REPORT ON GEOTECHNICAL INVESTIGATION FOR PROPOSED PRABHU KUNJ COMMERCIAL (2B+LG+G+7) BUILDING FOR Mr. VIRENDRA BHAGAT, BANK MORE, DHANBAD, JHARKHAND.

JULY' 2021

GEOTECHNICAL CONSULTANT

HOME CONCEPT

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Report on Geotechnical Investigation for
Proposed Prabhu Kunj Commercial (2B+LG+G+7) Building
For Mr. Virendra Bhagat, Bank More,
Dhanbad, Jharkhand.

✍ Introduction

I t has been proposed to construct Prabhu Kunj Commercial (2B+LG+G+7) Building for Mr. Virendra Bhagat, Bank More, Dhanbad, Jharkhand. For accessing ground condition, sub-soil stratification, load carrying capacity of the sub-soil etc., a detailed geotechnical investigation (soil investigation) for the site was needed and M/s Home Concept, Ranchi was appointed as geotechnical Agency to carry out the geotechnical investigation.

The scope of the work consists of the following:

a. No. of bore holes 5.

b. To and fro Transportation of man, machines, materials and samples

c. Making bore holes with hand auger in hard/soft soil up to a **depth of _5 m_ from existing ground level or refusal whichever occurs earlier.**

d. Carrying out Standard Penetration Tests at different depths and Collection of representative samples from different soil strata so as to enable fair assessment of soil profile and engineering properties of sub-soil at the bore hole locations.

e. Carrying out Laboratory testing of soil samples collected as above.

f. Recommending the suitability or otherwise of the sub soil to carry loads of medium pressure intensity.

g. Recommendation of Allowable bearing capacity of the soil.

h. Recommending suitable foundation system for medium pressure intensity structures.

📖 Description of the Site

T he site is almost a flat one. The bore-hole locations have been indicated in Sketch No HC/AG/VB/DNB/21/02-01. The Sub-soil consists of TWO (4) major layers up to the explored depth.

The first layer is consisting of Filling.

The second layer is consisting of Brown sandy silty clay.

The third layer is consisting of Brown clayey silty sand with/ without gravels.

The forth layer is consisting of Brown partially clay stone/ silt stone (slaty) and the foundation will rest in (third & forth) both layer. Undisturbed and Disturbed samples were collected from this layer. The Test results have been Tabulated as "Summary of Laboratory Test Results" and furnished in this report. The foundation Model HC/AG/VB/DNB/21/02-03 depicts the considerations in arriving at the Allowable Bearing Capacity considering this layer as the foundation medium.

In view of the importance of the buildings, as well the usual uncertainty of nature of deposition, it was decided to be conservative in predicting the Allowable Bearing capacity of the foundation medium without sacrificing much of the economy.

The GWT was struck during exploration at all bore locations as indicated in the corresponding Bore Logs.

📖 **Field investigation**

The location of boreholes is shown in Sketch HC/AG/VB/DNB/21/02-01. Total 5 Nos. of bore holes, were sunk in the site. The boreholes were up to 5.20 m.

Boring

The boring was carried out using shell and auger method. Casing was used up to a depth of 1.5 metres to protect the sides of boreholes against collapse. The boring was conducted as per the guidelines and provisions of IS: 1892. Standard Penetration Tests were conducted in all the boreholes and all the strata encountered in a well-planned manner. Undisturbed soil samples were collected from different boreholes as well from different strata. Disturbed samples were also collected from split spoon at all the test depth and test location of Standard Penetration Test and from different typical strata.

1. Sampling

I. Undisturbed Sampling

Undisturbed soil samples were collected as per guidelines of IS: 1892 Code of Practice for site investigation for foundation. The sampling system used was an assembly of a sampling tube of 100 mm. diameter and 450mm. long connected with a jarring link. The specification of the tube is as per the provision of IS: 2132, Code of practice for thin-walled sampling of soils.

After the samples are collected within the tubes, the tubes are taken out of the boreholes. Both ends of the tubes are sealed with wax, properly labeled, capped and thus made ready for onward transmission to the laboratory.

II. Disturbed samples

Disturbed samples were collected at very close frequencies, at Standard Penetration Test depth from the SPT split spoon sampler. These samples were collected in polythene bags, properly labeled and thus made ready for onward transmission to the laboratory.

2. Standard Penetration Test

Standard Penetration Test was conducted as per the guidelines and provisions of IS: 2131, Method for standard penetration test for soil, in all the boreholes at regular intervals or at change of strata with the SPT sampler. During the test, the sampler was driven by dropping a weight of 65 Kg. through a height of 750 mm. The sampler was driven through a depth of 450 mm or up to refusal. The number of blows for every 75mm. of penetration was recorded. The first 150 mm. was taken as seating drive; the number of blows for subsequent 300 mm. was used to determine the **SPT-N value.** The observed **N –values** are indicated in the corresponding bore logs.

3. Recording of Ground Water Table

The GWT was struck during exploration at all bore locations as indicated in the corresponding Bore Logs.

Laboratory Testing

Laboratory tests were conducted on the soil samples collected from all the FIVE (5) boreholes. The tests were conducted as per provisions and guidelines of Bureau of Indian Standard laid down in their different codes. The following tests were conducted for ascertaining the engineering and physical properties of the sub-soil:

☞ Grain Size Analysis (Both Sieve and hydrometer)

☞ Atterberg's Limits and Shrinkage Limit

☞ Moisture Content

☞ Bulk Density

☞ Tri-axial Tests

☞ Unconfined Compression Tests

☞ Consolidation Tests

📖 Description of Sub- Soil

The location of bore holes are shown in sketch no HC/AG/VB/DNB/21/02-01. The bore logs indicate the sub-soil condition encountered during field investigation with due consideration of the laboratory tests on disturbed & undisturbed soil samples as well as soil samples obtained from split spoon of the **Standard Penetration Test (SPT)** apparatus. The SPT values **(N Values)** are indicated in the corresponding bore logs.

📖 Sub- Soil Profile

Sketch HC/AG/VB/DNB/21/02-02 shows the sub- soil profile across the boreholes. The level indicated as +0.000 M corresponds to the existing Ground Level at BH locations. Broadly the sub- soil profile of the site is in FOUR (4) layers up to the depth where the exploration was terminated. The layers have been described earlier under description of the site.

Recommendation of foundation system:

It is found from foundation models Sketch No HC/AG/VB/DNB/21/02-03 the layer is having moderate engineering properties to rest foundation of medium pressure intensity.

The bearing capacity calculation along with recommendations for net safe bearing pressures for different sizes and shapes of footings resting at a founding level of 7.5 m are indicated in tabular form in this report. As per IS 1904-1978, Clause 9.3, all foundations are to be extended to a minimum depth of 500mm below Natural Ground Level.

On the basis of the annexed calculations, it is being recommended to consider **the following :**

Net Allowable Bearing Capacity (q_{net}) in tonne/sqm			
Type of foundation	Foundation Depth from ERL in m	Permissible settlement considered (in mm)	(q_{net}) in tonne/sqm
Isolated Square	7.5	40	25
Isolated rectangular	7.5	40	25
Raft	7.5	75	25

Since the boreholes could not be taken below a depth 5.2 m and foundation of structure are proposed to rested on at 7.5 m depth, the nature of soil at the proposed founding depth could not be explored. In the present report we have considered the founding layer will be stronger than layer 3 & 4, layer 4 is a weathered rock layer is stronger than layer 3. In view uncertainty, we have conservatively considered layer 3 as foundation layer.

It is recommended that after excavation the geotechnical consultant is asked to visit the site and accordingly subsequent advice on SBC to considered for foundation design is taken.

As per Bowles, Modulus of subgrade reaction

K= 40x SBC x Factor of Safety x10 Kn/m^2/m

K=40x25x2.5x10 Kn/m^2/m

K=25000 Kn/m^2/m

Where SBC to be considered is for 25mm settlement in Tonne/sqm. In the present case, the same is 25t/m^2

BORE HOLE LOCATION PLAN

SITE: BANK MORE, DHANBAD, JHARKHAND.
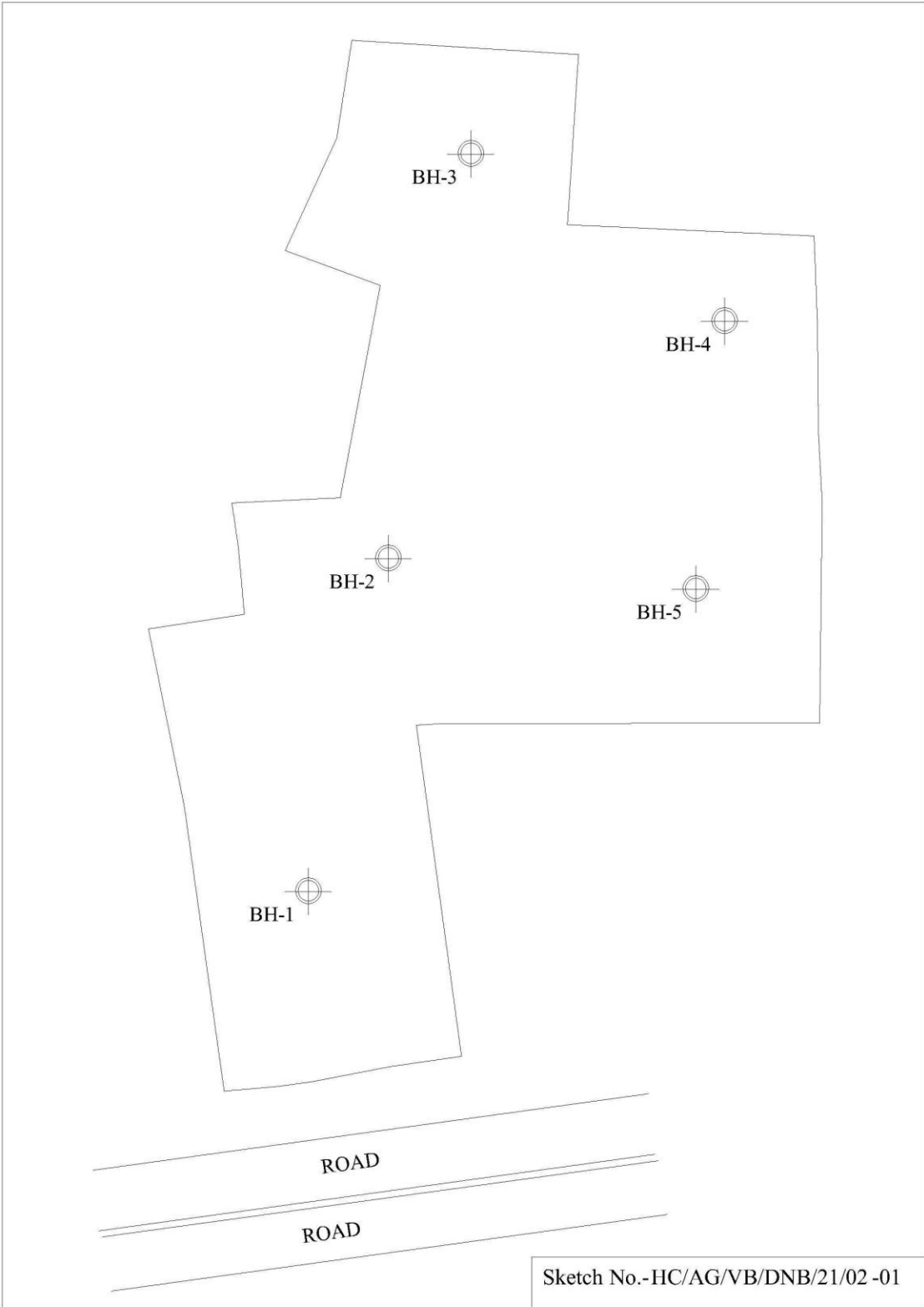
BH-3

BH-4

BH-2

BH-5

BH-1

ROAD

ROAD

Sketch No.-HC/AG/VB/DNB/21/02 -01

PROPOSED PRABHU KUNJ COMMERCIAL (2B+LG+G+7) BUILDING FOR Mr. VIRENDRA BHAGAT, BANK MORE, DHANBAD, JHARKHAND.

BORE LOG

SITE: BANK MORE, DHANBAD,

JHARKHAND.

BORE LOG SHEET	HOME CONCEPT, RANCHI					Bore Hole No.: 1 (Sheet 1)
Project: PROPOSED PRABHU KUNJ COMMERCIAL (2B+LG+G+7) BUILDING FOR Mr. VIRENDRA BHAGAT, BANK MORE, DHANBAD, JHARKHAND.						Job No.: HC/AG/VB/DNB/21/02
Co-ordinates: Shown in drawing	E.G.L.:		Unit:			Bore Hole Dia. : 150 MM.
Type of Boring : Auger	FIELDTEST	NOS.	SAMPLES	NOS.	SAMPLES NOS.	Commenced on : 05.07.2021
Depth of Boring 4.15M	SPT	3	UDS	1	WS	Completed on : 05.07.2021
Type of Drilling	DCPT		DS	4	RCS	Water Struck At : 2.50 M
Depth of Drilling	VST		SCPT			Standing Water Table : 2.50 M

DESCRIPTION	SYMBOL	DEPTH	N-VALUE	SAMPLE NO.	DEPTH
Brown clayey silty sand with/ without gravels.				DS1	0.50 M
		01	N = 05	SPT1 (DS2)	1.00 M
		02		UDS	2.00 M
		03	N = 45	SPT2 (DS3)	3.00 M
		04	N = Ref (150 mm for 63 blows)	SPT3 (DS4)	4.00 M
Termination depth 4.15m		05			
		06			
		07			
		08			
		09			
		10			

SPT – Standard Penetration Test	VST– Vane Shear Test	DS – Disturbed Sample	WS – Water Sample
DCPT – Dynamic Cone Penetration Test.	UDS – Undisturbed Sample	SCPT–Static Cone Penetration Test.	RCS – Rock Core Sample

BORE LOG SHEET		HOME CONCEPT, RANCHI					Bore Hole No.: **2** (Sheet 1)	
Project: PROPOSED PRABHU KUNJ COMMERCIAL (2B+LG+G+7) BUILDING FOR Mr. VIRENDRA BHAGAT, BANK MORE, DHANBAD, JHARKHAND.							Job No.: HC/AG/VB/DNB/21/02	
Co-ordinates: Shown in drawing		E.G.L.:		Unit:			Bore Hole Dia. : 150 MM.	
Type of Boring :	Auger	FIELDTEST	NOS.	SAMPLES	NOS.	SAMPLES NOS.	Commenced on : 06.07.2021	
Depth of Boring	4.20M	SPT	4	UDS	1	WS	Completed on : 06.07.2021	
Type of Drilling		DCPT		DS	5	RCS	Water Struck At : 3.00 M	
Depth of Drilling		VST		SCPT			Standing Water Table : 3.00 M	

DESCRIPTION	SYMBOL	DEPTH	N–VALUE	SAMPLE	
				NO.	DEPTH
Filling.					
				DS1	0.50 M
Brown clayey silty sand with/ without gravels.		01	N = 23	SPT1 (DS2)	1.00 M
				UDS	1.50 M
		02	N = 46	SPT2 (DS3)	2.00 M
		03	N = 61	SPT3 (DS4)	3.00 M
		04	N = Ref (200 mm for 61 blows)	SPT4 (DS5)	4.00 M
Termination depth 4.20m		05			
		06			
		07			
		08			
		09			
		10			

SPT – Standard Penetration Test	VST– Vane Shear Test	DS – Disturbed Sample	WS – Water Sample
DCPT – Dynamic Cone Penetration Test.	UDS – Undisturbed Sample	SCPT–Static Cone Penetration Test.	RCS – Rock Core Sample

BORE LOG SHEET		HOME CONCEPT, RANCHI					Bore Hole No.: **3** (Sheet 1)	
Project: PROPOSED PRABHU KUNJ COMMERCIAL (2B+LG+G+7) BUILDING FOR Mr. VIRENDRA BHAGAT, BANK MORE, DHANBAD, JHARKHAND.							Job No.: HC/AG/VB/DNB/21/02	
Co-ordinates: Shown in drawing		E.G.L.:		Unit:			Bore Hole Dia. : 150 MM.	
Type of Boring : Auger		FIELDTEST	NOS.	SAMPLES	NOS.	SAMPLES NOS.	Commenced on : 06.07.2021	
Depth of Boring 3.65M		SPT	3	UDS	1	WS	Completed on : 06.07.2021	
Type of Drilling		DCPT		DS	4	RCS	Water Struck At : 2.00 M	
Depth of Drilling		VST		SCPT			Standing Water Table : 2.00 M	

DESCRIPTION	SYMBOL	DEPTH	N-VALUE	SAMPLE	
				NO.	DEPTH
Filling.					
				DS1	0.50 M
Brown sandy silty clay.		01	N = 03	SPT1 (DS2)	1.00 M
		02		UDS	2.00 M
Brown partially clay stone/ silt stone (slaty).		03	N = 65	SPT2 (DS3)	3.00 M
			N = Ref (150 mm for 53 blows)	SPT3 (DS4)	3.50 M
Termination depth 3.65m		04			
		05			
		06			
		07			
		08			
		09			
		10			

SPT – Standard Penetration Test	VST– Vane Shear Test	DS – Disturbed Sample	WS – Water Sample
DCPT – Dynamic Cone Penetration Test.	UDS – Undisturbed Sample	SCPT–Static Cone Penetration Test.	RCS – Rock Core Sample

BORE LOG SHEET	HOME CONCEPT, RANCHI		Bore Hole No.: **4** (Sheet 1)
Project: PROPOSED PRABHU KUNJ COMMERCIAL (2B+LG+G+7) BUILDING FOR Mr. VIRENDRA BHAGAT, BANK MORE, DHANBAD, JHARKHAND.			Job No.: HC/AG/VB/DNB/21/02

Co-ordinates: Shown in drawing	E.G.L.:	Unit:				Bore Hole Dia. : 150 MM.
Type of Boring : Auger	FIELDTEST	NOS.	SAMPLES	NOS.	SAMPLES NOS.	Commenced on : 07.07.2021
Depth of Boring 5.15M	SPT 6		UDS 1		WS	Completed on : 07.07.2021
Type of Drilling	DCPT		DS 7		RCS	Water Struck At : 2.50 M
Depth of Drilling	VST		SCPT			Standing Water Table : 2.50 M

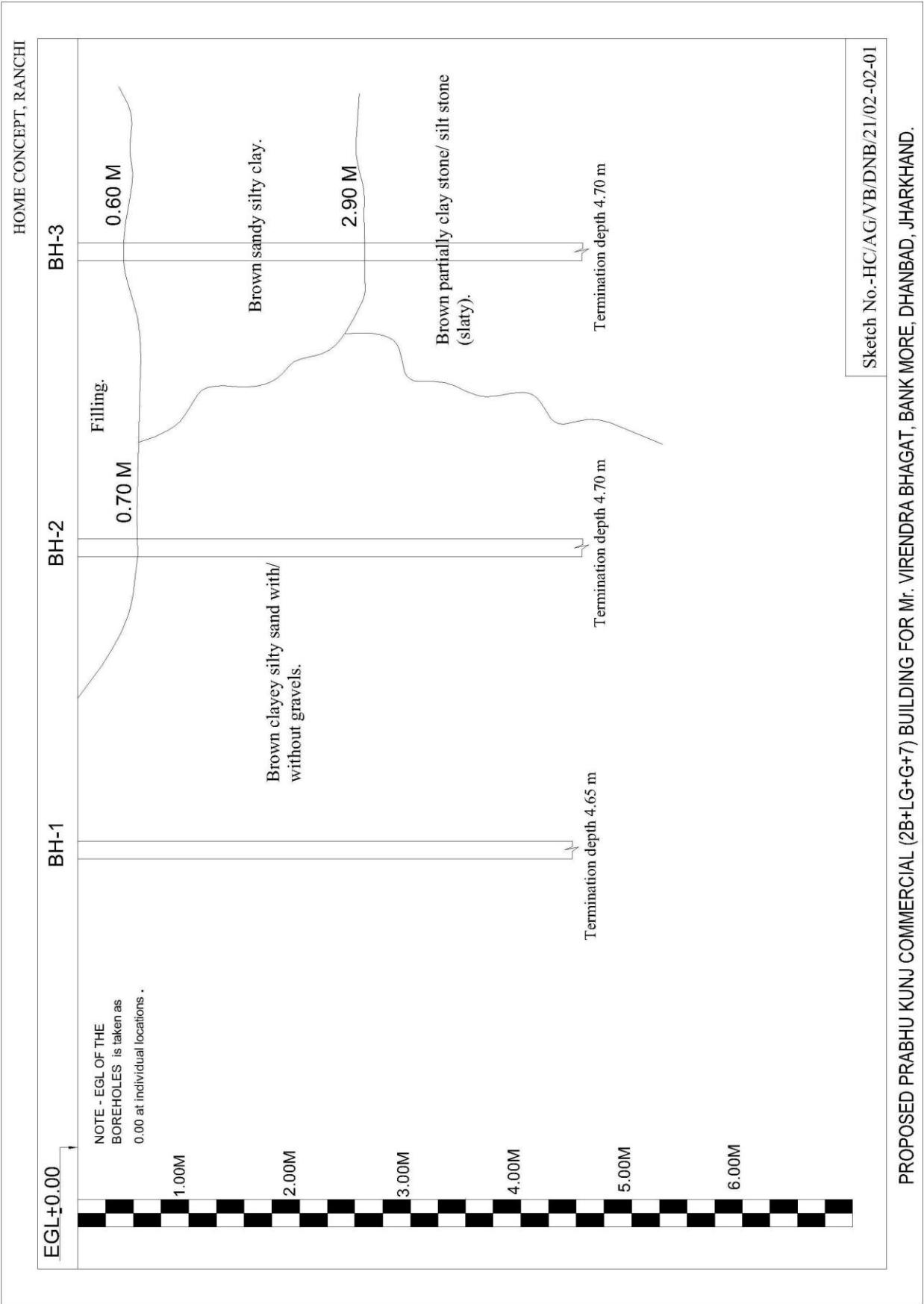| DESCRIPTION	SYMBOL	DEPTH	N-VALUE	SAMPLE	
				NO.	DEPTH
Filling.					
				DS1	0.50 M
Brown sandy silty clay.		01	N = 02	SPT1 (DS2)	1.00 M
			N = 07	SPT2 (DS3)	1.50 M
		02	N = 18	SPT3 (DS4)	2.00 M
				UDS	2.50 M
Brown clayey silty sand with/ without gravels.		03	N = 30	SPT4 (DS5)	3.00 M
		04	N = 53	SPT5 (DS6)	4.00 M
		05	N = Ref (150 mm for 62 blows)	SPT6 (DS7)	5.00 M
Termination depth 5.15m		06			
		07			
		08			
		09			
		10			

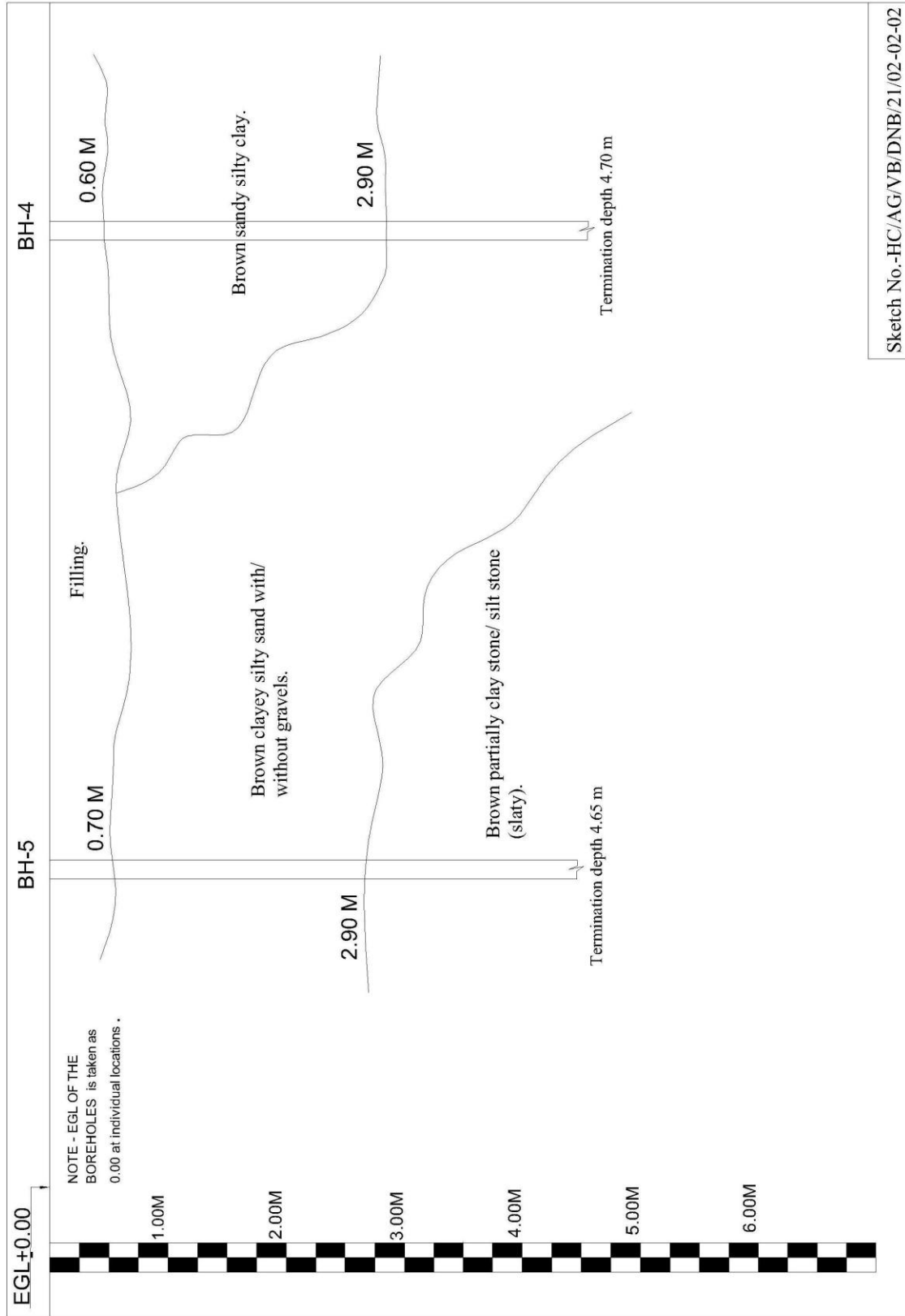|			
SPT – Standard Penetration Test	VST– Vane Shear Test	DS – Disturbed Sample	WS – Water Sample
DCPT – Dynamic Cone Penetration Test.	UDS – Undisturbed Sample	SCPT–Static Cone Penetration Test.	RCS – Rock Core Sample

BORE LOG SHEET		HOME CONCEPT, RANCHI				Bore Hole No.: **5** (Sheet 1)	
Project: PROPOSED PRABHU KUNJ COMMERCIAL (2B+LG+G+7) BUILDING FOR Mr. VIRENDRA BHAGAT, BANK MORE, DHANBAD, JHARKHAND.						Job No.: HC/AG/VB/DNB/21/02	
Co-ordinates: Shown in drawing		E.G.L.:	Unit:			Bore Hole Dia. : 150 MM.	
Type of Boring :	Auger	FIELDTEST	NOS.	SAMPLES	NOS.	SAMPLES NOS.	Commenced on : 07.07.2021
Depth of Boring	4.65M	SPT	6	UDS	1	WS	Completed on : 07.07.2021
Type of Drilling		DCPT		DS	5	RCS	Water Struck At : 2.50 M
Depth of Drilling		VST		SCPT			Standing Water Table : 2.50 M

DESCRIPTION	SYMBOL	DEPTH	N-VALUE	SAMPLE	
				NO.	DEPTH
Filling.				DS1	0.50 M
Brown clayey silty sand with/ without gravels.		01	N = 11	SPT1 (DS2)	1.00 M
		02	N = 36	SPT2 (DS3)	2.00 M
				UDS	2.50 M
Brown partially clay stone/ silt stone (slaty).		03	N = 58	SPT3 (DS4)	3.00 M
		04	N = 63	SPT4 (DS5)	4.00 M
			N = Ref (150 mm for 51 blows)	SPT5 (DS6)	4.50 M
Termination depth 4.65m		05			
		06			
		07			
		08			
		09			
		10			

SPT – Standard Penetration Test	VST– Vane Shear Test	DS – Disturbed Sample	WS – Water Sample
DCPT – Dynamic Cone Penetration Test.	UDS – Undisturbed Sample	SCPT–Static Cone Penetration Test.	RCS – Rock Core Sample

SECTION

SITE: BANK MORE, DHANBAD, JHARKHAND.

HOME CONCEPT, RANCHI

BH-3

0.60 M

Brown sandy silty clay.

2.90 M

Brown partially clay stone/ silt stone (slaty).

Termination depth 4.70 m

Filling.

BH-2

0.70 M

Termination depth 4.70 m

Brown clayey silty sand with/ without gravels.

BH-1

Termination depth 4.65 m

NOTE - EGL OF THE BOREHOLES is taken as 0.00 at individual locations .

EGL+0.00

1.00M

2.00M

3.00M

4.00M

5.00M

6.00M

Sketch No.-HC/AG/VB/DNB/21/02-02-01

PROPOSED PRABHU KUNJ COMMERCIAL (2B+LG+G+7) BUILDING FOR Mr. VIRENDRA BHAGAT, BANK MORE, DHANBAD, JHARKHAND.

HOME CONCEPT, RANCHI

BH-4

0.60 M

Brown sandy silty clay.

2.90 M

Termination depth 4.70 m

BH-5

Filling.

0.70 M

Brown clayey silty sand with/ without gravels.

Brown partially clay stone/ silt stone (slaty).

2.90 M

Termination depth 4.65 m

NOTE - EGL OF THE BOREHOLES is taken as 0.00 at individual locations .

EGL+0.00

1.00M

2.00M

3.00M

4.00M

5.00M

6.00M

Sketch No.-HC/AG/VB/DNB/21/02-02-02

PROPOSED PRABHU KUNJ COMMERCIAL (2B+LG+G+7) BUILDING FOR Mr. VIRENDRA BHAGAT, BANK MORE, DHANBAD, JHARKHAND.

FOUNDATION MODEL

SITE: BANK MORE, DHANBAD, JHARKHAND.

GWT
±0.000

Existing Ground Level.

−0.50 M

Filling.

I

Brown sandy silty clay.

II

3.00 M

Depth of Fdn. = 7.5M

Brown clayey silty sand with/
without gravels.

III &

Brown partially clay stone/ silt stone
(slaty).

IV

Foundation Model

Scale :- N.T.S.
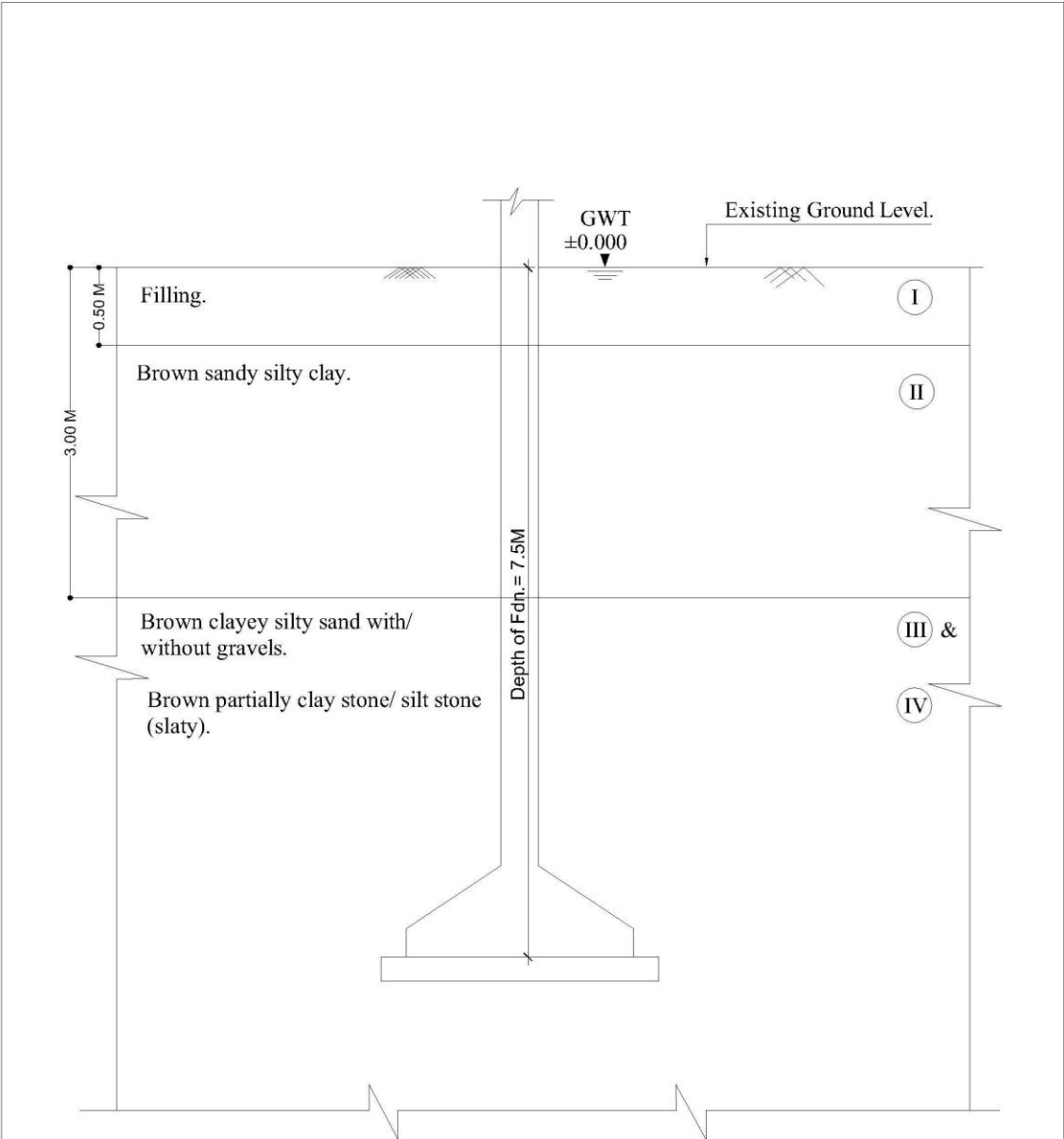
Sketch No.-HC/AG/VB/DNB/21/02 -03

PROPOSED PRABHU KUNJ COMMERCIAL (2B+LG+G+7) BUILDING FOR Mr. VIRENDRA BHAGAT, BANK MORE, DHANBAD, JHARKHAND.

SUMMARY OF LABORATORY TEST RESULTS

	Description of layer	Bore Hole No.	Depth	Sample Type - UD/D	SPT value	Atterburg Limits		Bulk Density in T/cum	Water Content in %	Cohesion in kg/sqcm	Friction angle in degree	Co-eff. of volume compressibility in sqcm/kg					Grading			
						LL	PL					m_v under pressure(kg/sqcm)					Gravel (> 4.75 mm) %	Sand (0.075 - 4.75 mm) %	Silt (0.002 - 0.075 mm) %	Clay (< 0.002 mm) %
			Meter					γ	m	C	ϕ	0.25 - 0.5	0.5 -1	1 - 2	2 - 4	4 - 8				
Strata 1	Filling.	BH-2	0.5	DS																
		BH-3	0.5	DS																
		BH-4	0.5	DS																
		BH-5	0.5	DS																
Strata 2	Brown sandy silty clay.	BH-3	1	DN	3												0	21	32	47
		BH-3	2	UD		39	21	1.98	15.7	0.65	11	0.041	0.037	0.027	0.023	0.019	0	25	29	46
		BH-4	1	DN	2															-
		BH-4	1.5	DN	7															-
		BH-4	2	DN	18															-
		BH-4	2.5	UD		41	20	1.97	12.5	0.6	9	0.042	0.035	0.029	0.025	0.022	0	20	35	45
Strata 3	Brown clayey silty sand with/ without gravels.	BH-1	0.5	DS																
		BH-1	1	DN	5															-
		BH-1	2	UD		37	19	1.83	9.63	0.25	18	0.0270	0.0210	0.0170	0.0125	0.0090	0	51	26	23
		BH-1	3	DN	45												3	57	22	18
		BH-1	4	DN	REF												2	61	24	13
		BH-2	1	DN	23												0	48	29	23
		BH-2	1.5	UD		36	18	2.02	10.5	0.3	20	0.032	0.025	0.019	0.0135	0.011	0	50	22	28
		BH-2	2	DN	46															-
		BH-2	3	DN	61												0	57	25	18
		BH-2	4	DN	REF												2	59	23	16

Strata	Description	BH		Type																
		BH-4	3	DN	30												0	52	26	22
		BH-4	4	DN	53												1	61	20	18
		BH-4	5	DN	REF												3	63	17	17
		BH-5	1	DN	11															-
		BH-5	2	DN	36															-
		BH-5	2.5	UD		37	18	1..98	9.5	0.25	23	0.0290	0.0240	0.0220	0.0120	0.0098	0	58	18	24
Strata 4	Brown partially clay stone/ silt stone (slaty).	BH-3	3	DN	65															-
		BH-3	3.5	DN	REF															-
		BH-5	3	DN	58															-
		BH-5	4	DN	63															-
		BH-5	4.5	DN	REF															-

SUMMARY OF FIELD/LABORATORY DATA AND CONSIDERED DESIGN PARAMETERS

Sub-soil Srtatification & Properties

FIELD RESULTS

Stratum No.	Description of layer	Layer Thickness	Field N Observed Depth	Value	Corrected N Value
		Meter	Meter		
Strata 1	Filling.	0.8			
Strata 2	Brown sandy silty clay.	2	1	3	5
Strata 3	Brown clayey silty sand with/ without gravels.	5	1	23	31
Strata 4	Brown partially clay stone/ silt stone (slaty).	3	3	65	50

Depth of water Table from EGL =	2	Meter

NOTE
1. If Water table is not met, then the water Table data has been assumed.
2. Layer thickness assumed for the last known layer

LABORATORY RESULTS

Stratum No.	Description of layer	Cohesion in T/sqm	Friction angle in degree	Bulk Density in T/cum	Co-eff. of volume compressibility in sqm/T
		c	ϕ	γ	m_v
Strata 1	Filling.				
Strata 2	Brown sandy silty clay.	6.00	9.0	1.97	0.00290
Strata 3	Brown clayey silty sand with/ without gravels.	2.50	18.0	1.83	0.00170
Strata 4	Brown partially clay stone/ silt stone (slaty).				

Note - If the sample has not shown significant compressibility, a negligible m_v has been assumed

DESIGN PARAMETERS

			E_{sand}			
Design Stratum	Soil Type	E_{clay}	SBC 5T - 10T	SBC 10T - 20T	SBC 20T - 40T	SBC 40T - 80T
Strata 3	SAND	1500	2222	3318	5511	9898

c	ϕ	Depth of Water Table from EGL*	γ	m_v	E	μ
T/sqm	Degrees	meter	T/Cum	Sqm/T	T/sqm	
2.50	18.0	0	1.83	0.00170	3318	0.3

* For design purpose, Ground Water Table has been considered as at EGL due to seasonal variation in GWT

CHECK FOR TYPE OF SHEAR FAILURE

Design value of ϕ, in degrees = 18
Friction Angle<=28degrees, Local Shear Failure

As per IS 6403-1981, cl. No. 5.1.2, the Ultimate Net Safe Bearing Capacity (Net q(ult))

1 For General Shear Failure, q(ult) = cNcscdcic + q(Nq-1)sqdqiq+0.5γBNγsγdγiγW'

2 For Local Shear Failure, q(ult) = c'N'cscdcic + q(N'q-1)sqdqiq+0.5γBN'γsγdγiγW'

3 For Intermediate Shear Failure, q(ult) = Value in between the General & Local Shear Failure

RECOMMENDATION FOR NET SAFE BEARING CAPACITY

A. As per IS- 12070-1987 Table-2,

Net Safe Bearing Pressure (q_{ns}) based on classification

For Soft or broken bed rock	=	100 T/sqm
Correction factor for submergence	=	0.5 ………… (a)
Correction factor for cavities	=	0.5 ………… (b)

Applying correction factors (a) & (b),

q_{ns} = 100 x 0.5 x 0.5 = 25 T/sqm …… (1)

B. As per IS- 12070-1987 Table-3,

Net Safe Bearing Pressure (q_{ns}) based on RMR

The present deposit may be CONSERVATIVELY considered under Classification No. V and having Description of Rock as "Very poor" with RMR value Range 20–0.

Therefore, as per the table, q_{ns} = 40 T/sqm …… (2)

C. Based on SPT value

Refer annexed calculation, q_{ns} > 50 T/sqm …… (3)

From (1), (2) & (3) above,

The recommended net safe bearing capacity = 25 T/sqm at a depth of 7.5metre from EGL.