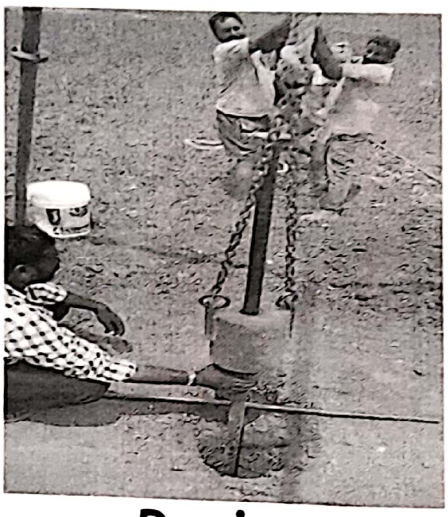
GEO-TECHNICAL INVESTIGATION REPORT



Project

Construction of MURALI TOWNSHIP

Location

Sy.No.532, 533, 534 & 539, Ongole-Inkollu road, NAGULUPPALAPADU(V&M), Prakasam Dt.

May - 2025

Client

MNR Developers

M/D-Sri Manne Narasimha Rao s/o Rangaiah

ONGOLE

CONSULTANT

SRI MASTER'S

Sri Master's Geo-Tech Consultants
(An ISO 9001-2015 Certified Unit)
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BRIEF GEOTECHNICAL INVESTIGATION REPORT

S. N.	DESCRIPTION	RESULTS
1.	Name of Project	Construction of MURALI TOWNSHIP
2.	Location	Ongole-Inkollu road, NAGULUPPALAPADU(V&M), Prakasam Dt.
3.	Area of plot	-
4.	No. of Boreholes	3

5. Findings of the investigation

5.1 - Sub soil Strata

BH No.	Subsoil Layers	Soil Type	Shear Parameters	
			Cohesion 'c' in t/m²	Angle of Friction 'ϕ'
BH-1 @ Sy.No 539	Layer – 1 (0.0m to 2.5m)	Medium Clay (CI)	4.5 - 5.0	0-5⁰
	Layer – 2 (2.5m to 6.0m)	Clayey Gravel(GC)	3.0 – 4.0	25-28⁰
BH-2 @ Sy.No 534	Layer – 1 (0.0m to 2.5m)	Medium Clay (CI)	2.0 - 3.0	0-5⁰
	Layer – 2 (2.5m to 3.5m)	Clayey Gravel(GC)	3.0 – 4.0	26-28⁰
	Layer – 3 (3.5m to 4.5m)	Clayey Sand (SC)	1.0 – 1.5	25-28⁰
	Layer – 4 (4.5m to 6.0m)	Stiff Clay (CI)	8.0 – 10.0	10-12⁰
BH-3 @ Sy.No 532,533	Layer – 1 (0.0m to 2.5m)	Medium Clay (CI)	4.0 - 5.0	4-6⁰
	Layer – 2 (2.5m to 3.5m)	Stiff Clay with Pebbles (CI)	9.0 – 11.0	10-12⁰
	Layer – 3 (3.5m to 6.0m)	Clayey Gravel(GC)	2.5 – 4.0	22-25⁰

5.2 - SPT values at different depths

Depth Below EGL	BH-1	BH-2	BH-3
	Nr	Nr	Nr
1.50 m	8	5	6
3.00 m	30	45	30
4.50 m	50	32	35
6.00 m	78	38	54

5.3 - Water Table:

6. Water table was observed at 3.0m depth below the existing ground level in all the bore holes.

Recommendations:

6.1 Type of Foundation : ISOLATED FOUNDATION

Founding Level Below EGL	Size of Footing	Type of Foundation	q net safe (t / m²)
1.5m	1.5mx1.5m	Isolated Square	6.0
2.0m	1.5mx1.5m	Isolated Square	10.0
2.5m	1.5mx1.5m	Isolated Square	15.0
3.0m	1.5mx1.5m	Isolated Square	25.0

6.2 DOUBLE UNDER REAMED PILES

Dia. of Pile	Length of Pile Below EGL	Safe Axial Load Carrying Capacity (t)
380 mm	5.0 m	20 Tonnes
450 mm	5.0 m	32 Tonnes
600 mm	5.0 m	55 Tonnes

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1.0 INTRODUCTION

1.1 Project Description

Sri Manne Narasimha Rao s/o Rangaiah, requested M/S Sri Master's Geo-tech Consultants, Ongole to conduct the necessary sub-soil investigation and to recommend suitable foundation for their proposed work "***Construction of MURALI TOWN SHIP at NAGULUPPALAPADU (V&M) in Prakasam Dt.".***

We have carried out the investigations and testing accordingly and our report for this project is submitted below.

1.2 Object of Investigations

To establish the parameters for the foundation design of the structure, various properties and parameters regarding the subsoil at site are required. These parameters are achieved through geo-technical investigations viz. soil profile, engineering properties & physical characteristics of the soil strata, variation in strength of soil strata etc. and can be elaborated as below:

- Sub-surface conditions which will reflect the thickness of the different soil strata
- Depth of ground water table
- Safe bearing capacity of the soil which will need the determination of various engineering properties of the soil strata at different levels
- Depth of the foundations
- Suitable type of foundations
- Requirement of any treatment needed to enhance the engineering properties of the soil beneath the footing

1.3 Scope of Investigations

For achieving the aforesaid objectives, the scope of work, as finalized by the consultant includes:

1. Excavating **THREE** bore holes up to 6.0m depth below existing ground surface in subsoil or refusal whichever is encountered earlier on the site at locations specified by the consultant.
2. Conducting Standard Penetration Tests (S. P. T.) at 1.5 m depth interval.
3. Extracting disturbed & undisturbed soil sample at different depth interval.
4. Observing ground water table after a stabilization period of 24 hours.
5. Conducting laboratory tests on disturbed and undisturbed soil samples collected during the subsurface exploration.
6. Compiling and submitting report in TWO copies, containing field and laboratory tests results and suggestion & recommendations regarding type & depth of foundations and allowable load bearing capacity of soil and other desired parameters at various depths.

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1.4 Organization of Report

This report has been primarily designed to explain the whole study in a systematic way, keeping in view the various demands of designers as well as the client. Each investigation is backed by its theoretical base and the results obtained either during the field tests or in laboratory are presented herein this report in self-explanatory tabular and/or graphical form. Calculations are shown wherever necessary before incorporating any parameter in the recommendations.

The chapter 'Introduction' describes the details of the project and various contents of this study. 'Site Reconnaissance' provides the general information regarding the site conditions, weather of the region, topography and the geology of the area. Details of various field and laboratory tests are given in the following two chapters. Findings obtained during these tests are summarized in the next chapter. 'Foundation Analysis' is an important chapter dealing with all design calculations required for the foundation selection and design. Recommendations are finalized in the concluding chapter.

Various table, figures and graphs are given in the annexure in quite an explanatory mode.

A list of Indian Standard (IS) Codes, which are referred throughout the study, is also attached at the end of this report.

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2.0 SITE RECONNAISSANCE

2.1 General Geology of the Area

The present site is located at **NAGULUPPALAPADU(V&M)** in Prakasam Dt.. The strata of this area comprise of **Clayey soil up to 2.5m depth and Clayey Gravel beyond 2.5m depth.**

2.2 General Weather

The available data about the weather and average rainfall and location of the site indicate that **there may be variation in the ground water** to affect the proposed structure and its foundation system. **Hence, submerged condition is considered for foundation analysis.**

2.3 Site Description

The proposed project is going to have structures with founding level at 2.5m depth below EGL.

Hence in this report, foundation proposal has been made at founding level of 2.5m depth below EGL.

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3.0 FIELD INVESTIGATION

3.1 Introduction

For achieving various soil parameters, Field Investigations are carried out at site. Field Investigation comprises site reconnaissance, detailed exploration including extensive boring program and conducting specified field tests viz. Standard Penetration Test.

3.2 Subsurface Exploration

Subsurface Exploration was carried on 7th May 2025 by using suitable boring method. ***Three boreholes were excavated in the site as per location specified by the client. Soil strata are same in all the bore holes.***

3.3 Standard Penetration Test

Standard Penetration Test conducted by means of the split spoon sampler furnishes data about resistance of the soils to penetration, which can be used to evaluate standard strength data, such as N values (number of blows per 30 cm of penetration using standard split spoon) of the soil.

Standard Penetration Tests were conducted in the boreholes at 1.5 m interval as per the provisions of IS 2131:1981. The tests were conducted by means of the split spoon sampler conforming to IS 9640:1980. If N values exceed 50 for 15cm penetration at any depth, it is taken as refusal depth and the bore-hole shall be terminated.

3.4 Ground Water Conditions

Ground water table was observed at 3.0m depth in all the bore holes. (may be seepage)

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4.0 LABORATORY INVESTIGATIONS

The laboratory tests to determine the physical properties, the engineering properties and the engineering characteristics of the soil were conducted in accordance with IS 2720. The tests performed are as follows.

4.1 Bulk Density and Natural Moisture Content

Undisturbed samples were collected from the boreholes in thin wall steel sample tubes by taking the dimensions and weight of these sample tubes, the bulk density of the soil is determined. Moisture content of the soil has been calculated by Oven Drying Method.

4.2 Grain Size Analysis

Grain size distribution of the soil is determined by sieving the soil sample in a set of IS sieves: 4.75 mm, 2 mm, 1 mm, 0.5 mm, 0.25 mm, 0.125 mm, 0.075 mm size. Grain Size Analysis curve has been plotted and attached in the appendices of this report for the soil samples collected from various depths of bore-holes.

4.3 Atterberg Limits

Atterberg Limits in the form of liquid limit, plastic limit and shrinkage limit are determined for the soil to establish its consistency. In the case of cohesionless soil, plastic limit is first determined and if it cannot be determined the soil sample is reported to be non-plastic.

4.4 Specific Gravity

Specific Gravity of the soil has been determined by Specific Gravity Bottle.

4.5 Direct Shear Test

Direct Shear Test is a strength test, which is performed on the soil sample to determine the value of angle of internal friction.

The direct shear test is generally conducted on cohesion less soil as consolidated drained (CD) test. In the present case the soil samples were prepared for various depths and were tested in the Direct Shear Apparatus under CD- condition.

4.6 Triaxial Shear Test

Triaxial Shear Test is a strength test, which is performed on the soil sample to determine the value of cohesion and angle of internal friction. Test samples are prepared from undisturbed samples and are tested in the Triaxial Apparatus.

Summary of Laboratory Tests results for all boreholes is shown in tabular form and the same is presented in the appendices of this report.

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5.0 FINDINGS OF INVESTIGATIONS

Based on various field and laboratory tests, following findings are observed:

1. The general grain size distribution pattern in the bore-hole has been observed as following:

BH No.	Subsoil Layers	Soil Type	Shear Parameters	
			Cohesion 'c' in t/m²	Angle of Friction 'ϕ'
BH-1 @ Sy.No 539	Layer – 1 (0.0m to 2.5m)	Medium Clay (CI)	4.5 - 5.0	0-5⁰
	Layer – 2 (2.5m to 6.0m)	Clayey Gravel(GC)	3.0 – 4.0	25-28⁰
BH-2 @ Sy.No 534	Layer – 1 (0.0m to 2.5m)	Medium Clay (CI)	2.0 - 3.0	0-5⁰
	Layer – 2 (2.5m to 3.5m)	Clayey Gravel(GC)	3.0 – 4.0	26-28⁰
	Layer – 3 (3.5m to 4.5m)	Clayey Sand (SC)	1.0 – 1.5	25-28⁰
	Layer – 4 (4.5m to 6.0m)	Stiff Clay (CI)	8.0 – 10.0	10-12⁰
BH-3 @ Sy.No 532,533	Layer – 1 (0.0m to 2.5m)	Medium Clay (CI)	4.0 - 5.0	4-6⁰
	Layer – 2 (2.5m to 3.5m)	Stiff Clay with Pebbles (CI)	9.0 – 11.0	10-12⁰
	Layer – 3 (3.5m to 6.0m)	Clayey Gravel(GC)	2.5 – 4.0	22-25⁰

2. Standard Penetration Test (SPT) results show the following pattern in bore hole in different depth range:

Depth Below EGL	BH-1	BH-2	BH-3
	Nr	Nr	Nr
1.50 m	8	5	6
3.00 m	30	45	30
4.50 m	50	32	35
6.00 m	78	38	54

3. Ground water table was observed at 3.0m depth below the e.g.l (may be seepage)
4. The variation of bulk density, natural moisture content and dry density for various depth ranges is found to follow the following pattern:

BH No.	Bulk Density gm/cc	Natural Moisture Content (%)	Dry Density gm/cc
BH-1	1.70-1.85	12-24 %	1.40 – 1.65

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6.0 FOUNDATION ANALYSIS

6.1 Foundation Type

A Foundation is required for distributing the loads of the superstructure on a larger ground area. The dead and live load of the proposed structure are to be transferred to the underlying supporting soil through suitable foundation.

Foundation may be broadly classified into two categories: i) Shallow Foundation and ii) Deep Foundation.

6.2 Shallow Foundation

Shallow foundation transmits the loads to the strata at shallow depth. A shallow foundation is one the width of which is greater than its depth. Shallow Foundations are located just below the lowest part of the wall or a column, which they support.

6.3 Deep Foundation

When the soil at or near the ground surface is not capable of supporting a structure, deep foundations are required to transfer the loads to deeper strata. Deep foundations are, therefore, used when surface soil is unsuitable for shallow foundation, and a firm stratum is so deep that it cannot be reached economically by shallow foundations. The most common types of deep foundations are piles, wells and caissons.

6.4 Selection of Foundation

Selection of suitable type of foundation for the proposed structure depends upon the (i) intensity & type of loading to be transferred from the superstructure and (ii) the properties & behavior of sub soil.

In the present case, the proposed residential building is likely to transfer normal load on the subsoil. The bearing capacity of the natural subsoil herein at required depth is adequate enough to bear the expected moderate load of the proposed structures. Hence, ***shallow foundation*** can be considered as the right solution for this project.

6.5 Determination of Bearing Capacity for the Shallow Foundations

Bearing capacity of soil for foundation has been calculated in accordance with IS: 6403 –1981. Here Allowable bearing pressure has been evaluated by: (a) Shear Failure criterion and (b) Settlement criterion taking SPT values.

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(a) Shear Failure criterion

$$q_a = \frac{1}{F}[c\, N_c S_c d_c i_c + \gamma D_f (N_q - 1) S_q d_q i_q + 0.5\, \gamma B N_\gamma S_\gamma d_\gamma i_\gamma W']$$

Here	q_a	= Allowable Bearing Capacity
	F	= Factor of safety, taken equal to 3.0 as per IS: 1904
	c	= Cohesion
	γ	= Unit weight of soil
	W'	= Water table correction factor
	D_f	= Depth of foundation
	B	= Width of foundation
	N_c, N_q, N_γ	= Bearing Capacity factors
	S_c, S_q, S_γ	= Shape Factors
	d_c, d_q, d_γ	= Depth Factor
	i_c, i_q, i_γ	= Inclination Factor

For various values of Df & B, calculations are done and the values for net safe bearing capacity have been obtained.

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7.0 RECOMMENDATIONS

In view of these findings & results obtained during the field and laboratory investigations and the analysis carried out thereafter, following general recommendations are being made for the foundation design of building.

1. The type of foundation depends upon the configuration of loading & loading intensity as well as characteristics & behavior of subsoil. Considering the type of loading and based on various findings of the subsoil, in the present case, the type of foundation can be adopted as ***SHALLOW FOUNDATION.***

2. Allowable Bearing Capacity shall be adopted corresponding to various parameters as following.

Founding Level Below EGL	Type of Foundation	Size of Footing	q net safe (t / m²)
1.5m	Isolated Square	1.5mx1.5m	6.0
2.0m	Isolated Square	1.5mx1.5m	10.0
2.5m	Isolated Square	1.5mx1.5m	15.0
3.0m	Isolated Square	1.5mx1.5m	25.0

3. The safe load carrying capacity of the piles have been calculated and Recommended values are as following.

Diameter of Pile (mm)	Length of Pile Below EGL	Safe Axial Load Carrying Capacity (t)
380 mm	5.0 m	20 Tonnes
450 mm	5.0 m	32 Tonnes
450 mm	5.0 m	55 Tonnes

4. **The diameter of bulb (D_u) should be 2.5 times the diameter of pile. The spacing of bulbs should be 1.5 times the diameter of bulb. The first bulb must be located at $2D_u$ minimum or 1.75m below the ground level.**

For **Sri Master's Geo-Tech Consultants**

Date: 14-05-2025
Place: Ongole

SRI MASTER'S GEO-TECH CONSULTANTS ONGOLE

14/5/25
Authorized Signatory
Sri Master's Geotech Consultants
Anjaiah Road,
ONGOLE-523 002.

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Annexure- A
Bearing Capacity Calculations

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ANNEXURE-A
Bearing Capacity calculations
(as per IS:6403-1981)

I. Shear Failure Criterion :

Founding level below EGL	**= 2.5m**
Average Bulk density [t/m³]	=1.82
Average Dry density [t/m³]	=1.48
C [t/m²]	= 4.0
ϕ[in degree]	= 25⁰
Assumed width of foundation W'	= 1.5m
	=0.5

$\phi = 25^0$ ⇒ Nc =14.83 Nq =6.40 Ny =5.39

Founding Level below EGL	Depth of Foundation	Type of Foundation	Sc	Sq	Sy	dc	dq = dy	q net safe in t/m²
2.5m	2.5m	Isolated Square	1.3	1.2	0.8	1.200	1.100	15.54

The values of bearing capacity factors Nc, Nq and Nγ have been arrived at from table 1 of IS: 6403-1981.

The depth factors dc, dq and dγ have been calculated as per clause 5.1.2.2 of IS:6403-1981.

The Shape factors Sc, Sq, Sy have taken from clause 5.1.2.1 of IS: 6403-1981.

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ANNEXURE-A
Bearing Capacity calculations
(as per IS:6403-1981)

I. Shear Failure Criterion :

Founding level below EGL	= 2.5m
Average Bulk density [t/m³]	=1.82
Average Dry density [t/m³]	=1.48
C [t/m²]	= 4.0
ϕ[in degree]	= 25⁰
Assumed width of foundation W'	= 1.5m
	=0.5

$\phi = 25^0$ $\Rightarrow$ Nc =14.83 Nq =6.40 Ny =5.39

Founding Level below EGL	Depth of Foundation	Type of Foundation	Sc	Sq	Sy	dc	dq = dy	q net safe in t/m²
2.5m	2.5m	Isolated Square	1.3	1.2	0.8	1.200	1.100	15.54

The values of bearing capacity factors Nc, Nq and Nγ have been arrived at from table 1 of IS: 6403-1981.

The depth factors dc, dq and dγ have been calculated as per clause 5.1.2.2 of IS:6403-1981.

The Shape factors Sc, Sq, Sy have taken from clause 5.1.2.1 of IS: 6403-1981.

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Annexure- B

Pile Capacity Calculations

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ANNEXURE-B

$$Q_u = A_p . N_c . C_p + A_a N_c C_a' + C_a' A_s' + \alpha C_a A_s$$

Where Q_u= Ultimate bearing capacity of pile

A_p = Cross sectional area of pile toe
Nc = Bearing capacity factor usually taken as 9
Cp = Average cohesion at pile tip = 3.0 T/m^2
A_a = $\pi/4\ (D_u^2 - D^2)$, where D_u and D are bulb and stem diameters respectively
C_a' = average cohesion of soil around the under reamed bulbs = 4.0 T/m^2
α = Reduction factor (usually taken as 0.5 for clays)
C_a = Average cohesion of soil along the pile stem = 4.0 T/m^2
A_s = Surface area of the stem
A_s' = Surface area of the cylinder circumscribing the under reamed bulbs

The safe load carrying capacity of the piles has been calculated as above and the recommended values are as following:

Diameter of Pile (mm)	Length of Pile Below EGL	Safe Axial Load Carrying Capacity (t)
380 mm	5.0 m	20 Tonnes
450 mm	5.0 m	32 Tonnes
600 mm	5.0 m	55 Tonnes

Note: The above pile capacities includes end bearing resistance also.

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Annexure-C
List of Referred IS Codes

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ANNEXURE-C
LIST OF REFERRED IS CODES

Field Investigation

1. IS : 1948-1970 Classification and identification of soils for general engineering purposes (first revision) Amendment 2
2. IS : 1892-1979 Code of practice for sub surface investigations for foundations
3. IS : 2131-1981 Method of standard penetration tests for soils
4. IS : 2132-1986 Code of practice for thin walled tube sampling of soils

Laboratory tests

1. IS : 2720-1983 (Part 1) Methods of tests for soils: Preparation of dry soil samples for various tests (second revision)
2. IS : 2720-1980 (Part-2) Methods of test for soils: Determination of water content (second revision) Amendment 1
3. IS : 2720-1980 (Part-3/Sec 1) Method of test for soil : Determination of specific gravity : Fine grained soils
4. IS : 2720-1980 (Part-3/Sec 2) Method of test for soil : Determination of specific gravity : Fine , medium & coarse grained soils.(First revision)
5. IS : 2720-1985 (Part-4) Methods of test for soils: Grain size analysis (Second revision)
6. IS : 2720-1985 (Part-6) Methods of test for soils: Determination of liquid and plastic limit (Second revision)

Foundation construction

1. IS : 1904-1986 Code of practice for design and construction of foundation in soils : General requirements (Third revision)
2. IS : 6403-1981 Code of practice for determination of bearing capacity of shallow foundations
3. IS : 8009-1976 (Part-1) Code of practice for calculation of settlements of foundations : Shallow foundations subjected to symmetrical static vertical loads (Amendment 2)

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Details of Bit 1

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FIELD BORELOG

Table No.- 1

METHOD OF BORING	: HAND AUGER	BORE HOLE NO.	: 1
CASING TYPE & DEPTH	: NIL	LOCATION	: Sy.No.539
WATER TABLE	: 3.0m b.g.l	DATE OF START	: 07-05-2025
DEPTH OF BORING	: 6.0 m b.g.l	DATE OF COMPLETION	: 07-05-2025

DEPTH(m)	DISCRIPTION OF SOIL STRATA	SOIL CLASS.	LEGEND	STRATA THICK. (m)	SAMPLES DETAILS			SPT BLOWS COUNTS				REMARKS
					TYPE	NO.	TEST DEPTH (m)	15	30	45	"N"	
1.0	MEDIUM CLAY	CI		2.5 M								
2.0					SPT	1	1.50-1.95	2	3	5	8	
3.0	CLAYEY GRAVEL	GC		3.5 M								
4.0					SPT	2	3.00-3.45	7	12	18	30	
5.0					SPT	3	4.50-4.95	14	17	33	50	
6.0					SPT	4	6.00-6.45	22	32	46	78	

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LABORATORY TEST RESULTS OF BH-1

Table No.-2

DEPTH BELOW GL	TYPE / SAMPLE NO.	DEPTH OF SAMPLE	SPT VALUE 'N'		DESCRIPTION OF STRATA	LEGEND	GRAIN SIZE ANALYSIS			ATTERBERG LIMITS			BULK DENSITY in t/m³	DRY DENSITY in t/m3	MOISTURE CONTENT (%)	SPECIFIC GRAVITY	SHEAR PARAMETERS		REMARKS
			OBSERVED	CORRECTED			GRAVEL (%)	SAND (%)	SILT + CLAY (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX					COHESION 'C' in t/m²	ANGLE of FRICTION	
1.00					MEDIUM CLAY														
2.00	SPT	1.50-1.95	8				0	5	95	44	25	19	1.77	1.43	23.60	2.70	4.50	0	
3.00					CLAYEY GRAVEL														
	SPT	3.00-3.45	30				26	33	41	40	20	20	1.83	1.59	15.40	2.66	4.00	28	
4.00																			
5.00	SPT	4.50-4.95	50				30	30	40	39	20	19	1.85	1.62	14.50	2.66	4.00	30	
6.00																			
	SPT	6.00-6.45	78				30	30	40										

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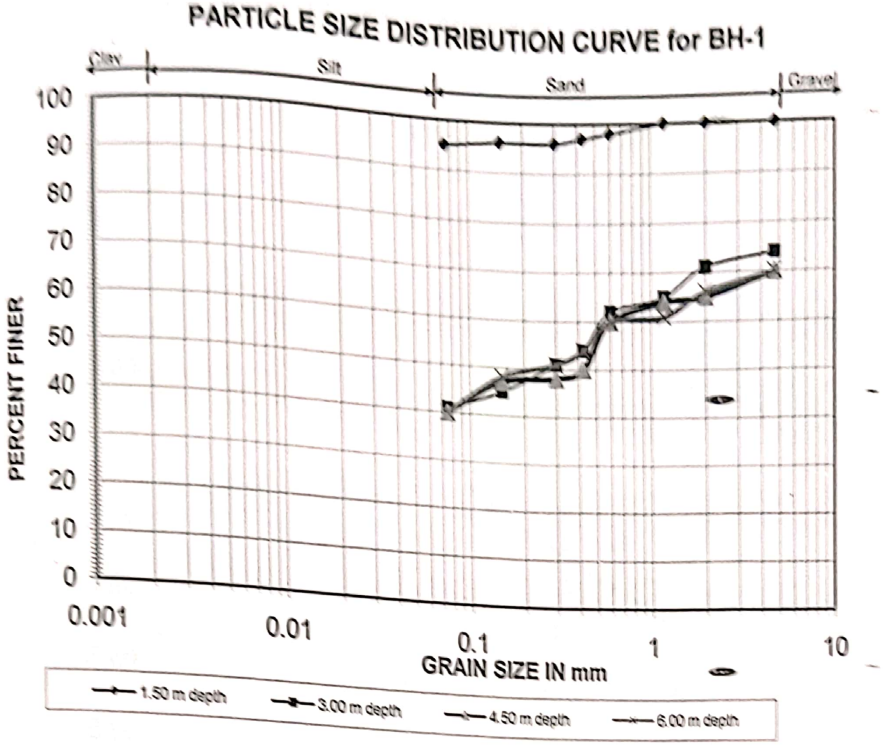

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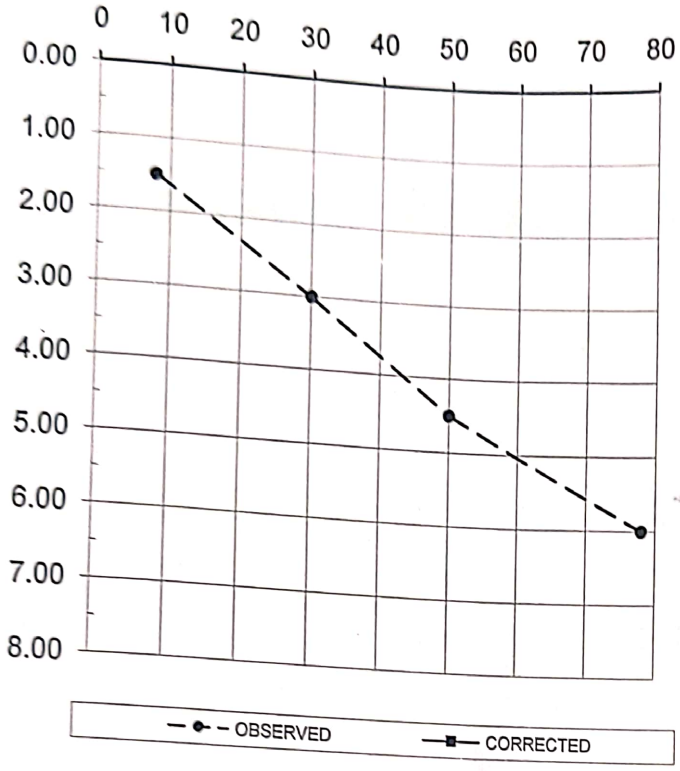
VARIATION OF SPT 'N' WITH DEPTH for B.H.No.- 1



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Details of BH-2

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FIELD BORELOG

Table No.- 3

METHOD OF BORING	: HAND AUGER	BORE HOLE NO.	: 2
CASING TYPE & DEPTH	: NIL	LOCATION	: Sy.No.534
WATER TABLE	: 3.0m b.g.l	DATE OF START	: 07-05-2025
DEPTH OF BORING	: 6.0 m b.g.l	DATE OF COMPLETION	: 07-05-2025

DEPTH(m)	DISCRIPTION OF SOIL STRATA	SOIL CLASS.	LEGEND	STRATA THICK. (m)	SAMPLES DETAILS			SPT BLOWS COUNTS				REMARKS
					TYPE	NO.	TEST DEPTH (m)	15	30	45	"N"	
1.0	MEDIUM CLAY	CI		2.5 M								
2.0					SPT	1	1.50-1.95	2	2	3	5	
3.0	CLAYEY GRAVEL	GC		1.0 M								
					SPT	2	3.00-3.45	18	20	25	45	
4.0	CLAYEY SAND	SC		1.0 M								
5.0	STIFF CLAY	CI		1.5 M	SPT	3	4.50-4.95	9	13	19	32	
6.0												
					SPT	4	6.00-6.45	11	16	22	38	

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LABORATORY TEST RESULTS OF BH-2

Table No.-4

DEPTH BELOW GL	TYPE / SAMPLE NO.	DEPTH OF SAMPLE	SPT VALUE 'N'		DESCRIPTION OF STRATA	LEGEND	GRAIN SIZE ANALYSIS			ATTERBERG LIMITS			BULK DENSITY in t/m^3	DRY DENSITY in t/m3	MOISTURE CONTENT (%)	SPECIFIC GRAVITY	SHEAR PARAMETERS		REMARKS
			OBSERVED	CORRECTED			GRAVEL (%)	SAND (%)	SILT + CLAY (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX					COHESION 'C' in t/m^4	ANGLE of FRICTION	
1.00					MEDIUM CLAY														
2.00	SPT	1.50-1.95	5				0	4	96	45	23	22	1.78	1.43	24.10	2.70	3.00	0	
3.00					CLAYEY GRAVEL														
	SPT	3.00-3.45	45				28	32	40	39	20	19	1.83	1.59	14.80	2.67	2.50	30	
4.00					SANDY CLAY														
5.00	SPT	4.50-4.95	32		STIFF CLAY		2	17	81	46	25	21	1.82	1.49	22.40	2.69	8.00	10	
6.00																			
	SPT	6.00-6.45	38				3	19	78										

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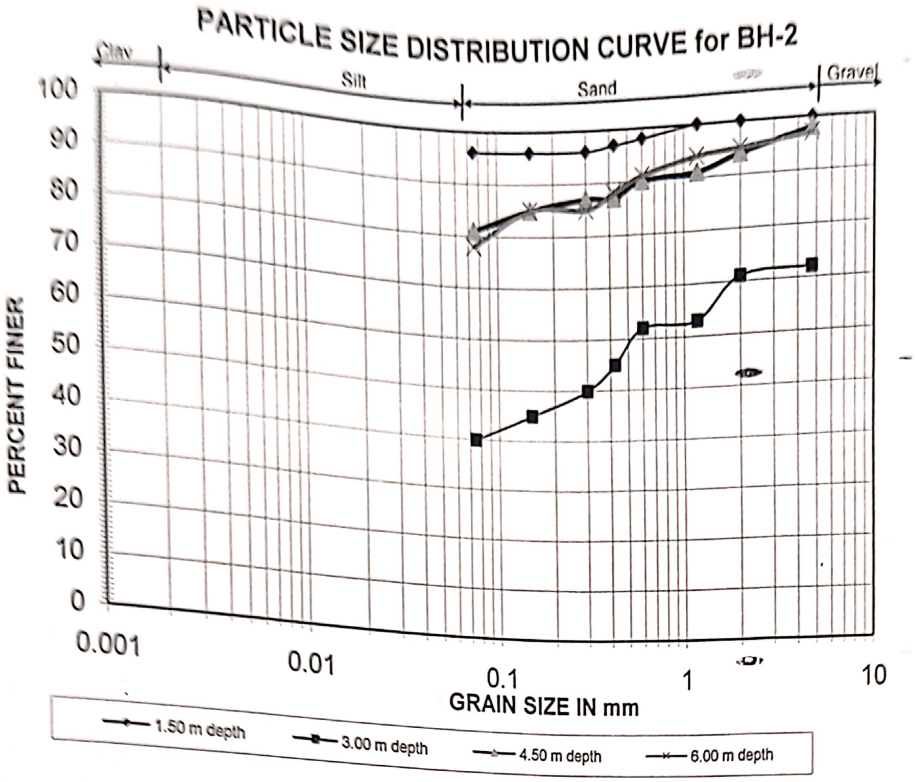

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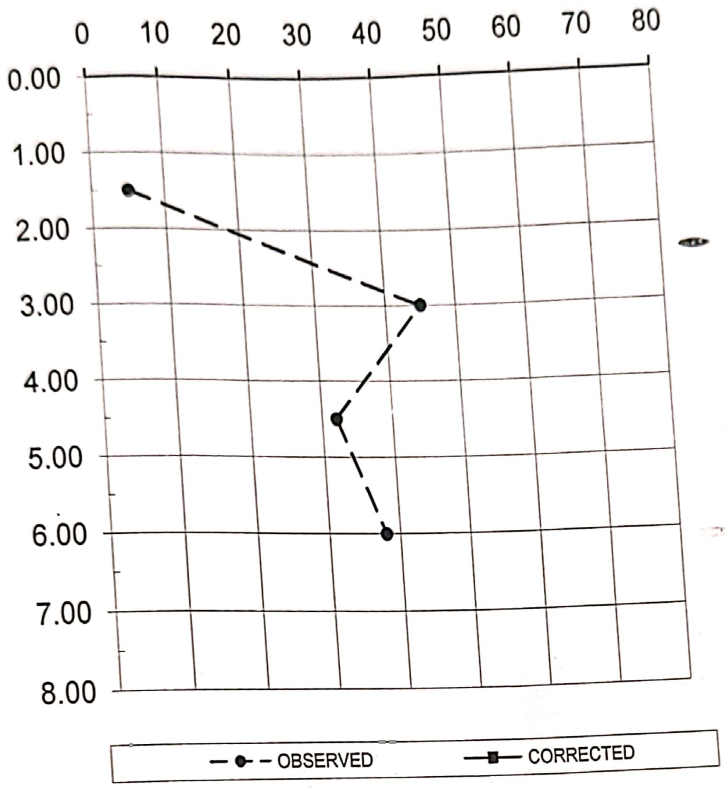
VARIATION OF SPT 'N' WITH DEPTH for B.H.No.- 2



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Details of BH-3

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FIELD BORELOG

Table No.- 5

METHOD OF BORING	: HAND AUGER	BORE HOLE NO.	: 3
CASING TYPE & DEPTH	: NIL	LOCATION	: Sy.No.532,533
WATER TABLE	: 3.0m b.g.l	DATE OF START	: 07-05-2025
DEPTH OF BORING	: 6.0 m b.g.l	DATE OF COMPLETION	: 07-05-2025

DEPTH(m)	DISCRIPTION OF SOIL STRATA	SOIL CLASS.	LEGEND	STRATA THICK. (m)	SAMPLES DETAILS			SPT BLOWS COUNTS				REMARKS
					TYPE	NO.	TEST DEPTH (m)	15	30	45	'N'	
1.0	MEDIUM CLAY	CI		2.5 M								
2.0					SPT	1	1.50-1.95	2	3	3	6	
3.0	STIFF CLAY WITH PEBBLES	CI		1.0 M	SPT	2	3.00-3.45	10	12	18	30	
4.0												
5.0	CLAYEY GRAVEL	GC		2.5 M	SPT	3	4.50-4.95	12	15	20	35	
6.0					SPT	4	6.00-6.45	14	22	32	54	

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LABORATORY TEST RESULTS OF BH-3

Table No.-6

DEPTH BELOW GL	TYPE / SAMPLE NO.	DEPTH OF SAMPLE	SPT VALUE 'N'		DESCRIPTION OF STRATA	LEGEND	GRAIN SIZE ANALYSIS			ATTERBERG LIMITS			BULK DENSITY in t/m³	DRY DENSITY in t/m3	MOISTURE CONTENT (%)	SPECIFIC GRAVITY	SHEAR PARAMETERS		REMARKS
			OBSERVED	CORRECTED			GRAVEL (%)	SAND (%)	SILT + CLAY (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX					COHESION 'C' in t/m²	ANGLE of FRICTION	
1.00					MEDIUM CLAY														
2.00	SPT	1.50-1.95	6				0	5	95	44	23	21	1.77	1.43	23.90	2.70	3.50	0	
3.00					STIFF CLAY WITH PEBBLES														
	SPT	3.00-3.45	30				11	18	71	42	20	20	1.79	1.54	16.60	2.69	8.00	10	
4.00																			
5.00	SPT	4.50-4.95	35		CLAYEY GRAVEL		35	25	40	38	21	17	1.84	1.59	15.80	2.68	4.00	25	
6.00																			
	SPT	6.00-6.45	54				34	25	41										

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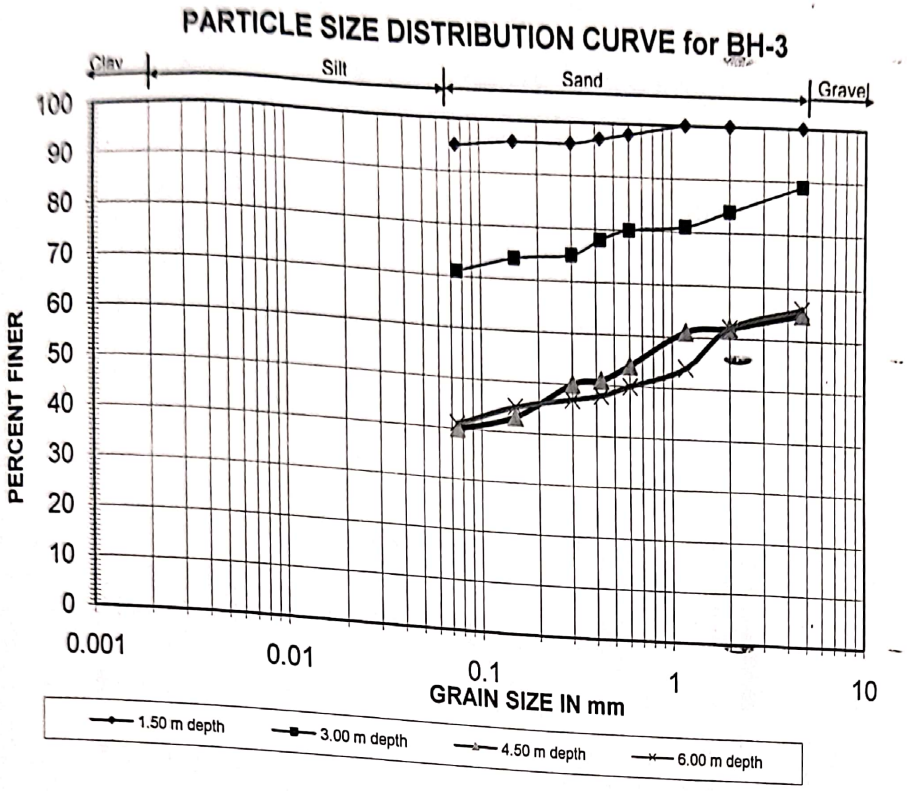

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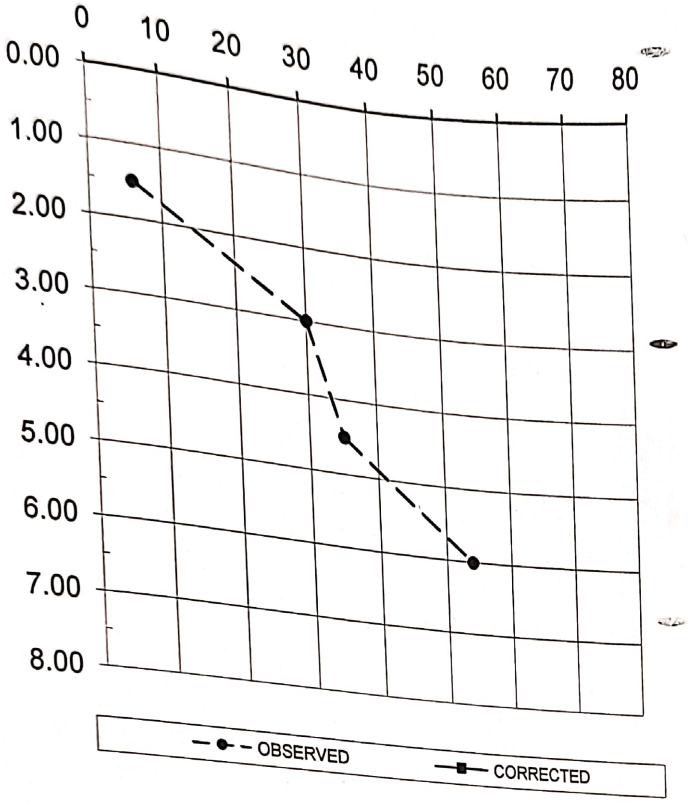
VARIATION OF SPT 'N' WITH DEPTH for B.H.No.- 3



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