



BORE TECH SERVICES

SOIL INVESTIGATION & FOUNDATION DESIGNING

Specialised in: ▶ Soil Investigation (Land & Water) ▶ Bridges Boring ▶ Rock Boring

GSTIN: 32BNWPS1509N1ZD

PAN NO: BNWPS1509N

SAC Code: 998346

SOIL INVESTIGATION REPORT

PROJECT

JalJeevan Mission (JJM)-JalJeevan Mission- 2020-21- CWSS to Agali and adjoining Panchayaths-Phase-II- Providing Distribution network & FHTC's in AgaliPanchayath.-JalJeevan Mission- 2020-21- CWSS to Agali and adjoining Panchayaths-Phase-II- Providing Distribution network & FHTC's in AgaliPanchayath.- Pipeline Work.(6 LAKH LTR WATER TANK,MUNIMALA,PALAKKAD)

CLIENT

M/S. Superintending Engineer,
Public Health Circle,
Palakkad.

CONTRACTOR

M/s.Hill Track Constructions Pvt.Ltd.,
Nadavayalpo, Wayanad - 670721.

CONSULTANT (FOUNDATION)

Mr.JAYAKRISHNAN MENON, M.TECH.(S.M.F.E.),M.I.G.S.
M/s.TDAC Geotechnical Solutions,
Kochi.

**REPORT ON SOIL INVESTIGATION CARRIED OUT FOR
PROPOSED JAL JEEVAN MISSION(JJM)-JAL JEEVAN MISSION-2020-21-
CWSS TO AGALI AND ADJOINING PANCHAYATH-PHASE-II-PROVIDING
DISTRIBUTION NETWORK& AMP; FHTC& RSQUO;S IN AGALI
PANCHAYATH.- JAL JEEVAN MISSION-2020-21-CWSS TO AGALI AND
ADJOINING PANCHAYATHS-PHASE-II PROVIDING DISTRIBUTION NET
WORK& AMP; FHTC&RSQUO;S IN AGALI PANCHAYATH.-PIPELINE
WORK.(6 LAKH LTR WATER TANK,MUNIMALA,AGALI,PALAKKAD).**

1. SCOPE OF WORK

The scope of the project envisages sub-surface investigation carried out for the purpose of the design of foundation for the proposed project. The scope of the work also involves executing **One Bore Hole** with related field tests, collection of disturbed SPT Soil Samples.

2. CODES AND STANDARDS

All works were carried out as per given specification. Where not specified, the latest relevant IS codes were followed.

3. PURPOSE

The purpose of the proposed Geo-Technical Investigation was to obtain the following:-

- a. To perform the required field investigation including soil boring with related field tests within the bore hole, collecting samples.
- b. To determine the type, extent to the sub-surface material upto **16.00m depth**.

4. FIELD WORKS / TESTS

The Field work consists of:-

- a. Executing **One Bore Hole** upto **16.00m depth**.
- b. Obtaining disturbed soil samples and finding out SPT 'N' values.

5 . PROGRAMME OF INVESTIGATION

Keeping in view of the type of structure and loading pattern **One Bore Hole** were proposed. The details of the boreholes are attached duly showing the approximate dimensions with respect to the site. (Site Plan).

6. PROCEDURE

The Boreholes were executed using **Rotary Drilling** method. Circulation of bentonite slurry was used for advancing the boreholes and stabilizing the side. Casing pipes were introduced to protect the first few meters. Standard penetration tests were conducted at regular intervals and also at points where change of strata was observed. Representative samples were collected and sent **BH - 1** for laboratory analysis. Foundation recommendation obtained from structural consultant.

7. LABORATORY INVESTIGATION

Laboratory tests consists of the following:-

- a) Physical identification of soil
- b) Determination of natural water content.
- c) Specific Gravity
- d) Atterberg's limit (Liquid limit and plastic limit)
- e) Mechanical analysis of finding sand, clay and soil fractions.

PROJECT/SITE: Proposed 6 Lakh Ltr Water Tank, Munimala, Palakkad

CLIENT: The Superintending Engineer, Palakkad

DATE : 07-07-2023

SUB SOIL PROFILE

In **BH-1**, the top 1.50m comprise of filling. This was followed by medium dense lateritic clayey sand with gravel having S.P.T value of 25 extending up to depth of 2.50m. From 2.50m to 7.50m medium dense lateritic silty sand having S.P.T value of 19 to 27 was noted. Below this medium dense lateritic gravelly sand having S.P.T value of 21 was noted extending upto depth of 9.50m. This was followed by medium dense lateritic clayey sand having S.P.T value of 18 to 25 extending up to depth of 14.00m. This was followed by dense to very dense lateritic clayey sand having S.P.T value of 45 to 50 extending up to depth of 16.00m and BH1 was terminated at 16.00m depth. Water table was not met in the borehole during the time of investigation.

SUMMARY & RECOMMENDATIONS:

For the proposed structures, shallow foundation may be provided in the medium dense lateritic clayey sand with gravel strata at a depth of about 2.00m from the ground level. A safe bearing capacity of 18t/m² may be adopted for a footing of minimum width of width 1.0m commencing from the medium dense lateritic clayey sand with gravel strata at a depth of 2.00m from the ground level. Depending upon the intensity of loading wall footing, isolated foundation, strip footing or raft foundation may be adopted.

Recommendations are based on the soil samples and N-value provided by M/s BORETECH SERVICES, and in the assumption that the soil profile found in the boreholes tested is indicative of the entire plot area. Any deviation in soil profile other than those observed in the boreholes tested, should immediately be referred to the consultant and proper modification should be implemented. **The foundation execution is recommended under strict technical supervision.**



JAYAKRISHNAN MENON, M.TECH. (S.M.F.E.), M.I.G.S.
GEOTECHNICALCONSULTANT





BORE TECH SERVICES

PROJECT : Proposed 6 Lakh Ltr Water
Tank
SITE : Munimala, Palakkad
BORE HOLE NO. : 1
TYPE OF BORING : Rotary Drilling

1/1

DATE OF COMMENCE : 24-06-2023
DATE OF COMPLETION : 24-06-2023
GROUND WATER LEVEL : Not Met With

BORE LOG CHART & DATA SHEET

Depth in Meter	Soil Profile	Visual Description of Soil	Thickness of Layers (M)	Standard Penetration Test Data				Graph of 'N' Value						Remarks			
				Depth (m)	15	30	45	'N' Value	10	20	30	40	50		>50		
0.00		Filling soil	1.50														
1.50		Lateritic slightly gravelly clayey silty sand(Brown)	1.00	2.00	6	10	15	25									
2.50		Lateritic clayey silty sand(Brown)	5.00	3.00	8	12	15	27									
				4.00	10	11	12	23									
				5.50	11	12	14	26									
				7.00	5	7	12	19									
7.50		Lateritic slightly gravelly clayey silty sand(Brown)	2.00	8.00	6	10	11	21									
9.50		Lateritic clayey silty sand(Brown)	1.50	10.00	5	8	10	18									
11.00		Lateritic slightly gravelly clayey silty sand(Brown)	1.50	11.50	9	12	13	25									
12.50		Lateritic clayey silty sand(Brown)	1.50	13.00	15	10	15	25									
14.00		Lateritic slightly gravelly clayey silty sand(Brown)	1.20	14.50	18	25	20	45									
15.20		Slightly gravelly clayey silty sand-weathered soil(Brown)	0.80	16.00	15	25	25	50									
16.00																	

Bore Hole Terminated at 16.00m depth

Site-in-charge



GEMAT

Geotechnical Material Analysis & Testing

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TEST CERTIFICATE

Report Reference	GML/23/359
Report Issued Date	30 June 2023

Lab Sample Ref.	GMS/23/359
Sample Received Date	26-Jun-2023

Information's given by the Client :

Project Name	Jal Jeevan Mission 2020-21, CWSS to Agali and Adjoining Panchayaths Phase-II, 6 Lakh Litre Water Tank @ Mumimala, Palakkad.		
Project Client	M/s. Superintending Engineer, Public Health Circle, Palakkad.		
Ground Water Level :	Not met with	Total Depth In Meter	16.00m
Sample Description	One sample of soil	Location	BH-01
		Type Of Boring :	Rotary Drilling
		Sampling Date	24 June 2023

"N" Value	Depth in m	Sample Number	Type of Sample	Description of soil	Natural water content (%)	IS Classification	Liquid Limit %	Plastic Limit %	Plasticity Index	Grain size distribution % of			Specific Gravity	Type Of Test	Cohesion c kg/cm ²	Angle of internal friction φ
										Clay & Silt	Sand	Gravel				
25	2.00	SPT-2	DS	Slightly Gravelly, Clayey, Silty, SAND (Brown) - Laterite Soil	30	SC				49	46	5	2.57			
27	3.00	SPT-3	DS	Clayey, Silty, SAND (Brown) - Laterite Soil	27	CI				58	42	0				
23	4.00	SPT-4	DS	Clayey, Silty, SAND (Brown) - Laterite Soil	37	CI	41	19	22	54	46	0				
26	5.50	SPT-5	DS	Clayey, Silty, SAND (Brown) - Laterite Soil	37	CI				53	47	0	2.56			
19	7.00	SPT-6	DS	Clayey, Silty, SAND (Brown) - Laterite Soil	36	CI				54	46	0				
21	8.00	SPT-7	DS	Slightly Gravelly, Clayey, Silty, SAND (Brown) - Laterite Soil	36	SC				45	49	6				
18	10.00	SPT-8	DS	Clayey, Silty, SAND (Brown) - Laterite Soil	32	SC				44	56	0	2.58			
25	11.50	SPT-9	DS	Slightly Gravelly, Clayey, Silty, SAND (Brown) - Laterite Soil	27	CI	43	20	23	56	42	2				
25	13.00	SPT-10	DS	Clayey, Silty, SAND (Brown) - Laterite Soil	28	CI				54	46	0				
45	14.50	SPT-11	DS	Slightly Gravelly, Clayey, Silty, SAND (Brown) - Laterite Soil	36	CI				57	38	5	2.55			
50	16.00	SPT-12	DS	Slightly Gravelly, Slightly Clayey, Silty, SAND (Brown) - Weathered Soil	19	SM				24	72	4				

Note :Direct Shear Test is Denoted as D.S., Disturbed Sample is denoted as DS & Non plasticity is denoted as N/P

Remarks:- Results relate only to samples tested. This report shall not be reproduced except in full, without the prior written consent of the testing laboratory.

REC-33-Rev.00

Revised on 02/03/2022

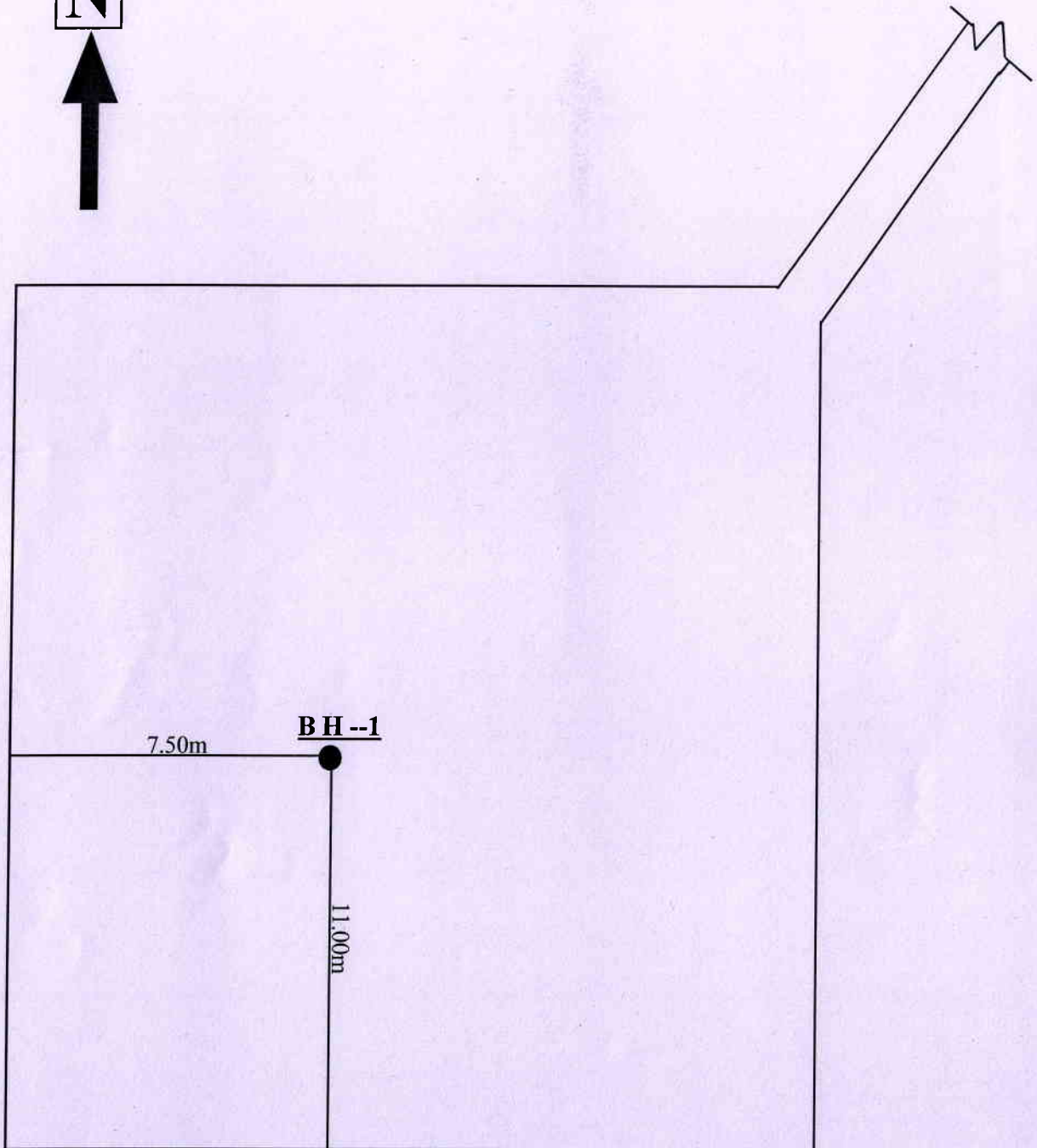
Reviewed by QM & Approved by OM/

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Midhun Cleetus (Quality Manager)
 For and on behalf of GEMAT Laboratory

*** End of Report ***

BORE HOLE LOCATIONS
MUNIMALA, PALAKKAD.



S-1
D-161

(Not To Scale)