



Your trusted partner for buying, selling, and managing property,
ensuring hassle-free service with 100% transparency.

3/350/2 Mettukuppam,
OMR Thoraipakkam,
Chennai, India

hello@verified.realestate

+91 9996 12 9996

Official Property Record

Digitally Verified Record - Powered by Verified  RealEstate™



SHRI BALAJI GEOTECH PVT LTD

Soil Investigations, Rock Core Drilling, Grouting works, Foundation & Structural Design

N0:40, Thiyagapramma Street, Subramania Nagar, Suramangalam, Salem-636005

ISO-9001:2015 Certified Company

Email: balagigeotech@gmail.com www.shribalajigeotech.com cell: 9894713236, 9150603434



SBGT/CIV/2020-2021/42

SOIL INVESTIGATION REPORT

Name of Work: CONDUCTING SOIL EXPLORATION FOR PROPOSED CONSTRUCTION OF STILT+4 FLOORS (40 DWELLINGS) RESIDENTIAL APARTMENT BUILDING (AFTER DEMOLISHING THE EXISTING BUILDING) AT D.NO.3/318B, 3/318C, OLD S.NO: 30/1, 30/2, 31/2, NEW WARD-X, BLOCK-9, T.S.NO: 29, 30, SEELANAICKENPATTY VILLAGE, SALEM TALUK & DISTRICT.

CLIENT:

R.PADMANABAN S/O R.RAJENDRAN



CONTENTS

Sl.No	Description	Page No.
1	Introduction	3
2	Scope of Work	3
3	Field Work	3
4	Sampling / Laboratory Tests	4
5	Subsoil Conditions	5
6	Engineering Appraisal	5
7	Design Methodology	5
8	Safe Bearing Capacity	5
9	Enclosures Annexure –I : Field Bore logs Annexure –II : Soil Test Results	

1 Introduction

Geotechnical Investigation for the “**PROPOSED CONSTRUCTION OF STILT + 4 FLOORS (40 DWELLINGS) RESIDENTIAL APARTMENT BUILDING (AFTER DEMOLISHING THE EXISTING BUILDING) AT D.NO. 3/318B, 3/318C, OLD S.NO: 30/1, 30/2, 31/2, NEW WARD-X, BLOCK-9, T.S.NO: 29, 30, SEELANAICKENPATTY VILLAGE, SALEM TALUK & DISTRICT.**” was carried out by SHRI BALAJI GEOTECH PVT LTD, SALEM.

2 Scope of Work

- One borehole was drilled through mechanically operated rotary drilling machine.
- Proposed construction of STILT + 4 Floors (40 Dwellings) Residential Apartment Building up to hard strata for preliminary identification of type and extent of soil layers.
- The Safe Bearing Capacity of layers at different depth is based on Standard Penetration test values which are conducted in the bore holes at regular intervals.
- Submitting geotechnical investigation report for the above project based on field and laboratory test results and recommendation of suitable foundation systems based on as per IS-1892 and IS -2720.

3 Field work

Field investigations were carried out through mechanically operated rotary drilling machine at location : 1 at WEST side mentioned in site.

3.1 Drilling through soil medium

3.1.1 ROTARY BORING

Rotary drilling technique was adapted using Rotary drilling machine in the proposed project. In this method, boring is effected by the cutting action of a rotating bit that is kept in firm contact with the bottom of the hole. The bit is attached to the lower end of a hollow drill rod that is rotated by a suitable chuck. Drilling mud (usually Bentonite) is continuously forced down the hollow drill rods. The mud returning upwards through the annular space between the drill rods and the side of the hole bring the cutting to the surface.

3.1.2. STANDARD PENETRATION TEST

It is now most commonly used in site test. The test measures the penetration resistance of the split spoon sampler, when it is driven into the soil, at the bottom of a borehole in a standard manner. The N-value, which is the number of blow required to achieve 300mm penetration of the soil, indicates the relative density of sand or gravel, the consistency of other soil such as silts or clays and the strength of weak rocks. The test is described in IS 2131 - 1981. The split spoon sampler is attached to stiff drill rod and lowered to the bottom of the bore hold. A standard blow consists of dropping a mass of 63.5kg free fall through 750 mm on to an anvil at the top of the rods and ensuing that this amount of dynamic energy is transferred to the sampler as much as possible.

The number of blows required to achieve each 150mm penetration is recorded for a fall penetration of 450mm. The initial 150mm penetration is referred to as seating drive and the blows required for this penetration are not considered as this zone is in disturbed soil. The next 300mm of penetration is referred to as the test drive and the number of blows required to achieve this fully is termed the penetration resistance or N-value. The SPT results are given in the annexure

4. SAMPLING:

The disturbed samples were collected through SPT sampler and undisturbed samples were collected through brass tube, properly waxed on both sides then sent to laboratory for analysis.

4. 1 LABORATORY TESTS

Following laboratory tests are conducted as per IS codes.

- a. Sieve analysis- IS 2720 Part 4
- b. Specific gravity –IS 2720-Part 3/Sec 1
- c. Unconfined compressive strength-IS 2720-Part 10
- d. Direct Shear test-IS 2720 Part 13 & Part 39 Sec 1
- e. Natural Moisture Content-IS 2720 Part 2
- f. Soil classification as per IS 1498-1970

5. Subsoil Conditions

The soil conditions at this site found through Standard Penetration Test samples N Values are obtained. One borehole is terminated at a maximum depth of 5.00m from Existing Ground level which are shown in bore log.

6. Engineering Appraisal

Based on Laboratory results on the samples collected from investigation locations, the shear strength parameters such as C (Cohesive Strength) and Φ (angle of internal friction) can be correlated with SPT values.

7. Design Methodology

The Safe Bearing Capacity of the soil can be calculated on Shear failure Criteria and Settlement Criteria and any foundation system has to satisfy the above said criteria. The former one depends on shear strength and the bearing capacity equation suggested by IS 6403 as follows.

Net ultimate Bearing Capacity is given by

$$C N_c S_c d_c i_c + \gamma D (N_q - 1) S_q d_q i_q + 0.5 \gamma B N_\gamma S_\gamma d_\gamma i_\gamma W'$$

The Safe Bearing Capacity is the maximum gross intensity of loading that the soil can carry safely without failing in shear which is obtained by the Net ultimate Bearing Capacity divided by factor of safety (2.5 to 3.0)

The later one follows Settlement Criteria, that the intensity of the loading will cause within the permissible settlement is termed as allowable bearing pressure given by

$$\text{Safe bearing capacity (SBC)} = 3.5 (N-3) \left\{ \frac{(B+0.3)}{2B} \right\}^2 \times RW \times FD + P \text{ Where,}$$

N = Collected N value N₂

B = Width of Foundation = constant 1

RW = Water Correction = constant 0.5

FD = Depth of Factor = constant 1

P = Over Burden Pressure

8. Safe Bearing Capacity

The recommended safe bearing capacity at various depth based on SPT results are tabulated in the annexure.

9. Depth of Foundation

Minimum depth of foundations is governed by the following factors:

- Top loose zone.
- Adequate depth of soil above founding level, to ensure mobilization of full safe bearing capacity.
- Adequate depth of soil strata below founding level of requisite strength to mobilize the safe bearing capacity and at the same time restricts the total and differential settlements within the allowable limits.

10. FOUNDATION RECOMMENDATIONS:

- The site for CONDUCTING SOIL EXPLORATION FOR PROPOSED CONSTRUCTION STILT + 4 FLOORS (40 DWELLINGS) RESIDENTIAL APARTMENT BUILDING (AFTER DEMOLISHING THE EXISTING BUILDING) AT D.NO. 3/318B, 3/318C, OLD S.NO: 30/1, 30/2, 31/2, NEW WARD-X, BLOCK-9, T.S.NO: 29, 30, SEELANAICKENPATTY VILLAGE, SALEM TALUK & DISTRICT.

The borehole investigation was conducted and SBC was determined.

Maximum Borehole Depth	5.00 m
Type of Foundation	Open foundation
Type of Footing	Isolated footing
Safe Bearing Capacity	35.00 t/m ²
Depth of Footing	3.00 m from NGL
Size of Footing	1.60 m X 1.60 m

NGL-NATURAL GROUND LEVEL


 GEOTECHNICAL ENGINEER
Er. K. PRAKASH M.E., MIGS.,
 Geotechnical Consultant
 Reg. No : LPA/GTE/19/05/003
 prakash.civil57@gmail.com Ph-9894713236

FIELD BORE LOG REPORT

Name of Work		CONDUCTING SOIL EXPLORATION FOR PROPOSED CONSTRUCTION OF STILT + 4 FLOORS (40 DWELLINGS) RESIDENTIAL APARTMENT BUILDING (AFTER DEMOLISHING THE EXISTING BUILDING) AT D.NO.3/318B, 3/318C, OLD S.NO: 30/1, 30/2, 31/2, NEW WARD-X, BLOCK-9, T.S.NO: 29, 30, SEELANAICKENPATTY VILLAGE, SALEM TALUK & DISTRICT.										 SHRI BALAJI GEOTECH		
Name of Contractor		SHRI BALAJI GEOTECH PVT LTD, SALEM												
Name of Client		R.PADMANABAN S/O R.RAJENDRAN												
Type of Bore:		Rotary Circular Drilling					CH :							
Period:		22.06.2021 - 22.06.2021					RL:							
Bore No :	1	LAT:	11.6252	LONG:	78.1474	Water Table in Metre :					NOT MET			
LOCATION		WEST					Weather Condition:					SUNNY		
Graphic Log	Depth in Metre	Soil Description	Thickness of each soil Layers in metre	Depth in metre	Standard Penetration Test (SPT) Data IS : 2131 - 1981				Soil Collection		Rock Samples IS : 11315 (Part. 11) -1985		Graphical Representation of Penetration Resistance (SPT in No. of Blows / 30 cm Penetration) Depth Vs Blows	Remarks
					0.0 - 15.0 Cms	15.0 - 30.0 Cms	30.0 - 45.0 Cms	SPT Value in No. of Blows/Cms	UDS/DS	IS CLASSIFICATION	Percentage of Rock Core Recovery	Percentage of Rock Quality Designation (RQD)		
 	1.00	TOP SOIL	1.00	1.00	-	-	-	-	-	TS	-	-	 ABBREVIATIONS : GL -Ground Level .DS -Disturbed Soil .UDS -Undisturbed Soil .RB -Rebound .WS -Washing Sample	
				2.00	4	5	10	15	-					
				3.00	45	50/3	RB	>50	-					
				4.00	50/7	RB	-	>50	-					
				5.00	50/4	RB	-	>50	-					
Bore Terminated at 5m														
Note :	1.The bore has been closed as per the field officers instruction.					4. Number of Soft Rock Core Bits								
	2. Number of Disturbed Sampled (DS)... ..					5. Number of Hard Rock Core Bits								
	3. Number of Undisturbed Soil Samples (UDS)					6. Soft / Hard Rock Core Dia (Ø)								

GEOTECHNICAL ENGINEER

Er. K. PRAKASH M.E., MGS.,
 Geotechnical Consultant
 Reg. No : LPA/GTE/19/05/003
 prakash.civil57@gmail.com Ph-9894713236

Name of work: CONDUCTING SOIL EXPLORATION FOR PROPOSED CONSTRUCTION STILT + 4 FLOORS (40 DWELLINGS) RESIDENTIAL APARTMENT BUILDING (AFTER DEMOLISHING THE EXISTING BUILDING) AT D.NO. 3/318B, 3/318C, OLD S.NO: 30/1, 30/2, 31/2, NEW WARD-X, BLOCK-9, T.S.NO: 29, 30, SEELANAICKENPATTY VILLAGE, SALEM TALUK & DISTRICT.

SHRI BALAJI GEOTECH SALEM				BORE NUMBER - I			LOCATION: WEST		GROUND WATER LEVEL:		WORK COMMENCED ON 22.06.2021		WORK COMPLETED ON 22.06.2021						
SOIL PROFILE AND DEPTH IN METRES	DEPTH OF SAMPLING	IS SOIL CLASSIFICATION	NATURAL WET DENSITY	NATURAL MOISTURE CONTENT %	INDEX TEST			SIEVE ANALYSIS % RETAINED IS SIEVE ANALYSIS		SHEAR TEST		STANDARD PENETRATION TEST				CONSOLIDATION TEST			
					LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX	4.75 MM	2.36 MM	425 MIC	75 MIC	COHESION C Ton / M ²	ANGLE OF INTERNAL FRICTION °	DEPTH OF TESTING M	OBSERVED N VALUE	CORRECTED N VALUE	SAFE BEARING CAPACITY T/m ²	COMPRESSION INDEX C _c	PRE - CONSOLIDATIO N PRESSURE KG/CM ²
	1.00	TS	17.9	8.9	NP	NP	NP	-	6	15	6	-	1.00	15	19.07	13.97	-		
			16.5	13.0	NP	NP	NP	-	10	17	10	-	3.00	>50	50.00	36.88			
			-	-	-	-	-	-	-	-	-	-	4.00	>50	50.00	38.93			
		SDR	-	-	-	-	-	-	-	-	-	-	5.00	>50	50.00	40.98			
	5.00																		

TS-TOP SOIL, SDR- SOFT DISINTEGRATED ROCK, SBC based on SPT N value. NP-Non plastic

Er. K. PRAKASH M.E., MGS.,

Geotechnical Consultant

GEOTECHNICAL ENGINEER

Reg. No : LPA/GTE/19/05/003

prakash.civil57@gmail.com Ph-9894713236



our services doesn't just end there



Buying & Selling Services

Property Buying Assistance, Property Selling Support, Market Price Analysis, Owner Outreach and Negotiation.



Legal & Documentation Services

Certified EC, Patta, legal opinions, property verification, due diligence, litigation solutions, and legal heir certificates.



Property Development & Approvals

Building plan approvals, construction, layout and sub-division approvals, zone conversion, and occupancy certification.



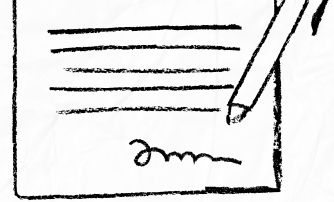
NRI & Investment Services

Escrow Services, Rentals, Litigation Solutions, Property Valuation and Property Management



Compliance & Special Services

Demolition, Vaasthu checks, regularization of unauthorized buildings, and office space solutions.



 **empowering your real estate decisions**
with smart tools



Property Valuation & Cost Estimation

Guideline Value, Apartment Composite Value, Stamp Duty & Registration Fees Calculator, Building Value Calculator, Capital Gains Calculator, Area Unit Converter, Length Unit Converter



Ownership, Compliance & Legal Verification

Encumbrance Certificate (EC) Search, Find Your SRO, Temple Property Check, WAQF Property Check, View Patta/Chitta, View FMB, Patta Analyzer, EC Analyzer



Zoning & Land Use Analysis

Land Use Zone Finder, CRZ Zone Check, Aquifer Zone Check, CBA Check, EWS Check, Road Width Check, Proposed Road Widening Check, FSI Calculator



Property Documentation & Workflow Tools

Forms & Templates, Document Generator, Document Translation, Dictionary



Vastu & Property Management Tools

Home Vastu Shastra, Plot Vastu Shastra, Property Management



We're honored to be part of your
real estate journey

3/350/2 Mettukuppam,
OMR Thoraipakkam,
Chennai, India

hello@verified.realestate
[+91 9996 12 9996](tel:+919996129996)
www.verified.realestate