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Date : 11-OCTOBER-2025

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Report No. ABC/25-26/SRS002115

# TEST - REPORT ON SUB-SOIL-INVESTIGATION AT THE PROPOSED SITE FOR CONSTRUCTION OF FORESTRY AND HORTICULTURE UNIVERSITY AT CAMPIRGANJ DISTRICT- GORAKHPUR(U.P.)



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**-: HOUSE FOR :-**

**Soil / Material Testing, Geological Investigation, Quality  
Control & Survey of sites**

**Administrative Office: - C-1074/75, SECTOR - B. MAHANAGAR, LUCKNOW**

### **ACKNOWLEDGEMENT**

*We are thankful for providing us the opportunity to prepare and submit the soil investigation report and we appreciate the co-operation & assistance provided by the client. Looking forward to provide, many such reliable & timely services in future.*



**ABC CONSULTANTS**

(Soil Investigations and Laboratory Works)

**Authorized Signatory**

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## **1.0 INTRODUCTION :**

This report cover the results of field and Laboratory test conducted at the Proposed Site for Construction of Forestry and Horticulture University Building at Campirganj District -Gorakhpur (U.P.) India. These Investigations have been made to find out the allowable pressure of the soil required for the safe and economical design and execution

of engineering works. The work of soil investigation was entrusted to **ABC CONSULTANTS, Administrative Office:- C-1074/75, SECTOR – B. MAHANAGAR, LUCKNOW**

It was decided by the concerned to conduct boring at Four points up to depth of 30.0 meter each at the points marked by them at the site. Accordingly, the boring was conducted in accordance to I.S:1892–1979. Disturbed & undisturbed soil samples were collected along with conducting the standard penetration test at an interval of 1.5 meter. Or change of strata which ever met earlier starting from boring points to the termination of bore holes.

### **1.1 UNDISTURBED SOIL SAMPLES:**

These samples have been collected by the oven dry sampler. After recovery of soil samples from the bore holes the ends of the tube have been cleaned waxed and marked properly. The depth of undisturbed soil samples have been indicated on the bore log chart as well on the Laboratory test result sheet attached. The soil samples have been collected as per I.S. 1892 – 1979.

### **2.1.2 DISTURBED SOIL SAMPLES:**

The depth of the disturbed soil samples have been indicated on the bore log chart as well as on the Laboratory test result and were collected in polythene bags & properly leveled.

### **2.2.1 STANDARD PENETRATION TEST:**

The Standard Penetration Test has been conducted in the bore log charts at the intervals of 1.5 meter as per latest IS: 2131-1981 i.e. “Method for standard penetration test for soils”.

In this depth Standard split spoon sampler is driven in to the soil are required depth,



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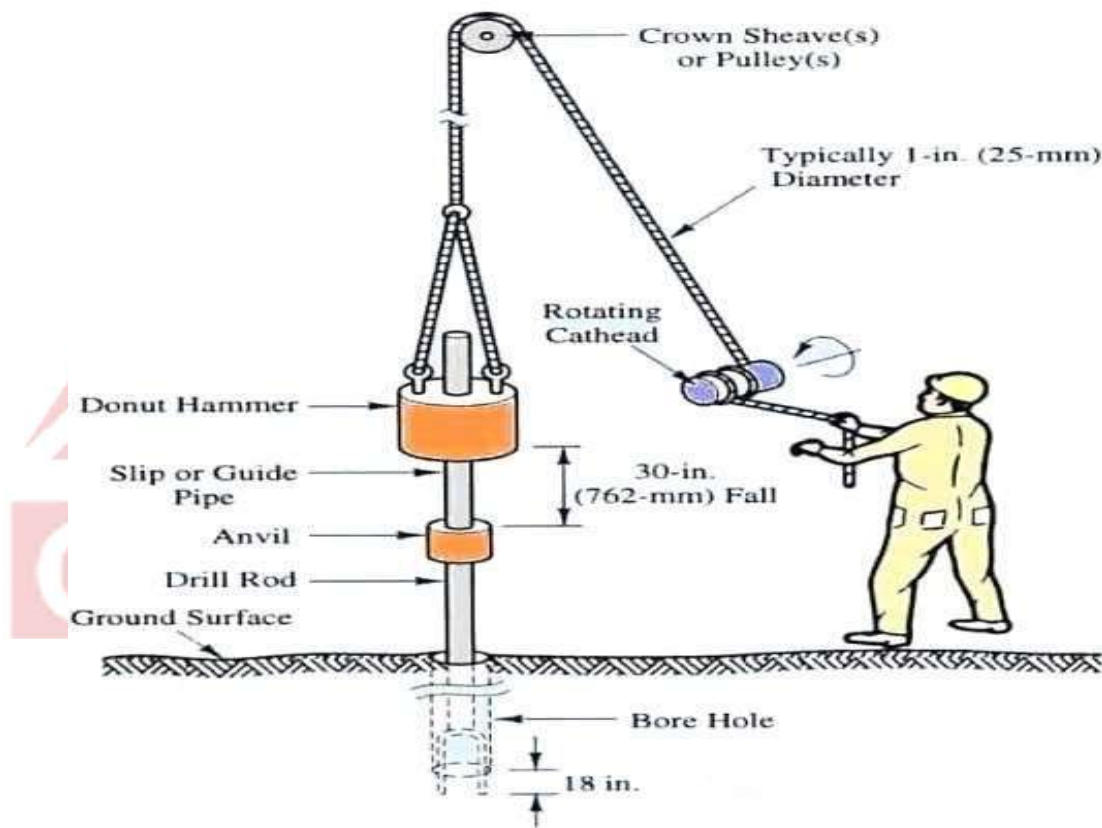
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with the help of drive weight of 63.5 kg falling freely under gravity through a Vertical height of 75cm. The number of blows for every 15 cms is recorded. The number of blow for the first 15 cm. is neglected due to local disturbance and as a seating drive. The number of blows next 30 cm. are recorded as penetration blows 'N' of the soil at the depth. The result of the standard penetration test have been indicated on the laboratory test results sheet as well as on the bore log chart. Disturbed Soil samples obtained from standard split spoon sampler were collected in polythene bags of suitable size. These samples were properly sealed, labelled, recorded and carefully transported to laboratory for testing.



**DIAGRAMMATIC OF SPT**

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## 2.2.2 CONSISTENCY/RELATIVE DENSITY OF SOIL WITH SPT VALUES AS PER IRC: 75-2015

CORRELATION FOR CLAY/PLASTIC SILT		CORRELATION FOR SAND/NON-PLASTIC SILT	
Consistency	Penetration Value	Relative Density	Penetration Value
Very Soft	0 to 2 Blows	Very loose	0 to 4 Blows
Soft	2 to 4 Blows	Loose	5 to 10 Blows
Medium Stiff	4 to 8 Blows	Medium	11 to 30 Blows
Stiff	8 to 15 Blows	Dense	31 to 50 Blows
Very Stiff	15 to 30 Blows	Very Dense	Above 50
Hard	Above 30		

### 3.0 LABORATORY WORK

#### 3.1 UNDISTURBED SOIL SAMPLES:

The Undisturbed soils collected from the bore holes have been tested for the following to determine the engineering properties of soil as per requirement.

- Sieve Analysis (I.S. Code 2720 (Part IV)-2007
- Atterberg's Limit (Via Liquid and Plastic Limit & Plasticity Index)  
(I.S. Code 2720 (Part V)-2007
- Particle size analysis (I.S. Code 2720 (Part IV)-2007
- Bulk and Dry Density (I.S. Code 2720 (Part XXIX)-2007
- Natural Moisture Content (I.S. Code 2720 (Part II)-2010
- Shear Parameters C &  $\Phi$  (I.S. Code 2720 (Part XII & XIII)-2007
- Consolidation Test (For determination of Cc values of clayey soil samples) (I.S. Code 2720 (Part XV)-2007
- Specific Gravity (I.S. Code 2720 (Part III)-2007

#### 3.2 DISTURBED SOIL SAMPLES :

The disturbed soil samples have been tested for the following parameters.

- Sieve Analysis (I.S. Code 2720 (Part IV)-2007

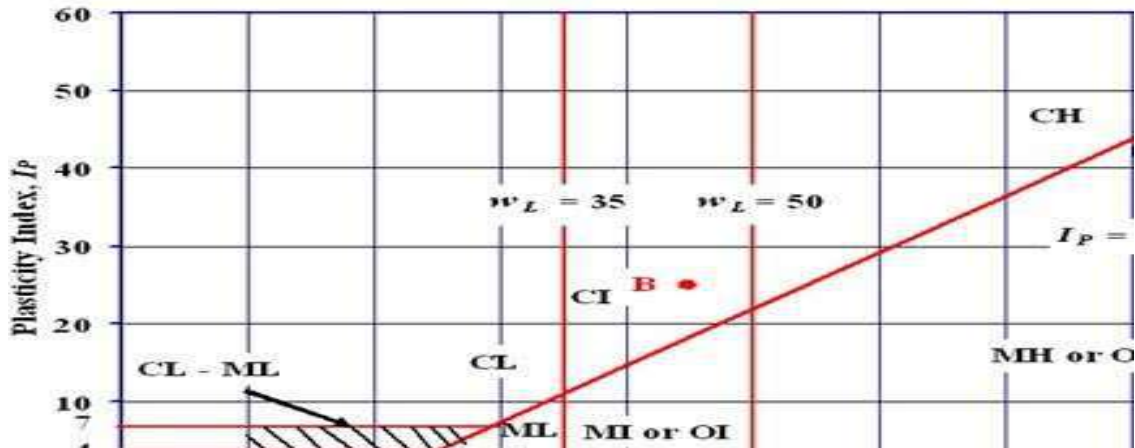
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**4.0 SOIL CLASSIFICATION:** Soil classification has been done with the help of the soil properties obtained by laboratory test as per I.S. 1498 "Methods of classification and identification of soil for general engineering purposes".

b) Atterberg's Limits (I.S. Code 2720 (Part IV)-2007

The entire Laboratory has been carried out as per relevant I.S. code & has been tabulated.



FOR COHESIVE SOIL		FOR NON-COHESIVE SOIL	
Plasticity	Liquid Limit	Soil Classification	% Passing on IS Sieve 0.075 mm
Low Plastic	<35	ML	>50
Medium Plastic	35 to 50	SM	13-49
High Plastic	>50	SM-SP	5-12
		SP	1-4

### ABBREVIATIONS

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>CL - SILTY CLAY OF LOW PLASTICITY</li> <li>CI - SILTY CLAY OF MEDIUM PLASTICITY</li> <li>CH - SILTY CLAY OF HIGH PLASTICITY</li> <li>ML - CLAYEY SILT OF LOW PLASTICITY</li> <li>CL-ML - CLAYEY SILT OF LOW PLASTICITY</li> <li>MI - CLAYEY SILT OF MEDIUM PLASTICITY</li> <li>SC - CLAYEY SAND</li> <li>GL - GROUND LEVEL</li> </ul> | <ul style="list-style-type: none"> <li>ML - SANDY SILT</li> <li>SM - SILTY SAND</li> <li>SM-SP - POORLY GRADED SAND-SILT MIXTURE</li> <li>SW/SP - WELL/POORLY GRADED SAND</li> <li>GSF - GENERAL SHEAR FAILURE</li> <li>LSF - LOCAL SHEAR FAILURE</li> <li>ISF - INTERMEDIATE SHEAR FAILURE</li> <li>BGL - BELOW GROUND LEVEL</li> </ul> |
|--|--|

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## **5.0 GENERAL NATURE OF SOIL STRATA:**

The general nature of the soil strata met during boring in each of bore holes are indicated on the bore log charts as well as on the laboratory test results sheet. The entire Strata comprises of 'CI' silty clay of medium plasticity, 'CL/ML' clayey silt of very low plasticity, 'ML' sandy silt and 'SM' silty sand..

## **5.1 STANDARD PENETRATION TEST:**

The 'N' values (or SPT values recorded) during penetration test in the strata in all the bore hole No. 1, 2, 3 & 4 were found vary from 6 to 49 indicate the consistency of the soil as medium.

## **6.0 WATER TABLE:**

The depth of water table was met up to 2.0 m depth during boring operation in bore hole at the time of soil exploration in the month of since September 2025.

## **7.0 INTERPRETATION OF THE TEST RESULTS (SHEAR CONSIDERATION):**

**7.1** The choice of the type of foundation depends upon the safe bearing capacity, design and layout of super structure, relative economics of various alternatives and practical consideration. In case of strip footing the safe bearing capacity / allowable bearing pressure, calculation is governed by IS: 6403-1981, for shear consideration & IS: 1904-1986 & IS: 8009 (Part-I)-1976, for consideration of settlement. Net Safe Bearing capacity from Shear Failure consideration has been computed in accordance with IS: 6403-1981. A factor of safety of 3.0 is selected based on clause 706.3.1.1.1 of IRC 78- 2014 to estimate the net safe bearing capacity from ultimate net bearing capacity. The modified bearing capacity formula are as below considering the shape of footing, inclination of loading, depth of embedment and effect of water table.

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$$Q_s = 1/F [C.N_c.S_c.d_c.i_c. + q(N_q-1) S_q.d_q.i_q. + 0.50 \gamma B. N_\gamma.s_\gamma.d_\gamma.i_\gamma.w']$$

Where:

$Q_s$  = Bearing capacity on shear consideration in  $\text{Kg/cm}^2$

$F$  = Factor of safety

$\gamma$  = Unit weight of soil

$C$  = Cohesion in  $\text{Kg/cm}^2$

$q$  = effective overburden pressure  $\text{Kg/cm}^2$

$B$  = Width of footing

$w'$  = Correction factor for position of water table.

$N_c.N_q.N_\gamma$  = Non dimensional bearing capacity factors depends upon angle of internal friction  $\phi$  and void ratio  $e$

$S_c.S_q.S_\gamma$  = Shape factors

$d_c.d_q.d_\gamma$  = Depth factors

$i_c.i_q.i_\gamma$  = Inclination factors

### 7.3 SETTLEMENT CONSOLIDATION: (For Plastic soil)

The settlement in the plastic soil indicating some cohesion is given by the formula:

$$S = \frac{C_c}{1 + e_o} \times H \times \log_{10} \frac{P_o + \Delta P}{P_o}$$

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Where:

$C_c$  = Compression Index

$H$  = Thickness of Plastic layer

$P_o$  = Original Pressure at mid depth of Plastic layer

$\Delta P$  = Change in Pressure at mid depth of Plastic layer

$e_o$  = Void ratio for pressure  $P_o$

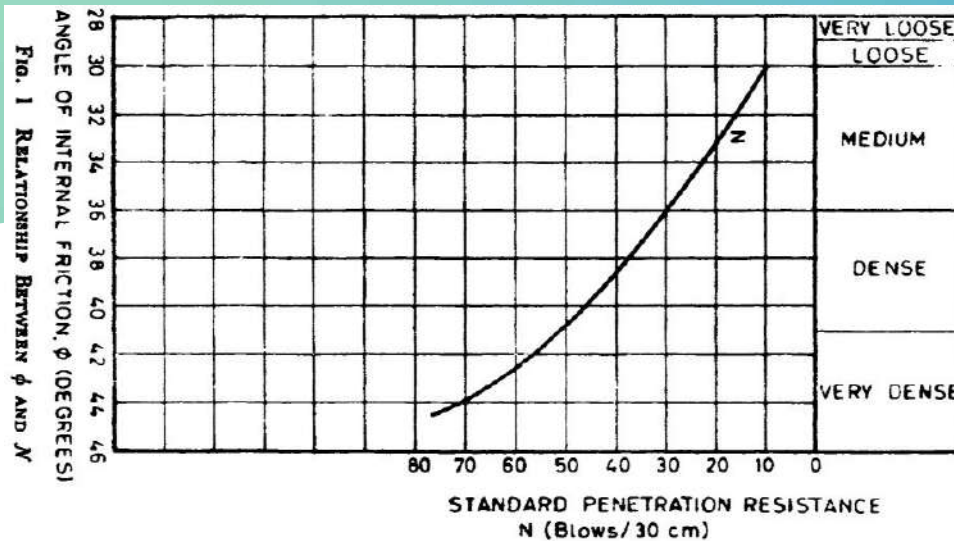
#### **7.4 SETTLEMENT CONSIDERATION:** (For non-Plastic soils)

The allowable bearing pressure is also to be so restricted that the anticipated settlement does not exceed the permissible settlement as specified in IS: 1904-1986, for a particular type of structure and nature of soil.

#### **7.5 Proposed Design Parameter's for Soil:**

##### **7.5.1 For Cohesionless Soils**

In cohesion-less soils since it is difficult to collect undisturbed samples, it is preferred to estimate the angle of internal friction from corrected SPT values (Ref: IS: 6403, IRC:78, Euro Code / British Code BS:8004). Particle size distribution among the non-cohesive soils will also affect on angle of internal friction, generally all codes and literatures have provided the curves between corrected SPT(N) value and angle of internal friction for sands (SP type soils) however when fine content increases, the angle of friction reduces. Although it is not necessary to conduct tests on cohesionless soils (Sandy Soils) as  $\phi$  value may directly be taken from Corrected SPT N value but to check the values as per laboratory tests also the same have been conducted. Direct shear tests may also be conducted on remoulded samples at simulated density; however, the structure of the soil cannot be duplicated.



### 7.5.2 Caltrans Geotechnical Manual:

#### Soil Correlations

This section of the Geotechnical Manual presents the SPT correlations to be used for friction angle ( $\phi$  angle) and unit weight. The correlations use Standard Penetration Test (N) values corrected for overburden and hammer efficiency (N160). Usage of correlations for geotechnical design is addressed in the various design sections of the Geotechnical Manual. Other correlations, e.g. CPT correlations and shear wave velocity correlations are found elsewhere in the Geotechnical Manual.

#### Cohesionless Soil: Friction Angle

Correlations of SPT blow counts to cohesionless soil friction angle and unit weight follow Bowles (1977) and are consistent with many of the NHI manuals used by the department. The correlations use Standard Penetration Test (N) values corrected for overburden and hammer efficiency (N160). Use Chart 1 to correlate N160 to the friction ( $\phi$ ) angle.

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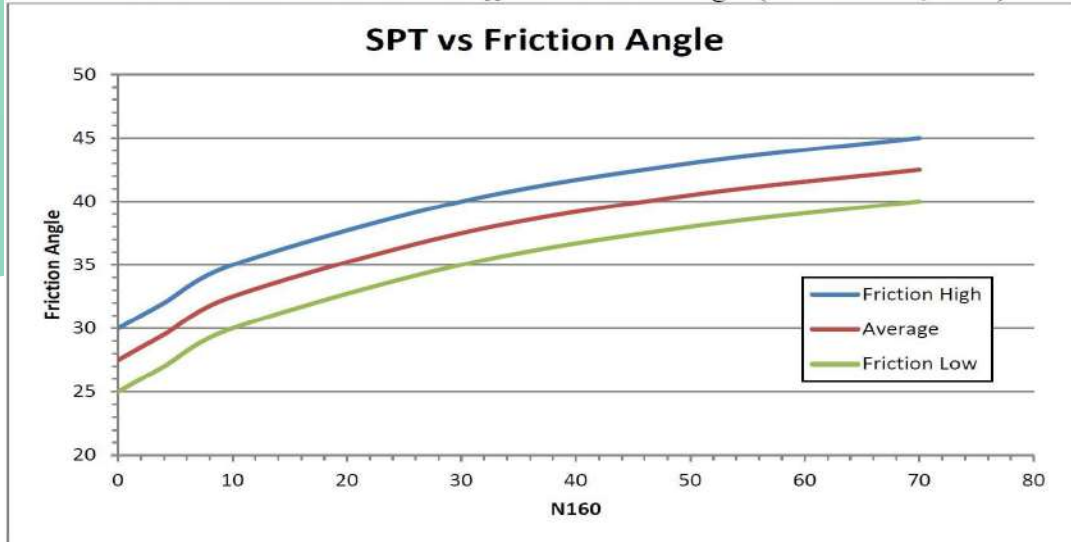
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Chart 1: Correlation of SPT  $N_{160}$  with Friction Angle (after Bowles, 1977)



Choose the friction angle (expressed to the nearest degree) based upon the soil type, particle size(s), and rounding or angularity. Experience should be used to select specific values within the ranges. In general, finer materials or materials with significant (about 30+ %) silt-sized material will fall in the lower portion of the range. Coarser materials with less than 5% fines will fall in the upper portion of the range. The extreme range of phi angles for any  $N_{160}$  is five degrees, so the adjustment factors for particle size and roundness should be only a degree or two. The following bullets provide help in determining which value to select for a given  $N_{160}$  and soil type:

- Use the maximum value for GW
- Use the average for GM and SP
- Use the minimum for SC
- Use the minimum + 0.5 for ML
- Use the average +1 for SW
- Use the average -1 for GC
- Use the Maximum -1 for GP

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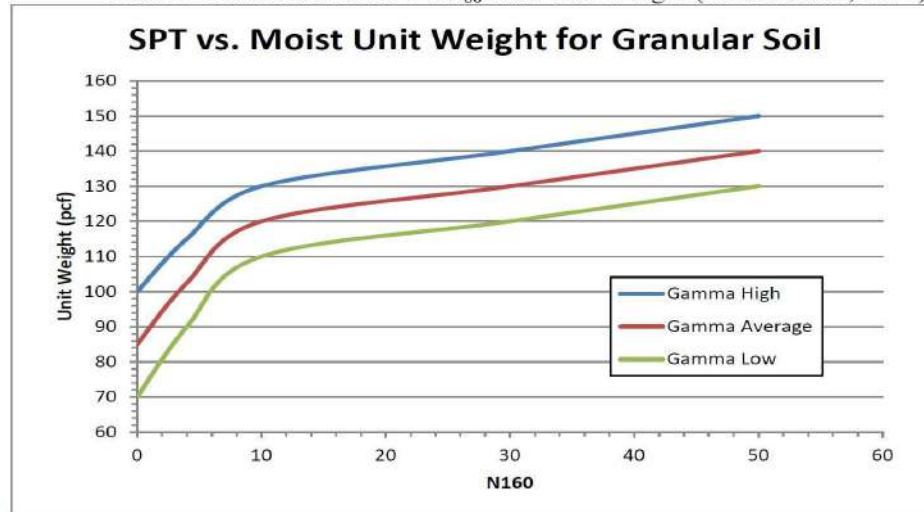
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Values may also be increased with increasing grain size and/or particle angularity and decreased with decreasing grain size and/or increasing roundness. For example, an SP with  $N_{160} = 30$  could be assigned phi angles of 37, 38 or 39 degrees for fine, medium and coarse grain sizes respectively.

Cohesion less Soil: Unit Weight

Use Chart 2 to correlate  $N_{160}$  to the moist unit weight for cohesion less (Granular) soil.

Chart 2: Correlation of SPT  $N_{160}$  with Unit Weight (after Bowles, 1977).



Choose the unit weight expressed to the nearest five pcf for the soil type based on the following guidelines:

- Use the higher values for well-graded sands and gravels and average values for poorly- graded sands and gravels.
- Use lower values for elastic silt, and clayey or silty sands and gravel.
- Deduct up to 20% for dry soils.

## ii. For Cohesive Soil's

For very stiff to hard consistency cohesive/plastic soils where undisturbed samples cannot be collected, correlation for estimating Un-drained cohesion of fine-grained soils based on  $(N)_{60}$  and plasticity index is proposed by M J Tomlinson. "Foundation Design and Construction" seventh edition as below;

$$C_u \text{ (kN/m}^2\text{)} = f_1 \cdot (N)_{60}$$

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Where,

(N)<sub>60</sub> = SPT 'N' value corrected for 100 kPa and 60% of theoretical free fall hammer energy

f<sub>1</sub> = factor to be taken from Figure shown below.

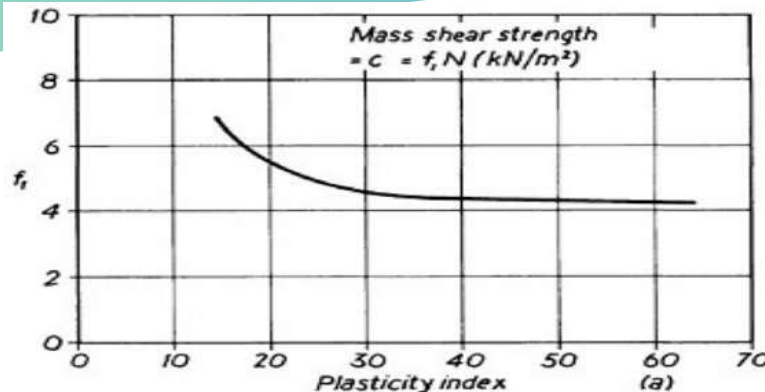


Fig. Relationship between mass shear strength plasticity index and standard penetration test N-values

- **Caltrans Geotechnical Manual:**

Cohesive Soil: Unconfined Compressive Strength ( $Q_u$ ) /Undrained Shear Strength ( $S_u$ )

The standard practice is to determine shear strength of cohesive soils in the field based on measurements with torvane, pocket penetrometer, or vane shear. It is not acceptable to use SPT correlations to determine shear strength or to assign consistency values. For preliminary studies, use Chart 3 to assign shear strength values when only SPT values are available. Usually this is applicable when data are available from old as-built LOTBs where field or laboratory strength tests are not available.

**Chart 3: Correlation of SPT N<sub>160</sub> to Unconfined Compressive Strength**

(after Bowles, 1977)

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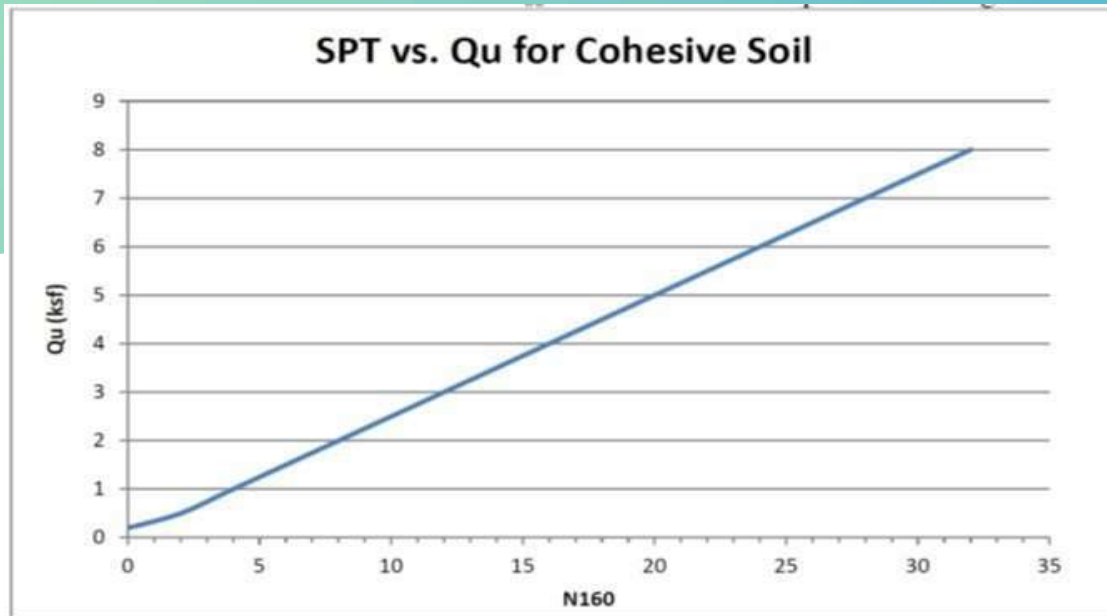
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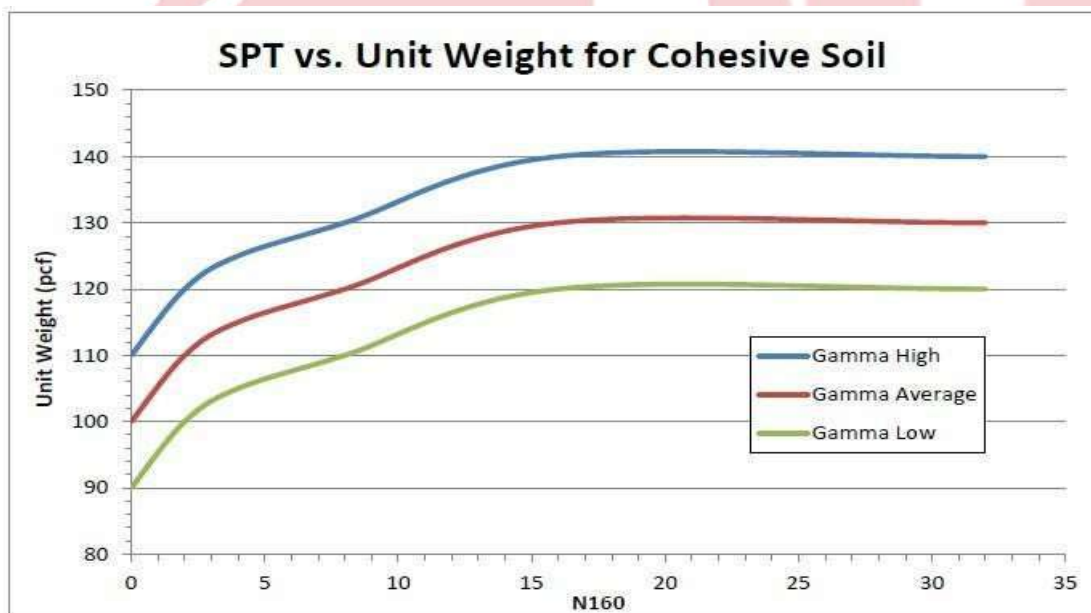
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#### Cohesive Soil: Unit Weight

Use Chart 4 to correlate N160 with the Unit Weight of cohesive soil.

Chart 4: Correlation of SPT N160 with Unit Weight (after Bowles, 1977).



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Comparing field pocket penetrometer and/or torvane readings to Chart 4 is a good way of determining whether high or low values should be used. For example, if the pocket penetrometer reading for a clay with  $N_{160} = 10$  is about 2.5 ksf (the same as the value shown in Chart 3) the unit weight should correspond to the average value. If the pocket penetrometer reading is higher, the unit weight should be increased from the average, and if the pocket penetrometer reading is lower, the unit weight should be decreased from the average. In the absence of SPT data, unit weights can be estimated using Charts 3 and 4 and the strength data (e.g., pocket penetrometer reading). For example, from Chart 3, a pocket penetrometer value of 5 ksf corresponds to an SPT  $N_{160}$  value of 20. Chart 4 shows the average unit weight of a cohesive soil with  $SPT\ N_{160} = 20$  is 130 pcf.

## 8.0 COMPUTATION OF BEARING CAPACITY :

### 8.1 BEARING CAPACITY FROM SHEAR CRITERIA:

Bearing capacity calculations were carried out Isolated / R.C.C. Raft Foundation at depth 1.50m, 2.00m, 2.50m, & 3.00m below ground level with width or size of foundation 1.50m, 2.00m, 2.50m & (10.00x10.00). However governing values of bearing capacity was found the calculations for the same are produced below:

#### 8.1.1 Bearing capacity Calculation:

Governing soil parameter are from bore hole no. 01

- |    |                                   |   |                         |
|----|-----------------------------------|---|-------------------------|
| 1. | Angle of internal friction $\phi$ | = | $17^0$                  |
| 2. | Cohesion C                        | = | 0.13 Kg/cm <sup>2</sup> |
| 3. | Unit weight of soil $\gamma$      | = | 1.77 gm/cc              |

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4. Submerged density. of soil  $\gamma$  = -
5. Specific Gravity = 2.61
6. Dry Density = 1.53 gm/cc
7. Void ratio  $e_0$  = 0.71
8. Condition = Medium (Interpolation)
9. Bearing Capacity Factor

Shear Parameters	Nc	Nq	Nr
General Shear failure $e_0 \leq 0.55$	12.520	4.920	3.750
Local Shear failure $> 0.75$	9.150	2.919	1.654
Interpolated value for $e_0 = 0.71$	9.824	3.320	2.073

10. Water Table correction Factor  $w'$  = 0.667
11. Overburden pressure  $q$  at depth 1.50 m = 0.266 Kg/cm<sup>2</sup>
12. Type of foundation = Isolated Foundation
13. Depth of foundation  $d_f$  = 1.50 m
14. Width or size of foundation = 1.50 m
15. Shape factors  
 $S_c = 1.30$   $S_q = 1.20$ ,  $S_\gamma = 0.80$
16. Inclination factors  
 $i_c = 1.0$ ,  $i_q = 1.0$ ,  $i_\gamma = 1.0$
17. Depth Factors  
 $d_c = 1.270$   $d_q \text{ \& } d_\gamma = 1.135$
18. Factor of safety  $f = 3.0$

**Bearing Capacity: -**

$$\begin{aligned} Q_c &= 1/3 [0.0953 \times 9.824 \times 1.270 \times 1.30 \times 1.0 + 0.266 \times (3.320 - 1.0) \times 1.20 \times 1.135 + 0.5 \times 1.77 \times 1.50 \\ &\quad \times 2.073 \times 0.80 \times 1.135 \times 0.667 / 10.0] \\ &= 1/3 [1.546 + 0.839 + 0.167] \text{ Kg/cm}^2 \\ &= 0.850 \text{ Kg/cm}^2 \end{aligned}$$

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**8.1.2 Bearing capacity Calculation:**

Governing soil parameter are from bore hole no. 01

1. Angle of internal friction  $\phi$  =  $25^0$
2. Cohesion C =  $0.00 \text{ Kg/cm}^2$
3. Unit weight of soil  $\gamma$  =  $1.96 \text{ gm/cc}$
4. Submerged density. of soil  $\gamma$  =  $0.96 \text{ gm/cc}$
5. Specific Gravity =  $2.59$
6. Dry Density =  $1.57 \text{ gm/cc}$
7. Void ratio  $e_0$  =  $0.65$
8. Condition = Medium (Interpolation)
9. Bearing Capacity Factor

Shear Parameters	Nc	Nq	Nr
General Shear failure $e_0 \leq 0.55$	20.720	10.660	10.880
Local Shear failure $> 0.75$	13.250	5.060	3.891
Interpolated value for $e_0 = 0.65$	16.985	8.510	7.385

10. Water Table correction Factor  $w'$  =  $1.0$
11. Overburden pressure  $q$  at depth  $2.00 \text{ m}$  =  $0.192 \text{ Kg/cm}^2$
12. Type of foundation = Isolated Foundation
13. Depth of foundation  $d_f$  =  $2.00 \text{ m}$
14. Width or size of foundation =  $2.00 \text{ m}$
15. Shape factors  
 $S_c = 1.30$     $S_q = 1.20$ ,    $S_\gamma = 0.80$
16. Inclination factors  
 $i_c = 1.0$ ,    $i_q = 1.0$ ,    $i_\gamma = 1.0$
17. Depth Factors  
 $d_c = 1.314$     $d_q \text{ \& } d_\gamma = 1.157$
18. Factor of safety  $f = 3.0$

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**Bearing Capacity: -**

$$\begin{aligned} Q_c &= 1/3 [0.000 \times 16.985 \times 1.314 \times 1.30 \times 1.0 + 0.192 \times (8.510 - 1.0) \times 1.20 \times 1.157 + 0.5 \times 0.96 \times 2.00 \\ &\quad \times 7.385 \times 0.80 \times 1.157 \times 1.0 / 10.0] \\ &= 1/3 [0.000 + 2.002 + 0.656] \text{ Kg/cm}^2 \\ &= 0.886 \text{ Kg/cm}^2 \end{aligned}$$

**8.1.3 Bearing capacity Calculation:**

Governing soil parameter are from bore hole no. 01

1. Angle of internal friction  $\phi$  =  $25^\circ$
2. Cohesion C = 0.00 Kg/cm<sup>2</sup>
3. Unit weight of soil  $\gamma$  = 1.96 gm/cc
4. Submerged density. of soil  $\gamma$  = 0.96 gm/cc
5. Specific Gravity = 2.59
6. Dry Density = 1.57 gm/cc
7. Void ratio  $e_0$  = 0.65
8. Condition = Medium (Interpolation)
9. Bearing Capacity Factor

Shear Parameters	Nc	Nq	Nr
General Shear failure $e_0 \leq 0.55$	20.720	10.660	10.880
Local Shear failure $> 0.75$	13.250	5.060	3.891
Interpolated value for $e_0 = 0.65$	16.985	8.510	7.385

10. Water Table correction Factor  $w'$  = 1.0
11. Overburden pressure  $q$  at depth 2.50 m = 0.240 Kg/cm<sup>2</sup>
12. Type of foundation = Isolated Foundation
13. Depth of foundation  $d_f$  = 2.50 m
14. Width or size of foundation = 2.00 m
15. Shape factors

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$$S_c = 1.30 \quad S_q = 1.20, \quad S_\gamma = 0.80$$

16. Inclination factors

$$i_c = 1.0, \quad i_q = 1.0, \quad i_\gamma = 1.0$$

17. Depth Factors

$$d_c = 1.392 \quad d_q \text{ \& } d_\gamma = 1.196$$

18. Factor of safety  $f = 3.0$

**Bearing Capacity: -**

$$\begin{aligned} Q_c &= 1/3 [0.000 \times 16.985 \times 1.392 \times 1.30 \times 1.0 + 0.240 \times (8.510 - 1.0) \times 1.20 \times 1.196 + 0.5 \times 0.96 \times 2.00 \\ &\quad \times 7.385 \times 0.80 \times 1.196 \times 1.0 / 10.0] \\ &= 1/3 [0.000 + 2.587 + 0.678] \text{ Kg/cm}^2 \\ &= 1.088 \text{ Kg/cm}^2 \end{aligned}$$

**8.1.4 Bearing capacity Calculation:**

Governing soil parameter are from bore hole no. 01

1. Angle of internal friction  $\phi = 25^\circ$
2. Cohesion  $C = 0.00 \text{ Kg/cm}^2$
3. Unit weight of soil  $\gamma = 1.96 \text{ gm/cc}$
4. Submerged density. of soil  $\gamma = 0.96 \text{ gm/cc}$
5. Specific Gravity  $= 2.59$
6. Dry Density  $= 1.57 \text{ gm/cc}$
7. Void ratio  $e_0 = 0.65$
8. Condition  $= \text{Medium (Interpolation)}$
9. Bearing Capacity Factor

Shear Parameters	Nc	Nq	Nr
General Shear failure $e_0 \leq 0.55$	20.720	10.660	10.880
Local Shear failure $> 0.75$	13.250	5.060	3.891
Interpolated value for $e_0 = 0.65$	16.985	8.510	7.385

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10. Water Table correction Factor  $w'$  = 1.0
11. Overburden pressure  $q$  at depth 2.00 m = 0.192 Kg/cm<sup>2</sup>
12. Type of foundation = R.C.C. Raft Foundation
13. Depth of foundation  $d_f$  = 2.00 m
14. Width or size of foundation = (10.00x10.00) m
15. Shape factors
- $S_c$  = 1.20     $S_q$  = 1.20,     $S_\gamma$  = 0.60
16. Inclination factors
- $i_c$  = 1.0,     $i_q$  = 1.0,     $i_\gamma$  = 1.0
17. Depth Factors
- $d_c$  = 1.062     $d_q$  &  $d_\gamma$  = 1.031
18. Factor of safety  $f$  = 3.0

**Bearing Capacity: -**

$$Q_c = \frac{1}{3} [0.000 \times 16.985 \times 1.062 \times 1.20 \times 1.0 + 0.192 \times (8.510 - 1.0) \times 1.20 \times 1.031 + 0.5 \times 0.96 \times 10.0 \times 7.385 \times 0.60 \times 1.031 \times 1.0 \times 1.0 / 10.0]$$
$$= \frac{1}{3} [0.000 + 1.784 + 2.193] \text{ Kg/cm}^2$$
$$= 1.326 \text{ Kg/cm}^2$$

**8.1.5 Bearing capacity Calculation:**

Governing soil parameter are from bore hole no. 01

1. Angle of internal friction  $\phi$  = 25°
2. Cohesion  $C$  = 0.00 Kg/cm<sup>2</sup>
3. Unit weight of soil  $\gamma$  = 1.96 gm/cc
4. Submerged density. of soil  $\gamma$  = 0.96 gm/cc
5. Specific Gravity = 2.59
6. Dry Density = 1.57 gm/cc
7. Void ratio  $e_o$  = 0.65

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8. Condition = Medium (Interpolation)
9. Bearing Capacity Factor

Shear Parameters	Nc	Nq	Nr
General Shear failure $e_0 \leq 0.55$	20.720	10.660	10.880
Local Shear failure $> 0.75$	13.250	5.060	3.891
Interpolated value for $e_0 = 0.65$	16.985	8.510	7.385

10. Water Table correction Factor  $w'$  = 1.0
11. Overburden pressure  $q$  at depth 2.50 m = 0.240 Kg/cm<sup>2</sup>
12. Type of foundation = R.C.C. Raft Foundation
13. Depth of foundation  $d_f$  = 2.50 m
14. Width or size of foundation = (10.00x10.00) m
15. Shape factors
- $S_c = 1.20$     $S_q = 1.20$ ,    $S_\gamma = 0.60$
16. Inclination factors
- $i_c = 1.0$ ,    $i_q = 1.0$ ,    $i_\gamma = 1.0$
17. Depth Factors
- $d_c = 1.078$     $d_q \text{ \& } d_\gamma = 1.039$
18. Factor of safety  $f = 3.0$

**Bearing Capacity: -**

$$\begin{aligned} Q_c &= 1/3 [0.000 \times 16.985 \times 1.078 \times 1.20 \times 1.0 + 0.240 \times (8.510 - 1.0) \times 1.20 \times 1.039 + 0.5 \times 0.96 \times 10.0 \\ &\quad \times 7.385 \times 0.60 \times 1.039 \times 1.0 \times 1.0 / 10.0] \\ &= 1/3 [0.000 + 2.247 + 2.210] \text{ Kg/cm}^2 \\ &= 1.486 \text{ Kg/cm}^2 \end{aligned}$$

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**8.2 BEARING CAPACITY FROM SETTLEMENT CRITERIA:****Estimation of Settlement:**

Bearing Capacity from settlement consideration is the bearing pressure, which restricts the settlement within permissible limits. Bearing capacity as obtained from the previous section is tried first as the bearing pressure to compute the settlement of foundation. If settlement thus obtained is excessive, lower values of bearing pressures are tried. The settlement calculation shown below is corresponding to safe bearing pressure. The soil in the effective zone below footing level is non-cohesive soil hence the settlement for both layers has been computed accordingly.

**Settlement of Non - Cohesive soil**

Standard penetration resistance at different depths in the effective zone will determine the settlement of sandy strata. S.P.T. values of sandy strata in the effective zone have been corrected for overburden as per I.S. 2131 – 1981

The recorded and corrected S.P.T. values are given below.

Depth below ground level (meter)	Over burden (Kg/cm <sup>2</sup> )	correction factor	S.P.T. Value recorded	Lowest Corrected S.P.T. Value
			Bore hole	
	1	1	1	
1.85-2.30	0.407	1.270	6	7.62
3.35-3.80	0.551	1.160	8	9.28
4.85-5.30	0.695	1.120	9	10.08
6.35-6.80	0.836	1.055	10	10.55
7.85-8.30	0.977	1.014	12	12.16
9.35-9.80	1.115	0.970	16	15.52
10.85-11.30	1.254	0.923	19	17.53
12.35-12.80	1.395	0.895	21	18.79
13.85-14.30	1.551	0.860	14	12.04
15.35-15.80	1.708	0.830	16	13.28
16.85-17.30	1.864	0.804	17	13.66

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The average and lowest corrected S.P.T. value is given below.

S.No.	Average Lowest corrected Value
1	8.45
2	9.68
3	13.28

Lowest average corrected S.P.T. Value have been taken used for analysis

### 8.2.1 Settlement of Non - Cohesive soil:

Settlement of a footing with width 'B' under unit intensity of pressure resting on cohesion less deposit with known standard penetration test values can be determine from I.S. 8009: 1981

The settlement of any other pressure is computed by assuming that the settlement is proportional to the intensity of pressure

- (i) Thus, the settlement for unit pressure for the lowest corrected S.P.T. value and for 0.850 Kg/Sqcm<sup>2</sup>. as the allowable pressure for 1.50 m depth with Isolated foundation of size 1.50 m is given below:

Type of Foundation = Isolated foundation

Lowest corrected value = 8.45

Settlement for unit pressure = 6.074 cm.

Settlement for 0.850 Kg/sqcm<sup>2</sup> = 5.163 cm.

Settlement after applying rigidity & depth factor = 4.130 cm.

The settlement is within permissible limit as per I.S: 1904 – 1986

Then safe Bearing capacity 8.50 t/m<sup>2</sup>.



- (ii) Thus, the settlement for unit pressure for the lowest corrected S.P.T. value and for 0.886 Kg/Sqcm<sup>2</sup>. as the allowable pressure for 2.00 m depth with Isolated foundation of size 2.00 m is given below:

Type of Foundation	=	Isolated foundation
Lowest corrected value	=	9.68
Settlement for unit pressure	=	4.466 cm.
Settlement for 0.886 Kg/sqcm <sup>2</sup>	=	3.956 cm.
Settlement after applying rigidity & depth factor	=	3.165 cm.

The settlement is within permissible limit as per I.S: 1904 – 1986

Then safe Bearing capacity 8.86 t/m<sup>2</sup>.

- (iii) Thus, the settlement for unit pressure for the lowest corrected S.P.T. value and for 1.088 Kg/Sqcm<sup>2</sup>. as the allowable pressure for 2.50 m depth with Isolated foundation of size 2.00 m is given below:

Type of Foundation	=	Isolated foundation
Lowest corrected value	=	9.68
Settlement for unit pressure	=	4.466 cm.
Settlement for 1.088 Kg/sqcm <sup>2</sup>	=	4.859 cm.
Settlement after applying rigidity & depth factor	=	3.887 cm.

The settlement is within permissible limit as per I.S: 1904 – 1986

Then safe Bearing capacity 10.88 t/m<sup>2</sup>.

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- (iv) Thus, the settlement for unit pressure for the lowest corrected S.P.T. value and for 1.326 Kg/Sqcm<sup>2</sup>. as the allowable pressure for 2.00 m depth with R.C.C. Raft foundation of size (10.0x10.0) m is given below:

Type of Foundation	=	R.C.C. Raft Foundation
Lowest corrected value	=	13.28
Settlement for unit pressure	=	2.7998 cm.
Settlement for 1.326 Kg/sqcm <sup>2</sup>	=	3.712 cm.
Settlement after applying rigidity factor	=	2.970 cm.

The settlement is within permissible limit as per I.S: 1904 – 1986

Then safe Bearing capacity 13.26 t/m<sup>2</sup>.

- (v) Thus, the settlement for unit pressure for the lowest corrected S.P.T. value and for 1.486 Kg/Sqcm<sup>2</sup>. as the allowable pressure for 2.50 m depth with R.C.C. Raft foundation of size (10.0x10.0) m is given below:

Type of Foundation	=	R.C.C. Raft Foundation
Lowest corrected value	=	13.28
Settlement for unit pressure	=	2.7998 cm.
Settlement for 1.486 Kg/sqcm <sup>2</sup>	=	4.160 cm.
Settlement after applying rigidity factor	=	3.328 cm.

The settlement is within permissible limit as per I.S: 1904 – 1986

Then safe Bearing capacity 14.86 t/m<sup>2</sup>.

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## 9.0 SAFE LOAD FROM ULTIMATE LOAD CAPACITY:

The Ultimate bearing capacity of pile can be calculated from soil properties as per IS: 2911 (Part-I /Sec 2)-2010. The soil properties required are strength properties, cohesion, angle of internal friction and soil density. If these properties are not available directly from laboratory and field tests, they may be indirectly obtained from in situ penetration test data.

### STATIC FORMULA: -

#### (A) Clayey soil: -

The ultimate bearing capacity of pile in cohesive soil may be worked out from the following formula: -

$$Q_u = A_p \cdot N_c \cdot C_p + \sum_{i=1}^n \alpha_i \cdot C_i \cdot A_{si}$$

Where

$Q_u$  = Ultimate bearing capacity of pile (Kg.).

$A_p$  = Cross sectional area of pile stem at toe Level (Cm<sup>2</sup>).

$N_c$  = Bearing Capacity Factor Usually taken as (9.0).

$C_p$  = Average Cohesion at pile tip (Kg/ Cm<sup>2</sup>).

$\alpha_i$  = Adhesion factor = 1.0

$C_i$  = Average Cohesion throughout the length of pile (Kg/ Cm<sup>2</sup>).

$A_{si}$  = Surface area of the pile shaft (Cm<sup>2</sup>).

## **AIRY BE CREATIVE CONSULTANTS (OPC) PRIVATE LIMITED**

OFFICE ADDRESS : C-1074/75, SECTOR -B, MAHANAGAR, LUCKNOW-226006, LAB ADDRESS HOUSE NO.- TEMP-68, SAHEED BHAGAT SING WARD-1(146) KANCHANPUR MATIYARI, KAMTA, LUCKNOW, PH NO.: 0522- 3639933, 09451371403, 07275268881, E-Mail ID :- [abcsoillab@gmail.com](mailto:abcsoillab@gmail.com), [abcconsultants2006@gmail.com](mailto:abcconsultants2006@gmail.com).

## (B) For Sandy Soil: -

The ultimate bearing capacity of pile in non-cohesive soil may be worked out from the following formula: -

$$Q_u = A_p (0.50 \cdot \gamma \cdot D \cdot N_r + P_D \cdot N_q) + \sum_{i=1}^n K \cdot P_{Di} \cdot \tan \delta \cdot A_{si}$$

Where

$A_p$  = Cross-sectional area of pile toe in  $\text{cm}^2$ .

$D$  = Stem diameter in cm.

$\gamma$  = Effective unit weight of soil at pile toe  $\text{Kgf}/\text{cm}^3$ .

$P_D$  = Effective over burden pressure at pile toe  $\text{Kgf}/\text{cm}^2$ .

$N_q$  &  $N_r$  = Bearing Capacity Factors depending upon the angle of internal friction  $\Phi$  at toe.

$K$  = Earth pressure coefficient

$\delta$  = Angle of wall friction (may be taken equal to the angle of internal friction of soil).

$\sum_{i=1}^n$  = Summation for  $n$  layers which piles is installed

$P_{Di}$  = Effective over burden pressure in  $\text{Kgf}/\text{cm}^2$  for the  $i^{\text{th}}$  layer where  $i$  varies from 1 to  $n$ .

$A_{si}$  = Surface area of the pile stem in  $\text{cm}^2$  in the  $i^{\text{th}}$  layer where  $i$  varies from 1 to  $n$

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CIN: U71200UP20230PC194892A

GST NO.: 9AAZCA9203H1Z6

ISO/ ICE 17025 ACCREDITED LABORATORY  
(NABL ACCREDITED LAB)**ABC CONSULTANTS**GEO-TECHNICAL INVESTIGATION, SOIL/ MATERIAL/  
WATER CONSULTANTS AND CIVIL ENGINEERING PROJECT**9.01 Calculation**

The soil strata comprise of cohesion &amp; non-cohesive soil the safe load may be estimated using clayey &amp; sandy soil formula and tabulated below.

Length of pile

= 15.0m

Dia of pile

= 0.60m

Depth (m)	Ap (cm <sup>2</sup> )	Nc	C <sub>p</sub> (kg/cm <sup>2</sup> )	α	C <sub>i</sub> (kg/cm <sup>2</sup> )	As / Asi (cm <sup>2</sup> )	D (cm)	Y	P <sub>d</sub>	N <sub>q</sub>	N <sub>r</sub>	K	P <sub>di</sub>	ø	Qu		F.O.C.	Safe load on pile (tone)
															(Kg)	(Tone)		
1.50	2826	9	0.13	1	0.13	33912	60	-	-	-	-	-	-	-	7714.98	7.71	2.50	3.09
1.50	2826	-	-	1	-	33912	60	0.0096	0.144	8.51	7.385	1.5	0.144	25	9457.3	9.4573	2.50	3.78
1.50	2826	-	-	1	-	33912	60	0.0096	0.144	7.3	6.687	1.5	0.144	25	8884.4	8.8844	2.50	3.55
1.50	2826	-	-	1	-	33912	60	0.0094	0.141	6.441	5.63	1.5	0.141	26	8003.8	8.0038	2.50	3.20
1.50	2826	-	-	1	-	33912	60	0.0094	0.141	5.763	4.742	1.5	0.141	26	7293.6	7.2936	2.50	2.92
1.50	2826	-	-	1	-	33912	60	0.0092	0.138	5.79	4.708	1.5	0.138	27	7266.0	7.2660	2.50	2.91
1.50	2826	-	-	1	-	33912	60	0.0093	0.139	5.79	4.708	1.5	0.139	27	7332.2	7.3322	2.50	2.93
1.50	2826	-	-	1	-	33912	60	0.0094	0.141	6.16	5.125	1.5	0.141	28	7915.9	7.9159	2.50	3.17
1.50	2826	9	0.25	1	0.25	33912	60	-	-	-	-	-	-	-	14836.50	14.84	2.50	5.93
1.50	2826	9	0.35	1	0.35	33912	60	-	-	-	-	-	-	-	20771.10	20.77	2.50	8.31
Total length= 15.00m`								Dia Of Pile=600 mm						Total Safe load		39.92		

**9.02 Calculation**

The soil strata comprise of cohesion &amp; non-cohesive soil the safe load may be estimated using clayey &amp; sandy soil formula and tabulated below.

Length of pile

= 18.0m

Dia of pile

= 0.60m

Depth (m)	Ap (cm <sup>2</sup> )	Nc	C <sub>p</sub> (kg/cm <sup>2</sup> )	α	C <sub>i</sub> (kg/cm <sup>2</sup> )	As / Asi (cm <sup>2</sup> )	D (cm)	Y	P <sub>d</sub>	N <sub>q</sub>	N <sub>r</sub>	K	P <sub>di</sub>	ø	Qu		F.O.C.	Safe load on pile (tone)
															(Kg)	(Tone)		
1.50	2826	9	0.13	1	0.13	33912	60	-	-	-	-	-	-	-	7714.98	7.71	2.50	3.09
1.50	2826	-	-	1	-	33912	60	0.0096	0.144	8.51	7.385	1.5	0.144	25	9457.3	9.4573	2.50	3.78
1.50	2826	-	-	1	-	33912	60	0.0096	0.144	7.3	6.687	1.5	0.144	25	8884.4	8.8844	2.50	3.55
1.50	2826	-	-	1	-	33912	60	0.0094	0.141	6.441	5.63	1.5	0.141	26	8003.8	8.0038	2.50	3.20
1.50	2826	-	-	1	-	33912	60	0.0094	0.141	5.763	4.742	1.5	0.141	26	7293.6	7.2936	2.50	2.92
1.50	2826	-	-	1	-	33912	60	0.0092	0.138	5.79	4.708	1.5	0.138	27	7266.0	7.2660	2.50	2.91
1.50	2826	-	-	1	-	33912	60	0.0093	0.139	5.79	4.708	1.5	0.139	27	7332.2	7.3322	2.50	2.93
1.50	2826	-	-	1	-	33912	60	0.0094	0.141	6.16	5.125	1.5	0.141	28	7915.9	7.9159	2.50	3.17
1.50	2826	-	-	1	-	33912	60	0.0094	0.141	6.188	5.247	1.5	0.141	27	7855.4	7.8554	2.50	3.14
1.50	2826	9	0.25	1	0.25	33912	60	-	-	-	-	-	-	-	14836.50	14.84	2.50	5.93
1.50	2826	9	0.35	1	0.35	33912	60	-	-	-	-	-	-	-	20771.10	20.77	2.50	8.31
1.50	2826	9	0.31	1	0.31	33912	60	-	-	-	-	-	-	-	18397.26	18.40	2.50	7.36
Total length= 18.00m`								Dia Of Pile=600 mm						Total Safe load		50.29		

**AIRY BE CREATIVE CONSULTANTS (OPC) PRIVATE LIMITED**

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07275268881, E-Mail ID :- [abcsoillab@gmail.com](mailto:abcsoillab@gmail.com), [abcconsultants2006@gmail.com](mailto:abcconsultants2006@gmail.com).

## 10.0 RECOMMENDATION:

- 10.1 The soil strata are effective zone comprises of cohesive & non-cohesive layers. The design load has therefore to ensure safety against failure due to shear failure.
- 10.2 The water table was met up to 2.00 m depth below existing ground level at the time of soil exploration.
- 10.3 The values of net safe bearing capacity for Isolated / R.C.C. Raft foundation below existing ground level are tabulated below: -

S. L. No.	Depth (m)	Type of foundation	Width or size of foundation (m)	Allowable Bearing Capacity	
				Kg/cm <sup>2</sup>	T/m <sup>2</sup>
1	1.50	Isolated Foundation	1.50	0.850	8.50
2	2.00		2.00	0.886	8.86
3	2.50		2.00	1.088	10.88
4	2.00	R.C.C. Raft Foundation	(10.00x10.00)	1.326	13.26
5	2.50			1.486	14.86

The 'CI' group soil is found in the effective zone below footing level. Accordingly, plinth beam, lintel beam and apron all around the structure will be provided. Due To Heavy Loaded structure if above values do not suit the designer alternately pile foundation may be provided at this site

- 10.4 The safe load on pile is calculated as per I.S. 2911(Part III)-1980. As per Static formula are assumed for design and tabulated below

S. H. No.	Length of Pile(m)	Dia of Pile (cm)	Safe Load On Pile (Tone)
1	15.00	60.0	39.92
2	18.00	60.0	50.29

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GST NO.: 9AAZCA9203H1Z6

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**Final design diameter & length of pile etc. will depend on incoming loads and capacity of piles, as determine by load test at site.**

The above recommendations are based on the field investigation data and the laboratory test result of the sample collected from site and our experience in this

If the actual sub – soil condition during excavation for foundation differs from that has been reported a reference should be made to us for suggestion.



## ABC CONSULTANTS

(Soil Investigations and Laboratory Works)

Authorized Signatory



Time: 09-26-2025 15:46  
Note: gorkhpur

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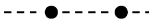
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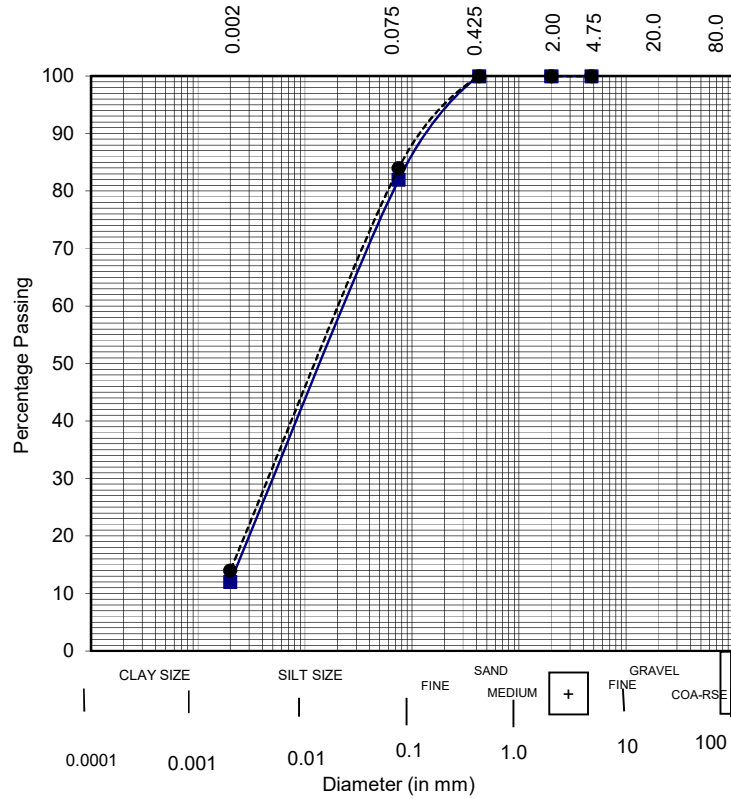
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Depth



0.00-0.50



1.50-1.85



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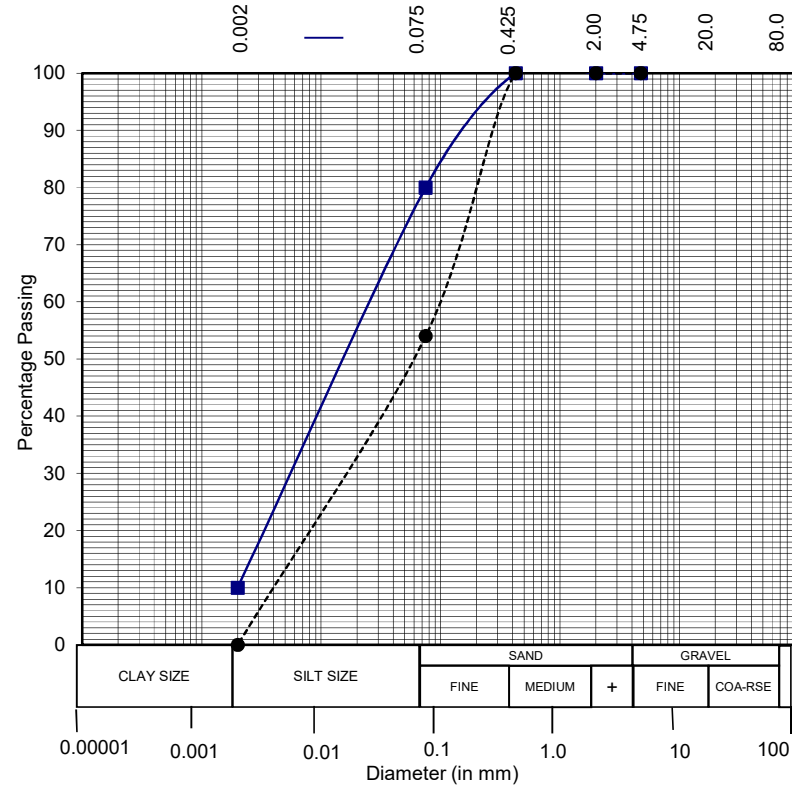
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Depth



3.00-3.35



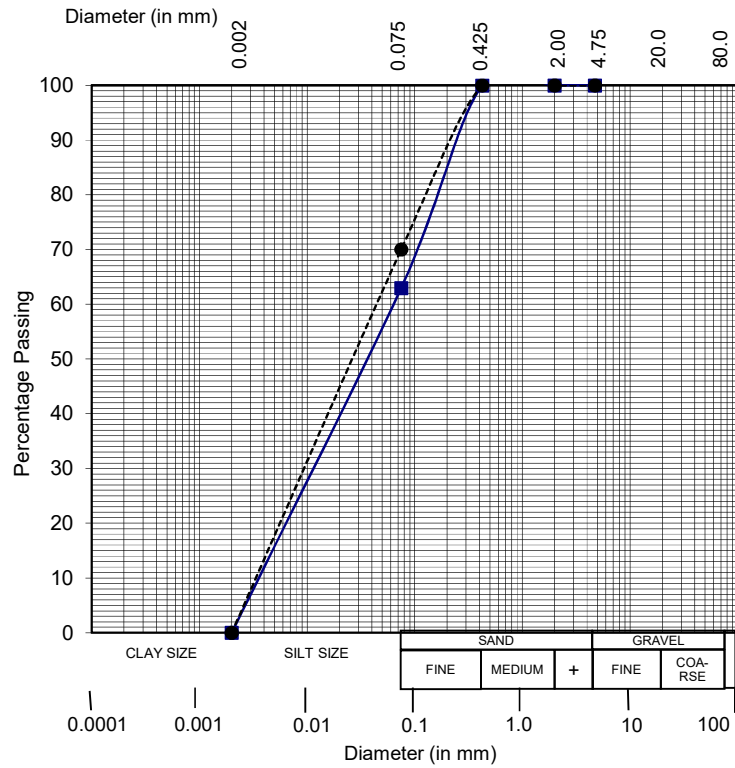
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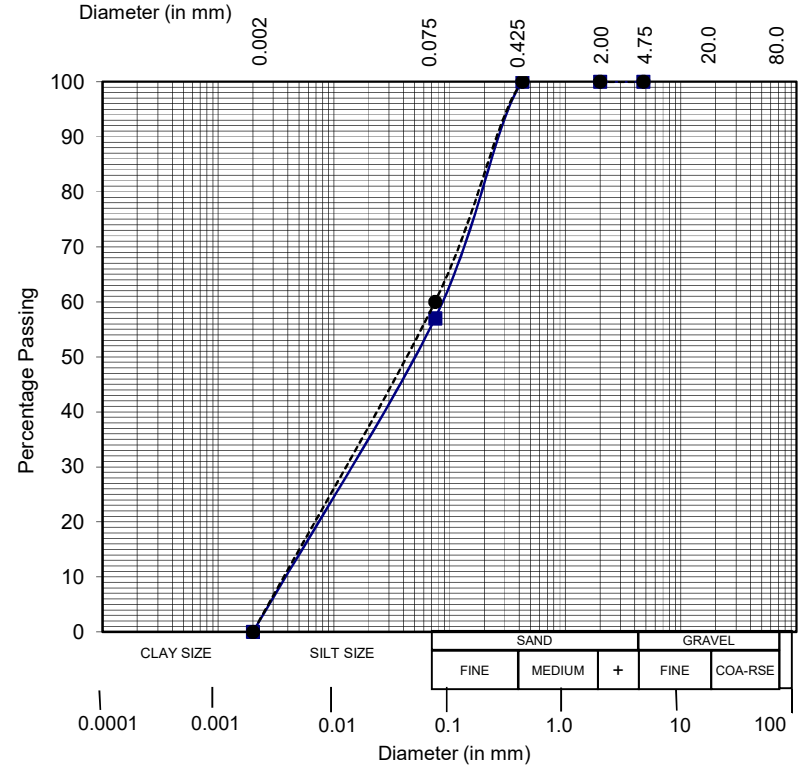
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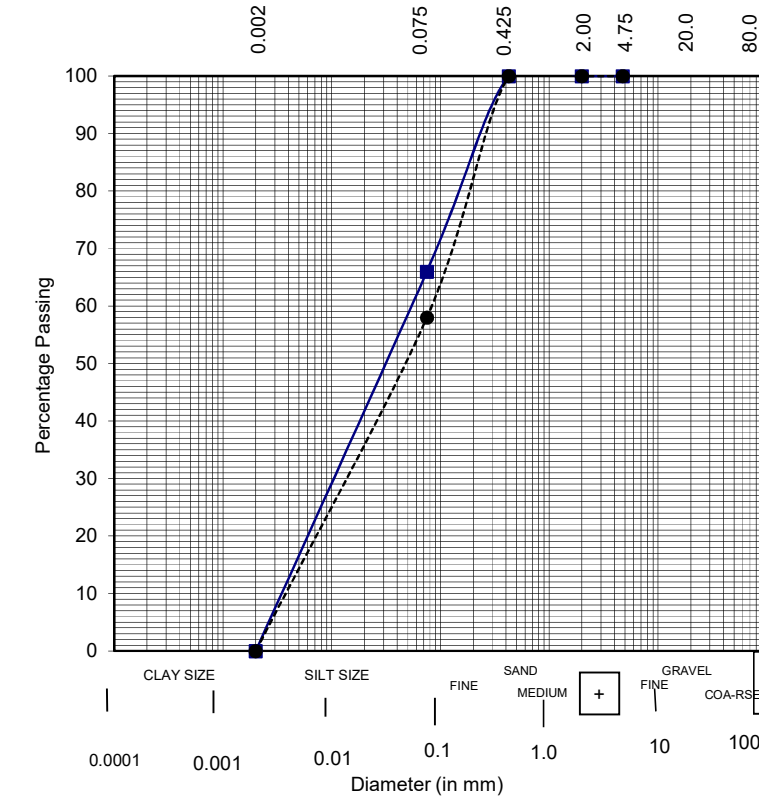


## ABC CONSULTANTS

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Bore Hole No. 1

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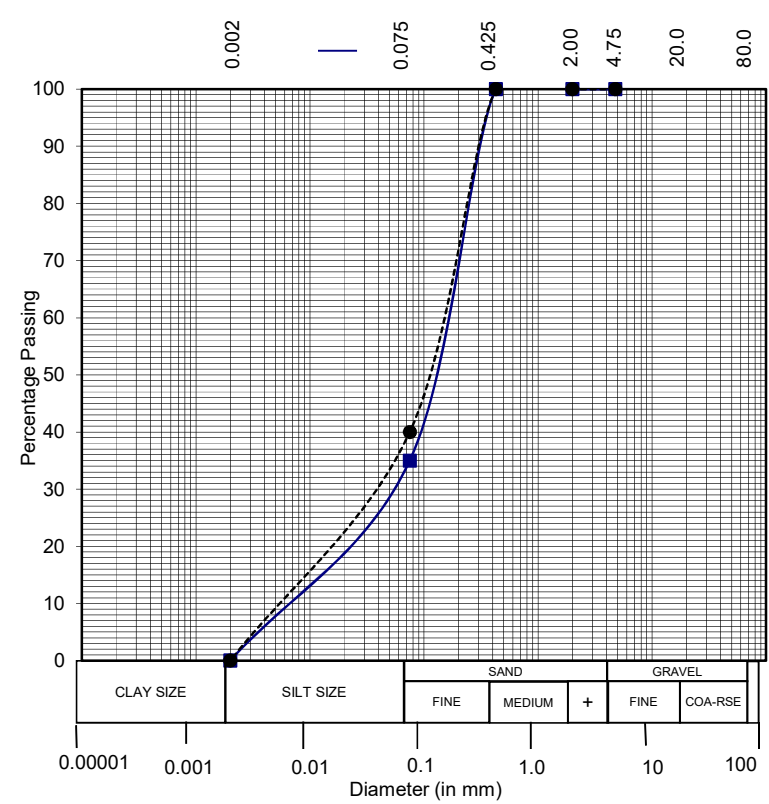


## ABC CONSULTANTS

OFFICE : C-1074/75,Sec-B,Mahanagar, LUCKNOW

Bore Hole No. 1

Depth



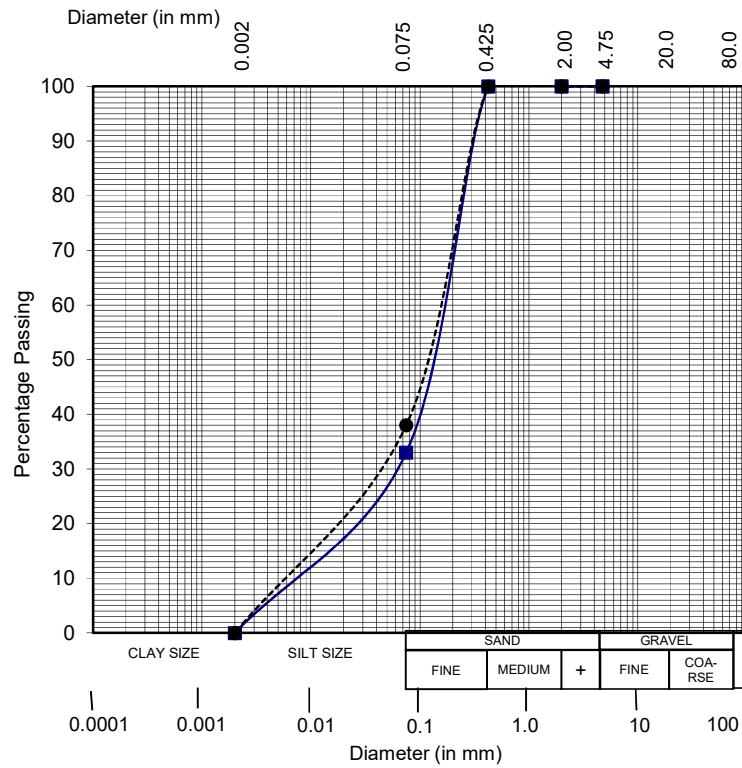
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OFFICE : C-1074/75,Sec-B,Mahanagar, LUCKNOW

Bore Hole No. 1

Depth

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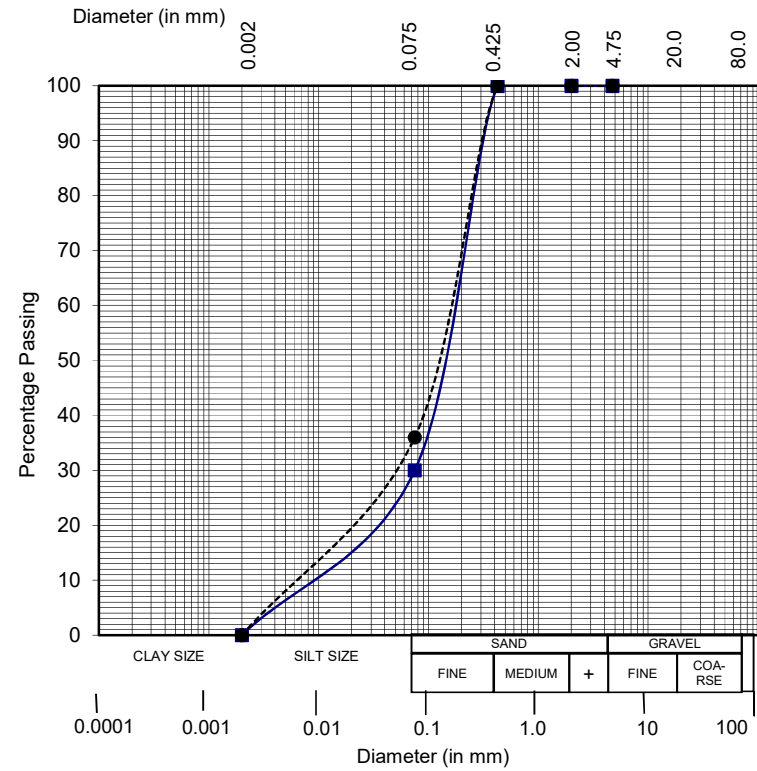
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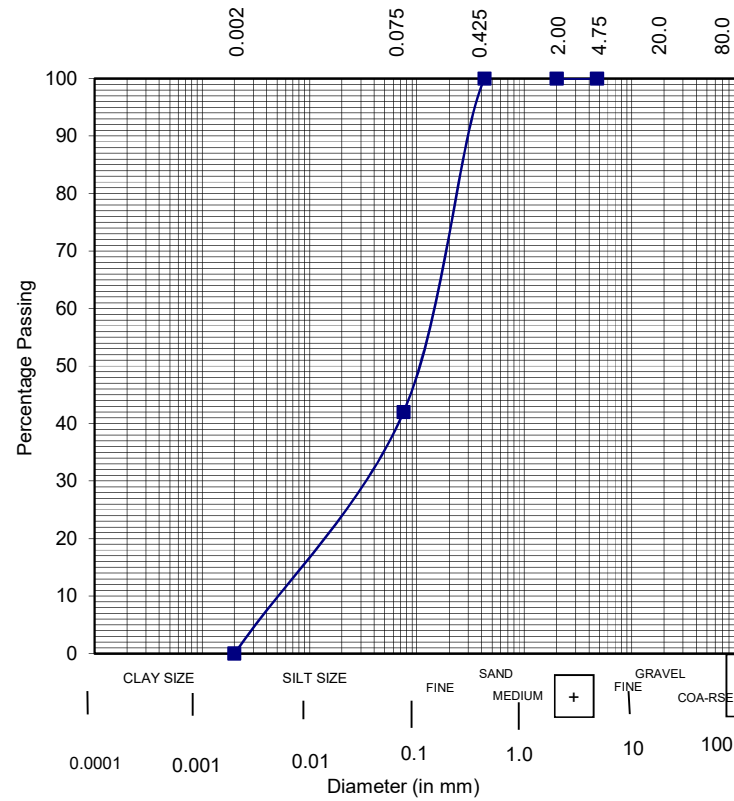


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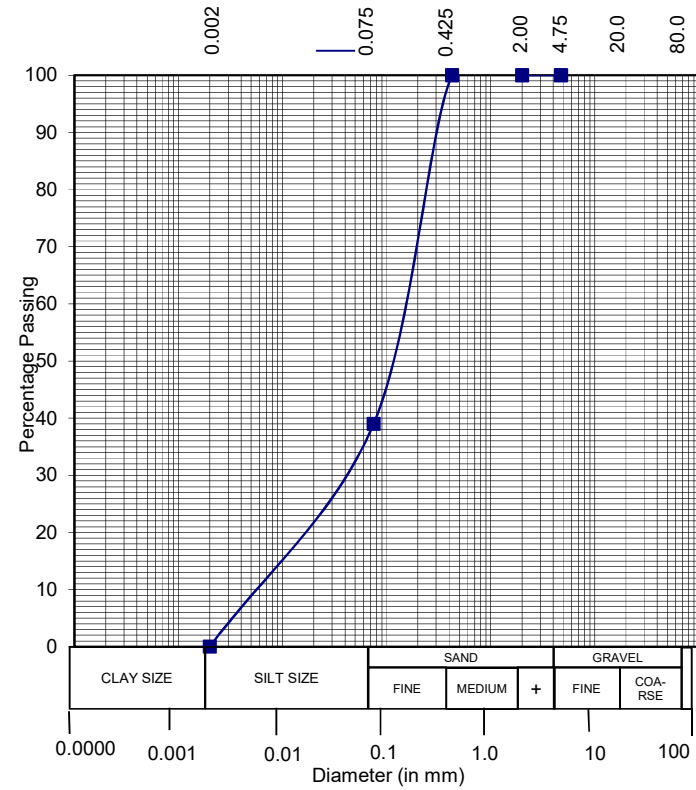


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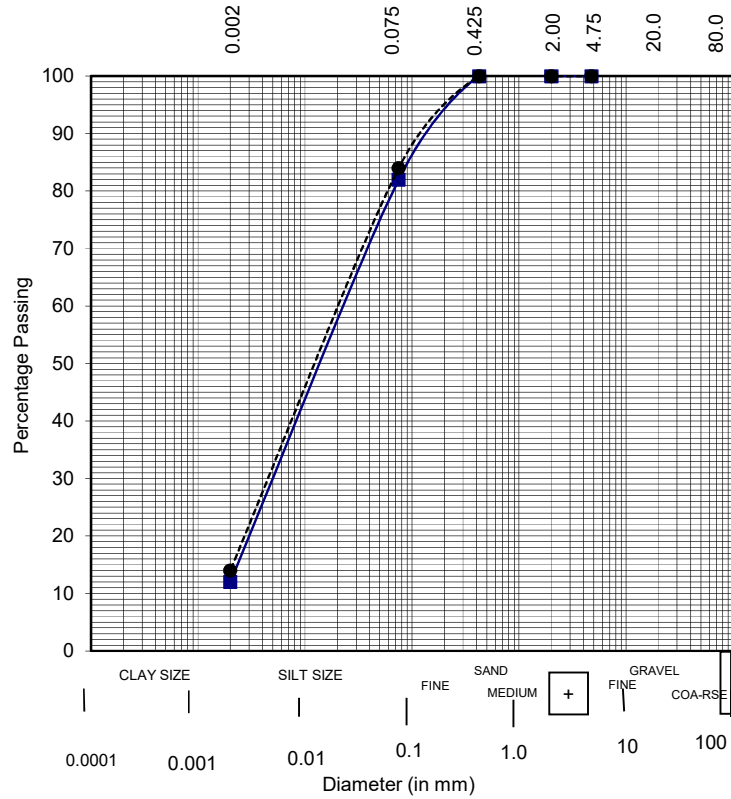
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## ABC CONSULTANTS

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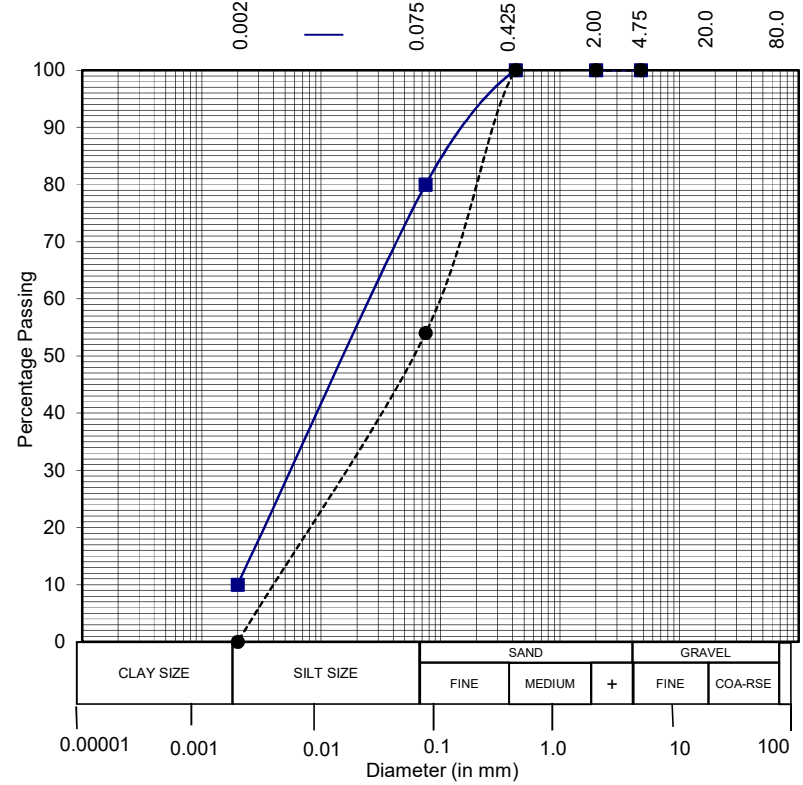
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Bore Hole No. 2  
Depth



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Bore Hole No. 2

Depth

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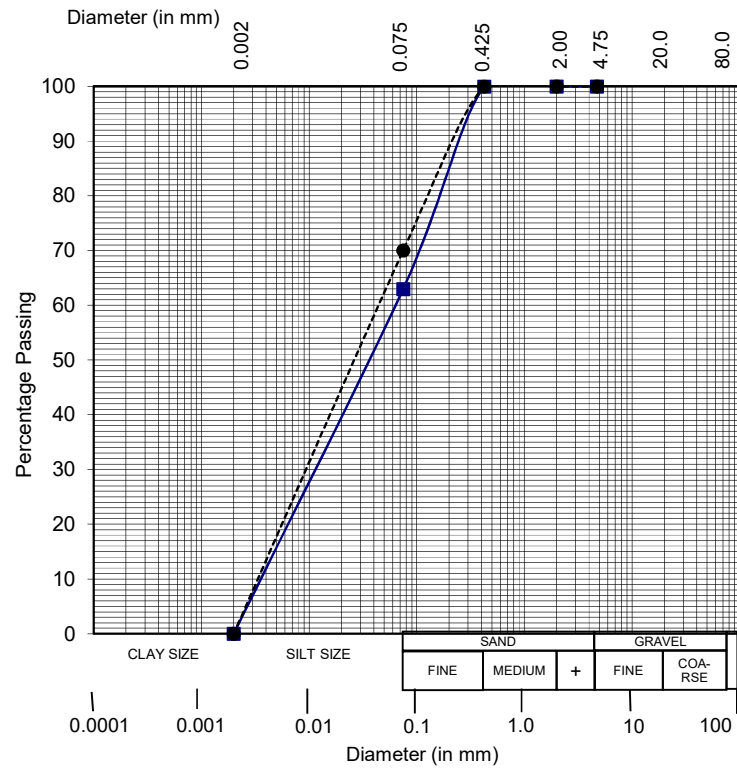
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Bore Hole No. 2

Depth

9.00-9.35

10.50-10.85



## ABC CONSULTANTS

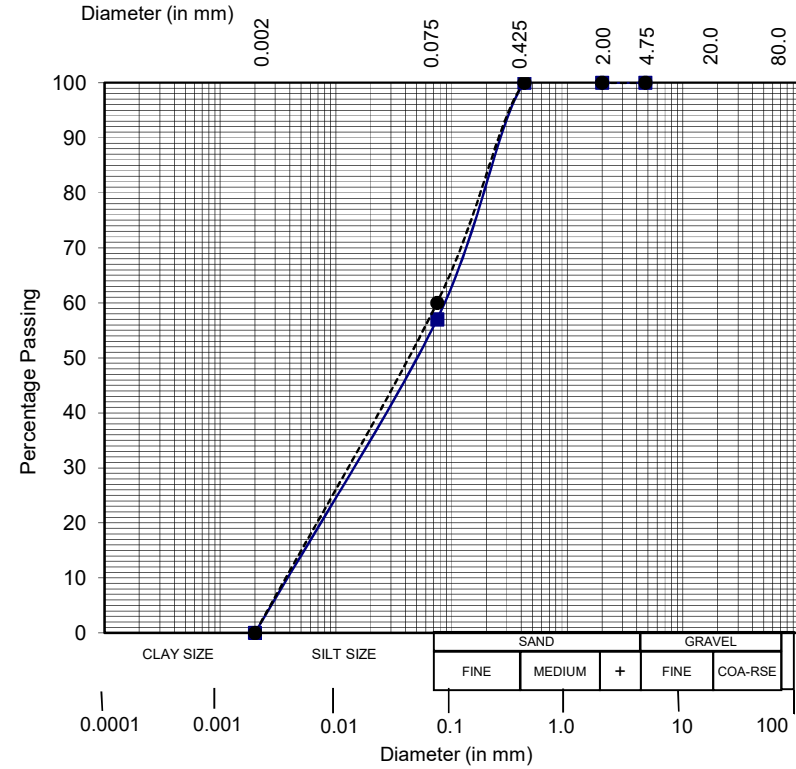
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Bore Hole No. 2

Depth

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10.50-10.85



## ABC CONSULTANTS

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Bore Hole No. 2

Depth

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13.50-13.85

## ABC CONSULTANTS

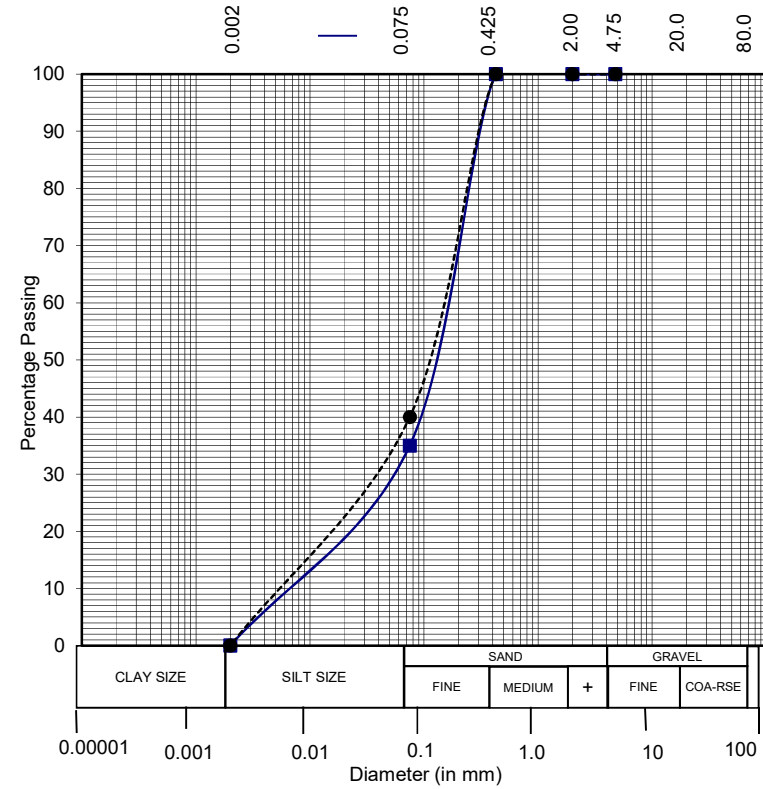
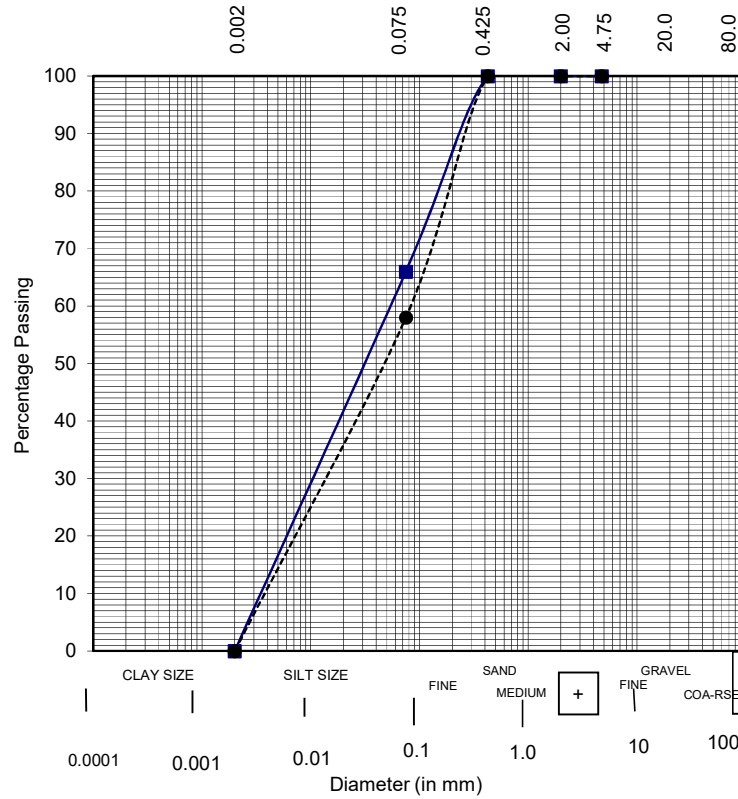
OFFICE : C-1074/75,Sec-B,Mahanagar, LUCKNOW

Bore Hole No. 2

Depth

15.00-15.35

16.50-16.85





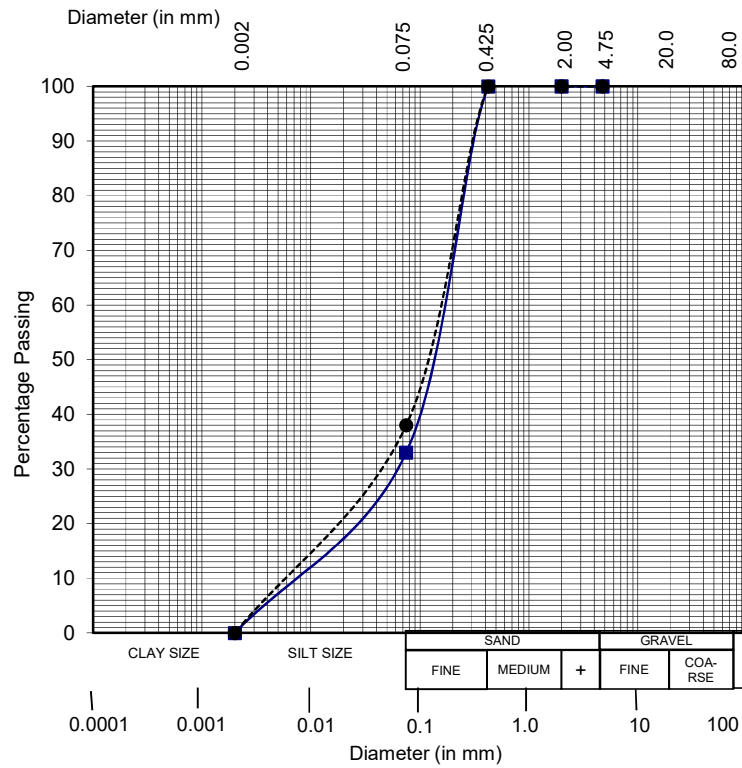
## ABC CONSULTANTS

OFFICE : C-1074/75,Sec-B,Mahanagar, LUCKNOW

Bore Hole No. 2

Depth

18.00-18.35 ---●---●--- 19.50-19.85



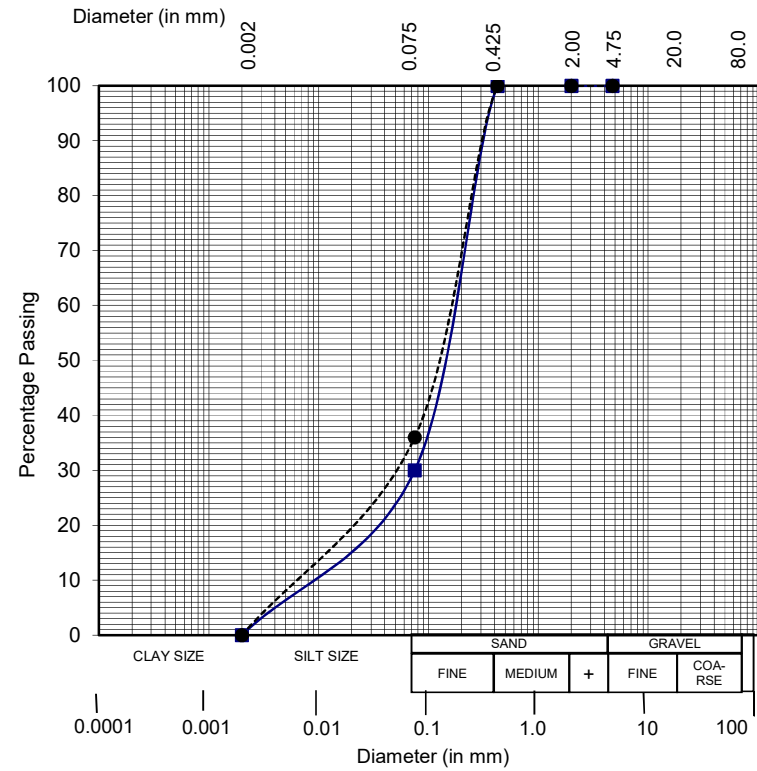
## ABC CONSULTANTS

OFFICE : C-1074/75,Sec-B,Mahanagar, LUCKNOW

Bore Hole No. 2

Depth

21.00-21.35 ---●---●--- 22.50-25.85



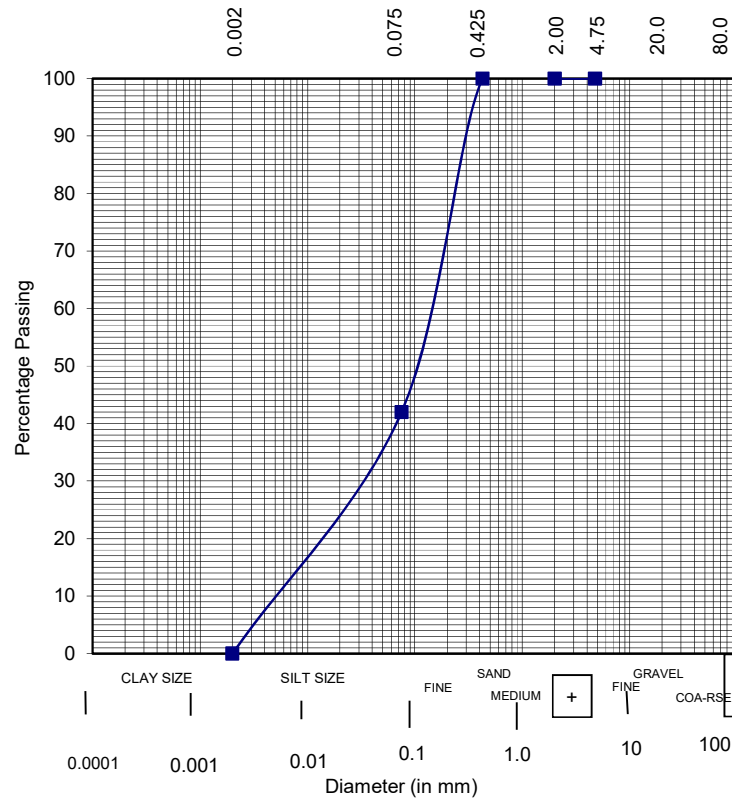
## ABC CONSULTANTS

OFFICE : C-1074/75,Sec-B,Mahanagar, LUCKNOW

Bore Hole No. 2

Depth

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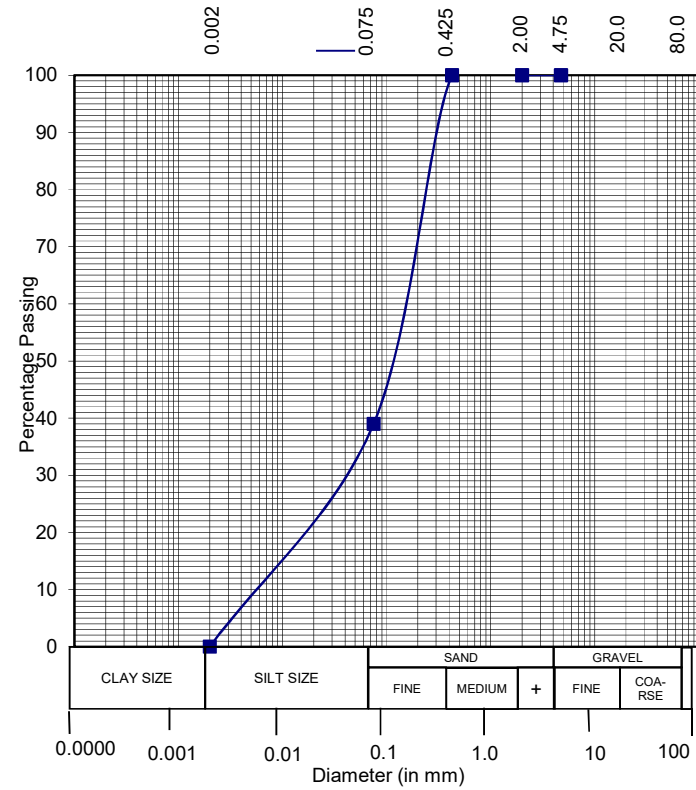
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OFFICE : C-1074/75,Sec-B,Mahanagar, LUCKNOW

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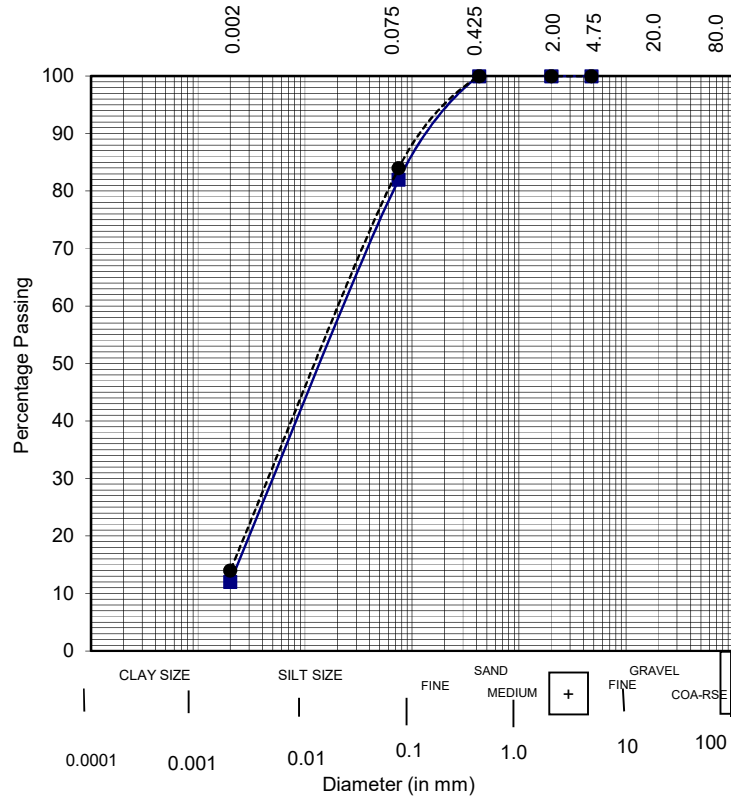
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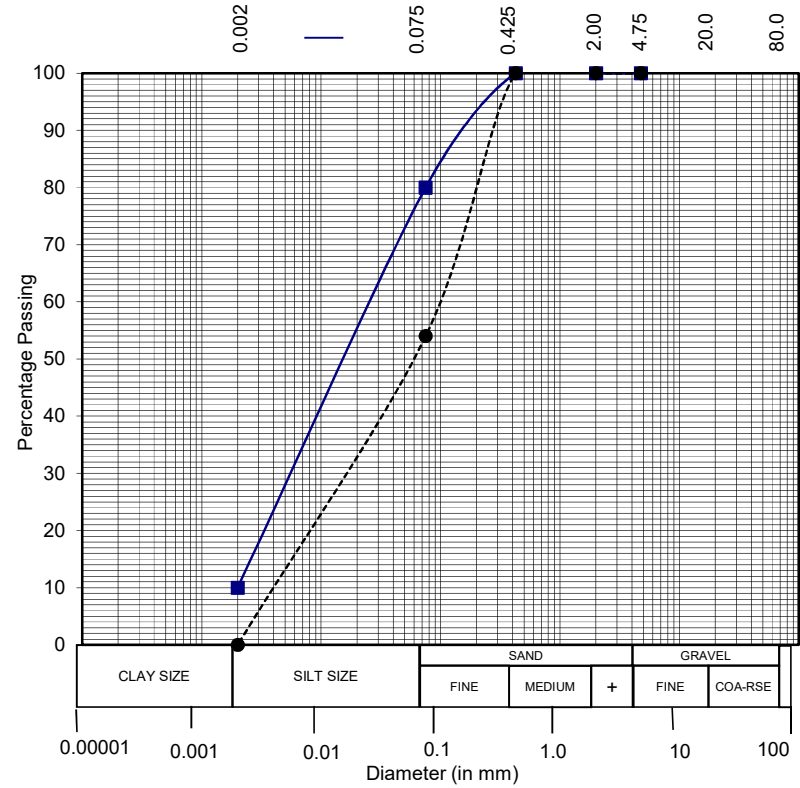
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Bore Hole No. 3  
Depth



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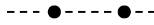
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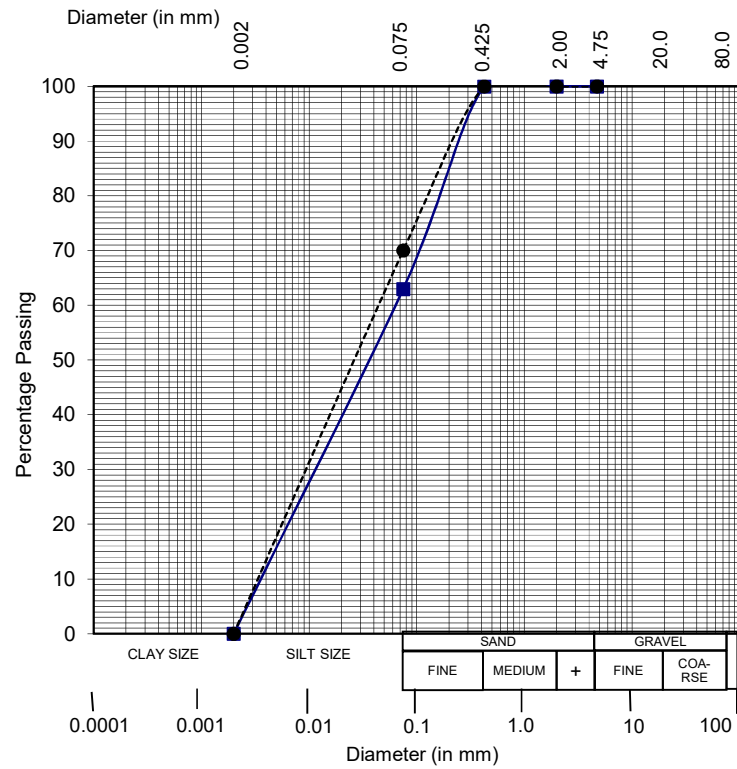
Depth



6.00-6.35



7.50-7.85



## ABC CONSULTANTS

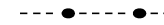
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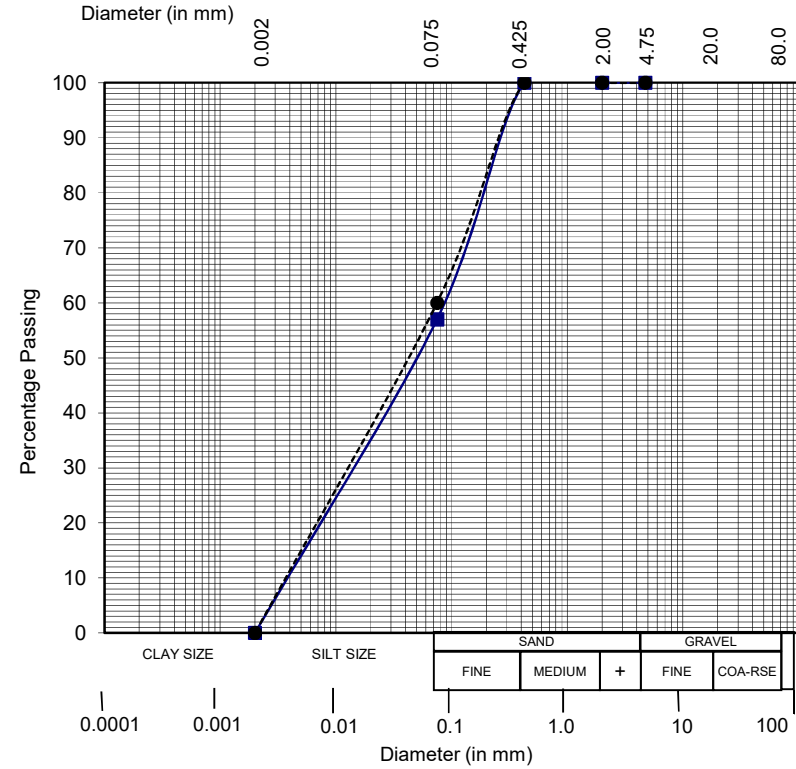
Depth



9.00-9.35



10.50-10.85



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OFFICE : C-1074/75,Sec-B,Mahanagar, LUCKNOW

Bore Hole No. 3

Depth

12.00-12.35

13.50-13.85

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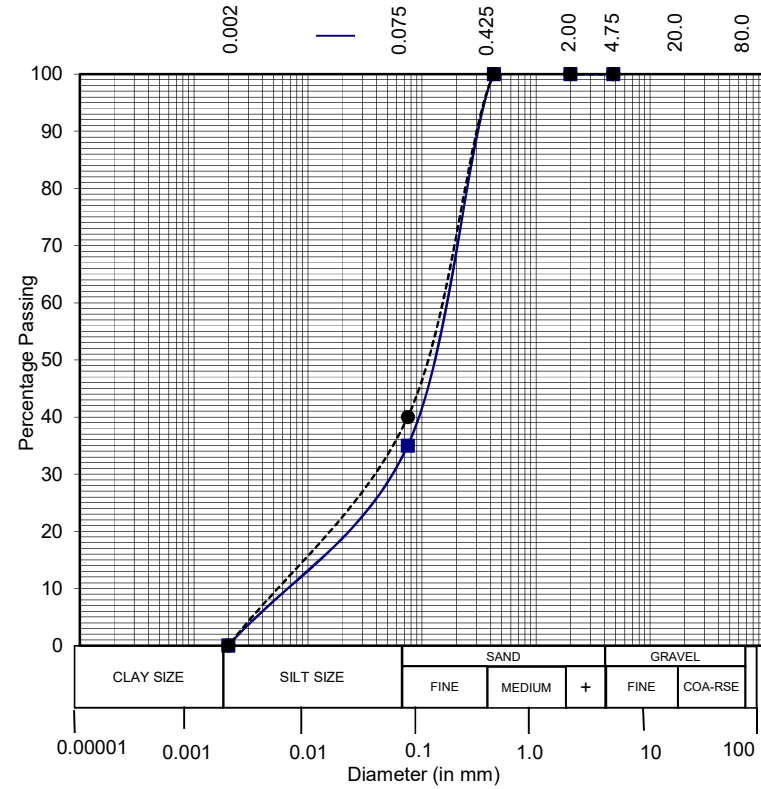
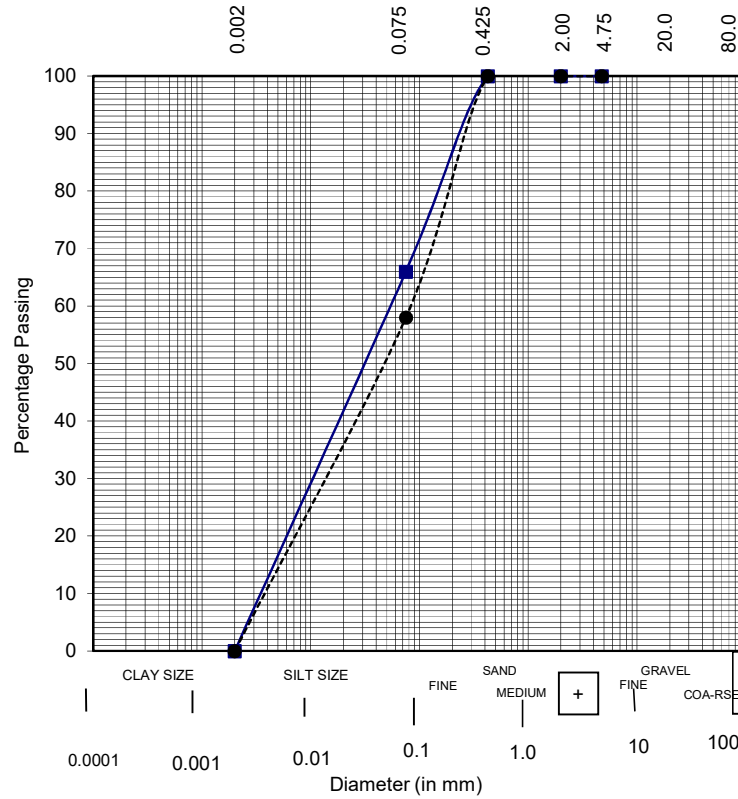
OFFICE : C-1074/75,Sec-B,Mahanagar, LUCKNOW

Bore Hole No. 3

Depth

15.00-15.35

16.50-16.85





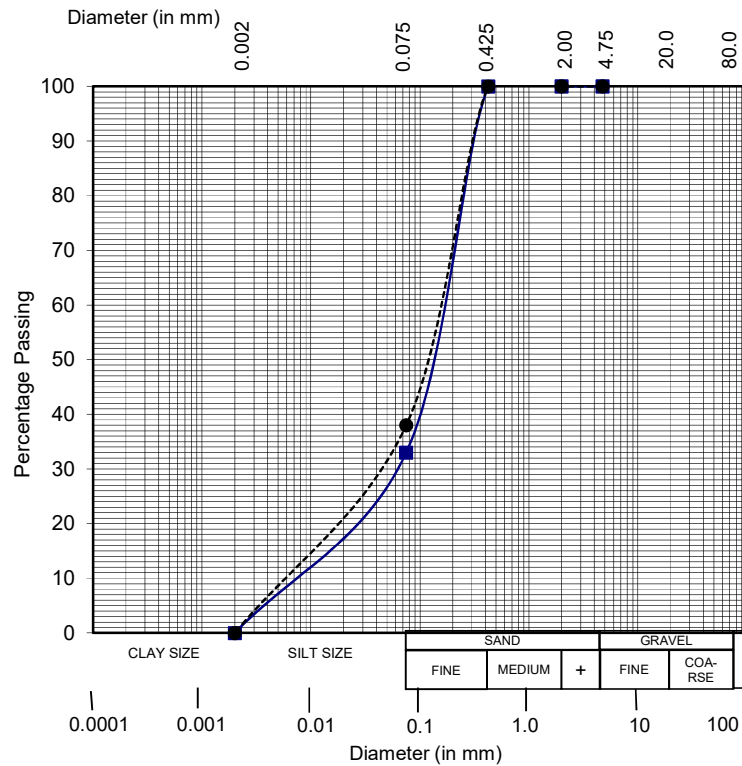
## ABC CONSULTANTS

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Bore Hole No. 3

Depth

18.00-18.35 ---●---●--- 19.50-19.85



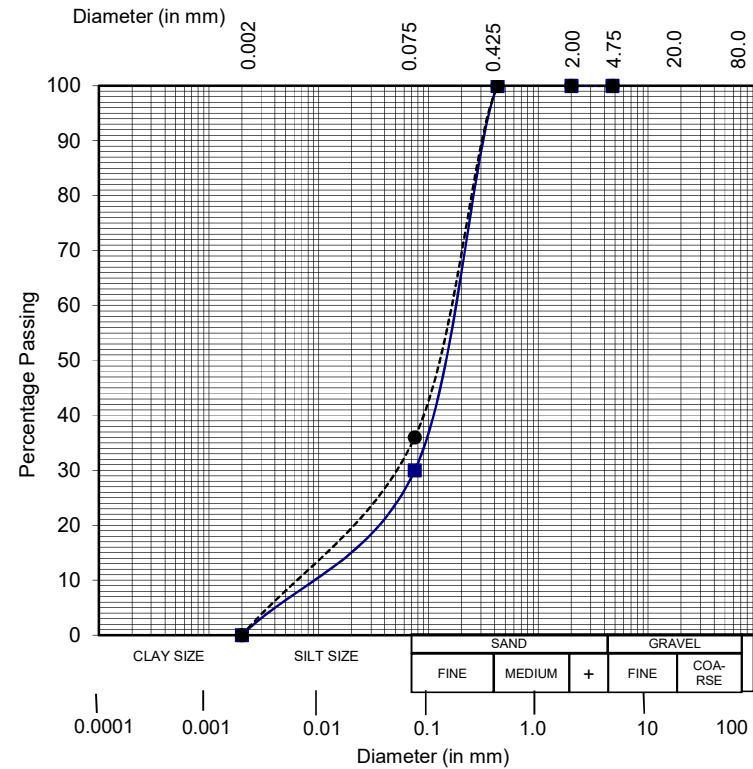
## ABC CONSULTANTS

OFFICE : C-1074/75,Sec-B,Mahanagar, LUCKNOW

Bore Hole No. 3

Depth

21.00-21.35 ---●---●--- 22.50-25.85



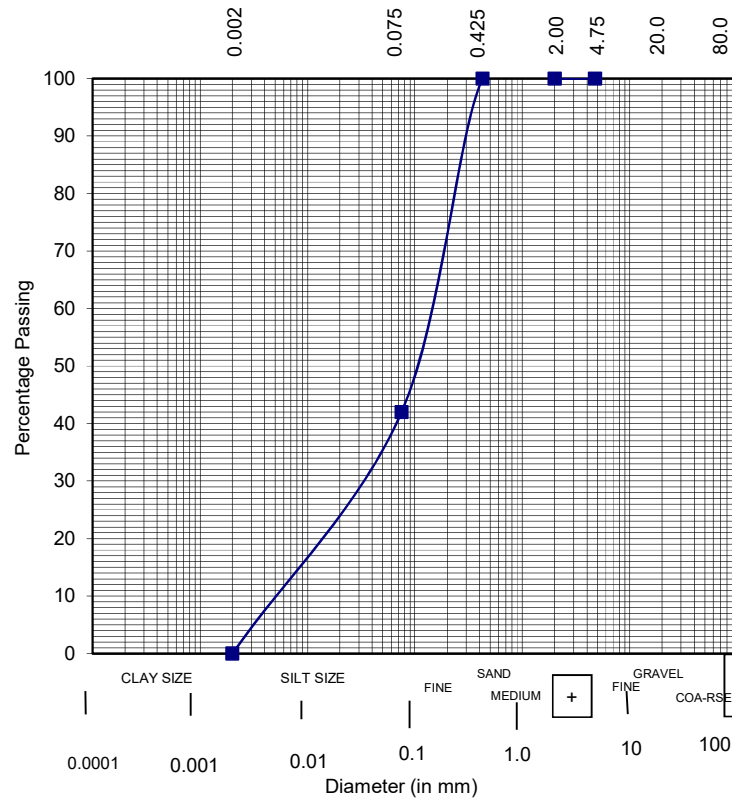
## ABC CONSULTANTS

OFFICE : C-1074/75,Sec-B,Mahanagar, LUCKNOW

Bore Hole No. 3

Depth

24.00-24.35 ---●---●--- 25.50-25.85



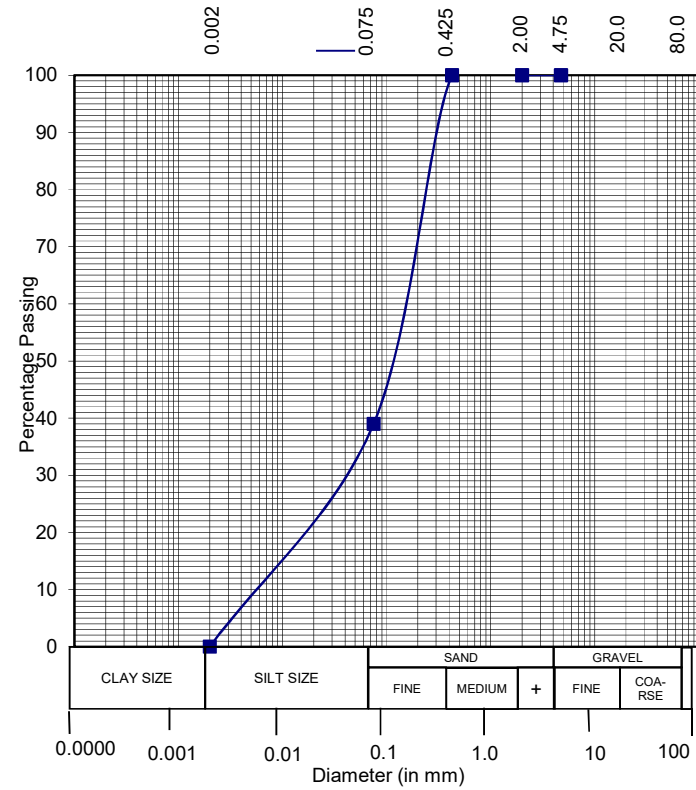
## ABC CONSULTANTS

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Bore Hole No. 3

Depth

27.00-27.35 ---●---●--- 28.50-28.85



# ABC CONSULTANTS

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**Project : Proposed Construction of G+10th Storied Forestry and Horticulture University Building at Campirganj District-Gorakhpur (U.P.)**

**Bore Hole No. 01**

**Depth of Bore Hole : 30.0M.**

**Depth of Water table : 2.0m**

## LABORATORY TEST RESULTS

S. No.	Depth of Bore Hole	Nature of soil Sample	% Passing on IS Sieve				Atterberg's Limit			Particle Size Analysis				S.P.T. Value	IS Group		Natural Moisture Content %	Wet Density gm/cc	Dry Density gm/cc	Specific Gravity 'G'	Void ratio 'e'	Shear Parameter		Compression Index Cc
			4.75 mm	2.00 mm	0.425mm	0.075 mm	LL %	PL %	PI %	Gravel %	Sand %	Silt %	Clay %		Symbol	hatching						Cohesion 'C' in Kg/Sqcm.	Angle of Internal Friction $\phi$	
1	0.0-0.50	DS	100	100	100	96	38	22	16	0	4	64	32	-	CI		-	-	-	-	-	-	-	-
2	1.50-1.85	UD	100	100	100	84	25	18	7	0	16	70	14	-	CL/ML		15.9	1.77	1.53	2.61	0.71	0.13	17	0.114
3	1.85-2.30	SPT	-	-	-	-	-	-	-	-	-	-	-	6	-		-	-	-	-	-	-	-	-
4	3.00-3.35	UD	100	100	100	55	NON-PLASTIC			0	45	55	0	-	ML		25.1	1.96	1.57	2.59	0.65	0	25	0
5	3.35-3.80	SPT	-	-	-	-	-	-	-	-	-	-	-	8	-		-	-	-	-	-	-	-	-
6	4.50-4.85	UD	100	100	100	59	NON-PLASTIC			0	41	59	0	-	ML		25.6	1.96	1.56	2.60	0.67	0	25	0
7	4.85-5.30	SPT	-	-	-	-	-	-	-	-	-	-	-	9	-		-	-	-	-	-	-	-	-
8	6.00-6.35	UD	100	100	100	35	NON-PLASTIC			0	65	35	0	-	SM		27.5	1.94	1.52	2.61	0.72	0	26	-
9	6.35-6.80	SPT	-	-	-	-	-	-	-	-	-	-	-	10	-		-	-	-	-	-	-	-	-
10	7.50-7.85	U.D.	100	100	100	39	NON-PLASTIC			0	61	39	0	-	SM		28.2	1.94	1.51	2.63	0.74	0	26	-
11	7.85-8.30	S.P.T.	-	-	-	-	-	-	-	-	-	-	-	12	-		-	-	-	-	-	-	-	-
12	9.00-9.35	U.D.	100	100	100	33	NON-PLASTIC			0	67	33	0	-	SM		28.8	1.92	1.49	2.61	0.75	0	27	-
13	9.35-9.80	S.P.T.	-	-	-	-	-	-	-	-	-	-	-	16	-		-	-	-	-	-	-	-	-
14	10.50-10.85	UD	100	100	100	37	NON-PLASTIC			0	63	37	0	-	SM		28.5	1.93	1.50	2.62	0.75	0	27	-
15	10.85-11.30	SPT	-	-	-	-	-	-	-	-	-	-	-	19	-		-	-	-	-	-	-	-	-
16	12.00-12.35	UD	100	100	100	40	NON-PLASTIC			0	60	40	0	-	SM		28.3	1.94	1.51	2.64	0.75	0	28	-
17	12.35-12.80	SPT	-	-	-	-	-	-	-	-	-	-	-	21	-		-	-	-	-	-	-	-	-
18	13.50-13.85	UD	100	100	100	99	42	22	20	0	1	59	40	-	CI		23.1	2.04	1.66	2.69	0.62	0.25	12	-
19	13.85-14.30	SPT	-	-	-	-	-	-	-	-	-	-	-	14	-		-	-	-	-	-	-	-	-
20	15.00-15.35	UD	100	99	98	97	45	23	22	0	3	55	42	-	CI		23.0	2.05	1.67	2.71	0.62	0.35	10	-
21	15.35-15.80	SPT	-	-	-	-	-	-	-	-	-	-	-	16	-		-	-	-	-	-	-	-	-

22	16.50-16.85	UD	99	98	97	96	43	22	21	1	3	57	39	-	CI		23.1	2.04	1.66	2.69	0.62	0.31	11	-
23	16.85-17.30	SPT	-	-	-	-	-	-	-	-	-	-	-	17	-		-	-	-	-	-	-	-	-
24	18.00-18.35	UD	100	100	100	28	NON-PLASTIC			0	72	28	0	-	SM		27.9	1.94	1.52	2.64	0.74	0	27	-
25	18.35-18.80	SPT	-	-	-	-	-	-	-	-	-	-	-	24	-		-	-	-	-	-	-	-	-
26	19.50-19.85	UD	100	100	100	30	NON-PLASTIC			0	70	30	0	-	SM		28.8	1.92	1.49	2.61	0.75	0	27	-
27	19.85-20.30	SPT	-	-	-	-	-	-	-	-	-	-	-	31	-		-	-	-	-	-	-	-	-
28	21.00-21.35	UD	100	100	100	32	NON-PLASTIC			0	68	32	0	-	SM		28.5	1.93	1.50	2.62	0.75	0	28	-
29	21.35-21.80	SPT	-	-	-	-	-	-	-	-	-	-	-	36	-		-	-	-	-	-	-	-	-
30	22.50-22.85	UD	100	100	100	36	NON-PLASTIC			0	64	36	0	-	SM		28.3	1.94	1.51	2.64	0.75	0	28	-
31	22.85-23.30	SPT	-	-	-	-	-	-	-	-	-	-	-	40	-		-	-	-	-	-	-	-	-
32	24.00-24.35	UD	100	100	100	38	NON-PLASTIC			0	62	38	0	-	SM		28.5	1.93	1.50	2.62	0.75	0	29	-
33	24.35-24.80	SPT	-	-	-	-	-	-	-	-	-	-	-	42	-		-	-	-	-	-	-	-	-
34	25.50-25.85	UD	100	100	100	33	NON-PLASTIC			0	67	33	0	-	SM		28.8	1.92	1.49	2.61	0.75	0	29	-
35	25.85-26.30	SPT	-	-	-	-	-	-	-	-	-	-	-	45	-		-	-	-	-	-	-	-	-
36	27.00-27.35	UD	100	100	100	35	NON-PLASTIC			0	65	35	0	-	SM		29.1	1.91	1.48	2.60	0.76	0	30	-
37	27.35-27.80	SPT	-	-	-	-	-	-	-	-	-	-	-	47	-		-	-	-	-	-	-	-	-
38	28.50-28.85	UD	100	100	100	37	NON-PLASTIC			0	63	37	0	-	SM		28.3	1.94	1.51	2.64	0.75	0	30	-
39	28.85-29.30	SPT	-	-	-	-	-	-	-	-	-	-	-	49	-		-	-	-	-	-	-	-	-
40	29.30-30.00	D.S.	-	-	-	-	-	-	-	-	-	-	-	-	SM		-	-	-	-	-	-	-	-

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**Project : Proposed Construction of G+10th Storied Forestry and Horticulture University Building at Campirganj District-Gorakhpur (U.P.)**

**Bore Hole No. 02**

**Depth of Bore Hole : 30.0M.**

**Depth of Water table : 2.0m**

## LABORATORY TEST RESULTS

S. No.	Depth of Bore Hole	Nature of soil Sample	% Passing on IS Sieve				Atterberg's Limit			Particle Size Analysis				S.P.T. Value	IS Group		Natural Moisture Content %	Wet Density gm/cc	Dry Density gm/cc	Specific Gravity 'G'	Void ratio 'e'	Shear Parameter		Compression Index Cc
			4.75 mm	2.00 mm	0.425mm	0.075 mm	LL %	PL %	PI %	Gravel %	Sand %	Silt %	Clay %		Symbol	hatching						Cohesion 'C' in Kg/Sqcm.	Angle of Internal Friction $\phi$	
1	0.0-0.50	DS	100	100	100	96	38	22	16	0	4	64	32	-	CI		-	-	-	-	-	-	-	-
2	1.50-1.85	UD	100	100	100	84	25	18	7	0	16	70	14	-	CL/ML		16.1	1.78	1.53	2.61	0.71	0.13	17	0.114
3	1.85-2.30	SPT	-	-	-	-	-	-	-	-	-	-	-	7	-		-	-	-	-	-	-	-	-
4	3.00-3.35	UD	100	100	100	55	NON-PLASTIC			0	45	55	0	-	ML		25.5	1.96	1.56	2.59	0.66	0	25	0
5	3.35-3.80	SPT	-	-	-	-	-	-	-	-	-	-	-	8	-		-	-	-	-	-	-	-	-
6	4.50-4.85	UD	100	100	100	59	NON-PLASTIC			0	41	59	0	-	ML		25.6	1.96	1.56	2.60	0.67	0	25	0
7	4.85-5.30	SPT	-	-	-	-	-	-	-	-	-	-	-	9	-		-	-	-	-	-	-	-	-
8	6.00-6.35	UD	100	100	100	35	NON-PLASTIC			0	65	35	0	-	SM		27.5	1.94	1.52	2.61	0.72	0	26	-
9	6.35-6.80	SPT	-	-	-	-	-	-	-	-	-	-	-	10	-		-	-	-	-	-	-	-	-
10	7.50-7.85	U.D.	100	100	100	39	NON-PLASTIC			0	61	39	0	-	SM		28.2	1.94	1.51	2.63	0.74	0	26	-
11	7.85-8.30	S.P.T.	-	-	-	-	-	-	-	-	-	-	-	12	-		-	-	-	-	-	-	-	-
12	9.00-9.35	U.D.	100	100	100	33	NON-PLASTIC			0	67	33	0	-	SM		28.8	1.92	1.49	2.61	0.75	0	27	-
13	9.35-9.80	S.P.T.	-	-	-	-	-	-	-	-	-	-	-	15	-		-	-	-	-	-	-	-	-
14	10.50-10.85	UD	100	100	100	37	NON-PLASTIC			0	63	37	0	-	SM		28.5	1.93	1.50	2.62	0.75	0	27	-
15	10.85-11.30	SPT	-	-	-	-	-	-	-	-	-	-	-	18	-		-	-	-	-	-	-	-	-
16	12.00-12.35	UD	100	100	100	40	NON-PLASTIC			0	60	40	0	-	SM		28.3	1.94	1.51	2.64	0.75	0	28	-
17	12.35-12.80	SPT	-	-	-	-	-	-	-	-	-	-	-	21	-		-	-	-	-	-	-	-	-
18	13.50-13.85	UD	100	100	100	99	42	22	20	0	1	59	40	-	CI		23.1	2.04	1.66	2.69	0.62	0.25	12	-
19	13.85-14.30	SPT	-	-	-	-	-	-	-	-	-	-	-	15	-		-	-	-	-	-	-	-	-
20	15.00-15.35	UD	100	99	98	97	45	23	22	0	3	55	42	-	CI		23.0	2.05	1.67	2.71	0.62	0.35	10	-
21	15.35-15.80	SPT	-	-	-	-	-	-	-	-	-	-	-	17	-		-	-	-	-	-	-	-	-



22	16.50-16.85	UD	99	98	97	96	43	22	21	1	3	57	39	-	CI		23.4	2.04	1.65	2.69	0.63	0.31	11	-
23	16.85-17.30	SPT	-	-	-	-	-	-	-	-	-	-	-	17	-		-	-	-	-	-	-	-	-
24	18.00-18.35	UD	100	100	100	28	NON-PLASTIC			0	72	28	0	-	SM		27.9	1.94	1.52	2.64	0.74	0	27	-
25	18.35-18.80	SPT	-	-	-	-	-	-	-	-	-	-	-	25	-		-	-	-	-	-	-	-	-
26	19.50-19.85	UD	100	100	100	30	NON-PLASTIC			0	70	30	0	-	SM		28.8	1.92	1.49	2.61	0.75	0	27	-
27	19.85-20.30	SPT	-	-	-	-	-	-	-	-	-	-	-	28	-		-	-	-	-	-	-	-	-
28	21.00-21.35	UD	100	100	100	32	NON-PLASTIC			0	68	32	0	-	SM		28.5	1.93	1.50	2.62	0.75	0	28	-
29	21.35-21.80	SPT	-	-	-	-	-	-	-	-	-	-	-	37	-		-	-	-	-	-	-	-	-
30	22.50-22.85	UD	100	100	100	36	NON-PLASTIC			0	64	36	0	-	SM		28.3	1.94	1.51	2.64	0.75	0	28	-
31	22.85-23.30	SPT	-	-	-	-	-	-	-	-	-	-	-	40	-		-	-	-	-	-	-	-	-
32	24.00-24.35	UD	100	100	100	38	NON-PLASTIC			0	62	38	0	-	SM		28.1	1.93	1.51	2.62	0.74	0	29	-
33	24.35-24.80	SPT	-	-	-	-	-	-	-	-	-	-	-	42	-		-	-	-	-	-	-	-	-
34	25.50-25.85	UD	100	100	100	33	NON-PLASTIC			0	67	33	0	-	SM		28.8	1.92	1.49	2.61	0.75	0	29	-
35	25.85-26.30	SPT	-	-	-	-	-	-	-	-	-	-	-	45	-		-	-	-	-	-	-	-	-
36	27.00-27.35	UD	100	100	100	35	NON-PLASTIC			0	65	35	0	-	SM		29.1	1.91	1.48	2.60	0.76	0	30	-
37	27.35-27.80	SPT	-	-	-	-	-	-	-	-	-	-	-	48	-		-	-	-	-	-	-	-	-
38	28.50-28.85	UD	100	100	100	37	NON-PLASTIC			0	63	37	0	-	SM		28.8	1.93	1.50	2.64	0.76	0	30	-
39	28.85-29.30	SPT	-	-	-	-	-	-	-	-	-	-	-	49	-		-	-	-	-	-	-	-	-
40	29.30-30.00	D.S.	-	-	-	-	-	-	-	-	-	-	-	-	SM		-	-	-	-	-	-	-	-

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**Project : Proposed Construction of G+10th Storied Forestry and Horticulture University Building at Campirganj District-Gorakhpur (U.P.)**

**Bore Hole No. 03**

**Depth of Bore Hole : 30.0M.**

**Depth of Water table : 2.0m**

## LABORATORY TEST RESULTS

S. No.	Depth of Bore Hole	Nature of soil Sample	% Passing on IS Sieve				Atterberg's Limit			Particle Size Analysis				S.P.T. Value	IS Group		Natural Moisture Content %	Wet Density gm/cc	Dry Density gm/cc	Specific Gravity 'G'	Void ratio 'e'	Shear Parameter		Compression Index Cc
			4.75 mm	2.00 mm	0.425mm	0.075 mm	LL %	PL %	PI %	Gravel %	Sand %	Silt %	Clay %		Symbol	hatching						Cohesion 'C' in Kg/Sqcm.	Angle of Internal Friction $\phi$	
1	0.0-0.50	DS	100	100	100	96	38	22	16	0	4	64	32	-	CI		-	-	-	-	-	-	-	-
2	1.50-1.85	UD	100	100	100	84	25	18	7	0	16	70	14	-	CL/ML		15.9	1.77	1.53	2.61	0.71	0.13	17	0.114
3	1.85-2.30	SPT	-	-	-	-	-	-	-	-	-	-	-	7	-		-	-	-	-	-	-	-	-
4	3.00-3.35	UD	100	100	100	55	NON-PLASTIC			0	45	55	0	-	ML		25.1	1.96	1.57	2.59	0.65	0	25	0
5	3.35-3.80	SPT	-	-	-	-	-	-	-	-	-	-	-	8	-		-	-	-	-	-	-	-	-
6	4.50-4.85	UD	100	100	100	59	NON-PLASTIC			0	41	59	0	-	ML		25.6	1.96	1.56	2.60	0.67	0	25	0
7	4.85-5.30	SPT	-	-	-	-	-	-	-	-	-	-	-	9	-		-	-	-	-	-	-	-	-
8	6.00-6.35	UD	100	100	100	35	NON-PLASTIC			0	65	35	0	-	SM		27.9	1.93	1.51	2.61	0.73	0	26	-
9	6.35-6.80	SPT	-	-	-	-	-	-	-	-	-	-	-	11	-		-	-	-	-	-	-	-	-
10	7.50-7.85	U.D.	100	100	100	39	NON-PLASTIC			0	61	39	0	-	SM		28.2	1.94	1.51	2.63	0.74	0	26	-
11	7.85-8.30	S.P.T.	-	-	-	-	-	-	-	-	-	-	-	13	-		-	-	-	-	-	-	-	-
12	9.00-9.35	U.D.	100	100	100	33	NON-PLASTIC			0	67	33	0	-	SM		28.8	1.92	1.49	2.61	0.75	0	27	-
13	9.35-9.80	S.P.T.	-	-	-	-	-	-	-	-	-	-	-	16	-		-	-	-	-	-	-	-	-
14	10.50-10.85	UD	100	100	100	37	NON-PLASTIC			0	63	37	0	-	SM		28.5	1.93	1.50	2.62	0.75	0	27	-
15	10.85-11.30	SPT	-	-	-	-	-	-	-	-	-	-	-	20	-		-	-	-	-	-	-	-	-
16	12.00-12.35	UD	100	100	100	40	NON-PLASTIC			0	60	40	0	-	SM		27.9	1.94	1.52	2.64	0.74	0	28	-
17	12.35-12.80	SPT	-	-	-	-	-	-	-	-	-	-	-	21	-		-	-	-	-	-	-	-	-
18	13.50-13.85	UD	100	100	100	99	42	22	20	0	1	59	40	-	CI		23.1	2.04	1.66	2.69	0.62	0.25	12	-
19	13.85-14.30	SPT	-	-	-	-	-	-	-	-	-	-	-	14	-		-	-	-	-	-	-	-	-
20	15.00-15.35	UD	100	99	98	97	45	23	22	0	3	55	42	-	CI		23.0	2.05	1.67	2.71	0.62	0.35	10	-
21	15.35-15.80	SPT	-	-	-	-	-	-	-	-	-	-	-	16	-		-	-	-	-	-	-	-	-

22	16.50-16.85	UD	99	98	97	96	43	22	21	1	3	57	39	-	CI		23.1	2.04	1.66	2.69	0.62	0.31	11	-
23	16.85-17.30	SPT	-	-	-	-	-	-	-	-	-	-	-	16	-		-	-	-	-	-	-	-	-
24	18.00-18.35	UD	100	100	100	28	NON-PLASTIC			0	72	28	0	-	SM		27.9	1.94	1.52	2.64	0.74	0	27	-
25	18.35-18.80	SPT	-	-	-	-	-	-	-	-	-	-	-	23	-		-	-	-	-	-	-	-	-
26	19.50-19.85	UD	100	100	100	30	NON-PLASTIC			0	70	30	0	-	SM		28.8	1.92	1.49	2.61	0.75	0	27	-
27	19.85-20.30	SPT	-	-	-	-	-	-	-	-	-	-	-	31	-		-	-	-	-	-	-	-	-
28	21.00-21.35	UD	100	100	100	32	NON-PLASTIC			0	68	32	0	-	SM		28.5	1.93	1.50	2.62	0.75	0	28	-
29	21.35-21.80	SPT	-	-	-	-	-	-	-	-	-	-	-	35	-		-	-	-	-	-	-	-	-
30	22.50-22.85	UD	100	100	100	36	NON-PLASTIC			0	64	36	0	-	SM		28.3	1.94	1.51	2.64	0.75	0	28	-
31	22.85-23.30	SPT	-	-	-	-	-	-	-	-	-	-	-	39	-		-	-	-	-	-	-	-	-
32	24.00-24.35	UD	100	100	100	38	NON-PLASTIC			0	62	38	0	-	SM		28.1	1.93	1.51	2.62	0.74	0	29	-
33	24.35-24.80	SPT	-	-	-	-	-	-	-	-	-	-	-	43	-		-	-	-	-	-	-	-	-
34	25.50-25.85	UD	100	100	100	33	NON-PLASTIC			0	67	33	0	-	SM		28.8	1.92	1.49	2.61	0.75	0	29	-
35	25.85-26.30	SPT	-	-	-	-	-	-	-	-	-	-	-	45	-		-	-	-	-	-	-	-	-
36	27.00-27.35	UD	100	100	100	35	NON-PLASTIC			0	65	35	0	-	SM		29.1	1.91	1.48	2.60	0.76	0	30	-
37	27.35-27.80	SPT	-	-	-	-	-	-	-	-	-	-	-	47	-		-	-	-	-	-	-	-	-
38	28.50-28.85	UD	100	100	100	37	NON-PLASTIC			0	63	37	0	-	SM		28.3	1.94	1.51	2.64	0.75	0	30	-
39	28.85-29.30	SPT	-	-	-	-	-	-	-	-	-	-	-	48	-		-	-	-	-	-	-	-	-
40	29.30-30.00	D.S.	-	-	-	-	-	-	-	-	-	-	-	-	SM		-	-	-	-	-	-	-	-

# ABC CONSULTANTS

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Phone : 9451371403, 07272268881, E-mail: abcconsultant2006@gmail.com






















**Project : Proposed Construction of G+10th Storied Forestry and Horticulture University Building at Campirganj District-Gorakhpur (U.P.)**

**Bore Hole No. 04**

**Depth of Bore Hole : 30.0M.**

**Depth of Water table : 2.10m**

## LABORATORY TEST RESULTS

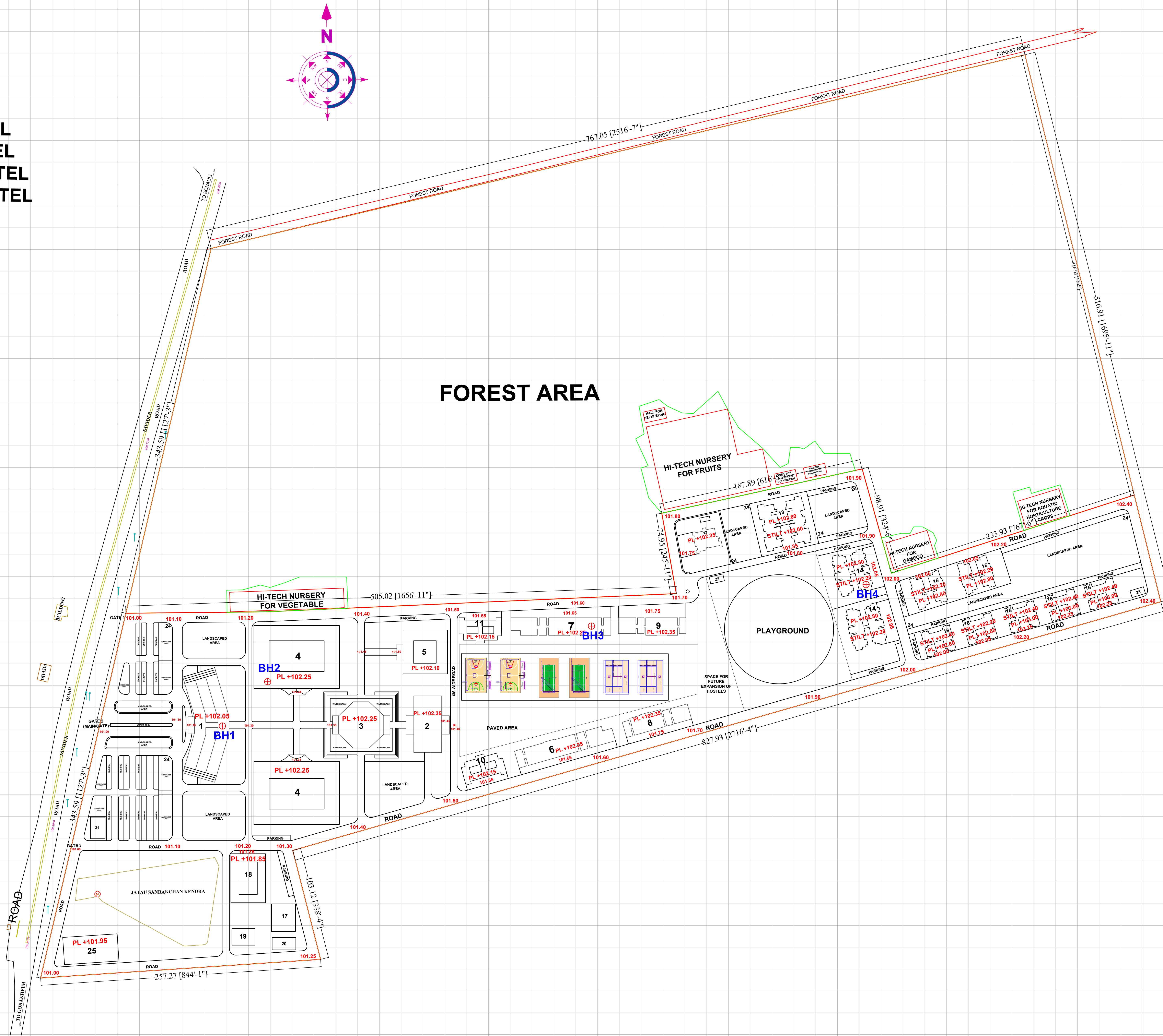
S. No.	Depth of Bore Hole	Nature of soil Sample	% Passing on IS Sieve				Atterberg's Limit			Particle Size Analysis				S.P.T. Value	IS Group		Natural Moisture Content %	Wet Density gm/cc	Dry Density gm/cc	Specific Gravity 'G'	Void ratio 'e'	Shear Parameter		Compression Index Cc
			4.75 mm	2.00 mm	0.425mm	0.075 mm	LL %	PL %	PI %	Gravel %	Sand %	Silt %	Clay %		Symbol	hatching						Cohesion 'C' in Kg/Sqcm.	Angle of Internal Friction $\phi$	
1	0.0-0.50	DS	100	100	100	96	38	22	16	0	4	64	32	-	CI		-	-	-	-	-	-	-	-
2	1.50-1.85	UD	100	100	100	84	25	18	7	0	16	70	14	-	CL/ML		15.9	1.77	1.53	2.61	0.71	0.13	17	0.114
3	1.85-2.30	SPT	-	-	-	-	-	-	-	-	-	-	-	7	-		-	-	-	-	-	-	-	-
4	3.00-3.35	UD	100	100	100	55	NON-PLASTIC			0	45	55	0	-	ML		25.1	1.96	1.57	2.59	0.65	0	25	0
5	3.35-3.80	SPT	-	-	-	-	-	-	-	-	-	-	-	8	-		-	-	-	-	-	-	-	-
6	4.50-4.85	UD	100	100	100	59	NON-PLASTIC			0	41	59	0	-	ML		25.6	1.96	1.56	2.60	0.67	0	25	0
7	4.85-5.30	SPT	-	-	-	-	-	-	-	-	-	-	-	9	-		-	-	-	-	-	-	-	-
8	6.00-6.35	UD	100	100	100	35	NON-PLASTIC			0	65	35	0	-	SM		27.9	1.93	1.51	2.61	0.73	0	26	-
9	6.35-6.80	SPT	-	-	-	-	-	-	-	-	-	-	-	11	-		-	-	-	-	-	-	-	-
10	7.50-7.85	U.D.	100	100	100	39	NON-PLASTIC			0	61	39	0	-	SM		28.2	1.94	1.51	2.63	0.74	0	26	-
11	7.85-8.30	S.P.T.	-	-	-	-	-	-	-	-	-	-	-	13	-		-	-	-	-	-	-	-	-
12	9.00-9.35	U.D.	100	100	100	33	NON-PLASTIC			0	67	33	0	-	SM		28.7	1.92	1.49	2.6	0.74	0	27	-
13	9.35-9.80	S.P.T.	-	-	-	-	-	-	-	-	-	-	-	16	-		-	-	-	-	-	-	-	-
14	10.50-10.85	UD	100	100	100	37	NON-PLASTIC			0	63	37	0	-	SM		28.5	1.93	1.50	2.62	0.75	0	28	-
15	10.85-11.30	SPT	-	-	-	-	-	-	-	-	-	-	-	20	-		-	-	-	-	-	-	-	-
16	12.00-12.35	UD	100	100	100	40	NON-PLASTIC			0	60	40	0	-	SM		27.9	1.94	1.52	2.64	0.74	0	28	-
17	12.35-12.80	SPT	-	-	-	-	-	-	-	-	-	-	-	21	-		-	-	-	-	-	-	-	-
18	13.50-13.85	UD	100	100	100	99	42	22	20	0	1	59	40	-	CI		22.9	2.04	1.66	2.68	0.61	0.25	11	-
19	13.85-14.30	SPT	-	-	-	-	-	-	-	-	-	-	-	14	-		-	-	-	-	-	-	-	-
20	15.00-15.35	UD	100	99	98	97	45	23	22	0	3	55	42	-	CI		23.0	2.05	1.67	2.71	0.62	0.35	10	-
21	15.35-15.80	SPT	-	-	-	-	-	-	-	-	-	-	-	16	-		-	-	-	-	-	-	-	-

22	16.50-16.85	UD	99	98	97	96	43	22	21	1	3	57	39	-	CI		23.1	2.04	1.66	2.69	0.62	0.31	11	-
23	16.85-17.30	SPT	-	-	-	-	-	-	-	-	-	-	-	16	-		-	-	-	-	-	-	-	-
24	18.00-18.35	UD	100	100	100	28	NON-PLASTIC			0	72	28	0	-	SM		27.9	1.94	1.52	2.64	0.74	0	27	-
25	18.35-18.80	SPT	-	-	-	-	-	-	-	-	-	-	-	23	-		-	-	-	-	-	-	-	-
26	19.50-19.85	UD	100	100	100	30	NON-PLASTIC			0	70	30	0	-	SM		28.8	1.92	1.49	2.61	0.75	0	27	-
27	19.85-20.30	SPT	-	-	-	-	-	-	-	-	-	-	-	32	-		-	-	-	-	-	-	-	-
28	21.00-21.35	UD	100	100	100	32	NON-PLASTIC			0	68	32	0	-	SM		28.5	1.93	1.50	2.62	0.75	0	28	-
29	21.35-21.80	SPT	-	-	-	-	-	-	-	-	-	-	-	36	-		-	-	-	-	-	-	-	-
30	22.50-22.85	UD	100	100	100	36	NON-PLASTIC			0	64	36	0	-	SM		28.3	1.94	1.51	2.64	0.75	0	28	-
31	22.85-23.30	SPT	-	-	-	-	-	-	-	-	-	-	-	39	-		-	-	-	-	-	-	-	-
32	24.00-24.35	UD	100	100	100	38	NON-PLASTIC			0	62	38	0	-	SM		28.2	1.94	1.51	2.63	0.74	0	29	-
33	24.35-24.80	SPT	-	-	-	-	-	-	-	-	-	-	-	43	-		-	-	-	-	-	-	-	-
34	25.50-25.85	UD	100	100	100	33	NON-PLASTIC			0	67	33	0	-	SM		28.8	1.92	1.49	2.61	0.75	0	29	-
35	25.85-26.30	SPT	-	-	-	-	-	-	-	-	-	-	-	46	-		-	-	-	-	-	-	-	-
36	27.00-27.35	UD	100	100	100	35	NON-PLASTIC			0	65	35	0	-	SM		29.1	1.91	1.48	2.60	0.76	0	30	-
37	27.35-27.80	SPT	-	-	-	-	-	-	-	-	-	-	-	47	-		-	-	-	-	-	-	-	-
38	28.50-28.85	UD	100	100	100	37	NON-PLASTIC			0	63	37	0	-	SM		28.3	1.94	1.51	2.64	0.75	0	30	-
39	28.85-29.30	SPT	-	-	-	-	-	-	-	-	-	-	-	48	-		-	-	-	-	-	-	-	-
40	29.30-30.00	D.S.	-	-	-	-	-	-	-	-	-	-	-	-	SM		-	-	-	-	-	-	-	-



LEGEND:-

1. ADMIN BLOCK
2. MULTIPURPOSE HALL
3. CENTRAL LIBRARY
4. ACADEMIC BLOCK
5. GUEST HOUSE
6. UG/PG BOYS HOSTEL
7. UG/PG GIRLS HOSTEL
8. DIPLOMA BOYS HOSTEL
9. DIPLOMA GIRLS HOSTEL
10. RESEARCH BOYS HOSTEL
11. RESEARCH GIRLS HOSTEL
12. VC RESIDENCE
13. TYPE - 5 QUARTERS
14. TYPE - 4 QUARTERS
15. TYPE - 3 QUARTERS
16. TYPE - 2 QUARTERS
17. FACILITY CENTRE
18. HEALTH CENTRE
19. MAINTENANCE BLOCK
20. POLICE CHOWKI
21. E.S.S
22. U.G.T
23. S.T.P
24. R.W.H
25. KISAN BHAWAN



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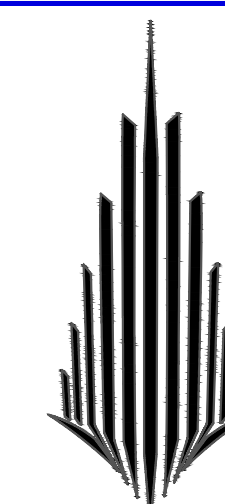
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PROJECT

CONSTRUCTION OF FORESTRY AND HORTICULTURE UNIVERSITY AT GORAKHPUR ON EPC MODE

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