PN – 190120

REPORT ON

GEOTECHNICAL INVESTIGATIONS

FOR THE PROPOSED BUILDING

In

Examination Building
At
J.P. University, Chhapra

Your Letter No.- BSEIDC/FIN/326/2012-242 Patna, Dated – 10.01.2019

Submitted to
The Chief Engineer
BSEIDC, Patna

January, 2019

BIHAR FOUNDATION CONSULTANTS
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Examination Building at J.P. University, Chhapra

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[A Unit : Baidyanath Foundation Consultants Pvt. Ltd.]

PN - 190120

CONTENTS

Appendix

[Containing Figures and Tables]

Report on Sub Soil Investigation for the proposed
Examination Building at J.P. University, Chhapra

1. INTRODUCTION

The subsoil investigations reported herein were taken up to find out the nature of subsoil at the site of the proposed construction and to recommend the capacity and type of its foundation. After certain tests on the soil, as detailed below, the desired recommendations have been made on **page 3** of this Report.

2. FIELD WORK

The fieldwork consisted of sinking a bore hole, conducting the necessary field tests in it and collecting soil samples from it for conducting laboratory tests on them.

2.1. Boring

Taking guidance from IS: 1892, one bore hole of 150 mm diameter was sunk at the location shown in the bore hole location map.

2.2 Sampling

2.2.1 Undisturbed Soil Samples

Open drive samplers of 100-mm diameter and about 450-mm length were used for obtaining undisturbed samples of cohesive soils. The collection, sealing, labeling and transportation of the samples to the laboratory were done as per the IS guide-lines.

2.2.2 Disturbed Soil Samples

Disturbed soil samples were collected from the bore hole at suitable intervals of depth (not more than 2.5 m) and at all depths of change in the nature of the subsoil. These samples were sealed in polythene bags with proper identification labels.

2.3 Field Tests

2.3.1 Standard Penetration Tests (SPT)

These tests were conducted as per IS: 2131 – 1963. The depth interval between two consecutive tests was 1 to 1.5 m. The tests were located in between the levels at which undisturbed soil samples were collected.

3. LABORATORY TESTS

Some or all of the following laboratory tests, as necessary, were done on the collected soil samples. Representative soil samples were selected for this from the different soil strata encountered during boring. The tests were performed as per the relevant Indian Standard Codes of Practice.

(a) Natural moisture content

(b) Bulk density

(c) Grain size analysis (using sieves and / or hydrometer)

(d) Specific gravity of soil solids

(e) Atterberg's limit tests (liquid, plastic and shrinkage limits)

(f) Shear Tests :

- [I] Triaxial compression test (unconsolidated – undrained), generally for fine- grained soils
- [II] Unconfined compression tests, only on cohesive soils
- [III] Direct shear tests, generally for coarse-grained soils

(g) Chemical tests on soil/ground water

(h) Other tests as and when required.

4. PRESENTATION OF TEST RESULTS

The field and laboratory test results are given in the **Appendix - B**.

5. SOIL STRATIFICATION

The results of field tests in three bore holes sunk at the site [vide Location Sketch in App. A] and the results of laboratory tests conducted on the collected soil samples indicate that the soil stratification at the site is as describe below.

The subsoil in BH 1 and 2 is sandy clayey silt / clayey silt [type ML / MI] up to the investigated depth of 10.5 m bgl. But in BH 3 it is silty clay [type CI] up to the depth of about 6.0 m followed by clayey silt [type MI] up to the investigated depth of 10.5 m bgl. It is also gritty from about 4.5 m to 10.5 m depth in [BH 1 and 2] and 6.0 m to 10.5 m depth in [BH 3].

Ground water table was struck at about 2.90m to 3.00 m depth below GL in January, 2019. It is subject to seasonal variations.

6. FOUNDATION ANALYSIS

The safe capacity of foundation of any type and size may be determined on the basis of the soil data given in this Report by using the standard methods of foundation design and following the relevant Indian Standard Codes.

7. RECOMMENDATIONS

The design of the foundation for the proposed structure depends on the nature of both [a] the subsoil and [b] the structure.

The subsoil in BH 1 and 2 is sandy clayey silt / clayey silt [type ML / MI] up to the investigated depth of 10.5 m bgl. But in BH 3 it is silty clay [type CI] up to the depth of about 6.0 m followed by clayey silt [type MI] up to the investigated depth of 10.5 m bgl. It is also gritty from about 4.5 m to 10.5 m depth in [BH 1 and 2] and 6.0 m to 10.5 m depth in [BH 3].

Ground water table was struck at about 2.90m to 3.00 m depth below GL in January, 2019. It is subject to seasonal variations.

1. The proposed structure may be provided with shallow foundation at a depth of 1.5 m or more.
2. As the major part of the formation is sandy silt and silt dominating, hence placement of bored cast in situ plane or u/r pile may not be desirable as this formation may collapse during such pile placement. Driven piles may be uneconomical.

The values of net allowable bearing pressures of foundations of certain sizes have been calculated [vide sample of Calculation in Appendix - F] and are tabulated below.

Table 1: Allowable Net Bearing Pressures [q_{na}] and Settlements Expected [s]

Depth (m) below GL	Width (m)	Net allowable bearing pressure (t/m^2)			Maximum expected settlement (mm)
		Strip footing	Square footing	Raft foundation	
1.5	2.0	6.0	6.6	….	50
	3.0	6.2	6.4	….	50
	10.0	…	…	8.0	75
2.0	2.0	6.8	7.5	….	50
	3.0	6.9	7.4	….	50
	10.0	…	…	8.7	75
2.5	2.0	7.6	8.5	…	50
	3.0	7.6	8.3	…	50
	10.0	…	…	9.4	75
3.0	2.0	8.5	9.6	…	50
	3.0	8.4	9.2	…	50
	10.0	…	…	10.1	75
3.5	2.0	9.7	11.0	…	50
	3.0	9.4	10.4	…	50
	10.0	…	…	11.0	75
4.0	2.0	11.2	12.8	…	50
	3.0	10.7	11.9	…	50
	10.0	…	…	12.3	75

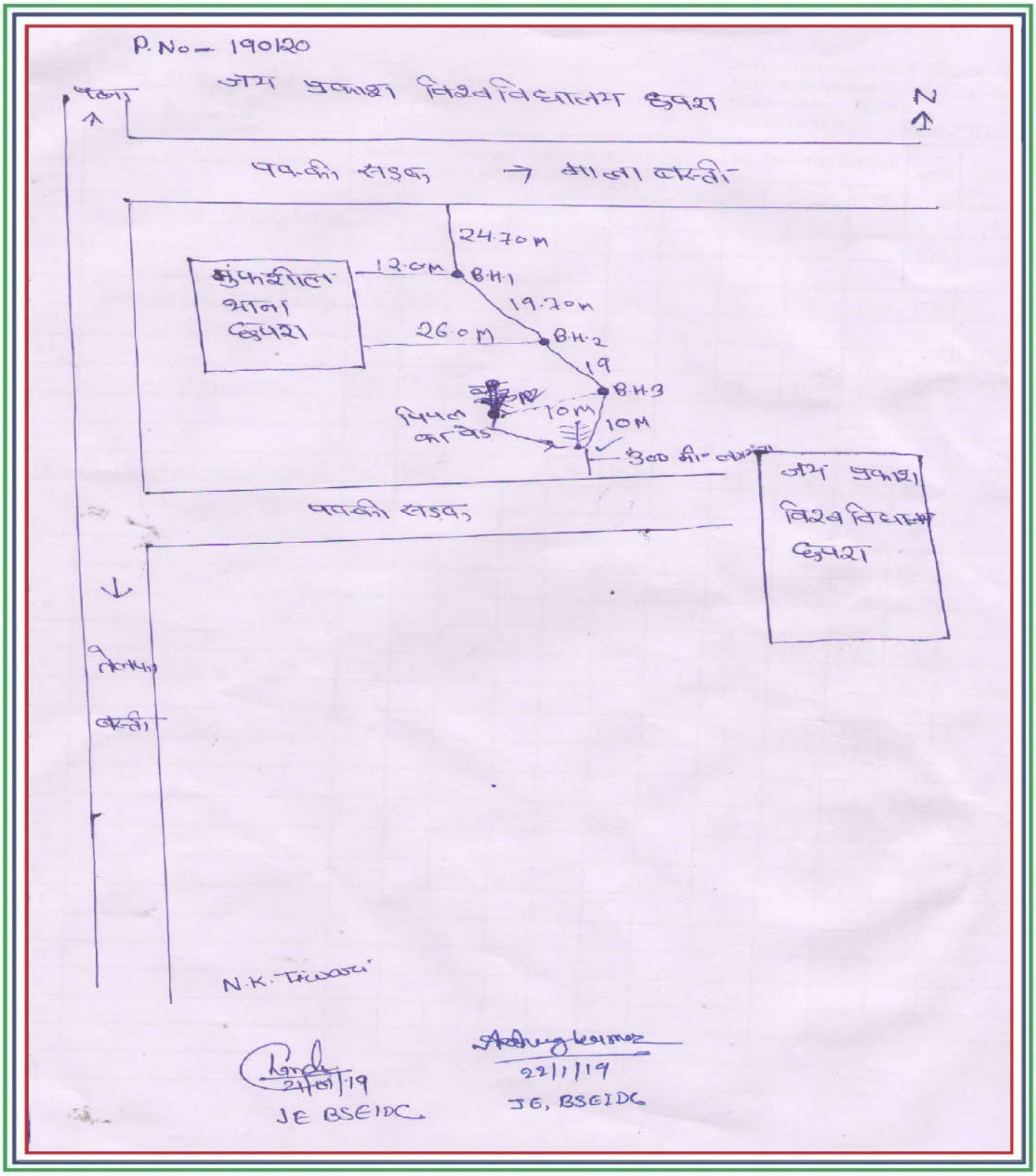
Note:

If a soil condition much different from those reported herein is met with during foundation trenching, suitable steps should be taken.

For Bihar Foundation Consultants,

(Dr. K.S.P. Singh, FIE, MIGS)
Senior Consultant.

Examination Building at J.P. University, Chhapra



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Appendix - A

NAME OF WORK : Sub soil Investigation for C/O							BORING FINISH DATE : 21.01.19					WATER TABLE : 2.90 m bgl				
Examination Building at J.P. University, Chhapra							BORING METHOD : Rotary									
BORE HOLE NO. : 1			Site Incharge - N.K. Tiwari				TERMINATION DEPTH : 10.5 m					RECORD ON : 21.01.19				

Depth Below GL (m)	Sample No.	SPT 'N' Value observation	Visual Description of Soil with IS Classification	Depth(m)		Thickness (m)	Liquid Limit	Plastic Limit	Plasticity Indix,%	Bulk Density (gm/cm3)	Natural Moisture Content (%)	Specific Gravity	Shear Test			Compression Index (C_c)
													Type of Test	Cohesion, c (kg/cm2)	Friction Angle, ϕ°	
		Obsr.		from	to											
1.0			Greyish sandy clayey silt, ML	0.0		1.5										
1.5	S1	17			1.5		32.0	24.4	7.6	1.94	28.3	2.65		0.14	16.2	
2.5			Greyish yellowish clayey silt, MI	1.5		3.0										
3.0	S2	8								1.94	28.6	2.64		0.07	15.3	
4.0																
4.5	S3	11			4.5		38.8	27.3	11.5	1.94	28.4	2.65		0.10	15.6	
5.5			Greyish yellowish clayey silt, MI with grits	4.5		6.0										
6.0	S4	16								1.94	28.2	2.64		0.14	16.1	
7.0																
7.5	S5	22					43.3	27.8	15.5	1.95	28.5	2.67		0.18	16.7	
8.5																
9.0	S6	28								1.95	28.3	2.65		0.23	17.3	
10.0																
10.5	S7	29			10.5											

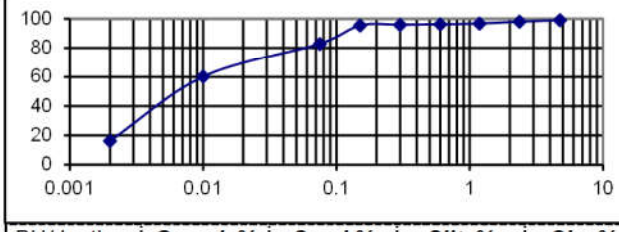
NAME OF WORK : Sub soil Investigation for C/O							BORING FINISH DATE : 22.01.19					WATER TABLE : 2.90 m bgl				
Examination Building at J.P. University, Chhapra							BORING METHOD : Rotary									
BORE HOLE NO. : 2			Site Incharge - N.K. Tiwari				TERMINATION DEPTH : 10.5 m					RECORD ON : 21.01.19				

Depth Below GL (m)	Sample No.	SPT 'N' Value observation	Visual Description of Soil with IS Classification	Depth(m)		Thickness (m)	Liquid Limit	Plastic Limit	Plasticity Indix,%	Bulk Density (gm/cm3)	Natural Moisture Content (%)	Specific Gravity	Shear Test			Compression Index (C_c)
													Type of Test	Cohesion, c (kg/cm2)	Friction Angle, ϕ °	
		Obsr.		from	to											
1.0			Greyish sandy clayey silt, MI	0.0		1.5										
1.5	S1	12			1.5					1.94	28.4	2.65		0.11	15.7	
2.5			Greyish yellowish clayey silt, MI	1.5		3.0										
3.0	S2	9					41.3	28.0	13.3	1.94	28.6	2.65		0.08	15.4	
4.0																
4.5	S3	13			4.5					1.94	28.3	2.64		0.12	15.8	
5.5			Greyish yellowish clayey silt, MI with grits	4.5		6.0										
6.0	S4	17					36.8	25.8	11.0	1.94	28.1	2.64		0.14	16.2	
7.0																
7.5	S5	19								1.95	28.6	2.67		0.16	16.4	
8.5																
9.0	S6	25					43.0	28.1	14.9	1.95	28.1	2.65		0.21	17.0	
10.0																
10.5	S7	28			10.5											

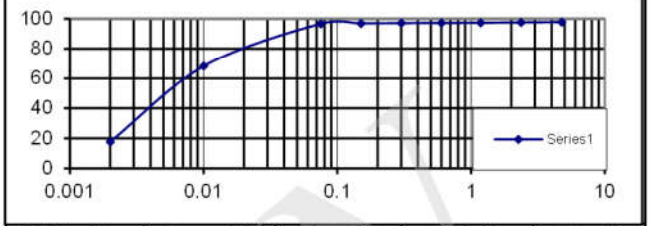
NAME OF WORK : Sub soil Investigation for C/O							BORING FINISH DATE : 22.01.19					WATER TABLE : 3.00 m bgl				
Examination Building at J.P. University, Chhapra							BORING METHOD : Rotary									
BORE HOLE NO. : 3			Site Incharge - N.K. Tiwari				TERMINATION DEPTH : 10.5 m					RECORD ON : 22.01.19				

Depth Below GL (m)	Sample No.	SPT 'N' Value observation	Visual Description of Soil with IS Classification	Depth(m)		Thickness (m)	Liquid Limit	Plastic Limit	Plasticity Indix,%	Bulk Density (gm/cm3)	Natural Moisture Content (%)	Specific Gravity	Shear Test			Compression Index (C_c)
													Type of Test	Cohesion, c (kg/cm2)	Friction Angle, ϕ°	
		Obsr.		from	to											
1.0			Greyish silty clay, CI	0.0		1.5										
1.5	S1	11			1.5		37.5	23.1	14.4	2.01	25.5	2.70		0.52	5.1	
2.5			Greyish yellowish silty clay, CI	1.5		4.5										
3.0	S2	10								2.00	26.0	2.70		0.48	5.0	0.140
4.0																
4.5	S3	14					37.5	20.0	17.5	2.01	25.4	2.70		0.61	5.1	0.135
5.5																
6.0	S4	15			6.0					2.01	25.3	2.69		0.63	5.1	
7.0			Greyish yellowish clayey silt, MI with grits	6.0		4.5										
7.5	S5	21					43.9	29.8	14.1	1.95	28.5	2.67		0.17	16.6	
8.5																
9.0	S6	26								1.95	28.2	2.65		0.22	17.1	
10.0																
10.5	S7	31			10.5											

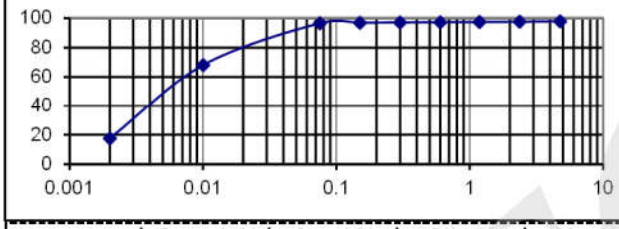
Table 2 [part B]: Grain Size Analysis Results [for Bore hole No./ Depth in m shown thus: 1/1.5]



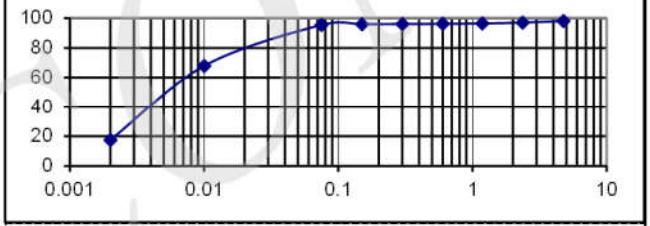
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
1/1.5	0.9	16.3	66.6	16.2



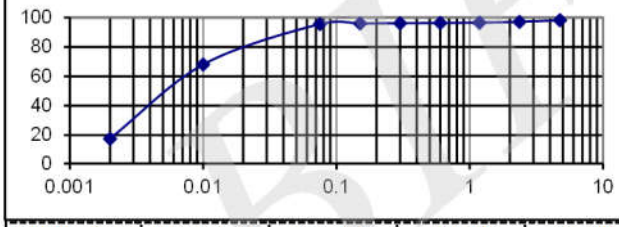
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
1/3.0	2.1	1.2	79.0	17.7



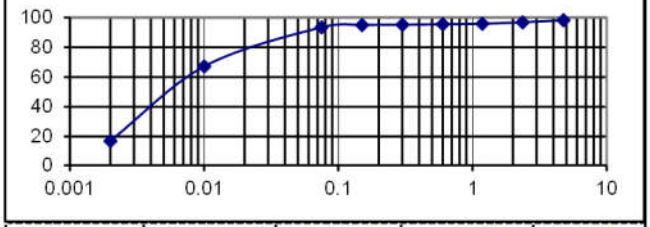
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
1/4.5	2.1	1.3	79.0	17.6



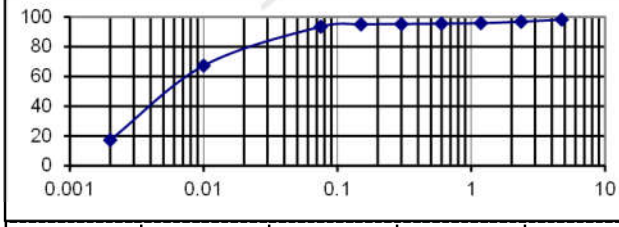
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
1/6.0	1.9	2.6	78.0	17.5



BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
1/7.5	1.8	2.6	78.0	17.6

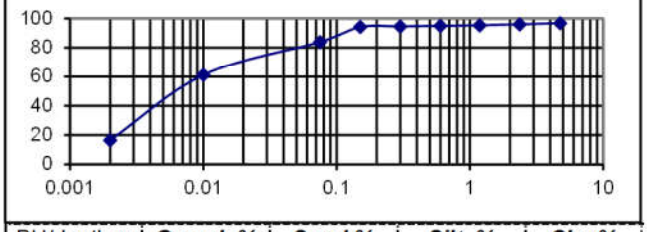


BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
1/9.0	1.8	4.7	76.4	17.1

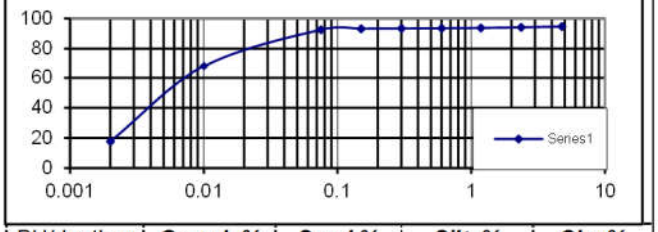


BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
1/10.5	1.7	4.8	76.2	17.3

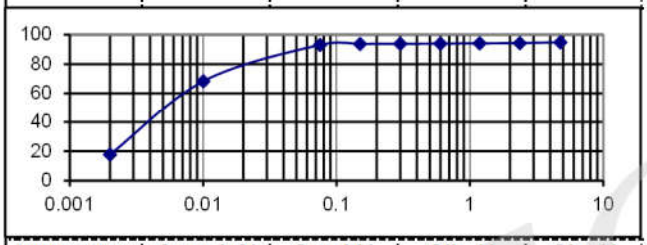
Table 2 [part B]: Grain Size Analysis Results [for Bore hole No./ Depth in m shown thus: 1/1.5]



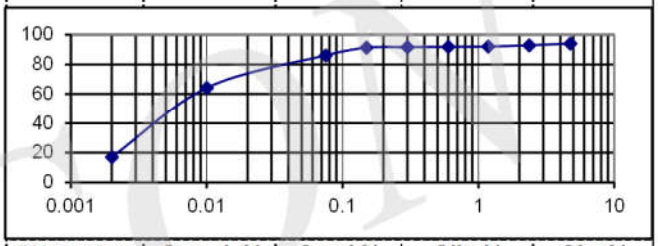
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
2/1.5	3.2	12.9	67.4	16.5



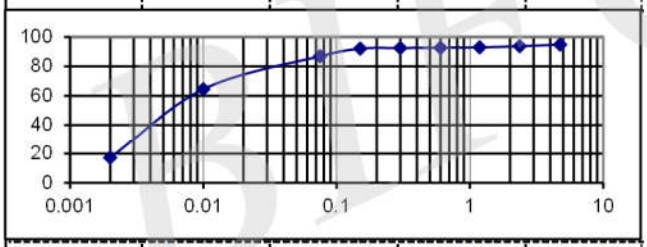
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
2/3.0	5.2	2.2	74.9	17.7



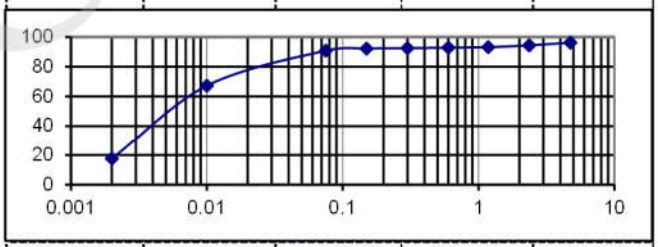
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
2/4.5	5.2	1.7	75.3	17.8



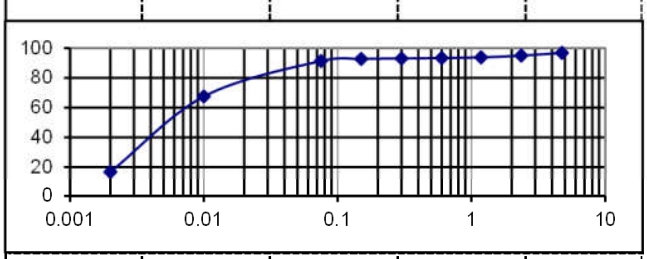
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
2/6.0	5.9	8.0	69.0	17.1



BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
2/7.5	5.2	7.9	69.6	17.3

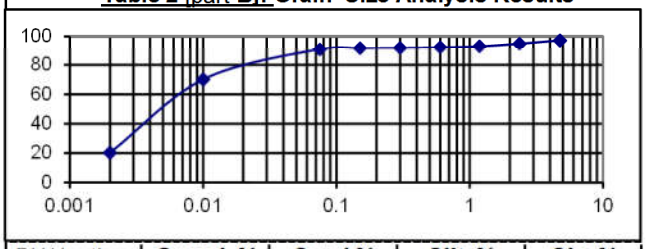


BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
2/9.0	3.8	5.5	73.1	17.6

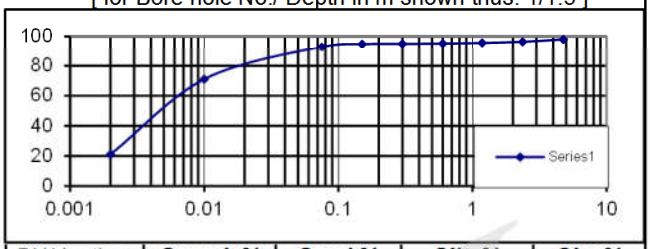


BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
2/10.5	3.2	5.4	74.7	16.7

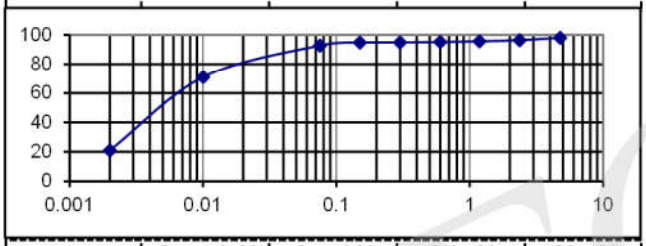
Table 2 [part B]: Grain Size Analysis Results [for Bore hole No./ Depth in m shown thus: 1/1.5]



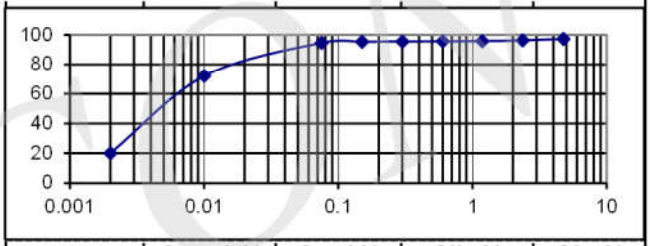
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
3/1.5	2.7	6.3	70.7	20.3



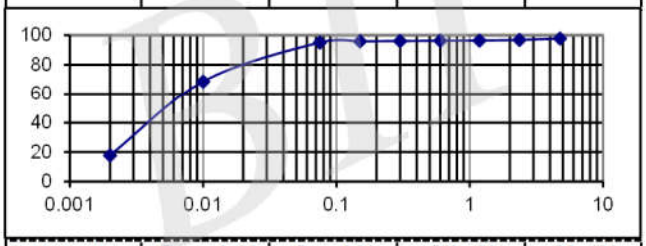
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
3/3.0	2.0	5.2	71.7	21.1



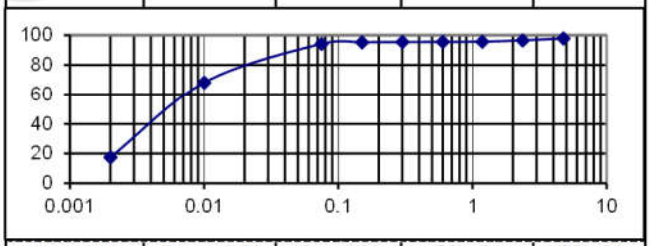
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
3/4.5	1.9	5.3	71.8	21.0



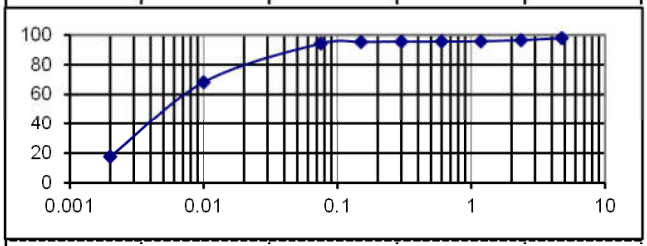
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
3/6.0	2.7	2.7	74.6	20.0



BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
3/7.5	2.2	2.7	77.3	17.8

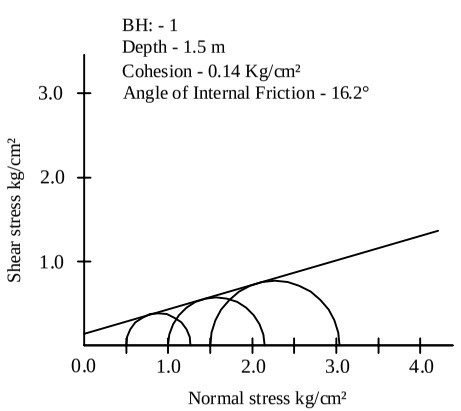


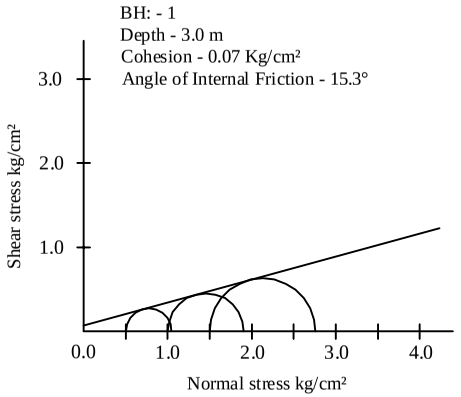
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
3/9.0	2.1	3.6	76.8	17.5

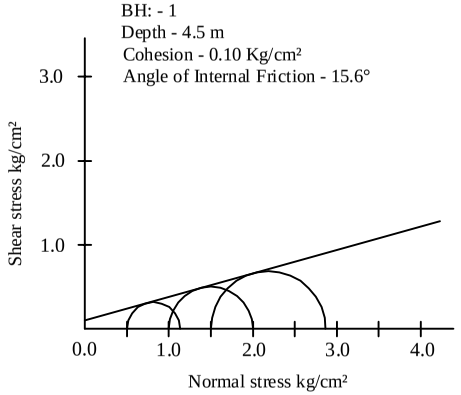


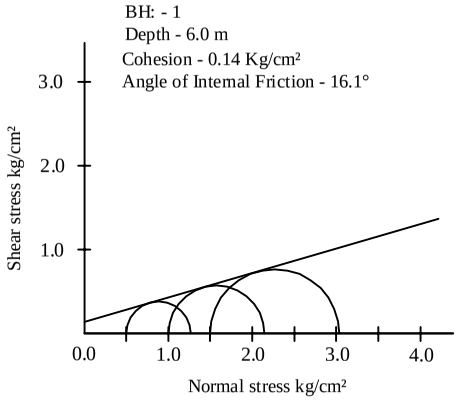
BH/depth,m	Gravel, %	Sand,%	Silt, %	Clay%
3/10.5	2.1	3.6	76.7	17.6

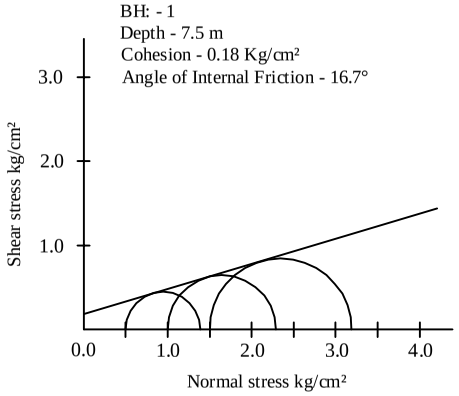
TRIAXIAL / DIRECT SHEAR TEST PLOTS

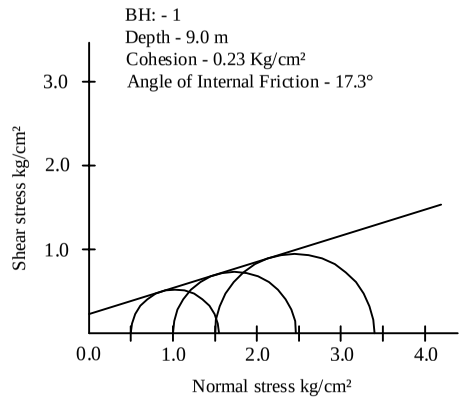












Appendix - D1

Bihar Foundation Consultants,
[A unit of Baidyanath Foundation Consultants Pvt. Ltd.]

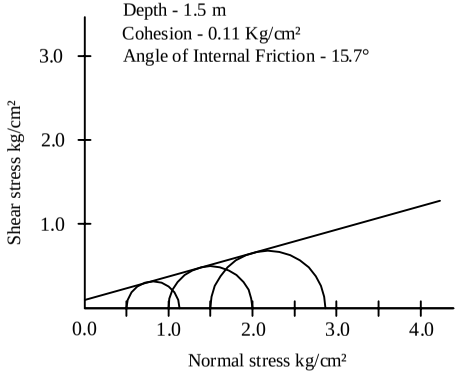
Project No. 190120

For the Proposed

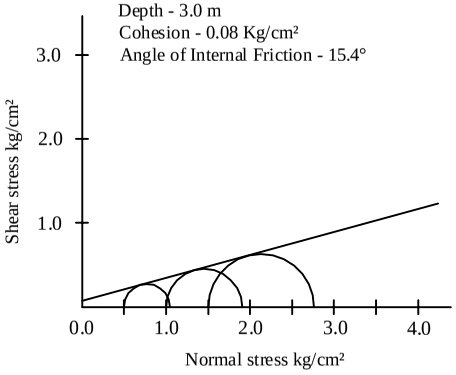
Examination Building at
J.P. University, Chhapra

TRIAXIAL / DIRECT SHEAR TEST PLOTS

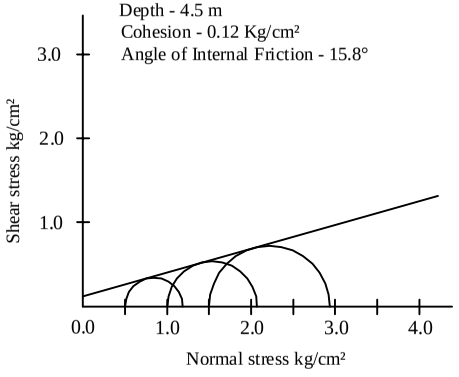
BH: - 2
Depth - 1.5 m
Cohesion - 0.11 Kg/cm²
Angle of Internal Friction - 15.7°



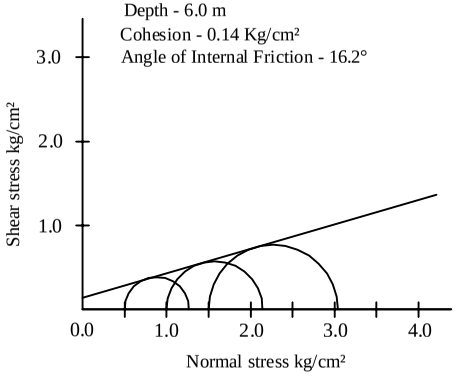
BH: - 2
Depth - 3.0 m
Cohesion - 0.08 Kg/cm²
Angle of Internal Friction - 15.4°



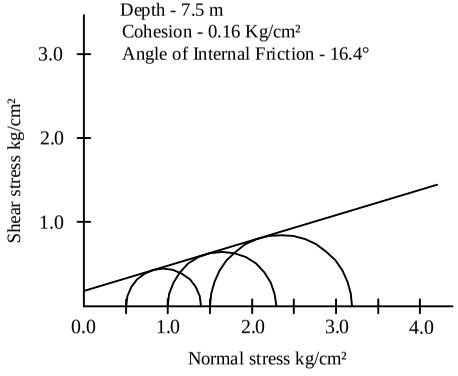
BH: - 2
Depth - 4.5 m
Cohesion - 0.12 Kg/cm²
Angle of Internal Friction - 15.8°



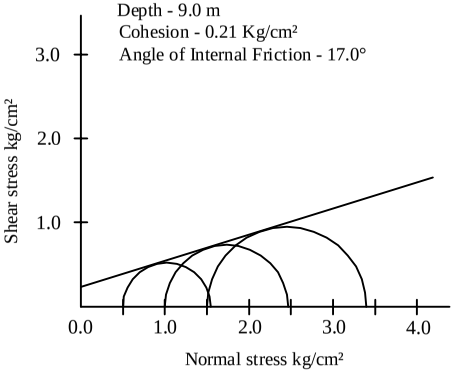
BH: - 2
Depth - 6.0 m
Cohesion - 0.14 Kg/cm²
Angle of Internal Friction - 16.2°



BH: - 2
Depth - 7.5 m
Cohesion - 0.16 Kg/cm²
Angle of Internal Friction - 16.4°



BH: - 2
Depth - 9.0 m
Cohesion - 0.21 Kg/cm²
Angle of Internal Friction - 17.0°



Appendix - D2

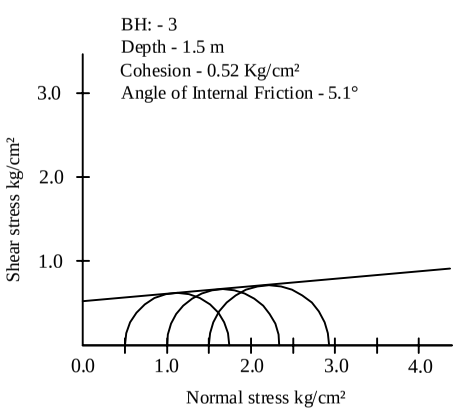
Bihar Foundation Consultants,
[A unit of Baidyanath Foundation Consultants Pvt. Ltd.]

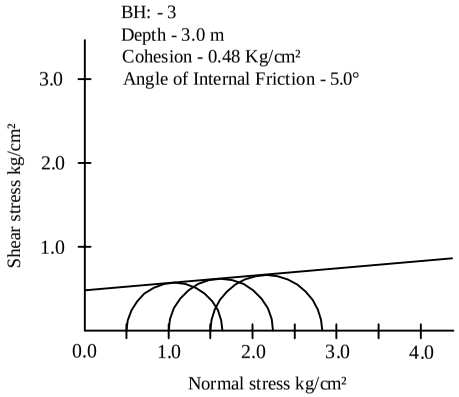
Project No. 190120

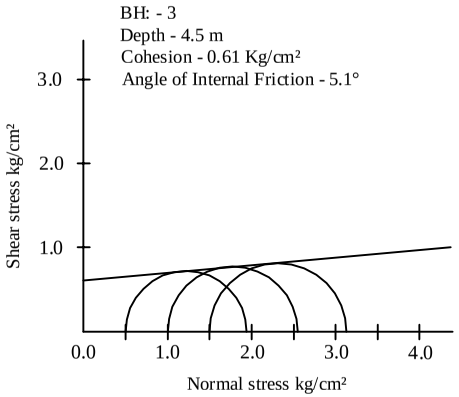
For the Proposed

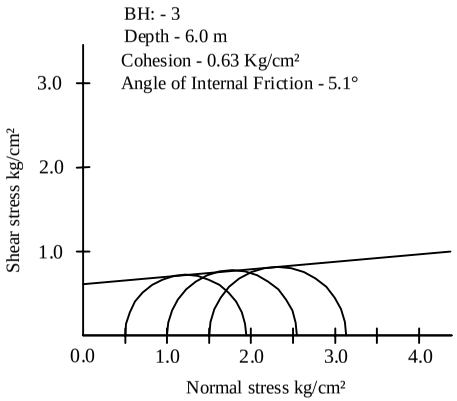
Examination Building at
J.P. University, Chhapra

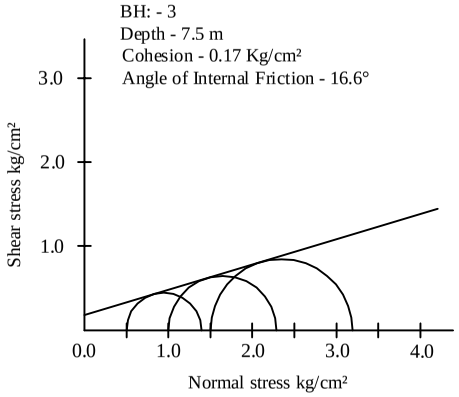
TRIAXIAL / DIRECT SHEAR TEST PLOTS

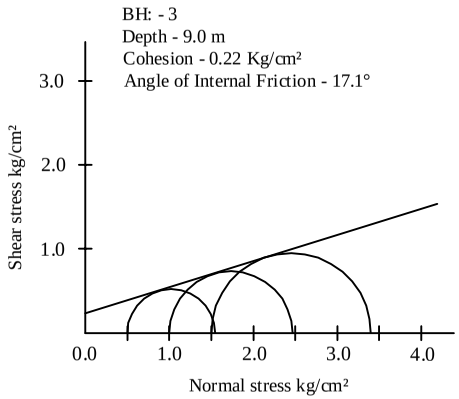












Appendix - D3

Bihar Foundation Consultants,
[A unit of Baidyanath Foundation Consultants Pvt. Ltd.]

Project No. 190120

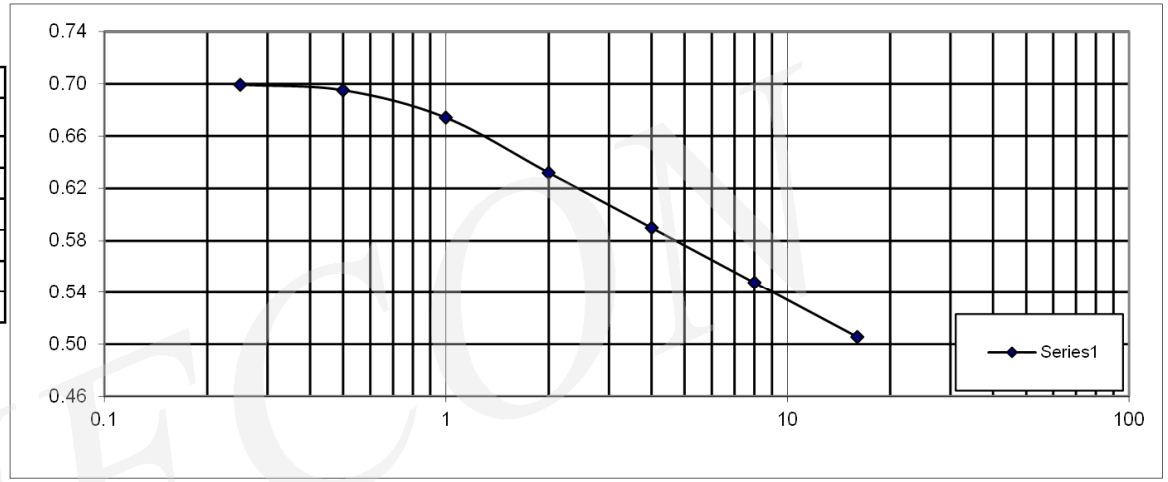
For the Proposed

Examination Building at
J.P. University, Chhapra

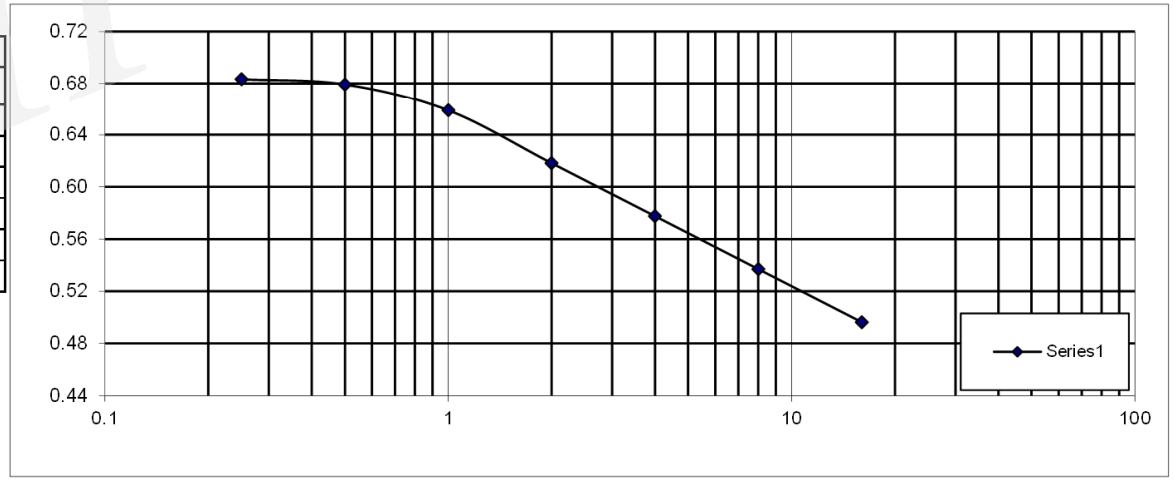
Fig. e - log p Plots from Consolidation Tests

X-axis : Pressure, p (kg/cm^2) on log scale. **Y-axis :** Void ratio, e

BH No./		Initial V.R.	
Depth (m)	Cc	e_0	CURVE
1/3.0	0.140	0.7020	Series1



BH No./		Initial V.R.	
Depth (m)	C_c	e_0	CURVE
1/4.5	0.135	0.6858	Series1



SAMPLE CALCULATION OF BEARING CAPACITY OF SHALLOW FOUNDATION

The determination of the **net safe bearing capacity**, q_{ns}, is done first on the basis of the shear failure criterion after dividing the value of the **net ultimate bearing capacity** q_{nf}, calculated as described below, by a suitable factor of safety. The **net soil pressure,** q_s, for a given permissible settlement is then calculated as explained in the next section. The lower of the two values, q_{ns} and q_s, thus determined is taken as the **allowable bearing capacity** of the soil.

1. Shear Failure Criterion.The **net ultimate bearing capacity** q_{nf} (t/m^2) of a shallow foundation of breadth B (m) and depth D (m) is given as per IS:6403-1981 (Sec.5.1.2) by the following equation :

$$q_{nf} = c\,N_c\,s_c\,d_c\,I_c + q\,(N_q - 1)\,s_q\,d_q\,I_q + 0.5\,\gamma\,B\,N_\gamma\,s_\gamma\,d_\gamma\,I_\gamma\,w$$

where c = cohesion (t/m^2)
q = effective surcharge (t/m^2)
γ = unit weight of subsoil (t/m^3)
N_c, N_γ, N_q = bearing capacity factors, which are functions of ϕ, the angle of internal friction of the soil
s_c, s_q, s_γ = shape factors
d_c, d_q, d_γ = depth factors
I_c, I_q, I_γ = inclination factors
} related to cohesion, surcharge and density of subsoil respectively
w = water table factor (= 0.5 to 1.0) depending on the depth, D_w of water table- vide Table below.

The bearing capacity factors (N's) are functions of ϕ, the angle of internal friction of the soil. Their values are found for general shear failure by referring to standard tables. If subsoil conditions are such as to lead to local shear failure, the values of these factors are found for a reduced value of angle of internal friction (ϕ') given by the equation : $\tan \phi' = 0.67 \tan \phi$. The value of cohesion is also reduced to $c' = 0.67\,c$.

The values of the other factors for usual conditions are as tabulated below :

s_c =	1.3	1+0.2B/L	1	d_c =	$1+0.2\,(N_\varphi)^{0.5}\,D/B$		D_w at G.L. Fou'dn.Level
s_q =	1.2	1+0.2B/L	1	$d_q = d_\gamma$ =	1	for $\varphi < 10^o$	w = 0.5 1
s_γ =	0.8//0.6	1-0.4B/L	1	$d_q = d_\gamma$ =	$1+0.1\,(N_\varphi)^{0.5}\,D/B$	$\varphi > 10^o$	Interpolation between
FOR	sq.// O	Rect.	STRIP	I_c, I_q, I_γ = 1 for vertical load			these values is linear.

In the present case, the representative values of cohesion © and angle of internal friction (ϕ)of the soil may be obtained from the soil data given earlier.

One example of calculation for a certain depth and width of a strip or square footing is given in the **Table A** on the next page. Full submergence of the soil has been assumed. The **safe bearing capacity**, q_{ns} has been obtained by dividing q_{nf} by a **safety factor, 3**. The net safe bearing capacity for a footing of the selected size and depth of footing is to be seen in its last column. Calculations of safe bearing capacities for other depths and widths of footings are done similarly.

2 Calculation of allowable bearing capacity based on settlement criterion

The **net soil pressure,** q_s (t/m^2) for a permissible settlement of 25 mm is give by Teng's formula:

$$q_s = 3.5\,[N'' - 3]\left[\frac{(B + 0.3)}{2B}\right]^2 w'\,F_d \quad t/m^2$$

where N'' = corrected value of N from SPT

$F_d = [1 + D/B] < \text{or} = 2$

D, B and w' are as defined before.

For a permissible settlement of **S** mm, the allowable bearing capacity

$$q'_s = S\, q_s /25$$

The corrected SPT N" values used in the calculations based on the above formula for different depths below G.L. may be found from the recorded data.

The N" value used in any case is to be for the influence zone below the footing, which depends on its width. A sample of calculation of the allowable soil pressure for the chosen size and depth of footing and for the permissible settlement is given in **Table B** in the next section.

The net allowable bearing pressure will be the lower of the values of bearing pressures found in the two Tables A and B.

Table A

Calculation of Net Safe Bearing Pressure [based on **shear failure** criterion]

Shape of Foundation: STRIP			F.S.= 3	γ, t/m³= 1.94		c = 0.75	ϕ = 15.3	Nc = 11.17	Nq = 4.06	Nγ = 2.77
D [m]	B [m]	dc	dq = dg	c	q	I Term	II Term	III Term	qnf	qnf /F
1.5	2	1.20	1.098	0.75	1.455	10.02	4.88	2.94	17.85	5.95

Table B

Calculation of Net Allowable Bearing Pressure [based on **settlement** criterion]

D	B	Fd =	N"	w'	$q_{s=25}$	S	$q_{s=S}$
m	m				t/m²	mm	t/m²
1.5	2.0	1.75	7	0.5	4.0502	50	8.1003

The adjoining Table and the comments below it are for a footing of depth, **D =** **1.5** m, and width, **B [m] =** **2.0**

The value of allowable bearing pressure from the above Table for s = 50 mm is = 8.1 t/m²

The value of safe bearing capacity from shear criterion as found from Table A = 6.0 t/m²

Hence the allowable bearing pressure for settlement, s= or < 50 mm will be = **6.0** **t/m²**

The calculations for other depths and widths of footing are similar.

Examination Building at J.P. University, Chhapra

बिहार सरकार

बिहार राज्य शैक्षणिक आधारभूत संरचना विकास निगम लिमिटेड
BIHAR STATE EDUCATIONAL INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

(A Govt. of Bihar Undertaking)
ISO 9001:14001; OHSAS 18001
Shiksha Bhawan, Bihar Rashtrabhasha Parishad Campus, Acharya Shivpujan Sahay Path, Saidpur, Patna - 800 004
Tel. No. : 0612 - 2660850 • Fax No. : 0612 - 2660256
E-mail : bseidc@gmail.com • Website : http://www.bseidc.in • CIN : U80301BR2010SGC015859

पत्रांकः– BSEIDC/ FIN /526/ 2012-242 पटना, दिनांक 10.01.2019

प्रेषक,

मनोज कुमार
मुख्य अभियंता

सेवा में,

बिहार फाउंडेशन कंसलटेन्ट
गंगा दर्शन अपार्टमेंट, फ्लैट न०–403,
सदाकत आश्रम के पश्चिम,
पटना– 800010

विषयः– निर्माण स्थल के मिट्टी जाँच हेतु।

प्रसंगः– आपका पत्रांक संख्या–00, दिनांक– 28.12.2010 एवं भवन निर्माण विभाग का पत्र संख्या–2030, दिनांक–21.04.2006

महाशय,

बिहार राज्य शैक्षणिक आधारभूत संरचना विकास निगम लि० के अधीन **"जय प्रकाश विश्वविद्यालय, छपरा"** के परिसर में परीक्षा भवन निर्माण प्रस्तावित है। इस भवन के निर्माण स्थल पर मिट्टी का जाँच कराना है।

अतः अनुरोध है कि उपरोक्त स्थल का तीन बिन्दुओं पर 10.5 मीटर गहराई तक प्रत्येक 1.5 मीटर गहराई में मिट्टी का नमूना संग्रह कर प्रतिवेदन समर्पित करें। साथ ही संलग्न विहित प्रपत्र में मिट्टी के भार वहन क्षमता की गणना (isolated एवं pile foundation के लिए अलग–अलग) भी समर्पित करें।

इस जाँच कार्य को इस तरह संपादित करें कि ट्रान्सपोर्टेशन एवं मोबलाईजेशन खर्च कम से कम हो। प्रत्येक स्थल पर सम्पर्क व्यक्ति संबंधित स्थल के विश्वविद्यालय/महाविद्यालय के प्रधानाचार्य/प्राचार्य रहेंगे।

विश्वासभाजन

10/01/19
मुख्य अभियंता

Bihar Foundation Consultants
403, Ganga Darshan Apartment, Patna-10
[A Unit : Baidyanath Foundation Consultants Pvt. Ltd.]

PN - 190120 **Appendix - G**