REPORT

ON

GEOTECHNICAL INVESTIGATION WORK

FOR

PROPOSED GROUND + THREE STORIED BUILDING.

AT

PREMISES NO.

111, DIAMOND PARK.

WARD NO. 143, KOLKATA. UNDER K.M.C.

EXECUTED BY:-

SOIL - TECH

SOIL INVESTIGATOR, PILING EXPERT, FOUNDATION CONSULTANT

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NOVEMBER - 2022

SOIL-TECH Kolkata

SUB - SOIL INVESTIGATION WORK IN CONNECTION WITH THE PROPOSED GROUND + THREE STORIED BUILDING. AT PREMISES NO. 111, DIAMOND PARK. WARD NO. 143, KOLKATA. UNDER K.M.C.

S O I L - T E C H

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INTRODUCTION

There is a proposal for the construction of Proposed GROUND + THREE STORIED BUILDING. AT PREMISES NO. 111, DIAMOND PARK. WARD NO. 143, KOLKATA. UNDER K.M.C.

SOIL – TECH *was awarded the contract by . Carrying out the soil testing work as per the detailed scope of work as described in the subsequent page.*

A detail soil investigation work including laboratory testing has been completed for the foundation of the proposed structure.

The object of this investigation was to find out the subsoil characteristics of different deposits of proposed site for the determination of suitable foundation and the allowable bearing capacity of foundation. The field work at the site commenced on - 11.11.2022 and completed on 12.11.2022. The investigation was carried out at different locations . The location of the bore-holes were decided and fixed by the Engineer in charge. Bore Hole Location Plan is attached. Disturbed and undisturbed soil samples at every mete interval were collected for necessary field and laboratory tests.

This report deals with the findings of field and laboratory testing's, analysis of subsoil data and there by the suitable foundation for the proposed GROUND + THREE STORIED BUILDING.

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2.01. *Field Investigation*:-

The programme field work at the present site was considered of the following :

i. *Sinking of bore holes. No. of Two.*

ii. *Collection of undisturbed soil sample from suitable depth below G.L.*

iii. *Conduction of standard penetration test of suitable depth below G.L.*

iv. *Collection of disturbed soil sample by the split spoon sampler.*

2.02. *Technique Of Boring*:-

Bentonite and drilling technique developed by the central building research institute was adopted in this case. Drilling was done with soil cutter by direct and circulation through the borehole, the 5% bentonte slurry, ejecting out of the cutter, brought the cut materials the surface. The bentonite slurry, by virtue its density and thirotropy stabilized the bore hole and prevented sand blowning, soft soil belowing and sedimentation. Thus the natural characteristics of the sub-soil strata was not disturbed and the firm base of the bore could be reached for undisturbed soil sampling and conduction of standard penetration test.

2.03. *Collection undisturbed sample*:-

Undisturbed samples were collected as per specification given in IS: 1892 and IS:2131, latest revision. After recovery of the samples tubes were properly sealed at both ends by wax, marked and sent for laboratory testing.

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2.04. Standard Penetration Test:-

Standard penetration tests were conducted within each bore hole at suitable intervals of depth in between levels from which undisturbed samples were taken in the cohesive strata. S.P.T. was also conducted within the sandy strata. The tastes were done with the standard split spoon sampler as per IS:2131. The 'N' values were obtained by counting the number of blows required to drive the spoon from 15 cm. to 45 cm.

3.0 Laboratory Tests:-

The programmed of the laboratory testing was considered of the following:

i. Determination of natural moisture contents (N.M.C.) .
ii. Mechanical analysis.
iii. Determination of atterberg limits (liquid limit and plastic limit).
iv. Triaxial tests.
v. Consolidation tests.
vi. Hydrometer Analysis.

3.01. Brief Description various Laboratory Tests:-

i. Natural Moisture Content

It is the ratio of the water to the dry weight of soil determined by oven drying.

ii. Bulk Density

It is the weight of the undistrubed sample per unit volume determined by taking the weight and volume for the specimen.

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iii. ***Mechanical analysis:-***

By this, the percentage for sand, silt and clay consisting the soil are determined based on stokes Law, by virtue of velocity of falling particles.

Known weight of soil is dispersed in known volume of water and the purpose is served by pipetting out the mixture after required intervals and over drying.

iv. ***Atterberg limits:-***

These are arbiratory moisture contents to determine the instant at which the soil is on the verge of being viscous liquid (liquid limit) or non plastic limit is the water contents at which the soil begins to crumble when rolled out into a thread of 3 mm.

v. ***Triaxial tests:-***

Unconfined compression tests are conducted on coheisve soil like clay/clayey silt sample to determine there shear strenght. The sample are tested under quick condition at a ratio at 1.25 mm./min. and are loaded upto a maximum of 20% of axial strain. This is a special type of triaxial test where no cell/confirmed pressure, if applied laterally.

Triaxial test is for conducted on cohesionless soil like sandy slit/silty sand.The sample this test, are subjected to different laterial stress 9 e.g. 10Kg/cm^2 etc. i.e. cell/confirmed pressure as well as vertical tress i.e. diators stress and rested upon a maximum strain of 20% under a quick condition at a ratio of 1.25mm./min. laterial stress on the sample is kept constant when the test continues .

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The stresses are failure in both the cases are to determine from the test. The shear strength ('C') and angle of shear in resistance(ϕ) are obtained from mathematical relation of graphical by Mohr's Diagram.

vi. ***Consolidation test:-***

This test is necessary to estimate the settlement characteristics of cohesive soils. In the consolidometer ring (6.25 cm dia) a 2 cm. high sample is taken with porous stores on top and bottom. After saturation, a compressive load is applied and maintained for 24 hrs. The compression of the sample is measured at regular intervals by dial gauge. Thus load increment made in the procedure is repeated. From the result obtained e_log 10p curve is drawn to estimate the compression index (Cc) from the straight portion of the curve. Slope of the curve is considered as :

$$Cc \text{ of } Cc = \frac{e1 - e2}{Log\ 10p\ (e2/e1)}$$

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LABORATORY TESTS:

The soil samples from the 10 cm diameter sampling tubes were extracted in the laboratory by pushing out the soil core with the help of a jack and a frame. The core was jacked out in a direction that corresponded to the soil movement with in the tube during sampling.

The following tests were done on representative samples of the cohesive strata.

Following tests have been conducted on various soil samples in the laboratory:

Laboratory Test	**IS : Code Referred**
Natural moisture content	IS : 2720 (Part-2)
Specific gravity	IS : 2720 (Part-3)
Grain Size analysis	IS : 2720 (Part-4)
Atterberg Limits: Liquid limit, Plastic limits & Plasticity index	IS: 2720 (Part 5 & 6)
Unconfined Compression shear test	IS:2720 (Part-10)
Triaxial shear test -Unconsolidated Undrained (UU)	IS: 2720 (Part –11)
Engineering classification of soil	IS :1498 - 1970

The laboratory tests, as detailed below, were run to ascertain the engineering properties of the soil and to obtain the necessary data required for design of the foundations.

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SUB – SOIL STRATIFICATION

Site: - 111, DIAMOND PARK. WARD NO. 143, KOLKATA. UNDER K.M.C.

Strata	Description	Depth in metre		Thickness in metre	'N' Value.
		From	To		
I	Soft dark grey to brownish grey clayey silt / silty clay with traces of vegetation.	0.0	4.0	4.0	2 - 3
`II	Soft dark grey to blackish grey silty clay with decomposed wood.	4.0	17.0	13.0	2 - 5
III	*Grey clayey silt.*	17.0	19.5	2.5	8 – 15
IV	*Grey silty sand.*	19.5	>21.0	>1.5	27

GROUND WATER WAS OBSERVED AT 1.5M. E.G.L.

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SUB - SOIL CHARACTERISTIC

STRATUM;-I

It consists of **Soft dark grey to brownish grey clayey silt / silty clay with traces of vegetation.** *It starts from 0.0m and continues up to the Depth 4.0m below the G.L.*

$C = 2.5t/m^2$ $\phi = 0$, $N = 2 - 3$, $\gamma = 1.67t/m^3$

STRATUM;-II

It consists of **Soft dark grey to blackish grey silty clay with decomposed wood.** *It starts from 4.0m and continues up to the Depth 17.0m below the G.L.*

$C = 2.0t/m^2$ $\phi = 0$, $N = 2 - 5$, $\gamma = 1.60t/m^3$

STRATUM;-III

It consists of **Stiff bluish grey to yellowish grey silty clay.** *It starts from 17.0m and continues up to the Depth 19.5m below the G.L.*

$C = 5.5t/m^2$ $\phi = 0$, $N = 8 - 15$, $\gamma = 1.92t/m^3$

STRATUM;-IV

It consists of ***Yellowish grey silty sand.*** *It starts from 19.5m and continues up to the Depth 21.0m below the G.L.*

$N = 27$

GROUND WATER TABLE

The ground water table at proposed site was found at 1.50M. E.G.L. However, considering seasonal fluctuation of G.W.T. It is desirable to consider G.W.T. to lie at the base of footing.

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FOUNDATION CONSIDREATION & BEARING CAPACITY:-

DEPTH OF FOUNDATION:-

In order to select suitable depth of foundation, one has to consider a few Important factors.

It is observed that the top soil consists of **Soft dark grey to brownish grey clayey silt / silty clay with traces of vegetation.**

The standing water table observed during boring was observed 1.50M. E.G.L. and No major fluctuations were noted. However, during peak monsoon it is very likely That the water table may rise to the surface.

From the above considerations and keeping in mind the economic point of view, The depth of foundation may be fixed at 1.5M below the ground level with 0.3m Sand cushion and Sal ballah piles below the foundation.

SALBALLAH PILING IS: - 2911(PART-II-1980)

It is observed that the soil from 0.0m. Till 1.8m to be removed and replaced by compacted sand cushion of 300mm thick. The sand should be filled in layers and proper compaction should be done by drainage of water below the sand cushion sal ballah piles of 16ft. of 150mm dia. should be driven below the foundation at a spacing of 450mm c/c. with such strengthening of soil, the cohesion value may be taken as C = 2.6t/m^2

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SAMPLE CALCULATION:-

FOR NET SAFE BEARING CAPACITY & SETTLEMENT FOR SQUARE FOOTING OF 3.0M. x 3.0M. SIZE PLACED AT 1.5M. DEPTH.

Net ultimate bearing capacity as per ***IS: 6403 – 1981***
Qu = C.Nc.Sc.dc.Ic.

Where, ***C = 2.6T/M^2 (undrained cohesive strength)***
Nc = Bearing capacity factor = 5.14
Sc = Shape factor = 1.3 for Square footing
Dc = Depth factor = 1 + 0.35df / B ***where, df = Depth of Foundation = 1.5M.***

B = Width of footing
Ic = Inclination factor = 1.0

Therefore, Qu = 2.6 x 5.14 x 1.175 x 1.3 = 20.41T/M^2

ALLOWABLE BEARING CAPACITY
qall = 20.41 / 2.5 = 8.1t/m^2

Consolidation settlement

Thickness of layer below the footing susceptible to consolidation settlement

H1 = 2B
Increment pressure due to foundation load at the mid depth of layer is

ΔP = 7 .1x 3.0 x 3.0 / (6 x 6) = 2.04t/m^2 ***(considering 2V 1H stress distribution)***

Consolidation settlement sc = mv x ΔpxH

Sc1 = *0.0048 x 6.0 x 2.04 x 1000 = 58.7mm. (Hence Safe)*

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SAMPLE CALCULATION:-

FOR NET SAFE BEARING CAPACITY & SETTLEMENT FOR STRIP FOOTING OF 2.0M. WIDE. SIZE PLACED AT 1.5M. DEPTH.

Net ultimate bearing capacity as per ***IS: 6403 – 1981***
Qu = C.Nc.Sc.dc.Ic.

Where, ***C = 2.6T/M^2 (undrained cohesive strength)***
Nc = Bearing capacity factor = 5.14
Sc = Shape factor = 1.3 for Square footing
Dc = Depth factor = 1 + 0.35df / B ***where, df = Depth of Foundation = 1.5M.***

B = Width of footing
Ic = Inclination factor = 1.0

Therefore, Qu = *2.6 x 5.14 x 1.26 x 1.0* = 16.8T/M^2

ALLOWABLE BEARING CAPACITY

qall = 16.8 / 2.5 = 6.7t/m^2

Consolidation settlement

Thickness of layer below the footing susceptible to consolidation settlement

H1 = 2B
Increment pressure due to foundation load at the mid depth of layer is

ΔP = 6.7 x 2.0 / 4.0 = 3.36t/m^2 ***(considering 2V 1H stress distribution)***

Consolidation settlement sc = mv . x ΔpxH

Sc1 = *0.0048 x 4.0 x 3.36 x 1000 = 64.6mm.* *(Hence Safe)*

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RECTANGULAR FOOTING:-

FOR NET SAFE BEARING CAPACITY & SETTLEMENT FOR RECTANGULAR FOOTING OF 3.0M. x 4.5M. SIZE PLACED AT 1.5M. DEPTH.

Net ultimate bearing capacity as per IS: 6403 – 1981
Qu = C.Nc.Sc.dc.Ic.

Where, C = 2.6T/M^2 (undrained cohesive strength)
Nc = Bearing capacity factor = 5.14
Sc = Shape factor = 1.13
Dc = Depth factor = 1 + 0.35df / B

Where, df = Depth of Foundation = 1.5M.

B = Width of footing
Ic = Inclination factor = 1.0

Therefore, Qu = *2.6 x 5.14 x 1.175 x 1.13* = 17.4T/M^2

ALLOWABLE BEARING CAPACITY

qall = 17.4 / 2.5 = 6.9t/m^2

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The following bearing capacity to be achieved after installation of *"WOODEN PILE"*& *"300mm SAND CUSHION"*

Earth excavation should be done down to a depth 1.5m. B.G.L.

The Allowable bearing capacity of soil thus obtained for different types and size of footing are given in Table 1.0.

Footing		Foundation Depth	Net Bearing Capacity (t/m^2)	Estimated Settlement (mm)
Type	Size			
Strip Footing	2.0m. wide	1.5M.	6.7	64.6
	1.5m. wide		6.9	53.7
	1.0m. wide		7.1	45.1
Isolated Square	3.0m. x 3.0m.		8.1	58.7
	2.5m. x 2.5m.		8.3	50.4
	2.0m. x 2.0m.		8.5	43.8
	1.5m. x 1.5m.		8.7	38.1
Rectangular	3.0M. x 4.5M		6.9	65.7

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***RECOMMENDATION AND CONCLUDING REMARK*:-**

Sub-soil investigation was carried out at the site in order to recommend suitable foundation systems for design of foundation of the proposed building structure. The soil exploration was carried out with *two bore holes*.

1. **The sub-soil at proposed site appears to be poor Kolkata soil deposit.**

It appears from sub-soil characteristics that shallow foundation at proposed may placed at a depth of 1.5M. B.g.1 on for construction of GROUND + THREE storied building. AT PREMISES NO. 111, DIAMOND PARK. WARD NO. 143, KOLKATA. UNDER K.M.C.

2. ***It appears from sub-soil characteristics that shallow foundation at proposed may be adopted after installation of SAL BALLAH of 6" Dia and 16ft. long @ spacing 450mm. c/c. The foundation should be placed on 300mm. sand cushion 1.5M. B.g.1 for construction of GROUND + THREE Storied building. The allowable bearing capacity of soil for Isolated Square Footing & Continuous Strip Footing may be considered as 8.1t/m^2 and 6.7t/m^2 & Rectangular Footing 6.9t/m^2. Respectively.***

   Earth excavation should be done down to a depth 1.8m. B.G.L.

3. **Existence of nearby structure should be given due consideration at various stages of construction.**

4. **To minimize differential settlement tie-beam connections may be provided at ground level.**

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5. **Final choice regarding shape and size of footing obviously lies on the discretion of the engineer concerned.**

6. **Report has been prepared on the basis of two bore holes.**

7. **Standing water level was observed at 1.50M. E.*G.L.***

The following bearing capacity to be achieved after installation of "WOODEN PILE" & "300mm SAND CUSHION" Earth excavation should be done down to a depth 1.8m. B.G.L.

Footing		*Foundation Depth*	*Net Bearing Capacity (t/m^2)*	*Estimated Settlement (mm)*
Type	*Size*			
Strip Footing	2.0m. wide	1.5M.	6.7	64.6
	1.5m. wide		6.9	53.7
	1.0m. wide		7.1	45.1
Isolated Square	3.0m. x 3.0m.		8.1	58.7
	2.5m. x 2.5m.		8.3	50.4
	2.0m. x 2.0m.		8.5	43.8
	1.5m. x 1.5m.		8.7	38.1
Rectangular	3.0M. x 4.5M		6.9	65.7

IF FOUNDATION PRESSURE INCREASED DEEP FOUNDATION MAY BE INVESTIGATED IN THE FORM OF PILE.

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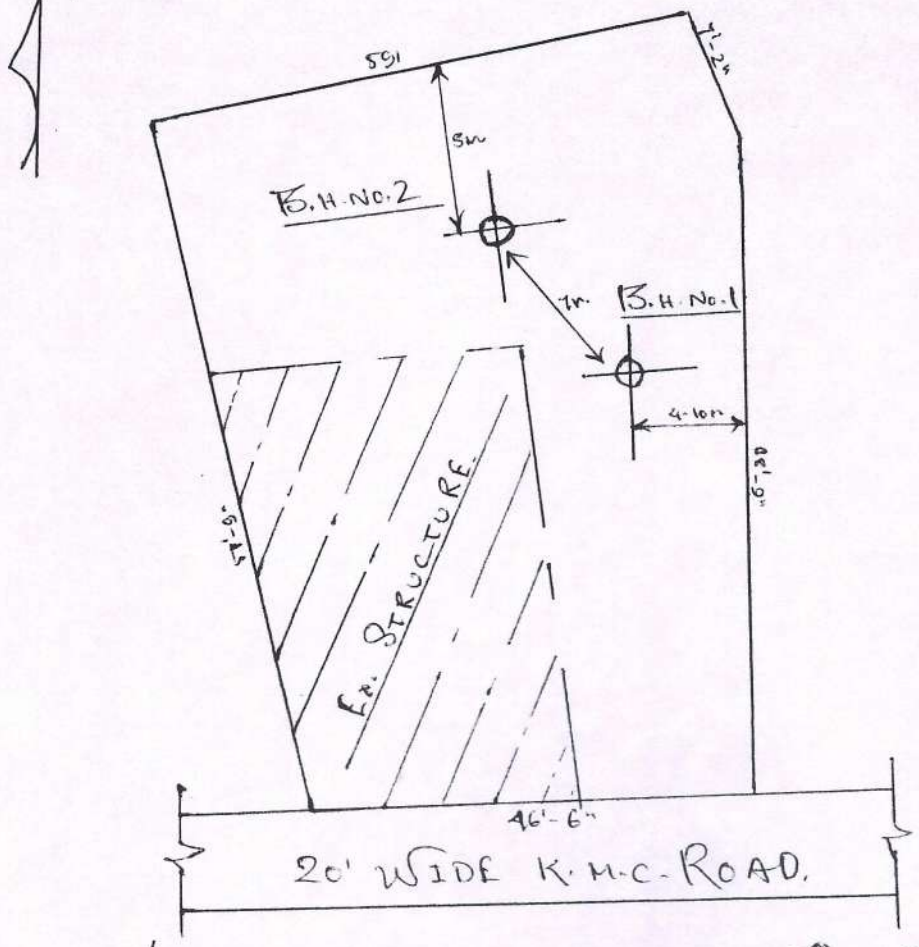
Proprietor

BHASKAR ROY
K.M.C. Empanelled
Geo-Technical Engineer
No.- G.T.-II/2



Sub-Soil Investigation Work in Connection With the Proposed G+III Storied building. At Premises No. 111, Diamond Park. Ward No. 143, Kolkata. Under K.M.C.

NOT TO SCALE.

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P.G.H.S. ROAD. KOLKATA – 700 032.

BORE LOG DATA SHEET | SHEET NO. A2.

TYPE OF BORING	SHELL & AUGER	BENTONITE MUD DRILLING	JOB NO. ST – SI – 122	BORE HOLE NO. BH-1
DIA OF HOLE		150 mm	CO-ORDINATE OR SEXT. ANGLES	
DEPTH		21.00 M.	DATUM	Existing Front Road Top = 0.00 m
COMMENCED ON 11.11.2022	COMPLETED ON 12.11.2022		PROJECT:-	111, DIAMOND PARK.WARD NO. 143, KOLKATA. UNDER K.M.C.
STANDING WATER LEVEL	1.50M. E.G.L.			

DESCRIPTION OF STRATA	WATER TABLE (m)	DEPTH (BELOW EGL) From (m)	DEPTH (BELOW EGL) To (m)	THICKNESS	'N' VALUE	SAMPLE TYPE	SAMPLE REF. NO.	DEPTH (m) REF. LV. EGL
Soft dark grey to brownish grey clayey silt / silty clay with traces of vegetation.		0.0	4.0	4.0	-- 2 - 2	*DS* *SPT* UDS *SPT*	DS-1 SPT-1 UDS-1 SPT-2	0.50 1.50-2.10 2.50-2.95 3.50-4.10
Soft dark grey to blackish grey silty clay with decomposed wood.		4.0	17.0	13.0	3 2 2 2 3 3 - 4 5	*SPT* *SPT* *SPT* *SPT* *SPT* *SPT* UDS *SPT* *SPT*	SPT-3 SPT-4 SPT-5 SPT-6 SPT-7 SPT-8 UDS-1 SPT-9 SPT-10	5.00-5.60 6.50-7.10 8.00-8.60 9.50-10.10 11.00-11.60 12.50-13.10 14.00-14.45 15.00-15.60 16.50-17.10
Grey clayey silt.		17.0	19.5	2.5	8 15	*SPT* *SPT*	SPT-11 SPT-12	18.00-18.60 19.50-20.10
Grey silty sand.		19.5	21.0	1.5	27	*SPT*	SPT-13	21.00-21.60

CODE: UDS – Undisturbed Sample, DS– Disturbed Sample, L – Large Diameter, C – Core. W – Water Sample, S TP – Standard Penetration Test, V – Vane Test.

EGL: Existing Ground Level EGL 0.0 m below datum

No. of Disturbed Sample: 01 *No. of U.D.S.: 02* *No. Vane Test : Nil*
No. of Large Disturbed Sample: Nil *No. of S.P.T.: 13* *No. Water Sample : Nil*

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BORE LOG DATA SHEET | **SHEET NO. A3.**

TYPE OF BORING	SHELL & AUGER	BENTONITE MUD DRILLING	JOB NO. ST – SI –112	BORE HOLE NO. BH- 2
DIA OF HOLE		150 mm	CO-ORDINATE OR SEXT. ANGLES	
DEPTH		10.0M.	DATUM	Existing Front Road Top = 0.00 m
COMMENCED ON 12.11.2022	COMPLETED ON 12.11.2022		PROJECT:-	111, DIAMOND PARK.WARD NO. 143, KOLKATA. UNDER K.M.C.
STANDING WATER LEVEL	1.50M. E.G.L.			

DESCRIPTION OF STRATA	WATER TABLE (m)	DEPTH (BELOW EGL) From (m)	DEPTH (BELOW EGL) To (m)	THICKNESS	'N' VALUE	SAMPLE TYPE	SAMPLE REF. NO.	DEPTH (m) REF. LV. EGL
Soft dark grey to brownish grey clayey silt / silty clay with traces of vegetation.		0.0	4.0	4.0	- - 2 3	*DS* *UDS* *SPT* *SPT*	DS-1 *UDS-1* SPT-1 SPT-2	0.50 1.50-1.95 2.00-2.60 4.00-4.60
Soft dark grey to blackish grey silty clay with decomposed wood.		4.0	10.0	6.0	2 2 3	*SPT* *SPT* *SPT*	SPT-3 SPT-4 SPT-5	6.00-6.60 8.00-8.60 10.00-10.60

CODE: UDS – Undisturbed Sample, DS– Disturbed Sample, L – Large Diameter, C – Core. W – Water Sample, S TP – Standard Penetration Test, V – Vane Test.

EGL: Existing Ground Level EGL 33330.0 m below datum

No. of Disturbed Sample: 01 | *No. of U.D.S.: 01* | *No. Vane Test : Nil*

No. of Large Disturbed Sample: Nil | *No. of S.P.T.: 05* | *No. Water Sample : Nil*

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SITE:– 111, DIAMOND PARK. WARD NO. 143, KOLKATA. UNDER K.M.C.

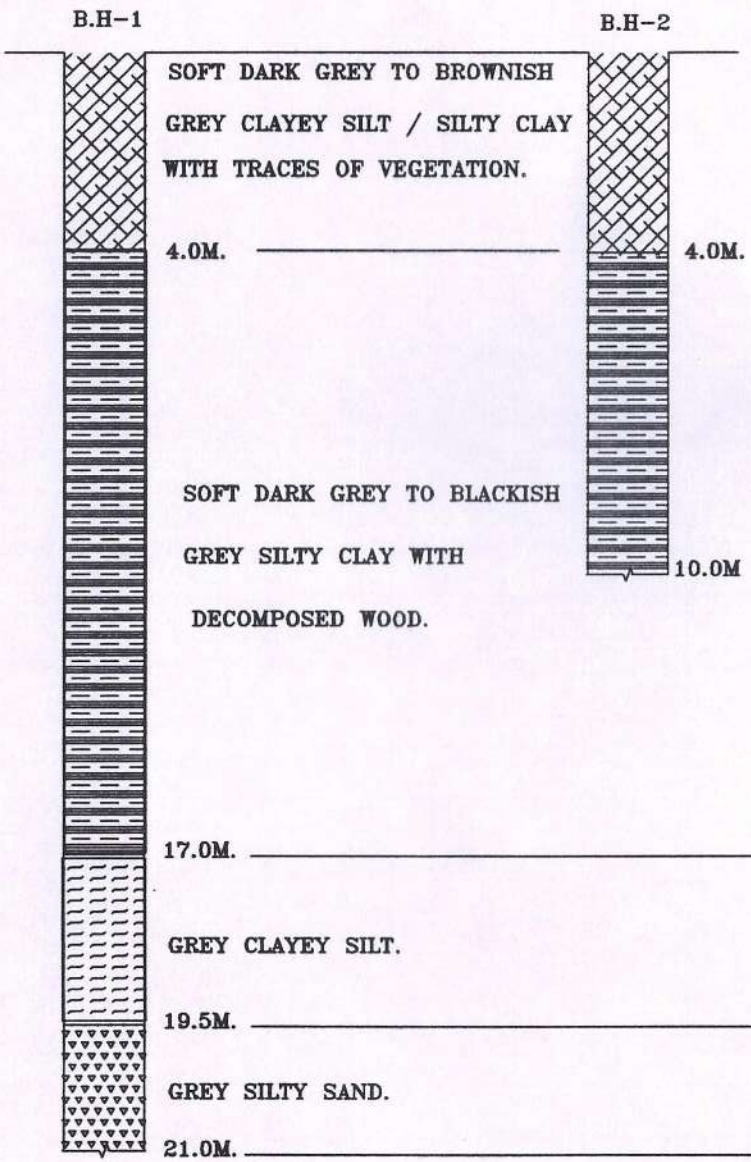

FIG: SUB–SOIL PROFILE (NOT TO SCALE).

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N-BLOWS/30CM, LOCATION - 111, DIAMOND PARK, WARD NO. 143, KOLKATA, UNDER K.M.C

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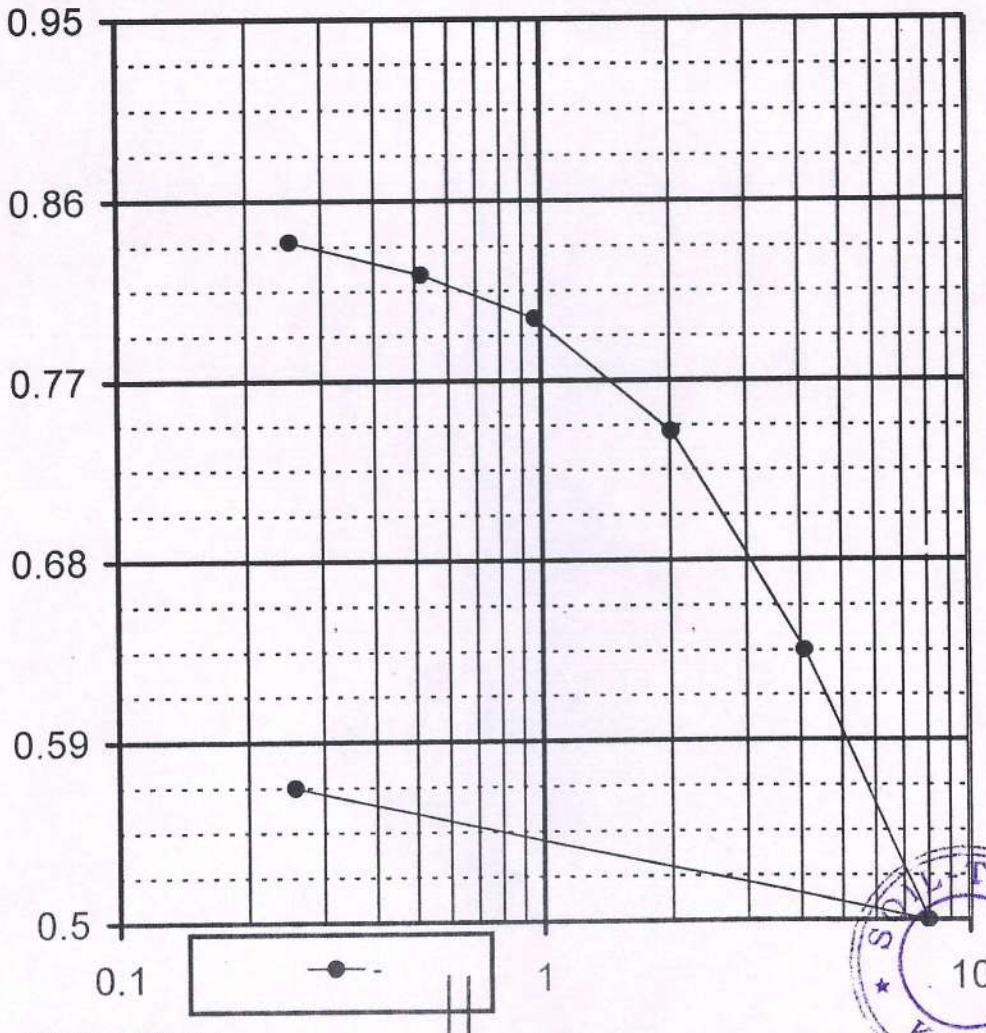
A6

B.H.No 1 Dept 2.5 M, e0 =0.95

e vs logp curve



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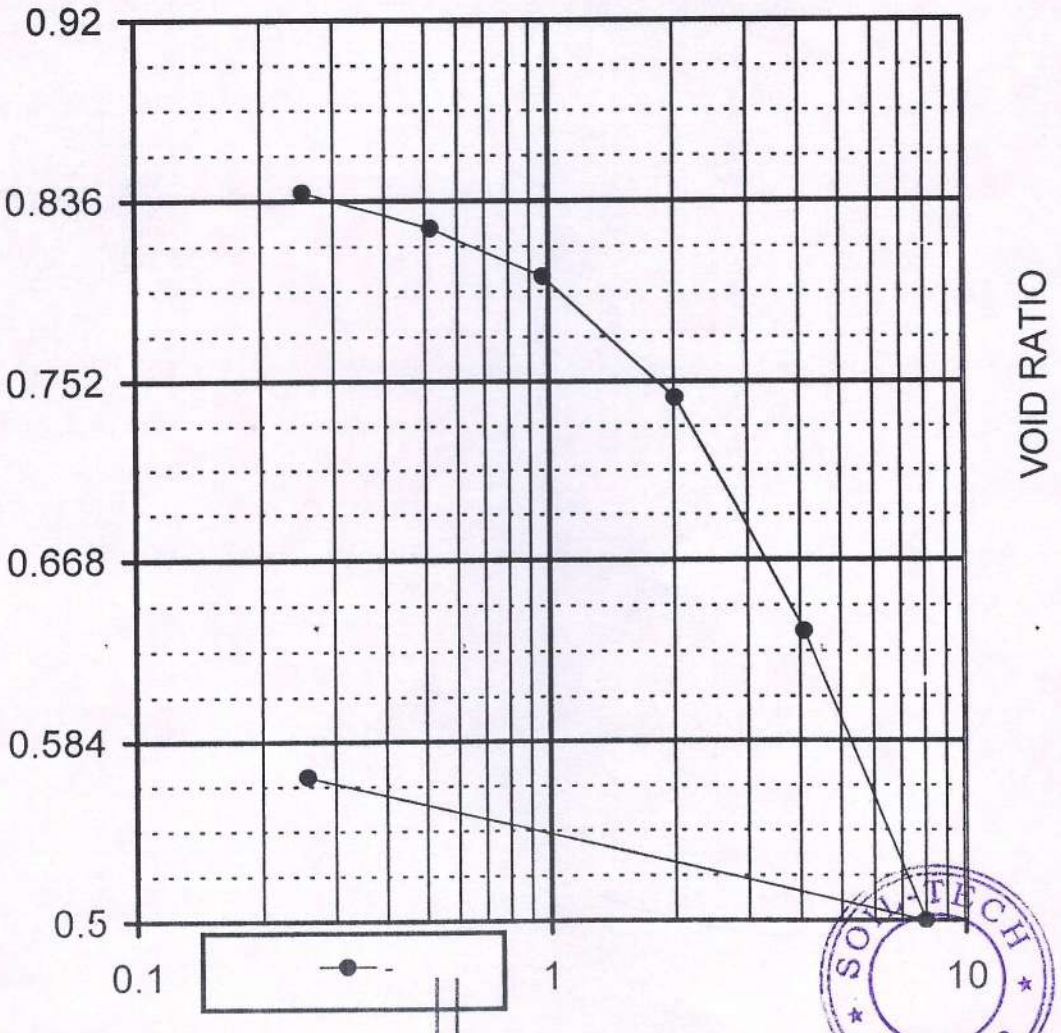
A8

B.H.No 2 Dept 1.5 M, e0 =0.92

e vs logp curve



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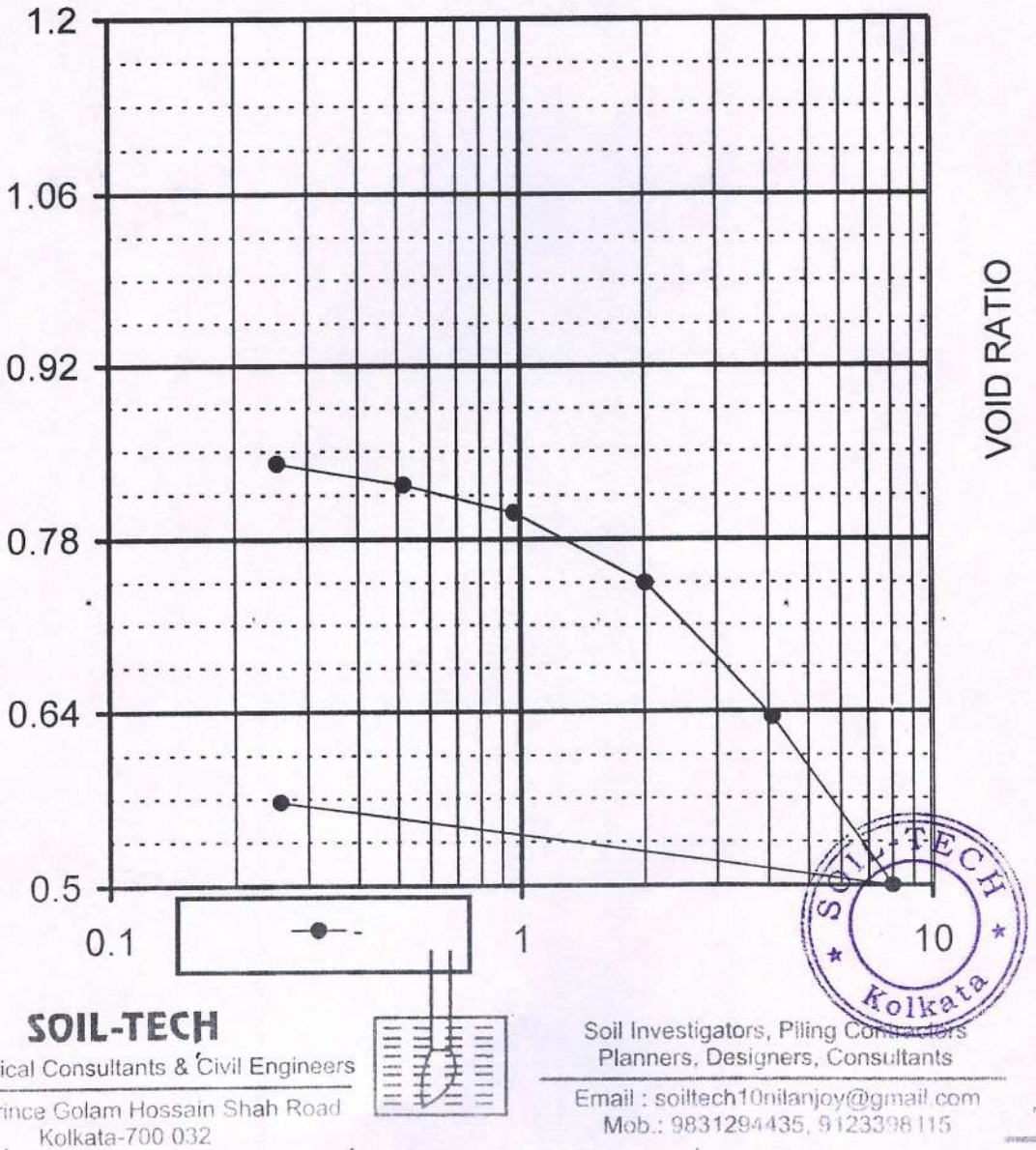
B.H.No 1 Dept 14.0 M, e0 =1.20

e vs logp curve



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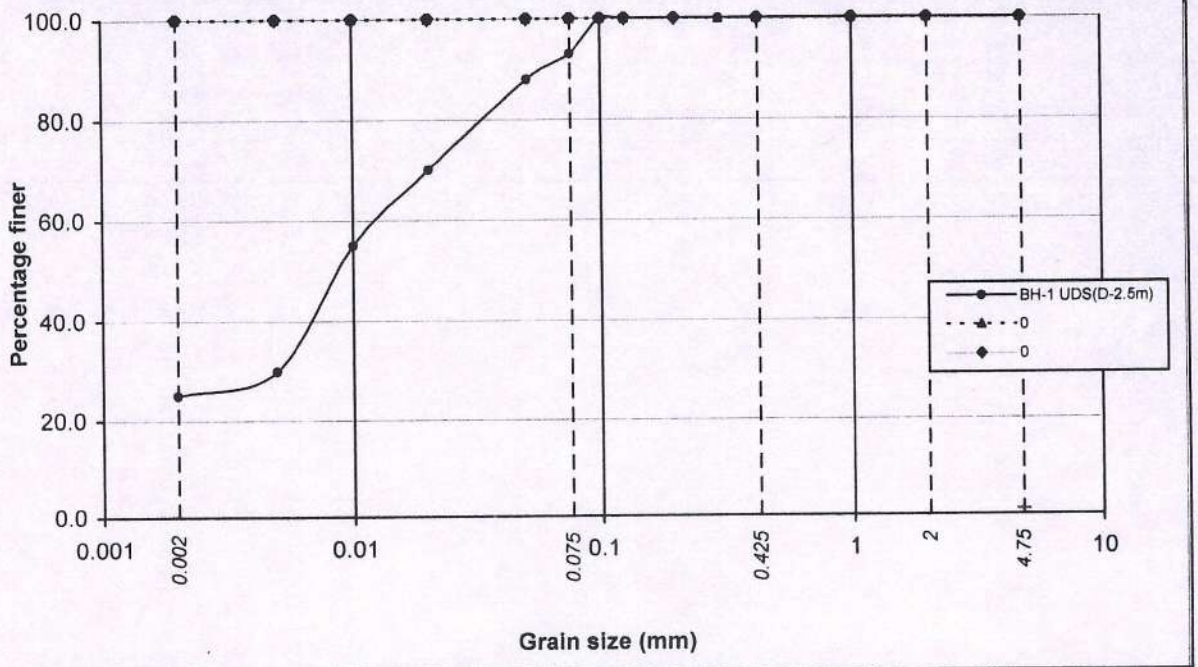
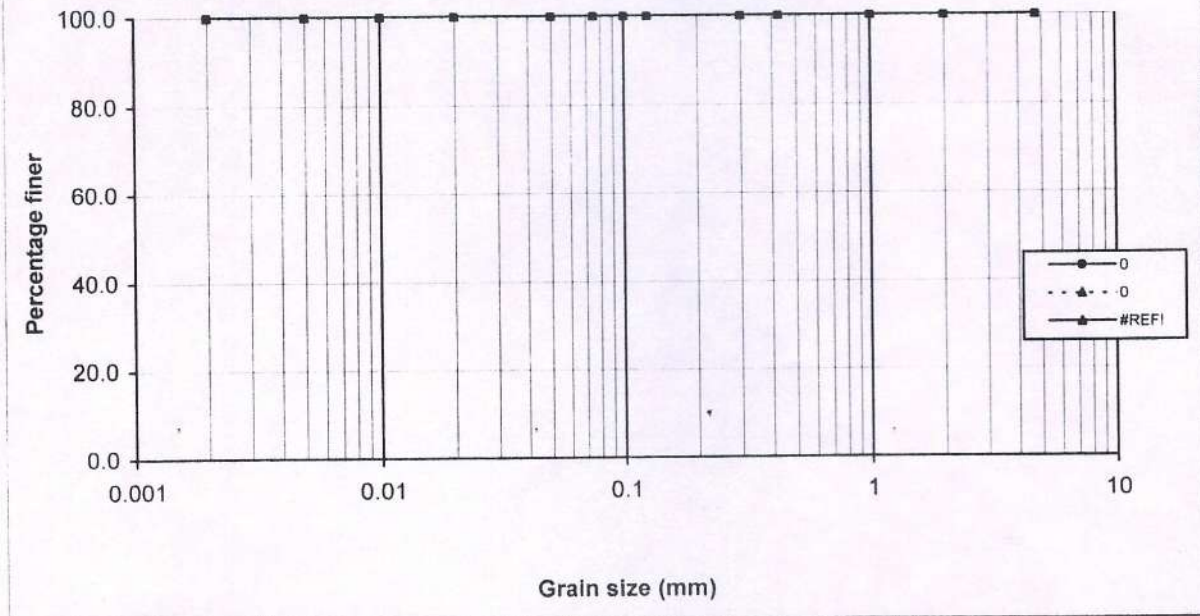
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-4.75	>4.75
Sample No.	Clay (%)	Silt (%)	Sand (%)	Gravel (%)
BH-1 UDS(D-2.5m)	27.0	68.0	5.0	0.0
0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-4.75	>4.75
Sample No.	Clay (%)	Silt (%)	Sand (%)	Gravel (%)
0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0

*Silt & Clay

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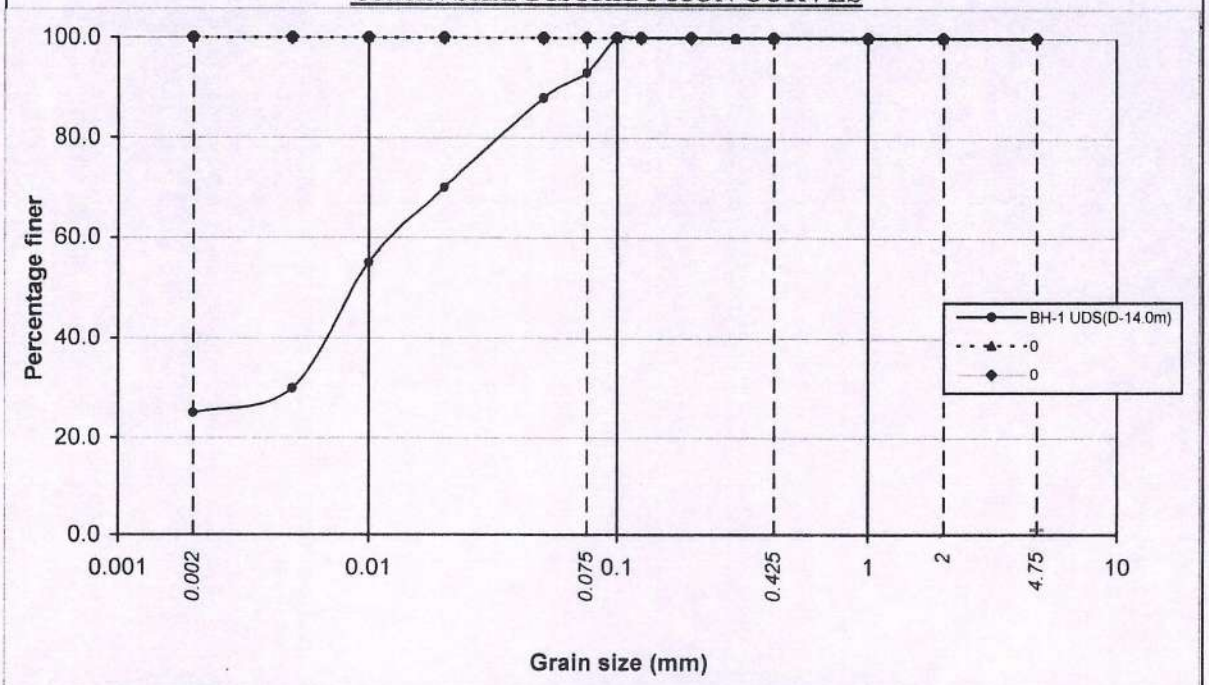
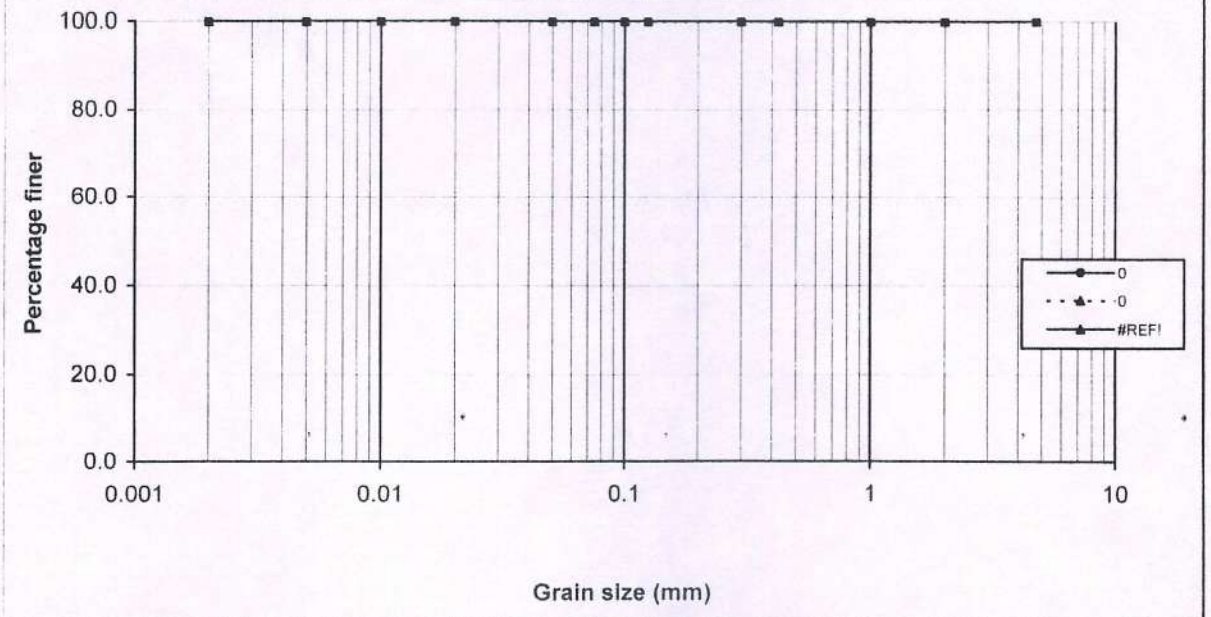
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-4.75	>4.75
Sample No.	Clay (%)	Silt (%)	Sand (%)	Gravel (%)
BH-1 UDS(D-14.0m)	35.0	60.0	5.0	0.0
0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-4.75	>4.75
Sample No.	Clay (%)	Silt (%)	Sand (%)	Gravel (%)
0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0

*Silt & Clay

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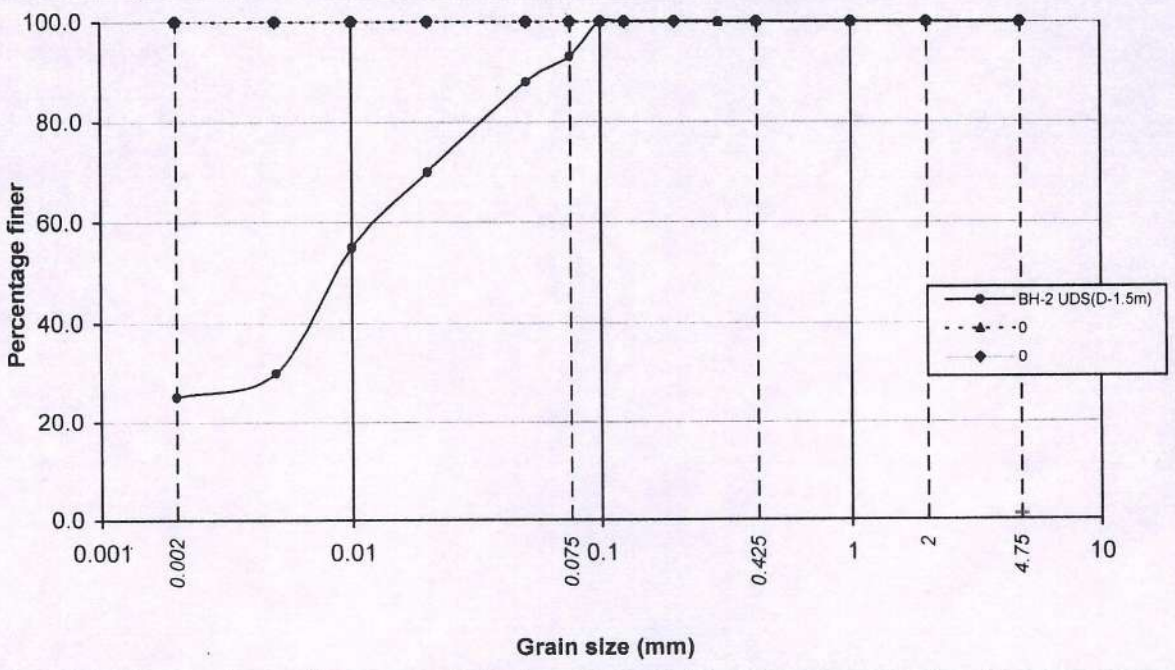
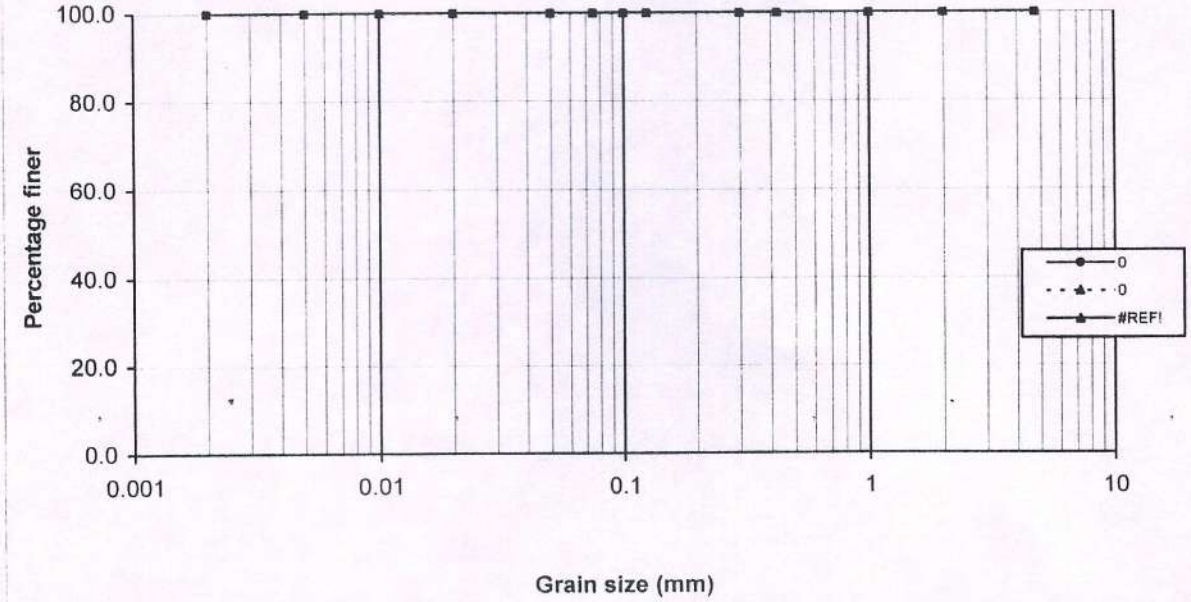
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-4.75	>4.75
Sample No.	Clay (%)	Silt (%)	Sand (%)	Gravel (%)
BH-2 UDS(D-1.5m)	254.0	69.0	6.0	0.0
0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	<0.002	0.002-0.075	0.075-4.75	>4.75
Sample No.	Clay (%)	Silt (%)	Sand (%)	Gravel (%)
0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0

*Silt & Clay

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LABORATORY TEST RESULTS

Borehole	Depth (m)	Sample no.	Bulk density (kg / cm^3)	NMC (%)	Sp. Gr.	Atterberg Limit		U.C.S (KG / CM^2)	Shear Strength		Initial void ratio	Consolidation	Grain Si		
						LL (%)	PL (%)		C (KG / CM^2)	(DEGEE)Ø		m_v (cm^2/ kg)	Sand (%)	Silt (%)	Clay (%)
1	2.5	UDS	1.69	36.0	2.62	47	27	0.23	.24	0	0.95	0.048 (0.5-1.0)	5	68	27
1	14.0	UDS	1.60	37.0	2.60	60	19	0.20	-	-	1.20	.052 (1.0 – 2.0)	4	60	36
II	1.50	UDS	1.70	34.0	2.64	48	26	0.24	-	-	0.92	.046 (1.0 – 2.0)	6	69	25

D E S C R I P T I O N

B.H. NO.1. =====2.5M. ======= *DARK GREY TO BROWNISH GREY CLAYEY SILT WITH TRACESOF VEGETATION.*

B.H. NO.1. =====14.0M. =======*DARK GREY CLAYEY SILT WITH DECOMPOSED WOOD.*

B.H. NO.2. =====1.50M. ======= *DARK GREY TO BROWNISH GREY CLAYEY SILT WITH TRACESOF VEGETATION.*

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