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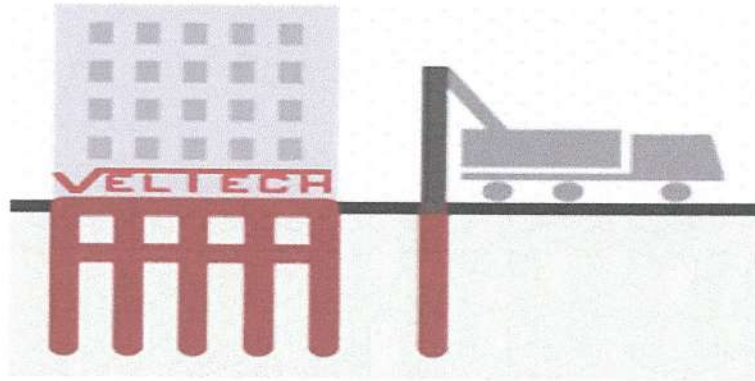
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VELTECH CONSULTING ENGINEERS

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GEOTECHNICAL INVESTIGATION REPORT

PROJECT: GEOTECHNICAL INVESTIGATION REPORT FOR THE PROPOSED CONSTRUCTION OF (G+2) RESIDENTIAL BUILDING AT DOOR NO.39 PART, T.S. NO.43 PART, HARIKRISHNA NAIDU STREET, VARADHARAJAPURAM, AMBATTUR VILLAGE & TK, CHENNAI – 53.

CLIENT : M/s. Hi Living Projects LLP.,

REPORT NO	DATE	REVISION-0
VCE/23/GIR-172	16.08.2023	Submission for Design of Foundation



Veltech Consulting Engineers

Geotechnical investigation



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16.08.2023

To

Client : M/s. Hi Living Projects LLP.,

**SUB: GEOTECHNICAL INVESTIGATION REPORT FOR THE PROPOSED
CONSTRUCTION OF (G+2) RESIDENTIAL BUILDING AT DOOR NO.39
PART, T.S. NO.43 PART, HARIKRISHNA NAIDU STREET,
VARADHARAJAPURAM, AMBATTUR VILLAGE & TK, CHENNAI – 53.**

Dear Sir,

We are glad to submit two copy of our final Geotechnical Investigation Report for the above captioned project.

We look forward to hearing from you at your earliest convenience regarding this report.

We are pleased to work for you in this project. We assure our continual services to our best.

Yours Truly,

FOR VELTECH CONSULTING ENGINEERS

Er.R.VENKATA KRISHNAIAH.M.E.,

Geotechnical Consultant



GEOTECHNICAL INVESTIGATION REPORT

VELTECH CONSULTING ENGINEERS

CLIENT :M/s.Hi Living Projects LLP.,

Project:(G+2) Residential Building

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GEOTECHNICAL INVESTIGATION REPORT

VELTECH CONSULTING ENGINEERS

CLIENT :M/s.Hi Living Projects LLP.,

Project:(G+2) Residential Building

INTRODUCTION

This report presents the geotechnical investigations results carried out by Veltech Consulting Engineers, for the proposed construction of (G+2) Residential Building At Door No.39 Part, T.S. No.43 Part, Harikrishna Naidu Street, Varadharajapuram, Ambattur Village & Tk, Chennai – 53.

This work was authorized by the Client :M/s. Hi Living Projects LLP.,

Standard Penetration Testing for borehole was drilled at the site up to a maximum depth of 10.0mbelow existing ground level.

The investigation consists of drilling one borehole, soil sampling, field and laboratory testing and preparation of a Geotechnical Report for the Proposed Construction of (G+2) Residential Building At Door No.39 Part, T.S. No.43 Part, Harikrishna Naidu Street, Varadharajapuram, Ambattur Village & Tk, Chennai – 53.

SCOPE OF WORK

The scope of this investigation is to:

- Conducting Standard Penetration Test (SPT) at regular depth intervals.
- Collecting split spoon samples or disturbed soil samples
- Conducting relevant laboratory tests
- Recommend a suitable foundation system and safe bearing pressure at foundation level.

SITE DESCRIPTION

The site for the proposed construction of (G+2) Residential Building At Door No.39 Part, T.S. No.43 Part, Harikrishna Naidu Street, Varadharajapuram, Ambattur Village & Tk, Chennai – 53.

The elevation of site is same from the nearby road level.



GEOTECHNICAL INVESTIGATION REPORT

VELTECH CONSULTING ENGINEERS

CLIENT :M/s.Hi Living Projects LLP.,

Project:(G+2) Residential Building

EXPLORATION TECHNIQUES

After the visual inspection of the site, the subsurface investigation was carried out as mentioned below:

One (1) exploration boreholes were drilled to a maximum depth of 10.0m

BH-1 was started on 11.08.2023 and completed on 11.08.2023.

Equipment Used

The equipment used for performing the drilling operations is a Calyx Rotary Drill Rig with direct mud circulation technique. The drill mud used was made out of Sodium Bentonite.

Methodology of drilling

In the soil strata, the drilling operations have been carried out using special drill bits and cutters coupled with direct mud circulation.

In-Situ Strength Tests: Standard Penetration Test:

Standard penetration tests were conducted at the borehole locations, in accordance with IS: 2131. The tests were conducted at every change of strata up to the depth of termination of the borehole as directed by the engineer-in-charge.

Collection of Samples: Disturbed Soil Samples

The SPT-samples collected were used as disturbed soil samples. These samples were used for visual and physical identification and for conducting laboratory classification tests as per I.S.1498-1970.



GEOTECHNICAL INVESTIGATION REPORT

VELTECH CONSULTING ENGINEERS

CLIENT :M/s.Hi Living Projects LLP.,

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LABORATORY TESTING

All the extracted soil samples were brought to our Laboratory for further examination in accordance with IS: 1498-1970. Selected samples were subjected to the following physical tests.

1. Moisture Content
2. Sieve Analysis (IS: 2720 Part IV — 1985)
3. Liquid limit (IS: 2720 Part V — 1985)
4. Plastic Limit and Plasticity Index (IS: 2720 Part VI — 1972)
5. Differential Free Swell Test

The laboratory test results are given in Appendix "C".

SUBSURFACE SOIL DESCRIPTION

Based on boreholes information, sub surface soil profile for the proposed construction Of Residentialbuilding is given below:

BH-1

Depth (m)		Soil Description
From	To	
0.0	1.3	Filling Soil
1.3	3.0	Reddish dark brown gravel sand with silt mixtures
3.0	4.0	Greyish brown medium plastic and medium swelling silty clay
4.0	5.5	Greyish brown clayey sand with silt mixtures
5.5	7.5	Greyish brown medium to fine silty sand
7.5	10.0	Brownish medium to fine silty sand

GROUND WATER

Ground water table was found at the depth of 5.0m below the existing ground level at the time of field investigation. However it will fluctuate due to seasonal variations.



GEOTECHNICAL INVESTIGATION REPORT

VELTECH CONSULTING ENGINEERS

CLIENT :M/s.Hi Living Projects LLP.,

Project:(G+2) Residential Building

FOUNDATION RECOMMENDATIONS

Based on the borehole information and laboratory test results in addition to the nature of structure, the recommendations for the proposed structure are given below.

SHALLOW FOUNDATION

- Isolated /Strip foundation shall be adopted for the proposed structure.
- Excavate upto the depth of 3.5m and backfill by gravels for 1.0m thickness with proper compaction.
- Foundation shall be placed at **2.5m** depth below the existing ground level on a gravel fill of 1.0m thickness.
- An allowable bearing pressure of **150 kN/m²** at the depth of **2.5m upon fill** shall be taken for design.
- Grade beams shall be adopted in order to minimize differential settlements.
- The type of foundation shall be decided by the structural engineer based upon foundation loads and the structural design conditions.
- The probable maximum and differential settlement of the soil under any part of the foundation must be limited to safe and tolerable limits.

FOUNDATION CONSIDERATIONS

A PCC (Plain Cement Concrete) layer of 20-30cm thickness is recommended below the Pile cap/ foundation. Any over excavation in the foundation trenches should be re-filled by plain concrete and any disturbed and loose materials found in the foundation trenches should be removed before placement of P.C.C.



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Excavated material except clay can be used as general backfill material. As per general practice the backfill material should not contain more than 15 % fines passing 0.075 mm sieve, retain 40% on 4.75mm size sieve while the maximum size of gravel allowed is 50mm.

Backfilling materials shall be placed in horizontal layers not exceeding 25 cm thickness and each layer shall be compacted to at least 95% of the maximum dry density.

GENERAL CONSIDERATIONS

The recommendations for foundation design and construction are based on the information obtained from the boreholes drilled at site. When foundation construction is underway, the recommendations of this report should be checked through field inspection, to validate the information for use during the construction stage. Any variation in underground conditions revealed by the borehole should be brought to our attention for alternate recommendations, if required.

Yours Truly,
FOR VELTECH CONSULTING ENGINEERS


Er.R.VENKATA KRISHNAIAH.M.E.,
Geotechnical Consultant



GEOTECHNICAL INVESTIGATION REPORT

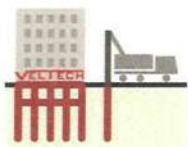
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CLIENT : M/s. Hi Living Projects LLP.,

Project: (G+2) Residential Building

APPENDIX A

BOREHOLE LOG



Veltech Consulting Engineers

Geotechnical investigation



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BOREHOLE LOG

Client : M/s.Hi Living Projects LLP.,			Water Table : 5.0m					
			Ele . Of G.L : Nil					
Type of building : (G+2) Residential Building			Type Of Boring : Rotary					
Location : Ambattur			Dia of Boring : 150mm					
B.H. No : 1			Started on : 11.08.2023					
Final Depth : 10.0m			Ended on : 11.08.2023					
Depth (m)	G W L	S Y M B O L	DESCRIPTION	SPT COUNT				Relative Density /Consistency
				0 -15 cm	15 -30 cm	30 -45 cm	N- Value	
0.0			Filling Soil					
0.5								
1.0								
1.5			Reddish dark brown gravel sand with silt mixtures	10	14	16	30	Medium Dense
2.0								
2.5								
3.0			Ditto	24	50/6cm			Very Dense
3.5								
4.0			Greyish brown medium plastic and medium swelling silty clay	10	14	15	29	Very Stiff
4.5								
5.0			Greyish brown clayey sand with silt mixtures	14	20	23	43	Dense
5.5								
6.0			Greyish brown medium to fine silty sand	16	23	28	51	Very dense
6.5								
7.0								
7.5			Brownish medium to fine silty sand		50/11' cm			Very dense
8.0								
8.5								
9.0								
9.5								
10.0			ditto		50/7' cm			Very dense
10.5			Borehole 1 terminated at the depth of 10.0m					

GEOTECHNICAL INVESTIGATION REPORT

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CLIENT : M/s. Hi Living Projects LLP.,

Project: (G+2) Residential Building

APPENDIX B

LABORATORY TEST RESULTS

GEOTECHNICAL INVESTIGATION REPORT

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CLIENT : M/s. Hi Living Projects LLP.,

Project: (G+2) Residential Building

1- a) PHYSICAL ANALYSIS OF SOIL BH-1

Test results of Moisture content , Atterberg limits

DEPTH M	Moisture Content%	Atterberg limits				IS Classification
		W _L %	W _P %	I _P %	FSI%	
1.3	Filling soil					
1.5	15.76	Non Plastic				GM
2.5	15.07	Non Plastic				SM
3.5	25.35	57	26	31	65	CH
4.5	17.49	Non Plastic				SC
6.0	14.51	Non Plastic				SM
8.0	17.44	Non Plastic				SM
10.0	19.18	Non Plastic				SC

1-b) GRAIN SIZE ANALYSIS OF SOIL – BH-1

DEPTH M	GRAVEL SAND %	COARSE SAND %	MEDIUM SAND %	FINE SAND %	SILT + CLAY%
1.3	Filling soil				
1.5	31	18	11	6	34
2.5	27	13	15	9	36
3.5	-	-	2	4	94
4.5	-	2	19	27	52
6.0	-	1	24	45	31
8.0	-	-	13	48	39
10.0	-	-	10	43	47

GEOTECHNICAL INVESTIGATION REPORT

VELTECH CONSULTING ENGINEERS

CLIENT : M/s. Hi Living Projects LLP.,

Project: (G+2) Residential Building

ABBREVIATION

Note

❖	W_N	=	Natural Moisture content (%)
❖	W_L	=	Liquid limit (%)
❖	W_P	=	Plasticity Limit (%)
❖	I_P	=	Plasticity Index (%)
❖	F.S.I	=	Free Swell Index (%)
❖	IS	=	Indian Standard Classification
❖	CL	=	Low compressibility Clay of $W_L < 35\%$
❖	CI	=	Inorganic Clay of $35\% < W_L < 50\%$
❖	CH	=	High Compressibility Clay of $W_L > 50\%$
❖	SP	=	Poorly graded sand
❖	GP	=	Poorly graded gravel
❖	SW	=	Well graded sand
❖	SM	=	Silty sand

GEOTECHNICAL INVESTIGATION REPORT

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CLIENT : M/s. Hi Living Projects LLP.,

Project: (G+2) Residential Building

APPENDIX C

PHOTOS

GEOTECHNICAL INVESTIGATION REPORT

VELTECH CONSULTING ENGINEERS

CLIENT : M/s. Hi Living Projects LLP.,

Project: (G+2) Residential Building





CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY

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PROFESSIONAL REGISTRATION CERTIFICATE

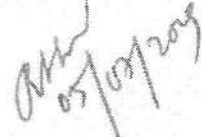
This is to certify that the **Thiru R.VENKATA KRISHNAIAH** has enrolled as **Registered Geo-Technical Engineer (RGTE)** with Chennai Metropolitan Development Authority (CMDA) who has the qualification of **M.E.,(Civil) - Geo Technical Engg.** and experience in the relevant field for **10 years**.

He has been given the Registration No.**GTE/19/07/032** on **05.07.2019**. He shall be required to comply with the duties and responsibilities prescribed by the Government of Tamil Nadu in Part-V, "Registration of Professionals", Tamil Nadu Combined Development and Building Rules, 2019 approved vide G.O.(Ms) No.18 MAWS (MA1) Dept. dated 04.02.2019.

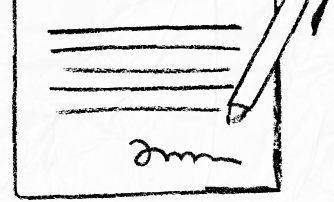
This Registration is valid upto **04.07.2024**.



R.VENKATA KRISHNAIAH
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SELAYUR, CHENNAI - 600073.
REG. NO. GTE/19/07/032


(R.SHIVAKUMAR)

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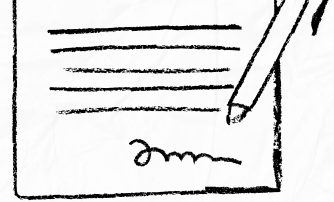
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