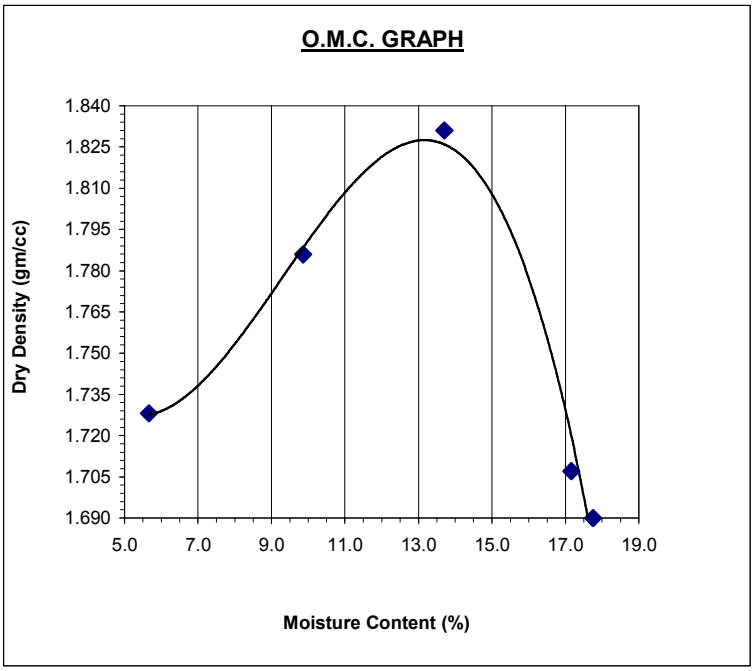


C.B.R. & MODIFIED PROCTOR TEST RESULTS.

TP03 / DS02

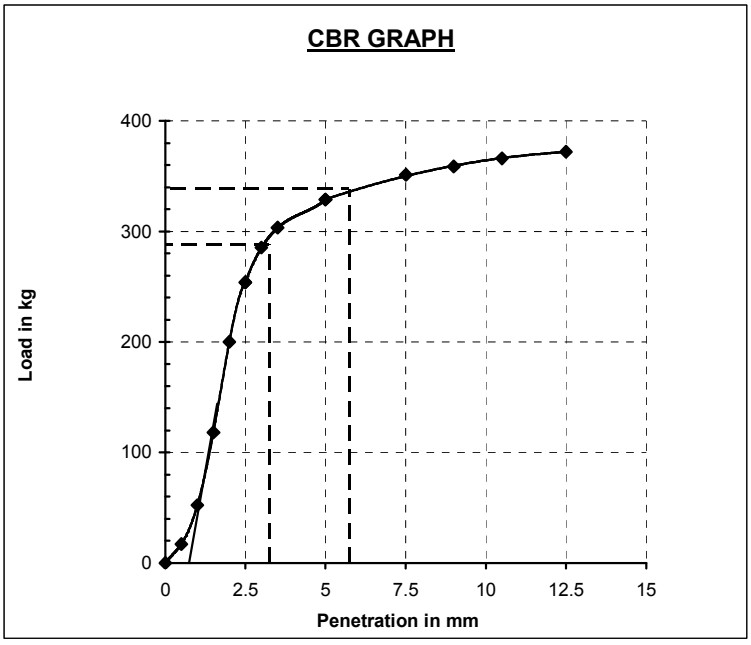
Depth = 2.00m

Maximum Dry Density : 1.827 gm/cc
Optimum Moisture Content: 13.30 %



TYPE :- SOAKED

Penetration (mm)	CBR (%)
2.5	21.05
5.0	16.48

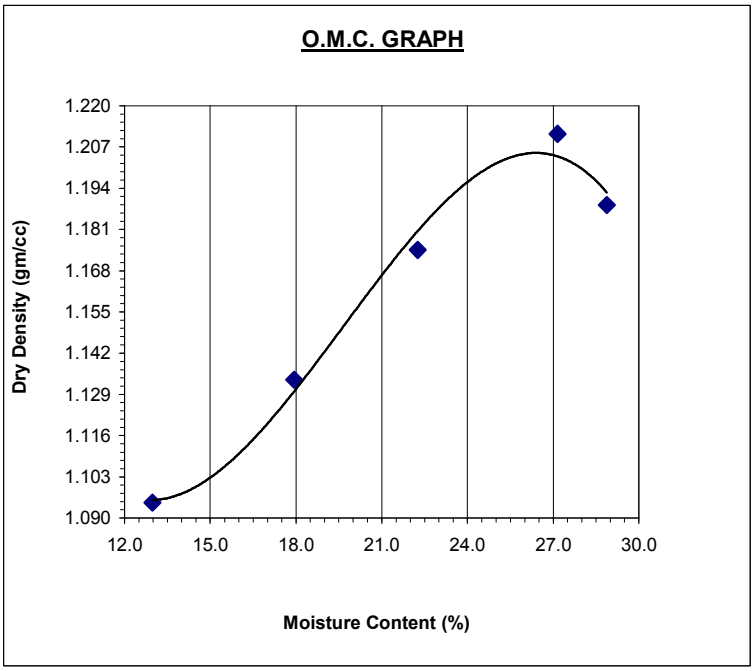


C.B.R. & MODIFIED PROCTOR TEST RESULTS.

TP07 / DS01

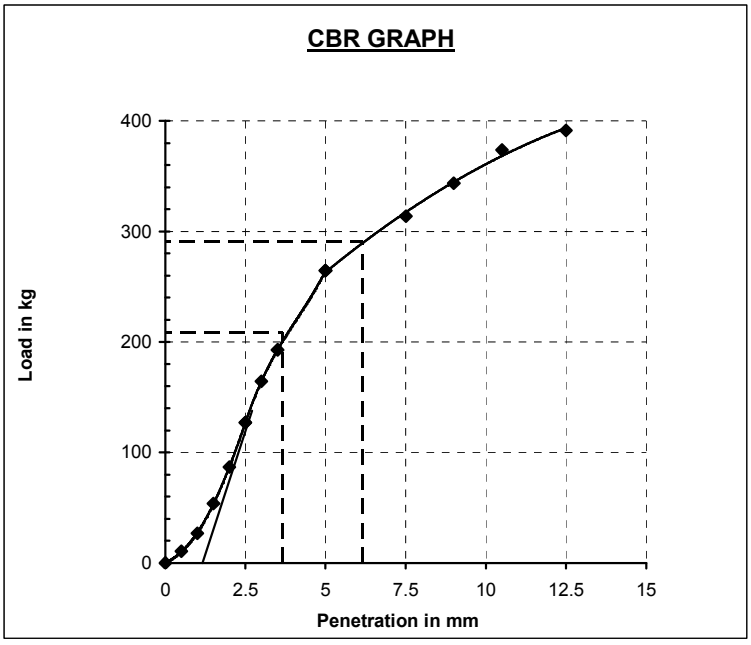
Depth = 1.00m

Maximum Dry Density : 1.205 gm/cc
Optimum Moisture Content: 26.50 %



TYPE :- SOAKED

Penetration (mm)	CBR (%)
2.5	15.24
5.0	14.14

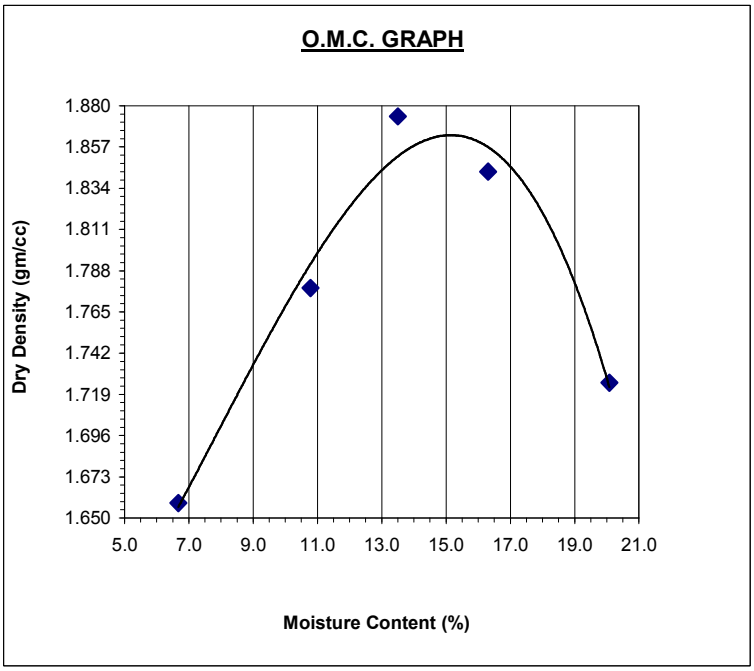


C.B.R. & STANDARD PROCTOR TEST RESULTS.

TP08 / DS01

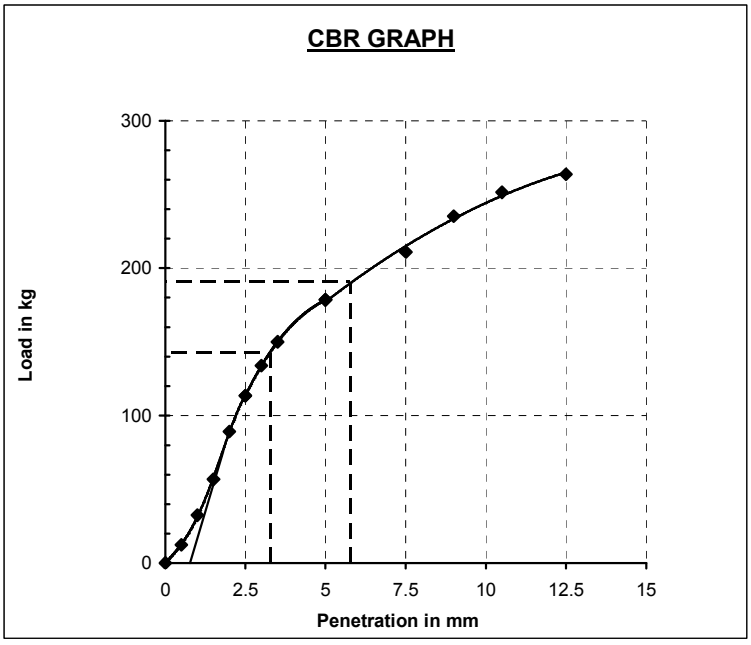
Depth = 1.00m

Maximum Dry Density : 1.863 gm/cc
Optimum Moisture Content: 15.20 %



TYPE :- SOAKED

Penetration (mm)	CBR (%)
2.5	10.41
5.0	9.28

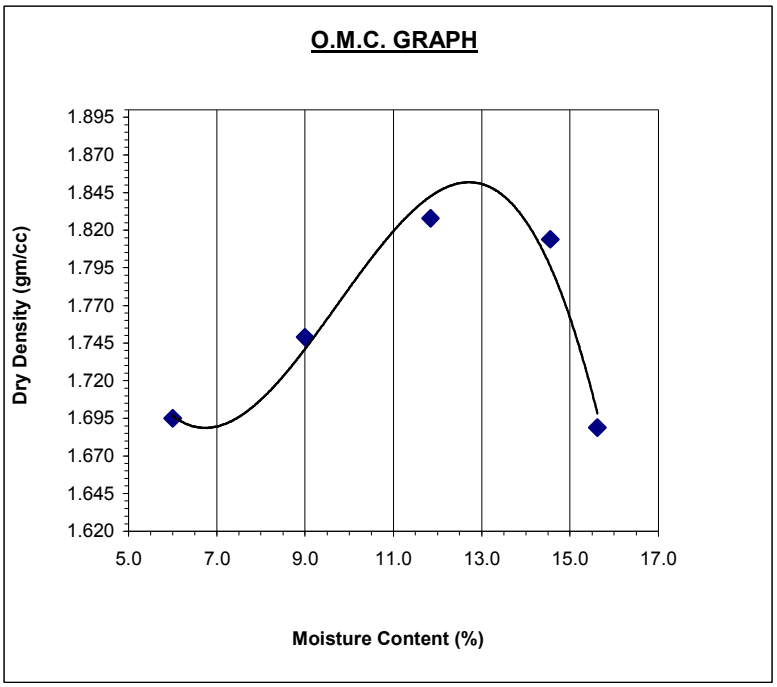


MODIFIED PROCTOR TEST RESULTS.

TP09 / DS01

Depth = 1.00m

Maximum Dry Density : 1.851 gm/cc
Optimum Moisture Content: 12.74 %

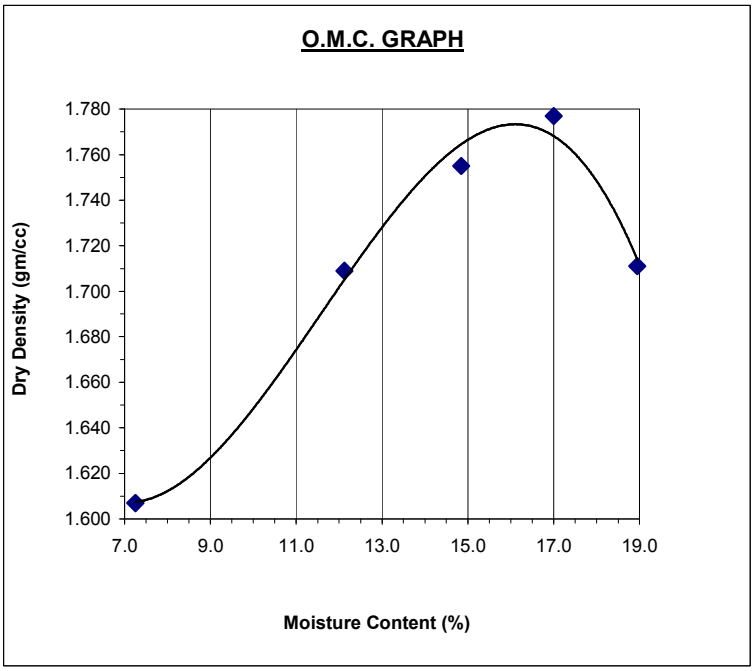


C.B.R. & STANDARD PROCTOR TEST RESULTS.

TP-09 / DS03

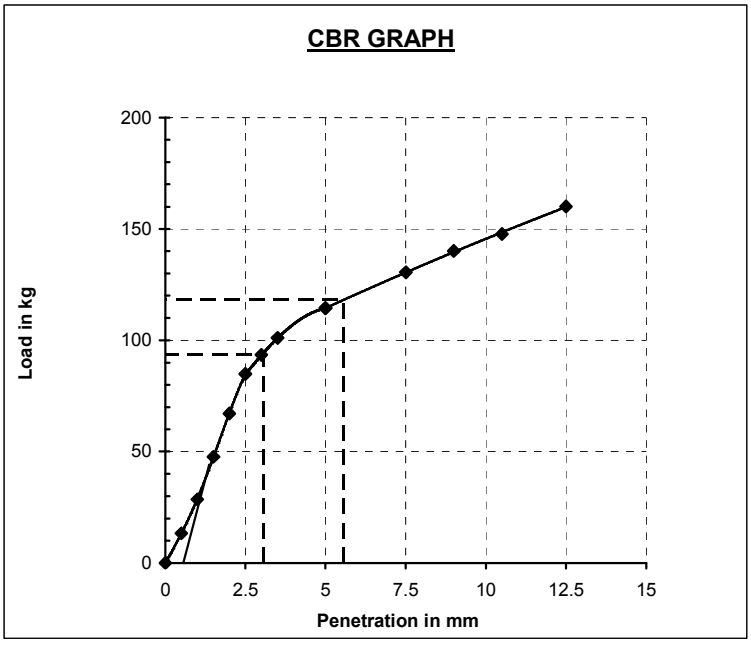
Depth = 3.00m

Maximum Dry Density : 1.773 gm/cc
Optimum Moisture Content: 16.10 %



TYPE :- SOAKED

Penetration (mm)	CBR (%)
2.5	6.83
5.0	5.75

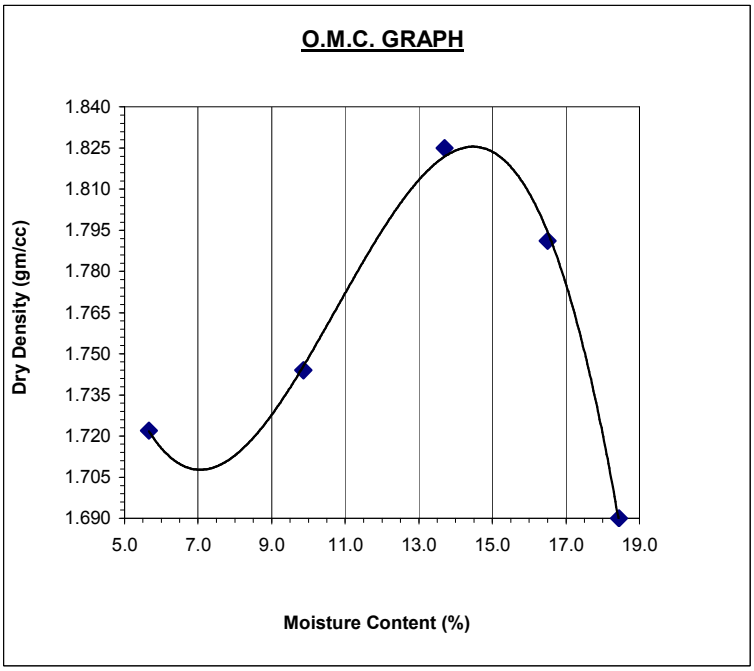


C.B.R. & MODIFIED PROCTOR TEST RESULTS.

TTP01 / DS02

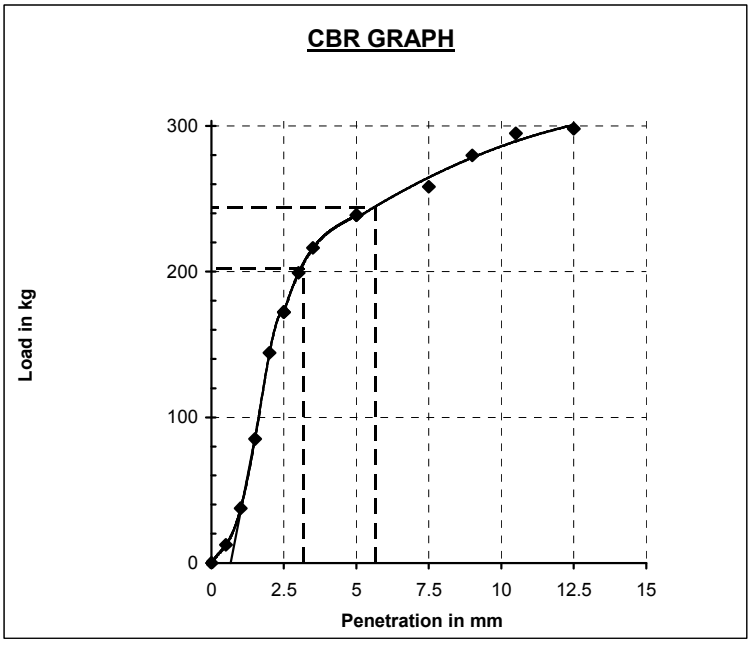
Depth = 2.00m

Maximum Dry Density : 1.825 gm/cc
Optimum Moisture Content: 14.55 %



TYPE :- SOAKED

Penetration (mm)	CBR (%)
2.5	14.77
5.0	11.89

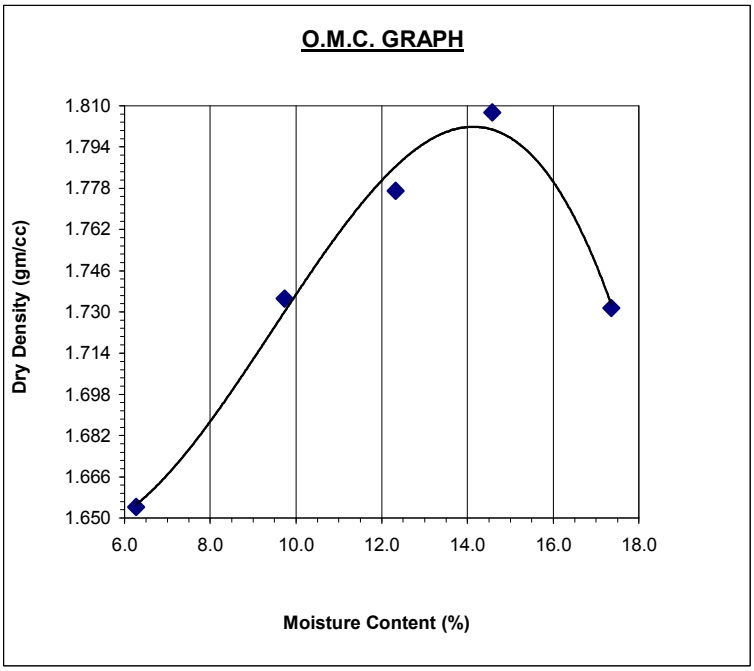


C.B.R. & STANDARD PROCTOR TEST RESULTS.

PLT-03 / DS02

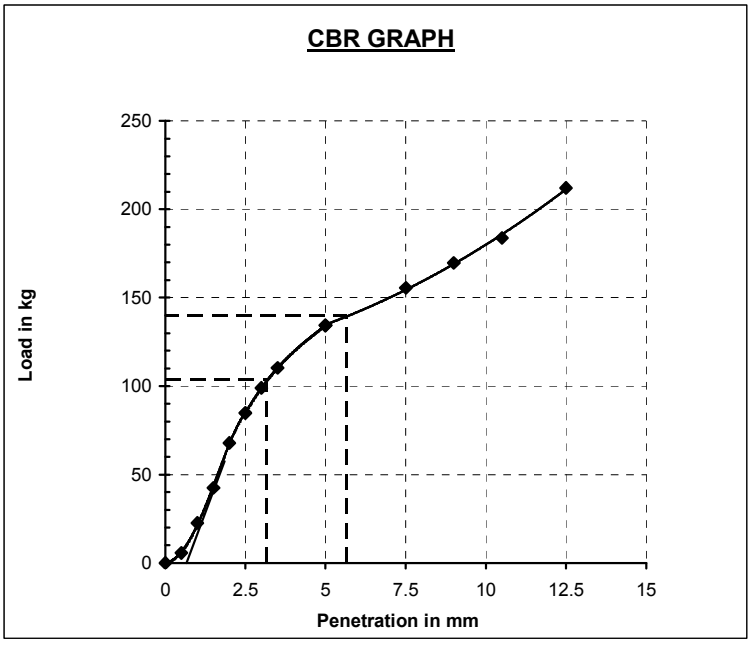
Depth = 2.00m

Maximum Dry Density : 1.801 gm/cc
Optimum Moisture Content: 14.00 %



TYPE :- SOAKED

Penetration (mm)	CBR (%)
2.5	7.57
5.0	6.80

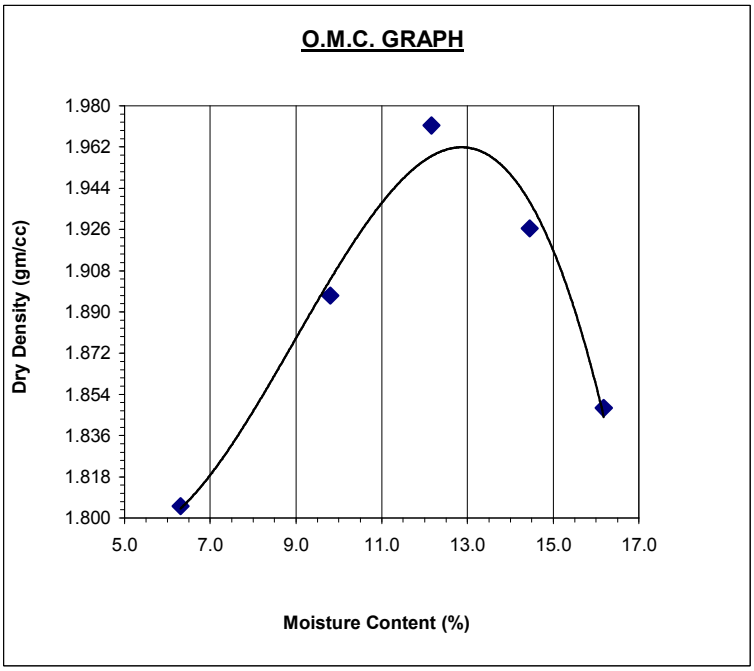


C.B.R. & MODIFIED PROCTOR TEST RESULTS.

PLT-05 / DS01

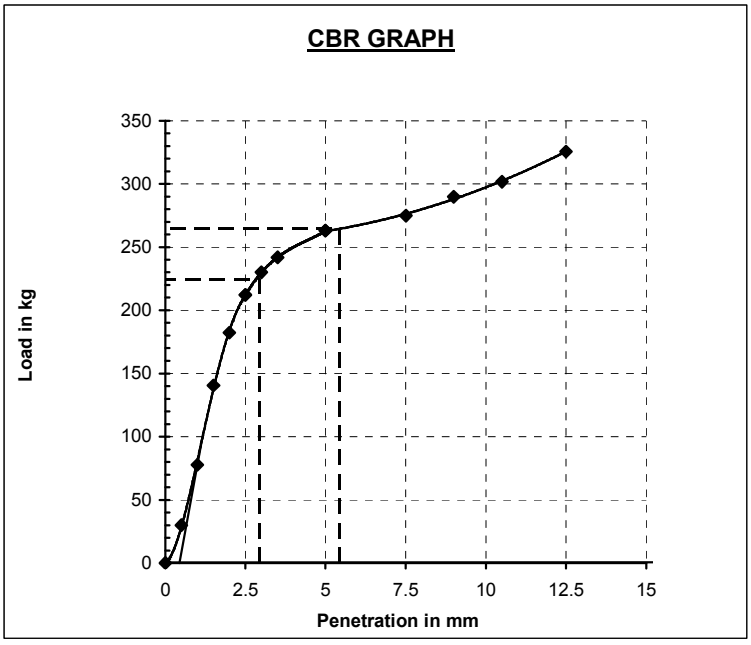
Depth = 1.00m

Maximum Dry Density : 1.961 gm/cc
Optimum Moisture Content: 12.90 %



TYPE :- SOAKED

Penetration (mm)	CBR (%)
2.5	16.36
5.0	12.87

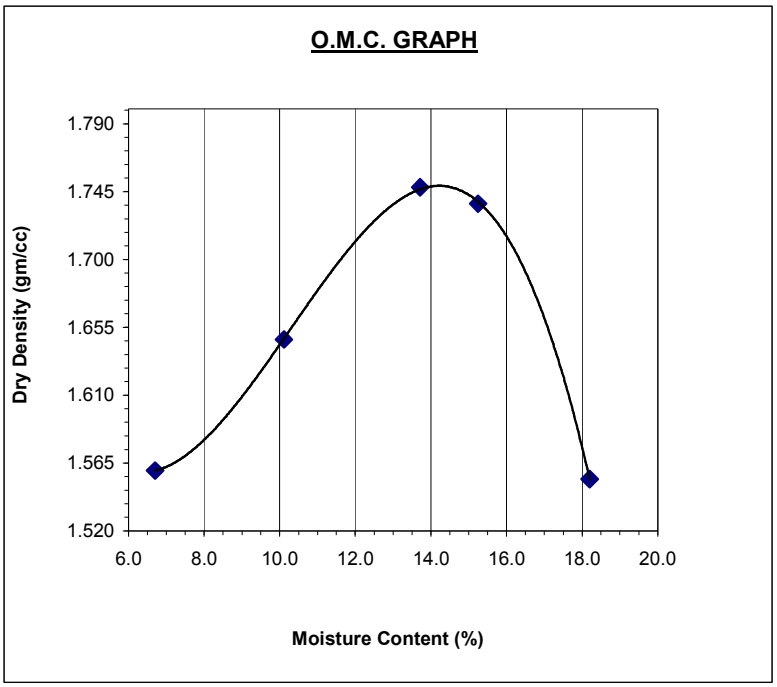


STANDARD PROCTOR TEST RESULTS.

PLT05 / DS02

Depth = 1.00m

Maximum Dry Density : 1.749 gm/cc
Optimum Moisture Content: 14.25 %

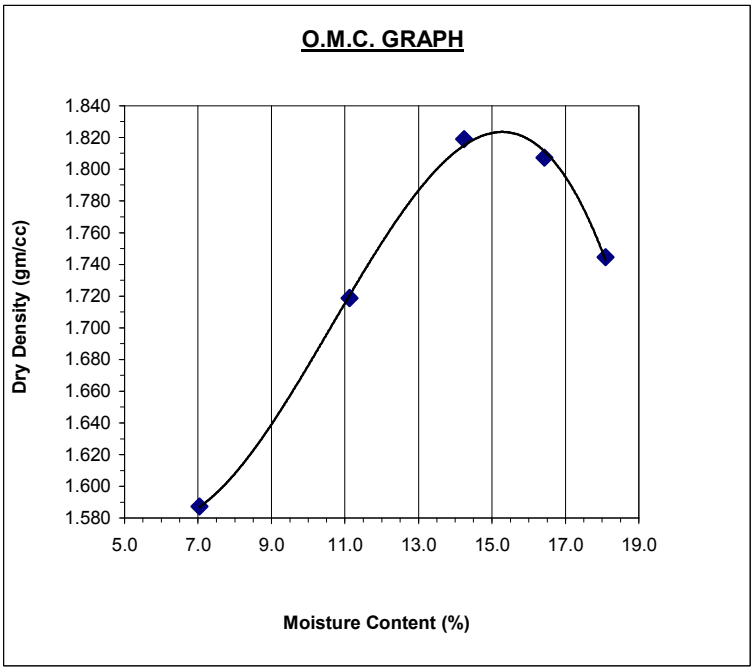


C.B.R. & STANDARD PROCTOR TEST RESULTS.

CPLT-01 / DS01

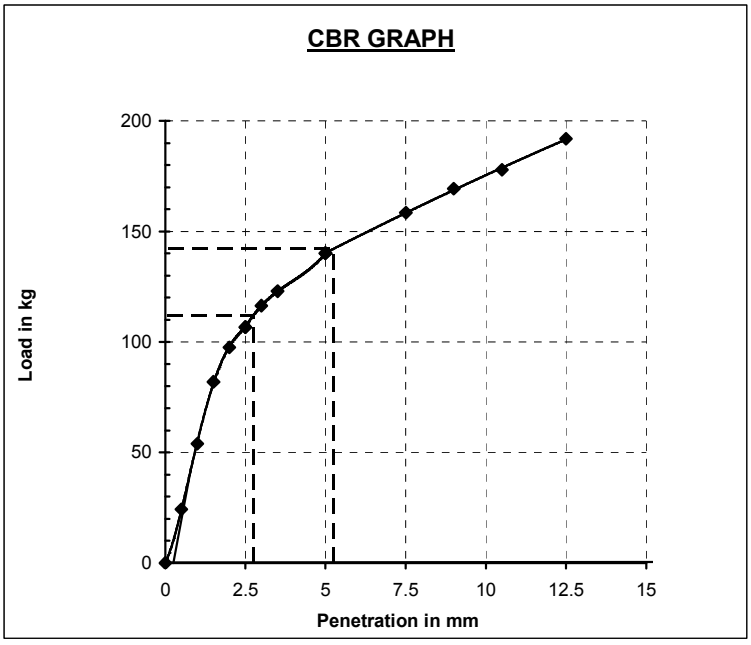
Depth = 1.00m

Maximum Dry Density : 1.822 gm/cc
Optimum Moisture Content: 15.32 %



TYPE :- SOAKED

Penetration (mm)	CBR (%)
2.5	8.16
5.0	6.92

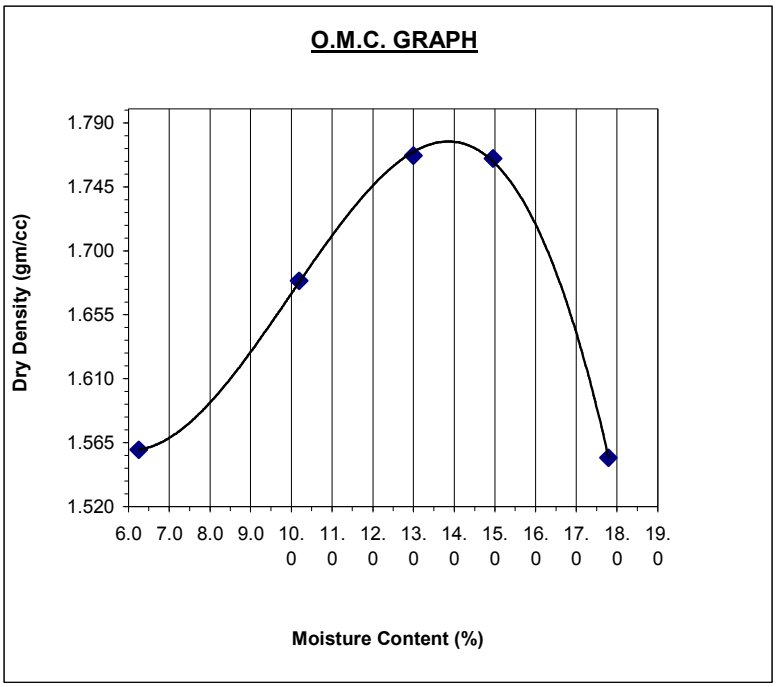


STANDARD PROCTOR TEST RESULTS.

CPLT01 / DS02

Depth = 2.00m

Maximum Dry Density : 1.777 gm/cc
Optimum Moisture Content: 13.85 %

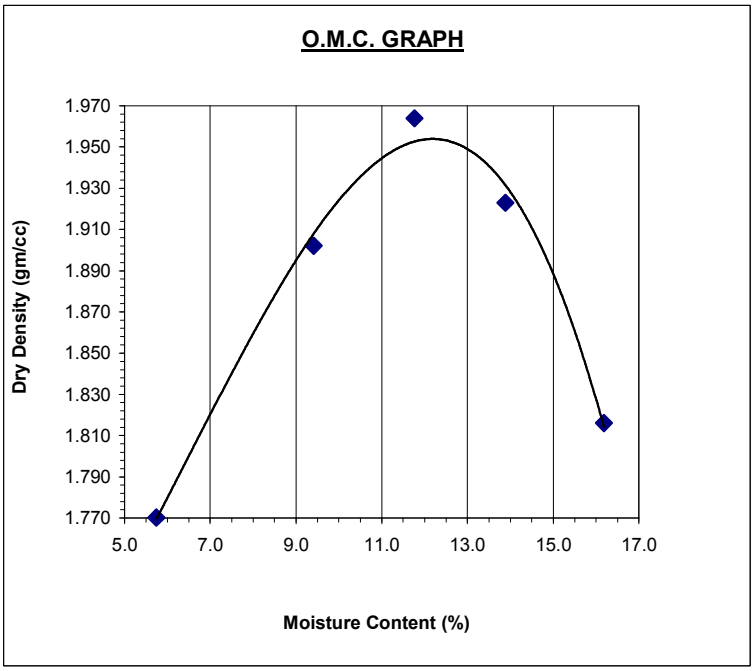


C.B.R. & MODIFIED PROCTOR TEST RESULTS.

CPLT-02 / DS02

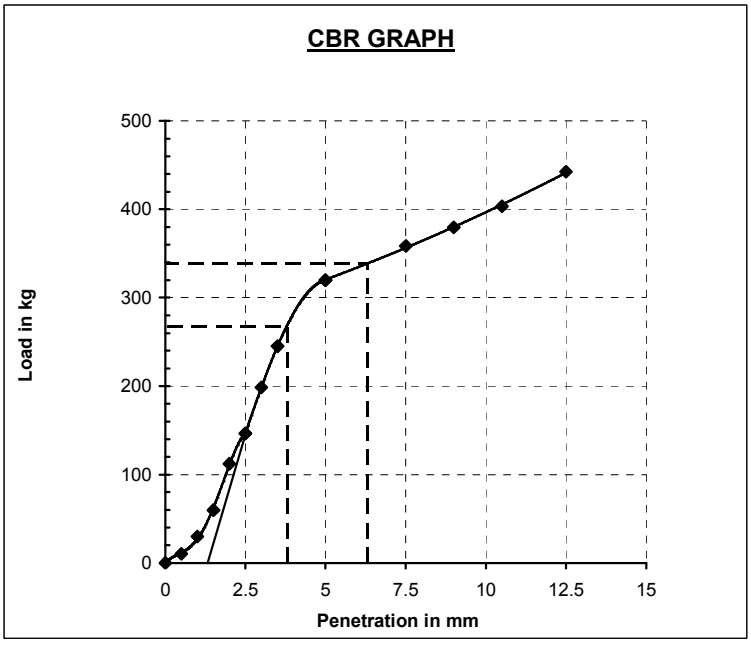
Depth = 2.00m

Maximum Dry Density : 1.954 gm/cc
Optimum Moisture Content: 12.20 %



TYPE :- SOAKED

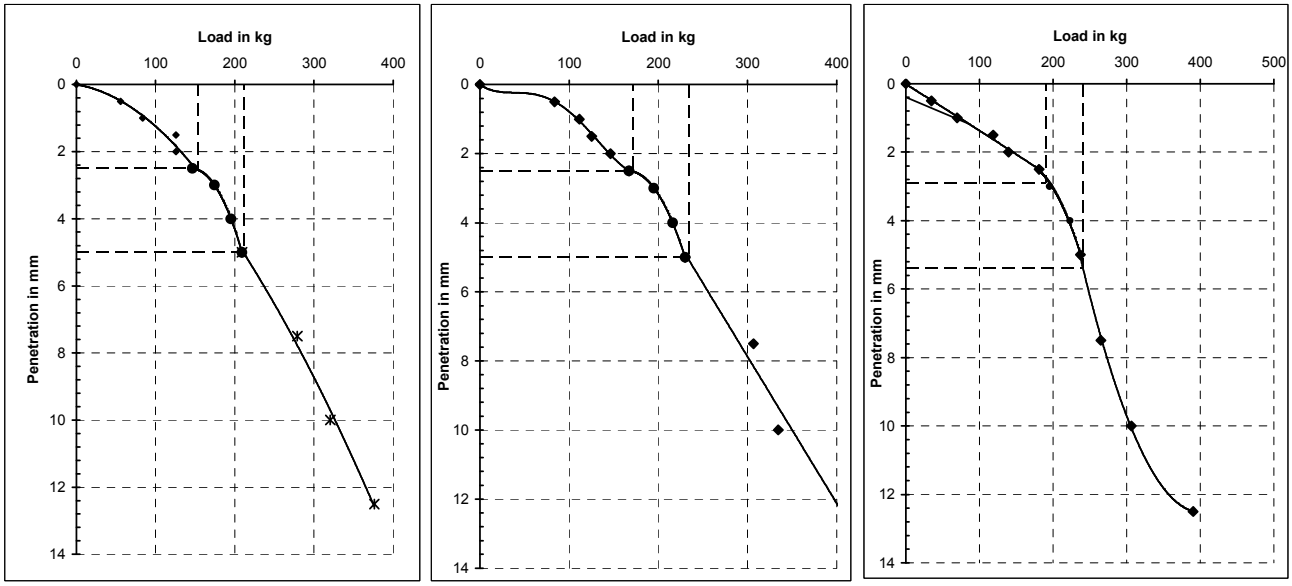
Penetration (mm)	CBR (%)
2.5	19.56
5.0	16.50



Load Penetration Curve of Field C.B.R. Test

Field CBR NO.-01 (Unsoaked)

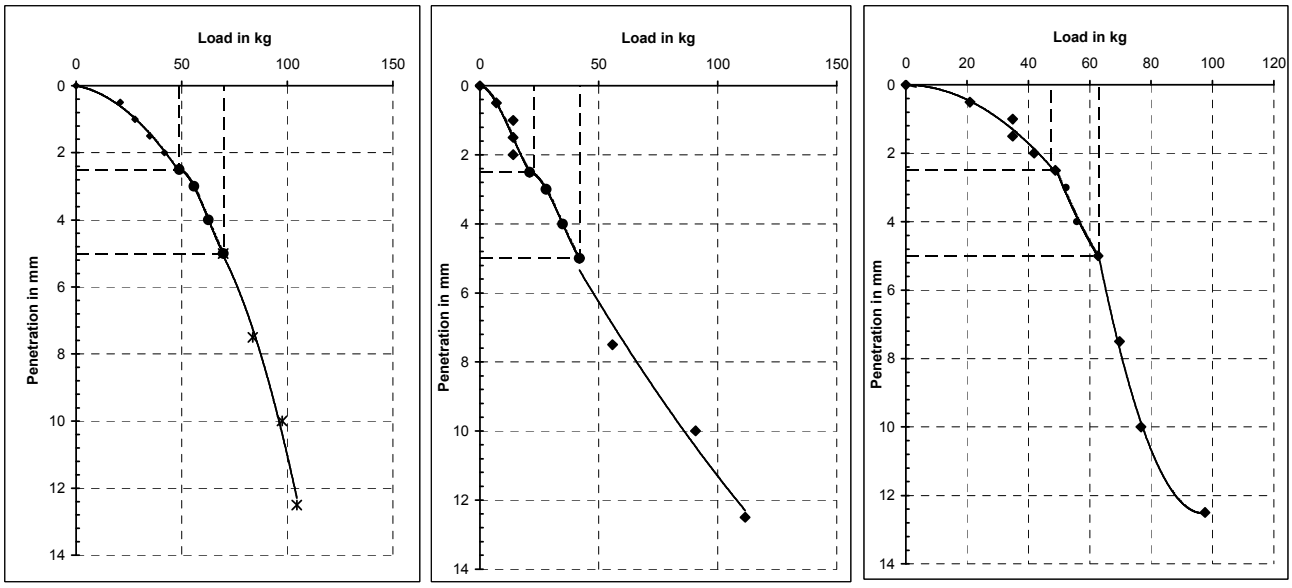
Test - 1		Test - 2		Test - 3	
Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)
2.5	11.21	2.5	12.49	2.5	13.89
5.0	10.31	5.0	11.41	5.0	11.71



Load Penetration Curve of Field C.B.R. Test

Field CBR NO.-01 (Soaked)

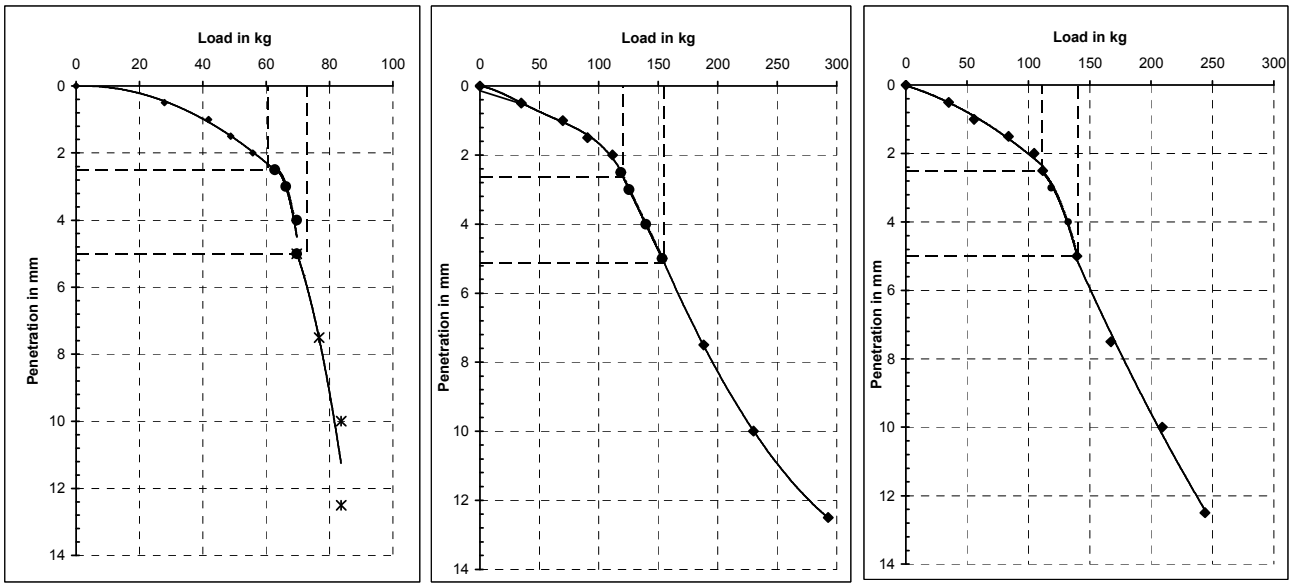
Test - 1		Test - 2		Test - 3	
Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)
2.5	3.57	2.5	1.65	2.5	3.46
5.0	3.41	5.0	2.05	5.0	3.06



Load Penetration Curve of Field C.B.R. Test

Field CBR NO.-02 (Unsoaked)

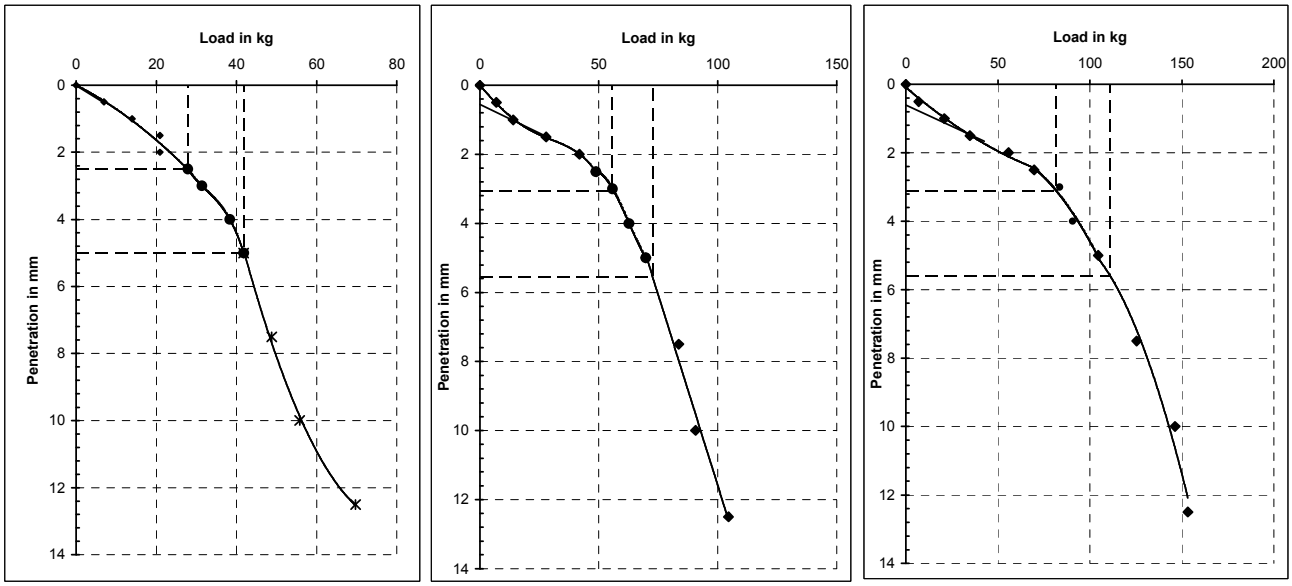
Test - 1		Test - 2		Test - 3	
Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)
2.5	4.42	2.5	8.79	2.5	8.12
5.0	3.54	5.0	7.55	5.0	6.84



Load Penetration Curve of Field C.B.R. Test

Field CBR NO.-02 (Soaked)

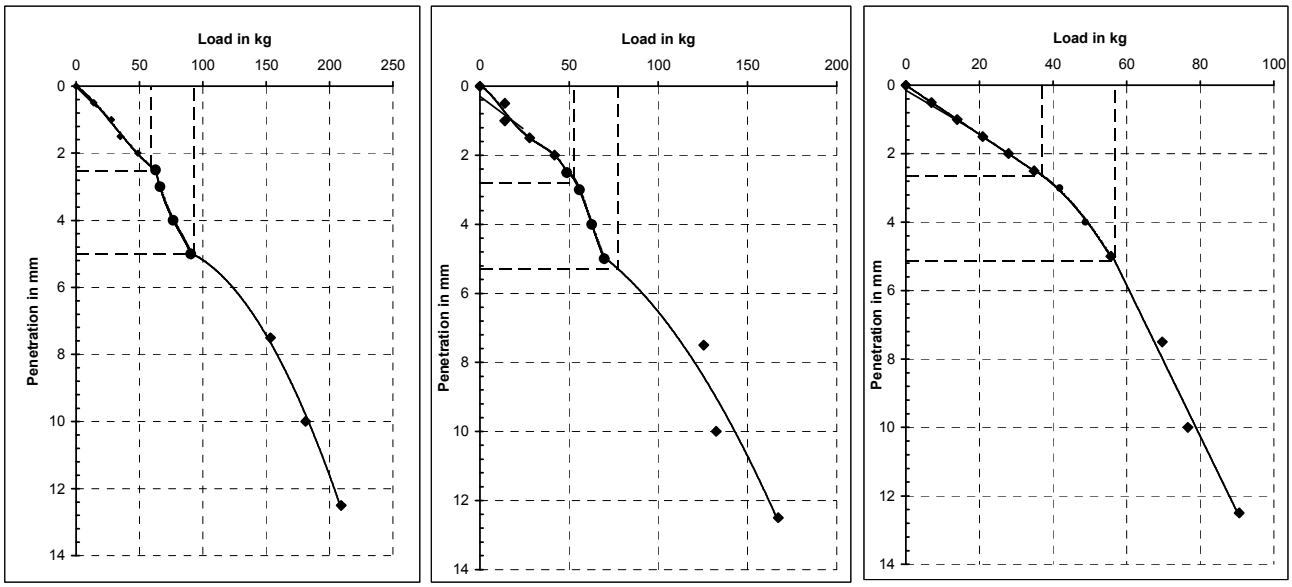
Test - 1		Test - 2		Test - 3	
Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)
2.5	2.04	2.5	4.06	2.5	5.97
5.0	2.04	5.0	3.54	5.0	5.41



Load Penetration Curve of Field C.B.R. Test

Field CBR NO.-03 (Unsoaked)

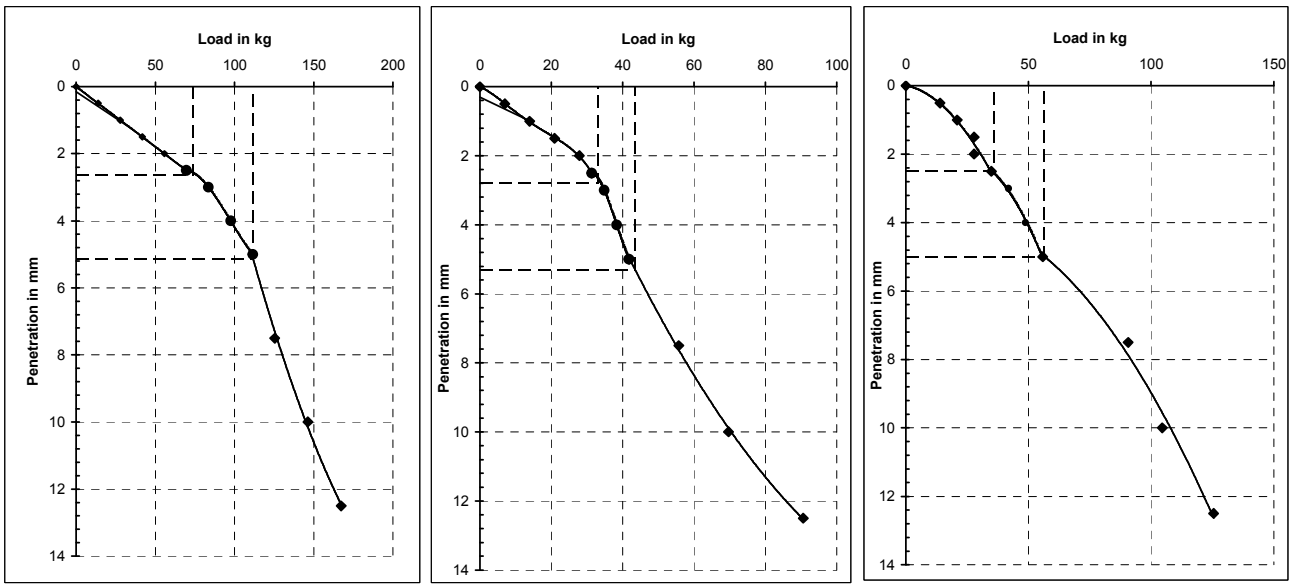
Test - 1		Test - 2		Test - 3	
Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)
2.5	4.29	2.5	3.84	2.5	2.70
5.0	4.51	5.0	3.78	5.0	2.77



Load Penetration Curve of Field C.B.R. Test

Field CBR NO.-03 (Soaked)

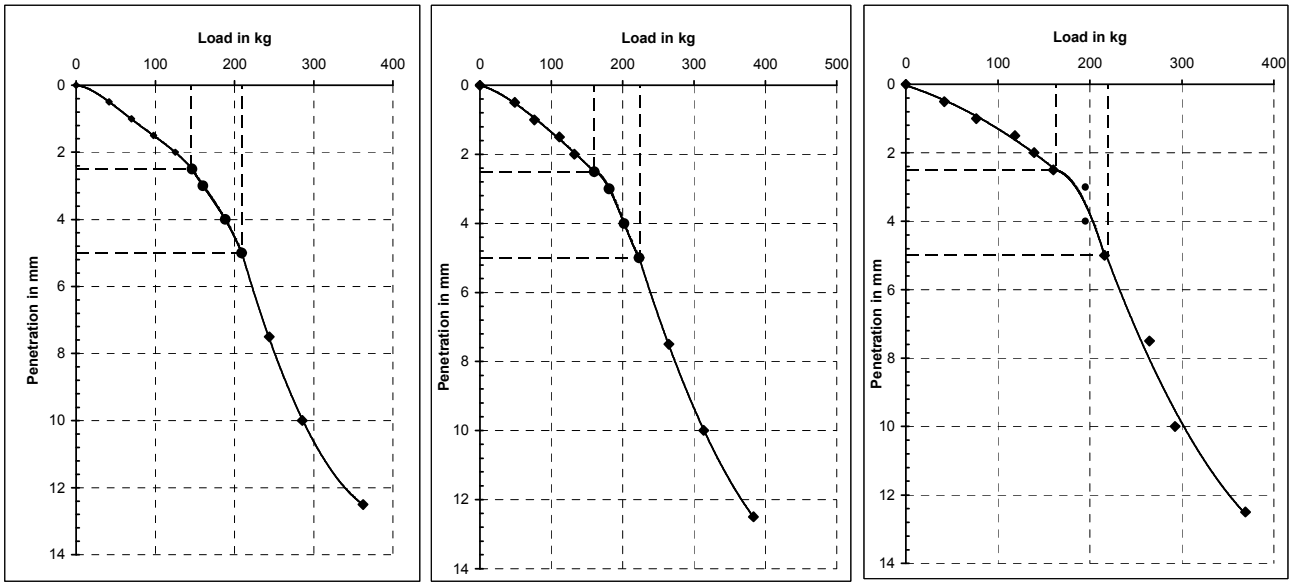
Test - 1		Test - 2		Test - 3	
Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)
2.5	5.39	2.5	2.42	2.5	2.63
5.0	5.44	5.0	2.12	5.0	2.73



Load Penetration Curve of Field C.B.R. Test

Field CBR NO.-04 (Unsoaked)

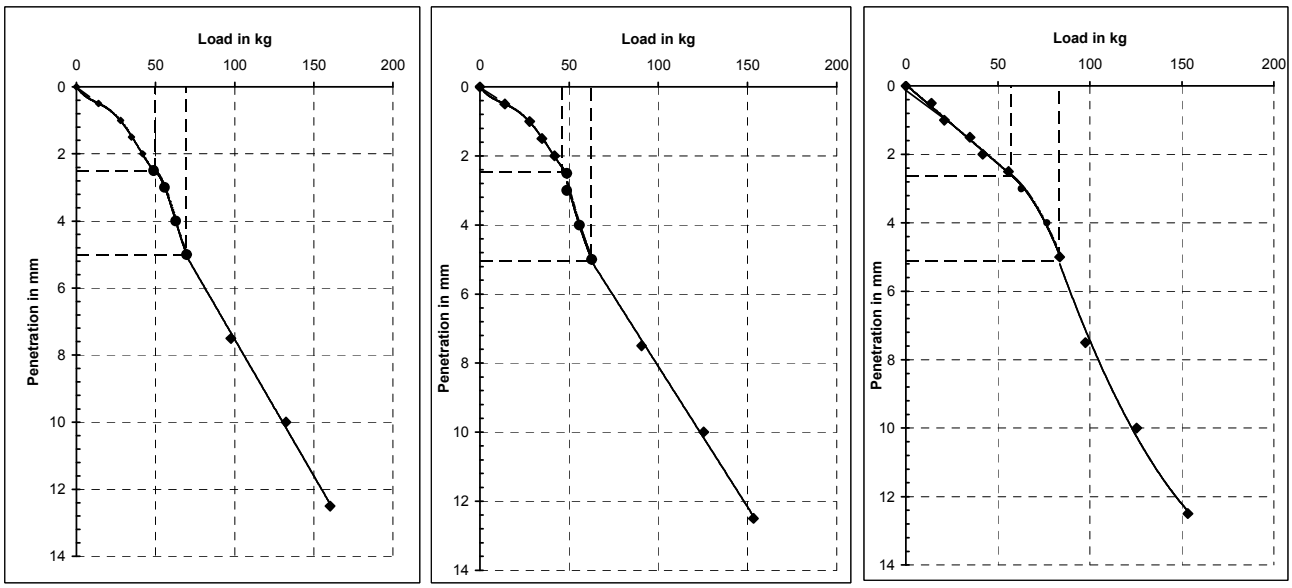
Test - 1		Test - 2		Test - 3	
Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)
2.5	10.55	2.5	11.64	2.5	11.94
5.0	10.19	5.0	10.90	5.0	10.69



Load Penetration Curve of Field C.B.R. Test

Field CBR NO.-04 (Soaked)

Test - 1		Test - 2		Test - 3	
Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)	Penetration (mm)	CBR (%)
2.5	3.60	2.5	3.36	2.5	4.17
5.0	3.36	5.0	3.04	5.0	4.05



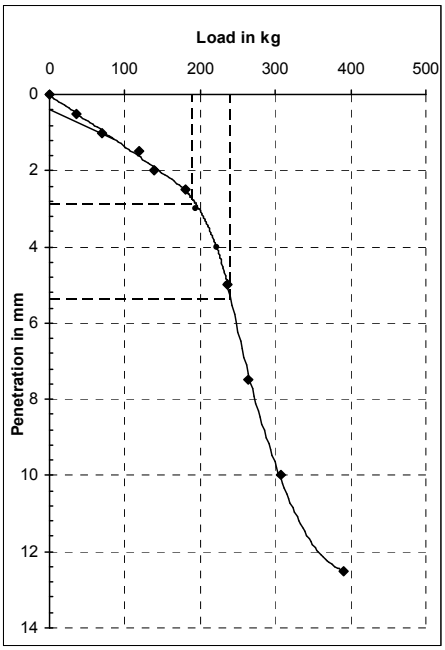
PART IV: SAMPLE CALCULATION

SAMPLE FIELD CBR CALCULATION

Test No. CBR-01
Depth: 0.50m
Description: Yellowish grey, silty sand / sandy silt.

Field CBR Test Results

CBR Type: *Unsoaked*		
Weight of Surcharge = 10 kg		
Proving Ring Constant = 6.97 kg/division		
Penetration (mm)	Proving Ring Reading	Load (in kg)
0	0.00	0.00
0.50	5.00	34.9
1.00	10.00	69.7
1.50	17.00	118.5
2.00	20.00	139.4
2.50	26.00	181.2
3.00	28.00	195.2
4.00	32.00	223.0
5.00	34.00	237.0
7.50	38.00	264.9
10.00	44.00	306.7
12.50	56.00	390.3



From graph,

Load for 2.50mm penetration = 190.3 kg
Hence CBR for 2.50mm penetration = (190.3 / 1370) x 100 = 13.89 %

Load for 5.00mm penetration = 240.7 kg
Hence CBR for 5.00mm penetration = (240.7 / 2055) x 100 = 11.71 %

IN-SITU PERMEABILITY TEST IN OVERBURDEN (FALLING HEAD METHOD)

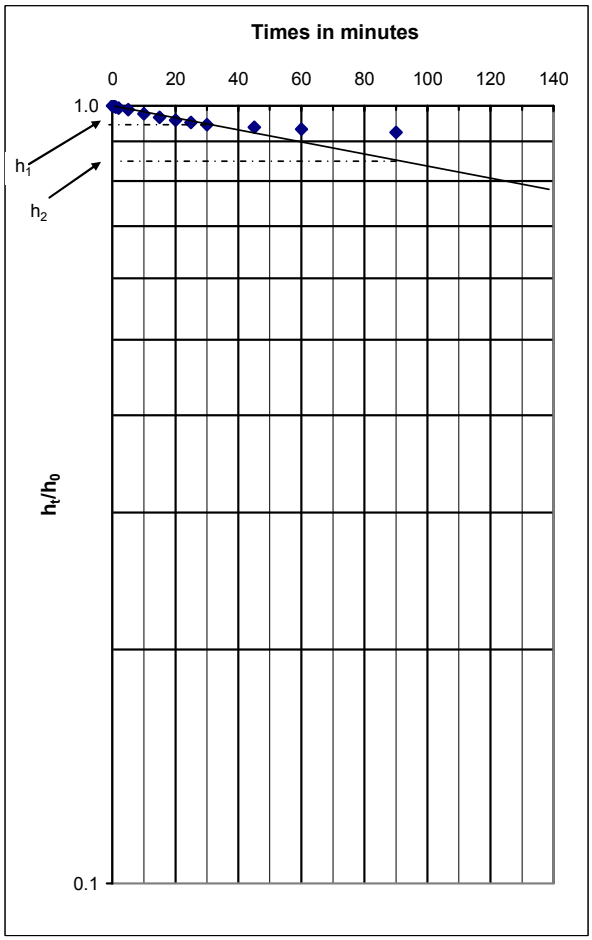
Test location	BH-31		
Ground elevation	79.905M	Static water level	26.00m below G.L.
Diameter of hole (2R)	174.0mm	Ht. of casing from GL	0.50m
Inner diameter of casing/ intake pipe (d)	150.0mm		
Depth tested	1.30m to 2.00m		
Length of test section (L)	0.70m		

Data sheet

Time interval (minute)	Water level in intake pipe (cm)	h_t (cm)	h_t/h_0
0	0.00	2650.000	1.0000
0.5	6.00	2644.000	0.9977
1	10.70	2639.300	0.9960
2	16.40	2633.600	0.9938
5	30.20	2619.800	0.9886
10	63.40	2586.600	0.9761
15	87.80	2562.200	0.9669
20	112.30	2537.700	0.9576
25	128.70	2521.300	0.9514
30	143.20	2506.800	0.9460
45	164.80	2485.200	0.9378
60	179.40	2470.600	0.9323
90	200.00	2450.000	0.9245
		2650.000	1.0000
		2650.000	1.0000
From the above Graph, We have			
h1 ⇘	0.950	t1 ⇘	30 min
h2 ⇘	0.850	t2 ⇘	90 min

$$K = \frac{d^2}{8L}\log_e \frac{L}{R}\frac{\log_e(h_1/h_2)}{t_2 - t_1}$$ ⇘ 2.588E-05cm/sec

Time vs. h_t/h_0 plot



Legend: h_1 = head of water in the intake pipe at time t_1 above static water level,
h_2 = head of water in the intake pipe at time t_2 above static water level;
h_0 = depth of static water level at time t_0,
h_t = head of water in the intake pipe at any time t

PART V: PHOTOGRAPHS

SPEED CONTROL UNIT

Annexure -1

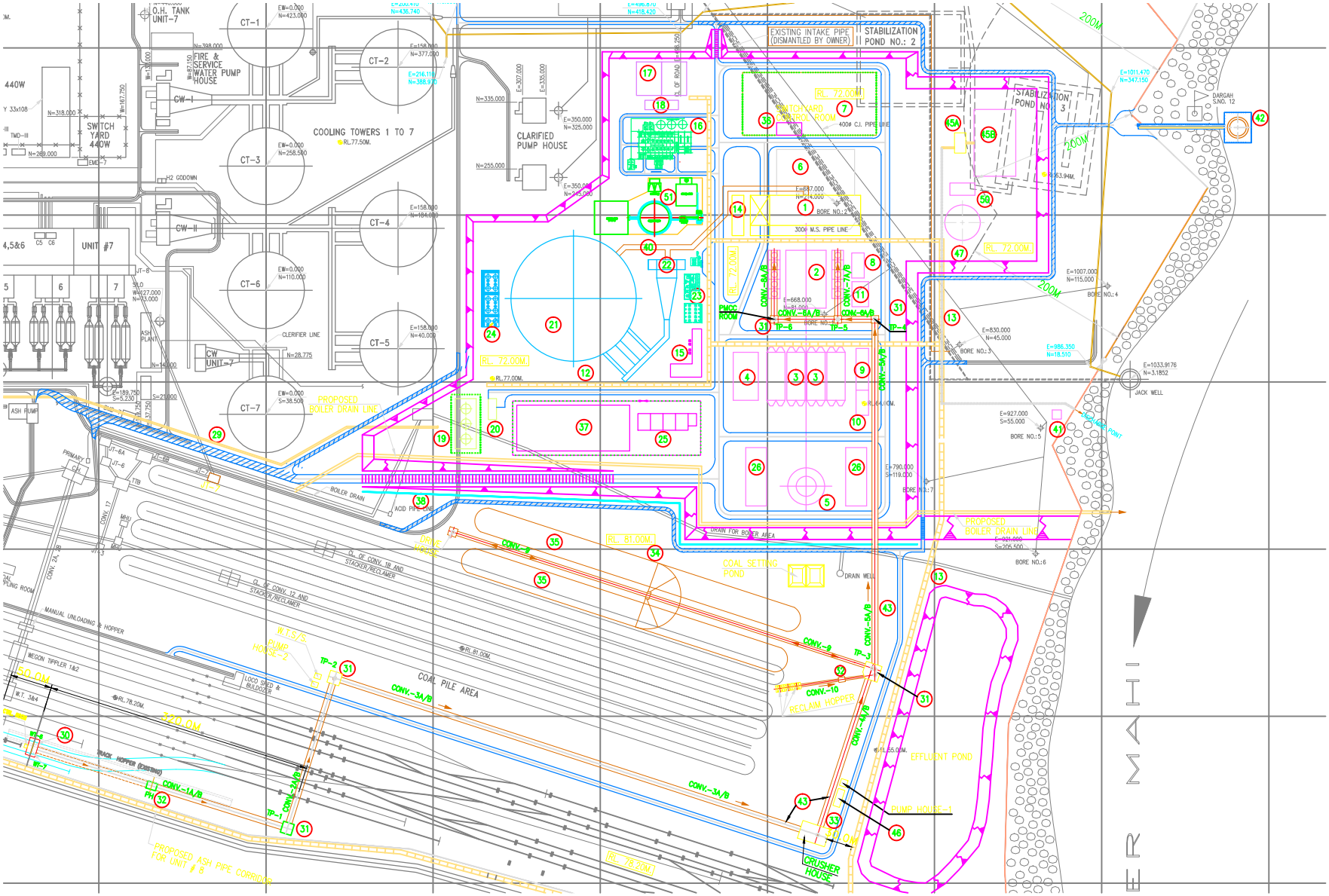
PERMISSIBLE LIMIT FOR CHEMICAL IN SOIL & WATER SAMPLE:

FOR SOIL SAMPLES:-

Permissible Limit (as per IS: 456 2000)	
pH value	6 to 9
Sulphate as SO_3 %	<0.2

FOR WATER SAMPLES:-

Permissible Limit (as per IS: 456 2000)	
pH value	6 to 9
Sulphate as (mg/litre)	400
Chloride as (mg/litre)	500
Organic matter (mg/litre)	200


O.H. TANK UNIT-7
FIRE & SERVICE WATER PUMP HOUSE
SWITCH YARD 440V
COOLING TOWERS 1 TO 7
CLARIFIED PUMP HOUSE
UNIT #7
CW UNIT-7
ASH PLANT
ASH PUMP
EXISTING INTAKE PIPE (DISMANTLED BY OWNER)
STABILIZATION POND NO.: 2
STABILIZATION POND NO.: 3
SWITCH YARD CONTROL ROOM
PMCC ROOM
PROPOSED BOILER DRAIN LINE
BOILER DRAIN
ACID PIPE LINE
DRAIN FOR BOILER AREA
COAL SETTING POND
DRAIN WELL
COAL PILE AREA
MANUAL UNLOADING HOPPER
WAGON TIPPLER 1&2
TRACK HOPPER (COVERING)
RECLAIM HOPPER
EFFLUENT POND
PUMP HOUSE-1
CRUSHER HOUSE
JACK WELL
PROPOSED ASH PIPE CORRIDOR FOR UNIT # 8
CONV.-1A/B
CONV.-2A/B
CONV.-3A/B
CONV.-4A/B
CONV.-5A/B
CONV.-6A/B
CONV.-7A/B
CONV.-8
CONV.-9
CONV.-10
TP-1
TP-2
TP-3
TP-5
TP-6
TP-8
RL. 72.00M.
RL. 81.00M.
RL. 78.20M.
RL. 55.00M.
200M
50.0M
220.0M
140.0M
BORE NO.: 1
BORE NO.: 2
BORE NO.: 3
BORE NO.: 4
BORE NO.: 5
BORE NO.: 6
BORE NO.: 7
3000 M.S. PIPE LINE
400ø C.I. PIPE LINE
DARGAH S.NO. 12
JACK WELL
ASH WATER POINT
N
E
R
M
A
H
I

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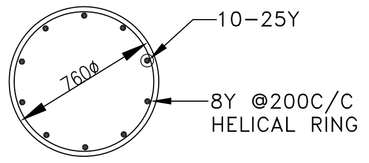
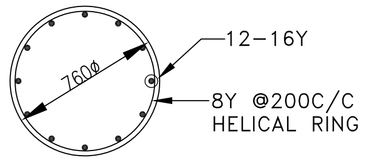


SECTION A–A



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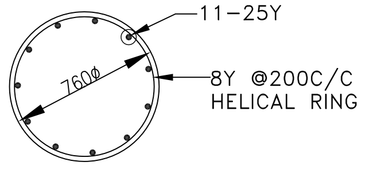

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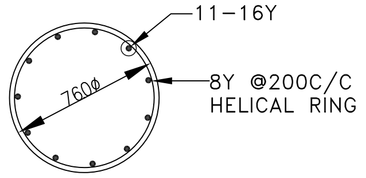


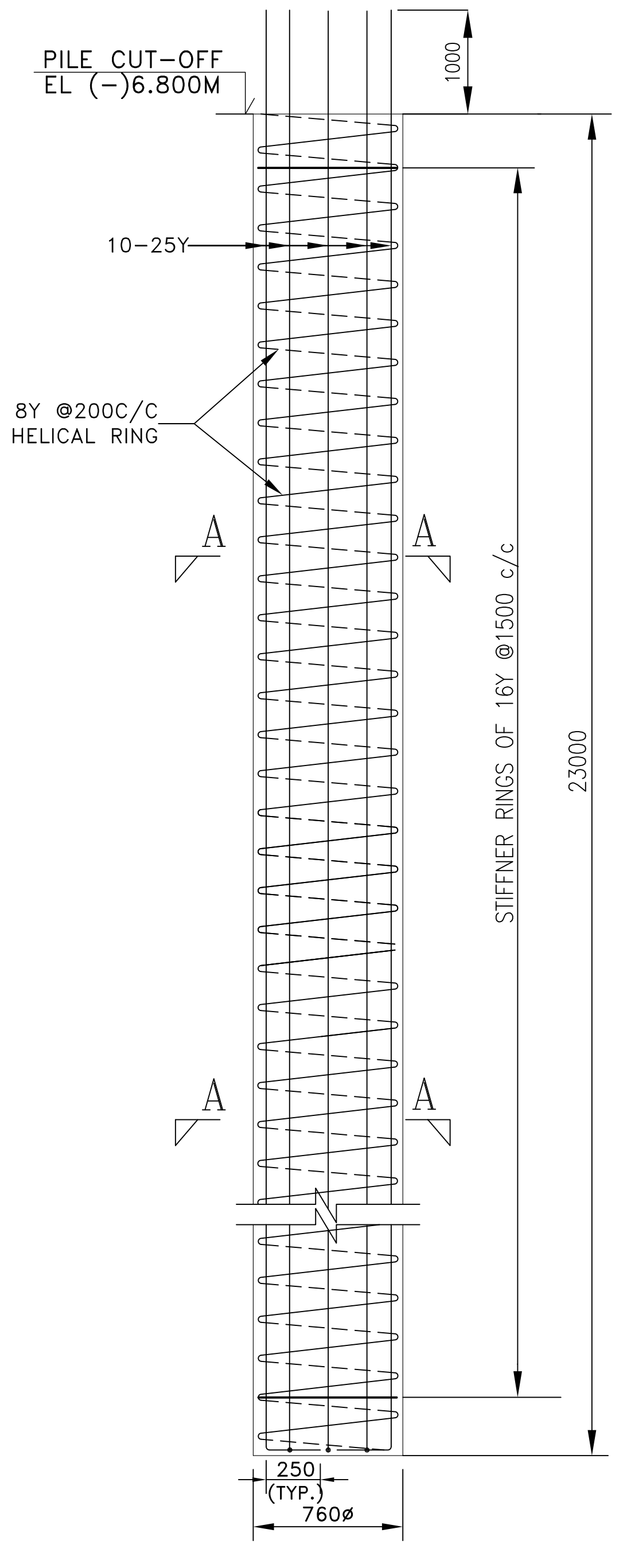
SECTION D–D

LOCATION OF TEST PILE (REF.NOTE–13)

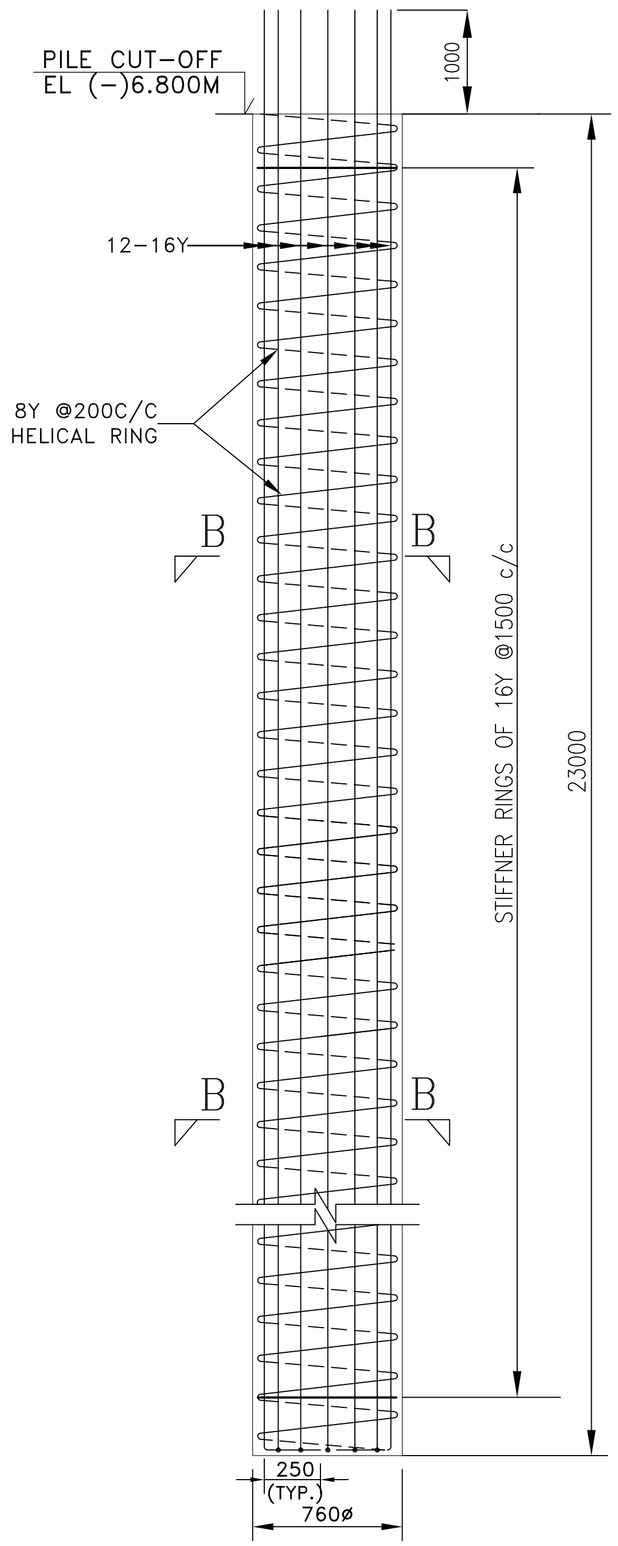
TEST NO.	COORDINATES		DIA OF PILE (MM)	REMARKS
TPH1	549 E	43 S	760	TPH–TEST PILE FOR LATERAL LOAD TPV–TEST PILE FOR VERTICAL COMPRESSION TPP–TEST PILE FOR PULL–OUT
TPV1	549 E	38 S		
TPP1	549 E	33 S		
TPH2	692 E	62 N	760	
TPV2	692 E	67 N		
TPP2	692 E	72 N		
TPH3	739 E	137 N	760	
TPV3	739 E	142 N		
TPP3	739 E	147 N		

SAFE LOAD CARRYING CAPACITY OF PILE

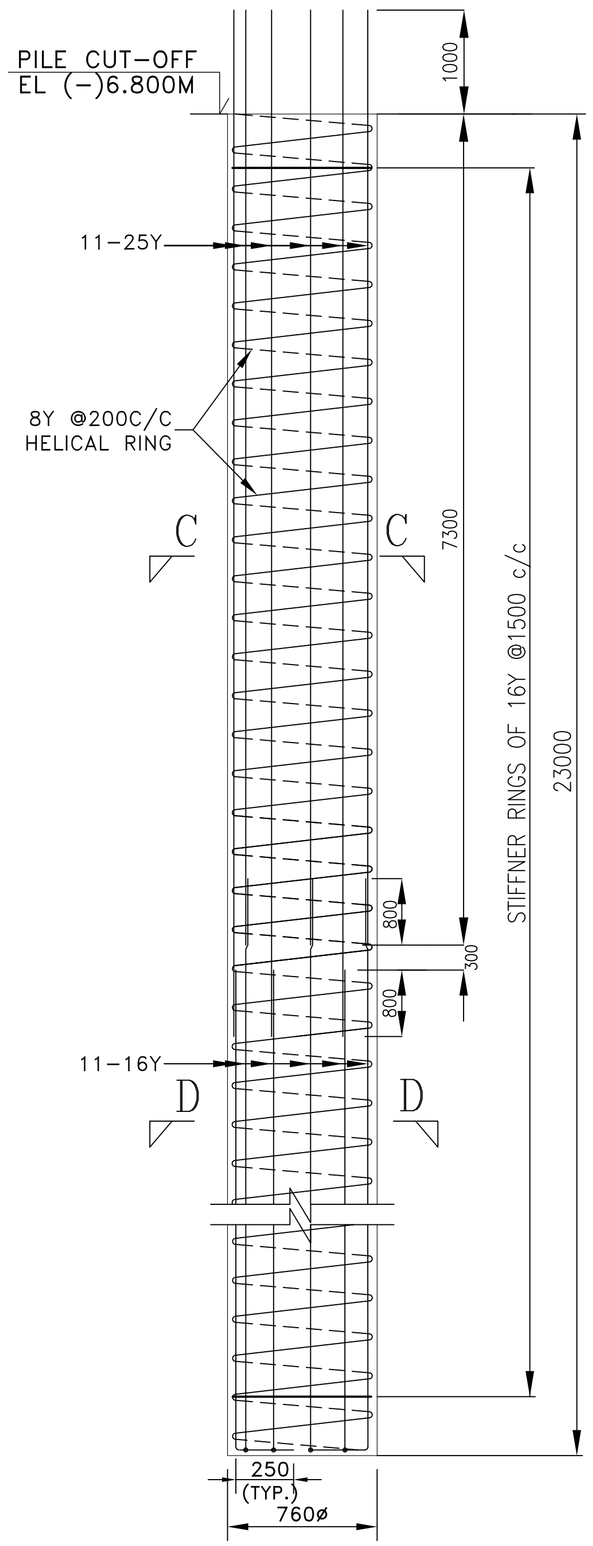
DIAMETER OF PILE (MM)	SAFE LOAD (MT)		
	VERTICAL COMPRESSION	PULL OUT	HORIZONTAL
760	200	40	9.8



FOR VERTICAL COMPRESSION



FOR PULL–OUT



FOR LATERAL LOAD

NOTES:

1. ALL DIMENSIONS ARE IN MM AND ELEVATION/LEVEL ARE IN METER UNLESS NOTED OTHERWISE.
2. EL.(±) 0.00M CORRESPONDS TO R.L. (+) 72.30M.
3. BORED CAST–IN–SITU CONCRETE PILE CONFORMING TO IS:2911 (PART–1/SEC.–2) SHALL BE USED.
4. GRADE OF CONCRETE SHALL BE M25 CONFORMING TO IS:456 WITH MINIMUM CEMENT CONTENT OF 400 KG/M^3. ORDINARY PORTLAND CEMENT SHALL BE USED.
5. REINFORCEMENT STEEL SHALL BE HIGH STRENGTH DEFORMED TMT STEEL BARS OF GRADE Fe 500D CONFORMING TO IS:1786.
6. LAP LENGTH SHALL BE 50 TIMES DIAMETER OF BAR. LAPS SHALL BE STAGGERED ALTERNATIVELY.
7. CLEAR COVER TO LONGITUDINAL REINFORCEMENT SHALL BE 60MM.
8. INITIAL LOAD TEST SHALL BE CONDUCTED UPTO A MAXIMUM TEST LOAD OF TWO AND HALF TIMES THE SAFE LOAD CARRYING CAPACITY OF PILE. VERTICAL COMPRESSION TEST SHALL BE CARRIED OUT BY CYCLIC LOAD METHOD AS PER IS:2911 PART IV.
9. TEST SHALL BE CONDUCTED AT PILE CUT–OFF LEVEL.
10. CONCRETE SHALL BE CAST TO THE PILING PLATFORM LEVEL TO PERMIT OVERFLOW OF CONCRETE FOR VISUAL INSPECTION OR TO A MINIMUM OF 1000MM ABOVE CUT OFF LEVEL.
11. TEST RESULTS SHALL BE SUBMITTED TO OWNER/OWNER'S CONSULTANT/BHEL–PEM IMMEDIATELY AFTER COMPLETION OF THE SAME.
12. TREMIE CONCRETING SHALL BE ADOPTED.
13. TEST PILE LOCATIONS ARE INDICATIVE ONLY. MINOR MODIFICATIONS (IF REQUIRED) IN TEST LOCATIONS MAY BE DONE AT SITE IN CONSULTATION WITH OWNER.
14. LOW STRAIN PILE INTEGRITY TEST SHALL BE CARRIED OUT ON ALL TEST PILES AS PER SPECIFICATION.

REFERENCE:

1. REPORT ON GEOTECHNICAL INVESTIGATION WORK FOR 1x800MW WANAKBORI TPS, GUJARAT.
2. CUSTOMER'S TECHNICAL SPECIFICATION.
3. DRAWING NO. PE–DG–408–100–M001 TITLED, "PLOT PLAN".
4. DOCUMENT NO. PE–DC–408–607–C003 TITLED "DESIGN CALCULATION FOR 760MM DIAMETER INITIAL LOAD TEST PILES FOR MAIN PLANT AREA."

REINFORCEMENT DETAILS OF 760MM DIAMETR INITIAL LOAD TEST PILES

GUJARAT STATE ELECTRICITY CORPORATION LIMITED
VADODARA, GUJARAT
1x800 MW Wanakbori Thermal Power Station Extn. Unit–8

DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA · MUMBAI · CHENNAI · NEW DELHI

BHARAT HEAVY ELECTRICALS LTD
POWER GROUP
PROJECTS ENGINEERING MANAGEMENT
NEW DELHI

JOB NO. 408
STATUS CONTRACT
DISTRIBUTION

TO	REV	DATE	ALTD	CHD	APPD
NUPT					

DEPT CODE		NAME	SIGN	DATE
DRN		S.ND	–sd–	16/02/15
DESN	C	V.S.	–sd–	16/02/15
CHD		Y.V/TMSR	–sd–	16/02/15
APPD		GPK	–sd–	16/02/15

TITLE: R/C DETAILS OF 760MM DIAMETER INITIAL LOAD TEST PILE FOR MAIN PLANT AREA

DEPT. | SCALE | DRAWING NO. PE–DG–408–607–C003
SIGN
DATE
SHEET 1 OF 1 | REV 00
Feb 16, 2015 – 5:49pm
SIZE–A0

COMPUTER FILE NAME:

DRAWING NO. PE-DG-408-607-C002
FIRST ANGLE PROJECTION
ALL DIMENSIONS ARE IN MM
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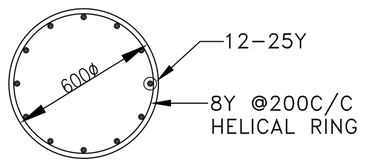

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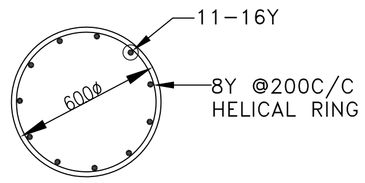

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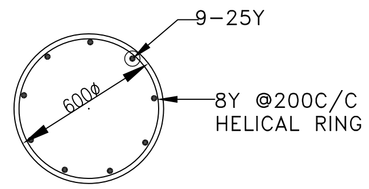

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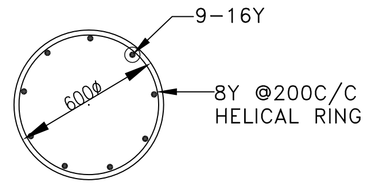

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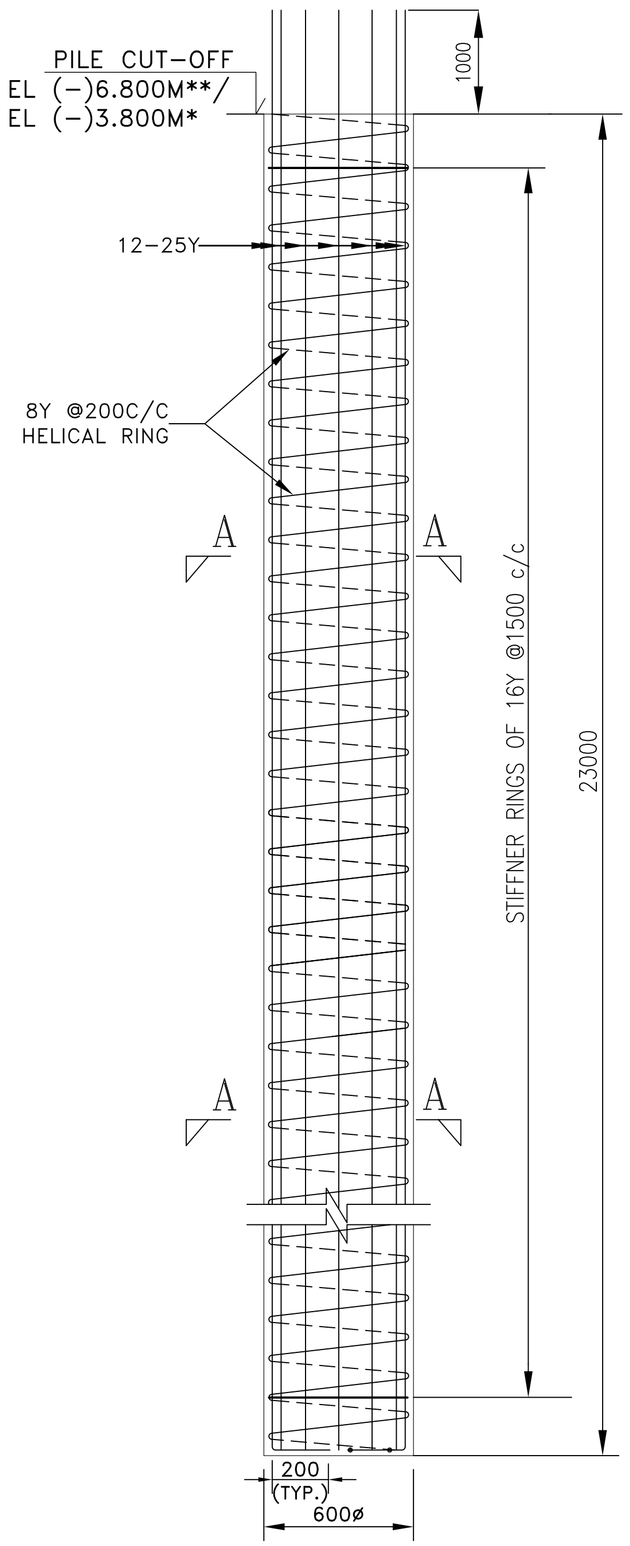
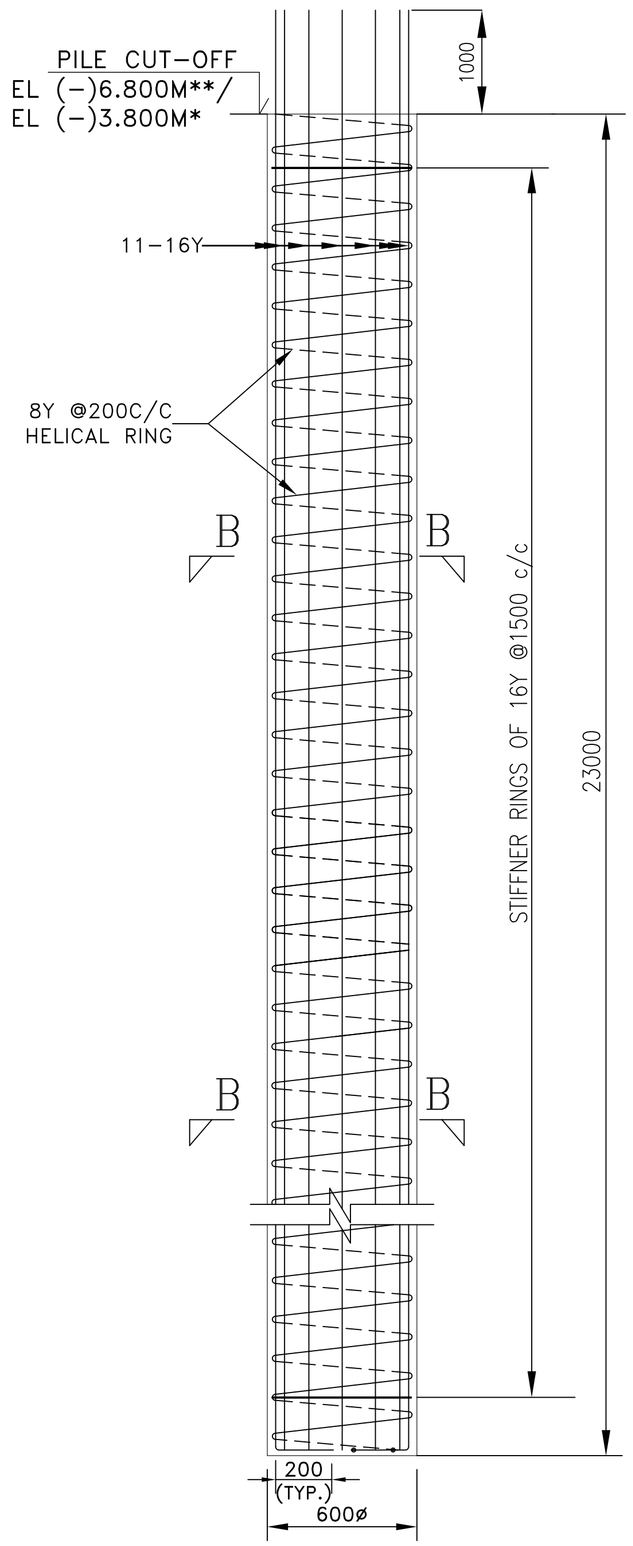
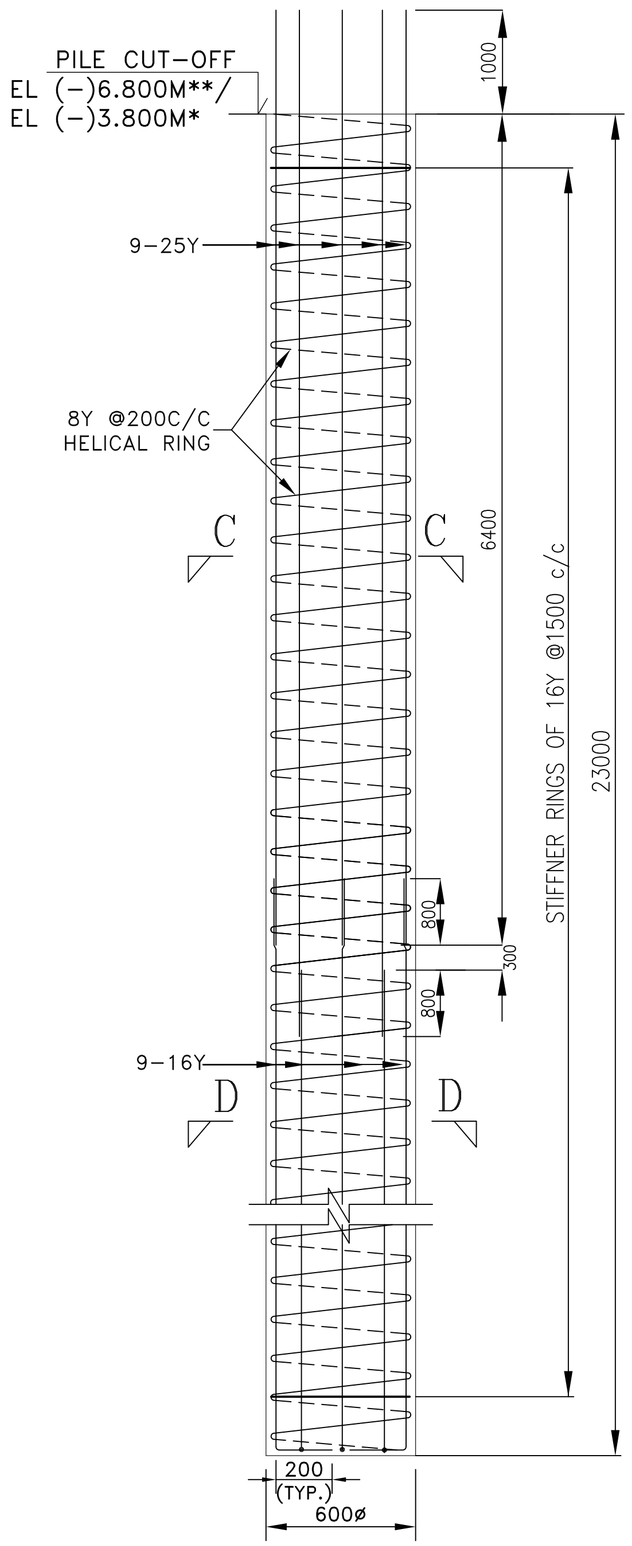


FOR VERTICAL COMPRESSION



FOR PULL-OUT



FOR LATERAL LOAD

LOCATION OF TEST PILE (REF.NOTE-13)

TEST AREA	TEST NO.	COORDINATES		DIA OF PILE (MM)	REMARKS
*BOP AREA CUT-OFF LVL EL(-)3.800M	TPH1	499 E	329 N	600	TPH-TEST PILE FOR LATERAL LOAD TPV-TEST PILE FOR VERTICAL COMPRESSION TPP-TEST PILE FOR PULL-OUT
	TPV1	504 E	329 N		
	TPP1	509 E	329 N		
**MAIN PLANT AREA CUT-OFF LVL EL(-)6.800M	TPH2	587 E	69 N	600	
	TPV2	587 E	74 N		
	TPP2	587 E	79 N		
	TPH3	636 E	95 S	600	
	TPV3	641 E	95 S		
	TPP3	646 E	95 S		

SAFE LOAD CARRYING CAPACITY OF PILE

DIAMETER OF PILE (MM)	SAFE LOAD (MT)		
	VERTICAL COMPRESSION	PULL OUT	HORIZONTAL
600	150	35	7.0

NOTES:

1. ALL DIMENSIONS ARE IN MM AND ELEVATION/LEVEL ARE IN METER UNLESS NOTED OTHERWISE.
2. EL.(±) 0.00M CORRESPONDS TO R.L. (+) 72.30M.
3. BORED CAST-IN-SITU CONCRETE PILE CONFORMING TO IS:2911 (PART-1/SEC.-2) SHALL BE USED.
4. GRADE OF CONCRETE SHALL BE M25 CONFORMING TO IS:456 WITH MINIMUM CEMENT CONTENT OF 400 KG/M^3. ORDINARY PORTLAND CEMENT SHALL BE USED.
5. REINFORCEMENT STEEL SHALL BE HIGH STRENGTH DEFORMED TMT STEEL BARS OF GRADE Fe 500D CONFORMING TO IS:1786.
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3. DRAWING NO. PE-DG-408-100-M001 TITLED, "PLOT PLAN".
4. DOCUMENT NO. PE-DC-408-607-C002 TITLED "DESIGN CALCULATION FOR 600MM DIAMETER INITIAL LOAD TEST PILES FOR MAIN PLANT / BOP AREA."

* FOR BOP AREA, ** FOR MAIN PLANT AREA

REINFORCEMENT DETAILS OF 600MM DIAMETR INITIAL LOAD TEST PILES

GUJARAT STATE ELECTRICITY CORPORATION LIMITED
VADODARA, GUJARAT
1x800 MW Wanakbori Thermal Power Station Extn. Unit-8

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BHARAT HEAVY ELECTRICALS LTD
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NEW DELHI

JOB NO.	408
STATUS	CONTRACT
DISTRIBUTION	
TO	
NLMT	

REV	DATE	ALTD	CHD	APPD

DEPT	NAME	SIGN	DATE
CODE			
DRN	S.KS	-sd-	16/02/15
DESN	V.K.	-sd-	16/02/15
CHD	V.V.THASIM	-sd-	16/02/15
APPD	DPK	-sd-	16/02/15

TITLE
R/C DETAILS OF 600MM DIAMETER INITIAL LOAD TEST PILE FOR MAIN PLANT / BOP AREA

DEPT.	SCALE	DRAWING NO.
SIGN		PE-DG-408-607-C002
DATE		SHEET 1 OF 1 REV 00

Feb 16, 2015 - 5:49pm
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