

TENDER SPECIFICATION

NO: BHE/PW/PUR/MANUT-CVL CHP/1535

JOB: All Civil and Architectural works required for Coal Handling Plant AT
4X270 MW Thermal Power Station, Manuguru, Distt-Khammam, Telangana

VOLUME – IF

**Geotechnical Investigation Report for CHP &
AHP Area**



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

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**TELANGANA STATE POWER
GENERATION CORPORATION LIMITED
(TSGENCO)**

4X270 MW BHADRADRI TPS

**GEOTECHNICAL INVESTIGATION REPORT-
CHP/ AHP AREA**

DOCUMENT NO. PE-DC-411-602-C001

VOLUME - 9



**BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT
NOIDA-201301**



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**GEOTECHNICAL INVESTIGATION REPORT
FOR THE PROPOSED (4 X 270 MW)
BHADRADRI THERMAL POWER PROJECT**

**VOLUME - 9
FOR CHP/ AHP AREA**

Customer :

**Telengana State Power Generation
Corporation
(TS GENCO)**

EPC Contractor :

**Bharat Heavy Electricals Limited
(BHEL)**

Website : nagadi.co.in

Job No. : **G(H) 1658(9)**

Date : 01.10.15

**GEOTECHNICAL INVESTIGATION REPORT FOR THE
PROPOSED (4 X 270 MW) BHADRADRI THERMAL POWER
PROJECT TELENGANA
VOLUME - 9
FOR CHP/ AHPAREA**

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GEOTECHNICAL INVESTIGATION REPORT FOR (4 X 270 MW)
BHADRADRI THERMAL POWER PROJECT TELENGANA
PREAMBLE

Telangana State Power Generation Corporation (TS GENCO) has proposed to install 4 x 270 MW Bhadradi Thermal Power Project in Manuguru, District Khammam, Telangana State and the job was awarded to M/s Bharat Heavy Electrical Limited. To design the foundation system of Plant structures/ buildings, a detailed geotechnical investigation was required to be conducted. M/s Bharat Heavy Electrical Limited, in turn awarded the job to M/s Nagadi Consultants Pvt. Ltd. To obtain adequate information regarding the subsoil/rock conditions, for the design of the substructures for the proposed structures of the Power Plant, a detailed geotechnical investigation programme has been undertaken at the site of the proposed plant for which a geotechnical investigation report has been prepared.

The scope of work comprises of sinking 56 nos. boreholes. The scope also included 7 nos. plate load tests, 1 no. cyclic plate load test, 3 nos. dynamic cone penetration tests and 4 nos. pressure meter tests.

This geotechnical investigation report has been prepared in 12 Volumes which are as follows:

- Volume - 1 Geotechnical investigation report for Chimney Area
- Volume - 2 Geotechnical investigation report for ESP Area
- Volume - 3 Geotechnical investigation report for Mill and Boiler Area
- Volume - 4 Geotechnical investigation report for Power House and Transformer Yard Area
- Volume - 5 Geotechnical investigation report for ID Fan Area
- Volume - 6 Geotechnical investigation report for Switchyard Area
- Volume - 7 Geotechnical investigation report for Cooling Tower Area
- Volume - 8 Geotechnical investigation report for BOP Area
- Volume - 9 Geotechnical investigation report for CHP/ AHP Area
- Volume - 10 Geotechnical investigation report for Electrical Resistivity Area
- Volume - 11 Geotechnical investigation report for Permeability and CBR Test Area
- Volume - 12 Geotechnical investigation report for PMT & CHST Tests

This is Volume - 9 of the report pertaining to the CHP/ AHP Area



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**GEOTECHNICAL INVESTIGATION REPORT FOR
POWER HOUSE AND TRANSFORMER YARD AREA
(4 X 270 MW) BHADRADRI THERMAL POWER PROJECT
TELENGANA**

1.0 INTRODUCTION

1.1 This volume - 9 of Geotechnical investigation report pertains to the investigations carried out for CHP/ AHP Area of the Thermal Power Project.

2.0 PROJECT DETAILS

2.1 Site Location

2.1.1 The site of the proposed Thermal Power Plant is located near Ramanujavaram Village adjacent to Burgampadu Etunagaram Road.

2.1.2 The site is located at a distance of about 20 km from Manuguru Railway Station.

2.2 Site Topography

2.2.1 The site had earlier been used for agriculture and at the time of commencement of the investigations, standing crops were observed in some portions of the site. A few nallahs were observed to be passing through the site which apparently were used to provide irrigation water to the fields for crop cultivation/agriculture.

2.2.2 The Godavari river was observed to flow in a North-South direction to the east of the site at a distance of about 2km from the main plant area.

2.3 Geology of the Site

2.3.1 The geology of the site has been assessed based on the published detailed geological studies carried out by Geological Survey of India (GSI).

2.3.2 The rocks encountered at the site belong to the Gondwana Supergroup of an older Triassic age. More specifically, the rocks belong to the Kamthi formation which primarily consists of red and grey argillaceous sandstones, conglomerates and shales. These are overlain by the Maleri formation to the North.

2.3.3 The Kamthi formation extends along the Wardha -Godavaru valley which includes areas in Maharashtra and Telengana.



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2.3.4 The rock encountered at the present site is shale in a weathered condition. The rock is generally reddish brown in colour with occasional grey and white colours also encountered. The bedding planes of the shale rock encountered at the present site are generally horizontal.

2.4 Seismic Zone

2.4.1 The present site is located in the Seismic Zone III which is the zone of medium seismicity, as per the seismic zoning map of India given in BIS code IS:1893 (Part1)-2002.

3.0 OBJECT OF GEOTECHNICAL INVESTIGATION

3.1 For designing the foundation system of the proposed structures, the following data are required :

- a) Type of foundation
- b) Depth below the ground level at which the foundation system is to be laid.
- c) Allowable bearing pressure at the foundation level.

3.2 To determine the above factors, the following information shall be required:

- a) The subsoil profile indicating thickness of the various soil/rock strata, to a depth within the influence zone below the foundations
- b) Engineering properties of the soil/rock strata at various levels
- c) Physical characteristics of the soil/rock strata
- d) Variation of strength of soil/rock strata with depth

3.3 For evaluating the above parameters, field investigations and laboratory investigations on the soil/rock samples collected during the field investigations, have been carried out.

3.4 The results from these investigations have been analysed to provide the recommendations for the design of foundations.

4.0 SCOPE OF WORK

4.1 The scope of work comprises of sinking 56 nos. boreholes down to a maximum depth of 30m below the existing ground level, conducting 3 nos. dynamic cone penetration tests down to depth of refusal/ rock strata, conducting 1 no. cyclic plate load test, 7 nos. plate load tests and 4 nos. pressuremeter tests.

5.0 FIELD INVESTIGATIONS

5.1.1 Field investigations had commenced from 6th January 2015 and have been completed on 15th July 2015.



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5.1.2 A geotechnical investigation layout showing test locations is attached in the report as reference in fig. 1.

5.2 Boreholes

5.2.1 All the boreholes had been conducted down to the stipulated depths.

5.2.2 All the boreholes of 150mm diameter had been progressed by Augering down to the refusal depths i.e. depths at which the boreholes could not be progressed by this method.

5.2.3 Drilling in rock/ refusal strata had been carried out in all the boreholes, to get adequate information regarding the rock strata encountered.

5.2.4 Drilling in rock / refusal strata had been carried out beyond the depths of refusal strata down to a maximum depth of 30m below the existing ground level, by rotary drilling machine using bits of Nx size.

5.2.5 The entire investigation carried out is presented in Twelve (12) Volumes as listed below:

Volume - 1 Geotechnical investigation report for Chimney Area

Volume - 2 Geotechnical investigation report for ESP Area

Volume - 3 Geotechnical investigation report for Mill And Boiler Area

Volume - 4 Geotechnical investigation report for Power House and Transformer Yard Area

Volume - 5 Geotechnical investigation report for ID Fan Area

Volume - 6 Geotechnical investigation report for Switchyard Area

Volume - 7 Geotechnical investigation report for Cooling Tower Area

Volume - 8 Geotechnical investigation report for BOP Area

Volume - 9 Geotechnical investigation report for CHP/ AHP Area

Volume - 10 Geotechnical investigation report for Electrical Resistivity Tests

Volume - 11 Geotechnical investigation report for Permeability and CBR Tests

Volume - 12 Geotechnical investigation report for PMT & CHST Tests

This report is Volume - 9, which presents field and laboratory test results of Boreholes, IBH-1 to IBH-56, conducted down to a maximum depth of 30m below the existing ground level, conducting dynamic cone penetration tests (DCPT), IDCPT-1, IDCPT-2 and IDCPT-4, conducting Plate load test (IPLT), IPLT-1, IPLT-3, IPLT-4, IPLT-5, IPLT-6 and IPLT-7, conducting cyclic plate load test, (ICPLT), ICPLT-1 and conducting pressuremeter tests, (IPMT), IPMT-1, IPMT-2, IPMT-3 and IPMT-4.



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5.2.6 The entire CHP/ AHP Area has been divided in Six groups which are as follows :

- a) Group - 1 : IBH - 1, 8, 13, 15, 18, 29, 53, 55
- b) Group - 2 : IBH - 9, 14, 17, 22, 49, 50
- c) Group - 3 : IBH - 16, 19, 47, 51
- d) Group - 4 : IBH - 3, 7, 7, 10, 11, 12, 20, 24, 25, 54, 56
- e) Group - 6 : IBH - 23, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 48

5.2.7 Termination depths and depth at which the refusal/ rock strata had been encountered in different boreholes are being given hereunder.

IBH No.	Termination	Top of the	Existing Ground	Boreholes Coordinates (m)	
	Depth (m) below EGL	Rock below EGL (m)		North	East
1	25	6.5	R.L.(+)69.25	1993168	472190
2	20	9.5	R.L.(+)68.35	1993352	472192
3	30	5	R.L.(+)75.40	1992764	472309
4	30	5	R.L.(+)75.50	1992766	472340
5	20	9.5	R.L.(+)68.85	1993375	472058
6	20	9.5	R.L.(+)67.95	1993413	472084
7	20	5	R.L.(+)74.09	1992816	472306
8	15	6.5	R.L.(+)69.50	1993134	472226
9	17	8	R.L.(+)69.40	1993264	472055
10	17	5	R.L.(+)73.70	1992764	472168
11	17	5	R.L.(+)72.30	1992904	472168
12	17	5	R.L.(+)71.05	1993000	472168
13	17	8	R.L.(+)70.50	1993072	472168
14	17	8	R.L.(+)69.35	1993388	471943
15	17	5	R.L.(+)70.70	1993276	472167
16	17	5	R.L.(+)69.40	1993175	472107
17	20	6.5	R.L.(+)69.75	1993188	472044
18	25	5	R.L.(+)69.80	1993120	472191



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IBH No.	Termination	Top of the	Existing Ground	Boreholes Coordinates (m)	
	Depth (m) below EGL	Rock below EGL (m)		North	East
19	25	6.5	R.L.(+)70.22	1993135	471956
20	15	5	R.L.(+)74.64	1992811	472494
21	15	14	R.L.(+)66.41	1993523	472460
22	25	9.5	R.L.(+)69.46	1993325	471956
23	20	17	R.L.(+)65.96	1992983	472819
24	13	5	R.L.(+)71.88	1992839	472593
25	13	3	R.L.(+)68.88	1993093	472460
26	13	6.5	R.L.(+)67.95	1993255	472375
27	10	6.5	R.L.(+)67.40	1993075	472649
28	13	8	R.L.(+)69.10	1992897	472704
29	13	3	R.L.(+)67.48	1993149	472571
30	13	8	R.L.(+)67.25	1993311	472485
31	17	N.E.	R.L.(+)65.25	1993062	472903
32	30	17	R.L.(+)64.30	1993054	472887
33	30	17	R.L.(+)66.45	1993405	472664
34	30	17	R.L.(+)66.10	1993265	472740
35	30	17	R.L.(+)66.20	1993125	472812
36	30	15	R.L.(+)64.78	1993039	472860
37	30	14	R.L.(+)66.13	1993008	472802
38	15	N.E.	R.L.(+)66.25	1993204	472698
39	20	17	R.L.(+)66.35	1993303	472645
40	20	14	R.L.(+)66.35	1993414	472586
41	30	11	R.L.(+)66.70	1993515	472512
42	30	15.5	R.L.(+)62.20	1993563	472527
43	23	11	R.L.(+)65.20	1993475	472398
44	23	11	R.L.(+)66.40	1993417	472290



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IBH No.	Termination	Top of the	Existing Ground	Boreholes Coordinates (m)	
	Depth (m) below EGL	Rock below EGL (m)		North	East
45	20	9.5	R.L.(+)68.15	1993413	472193
46	30	8	R.L.(+)68.05	1993413	471993
47	20	5	R.L.(+)68.50	1993072	472054
48	10	N.E.	R.L.(+)70.81	1993285	472542
49	30	8	R.L.(+)67.00	1993177	471993
50	30	8	R.L.(+)69.94	1993271	471993
51	30	5	R.L.(+)69.57	1993076	471993
52	25	8	R.L.(+)67.50	1993312	472279
53	10	4	R.L.(+)68.45	1993192	472366
54	10	3	R.L.(+)71.94	1992985	472473
55	10	4	R.L.(+)67.36	1993237	472454
56	10	3	R.L.(+)69.20	1993030	472562

N.E. : not encountered

EGL : Existing Ground level

- 5.2.8 In the soil strata, Standard Penetration Tests (SPT) had been conducted at specified intervals. Disturbed soil samples recovered from split spoon samplers had been retained for identification purposes.
- 5.2.9 Undisturbed soil samples had been recovered at specified intervals, by thin walled tube samplers conforming to IS : 2132. These tubes had an area ratio of less than 10%.
- 5.2.10 The diameter of undisturbed soil samples was 100mm and the length was 450mm.
- 5.2.11 The ends of sample tubes had been sealed by wax to prevent loss / ingress of moisture. Disturbed soil samples had been enclosed in polythene bags.
- 5.2.12 In the rock strata, the rock core samples, where recovered from the boreholes had been preserved in the core boxes with proper marking on each sample and the borelogs had been maintained appropriately.
- 5.2.13 Soil / rock samples had been transported to the laboratory for testing purposes.
- 5.2.14 Ground water table had not been encountered in any of the boreholes.



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5.3 Dynamic Cone Penetration Test

- 5.3.1 The stipulated scope of work consists of conducting dynamic cone penetration tests with circulation of bentonite slurry at seven locations.
- 5.3.2 Dynamic cone penetration tests (IDCPT1, IDCPT2, and IDCPT4) had been conducted down to the refusal strata below the existing ground level.
- 5.3.3 The reduced level and the coordinates of dynamic cone penetration tests are as follows

IDCPT No.	Existing Ground Level (m)	DCPT Coordinates (m)	
		North	East
1	R.L.(+)68.35	1993414	472014
2	R.L.(+)70.50	1993088	471990
4	R.L.(+)66.40	1993489	472547

EGL : Existing Ground level

- 5.3.4 This test involved driving into the soil of a steel cone having a diameter of 65mm and an apex angle of 60 degrees attached to rods of lesser diameter with arrangement for the drilling mud to flow through the cone, by giving blows from a 65 kg hammer falling freely through a height of 75 cm. The drilling mud is forced under pressure through the pipe and cone. The mud solution coming out of the cone rises above along the drill rod eliminating thereby the frictional resistance offered by the soil for penetration. The number of blows required for every 30cm penetration had been recorded. Such a continuous record had been maintained down to the termination depth of the test.

5.4 Plate Load Tests & Cyclic Plate Load Test

- 5.4.1 All Plate Load Tests (PLT) had been conducted at 3m depth below the existing ground level at different locations on a plate of size 60 x 60cm.
- 5.4.2 The reduced level and the coordinates of plate load tests are as follows :

PLT No.	Existing Ground Level (m)	PLT Coordinates (m)	
		North	East
1	R.L.(+)70.10	1993026	472496
2	R.L.(+)74.33	1992795	472281
3	R.L.(+)69.55	1993140	472191
4	R.L.(+)68.75	1993377	472024



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PLT No.	Existing Ground Level (m)	PLT Coordinates (m)	
		North	East
5	R.L.(+)69.68	1993187	472071
6	R.L.(+)69.42	1993255	472045
7	R.L.(+)65.58	1992986	472846

5.4.3 Cyclic Plate Load Test (ICPLT1) had been conducted at 3m depth below the existing ground level on a plate of size 60 x 60cm.

5.4.4 The reduced level and the coordinates of the cyclic plate load test is as follows :

ICPLT No.	Existing Ground level(m)	Boreholes Coordinates (m)	
		North	East
1	R.L.(+)64.60	1993533	472533

5.4.5 All the tests have been conducted under saturated conditions on the strata consisting of sandy clayey silt with gravel.

5.4.6 The test pit had been excavated down to the required depth while ensuring that the plan size at the bottom of the test pits had been a minimum of 3m x 3m i.e. five times the width of the test plate.

5.4.7 The loading platforms had been erected using wooden sleepers with sand bags placed on these platforms to provide reactions of adequate magnitude.

5.4.8 A hydraulic jack had been positioned above the centre of the test plate to apply the controlled reaction loading from the loading platform onto the test plate.

5.4.9 For recording the settlements of the test plate, dial gauges had been positioned at the corners of the test plate and fixed on datum bars which rested on the soil surface at sufficiently large distances from the edge of the test plate.

5.4.10 After the arrangement of the above set up, the initial readings of the dial gauges had been noted and the first increment of the static load had been applied. This load had been maintained constant for a period till no further settlement occurred or the rate of settlement became negligible. The readings of the dial gauges had been noted down.



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- 5.4.11 In the case of cyclic plate load tests, the load for that stage had then been removed completely in appropriate decrements of load with the dial gauge readings recorded after each decrement of load had been removed and the dial gauge readings had stabilised.
- 5.4.12 The next higher stage load had then been applied with the dial gauge readings recorded after the readings had stabilised.
- 5.4.13 In the case of cyclic plate load tests, the next higher stage load had then been applied in appropriate increments of load with the dial gauge readings recorded after each increment of load had been applied and the dial gauge readings had stabilised. The load for that stage had then been removed completely in appropriate decrements of load with the dial gauge readings recorded after each decrement of load had been removed and the dial gauge readings had stabilised.
- 5.4.14 The above procedure had been continued till either the maximum specified settlement of 40mm had been reached or the ultimate loading intensity had been reached.

5.5 Pressuremeter Tests

- 5.5.1 The pressuremeter tests had been carried out at different depths in different boreholes to obtain the pressure vs volume expansion behaviour (i.e. stress vs strain behaviour) of the soil/rock strata and thereon the in-situ stress strain modulus (i.e. Menard modulus) of the soil/rock strata.
- 5.5.2 The pressuremeter tests had been conducted using a Menard Pressuremeter test apparatus manufactured by M/s AIMIL Ltd. of 80 bar capacity using an NX size probe.
- 5.5.3 This test involves the installation of the probe at the required depth in the borehole in which the test is to be conducted and thereafter application of gas/water pressure in increments to inflate the probe in-situ and measurement of the consequent radial volume deformation of the soil/rock in the walls of the borehole at that depth. The required control and measurements of the gas pressure applied and the radial volume deformation is carried out using a control panel installed at the ground surface.
- 5.5.4 The coordinates and the reduced levels of the existing ground level of the locations at which the Pressurement tests have been conducted are being given hereunder.



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PMT No.	Existing Ground Levels (m)	PMT Coordinates (m)	
		North	East
PMT-1	R.L.(+)68.05	1993146	472499
PMT-2	R.L.(+)65.62	1993338	472706
PMT-3	R.L.(+)65.50	1993069	472867
PMT-4	R.L.(+)69.26	1993184	472170

EGL : Existing Ground level

5.5.5 The Pressuremeter tests had been conducted at the specified depths of 2, 4, 6, 8, 10, 12, 15, 18, 21 & 25m at each test location.

6.0 LABORATORY INVESTIGATIONS

6.1 Tests on Soil and Rock Samples from Boreholes

6.1.1 The soil samples brought to the laboratory had been subjected to various tests to determine the following properties :

- Type and gradation of soil
- Atterberg limits
- Density and water content
- Shear strength parameters
- Free swell index
- Swell Pressure
- Consolidation Test

6.1.2 As the rock cores, where recovered, are in a very soft and friable state, tests to determine the physical and engineering properties of the rock cores could not be satisfactorily carried out.

7.0 RESULTS & ANALYSIS

7.1 Presentation of Results

7.1.1 As specified, the results of the borehole investigations and of the laboratory investigations conducted on the soil samples collected from the boreholes, have been presented in the form of tables.

7.1.2 The tables indicate the following:

- Standard penetration test values at various depths
- Soil description identifying the type of soil



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- c) Grain size analysis indicating composition of subsoil
- d) Atterberg Limits
- e) Natural density and water content
- f) Triaxial test results
- g) Swell test results

7.2 Soil/Rock Profile

7.2.1 A perusal of the data presented in the tables indicates the presence of the following two soil/rock strata at the site :

- a) Stratum - I : Silty clay with occasional gravel
- b) Stratum - II : Yellowish brown to reddish brown weathered shale

7.2.2 The minimum, maximum and average depths down to which the Stratum-I (i.e. Soil Strata) has been encountered are as follows :

Structure	Borehole Nos. (IBH)	Depth (m) of Soil Strata below EGL		
		Minimum	Maximum	Average
Group - 1	1, 8, 13, 15, 18, 29, 53, 55	3	8	5.50
Group - 2	9, 14, 17, 22, 49, 50	6.5	9.5	8.0
Group -3	16, 19, 47, 51	5	6.5	5.75
Group - 4	3, 4, 7, 10 11, 12, 20, 24, 25, 54, 56	3	5	4
Group - 5	2, 5, 6, 21, 26, 27, 28, 30, 41, 42, 43, 44, 45, 46, 52	8	14	11
Group - 6	23, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 48	14	17	15.5

7.3 Soil Composition

7.3.1 The grain size distributions of the soil samples at various depths have been presented in the form of grain size analysis curves.

7.3.2 The variations in the grain size distributions at different levels are being given hereunder

Depth(m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
1	0 - 16	5 - 58	20 - 47	18 - 60



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Depth(m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
3	0 - 31	4 - 44	14 - 48	11 - 50
5	0 - 19	3 - 62	17 - 50	17 - 63
8	0 - 14	4 - 43	26 - 45	24 - 60
11	0 - 4	4 - 30	34 - 42	35 - 56

The above results indicate that :

- The soil generally comprises of grain size fractions from clay to silt to sand as well as gravel.
- Large variations are observed in the percentages of each grain size fraction (i.e. clay, silt, sand and gravel) thus indicating a very heterogenous grain size distribution of the soil throughout the site.
- The percentage of clay has been observed to increase with depth.

7.4 Natural Density and Water Content

7.4.1 The variations in the natural bulk densities, water contents and dry densities of the subsoil at different depths are as given here under.

Depth (m)	Bulk Density (g/cm ³)	Water Content (%)	Dry Density (g/cm ³)
2	1.65 - 2.28	6.1 - 33.3	1.40 - 2.14
4	1.48 - 2.10	9.5 - 36.7	1.26 - 1.76
6.5	1.64 - 2.35	6.6 - 34.5	1.28 - 2.01
9.5	1.85 - 2.20	14.6 - 28.9	1.45 - 1.76

The above results indicate the following :

- The subsoil is generally stiff / very stiff to hard silty clay down to the depths of the refusal strata.
- Large variations are observed in the in-situ dry densities of the soil throughout the area of the site thus indicating significant heterogeneity in the in-situ density state of the soil.



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7.5 Atterberg Limits

- 7.5.1 The Atterberg limits indicate that the soil is predominantly medium to high plastic with occasional layers of low plastic soils in between.
- 7.5.2 In the medium plastic to high plastic soil where encountered, the liquid limit varies from about 35% to 92% while the plastic limit varies from about 20% to about 42% with the Plasticity index varying from about 12 to 54.

7.6 Standard Penetration Tests Values (N-values)

- 7.6.1 The observed Standard Penetration Test values (N-values) vary between 6 and 97 in soil strata and generally in excess of 100 in case of rock strata.
- 7.6.2 These test results indicate that the silty clay subsoil is generally stiff / very stiff to hard down to the depths of the refusal strata.

7.7 Rock Conditions

- 7.7.1 The rock strata consists of Shale in a highly to moderately weathered condition down to the maximum depth investigated i.e. 30m below the existing ground level.
- 7.7.2 The colour of the shale varies from reddish to greyish.
- 7.7.3 Core recoveries in weathered Shale strata is generally nil. However, at some depths in some of the boreholes core recovery of upto 88% has been recorded.
- 7.7.4 RQD values in the weathered Shale strata is generally nil.

7.8 Compiled Soil And Rock Profile

- 7.8.1 An overview of the results of the geotechnical investigations and their analysis has been presented in the form of compiled soil and rock profile.
- 7.8.2 The above figures show the various strata encountered and their thicknesses in each of the boreholes and also gives the soil / rock composition and the observed N-values at various depths as also the core recoveries and RQD in the rock strata.

7.9 Free Swell Index Tests

- 7.9.1 As significant percentages of clay have been observed in the subsoil in all the boreholes, free swell index tests have been conducted on selected soil samples at different depths and different boreholes to assess the swelling characteristics of the subsoil.
- 7.9.2 The results of the free swell index tests show that the subsoil has shown free swelling index varying between about 25% to 145%.



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7.10 Swell Pressure Tests

7.10.1 Swell pressure tests have been conducted on selected soil samples at different depths and different boreholes to assess the level of swelling pressures generated in the subsoil.

7.10.2 The results of the swell pressure tests show that the subsoil shows swell pressures varying between about 0.21 kg/cm² to over 1.46 kg/cm².

7.11 Consolidation Tests

7.11.1 Consolidation tests have been conducted on undisturbed soil samples from various depths from different boreholes to determine the consolidation properties of the soil. The consolidation properties of the clayey soil are needed for determining the probable settlements of foundations resting on this type of soil.

7.11.2 The results of these tests have been presented in the form of plots of void ratio 'e' versus normal axial stress 'p' in sheet nos.

7.11.3 The coefficient of compressibility 'a_v' is then determined as the slope of the straight line portion of the above plot.

7.11.4 The void ratio 'e', coefficient of compressibility 'a_v' and coefficient of volume compressibility 'm_v' as determined for the tests conducted are given in the table below:

IBH No.	Depth (m)	e ₀	a _v (cm ² /kg)	m _v (cm ² /kg)
13	6.5	0.465	0.02	0.0136
29	4	0.444	0.016	0.011
17	4	0.461	0.018	0.013
49	2.4	0.429	0.024	0.0167
50	4	0.548	0.042	0.0271
16	4	0.446	0.024	0.0165
51	4	0.468	0.018	0.0122
27	4	0.490	0.024	0.0161
42	4	0.451	0.018	0.0124
41	4	0.424	0.023	0.0161
45	6.5	0.470	0.015	0.0102
32	2	0.461	0.019	0.0123



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IBH No.	Depth (m)	e_0	a_v (cm ² /kg)	m_v (cm ² /kg)
33	4	0.421	0.021	0.0147
40	4	0.469	0.037	0.0251

7.11.5 The results of the consolidation tests are considered for determining the settlement of shallow foundations.

7.12 Chemical Analysis

7.12.1 The results of the chemical analysis conducted on soil samples collected from the boreholes for determining the presence of any harmful salts which can have adverse effects on construction are as follows :

Borehole No./ Depth (m)	pH value	Chloride Content (ppm)	Sulphate Content (ppm) SO ₄	Carbonate Content (ppm)	Nitrate Content (ppm)	Sulphate Content (ppm) SO ₃	Organic matter (ppm)	Alkali metals (ppm)
2/ 2m	6.5	57	64	27	6	38	54	52
16/ 6.5	6.5	38	64	27	6	38	54	52
23/ 6.5	7	24	69	24	7	44	62	55
34/ 2m	6.5	62	79	35	10	40	80	62
35/ 5m	6.5	53	74	32	8	49	39	70
41/ 5m	6.5	38	65	28	6	46	72	60
44/ 6.5	7	41	64	29	6	40	66	52
52/ 6.5m	6.5	36	60	26	7	40	63	56

7.13 Dynamic Cone Penetration Tests

7.13.1 The results of these tests have been presented in the form of plots of number of blows per 30cm penetration vs depth.

7.13.2 These results which primarily indicate the variation in the hardness/stiffness with depth of the subsoil show close conformity with the standard penetration test values (N-values) and also show that there is no significant variation in the hardness/stiffness conditions of the subsoil at the locations of these tests in reference to those observed at nearby borehole locations.



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7.14 Plate Load Tests

7.14.1 The result of these tests have been presented in the form of loading intensity vs settlement curves.

7.14.2 The final loading intensity and the corresponding settlement along with the locations of the plate load tests are given below :

IPLTNo.	Loading Intensity (kg/cm ²)	Corresponding Settlement (mm)
1	8	17.05
3	4	Load not sustained
4	3	Load not sustained
5	8	22.08
6	3	Load not sustained
7	4	Load not sustained

7.14.3 Large variations have been observed in the load settlement behaviour of the soil strata at different locations.

7.14.4 The safe bearing capacity as determined from the plate load tests vary between 10t/m² and 25t/m².

7.14.5 The modulus of subgrade reaction (K-value) can be obtained as dividing net safe bearing capacity by corresponding settlement.

7.14.6 These results clearly indicate the significant heterogeneity in the behaviour of the subsoil. The same should be and has been taken into account in arriving at the recommendations for shallow foundations resting on soil strata.

7.15 Cyclic Plate Load Test

7.15.1 Cyclic Plate Load Test, ICPLT1 has been conducted at the location as shown in the layout plan, at a depth of 3m below the existing ground level under saturated conditions.

7.15.2 The results of this test have been presented in the form of loading intensity vs settlement curves.

7.15.3 The final loading intensity and the corresponding settlement for the cyclic plate load test is given below :



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ICPLT No.	Loading Intensity (kg/cm ²)	Corresponding Settlement (mm)
1	4	Continuing settlement

7.15.4 The coefficient of elastic uniform compression 'C_u' is determined as the slope of the loading intensity vs elastic settlement plot given in report. The elastic settlement is taken as the difference in the measured settlements of the plate under the given loading intensity and after removal of the given loading intensity respectively.

7.15.5 The coefficients of elastic uniform compression 'C_u' for foundation areas greater than 10m² size obtained from the Cyclic Plate Load Tests are :

CPLT No.	Coeff. of Elastic Uniform Compression (kg/cm ³)	
	C _u	C _{u10}
1	6.8	1.3

7.15.6 The above results indicate the large variations in the dynamic characteristics of the soil at different locations within the site.

7.16 Pressuremeter Tests

7.16.1 The results of the pressuremeter tests have been presented in the form of pressure vs volume plots for each of the tests conducted in sheet nos. **120 to 159**.

7.16.2 The Menard modulus is determined using the following formula :

$$E_m = 2.66 \cdot \left(V_c + V_b + \frac{V_1 + V_2}{2} \right) \cdot \left(\frac{P_2 - P_1}{V_2 - V_1} \right)$$

Where V_c = initial volume of the measuring cell of the probe = 650cm³

V_b = volume expansion required of the measuring cell of the probe to make contact with walls of the borehole

V₁ = volume at start of straight portion of the pressure vs volume plot

V₂ = volume at end of straight portion of the pressure vs volume plot

P₁ = pressure at start of straight portion of the pressure vs volume plot

P₂ = pressure at end of straight portion of the pressure vs volume plot



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7.16.3 The straight portions of the respective plots for the various tests conducted have been clearly marked by dashed lines.

7.16.4 The Menard modulus determined in the various tests conducted are shown in the respective plots and are also presented in the form of tables given in Annexure-A of this report.

7.16.5 The Young's Modulus 'E' of the soil / rock strata is determined using the following formula.

$$E = \frac{E_m}{\alpha}$$

Where α = rheological factor

= 0.67 (for clayey soils)

= $1/3 \approx 0.33$ (for extremely fractured rock)

8.0 DESIGN CRITERIA

8.1 The parameters required for the design of the foundation system for the proposed structures are:

- a) Type of foundation to be adopted
- b) Depth at which the foundations have to be laid
- c) Allowable bearing pressure on the soil/rock at the foundation level

8.2 On the basis of the analysis of the results of the investigations, the required design parameters have been arrived at as given in the following sections.

8.2.1 The type of foundation depends upon the following :

- a) Subsoil/rock conditions
- b) Type of structure
- c) Configuration of loading points
- d) Loading intensities on the foundations

8.2.2 The proposed structures are of CHP and AHP Area. Considering this, medium heavy to heavy loads can be anticipated on the foundations.

8.2.3 The results of the investigations have indicated that the rock strata in the form of weathered Shale has been encountered at depths varying between about 3m and 17m below the existing ground level.



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8.2.4 Hence, the proposed structures can be supported on open foundations resting on the soil/ rock strata, depending upon the requirement.

9.0 RECOMMENDATIONS

9.1 Considering the subsoil/rock conditions and the proposed structures at CHP/ AHP Area, shallow / open foundations, can be adopted.

9.2 Ground water table had not been encountered in any of the boreholes.

9.3 The recommended net safe bearing capacity values for different widths of foundations at various depths are presented below.

Structure	BH No.	FGL. R.L.(+) m	Founding Strata	Depth (m) of Foundation below FGL	Net Safe Bearing Capacity (t/m ²)		
					B≤3m	3<B<6m	B≥6m
Ash Slurry PH-1, Slurry Sump & Seal Water Tank, HT Switchgear Cum Control Room near Chimney for Unit 1 & 2, Vacuum cum Compressor House-2, FAE Tower 6,7 & 8, Bottom Ash Hopper-3, Pipe & Cable Rack (Stretch from FAE Tower-6 to FAE Tower-8)	16, 19, 47 & 51	69.00	Soil	2	30	25	30
			Soil	3	35	30	34
			Rock	4.5	45	45	45
Ash Slurry PH-2, Slurry Sump & Seal Water Tank, AHP MCC-A near TP-5, BCN 6 A/B, TP-3, DS PUMP HOUSE - II, TP - 4, TP - 5, CHP MCC-4 near Bunker Area, Tunnel 10, BCN 5 A/B, Pent House-II, Dozer Shed, BCN-8 & Stack Reclaimer-1, MCC-4 near Bunker Area	2, 5, 6, 45, 43, 44, 46, 28, 30	67.00	Soil	4	20	15	19
			Soil	5	25	20	25
			Soil	6	35	30	38
			Soil	7	40	35	40
			Rock	8	45	45	45



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Structure	BH No.	FGL. R.L.(+) m	Founding Strata	Depth (m) of Foundation below FGL	Net Safe Bearing Capacity (t/m ²)		
					B ≤ 3m	3 < B < 6m	B ≥ 6m
Ash Water Pump House / Ash Water Tank, Chemical House & Parshall Flume, Clarifier & Sludge Pit, Pipe & Cable Rack (Stretch from ASPH-1 to Silo)	1, 8, 18, 13, 15	69.00	2.5	Soil	20	18	23
			3.5	Soil	25	20	25
Vacuum cum Compressor House-1, Bottom Ash Hopper-1, FAE Tower-1,2,3,4 & 5, BCN-7A/B, Pipe & Cable Rack (Stretch from FAE Tower-1 to FAE Tower-6)	9, 22, 49,50	69.00	Soil	3	20	15	19
			Soil	4	25	20	25
			Soil	5	30	25	30
			Soil	6	35	30	38
			Rock	7	45	45	45
Silo Utility Building & Ash Conditioner Water Tank, Fly Ash Silo, AHP MCC-B near Chimney for Unit 3 & 4, conveyor 9 & stacker reclaimer-2 FDN	11, 7, 12, 24, 25	67.00	Soil	1	35	40	40
			Rock	2	45	45	45
			Rock	20.5	45	45	45
Wagon Tippler Complex	31 & 32	67.00	Rock	21.5	45	45	45
			Rock	22.5	45	45	45
Track Hopper (371 M), Maintenance bay and tunnel 1 a/b	33, 34, 35	67.00	Soil	9	30	22	28
			Soil	12	33	25	30
			Soil	13	35	30	38
			Soil	14.5	40	35	40
			Soil	16.5	40	35	40
Transfer point - 1 (under ground) & tunnel 2 a/b	36	67.00	Rock	18.5	45	45	45
			Rock	19.5	45	45	45
			Rock	20.5	45	45	45



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Structure	BH No.	FGL. R.L.(+) m	Founding Strata	Depth (m) of Foundation below FGL	Net Safe Bearing Capacity (t/m ²)		
					B ≤ 3m	3 < B < 6m	B ≥ 6m
Transfer point - 2 (under ground) & tunnel 3 a/b	37	67.00	Soil	4	20	14	18
			Soil	13	35	30	38
			Rock	22.5	45	45	45
			Rock	23.5	45	45	45
			Rock	24.5	45	45	45
Pent House I, BCN-3 A/B, BCN 4 A/B, CHP MCC-1&2 Near TP-2, DS Pump House-1, Coal Settling Pond, MCC-3 Near WT, Crusher House, Wagon Tippler Control Room, Loco Shed	38, 39, 40, 23, 31, 32, 36	67.00	Soil	5	25	18	20
			Soil	6	27	20	23
			Soil	9	30	22	28
Emergency reclaim hopper-A	26	67.00	Rock	12	45	45	45
			Rock	13	45	45	45
			Rock	14	45	45	45
Coal Stock Pile - 1, 2, 3 & 4	53, 54, 55, 56, 27, 48	69.00	Soil	0.5	12	10	12
			Soil	1	13	11	14
			Soil	2	17	14	18

F.G.L. : Finished Ground Level

Remarks / Notes

- In case any loose pockets are observed at the proposed founding level, the same shall be excavated out and filled up with PCC upto the founding level.
- Foundations resting in rock strata shall be embedded 0.3m into the rock strata.

9.4 The soil at site down to about 2m depth below the natural ground level is generally high swelling soil. This soil shall not be used for filling and backfilling purposes. However, below 2m depth, low to medium swelling soil available at site, on confirmation by conducting suitable laboratory tests, can be used for filling/ backfilling purposes.



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- 9.5 The modulus of subgrade reaction (K-value) can be obtained as dividing net safe bearing capacity by corresponding settlement.
- 9.6 Chemical tests were carried out on a few soil samples so as to detect the pH value, Sulphate and Chloride contents. The values are on the safe side as they are well within the acceptable limits. Accordingly, either Ordinary Portland cement or Portland slag cement or Portland Pozzolana cement can be used for the purpose.

10.0 Appendices

- 10.1.1 The typical calculation of allowable bearing pressure has been shown in Appendix - A of this report.
- 10.1.2 A list of IS Codes referred for providing the recommendations and that which might be required to implement the same is also enclosed in this report in Appendix - B.

10.2 Special Note

If any loose pockets and/or soil strata are observed at the proposed foundation level, the same shall be removed and filled with lean concrete. Foundations can subsequently be placed over such a prepared surface.

11.0 LIMITATIONS

This Geotechnical investigation has been carried out at locations in the site chosen by the client so as to represent the entire site. The recommendations provided in this report are hence valid only for these test locations.

Dr. N. Santosh Rao

Technical Director

For Nagadi Consultants Pvt. Ltd.,

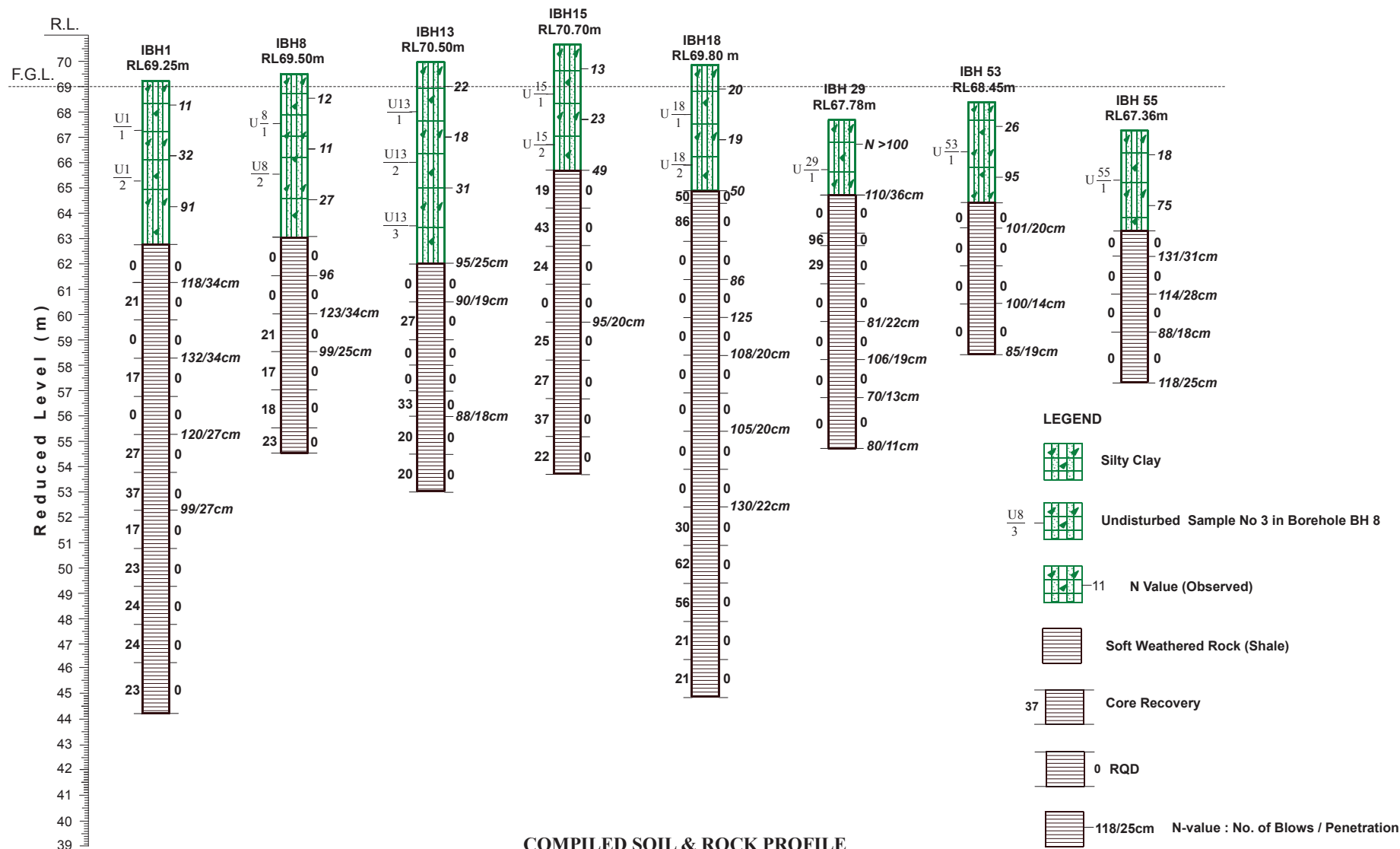


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COMPILED SOIL & ROCK PROFILE

Coal Handling Plant /Ash Handling Plant Area



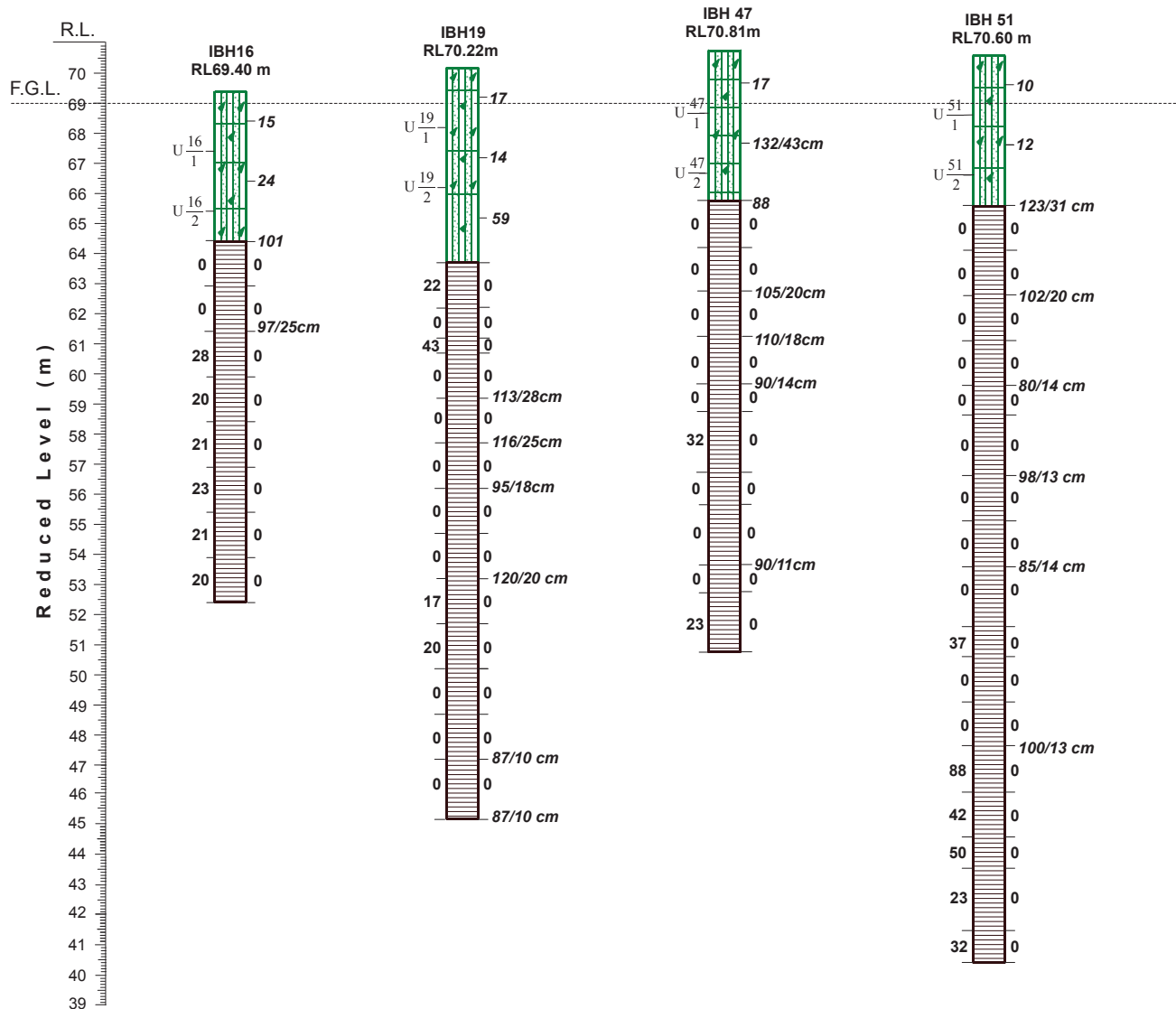
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COMPILED SOIL & ROCK PROFILE

Coal Handling Plant /Ash Handling Plant Area

Project : **Geotechnical Investigation for (4x270MW)**
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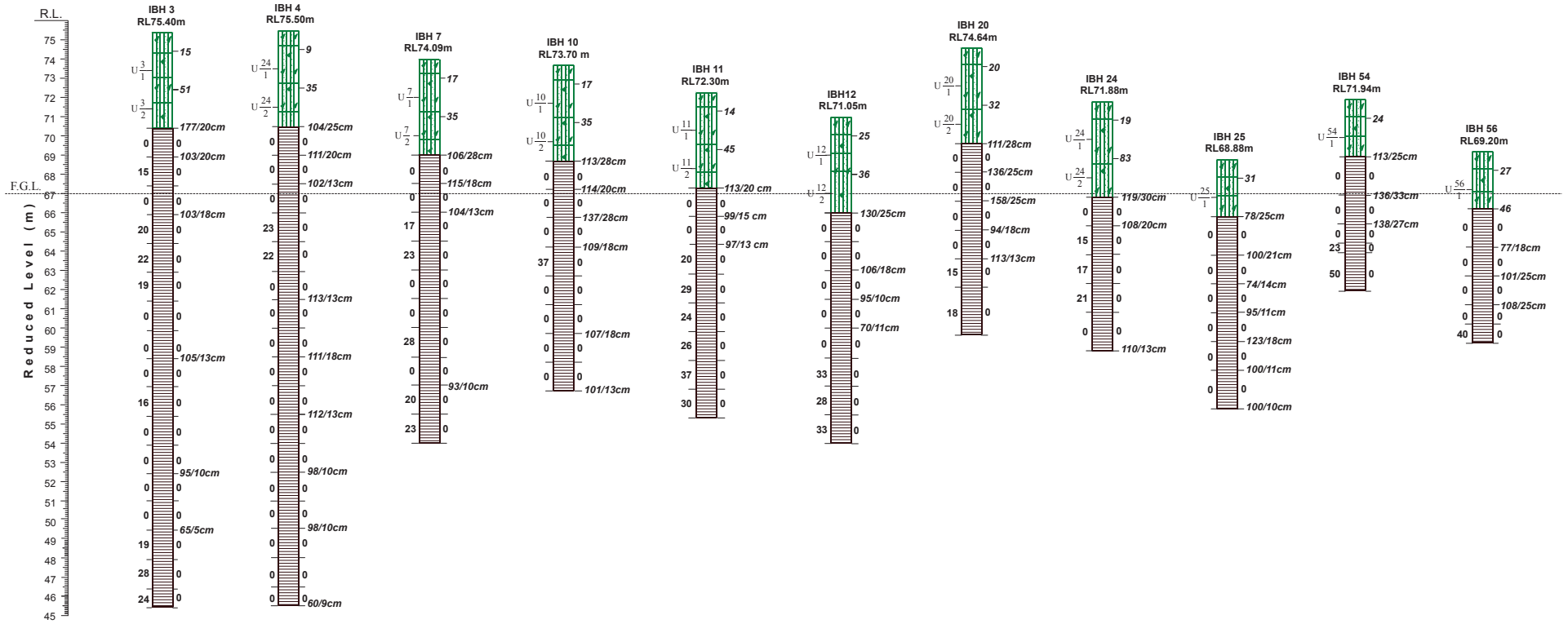


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LEGEND



Clayey Silty Sand



Undisturbed Sample No 3 in Borehole BH 7



N Value (Observed)



Soft Weathered Rock (Shale)



Core Recovery



RQD



N-value : No. of Blows / Penetration

COMPILED SOIL & ROCK PROFILE

Coal Handling Plant /Ash Handling Plant Area



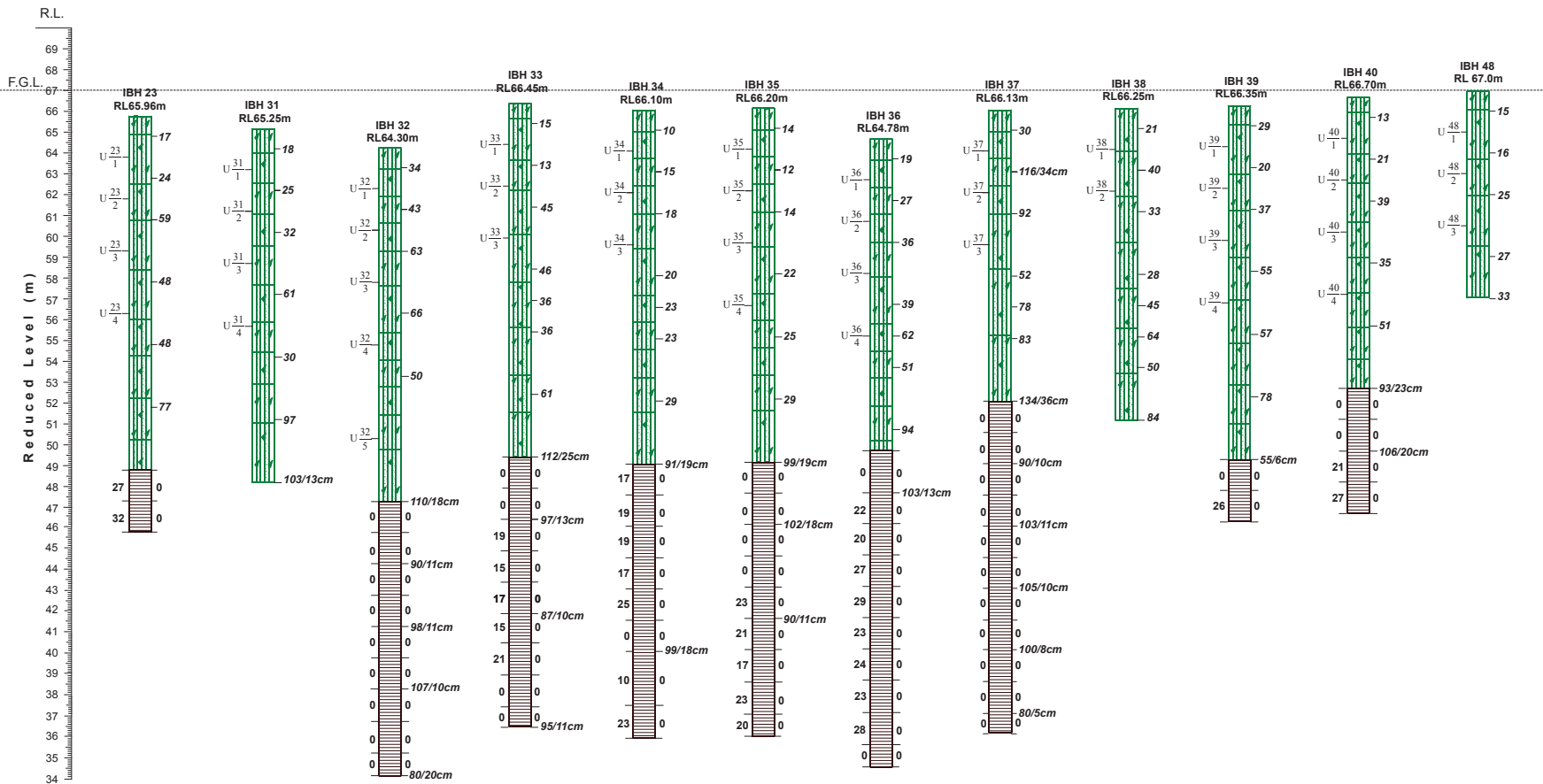
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LEGEND



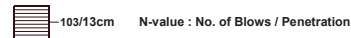
Undisturbed Sample No 4 in Borehole BH 23

N Value (Observed)



Core Recovery

RQD



N-value : No. of Blows / Penetration

COMPILED SOIL & ROCK PROFILE

Coal Handling Plant /Ash Handling Plant Area



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CHP/ AHP AREA (GROUP - 1)

Reference Boreholes IBH – 1, 8, 13, 15, 18, 29, 53, 55

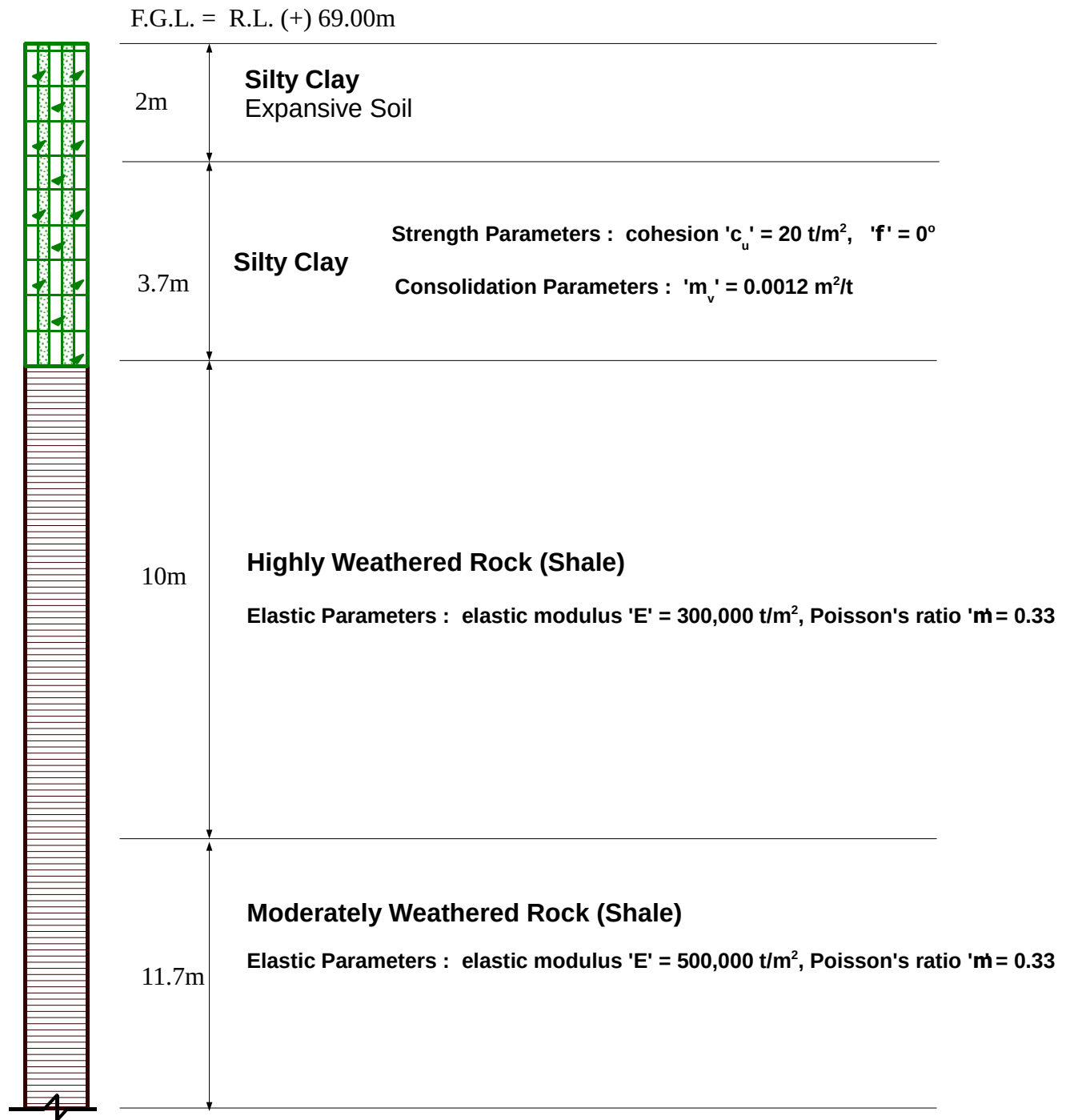


Fig. 2a : Design Profile

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CHP/ AHP AREA (GROUP - 2)

Reference Boreholes IBH9, 14, 17, 22, 49 & 50

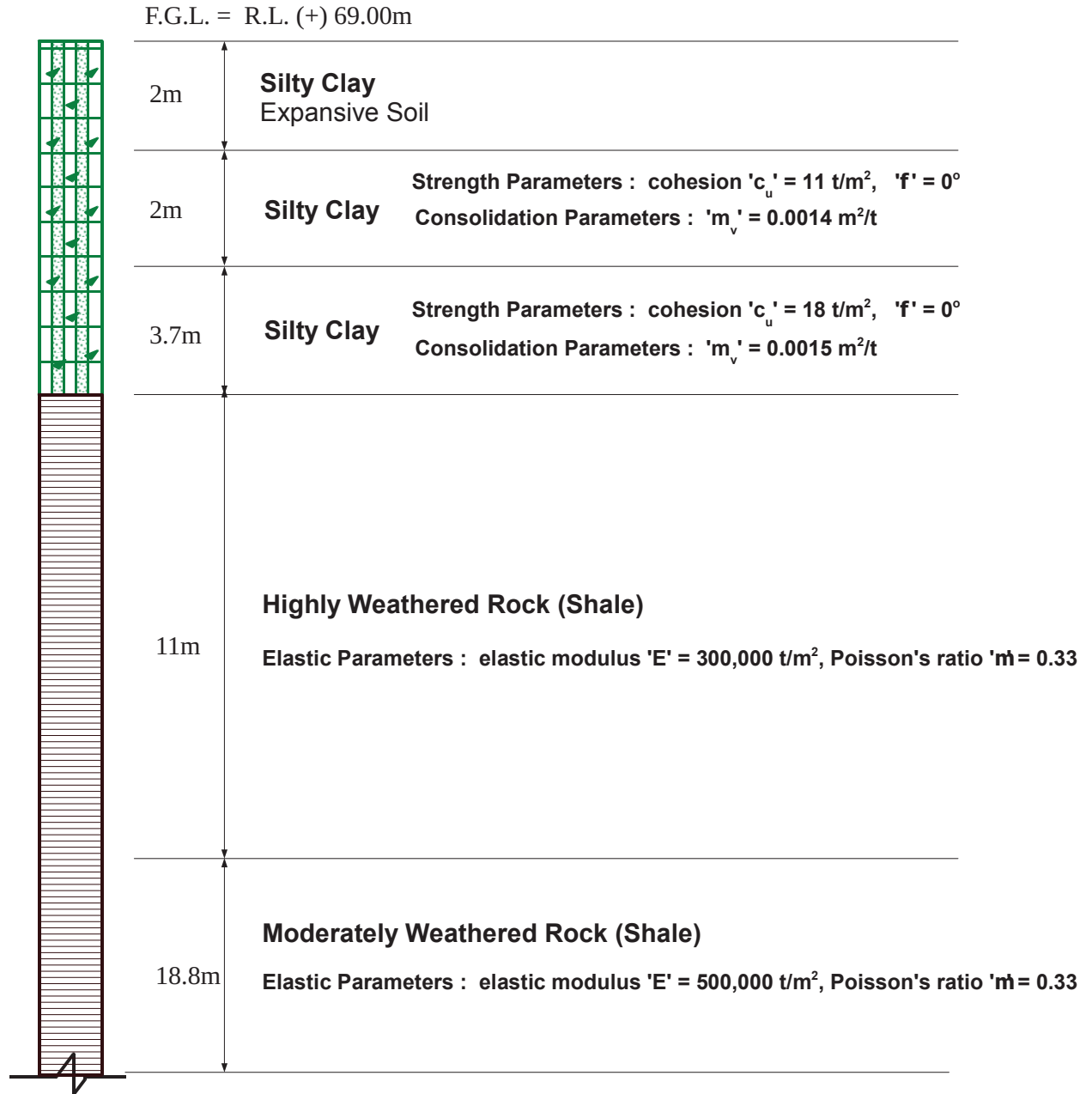


Fig. 2b : Design Profile

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CHP/ AHP AREA (GROUP - 3)
Reference Boreholes IBH – 16, 19, 47 & 51

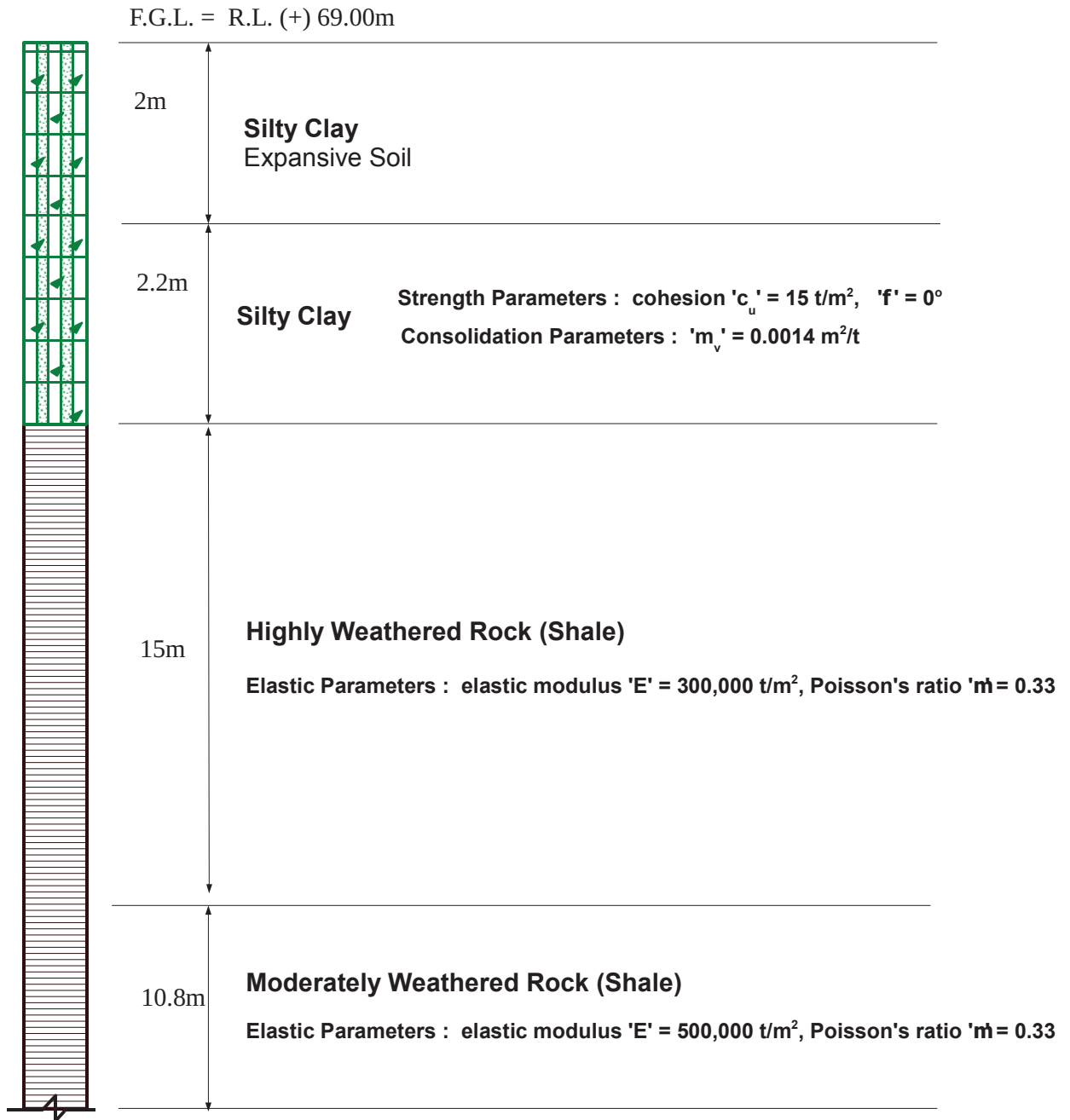


Fig. 2c : Design Profile

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CHP/ AHP AREA (GROUP - 5)

Reference Boreholes IBH – 2, 5, 6, 21, 26 27, 28,
30, 41, 42, 43, 44, 45, 46, 52

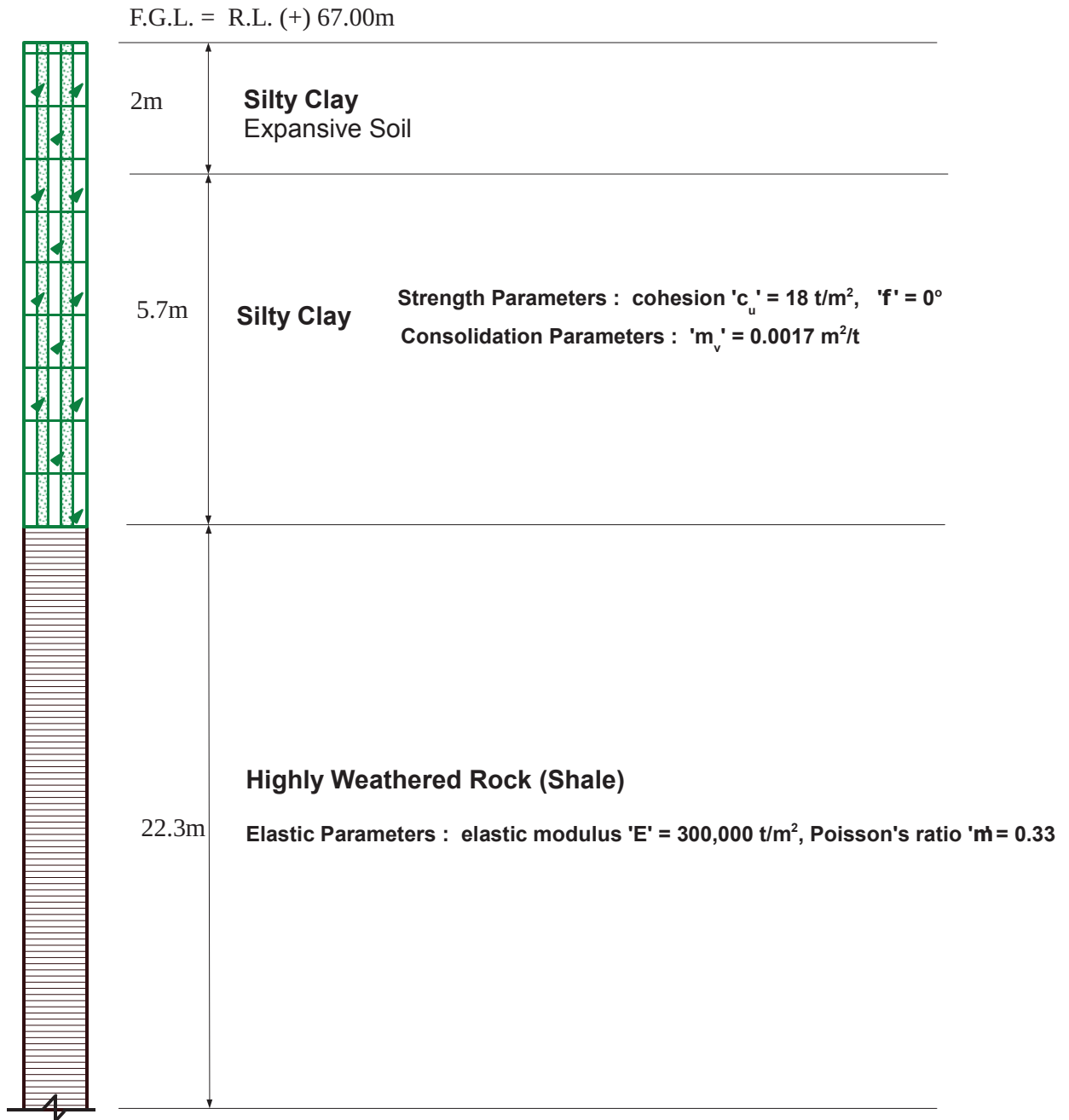


Fig. 2d : Design Profile

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CHP/ AHP AREA (GROUP - 6)

Reference Boreholes IBH – 23, 31, 32, 33, 34, 35,
36, 37, 38, 39, 40, & 48

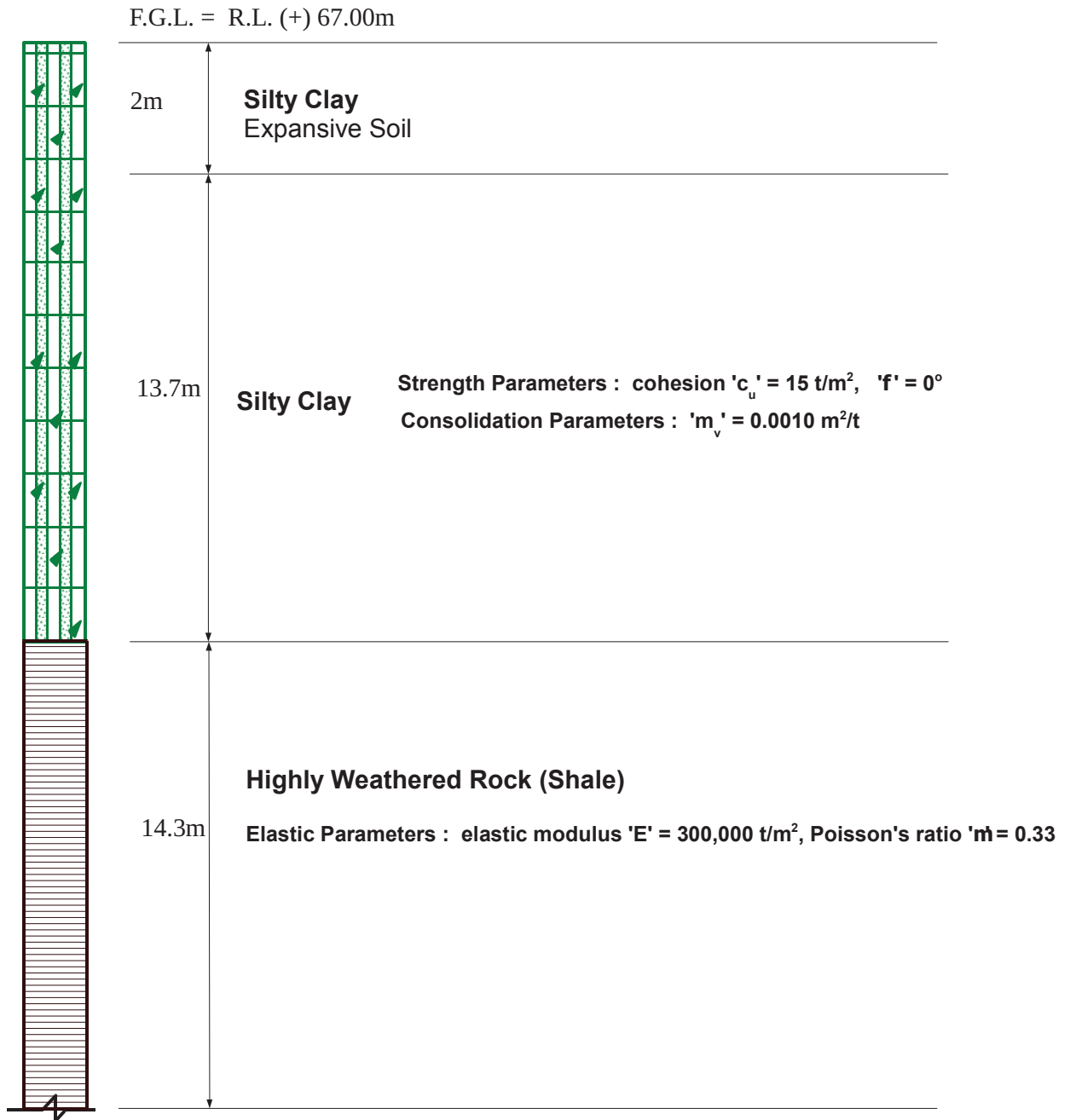


Fig. 2e : Design Profile

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ANALYSIS FOR SAFE BEARING CAPACITY

A.1 METHODOLOGY

- A.1.1 The safe bearing capacities for foundations resting on both soil strata as well as weathered rock strata are determined based on the lower of the values determined from the shear failure criterion and the settlement criterion.
- A.1.2 As the soil strata generally consists of Silty Clay, to calculate the safe bearing capacity from the shear failure criterion, the undrained shear strength parameters of cohesion ' c_u ' and angle of shearing resistance ' ϕ_u ' are considered. For the weathered rock strata, to calculate the safe bearing capacity from the shear failure criterion, the weathered rock strata is considered as very dense sand and accordingly the appropriate value of the angle of shearing resistance ' ϕ ' is adopted.
- A.1.3 For the Silty Clay soil strata, the safe bearing capacity from the settlement criterion is calculated based on the consolidation properties of the clayey soil namely the coefficient of volume compressibility ' m_v '.
- A.1.4 For the weathered rock strata, to calculate the safe bearing capacity from the settlement criterion, the calculation of settlement of foundations can be carried out by use of elastic theory considering the weathered rock mass as an elastic half space with certain elastic modulus E and Poisson's ratio ' μ '.
- A.1.5 The settlement of foundations resting on an elastic space are generally determined by the equation given by Timoshenko & Goodier. The influence factors considered in the equation given by Timoshenko & Goodier, are determined by equations given by Steinbrenner.

A.2 DATA**A.2.1 Depth of Foundation**

Foundations can be placed at different levels at locations of the boreholes as given in the recommendations above.



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A.2.2 Soil Properties

The soil properties considered for the calculations of the safe bearing capacities are shown in the respective design profiles adopted for each of the groups.

A.2.3 Weathered Rock Properties

The typical minimum value of the elastic modulus of the weathered rock encountered at the present site which is Shale is around 300,000t/m² as given in the book titled Foundation Design by J.E. Bowles.

The Poisson's ratio 'μ' is typically in the range of about 0.3 to 0.4 for weathered Shale and considering the rock conditions encountered at the present site, the Poisson's ratio is taken as μ = 0.33.

A.2.4 Allowable Settlement

The allowable settlement of foundations resting on Silty Clay soil strata is considered as 25mm only. This is because at higher total settlements, the differential settlements can become significant owing to the varying nature of soil as well as varying depth to rock (i.e. varying thickness of soil below the foundations).

The allowable settlement of foundations resting on weathered rock strata is considered as 12mm as per the provisions given in BIS codes IS:12070-1987 & IS:13063-1991.

A.2.5 Design Profile

The design profiles considered for each of the units, are shown in the figs. 2a to 2e.

A.3 CALCULATION OF SAFE BEARING CAPACITY IN SILTY CLAY SOIL FROM SHEAR CRITERION

A.3.1 The ultimate bearing capacity of the foundation is determined using the following equation as given in BIS code IS:6403-1981.

$$q_d = c_u \cdot N_c \cdot s_c \cdot d_c \cdot i_c$$

Where c_u = undrained cohesion of the Silty Clay soil

N_c	=	bearing capacity factor	=	5.14 (for $\phi_u = 0$)
s_c	=	shape factor	=	1 (for Strip footing)
d_c	=	depth factor	=	$1 + 0.2 D_f/B$
i_c	=	inclination factor	=	1 (for inclination $\alpha = 0^\circ$)
D_f	=	depth of foundation		
B	=	width of foundation		



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A.3.2 Considering a factor of safety of 2.5, the safe bearing capacities for foundations resting at different depths at the locations of boreholes of Group - 1 to Group - 3 are given below.

Structure	BH No.	FGL R.L.(+) m	Founding Strata	Depth (m) of Foundation below FGL	Net Safe Bearing Capacity (t/m ²)		
					B ≤ 3m	3 < B < 6m	B ≥ 6m
Ash Slurry PH-1, Slurry Sump & Seal Water Tank, HT Switchgear Cum Control Room near Chimney for Unit 1 & 2, Vacuum cum Compressor House-2, FAE Tower 6,7 & 8, Bottom Ash Hopper-3, Pipe & Cable Rack (Stretch from FAE Tower-6 to FAE Tower-8)	16, 19, 47 & 51	69.00	Soil	2	35	33	33
Ash Slurry PH-2, Slurry Sump & Seal Water Tank, AHP MCC-A near TP-5, BCN 6 A/B, TP-3, DS PUMP HOUSE - II, TP - 4, TP - 5, CHP MCC-4 near Bunker Area, Tunnel 10, BCN 5 A/B, Pent House-II, Dozer Shed, BCN-8 & Stack Reclaimer-1, MCC-4 near Bunker Area	2, 5, 6, 45, 43, 44, 46, 28, 30	67.00	Soil	4	47	43	42
			Soil	5	49	44	43
			Soil	6	52	46	44
			Soil	7	54	47	46
Ash Water Pump House / Ash Water Tank, Chemical House & Parshall Flume, Clarifier & Sludge Pit, Pipe & Cable Rack (Stretch from ASPH-1 to Silo)	1, 8, 18, 13, 15	69.00	Soil	3	48	45	45



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Structure	BH No.	FGL R.L.(+) m	Founding Strata	Depth (m) of Foundation below FGL	Net Safe Bearing Capacity (t/m ²)		
					B ≤ 3m	3 < B < 6m	B ≥ 6m
Vacuum cum Compressor House-1, Bottom Ash Hopper-1, FAE Tower-1,2,3,4 & 5, BCN-7A/B, Pipe & Cable Rack (Stretch from FAE Tower-1 to FAE Tower-6)	9, 22, 49,50	69.00	Soil	3	27	25	25
			Soil	4	47	43	42
			Soil	5	49	44	43
			Soil	6	52	46	44
Track Hopper (371 M), Maintenance bay and tunnel 1 a/b	33, 34, 35	67.00	Soil	11	53	44	42
			Soil	12	55	46	43
			Soil	13	58	47	44
Transfer point - 1 (under ground) & tunnel 2 a/b	36	67.00	Soil	14.5	60	49	46
			Soil	16.5	65	51	48
Transfer point - 2 (under ground) & tunnel 3 a/b	37	67.00	Soil	4	39	36	35
				13	58	44	44
Pent House I, BCN-3 A/B, BCN 4 A/B, CHP MCC-1&2 Near TP-2, DS Pump House-1, Coal Settling Pond, MCC-3 Near WT, Crusher House, Wagon Tippler Control Room, Loco Shed	38, 39, 40, 23, 31, 32, 36	67.00	Soil	5	41	37	36
			Soil	6	43	38	37
			Soil	7	45	39	38
			Soil	12	56	46	43

F.G.L. : Finished Ground Level

A.4 CALCULATION OF SAFE BEARING CAPACITY IN SILTY CLAY SOIL FROM SETTLEMENT CRITERION

A.4.1 The safe bearing capacity of foundations resting on Silty Clay soil strata is determined using the consolidation properties of the clayey soil as given below

$$q_s = \frac{s}{\Delta p \cdot m_v \cdot H}$$



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Where Δp = increase in pressure at the middle of the soil layer due to the bearing pressure on the foundation

m_v = coefficient of volume compressibility

H = thickness of the compressible soil layer

A.4.2 The increase in pressure Δp at the middle of the soil layer is determined by the simplified method of determining the stress distribution below the foundation by considering a two dimensional spread of load in the soil at an angle of 1H : 2V.

A.4.3 For example, for a width of foundation 'B' of 3m and thickness of compressible soil layer below the foundation 'H' of 2m, the increase in pressure Δp at the middle of the soil layer will be $0.75t/m^2$ for a unit pressure on the foundation 'p' of $1t/m^2$.

Considering a coefficient of volume compressibility ' m_v ' of $0.0010 m^2/t$, the safe bearing capacity on the foundation works out to be $17t/m^2$.

A.4.4 Further, foundation widths greater than 6m are typically considered as raft foundations and the settlements of such foundations are lower on account of the rigidity of the foundation and hence, the calculated settlements have to be reduced by use of a reduction factor for rigidity of 0.8 as given in the relevant provisions of BIS code IS:8009(Part1) - 1976.

A.5 CALCULATION OF SAFE BEARING CAPACITY IN WEATHERED ROCK FROM SHEAR CRITERION

A.5.1 The ultimate bearing capacity of the foundation is determined using the following equation as given in BIS code IS:6403-1981.

$$q_d = q \cdot (N_q - 1) \cdot s_q \cdot d_q \cdot i_q + \frac{1}{2} \gamma \cdot B \cdot N_\gamma \cdot s_\gamma \cdot d_\gamma \cdot i_\gamma \cdot W'$$

Where q = effective surcharge at the foundation level

N_q, N_γ = bearing capacity factors

s_q, s_γ = shape factors

d_q, d_γ = depth factors

i_q, i_γ = inclination factors

γ = unit weight of soil/weathered rock = $2t/m^3$

B = width of foundation

W' = water table correction factor



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A.5.2 Considering the weathered rock as dense sand, the angle of shearing resistance ' ϕ ' can be taken as 40° .

A.5.3 Accordingly, the bearing capacity factors for general shear failure conditions will be :

$$N_q = 64.20$$

$$N_\gamma = 109.41$$

A.5.4 As the foundation is not subjected to any inclined loads, the inclination factors will be equal to 1.

A.5.5 As the foundations can either be continuous strip or square in shape, the shape factors corresponding to the continuous strip are adopted as they are generally lower.

$$s_q = s_\gamma = 1.0$$

A.5.6 Considering the depth of foundation as an average of about 6m, and the width of foundation as 6m, the depth factors work out to be :

$$d_q, d_\gamma = 1.21$$

A.5.7 Although ground water table has not been encountered, to be on the safer side, the water table correction factor is considered as $W' = 0.5$.

A.5.8 The effective surcharge at the foundation level calculated by considering the unit weight of the soil = $2t/m^3$, works out to be = $12t/m^2$.

A.5.9 Accordingly, the ultimate bearing capacity works out to be :

$$q_d = 984 \text{ t/m}^2$$

A.5.10 Applying a factor of safety of 2.5, the safe bearing capacity from shear criterion works out to be :

$$q_s = 393 \text{ t/m}^2$$

A.6 CALCULATION OF SAFE BEARING CAPACITY IN WEATHERED ROCK FROM SETTLEMENT CRITERION

A.6.1 The settlement of foundations resting on weathered rock strata is calculated based on the equation given by Timoshenko & Goodier as given below :

$$s = q \cdot B \cdot \frac{1 - \mu^2}{E} \left(I_1 + \frac{1 - 2\mu}{1 - \mu} I_2 \right) \cdot I_F$$



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The above equation simplified by Steinbrenner is given below :

$$s = q \cdot B' \cdot \frac{1 - \mu^2}{E} \cdot m \cdot I_s \cdot I_F$$

Where q = loading intensity on the foundation
 B' = Least lateral dimension of the contributing loaded area
 m = factor which is 4 at footing centre
 I_s = influence factor for loaded area

I_F = influence factor for depth of foundation The calculation of settlement of foundation is done considering the following data:

q = bearing pressure on foundation
 $= 45 \text{ t/m}^2$
 $E = 3,00,000 \text{ t/m}^2$
 $\mu = 0.33$

The influence factors ' I_s ' & ' I_F ' are determined considering the thickness of compressible weathered rock strata, the depth of foundation and the widths of foundations.

Considering the depth of foundation of 7m and width of foundation of 6m and thickness of highly weathered rock strata of 4m, the influence factors are determined to be :

$I_s = 0.2386$
 $I_F = 0.6382$

Accordingly, the settlement of foundation works out to be :

$s = 0.24 \text{ mm}$

As the proposed foundation will be a rigid foundation, the above calculated settlement has to be reduced by use of a reduction factor for rigidity of 0.8 as given in the relevant provisions of BIS code IS:8009(Part1) - 1976.

Accordingly, the final calculated settlement of the foundation works out to be :

$s = 0.8 \times 0.24 \approx 0.2 \text{ mm}$

As the above calculated settlements of the foundation are less than the allowable settlement of 12mm, the net safe bearing capacity of 45 t/m² can be safely adopted for the foundations resting on weathered rock strata.



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LIST OF IS CODES

Field Investigation

1. IS : 1892 - 1979 : Code of practice for sub surface investigations for foundations
2. IS : 2131 - 1981 : Method of Standard Penetration Tests for soils (First revision)
3. IS : 2132 - 1986 : Code of practice for thin walled tube sampling of soils (Second revision)
4. IS : 11315 - 1985 (Part 11) : Method for the quantitative descriptions of discontinuities in rock masses
5. IS : 11315 - 1995 (Part 12) : Quantitative description of discontinuities in rock mass methods.

Laboratory Tests

1. IS : 2720 - 1983 (Part 1) : Methods of test for soils: Preparation of dry soil samples for various tests (Second revision)
2. IS : 2720 - 1980 (Part 2) : Method of test for soils: Determination of water content (Second revision) Amendment 1
3. IS : 2720 - 1980 (Part 3/sec 1) : Method of Test for Soils : Determination of Specific Gravity : Fine Grained Soils. (First Revision)
4. IS : 2720 - 1980 (Part 3/Sec 2) : Method of test for soils : Determination of Specific Gravity : Fine, Medium & Coarse grained soils. (First revision).
5. IS : 2720 - 1985 (Part 4) : Method of test for soils : Grain size analysis (Second revision)
6. IS : 2720 - 1985 (Part 5) : Method of test for soils : Determination of liquid and plastic limit (Second revision)
7. IS : 2720 (Part 10) - 1973 : Method of test for soils : Determination of shear strength parameters using Triaxial apparatus



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8. IS: 4078 - 1980 : Code of practice for indexing and storage of drill cores (First Revision)
9. IS: 5529 (Part1) - 1985 : Code of practice for in-situ permeability tests.
10. IS : 9143 : 1976 : Method for the determination of unconfined compressive strength of rock materials.
11. IS : 13030 : 1991 : Method of test for laboratory determination of water content, porosity, density and related properties of rock material.

Foundation Construction

1. IS : 1904 - 1986 : Code of practice for design and construction of foundation in soils: General requirements (Third revision)
2. IS : 1904 - 1986 : Code of practice for design and construction of foundation in soils: General requirements (Third revision)
3. IS : 6403 - 1981 : Code of practice for determination of bearing capacity of shallow foundations : First revision (Amendment 1)
4. IS : 8009 - 1976 (Part 1) : Code of practice for calculation of settlements of foundations : Shallow foundations subject to symmetrical static vertical loads (Amendment 2)
5. IS: 12070 - 1987 : Code of practice for design and construction of shallow foundations on rocks
6. IS : 13063 : 1991 : Code of practice for structural safety of buildings on shallow foundations on Rocks



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 1
		Location: CHP/AHP Area			Red. Lev. (m): 69.25m		Term. Depth (m): 25.0
		B.H. Coord. : 1993168N, 472190E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Brown Clay Silt with Gravels
1.0			SPT	(4, 5, 6)			Brown Clay Silt with Gravels
2.0			UDS	11			Yellowish Brown Sandy Clay Silt with Gravels
3.0			SPT	(20, 20, 12)			Yellowish Brown Sandy Clay Silt with Gravels
4.0			UDS	32			Red Sandy Clay Silt with Gravels
4.5							Greyish Red Sandy Clay Silt with Gravels
5.0			SPT	(7, 16, 35)			Greyish Red Sandy Clay Silt with Gravels
6.0		45		51	0	0	Red Highly Weathered Rock (Shale)
6.5		-			0	0	Red Highly Weathered Rock (Shale)
7.5		50			0	0	Red Highly Weathered Rock (Shale)
8.0	9.5	55	SPT	118/34 cm	21	0	Greyish Red Moderately Weathered Rock (Shale)
9.5	11.0	-			0	0	Red Highly Weathered Rock (Shale)
11.0	12.5	65	SPT	132/34 cm	17	0	Red Moderately Weathered Rock (Shale)
12.5	13.0	-			0	0	Red Highly Weathered Rock (Shale)
13.0	14.0	80			0	0	Red Highly Weathered Rock (Shale)
14.0	15.5	90	SPT	120/27 cm	19	0	Red Moderately Weathered Rock (Shale)
15.5	16.0	-			0	0	Greyish Red Highly Weathered Rock (Shale)
16.0	17.0	80			0	0	Greyish Red Highly Weathered Rock (Shale)
17.0	18.5	85	SPT	99/27 cm	17	0	Greyish Red Moderately Weathered Rock (Shale)
18.5	20.0	140			23	0	Red Moderately Weathered Rock (Shale)
20.0	21.5	85			24	0	Red Moderately Weathered Rock (Shale)
21.5	23.0	120			24	0	Red Moderately Weathered Rock (Shale)
23.0	25.0	180			23	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 2
		Location: CHP/AHP Area			Red. Lev. (m): 68.35 m		Term. Depth (m): 20
		B.H. Coord. : 1993352N, 472192E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Yellowish Brown Clay Silt
1.0			SPT	(3, 5, 8)			Brown Clay Silt
2.0			UDS	13			Brown Clay Silt with Gravels
3.0			SPT	(7,10,11)			Brown Clay Silt with Gravels
4.0			UDS	21			Brown Clay Silt with Gravels
5.0			SPT	(13, 17, 27)			Brown Clay Silt with Gravels
6.5			UDS	44			Brown Clay Silt with Gravels
8.0			SPT	(10, 19, 28)			Red Clay Silt
9.0				47			Red Clay Silt
9.5			SPT	(19, 39, 50)	21	0	Red Moderately Weathered Rock (Shale)
11.0	12.0	-		89	0	0	Red Highly Weathered Rock (Shale)
12.0	13.0	90			0	0	Red Highly Weathered Rock (Shale)
13.0	14.0	-			0	0	Red Highly Weathered Rock (Shale)
14.0	15.5	130	SPT	98/18 cm	27	0	Red Moderately Weathered Rock (Shale)
15.5	17.0	145			37	0	Reddish Grey Moderately Weathered Rock (Shale)
17.0	18.0	-			0	0	Reddish Grey Highly Weathered Rock (Shale)
18.0	19.0	-			40	0	Red Moderately Weathered Rock (Shale)
19.0	20.0	-			0	0	Reddish Grey Highly Weathered Rock (Shale)
20.0		-	SPT	75/13 cm	0	0	Reddish Grey Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 3
		Location: CHP/AHP Area			Red. Lev. (m): 75.40 m		Term. Depth (m): 30
		B.H. Coord. : 1992764N, 472309E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Brown Clay Silt with Gravels
1.0			SPT	(3, 6, 9) 15			Brown Clay Silt with Gravels
2.0			UDS				Red Clay Silt with Gravels
3.0			SPT	(11, 21, 30) 51			Red Clay Silt with Gravels
4.0			UDS				Red Clay Silt with Gravels
4.5		25					Red Clay Silt with Gravels
5.0	6.0	-	SPT	177/20 cm	0	0	Greyish Red Highly Weathered Rock (Shale)
6.0	6.5	45			0	0	Greyish Red Highly Weathered Rock (Shale)
6.5	8.0	-	SPT	103/20 cm	15	0	Red Moderately Weathered Rock (Shale)
8.0	9.0	55			0	0	Red Highly Weathered Rock (Shale)
9.5	11.0	85	SPT	103/18 cm	20	0	Red Moderately Weathered Rock (Shale)
11.0	12.5	70			22	0	Red Moderately Weathered Rock (Shale)
12.5	14.0	75			19	0	Whitish Red Moderately Weathered Rock (Shale)
14.0	16.0	-			0	0	Red Highly Weathered Rock (Shale)
16.0	17.0	135			0	0	Red Highly Weathered Rock (Shale)
17.0	18.0	-	SPT	105/13 cm	0	0	Red Highly Weathered Rock (Shale)
18.0	20.0	145			16	0	Red Moderately Weathered Rock (Shale)
20.0	22.0	-			0	0	Red Highly Weathered Rock (Shale)
22.0	23.0	160			0	0	Red Highly Weathered Rock (Shale)
23.0	25.0	-	SPT	95/10 cm	0	0	Red Highly Weathered Rock (Shale)
25.0	26.0	185			0	0	Red Highly Weathered Rock (Shale)
26.0	27.5	-	SPT	65/5 cm	19	0	Red Moderately Weathered Rock (Shale)
27.5	29.0	110			28	0	Greyish Red Moderately Weathered Rock (Shale)
29.0	30.0	65			24	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 4
		Location: CHP/AHP Area			Red. Lev. (m): 75.50 m		Term. Depth (m): 30
		B.H. Coord. :1992766N 472340E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Brown Clay Silt with Gravels
1.0			SPT	(3, 5, 8) 9			Brown Clay Silt with Gravels
2.0			UDS				Red Clay Silt with Gravels
3.0			SPT	(8, 14, 21) 35			Red Clay Silt with Gravels
4.0			UDS				Red Clay Silt with Gravels
5.0	6.0	-	SPT	104/25 cm	0	0	Greyish Red Highly Weathered Rock (Shale)
6.0	6.5	45			0	0	Greyish Red Highly Weathered Rock (Shale)
6.5	8.0	-	SPT	111/20 cm	0	0	Greyish Red Highly Weathered Rock (Shale)
8.0	9.5	35	SPT	102/13 cm	0	0	Red Highly Weathered Rock (Shale)
9.5	11.0	90			23	0	Whitish /Greyish Red Moderately Weathered Rock (Shale)
11.0	13.0	-			22	0	Red Moderately Weathered Rock (Shale)
13.0	14.0	80			0	0	Red Highly Weathered Rock (Shale)
14.0	16.0	-	SPT	113/13 cm	0	0	Red Highly Weathered Rock (Shale)
16.0	17.0	150			0	0	Whitish Red Highly Weathered Rock (Shale)
17.0	19.0	-	SPT	111/18 cm	0	0	Red Highly Weathered Rock (Shale)
19.0	20.0	140			0	0	Red Highly Weathered Rock (Shale)
20.0	22.0	-	SPT	112/13 cm	0	0	Red Highly Weathered Rock (Shale)
22.0	23.0	150			0	0	Red Highly Weathered Rock (Shale)
23.0	25.0	-	SPT	98/10 cm	0	0	Red Highly Weathered Rock (Shale)
25.0	26.0	140			0	0	Red Highly Weathered Rock (Shale)
26.0	27.0	-	SPT	98/10 cm	0	0	Red Highly Weathered Rock (Shale)
27.0	28.0	80			0	0	Red Highly Weathered Rock (Shale)
29.0	30.0	85			0	0	Greyish Red Highly Weathered Rock (Shale)
30.0		-	SPT	60/9 cm	0	0	Greyish Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 5
		Location: CHP/AHP Area			Red. Lev. (m): 68.85m		Term. Depth (m): 20
		B.H. Coord. : 1993375N, 472058E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Yellowish Brown Clay Silt with Gravels
1.0			SPT	(2, 3, 4) 7			Yellowish Brown Clay Silt with Gravels
2.0			UDS				Yellowish Brown Sandy Clay Silt with Gravels
3.0			SPT	(2, 4, 7) 11			Brownish Yellow Clay Silt with Gravels
4.0			UDS				Brownish Yellow Sandy Clay Silt with Gravels
4.5							Brownish Yellow Sandy Clay Silt with Gravels
5.0			SPT	(8, 14, 21) 35			Brownish Yellow Sandy Clay Silt with Gravels
6.0							Brown Clay Silt with Gravels
6.5			UDS				Brown Clay Silt with Gravels
7.0							Brown Clay Silt with Gravels
8.0			SPT	(16, 27, 34) 61			Brown Clay Silt with Gravels
9.0							Brown Clay Silt with Gravels
9.5	10.0	-			0	0	Red Highly Weathered Rock (Shale)
10.0	11.0	65			0	0	Red Highly Weathered Rock (Shale)
11.0	14.0	-	SPT	67/10 cm	0	0	Red Highly Weathered Rock (Shale)
14.0	15.0	-	SPT	103/18 cm	0	0	Red Highly Weathered Rock (Shale)
15.0	17.0	90			26	0	Red Moderately Weathered Rock (Shale)
17.0	18.5	-			20	0	Red Moderately Weathered Rock (Shale)
18.5	20.0	-			25	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 6	
		Location: CHP/AHP Area			Red. Lev. (m): 67.95 m		Term. Depth (m): 25	
		B.H. Coord. : 1993413N, 472084E					Water Table (m): Nil	
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description	
From	To							
0.0	10.0	70	SPT	(3, 8, 11) 19			Yellowish Brown Clay Silt with Gravels	
1.0							Yellowish Brown Clay Silt with Gravels	
2.0							Yellowish Brown Clay Silt with Gravels	
3.0							Brownish Yellow Clay Silt with Gravels	
4.0							Brownish Yellow Sandy Clay Silt with Gravels	
4.5							Yellowish Brown Clay Silt with Gravels	
5.0			SPT	(14, 21, 28) 49			Brownish Yellow Sandy Clay Silt with Gravels	
6.0							Brown Clay Silt with Gravels	
6.5							Brown Clay Silt with Gravels	
7.0							Brown Clay Silt with Gravels	
8.0							Brown Clay Silt with Gravels	
9.0							0	0
9.5		Red Highly Weathered Rock (Shale)						
10.0		Red Highly Weathered Rock (Shale)						
11.0		SPT	112/28cm	0	0	Red Highly Weathered Rock (Shale)		
13.0						Red Highly Weathered Rock (Shale)		
14.0						Red Highly Weathered Rock (Shale)		
15.0						Red Highly Weathered Rock (Shale)		
16.0	Red Highly Weathered Rock (Shale)							
16.0	17.5					155	SPT	55/8 cm
17.5	19.0	155	Red Moderately Weathered Rock (Shale)					
19.0	20.5	130	Red Moderately Weathered Rock (Shale)					
20.5	22.0	217	Red Moderately Weathered Rock (Shale)					
22.0	23.5	150	Red Moderately Weathered Rock (Shale)					
23.5	25.0	155	Red Moderately Weathered Rock (Shale)					



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No. : 7
		Location: CHP/AHP Area			Red. Lev. (m): 74.09 m		Term. Depth (m): 20
		B.H. Coord. : 1992816N, 472306E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Brownish Yellow Clay Silt with Gravels
1.0			SPT	(3, 6, 11)			Brownish Yellow Clay Silt with Gravels
2.0			UDS	17			Red Clay Silt with Gravels
3.0			SPT	(9,15, 20)			Red Clay Silt with Gravels
4.0			UDS	35			Red Clay Silt with Gravels
4.5		20					Red Clay Silt with Gravels
5.0	6.0	-	SPT	106/28 cm	0	0	Red Highly Weathered Rock (Shale)
6.0	6.5	50			0	0	Red Highly Weathered Rock (Shale)
6.5	7.0	55	SPT	115/18 cm	0	0	Red Highly Weathered Rock (Shale)
7.0	8.0	65			0	0	Whitish /Greyish Red Highly Weathered Rock (Shale)
8.0	9.5	60	SPT	104/13 cm	17	0	Red Moderately Weathered Rock (Shale)
9.5	11.0	65			23	0	Red Moderately Weathered Rock (Shale)
11.0	12.0	-			0	0	Red Highly Weathered Rock (Shale)
12.0	14.0	115			0	0	Whitish Red Highly Weathered Rock (Shale)
14.0	15.0	-			28	0	Red Moderately Weathered Rock (Shale)
15.0	16.0	-			0	0	Red Highly Weathered Rock (Shale)
16.0	17.0	125	SPT	93/10 cm	0	0	Red Highly Weathered Rock (Shale)
17.0	18.5	65			20	0	Red Moderately Weathered Rock (Shale)
18.5	20.0	70			23	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No. : 8
		Location: CHP/AHP Area			Red. Lev. (m): 69.50 m		Term. Depth (m): 15
		B.H. Coord. : 1993134N, 472226E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Brown Clay Silt with Gravels
1.0			SPT	(3, 4, 8)			Brown Clay Silt with Gravels
2.0			UDS	12			Brown Clay Silt with Gravels
3.0			SPT	(4, 4, 7)			Brown Clay Silt with Gravels
4.0			UDS	11			Reddish Brown Clay Silt with Gravels
4.5		30					Brownish Red Clay Silt
5.0		-	SPT	(7, 11, 16)			Greyish Red Clay Silt
6.0		50		27			Red Clay Silt
6.5	7.5	-	UDS		0	0	Red Highly Weathered Rock (Shale)
7.5	8.0	55			0	0	Red Highly Weathered Rock (Shale)
8.0	9.5	-	SPT	(13, 31, 65)	0	0	Greyish Red Highly Weathered Rock (Shale)
9.5	10.5	-	SPT	96	0	0	Red Highly Weathered Rock (Shale)
10.5	11.0	75		123/34 cm	0	0	Red Highly Weathered Rock (Shale)
11.0	12.5	80	SPT	99/25 cm	17	0	Red Moderately Weathered Rock (Shale)
12.5	14.0	85			18	0	Red Moderately Weathered Rock (Shale)
14.0	15.0	40			23	0	Red Moderately Weathered Rock (Shale)
15.0		-			0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No. : 9
		Location: CHP/AHP Area			Red. Lev. (m): 69.40 m		Term. Depth (m): 17
		B.H. Coord. : 1993264N, 472055E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Silty Clay with Gravels
1.0			SPT	(2, 2, 4) 6			Brown Silty Clay with Gravels
2.0			UDS				Yellowish Brown Silty Clay with Gravels
3.0			SPT	(2, 5, 8) 13			Brown Silty Clay with Gravels
4.0			UDS				Brown Silty Clay with Gravels
4.5							Yellowish / Whitish /Brownish Red Silty Clay with Gravels
5.0			SPT	(11, 27, 29) 56			Brownish Red Clay Silt with Gravels
6.0							Red Clay Silt
6.5	7.5	-	UDS				Red Highly Weathered Rock (Shale)
7.5	8.0	65					Red Highly Weathered Rock (Shale)
8.0	9.0	-	SPT	99/25 cm	0	0	Red Highly Weathered Rock (Shale)
9.0	9.5	80			0	0	Red Highly Weathered Rock (Shale)
9.5	11.0	90	SPT	85/20 cm	37	0	Red Moderately Weathered Rock (Shale)
11.0	12.5	110			30	0	Greyish Red Moderately Weathered Rock (Shale)
12.5	14.0	120			33	0	Greyish Red Moderately Weathered Rock (Shale)
14.0	15.5	105			33	0	Greyish Red Moderately Weathered Rock (Shale)
15.5	17.0	110			47	0	Greyish Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 10
		Location: CHP/AHP Area			Red. Lev. (m): 73.70 m		Term. Depth (m):17
		B.H. Coord. : 1992764N, 472168E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Brownish Yellow Clay Silt with Gravels
1.0			SPT	(3, 6, 11)			Brownish Yellow Clay Silt with Gravels
2.0			UDS	17			Red Clay Silt with Gravels
3.0			SPT	(7, 14, 21)			Red Clay Silt with Gravels
4.0			UDS	35			Red Clay Silt with Gravels
4.5							Red Clay Silt with Gravels
5.0	6.0	-	SPT	113/28 cm	0	0	Red Highly Weathered Rock (Shale)
6.0	6.5	70			0	0	Red Highly Weathered Rock (Shale)
6.5	7.0	-	SPT	114/20 cm	0	0	Red Highly Weathered Rock (Shale)
7.0	8.0	80			0	0	Whitish /Greyish Red Highly Weathered Rock (Shale)
8.0	9.0	-	SPT	137/28 cm	0	0	Red Highly Weathered Rock (Shale)
9.0	9.5	75			0	0	Red Highly Weathered Rock (Shale)
9.5	11.0	-	SPT	109/18 cm	37	0	Red Moderately Weathered Rock (Shale)
11.0	12.0	85			0	0	Whitish Red Highly Weathered Rock (Shale)
12.0	13.0	-			0	0	Red Highly Weathered Rock (Shale)
13.0	14.0	145			0	0	Red Highly Weathered Rock (Shale)
14.0	16.0	-	SPT	107/18 cm	0	0	Red Highly Weathered Rock (Shale)
16.0	17.0	155			0	0	Red Highly Weathered Rock (Shale)
17.0		-		101/13 cm	0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 11
		Location:CHP/AHP Area			Red. Lev. (m): 72.30 m		Term. Depth (m): 17
		B.H. Coord. : 1992904N, 472168E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Brown Sandy Clay Silt with Gravels
1.0			SPT	(5, 6, 8) 14			Brown Clay Silt with Gravels
2.0			UDS				Yellowish Brown Clay Silt with Gravels
3.0			SPT	(10, 21, 24) 45	0	0	Greyish Red Highly Weathered Rock (Shale)
4.0			UDS		0	0	Greyish Red Highly Weathered Rock (Shale)
5.0	6.0	-	SPT	113/20 cm	0	0	Red Highly Weathered Rock (Shale)
6.0	6.5	60			0	0	Red Highly Weathered Rock (Shale)
6.5	7.5	-	SPT	99/15 cm	0	0	Greyish Red Highly Weathered Rock (Shale)
7.5	8.0	70			0	0	Red Highly Weathered Rock (Shale)
8.0	9.5	80	SPT	97/13 cm	20	0	Red Moderately Weathered Rock (Shale)
9.5	11.0	75			29	0	Greyish Red Moderately Weathered Rock (Shale)
11.0	12.5	80			24	0	Greyish Red Moderately Weathered Rock (Shale)
12.5	14.0	85			26	0	Greyish Red Moderately Weathered Rock (Shale)
14.0	15.5	75			37	0	Greyish Red Moderately Weathered Rock (Shale)
15.5	17.0	80			30	0	Whitish Grey Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 12
		Location:CHP/AHP Area			Red. Lev. (m): 71.05 m		Term. Depth (m): 17
		B.H. Coord. :1993000N, 472168E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Yellowish Brown Clay Silt with Gravels
1.0			SPT	(3, 9, 16)			Yellowish Brown Clay Silt with Gravels
2.0			UDS	25			Reddish Clay Silt
3.0			SPT	(7, 11, 25)			Brown Red Clay Silt with Gravels
3.5				36			Red Clay Silt with Gravels
4.0			UDS				Red Clay Silt with Gravels
4.5					0	0	Red Highly Weathered Rock (Shale)
5.0	6.5	-	SPT	130/25cm	0	0	Red Highly Weathered Rock (Shale)
6.5	7.5	-			0	0	Red Highly Weathered Rock (Shale)
7.5	8.0	70			0	0	Red Highly Weathered Rock (Shale)
8.0	9.0	-	SPT	106/18cm	0	0	Red Highly Weathered Rock (Shale)
9.0	9.5	70			0	0	Red Highly Weathered Rock (Shale)
9.5	10.5	-	SPT	95/10cm	0	0	Red Highly Weathered Rock (Shale)
10.5	11.0	80			0	0	Red Highly Weathered Rock (Shale)
11.0	12.0	-	SPT	70/11cm	0	0	Red Highly Weathered Rock (Shale)
12.0	13.0	80			0	0	Red Highly Weathered Rock (Shale)
13.0	14.0	90			33	0	Red Moderately Weathered Rock (Shale)
14.0	15.5	100			28	0	Red Moderately Weathered Rock (Shale)
15.5	17.0	110			33	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 13
		Location: CHP/AHP Area			Red. Lev. (m): 70.50 m		Term. Depth (m): 17
		B.H. Coord. : 1993072N 472168E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt
1.0			SPT	(4, 7, 15) 22			Brown Clay Silt with Gravels
2.0			UDS				Brown Clay Silt with Gravels
3.0			SPT	(5, 7, 11) 18			Yellowish / Whitish Brown Clay Silt with Gravels
4.0			UDS				Yellowish / Whitish Brown Clay Silt with Gravels
5.0			SPT	(9, 13, 18) 31			Yellowish / Whitish Brown Clay Silt with Gravels
6.0		60			0	0	Red Highly Weathered Rock (Shale)
6.5		-	UDS		0	0	Red Highly Weathered Rock (Shale)
8.0	9.0	-	SPT	95/25cm	0	0	Red Highly Weathered Rock (Shale)
9.0	9.5	70			0	0	Red Highly Weathered Rock (Shale)
9.5	11.0	75	SPT	90/19cm	27	0	Red Moderately Weathered Rock (Shale)
11.0	12.0	-			0	0	Greyish Red Highly Weathered Rock (Shale)
12.0	13.0	60			0	0	Red Highly Weathered Rock (Shale)
13.0	14.0	75			20	0	Red Moderately Weathered Rock (Shale)
14.0	15.5	80	SPT	88/18cm	20	0	Red Moderately Weathered Rock (Shale)
15.5	17.0	75			0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 14
		Location: CHP/AHP Area			Red. Lev. (m): 69.35 m		Term. Depth (m): 17
		B.H. Coord. : 1993388N, 471943E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clayey Silt with Gravels
1.0			SPT	(3, 5, 9) 14			Dark Brown Clayey Silt with Gravels
2.0			UDS				Brown Clayey Silt with Gravels
3.0			SPT	(3, 6, 7) 13			Brown Clayey Silt with Gravels
4.0			UDS				Brown Clayey Silt with Gravels
4.5							Brown Clayey Silt
5.0			SPT	(8, 14, 20) 34			Brown Clayey Silt
6.0							Brown Sandy Clayey Silt
6.5			UDS		0	0	Red Highly Weathered Rock (Shale)
7.5					0	0	Greyish Red Highly Weathered Rock (Shale)
8.0	9.0	-	SPT	137/33 cm	0	0	Greyish Red Highly Weathered Rock (Shale)
9.0	9.5	80			20	0	Greyish Red Moderately Weathered Rock (Shale)
9.5	11.0	-	SPT	107/27 cm	0	0	Greyish Red Highly Weathered Rock (Shale)
11.0	12.0	-			0	0	Greyish Red Highly Weathered Rock (Shale)
12.0	12.5	100			0	0	Red Highly Weathered Rock (Shale)
12.5	14.0	-			27	0	Red Moderately Weathered Rock (Shale)
14.0	16.5	-			-	0	Red Highly Weathered Rock (Shale)
16.5	17.0	-			17	0	Red Moderately Weathered Rock (Shale)
17.0		-	SPT	70/10 cm	0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 15
		Location: CHP/AHP Area			Red. Lev. (m): 70.70 m		Term. Depth (m): 17
		B.H. Coord. : 1993276N 472167E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0		25	SPT	(2, 5, 8) 13			Dark Brownish Grey Clay Silt
1.0							Dark Brownish Grey Clay Silt
2.0							Brown Clay Silt with Gravels
3.0							Brown Clay Silt with Gravels
3.5		40	UDS	(7, 11, 12) 23			Greyish Red Clay Silt
4.0							Greyish Red Clay Silt
4.5							Brownish Red Clay Silt
5.0	6.5	55	SPT	(10, 16, 33) 49	19	0	Reddish Grey Moderately Weathered Rock (Shale)
6.5	8.0	65	SPT	95/20cm	43	0	Grey Sand Stone
8.0	9.5	70			24	0	Red Moderately Weathered Rock (Shale)
9.5	11.0	-			0	0	Greyish Red Highly Weathered Rock (Shale)
11.0	12.5	65			25	0	Red Moderately Weathered Rock (Shale)
12.5	14.0	80			27	0	Greyish Red Moderately Weathered Rock (Shale)
14.0	15.5	75			37	0	Greyish Red Moderately Weathered Rock (Shale)
15.5	17.0	-			22	0	Greyish Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 16
		Location: CHP/AHP Area			Red. Lev. (m): 69.40 m		Term. Depth (m): 17
		B.H. Coord. : 1993175N 472107E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt with Gravels
1.0			SPT	(4, 6, 9) 15			Dark Brown Clay Silt with Gravel
2.0			UDS				Brown Clay Silt with Gravel
3.0			SPT	(6, 11, 13) 24			Whitish Red Highly Weathered Rock (Shale)
4.0			UDS				Greyish Red Highly Weathered Rock (Shale)
4.5							Reddish Brown Clay Silt
5.0	6.0	-	SPT	(17, 44, 57) 101	0	0	Greyish / Reddish Brown Highly Weathered Rock (Shale)
6.0	6.5	60			0	0	Greyish / Reddish Brown Highly Weathered Rock (Shale)
6.5	7.5	-			0	0	Reddish Brown Highly Weathered Rock (Shale)
7.5	8.0	70			0	0	Reddish Brown Highly Weathered Rock (Shale)
8.0	9.5	80	SPT	103/20cm	28	0	Brownish White Sand Stone with Shale
9.5	11.0	90			20	0	Reddish Pink Moderately Weathered Rock (Shale)
11.0	12.0	100			21	0	Brownish White Moderately Weathered Rock (Shale)
12.0	14.0	110			23	0	Brownish White Moderately Weathered Rock (Shale)
14.0	15.5	115			21	0	Brownish White Moderately Weathered Rock (Shale)
15.5	17.0	150			20	0	Brownish Pink Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 17
		Location: CHP/AHP Area			Red. Lev. (m): 69.75 m		Term. Depth (m): 20
		B.H. Coord. : 1993188N 472044E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt with Gravels
1.0			SPT	(2, 4, 6)			Brown Clay Silt with Gravel
2.0			UDS	10			Brown Clay Silt with Gravel
3.0			SPT	(5, 8, 12)			Red Clay Silt with Gravels
4.0			UDS	20			Red Clay Silt with Gravels
5.0			SPT	(12, 21, 23)			Red Clay Silt with Gravels
6.0				44			Brownish Red Sandy Clay Silt
6.5	8.0	50	UDS		17	0	Red Moderately Weathered Rock (Shale)
8.0	9.5	45			31	0	Red Moderately Weathered Rock (Shale)
9.5	11.0	50			67	0	Greyish Red Moderately Weathered Rock (Shale)
11.0	12.5	50			70	0	Greyish Red Moderately Weathered Rock (Shale)
12.5	14.0	60			23	0	Greyish Red Moderately Weathered Rock (Shale)
14.0	15.5	65			23	0	Greyish Red Moderately Weathered Rock (Shale)
15.5	17.0	-			-	0	Greyish Red Highly Weathered Rock (Shale)
17.0	18.5	-	SPT	100/19cm	-	0	Greyish Red Highly Weathered Rock (Shale)
18.5	20.0	85			27	0	Greyish Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 18			
		Location: CHP/AHP Area			Red. Lev. (m): 69.80 m		Term. Depth (m): 25			
		B.H. Coord. : 1993120N, 472191E					Water Table (m): Nil			
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description			
From	To									
0.0	5.0	30	SPT	(5, 10, 10) 20	50	0	Dark Brown Clay Silt with Gravels			
1.0							Dark Brown Clay Silt with Gravels			
2.0							Dark Brown Clay Silt with Gravels			
3.0							Yellowish Brown Clay Silt with Gravels			
4.0	5.0	60	UDS	(16, 9, 10) 19	0	0	Yellowish Brown Stand Stone			
5.0	5.5	70	SPT				Brownish Grey Stand Stone			
5.5	7.0	63	SPT				(12, 20, 30) 50	0	0	Brownish Grey Stand Stone
7.0	8.5	70								Brownish Grey Stand Stone
8.5	9.0	95		(31, 39, 47) 86	0	0				Red Highly Weathered Rock (Shale)
9.0	10.0	-								SPT
10.0	11.0	95	Red Highly Weathered Rock (Shale)							
11.0	11.5	90	Red Highly Weathered Rock (Shale)							
11.5	13.0	-	SPT	108/20cm	0	0	Red Highly Weathered Rock (Shale)			
13.0	14.5	95					Red Highly Weathered Rock (Shale)			
14.5	16.0	70					Red Highly Weathered Rock (Shale)			
16.0	17.5	155					Red Highly Weathered Rock (Shale)			
17.5	19.0	130	SPT	130/28cm	30	0	Red Moderately Weathered Rock (Shale)			
19.0	20.5	217	Red Moderately Weathered Rock (Shale)							
20.5	22.0	150	Red Moderately Weathered Rock (Shale)							
22.0	23.5	155	Red Moderately Weathered Rock (Shale)							
23.5	25.0				21	0	Red Moderately Weathered Rock (Shale)			



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 19
		Location: CHP/AHP Area			Red. Lev. (m): 70.22 m		Term. Depth (m): 25
		B.H. Coord. : 1993135N, 471956E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Brown Clay Silt with Gravels
1.0			SPT	(3, 7, 10) 17			Brown Clay Silt with Gravels
2.0			UDS				Brown Clay Silt with Gravels
3.0			SPT	(4, 6, 8) 14			Yellowish Brown Clay Silt with Gravels
4.0			UDS				Yellowish Brown Clay Silt with Gravels
4.5							Greyish Brown Clay Silt with Gravels
5.0	6.0	-	SPT	(14, 23, 36) 59	0	0	Red Highly Weathered Rock (Shale)
6.0	6.5	60			0	0	Red Highly Weathered Rock (Shale)
6.5	8.0	40			22	0	Red Moderately Weathered Rock (Shale)
8.0	9.5	70			43	0	Red Moderately Weathered Rock (Shale)
9.5	11.0	-			0	0	Red Highly Weathered Rock (Shale)
11.0	12.0	-	SPT	113/28 cm	0	0	Greyish Red Highly Weathered Rock (Shale)
12.0	12.5	90	SPT	116/25 cm	0	0	Red Highly Weathered Rock (Shale)
12.5	13.0	-			0	0	Red Highly Weathered Rock (Shale)
13.0	14.0	80			0	0	Red Highly Weathered Rock (Shale)
14.0	15.0	-	SPT	95/18 cm	0	0	Red Highly Weathered Rock (Shale)
15.0	17.0	180			0	0	Red Highly Weathered Rock (Shale)
17.0	18.5	-	SPT	120/20 cm	17	0	Red Moderately Weathered Rock (Shale)
18.5	20.0	-			20	0	Red Moderately Weathered Rock (Shale)
20.0	21.5	-			0	0	Red Highly Weathered Rock (Shale)
21.5	23.0	-			0	0	Red Highly Weathered Rock (Shale)
23.0	25.0	-	SPT	87/10 cm	0	0	Red Highly Weathered Rock (Shale)
25.0		-	SPT	87/10 cm	0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 20
		Location: CHP/AHP Area			Red. Lev. (m): 74.64 m		Term. Depth (m):15
		B.H. Coord. : 1992811N, 472494E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0			SPT	(4, 7, 13) 20			Brown Clay Silt
1.0							Brown Clay Silt with Gravels
2.0							Red Clay Silt
3.0							Red Clay Silt
4.0							Red Clay Silt with Gravels
4.5							Red Clay Silt with Gravels
5.0	6.0	50	SPT	113/28 cm	0	0	Red Highly Weathered Rock (Shale)
6.0	6.5	-	SPT	136/25 cm	0	0	Red Highly Weathered Rock (Shale)
6.5	7.0	55	SPT	158/25 cm	0	0	Red Highly Weathered Rock (Shale)
7.0	8.0	65	SPT	94/18 cm	0	0	Red Highly Weathered Rock (Shale)
8.0	9.0	70	SPT	113/13 cm	15	0	Red Highly Weathered Rock (Shale)
9.0	9.5	90	SPT		18	0	Red Highly Weathered Rock (Shale)
9.5	10.0						Red Highly Weathered Rock (Shale)
10.0	11.0						Red Highly Weathered Rock (Shale)
11.0	12.5						Red Highly Weathered Rock (Shale)
12.5	15.0						Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 21
		Location: CHP/AHP Area			Red. Lev. (m): 66.41 m		Term. Depth (m): 15
		B.H. Coord. : 1993523N, 472460 E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0	15.0						Dark Brown Clay Silt with Gravels
1.0			SPT	(5, 9, 16) 25			Dark Brown Clay Silt with Gravels
2.0			UDS				Yellowish Brown Clay Silt with Gravels
3.0			SPT	(12, 19, 24) 43			Yellowish Brown Clay Silt with Gravels
3.5							Brown Clay Silt with Gravels
4.0			UDS				Brown Clay Silt with Gravels
4.5							Brown Clay Silt with Gravels
5.0			SPT	(10, 16, 22) 38			Brown Clay Silt with Gravels
6.0							Brown Clay Silt with Gravels
6.5			UDS				Brown Clay Silt with Gravels
7.5							Brown Clay Silt with Gravels
8.0			SPT	(11, 17, 23) 40			Brown Clay Silt with Gravels
9.0							Brown Clay Silt with Gravels
9.5			UDS				Brown Clay Silt with Gravels
10.5							Brown Clay Silt with Gravels
11.0		SPT	(15, 25, 38) 63			Brown Clay Silt with Gravels	
12.0						Brown Clay Silt with Gravels	
13.0						Brown Clay Silt with Gravels	
14.0		-	SPT	114/28 cm			Red Highly Weathered Rock (Shale)
15.0		-	SPT	114/27 cm			Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No. : 22
		Location: CHP/AHP Area			Red. Lev. (m): 69.46 m		Term. Depth (m): 25
		B.H. Coord. : 1993325 N, 471956 E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0			SPT	(2, 4, 6) 10			Brown Sandy Clay Silt
1.0							Brown Clay Silt with Gravels
2.0							Brown Clay Silt with Gravels
3.0			SPT	(2, 4, 7) 11			Brown Clay Silt with Gravels
4.0			UDS				Brown Clay Silt with Gravels
4.5			Brown Clay Silt with Gravels				
5.0			SPT	(8, 11, 19) 30			Brown Clay Silt with Gravels
6.0							Brown Clay Silt with Gravels
6.5			UDS				Brown Clay Silt with Gravels
7.5				Brownish Red Clay Silt with Gravels			
8.0			SPT	(13, 31, 52) 83			Red Clay Silt with Gravels
9.0							Red Clay Silt with Gravels
9.5			UDS				Red Clay Silt with Gravels
10.5				Red Clay Silt with Gravels			
11.0			12.5	-			SPT
12.5	14.0	-	SPT	118/28 cm	0	0	Red Highly Weathered Rock (Shale)
14.0	15.5	-	SPT	110/22 cm	0	0	Red Highly Weathered Rock (Shale)
15.5	17.0	60			19	0	Red Moderately Weathered Rock (Shale)
17.0	18.5	80			21	0	Red Moderately Weathered Rock (Shale)
18.5	20.0	90			17	0	Red Moderately Weathered Rock (Shale)
20.0	23.0	95			23	0	Red Moderately Weathered Rock (Shale)
23.0	25.0	-	SPT	88/13 cm	0	0	Red Highly Weathered Rock (Shale)
25.0		-	SPT	87/11 cm	0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 23
		Location: CHP/AHP Area			Red. Lev. (m): 65.96 m		Term. Depth (m): 20
		B.H. Coord. : 1992983N, 472819E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt with Gravels
1.0			SPT	(5, 7, 10) 17			Yellowish Brown Clay Silt with Gravels
2.0			UDS				Reddish Brown Clay Silt with Gravels
3.0			SPT	(7, 10, 14) 24			Reddish Brown Clay Silt with Gravels
4.0			UDS				Reddish Brown Clay Silt with Gravels
4.5							Reddish Brown Clay Silt with Gravels
5.0			SPT	(15, 25, 34) 59			Reddish Brown Clay Silt with Gravels
6.0							Reddish Brown Clay Silt with Gravels
6.5			UDS				Reddish Brown Clay Silt with
7.5							Brown Clay Silt
8.0			SPT	(11, 20, 28) 48			Brown Clay Silt
9.0							Brown Clay Silt
9.5			UDS				Brown Clay Silt
11.0			SPT	(11, 19, 29) 48			Red Clay Silt
12.0							Red Clay Silt
13.0							Red Clay Silt
14.0			SPT	(27, 32, 45) 77			Red Clay Silt
15.0							Red Clay Silt
15.5	17.0	100			36	0	Red Moderately Weathered Rock (Shale)
17.0	18.5	115			27	0	Red Moderately Weathered Rock (Shale)
18.5	20.0	110			32	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 24
		Location: CHP/AHP Area			Red. Lev. (m): 71.88 m		Term. Depth (m): 13
		B.H. Coord. :1992839N, 472593E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Reddish Brown Clay Silt
1.0			SPT	(5, 8, 11) 19			Reddish Brown Clay Silt
2.0			UDS				Red Clay Silt with Gravels
3.0			SPT	(17, 40, 53) 83			Red Clay Silt with Gravels
4.0			UDS				Red Clay Silt with Gravels
4.5							Red Clay Silt with Gravels
5.0	6.0	-	SPT	119/30 cm	0	0	Red Highly Weathered Rock (Shale)
6.0	6.5	55			0	0	Red Highly Weathered Rock (Shale)
6.5	8.0	65	SPT	108/20 cm	15	0	Brownish Red Moderately Weathered Rock (Shale)
8.0	9.5	60			17	0	Reddish Grey Moderately Weathered Rock (Shale)
9.5	11.0	70			21	0	Reddish Grey Moderately Weathered Rock (Shale)
11.0	12.0	-			0	0	Reddish Grey Highly Weathered Rock (Shale)
12.0	13.0	80			0	0	Red Highly Weathered Rock (Shale)
13.0		-	SPT	110/13 cm	0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No. : 25
		Location: CHP/AHP Area			Red. Lev. (m): 68.88 m		Term. Depth (m): 13
		B.H. Coord. : 1993093N, 472460E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Red Clay Silt with Gravels
1.0			SPT	(6, 13, 18)			Red Clay Silt with Gravels
2.0			UDS	31			Red Clay Silt with Gravels
2.5							Red Clay Silt with Gravels
3.0	3.5	-	SPT	78/25 cm	0	0	Red Highly Weathered Rock (Shale)
3.5	4.0	40			0	0	Red Highly Weathered Rock (Shale)
4.0	4.5	-	UDS		0	0	Red Highly Weathered Rock (Shale)
4.5	5.0	60			0	0	Red Highly Weathered Rock (Shale)
5.0	6.0	-	SPT	100/21 cm	0	0	Red Highly Weathered Rock (Shale)
6.0	6.5	75			0	0	Red Highly Weathered Rock (Shale)
6.5	7.5	-	SPT	74/14 cm	0	0	Red Highly Weathered Rock (Shale)
7.5	8.0	80			0	0	Red Highly Weathered Rock (Shale)
8.0	9.0	-	SPT	95/11 cm	0	0	Red Highly Weathered Rock (Shale)
9.0	9.5	90			0	0	Red Highly Weathered Rock (Shale)
9.5	10.5	-	SPT	123/18 cm	0	0	Red Highly Weathered Rock (Shale)
10.5	11.0	90			0	0	Red Highly Weathered Rock (Shale)
11.0	12.0	-	SPT	100/11 cm	0	0	Red Highly Weathered Rock (Shale)
12.0	13.0	100			0	0	Red Highly Weathered Rock (Shale)
13.0		-	SPT	100/10 cm	0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 26
		Location: CHP/AHP Area			Red. Lev. (m): 67.95 m		Term. Depth (m): 13
		B.H. Coord. : 1993255N, 472375E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Red Clay Silt with Gravels
1.0			SPT	(7, 9, 13) 22			Red Clay Silt with Gravels
2.0			UDS				Red Clay Silt with Gravels
3.0			SPT	(11, 18, 27) 45			Red Clay Silt with Gravels
3.5		30			0	0	Red Highly Weathered Rock (Shale)
4.0		-	UDS		0	0	Red Highly Weathered Rock (Shale)
4.5		60			0	0	Red Highly Weathered Rock (Shale)
5.0		-	SPT	(15, 18, 26) 44	0	0	Red Highly Weathered Rock (Shale)
6.0		60			0	0	Red Highly Weathered Rock (Shale)
6.5	8.0	90			49	0	Red Moderately Weathered Rock (Shale)
8.0	9.0	-			0	0	Red Highly Weathered Rock (Shale)
9.0	9.5	100			0	0	Red Highly Weathered Rock (Shale)
9.5	10.5	-	SPT	N > 100	0	0	Red Highly Weathered Rock (Shale)
10.5	11.0	-			0	0	Red Highly Weathered Rock (Shale)
11.0	12.0	-	SPT	95/13 cm	0	0	Red Highly Weathered Rock (Shale)
12.0	13.0	-			0	0	Red Highly Weathered Rock (Shale)
13.0		-	SPT	90/14 cm	0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 27
		Location: CHP/AHP Area			Red. Lev. (m): 67.40 m		Term. Depth (m): 10
		B.H. Coord. : 19930781N, 472649E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt with Gravels
1.0			SPT	(7, 11, 18)			Reddish Brown Clay Silt with Gravels
2.0			UDS	29			Red Clay Silt with Gravels
3.0			SPT	(4, 10, 23)			Red Clay Silt with Gravels
3.5				33			Red Clay Silt with Gravels
4.0			UDS				Red Clay Silt with Gravels
4.5							Red Clay Silt with Gravels
5.0			SPT	(10, 17, 33)			Red Clay Silt with Gravels
6.0		60		48			Red Clay Silt with Gravels
6.5	7.0	-	SPT	93/25 cm	0	0	Red Highly Weathered Rock (Shale)
7.0	8.0	70			0	0	Red Highly Weathered Rock (Shale)
8.0	9.0	-	SPT	100/18 cm	0	0	Red Highly Weathered Rock (Shale)
9.0	9.5	-			0	0	Red Highly Weathered Rock (Shale)
9.5	10.0	70			0	0	Red Highly Weathered Rock (Shale)
10.0		-	SPT	87/13 cm	0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 28
		Location: CHP/AHP Area			Red. Lev. (m): 69.10 m		Term. Depth (m): 13
		B.H. Coord. : 1992897N, 472704E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Brown Clay Silt with Gravels
1.0			SPT	(4, 8, 13) 21			Brown Clay Silt with Gravels
2.0			UDS				Red Clay Silt with Gravels
3.0			SPT	(14, 25, 37) 62			Red Clay Silt with Gravels
4.0			UDS				Red Clay Silt with Gravels
4.5							Red Clay Silt with Gravels
5.0			SPT	(16, 29, 45) 74			Red Clay Silt with Gravels
6.0							Red Clay Silt with Gravels
6.5			UDS				Greyish Red Clay Silt with Gravels
7.0							Red Sandy Clay Silt
8.0	9.0	-	SPT	95/10 cm	0	0	Red Highly Weathered Rock (Shale)
9.0	9.5	55			0	0	Red Highly Weathered Rock (Shale)
9.5	11.0	50	SPT	108/13 cm	28	0	Red Moderately Weathered Rock (Shale)
11.0	12.5	55			35	0	Reddish Grey Moderately Weathered Rock (Shale)
12.5	13.0	25			15	0	Reddish Grey Moderately Weathered Rock (Shale)
13.0		-			0	0	Reddish Grey Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 29
		Location: CHP/AHP Area			Red. Lev. (m): 67.48 m		Term. Depth (m): 13
		B.H. Coord. : 1993149N, 472521E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt with Gravels
1.0			SPT	(4, 9, 11) 20			Brownish Red Clay Silt with Gravels
2.0			UDS				Reddish Brown Clay Silt with Gravels
3.0	3.5		SPT	100/36 cm			Red Highly Weathered Rock (Shale)
3.5	4.0	30					Red Highly Weathered Rock (Shale)
4.0	4.5	-	UDS				Red Highly Weathered Rock (Shale)
4.5	5.0	60			96	0	Red Moderately Weathered Rock (Shale)
5.0	6.5	70			29	0	Red Moderately Weathered Rock (Shale)
6.5	7.0	-			0	0	Red Highly Weathered Rock (Shale)
7.0	8.0	80			0	0	Red Highly Weathered Rock (Shale)
8.0	9.0	-	SPT	81/22 cm	0	0	Red Highly Weathered Rock (Shale)
9.0	9.5	90			0	0	Red Highly Weathered Rock (Shale)
9.5	10.5	-	SPT	106/19cm	0	0	Red Highly Weathered Rock (Shale)
10.5	11.0	90			0	0	Red Highly Weathered Rock (Shale)
11.0	13.0	-	SPT	70/13 cm	0	0	Red Highly Weathered Rock (Shale)
13.0		-	SPT	80/11 cm	0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 30	
		Location: CHP/AHP Area			Red. Lev. (m): 67.25 m		Term. Depth (m):13	
		B.H. Coord. : 1993311N, 472485E					Water Table (m): Nil	
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description	
From	To							
0.0			SPT	(4, 5, 6) 11			Dark Brown Clay Silt with Gravels	
1.0							Dark Brown Clay Silt with Gravels	
2.0							Brownish Red Clay Silt with Gravels	
3.0		3.5	SPT	(2, 2, 6) 8			Red Clay Silt with Gravels	
3.5		4.0	UDS		0	0	Red Clay Silt with Gravels	
4.0		4.5			0	0	Red Clay Silt with Gravels	
4.5		5.0			0	0	Red Clay Silt with Gravels	
5.0		6.0	SPT	(2, 4, 7) 11	0	0	Red Clay Silt with Gravels	
6.0		6.5	-	UDS	0	0	Red Clay Silt with Gravels	
6.5		7.5			0	0	Greyish Red Highly Weathered Rock (Shale)	
7.5		8.0			0	0	Red Highly Weathered Rock (Shale)	
8.0		9.0	-	SPT	128/33cm	0	0	Yellowish Grey Highly Weathered Rock (Shale)
9.0		9.5	50	SPT	101/25 cm	0	0	Red Highly Weathered Rock (Shale)
9.5		11.0	65			18	0	Red Moderately Weathered Rock (Shale)
11.0		13.0	-			19	0	Greyish Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 31
		Location: CHP/AHP Area			Red. Lev. (m): 65.25 m		Term. Depth (m): 17
		B.H. Coord. : 1993062N, 472903E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0	17.0	140	SPT	(4, 7, 11) 18	0	0	Brown Clay Silt with Gravels
1.0							Brown Clay Silt with Gravels
2.0							Brown Clay Silt with Gravels
3.0			Brown Clay Silt with Gravels				
3.5			Brown Clay Silt with Gravels				
4.0			Brown Clay Silt with Gravels				
4.5			Brown Clay Silt with Gravels				
5.0			Brown Clay Silt				
6.0			Brown Clay Silt				
6.5			Brown Clay Silt				
7.0			Brown Clay Silt				
8.0			Brown Clay Silt				
9.0			Brown Clay Silt				
9.5			Brown Clay Silt				
10.5			Brown Clay Silt				
11.0			Brown Clay Silt				
13.0			Brown Clay Silt				
14.0			Brown Clay Silt				
16.0	-	SPT	103/13 cm	0	0	Red Highly Weathered Rock (Shale)	
17.0						Red Highly Weathered Rock (Shale)	



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 32
		Location: CHP/AHP Area			Red. Lev. (m): 64.30 m		Term. Depth (m): 30
		B.H. Coord. :1993054N, 472887E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt
1.0			SPT	(9, 14, 20) 34			Brown Clay Silt with Gravels
2.0			UDS				Brown Clay Silt with Gravels
3.0			SPT	(13, 19, 24) 43			Brown Clay Silt with Gravels
4.0			UDS				Brown Clay Silt
5.0			SPT	(14, 26, 37) 63			Brown Clay Silt
6.0							Brown Clay Silt
6.5			UDS				Brown Clay Silt with Gravels
8.0			SPT	(16, 29, 37) 66			Brown Clay Silt with Gravels
9.0							Brown Sandy Clay Silt
9.5			UDS				Brown Clay Silt with Gravels
10.0							Brown Clay Silt with Gravels
10.5							Brown Clay Silt with Gravels
11.0			SPT	(13, 19, 31) 50			Greyish Brown Clay Silt
12.0							Brown Clay Silt
13.0							Brown Clay Silt
14.0			UDS				Brown Clay Silt
15.0							Brown Clay Silt
16.0							Brown Clay Silt
17.0	18.0	-	SPT	110/18 cm	0	0	Red Highly Weathered Rock (Shale)
18.0	19.0	120			0	0	Red Highly Weathered Rock (Shale)
19.0	20.0	120			0	0	Red Highly Weathered Rock (Shale)
20.0	21.0	-	SPT	90/11 cm	0	0	Red Highly Weathered Rock (Shale)
21.0	22.0	120			0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No. : 32
		Location: CHP/AHP Area			Red. Lev. (m): 64.30 m		Term. Depth (m): 30
		B.H. Coord. : 1993054N, 472887E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
22.0	23.0	130	SPT	98/11 cm	0	0	Red Highly Weathered Rock (Shale)
23.0	26.0	-	SPT	107/10 cm	0	0	Red Highly Weathered Rock (Shale)
26.0	29.0	-	SPT	80/5 cm	0	0	Red Highly Weathered Rock (Shale)
29.0	30.0	-			0	0	Red Highly Weathered Rock (Shale)

Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana		B.H.No. : 32
Location: CHP/AHP Area	Red. Lev. (m): 64.30 m	Term. Depth (m): 30
B.H. Coord. : 1993054N, 472887E		Water Table (m): Nil

Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
22.0	23.0	130	SPT	98/11 cm	0	0	Red Highly Weathered Rock (Shale)
23.0	26.0	-	SPT	107/10 cm	0	0	Red Highly Weathered Rock (Shale)
26.0	29.0	-	SPT	80/5 cm	0	0	Red Highly Weathered Rock (Shale)
29.0	30.0	-			0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 33
		Location: CHP/AHP Area			Red. Lev. (m): 66.45 m		Term. Depth (m): 30
		B.H. Coord. : 1993405N, 472664E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt
1.0			SPT	(4, 6, 9)			Dark Brown Clay Silt
2.0			UDS	15			Brown Clay Silt
3.0			SPT	(5, 8, 15)			Brown Clay Silt
4.0			UDS	13			Brown Clay Silt
5.0			SPT	(10, 20, 25)			Brown Clay Silt
6.5			UDS	45			Brown Clay Silt
8.0			SPT	(7, 18, 28)			Brown Clay Silt
9.5			SPT	(9, 14, 22)			Brown Clay Silt
11.0			SPT	(11, 14, 22)			Brown Clay Silt with Gravels
13.0				36			Brown Clay Silt with Gravels
14.0			SPT	(13, 21, 40)			Brown Clay Silt with Gravels
16.0				61			Brown Clay Silt with Gravels
17.0	19.0	-	SPT	112/25 cm	0	0	Red Highly Weathered Rock (Shale)
19.0	20.0	145			0	0	Red Highly Weathered Rock (Shale)
20.0	21.5	70	SPT	97/13 cm	19	0	Red Moderately Weathered Rock (Shale)
21.5	23.0	80			15	0	Greyish Red Moderately Weathered Rock (Shale)
23.0	24.5	75			17	0	Greyish Red Moderately Weathered Rock (Shale)
24.5	26.0	85			15	0	Greyish Red Moderately Weathered Rock (Shale)
26.0	27.5	65			21	0	Greyish Red Moderately Weathered Rock (Shale)
27.5	29.0	-			0	0	Greyish Red Highly Weathered Rock (Shale)
29.0	30.0	70			0	0	Red Highly Weathered Rock (Shale)
30.0		-	SPT	95/11 cm	0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 34		
		Location: CHP/AHP Area			Red. Lev. (m): 66.10 m		Term. Depth (m): 30		
		B.H. Coord. : 1993265N, 472740E					Water Table (m): Nil		
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description		
From	To								
0.0			SPT	(4, 4, 6) 10			Dark Brown Clay Silt with Gravels		
1.0							Dark Brown Clay Silt with Gravels		
2.0							Dark Brown Clay Silt with Gravels		
3.0							Dark Brown Clay Silt with Gravels		
4.0							Brownish Red Clay Silt		
4.5							Reddish Brown Clay Silt		
5.0			SPT	(4, 7, 11) 18			Reddish Brown Clay Silt		
6.0			Reddish Brown Clay Silt						
6.5			UDS				Reddish Brown Clay Silt		
7.5			Reddish Brown Clay Silt						
8.0			SPT				(5, 7, 13) 20	Reddish Brown Clay Silt	
9.0			Brown Sandy Clay Silt with Gravels						
9.5			SPT	(5, 9, 14) 23				Brown Sandy Clay Silt with Gravels	
11.0			SPT					(6, 10, 13) 23	Brown Sandy Clay Silt with Gravels
12.0			Brown Sandy Clay Silt with Gravels						
13.0			Brown Sandy Clay Silt with Gravels						
14.0	SPT	(6, 10, 19) 29	Brown Sandy Clay Silt with Gravels						
17.0	18.5		88		SPT	91/19 cm	17		0
18.5	20.0		100			19	0		Greyish Red Moderately Weathered Rock (Shale)
20.0	21.5		110			19	0	Greyish Red Moderately Weathered Rock (Shale)	
21.5	23.0		125			17	0	Greyish Red Moderately Weathered Rock (Shale)	
23.0	24.5		120			25	0	Greyish Red Moderately Weathered Rock (Shale)	
24.5	25.0	-			0	0	Greyish Red Highly Weathered Rock (Shale)		



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 34
		Location: CHP/AHP Area			Red. Lev. (m): 66.10		Term. Depth (m): 30
		B.H. Coord. : : 1993265N, 472740E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
25.0	26.0	125	SPT	99/18 cm	0	0	Greyish Red Highly Weathered Rock (Shale)
26.0	28.5	-			10	0	Red Moderately Weathered Rock (Shale)
28.5	30.0	-			23	0	Red Moderately Weathered Rock (Shale)
30.0					0	0	Greyish Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 35		
		Location: CHP/AHP Area			Red. Lev. (m): 66.20 m		Term. Depth (m): 30		
		B.H. Coord. : 1993126N, 472812E					Water Table (m): Nil		
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description		
From	To								
0.0			SPT	(4, 6, 8) 14			Dark Brown Clay Silt with Gravels		
1.0							Dark Brown Clay Silt with Gravels		
2.0							UDS	Dark Brown Clay Silt with Gravels	
3.0							SPT	(4, 5, 7) 12	Brown Clay Silt
4.0							UDS	Brown Clay Silt	
4.5								Brown Clay Silt	
5.0			SPT	(2, 5, 9) 14			Brown Clay Silt		
6.0				Brown Clay Silt					
6.5			UDS	Brown Clay Silt					
7.5				Brown Clay Silt					
8.0			SPT	(4, 9, 13) 22			Brown Clay Silt		
9.0				Brown Clay Silt					
9.5			UDS	Brown Clay Silt					
10.0				Brown Clay Silt					
10.5				Brown Clay Silt					
11.0			SPT	(5, 10, 15) 25			Brown Sandy Clay Silt		
12.0				Brown Sandy Clay Silt					
13.0				Brown Sandy Clay Silt					
14.0			SPT	(5, 10, 19) 29			Brown Clay Silt with Gravels		
15.0				Brown Clay Silt with Gravels					
16.0		Brown Clay Silt with Gravels							
17.0	18.0	180	SPT	99/ 19 cm	0	0	Red Highly Weathered Rock (Shale)		
18.0	19.0				0	0	Red Highly Weathered Rock (Shale)		
19.0	20.0				0	0	Red Highly Weathered Rock (Shale)		



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 35
		Location: CHP/AHP Area			Red. Lev. (m): 66.20 m		Term. Depth (m): 30
		B.H. Coord. : 1993126N, 472812E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
19.0	22.0	140	SPT	90/11 cm	0	0	Red Highly Weathered Rock (Shale)
22.0	23.0	110			0	0	Red Highly Weathered Rock (Shale)
23.0	24.5	115			23	0	Greyish Red Moderately Weathered Rock (Shale)
24.5	26.0	115			21	0	Greyish Red Moderately Weathered Rock (Shale)
26.0	27.5	120			17	0	Greyish Red Moderately Weathered Rock (Shale)
27.5	29.0	80			23	0	Greyish Red Moderately Weathered Rock (Shale)
29.0	30.0				20	0	Greyish Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 36
		Location: CHP/AHP Area			Red. Lev. (m): 64.78 m		Term. Depth (m): 30
		B.H. Coord. : 1993303N, 472645 E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0			SPT	(5, 8, 11) 19			Brown Clay Silt with Gravels
1.0							Brown Clay Silt with Gravels
2.0							Brown Clay Silt with Gravels
3.0			SPT	(4, 10, 17) 27			Brown Clay Silt with Gravels
4.0			UDS	Brown Clay Silt with Gravels			
5.0			SPT	Brown Clay Silt			
6.0			UDS	(8, 14, 22) 36			Brown Clay Silt
6.5				Brown Clay Silt			
7.0				Brown Clay Silt			
8.0			SPT	(9, 16, 23) 39			Brown Clay Silt
9.0				Brown Clay Silt			
9.5			SPT	(15, 26, 36) 62			Brown Clay Silt
10.0				Brown Clay Silt			
11.0			SPT	(12, 22, 29) 51			Brown Clay Silt
13.0				Brown Sandy Clay Silt with Gravels			
14.0	SPT	(23, 41, 56) 97	Brown Sandy Clay Silt with Gravels				
16.0	17.0	140			0	0	Red Highly Weathered Rock (Shale)
17.0	18.5	95	SPT	103/13 cm	0	0	Red Highly Weathered Rock (Shale)
18.5	20.0	85			22	0	Red Moderately Weathered Rock (Shale)
20.0	21.5	90			20	0	Red Moderately Weathered Rock (Shale)
21.5	23.0	80			27	0	Red Moderately Weathered Rock (Shale)
23.0	24.5	75			29	0	Red Moderately Weathered Rock (Shale)
24.5	26.0	85			23	0	Red Moderately Weathered Rock



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 36
		Location: CHP/AHP Area			Red. Lev. (m): 64.78 m		Term. Depth (m): 30
		B.H. Coord. : 1993303N, 472645 E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
26.0	27.5	80			24	0	Red Moderately Weathered Rock (Shale)
27.5	29.0	85			23	0	Red Moderately Weathered Rock (Shale)
29.0	30.0	-			28	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 37
		Location: CHP/AHP Area			Red. Lev. (m): 66.13 m		Term. Depth (m): 30
		B.H. Coord. : 1993008N, 472802E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt with Gravels
1.0			SPT	(11, 12, 18) 30			Dark Brown Clay Silt with Gravels
2.0			UDS				Brownish Red Clay Silt with Gravels
3.0			SPT	116/34 cm			Red Clay Silt with Gravels
3.5							Red Clay Silt with Gravels
4.0			UDS				Red Clay Silt with Gravels
4.5							Red Clay Silt with Gravels
5.0			SPT	(16, 37, 55) 92			Red Clay Silt with Gravels
6.0							Red Clay Silt with Gravels
6.5			UDS				Red Clay Silt with Gravels
7.0							Red Clay Silt with Gravels
8.0			SPT	(13, 19, 33) 52			Red Clay Silt with Gravels
9.0							Red Clay Silt with Gravels
9.5			SPT	(22, 33, 45) 78			Red Clay Silt with Gravels
10.5							Red Clay Silt with Gravels
11.0			SPT	(24, 35, 48) 83			Red Clay Silt with Gravels
14.0	16.0	-	SPT	107/20 cm	0	0	Brownish Red Highly Weathered Rock (Shale)
16.0	17.0	130			0	0	Brownish Red Highly Weathered Rock (Shale)
17.0	18.0	130	SPT	90/10 cm	0	0	Brownish Red Highly Weathered Rock (Shale)
18.0	19.0	-			0	0	Red Highly Weathered Rock (Shale)
19.0	20.0	140			0	0	Red Highly Weathered Rock (Shale)
20.0	23.0	-	SPT	103/11 cm	0	0	Red Highly Weathered Rock (Shale)
23.0	26.0	-	SPT	105/10 cm	0	0	Red Highly Weathered Rock (Shale)
26.0	29.0	-	SPT	100/ 8 cm	0	0	Red Highly Weathered Rock (Shale)
29.0	30.0	-	SPT	80/ 5 cm	0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 38
		Location: CHP/AHP Area			Red. Lev. (m): 66.25 m		Term. Depth (m): 15
		B.H. Coord. : 1993204N, 472698E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Yellowish Brown Clay Silt with Gravels
1.0			SPT	(6, 9, 12) 21			Yellowish Brown Clay Silt with Gravels
2.0			UDS				Brown Clay Silt with Gravels
3.0			SPT	(7, 15, 25) 40			Brown Clay Silt
3.5							Brown Clay Silt
4.0			UDS				Brown Clay Silt
4.5							Brown Clay Silt
5.0			SPT	(8, 15, 20) 33			Brown Clay Silt
6.0							Brown Clay Silt
6.5			UDS				Brown Clay Silt
7.5							Brown Clay Silt
8.0			SPT	(9, 12, 16) 28			Brown Clay Silt
9.0							Brown Clay Silt
9.5			SPT	(9, 17, 28) 45			Brown Clay Silt
10.0							Brown Clay Silt
11.0			SPT	(16, 30, 34) 64			Brown Clay Silt
12.5			SPT	(11, 17, 33) 50			Brown Clay Silt
15.0			SPT	(25, 37, 47) 84			Brown Clay Silt



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 39
		Location: CHP/AHP Area		Red. Lev. (m): 66.35 m		Term. Depth (m): 20	
		B.H. Coord. : 1993034N, 472645E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0			SPT	(7, 13, 16) 29			Dark Brown Clay Silt with Gravels
1.0							Dark Brown Clay Silt with Gravels
2.0							Yellowish Brown Clay Silt with Gravels
3.0							Yellowish Brown Clay Silt with Gravels
3.5			Yellowish Brown Clay Silt with Gravels				
4.0			Yellowish Brown Clay Silt with Gravels				
4.5			Brown Clay Silt with Gravels				
5.0			Brown Clay Silt with Gravels				
6.0			Brown Clay Silt with Gravels				
6.5			Brown Clay Silt with Gravels				
7.5			Brown Clay Silt				
8.0			Brown Clay Silt				
9.0			Brown Clay Silt				
9.5			Brown Clay Silt				
10.0	Brown Clay Silt						
11.0	SPT	(15, 24, 33) 57	Brown Clay Silt				
12.0			Brown Clay Silt				
13.0			Brown Clay Silt				
14.0			Brown Clay Silt				
17.0	18.0	-	SPT	55/6 cm	0	0	Red Highly Weathered Rock (Shale)
18.0	18.5	-			0	0	Red Highly Weathered Rock (Shale)
18.5	20.0	-			26	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 40		
		Location: CHP/AHP Area			Red. Lev. (m): 66.70 m		Term. Depth (m): 20		
		B.H. Coord. : 1993414N, 472586E					Water Table (m): Nil		
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description		
From	To								
0.0							Brown Clay Silt with Gravels		
1.0							SPT	(2, 5, 8) 13	Brown Clay Silt with Gravels
2.0							UDS		Brown Clay Silt with Gravels
3.0							SPT	(5, 8, 13) 21	Greyish Brown Clay Silt with Gravels
3.5									Greyish Brown Clay Silt with Gravels
4.0							UDS		Greyish Brown Clay Silt with Gravels
4.5									Greyish Brown Clay Silt with Gravels
5.0							SPT	(7, 12, 25) 39	Brown Clay Silt with Gravels
6.0									Brown Clay Silt with Gravels
6.5							UDS		Brown Clay Silt with Gravels
7.5									Brown Clay Silt with Gravels
8.0							SPT	(10, 14, 21) 35	Greyish Brown Clay Silt
9.0									Greyish Brown Clay Silt
9.5							UDS		Greyish Brown Clay Silt
10.0									Greyish Brown Clay Silt
11.0							SPT	(9, 21, 30) 51	Greyish Brown Clay Silt
12.0									Greyish Brown Clay Silt
13.0									Greyish Brown Clay Silt
14.0							SPT	93/23 cm	Greyish Brown Clay Silt
16.0									Greyish Brown Clay Silt
17.0	18.5	90	SPT	106/20 cm	21	0	Red Moderately Weathered Rock (Shale)		
18.5	20.0	85			27	0	Red Moderately Weathered Rock (Shale)		



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 41
		Location: CHP/AHP Area			Red. Lev. (m): 62.50 m		Term. Depth (m): 30
		B.H. Coord. :1993515N, 472512 E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt with Gravels
1.0			SPT	(3, 4, 6) 10			Dark Brown Clay Silt with Gravels
2.0			UDS				Yellowish Brown Sandy Clay Silt with Gravels
3.0			SPT	(8, 13, 17) 30			Yellowish Brown Sandy Clay Silt with Gravels
4.0			UDS				Brown Sandy Clay Silt with Gravels
4.5							Brown Sandy Clay Silt with Gravels
5.0			SPT	(10, 23, 37) 60			Brown Sandy Clay Silt with Gravels
6.0							Brown Sandy Clay Silt with Gravels
6.5			UDS				Brown Sandy Clay Silt with Gravels
7.0							Brown Sandy Clay Silt with Gravels
8.0			SPT	(6, 16, 22) 38			Brown Sandy Clay Silt with Gravels
9.5			SPT	(19, 28, 40) 63			Brownish Red Sandy Clay Silt with Gravels
10.0							Brown Sandy Clay Silt with Gravels
11.0	13.0	95	SPT	125/38 cm	0	0	Red Highly Weathered Rock (Shale)
13.0	14.0	125			0	0	Red Highly Weathered Rock (Shale)
14.0	15.5	70	SPT	108/28 cm	0	0	Red Highly Weathered Rock (Shale)
15.5	17.0	65			24	0	Greyish Red Moderately Weathered Rock (Shale)
17.0	19.0	-			25	0	Greyish Red Moderately Weathered Rock (Shale)
19.0	20.0	-			0	0	Red Highly Weathered Rock (Shale)
20.0	21.5	-	SPT	89/15 cm	14	0	Red Moderately Weathered Rock (Shale)
21.5	23.0	-			0	0	Reddish Grey Highly Weathered Rock (Shale)
23.0	26.0	-	SPT	55/8cm	0	0	Red Highly Weathered Rock (Shale)
26.0	27.5	65	SPT	84/10cm	17	0	Red Moderately Weathered Rock (Shale)
27.5	30.0	140			20	0	Reddish Grey Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No. : 42
		Location: CHP/AHP Area			Red. Lev. (m): 65.70 m		Term. Depth (m): 30
		B.H. Coord. : 1993563N, 472527 E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt with Gravels
1.0			SPT	(17, 23, 26)			Dark Brown Clay Silt with Gravels
2.0			UDS	49			Yellowish Brown Sandy Clay Silt with Gravels
3.0			SPT	(9, 17, 23)			Yellowish Brown Sandy Clay Silt with Gravels
4.0			UDS	40			Brown Sandy Clay Silt with Gravels
4.5							Brown Sandy Clay Silt with Gravels
5.0			SPT	(5, 16, 23)			Brown Sandy Clay Silt with Gravels
6.0				39			Brown Sandy Clay Silt with Gravels
6.5			UDS				Brown Sandy Clay Silt with Gravels
7.5							Brown Sandy Clay Silt with Gravels
8.0			SPT	(10, 15, 21)			Brown Sandy Clay Silt with Gravels
9.0				38			Brown Sandy Clay Silt with Gravels
9.5			UDS				Brownish Red Sandy Clay Silt with Gravels
10.5							Brown Sandy Clay Silt with Gravels
11.0			SPT	(12, 23, 29)			Reddish Clay Silt with Gravels
13.0				52			Brownish Red Clay Silt with Gravels
14.0	15.5	115	SPT	(10, 17, 22)			Brownish Red Clay Silt with Gravels
15.5	17.0	-		39	25	0	Greyish Red Moderately Weathered Rock (Shale)
17.0	18.0	105			0	0	Greyish Red Highly Weathered Rock (Shale)
18.0	18.5	110			0	0	Red Highly Weathered Rock (Shale)
18.5	20.0	120			20	0	Red Moderately Weathered Rock (Shale)
20.0	21.5				21	0	Reddish Grey Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 42
		Location: CHP/AHP Area			Red. Lev. (m): 65.70 m		Term. Depth (m): 30
		B.H. Coord. : 1993563N, 472527 E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
21.5	23.0	125	SPT	55/5 cm	20	0	Red Moderately Weathered Rock (Shale)
23.0	24.5	135			23	0	Red Moderately Weathered Rock (Shale)
24.5	26.0	140			27	0	Reddish Grey Moderately Weathered Rock (Shale)
26.0	27.0	-			0	0	Reddish Grey Higly Weathered Rock (Shale)
27.0	28.0	-			0	0	Reddish Grey Higly Weathered Rock (Shale)
28.0	29.0	245			0	0	Reddish Grey Higly Weathered Rock (Shale)
29.0	30.0	60			30	0	Reddish Grey Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 43
		Location: CHP/AHP Area			Red. Lev. (m): 66.40 m		Term. Depth (m): 23
		B.H. Coord. : 1993475N, 472398 E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Brown Sandy Clay
1.0			SPT	(5, 7, 12) 19			Brown Sandy Clay Silt
2.0			UDS				Yellowish Brown Clay Silt with Gravels
3.0			SPT	(6, 11, 13) 24			Yellowish Brown Clay Silt with Gravels
3.5							Yellowish Brown Clay Silt with Gravels
4.0			UDS				Brown Clay Silt with Gravels
4.5							Brown Clay Silt with Gravels
5.0			SPT	(6, 12, 18) 30			Brown Clay Silt with Gravels
6.0							Brown Clay Silt with Gravels
6.5			UDS				Brown Clay Silt with Gravels
7.0							Brown Clay Silt with Gravels
8.0			SPT	(10, 14, 21) 35			Brown Clay Silt with Gravels
9.0							Brown Clay Silt with Gravels
9.5			UDS				Brown Clay Silt with Gravels
10.5							Brown Clay Silt with Gravels
11.0	13.0	-	SPT	102/20 cm	0	0	Red Highly Weathered Rock (Shale)
13.0	14.0	-			0	0	Red Highly Weathered Rock (Shale)
14.0	17.0	135	SPT	65/8 cm	0	0	Red Highly Weathered Rock (Shale)
17.0	20.0	-	SPT	50/5 cm	0	0	Red Highly Weathered Rock (Shale)
20.0	21.0	-	SPT	65/8 cm	0	0	Red Highly Weathered Rock (Shale)
21.0	23.0	-			18	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 44
		Location: CHP/AHP Area			Red. Lev. (m): 68.15 m		Term. Depth (m): 23
		B.H. Coord. : 1993417N, 472290 E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Brown Clay Silt with Gravels
1.0			SPT	(6, 6, 10) 16			Brown Clay Silt with Gravels
2.0			UDS				Brown Clay Silt with Gravels
3.0			SPT	(4, 6, 9) 15			Brown Clay Silt with Gravels
3.5							Brownish Red Sandy Clay
4.0			UDS				Brownish Red Sandy Clay
4.5							Brownish Red Sandy Clay
5.0			SPT	(8, 16, 24) 40			Brownish Red Sandy Clay
6.0							Brownish Red Sandy Clay
6.5			UDS				Brownish Red Sandy Clay
7.5							Brownish Red Sandy Clay
8.0		-	SPT	(8, 21, 31) 52			Greyish Red Highly Weathered Rock (Shale)
9.5		-	SPT	(18, 22, 27) 54			Greyish Red Highly Weathered Rock (Shale)
11.0		80	SPT	120/41 cm			Red Highly Weathered Rock (Shale)
12.5		-					Red Highly Weathered Rock (Shale)
14.0	15.5	140	SPT	91/19 cm	17	0	Red Moderately Weathered Rock (Shale)
15.5	17.0	120			18	0	Red Moderately Weathered Rock (Shale)
17.0	18.5	100			21	0	Red Moderately Weathered Rock (Shale)
18.5	20.0	140			23	0	Red Moderately Weathered Rock (Shale)
20.0	21.5	120			29	0	Red Moderately Weathered Rock (Shale)
21.5	23.0	100			65	0	Greyish Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 45		
		Location: CHP/AHP Area			Red. Lev. (m): 68.05 m		Term. Depth (m): 20		
		B.H. Coord. : 1993413N 472193E					Water Table (m): Nil		
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description		
From	To								
0.0			SPT	(3, 6, 8) 14			Brown Clay Silt with Gravels		
1.0							Brown Clay Silt with Gravels		
2.0							Brown Clay Silt with Gravels		
3.0			SPT	(11, 21, 28) 49			Brown Clay Silt with Gravels		
3.5			UDS	Yellowish Brown Clay Silt with Gravels					
4.0				Yellowish Brown Clay Silt with Gravels					
4.5				Brown Clay Silt with Gravels					
5.0			SPT	(7, 12, 18) 30			Yellowish Brown Clay Silt with Gravels		
6.0			UDS	Brown Sandy Clay Silt with Gravels					
6.5				Brown Sandy Clay Silt with Gravels					
7.5				Brown Sandy Clay Silt with Gravels					
8.0			SPT	(10, 15, 21) 36			Brown Sandy Clay Silt with Gravels		
9.0		-		0	0	Reddish Brown Highly Weathered Rock (Shale)			
9.5		10.0		75	UDS	0	0	Brownish Red Highly Weathered Rock (Shale)	
10.0		11.0		-	0	0	Brownish Red Highly Weathered Rock (Shale)		
11.0		13.0		70	SPT	99/20cm	0	0	Red Highly Weathered Rock (Shale)
13.0		14.0		-	0	0	Red Highly Weathered Rock (Shale)		
14.0		15.0		170	SPT	83/9cm	0	0	Red Highly Weathered Rock (Shale)
15.0		17.0		95		18	0	Red Moderately Weathered Rock (Shale)	
17.0		18.5		-		13	0	Red Moderately Weathered Rock (Shale)	
18.5	19.0	90	0	0		Red Highly Weathered Rock (Shale)			
19.0	20.0	-	0	0		Red Highly Weathered Rock (Shale)			
20.0			SPT	60	0	0	Red Highly Weathered Rock (Shale)		



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 46
		Location: CHP/AHP Area			Red. Lev. (m): 68.50 m		Term. Depth (m): 30
		B.H. Coord. : 1993413 N, 471993 E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt with Gravels
1.0			SPT	(2, 3, 4) 7			Dark Brown Clay Silt with Gravel
2.0			UDS				Brown Clay Silt with Gravel
3.0			SPT	(2, 4, 7) 11			Brown Clay Silt with Gravel
4.0			UDS				Yellowish Brown Clay Silt with Gravel
4.5							Brown Clay Silt with Gravel
5.0			SPT	(8, 14, 24) 38			Red Clay Silt
6.0							Red Clay Silt
6.5			UDS				Red Clay Silt
7.0							Red Clay Silt
8.0	9.0		SPT	100/23 cm	0	0	Greyish Red Highly Weathered Rock (Shale)
9.0	9.5				0	0	Red Highly Weathered Rock (Shale)
9.5	10.0		SPT	94/18 cm	0	0	Red Highly Weathered Rock (Shale)
10.0	11.0				0	0	Red Highly Weathered Rock (Shale)
11.0	12.0		SPT	102/13 cm	0	0	Red Highly Weathered Rock (Shale)
12.0	13.0				0	0	Red Highly Weathered Rock (Shale)
13.0	14.0				0	0	Red Highly Weathered Rock (Shale)
14.0	15.5		SPT	65/8 cm	0	0	Red Highly Weathered Rock (Shale)
15.5	17.0				22	0	Red Moderately Weathered Rock (Shale)
17.0	18.5				27	0	Red Moderately Weathered Rock (Shale)
18.5	19.0				17	0	Red Moderately Weathered Rock (Shale)
19.0	20.0				0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 46
		Location: CHP/AHP Area			Red. Lev. (m): 68.50 m		Term. Depth (m): 30
		B.H. Coord. : 1993188N 472044E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
20.0	21.0	-	SPT	83/10 cm	0	0	Red Highly Weathered Rock (Shale)
21.0	22.0	-			0	0	Red Highly Weathered Rock (Shale)
22.0	23.0	170			0	0	Red Highly Weathered Rock (Shale)
23.0	24.5	-	SPT	92/13 cm	25	0	Red Moderately Weathered Rock (Shale)
24.5	26.0	65			28	0	Red Moderately Weathered Rock (Shale)
26.0	27.5	70			18	0	Red Moderately Weathered Rock (Shale)
27.5	29.0	75			16	0	Red Moderately Weathered Rock (Shale)
29.0	30.0	65			17	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 47
		Location: CHP/AHP Area			Red. Lev. (m): 70.81 m		Term. Depth (m): 20
		B.H. Coord. : 1993072N 472054E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Brown Clay Silt with Gravels
1.0			SPT	(3, 5, 12) 17			Brown Clay Silt with Gravel
2.0			UDS				Brown Clay Silt with Gravel
3.0			SPT	(15, 29, 88) 98			Greyish / Whitish Brown Clay Silt with Gravels
3.5							Red Clay Silt with Gravels
4.0			UDS				Red Clay Silt with Gravels
4.5							Red Clay Silt with Gravels
5.0	6.0	-	SPT	(20, 28, 60) 88	0	0	Greyish Red Highly Weathered Rock (Shale)
6.0	6.5	60			0	0	Red Highly Weathered Rock (Shale)
6.5	7.5	-	UDS		0	0	Red Highly Weathered Rock (Shale)
7.5	8.0	65			0	0	Red Highly Weathered Rock (Shale)
8.0	9.0	-	SPT	103/20cm	0	0	Red Highly Weathered Rock (Shale)
9.0	9.5	80			0	0	Red Highly Weathered Rock (Shale)
9.5	10.5	-	SPT	110/18cm	0	0	Red Highly Weathered Rock (Shale)
10.5	11.0	80			0	0	Red Highly Weathered Rock (Shale)
11.0	12.0	90	SPT	90/14cm	0	0	Red Highly Weathered Rock (Shale)
12.0	14.0	120			0	0	Red Highly Weathered Rock (Shale)
14.0	15.0	80			32	0	Red Moderately Weathered Rock (Shale)
15.0	16.0	-			0	0	Red Highly Weathered Rock (Shale)
16.0	17.0	90			0	0	Red Highly Weathered Rock (Shale)
17.0	18.0	-	SPT	90/11cm	0	0	Red Highly Weathered Rock (Shale)
18.0	20.0	100			23	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 48
		Location:CHP/AHP Area			Red. Lev. (m): 67.00 m		Term. Depth (m): 10
		B.H. Coord. : 1993285N, 472542E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt with Gravels
1.0			SPT	(4, 5, 10) 12			Dark Brown Clay Silt with Gravels
2.0			UDS				Red Clay Silt with gravels
3.0			SPT	(5, 6, 10) 16			Brownish Red Clay Silt with Gravels
3.5							Brownish Red Clay Silt with Gravels
4.0			UDS				Brownish Red Sandy Clay Silt with Gravels
4.5							Greyish Red Sandy Clay Silt
5.0			SPT	(7, 11,14) 25			Greyish Red Sandy Clay Silt
6.0							Brownish Red Sandy Clay Silt
6.5			UDS				Red Sandy Clay Silt
7.5							Red Sandy Clay Silt
8.0			SPT	(7, 10, 17) 27			Red Sandy Clay Silt
9.0							Red Sandy Clay Silt
10.0			SPT	(9, 13, 20) 33			Red Sandy Clay Silt



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 49
		Location: CHP/AHP Area			Red. Lev. (m): 69.94 m		Term. Depth (m): 30
		B.H. Coord. : 1993177N, 471993E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt with Gravels
1.0			SPT	(2, 3, 4) 7			Brown Clay Silt with Gravels
2.0			UDS				Yellowish Brown Clay Silt with Gravels
3.0			SPT	(18, 24, 26) 50			Whitish Brown Clay Silt with Gravels
4.0			UDS				Brown Clay Silt with Gravels
4.5							Brownish White Clay Silt
5.0			SPT	(7, 14, 25) 39			Brownish White Sandy Clay Silt
6.0							Brown Sandy Clay Silt with Gravels
6.5			UDS				Brown Sandy Clay Silt with Gravels
7.5							Brownish Red Clay Silt
8.0	9.0	-	SPT	136/41 cm	0	0	Brownish White Highly Weathered Rock (Shale)
9.0	9.5	60			0	0	Brownish Red Highly Weathered Rock (Shale)
9.5	10.5	-	SPT	89/25 cm	0	0	Brownish White Highly Weathered Rock (Shale)
10.5	11.0	60			0	0	Whitish Brown Highly Weathered Rock (Shale)
11.0	12.0	-	SPT	112/25 cm	0	0	Brownish / Greyish White Highly Weathered Rock (Shale)
12.0	14.0	-			32	0	Whitish Brown Moderately Weathered Rock (Shale)
14.0	15.0	-			0	0	Red Highly Weathered Rock (Shale)
15.0	17.0	-			0	0	Red Highly Weathered Rock (Shale)
17.0	18.0	-	SPT	90/14 cm	0	0	Red Highly Weathered Rock (Shale)
18.0	19.0	-			0	0	Red Highly Weathered Rock (Shale)
19.0	20.0	120			0	0	Red Highly Weathered Rock (Shale)
20.0	21.5	130	SPT	88/10 cm	31	0	Red Moderately Weathered Rock (Shale)
21.5	23.0	140			22	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 49
		Location: CHP/AHP Area			Red. Lev. (m): 69.94 m		Term. Depth (m): 30
		B.H. Coord. : 1993177N, 471993E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
23.0	24.5	140	SPT	100/10 cm	23	0	Red Moderately Weathered Rock (Shale)
24.5	26.0	150			18	0	Red Moderately Weathered Rock (Shale)
26.0	27.5	150			13	0	Red Moderately Weathered Rock (Shale)
27.5	29.0	140			0	0	Red Highly Weathered Rock (Shale)
29.0	30.0	-			0	0	Red Highly Weathered Rock (Shale)
30.0		-			0	0	Red Highly Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 50
		Location: CHP/AHP Area			Red. Lev. (m): 69.57 m		Term. Depth (m): 30
		B.H. Coord. : 1993271N, 471993E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Dark Brown Clay Silt with Gravels
1.0			SPT	(3, 5, 7) 12			Dark Brown Clay Silt with Gravels
2.0			UDS				Reddish Brown Clay Silt with Gravels
3.0			SPT	(3, 4, 6) 10			Brown Clay Silt with Gravels
4.0			UDS				Brown Clay Silt with Gravels
4.5							Brown Silty Clay with Gravels
5.0	6.0		SPT	(19, 33, 50) 83			Brown Silty Clay with Gravels
6.0	6.5						Brown Silty Clay with Gravels
6.5	7.5		UDS				Red Silty Clay with Gravels
7.5	8.0						Brownish Red Silty Clay with Gravels
8.0	9.0	-	SPT	119/18 cm	0	0	Red Highly Weathered Rock (Shale)
9.0	9.5	70			0	0	Red Highly Weathered Rock (Shale)
9.5	10.5	-	SPT	120/20 cm	0	0	Red Highly Weathered Rock (Shale)
10.5	11.0	70			44	0	Red Moderately Weathered Rock (Shale)
11.0	12.0	-			0	0	Red Highly Weathered Rock (Shale)
12.0	14.0	120			29	0	Yellowish /Whitish Grey Moderately Weathered Rock (Shale)
14.0	15.5	120			47	0	Yellowish /Whitish Grey Moderately Weathered Rock (Shale)
15.5	17.0	120			35	0	Yellowish /Whitish Grey Moderately Weathered Rock (Shale)
17.0	18.5	130			55	0	Yellowish /Whitish Grey Moderately Weathered Rock (Shale)
18.5	20.0	130			35	0	Yellowish /Whitish Grey Moderately Weathered Rock (Shale)
20.0	21.5	140			35	0	Greyish Red Moderately Weathered Rock (Shale)
21.5	23.0	140			12	0	Greyish Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 50
		Location: CHP/AHP Area			Red. Lev. (m): 69.57 m		Term. Depth (m): 30
		B.H. Coord. : 1993271N, 471993E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
23.0	24.5	140			17	0	Greyish Red Moderately Weathered Rock (Shale)
24.5	26.0	150			23	0	Greyish Red Moderately Weathered Rock (Shale)
26.0	27.5	-			21	0	Greyish Red Moderately Weathered Rock (Shale)
27.5	29.0	-			28	0	Greyish Red Moderately Weathered Rock (Shale)
29.0	30.0	-			25	0	Greyish Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 51
		Location: CHP/AHP Area			Red. Lev. (m): 70.60 m		Term. Depth (m): 30
		B.H. Coord. : 1993076N 471993E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0			SPT	(2, 4, 6) 10			Yellowish Brown Clay Silt with Gravels
1.0							Brown Clay Silt with Gravels
2.0							Yellowish Brown Clay Silt with Gravels
3.0							Red Clay Silt
4.0			UDS	12			Red Clay Silt with Gravels
4.5		40			0	0	Red Highly Weathered Rock (Shale)
5.0	6.0	-	SPT	123	0	0	Greyish Red Highly Weathered Rock (Shale)
6.0	6.5	60			0	0	Red Highly Weathered Rock (Shale)
6.5	7.5	-	UDS		0	0	Red Highly Weathered Rock (Shale)
7.5	8.0	65			0	0	Red Highly Weathered Rock (Shale)
8.0	9.0	-	SPT	102/20 cm	0	0	Red Highly Weathered Rock (Shale)
9.0	9.5	70			0	0	Red Highly Weathered Rock (Shale)
9.5	10.5	-	UDS		0	0	Red Highly Weathered Rock (Shale)
10.5	11.0	70			0	0	Red Highly Weathered Rock (Shale)
11.0	14.0	-	SPT	80/14 cm	0	0	Red Highly Weathered Rock (Shale)
14.0	15.0	90	SPT	98/13 cm	0	0	Red Highly Weathered Rock (Shale)
15.0	16.0	-			0	0	Red Highly Weathered Rock (Shale)
16.0	17.0	105			0	0	Red Highly Weathered Rock (Shale)
17.0	19.0	-	SPT	85/14 cm	0	0	Red Highly Weathered Rock (Shale)
19.0	20.0	120			37	0	Red Moderately Weathered Rock (Shale)
20.0	21.0	-			0	0	Red Highly Weathered Rock (Shale)
21.0	23.0	-			0	0	Red Highly Weathered Rock



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 51
		Location: CHP/AHP Area			Red. Lev. (m): 70.60 m		Term. Depth (m): 30
		B.H. Coord. :1993076N 471993E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
23.0	24.5	130			88	0	Red Moderately Weathered Rock (Shale)
24.5	26.0	120			42	0	Red Moderately Weathered Rock (Shale)
26.0	27.0	130			50	0	Red Moderately Weathered Rock (Shale)
27.0	29.0	140			23	0	Red Moderately Weathered Rock (Shale)
29.0	30.0	-			32	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 52
		Location: CHP/AHP Area			Red. Lev. (m): 67.50 m		Term. Depth (m): 25
		B.H. Coord. : 1993312N, 472279E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Brown Clay Silt with Gravels
1.0			SPT	(4, 5, 10) 15			Brown Clay Silt with Gravels
2.0			UDS				Brown Clay Silt with Gravels
3.0			SPT	(6, 9, 21) 30			Brown Clay Silt with Gravels
4.0			UDS				Brown Clay Silt with Gravels
5.0			SPT	(10, 15, 26) 41			Brown Clay Silt with Gravels
6.5			UDS				Red Sandy Clay Silt
8.0	9.5	60	SPT	89/18 cm	23	0	Greyish Red Moderately Weathered Rock (Shale)
9.5	11.0	105			22	0	Greyish Red Moderately Weathered Rock (Shale)
11.0	12.5	85			46	0	Greyish Red Moderately Weathered Rock (Shale)
12.5	14.0	75			69	0	Greyish Red Moderately Weathered Rock (Shale)
14.0	15.5	110			21	0	Greyish Red Moderately Weathered Rock (Shale)
15.5	17.0	120			24	0	Greyish Red Moderately Weathered Rock (Shale)
17.0	18.5	120			34	0	Greyish Red Moderately Weathered Rock (Shale)
18.5	20.0	125			29	0	Greyish Red Moderately Weathered Rock (Shale)
20.0	21.5	120			34	0	Greyish Red Moderately Weathered Rock (Shale)
21.5	23.0	120			25	0	Greyish Red Moderately Weathered Rock (Shale)
23.0	25.0	150			31	0	Greyish Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No. : 53	
		Location: CHP/AHP Area			Red. Lev. (m): 68.45 m		Term. Depth (m): 10	
		B.H. Coord. : 1993192N, 472366E					Water Table (m): Nil	
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description	
From	To							
0.0							Dark Brown Clay Silt with Gravels	
1.0			SPT	(7, 10, 16) 26			Dark Brown Clay Silt with Gravels	
2.0			UDS				Red Clay Silt with gravels	
3.0			SPT	(30, 30, 65) 95			Brownish Red Clay Silt with Gravels	
4.0	4.5				0	0	Red Highly Weathered Rock (Shale)	
4.5	5.0				0	0	Red Highly Weathered Rock (Shale)	
5.0	6.5	70	SPT	(101/20cm)	0	0	Greyish Red Highly Weathered Rock (Shale)	
6.5	8.0	80			0	0	Greyish Red Highly Weathered Rock (Shale)	
8.0	9.5	-	SPT	(100/14cm)	0	0	Red Highly Weathered Rock (Shale)	
9.5	10.0	-	SPT	(85/19cm)	0	0	Red Highly Weathered Rock (Shale)	



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 54
		Location: CHP/AHP Area			Red. Lev. (m): 71.94 m		Term. Depth (m): 10
		B.H. Coord. : 1992985N, 472473E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Yellowish Brown Clay Silt with Gravels
1.0			SPT	(8, 11, 13) 24			Brown Clay Silt with Gravels
2.0			UDS				Brown Clay Silt with Gravels
3.0	3.5		SPT	113/25 cm	0	0	Red Highly Weathered Rock (Shale)
3.5	4.0	30			0	0	Red Highly Weathered Rock (Shale)
4.0	4.5	-	UDS		0	0	Red Highly Weathered Rock (Shale)
4.5	5.0	50			0	0	Red Highly Weathered Rock (Shale)
5.0	6.0	-	SPT	136/33 cm	0	0	Red Highly Weathered Rock (Shale)
6.0	6.5	60			0	0	Red Highly Weathered Rock (Shale)
6.5	7.5	-	SPT	138/27 cm	0	0	Red Highly Weathered Rock (Shale)
7.5	8.0	70			23	0	Red Moderately Weathered Rock (Shale)
8.0	9.0	-			0	0	Red Highly Weathered Rock (Shale)
9.0	10.0	-			50	0	Red Moderately Weathered Rock (Shale)



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 55	
		Location: CHP/AHP Area			Red. Lev. (m): 67.36 m		Term. Depth (m): 10	
		B.H. Coord. : 1993237N, 472454E					Water Table (m): Nil	
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description	
From	To							
0.0							Dark Brown Clay Silt with Gravels	
1.0			SPT	(5, 8, 10) 18			Dark Brown Clay Silt with Gravels	
2.0			UDS				Brownish Red Clay Silt with Gravels	
3.0			SPT	(30, 40, 35) 75			Red Clay Silt with Gravels	
4.0			UDS		0	0	Red Highly Weathered Rock (Shale)	
5.0			SPT	131/31 cm	0	0	Greyish Red Highly Weathered Rock (Shale)	
6.0					0	0	Red Highly Weathered Rock (Shale)	
6.5			SPT	114/28 cm	0	0	Greyish Red Highly Weathered Rock (Shale)	
7.5					0	0	Red Highly Weathered Rock (Shale)	
8.0			SPT	88/18 cm	0	0	Red Highly Weathered Rock (Shale)	
9.0					0	0	Red Highly Weathered Rock (Shale)	
10.0			SPT	118/25 cm	0	0	Red Highly Weathered Rock (Shale)	



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Field Borelog		Project: 4 x 270MW Thermal Power Plant at Manuguru, Telangana					B.H.No.: 56
		Location: CHP/AHP Area			Red. Lev. (m): 69.20 m		Term. Depth (m): 10
		B.H. Coord. : 1993030N, 472562E					Water Table (m): Nil
Drill Run (m)		Drilling Time (min)	Sample Type	N-Value	Core Recovery (%)	RQD (%)	Strata Description
From	To						
0.0							Red Clay Silt
1.0			SPT	(8, 12, 15) 27			Red Clay Silt
2.0			UDS				Red Clay Silt
3.0	3.5		SPT	(15, 28, 38) 46	0	0	Red Highly Weathered Rock (Shale)
3.5	4.0	20			0	0	Red Highly Weathered Rock (Shale)
4.0	4.5	-	UDS		0	0	Red Highly Weathered Rock (Shale)
4.5	5.0	30			0	0	Red Highly Weathered Rock (Shale)
5.0	6.0	-	SPT	77/18 cm	0	0	Red Highly Weathered Rock (Shale)
6.0	6.5	60			0	0	Red Highly Weathered Rock (Shale)
6.5	7.5	-	SPT	101/25cm	0	0	Red Highly Weathered Rock (Shale)
7.5	8.0	80			0	0	Red Highly Weathered Rock (Shale)
8.0	9.0	-	SPT	108/25 cm	0	0	Red Highly Weathered Rock (Shale)
9.0	10.0	100			40	0	Red Moderately Weathered Rock (Shale)
10.0		-			0	0	Red Highly Weathered Rock (Shale)

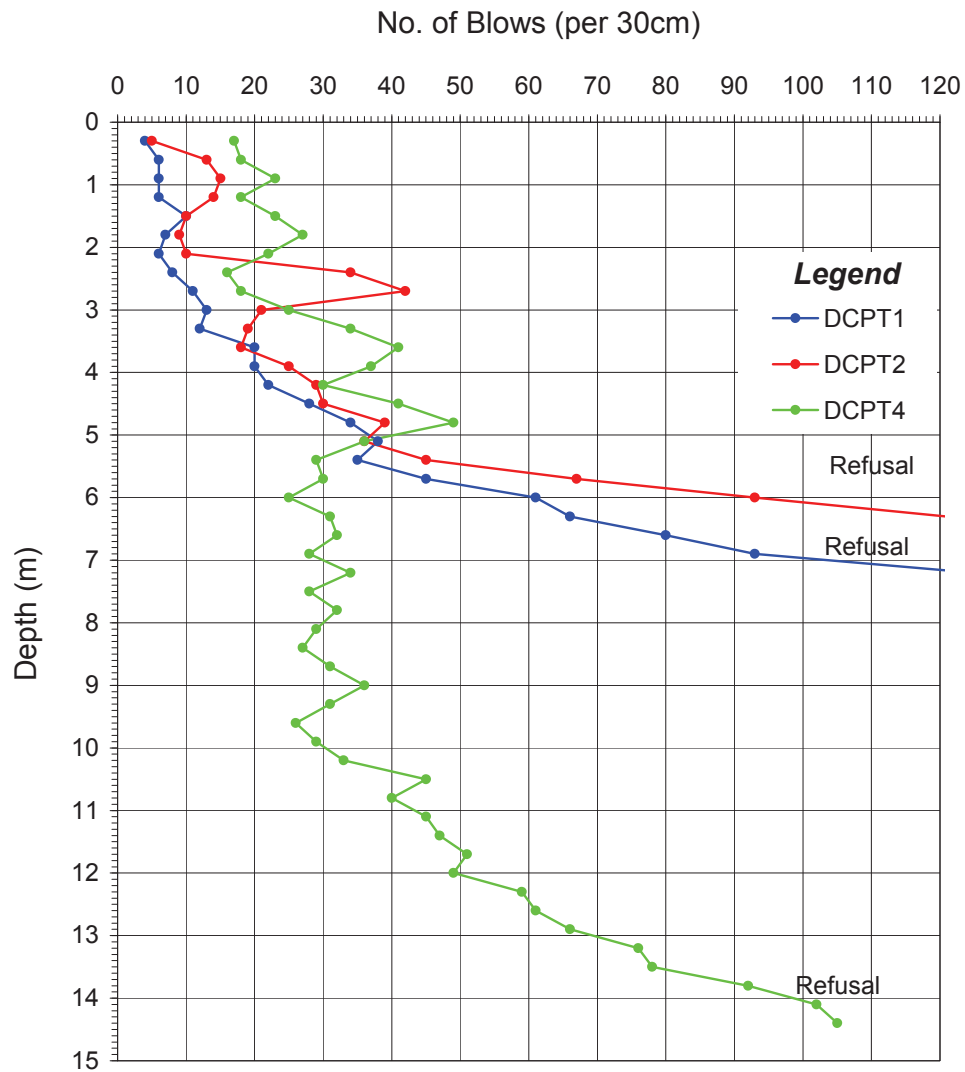


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Dynamic Cone Penetration Test Curves



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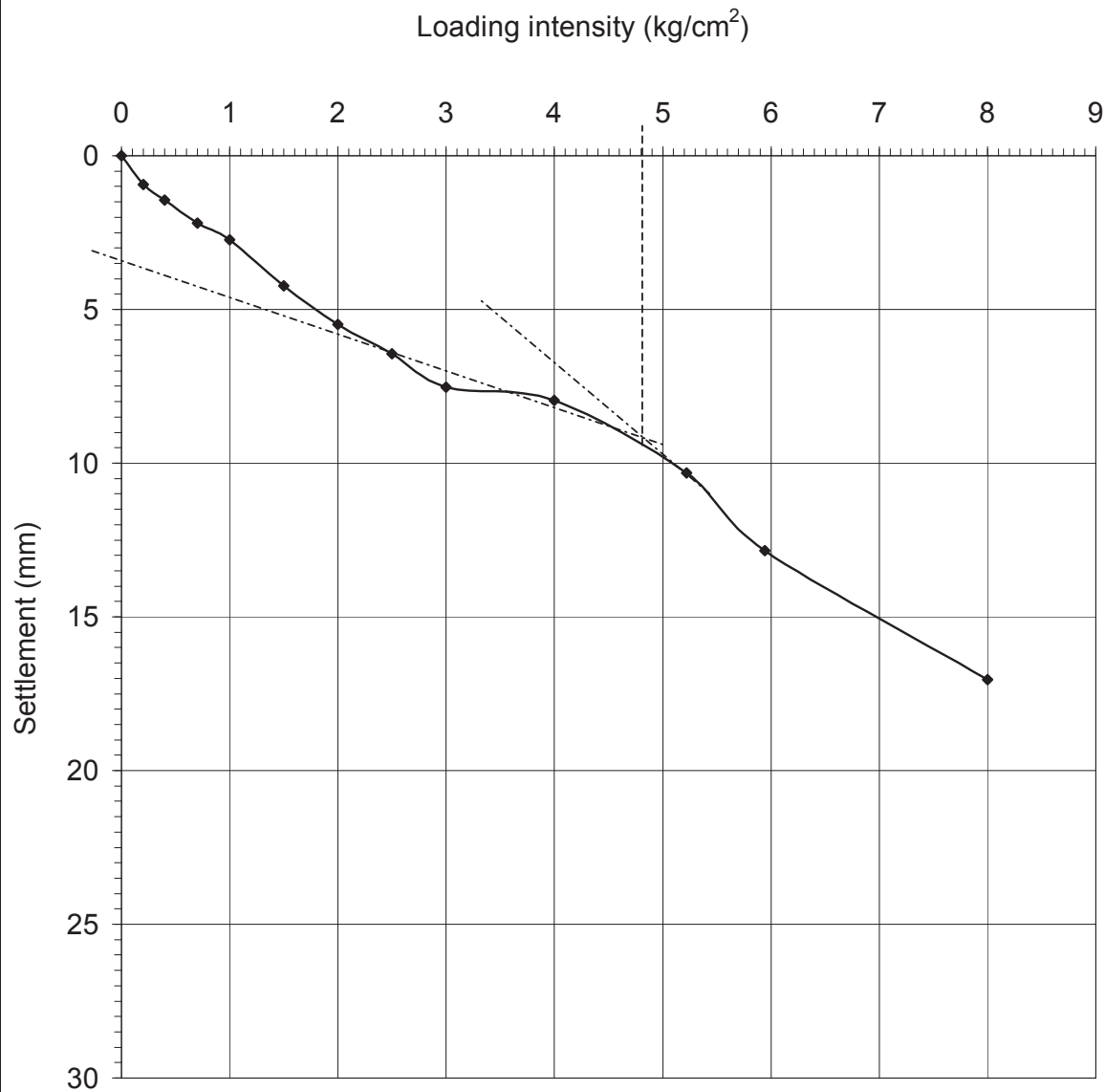
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Ultimate Bearing Capacity = 48 t/m^2

Safe Bearing Capacity = $48 / 2.5 = 19 \text{ t/m}^2$



Size of plate	= 60 x 60 cm
Depth of test	= 3m
Final loading intensity	= 8 kg/cm^2
Corresponding settlement	= 17.05mm
Test condition	= Saturated

Plate Load Test - IPLT1



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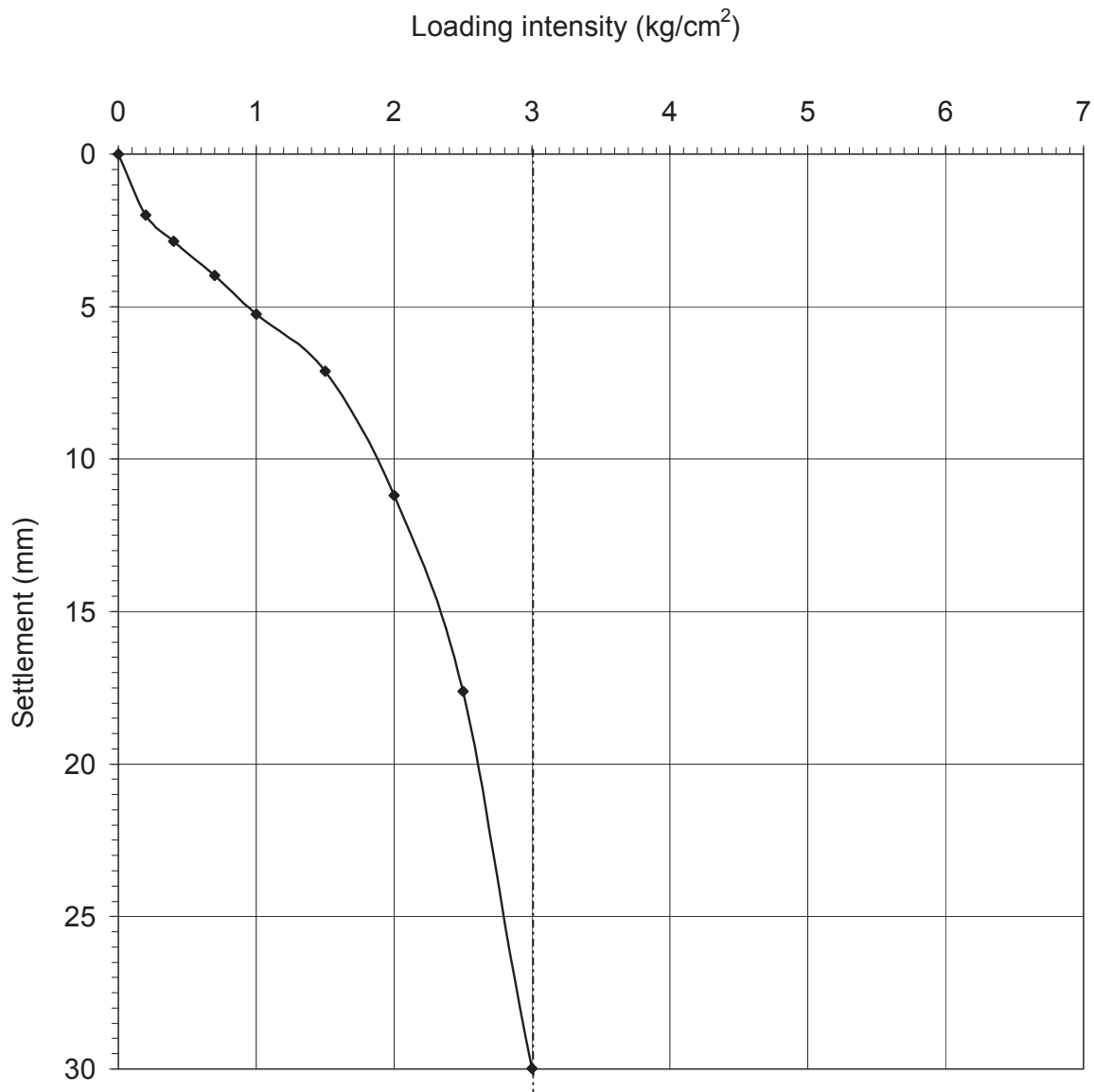
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Ultimate Bearing Capacity = 30 t/m^2

Safe Bearing Capacity = $30 / 2.5 = 12 \text{ t/m}^2$



Size of plate	= 60 x 60 cm
Depth of test	= 3m
Final loading intensity	= 4 kg/cm^2
Corresponding settlement sustained	= Load not sustained

Plate Load Test - IPLT3



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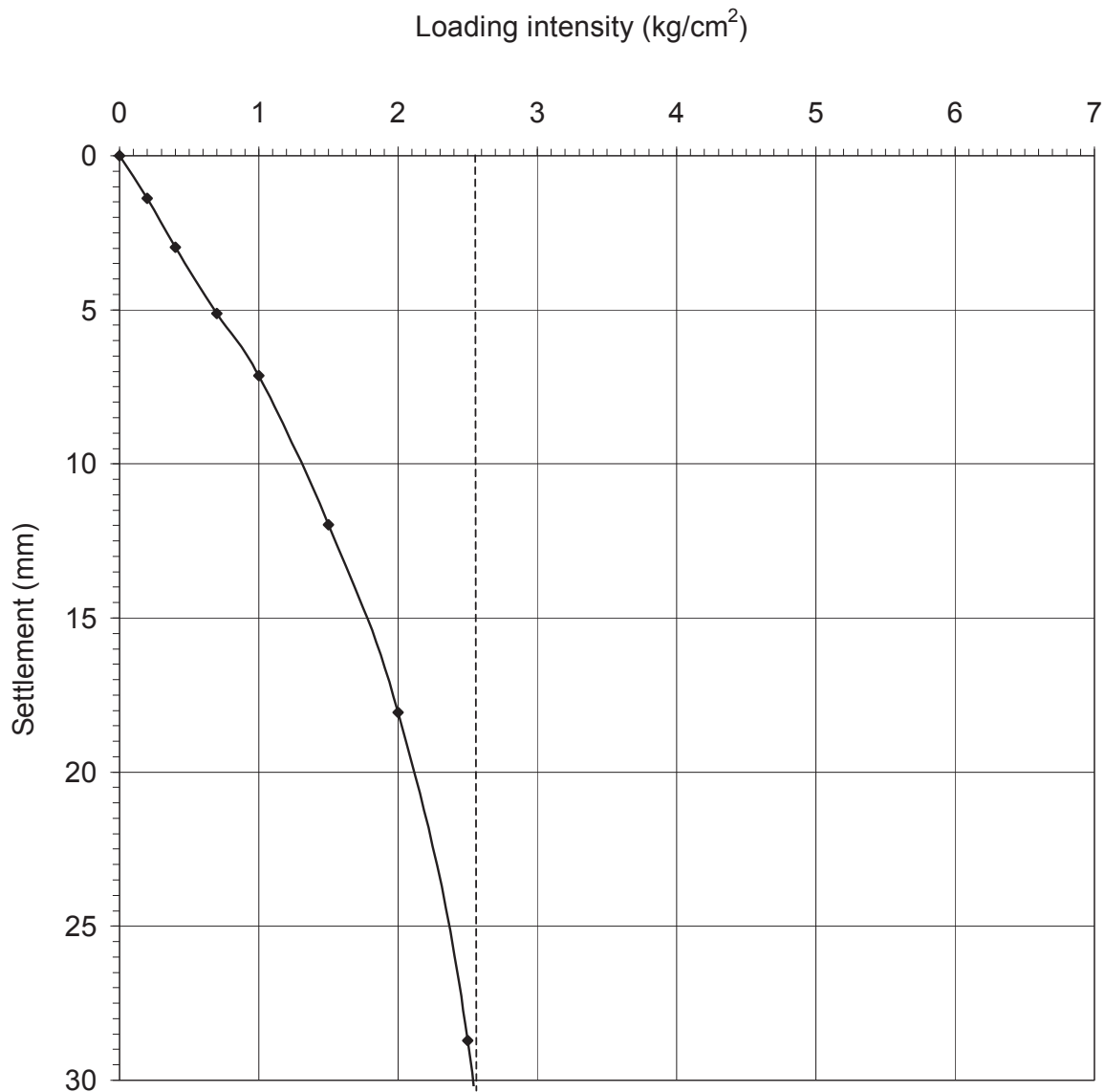
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Ultimate Bearing Capacity = 25 t/m^2

Safe Bearing Capacity = $25 / 2.5 = 10 \text{ t/m}^2$



Size of plate	= 60 x 60 cm
Depth of test	= 3m
Final loading intensity	= 3 kg/cm^2
Corresponding settlement	= Load not sustained
Test condition	= Saturated

Plate Load Test - IPLT4



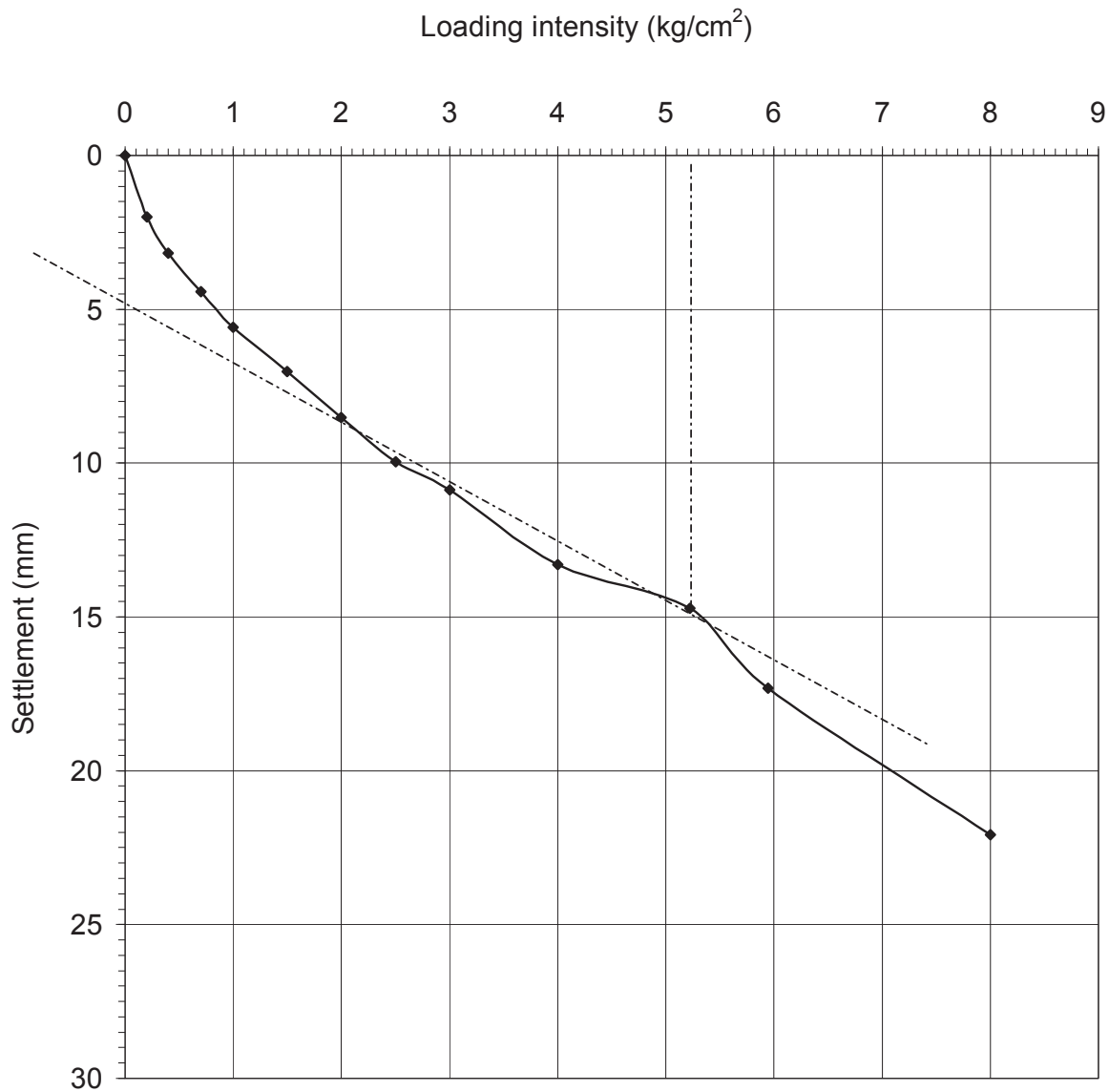
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Ultimate Bearing Capacity = 52 t/m^2
 Safe Bearing Capacity = $52 / 2.5 = 21 \text{ t/m}^2$



Size of plate	= 60 x 60 cm
Depth of test	= 3m
Final loading intensity	= 8 kg/cm^2
Corresponding settlement	= 22.08mm
Test condition	= Saturated

Plate Load Test - IPLT5



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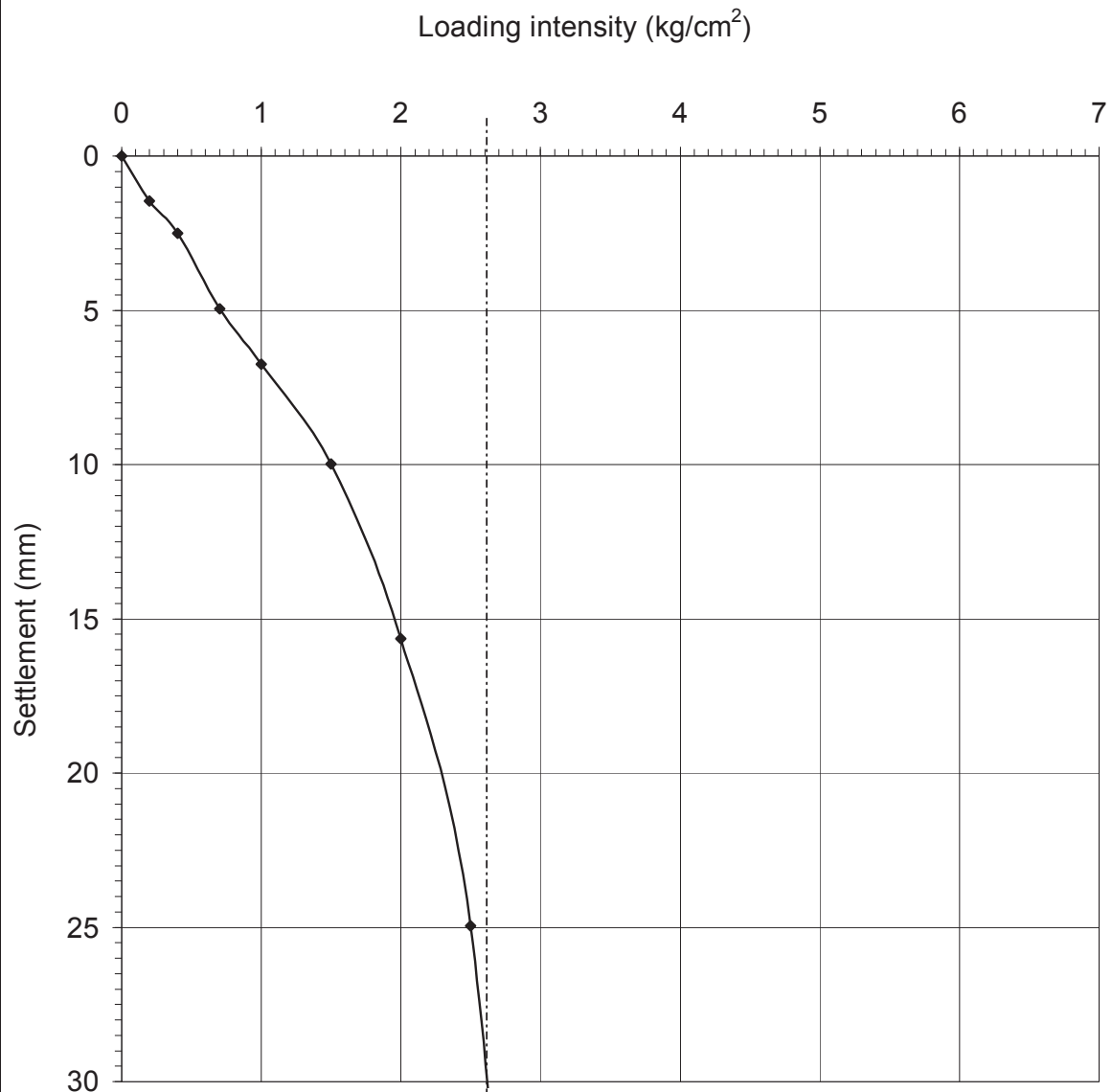
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Ultimate Bearing Capacity = 26 t/m^2

Safe Bearing Capacity = $26 / 2.5 = 10 \text{ t/m}^2$



Size of plate	= 60 x 60 cm
Depth of test	= 3m
Final loading intensity	= 3 kg/cm^2
Corresponding settlement	= Load not sustained
Test condition	= Saturated

Plate Load Test - IPLT6



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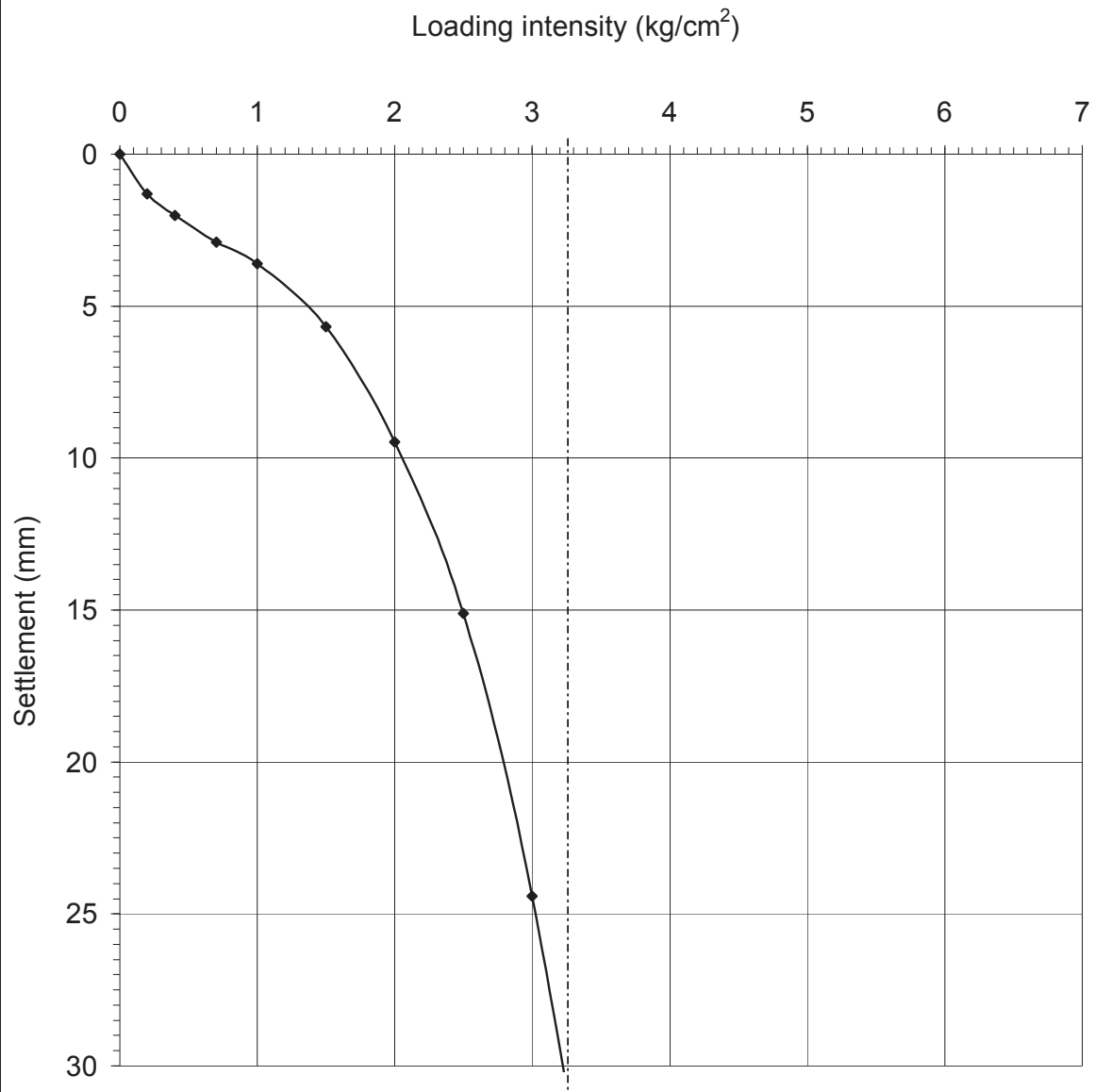
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Ultimate Bearing Capacity = 32 t/m^2

Safe Bearing Capacity = $32 / 2.5 = 13 \text{ t/m}^2$



Size of plate	= 60 x 60 cm
Depth of test	= 3m
Final loading intensity	= 4 kg/cm^2
Corresponding settlement sustained	= Load not sustained

Plate Load Test - IPLT7

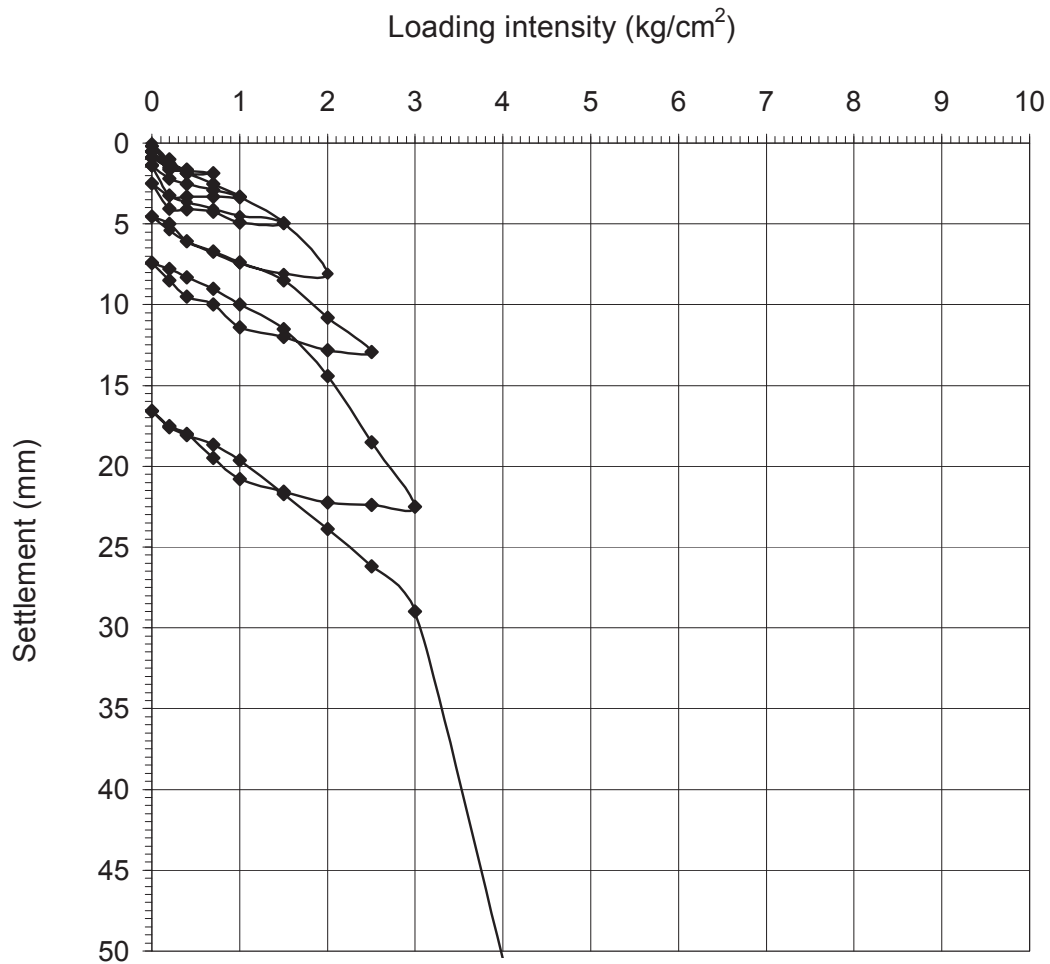


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Size of plate	= 60 x 60 cm
Depth of test	= 3m
Final loading intensity	= 4 kg/cm ²
Corresponding settlement	= Continuing settlement
Pit condition	= Saturated

Cyclic Plate Load Test - ICPLT1



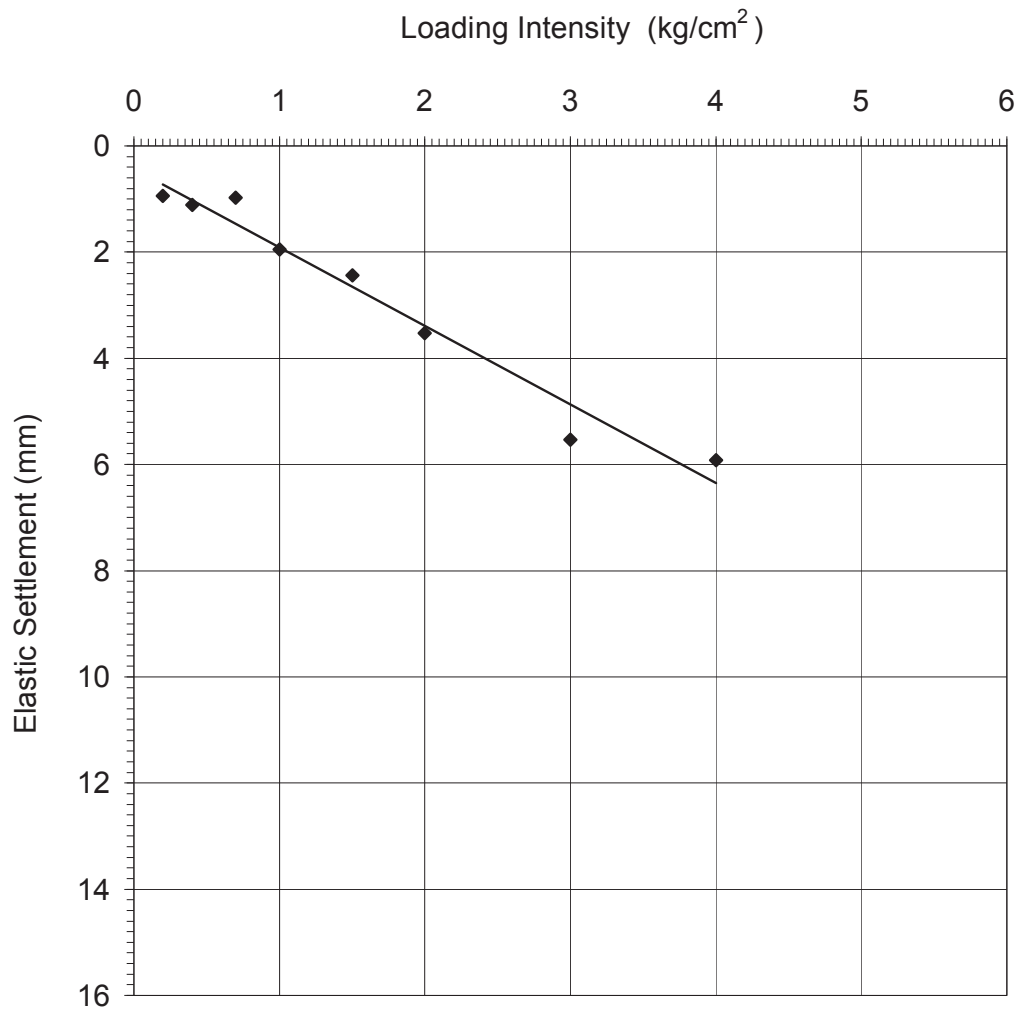
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Coefficient of Elastic Uniform Compression

$$C_u = 6.8 \text{ kg/cm}^3$$

$$C_{u10} = 1.3 \text{ kg/cm}^3$$

Cyclic Plate Load Test- ICPLT1



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Results of Pressuremeter Test IPMT-1

Depth (m)	Young's Modulus 'E' (kg/cm ²)
2	81
4	425
6	133
8	199
10	1363
12	4545
15	3821
18	7042
21	4724
25	7167

Results of Pressuremeter Test IPMT-2

Depth (m)	Young's Modulus 'E' (kg/cm ²)
2	373
4	258
6	233
8	560
10	390
12	481
15	2348
18	2218
21	3709
25	5400



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Results of Pressuremeter Test IPMT-3

Depth (m)	Young's Modulus 'E' (kg/cm ²)
2	118
4	227
6	218
8	285
10	430
12	2306
15	2564
18	2203
21	3939
25	7894

Results of Pressuremeter Test IPMT-4

Depth (m)	Young's Modulus 'E' (kg/cm ²)
2	70
4	90
6	175
8	1712
10	1500
12	2670
15	3215
18	5436
21	7324
25	5879

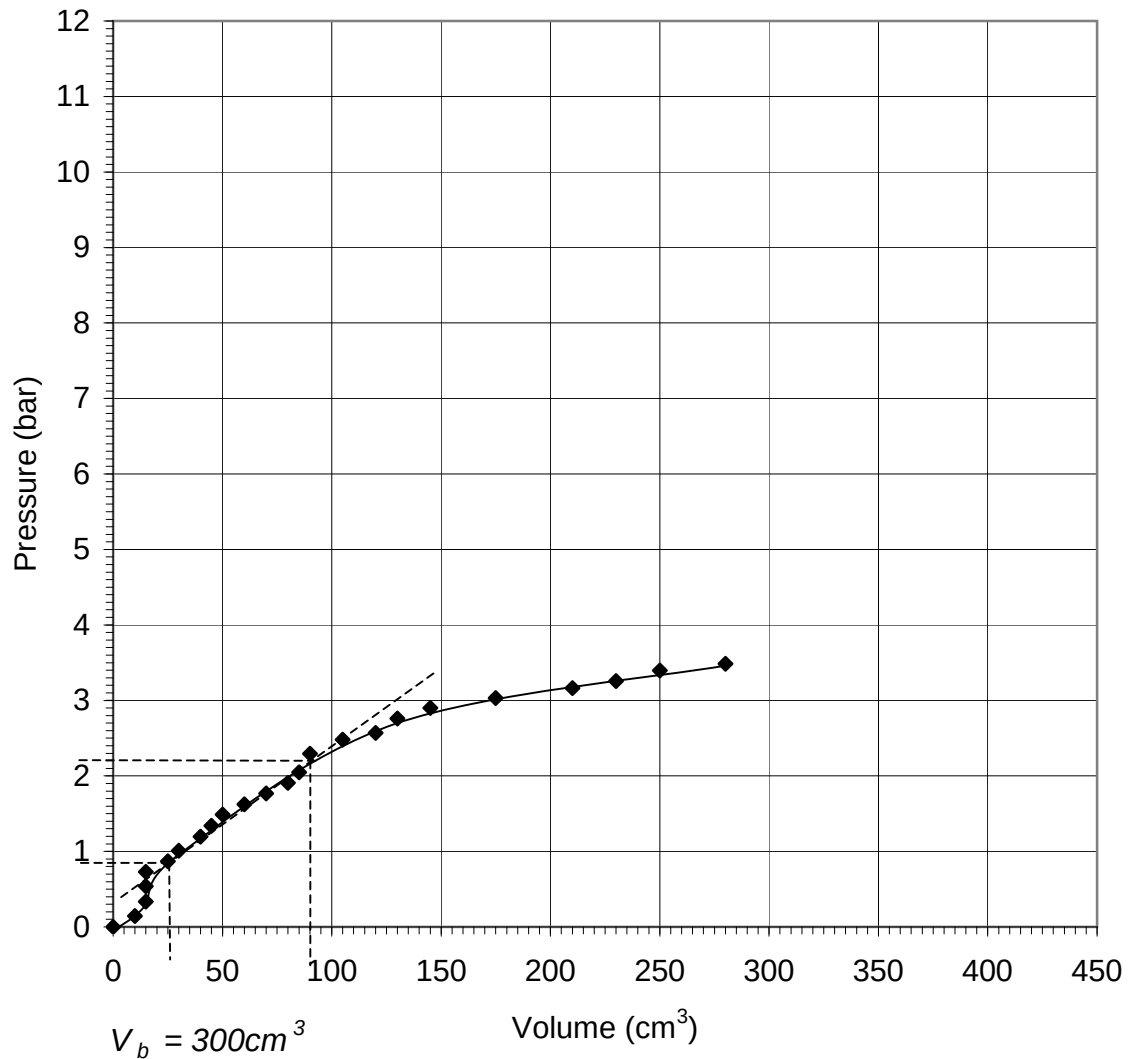


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Pressuremeter Modulus $E_m = 54\text{kg/cm}^2$

Pressuremeter Test Curve - 1

Location : IPMT1
Depth (m) : 2m

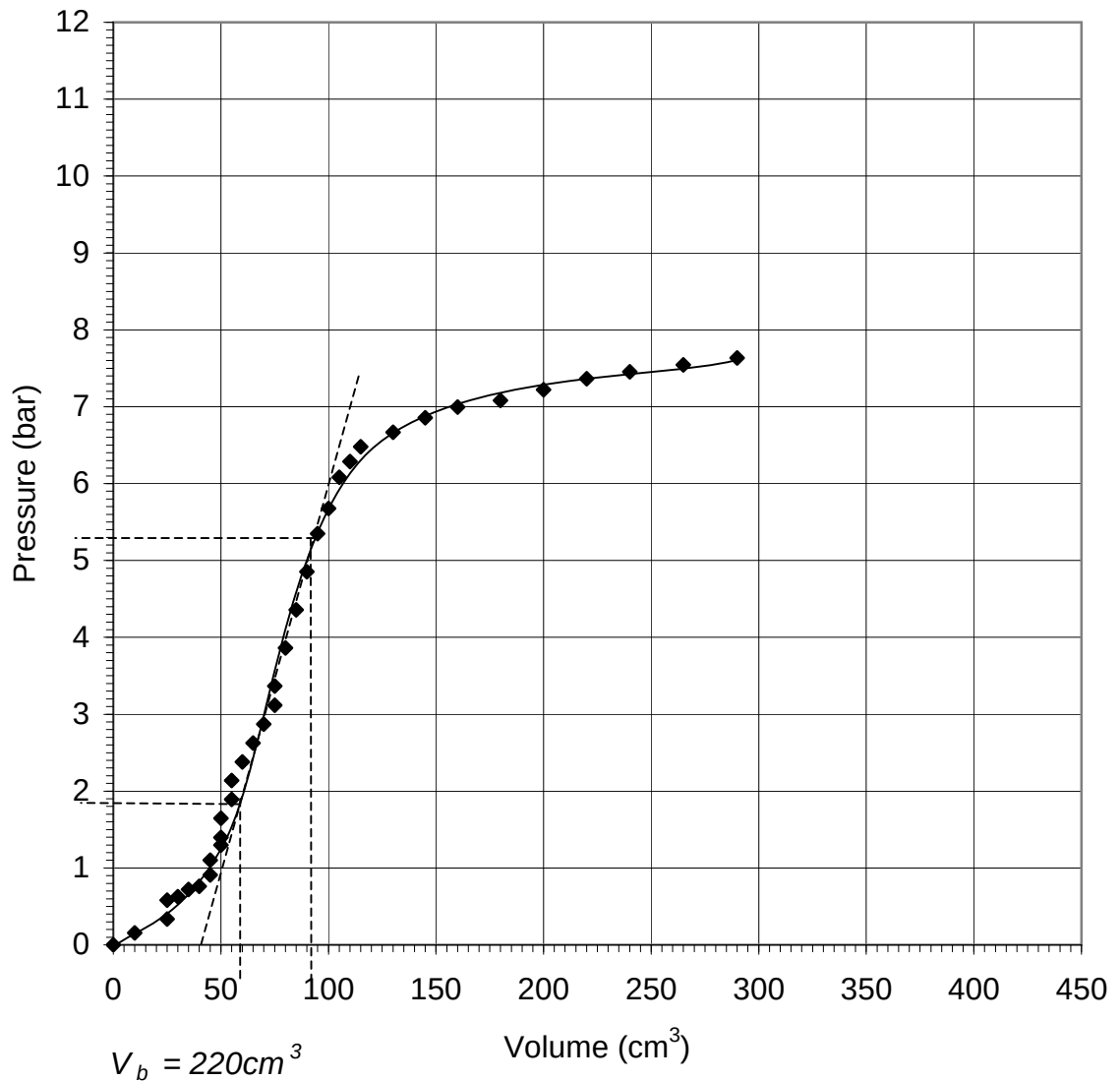


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Pressuremeter Test Curve - 2

Location : IPMT1

Depth (m) : 4m



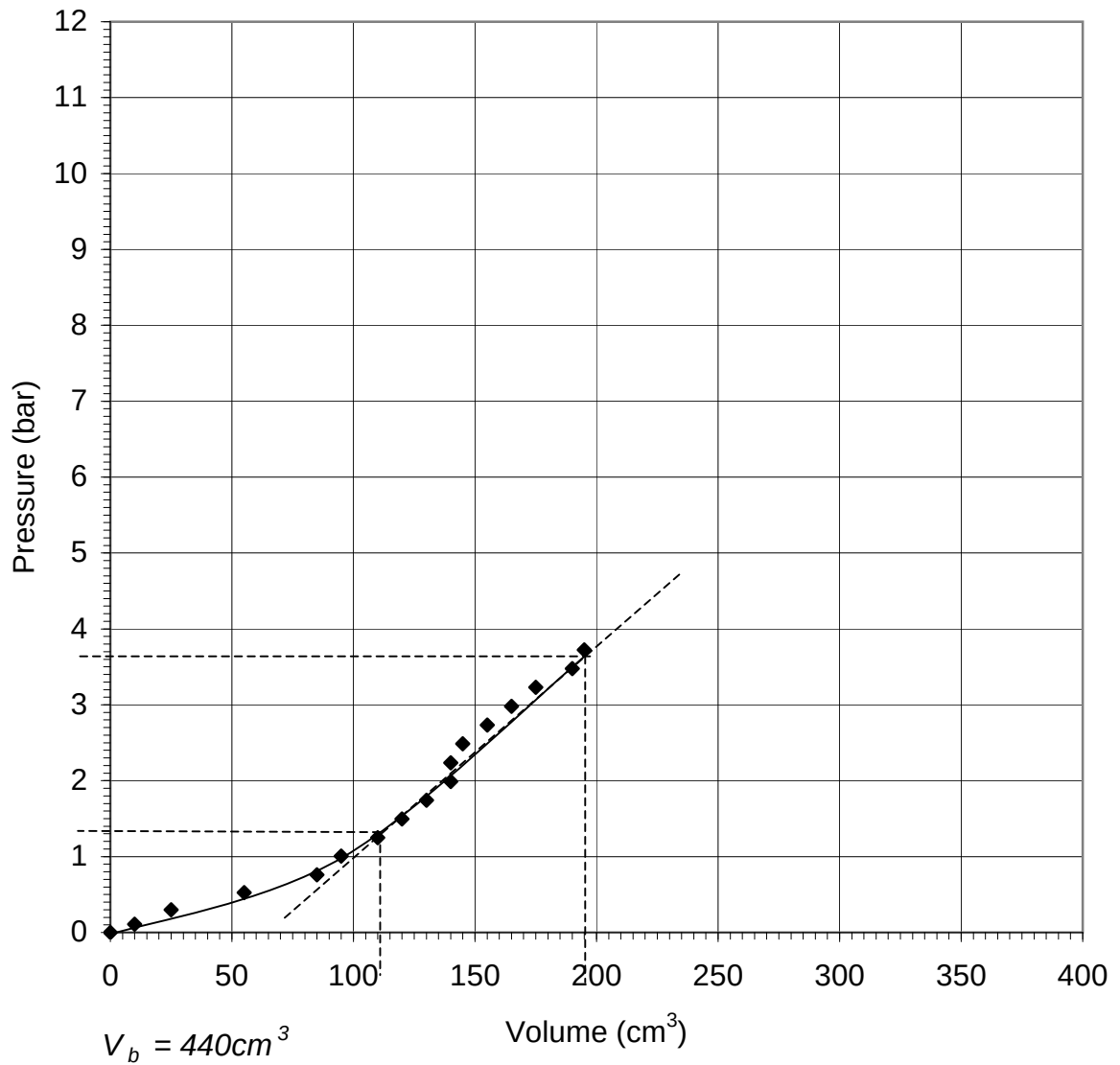
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Pressuremeter Test Curve - 3

Location : IPMT1

Depth (m) : 6m



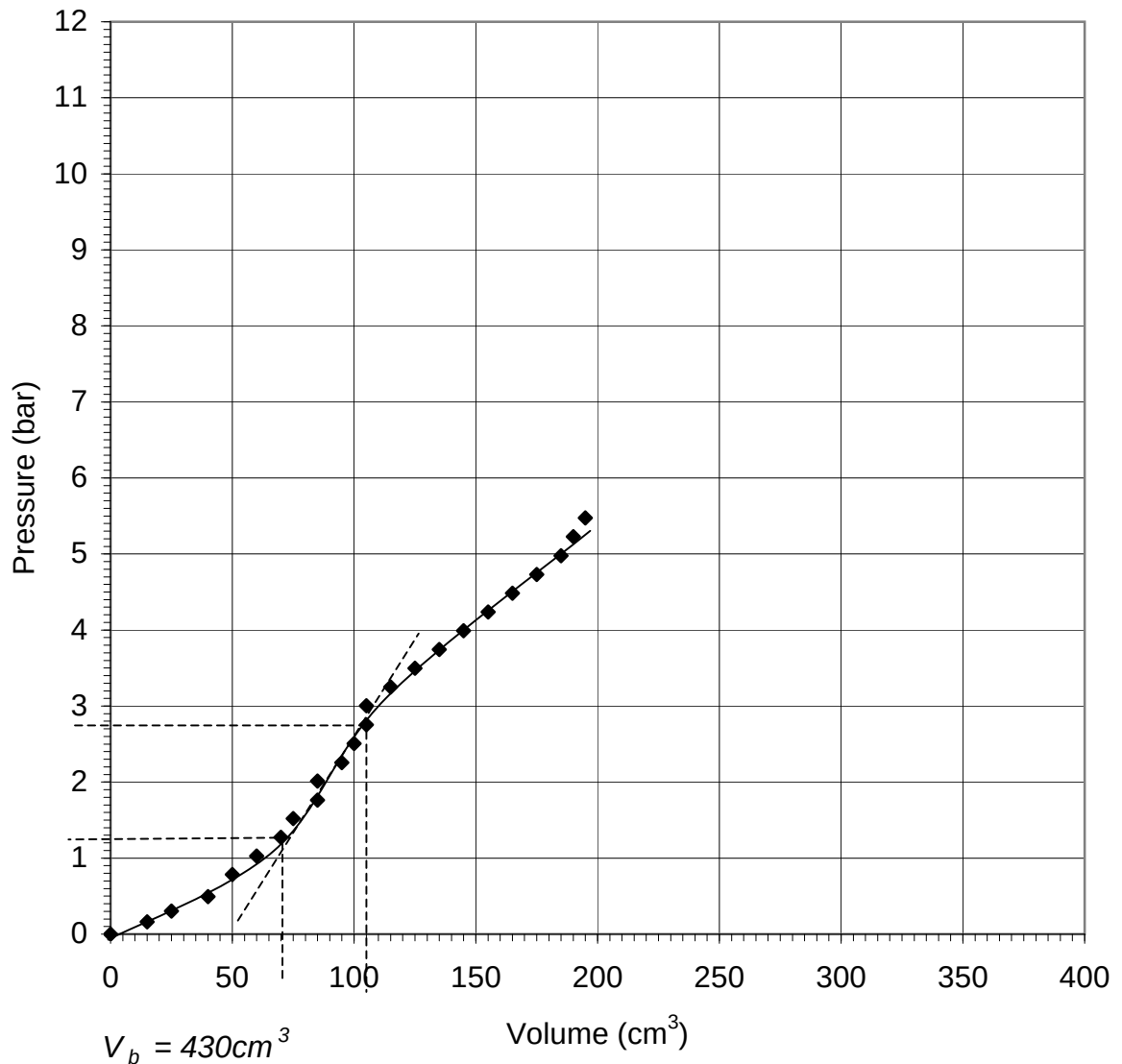
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Pressuremeter Test Curve - 4

Location : IPMT1

Depth (m) : 8m



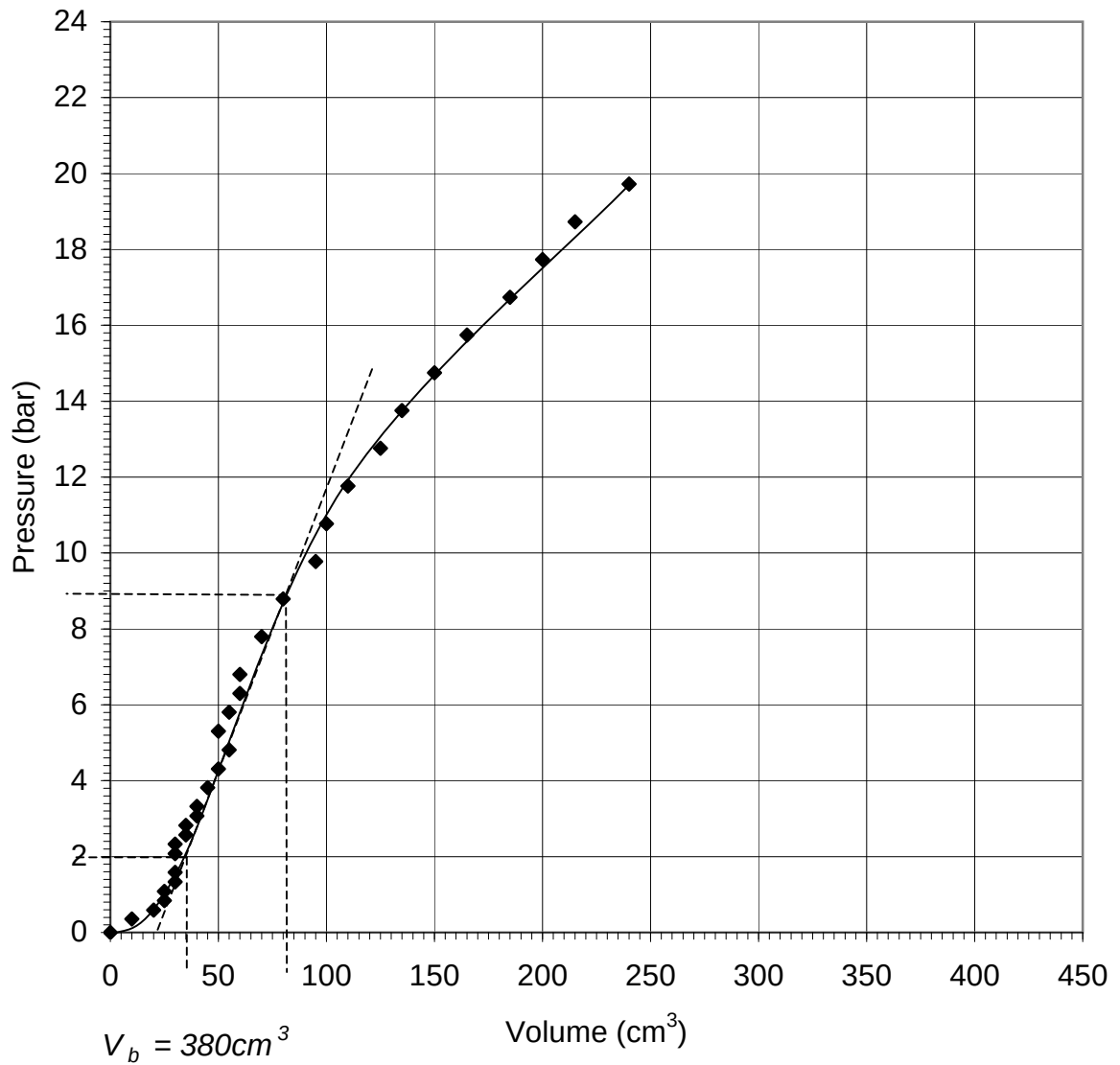
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Pressuremeter Test Curve - 5

Location : IPMT1

Depth (m) : 10m



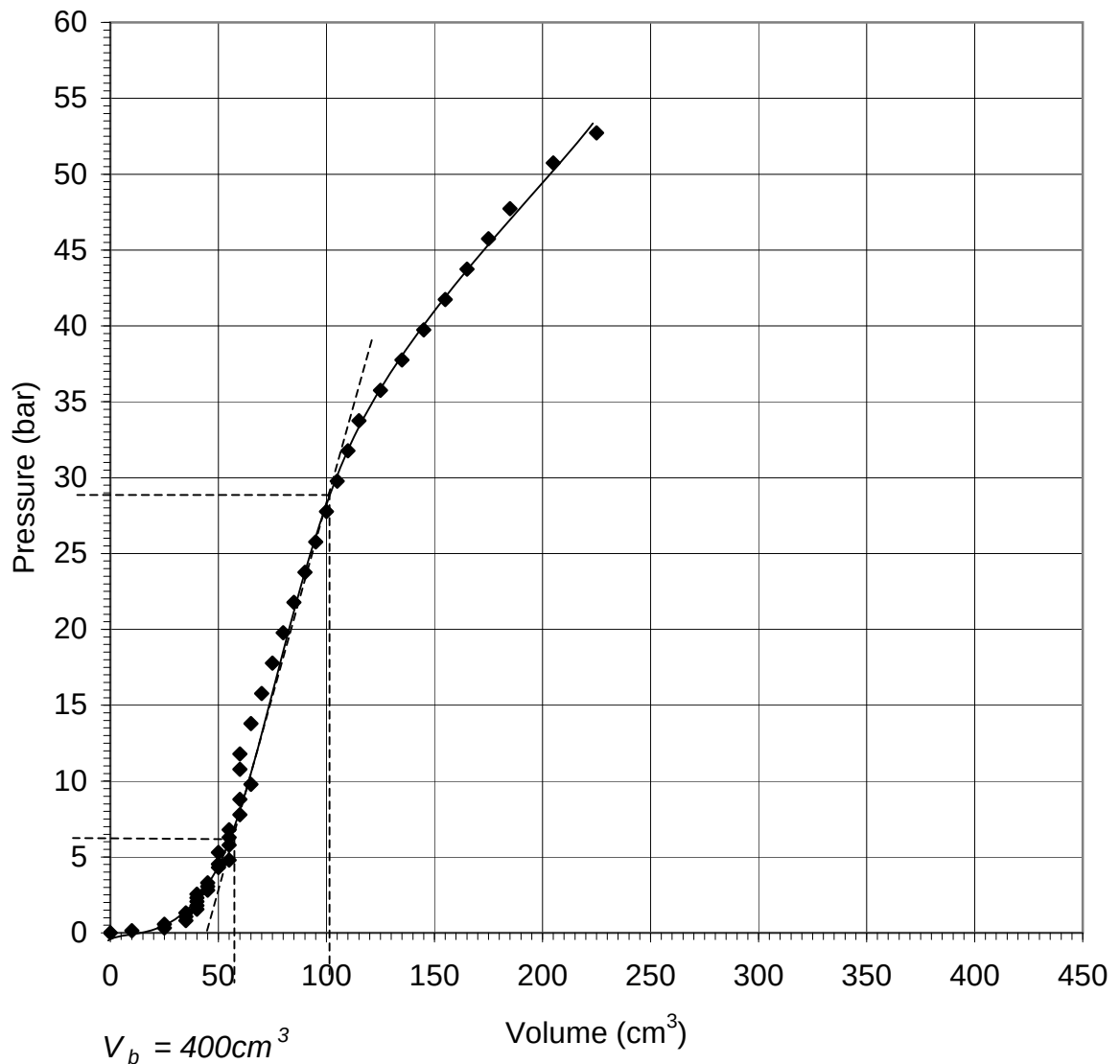
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Pressuremeter Test Curve - 6

Location : IPMT1

Depth (m) : 12m

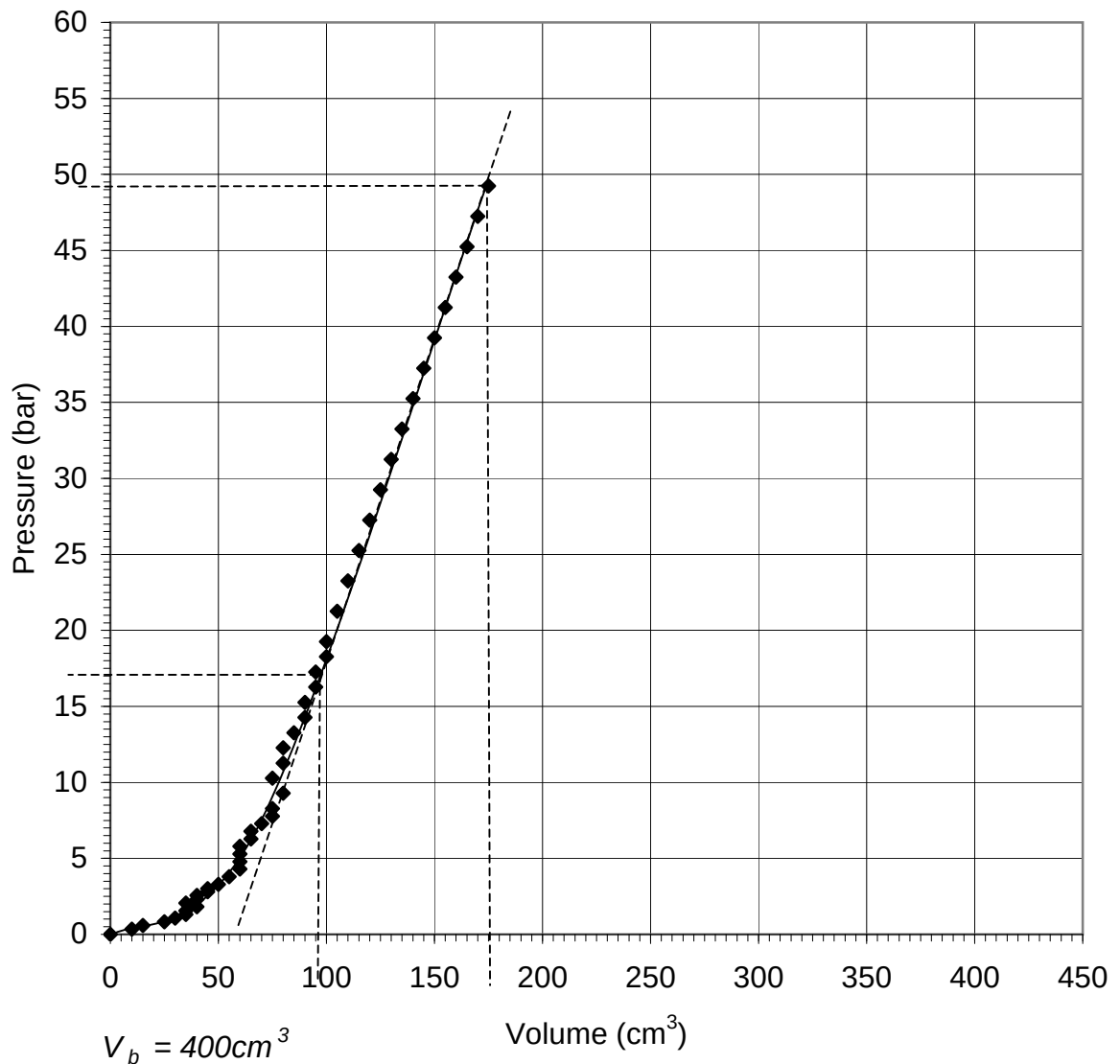


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Pressuremeter Test Curve - 7

Location : IPMT1

Depth (m) : 15m

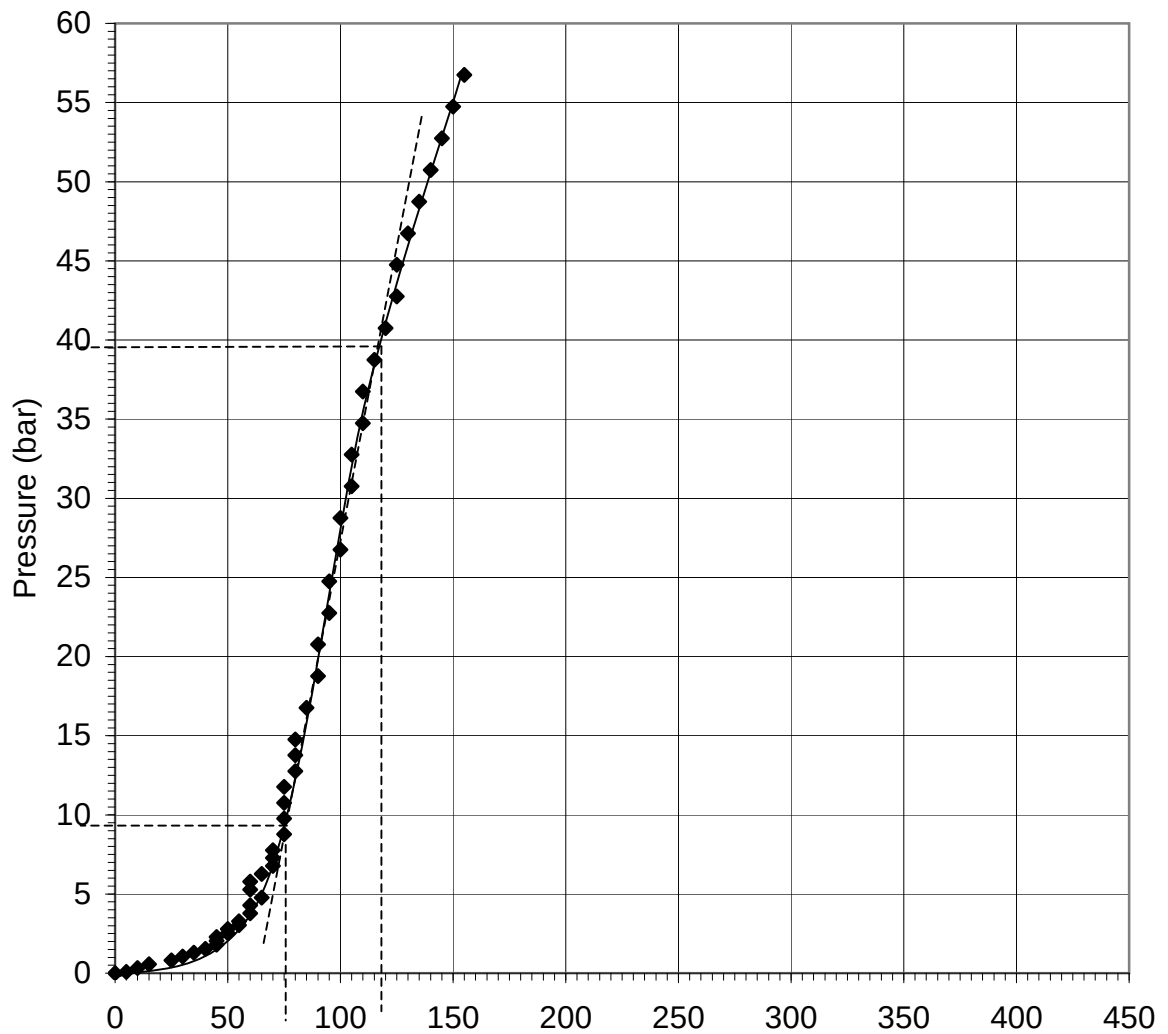


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$V_b = 420\text{cm}^3$

Volume (cm^3)

Pressuremeter Modulus $E_m = 2324\text{kg/cm}^2$

Pressuremeter Test Curve - 8

Location : IPMT1

Depth (m) : 18m



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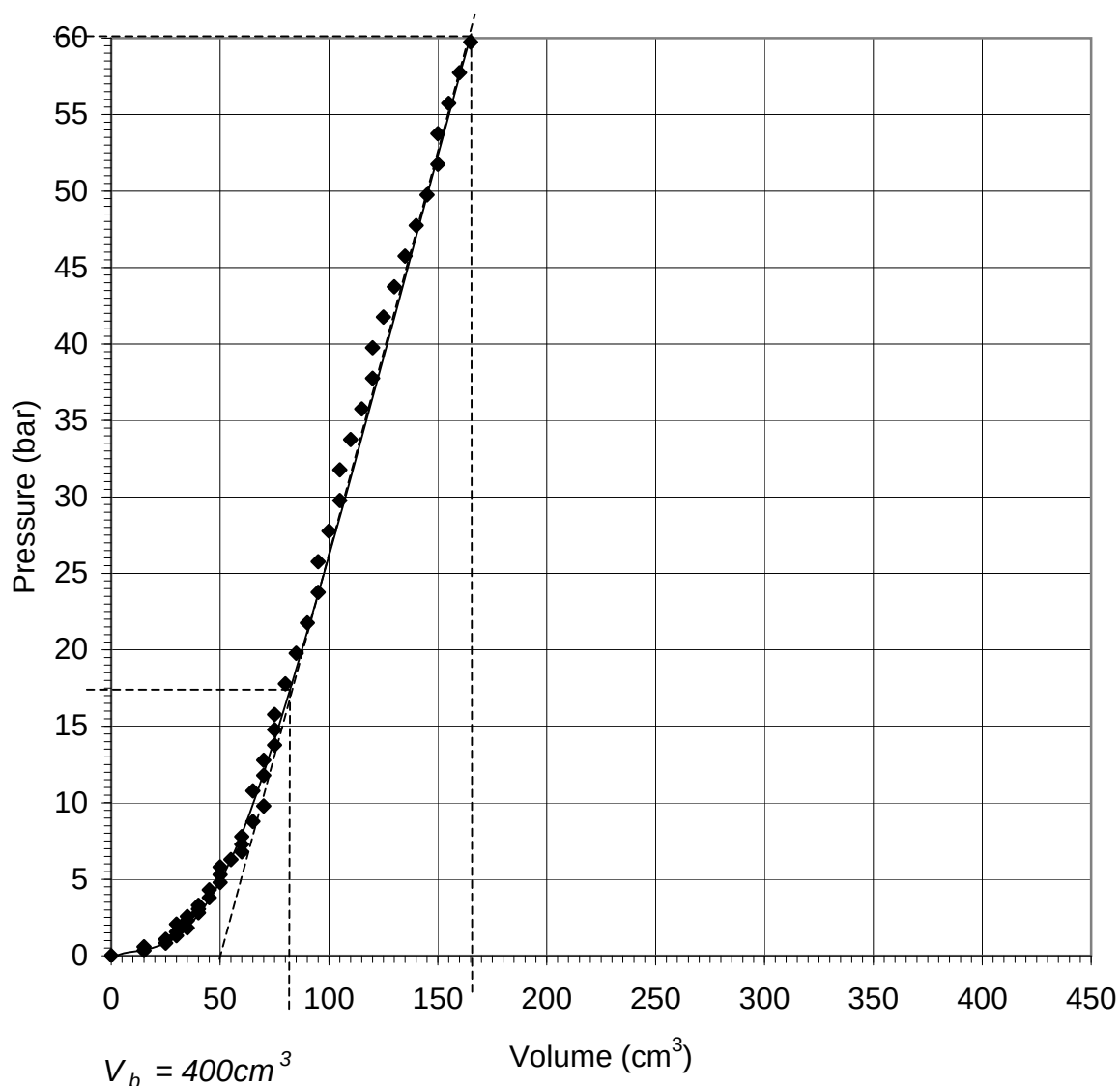
secunderabad@nagadi.co.in

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Pressuremeter Test Curve - 9

Location : IPMT1
Depth (m) : 21m



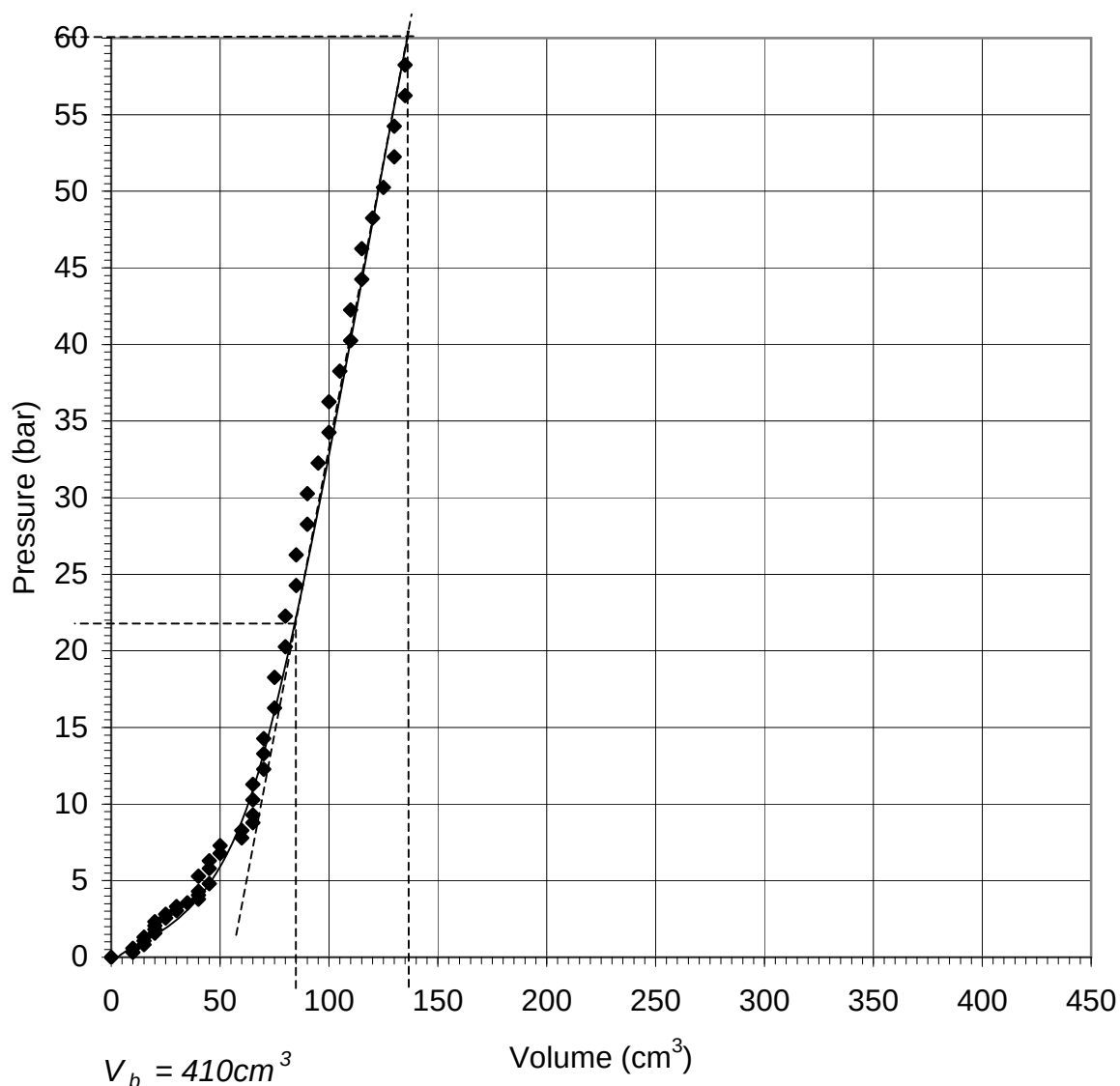
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Pressuremeter Test Curve - 10

Location : IPMT1

Depth (m) : 25m



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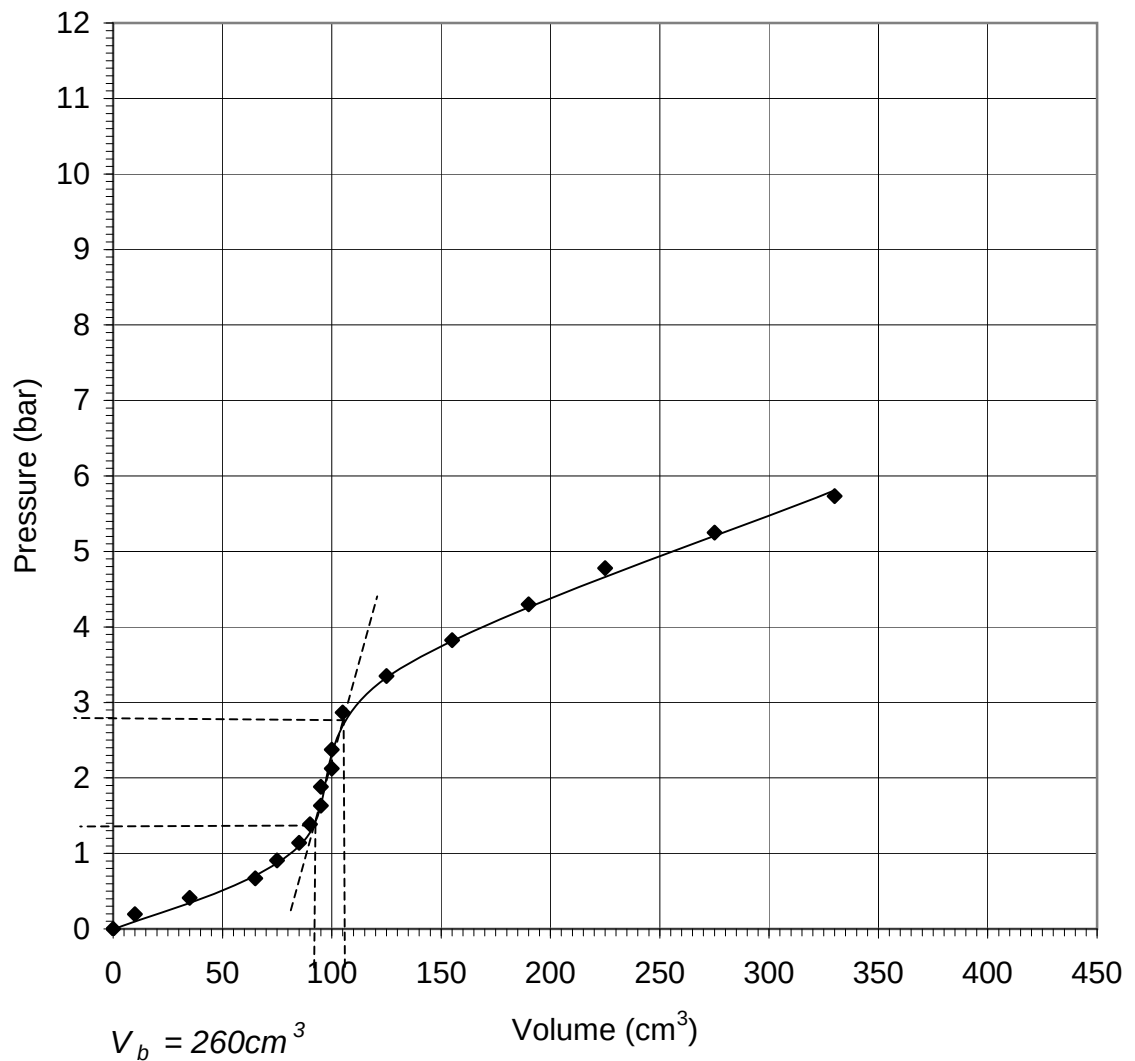
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Pressuremeter Modulus $E_m = 250\text{kg/cm}^2$

Pressuremeter Test Curve - 11

Location : IPMT2
Depth (m) : 2m

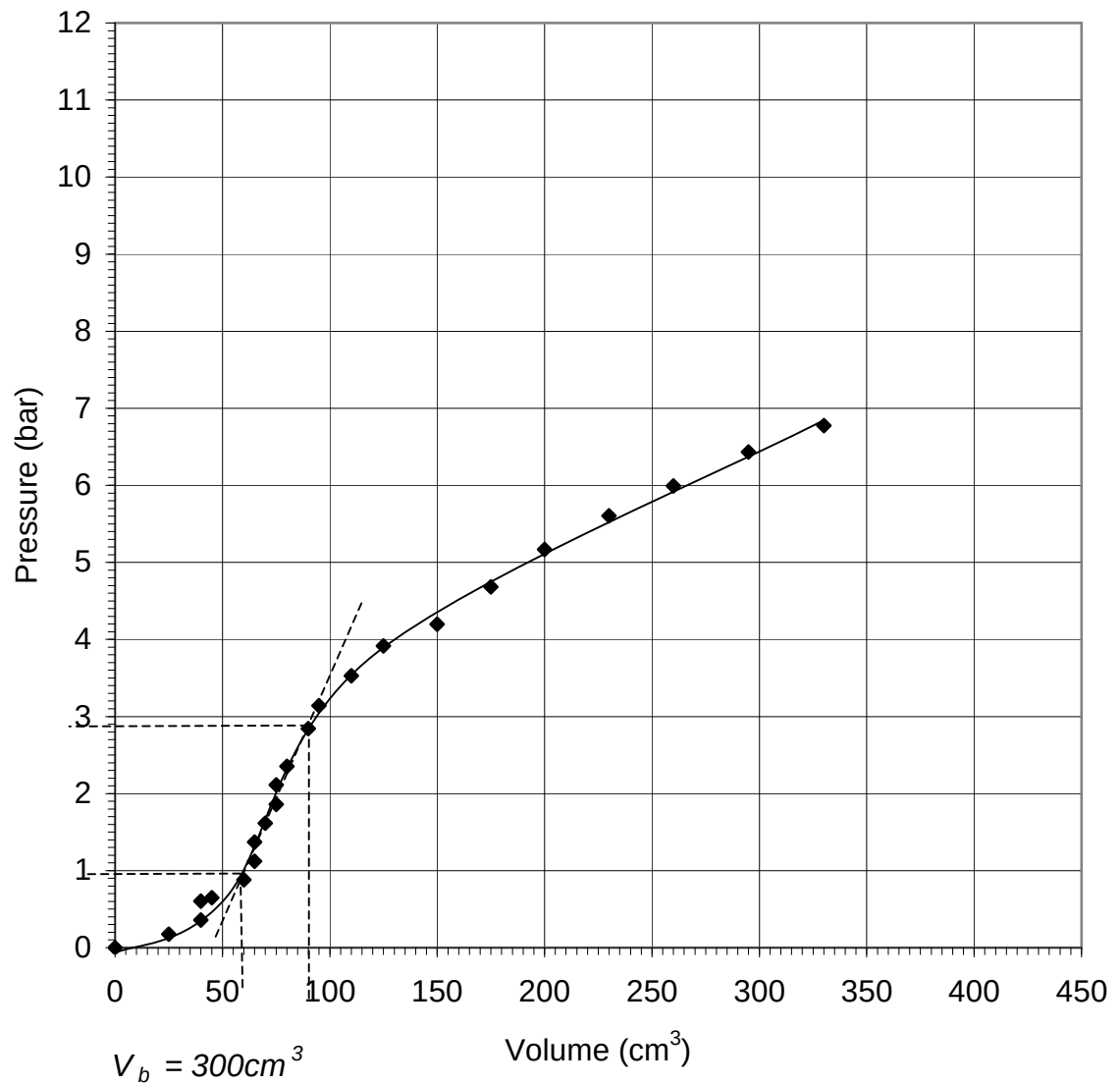


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Pressuremeter Test Curve - 12

Location : IPMT2

Depth (m) : 4m



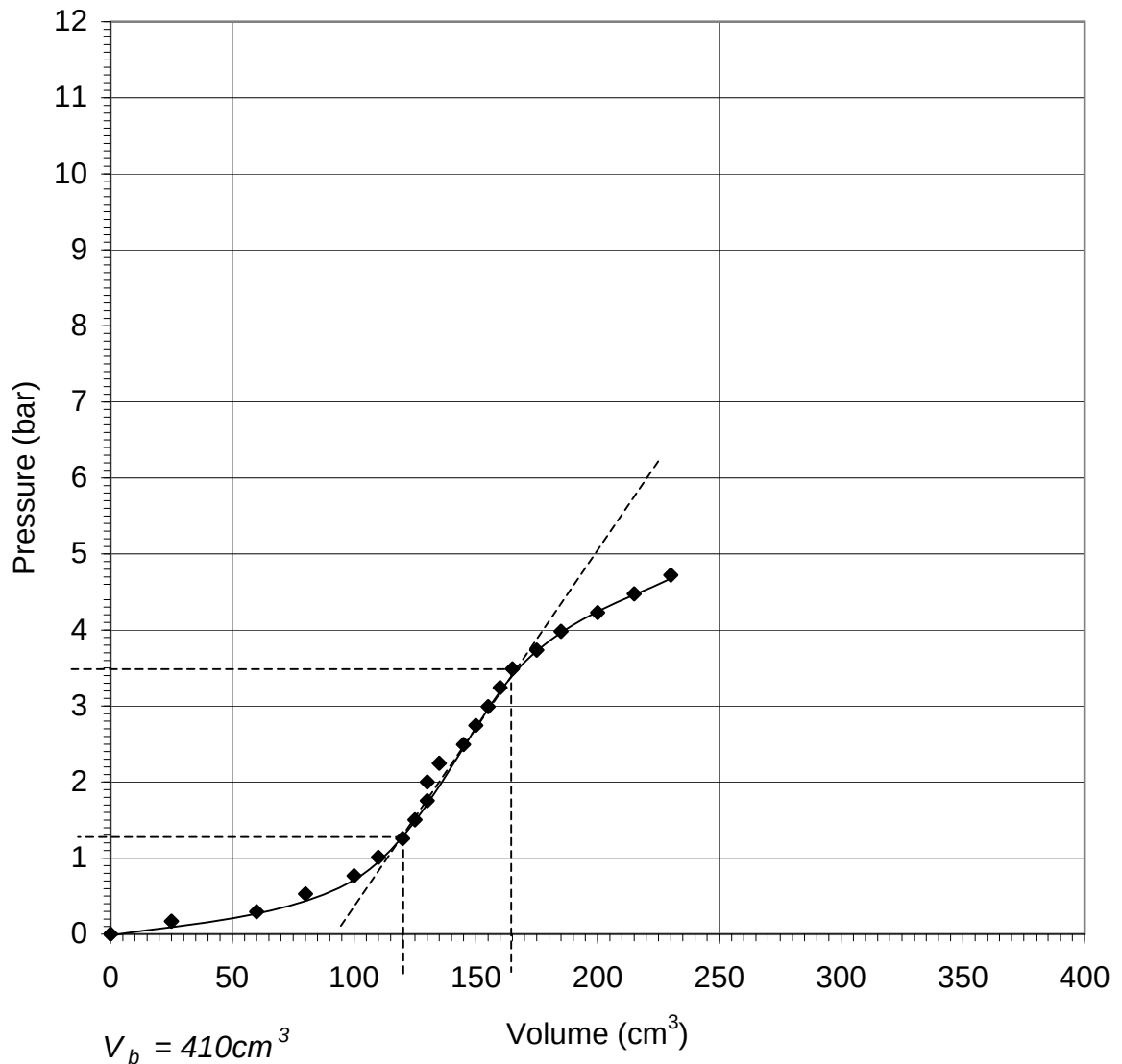
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Pressuremeter Modulus $E_m = 156\text{kg/cm}^2$

Pressuremeter Test Curve - 13

Location : IPMT2

Depth (m) : 6m

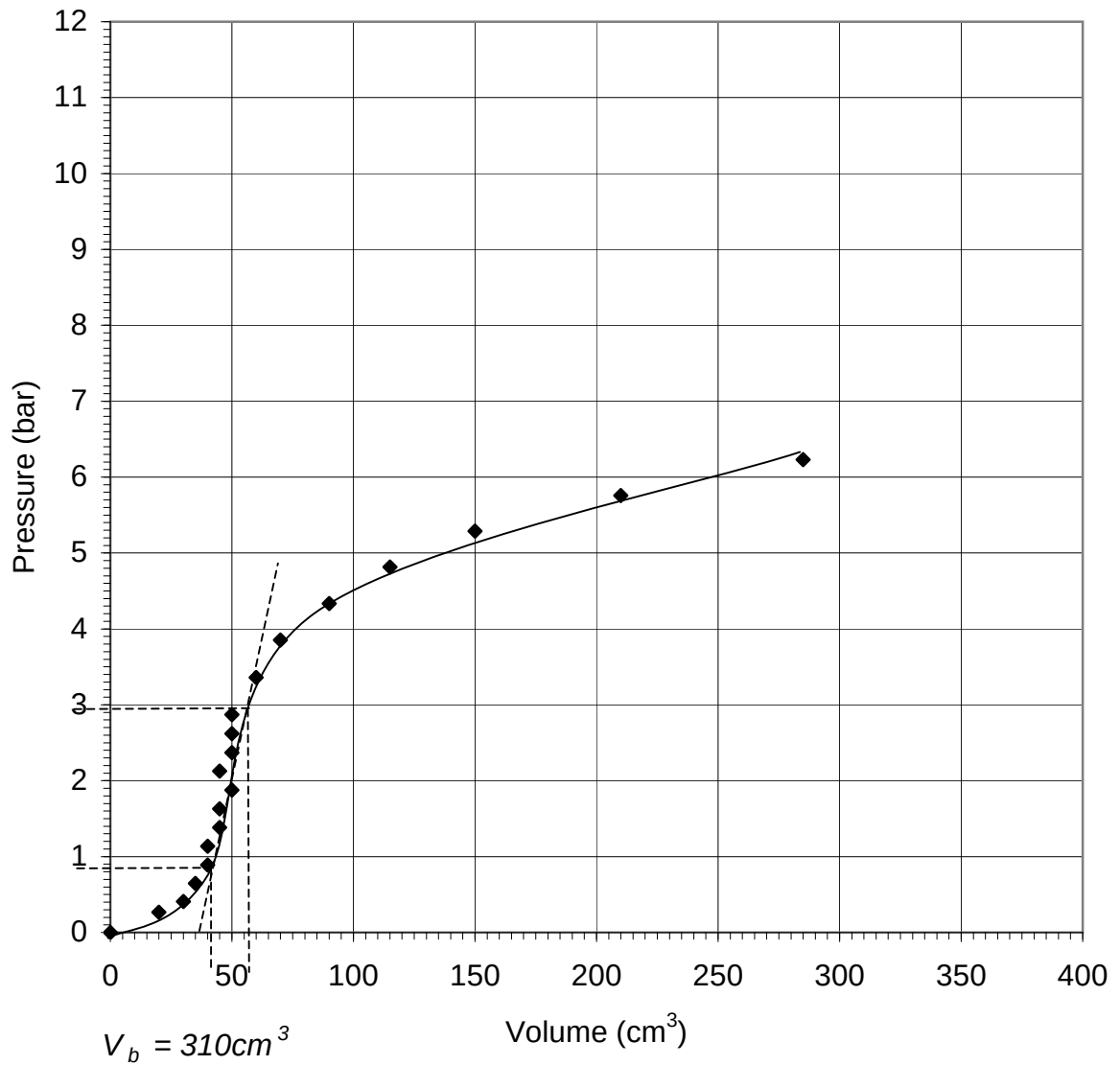


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Pressuremeter Test Curve - 14

Location : IPMT2

Depth (m) : 8m

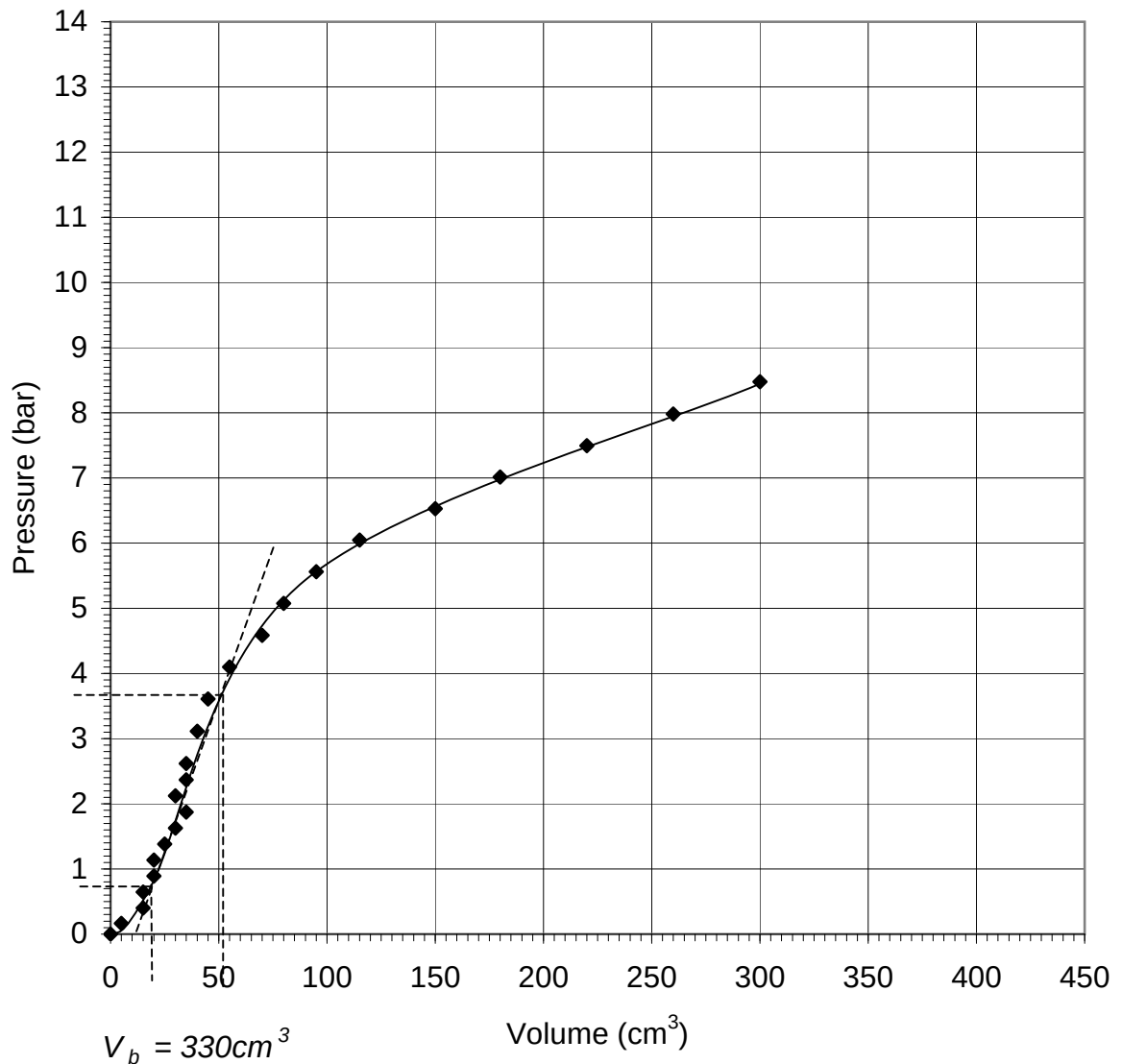


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Pressuremeter Test Curve - 15

Location : IPMT2

Depth (m) : 10m



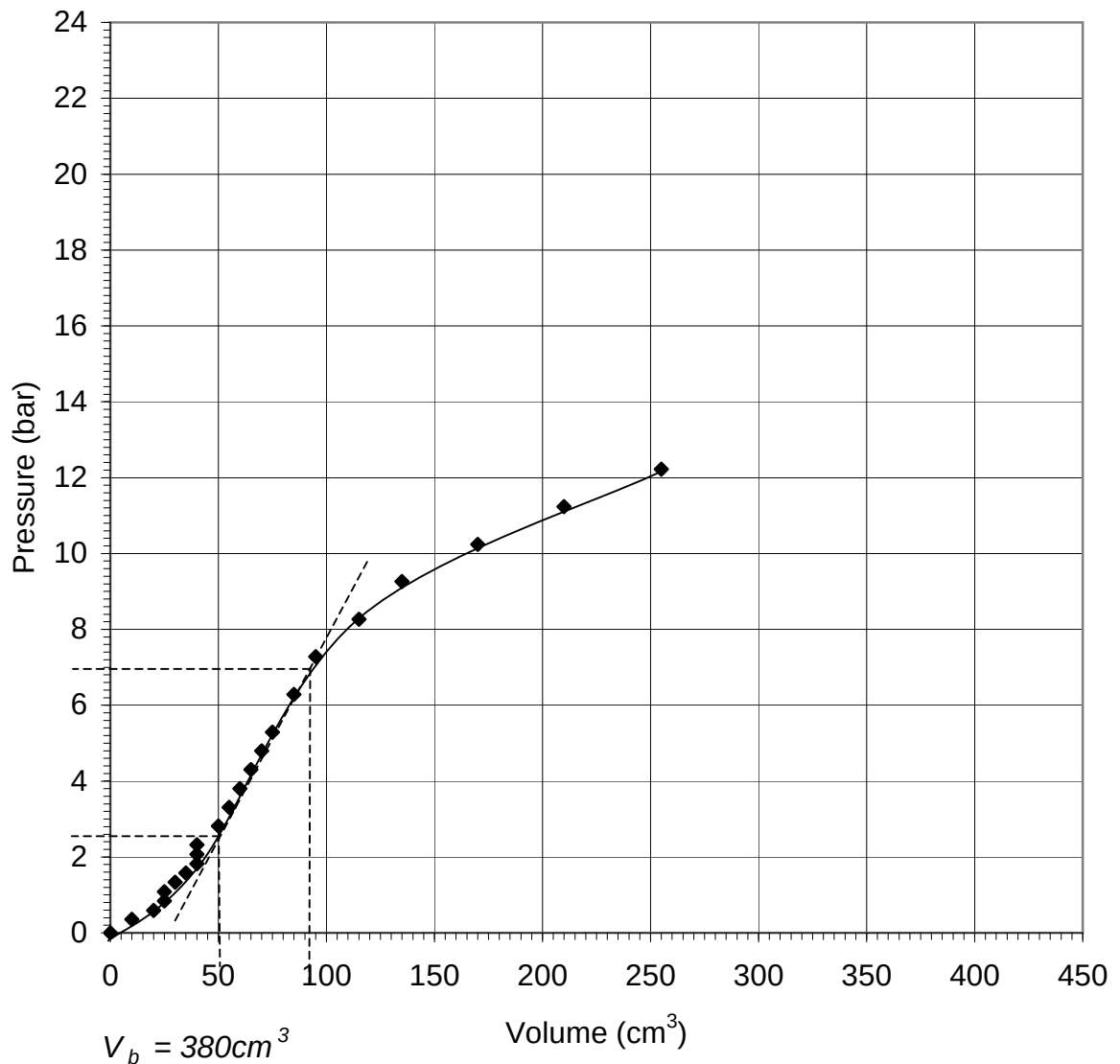
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Pressuremeter Test Curve - 16

Location : IPMT2

Depth (m) : 12m



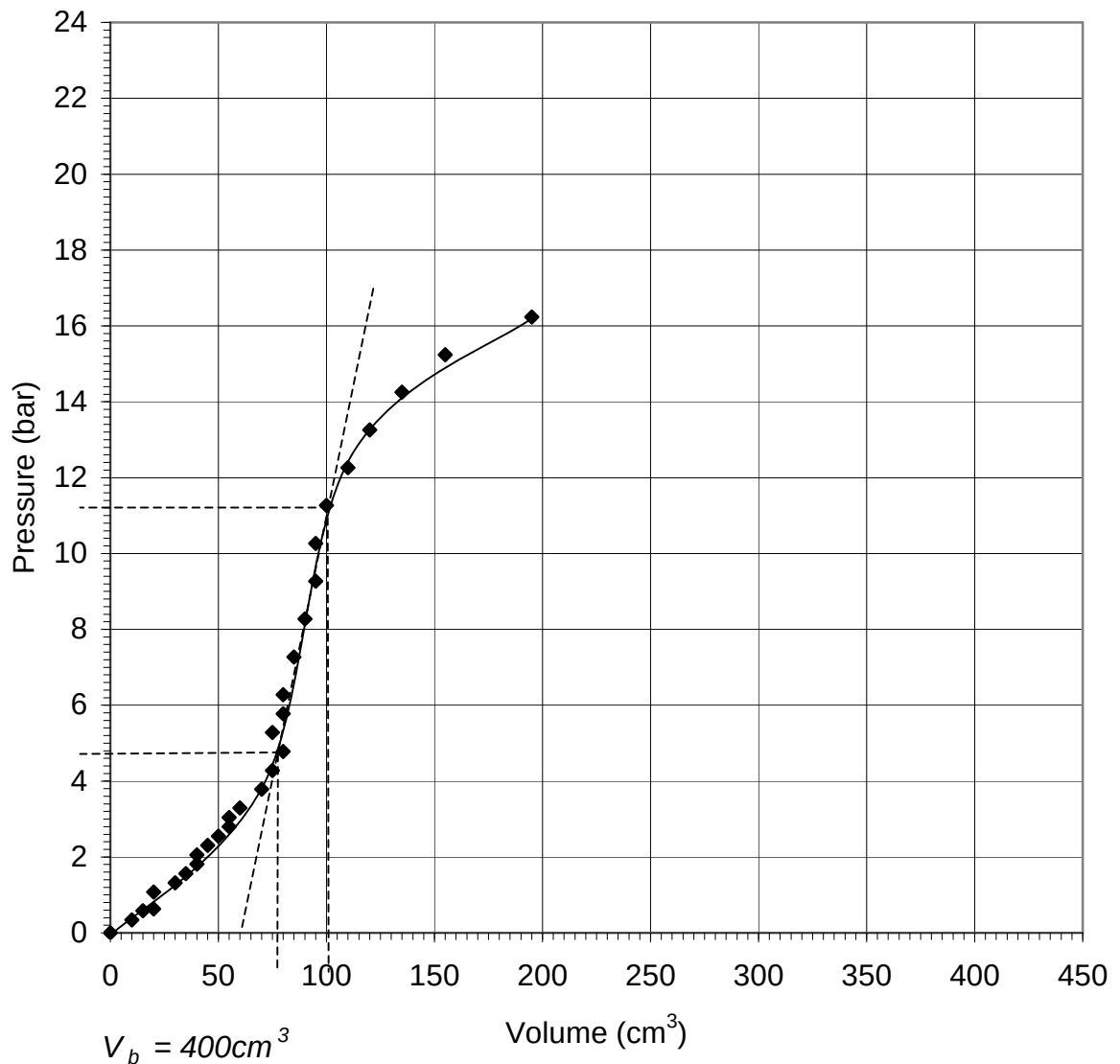
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Pressuremeter Modulus $E_m = 775\text{kg/cm}^2$

Pressuremeter Test Curve - 17

Location : IPMT2

Depth (m) : 15m



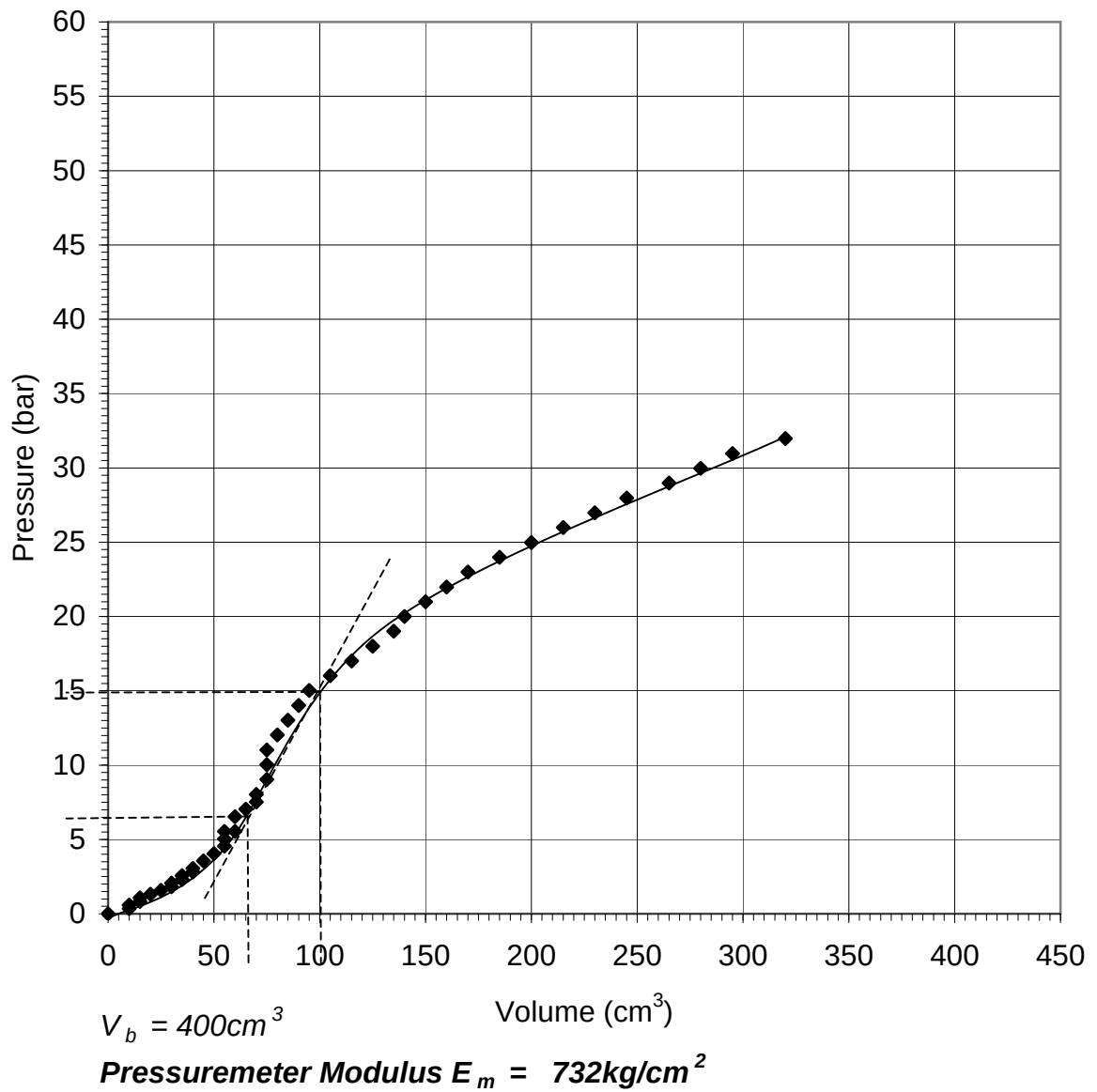
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Pressuremeter Test Curve - 18

Location : IPMT2
Depth (m) : 18m



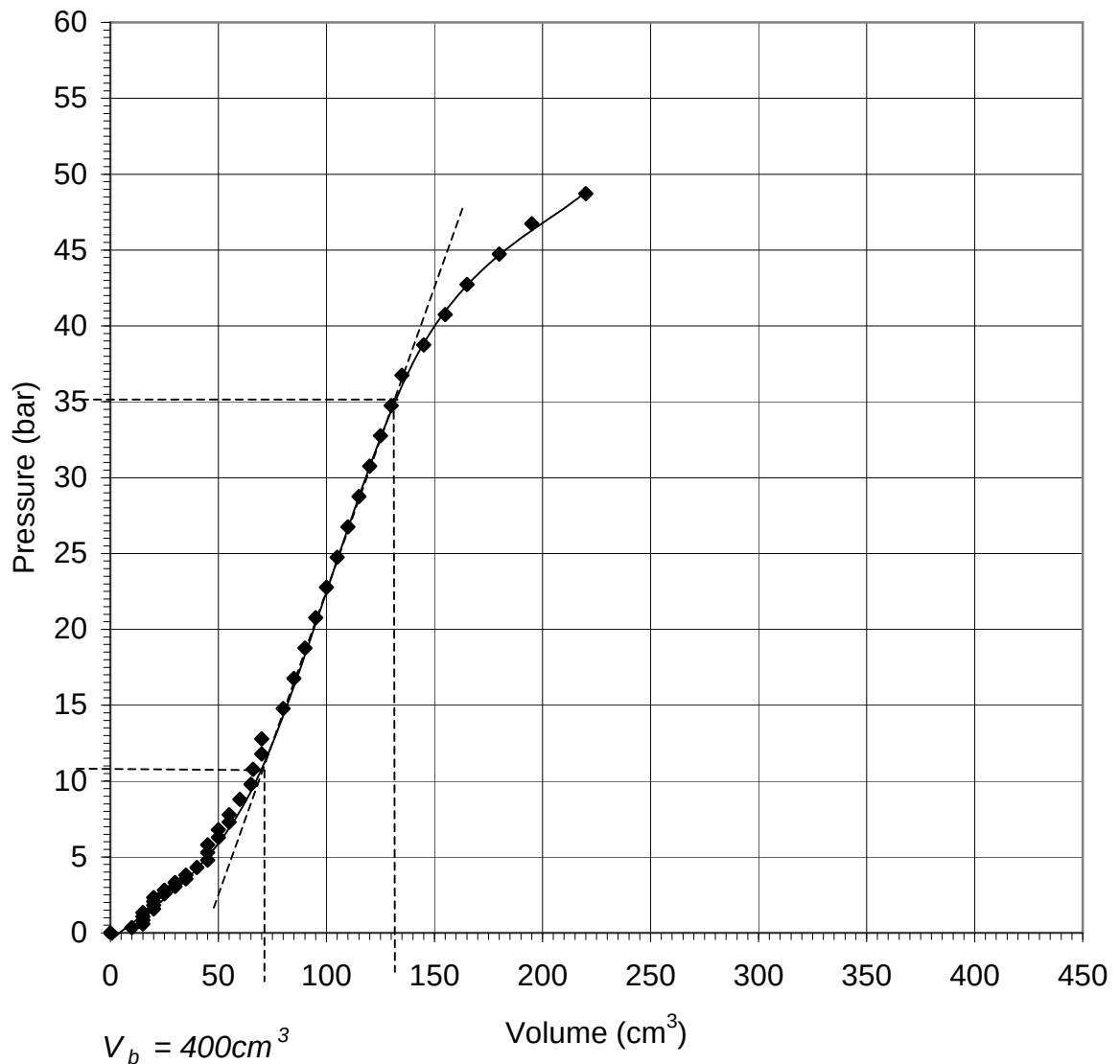
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Pressuremeter Modulus $E_m = 1224\text{kg/cm}^2$

Pressuremeter Test Curve - 19

Location : IPMT2

Depth (m) : 21m

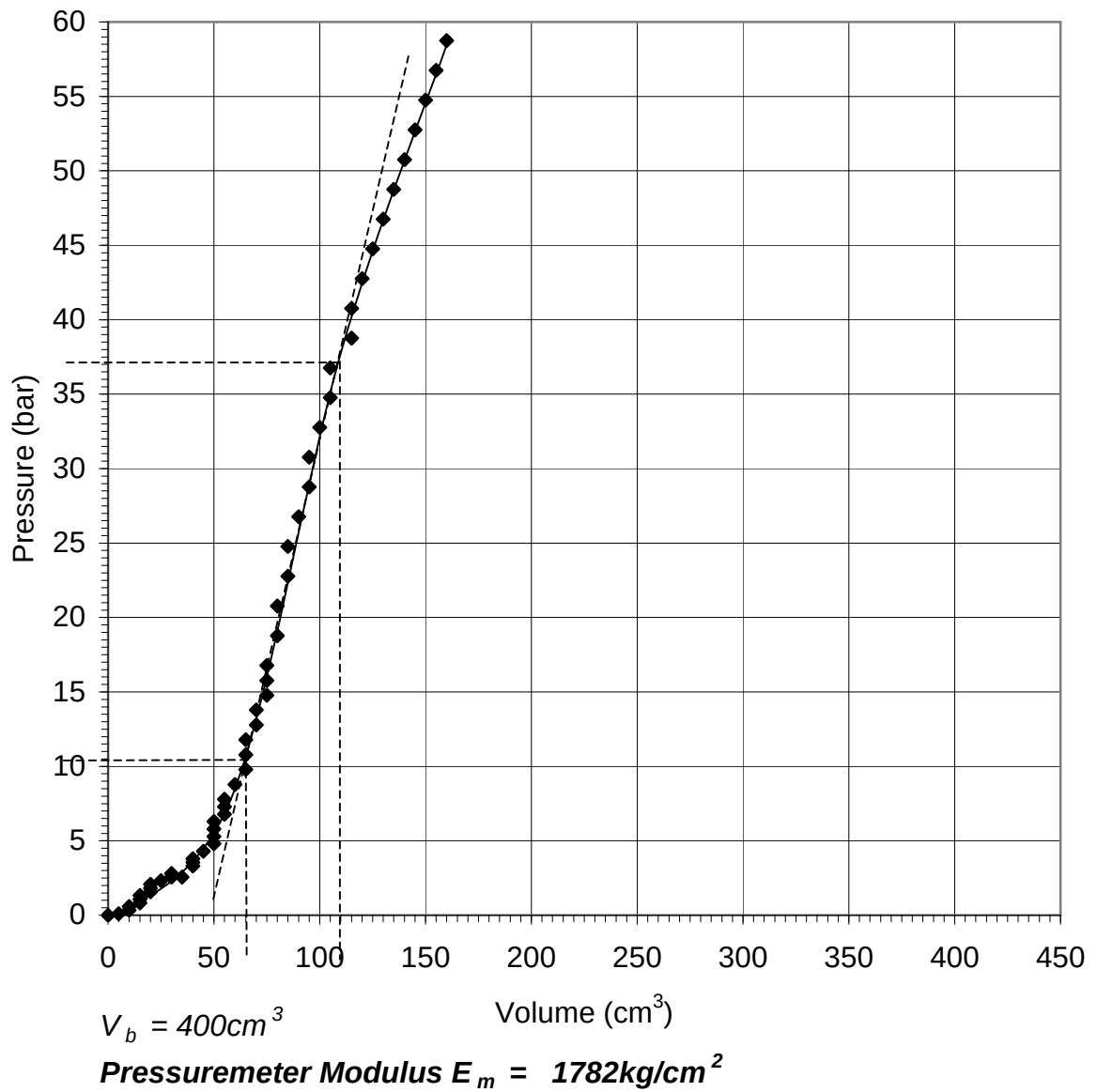


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Pressuremeter Test Curve - 20

Location : IPMT2

Depth (m) : 25m

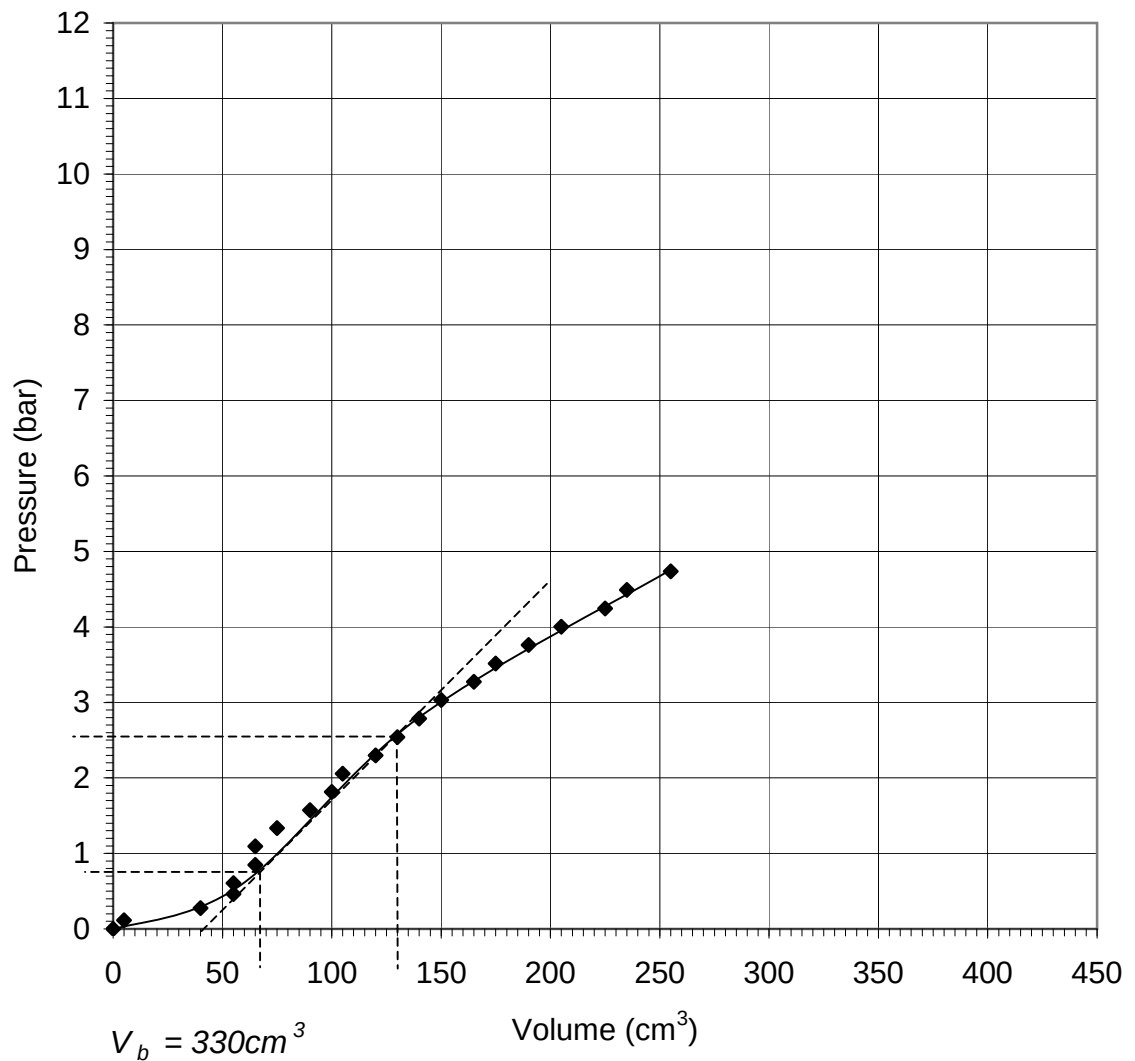


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Pressuremeter Test Curve - 21

Location : IPMT3
Depth (m) : 2m

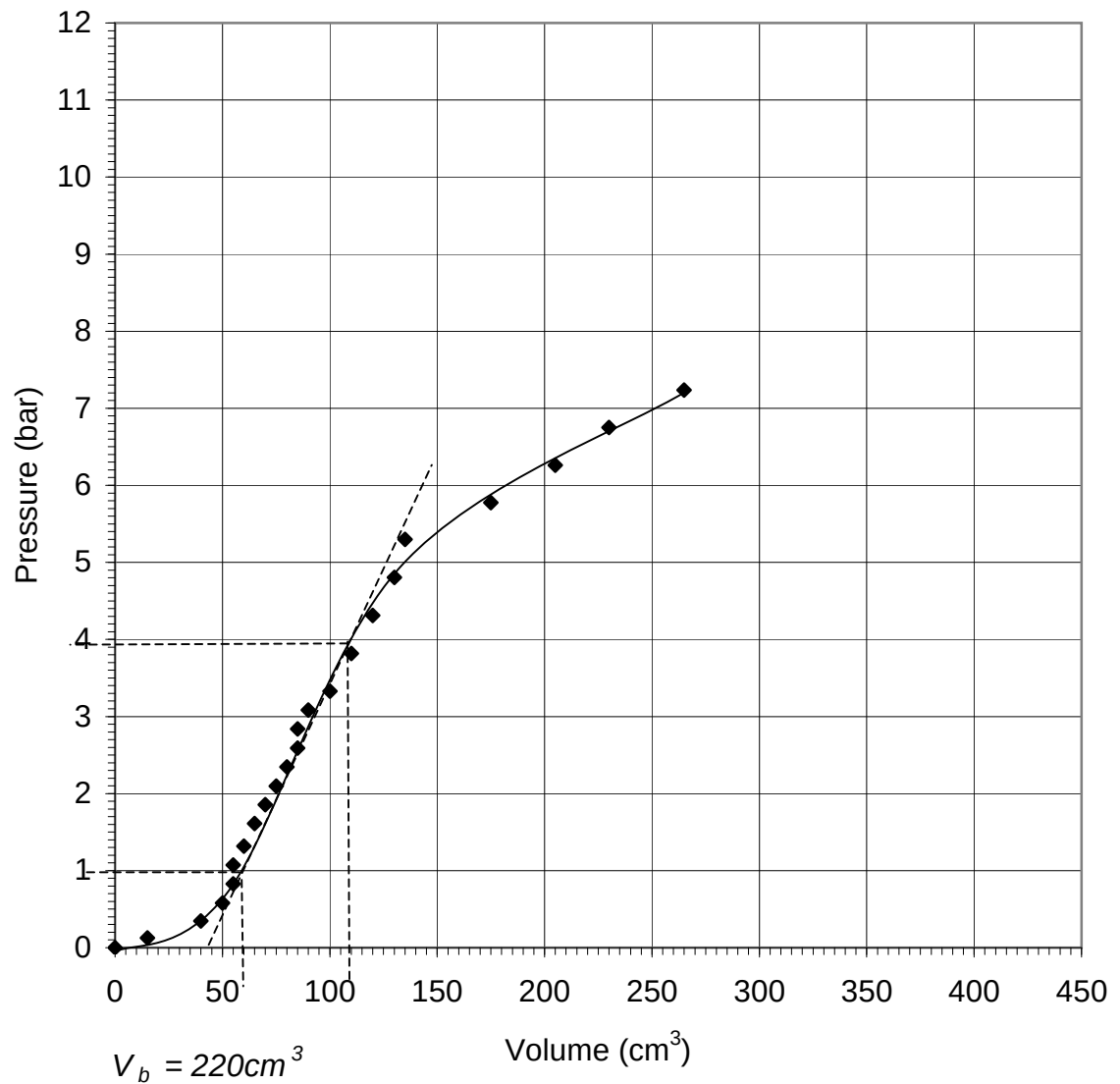


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Pressuremeter Test Curve - 22

Location : IPMT3

Depth (m) : 4m



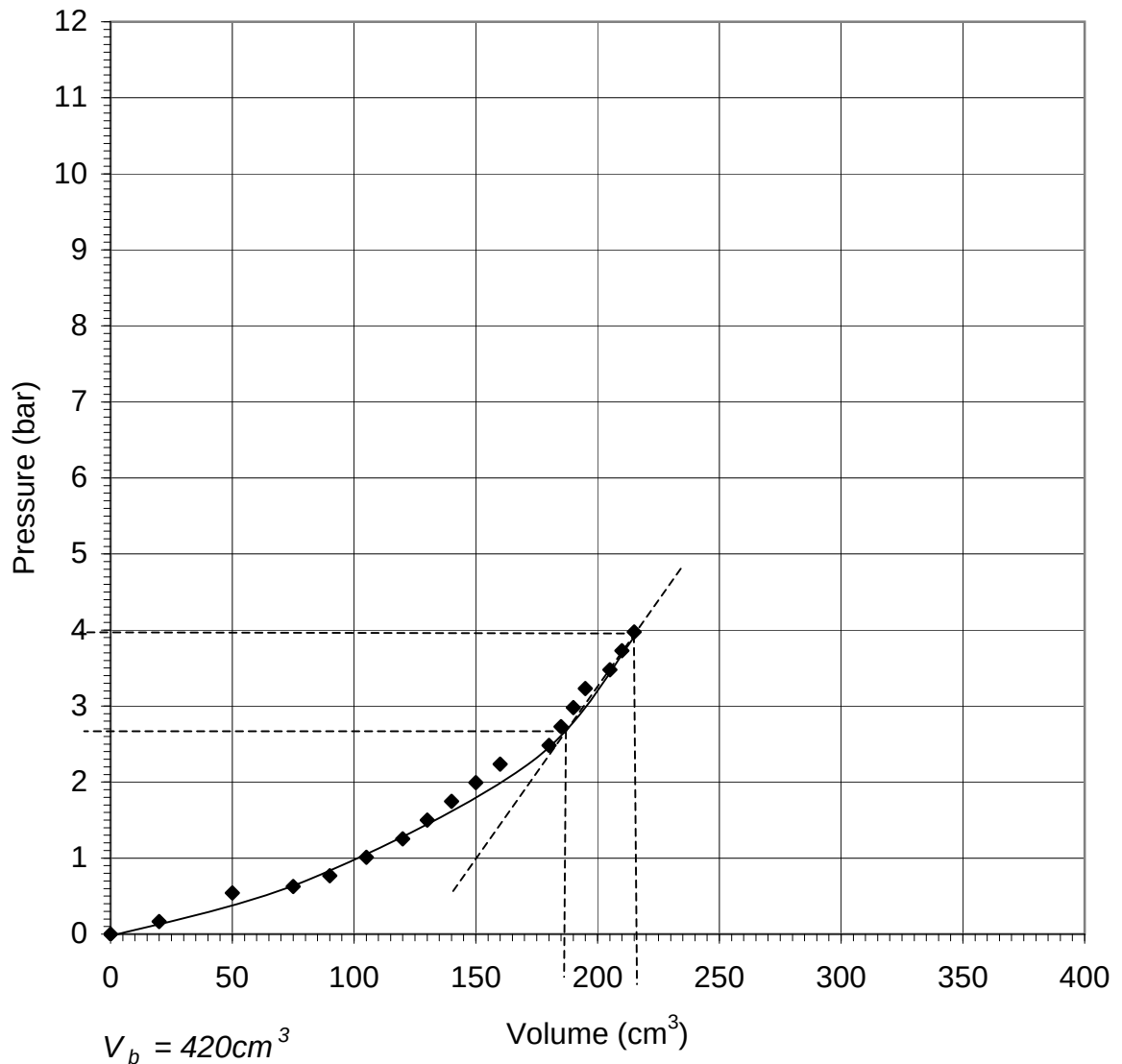
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Pressuremeter Test Curve - 23

Location : IPMT3

Depth (m) : 6m

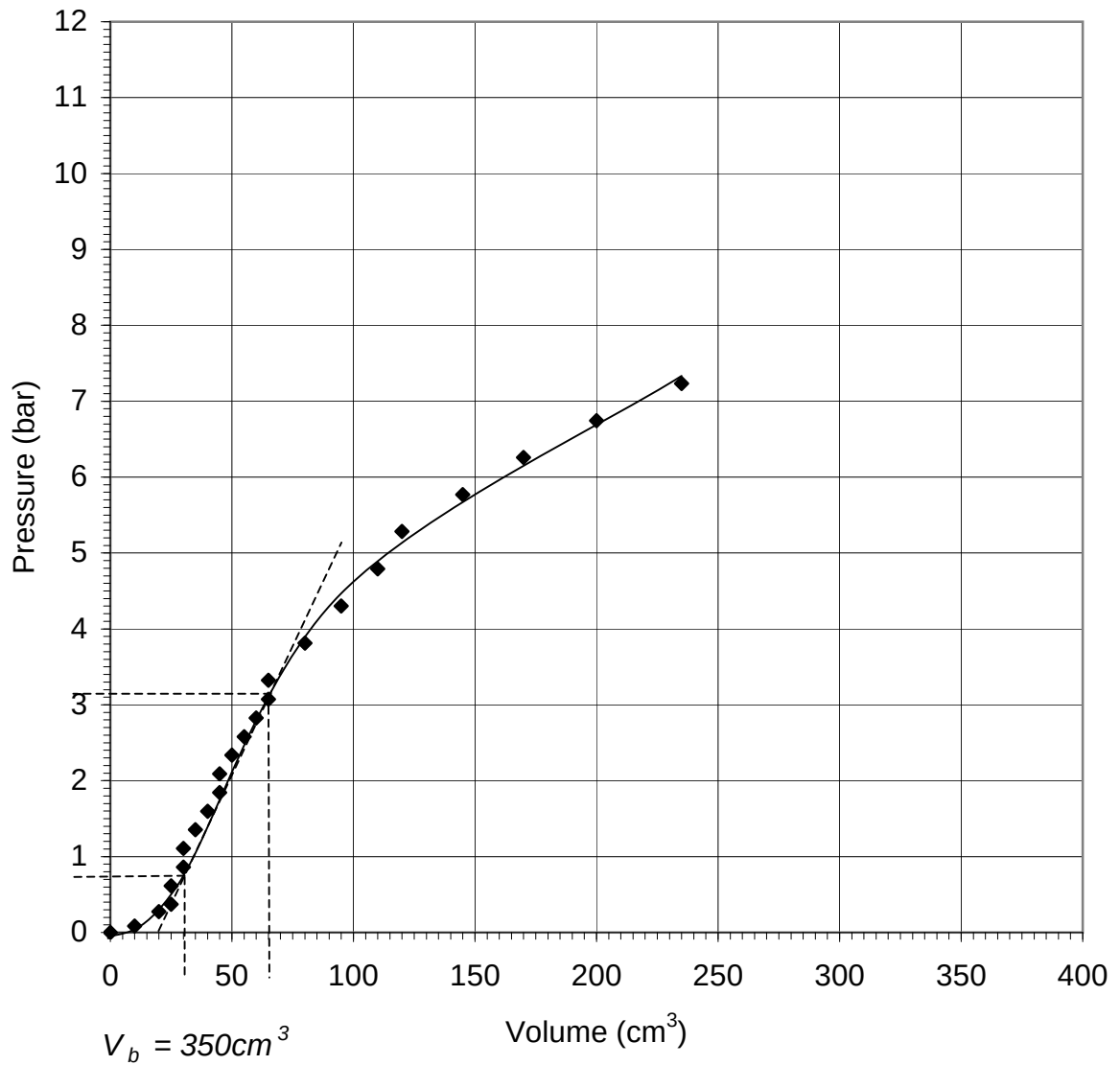


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Pressuremeter Test Curve - 24

Location : IPMT3

Depth (m) : 8m



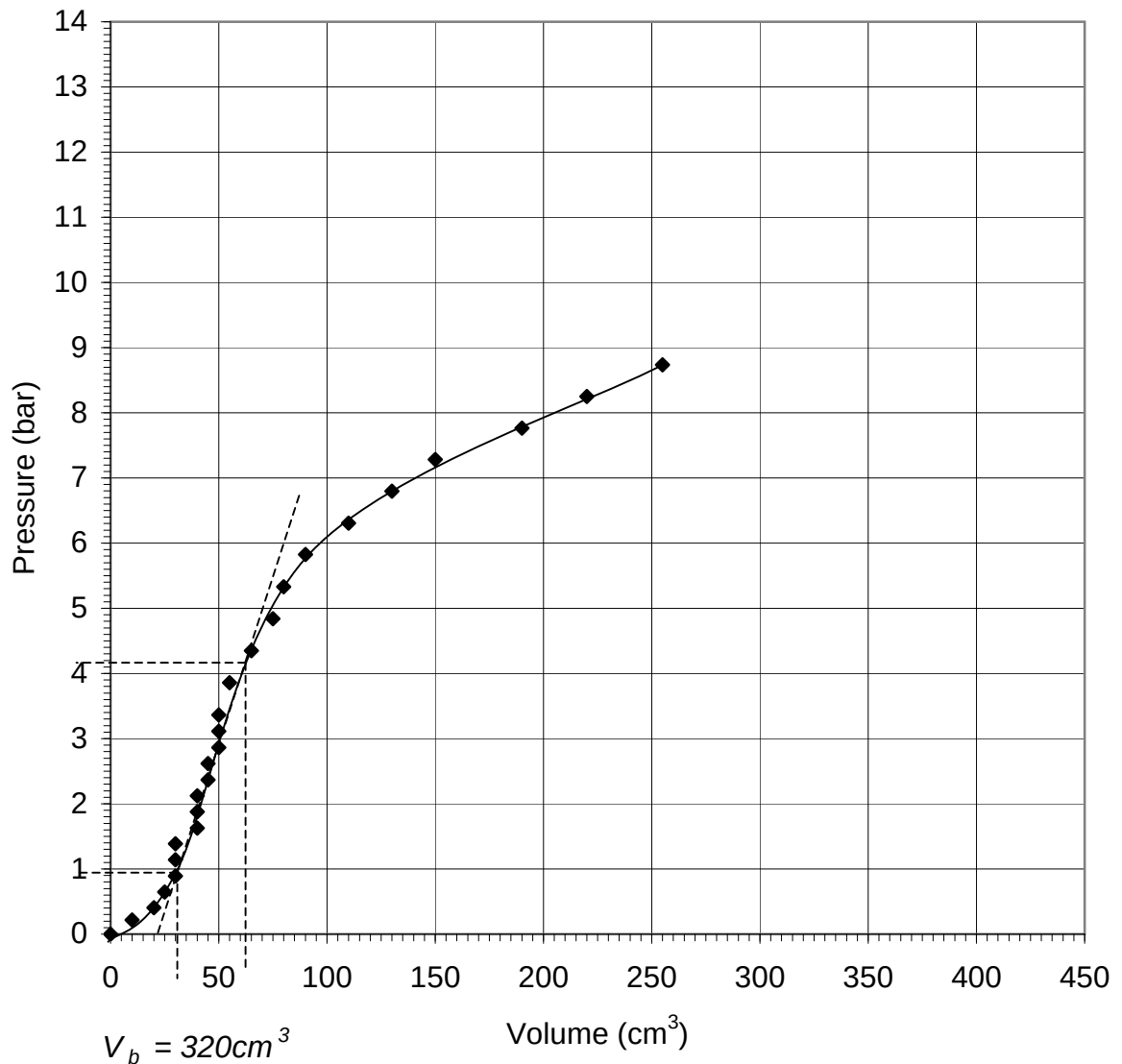
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Pressuremeter Test Curve - 25

Location : IPMT3

Depth (m) : 10m



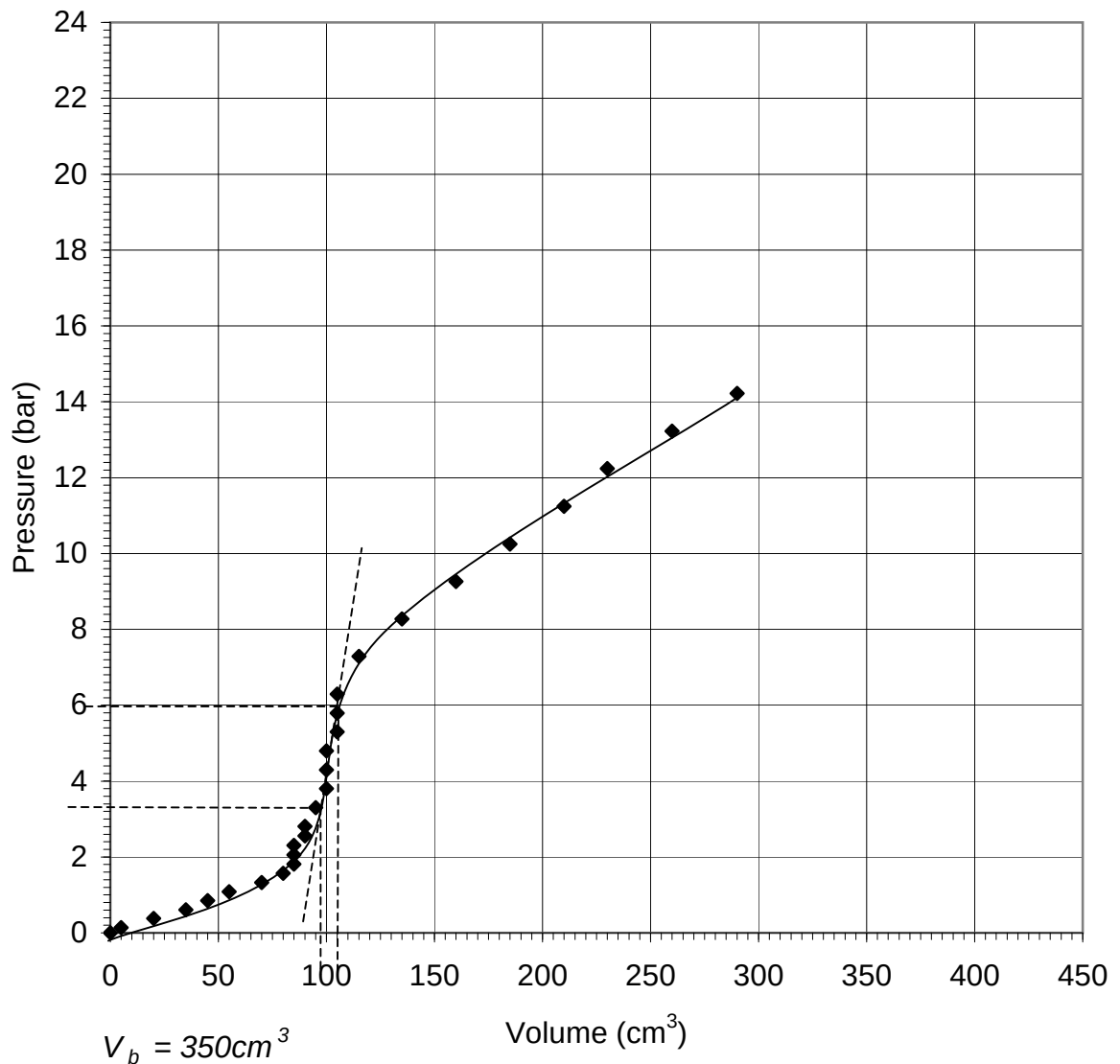
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Pressuremeter Test Curve - 26

Location : IPMT3

Depth (m) : 12m



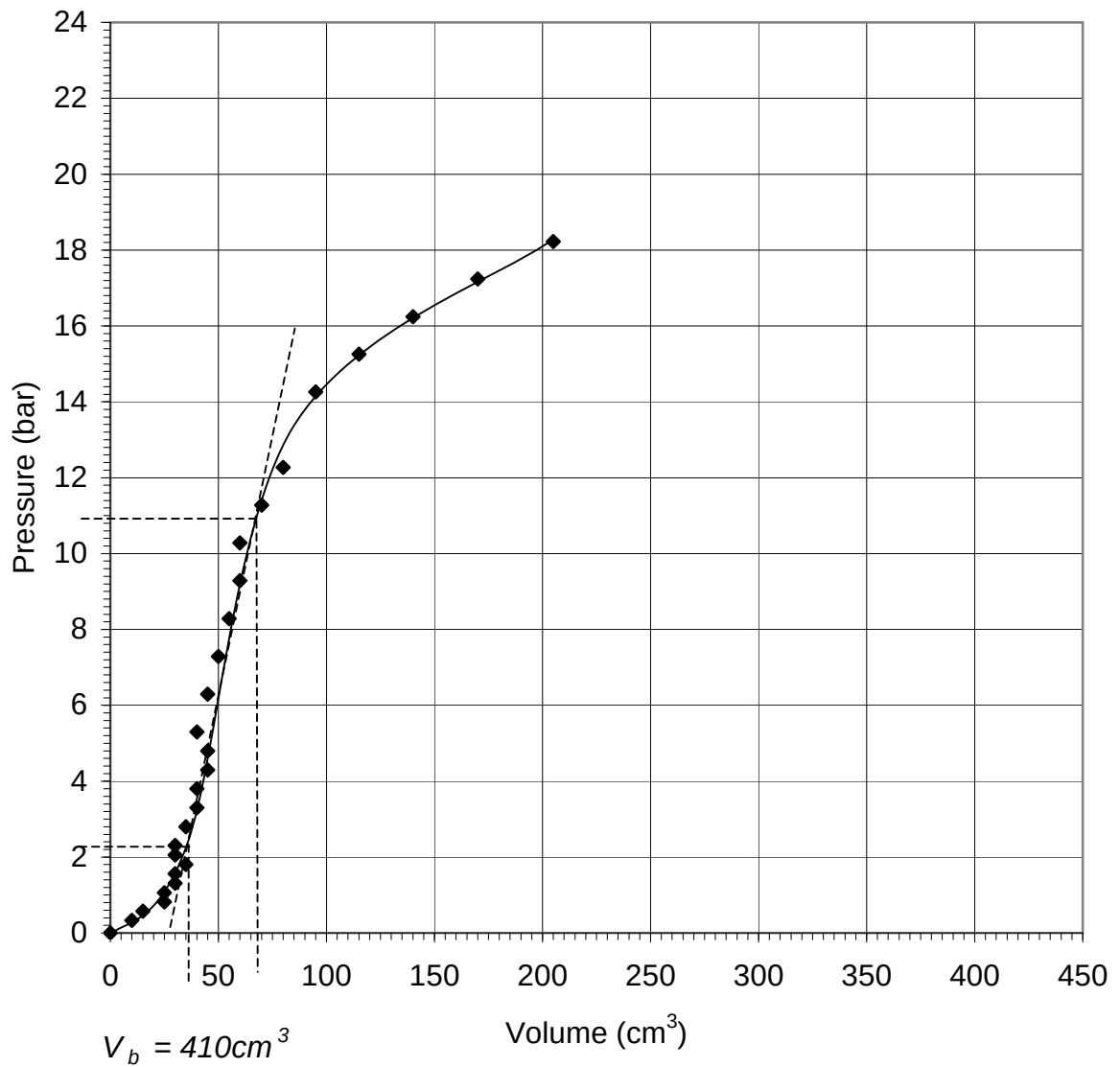
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Pressuremeter Test Curve - 27

Location : IPMT3

Depth (m) : 15m



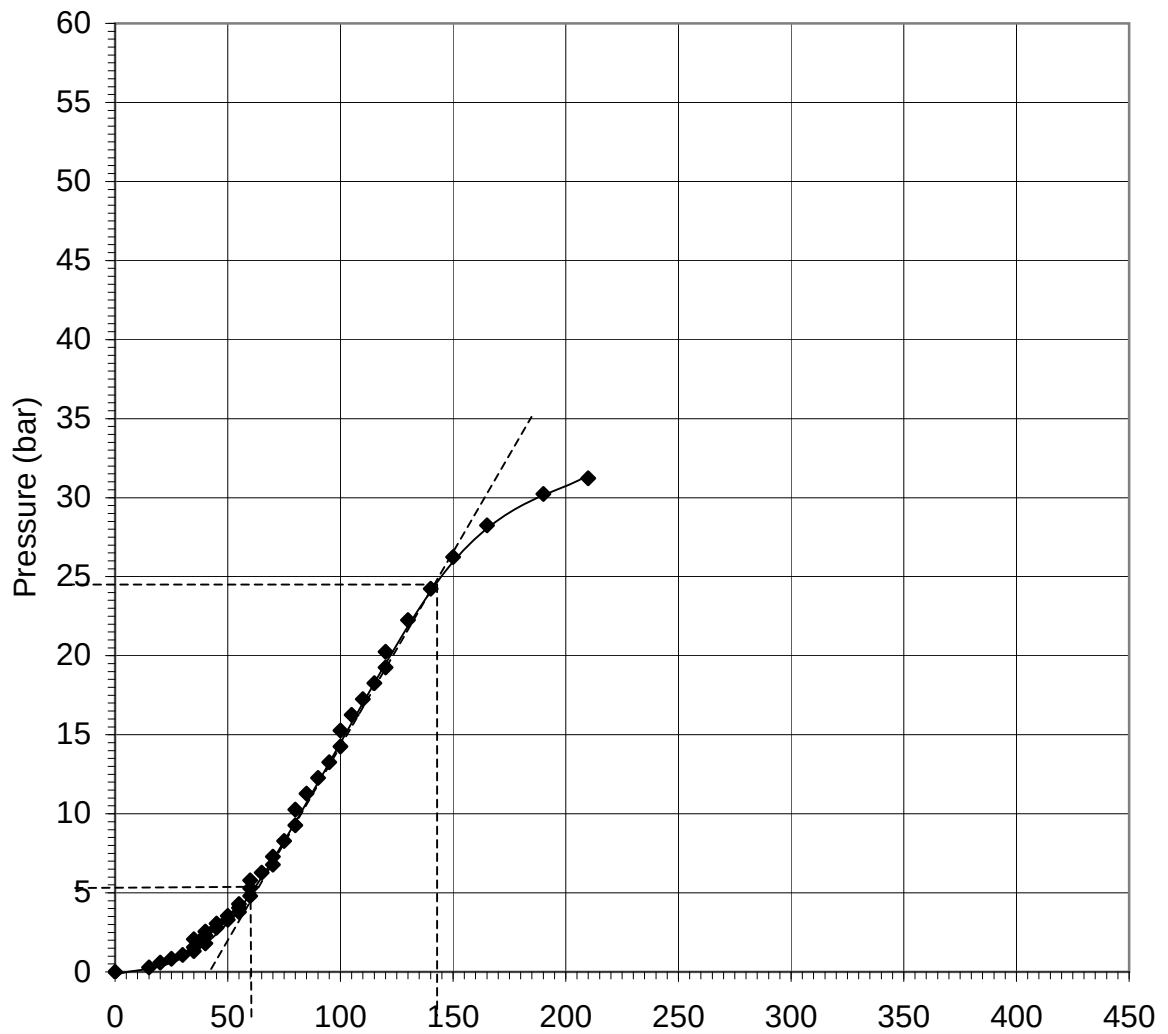
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$V_b = 400\text{cm}^3$

Volume (cm³)

Pressuremeter Modulus $E_m = 727\text{kg/cm}^2$

Pressuremeter Test Curve - 28

Location : IPMT3

Depth (m) : 18m



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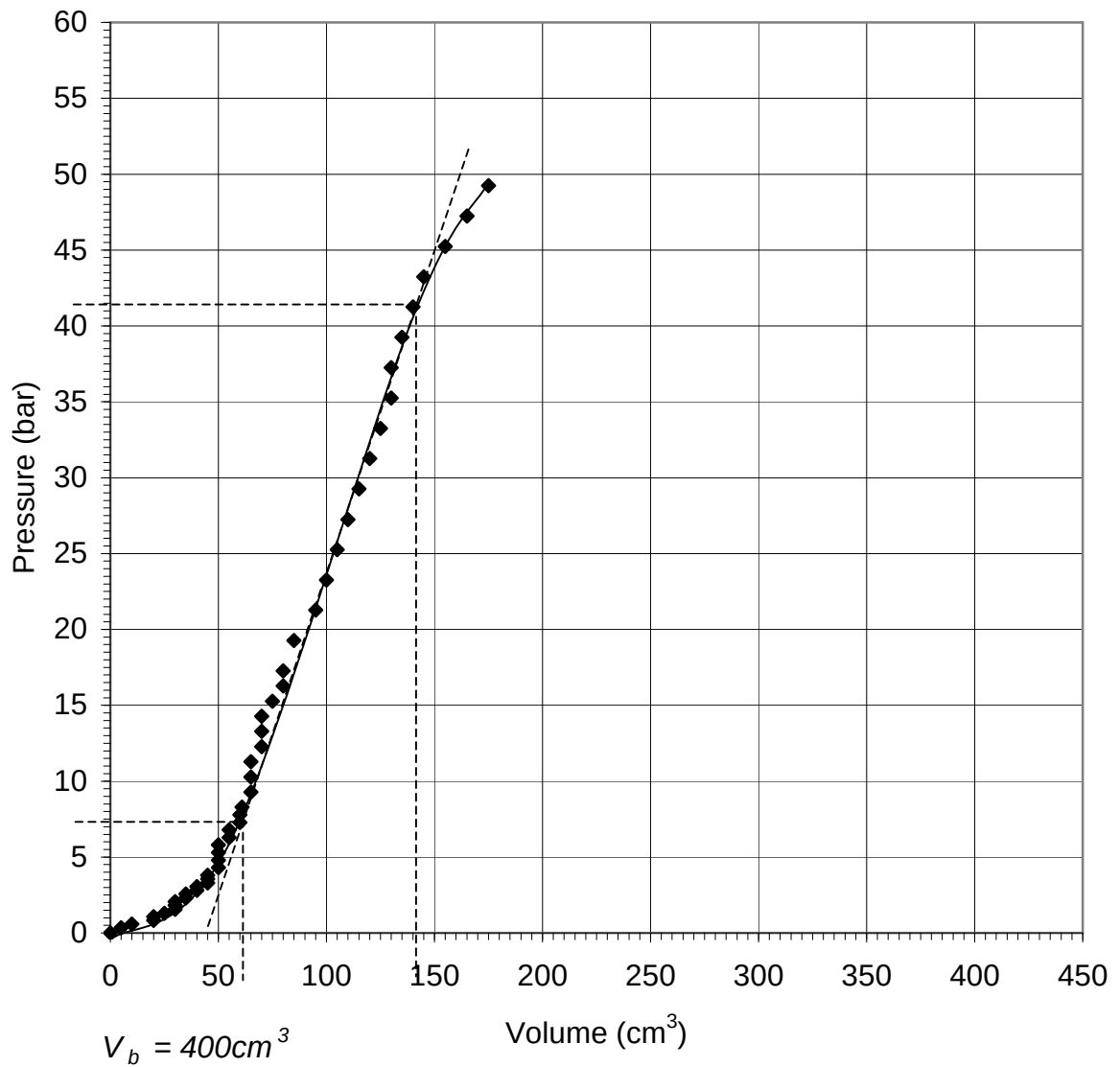
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Pressuremeter Test Curve - 29

Location : IPMT3

Depth (m) : 21m



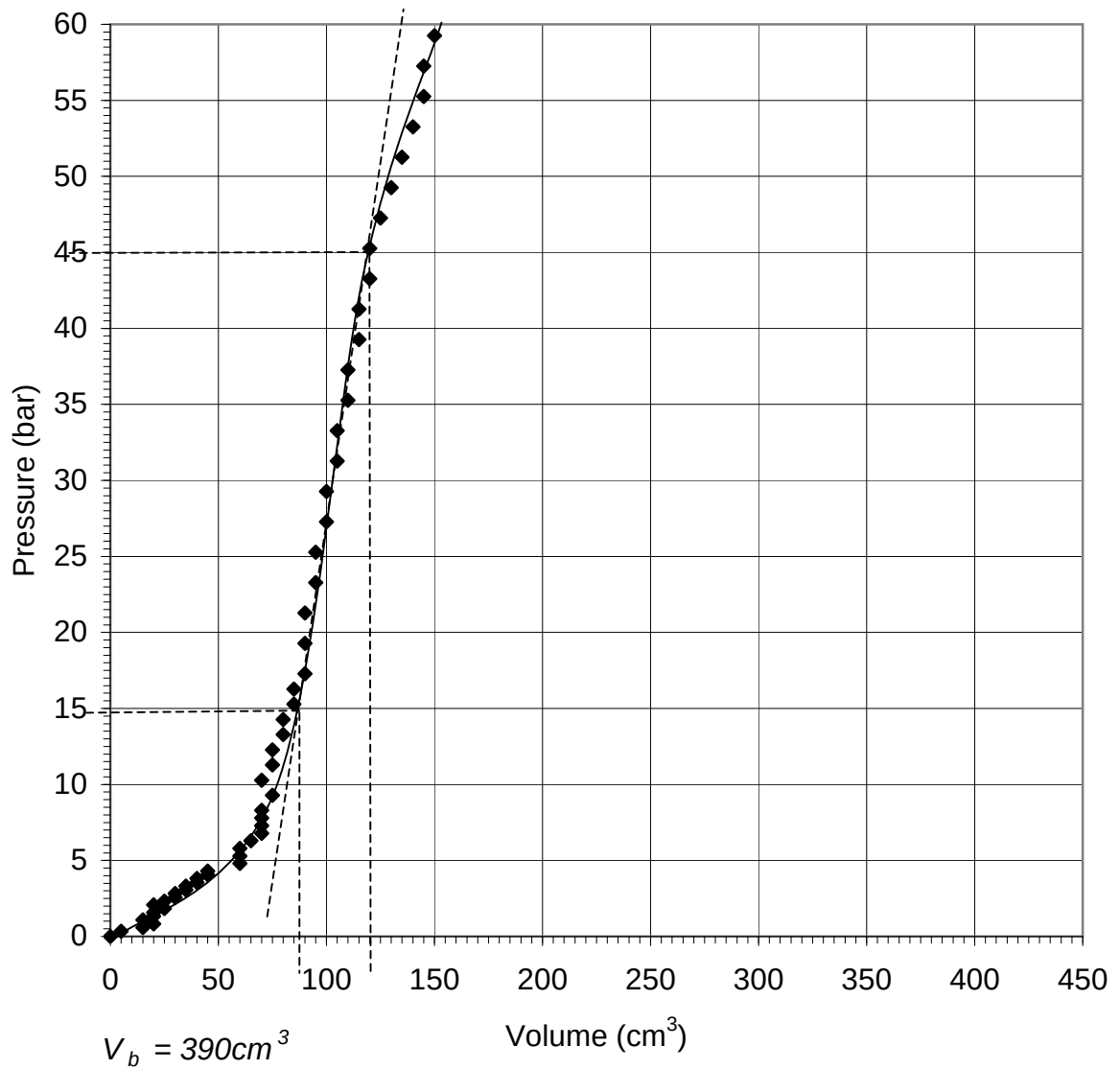
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Pressuremeter Test Curve - 30

Location : IPMT3

Depth (m) : 25m



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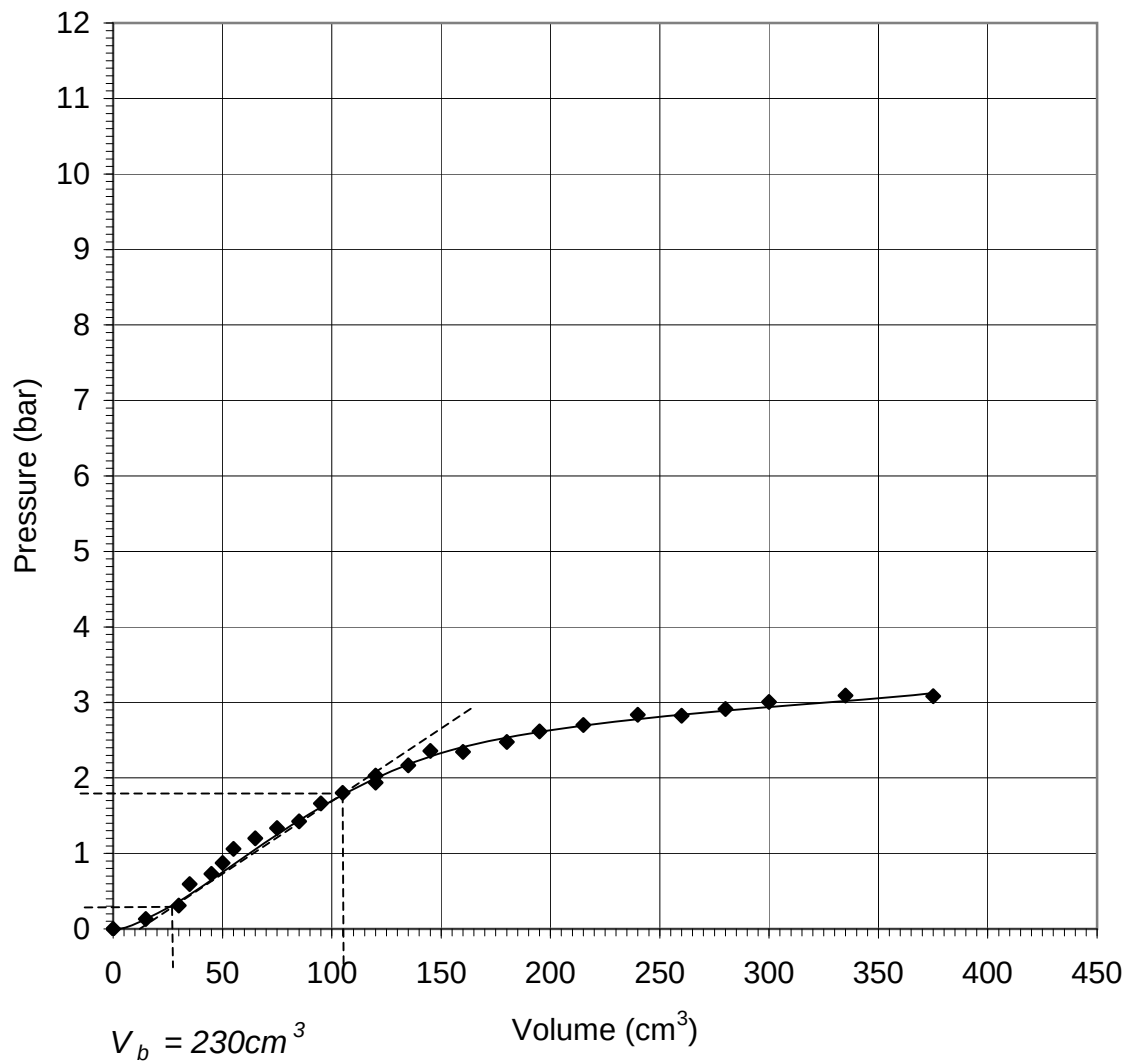
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Pressuremeter Modulus $E_m = 47 \text{ kg/cm}^2$

Pressuremeter Test Curve - 31

Location : IPMT4
Depth (m) : 2m

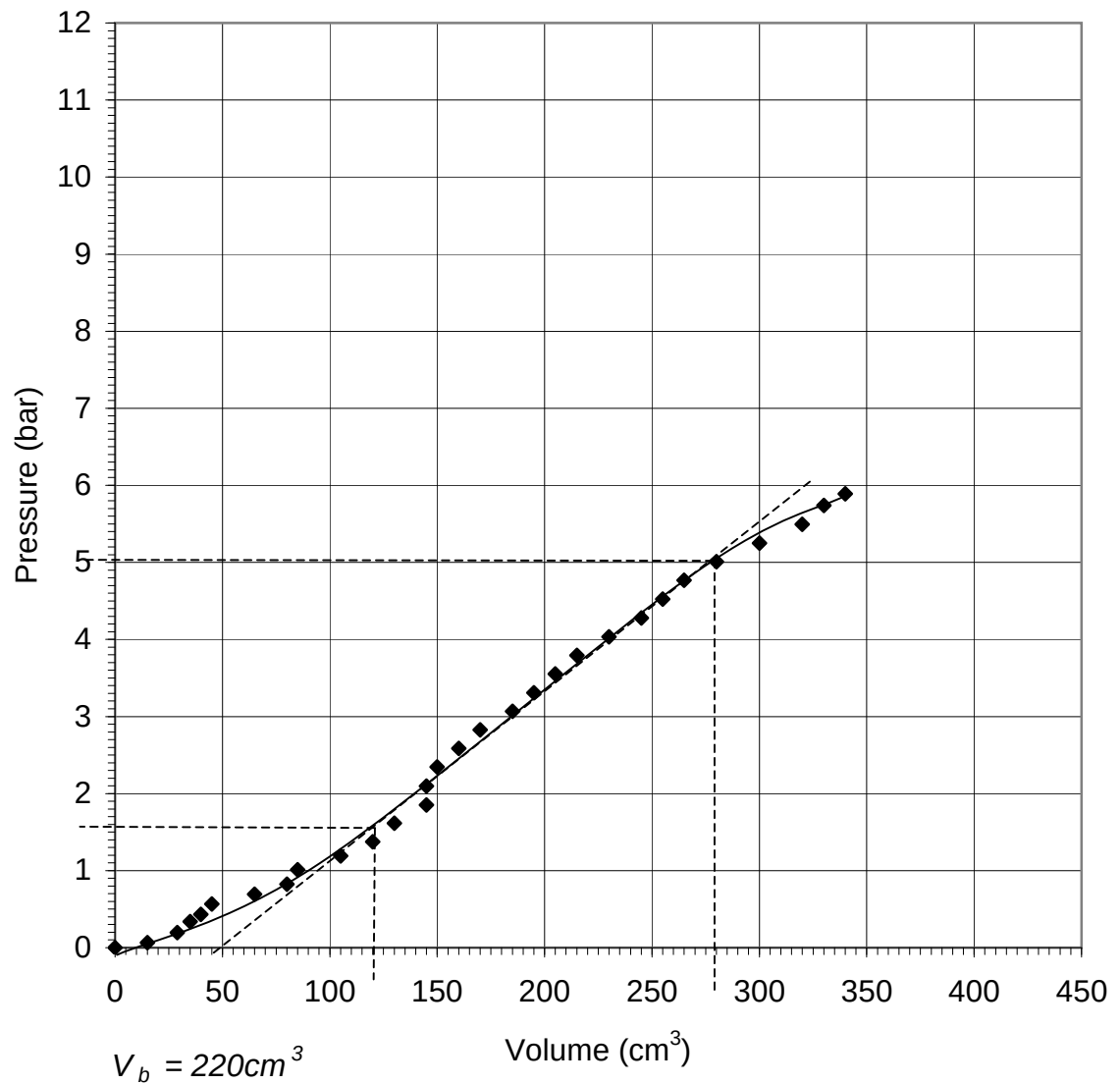


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Pressuremeter Test Curve - 32

Location : IPMT4

Depth (m) : 4m

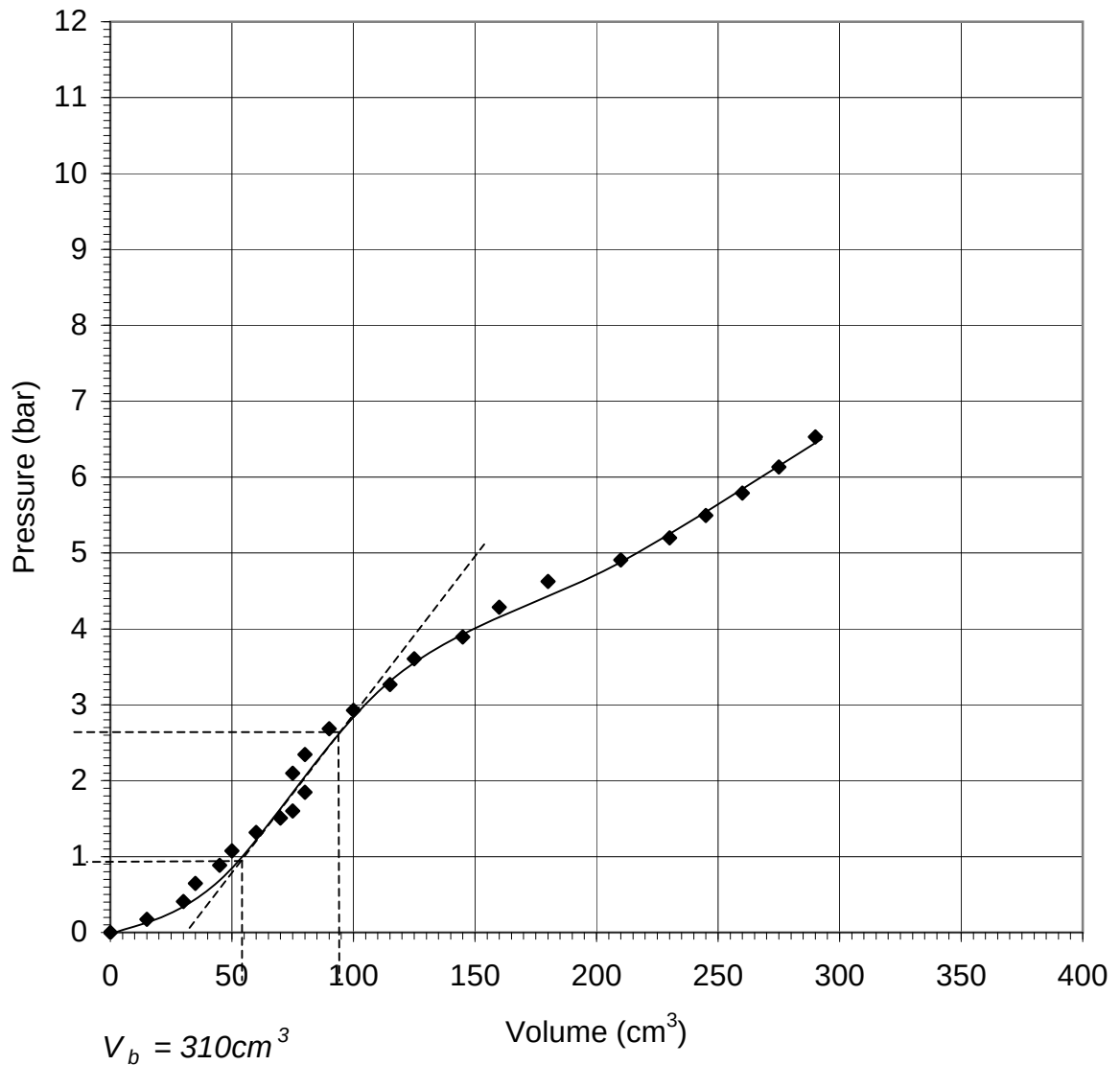


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Pressuremeter Test Curve - 33

Location : IPMT4

Depth (m) : 6m

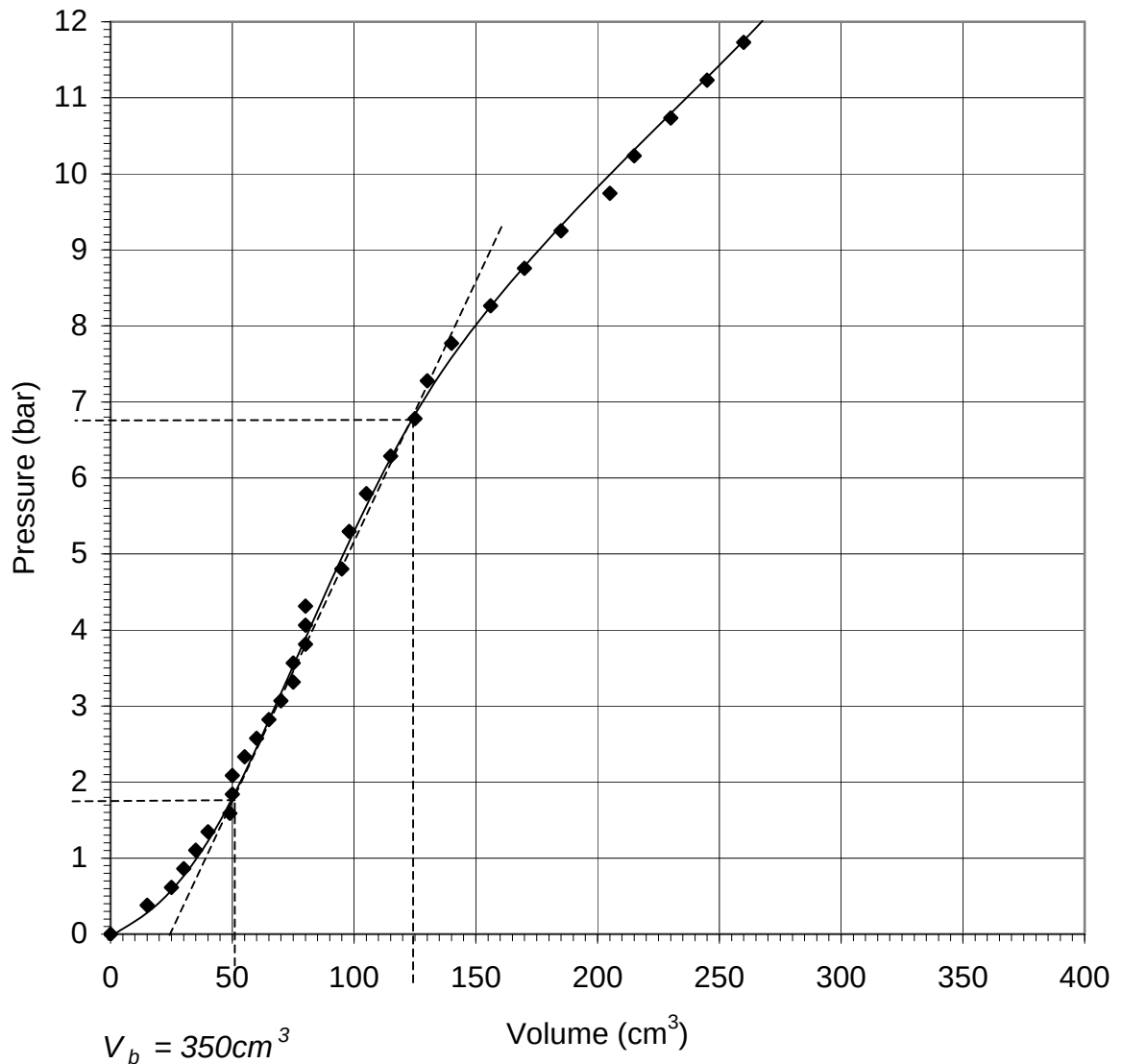


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Pressuremeter Test Curve - 34

Location : IPMT4

Depth (m) : 8m

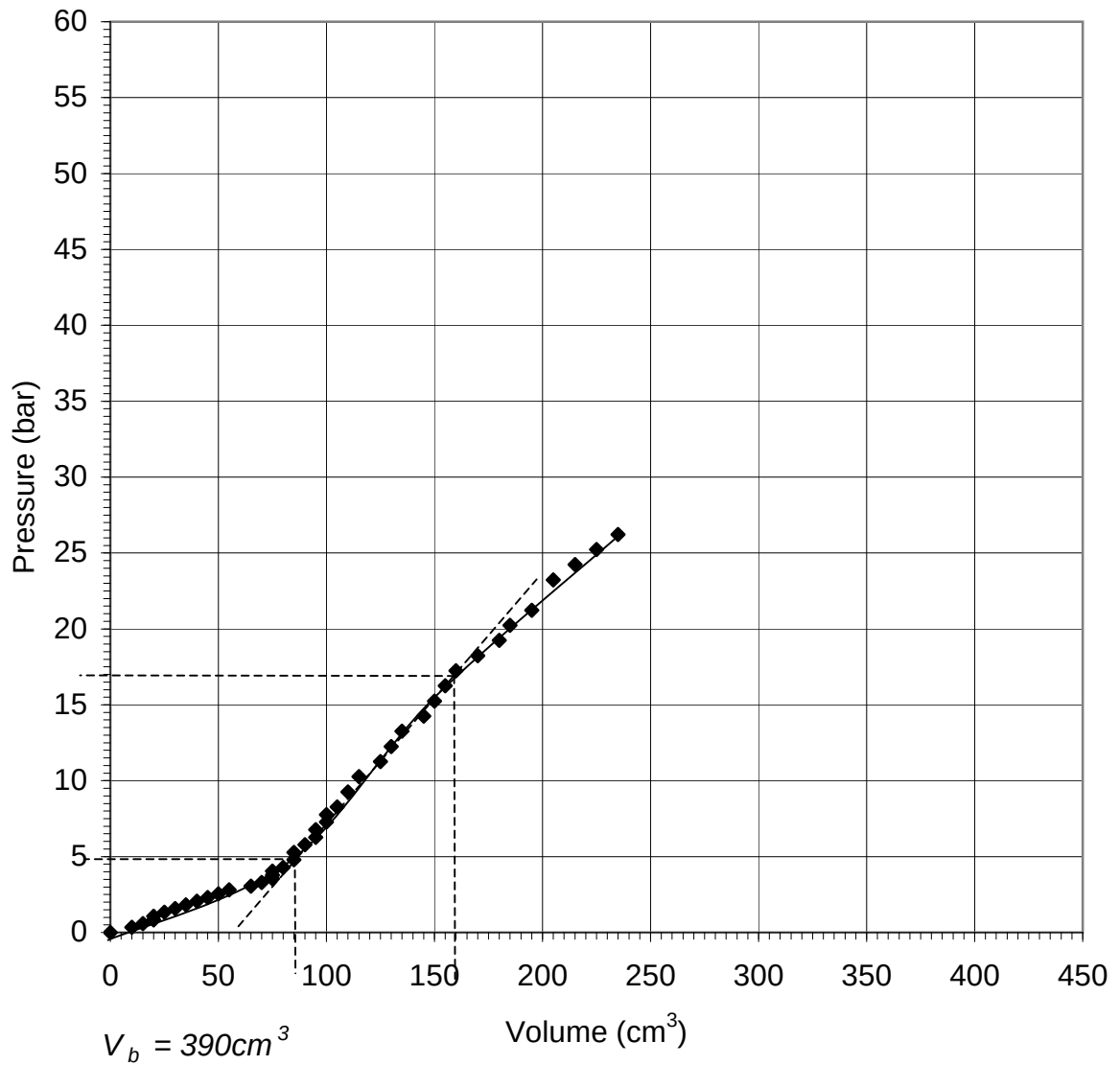


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Pressuremeter Test Curve - 35

Location : IPMT4

Depth (m) : 10m



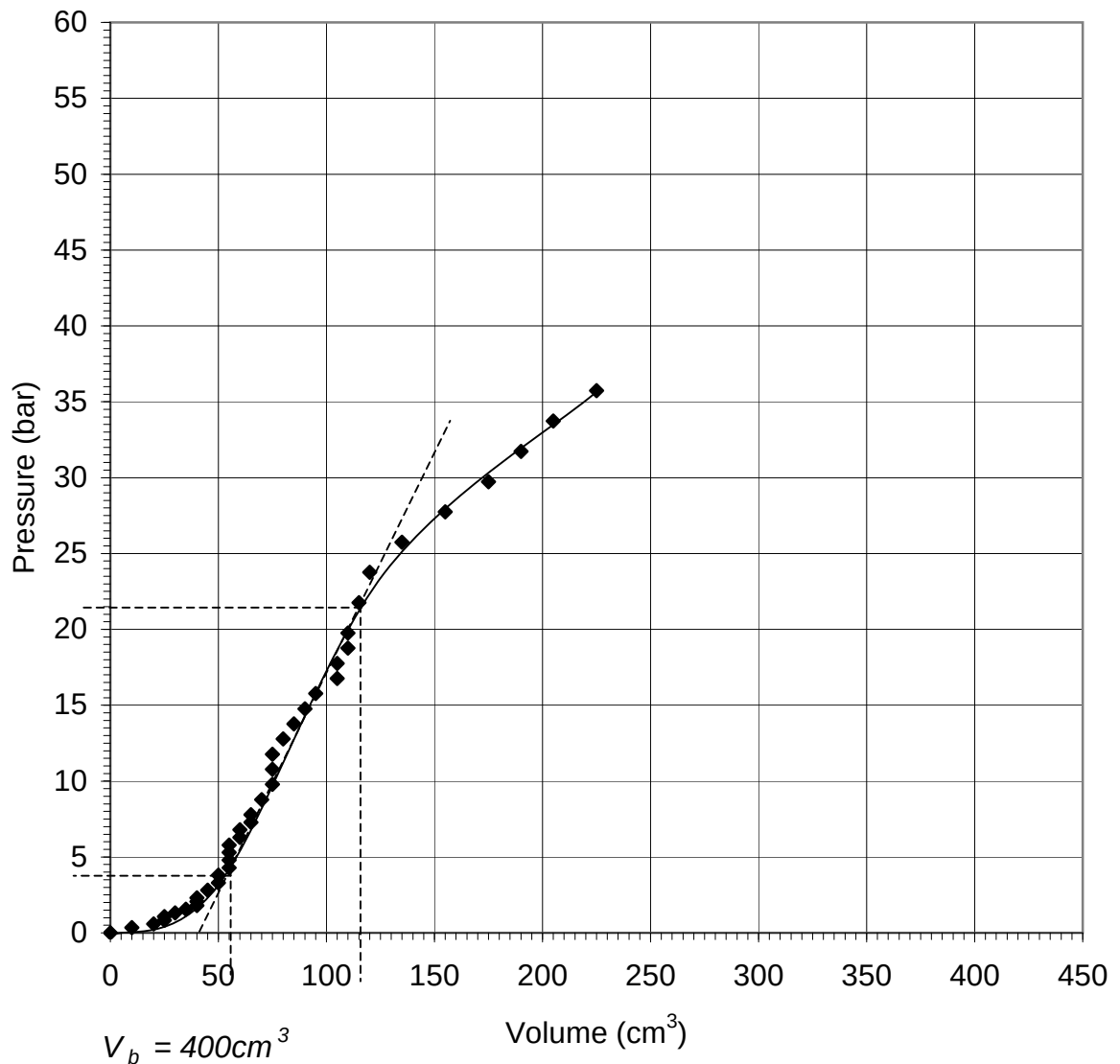
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Pressuremeter Modulus $E_m = 881\text{kg/cm}^2$

Pressuremeter Test Curve - 36

Location : IPMT4

Depth (m) : 12m

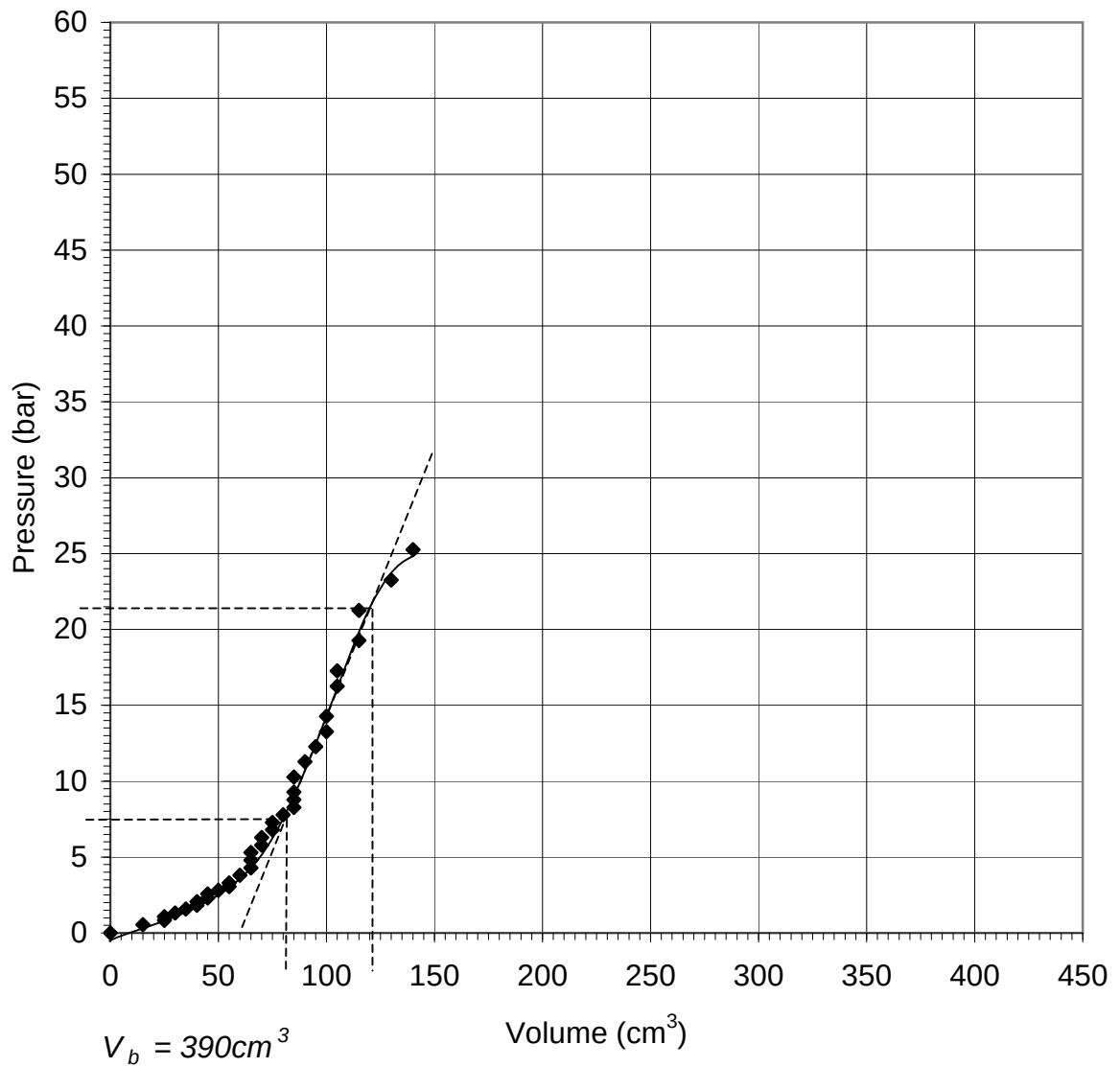


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Pressuremeter Test Curve - 37

Location : IPMT4

Depth (m) : 15m

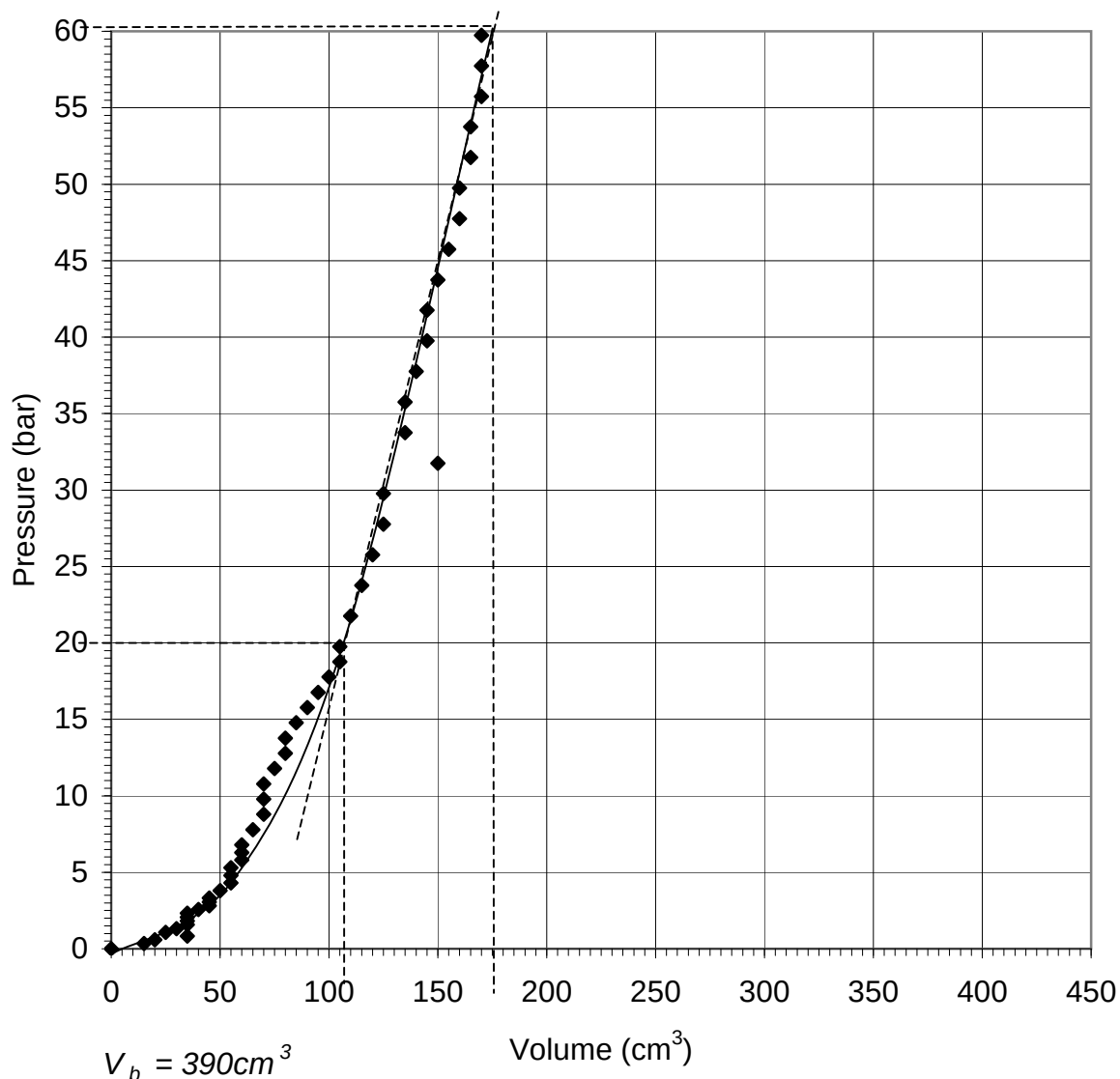


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Pressuremeter Test Curve - 38

Location : IPMT4
Depth (m) : 18m



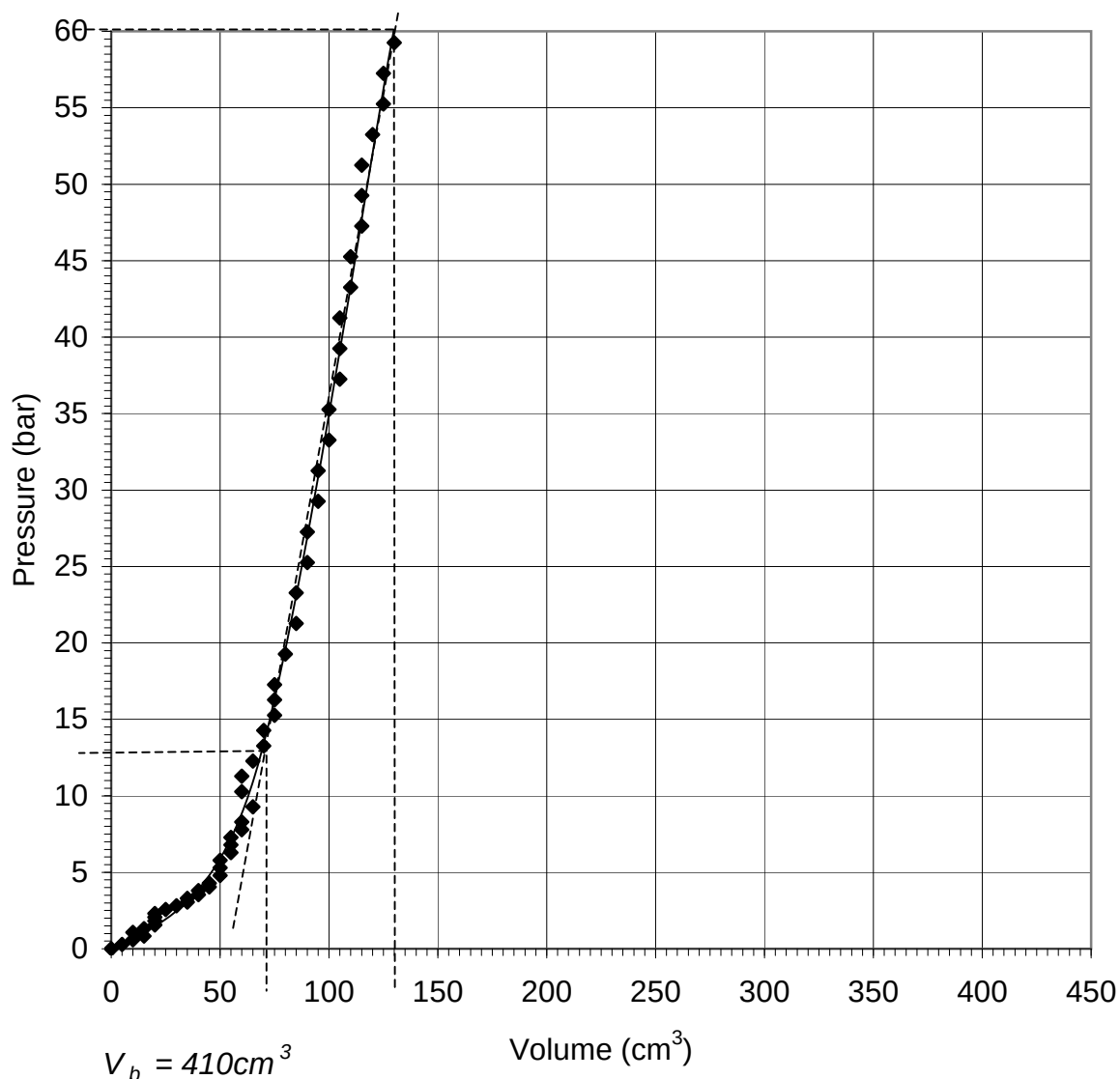
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Pressuremeter Test Curve - 39

Location : IPMT4
Depth (m) : 21m



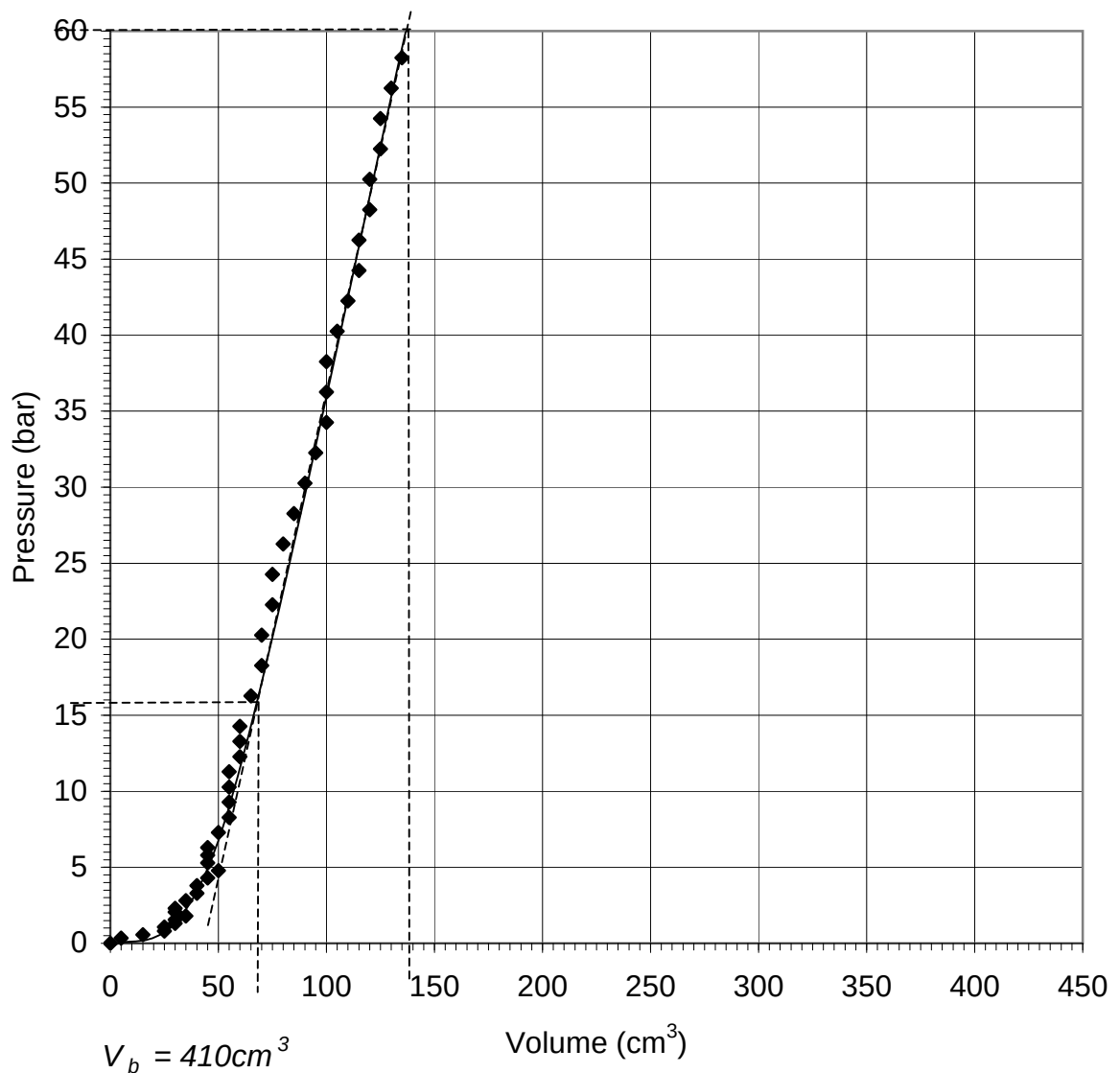
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Pressuremeter Test Curve - 40

Location : IPMT4

Depth (m) : 25m



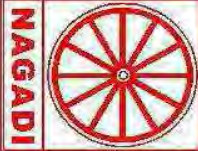
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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	SPT (N Value) Blows 15cm				DENSITY (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL			STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST							
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		SPECIFIC GRAVITY	Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)						
1	1.0	SPT	4	5	6	11				2	36	35	27	40	24	16		CI		2.5																	
1	2.0	UDS					2.28	2.14	6.3																		0.23	35									
1	3.0	SPT	20	20	12	32				31	44	14	11	L	P			SM																			
1	4.0	UDS					1.99	1.68	17.8								8.9				CD	0.24	22						40								
1	5.0	SPT	7	16	35	51				0	9	50	41	64	28	36		CH			2.5																

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

Results of Field and Laboratory Tests

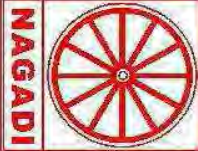
BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST					SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)	Optimum Moisture Cont. (%)				
2	1.0	SPT	3	5	8	13				0	11	39	50	76	30	46		CH		2.56																
2	2.0	UDS					1.98	1.48	33.6											UU	0.06	12						1.2	120							
2	3.0	SPT	7	10	11	21				6	10	36	48	66	29	37		CH																		
2	4.0	UDS					2.03	1.62	24.6																			0.8	70							
2	5.0	SPT	13	17	27	44				0	21	32	47	68	31	37		CH		2.52																
2	6.5	UDS					1.64	1.28	27.9																											
2	8.0	SPT	10	19	28	47				3	31	31	35	52	26	26		CH	2.55										100							

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		STRENGTH TEST	CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS		
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)					Swelling Pressure (kg/cm²)	Free Swell Index (%)
3	1.0	SPT	3	6	9	15				3	36	28	33	48	25	23		CI		2.54														
3	2.0	UDS					1.94	1.46	32.9								9.1			UCC	1.21						0.81	70						
3	3.0	SPT	11	21	30	51				0	12	42	46	68	32	36		CH		2.55														
3	4.0	UDS					1.95	1.64	19.0																									

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test

CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Blows 15cm				DENSITY (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'P _c ' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Density (g/cm³)				
4	1.0	SPT	3	5	8	13				4	35	26	35	48	25	23		CI		2.56															
4	2.0	UDS					1.80	1.59	13.4											CD	0.28	20						0.53	60						
4	3.0	SPT	8	14	21	35				0	13	42	45	68	32	36		CH		2.55															
4	4.0	UDS					2.00	1.68	19.4																			0.48	70						

Type of Sample

DS	Disturbed Soil Sample
UDS	Undisturbed Soil Sample
RMS	Remoulded Soil Sample
WS	Water Sample

Type of Strength Tests

UCC	Unconfined Compression Test
VST	Vane Shear Test
Tuu	Unconsolidated undrained triaxial test
Tcu	Consolidated Undrained triaxial test with pore pressure
Tcd	Consolidated drained triaxial test



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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL			STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS	
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'Cc'	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolids. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Density (g/cm³)					Optimum Moisture Cont. (%)
5	1.0	SPT	2	3	4	7				0	14	43	43	72	34	38		CH		2.54																
5	2.0	UDS					2.00	1.54	30.0																	0.7	80									
5	3.0	SPT	2	4	7	11				2	24	34	40	68	33	35					2.53															
5	4.0	UDS					1.90	1.64	15.4								8.8				UCC	1.32						1.1	100							
5	5.0	SPT	8	14	21	35				2	31	33	34	46	24	22		CI																		
5	6.5	UDS					1.92	1.55	23.7											2.54							0.4	60								
5	8.0	SPT	17	27	34	61				2	29	34	35	42	24	18		CI																		

Type of Sample

DS Disturbed Soil Sample
 UDS Undisturbed Soil Sample
 RMS Remoulded Soil Sample
 WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
 VST Vane Shear Test
 Tuu Unconsolidated undrained triaxial test
 Tcu Consolidated Undrained triaxial test with pore pressure
 Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS	
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'P _c ' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)					Optimum Moisture Cont. (%)
6	1.0	SPT	3	8	11	19				2	21	40	37	72	32	40		CH	2.54																	
6	2.0	UDS					1.86	1.44	28.8											CD	0.28	18						1.25	120							
6	3.0	SPT	7	13	20	33				8	13	32	47	69	30	39		CH																		
6	4.0	UDS					1.88	1.56	20.4																				100							
6	5.0	SPT	14	21	28	49				3	12	35	50	65	27	38		CH																		
6	6.5	UDS					1.98	1.47	34.5																											
6	8.0	SPT	12	24	31	55				3	12	40	45	60	26	34		CH																		

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm			DENSIT Y (g/cm³)	WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST					SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS	
								GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'Cc'	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)	Optimum Moisture Cont. (%)					
7	1.0	SPT	3	6	11	17			0	31	33	36	48	24	24		CI	2.54																	
7	2.0	UDS					1.90	1.61	17.5										CD	0.30	20					0.42	50								
7	3.0	SPT	9	15	20	35			0	26	47	27	40	23	17		CI		2.56																
7	4.0	UDS					1.95	1.64	18.6																		50								

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)	WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST		CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS	
									GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'ₒ	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Idex 'C'ₑ	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)					Max. Dry Dendity (g/cm³)
8	1.0	SPT	3	4	8	12				2	30	31	37	48	25	23		CI	2.57															
8	2.0	UDS					1.94	1.59	22.3																	65								
8	3.0	SPT	4	4	7	11				2	27	30	41	58	26	32		CH		2.54														
8	4.0	UDS					1.85	1.56	18.8								9.8					UCC	1.45					0.63	80					
8	5.0	SPT	7	11	16	27				2	32	33	33	45	24	21		CI		2.55														
8	6.5	UDS					1.78	1.57	13.5																			40						

Type of Sample

DS Disturbed Soil Sample
 UDS Undisturbed Soil Sample
 RMS Remoulded Soil Sample
 WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
 VST Vane Shear Test
 Tuu Unconsolidated undrained triaxial test
 Tcu Consolidated Undrained triaxial test with pore pressure
 Tcd Consolidated drained triaxial test



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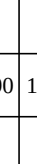
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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm			DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL			STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST								
						BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Density (g/cm³)						Optimum Moisture Cont. (%)	CALIFORNIA BEARING RATIO (%)
9	1.0	SPT	2	2	4	6			0	19	39	42	63	28	35		CH		2.56																		
9	2.0	UDS					1.90	1.50	21.5																0.34	60											
9	3.0	SPT	2	5	8	13			2	23	32	43	56	25	31		CH		2.57																		
9	4.0	UDS					1.48	1.26	17.3											UCC	1.63						0.56	80									
9	5.0	SPT	11	27	29	56			19	18	31	32	42	24	18		CI		2.55																		
9	6.5	UDS					2.35	2.01	6.6																												

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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Job No. : G(H)1658(9)
Sheet No. : 170 of 271

CHP/ AHP AREA

Results of Field and Laboratory Tests

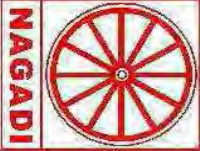
BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
10	1.0	SPT	3	7	10	17				2	31	28	39	48	25	23		CI																	
10	2.0	UDS					1.85	1.57	17.6											CD	0.31	21					0.72	100							
10	3.0	SPT	7	14	21	35				2	15	41	42	68	28	40		CH			2.54														
10	4.0	UDS					1.93	1.63	18.0																			50							

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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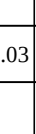
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Job No. : G(H)1658(9)
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CHP/ AHP AREA

Results of Field and Laboratory Tests

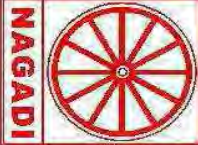
BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS			SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS	
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION		DESCRIPTION	Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'P _c ' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)					Max. Dry Dendity (g/cm³)
11	1.0	SPT	5	6	8	14				0	21	41	38	52	26	26		CH		2.54															
11	2.0	UDS					2.03	1.65	23.8											CD	0.25	16					0.52	70							
11	3.0	SPT	10	21	24	45				4	19	39	38	46	24	22		CI		2.58															
11	4.0	UDS					1.85	1.57	18.0																			55							

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL			STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST					
										GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
12	1.0	SPT	3	9	16	25				0	42	29	29	38	22	16		CI																	
12	2.0	UDS					1.78	1.59	12.1										UCC	1.62						60									
12	3.0	SPT	7	11	25	36				11	18	38	33	40	23	17		CI																	
12	4.0	UDS					2.10	1.53	36.7																0.36	60									

- Type of Sample**

DS Disturbed Soil Sample

UDS Undisturbed Soil Sample

RMS Remoulded Soil Sample

WS Water Sample
- Type of Strength Tests**

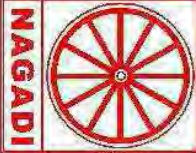
UCC Unconfined Compression Test

VST Vane Shear Test

Tuu Unconsolidated undrained triaxial test

Tcu Consolidated Undrained triaxial test with pore pressure

Tcd Consolidated drained triaxial test



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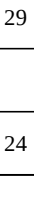
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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Blows 15cm			DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL			STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST								
						BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		SPECIFIC GRAVITY	Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)					Max. Dry Dendity (g/cm³)	Optimum Moisture Cont. (%)	CALIFORNIA BEARING RATIO (%)
13	1.0	SPT	4	7	15	22				0	43	25	32	53	24	29		CH		2.49																	
13	2.0	UDS					1.86	1.62	14.6																				80								
13	3.0	SPT	5	7	11	18				9	38	23	30	48	24	24		CI																			
13	4.0	UDS					1.93	1.59	20.7												UU	0.80	19					0.61	80								
13	5.0	SPT	9	13	18	31				7	38	28	27	40	23	17		CI		2.53																	
13	6.5	UDS					1.85	1.51	22.4																				40								

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL			STRENGTH TEST			CONSOLIDATION TEST					SWELL TEST		CT TEST								
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolida. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)	Optimum Moisture Cont. (%)							CALIFORNIA BEARING RATIO (%)
14	1.0	SPT	3	5	9	14				0	35	27	38	44	23	21		CI		2.56																			
14	2.0	UDS					1.72	1.44	18.71								10											70											
14	3.0	SPT	3	6	7	13				8	29	30	33	42	24	18		CI			2.57																		
14	4.0	UDS					2.01	1.76	14.10																		0.56	80											
14	5.0	SPT	8	14	20	34				0	18	37	45	56	26	30		CH			2.52																		
14	6.5	UDS					1.78	1.47	20.99												UCC	1.91							85										

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

Results of Field and Laboratory Tests

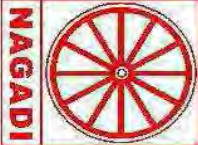
BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Blows 15cm				DENSITY Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
15	1.0	SPT	2	5	8	13				0	5	35	60	76	28	48		CH		2.46															
15	2.0	UDS					1.69	1.55	8.9								8.9											40							
15	3.0	SPT	7	11	12	23				9	15	31	45	82	30	52		CH																	
15	4.0	UDS					1.75	1.53	14.4											UU	1	20						1.23	120						

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)			PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL			STRENGTH TEST	CONSOLIDATION TEST				SWELL TEST		CT TEST						
							BULK	DRY		WATER CONTENT (%)	GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION			DESCRIPTION	Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)					Co. of Consolid. 'Cv' (cm²/min)
16	1.0	SPT	4	6	9	15				0	43	34	23	41	22	19		CI		2.47														
16	2.0	UDS					1.82	1.56	16.1											CD	0.20	22					0.24	60						
16	3.0	SPT	6	11	13	24				12	23	41	24	42	23	19		CI		2.46														
16	4.0	UDS					1.90	1.65	15.0																		60							

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

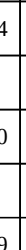
Type of Strength Tests

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VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSITY (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST		CONSOLIDATION TEST			SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS	
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'P _c ' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)					Free Swell Index (%)
17	1.0	SPT	2	4	6	10				0	6	44	50	86	34	52		CH		2.52														
17	2.0	UDS					1.86	1.51	22.9								9.3											1.32	130					
17	3.0	SPT	5	8	12	20				0	7	46	47	76	30	46		CH			2.58													
17	4.0	UDS					1.92	1.66	15.6												UCC	1.53							100					
17	5.0	SPT	12	21	23	44				0	11	44	45	70	29	41		CH			2.53													

Type of Sample

DS Disturbed Soil Sample
 UDS Undisturbed Soil Sample
 RMS Remoulded Soil Sample
 WS Water Sample

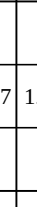
Type of Strength Tests

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 VST Vane Shear Test
 Tuu Unconsolidated undrained triaxial test
 Tcu Consolidated Undrained triaxial test with pore pressure
 Tcd Consolidated drained triaxial test



CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Blows 15cm				DENSITY Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST		CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS	
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'P _c ' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)					Max. Dry Dendity (g/cm³)
18	1.0	SPT	5	10	10	20				3	12	45	40	62	27	35		CH		2.52															
18	2.0	UDS					1.67	1.52	9.7											UU	0.80	17							50						
18	3.0	SPT	16	9	10	19				0	30	34	36	50	23	23		CH		2.55															
18	4.0	UDS					1.92	1.61	19.6																			0.69	100						

Type of Sample

DS Disturbed Soil Sample
 UDS Undisturbed Soil Sample
 RMS Remoulded Soil Sample
 WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
 VST Vane Shear Test
 Tuu Unconsolidated undrained triaxial test
 Tcu Consolidated Undrained triaxial test with pore pressure
 Tcd Consolidated drained triaxial test



CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST		CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'P _c ' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)				
19	1.0	SPT	3	7	10	17				7	28	37	28	40	22	18		CI	UCC	2.49														
19	2.0	UDS					1.65	1.56	6.1											1.45								0.63	80					
19	3.0	SPT	4	6	8	14				3	13	42	42	64	28	36		CH		2.53														
19	4.0	UDS					1.75	1.54	13.4																			60						
19	5.0	SPT	14	23	36	59				2	24	37	37	50	25	25		CH	2.56															

Type of Sample

DS Disturbed Soil Sample
 UDS Undisturbed Soil Sample
 RMS Remoulded Soil Sample
 WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
 VST Vane Shear Test
 Tuu Unconsolidated undrained triaxial test
 Tcu Consolidated Undrained triaxial test with pore pressure
 Tcd Consolidated drained triaxial test



CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Blows 15cm				DENSITY Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST		CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS	
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'P _c ' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)					Max. Dry Density (g/cm³)
20	1.0	SPT	4	7	13	20				8	28	36	28	40	22	18		CI	/	2.56															
20	2.0	UDS					1.86	1.64	15.4												UCC	1.65							50						
20	3.0	SPT	9	14	18	32				2	25	45	28	42	23	19		CI		2.55															
20	4.0	UDS					1.74	1.46	18.7																		0.21	50							

Type of Sample

DS Disturbed Soil Sample
 UDS Undisturbed Soil Sample
 RMS Remoulded Soil Sample
 WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
 VST Vane Shear Test
 Tuu Unconsolidated undrained triaxial test
 Tcu Consolidated Undrained triaxial test with pore pressure
 Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL			STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST					
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
21	1.0	SPT	5	9	16	25				16	43	23	18	32	20	12		CL		2.57															
21	2.0	UDS					1.90	1.55	22.4										CD	0.25	18														
21	3.0	SPT	12	19	24	43				0	15	40	45	58	26	32		CH									1.16	120							
21	4.0	UDS					1.88	1.53	22.8									CH																	
21	5.0	SPT	10	16	22	38				2	9	36	53	64	29	35		CH			2.49														
21	6.5	UDS					1.75	1.64	6.8								9.7											80							
21	8.0	SPT	11	17	23	40				2	13	39	46	60	28	32		CH																	
21	9.5	UDS					1.85	1.60	15.7											UCC	1.86														
21	11.0	SPT	15	25	38	63				3	22	37	38	54	27	30		CH			2.54							0.42	70						

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS	
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)					Optimum Moisture Cont. (%)
22	1.0	SPT	2	4	6	10				0	45	32	23	38	22	16		CI	2.56																	
22	2.0	UDS					1.96	1.67	17.16																		0.56	80								
22	3.0	SPT	2	4	7	11				5	19	36	40	66	28	38		CH		2.57																
22	4.0	UDS					1.77	1.58	11.39														UU	0.90	17					90						
22	5.0	SPT	8	11	19	30				0	21	37	42	60	26	40		CH																		
22	6.5	UDS					1.82	1.53	18.70																			0.69	100							
22	8.0	SPT	13	31	52	83				13	33	30	24	40	26	14		CI			2.54															
22	9.5	UDS					1.85	1.61	14.60														UCC	1.90						70						

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST					SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C'ₑ	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)	Optimum Moisture Cont. (%)				
23	1.0	SPT	5	7	10	17				0	10	34	56	72	32	40		CH	▨	2.54																
23	2.0	UDS					2.09	1.64	27.3												CD	0.32	18					1.23	130							
23	3.0	SPT	7	10	14	24				5	9	36	50	74	31	43		CH			2.52															
23	4.0	UDS					2.00	1.59	26.0																			100								
23	5.0	SPT	15	25	34	59				2	10	40	48	72	30	42		CH																		
23	6.5	UDS					2.22	1.71	29.3								9.5																			
23	8.0	SPT	11	20	28	48				4	4	32	60	92	38	54		CH																		
23	9.5	UDS					1.99	1.58	25.6											UCC	1.72							1.26	125							
23	11.0	SPT	11	19	29	48				0	22	36	42	62	28	34		CH			2.55															
23	14.0	SPT	27	32	45	77																														

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'Cc'	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
24	1.0	SPT	5	8	11	19				0	41	33	26	42	23	19		CI		2.57															
24	2.0	UDS					1.70	1.50	13.4											CD	0.29	26					0.24	55							
24	3.0	SPT	16	28	37	65				0	21	47	32	48	24	24		CI		2.58															
24	4.0	UDS					1.80	1.52	18.8																			60							

Type of Sample

DS Disturbed Soil Sample
 UDS Undisturbed Soil Sample
 RMS Remoulded Soil Sample
 WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
 VST Vane Shear Test
 Tuu Unconsolidated undrained triaxial test
 Tcu Consolidated Undrained triaxial test with pore pressure
 Tcd Consolidated drained triaxial test



CHP/ AHP AREA

Results of Field and Laboratory Tests

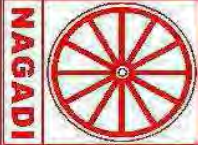
BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS		
25	1.0	SPT	6	13	18	31				0	32	38	30	42	24	18		CI		2.54																	
25	2.0	UDS					1.93	1.62	18.9																												
																								</													

Type of Sample

DS	Disturbed Soil Sample
UDS	Undisturbed Soil Sample
RMS	Remoulded Soil Sample
WS	Water Sample

Type of Strength Tests

UCC	Unconfined Compression Test
VST	Vane Shear Test
Tuu	Unconsolidated undrained triaxial test
Tcu	Consolidated Undrained triaxial test with pore pressure
Tcd	Consolidated drained triaxial test



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Results of Field and Laboratory Tests

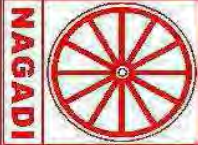
BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)	WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
									GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'P _c ' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
26	1.0	SPT	7	9	13	22				0	31	38	31	40	23	17		CI	2.53															
26	2.0	UDS					1.99	1.66	19.9																		40							
26	3.0	SPT	11	18	27	45				5	34	34	27	38	23	15	CI																	
26	4.0	UDS					1.86	1.51	23.3												UU	0.90	18					50						
26	5.0	SPT	15	18	26	44				15	13	38	34	46	24	22		CI		2.49														

Type of Sample

- DS Disturbed Soil Sample
- UDS Undisturbed Soil Sample
- RMS Remoulded Soil Sample
- WS Water Sample

Type of Strength Tests

- UCC Unconfined Compression Test
- VST Vane Shear Test
- Tuu Unconsolidated undrained triaxial test
- Tcu Consolidated Undrained triaxial test with pore pressure
- Tcd Consolidated drained triaxial test



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Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e' _o	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C' _c	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
27	1.0	SPT	7	11	18	29				2	11	47	40	48	24	24		CI	▨	2.49															
27	2.0	UDS					1.87	1.49	25.5																			100							
27	3.0	SPT	4	10	23	33				0	12	46	42	56	26	30		CH																	
27	4.0	UDS					1.82	1.46	24.4												UCC	1.81							0.84	110					
27	5.0	SPT	10	17	33	50				2	11	42	45	58	27	31		CH			2.58														

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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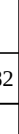
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Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e' _o	Preconsolid. Press. 'P _c ' (kg/cm²)	Compression Index 'C' _c	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
28	1.0	SPT	4	8	13	21				0	23	40	37	48	24	24		CI		2.46															
28	2.0	UDS					1.82	1.47	23.4																		0.54	80							
28	3.0	SPT	14	25	37	62				2	21	39	38	54	26	28		CH																	
28	4.0	UDS					1.81	1.46	24.3													UU	0.82	17					25						
28	5.0	SPT	16	29	45	74				0	22	43	35	55	26	29		CH			2.62														
28	6.5	UDS					1.80	1.59	13.0																			40							

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test

CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm			DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST		CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS		
29	1.0	SPT	4	9	11	20			0	21	46	33	46	24	22		CI		2.55																
29	2.0	UDS					2.17	1.82	18.7																										

Type of Sample

DS Disturbed Soil Sample
 UDS Undisturbed Soil Sample
 RMS Remoulded Soil Sample
 WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
 VST Vane Shear Test
 Tuu Unconsolidated undrained triaxial test
 Tcu Consolidated Undrained triaxial test with pore pressure
 Tcd Consolidated drained triaxial test



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Job No. : G(H)1658(9)
Sheet No. : 190 of 271

CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.		DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)	WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
										GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C'ₑ	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
30	1.0	SPT	4	5	6	11				0	14	34	52	74	30	43		CH		2.54															
30	2.0	UDS					1.95	1.53	27.7																0.88	120									
30	3.0	SPT	2	2	6	8				8	18	43	31	52	24	28		CH																	
30	4.0	UDS					1.81	1.58	22.5																										
30	5.0	SPT	2	4	7	11				2	13	40	45	62	27	35		CH			2.56														
30	6.5	UDS					1.85	1.59	16.4											UCC	1.12							100							

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)	WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		STRENGTH TEST	CONSOLIDATION TEST						SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS			
									GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C'ₑ	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)					Max. Dry Dendity (g/cm³)	Optimum Moisture Cont. (%)	
31	1.0	SPT	4	7	11	18				0	11	44	45	58	28	30		CH	SPECIFIC GRAVITY																	
31	2.0	UDS					1.80	1.52	18.70											CD	0.38	16							115							
31	3.0	SPT	6	11	14	25				0	8	41	51	65	30	35		CH																		
31	4.0	UDS					1.93	1.58	22.0																											
31	5.0	SPT	9	12	20	32				0	4	43	53	72	36	36		CH		2.54																
31	6.5	UDS					1.84	1.43	28.2																	1.19	125									
31	8.0	SPT	12	25	36	61				14	10	38	38	54	26	28		CH																		
31	9.5	UDS					1.87	1.52	22.5								8.9				UU	1.68														
31	11.0	SPT	10	16	14	30				0	26	38	36	52	26	26		CH		2.56																
31	14.0	SPT	23	41	56	97				0	22	40	38	58	27	31		CH										100								

- Type of Sample**

DS Disturbed Soil Sample

UDS Undisturbed Soil Sample

RMS Remoulded Soil Sample

WS Water Sample
- Type of Strength Tests**

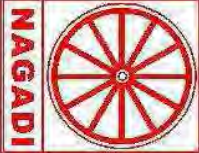
UCC Unconfined Compression Test

VST Vane Shear Test

Tuu Unconsolidated undrained triaxial test

Tcu Consolidated Undrained triaxial test with pore pressure

Tcd Consolidated drained triaxial test



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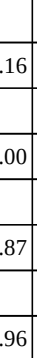
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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm			DENSIT Y (g/cm³)	WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS			SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST			SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS	
								GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION		DESCRIPTION	Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e' °	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C' °	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)					Free Swell Index (%)
32	1.0	SPT	9	14	20	34		2	21	41	36	54	25	29		CH																
32	2.0	UDS					2.16	1.76	22.4															100								
32	3.0	SPT	13	19	24	43		3	6	40	51	72	32	40		CH																
32	4.0	UDS					2.00	1.70	17.2															1.32	130							
32	5.0	SPT	14	26	37	63		0	6	33	61	88	41	47		CH		2.50														
32	6.5	UDS					1.87	1.45	28.7																90							
32	8.0	SPT	16	29	37	66		3	43	30	24	40	24	16		CI																
32	9.5	UDS					1.96	1.56	24.8															0.75	100							
32	11.0	SPT	13	19	31	50		0	30	34	36	48	25	23		CI		2.55														
32	14.0	UDS					1.84	1.50	22.6									UU	2.02													

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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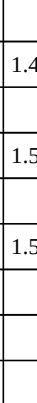
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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST					SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e' °	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Idex 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)	Optimum Moisture Cont. (%)				
33	1.0	SPT	4	6	9	15				0	8	42	50	88	39	49		CH		2.54																
33	2.0	UDS					1.90	1.49	27.2											CD	0.30	21							100							
33	3.0	SPT	5	8	15	23				0	12	39	49	76	36	40		CH																		
33	4.0	UDS					1.85	1.52	21.4																		1.12	110								
33	5.0	SPT	10	20	27	47				0	23	35	42	72	33	41		CH		2.55																
33	6.5	UDS					1.90	1.54	23.40											UCC	1.21								90							
33	8.0	SPT	7	18	28	46				2	15	38	45	65	29	36		CH																		
33	9.5	SPT	9	14	22	36				2	19	37	42	68	30	38		CH																		
33	11.0	SPT	11	14	22	36				2	27	34	37	48	25	23		CI		2.54									80							
33	14.0	SPT	13	21	30	51				3	22	37	38	52	27	25		CH																		

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

Type of Strength Tests

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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Job No.: G(H)1658(9)
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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST					SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e' °	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Idex 'C' ° _c	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)	Optimum Moisture Cont. (%)				
34	1.0	SPT	4	4	6	10				3	5	47	45	72	33	39		CH		2.53																
34	2.0	UDS					1.87	1.50	24.2																			120								
34	3.0	SPT	4	6	9	15				0	8	44	48	85	41	44		CH			UU	1.01	1.9													
34	4.0	UDS					1.97	1.63	21.1																		1.05	110								
34	5.0	SPT	4	7	11	18				0	7	47	46	69	37	32		CH			2.55															
34	6.5	UDS					2.07	1.69	22.1													UCC	1.32						0.85	100						
34	8.0	SPT	5	7	13	20				5	6	37	52	76	40	36		CH																		
34	9.5	SPT	5	9	14	23				8	37	25	30	46	25	21		CI			2.56									70						
34	11.0	SPT	6	10	13	23				2	27	36	35	48	24	24		CI																		
34	14.0	SPT	6	10	19	29				0	23	37	40	50	26	24		CI											85							

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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Sheet No. : 195 of 271

CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
35	1.0	SPT	4	6	8	14				8	8	36	48	72	30	42		CH	/	2.56															
35	2.0	UDS					1.84	1.57	17.1																		1.21	120							
35	3.0	SPT	4	5	7	12				3	4	41	52	78	34	44		CH																	
35	4.0	UDS					1.75	1.60	9.5													CD	0.28	18				1.12	110						
35	5.0	SPT	2	5	9	14				0	7	38	55	85	40	45		CH																	
35	6.5	UDS					1.82	1.40	30.0													UU	1.10	2					135						
35	8.0	SPT	4	9	13	22				5	5	40	50	80	39	41		CH			2.53														
35	9.5	UDS					1.98	1.65	19.7													UCC	1.64					1.46	140						
35	11.0	SPT	5	10	15	25				4	5	37	56	91	42	49		CH			2.54														
35	14.0	SPT	5	10	19	29				8	8	39	45	65	29	36		CH										70							

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
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CHP/ AHP AREA

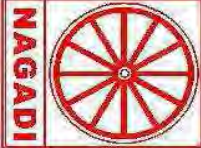
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e' °	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Idex 'C'c	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
36	1.0	SPT	5	8	11	19				0	7	33	60	91	45	46		CH	2.51																
36	2.0	UDS					1.96	1.55	25.7																			140							
36	3.0	SPT	4	10	17	27				0	7	33	60	86	42	44		CH																	
36	4.0	UDS					1.85	1.55	19.1											UU	1.20	16					1.42	145							
36	5.0	SPT	8	14	22	36				0	3	34	63	90	42	48		CH		2.54															
36	6.5	UDS					2.00	1.57	27.2																										
36	8.0	SPT	9	16	23	39				0	12	36	52	82	37	45		CH																	
36	9.5	UDS					2.10	1.76	19.1																	1.22	120								
36	11.0	SPT	12	22	29	51				0	18	34	48	65	27	38		CH		2.57															
36	14.0	SPT	23	41	56	97				0	22	36	42	58	26	32		CH																	

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)	WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
									GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C'c	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
37	1.0	SPT	11	12	18	30			0	9	38	53	78	40	38		CH	2.48																
37	2.0	UDS					1.85	1.45	27.2																	0.85	115							
37	3.0	SPT	11	70	35	>100			0	12	42	46	70	39	31		CH																	
37	4.0	UDS					1.87	1.49	25.5																		120							
37	5.0	SPT	16	37	55	92			0	21	39	40	66	34	32		CH		2.47															
37	6.5	UDS					1.95	1.61	21.40							10			UCC 2.24									80						
37	8.0	SPT	13	19	33	52			0	24	38	38	62	30	32		CH																	
37	9.5	SPT	22	33	45	78			3	7	42	48	64	32	32		CH																	
37	11.0	SPT	24	35	48	83			0	13	42	45	66	32	34		CH																	

Type of Sample

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UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

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Job No. :
G(H)1658

Sheet No. :
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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST		CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)				
38	1.0	SPT	6	9	12	21				0	21	37	42	58	26	32		CH		2.49														
38	2.0	UDS					1.90	1.57	21.0																			110						
38	3.0	SPT	7	15	25	40				0	20	45	35	48	24	24		CI																
38	4.0	UDS					1.82	1.54	17.7																		0.32	80						
38	5.0	SPT	8	13	20	33				3	34	35	28	42	23	19		CI		2.50														
38	6.5	UDS					1.88	1.52	23.5												CD	0.32	22						90					
38	8.0	SPT	9	12	16	28				3	14	45	38	50	24	26		CH																
38	9.5	SPT	9	17	30	47				0	11	41	48	64	28	36		CH																
38	11.0	SPT	16	30	34	64				3	23	34	40	62	27	35		CH		2.53														
38	12.5	SPT	11	17	33	50				0	28	34	38	56	26	30		CH																
38	15.0	SPT	25	37	47	84				0	20	38	42	52	26	26																		

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure



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Job No.: G(H)1658(9)
Sheet No.: 199 of 271

CHP/ AHP AREA

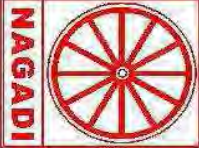
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS	
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e' °	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Idex 'C' ° _c	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)					Optimum Moisture Cont. (%)
39	1.0	SPT	7	13	16	29				5	10	43	42	58	26	32		CH	2.52																	
39	2.0	UDS					2.02	1.56	29.0																			0.95	120							
39	3.0	SPT	5	8	12	20				2	6	36	56	72	38	34		CH																		
39	4.0	UDS					1.87	1.58	18.1												UCC	1.56										125				
39	5.0	SPT	7	12	25	37				0	4	43	53	76	40	36		CH																		
39	6.5	UDS					1.90	1.74	23.3																				90							
39	8.0	SPT	14	22	33	55				0	16	36	48	70	38	32		CH		2.56																
39	9.5	UDS					1.95	1.63	19.4																											
39	11.0	SPT	15	24	33	57				2	4	38	56	82	41	41		CH																		
39	14.0	SPT	15	28	50	78				0	15	37	48	72	37	35		CH																		

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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Sheet No.: 200 of 274

CHP/ AHP AREA

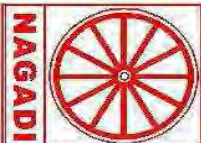
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'ₒ	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C'ₑ	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
40	1.0	SPT	2	5	8	13				0	21	34	45	68	34	34		CH	2.56																
40	2.0	UDS					1.94	1.53	26.3																			60							
40	3.0	SPT	5	8	13	21				13	34	30	23	40	23	17		CI																	
40	4.0	UDS					1.86	1.50	23.6											UU	1.65	18													
40	5.0	SPT	7	14	25	39				0	9	35	56	74	37	37		CH																	
40	6.5	UDS					1.90	1.52	24.6																		0.54	90							
40	8.0	SPT	10	14	21	35				3	13	34	50	76	38	38		CH		2.48															
40	9.5	UDS					2.20	1.71	28.4																										
40	11.0	SPT	9	21	30	51				0	22	40	38	54	26	28		CH																	

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
TcU Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

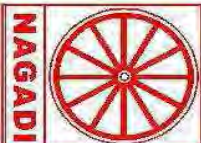
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
41	1.0	SPT	3	4	6	10				0	21	46	33	48	24	24		CI		2.57															
41	2.0	UDS					1.70	1.40	20.7																			80							
41	3.0	SPT	8	13	17	30				20	27	28	25	36	22	14		CI																	
41	4.0	UDS					1.72	1.44	19.2								9.2				CD	0.28	26					0.36	70						
41	5.0	SPT	10	23	37	60				0	9	43	48	64	29	35		CH		2.53															
41	6.5	UDS					2.03	1.57	28.9																			50							
41	8.0	SPT	6	16	22	38				3	12	35	50	72	35	37		CH																	
41	9.5	SPT	19	28	40	68				0	25	35	40	64	30	34		CH																	

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

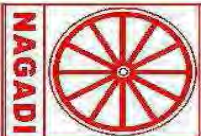
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST		CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)				
42	1.0	SPT	17	23	26	49				4	44	26	26	42	22	20		CI	2.48															
42	2.0	UDS					1.85	1.48	24.9																			55						
42	3.0	SPT	9	17	23	40				0	6	45	49	74	38	36		CH																
42	4.0	UDS					1.90	1.50	26.8																		0.46	70						
42	5.0	SPT	5	16	23	39				0	4	45	51	82	40	42		CH																
42	6.5	UDS					1.92	1.56	22.6																			90						
42	8.0	SPT	10	15	21	36				0	41	30	29	38	22	16		CI																
42	9.5	UDS					1.96	1.67	16.9												UCC	1.75							65					
42	11.0	SPT	12	23	29	52				0	25	37	38	56	26	28		CH		2.57														
42	14.0	SPT	10	17	22	39				0	25	39	36	50	25	25		CH																

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

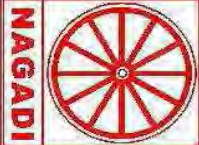
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST		CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)				
43	1.0	SPT	5	7	12	19				3	58	20	19	35	20	15		CI	2.54															
43	2.0	UDS					1.79	1.54	15.5																				60					
43	3.0	SPT	6	11	13	24				2	10	48	40	62	26	36		CH																
43	4.0	UDS					1.85	1.58	17.3																				75					
43	5.0	SPT	6	12	18	30				2	17	35	46	66	35	31		CH																
43	6.5	UDS					2.03	1.71	18.6											UU	1.40	16						0.65	80					
43	8.0	SPT	10	14	21	35				2	12	42	44	62	36	26		CH		2.56														
43	9.5	UDS					1.82	1.45	25.9																									

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
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CHP/ AHP AREA

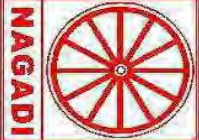
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL			STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST								
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		SPECIFIC GRAVITY	Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e' °	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)					Max. Dry Dendity (g/cm³)	Optimum Moisture Cont. (%)	CALIFORNIA BEARING RATIO (%)
44	1.0	SPT	6	6	10	16				2	14	34	50	78	40	38		CH																				
44	2.0	UDS					1.85	1.56	18.3																				115									
44	3.0	SPT	4	6	9	15				0	8	38	54	86	42	44		CH			2.54																	
44	4.0	UDS					2.03	1.66	21.8													UCC	1.58						1.24	130								
44	5.0	SPT	8	16	24	40				0	11	39	50	80	41	39		CH																				
44	6.5	UDS					1.91	1.56	22.4																					90								
44	8.0	SPT	8	21	31	52				7	33	26	34	44	25	19		CI			2.53																	
44	9.5	SPT	18	22	32	54				2	42	28	28	38	22	16		CI																				

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
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CHP/ AHP AREA

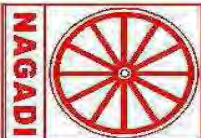
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST					SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Density (g/cm³)	Optimum Moisture Cont. (%)				
45	1.0	SPT	3	6	8	14				0	45	33	22	42	23	19		CI																		
45	2.0	UDS					1.95	1.51	28.6																			60								
45	3.0	SPT	11	21	28	49				12	16	37	35	54	26	28		CH		2.58																
45	4.0	UDS					1.95	1.75	11.2																			80								
45	5.0	SPT	7	12	18	30				0	25	38	37	58	27	31		CH																		
45	6.5	UDS					1.92	1.54	24.6										CD	0.28	27							30								
45	8.0	SPT	8	15	21	36				9	36	27	28	40	23	17		CI																		

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
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CHP/ AHP AREA

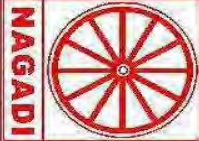
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST		CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'P _c ' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)				
46	1.0	SPT	2	3	4	7				0	11	31	58	78	40	38		CH	2.58															
46	2.0	UDS					1.97	1.51	30.5																			90						
46	3.0	SPT	2	4	7	11				12	23	26	39	62	33	29		CH																
46	4.0	UDS					1.93	1.56	23.5																	0.38	80							
46	5.0	SPT	8	14	24	38				2	21	37	40	66	35	31		CH																
46	6.5	UDS					1.87	1.54	21.40										UCC	1.72								40						

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

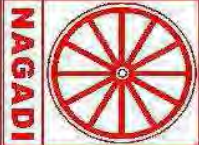
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		STRENGTH TEST	CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS		
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)					Swelling Pressure (kg/cm²)	Free Swell Index (%)
47	1.0	SPT	3	5	12	17				13	36	24	27	44	22	22		CI	/	2.58														
47	2.0	UDS					1.78	1.60	11.5											CD	0.24	29							60					
47	3.0	SPT	15	29	88	>100				12	44	20	24	48	24	24		CI		2.47														
47	4.0	UDS					1.97	1.54	25.8								9.2												80					
47	5.0	SPT	20	28	60	88				0	25	35	40	58	27	31		CH		/														

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm			DENSIT Y (g/cm³)	WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
								GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'ₒ	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Idex 'C'c	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
48	1.0	SPT	4	5	10	15			0	14	41	45	72	39	33		CH	2.56															
48	2.0	UDS					2.11	1.67	26.2																	90							
48	3.0	SPT	5	6	10	16			0	20	30	50	80	40	40		CH																
48	4.0	UDS					1.96	1.69	16.3																								
48	5.0	SPT	7	11	14	25			2	62	19	17	L	P			SM																
48	6.5	UDS					1.98	1.57	25.8										UU	0.95	15						45						
48	8.0	SPT	7	10	17	27			4	14	34	48	76	38	38		CH	2.54															
48	10.0	SPT	9	13	20	33			2	21	37	40	72	39	33		CH																

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
TcU Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

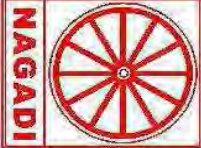
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C'c	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
49	1.0	SPT	2	3	4	7				0	35	33	32	44	24	20		CI																	
49	2.0	UDS					1.84	1.67	10.35											CD	0.28	30					0.24	60							
49	3.0	SPT	18	24	26	50				0	35	30	35	52	26	26		CH																	
49	4.0	UDS																									40								
49	5.0	SPT	7	14	25	39				2	61	17	20	36	21	15		CI		2.55															
49	6.5	UDS					1.81	1.58	14.13																										

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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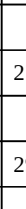
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CHP/ AHP AREA

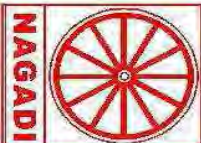
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e' _o	Preconsolid. Press. 'P _c ' (kg/cm²)	Compression Index 'C' _c	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
50	1.0	SPT	3	5	7	12				0	33	30	37	50	26	24		CH		2.57															
50	2.0	UDS					1.82	1.54	18.11																			70							
50	3.0	SPT	3	4	6	10				5	29	32	34	52	25	27		CH			2.57														
50	4.0	UDS					2.00	1.64	21.94												UCC	1.46						0.66	110						
50	5.0	SPT	19	33	50	83				0	24	38	38	56	27	29		CH																	
50	6.5	UDS					1.79	1.61	11.12																										

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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CHP/ AHP AREA

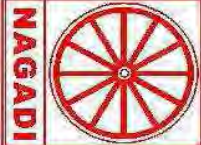
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST		CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'P _c ' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)				
51	1.0	SPT	2	4	6	10				0	25	39	36	54	26	28		CH	2.54															
51	2.0	UDS					1.79	1.61	11.25								8.8											60						
51	3.0	SPT	5	6	6	12				0	17	39	44	66	38	28		CH																
51	4.0	UDS					1.80	1.58	14.29											UCC	1.18													

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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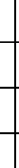
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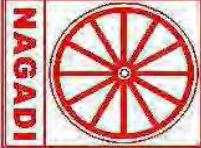
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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)	WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL			STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST							
									GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		SPECIFIC GRAVITY	Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)					Max. Dry Density (g/cm³)	Optimum Moisture Cont. (%)
52	1.0	SPT	4	5	10	15				0	9	33	58	84	42	42		CH		2.54																
52	2.0	UDS					1.76	1.49	17.6																	0.86	110									
52	3.0	SPT	6	9	21	30				5	20	26	49	76	39	37		CH																		
52	4.0	UDS					1.85	1.56	18.4												UU	1.50	20													
52	5.0	SPT	10	15	26	41				0	15	35	50	80	40	40		CH		2.49									100							
52	6.5	UDS					2.01	1.72	16.6																											

- Type of Sample**
- DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample
- UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
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CHP/ AHP AREA

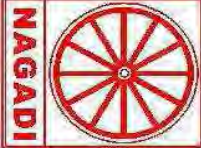
Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm ³)	WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		STRENGTH TEST	CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
									GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage															
53	1.0	SPT	7	10	16	26			0	38	28	34	52	26	26		CH	2.53													
53	2.0	UDS					1.96	1.56	25.5															0.75	80						
53	3.0	SPT	30	30	65	95			10	20	34	36	58	27	31		CH														

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		STRENGTH TEST	CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS		
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)					Swelling Pressure (kg/cm²)	Free Swell Index (%)
54	1.0	SPT	8	11	13	24				0	22	36	42	68	34	34		CH	2.54															
54	2.0	UDS					2.03	1.65	22.4																			80						

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test



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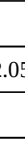
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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)	WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST				SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS
									GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e'₀	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C'ₑ	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)	Max. Dry Dendity (g/cm³)				
55	1.0	SPT	5	8	10	18			4	19	33	44	72	37	35		CH																	
55	2.0	UDS					2.05	1.69	20.6																									
55	3.0	SPT	30	40	35	75			3	15	34	48	76	39	37				2.54															
55	4.0	UDS					1.78	1.56	13.9											CD	0.35	31					0.68	95						

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
Tuu Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure



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CHP/ AHP AREA

Results of Field and Laboratory Tests

BOREHOLE / TRIAL PIT NO.	DEPTH (m)	TYPE OF SAMPLE	Value) Blows 15cm				DENSIT Y (g/cm³)		WATER CONTENT (%)	PARTICLE SIZE (%)				ATTERBERG'S LIMITS				SOIL		SPECIFIC GRAVITY	STRENGTH TEST			CONSOLIDATION TEST			SWELL TEST		CT TEST		CALIFORNIA BEARING RATIO (%)	RELATIVE DENSITY	PERMEABILITY (m/hr)	REMARKS		
							BULK	DRY		GRAVEL	SAND	SILT	CLAY	Liquid	Plastic	Plasticity Index	Shrinkage	IS CLASSIFICATION	DESCRIPTION		Type	Cohesion 'c' (kg/cm²)	Angle of Shearing Res. 'Φ' (deg)	Initial Void Ratio 'e _o '	Preconsolid. Press. 'Pc' (kg/cm²)	Compression Index 'C _c '	Co. of Vol. Comp. 'mv' (cm²/kg)	Co. of Consolid. 'Cv' (cm²/min)	Swelling Pressure (kg/cm²)	Free Swell Index (%)					Max. Dry Dendity (g/cm³)	Optimum Moisture Cont. (%)
56	1.0	SPT	8	12	15	27				0	19	31	50	82	41	41		CH		2.49																
56	2.0	UDS					1.88	1.64	14.7																		1.04	115								

Type of Sample

DS Disturbed Soil Sample
UDS Undisturbed Soil Sample
RMS Remoulded Soil Sample
WS Water Sample

UCC Unconfined Compression Test
VST Vane Shear Test
TuU Unconsolidated undrained triaxial test
Tcu Consolidated Undrained triaxial test with pore pressure
Tcd Consolidated drained triaxial test

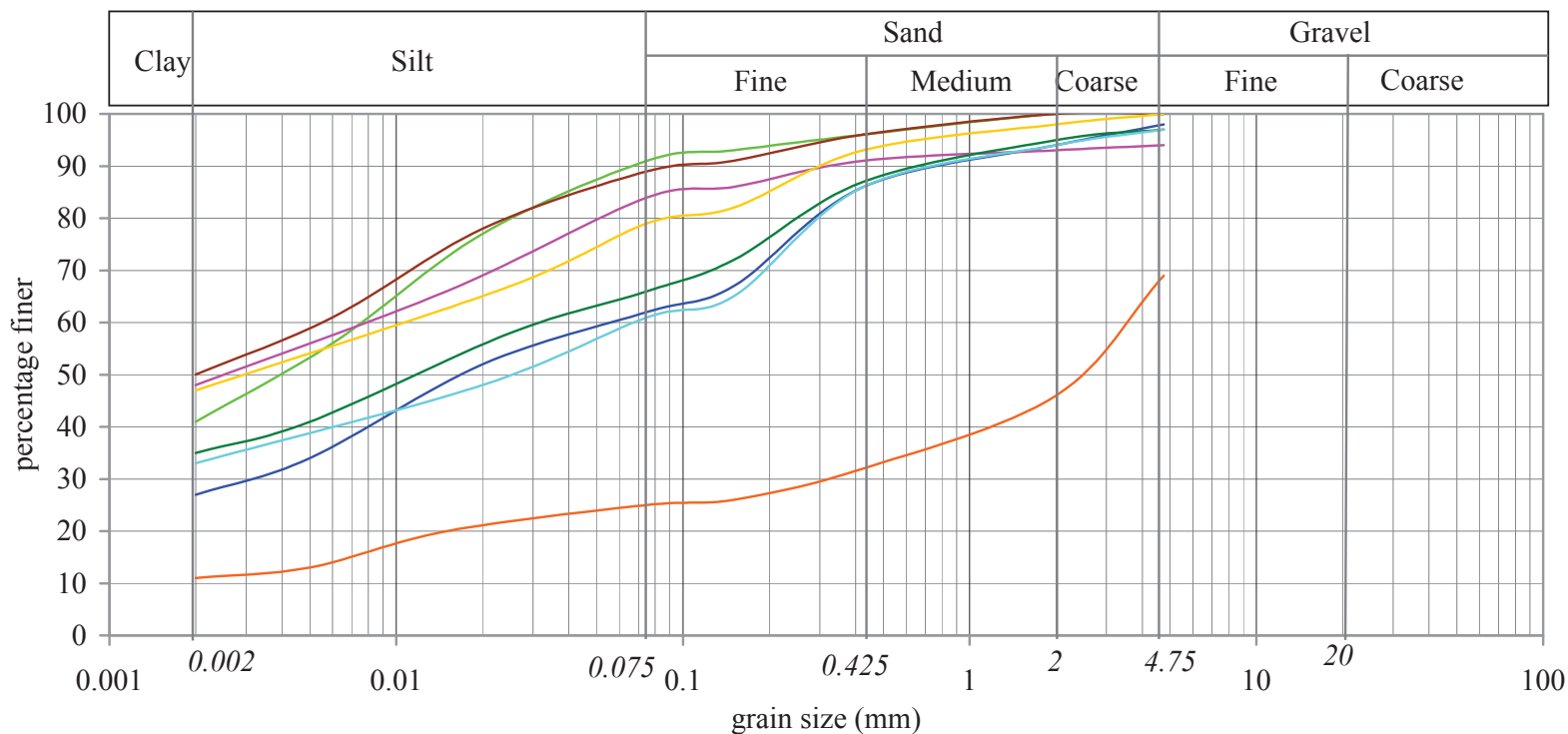


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	1	1	Clayey silty sand with gravel	2	36	35	27	0.052	-	-
	1	3	Clayey silty sand with gravel	31	44	14	11	3.5	-	-
	1	5	Sandy clayey silt	0	9	50	41	0.0071	-	-
	2	1	Sandy clayey silt	0	11	39	50	0.0051	-	-
	2	3	Sandy silty clay with gravel	6	10	36	48	0.0072	-	-
	2	5	Sandy silty clay	0	21	32	47	0.012	-	-
	2	8	Clayey silty sand with gravel	3	31	31	35	0.029	-	-
	3	1	Silty clayey sand with gravel	3	36	28	33	0.062	-	-

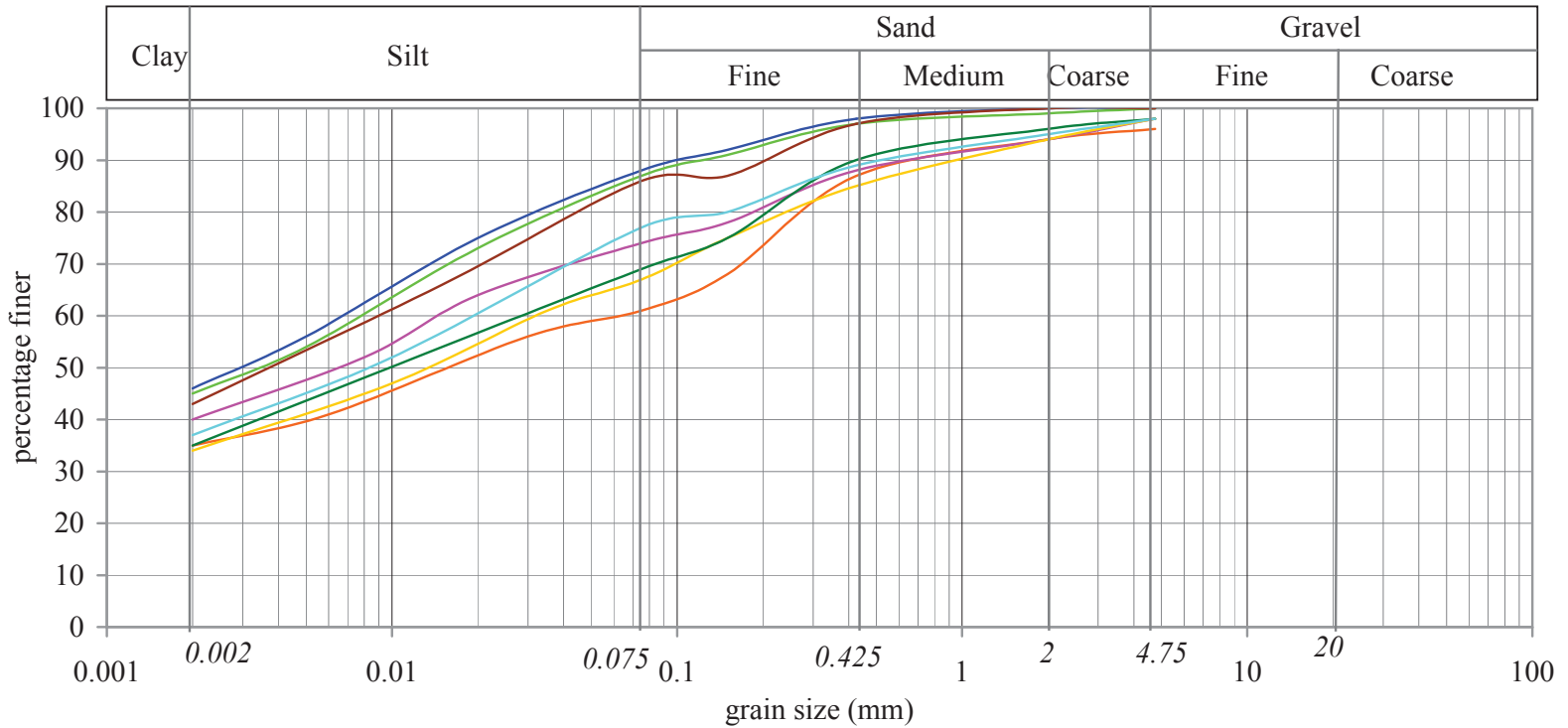


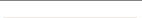
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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	3	3	Sandy silty clay	0	12	42	46	0.0065	-	-
	4	1	Silty clayey sand with gravel	4	35	26	35	0.059	-	-
	4	3	Sandy silty clay	0	13	42	45	0.0072	-	-
	5	1	Sandy clayey silt	0	14	43	43	0.009	-	-
	5	3	Sandy silty clay with gravel	2	24	34	40	0.015	-	-
	5	5	Sandy silty clay with gravel	2	31	33	34	0.029	-	-
	5	8	Sandy silty clay with gravel	2	29	34	35	0.028	-	-
	6	1	Sandy clayey silt with gravel	2	21	40	37	0.019	-	-

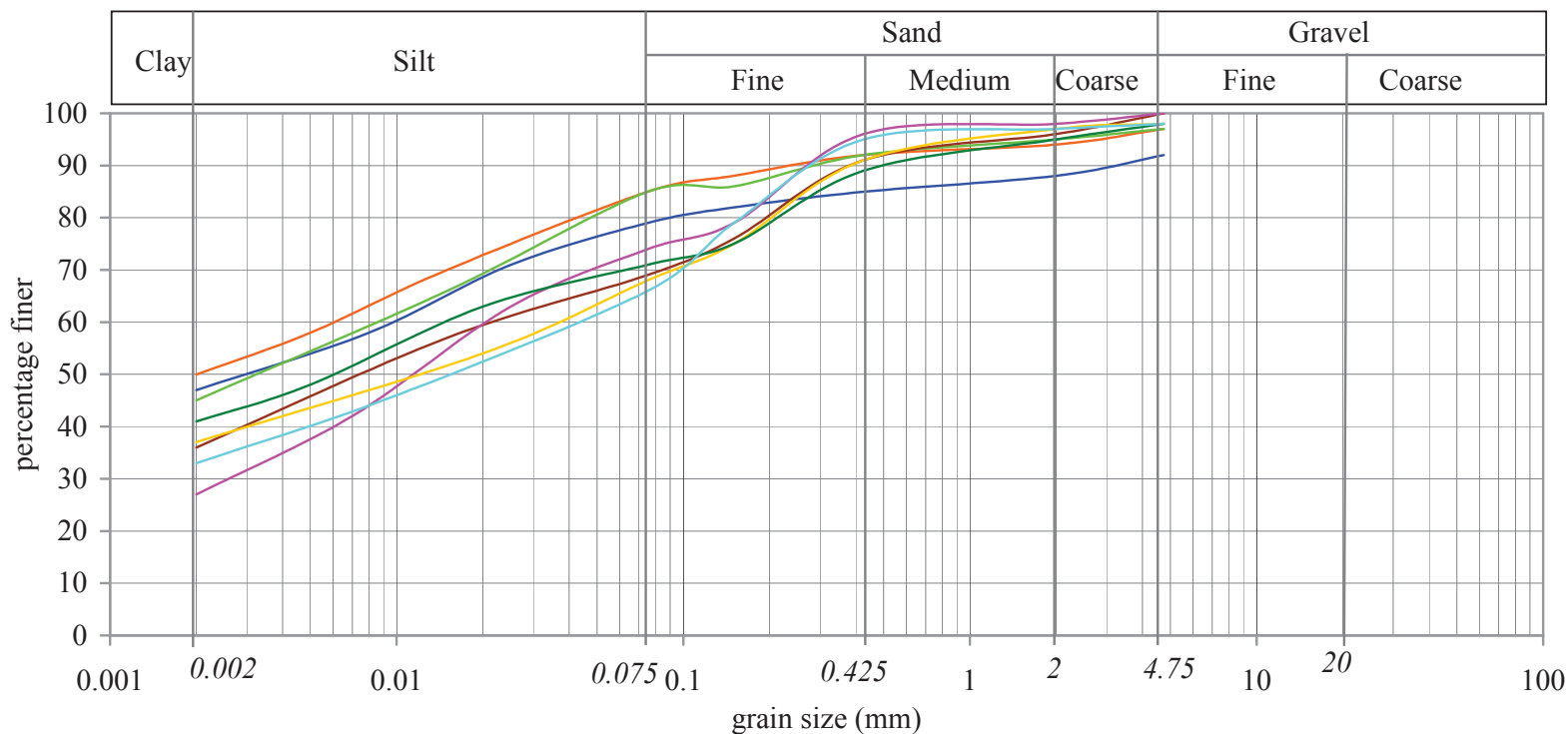


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
—	6	3	Sandy silty clay with gravel	8	13	32	47	0.0091	-	-
—	6	5	Sandy silty clay with gravel	3	12	35	50	0.0058	-	-
—	6	8	Sandy silty clay with gravel	3	12	40	45	0.0088	-	-
—	7	1	Sandy silty clay	0	31	33	36	0.021	-	-
—	7	3	Sandy clayey silt	0	26	47	27	0.021	-	-
—	8	1	Sandy silty clay with gravel	2	30	31	37	0.037	-	-
—	8	3	Sandy silty clay with gravel	2	27	30	41	0.015	-	-
—	8	5	Sandy silty clay with gravel	2	32	33	33	0.042	-	-

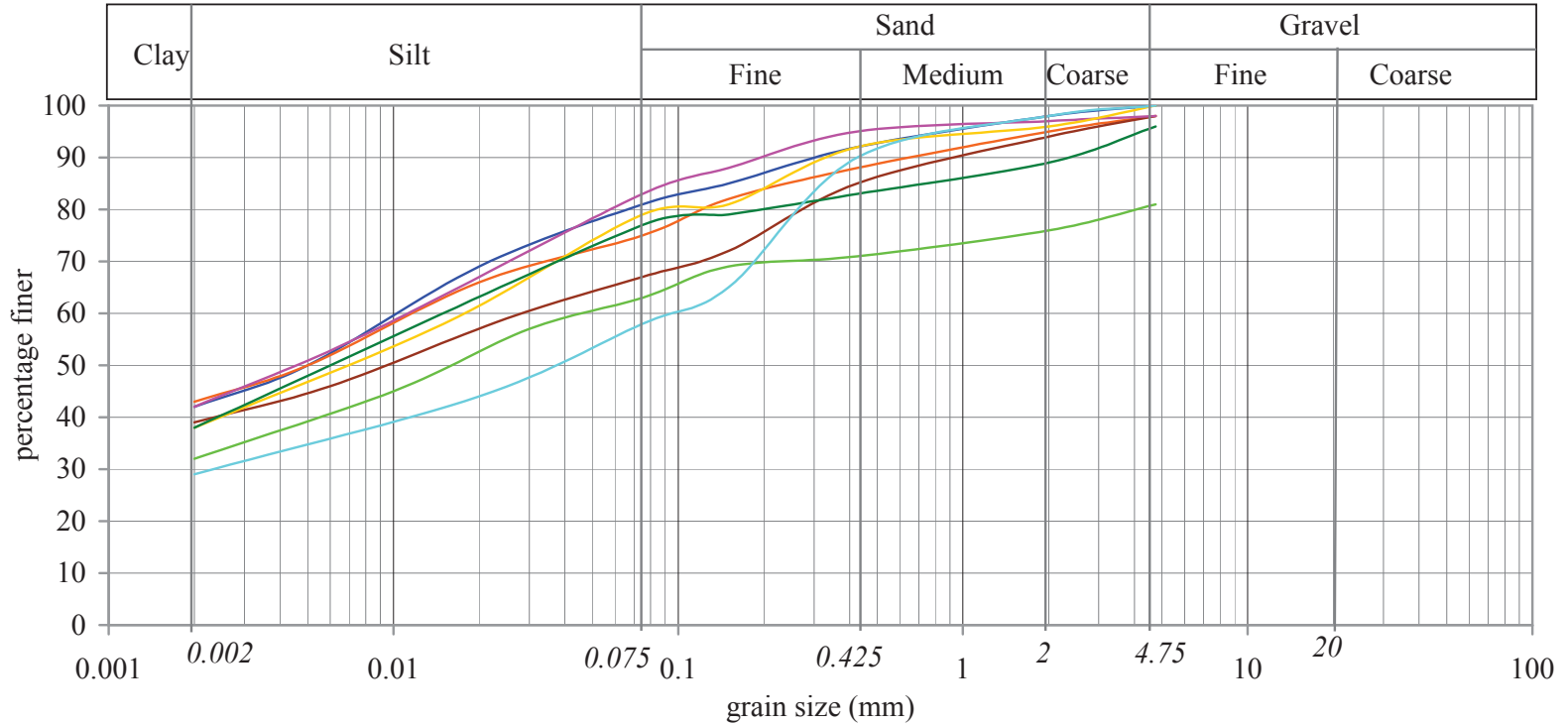


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	9	1	Sandy silty clay	0	19	39	42	0.011	-	-
	9	3	Sandy silty clay with gravel	2	23	32	43	0.012	-	-
	9	5	Sandy silty clay with gravel	19	18	31	32	0.045	-	-
	10	1	Silty sandy clay with gravel	2	31	28	39	0.028	-	-
	10	3	Sandy silty clay with gravel	2	15	41	42	0.012	-	-
	11	1	Sandy clay silt	0	21	41	38	0.018	-	-
	11	3	Sandy clayey silt with gravel	4	19	39	38	0.015	-	-
	12	1	Clayey silty sand	0	42	29	29	0.091	-	-

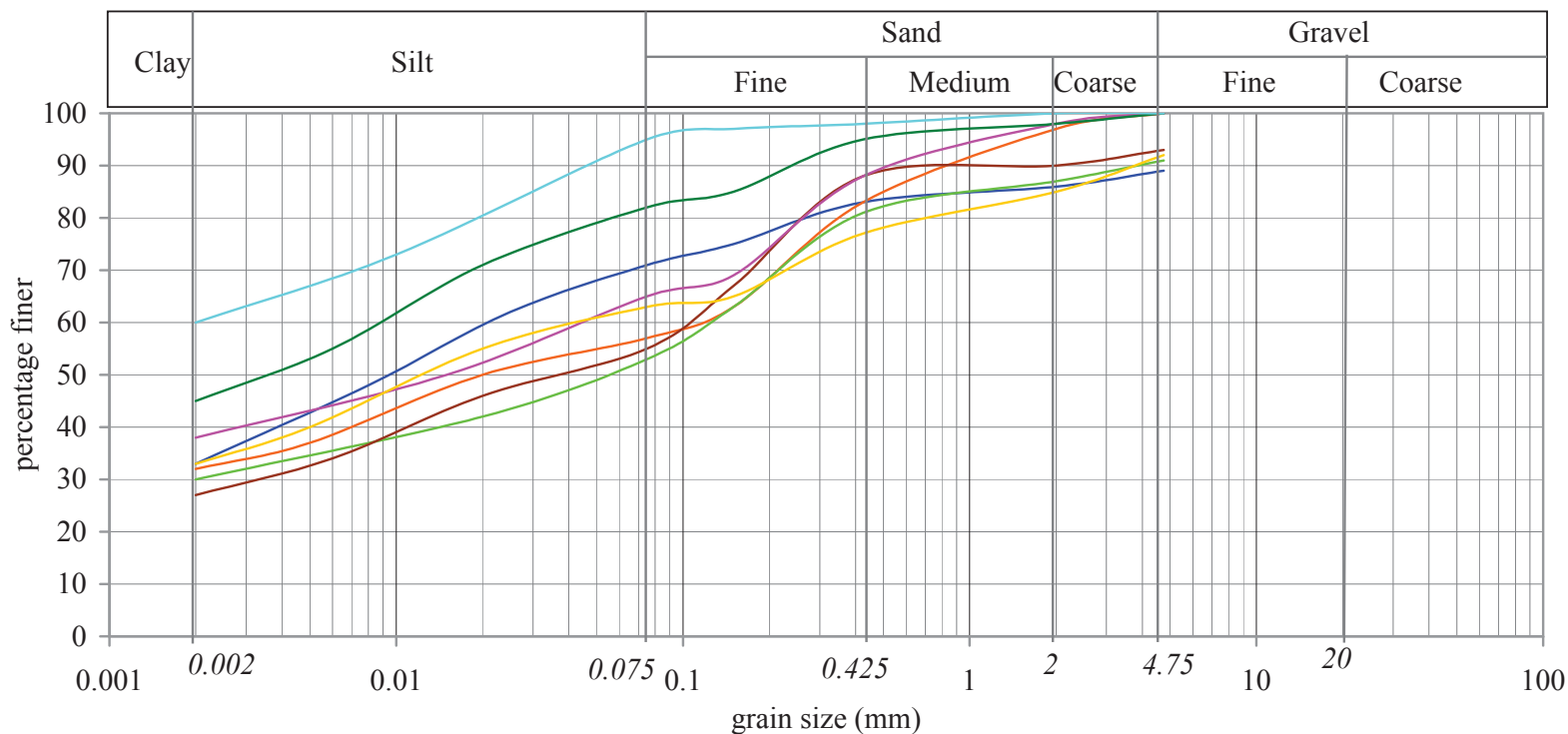


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d_{60}	d_{10}	c_u
—	12	3	Sandy clayey silt with gravel	11	18	38	33	0.021	-	-
—	13	1	Silty clayey sand	0	43	25	32	0.12	-	-
—	13	3	Silty clayey sand with gravel	9	38	23	30	0.13	-	-
—	13	5	Clayey silty sand with gravel	7	38	28	27	0.11	-	-
—	14	1	Silty sandy clay	0	35	27	38	0.042	-	-
—	14	3	Sandy silty clay with gravel	8	29	30	33	0.041	-	-
—	14	5	Sandy silty clay	0	18	37	45	0.0085	-	-
—	15	1	Sandy silty clay	0	5	35	60	-	-	-

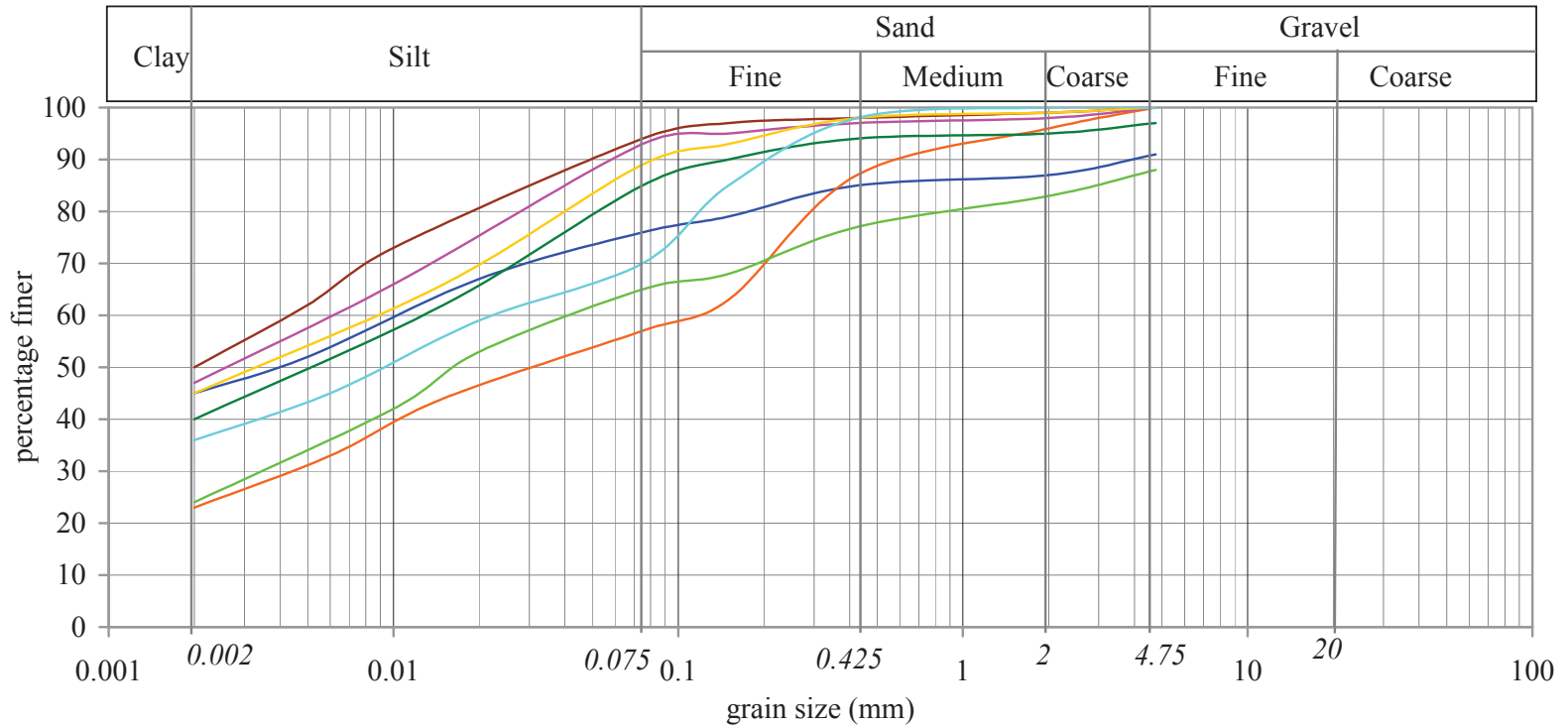


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	15	3	Sandy silty clay with gravel	9	15	31	45	0.011	-	-
	16	1	Clayey silty sand	0	43	34	23	0.12	-	-
	16	3	Sandy clayey silt with gravel	12	23	41	24	0.039	-	-
	17	1	Sandy silty clay	0	6	44	50	0.0041	-	-
	17	3	Snayd silty clay	0	7	46	47	0.0061	-	-
	17	5	Sandy silty clay	0	11	44	45	0.0082	-	-
	18	1	Sandy clayey silt with gravel	3	12	45	40	0.013	-	-
	18	3	Sandy silty clay	0	30	34	36	0.021	-	-

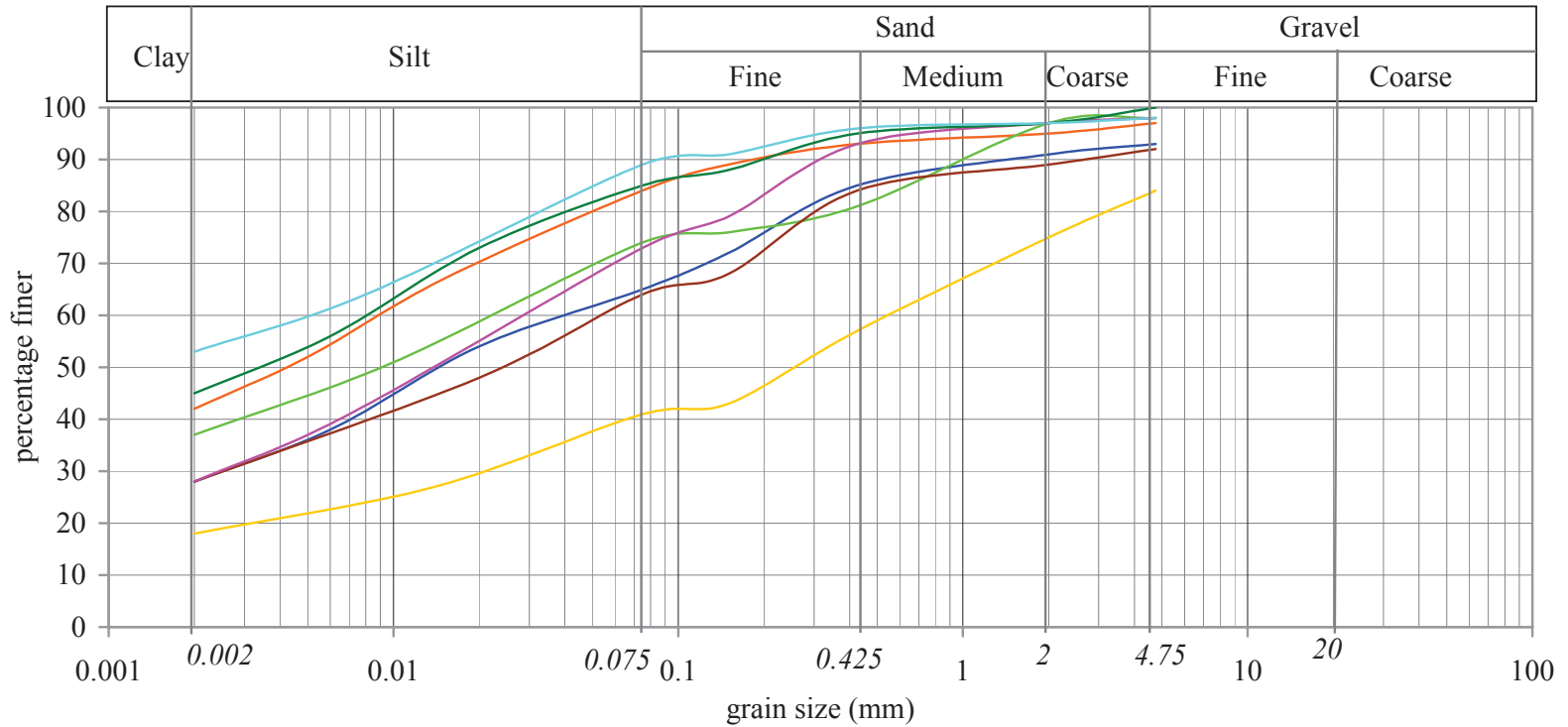


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	19	1	Clayey sandy silt with gravel	7	28	37	28	0.039	-	-
	19	3	Sandy clayey silt with gravel	3	13	42	42	0.0075	-	-
	19	5	Sandy clayey silt with gravel	2	24	37	37	0.023	-	-
	20	1	Sandy clayey silt with gravel	8	28	36	28	0.052	-	-
	20	3	Sandy clayey silt with gravel	2	25	45	28	0.028	-	-
	21	1	Clayey silty sand with gravel	16	43	23	18	0.535	-	-
	21	3	Sandy silty clay	0	15	40	45	0.0081	-	-
	21	5	Sandy silty clay with gravel	2	9	36	53	0.0051	-	-

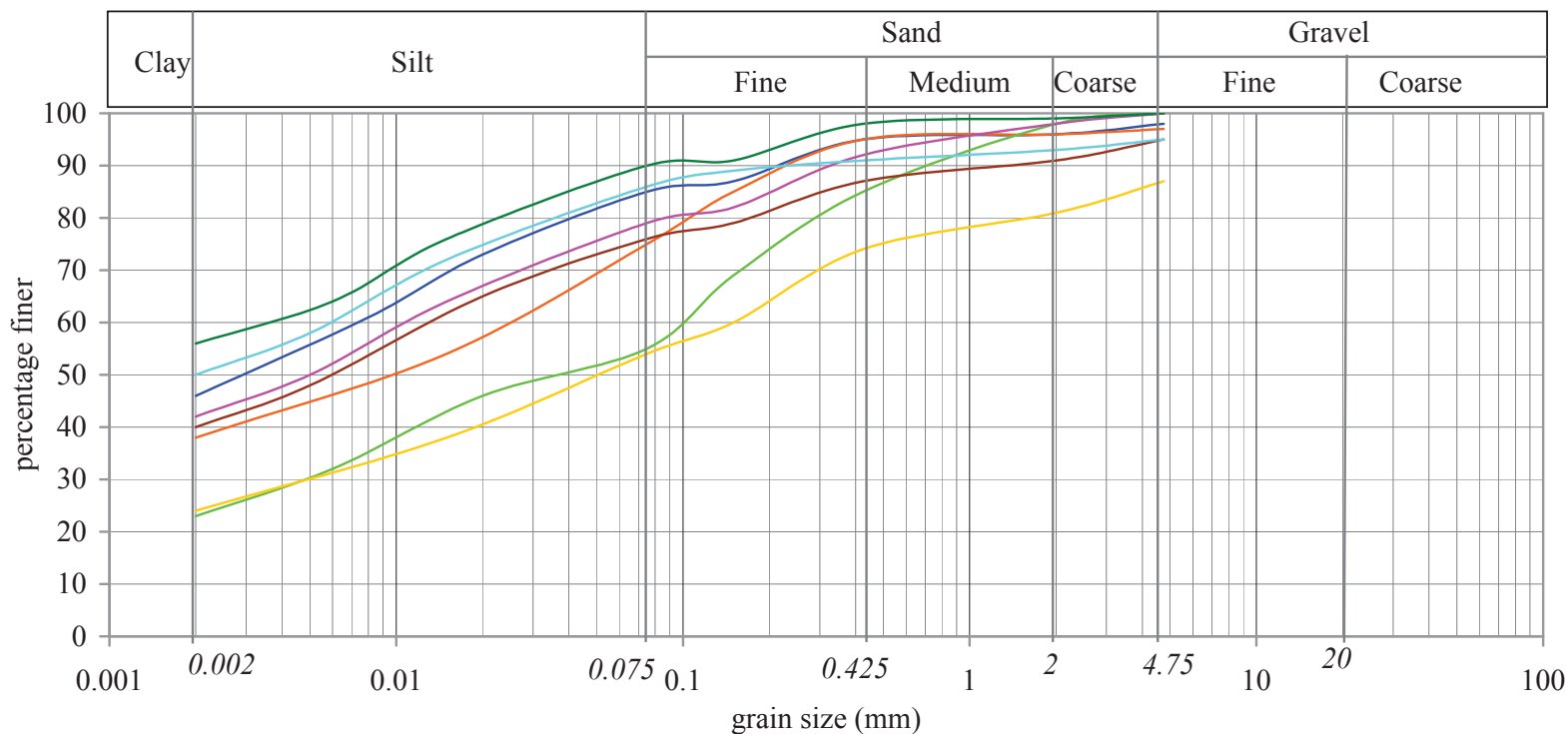


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	21	8	Sandy silty clay with gravel	2	13	39	46	0.0072	-	-
	21	11	Sandy silty clay with gravel	3	22	37	38	0.025	-	-
	22	1	Clayey silty sand	0	45	32	23	0.1	-	-
	22	3	Sandy silty clay with gravel	5	19	36	40	0.013	-	-
	22	5	Sandy silty clay	0	21	37	42	0.011	-	-
	22	8	Clayey silty sand with gravel	13	33	30	24	0.15	-	-
	23	1	Sandy silty clay	0	10	34	56	0.036	-	-
	23	3	Sandy silty clay with gravel	5	9	36	50	0.0059	-	-

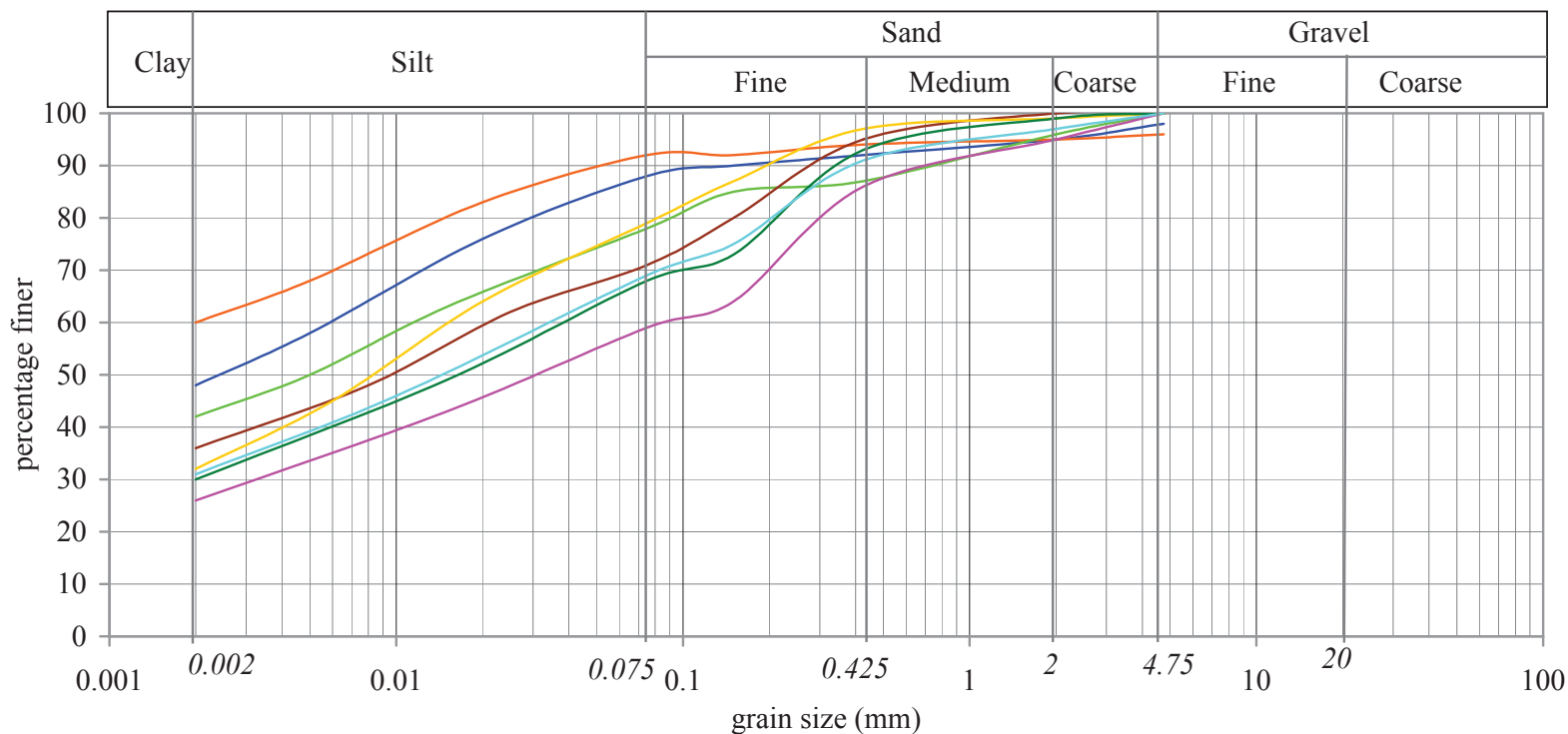


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	23	5	Sandy silty clay with gravel	2	10	40	48	0.0059	-	-
	23	8	Sandy silty clay with gravel	4	4	32	60	0.002	-	-
	23	11	Sandy silty clay	0	22	36	42	0.012	-	-
	23	14	Sandy silty clay	0	29	35	36	0.021	-	-
	24	1	Clayey silty sand	0	41	33	26	0.09	-	-
	24	3	Snady clayey silt	0	21	47	32	0.015	-	-
	25	1	Clayey sandy silt	0	32	38	30	0.035	-	-
	26	1	Clayey sandy silt	0	31	38	31	0.035	-	-

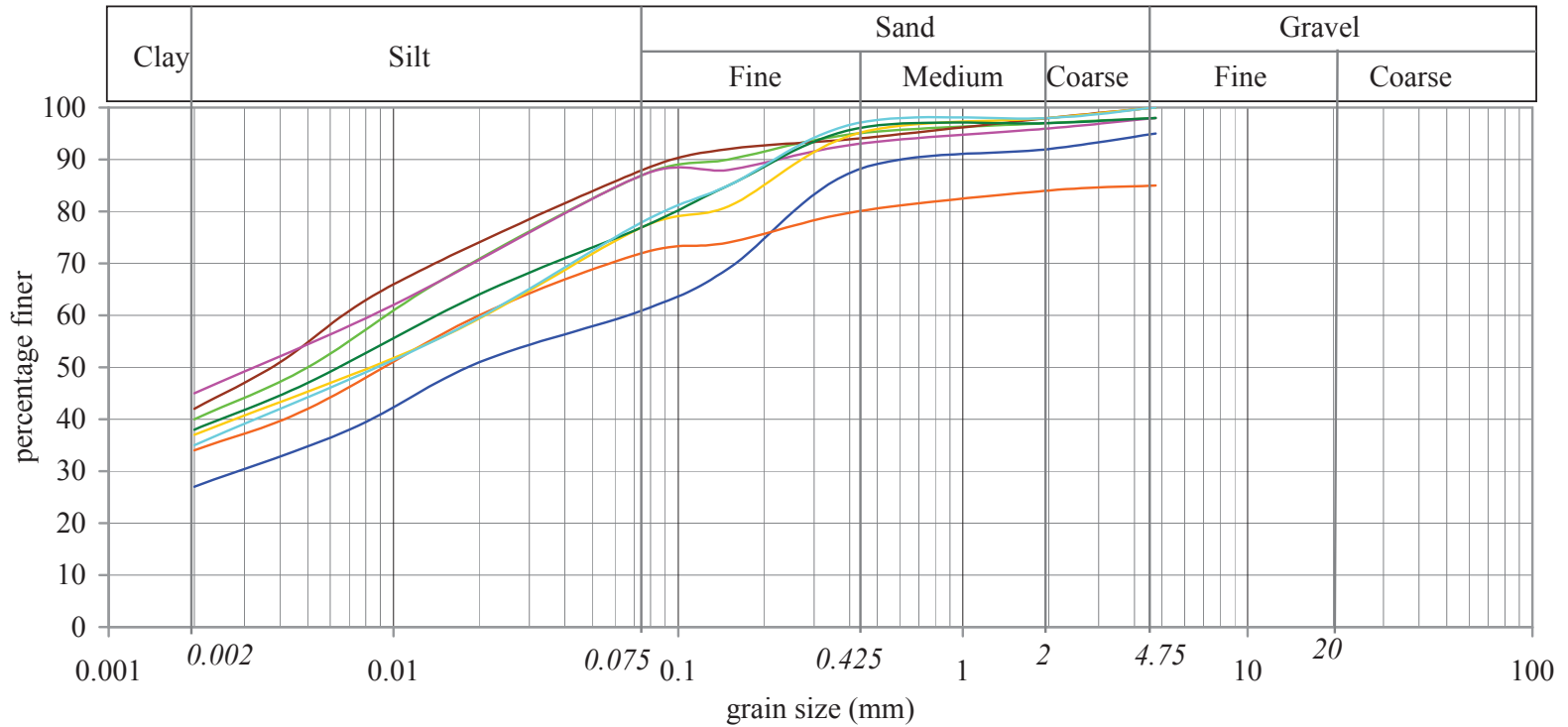


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
—	26	3	Clayey sandy silt with gravel	5	34	34	27	0.065	-	-
—	26	5	Sandy clayey silt with gravel	15	13	38	34	0.021	-	-
—	27	1	Sandy clayey silt with gravel	2	11	47	40	0.0091	-	-
—	27	3	Sandy clayey silt	0	12	46	42	0.0065	-	-
—	27	5	Sandy silty clay with gravel	2	11	42	45	0.0081	-	-
—	28	1	Sandy clayey silt	0	23	40	37	0.019	-	-
—	28	3	Sandy clayey silt with gravel	2	21	39	38	0.015	-	-
—	28	5	Sandy clayey silt	0	22	43	35	0.021	-	-

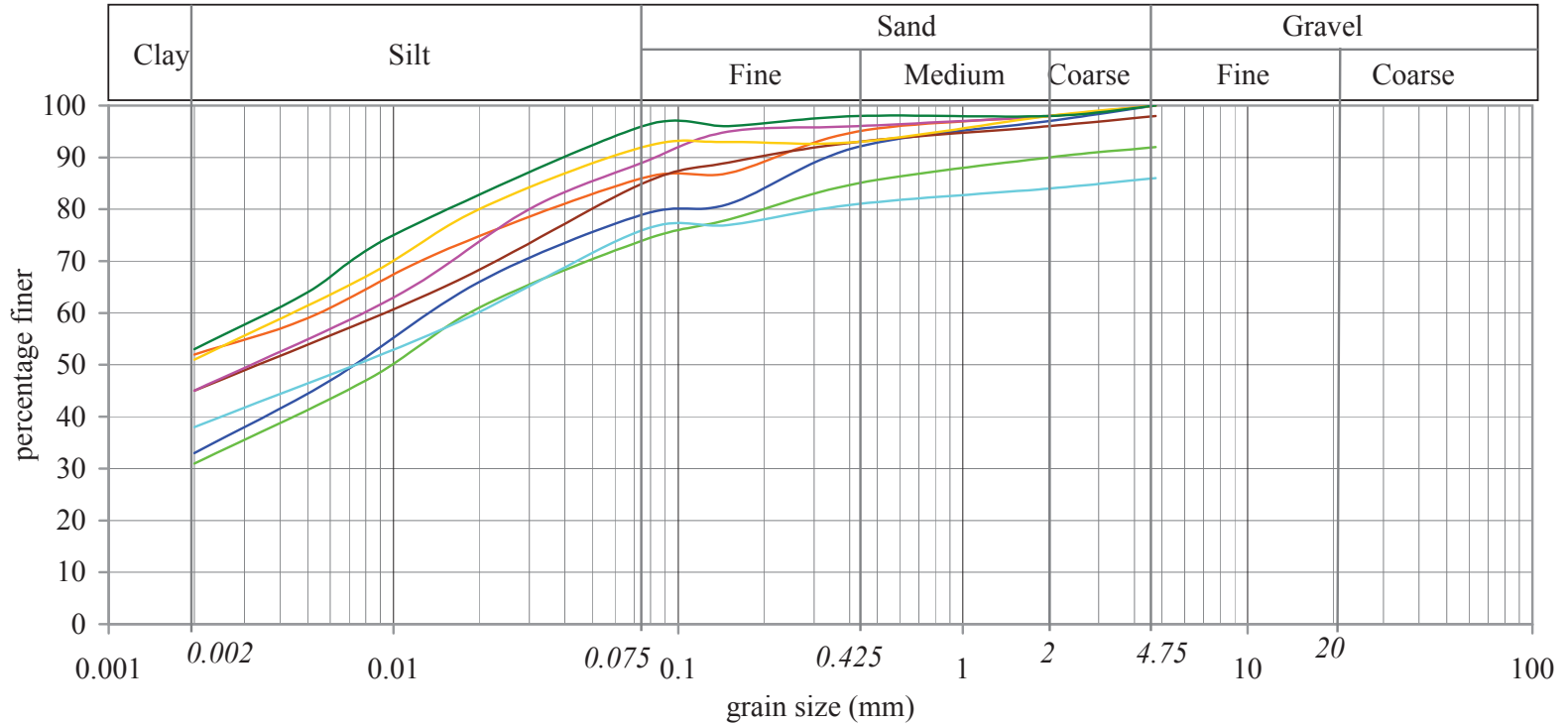


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	29	1	Sandy clayey silt	0	21	46	33	0.014	-	-
	30	1	Sandy silty clay	0	14	34	52	0.0055	-	-
	30	3	Sandy clayey silt with gravel	8	18	43	31	0.018	-	-
	30	5	Sandy silty clay with gravel	2	13	40	45	0.0091	-	-
	31	1	Sandy silty clay	0	11	44	45	0.0075	-	-
	31	3	Sandy silty clay	0	8	41	51	0.0045	-	-
	31	5	Snady silty clay	0	4	43	53	0.0035	-	-
	31	8	Sandy clayey silt with gravel	14	10	38	38	0.018	-	-

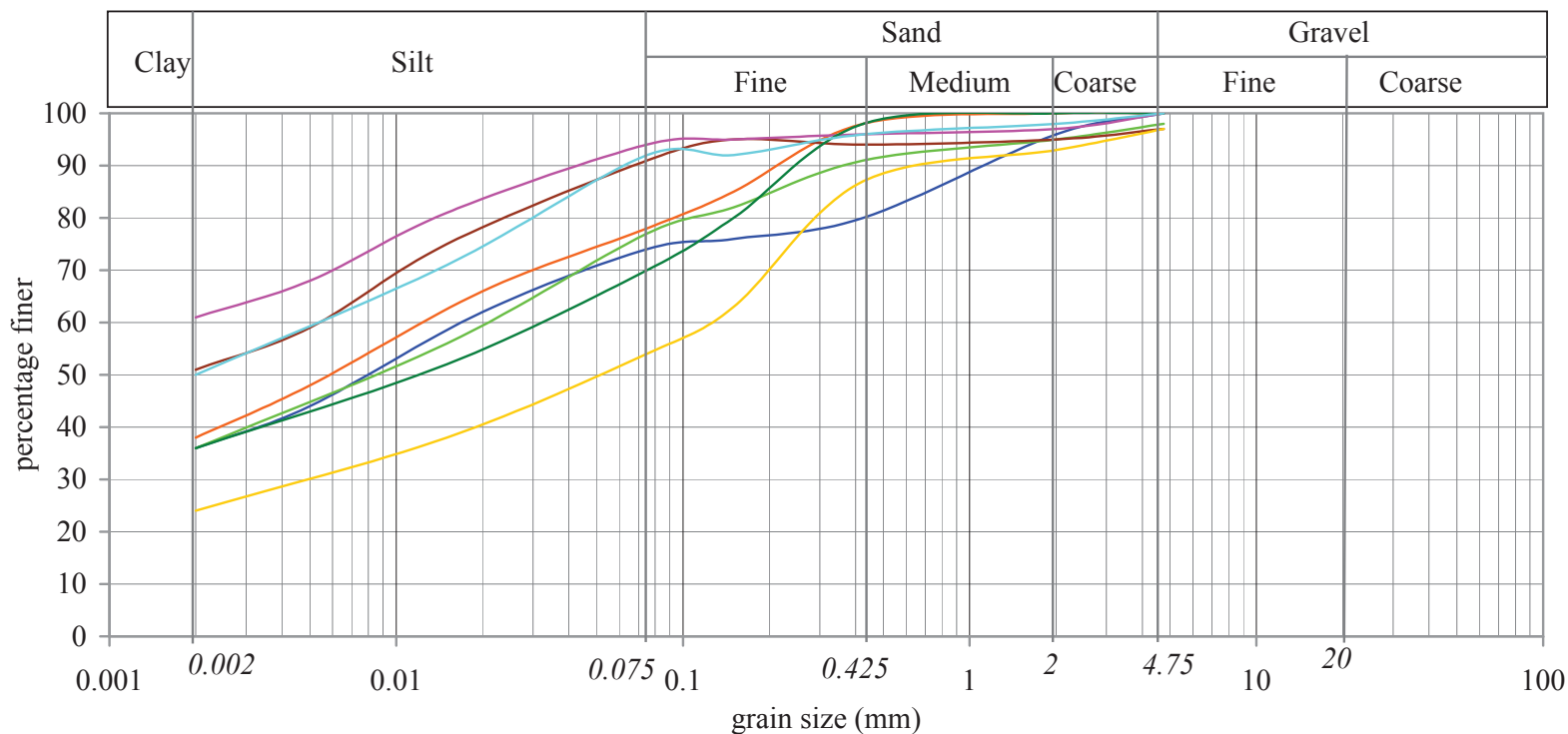


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	31	11	Sandy clayey silt	0	26	38	36	0.016	-	-
	31	14	Sandy clayey silt	0	22	40	38	0.012	-	-
	32	1	Sandy clayey silt with gravel	2	21	41	36	0.021	-	-
	32	3	Sandy silty clay with gravel	3	6	40	51	0.0051	-	-
	32	5	Sandy silty clay	0	6	33	61	-	-	-
	32	8	Clayey silty sand with gravel	3	43	30	24	0.13	-	-
	32	11	Sandy silty clay	0	30	34	36	0.031	-	-
	33	1	Sandy silty clay	0	8	42	50	0.0052	-	-

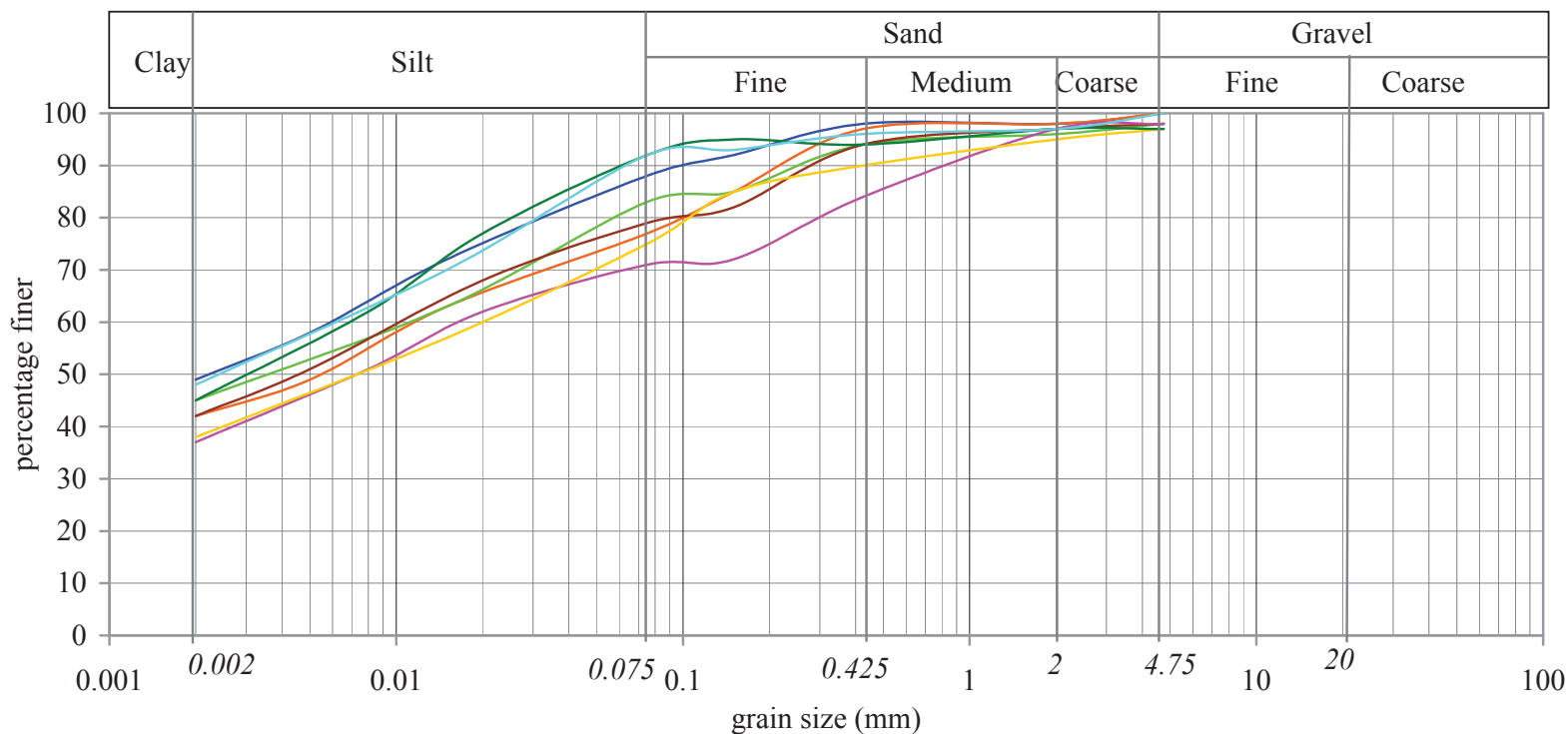


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
—	33	3	Sandy silty clay	0	12	39	49	0.0058	-	-
—	33	5	Sandy silty clay	0	23	35	42	0.012	-	-
—	33	8	Sandy silty clay with gravel	2	15	38	45	0.011	-	-
—	33	9.5	Sandy silty clay with gravel	2	19	37	42	0.011	-	-
—	33	11	Sandy silty clay with gravel	2	27	34	37	0.017	-	-
—	33	14	Sandy silty clay with gravel	3	22	37	38	0.019	-	-
—	34	1	Sandy clayey silt with gravel	3	5	47	45	0.0068	-	-
—	34	3	Sandy silty clay	0	8	44	48	0.0061	-	-

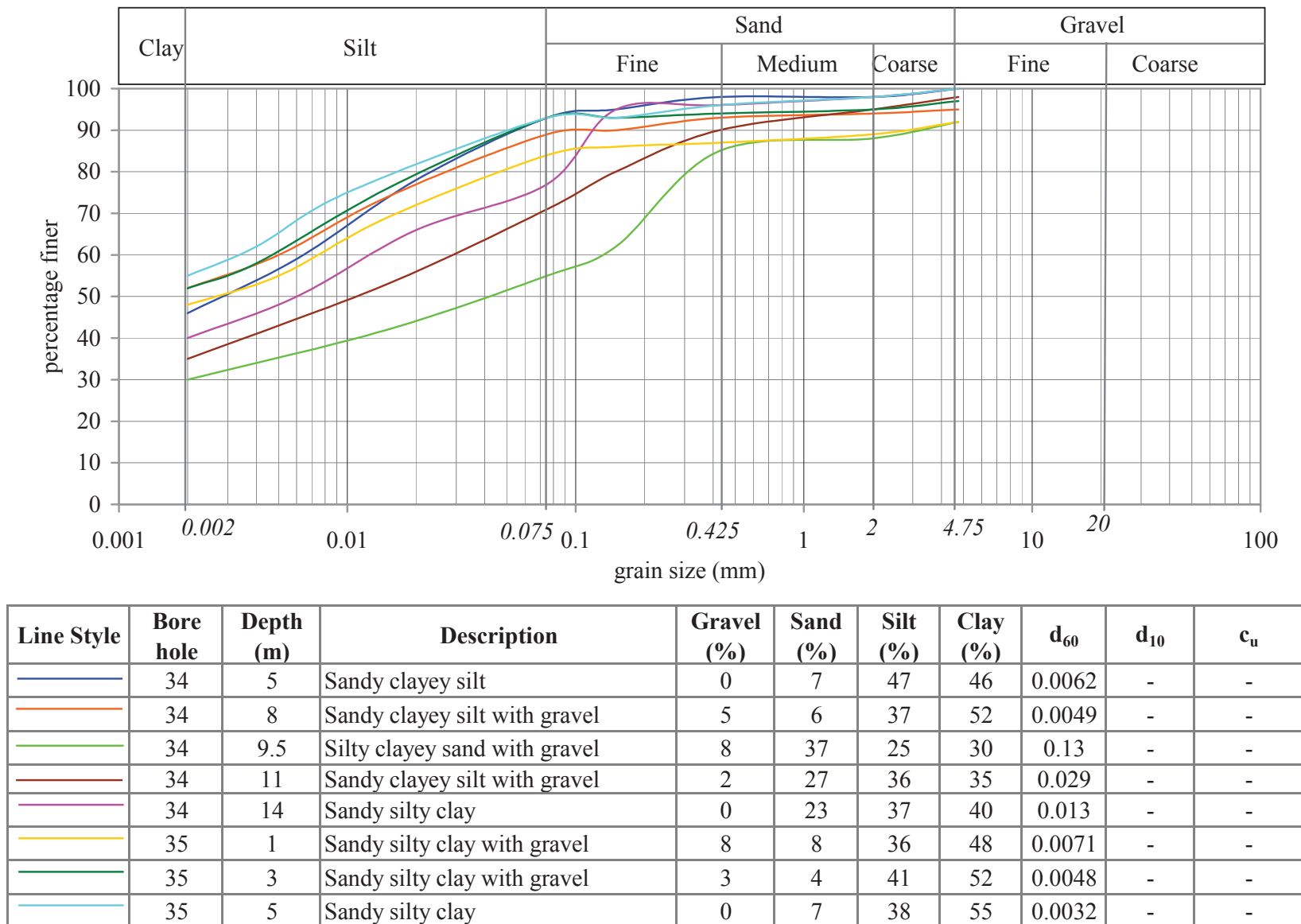


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Job No. : **G(H)1658(9)**
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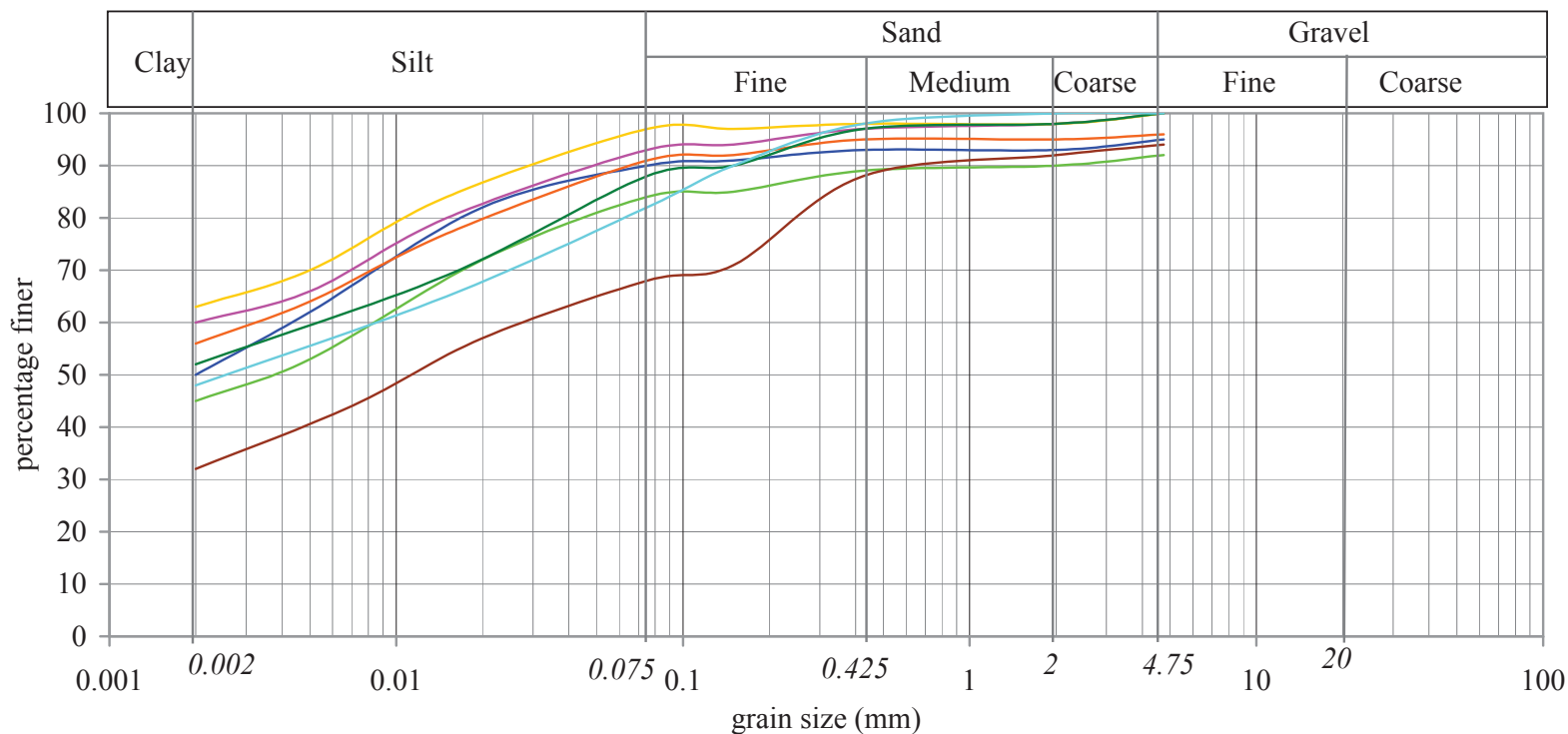


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d_{60}	d_{10}	c_u
	35	8	Sandy silty clay with gravel	5	5	40	50	0.0041	-	-
	35	11	Sandy silty clay with gravel	4	5	35	56	0.0032	-	-
	35	14	Sandy silty clay with gravel	8	8	39	45	0.0081	-	-
	36	1	Sandy clayey silt with gravel	6	26	36	32	0.027	-	-
	36	3	Sandy silty clay	0	7	33	60	0.002	-	-
	36	5	Sandy silty clay	0	3	34	63	-	-	-
	36	8	Sandy silty clay	0	12	36	52	0.0052	-	-
	36	11	Sandy silty clay	0	18	34	48	0.0092	-	-

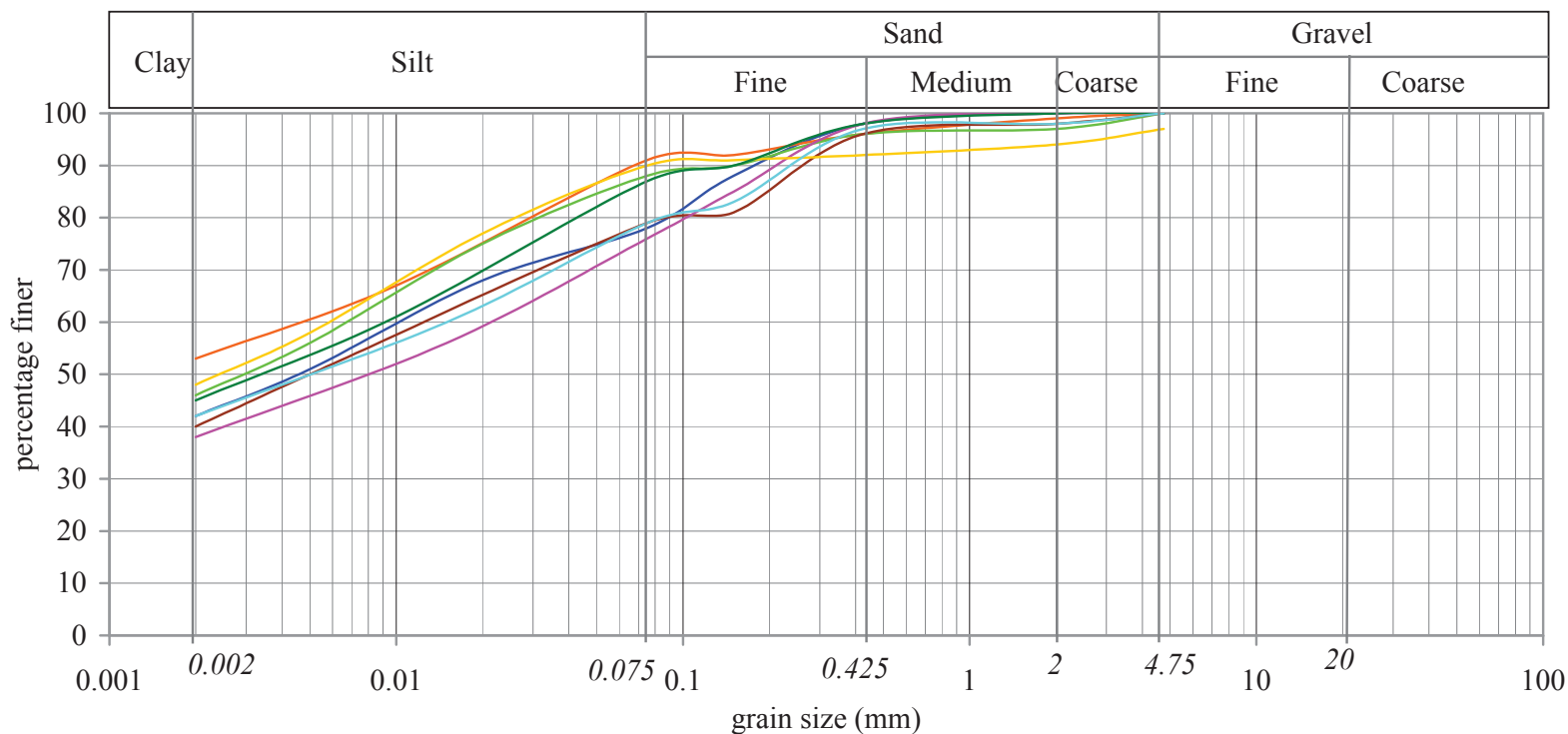


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	36	14	Sandy silty clay	0	22	36	42	0.011	-	-
	37	1	Sandy silty clay	0	9	38	53	0.0046	-	-
	37	3	Sandy silty clay	0	12	42	46	0.0067	-	-
	37	5	Sandy silty clay	0	21	39	40	0.013	-	-
	37	8	Sandy silty clay	0	24	38	38	0.022	-	-
	37	9.5	Sandy silty clay with gravel	3	7	42	48	0.0058	-	-
	37	11	Sandy silty clay	0	13	42	45	0.0095	-	-
	38	1	Sandy silty clay	0	21	37	42	0.015	-	-

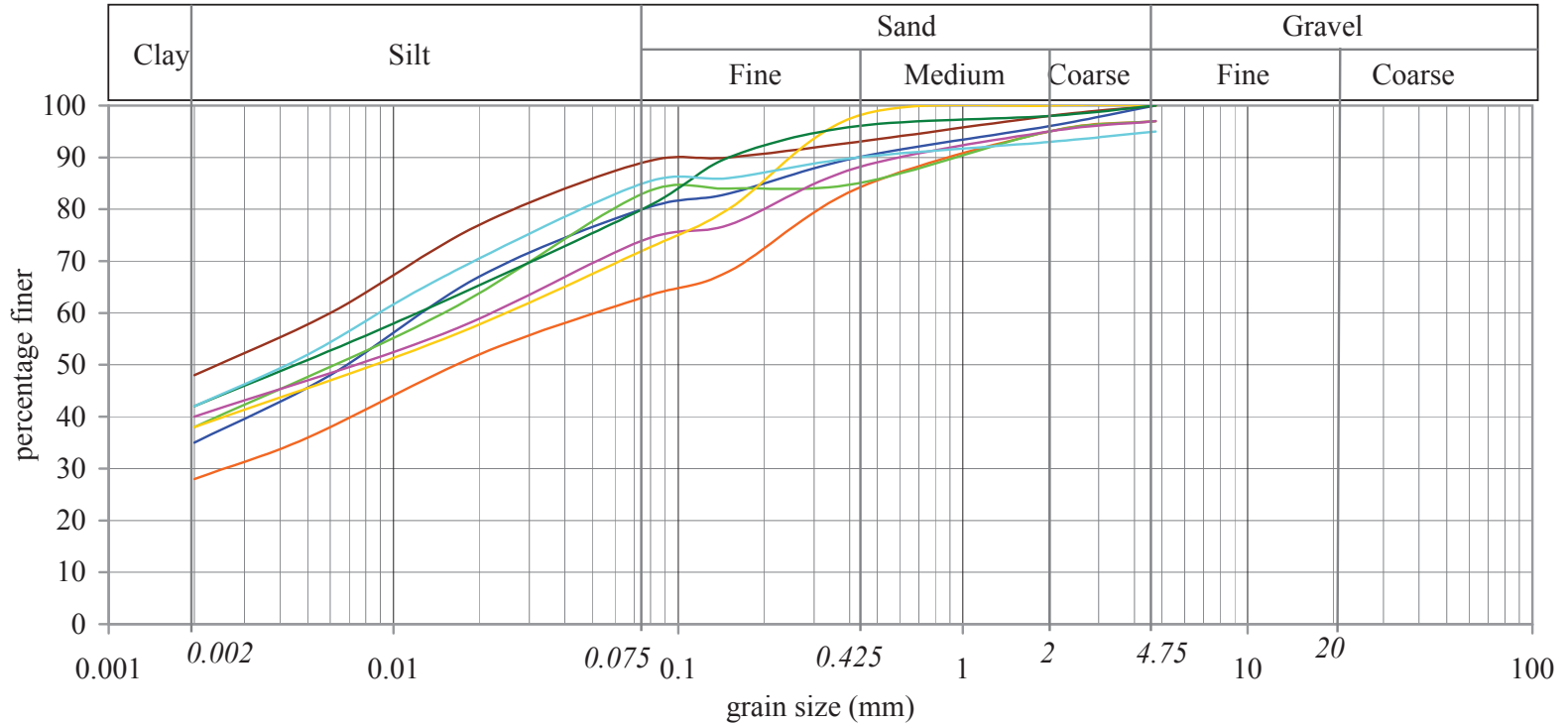


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	38	3	Sandy clayey silt	0	20	45	35	0.013	-	-
	38	5	Clayey sandy silt with gravel	3	34	35	28	0.051	-	-
	38	8	Sandy clayey silt with gravel	3	14	45	38	0.015	-	-
	38	9.5	Sandy silty clay	0	11	41	48	0.0059	-	-
	38	11	Sandy silty clay with gravel	3	23	34	40	0.022	-	-
	38	12.5	Sandy silty clay	0	28	34	38	0.023	-	-
	38	15	Sandy silty clay	0	20	38	42	0.013	-	-
	39	1	Sandy clayey silt with gravel	5	10	43	42	0.0091	-	-

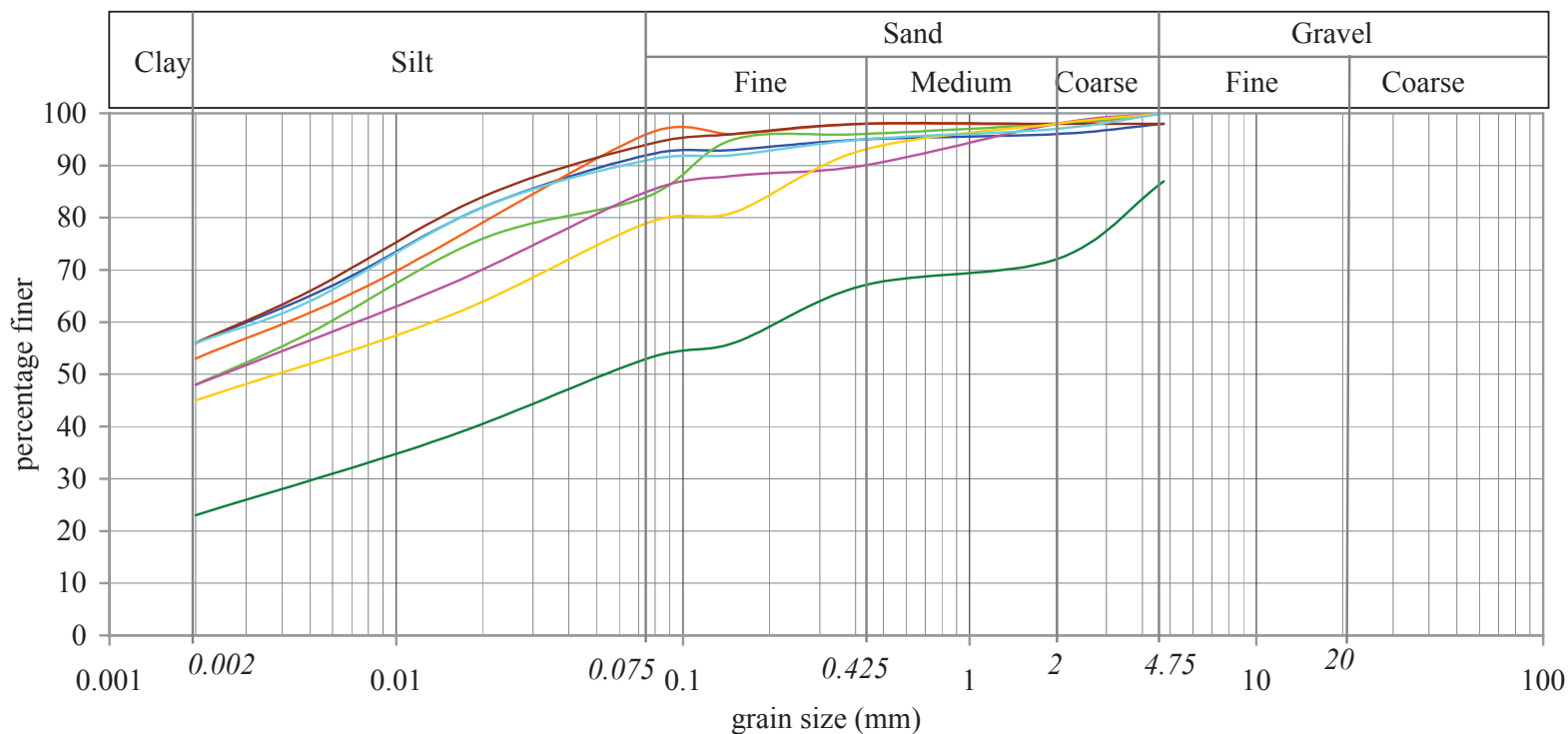


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	39	3	Sandy silty clay with gravel	2	6	36	56	0.0032	-	-
	39	5	Sandy silty clay	0	4	43	53	0.0041	-	-
	39	8	Sandy silty clay	0	16	36	48	0.0058	-	-
	39	11	Sandy silty clay with gravel	2	4	38	56	0.0029	-	-
	39	14	Sandy silty clay	0	15	37	48	0.0072	-	-
	40	1	Sandy silty clay	0	21	34	45	0.013	-	-
	40	3	Clayey silty sand with gravel	13	34	30	23	0.22	-	-
	40	5	Sandy silty clay	0	9	35	56	0.0032	-	-

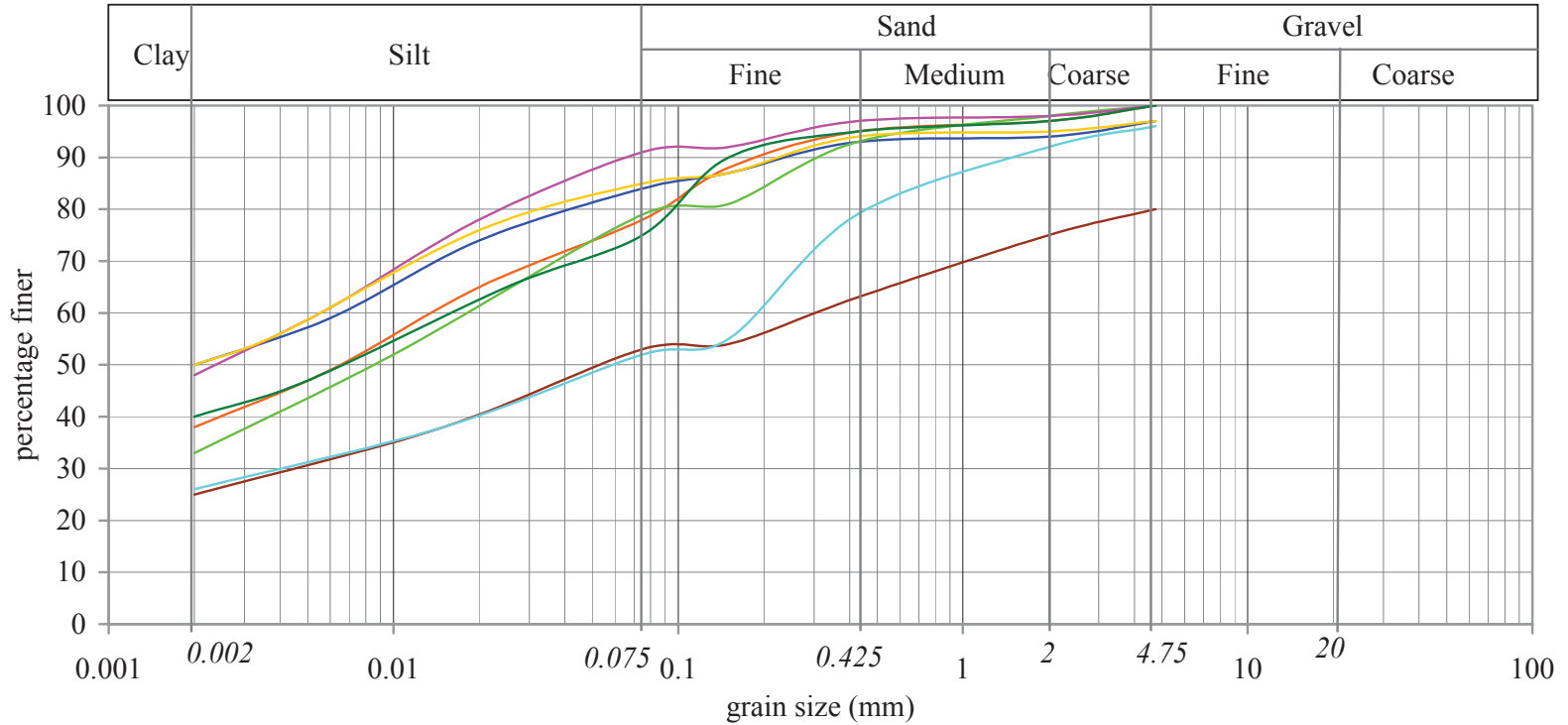


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d_{60}	d_{10}	c_u
—	40	8	Sandy silty clay with gravel	3	13	34	50	0.0062	-	-
—	40	11	Sandy clayey silt	0	22	40	38	0.013	-	-
—	41	1	Sandy clayey silt	0	21	46	33	0.017	-	-
—	41	3	Clayey sandy silt with gravel	20	27	28	25	0.29	-	-
—	41	5	Sandy silty clay	0	9	43	48	0.0058	-	-
—	41	8	Sandy silty clay with gravel	3	12	35	50	0.0055	-	-
—	41	9.5	Sandy silty clay	0	25	35	40	0.015	-	-
—	42	1	Clayey silty sand with gravel	4	44	26	26	0.18	-	-

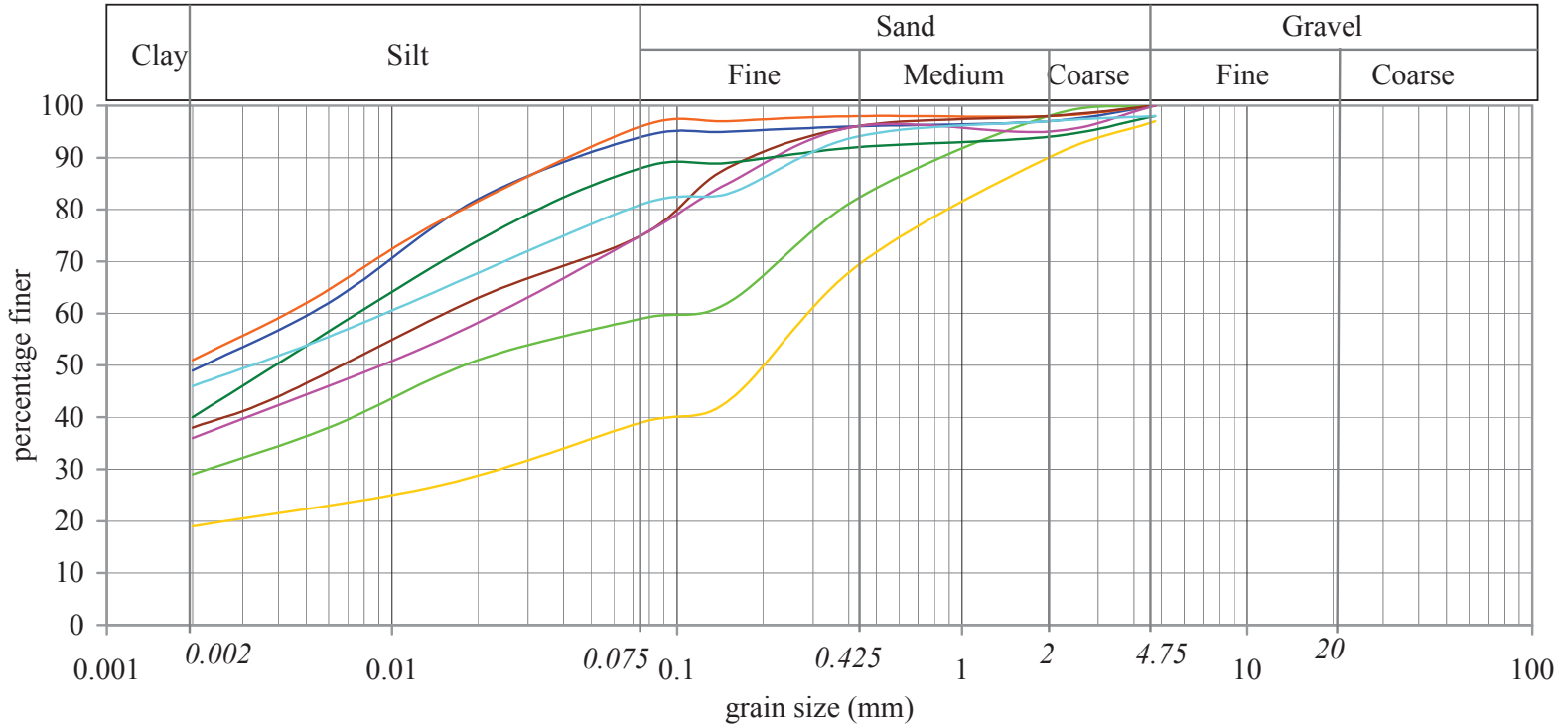


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	42	3	Sandy silty clay	0	6	45	49	0.0051	-	-
	42	5	Sandy silty clay	0	4	45	51	0.0042	-	-
	42	8	Silty clayey sand	0	41	30	29	0.13	-	-
	42	11	Sandy silty clay	0	25	37	38	0.015	-	-
	42	14	Sandy clayey silt	0	25	39	36	0.023	-	-
	43	1	Clayey silty sand with gravel	3	58	20	19	0.29	-	-
	43	3	Sandy clayey silt with gravel	2	10	48	40	0.0075	-	-
	43	5	Sandy silty clay with gravel	2	17	35	46	0.0089	-	-

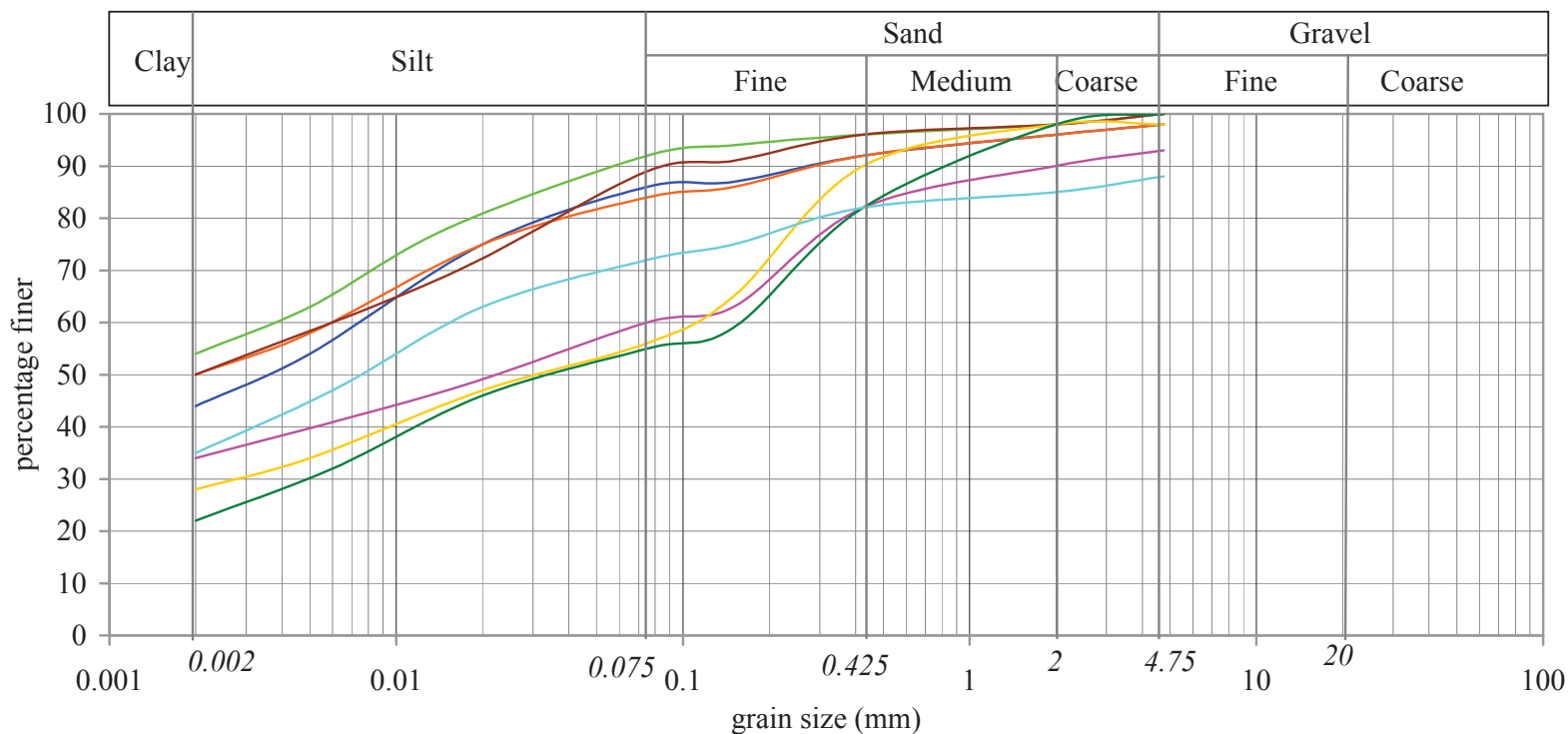


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	43	8	Sandy silty clay with gravel	2	12	42	44	0.0072	-	-
	44	1	Sandy silty clay with gravel	2	14	34	50	0.0057	-	-
	44	3	Sandy silty clay	0	8	38	54	0.0038	-	-
	44	5	Sandy silty clay	0	11	39	50	0.0058	-	-
	44	8	Silty sandy clay with gravel	7	33	26	34	0.0078	-	-
	44	9.5	Clayey silty sand with gravel	2	42	28	28	0.12	-	-
	45	1	Clayey silty sand	0	45	33	22	0.16	-	-
	45	3	Sandy clayey silt with gravel	12	16	37	35	0.015	-	-

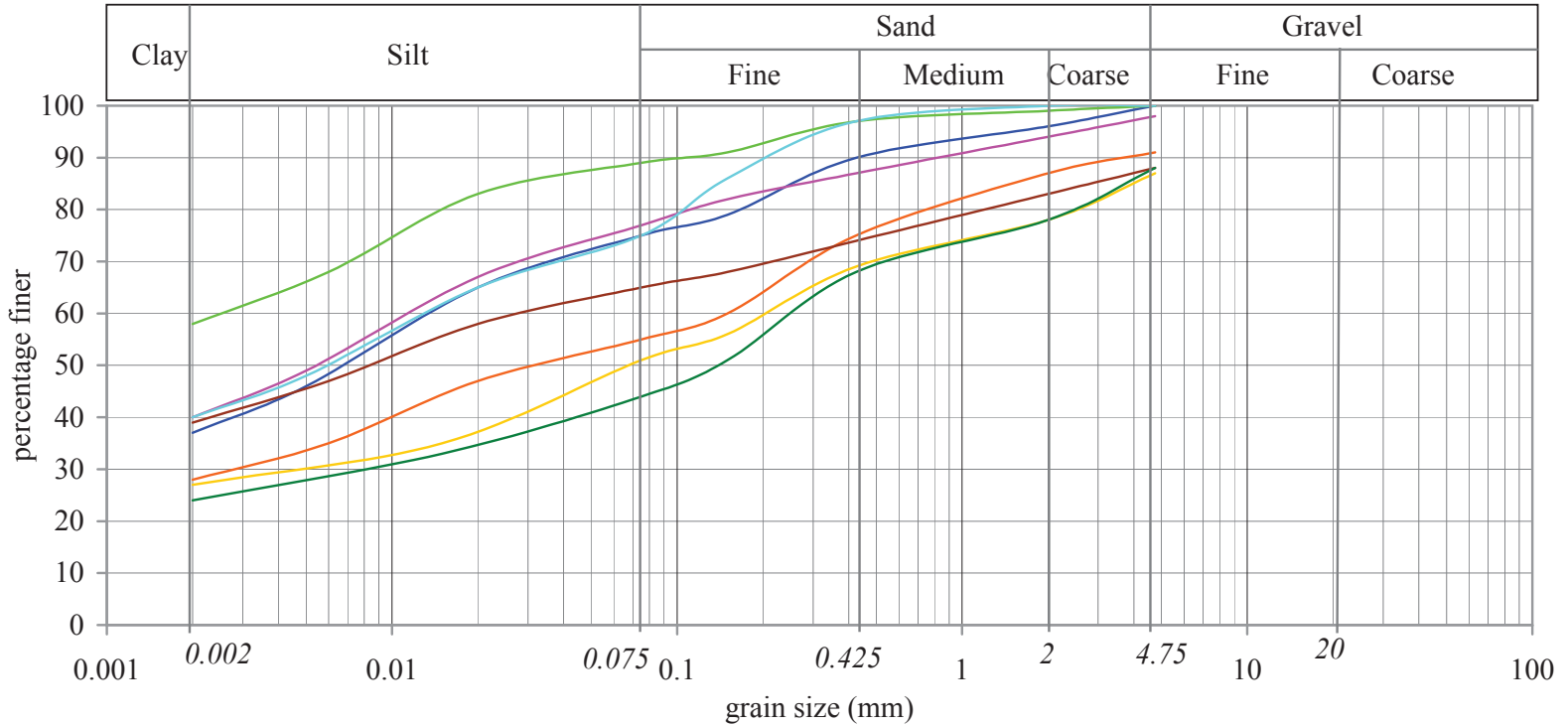


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
	45	5	Sandy clayey silt	0	25	38	37	0.013	-	-
	45	8	Silty clayey sand with gravel	9	36	27	28	0.15	-	-
	46	1	Sandy silty clay	0	11	31	58	0.0025	-	-
	46	3	Sandy silty clay with gravel	12	23	26	39	0.026	-	-
	46	5	Sandy silty clay with gravel	2	21	37	40	0.012	-	-
	47	1	Silty clayey sand with gravel	13	36	24	27	0.21	-	-
	47	3	Silty clayey sand with gravel	12	44	20	24	0.25	-	-
	47	5	Sandy silty clay	0	25	35	40	0.013	-	-

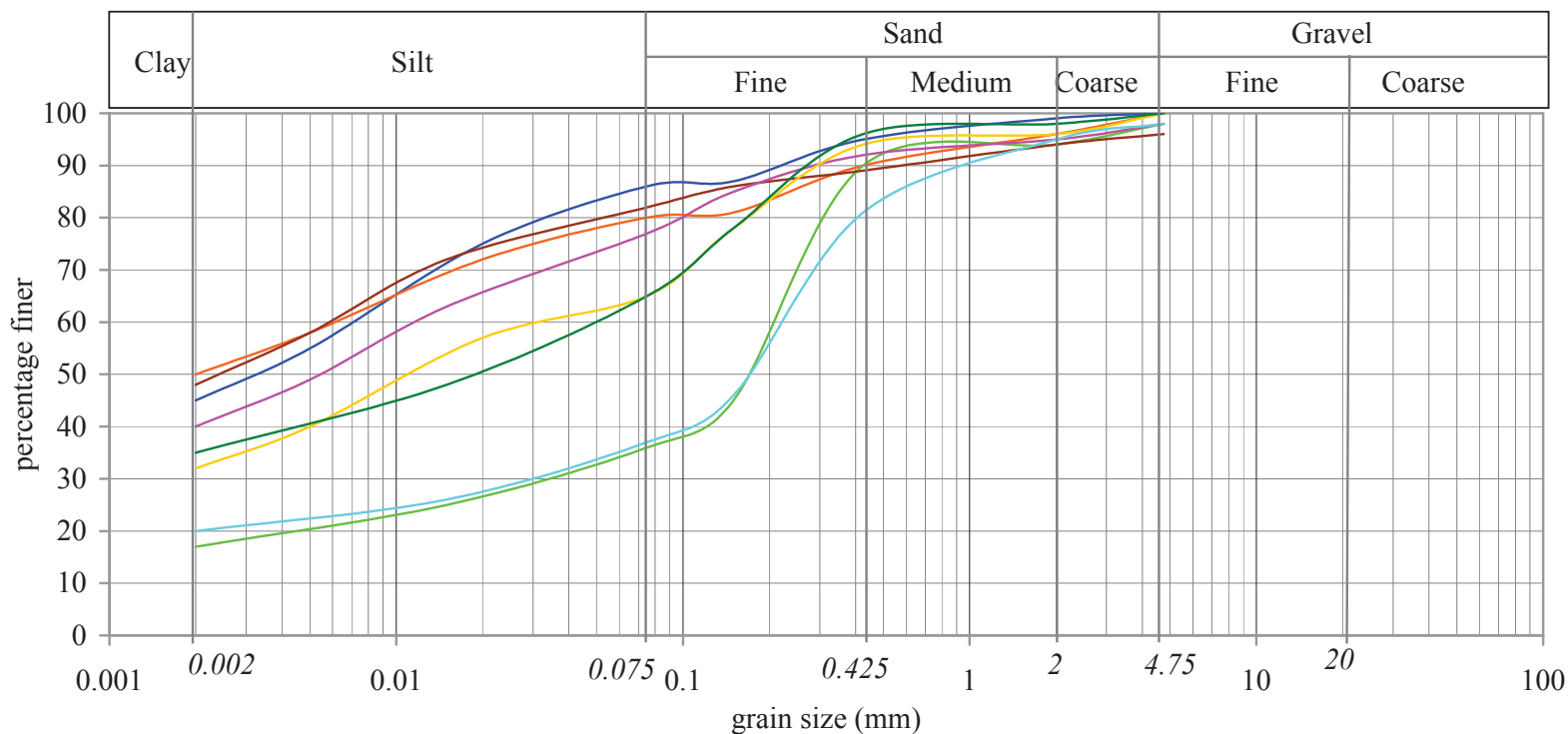


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Line Style	Bore hole	Depth (m)	Description	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	d ₆₀	d ₁₀	c _u
—	48	1	Sandy silty clay	0	14	41	45	0.0071	-	-
—	48	3	Sandy silty clay	0	20	30	50	0.0051	-	-
—	48	5	Clayey silty sand with gravel	2	62	19	17	0.21	-	-
—	48	8	Sandy silty clay with gravel	4	14	34	48	0.0058	-	-
—	48	10	Sandy silty clay with gravel	2	21	37	40	0.012	-	-
—	49	1	Clayey silty sand	0	35	33	32	0.032	-	-
—	49	3	Silty clayey sand	0	35	30	35	0.049	-	-
—	49	5	Silty clayey sand with gravel	2	61	17	20	0.23	-	-

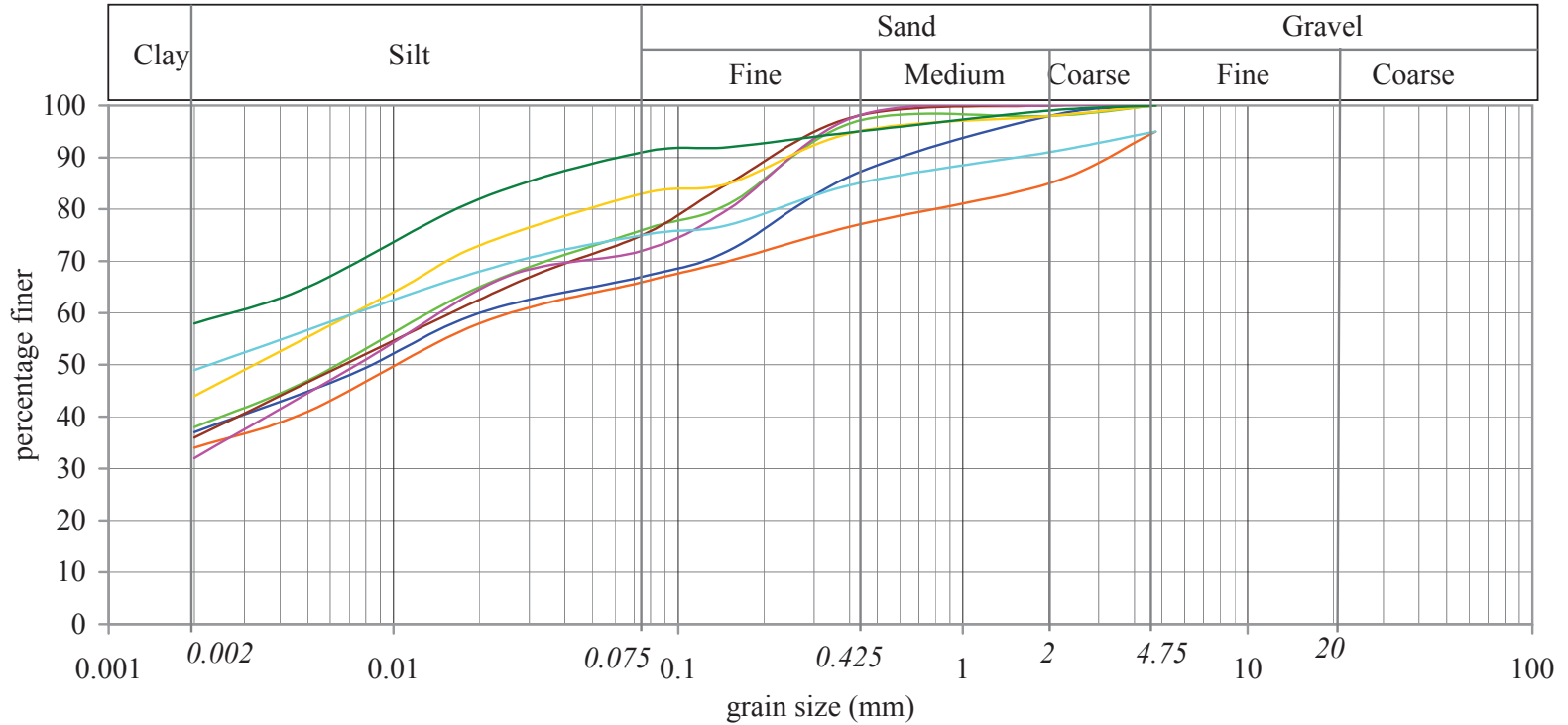


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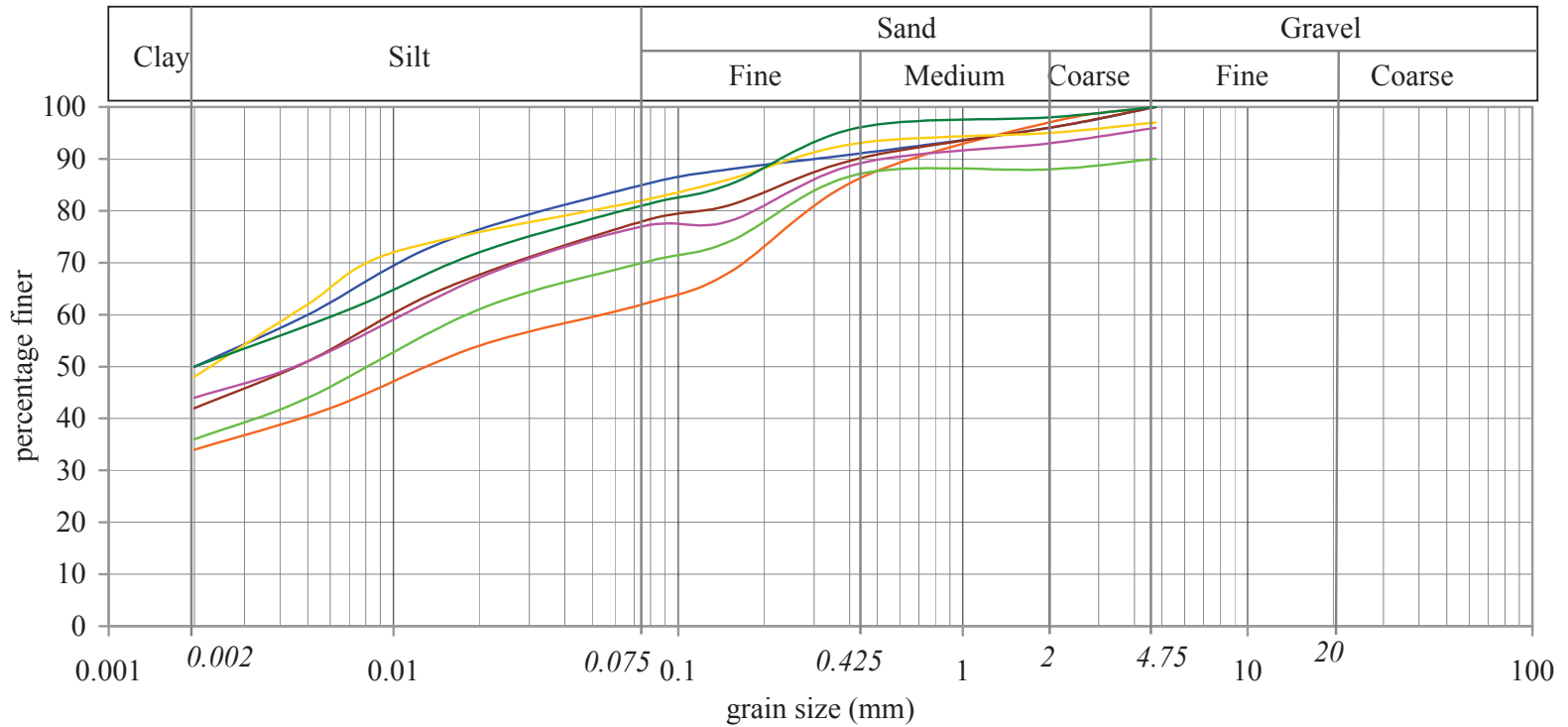


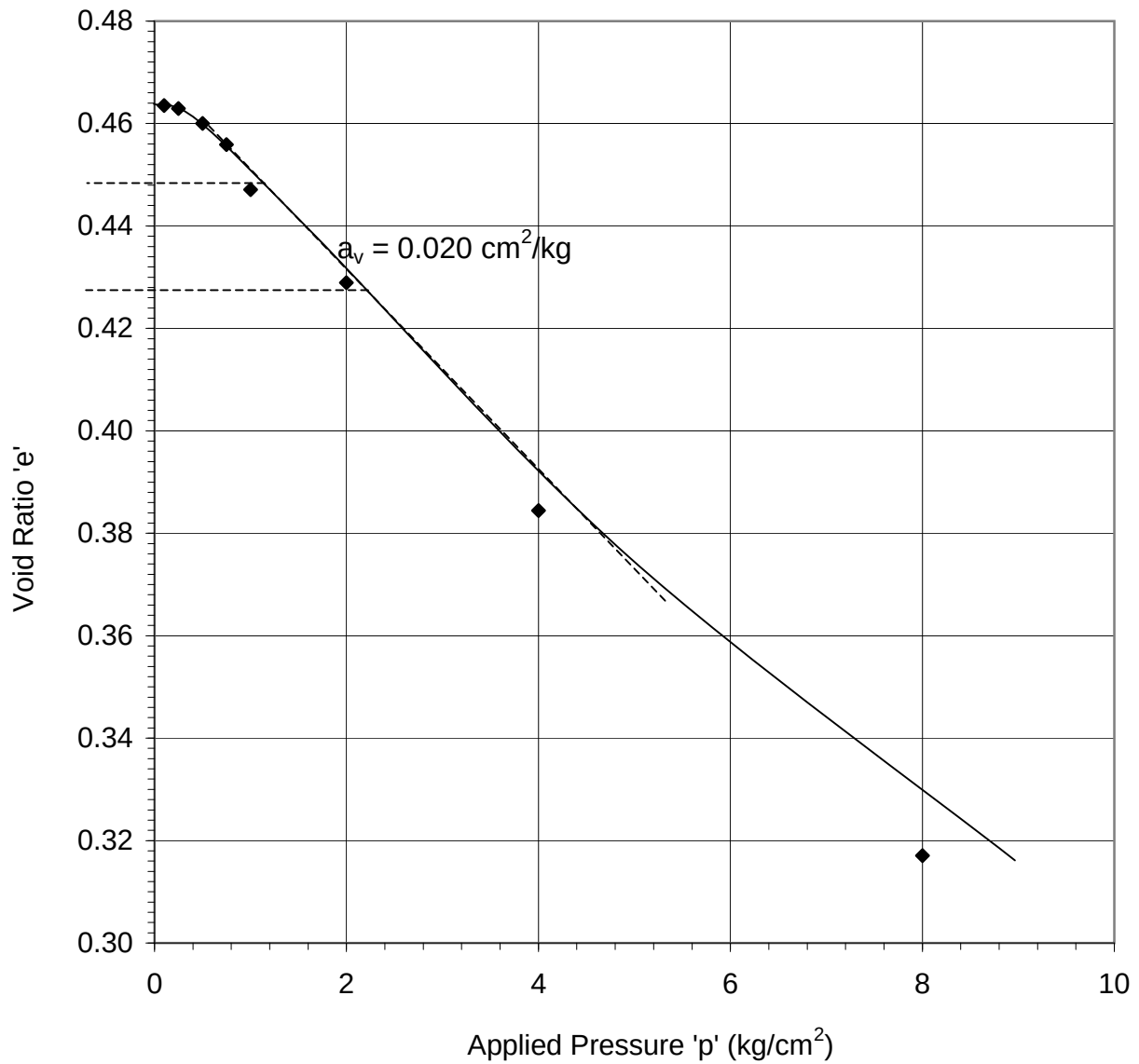


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Soil Sample Details

Borehole - BH13
 Depth - 6.5m
 Soil Type - Silty clay

Consolidation Test - 1

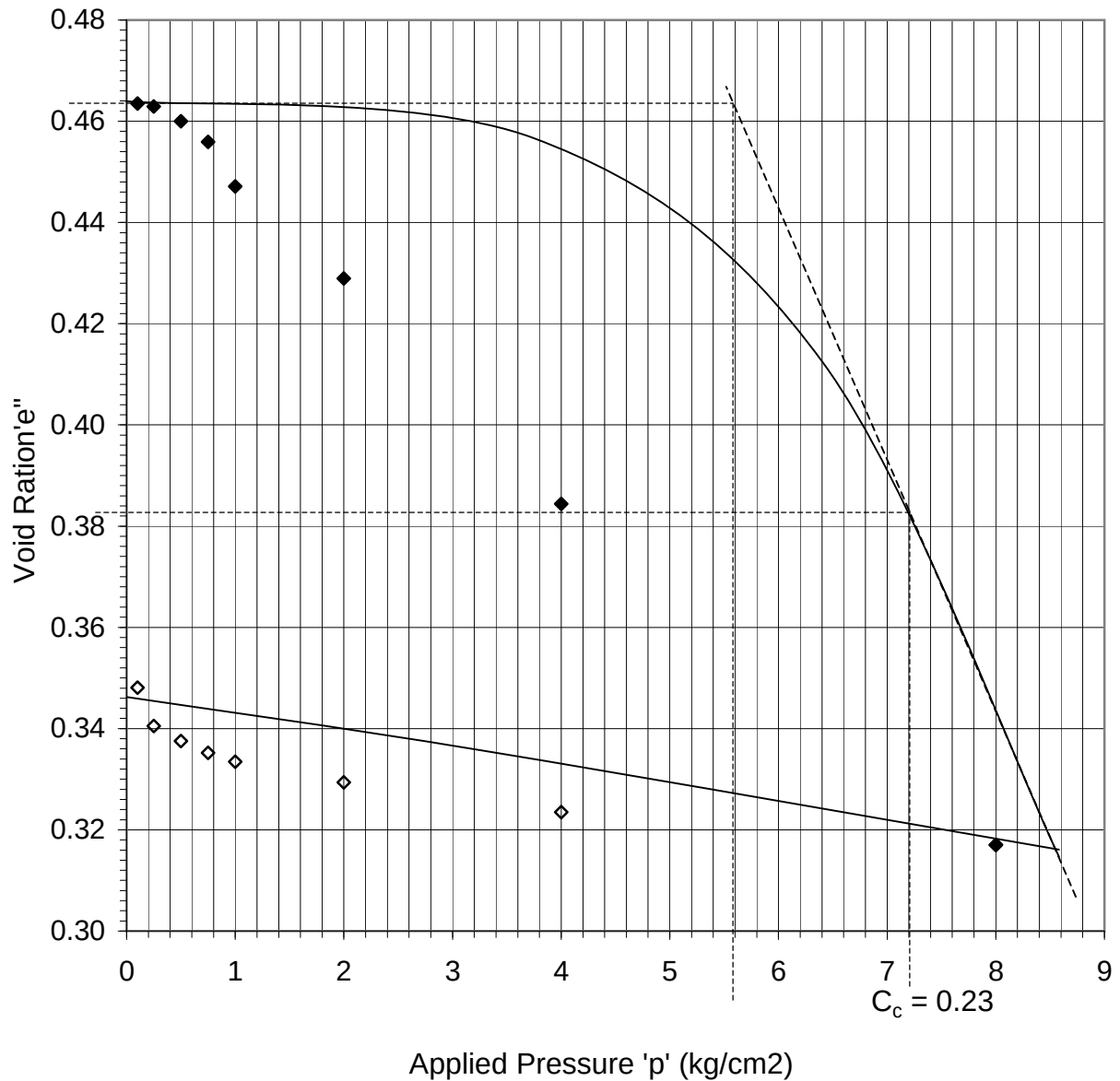


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Soil Sample Details

Borehole - BH13
 Depth - 6.5m
 Soil Type - Silty clay

Consolidation Test - I

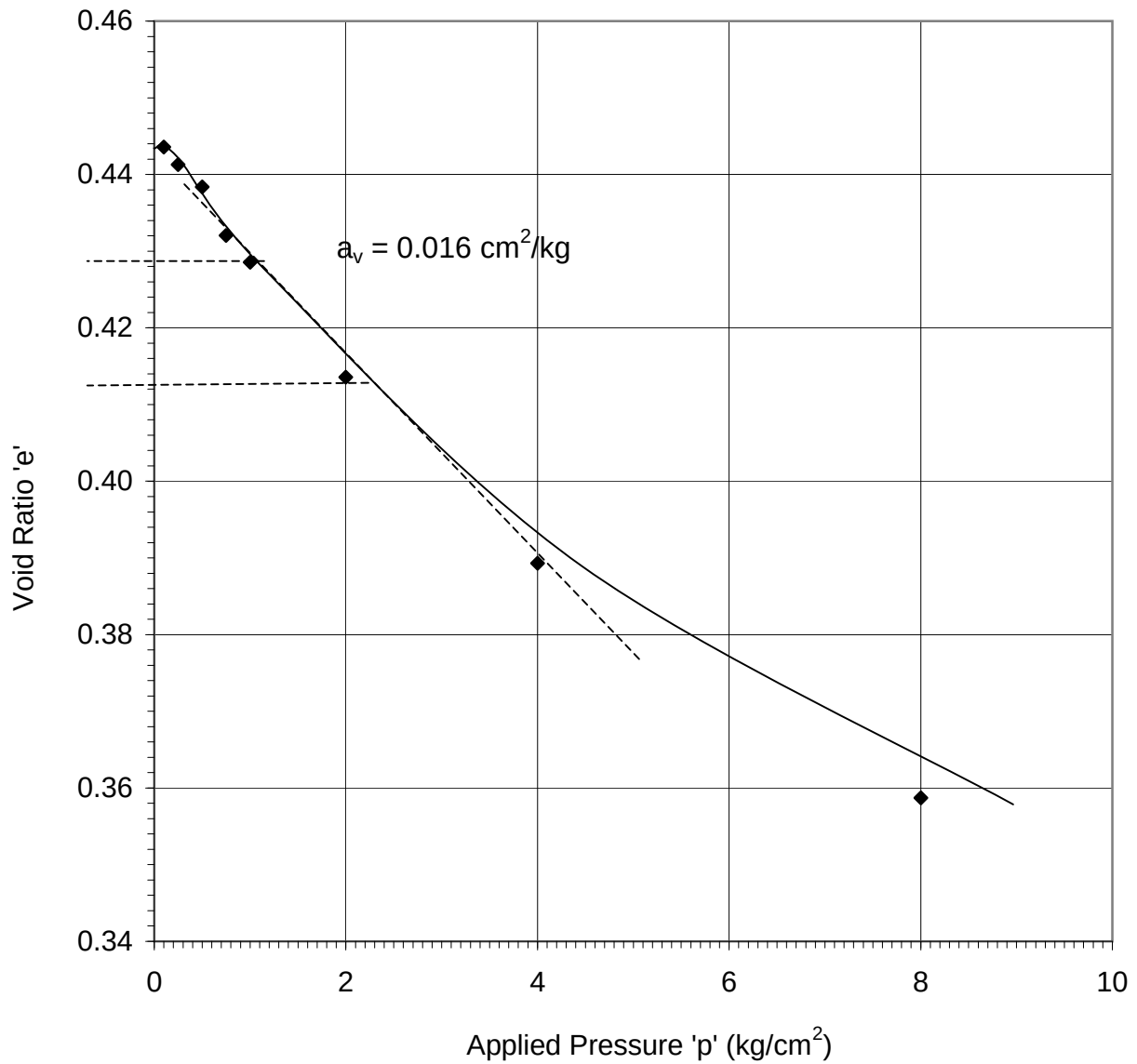


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Soil Sample Details

Borehole - BH29
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 2



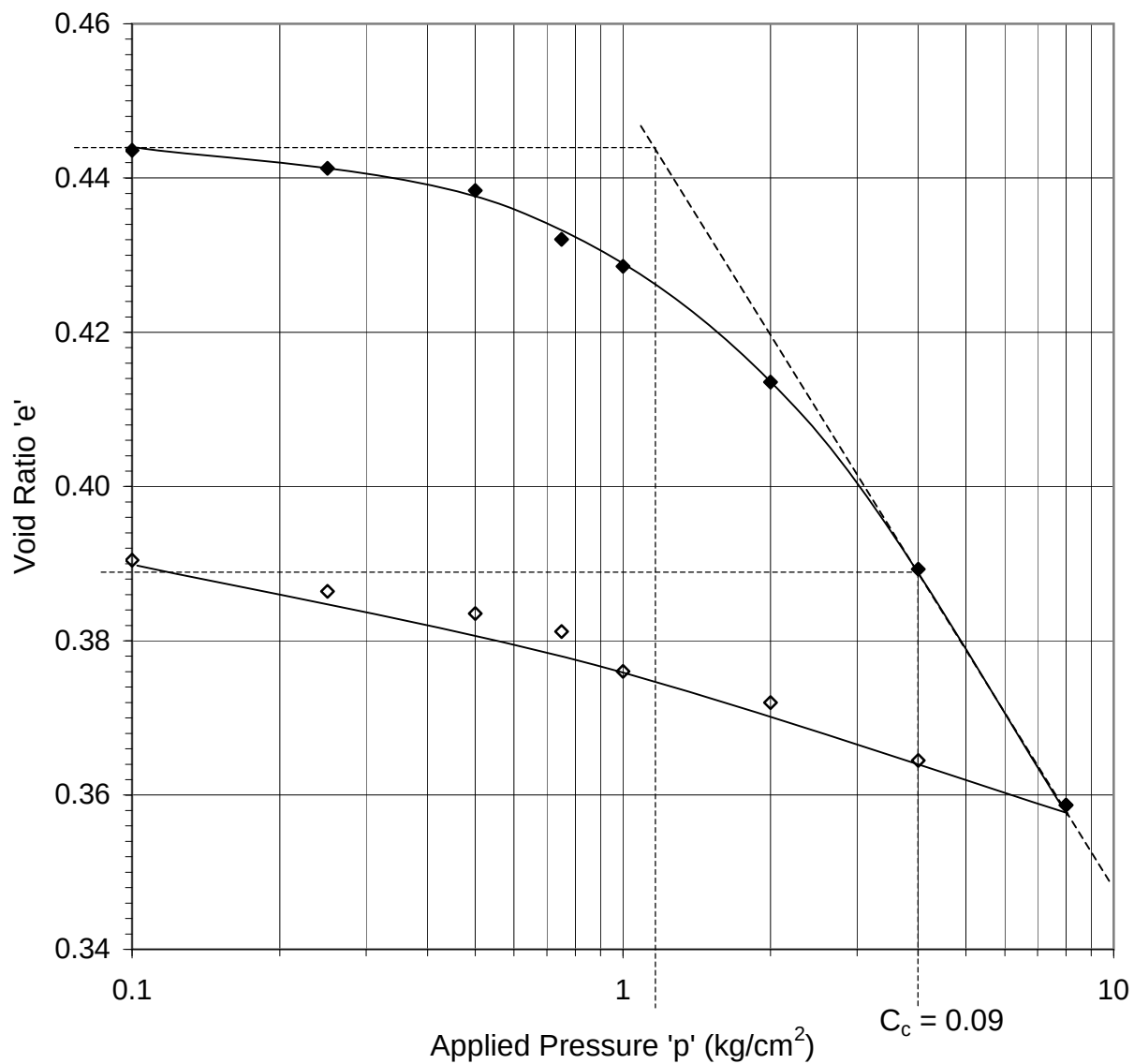
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Soil Sample Details

Borehole - BH29
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 2

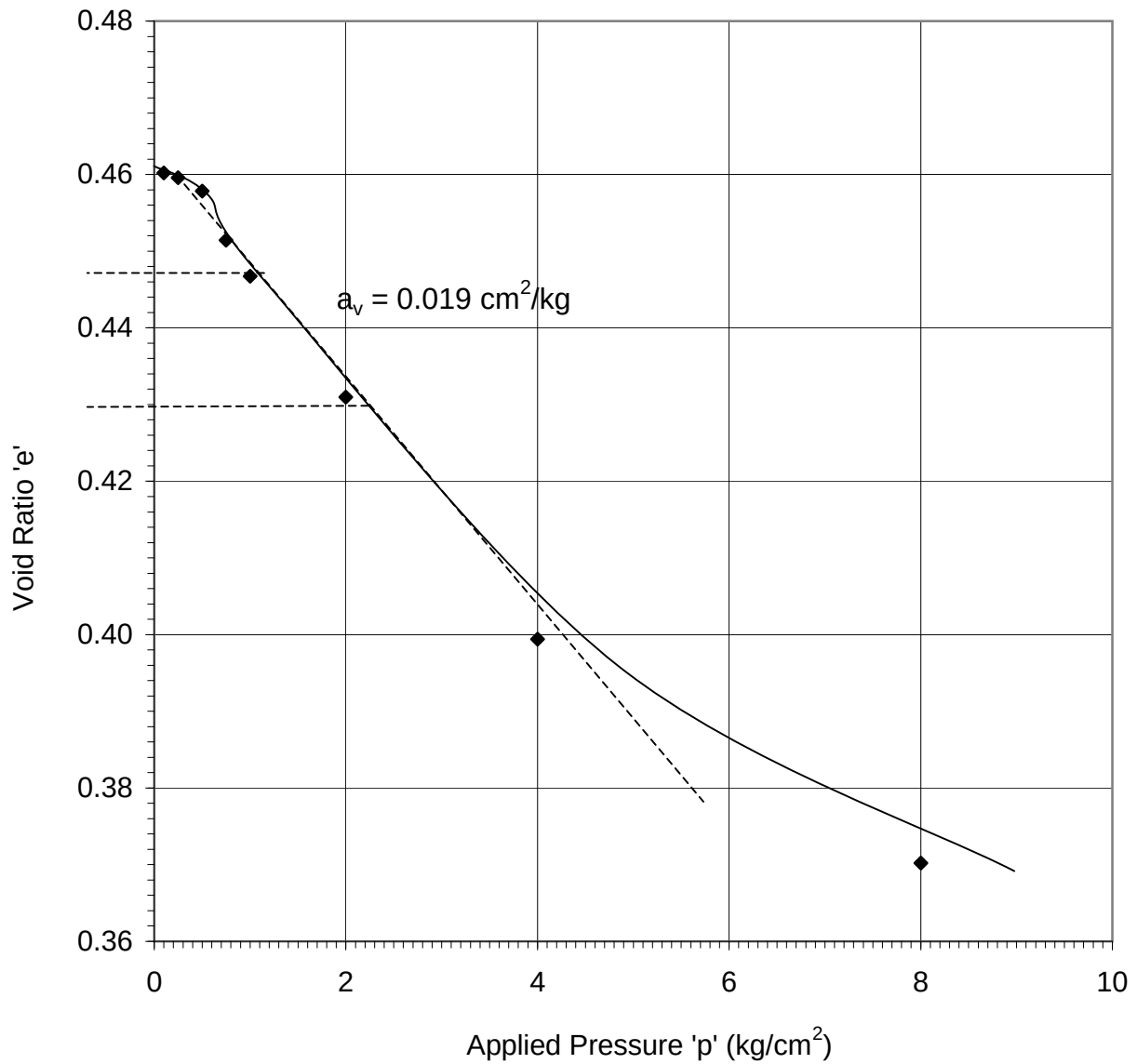


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Soil Sample Details

Borehole - BH17
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 3

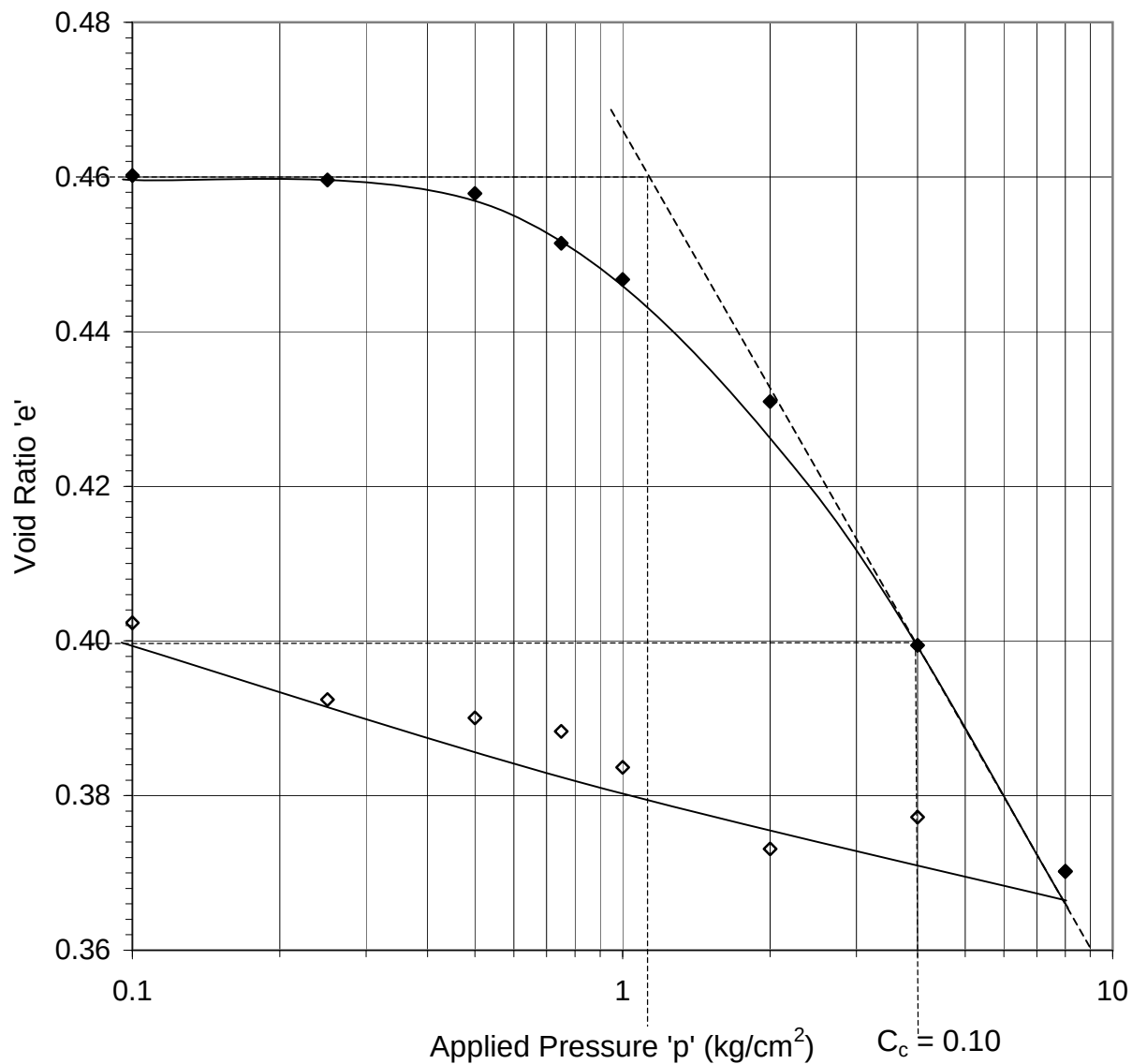


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Soil Sample Details

Borehole - BH17
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 3

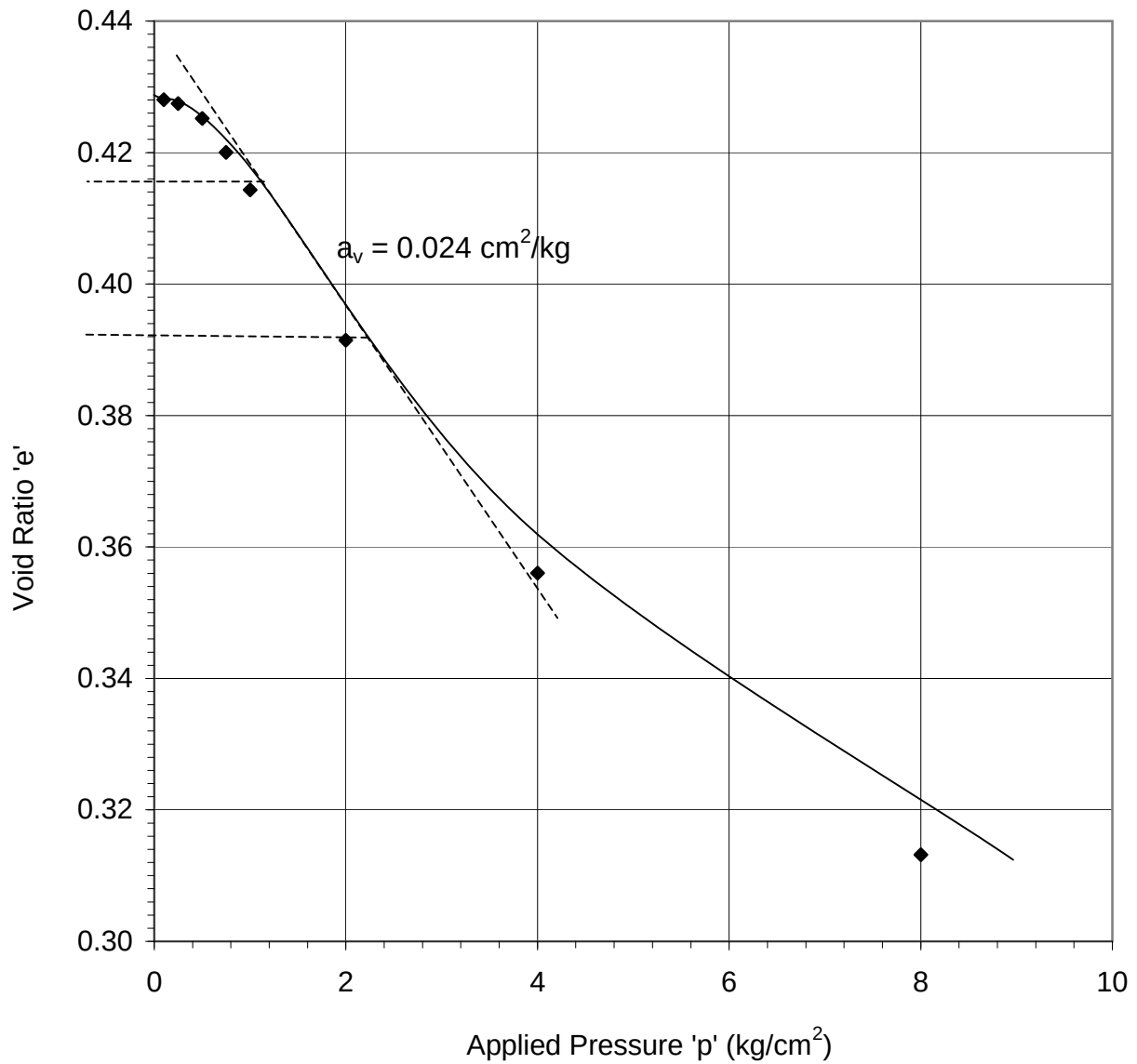


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Soil Sample Details

Borehole - BH49
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 4

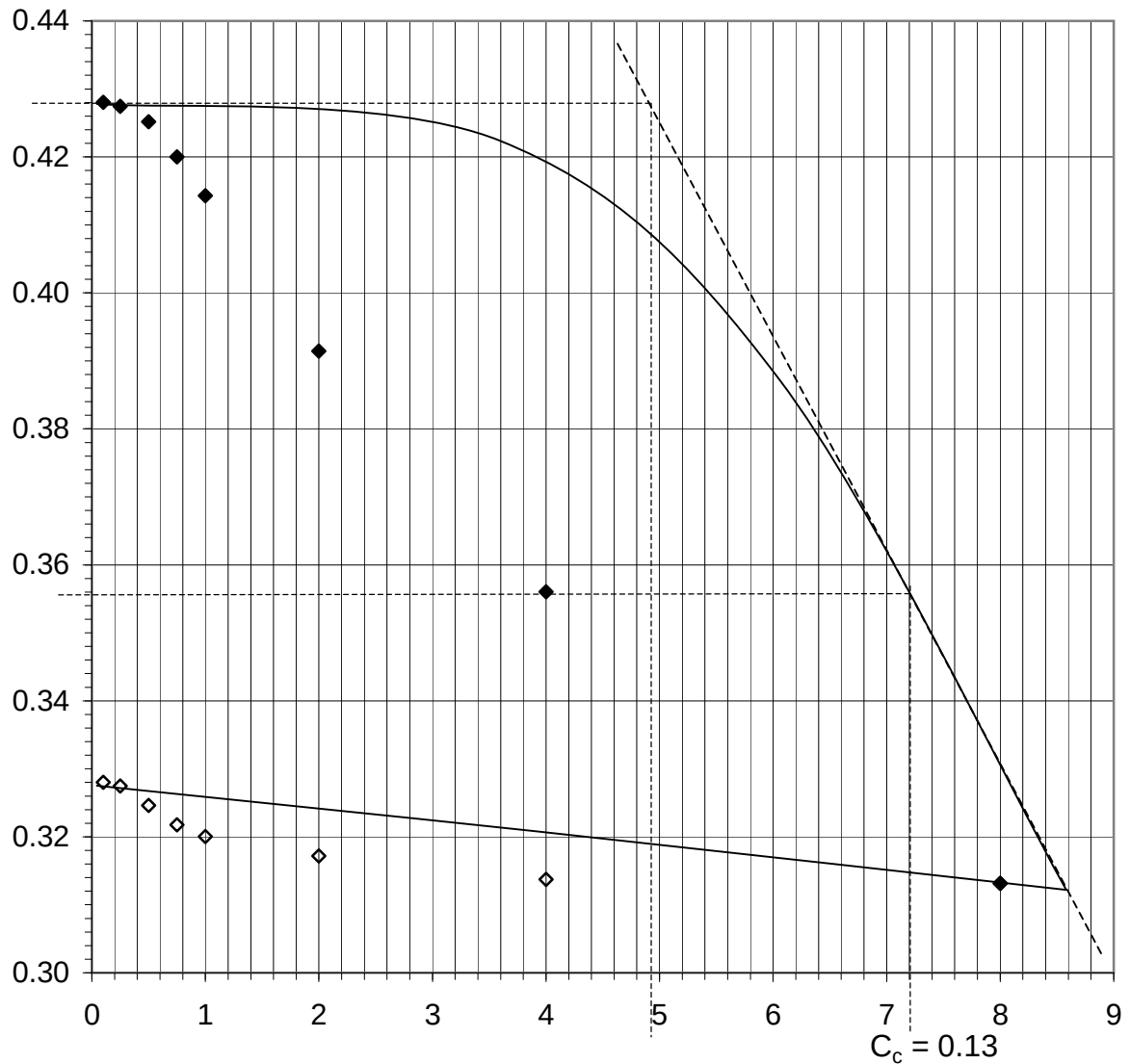


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Soil Sample Details

Borehole - BH49
Depth - 4m
Soil Type - Silty clay

Consolidation Test - 4

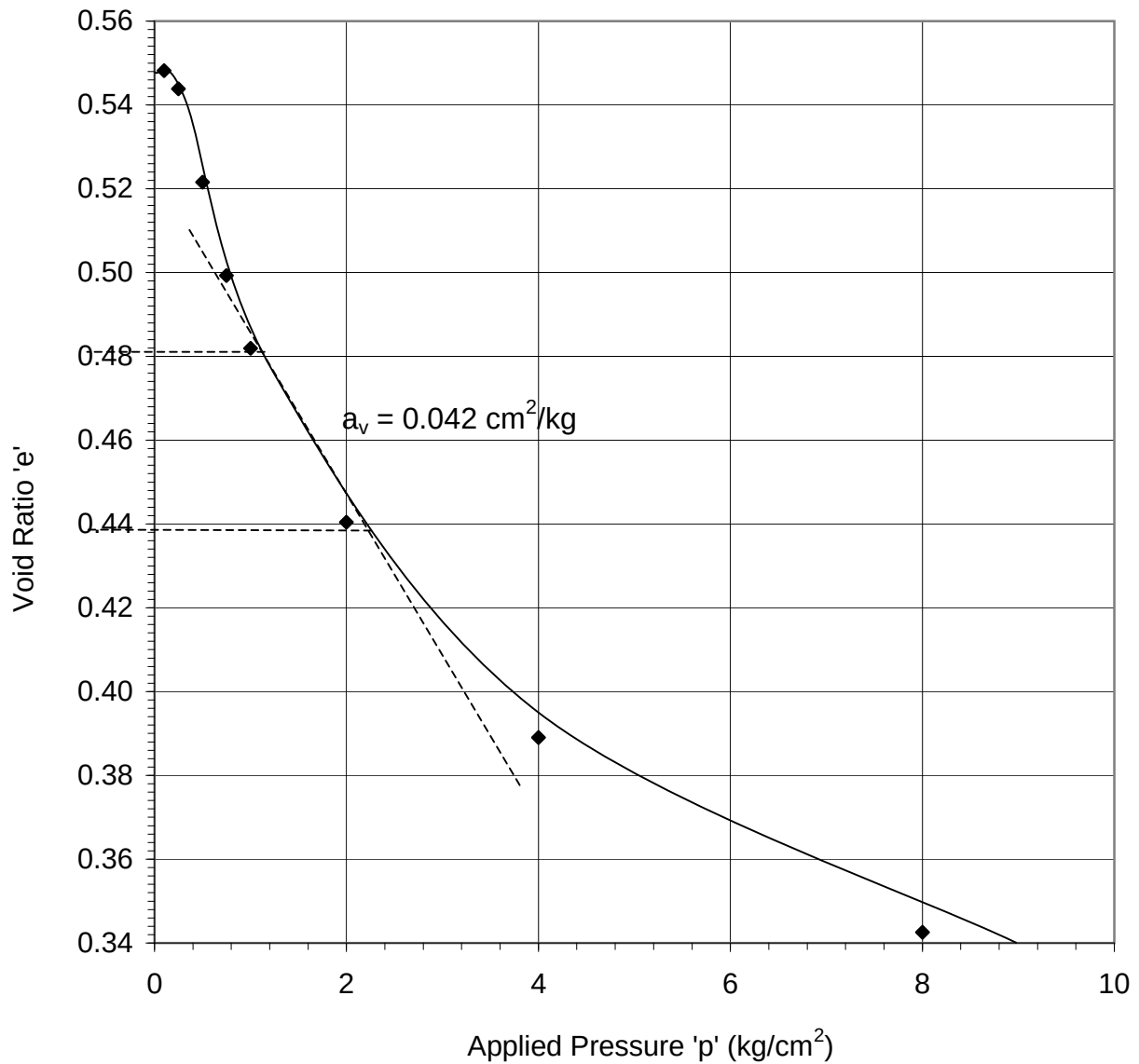


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Soil Sample Details

Borehole - BH50
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 5

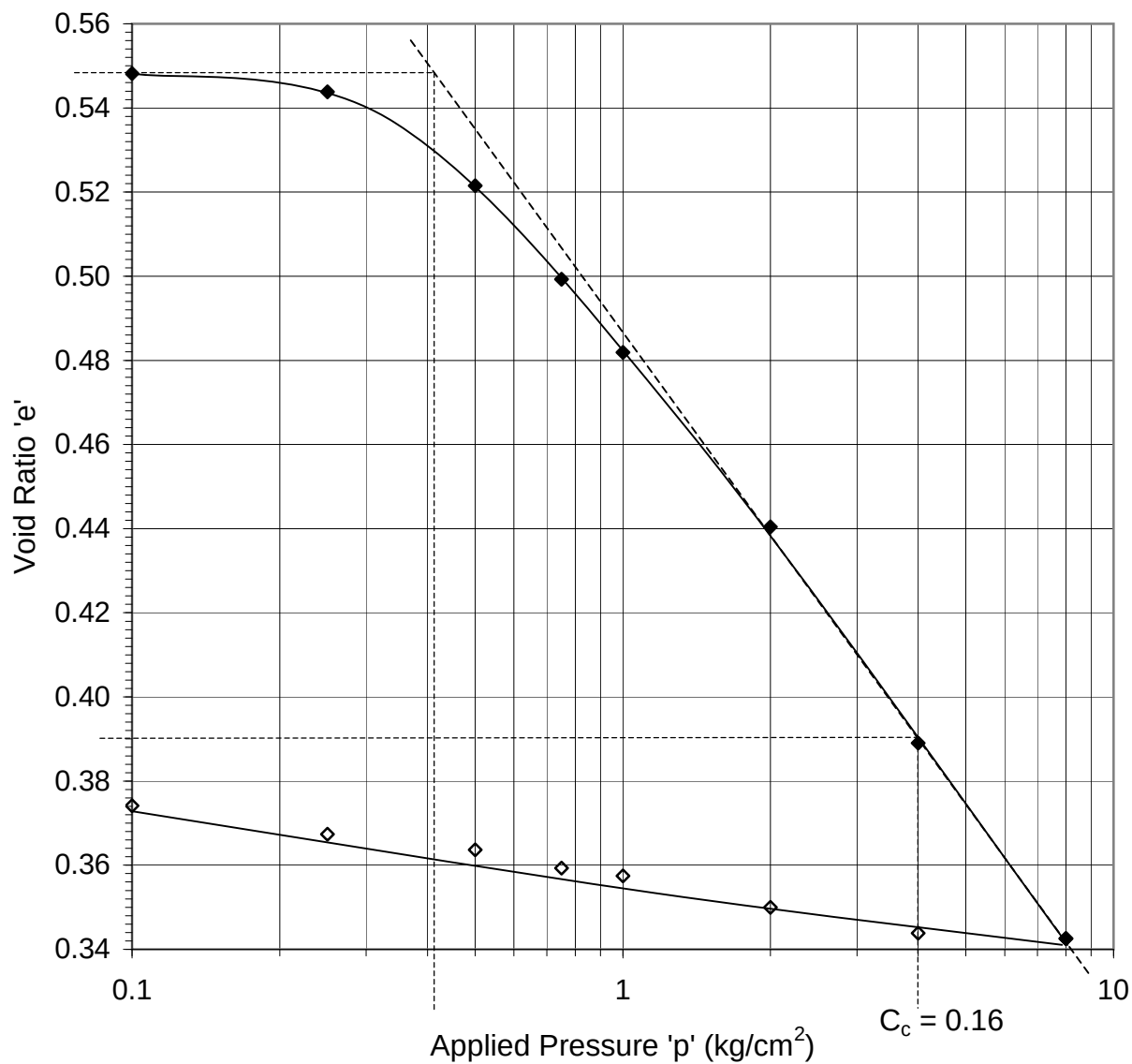


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Soil Sample Details

Borehole - BH50
Depth - 4m
Soil Type - Silty clay

Consolidation Test - 5

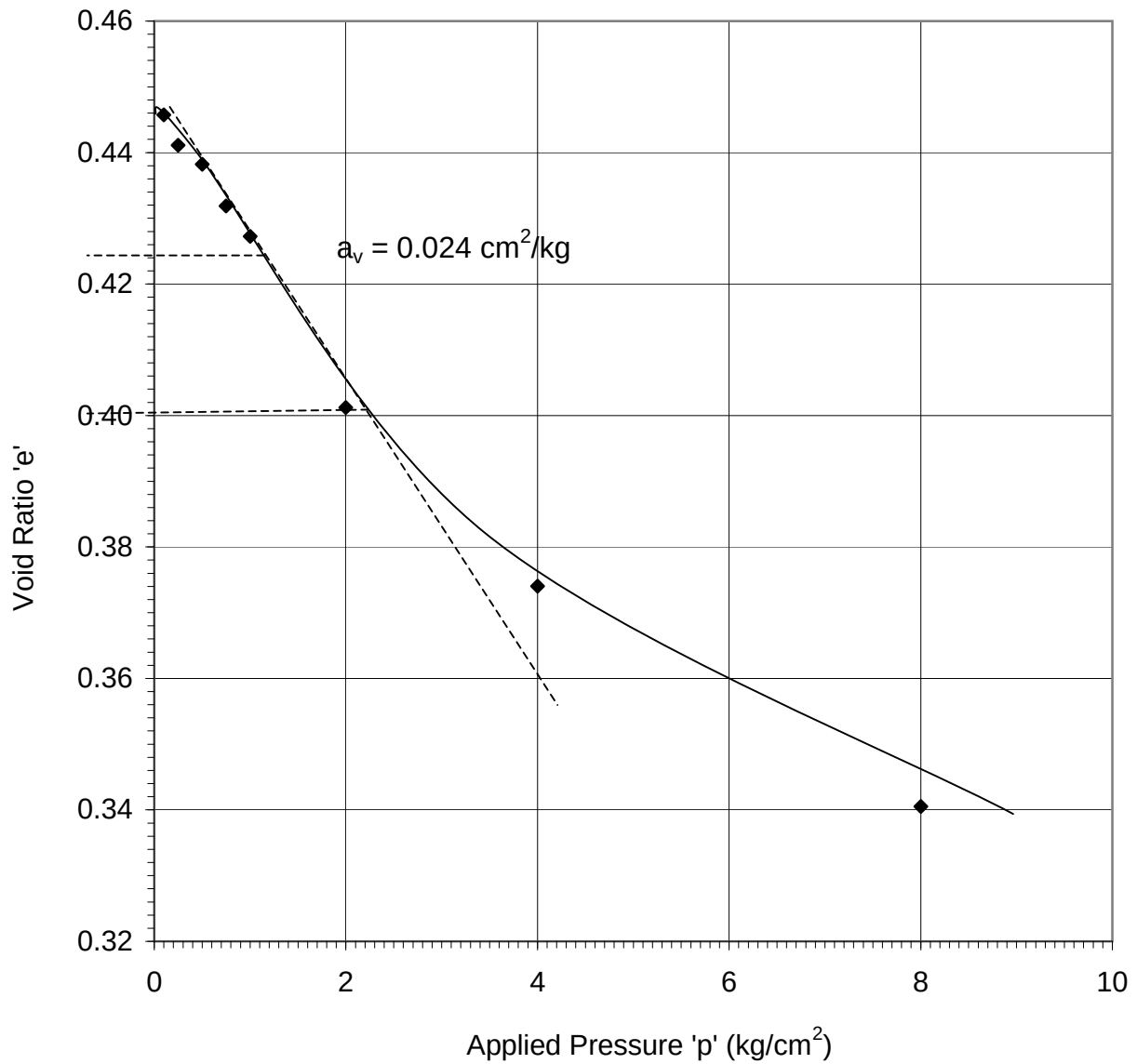


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Soil Sample Details

Borehole - BH16
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 6



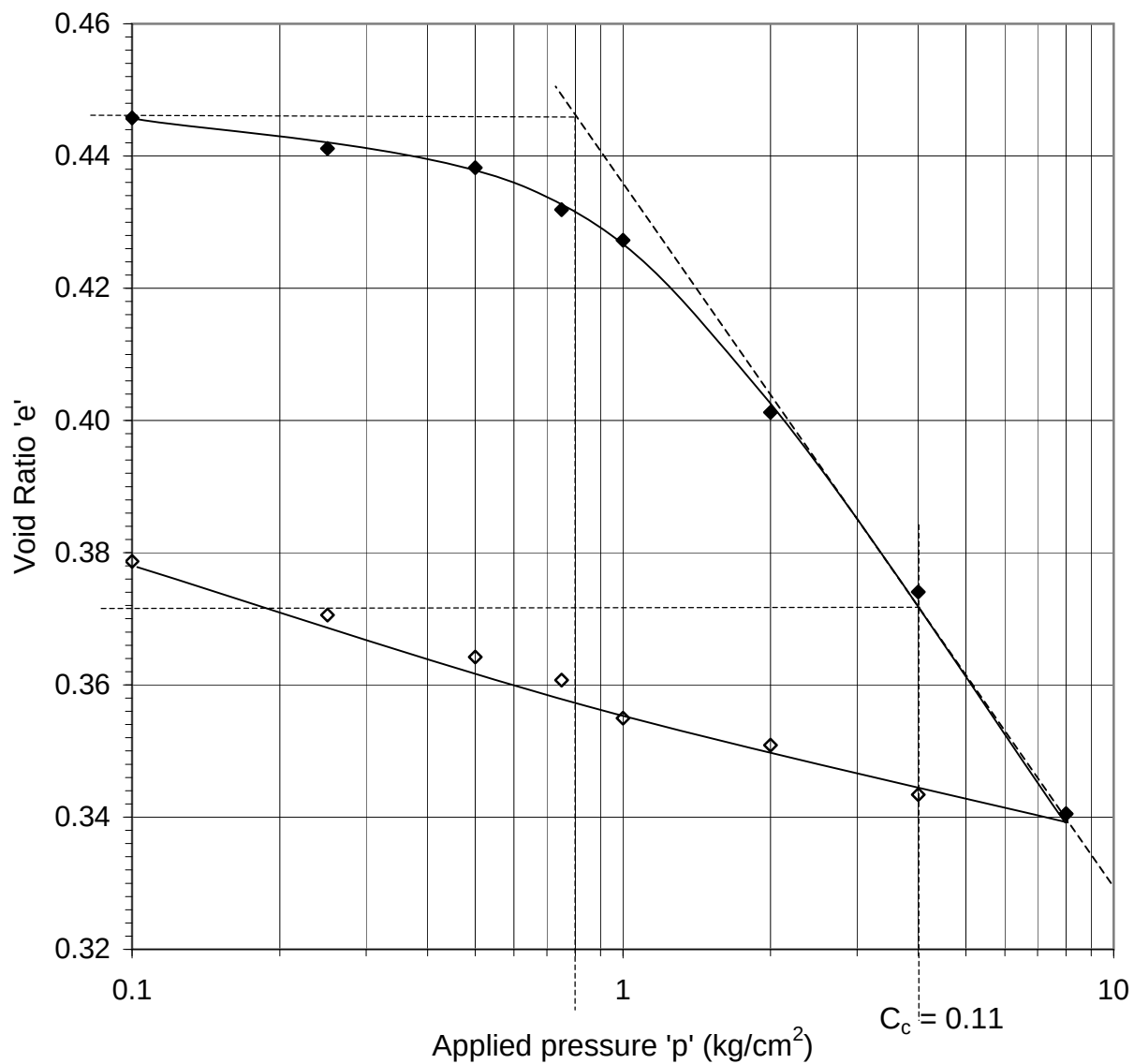
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Soil Sample Details

Borehole - BH16
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 6

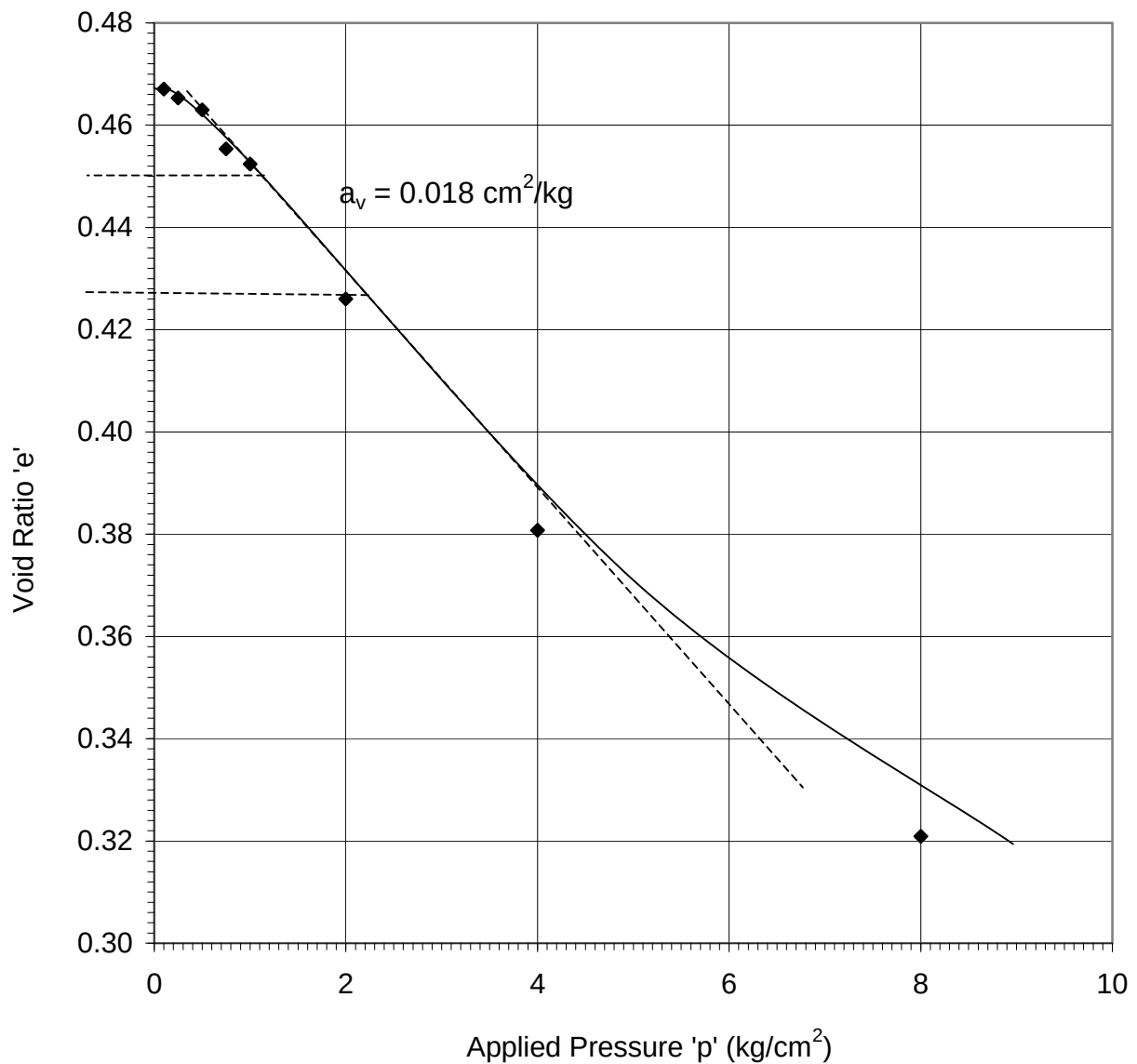


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Soil Sample Details

Borehole - BH51
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 7



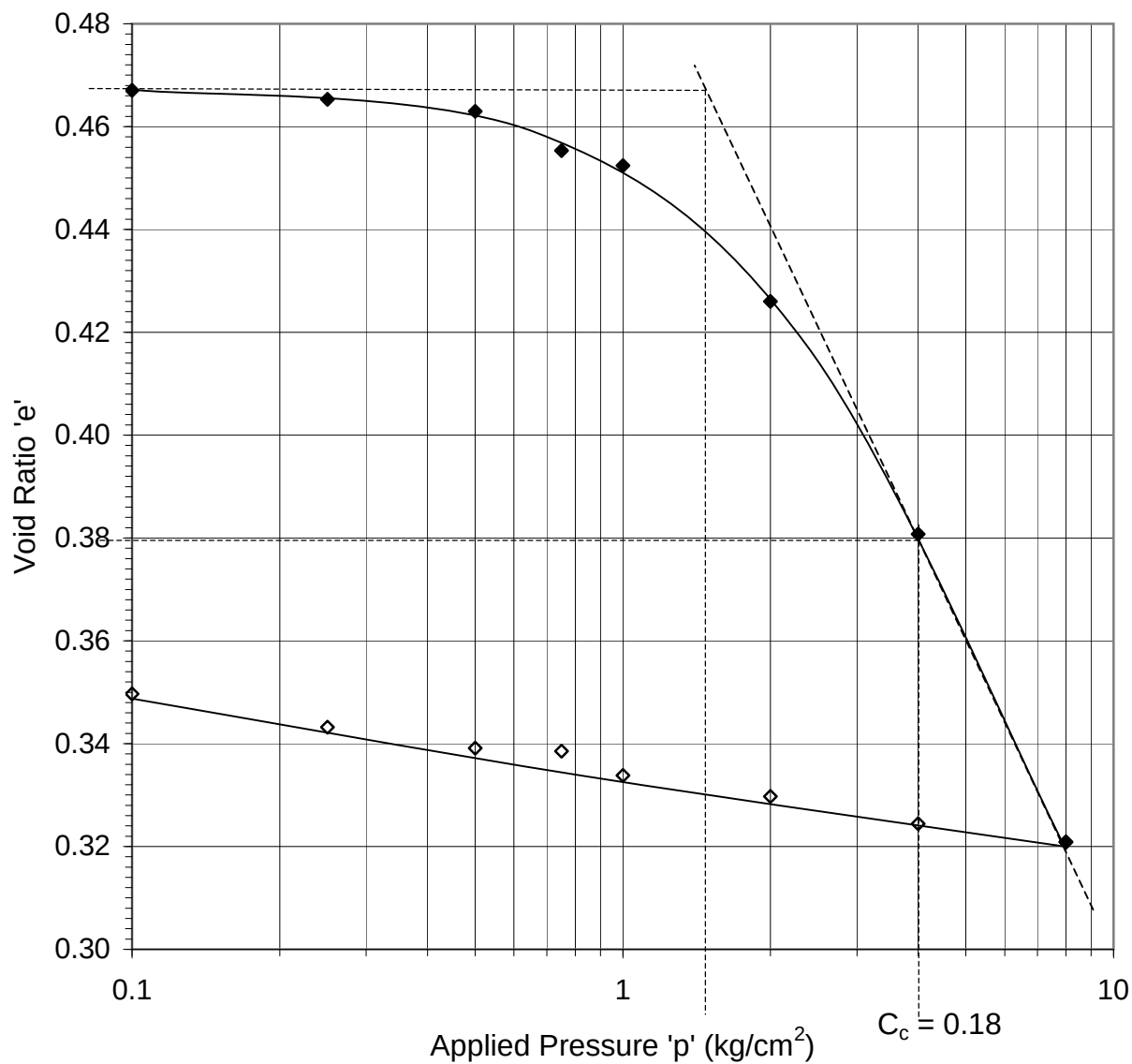
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Soil Sample Details

Borehole - BH51
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 7

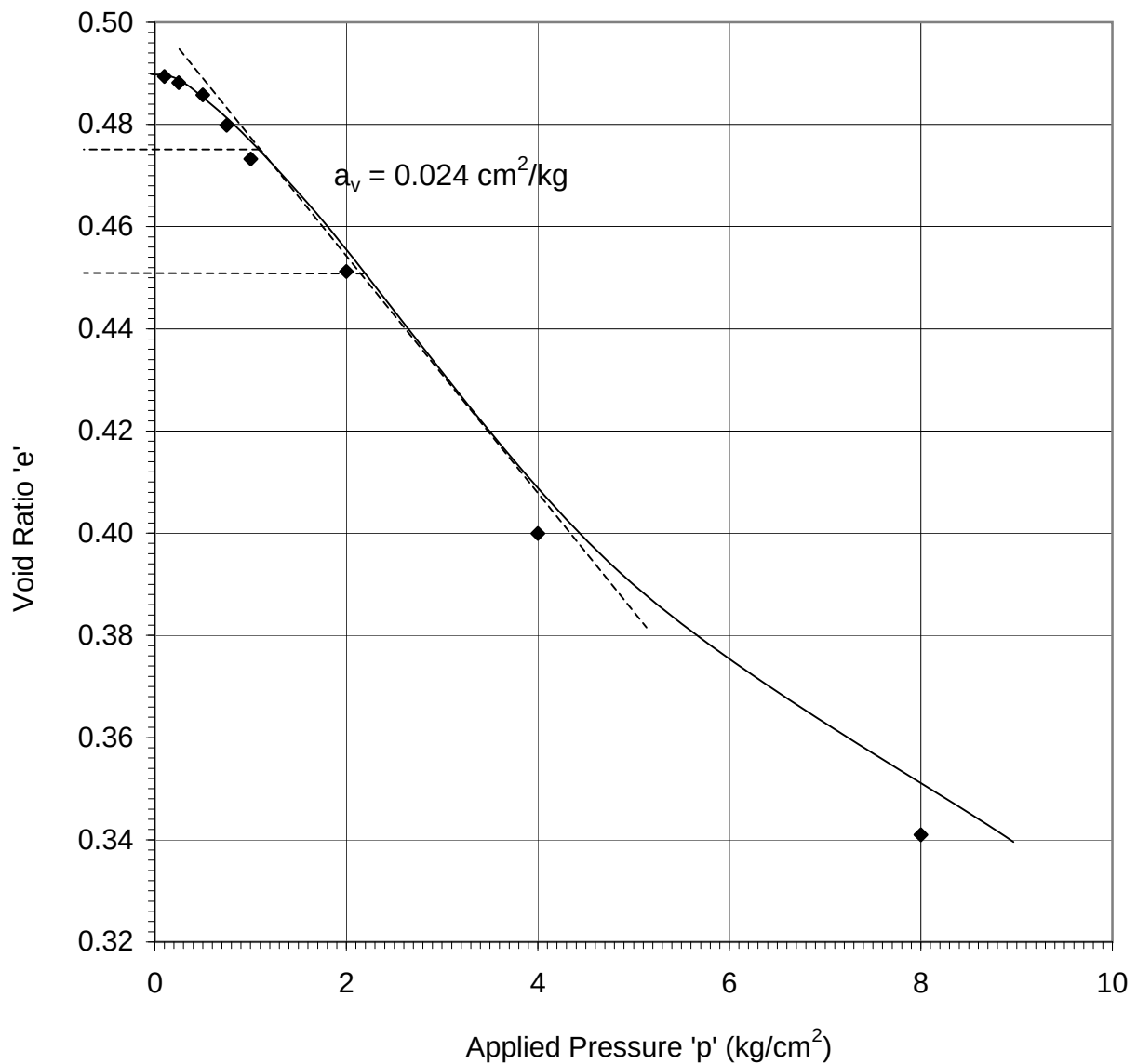


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Soil Sample Details

Borehole - BH27
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 8

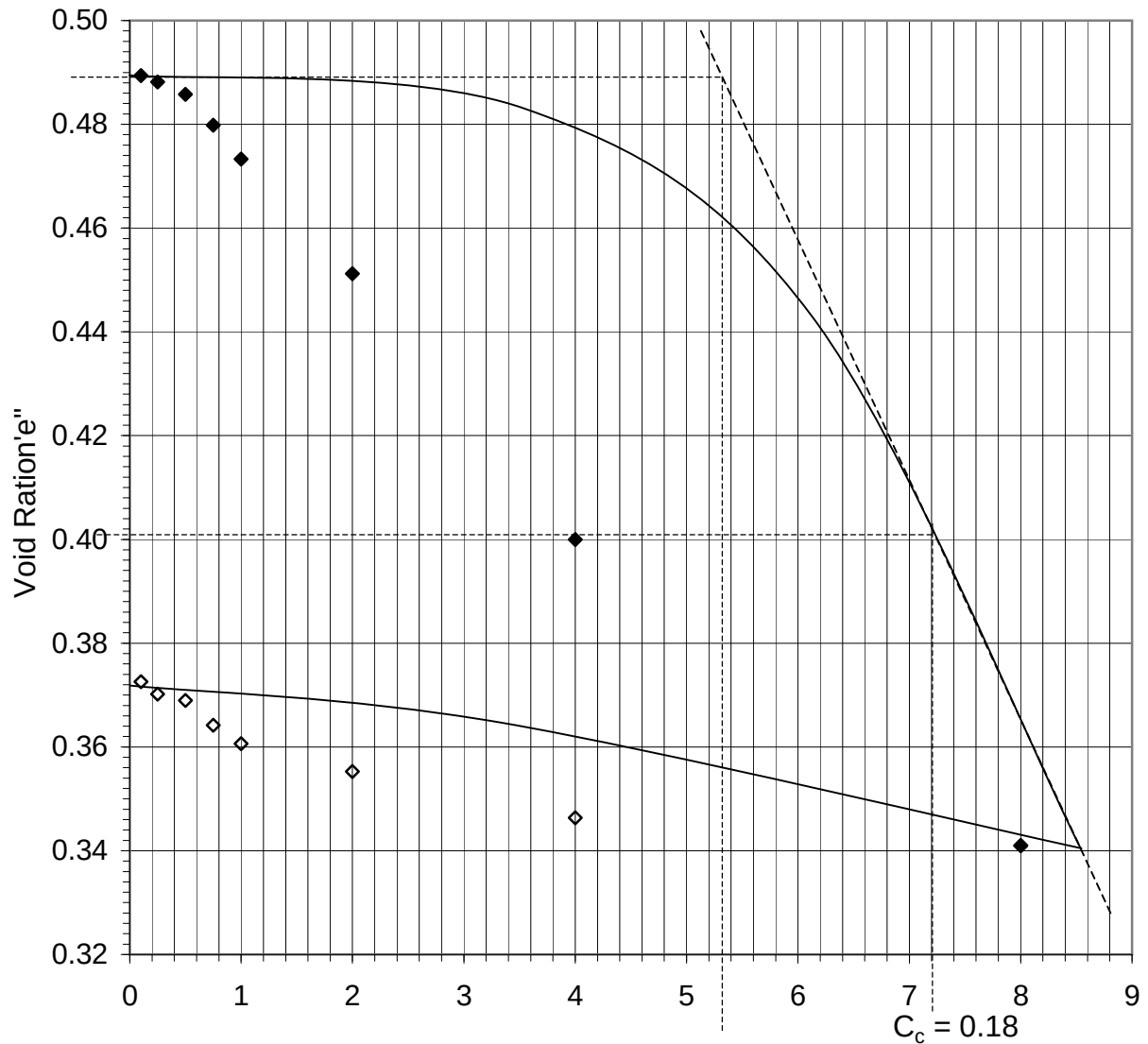


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Applied Pressure 'p' (kg/cm²)

Soil Sample Details

Borehole - BH27
Depth - 4m
Soil Type - Silty clay

Consolidation Test - 8

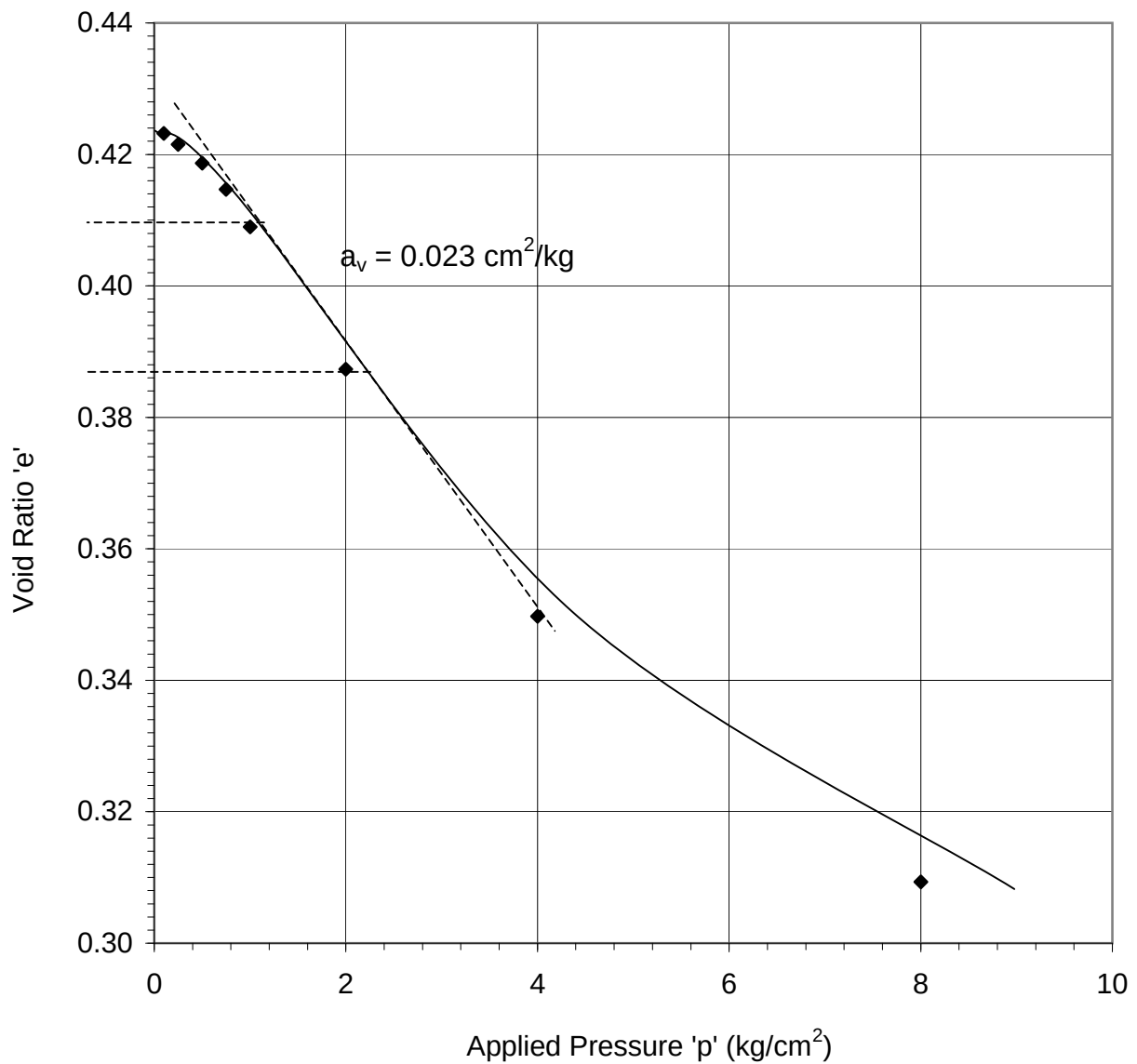


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Soil Sample Details

Borehole - BH41
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 9

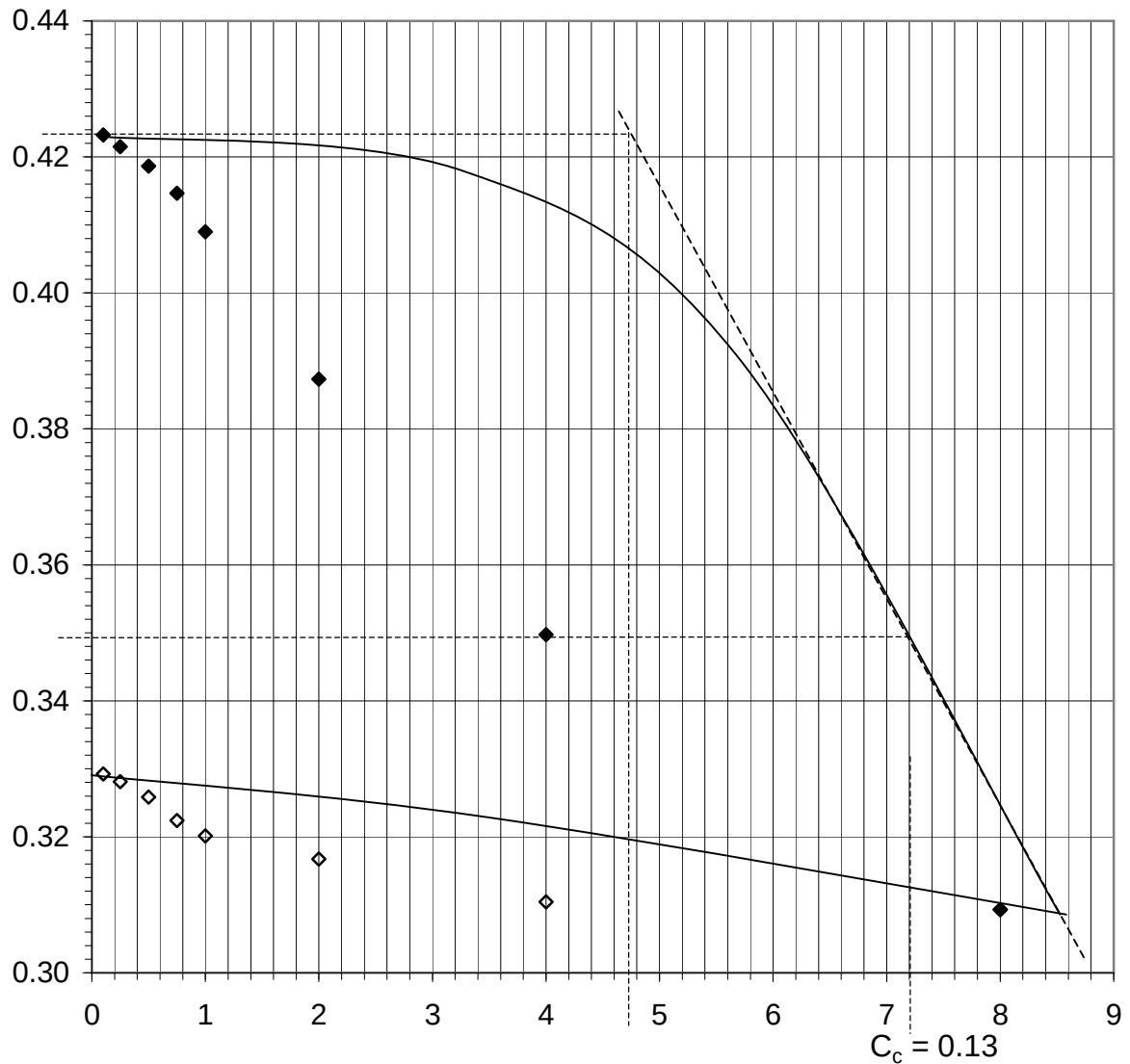


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Soil Sample Details

Borehole - BH41
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 9

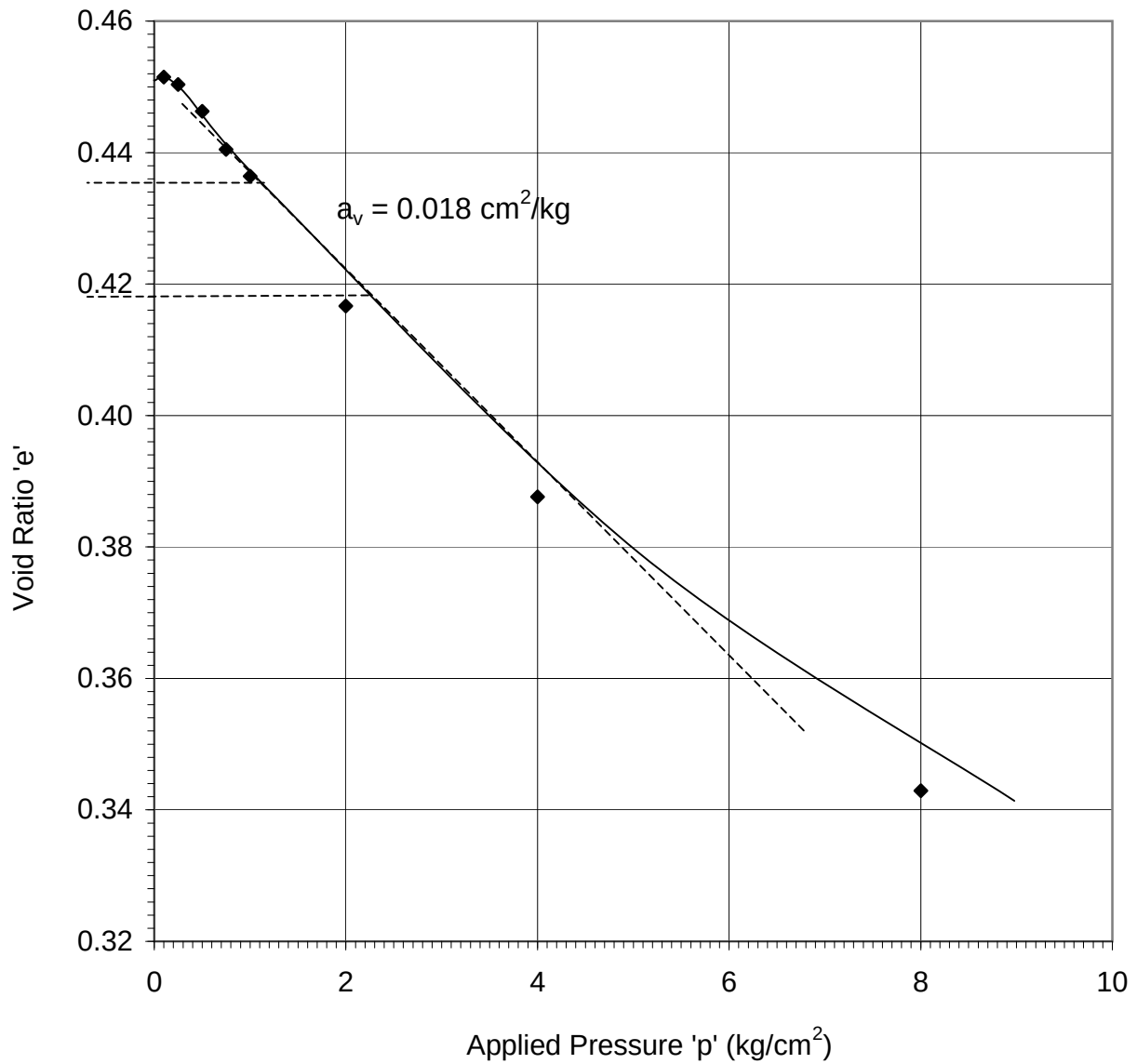


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Soil Sample Details

Borehole - BH42
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 10

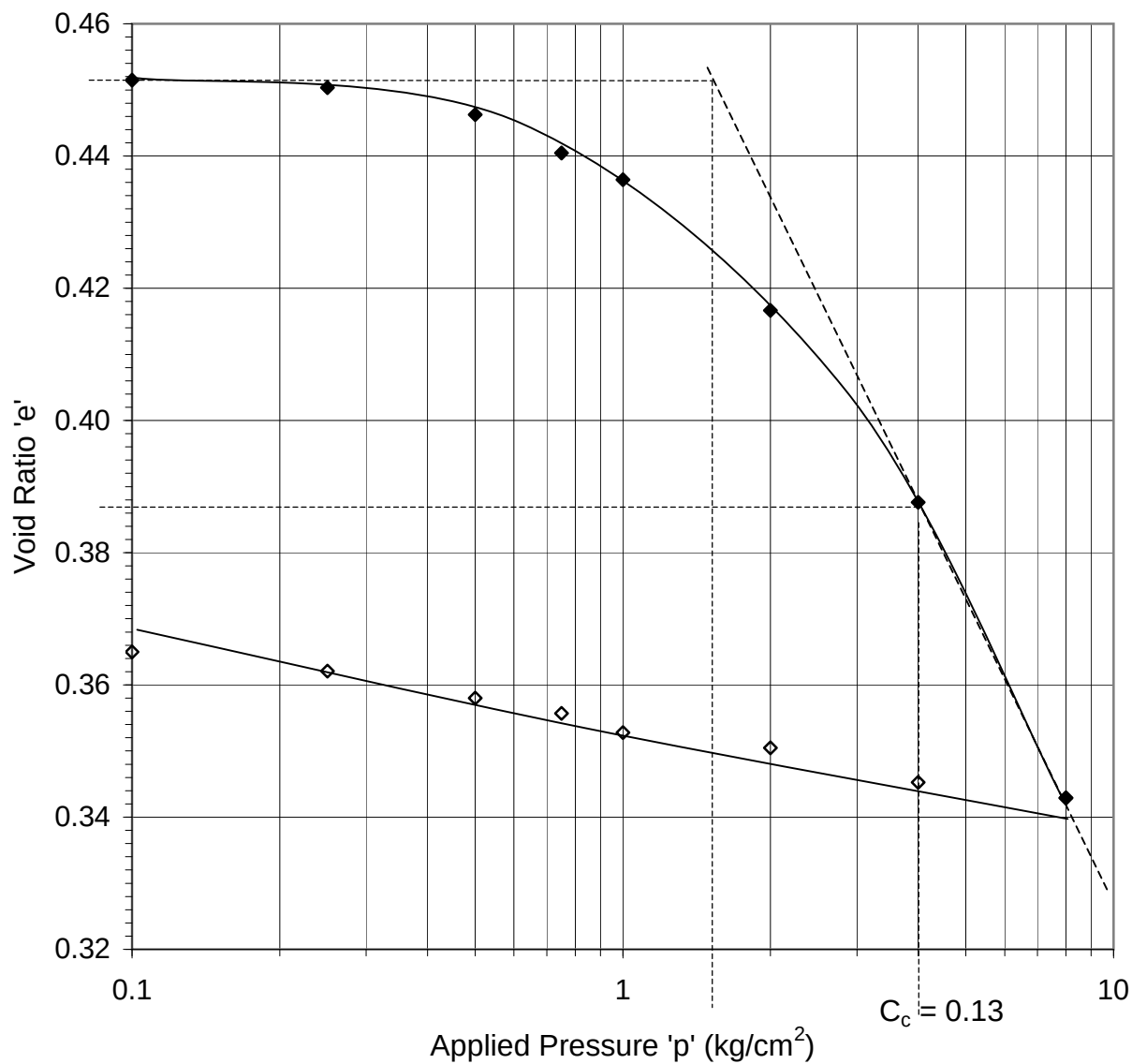


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Soil Sample Details

Borehole - BH42
Depth - 4m
Soil Type - Silty clay

Consolidation Test - 10

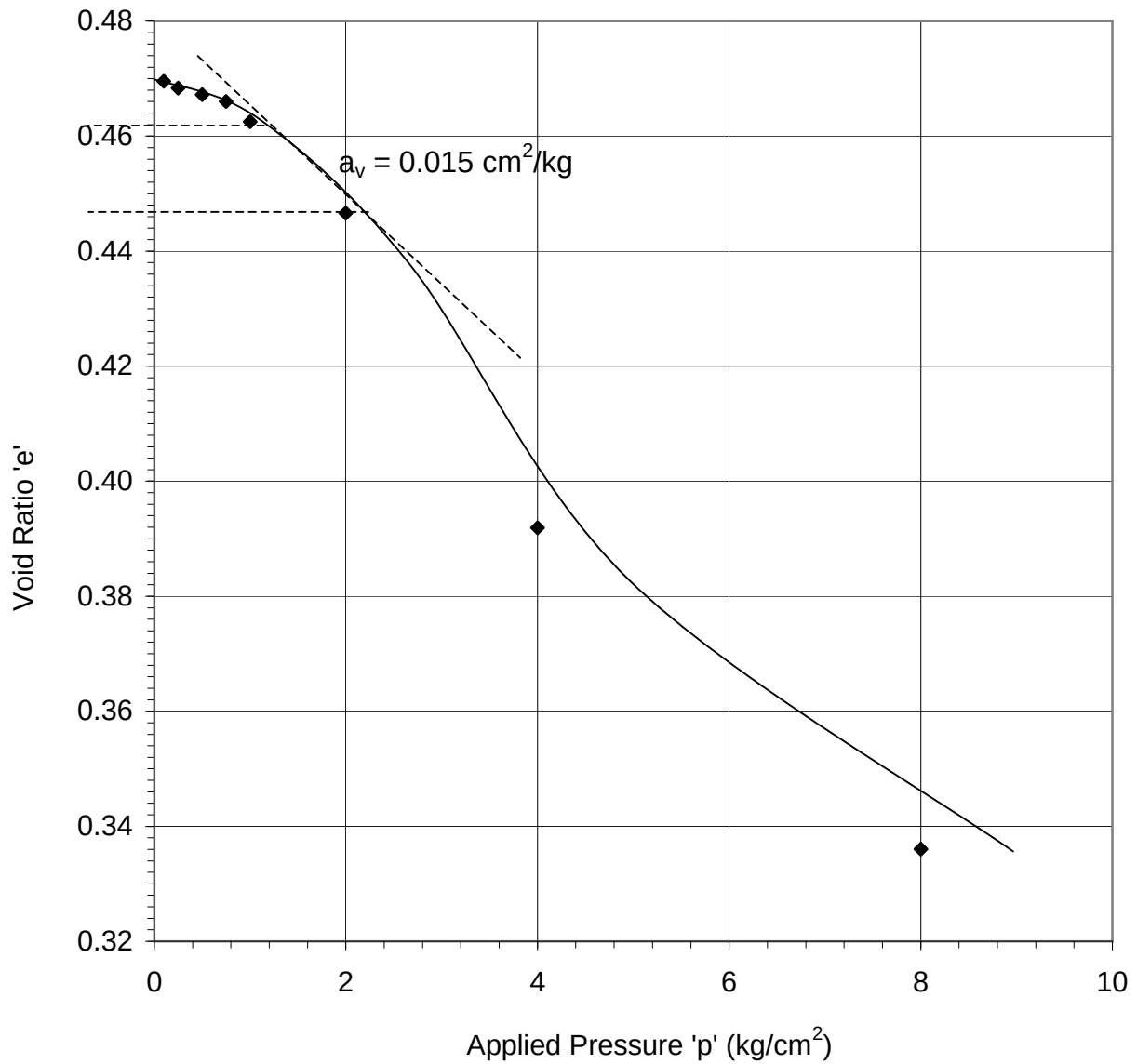


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Soil Sample Details

Borehole - BH45
 Depth - 6.5m
 Soil Type - Silty clay

Consolidation Test - 11

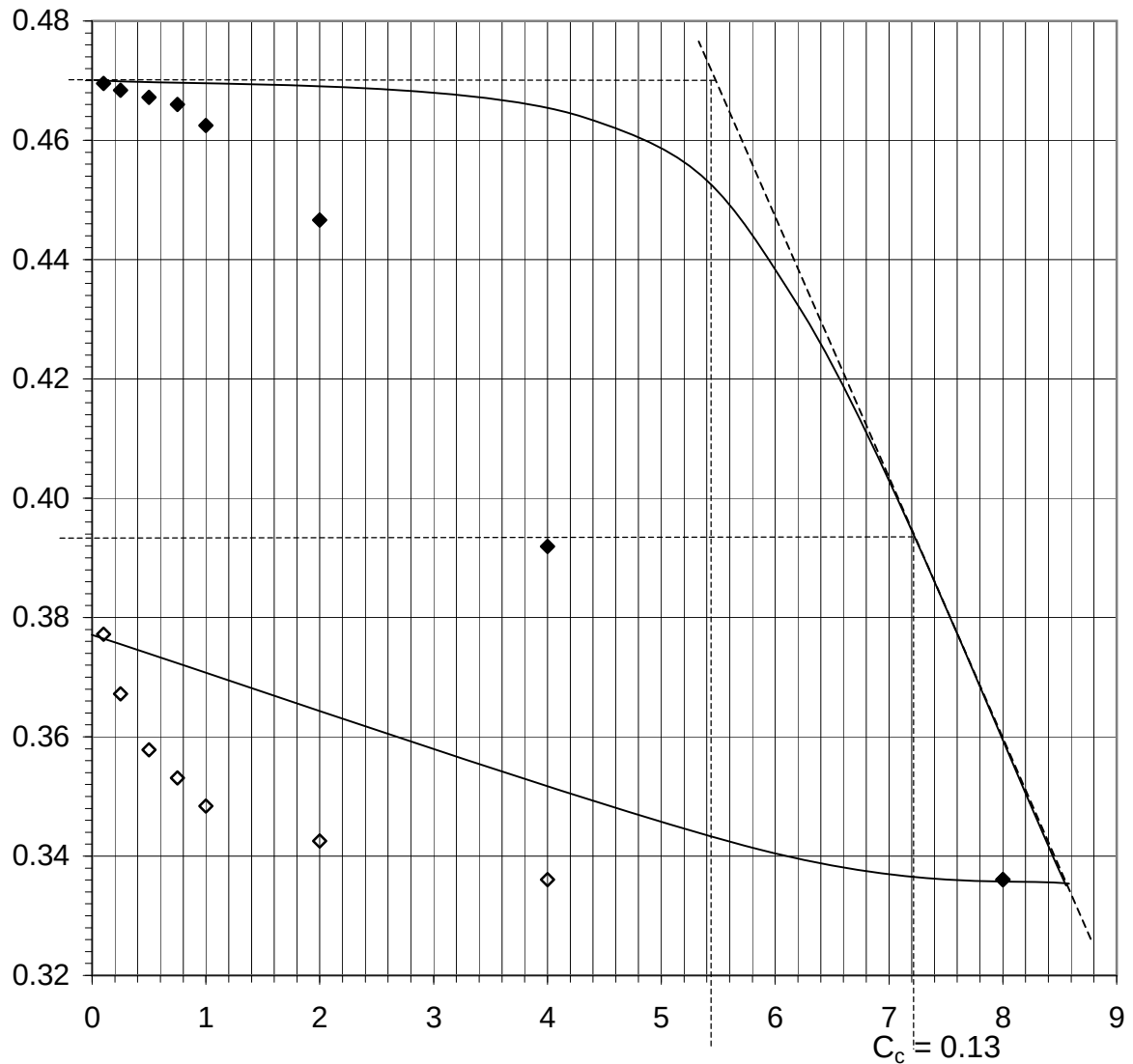


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Soil Sample Details

Borehole - BH45
Depth - 6.5m
Soil Type - Silty clay

Consolidation Test - 11

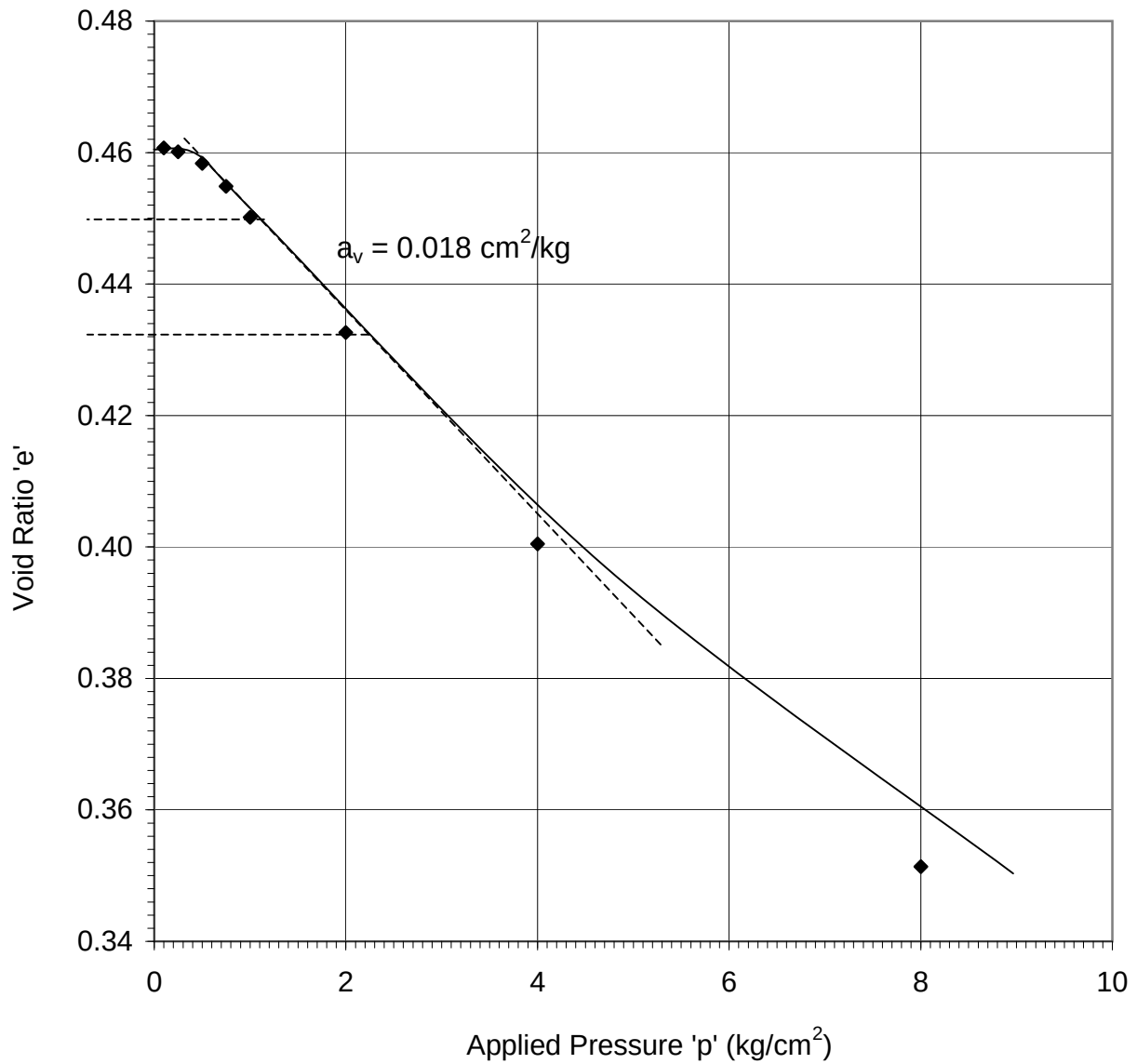


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Soil Sample Details

Borehole - BH32
 Depth - 2m
 Soil Type - Silty clay

Consolidation Test - 12

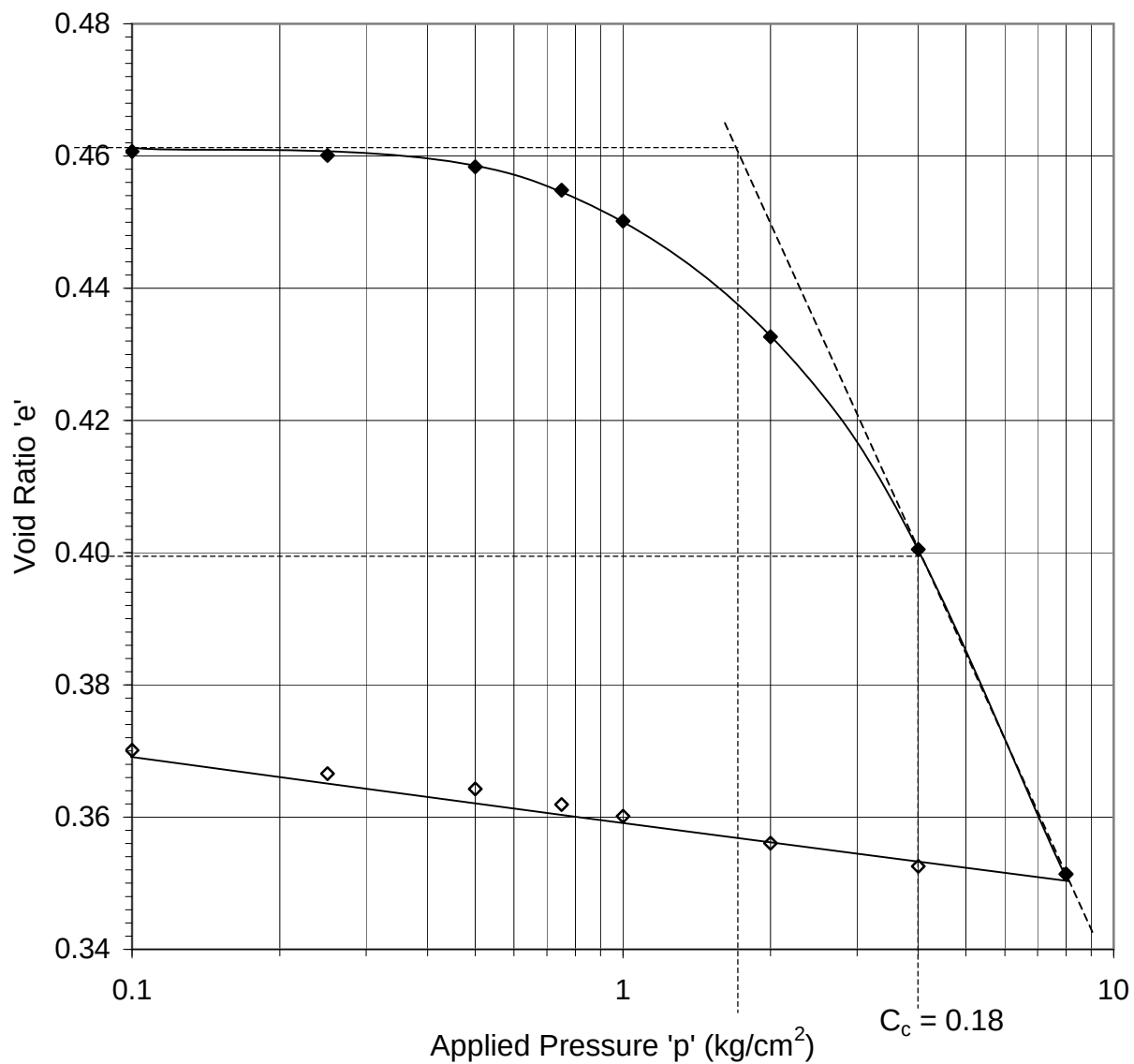


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Soil Sample Details

Borehole - BH32
 Depth - 2m
 Soil Type - Silty clay

Consolidation Test - 12

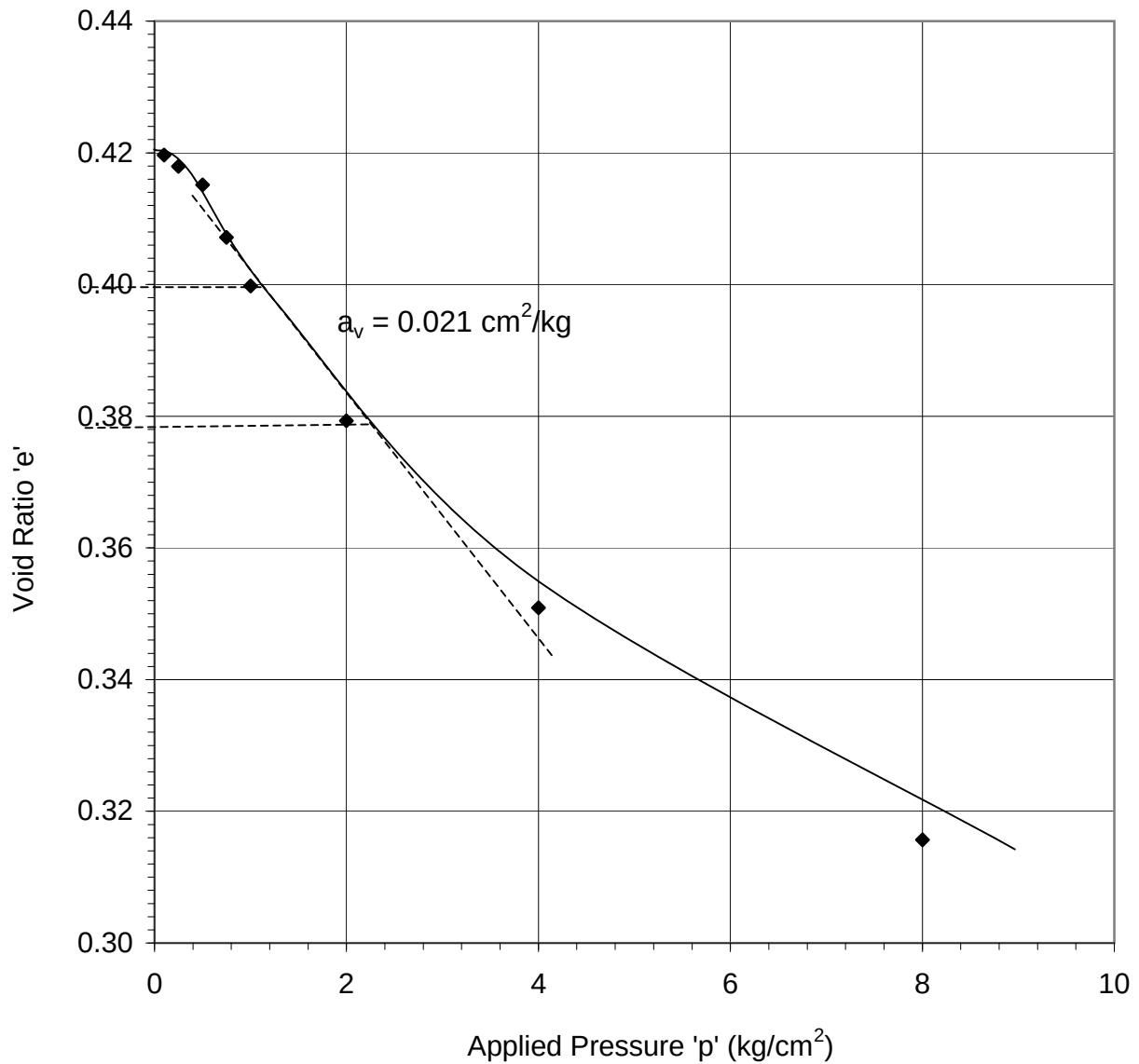


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Soil Sample Details

Borehole - BH33
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 13

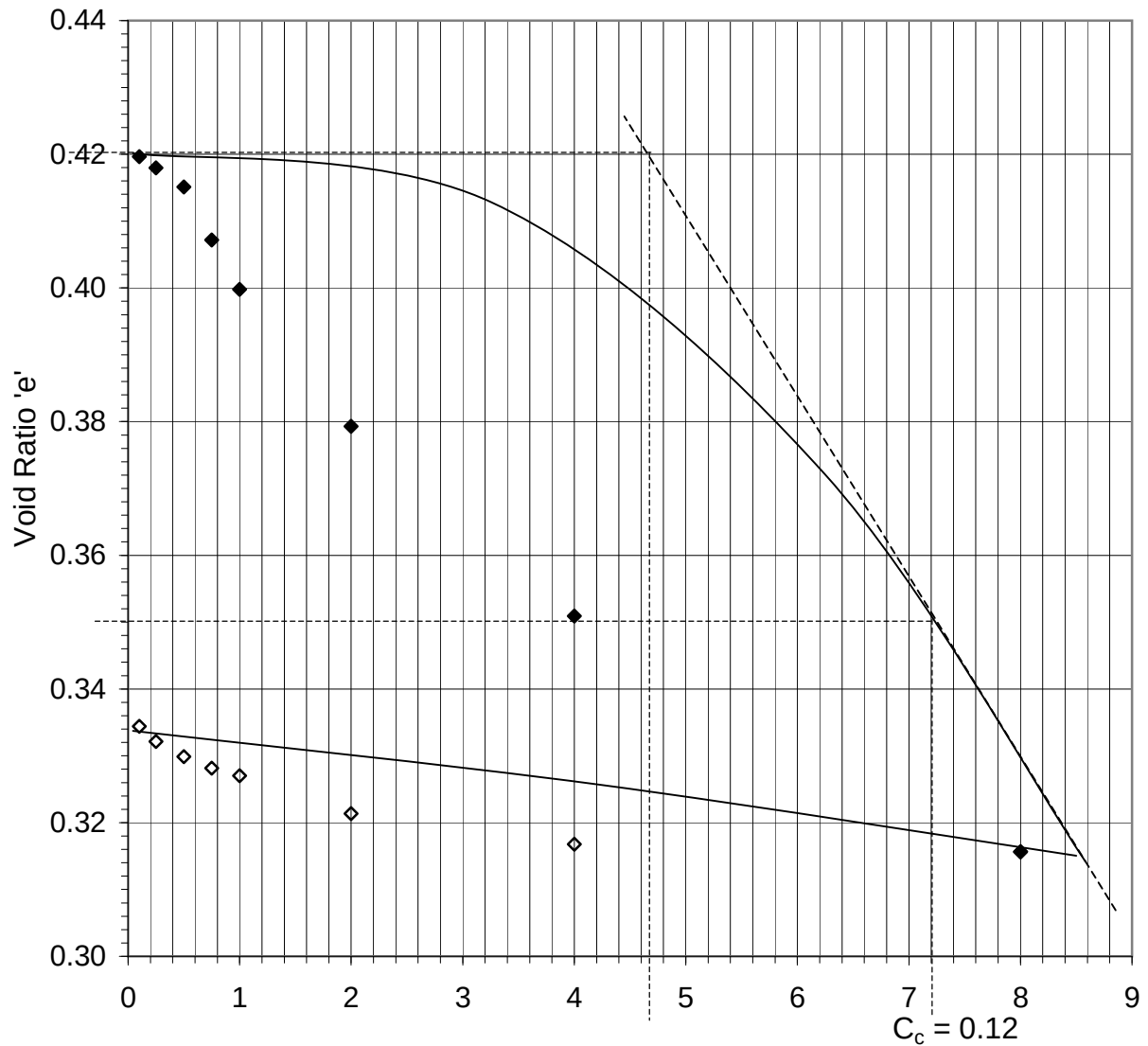


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Applied Pressure 'p' (kg/cm²)

Soil Sample Details

Borehole - BH33
Depth - 4m
Soil Type - Silty clay

Consolidation Test - 13

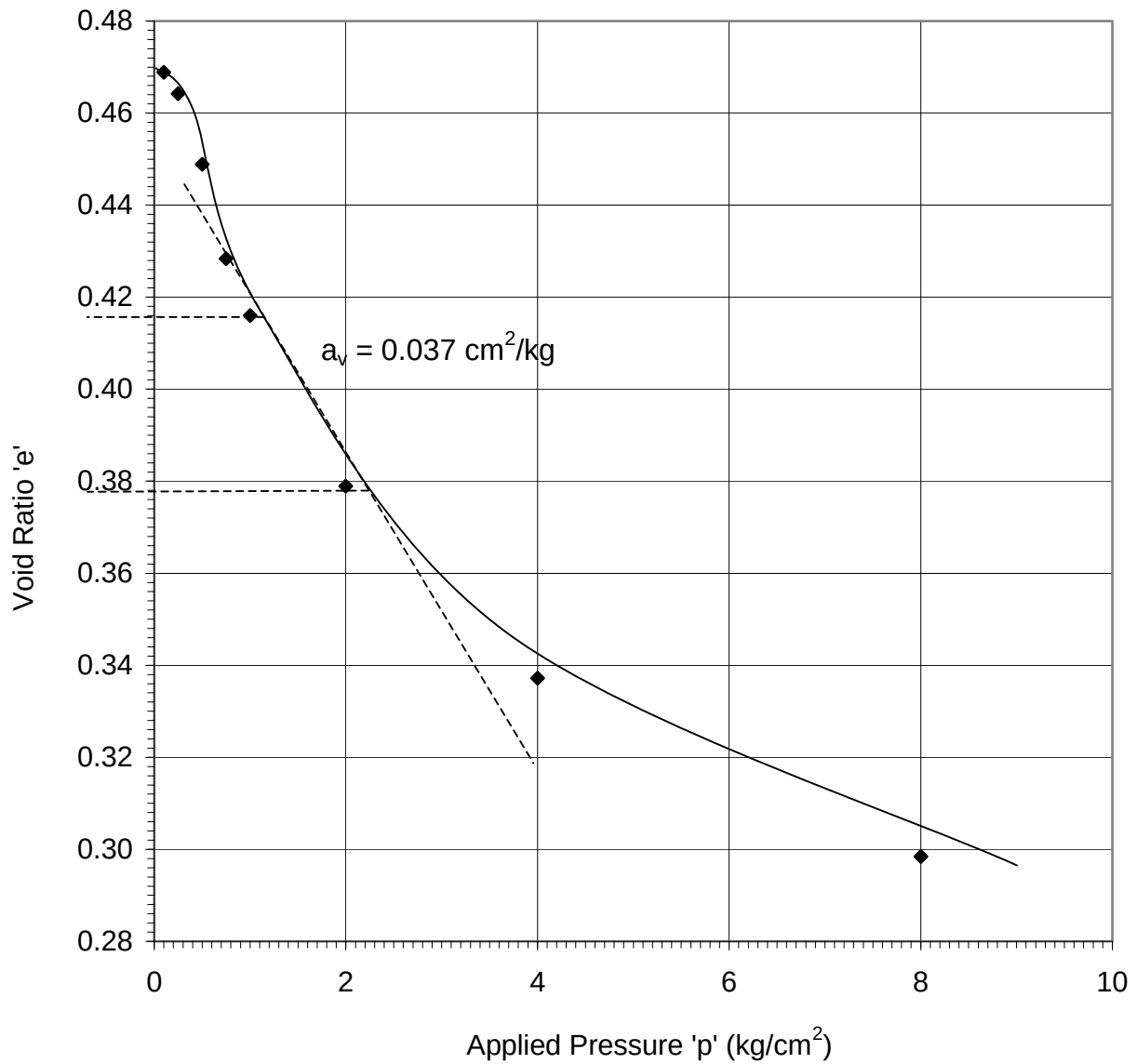


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Soil Sample Details

Borehole - BH40
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 14

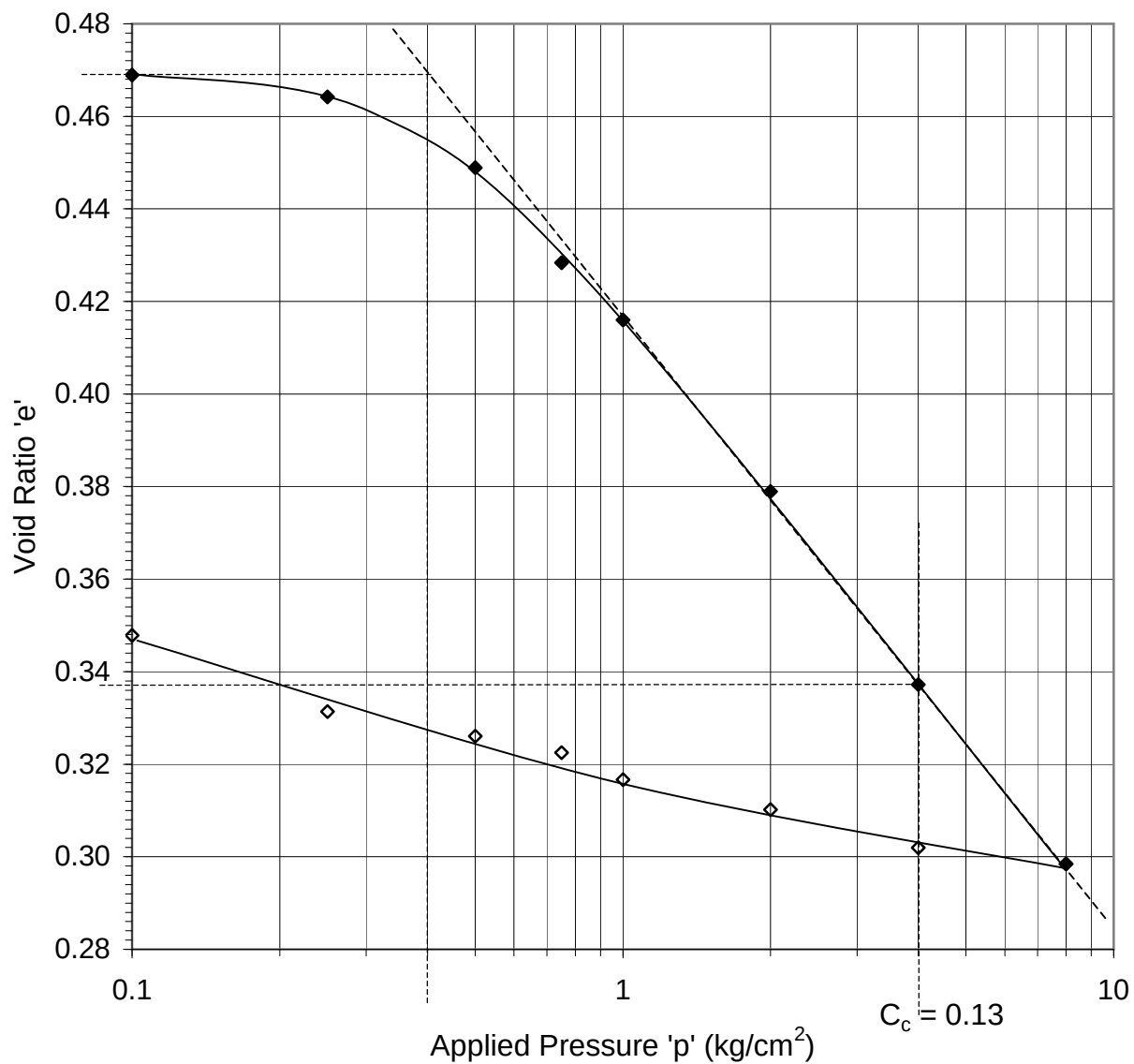


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Soil Sample Details

Borehole - BH40
 Depth - 4m
 Soil Type - Silty clay

Consolidation Test - 14



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PHOTOGRAPH SHOWING WORK UNDER PROGRESS



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PHOTOGRAPH SHOWING CORE PIECES IN CORE BOX



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